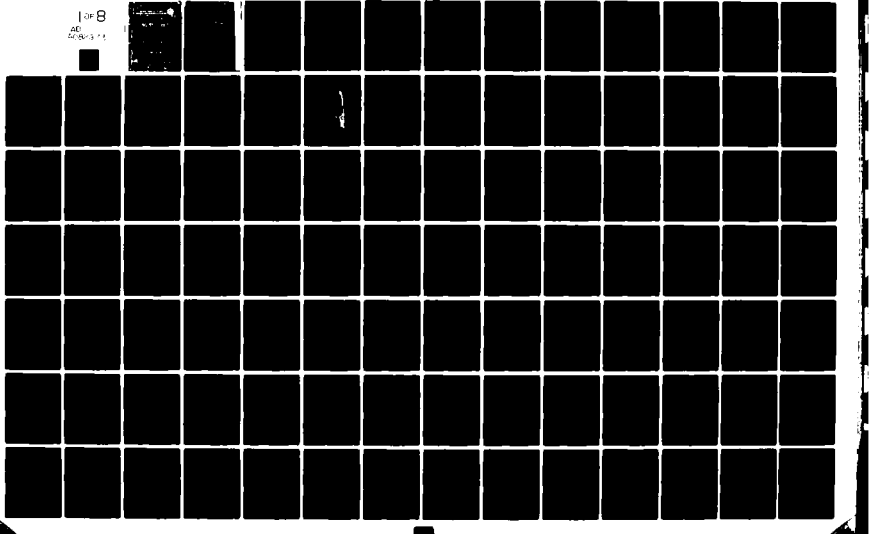
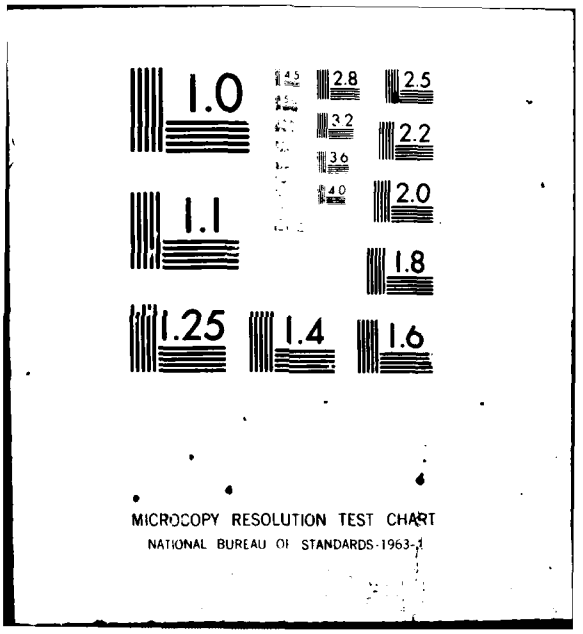
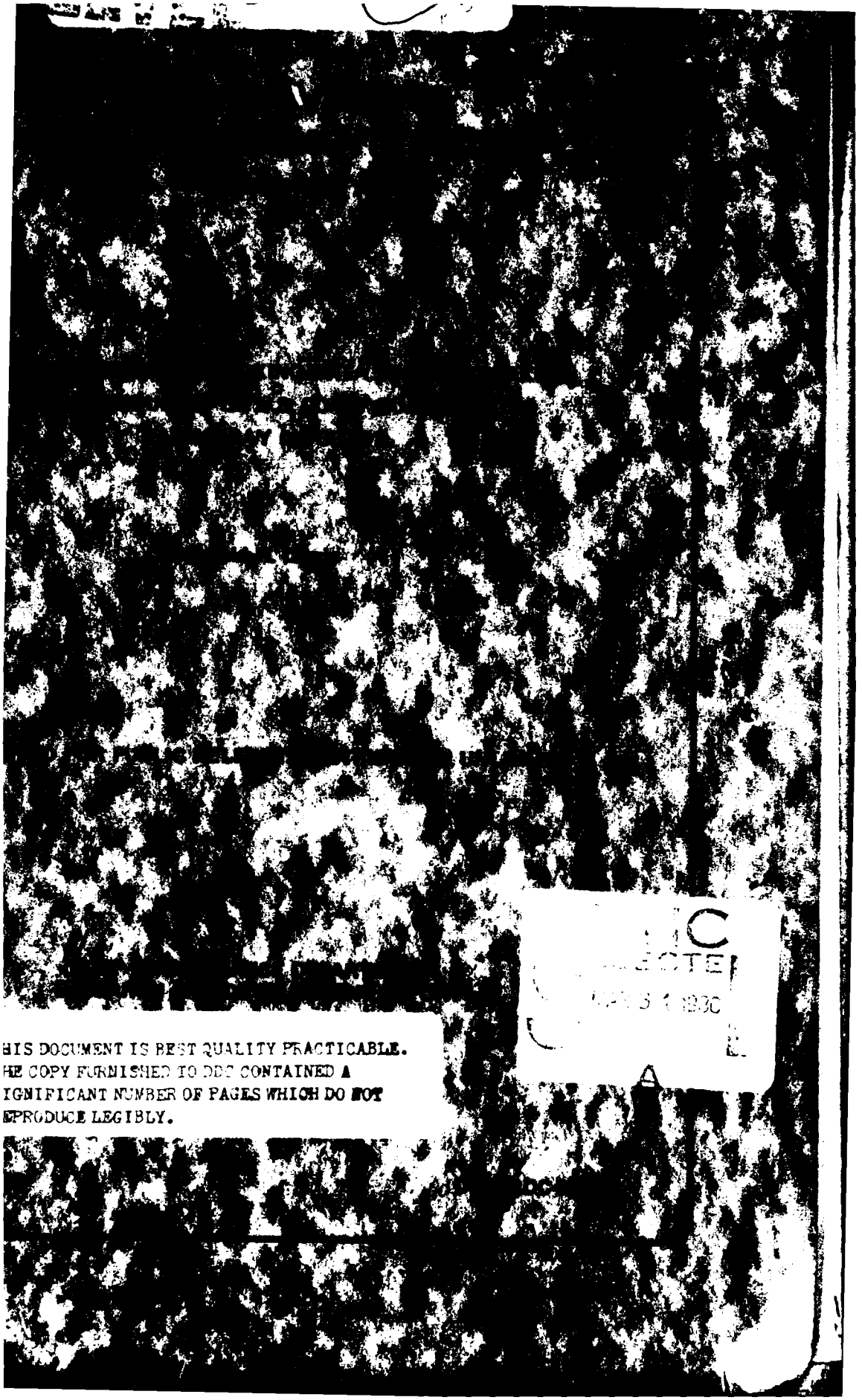
AD-A082 373 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUC--ETC(U)
FEB 80 D H DRAZIN
UNCLASSIFIED DTNSRDC-80/024 MIPR-Z51100-8-0012 NL




1.0
2.8
2.5
3.2
2.2
3.6
4.0
2.0
1.1
1.8
1.25
1.4
1.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A



HIS DOCUMENT IS BEST QUALITY PRACTICABLE.
HE COPY FURNISHED TO DDC CONTAINED A
IGNIFICANT NUMBER OF PAGES WHICH DO NOT
EPRODUCE LEGIBLY.

DISCLAIMER NOTICE

THIS DOCUMENT IS BEST QUALITY PRACTICABLE. THE COPY FURNISHED TO DTIC CONTAINED A SIGNIFICANT NUMBER OF PAGES WHICH DO NOT REPRODUCE LEGIBLY.

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE

READ INSTRUCTIONS BEFORE COMPLETING FORM

1. REPORT NUMBER: DTNSRDC-80/024	2. GOVT ACCESSION NO.
3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle): MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUCTED ON U.S. COAST GUARD CUTTER KATMAI BAY (WTGB-101).	5. TYPE OF REPORT & PERIOD COVERED: Final rept. Jan-Mar 79
	6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s): Donald H. Drazin	8. CONTRACT OR GRANT NUMBER(s): MIPR-Z51140-1-0012
9. PERFORMING ORGANIZATION NAME AND ADDRESS: David W. Taylor Naval Ship Research and Development Center, Bethesda, Maryland 20084	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: Work Units 1536-190 and 1536-204
11. CONTROLLING OFFICE NAME AND ADDRESS: United States Coast Guard, Washington, D.C. 20590	12. REPORT DATE: Feb 80
	13. NUMBER OF PAGES: 708
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office): 710	15. SECURITY CLASS. (of this report): UNCLASSIFIED
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

APPROVED FOR PUBLIC RELEASE: DISTRIBUTION UNLIMITED

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

DDC ELECTE MAR 31 1980 D A

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

KATMAI BAY (WTGB-101)
Ice-Breaking Trials
Powering
Speed
Machinery

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

This report contains the results of ice-breaking trials conducted on the United States Coast Guard Cutter KATMAI BAY (WTGB-101) during the months of January, February, and March 1979. Data represented in this report include: powering, speed, and machinery measurements obtained while operating in level and brash ice in the vicinity of Sault Sainte Marie, Michigan. The various types of trial runs conducted included: (1) continuous, level ice-breaking;

(Continued on reverse side)

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE S/N 0102-LF-014-6601

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

(Block 20 continued)

(2) ice-breaking in brash ice; (3) ice-breaking by ramming; (4) maneuvering in level and brash ice; (5) rudder torque validation; and (6) bollard pull.

The data are presented in graphical and tabular form. No attempt is made to analyze the data as it is understood that these data will be included in a comprehensive overall report to be published by the Coast Guard Research and Development Center.

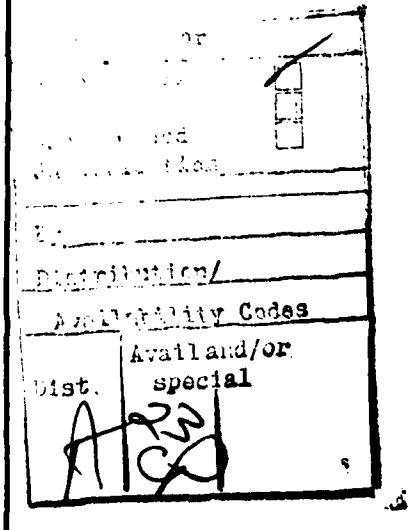


TABLE OF CONTENTS

	Page
LIST OF FIGURES	iv
LIST OF TABLES	xiii
FRONTISPIECE	xv
ABSTRACT	1
ADMINISTRATIVE INFORMATION	1
INTRODUCTION	1
SHIP CHARACTERISTICS	2
TRIAL CONDITIONS	3
INSTRUMENTATION	3
CONTINUOUS SYSTEM	3
DIGITAL SYSTEM	3
PROPELLER SHAFT TORQUE	4
PROPELLER THRUST	4
REVOLUTIONS PER MINUTE (RPM)	5
SHIP SPEED AND SHIP POSITION	5
RUDDER RAM PRESSURES	5
RUDDER ANGLE	6
SHIP ELECTRICAL PARAMETERS AND TEMPERATURES	6
PRESENTATION AND DISCUSSION OF RESULTS	7
DATA PRESENTATION FORMAT	7
LEVEL AND BRASH ICE-BREAKING	8
ICE RAMMING	9
TURNS IN LEVEL AND BRASH ICE	9
RUDDER VALIDATION TRIALS	10
BOLLARD PULL TRIALS	10
CONCLUSIONS	11
ACKNOWLEDGMENTS	11
REFERENCES	691

LIST OF FIGURES

	Page
1 - Instrument Block Diagram	12
2 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1100	13
3 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1100	14
4 - Generator 1 Data Averaged Over Five-Second Periods, Run 1100	15
5 - Generator 2 Data Averaged Over Five-Second Periods, Run 1100	16
6 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1100	17
7 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1100	18
8 - Generator 1 Data, Five Samples per Second Plotted, Run 1100	19
9 - Generator 2 Data, Five Samples per Second Plotted, Run 1100	20
10 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1110	21
11 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1110	22
12 - Generator 1 Data Averaged Over Five-Second Periods, Run 1110	23
13 - Generator 2 Data Averaged Over Five-Second Periods, Run 1110	24
14 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1110	25
15 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1110	26
16 - Generator 1 Data, Five Samples per Second Plotted, Run 1110	27

Page

17 - Generator 2 Data, Five Samples per Second Plotted, Run 1110..... 28

18 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1120..... 29

19 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1120..... 30

20 - Generator 1 Data Averaged Over Five-Second Periods, Run 1120..... 31

21 - Generator 2 Data Averaged Over Five-Second Periods, Run 1120..... 32

22 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1120..... 33

23 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1120..... 34

24 - Generator 1 Data, Five Samples per Second Plotted, Run 1120..... 35

25 - Generator 2 Data, Five Samples per Second Plotted, Run 1120..... 36

26 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1130..... 37

27 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1130..... 38

28 - Generator 1 Data Averaged Over Five-Second Periods, Run 1130..... 39

29 - Generator 2 Data Averaged Over Five-Second Periods, Run 1130..... 40

30 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1130..... 41

31 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1130..... 42

32 - Generator 1 Data, Five Samples per Second Plotted, Run 1130..... 43

33 - Generator 2 Data, Five Samples per Second Plotted, Run 1130..... 44

Page

34 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1320..... 45

35 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1320..... 46

36 - Generator 1 Data Averaged Over Five-Second Periods, Run 1320..... 47

37 - Generator 2 Data Averaged Over Five-Second Periods, Run 1320..... 48

38 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1320..... 49

39 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1320..... 50

40 - Generator 1 Data, Five Samples per Second Plotted, Run 1320..... 51

41 - Generator 2 Data, Five Samples per Second Plotted, Run 1320..... 52

42 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 2231..... 53

43 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 2231..... 54

44 - Generator 1 Data Averaged Over Five-Second Periods, Run 2231..... 55

45 - Generator 2 Data Averaged Over Five-Second Periods, Run 2231..... 56

46 - Propeller Shaft Data, Five Samples per Second Plotted, Run 2231..... 57

47 - Propulsion Motor Data, Five Samples per Second Plotted, Run 2231..... 58

48 - Generator 1 Data, Five Samples per Second Plotted, Run 2231..... 59

49 - Generator 2 Data, Five Samples per Second Plotted, Run 2231..... 60

50 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 2221..... 61

Page

51 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 2221..... 62

52 - Generator 1 Data Averaged Over Five-Second Periods, Run 2221..... 63

53 - Generator 2 Data Averaged Over Five-Second Periods, Run 2221..... 64

54 - Propeller Shaft Data, Five Samples per Second Plotted, Run 2221..... 65

55 - Propulsion Motor Data, Five Samples per Second Plotted, Run 2221..... 66

56 - Generator 1 Data, Five Samples per Second Plotted, Run 2221..... 67

57 - Generator 2 Data, Five Samples per Second Plotted, Run 2221..... 68

58 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 2210..... 69

59 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 2210..... 70

60 - Generator 1 Data Averaged Over Five-Second Periods, Run 2210..... 71

61 - Generator 2 Data Averaged Over Five-Second Periods, Run 2210..... 72

62 - Propeller Shaft Data, Five Samples per Second Plotted, Run 2210..... 73

63 - Propulsion Motor Data, Five Samples per Second Plotted, Run 2210..... 74

64 - Generator 1 Data, Five Samples per Second Plotted, Run 2210..... 75

65 - Generator 2 Data, Five Samples per Second Plotted, Run 2210..... 76

66 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 3520..... 77

67 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 3520..... 78

Page

68 - Generator 1 Data Averaged Over Five-Second Periods, Run 3520. 79

69 - Generator 2 Data Averaged Over Five-Second Periods, Run 3520. 80

70 - Propeller Shaft Data, Five Samples per Second Plotted, Run 3520. 81

71 - Propulsion Motor Data, Five Samples per Second Plotted, Run 3520. 82

72 - Generator 1 Data, Five Samples per Second Plotted, Run 3520 83

73 - Generator 2 Data, Five Samples per Second Plotted, Run 3520 84

74 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 3410 85

75 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 3410. 86

76 - Generator 1 Data Averaged Over Five-Second Periods, Run 3410. 87

77 - Generator 2 Data Averaged Over Five-Second Periods, Run 3410. 88

78 - Propeller Shaft Data, Five Samples per Second Plotted, Run 3410. 89

79 - Propulsion Motor Data, Five Samples per Second Plotted, Run 3410. 90

80 - Generator 1 Data, Five Samples per Second Plotted, Run 3410. 91

81 - Generator 2 Data, Five Samples per Second Plotted, Run 3410. 92

82 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 3430 93

83 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 3430. 94

84 - Generator 1 Data Averaged Over Five-Second Periods, Run 3430. 95

Page

85 - Generator 2 Data Averaged Over Five-Second Periods, Run 3430. 96

86 - Propeller Shaft Data, Five Samples per Second Plotted, Run 3430. 97

87 - Propulsion Motor Data, Five Samples per Second Plotted, Run 3430. 98

88 - Generator 1 Data, Five Samples per Second Plotted, Run 3430. 99

89 - Generator 2 Data, Five Samples per Second Plotted, Run 3430. 100

90 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 3500 101

91 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 3500. 102

92 - Generator 1 Data Averaged Over Five-Second Periods, Run 3500. 103

93 - Generator 2 Data Averaged Over Five-Second Periods, Run 3500. 104

94 - Propeller Shaft Data, Five Samples per Second Plotted, Run 3500. 105

95 - Propulsion Motor Data, Five Samples per Second Plotted, Run 3500. 106

96 - Generator 1 Data, Five Samples per Second Plotted, Run 3500. 107

97 - Generator 2 Data, Five Samples per Second Plotted, Run 3500. 108

98 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 4420 109

99 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 4420. 110

100 - Generator 1 Data Averaged Over Five-Second Periods, Run 4420. 111

101 - Generator 2 Data Averaged Over Five-Second Periods, Run 4420. 112

Page

102 - Propeller Shaft Data, Five Samples per Second Plotted, Run 4420. 113

103 - Propulsion Motor Data, Five Samples per Second Plotted, Run 4420. 114

104 - Generator 1 Data, Five Samples per Second Plotted, Run 4420. 115

105 - Generator 2 Data, Five Samples per Second Plotted, Run 4420. 116

106 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 4310 117

107 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 4310. 118

108 - Generator 1 Data Averaged Over Five-Second Periods, Run 4310. 119

109 - Generator 2 Data Averaged Over Five-Second Periods, Run 4310. 120

110 - Propeller Shaft Data, Five Samples per Second Plotted, Run 4310. 121

111 - Propulsion Motor Data, Five Samples per Second Plotted, Run 4310. 122

112 - Generator 1 Data, Five Samples per Second Plotted, Run 4310. 123

113 - Generator 2 Data, Five Samples per Second Plotted, Run 4310. 124

114 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 4330 125

115 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 4330. 126

116 - Generator 1 Data Averaged Over Five-Second Periods, Run 4330. 127

117 - Generator 2 Data Averaged Over Five-Second Periods, Run 4330. 128

118 - Propeller Shaft Data, Five Samples per Second Plotted, Run 4330. 129

Page

119 - Propulsion Motor Data, Five Samples per Second Plotted, Run 4330. 130

120 - Generator 1 Data, Five Samples per Second Plotted, Run 4330. 131

121 - Generator 2 Data, Five Samples per Second Plotted, Run 4330. 132

122 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 4300 133

123 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 4300. 134

124 - Generator 1 Data Averaged Over Five-Second Periods, Run 4300. 135

125 - Generator 2 Data Averaged Over Five-Second Periods, Run 4300. 136

126 - Propeller Shaft Data, Five Samples per Second Plotted, Run 4300. 137

127 - Propulsion Motor Data, Five Samples per Second Plotted, Run 4300. 138

128 - Generator 1 Data, Five Samples per Second Plotted, Run 4300. 139

129 - Generator 2 Data, Five Samples per Second Plotted, Run 4300. 140

130 - Ship Track, Ice-Ramming, Run 6500. 141

131 - Propeller Shaft Data Averaged Over One-Second Periods, Run 6500. 142

132 - Propulsion Motor Data Averaged Over One-Second Periods, Run 6500. 143

133 - Generator 1 Data Averaged Over One-Second Periods, Run 6500. 144

134 - Generator 2 Data Averaged Over One-Second Periods, Run 6500. 145

135 - Propeller Shaft Data, Five Samples per Second Plotted, Run 6500. 146

Page

136 - Propulsion Motor Data, Five Samples per Second Plotted, Run 6500. 147

137 - Generator 1 Data, Five Samples per Second Plotted, Run 6500. 148

138 - Generator 2 Data, Five Samples per Second Plotted, Run 6500. 149

139 - Ship Track, Ice-Ramming, Run 6612. 150

140 - Propeller Shaft Data Averaged Over One-Second Periods, Run 6612. 151

141 - Propulsion Motor Data Averaged Over One-Second Periods, Run 6612. 152

142 - Generator 1 Data Averaged Over One-Second Periods, Run 6612. 153

143 - Generator 2 Data Averaged Over One-Second Periods, Run 6612. 154

144 - Propeller Shaft Data, Five Samples per Second Plotted, Run 6612. 155

145 - Propulsion Motor Data, Five Samples per Second Plotted, Run 6612. 156

146 - Generator 1 Data, Five Samples per Second Plotted, Run 6612. 157

147 - Generator 2 Data, Five Samples per Second Plotted, Run 6612. 158

148 - Ship Track, Maneuvering in Level Ice, 30-Degree Right Rudder, Run 8000 159

149 - Ship Track, Maneuvering in Level Ice, 30-Degree Left Rudder, Run 8110. 160

150 - Propeller Shaft Data for Maneuvering in Level Ice, 30-Degree Right Rudder, Run 8000 161

151 - Propeller Shaft Data for Maneuvering in Level Ice, 30-Degree Left Rudder, Run 8110. 162

152 - Rudder Ram Pressures and Rudder Angle for Maneuvering in Level Ice, 30-Degree Right Rudder, Run 8000 163

Page

153 - Rudder Ram Pressures and Rudder Angle for Maneuvering in Level Ice, 30-Degree Left Rudder, Run 8110 164

154 - Ship Track, Maneuvering in Brash Ice, 30-Degree Right Rudder, Run 9701. 165

155 - Ship Track, Maneuvering in Brash Ice, 30-Degree Left Rudder, Run 9600 166

156 - Propeller Shaft Data for Maneuvering in Brash Ice, 30-Degree Right Rudder, Run 9701. 167

157 - Propeller Shaft Data for Maneuvering in Brash Ice, 30-Degree Left Rudder, Run 9600 168

158 - Rudder Ram Pressures and Rudder Angle, Approach Speed 12 Knots for 35-Degree Left and Right Rudders, Runs 12000 and 12010 169

159 - Rudder Ram Pressures and Rudder Angle, Approach Speed 9 Knots for 35-Degree Left and Right Rudders, Runs 12020 and 12030 170

160 - Rudder Ram Pressures and Rudder Angle, Approach Speed 6 Knots for 35-Degree Left and Right Rudders, Runs 12040 and 12050 171

161 - Rudder Ram Pressures and Rudder Angle, Approach Speed 3 Knots for 35-Degree Left and Right Rudders, Runs 12060 and 12070 172

162 - Rudder Ram Pressures and Rudder Angle, Approach Speed 5-Knots Astern for 35-Degree Left and Right Rudders, Runs 12080 and 12090 173

163 - Rudder Ram Pressures and Rudder Angle, Approach Speed 10-Knots Astern for 35-Degree Left and Right Rudders, Runs 12100 and 12110 174

164 - Bollard Pull, Ahead and Astern. 175

LIST OF TABLES

1 - Ship and Propeller Characteristics. 176

2 - Machinery Parameters, Run 1100. 177

3 - Machinery Parameters, Run 1110. 204

Page

4 - Machinery Parameters, Run 1120. 230

5 - Machinery Parameters, Run 1130. 257

6 - Machinery Parameters, Run 1320. 284

7 - Machinery Parameters, Run 2231. 313

8 - Machinery Parameters, Run 2221. 342

9 - Machinery Parameters, Run 2210. 371

10 - Machinery Parameters, Run 3520. 400

11 - Machinery Parameters, Run 3410. 429

12 - Machinery Parameters, Run 3430. 458

13 - Machinery Parameters, Run 3500. 487

14 - Machinery Parameters, Run 4420. 516

15 - Machinery Parameters, Run 4310. 545

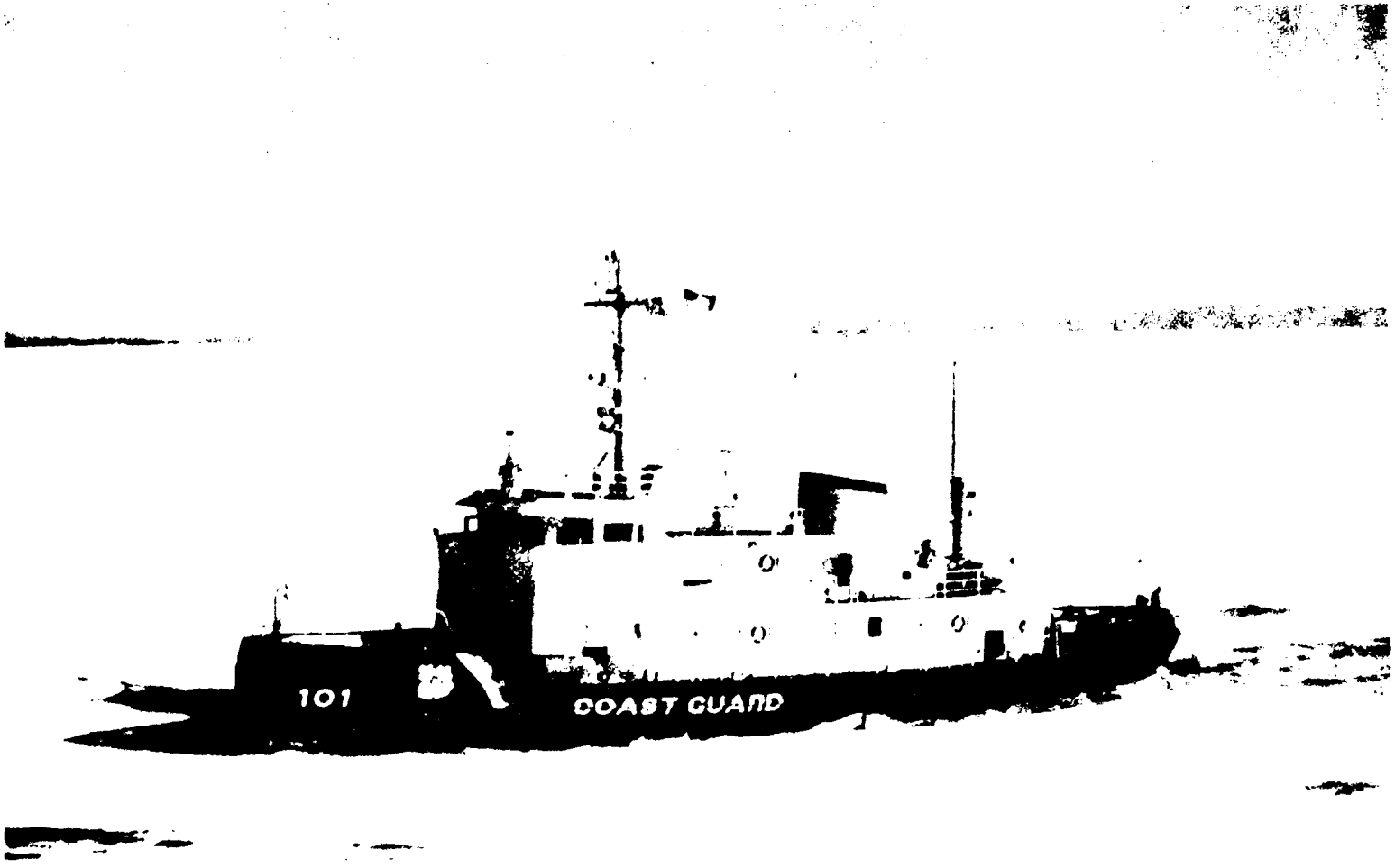
16 - Machinery Parameters, Run 4330. 574

17 - Machinery Parameters, Run 4300. 603

18 - Machinery Parameters, Run 6500. 632

19 - Machinery Parameters, Run 6612. 661

20 - Bollard Pull Data, Ahead and Astern 690


101
COAST GUARD

ABSTRACT

This report contains the results of ice-breaking trials conducted on the United States Coast Guard Cutter KATMAI BAY (WTGB-101) during the months of January, February, and March 1979. Data presented in this report include powering, speed, and machinery measurements obtained while operating in level and brash ice in the vicinity of Sault Sainte Marie, Michigan. The various types of trial runs conducted included: 1) continuous, level ice-breaking; 2) ice-breaking in brash ice; 3) ice-breaking by ramming; 4) maneuvering in level and brash ice; 5) rudder torque validation; and 6) bollard pull.

The data are presented in graphical and tabular form. No attempt is made to analyze the data as it is understood that these data will be included in a comprehensive overall report to be published by the Coast Guard Research and Development Center.

ADMINISTRATIVE INFORMATION

The trial results reported herein were authorized by and conducted in accordance with United States Coast Guard Contract Z51100-8-0012. This work was accomplished under David W. Taylor Naval Ship Research and Development Center Work Units 1536-190 and 1536-204.

INTRODUCTION

The United States Coast Guard (USCG) has designed and built a new class of 140-foot ice-breaking cutter to replace the aging 110-foot WYTM Class. The new class of cutter has more propeller shaft power than the 110-foot WYTM Class and a hull air lubrication system (bubbler) to reduce friction while breaking ice. Trials were conducted on the USCG Cutter KATMAI BAY (WTGB-101), the first cutter of this class, in the vicinity of Sault Sainte Marie, Michigan in order to validate this new design. The trials were conducted under the direction of the United States Coast Guard Research and Development Center (USCGR&DC). The trial program was performed as outlined by 'The Test Plan for 140-Foot Cutter Test and Evaluation.' This test plan, dated 2 October 1978, was promulgated by the USCGR&DC. The United States Army Cold Regions Research and Engineering Laboratory (CRREL) were responsible for measuring ice conditions. The David W. Taylor Naval Ship Research and Development Center (DTNSRDC) was

tasked to track the ship and record machinery, vibration, and structural data. The trials were conducted during two time frames. The first series of trials were performed from 30 January through 13 February 1979. The second series of trials were performed from 10 March through 19 March 1979.

This report presents machinery and ship position data collected during various segments of the test program. Data were collected for level ice-breaking with and without bubblers, brash ice-breaking with and without bubblers, and ice-breaking by ramming. Data were also collected during rudder validation and bollard pull tests. Ship position data are presented for maneuvering trials in brash ice and level ice, and for ice-ramming trials.

Vibration and structural data were also recorded by DTNSRDC personnel during these trials. These data are the subject of separate reports. Tactical and maneuvering trials have also been conducted on KATMAI BAY in open water. The tactical and maneuvering trials report is listed as Reference 1.* Seakeeping trials have been conducted on the USCG Cutter MOBILE BAY (WTGB-103). The report of these trials is in preparation.

SHIP CHARACTERISTICS

KATMAI BAY is a single-screw, single rudder, ice-breaking tugboat, equipped with a diesel-electric propulsion system. It has multi-mission capability with its primary duty being ice-breaking operations. As a means of improving ice-breaking capability, a hull air lubrication system (bubbler) has been installed. The bubbler system ejects air through holes in the forward portion of the hull near the keel. This causes an upward flow of air and water which acts as a lubricant between the hull and the ice. This lubricating action reduces the resistance of the ice-breaker in ice, which in turn, reduces the amount of propeller shaft power required to move the ship through a given thickness of ice. Pertinent ship and propeller characteristics are presented in Table 1.

---

*A complete listing of references is given on page 691.

TRIAL CONDITIONS

The ice-breaking and maneuvering trials were conducted in Whitefish Bay in Lake Superior and in the Saint Marys River above and below Sault Sainte Marie, Michigan. Rudder validation trials were conducted in the Northern portion of Lake Huron since the ice was thin (approximately 2 in, 5 cm) and as close to open water conditions as could be obtained for these tests. Bollard pull tests were conducted in the Saint Marys River off the East center pier of the Army Corps of Engineers Locks at Sault Sainte Marie. Weather conditions during the trials were favorable and did not adversely affect the trial results. However, during the astern bollard pull trials, wind direction and speed made it necessary to pull adjacent to the pier, rather than off the end of the pier where there would be less flow restriction around the propeller.

Ice conditicns were good for the trials and plate ice thicknesses up to 36 in (91 cm) were obtained. Ice conditions were documented by personnel from CRREL.

INSTRUMENTATION

Two types of recording systems were used to obtain the data. One system was used to obtain continuous data, while the second system collected data as discrete digital measurements. A block diagram of the instrumentation set-up is shown in Figure 1. A description of each system follows.

CONTINUOUS SYSTEM

Analog signals from trial data sources were entered into a 14-channel AMPEX FM 1300 analog tape recorder. Electronics used with this recorder were capable of recording signals up to 600 hertz.

DIGITAL SYSTEM

A Hewlett-Packard 2240A measurement and control processor was interfaced to the analog signals to be measured. The 2240A processor was under the control of a Hewlett-Packard 9825A programmable calculator. The processor measured all analog data channels 5 times each second from the start to the end of the run. Digital time code data were also processed

by the 2240A processor. Ship position data were collected by the 2240A processor once every 4 seconds when a run required ship position measurements. The 9825A calculator was programmed to record the data as they were accumulated with a Hewlett-Packard 9885M flexible disc drive.

The following is a list of test parameters measured and a description of the instrumentation used to make these measurements.

PROPELLER SHAFT TORQUE

This parameter was measured by using an ACUREX autodata torsion measurement system. The torsionmeter employed a transducer assembly which was mounted on the propeller shaft. The signal conditioning unit provided two output voltages proportional to the angular deflection of the shaft. One output voltage was filtered and provided steady state torque or low torque rates of change. This signal was entered into the 2240A processor. The other signal was unfiltered and had a frequency response higher than 50 hertz. This signal was interfaced to a buffer amplifier with a gain of less than 1 to reduce the voltage to a level acceptable to the analog tape recorder. The transducer was calibrated for deflection versus voltage output in a laboratory calibration stand prior to its installation on the propulsion shaft. The torque values obtained are estimated to be accurate to within 4 percent.

PROPELLER THRUST

Thrust was measured by strain gage load cells located in the thrust bearing. The thrust bearing is equipped with 6 thrust shoes on the ahead side and 6 on the astern side. There are two instrumented shoe positions on the ahead side and two on the astern side. Signals from one instrumented shoe on the ahead side and one on the astern side were recorded. The low level analog signals developed were amplified and then entered into the 2240A processor and analog tape recorder. Manufacturer's calibrations of the load cells were used to determine the thrust loads since the load cells were already installed in the thrust bearing and not available for calibration. It is not known how accurate the thrustmeter measurements were.

REVOLUTIONS PER MINUTE (RPM)

The rpm for three shafts (propeller shaft, Generator 1 shaft, and Generator 2 shaft) were obtained in the same fashion. A known number of ferrous slugs were clamped to the perimeter of each shaft. An electromagnetic probe was mounted in close proximity to the slugs, generating a frequency proportional to rpm as the shaft rotated. This frequency was entered into a frequency to voltage converter. The analog voltage generated was then entered into the 2240A processor. The frequency generated by the propeller shaft rpm probe was also recorded on the analog tape recorder. RPM values are estimated to be accurate to within 0.5 percent.

SHIP SPEED AND SHIP POSITION

Speed was determined by a Motorola Mini-Ranger tracking system used in conjunction with a Hewlett-Packard 9825A calculator. Transponders were located on the ice when tracking was required, while a receiving/transmitting transponder was located on board the ship. The shipboard unit, under program control of the 9825A calculator via the 2240A processor, obtained a range to each shore station transponder once every 4 seconds. The ranges were recorded with a 9885M flexible disc drive. The range distance between the two shore station transponders, having been determined before starting the day's runs, was then used in calculating the ship position for each range sample. Knowing the time between updating ship positions, the speed could be calculated. For steady state runs, the average speed data were based on several position points at the beginning and end of the run. Thus, the effect of position errors on the speed calculation was minimized. Speed calculated in this manner is estimated to be accurate to within 0.1 knot.

RUDDER RAM PRESSURES

Rudder ram pressure data were measured with Statham 0-3000 psig (0-20.7 MPa) strain gage pressure transducers placed in the rudder hydraulic lines. Analog signals generated by these transducers were

interfaced to the 2240A processor. Transducers were calibrated before installation and pressure data presented are estimated to be accurate to within 2 percent.

RUDDER ANGLE

Rudder angle data were obtained from the ship's rudder angle analog signal. The signal was interfaced with the 2240A processor through a buffer amplifier. The rudder calibration obtained was not satisfactory, therefore, rudder angle data can only be used as an indication of direction and rudder angle movement.

SHIP ELECTRICAL PARAMETERS AND TEMPERATURES

Permanently installed ship instrumentation was used to measure the following parameters.

1. Propulsion motor armature voltage.
2. Propulsion motor armature current.
3. Propulsion motor exciter voltage.
4. Propulsion motor exciter current.
5. Propulsion motor temperature.
6. Generator 1 armature voltage.
7. Generator 1 armature current.
8. Generator 1 exciter voltage.
9. Generator 1 exciter current.
10. Generator 1 temperature.
11. Generator 2 armature voltage.
12. Generator 2 armature current.
13. Generator 2 exciter voltage.
14. Generator 2 exciter current.

Electrical outputs were taken from ship's instruments, processed, and recorded for each trial run. All of these instruments were calibrated prior to the trials. Data accumulated from ship instrumentation are estimated to be accurate to within 3 percent.

PRESENTATION AND DISCUSSION OF RESULTS

DATA PRESENTATION FORMAT

Level ice-breaking and brash ice-breaking run data are presented in the following manner.

1. Propeller Shaft Data - The digital data for propeller shaft torque, thrust, and rpm parameters were averaged for 5-second periods throughout the run. The maximum and minimum values of each parameter for each 5-second period were determined. The standard deviation value for the 5-second period was calculated from the following equation.

$$\text{Standard Deviation} = \left[\frac{\Sigma x^2}{N} - \frac{(\Sigma x)^2}{N} \right]^{1/2}$$

where N = number of readings during 5-second period

x = a parameter measurement during 5-second period

Σ = summation

The data are presented in a tabulated form for each 5-second period throughout the run. At the end of a run, where the last time period was not 5 seconds, the averaged, maximum, minimum, and standard deviation values were calculated taking into account the shorter time period. Average, maximum, minimum, and standard deviation values for the whole run are also presented.

The propeller shaft power was calculated from the propeller shaft torque and propeller rpm values measured over the same sampling period. The shaft power data are tabulated in the same manner as torque, rpm, and thrust.

Presented with the tabulations is a plot of the 5-second averages for each parameter measured or calculated. Each data point is plotted half way between the time period over which it was calculated. A plot of the actual reading for a 20-second time "window" is presented for each parameter.

2. Propulsion Motor Data - The propulsion motor data are presented in the same format at the propeller shaft data. The following parameters are presented.

a. Armature voltage.

b. Armature current.

c. Exciter voltage.

d. Exciter current.

e. Temperature.

The input power is calculated from propulsion motor armature voltage and propulsion motor armature current measured over the same sampling period. The propulsion motor exciter power was calculated from propulsion motor exciter voltage and exciter current measurements taken over the same sampling period.

3. Generator 1 Data - The same data format used for the propeller shaft data is used to present the Generator 1 data. The measured parameters for Generator 1 are:

a. armature voltage;

b. armature current;

c. exciter voltage;

d. exciter current;

e. temperature; and

f. rpm.

Generator 1 output power and exciter power were calculated in the same manner as the propulsion motor input power and exciter power.

4. Generator 2 Data - The Generator 2 parameters are presented in the same manner as Generator 1 parameters except for Generator 2 temperature. No temperature measurements were taken on Generator 2.

Ice-ramming data are presented for the same parameters, and in the same manner, as level ice-breaking and brash ice-breaking runs. However, average, maximum, minimum, and standard deviation values are presented for 1-second periods throughout the runs and there is no tabulation of averaged, maximum, minimum, and standard deviation values for the entire run.

LEVEL AND BRASH ICE-BREAKING

Data for the level ice-breaking runs without the bubbler in operation are tabulated in Tables 2 through 6, and presented graphically in Figures 2 through 41. Included in the tables and figures are speed and ice conditions for each run. The Generator 2 armature voltage measurement was found to be erroneous because of an instrumentation problem which was

subsequently corrected. Therefore, Generator 2 armature voltage data are not presented for Runs 1100, 1110, 1120, and 1130. Of course, this precluded the calculation of the Generator 2 output power. Plots and printouts of the Generators 1 and 2 exciter currents show an occasional negative value on all the level ice-breaking runs. It is believed that these negative values are the result of invalid data.

Level ice-breaking runs with bubblers in operation are tabulated in Tables 7 through 9 and are presented graphically in Figures 42 through 65. As with the level ice-breaking runs without bubblers, ship speed and ice conditions are given for each run.

Selected brash ice-breaking runs without bubblers in operation are presented as Tables 10 through 13, and Figures 66 through 97. The brash ice-breaking runs with bubblers in operation are presented as Tables 14 through 17, and Figures 98 through 129. The same occasional negative generator exciter currents shown in the level ice-breaking runs are observed in the brash ice-breaking runs.

ICE RAMMING

The two ice-ramming runs selected for presentation are tabulated in Tables 18 and 19 and are presented graphically as Figures 130 through 147. These runs are presented in the same manner as the level and brash ice-breaking runs except that a plot of the ship track is included in the figures. Data points shown on these plots are 4 seconds apart. The start of the run is at zero time, and the point and time of impact with the ice is marked on Figure 139 for Run 6612. Impact time, estimated from machinery data for Run 6500 (Figure 130), occurred at approximately 42 seconds. The generator exciter currents show the same occasional, negative values that were noted in the level and brash ice-breaking runs.

TURNS IN LEVEL AND BRASH ICE

Four turning maneuvers, using 30 degrees left and right rudders, were conducted in level and brash ice. These runs are presented in Figures 148 through 157. Figure 148 is a plot of the right turn in level ice and Figure 149 is a plot of the left turn in level ice. After a steady approach, the rudder was moved to the 30-degree position and held until the

end of the run. The execute position is marked on the plot. Data points are at 4-second intervals. Positions and time for various changes of heading are marked on the plots. The grid blocks represent 25 yd (22.9 m). The circle diameters and shapes will always be determined to some extent by ice thickness and strength. Torque and rpm data recorded during these runs are plotted in Figures 150 and 151. Rudder ram pressures and rudder angle data are presented in Figures 152 and 153. The designation of P-1 on these figures is the ram pressure which results in the rudder moving to the right. The P-2 designation represents the ram pressure which results in left rudder. Plots of ship's path during the turning maneuvers in brash ice are presented as Figures 154 and 155. The ship broke ice in an area until enough brash ice was available to make these turns. The turns were not continued through a complete circle because the area of brash ice available was not sufficient. Execute point and positions for various changes of heading are indicated on the plots. Plots of torque and rpm for these runs are presented in Figures 156 and 157. Due to instrumentation difficulties, rudder ram pressure and rudder angle data were not collected.

RUDDER VALIDATION TRIALS

Twelve rudder validation runs were conducted in as near open water conditions as could be found. The ice in the area where they were conducted was about 2 in (5.1 cm) thick. These maneuvers consisted of steadying the ship at a selected rpm and moving the rudder to full left or full right. Full rudder amounted to 35 degrees on the bridge indicator. Plots of rudder movement and rudder ram pressures are presented in Figures 158 through 163. The P-1 and P-2 designations on these figures apply in the same manner as the turns in level ice.

BOLLARD PULL TRIALS

Bollard pulls in the ahead direction were conducted using a bollard at the down stream end of the Army Corps of Engineer's Locks at Saulte Sainte Marie, Michigan. A line long enough so that the propeller wash at the end of the pier wall would not affect the measurement was used to restrain the ship. A load cell capable of measuring 100,000-lb (445-kN) tension load was inserted in the line. The load cell was calibrated at

DTNSRDC prior to the trials. The astern bollard pulls were also conducted at the pier, but because of unfavorable wind conditions, the pull was made along side and almost parallel to the pier. The bollard pull results are presented tabulated in Table 20 and are presented graphically in Figure 164. The rpm measurement presented for the bollard pulls astern are accurate to within $\pm$ 1 rpm. The ahead bollard pull data and thrust obtained from the ship's thrustmeter agree very well. No astern thrust data are presented because the thrust values were considerably lower than those obtained from the load cell. Since the astern power levels were not too different from the ahead power levels, it did not appear likely that the propeller efficiency in the astern direction could be low enough to account for the low thrust values obtained.

CONCLUSIONS

The intent of this report is to provide that data obtained on the KATMAI BAY ice-breaking trials to the Coast Guard Research and Development Center for analysis and evaluation and possible inclusion in a more comprehensive report. No attempt has been made to draw any conclusions as to ship performance or to make comparisons between the various conditions under which the trials were conducted. Trial runs presented in this report were selected by mutual agreement between Coast Guard and DTNSRDC personnel involved in the trial program.

The data presented are considered good, and are representative of the USCG Cutter KATMAI BAY (WTGB-101) as tested.

ACKNOWLEDGMENTS

The author would like to acknowledge the cooperation and assistance rendered by Project Manager Lieutenant A. S. Gracewski (Coast Guard G-ENE-3); Trial Director Lieutenant Commander M. J. Goodwin (Coast Guard Research and Development Center); Commanding Officer of the KATMAI BAY Lieutenant Commander R. D. White; the crew of the KATMAI BAY; and the United States Coast Guard Group, Saulte Sainte Marie, Michigan.

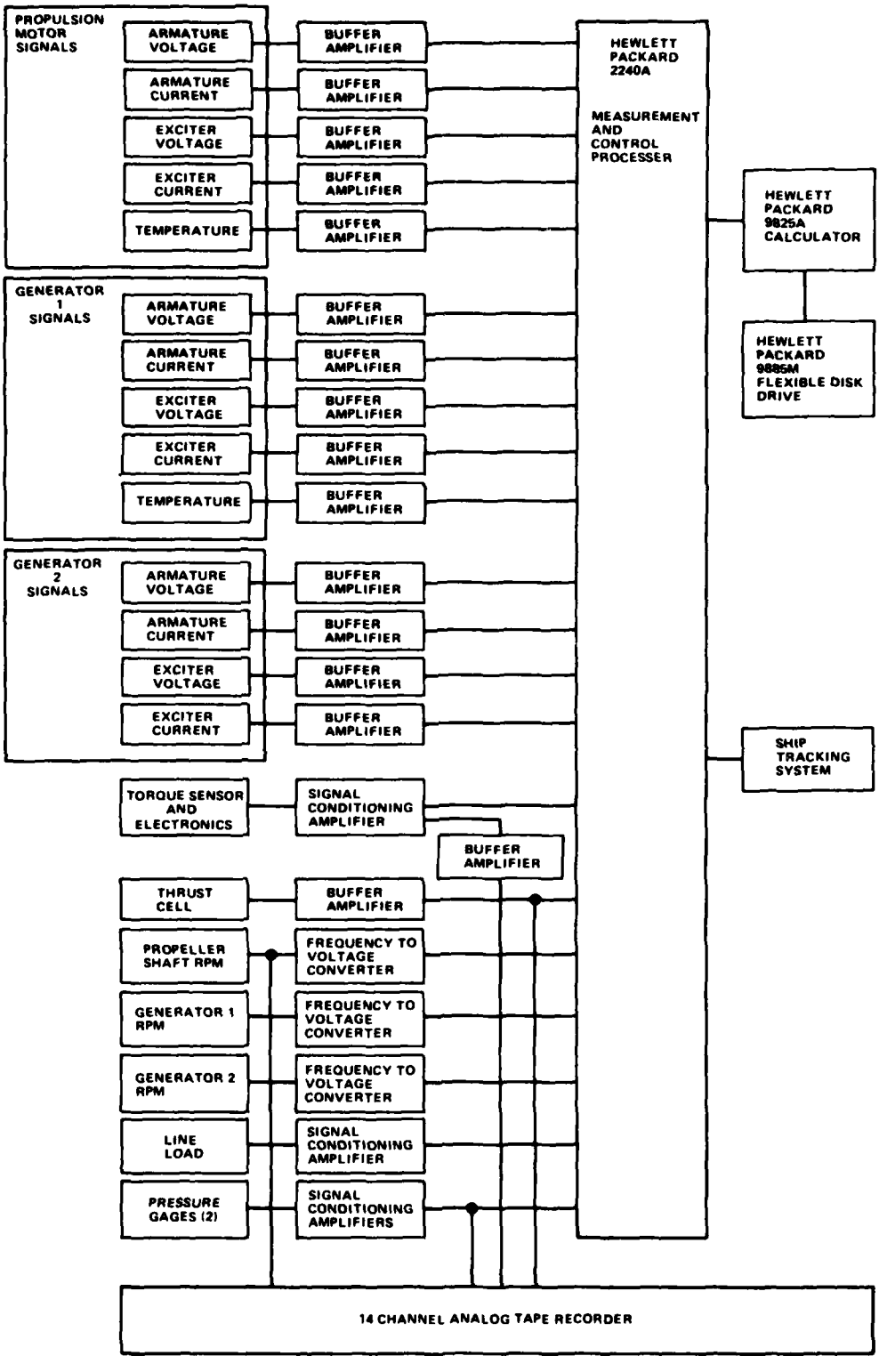


Figure 1 - Instrument Block Diagram

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **14 in. (35.6 cm) OF ICE WITH 1.5 in. (3.8 cm) OF SNOW**
3. **SHIP SPEED 1.0 knot**
4. **FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)**

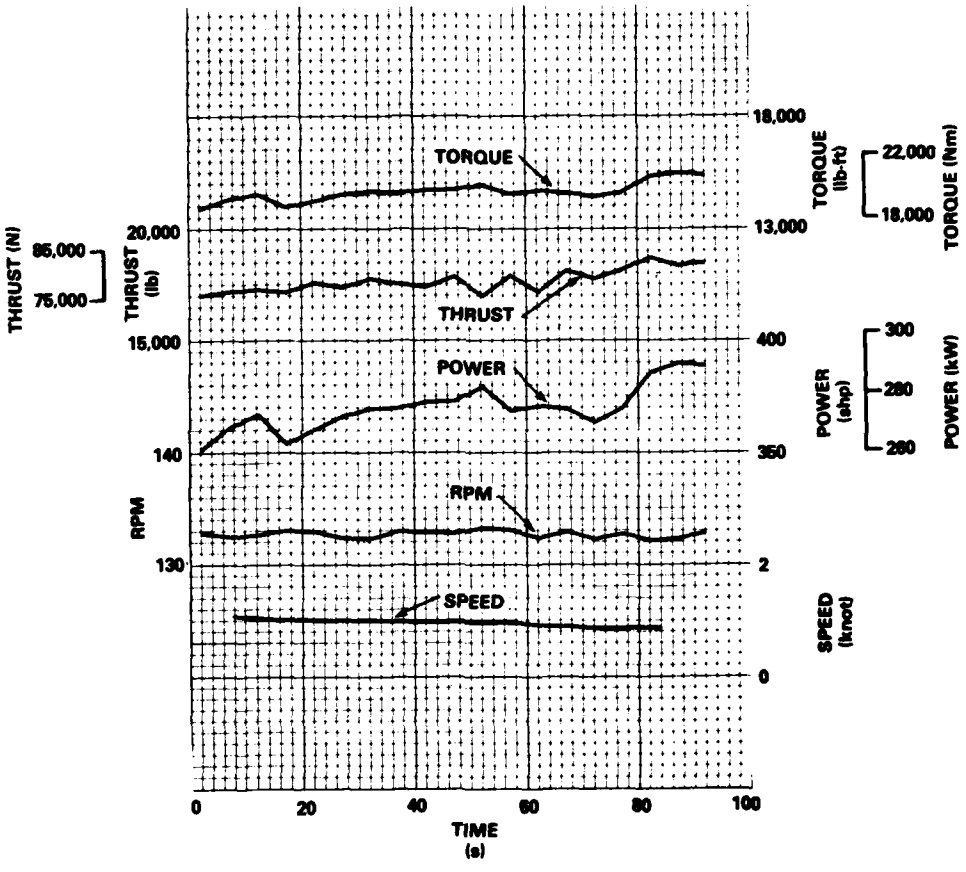


Figure 2 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1100

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 1.5 in. (3.8 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

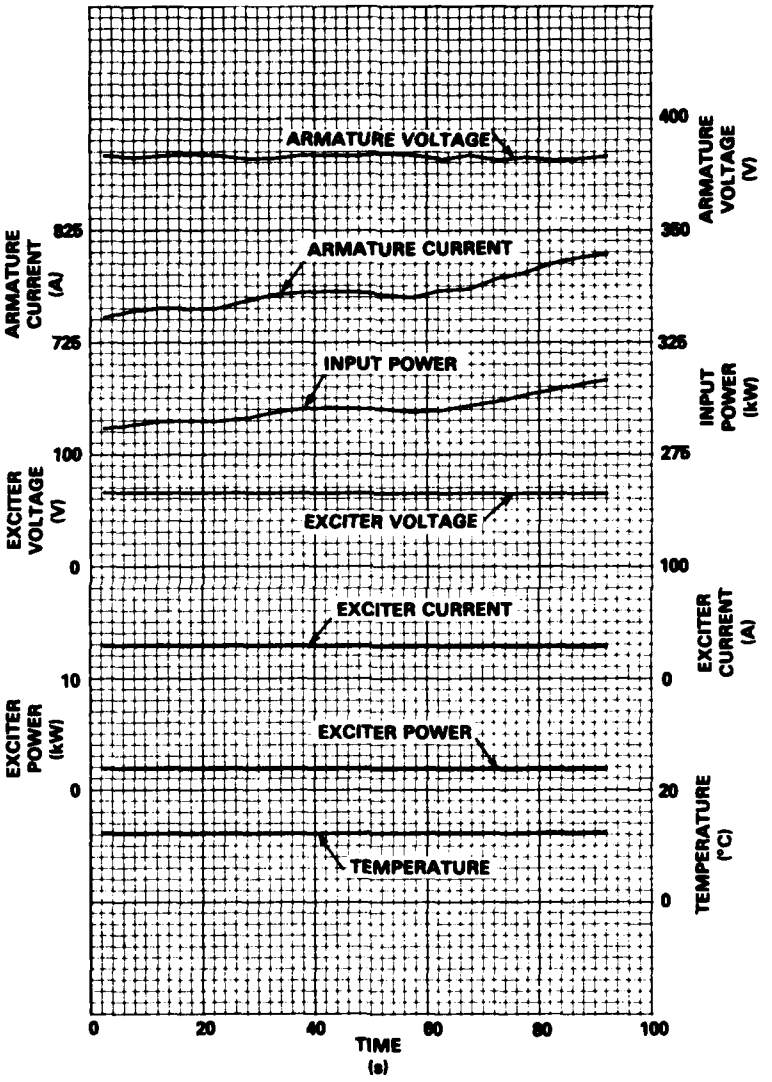


Figure 3 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1100

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 1.5 in. (3.8 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

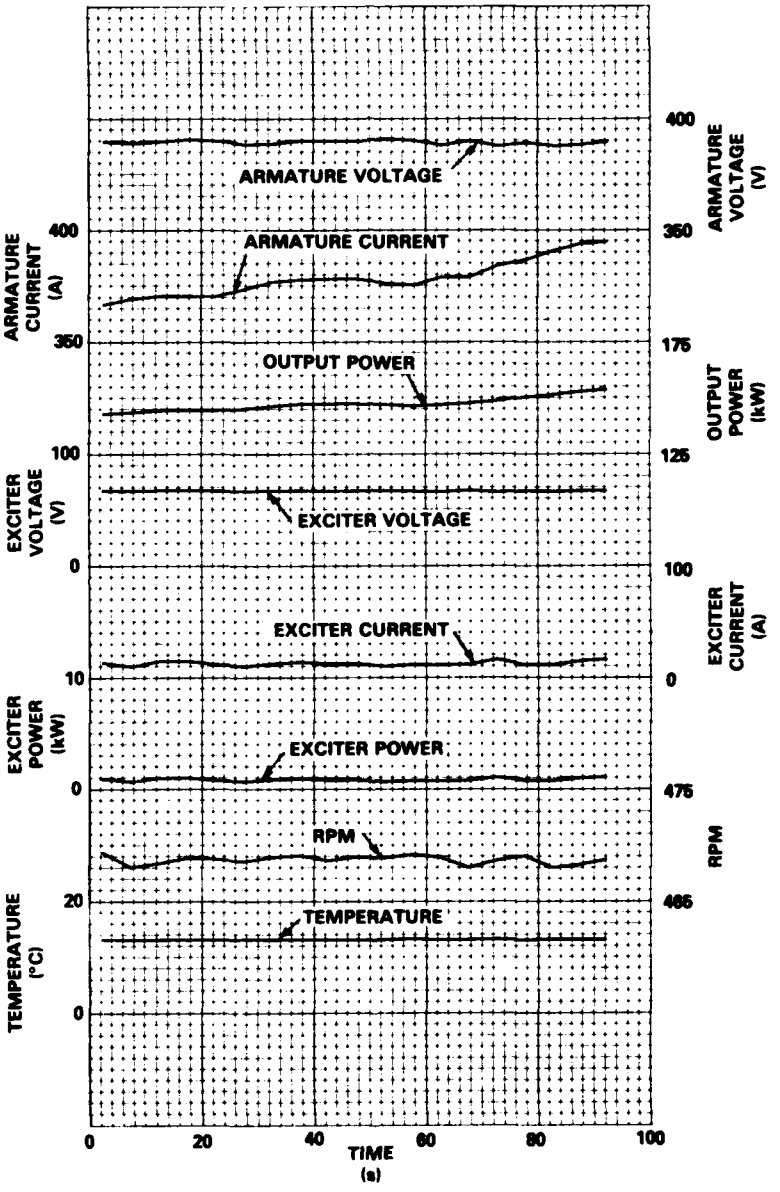


Figure 4 - Generator 1 Data Averaged Over Five-Second Periods, Run 1100

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 1.5 in. (3.8 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

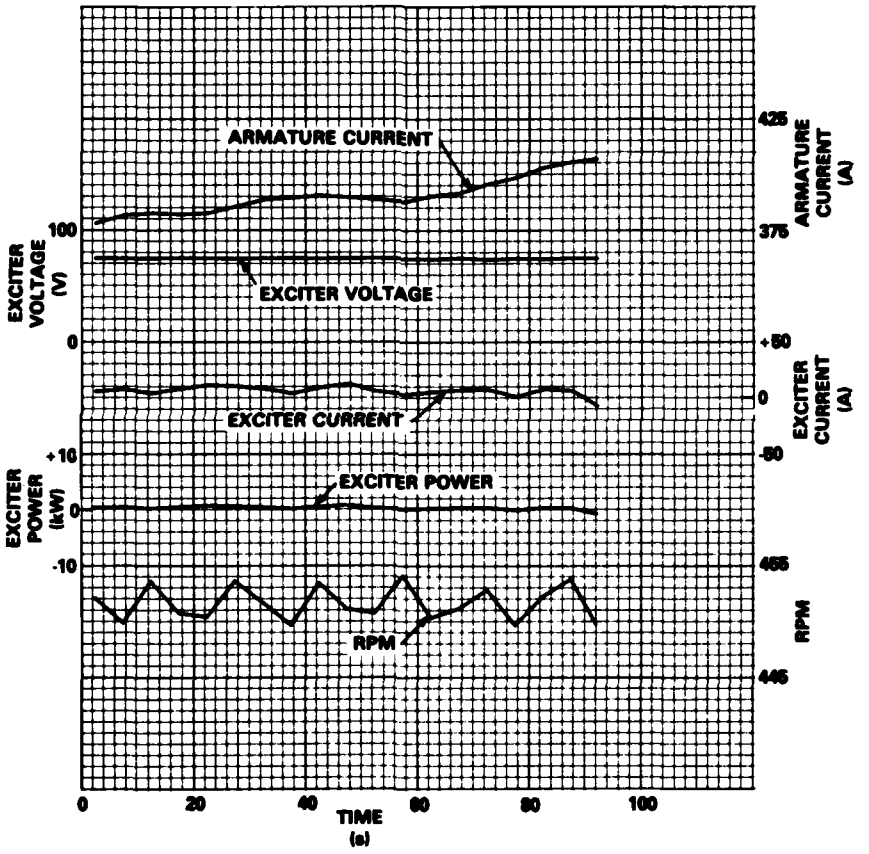


Figure 5 - Generator 2 Data Averaged Over Five-Second Periods, Run 1100

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 1.5 in. (3.8 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

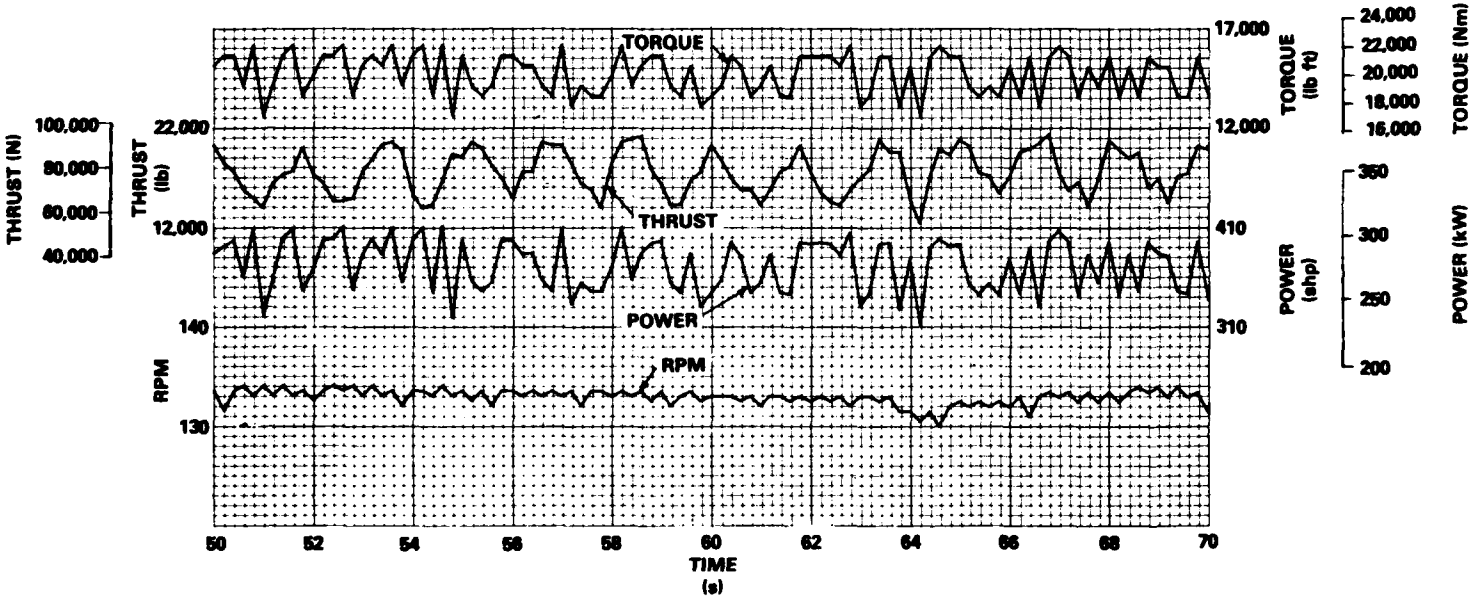


Figure 6 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1100

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 1.5 in. (3.8 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

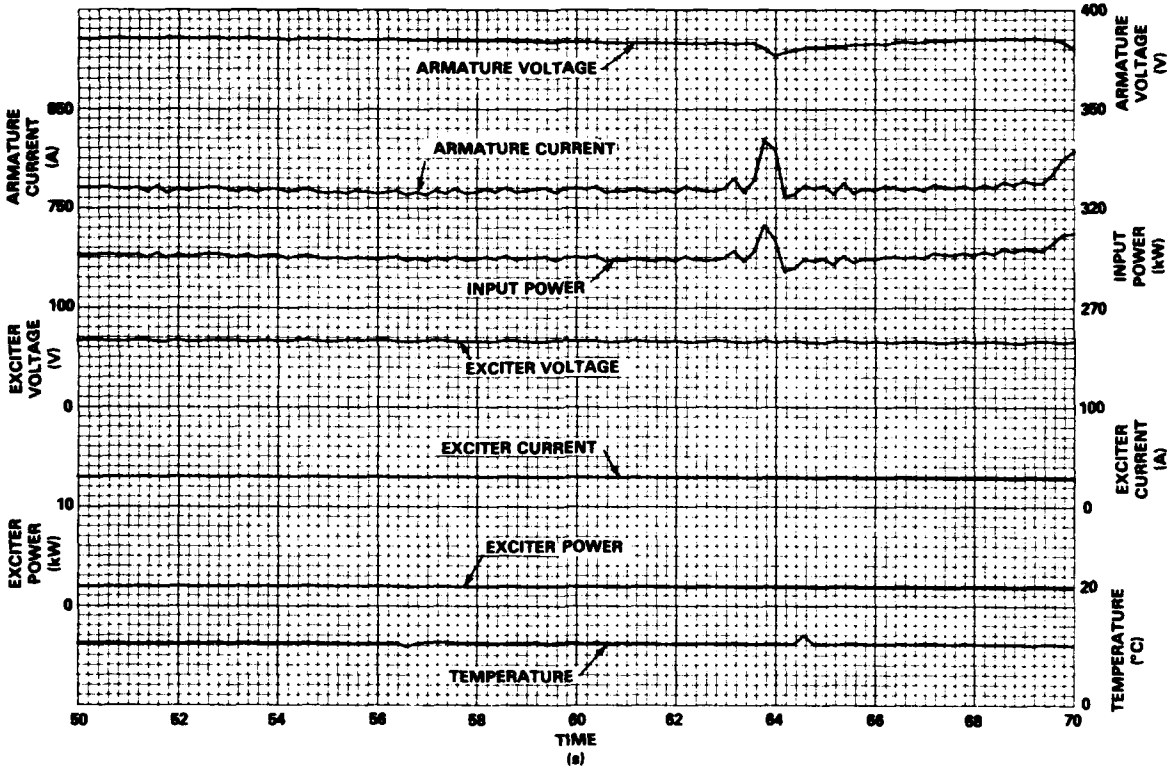


Figure 7 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1100

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **14 in. (35.6 cm) OF ICE WITH 1.5 in. (3.8 cm) OF SNOW**
3. **SHIP SPEED 1.0 knot**
4. **FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)**

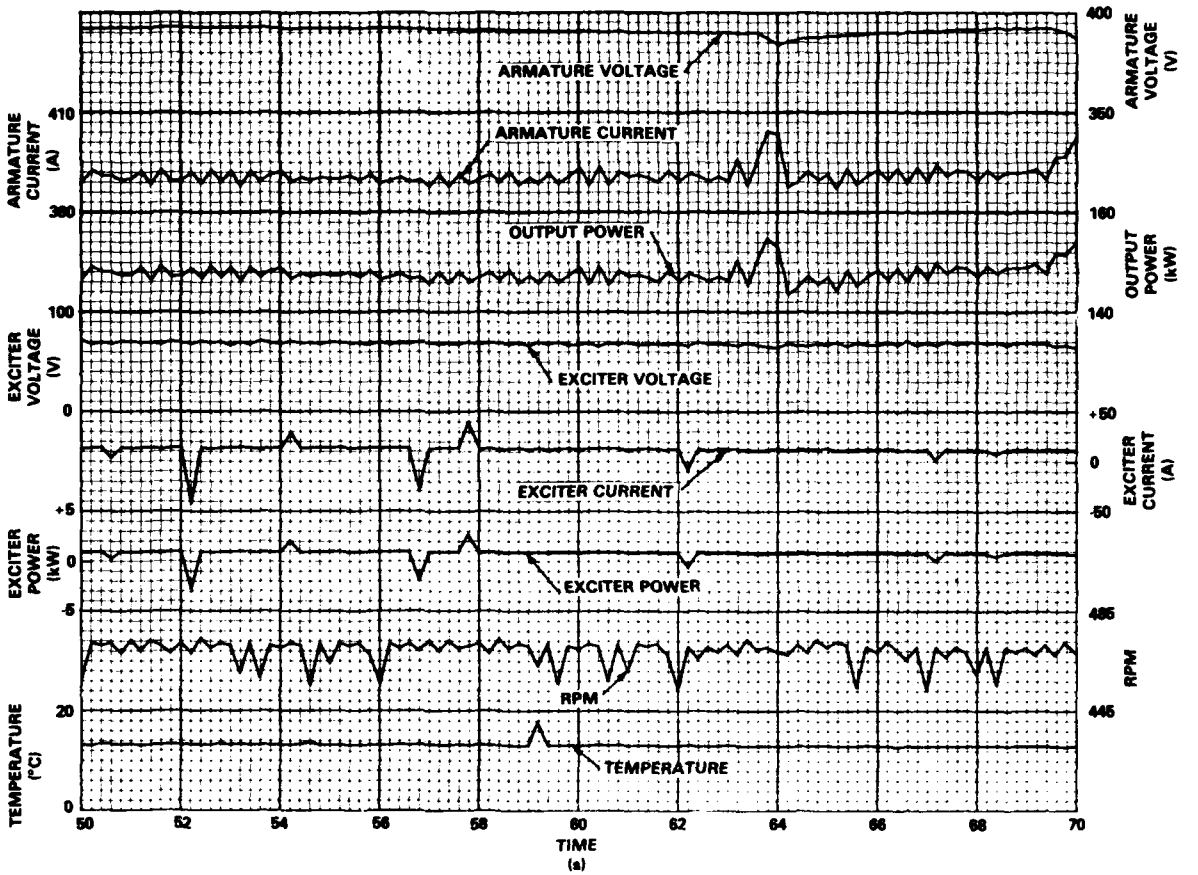


Figure 8 - Generator 1 Data, Five Samples per Second Plotted, Run 1100

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 1.5 in. (3.8 cm) OF SNOW
3. *SHIP SPEED* 1.0 knot
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

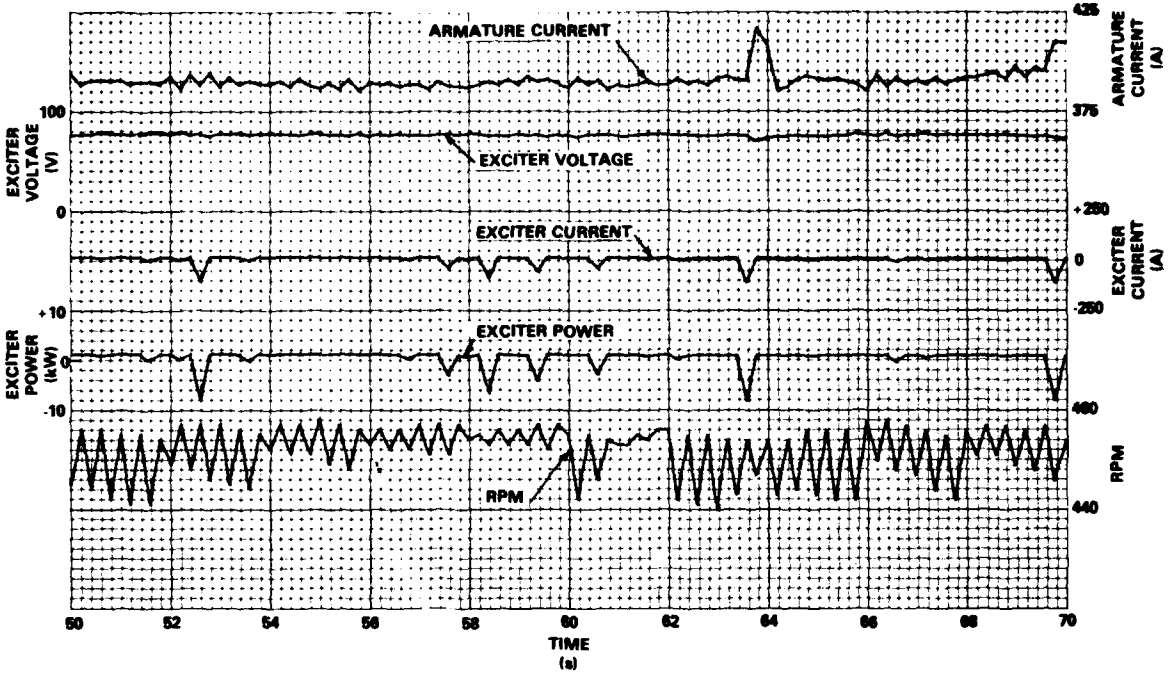


Figure 9 - Generator 2 Data, Five Samples per Second Plotted, Run 1100

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14.5 in. (36.8 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 5.4 knots
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

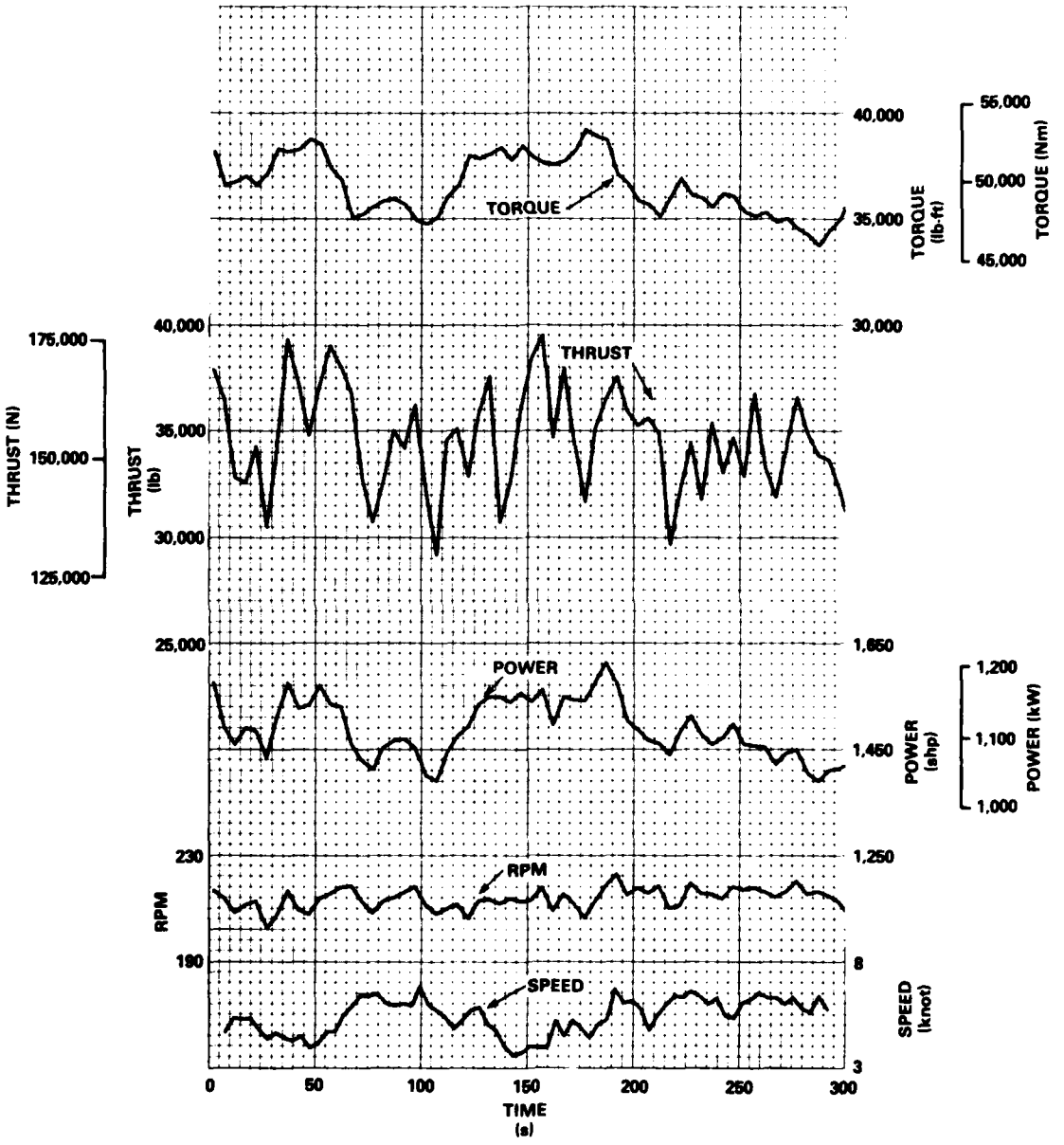


Figure 10 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1110

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14.5 in. (36.8 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 5.4 knots
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

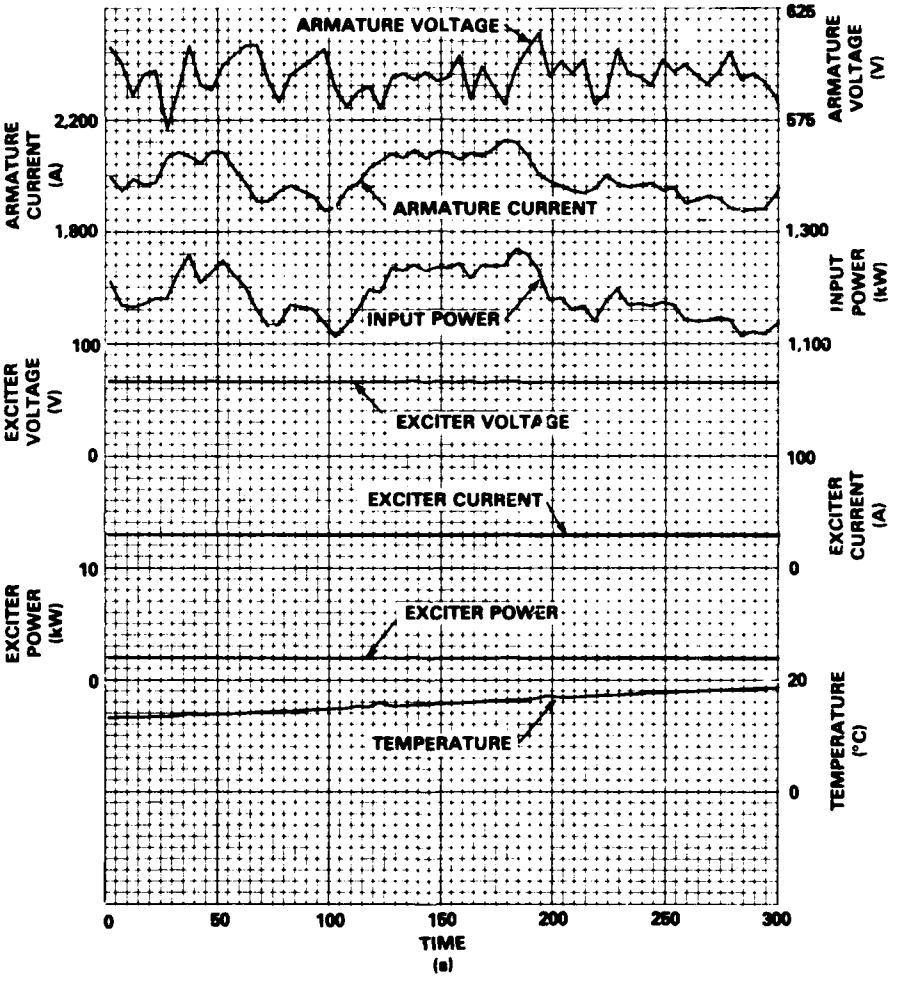


Figure 11 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1110

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14.5 in. (36.8 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 5.4 knots
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

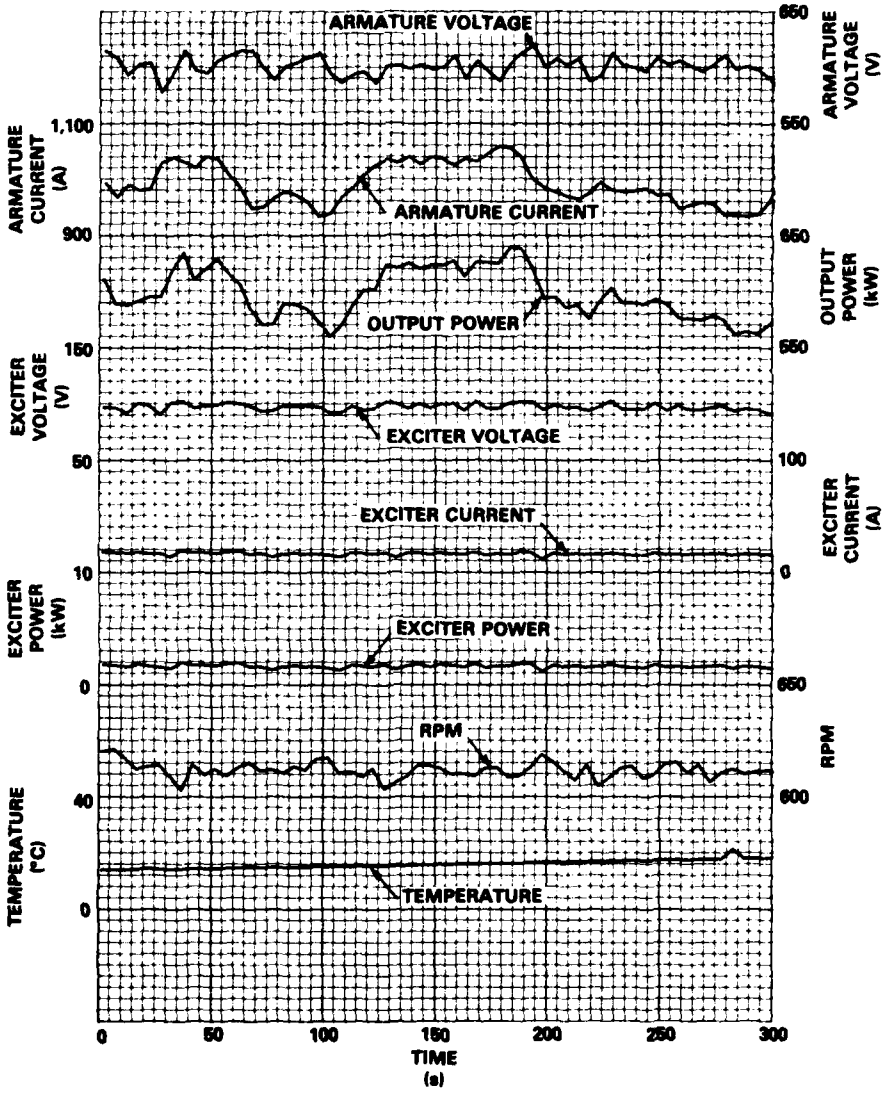


Figure 12 - Generator 1 Data Averaged Over Five-Second Periods, Run 1110

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14.5 in. (36.8 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 5.4 knots
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

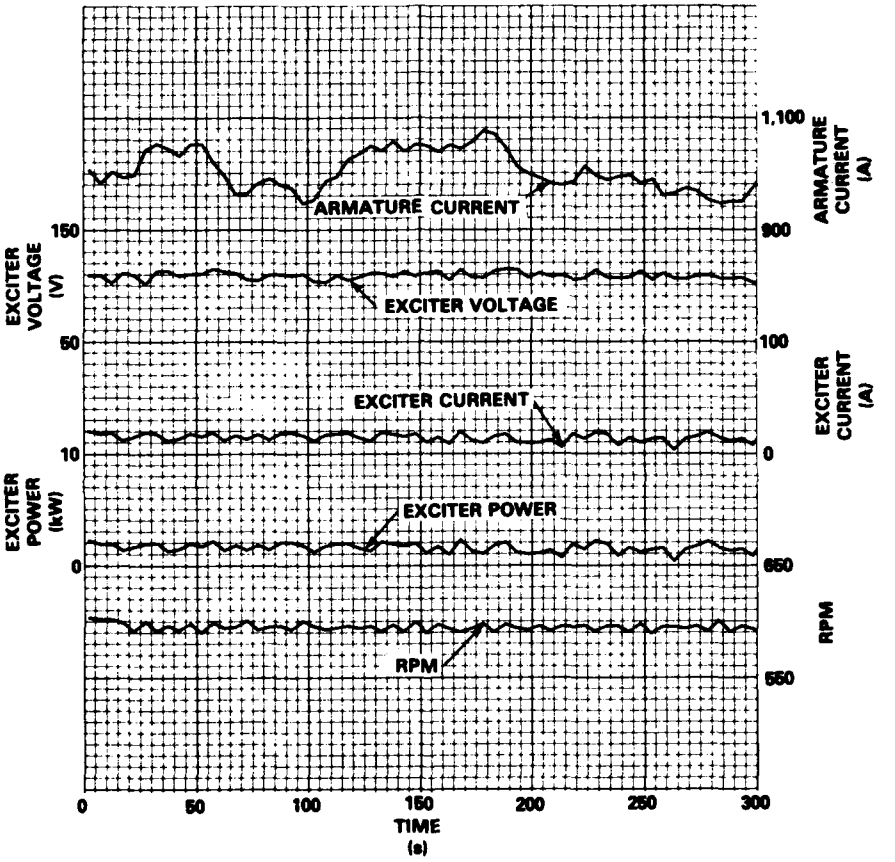


Figure 13 - Generator 2 Data Averaged Over Five-Second Periods, Run 1110

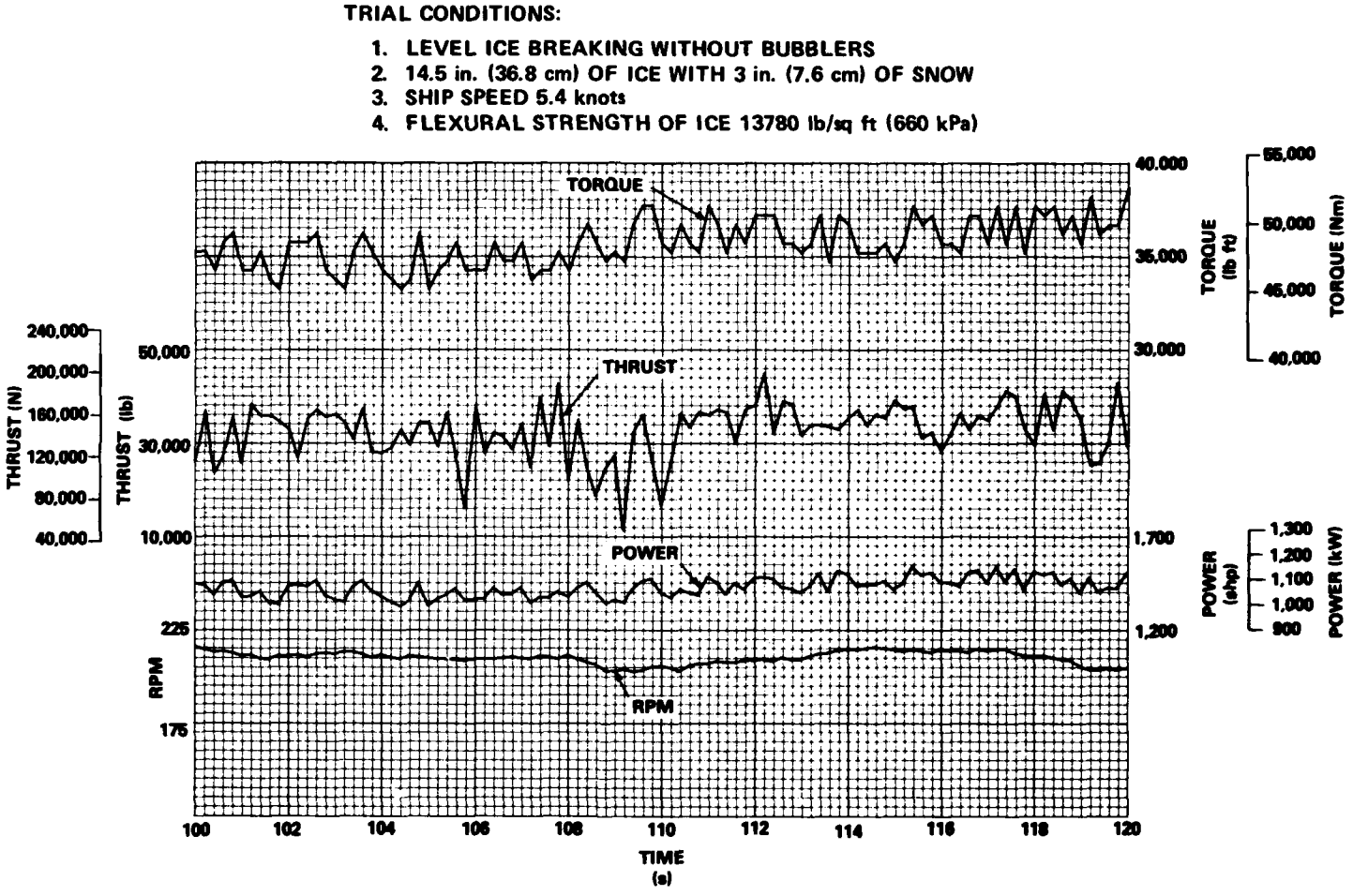


Figure 14 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1110

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14.5 in. (36.8 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 5.4 knots
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

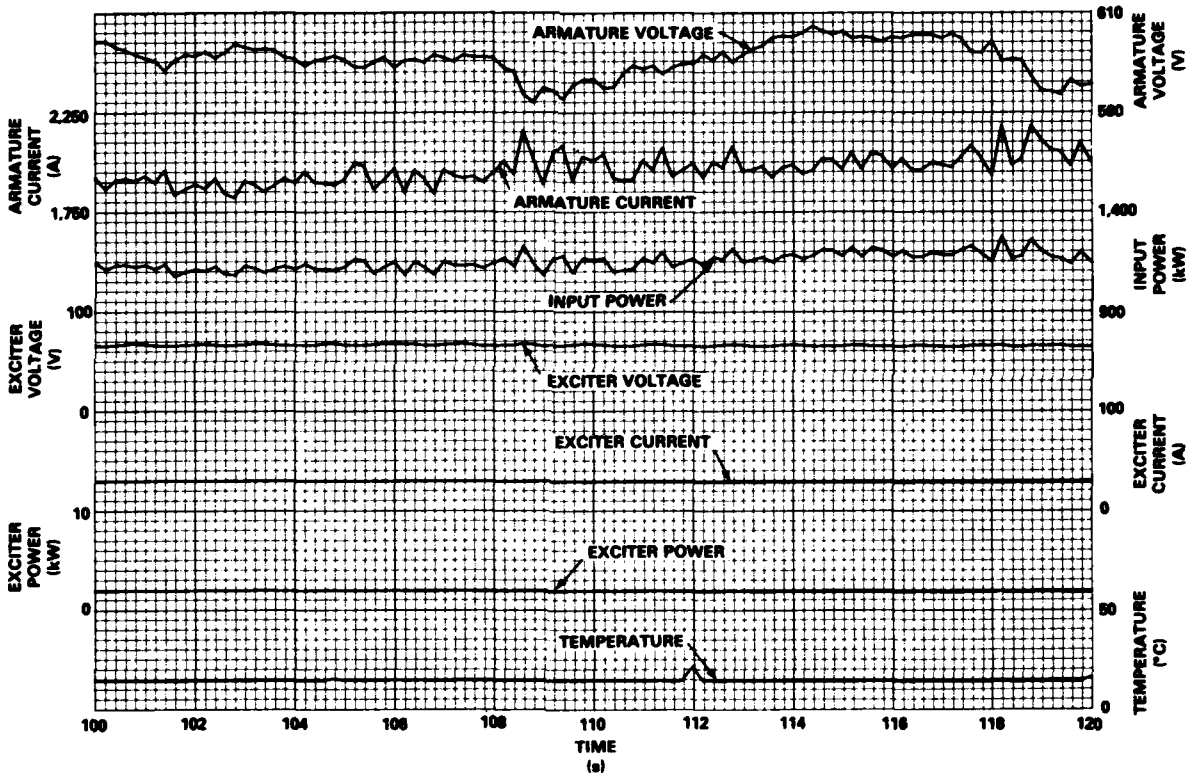


Figure 15 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1110

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14.5 in. (36.8 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 5.4 knots
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

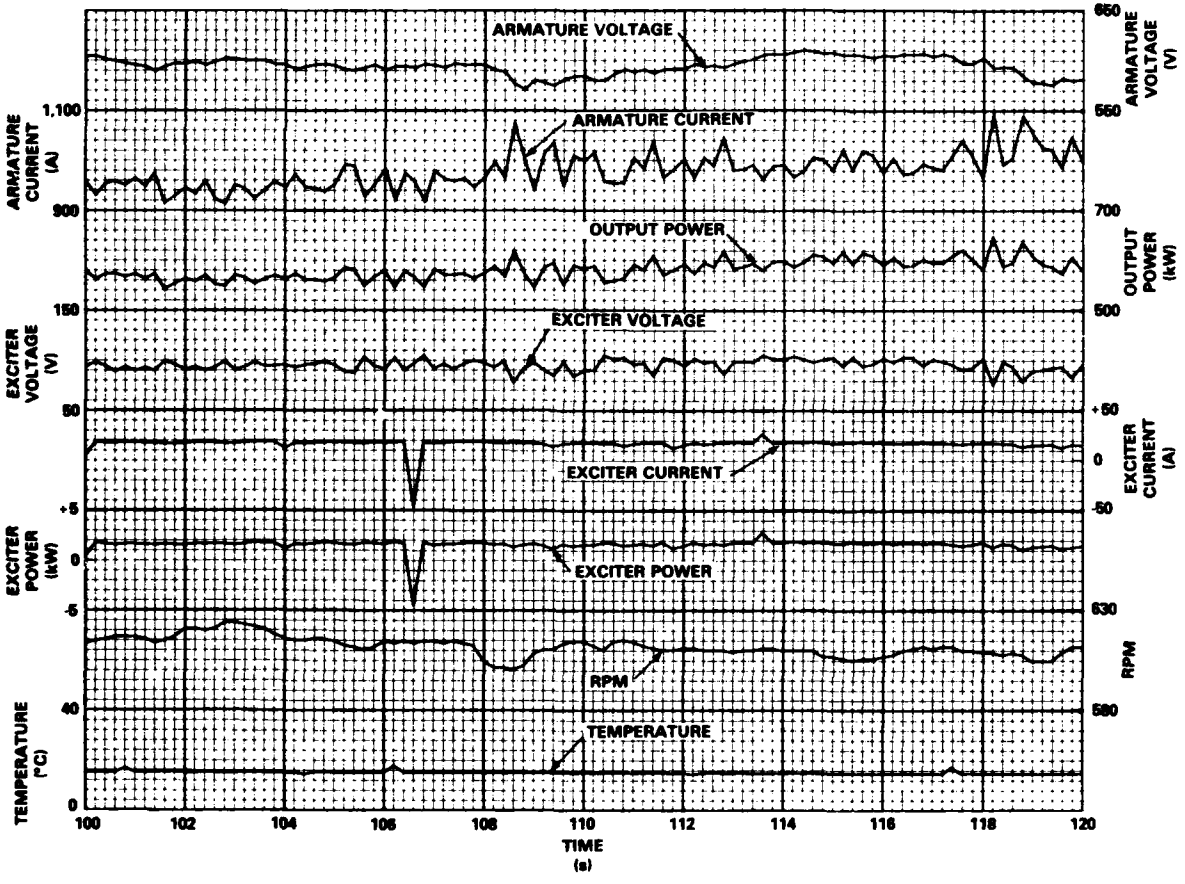


Figure 16 - Generator 1 Data, Five Samples per Second Plotted, Run 1110

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14.5 in. (36.8 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 5.4 knots
4. FLEXURAL STRENGTH OF ICE 13780 lb/sq ft (660 kPa)

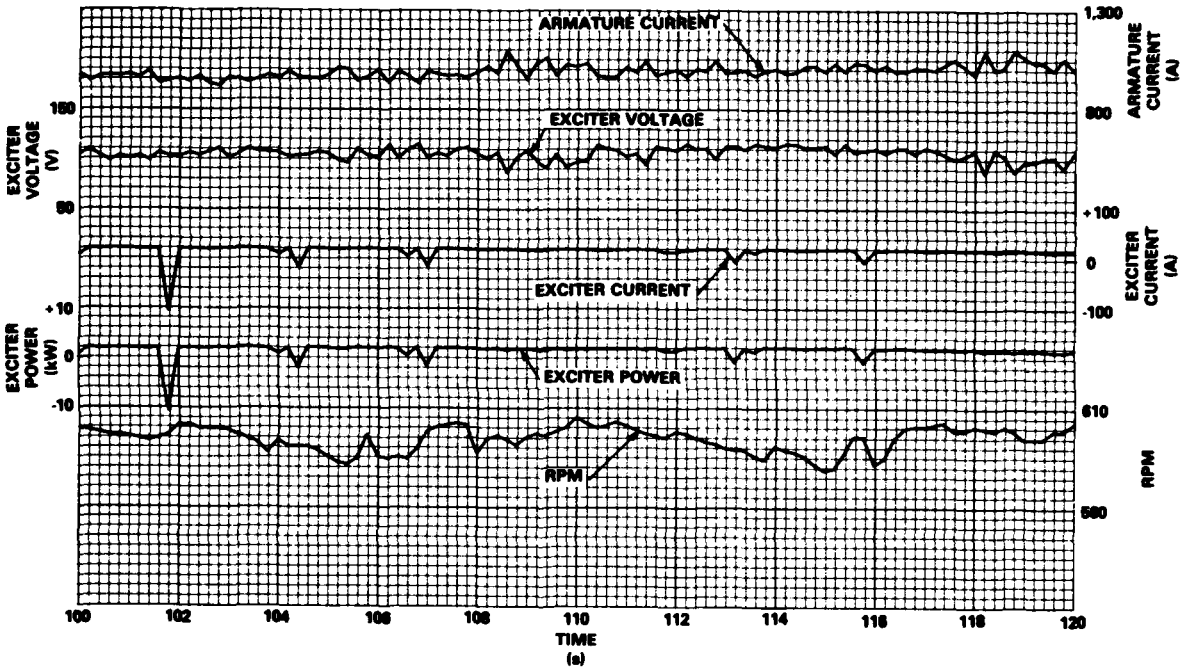


Figure 17 - Generator 2 Data, Five Samples per Second Plotted, Run 1110

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 4.5 in. (11.4 cm) OF SNOW
3. SHIP SPEED 7.7 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

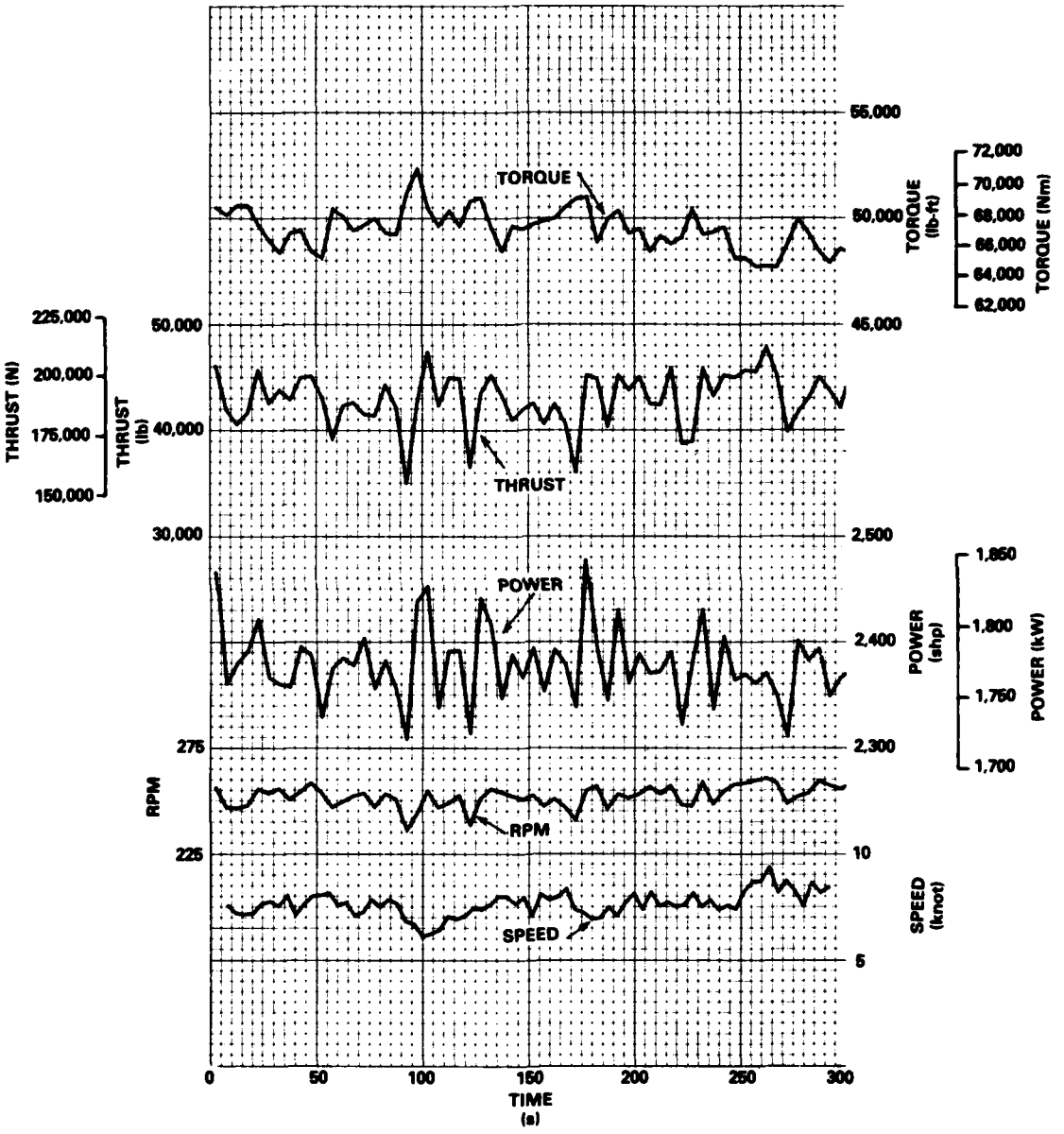


Figure 18 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1120

TRAIL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 4.5 in. (11.4 cm) OF SNOW
3. SHIP SPEED 7.7 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

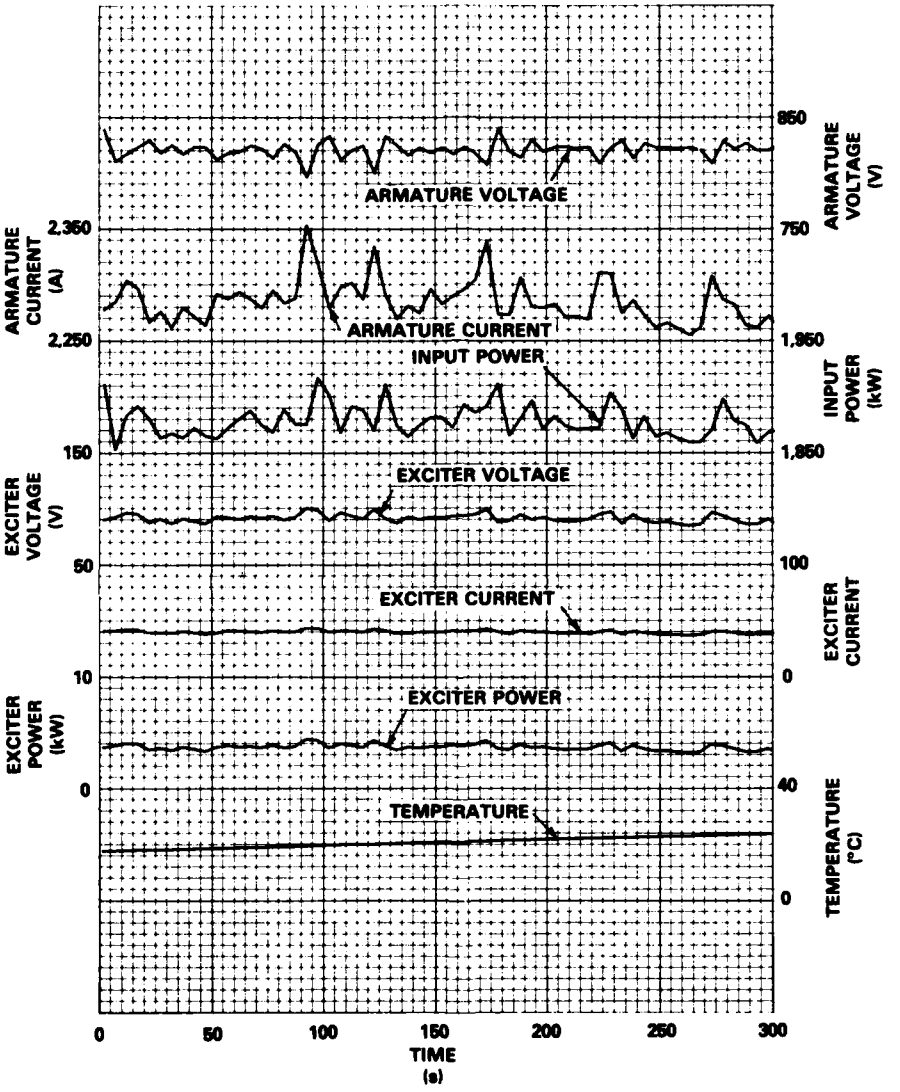


Figure 19 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1120

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 4.5 in. (11.4 cm) OF SNOW
3. SHIP SPEED 7.7 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

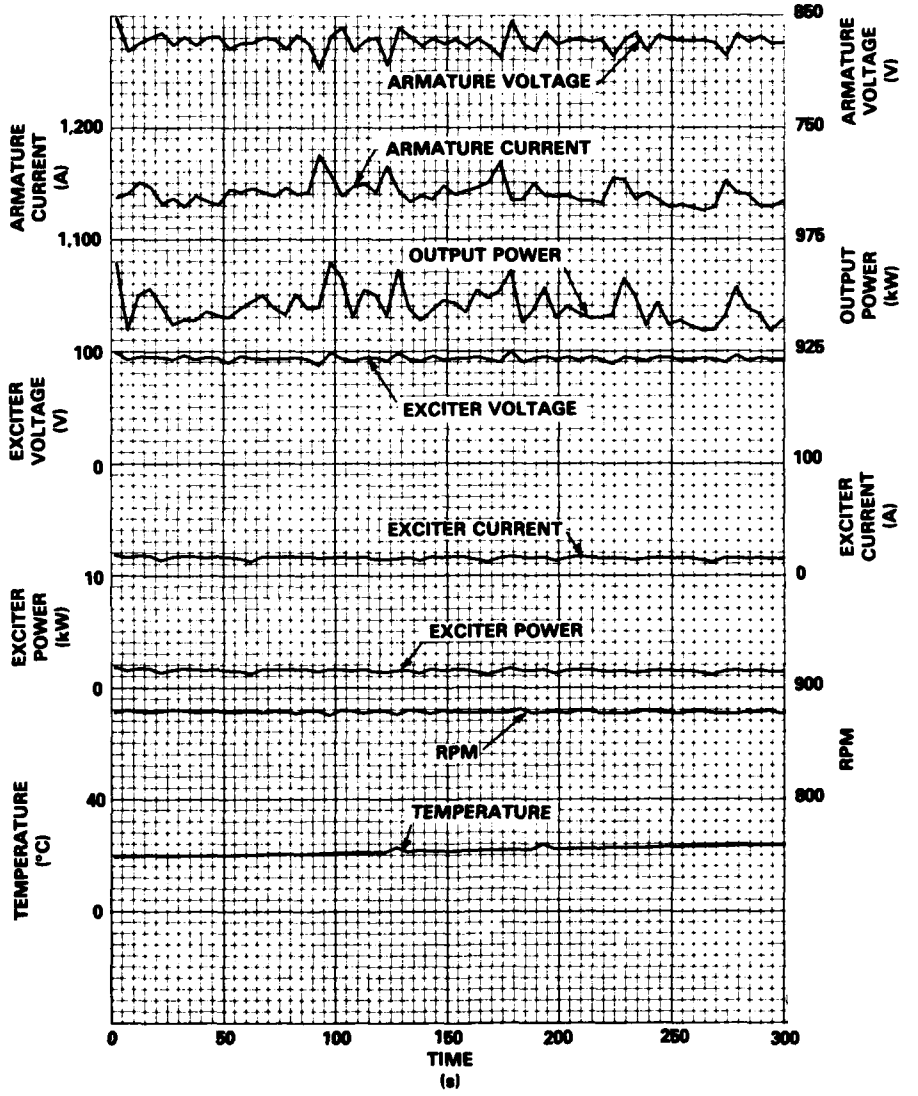


Figure 20 - Generator 1 Data Averaged Over Five-Second Periods, Run 1120

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 4.5 in. (11.4 cm) OF SNOW
3. SHIP SPEED 7.7 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

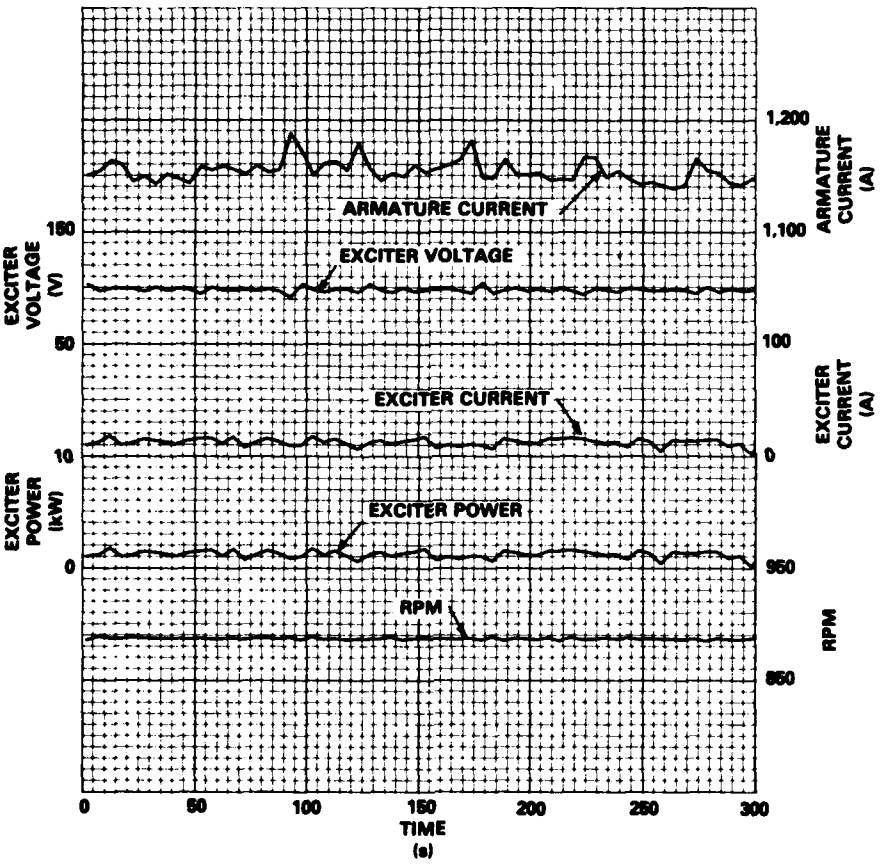


Figure 21 - Generator 2 Data Averaged Over Five-Second Periods, Run 1120

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 4.5 in. (11.4 cm) OF SNOW
3. SHIP SPEED 7.7 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

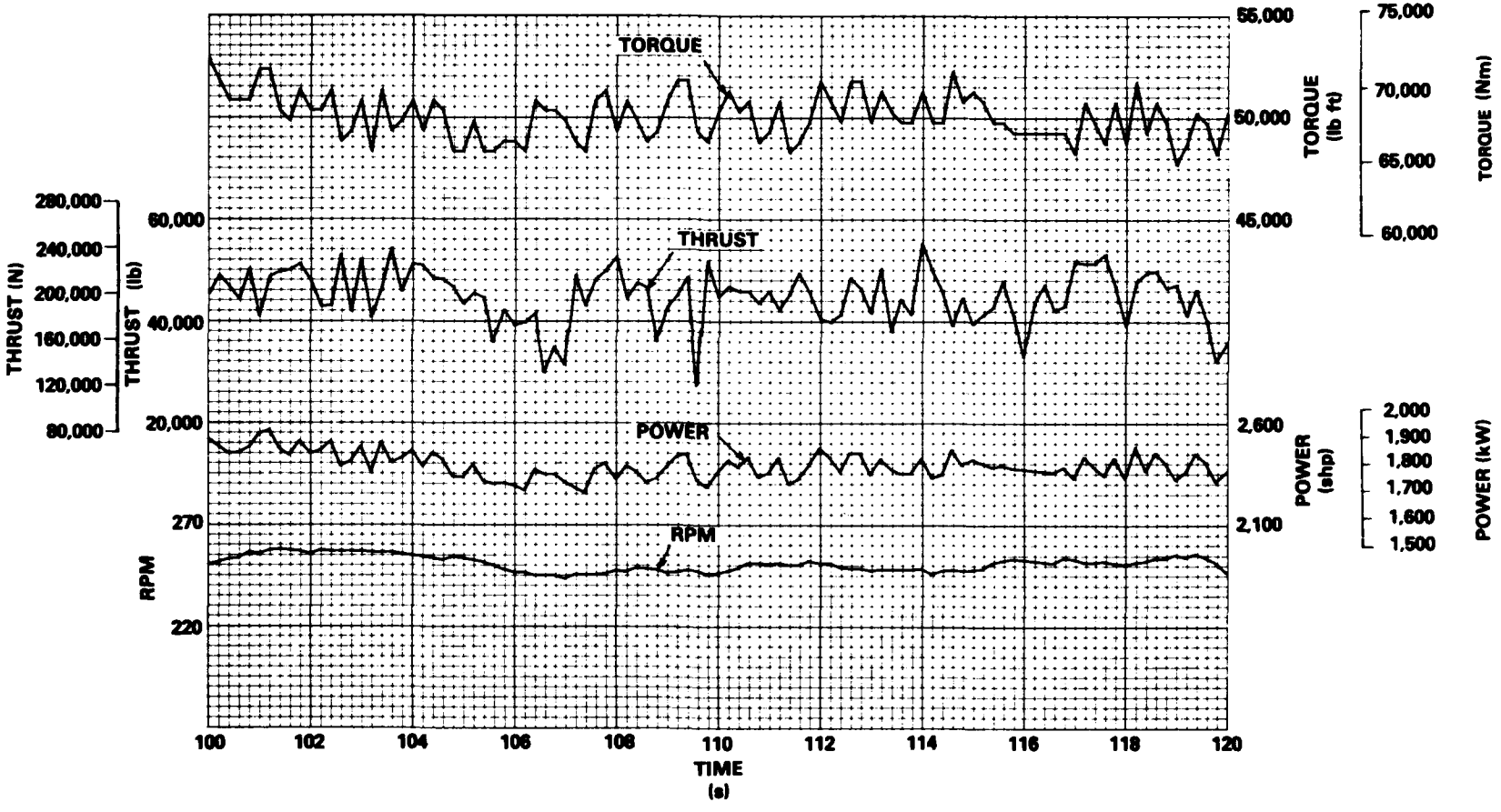


Figure 22 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1120

TRIALS CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 4.5 in. (11.4 cm) OF SNOW
3. SHIP SPEED 7.7 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

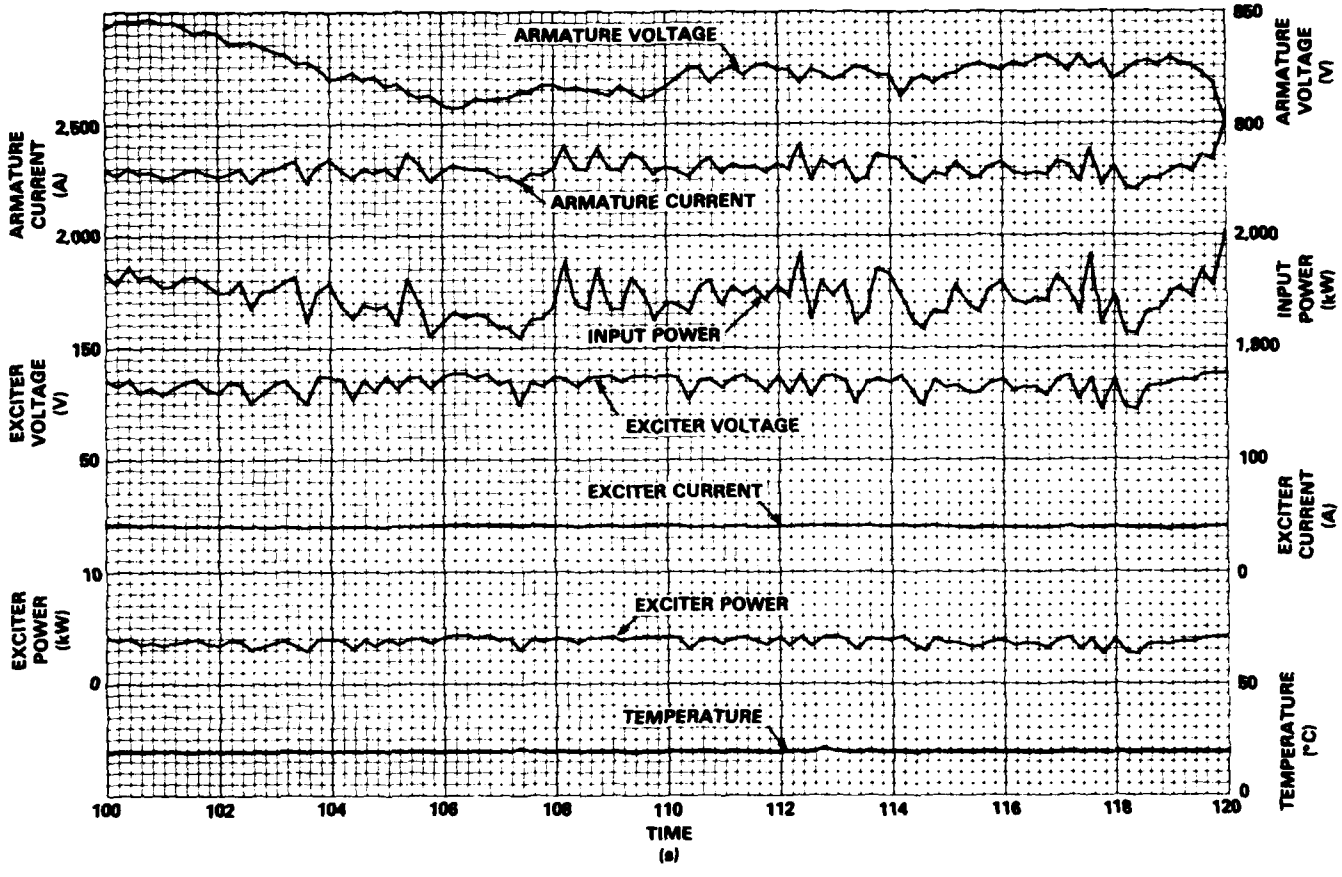


Figure 23 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1120

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **14 in. (35.6 cm) OF ICE WITH 4.5 in. (11.4 cm) OF SNOW**
3. **SHIP SPEED 7.7 knots**
4. **FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)**

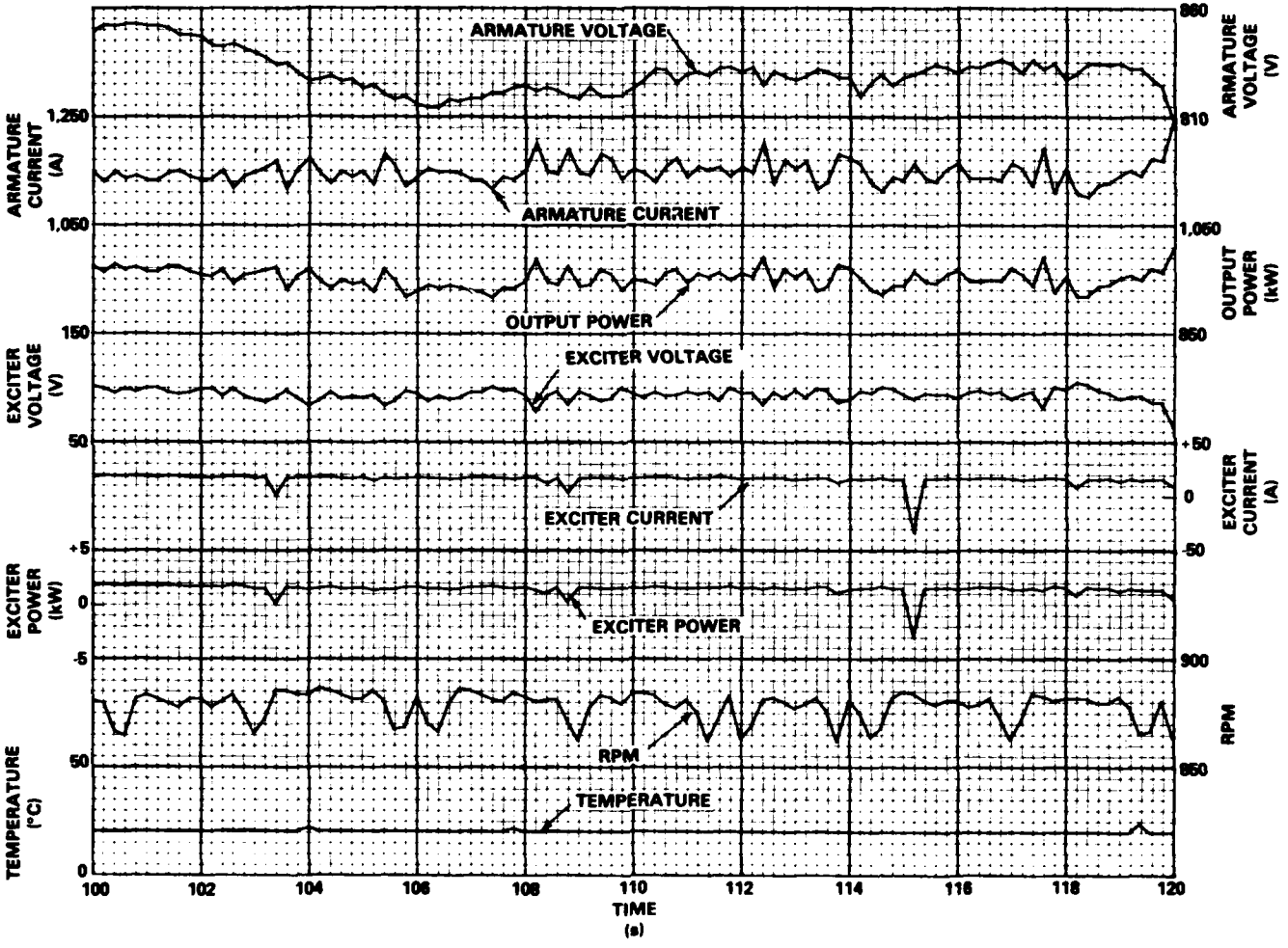


Figure 24 - Generator 1 Data, Five Samples per Second Plotted, Run 1120

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 14 in. (35.6 cm) OF ICE WITH 4.5 in. (11.4 cm) OF SNOW
3. SHIP SPEED 7.7 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

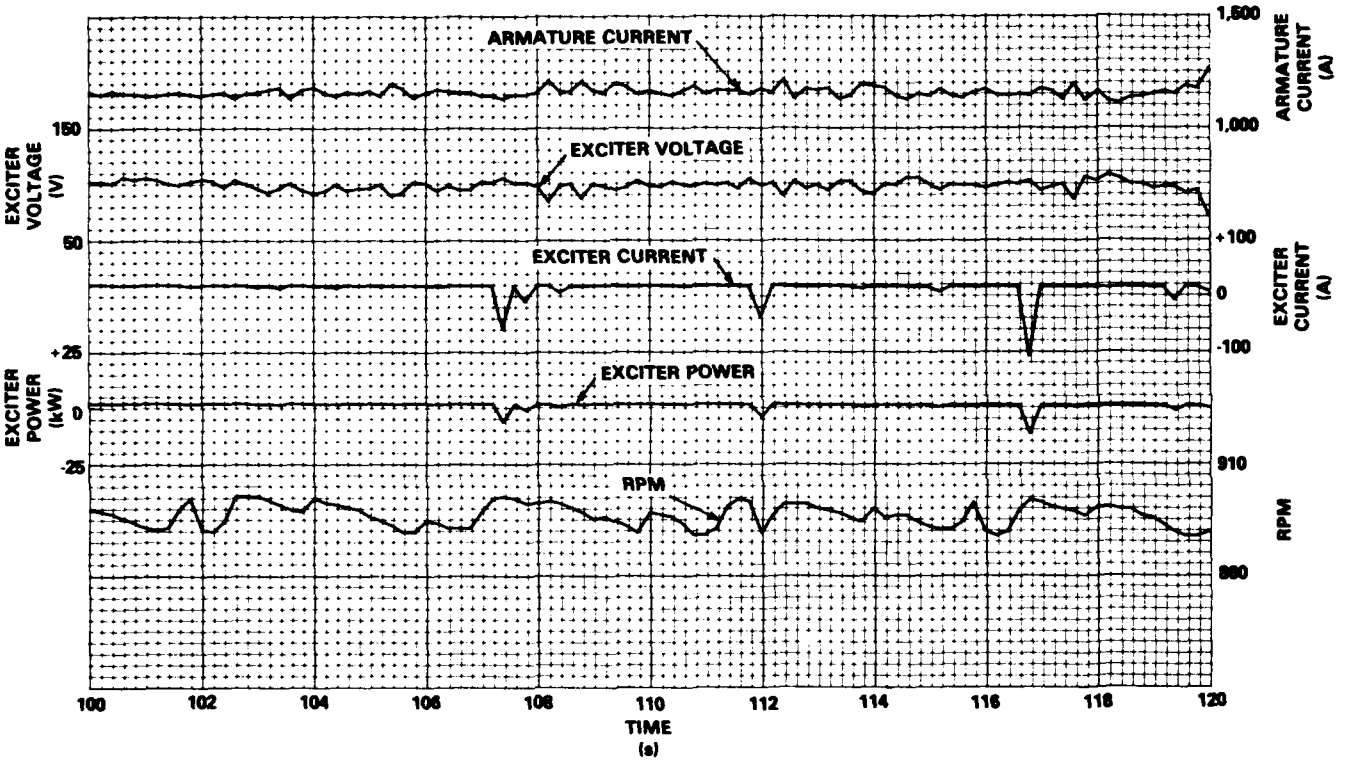


Figure 25 - Generator 2 Data, Five Samples per Second Plotted, Run 1120

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 9.0 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

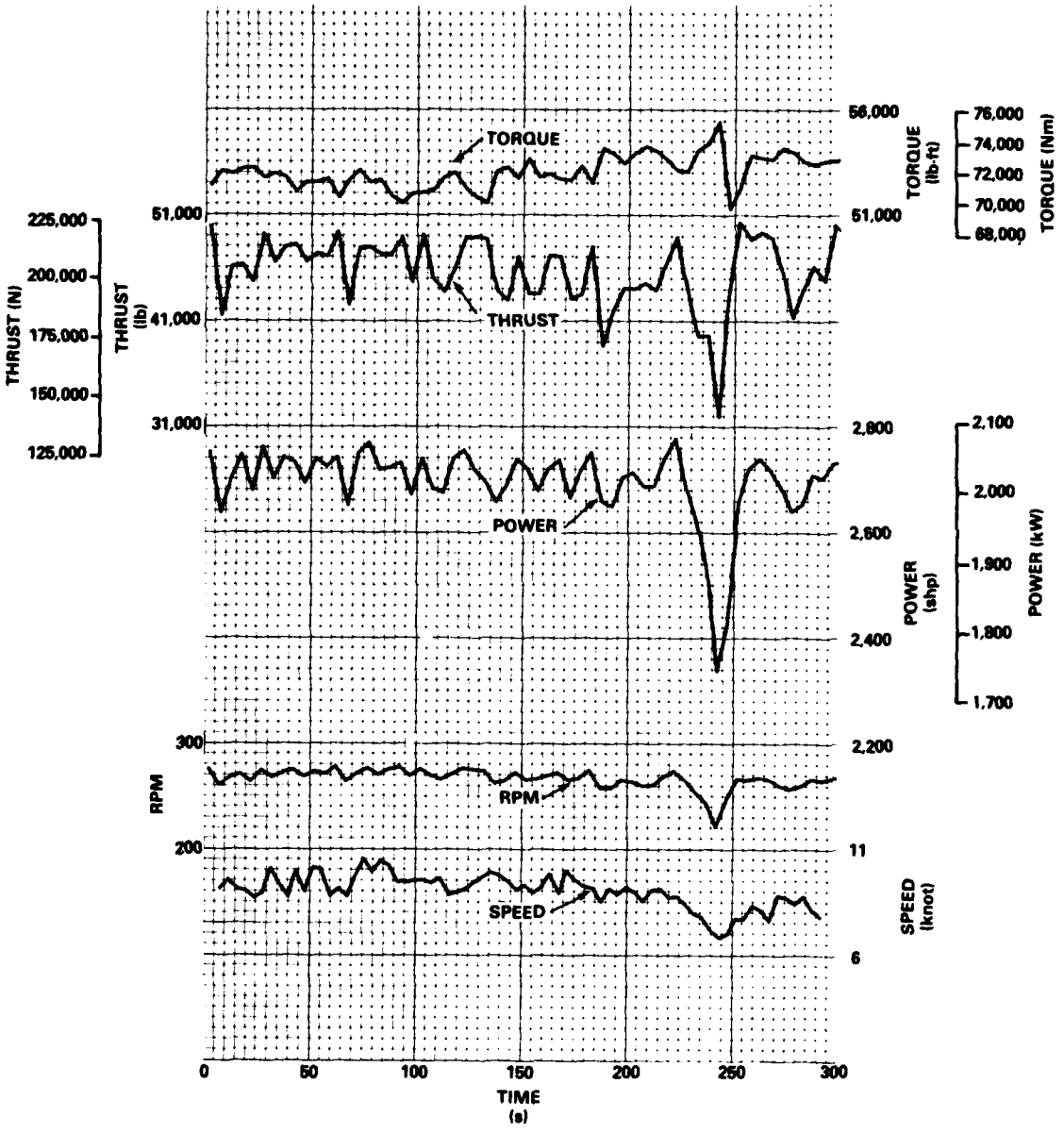


Figure 26 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1130

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 9.0 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

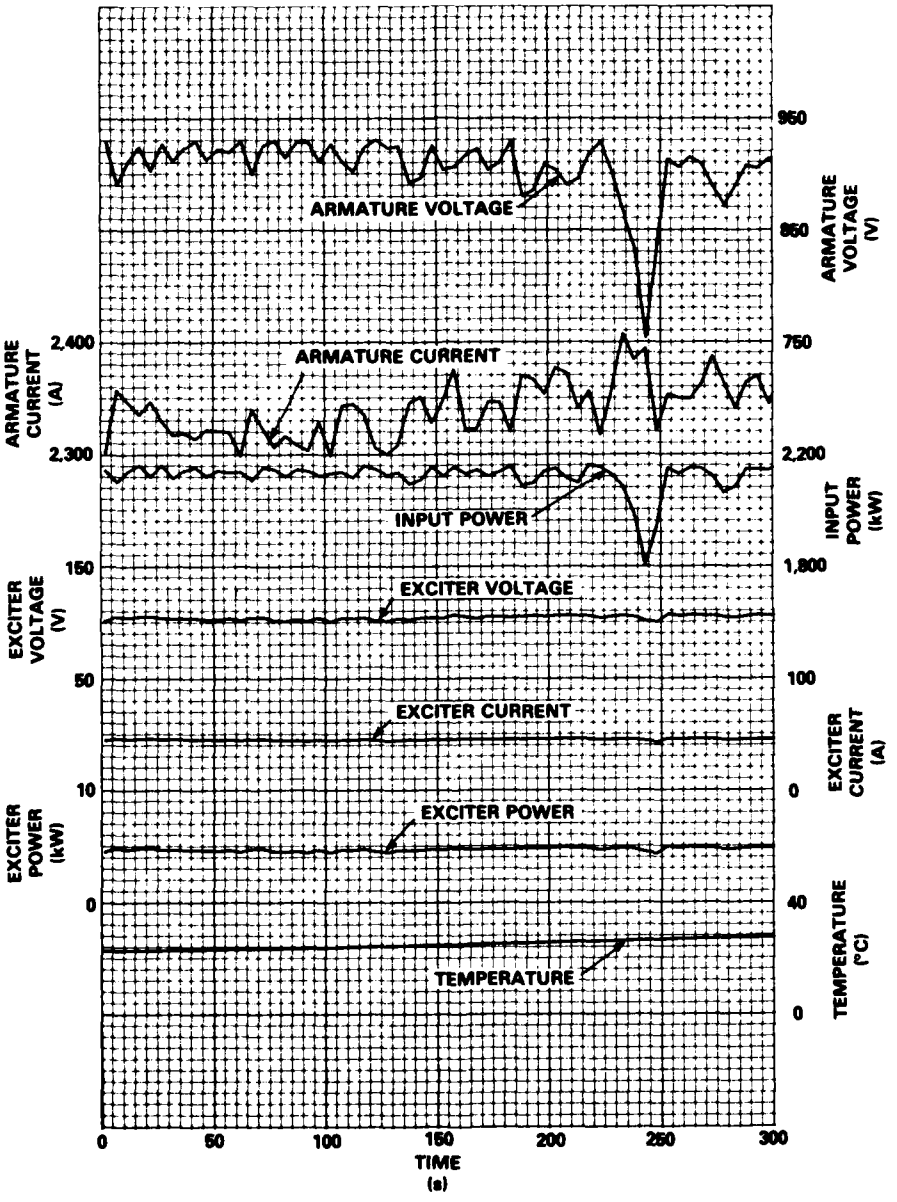


Figure 27 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1130

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 9.0 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

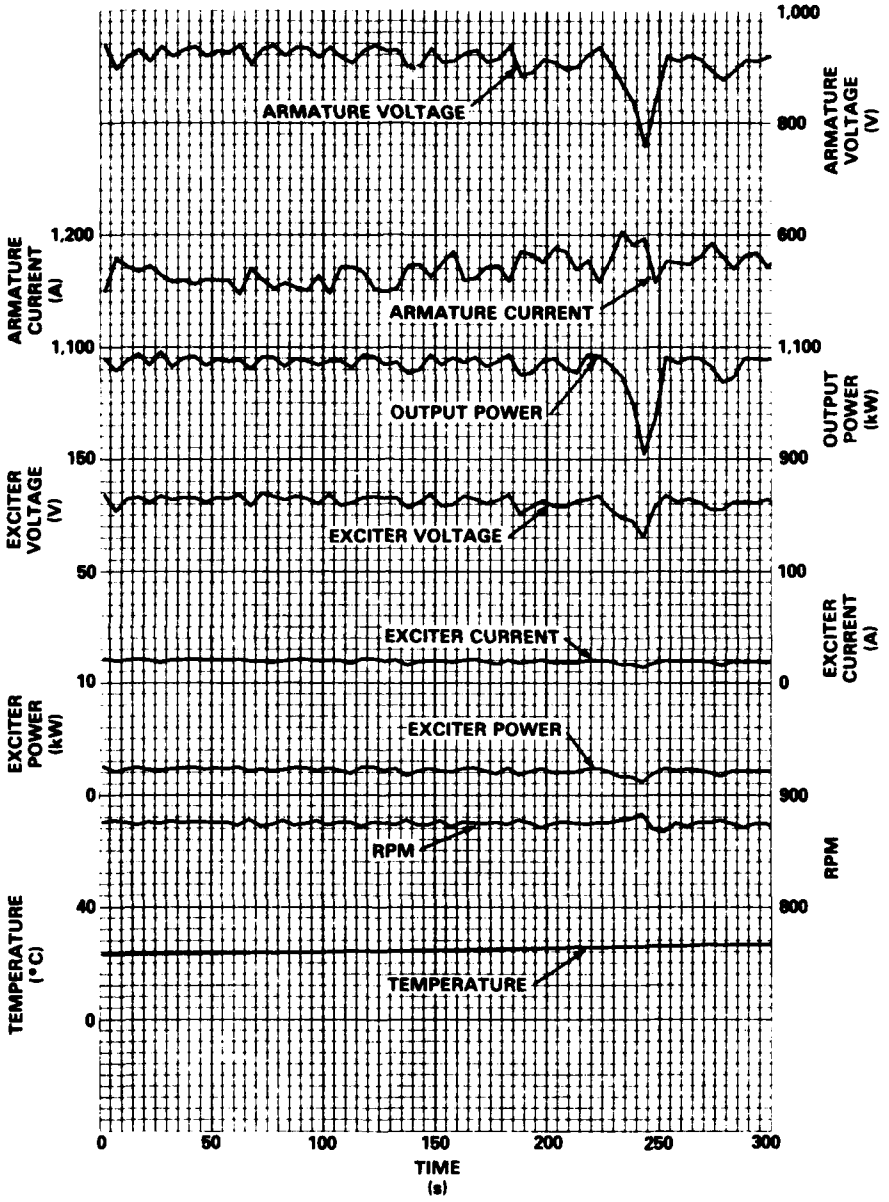


Figure 28 - Generator 1 Data Averaged Over Five-Second Periods, Run 1130

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 9.0 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

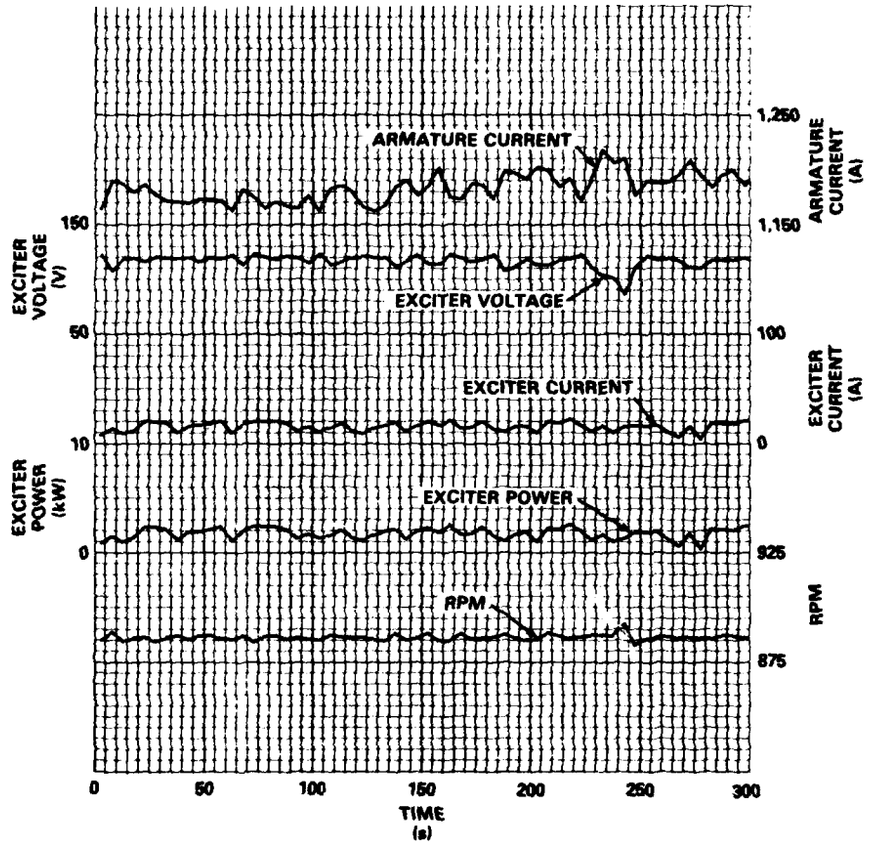


Figure 29 - Generator 2 Data Averaged Over Five-Second Periods, Run 1130

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 9.0 knots
4. FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)

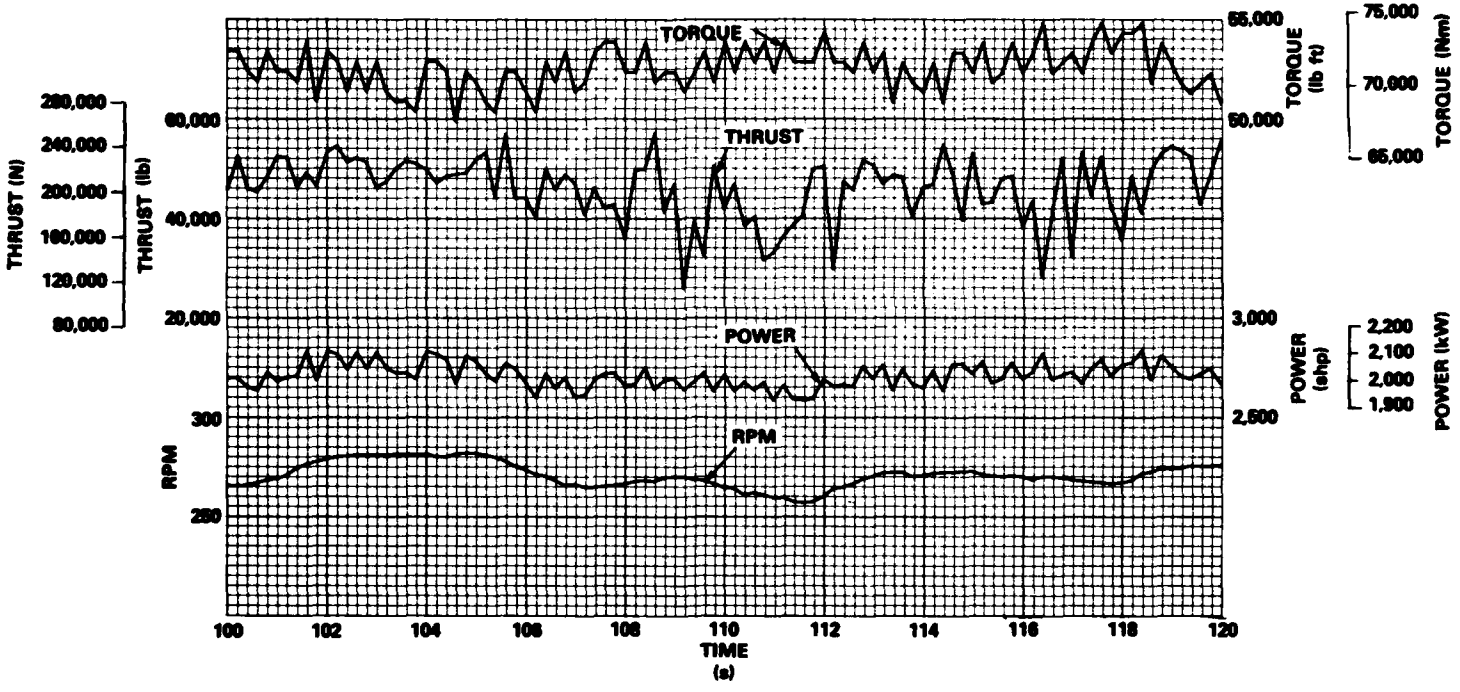


Figure 30 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1130

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 9.0 knots**
4. **FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)**

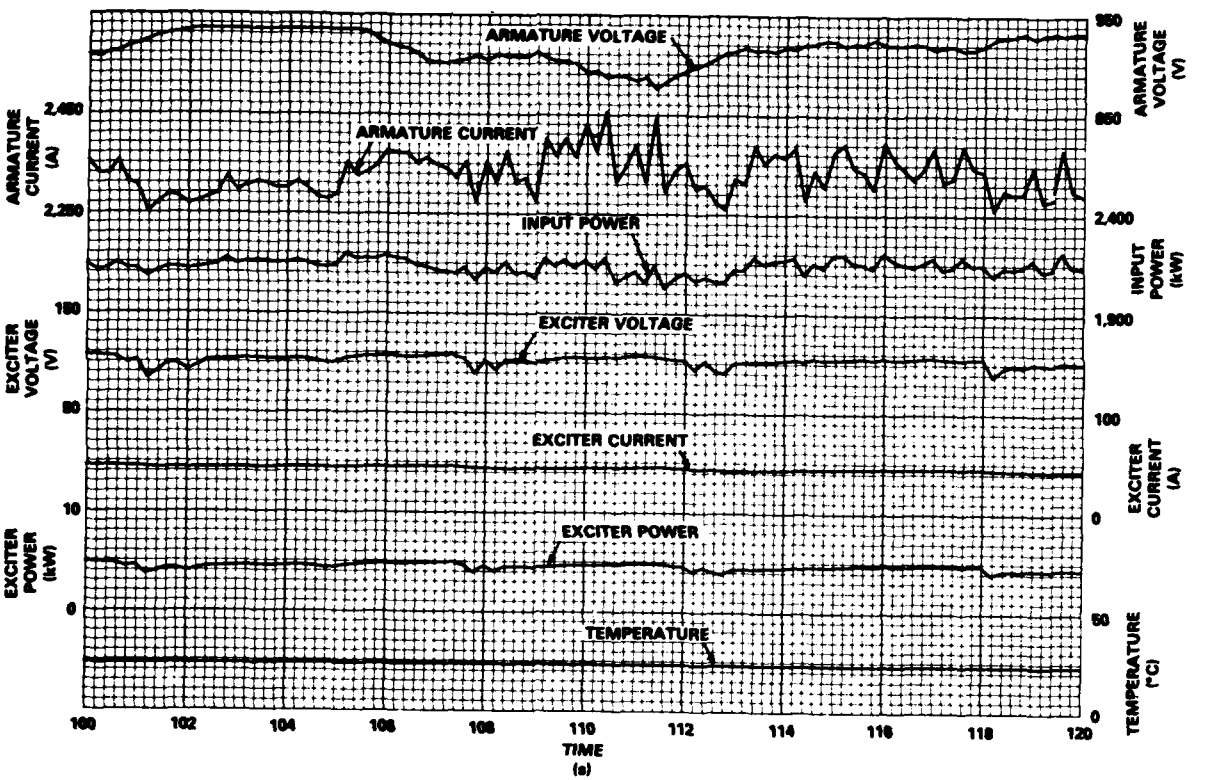


Figure 31 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1130

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 9.0 knots**
4. **FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)**

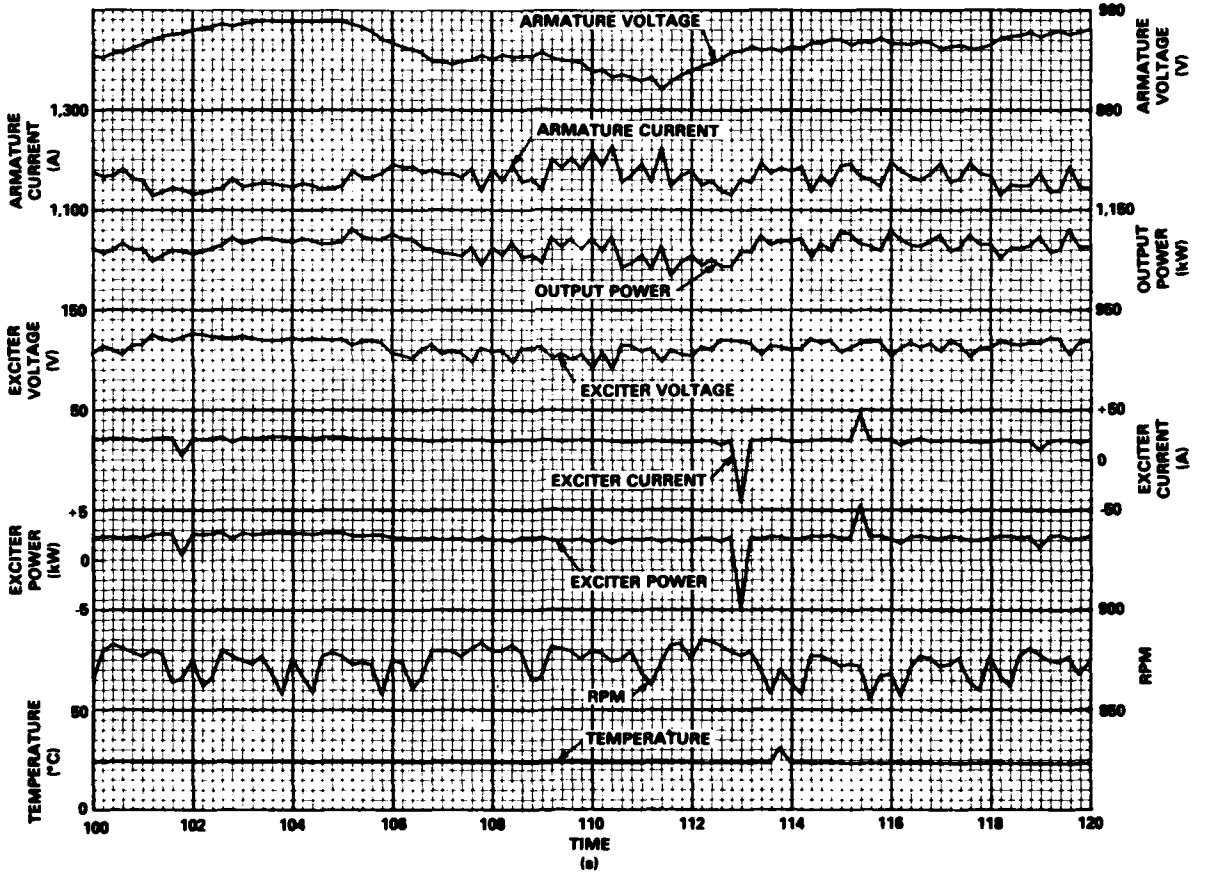


Figure 32 - Generator 1 Data, Five Samples per Second Plotted, Run 1130

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 9.0 knots**
4. **FLEXURAL STRENGTH OF ICE 13990 lb/sq ft (670 kPa)**

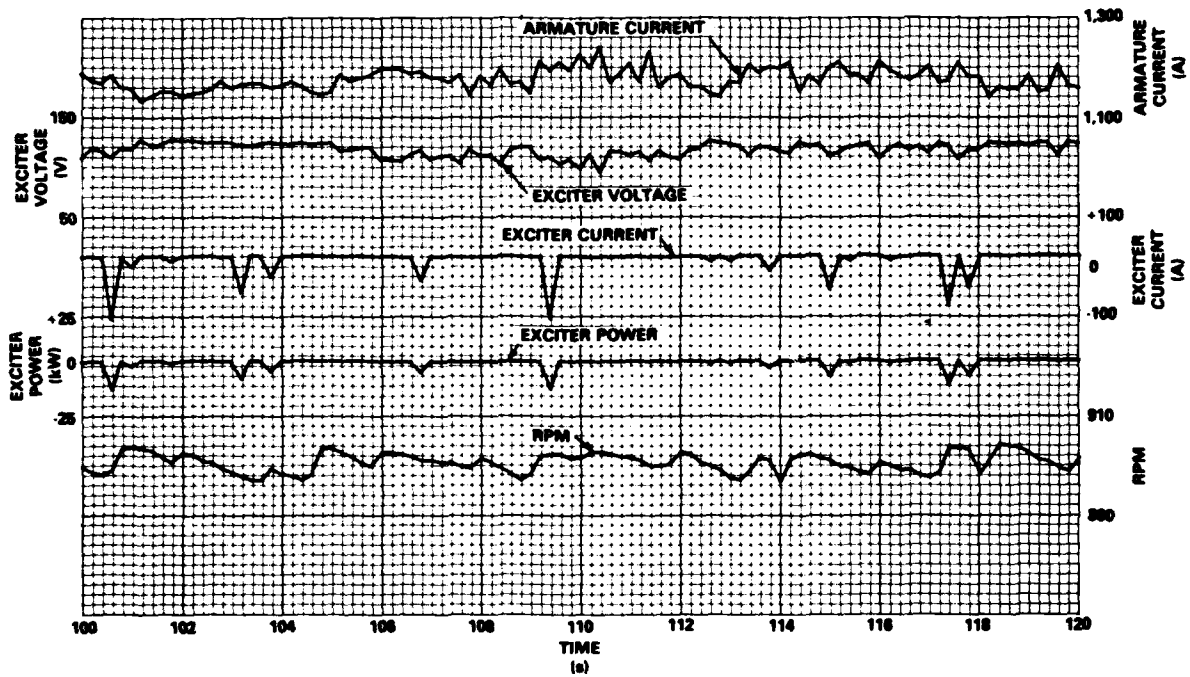


Figure 33 - Generator 2 Data, Five Samples per Second Plotted, Run 1130

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **16.5 in. (41.9 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW**
3. **SHIP SPEED 5.0 knots**
4. **FLEXURAL STRENGTH OF ICE 13360 lb/sq ft (640 kPa)**

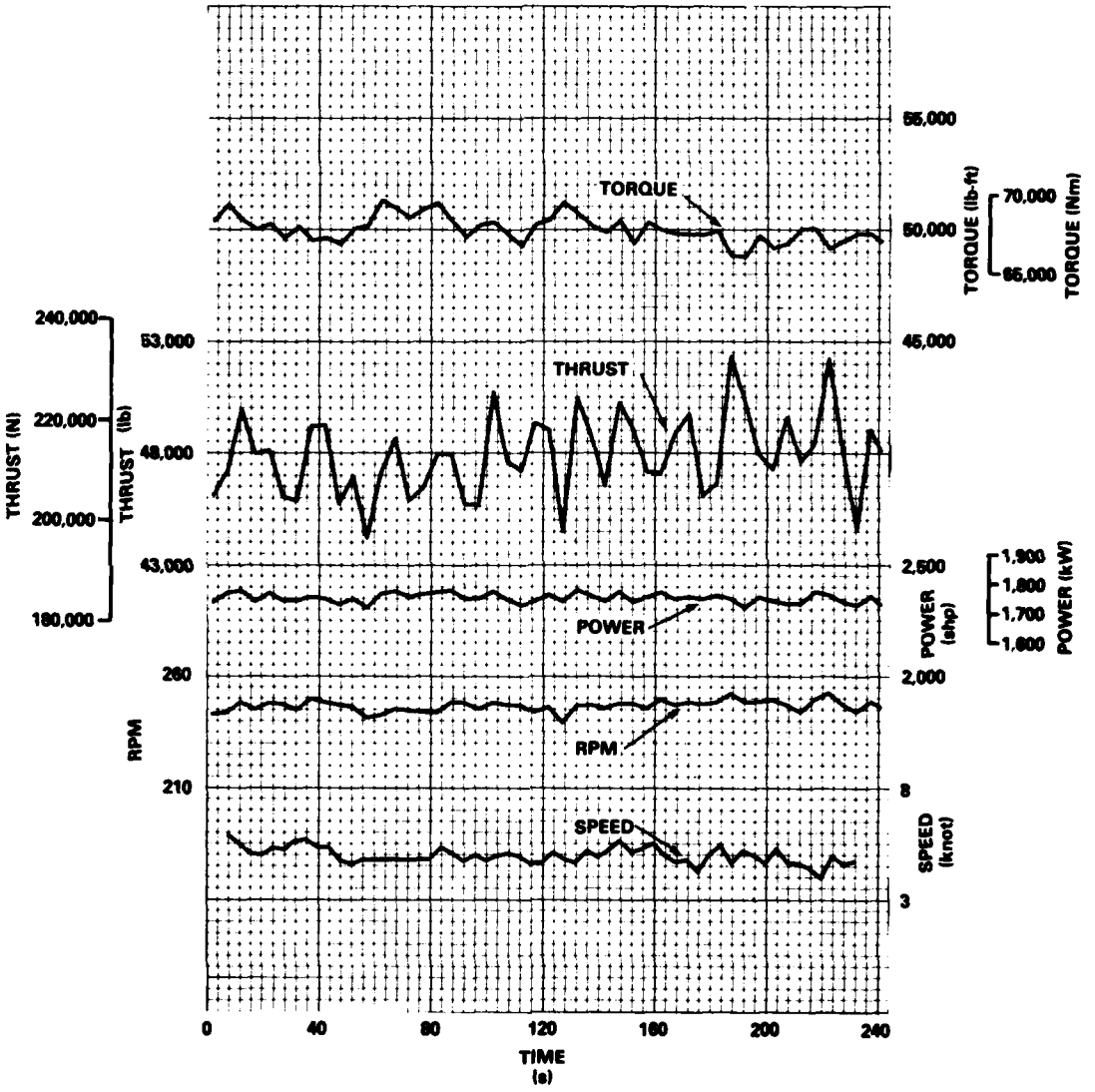


Figure 34 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 1320

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 16.5 in. (41.9 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 5.0 knots
4. FLEXURAL STRENGTH OF ICE 13360 lb/sq ft (640 kPa)

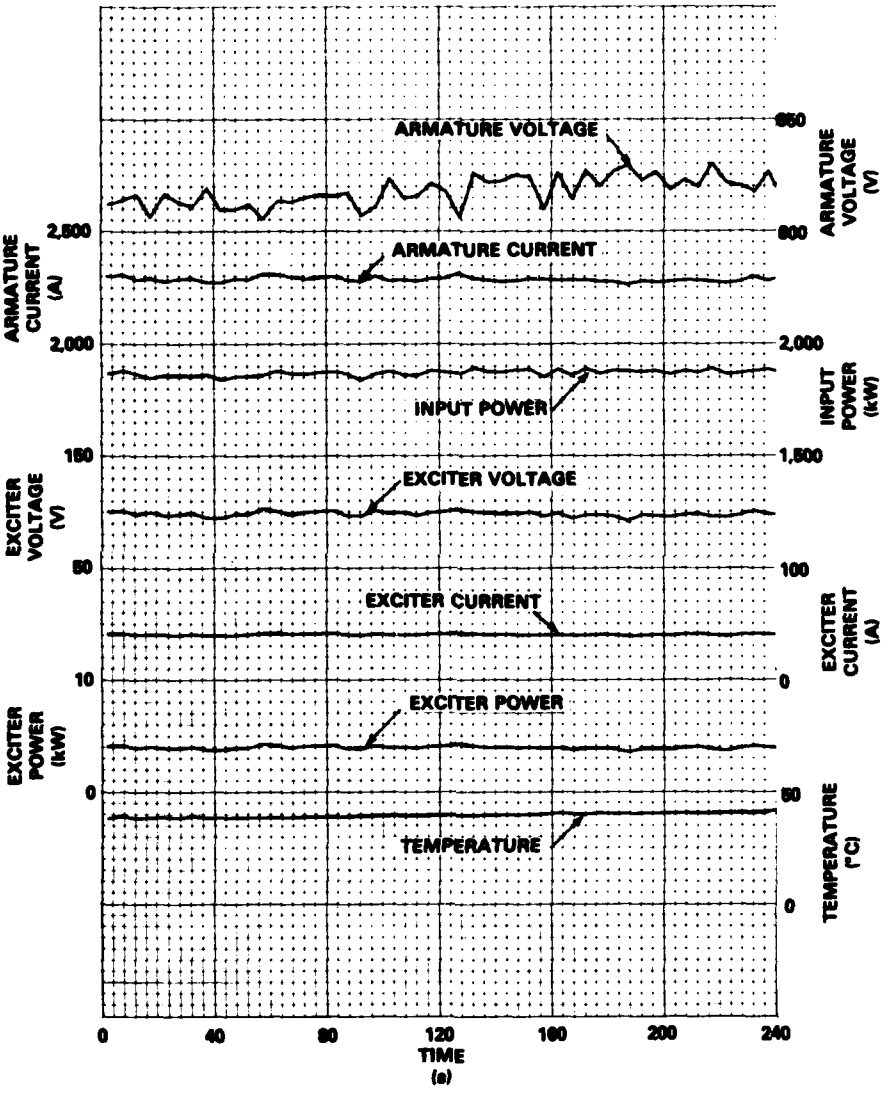


Figure 35 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 1320

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 16.5 in. (41.9 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 5.0 knots
4. FLEXURAL STRENGTH OF ICE 13360 lb/sq ft (640 kPa)

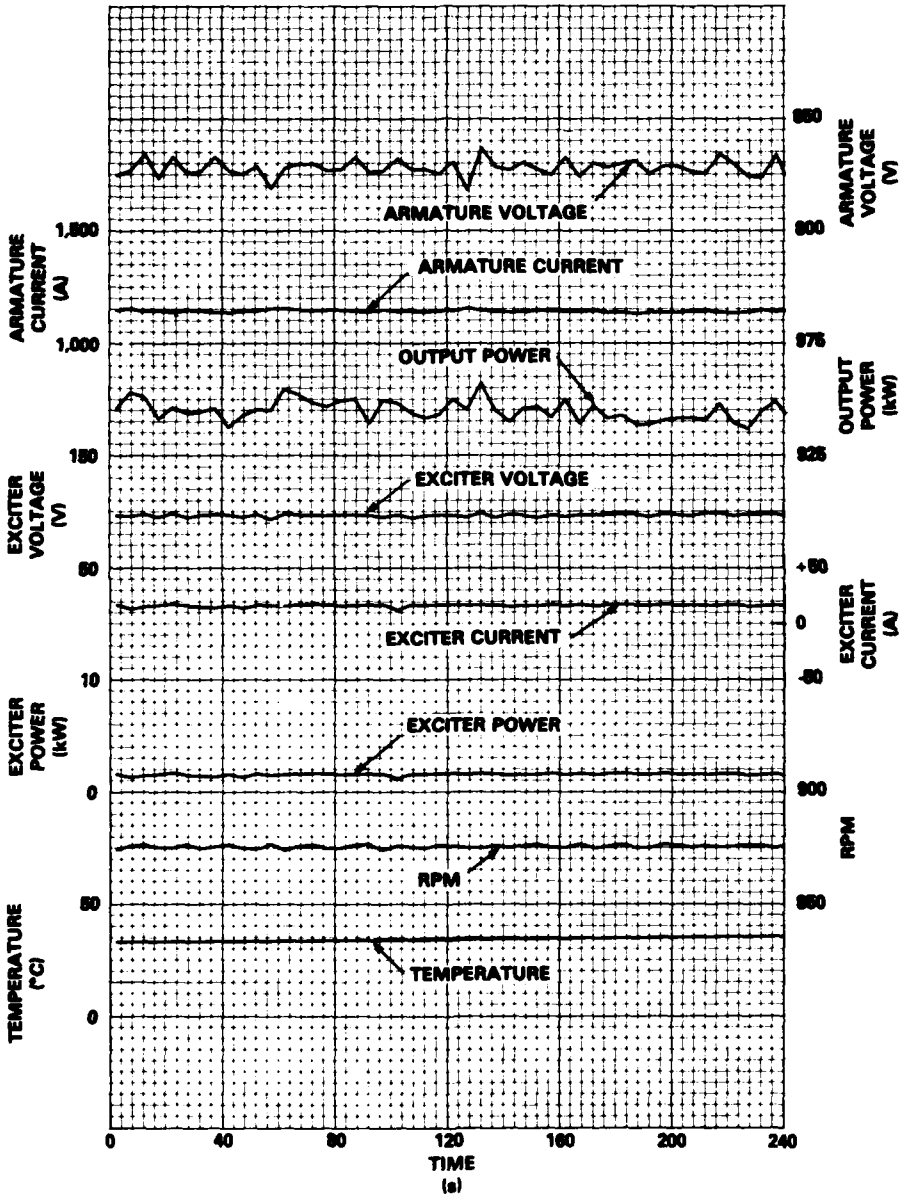


Figure 36 - Generator 1 Data Averaged Over Five-Second Periods, Run 1320

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 16.5 in. (41.9 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 5.0 knots
4. FLEXURAL STRENGTH OF ICE 13360 lb/sq ft (640 kPa)

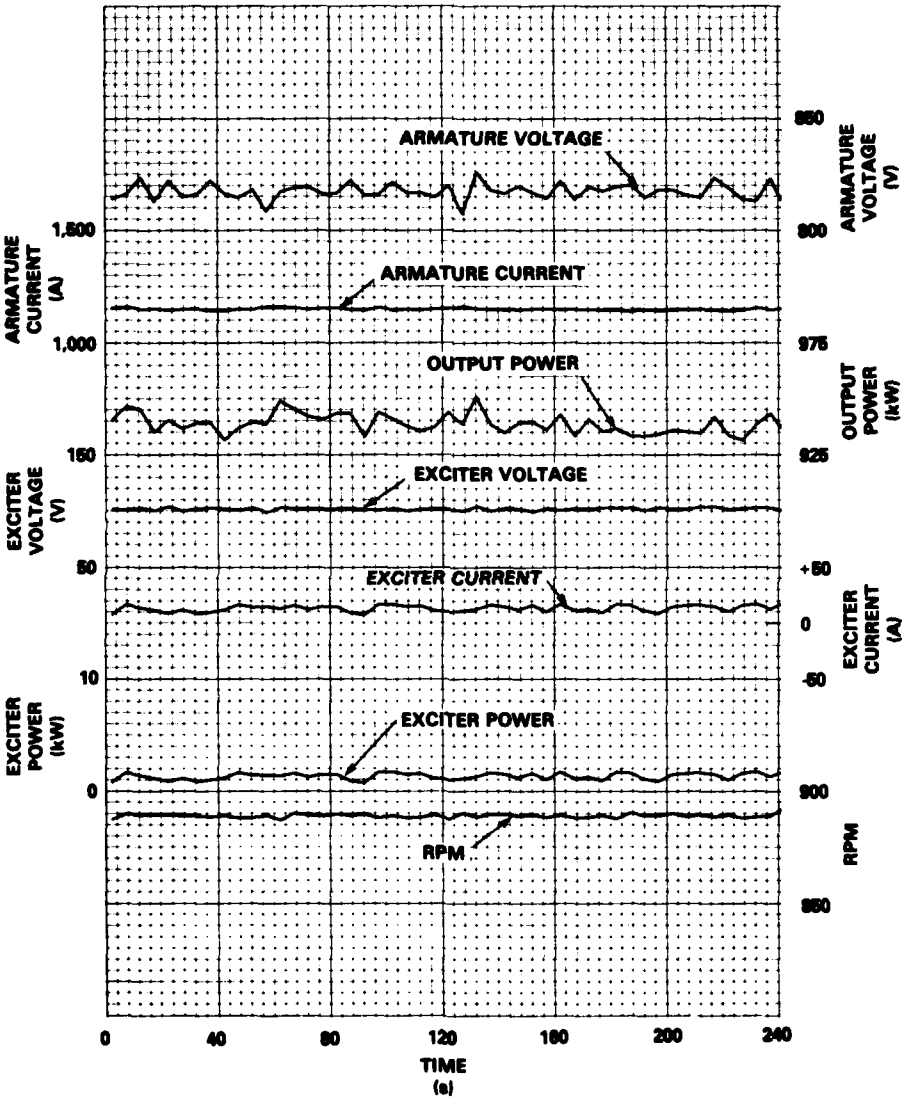


Figure 37 - Generator 2 Data Averaged Over Five-Second Periods, Run 1320

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 16.5 in. (41.9 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 5.0 knots
4. FLEXURAL STRENGTH OF ICE 13360 lb/sq ft (640 kPa)

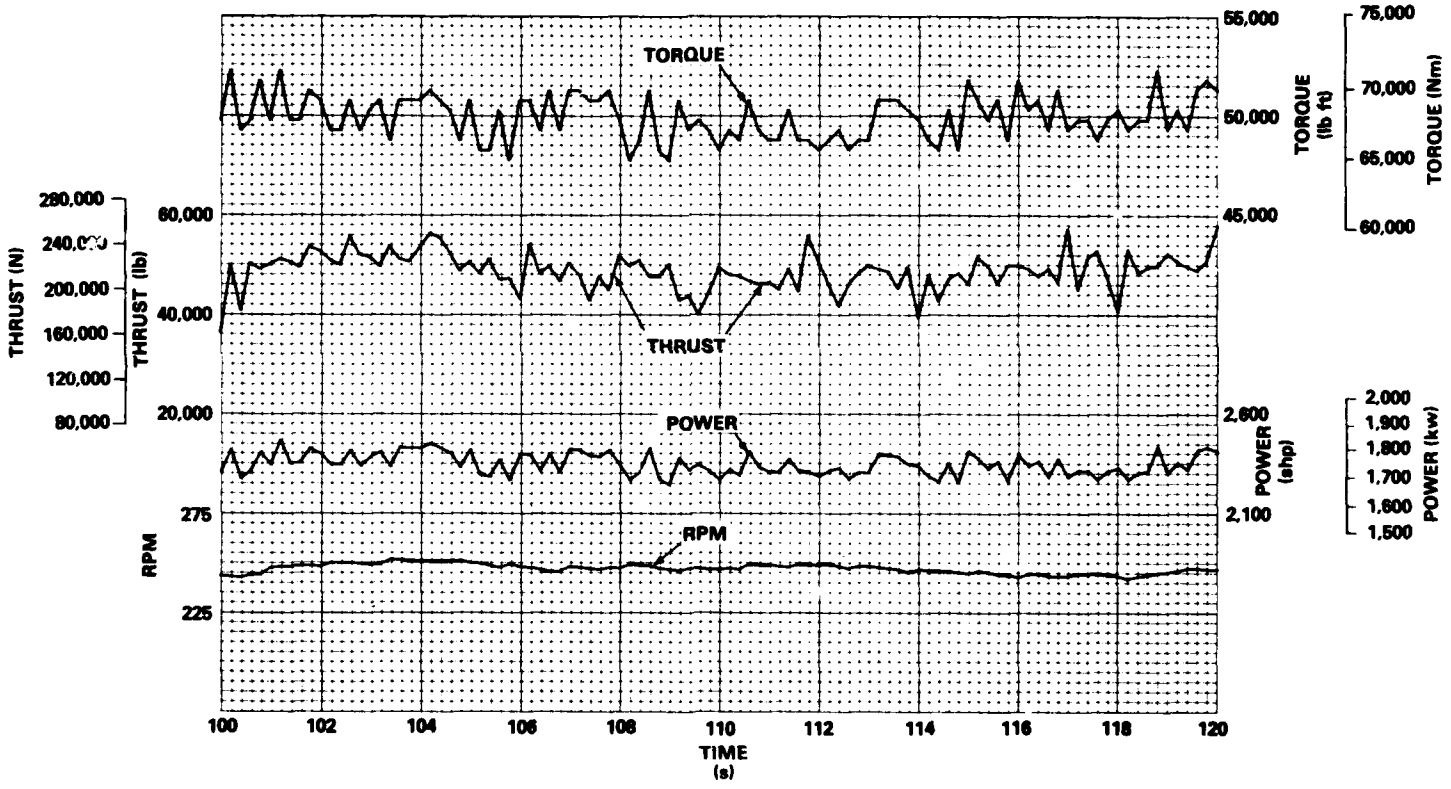


Figure 38 - Propeller Shaft Data, Five Samples per Second Plotted, Run 1320

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITHOUT BUBBLERS
2. 16.5 in. (41.9 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 5.0 knots
4. FLEXURAL STRENGTH OF ICE 13360 lb/sq ft (640 kPa)

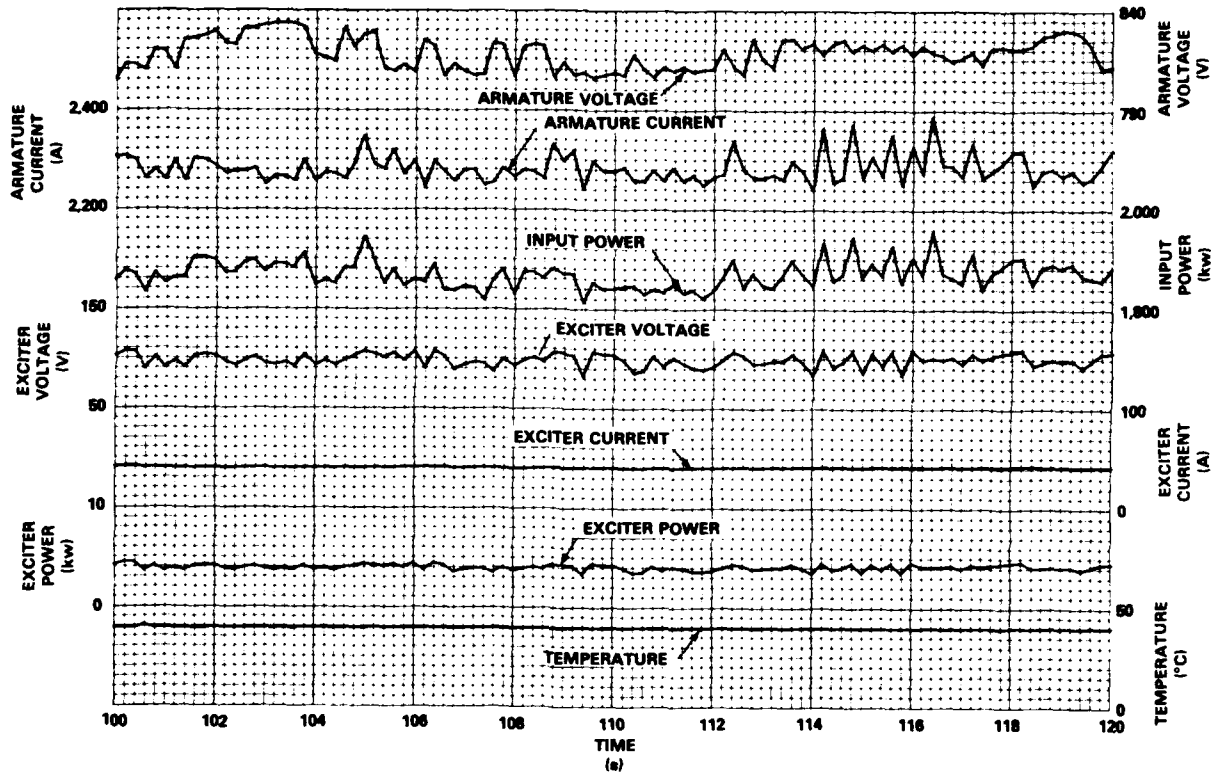


Figure 39 - Propulsion Motor Data, Five Samples per Second Plotted, Run 1320

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **16.5 in. (41.9 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW**
3. **SHIP SPEED 5.0 knots**
4. **FLEXURAL STRENGTH OF ICE 13360 lb/sq ft (640 kPa)**



Figure 40 - Generator 1 Data, Five Samples per Second Plotted, Run 1320

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITHOUT BUBBLERS**
2. **16.5 in. (41.9 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW**
3. **SHIP SPEED 5.0 knots**
4. **FLEXURAL STRENGTH OF ICE 13360 lb/sq ft (640 kPa)**

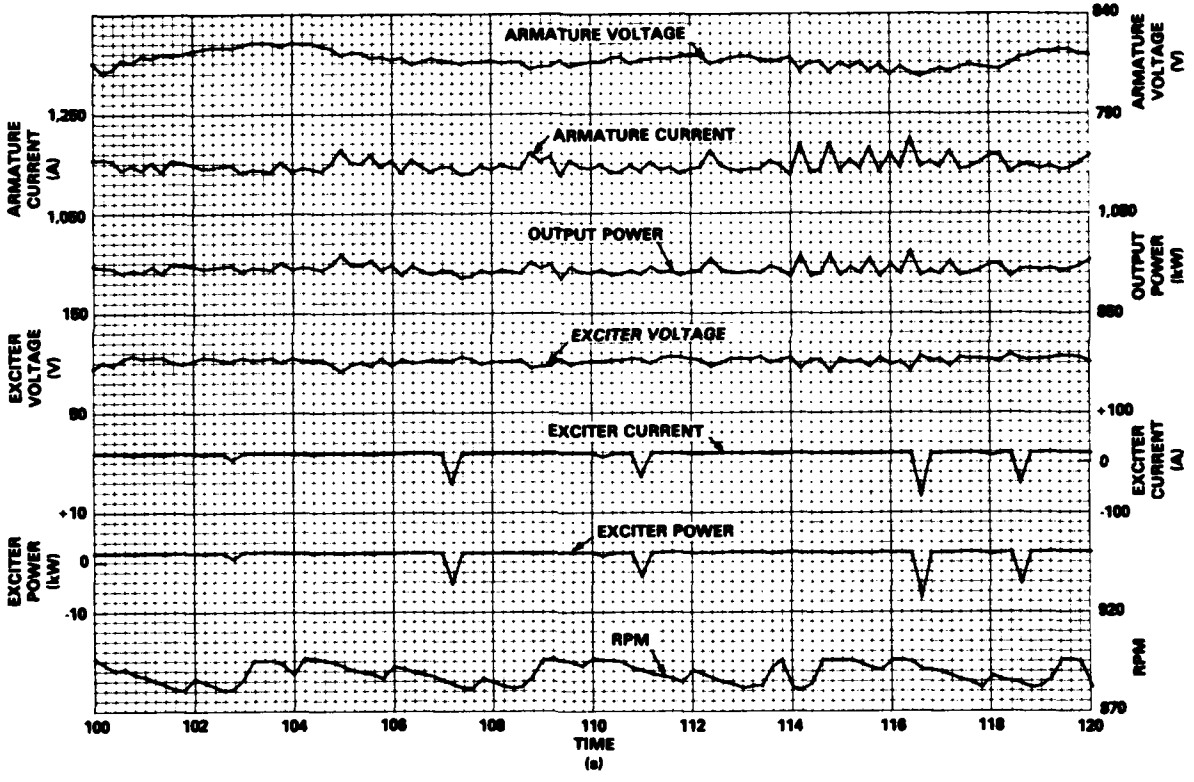


Figure 41 - Generator 2 Data, Five Samples per Second Plotted, Run 1320

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITH ALL BUBBLERS**
2. **15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 1.0 knot**
4. **FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)**

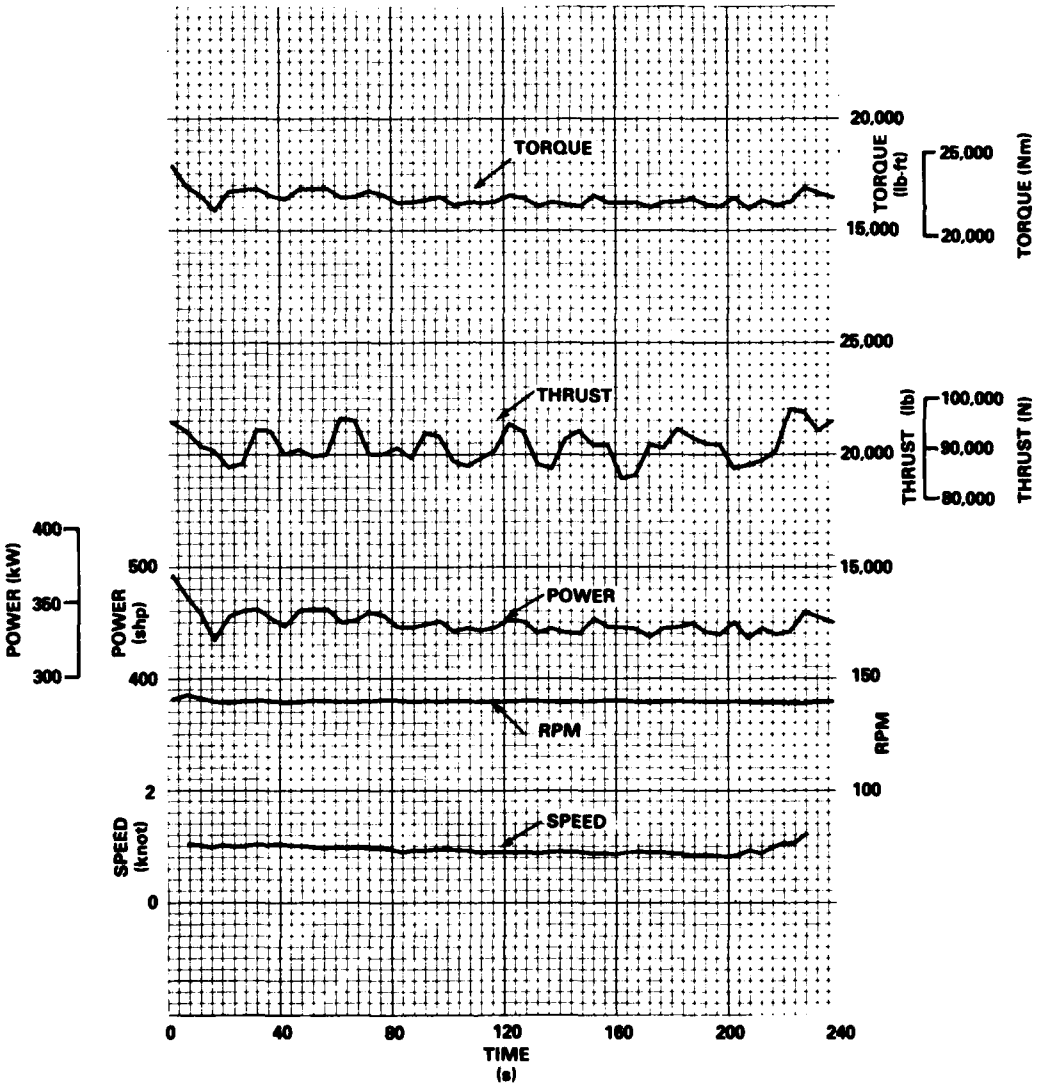


Figure 42 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 2231

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

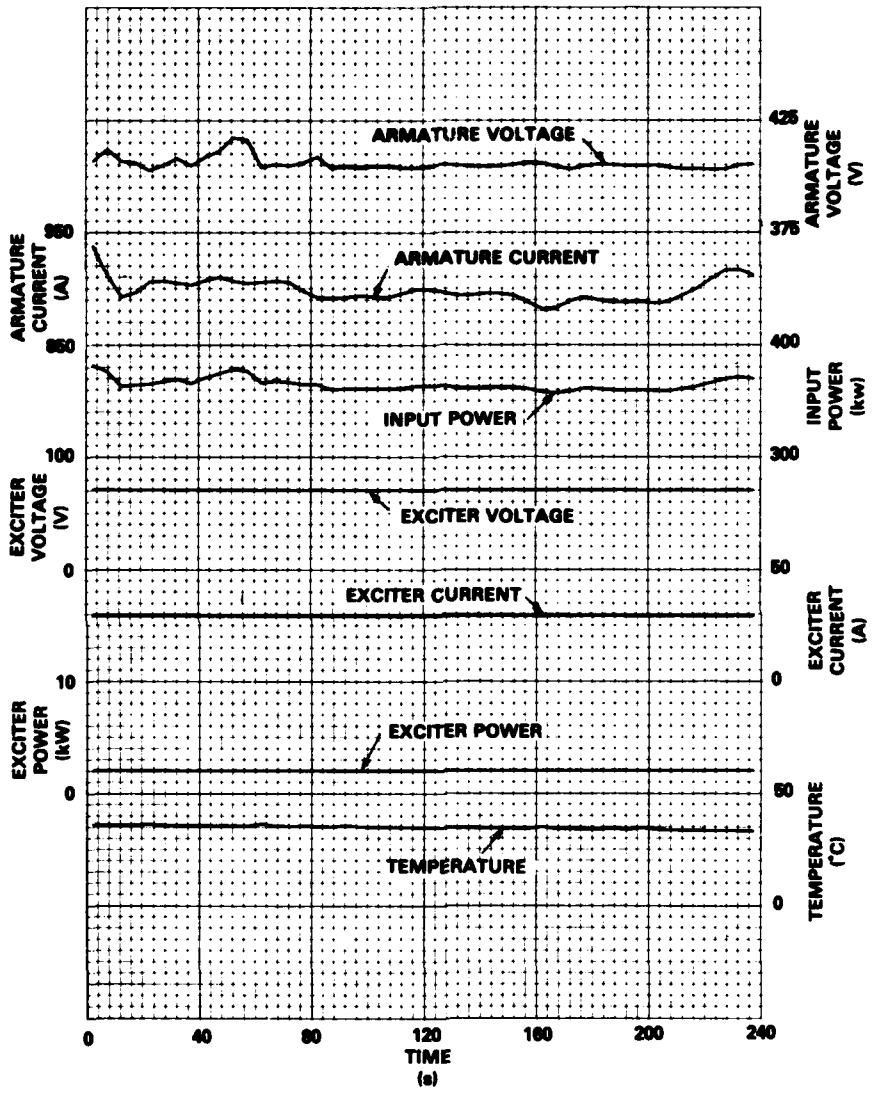


Figure 43 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 2231

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

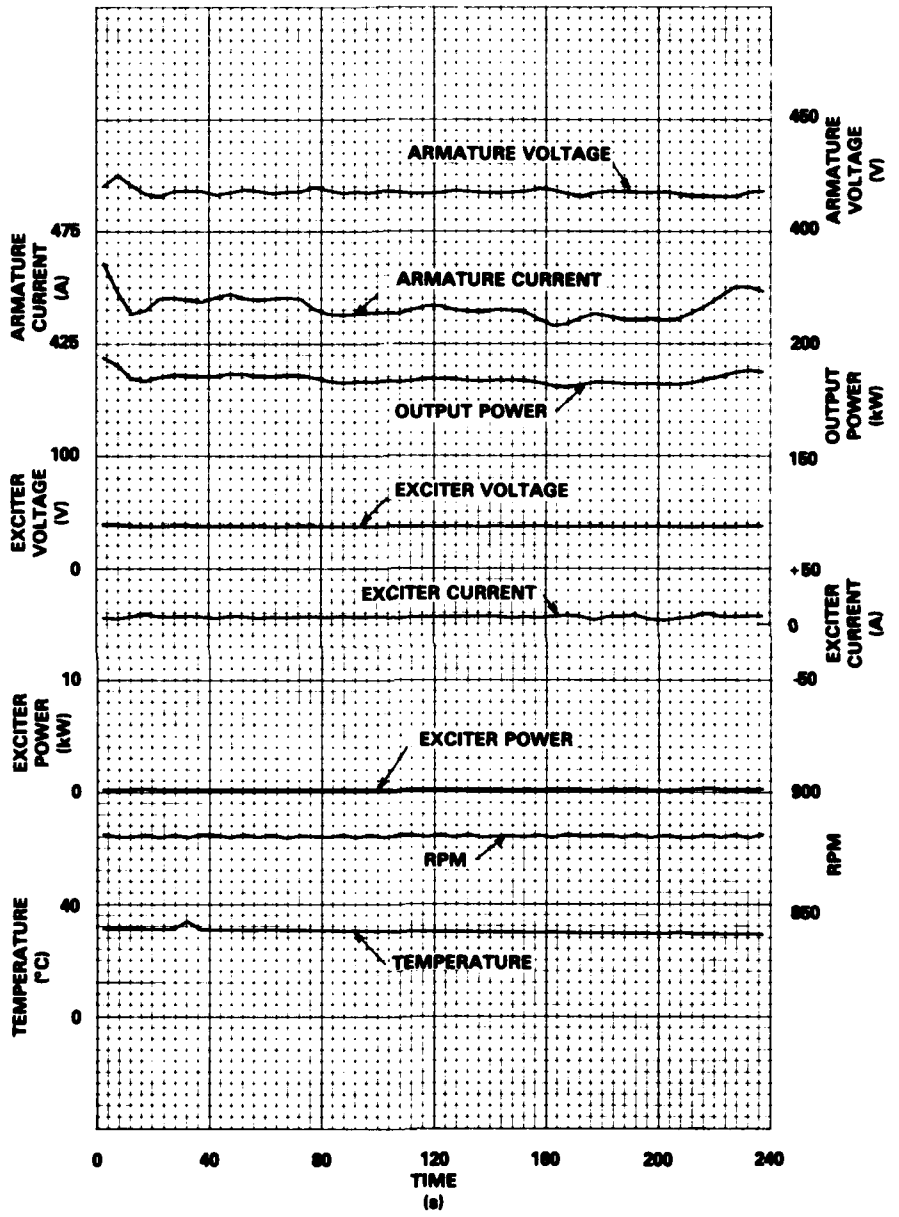


Figure 44 - Generator 1 Data Averaged Over Five-Second Periods, Run 2231

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITH ALL BUBBLERS**
2. **15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 1.0 knot**
4. **FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)**

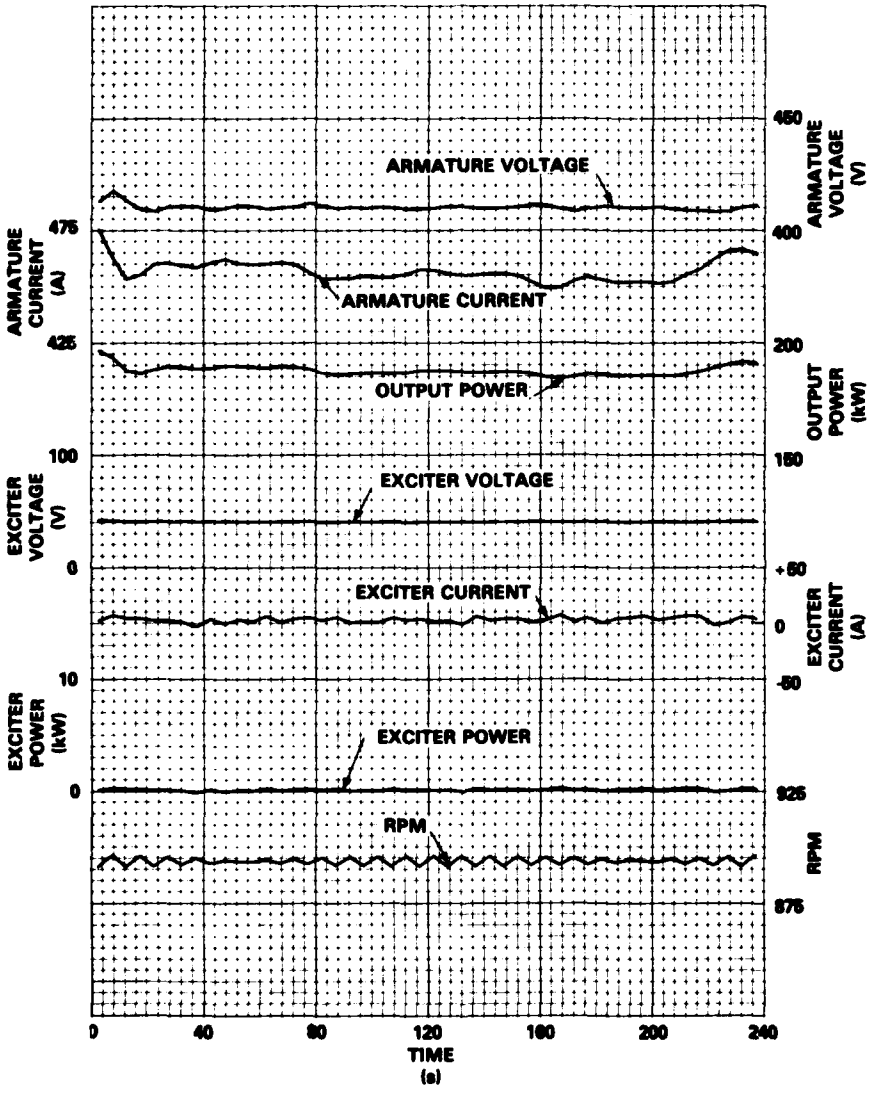


Figure 45 - Generator 2 Data Averaged Over Five-Second Periods, Run 2231

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

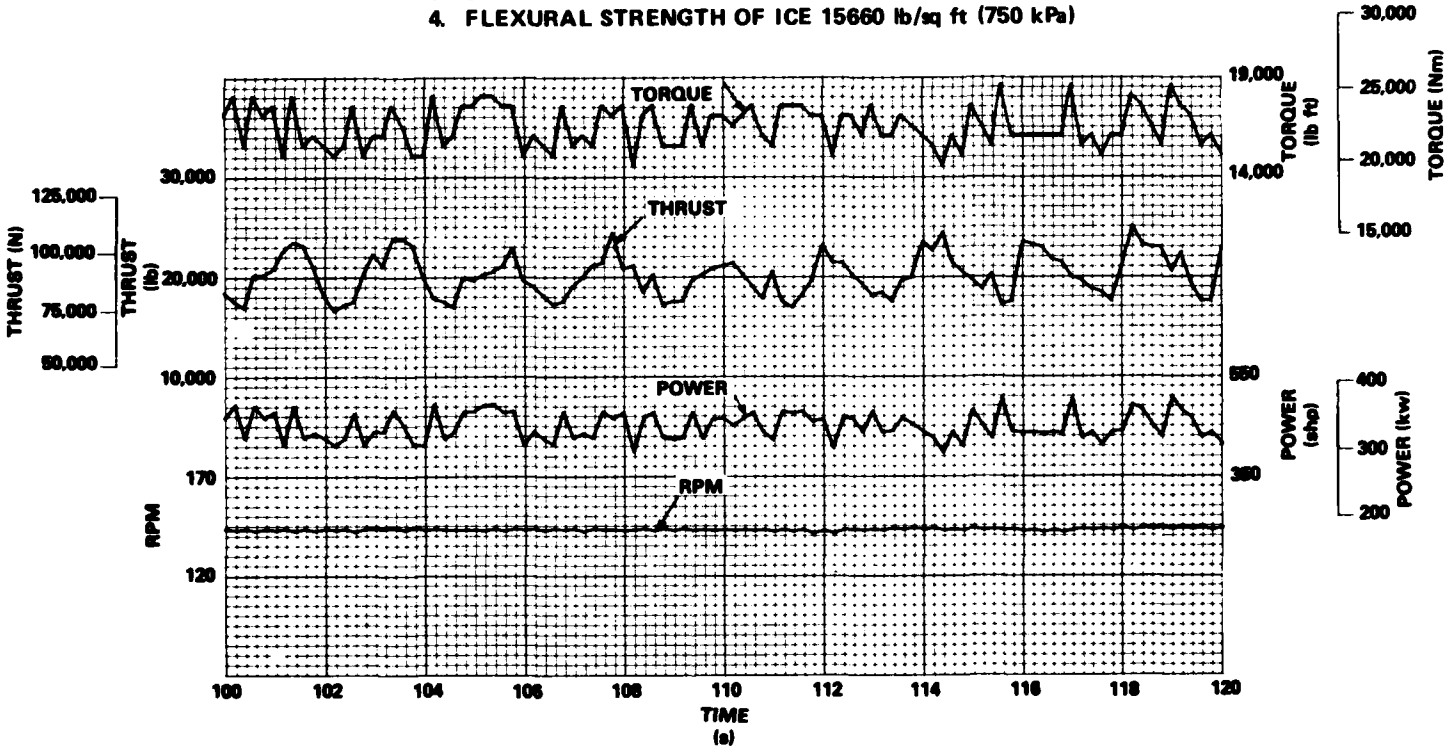


Figure 46 - Propeller Shaft Data, Five Samples per Second Plotted, Run 2231

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITH ALL BUBBLERS**
2. **15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 1.0 knot**
4. **FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)**

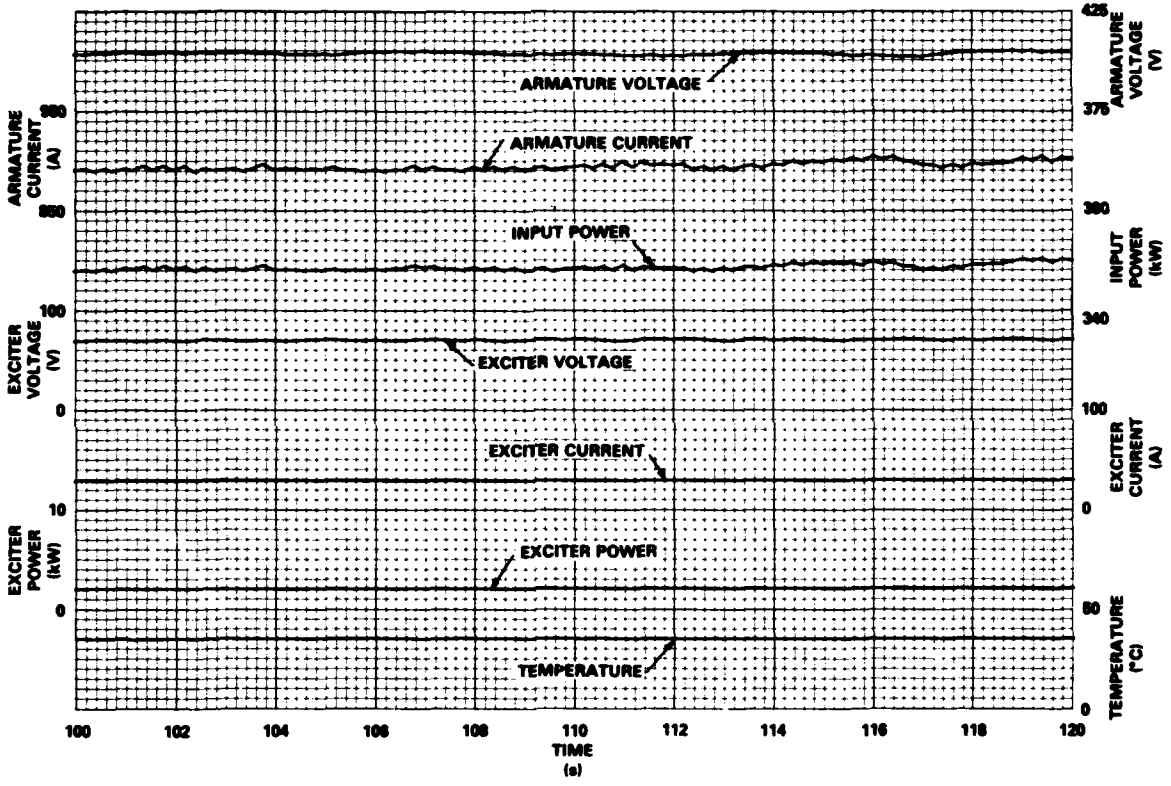


Figure 47 - Propulsion Motor Data, Five Samples per Second Plotted, Run 2231

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

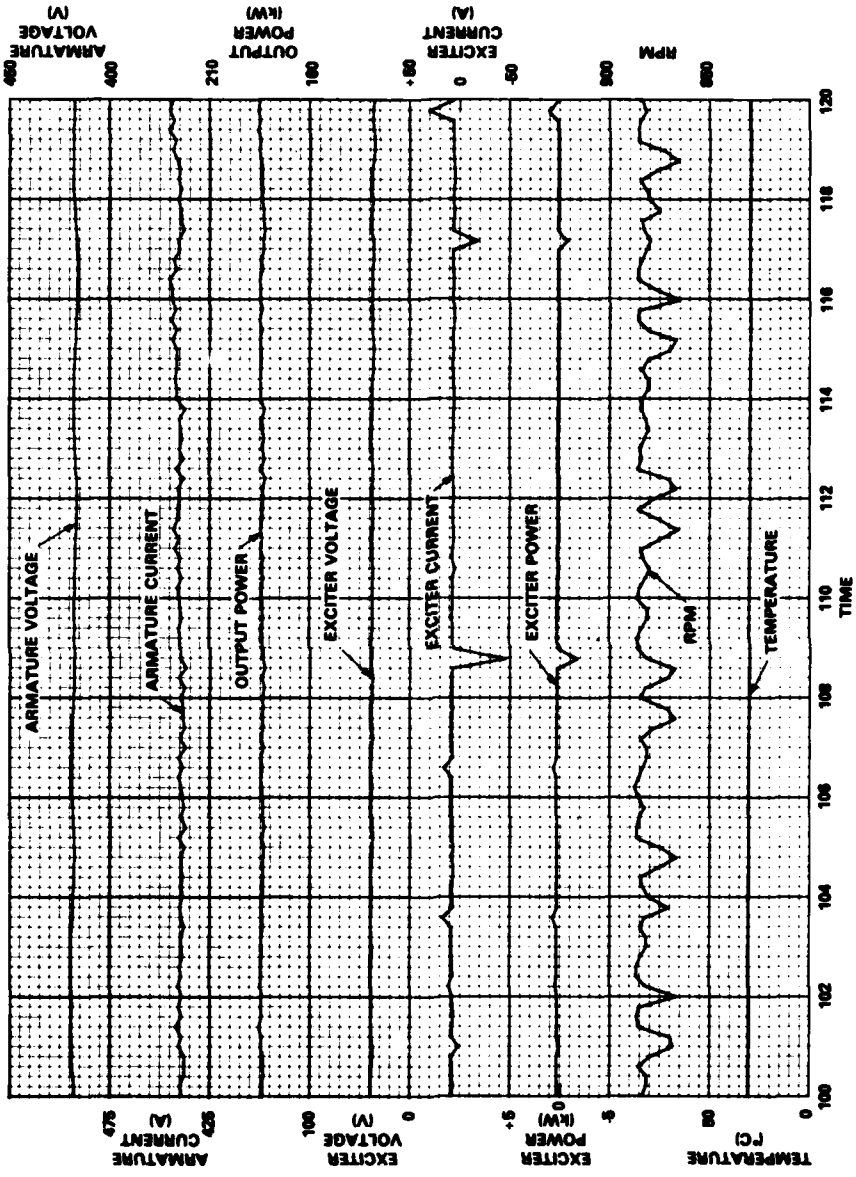


Figure 48 - Generator 1 Data, Five Samples per Second Plotted, Run 2231

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 15 in. (38.1 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 1.0 knot
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

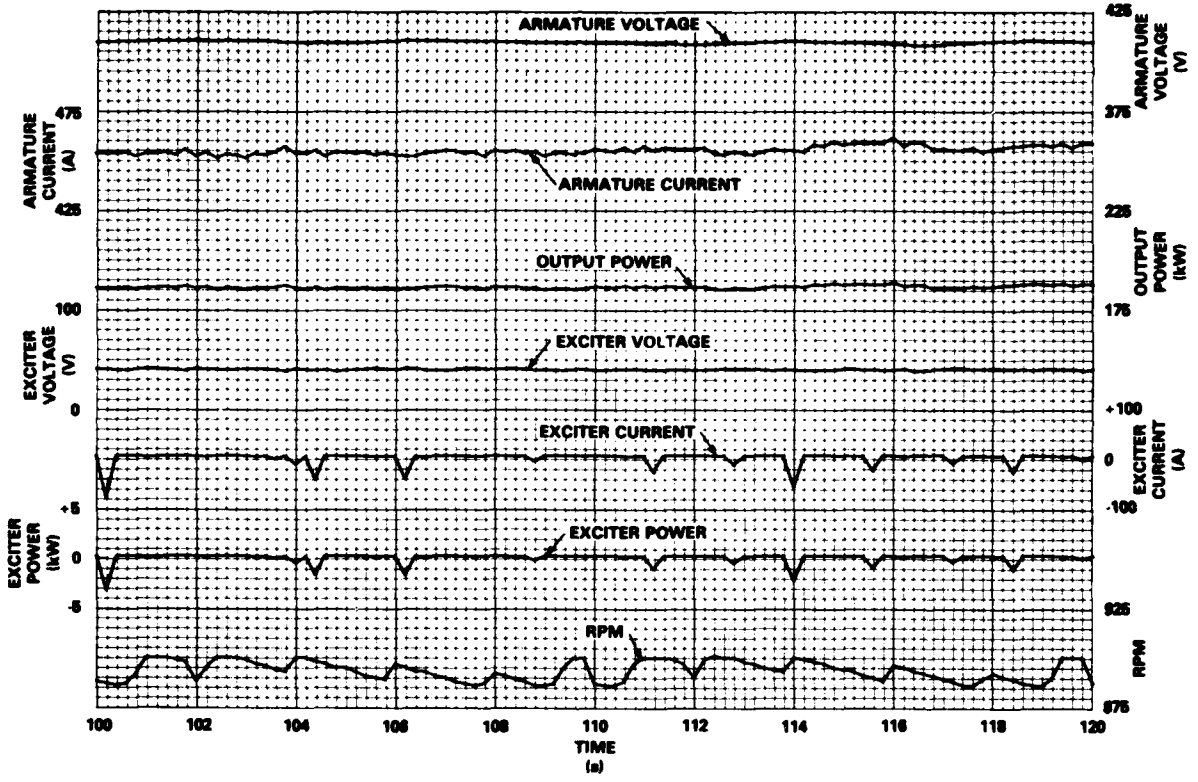


Figure 49 - Generator 2 Data, Five Samples per Second Plotted, Run 2231

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITH ALL BUBBLERS**
2. **16 in. (40.6 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW**
3. **SHIP SPEED 4.7 knots**
4. **FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)**

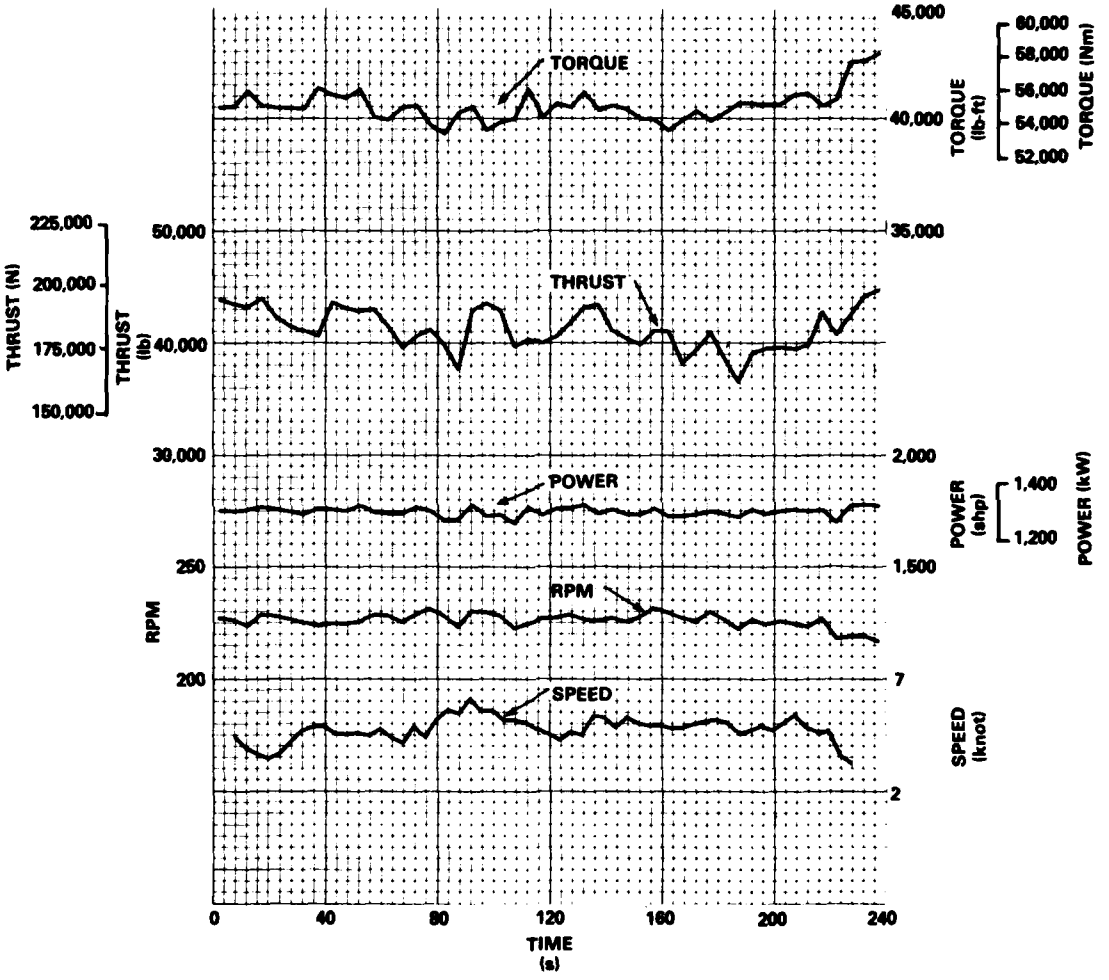


Figure 50 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 2221

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 16 in. (40.6 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 4.7 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

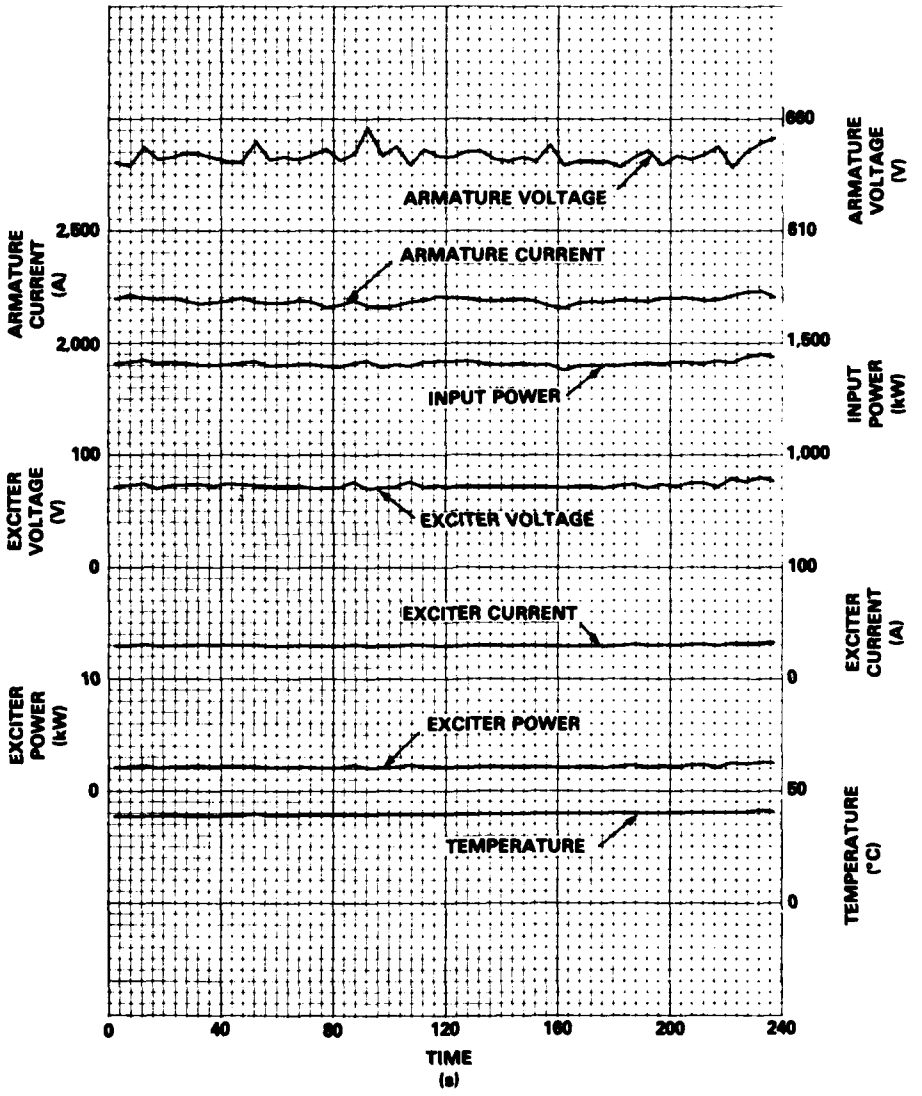


Figure 51 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 2221

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 16 in. (40.6 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 4.7 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

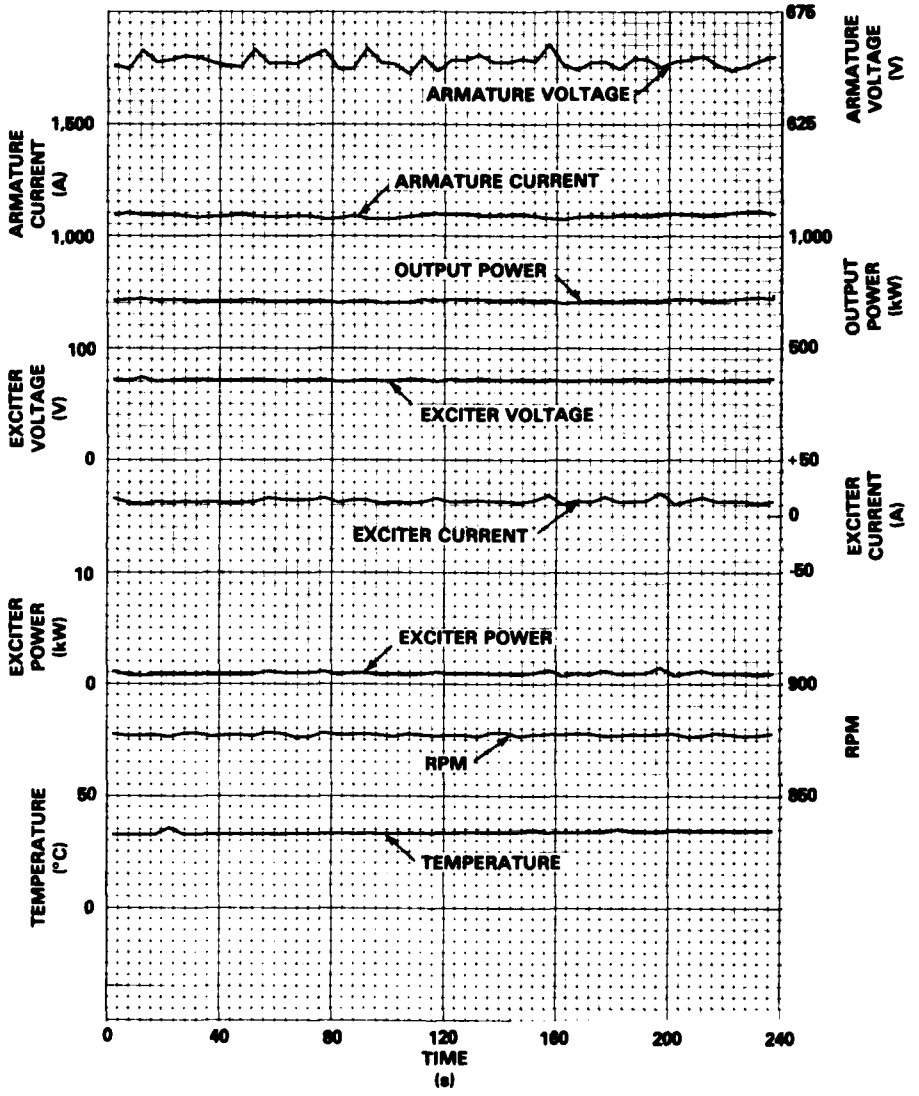


Figure 52 - Generator 1 Data Averaged Over Five-Second Periods, Run 2221

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 16 in. (40.6 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 4.7 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

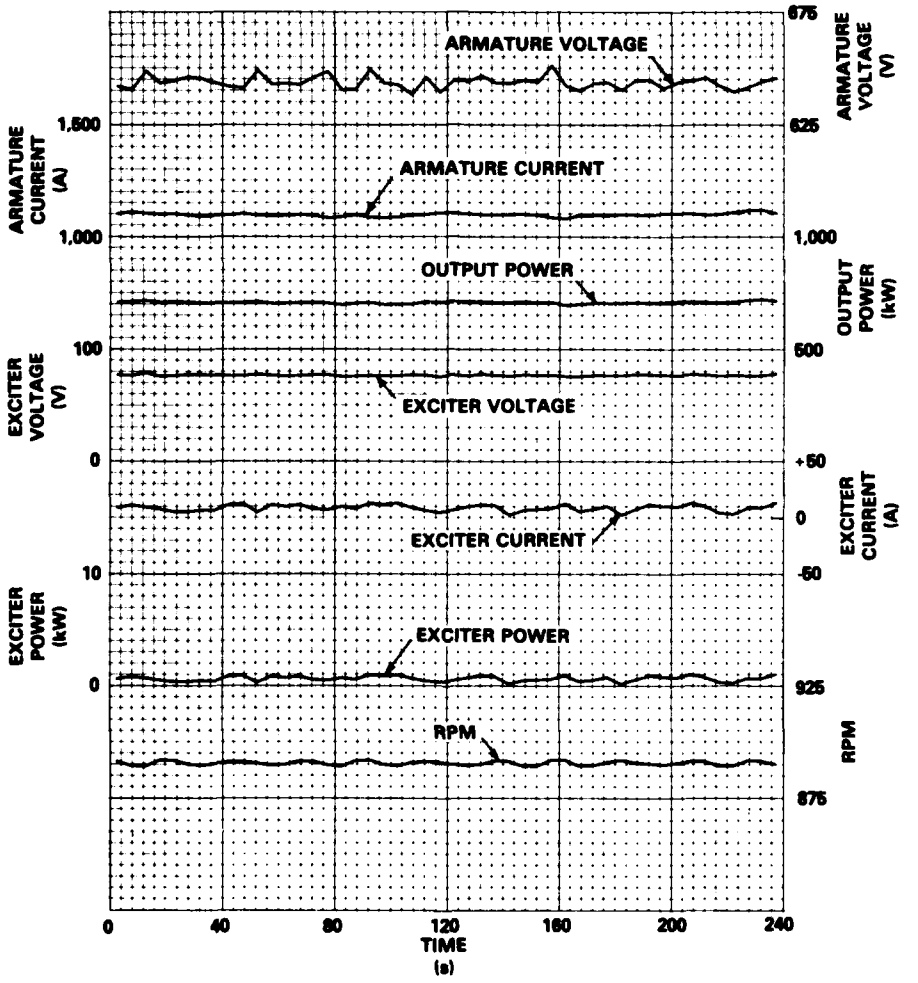


Figure 53 - Generator 2 Data Averaged Over Five-Second Periods, Run 2221

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 16 in. (40.6 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 4.7 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

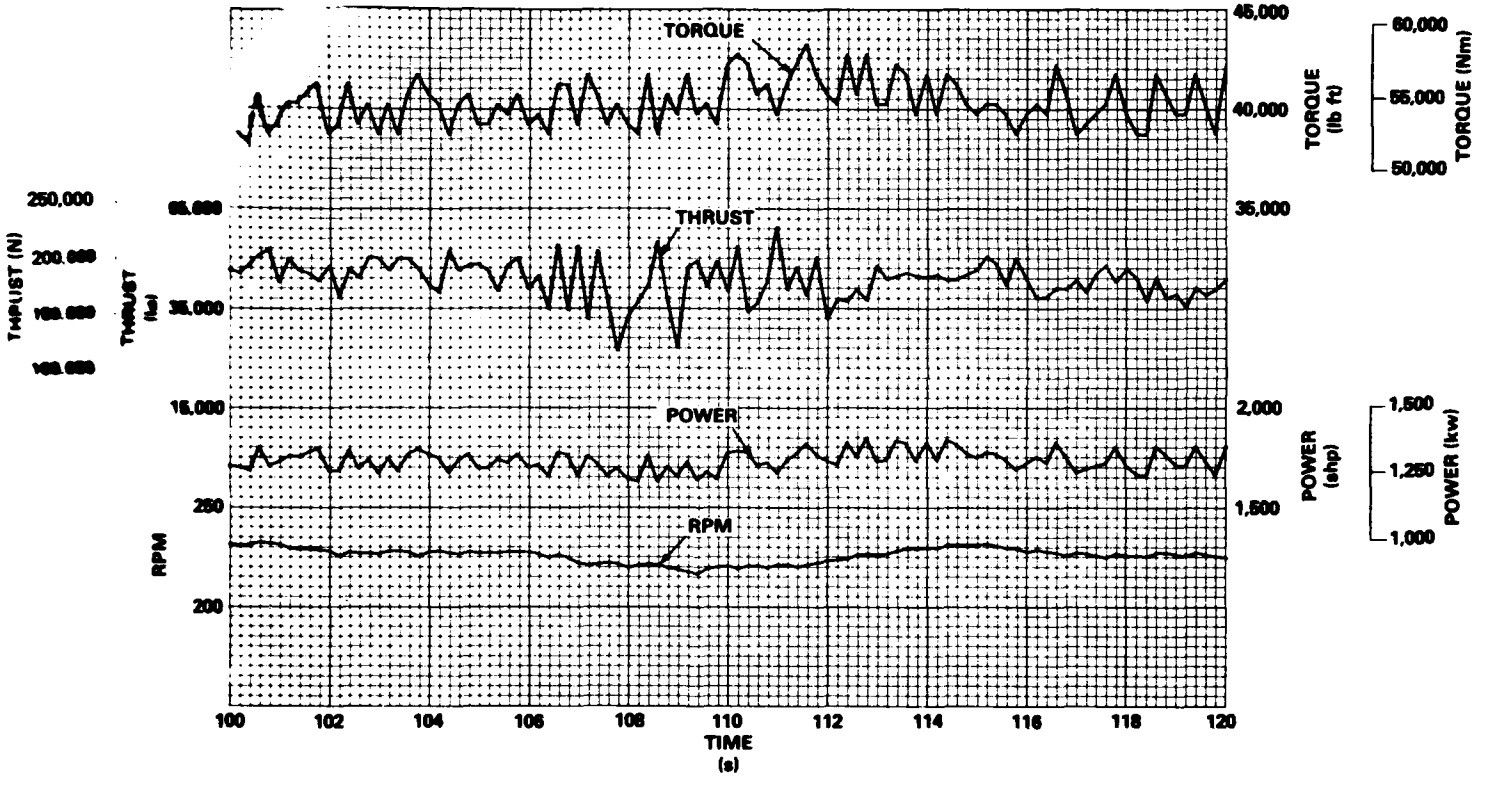


Figure 54 - Propeller Shaft Data, Five Samples per Second Plotted, Run 2221

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 16 in. (40.6 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 4.7 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

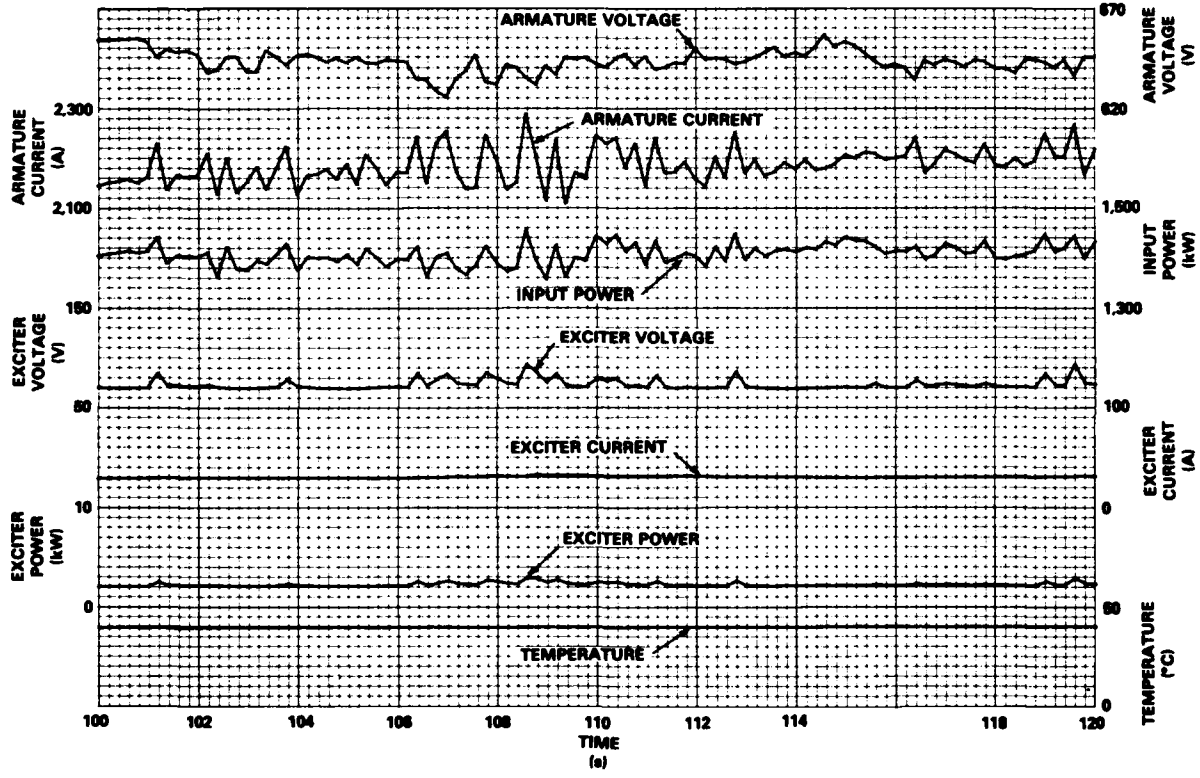


Figure 55 - Propulsion Motor Data, Five Samples per Second Plotted, Run 2221

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 16 in. (40.6 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 4.7 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

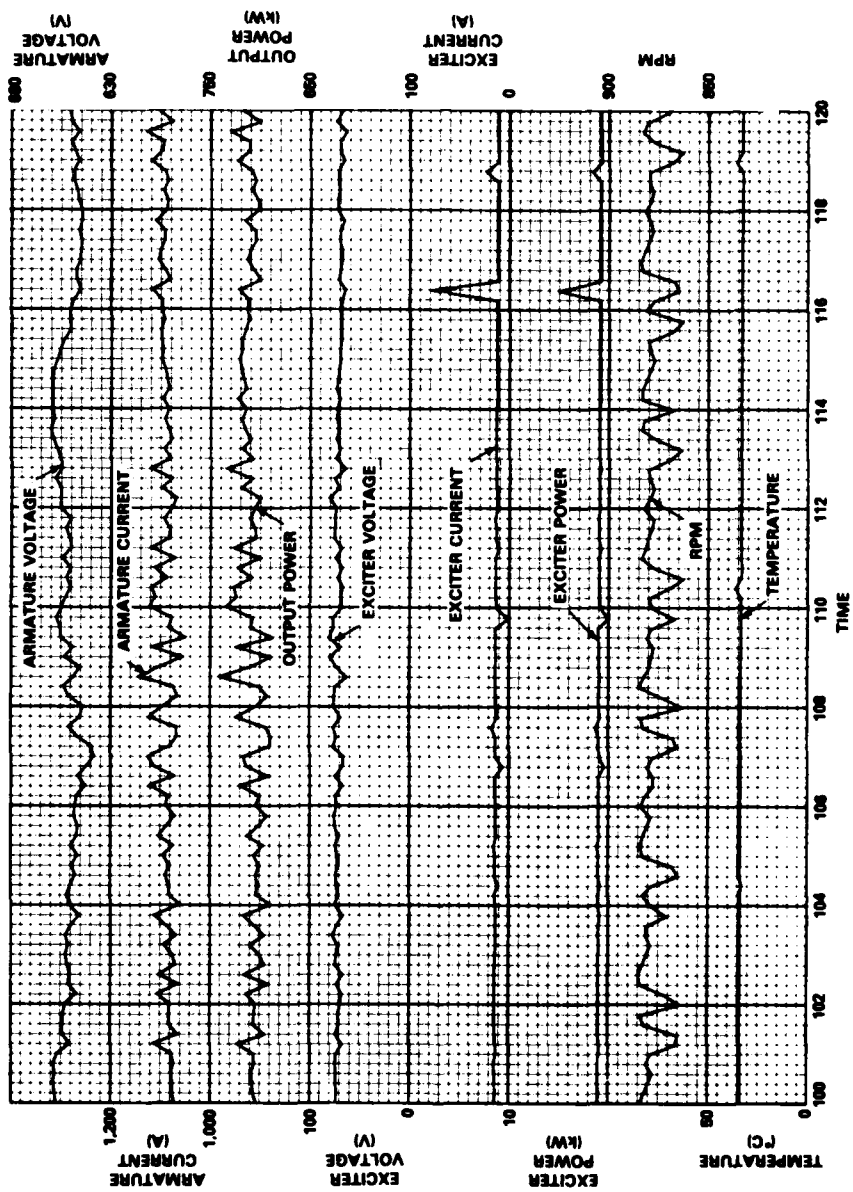


Figure 56 - Generator 1 Data, Five Samples per Second Plotted, Run 2221

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 16 in. (40.6 cm) OF ICE WITH 4 in. (10.2 cm) OF SNOW
3. SHIP SPEED 4.7 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

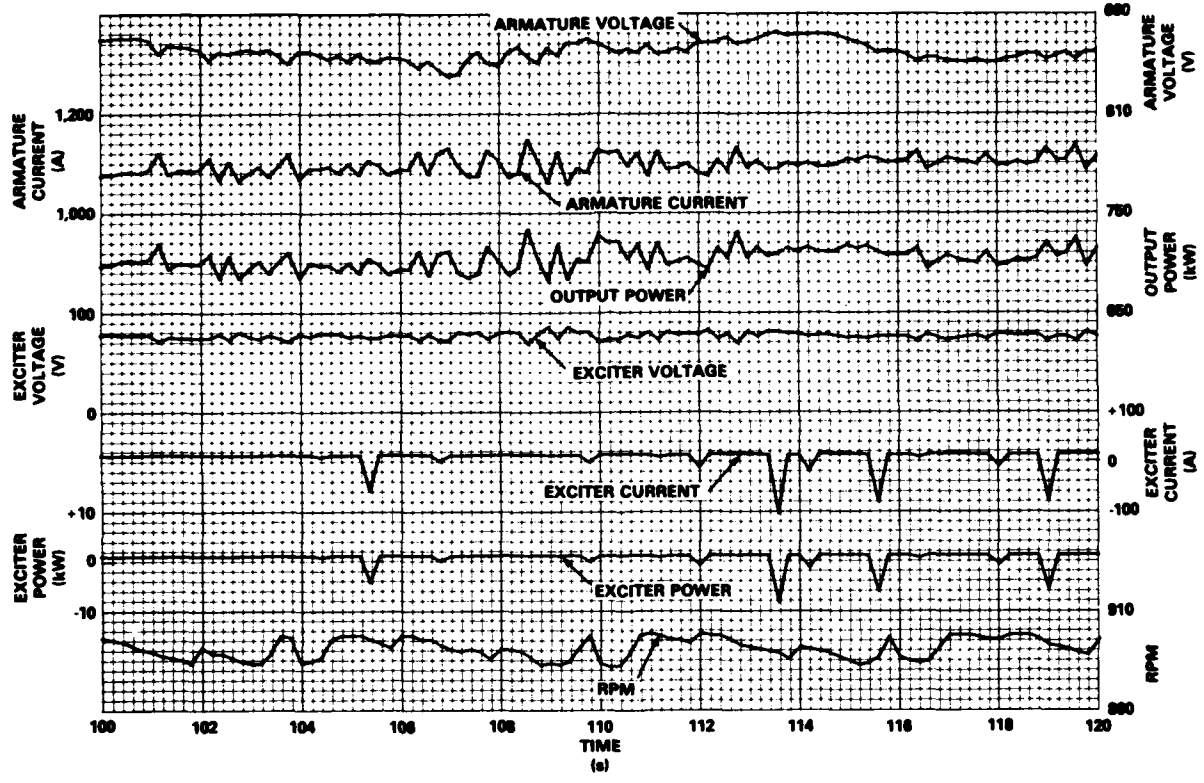


Figure 57 - Generator 2 Data, Five Samples per Second Plotted, Run 2221

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 13 in. (33.0 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 6.5 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

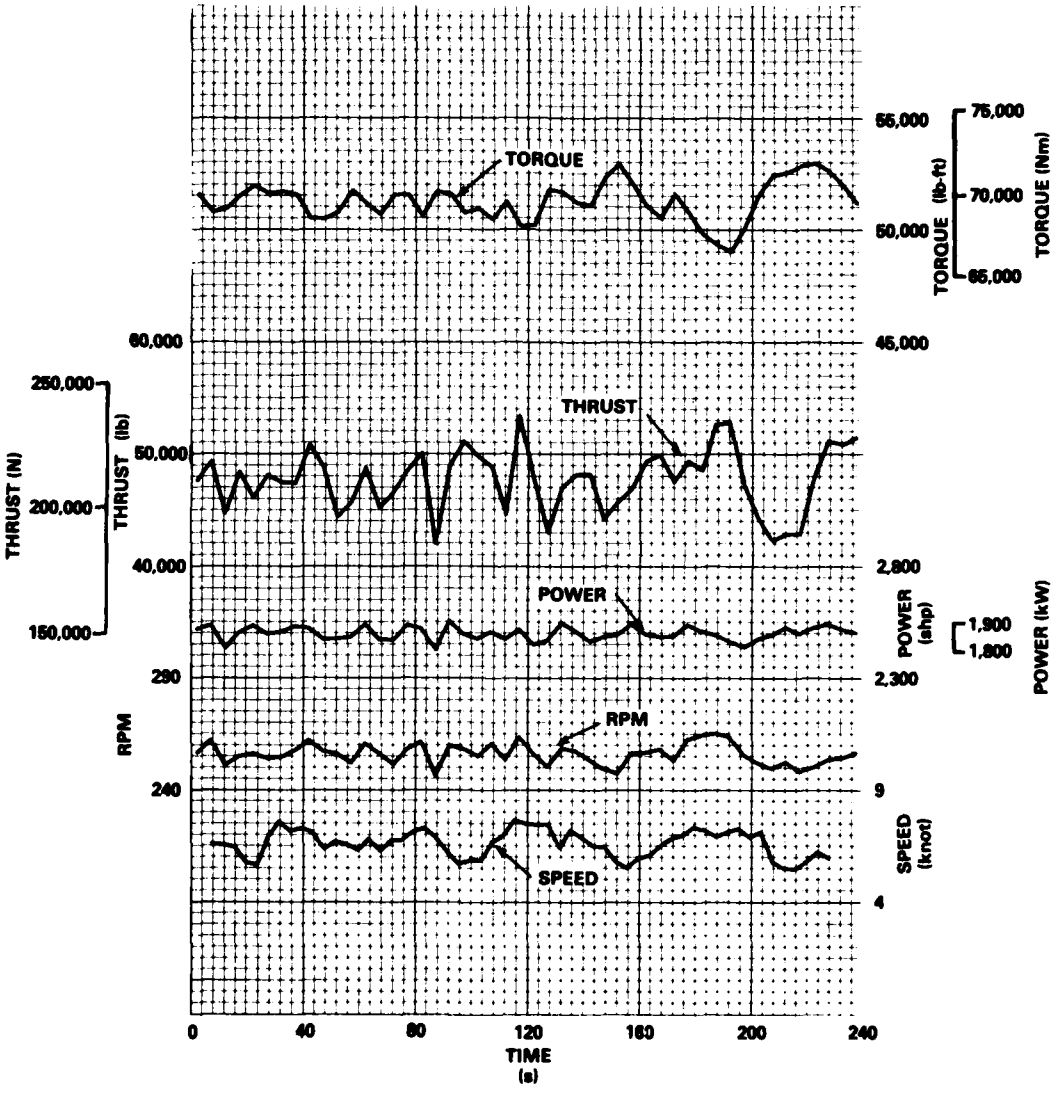


Figure 58 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 2210

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 13 in. (33.0 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 6.5 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

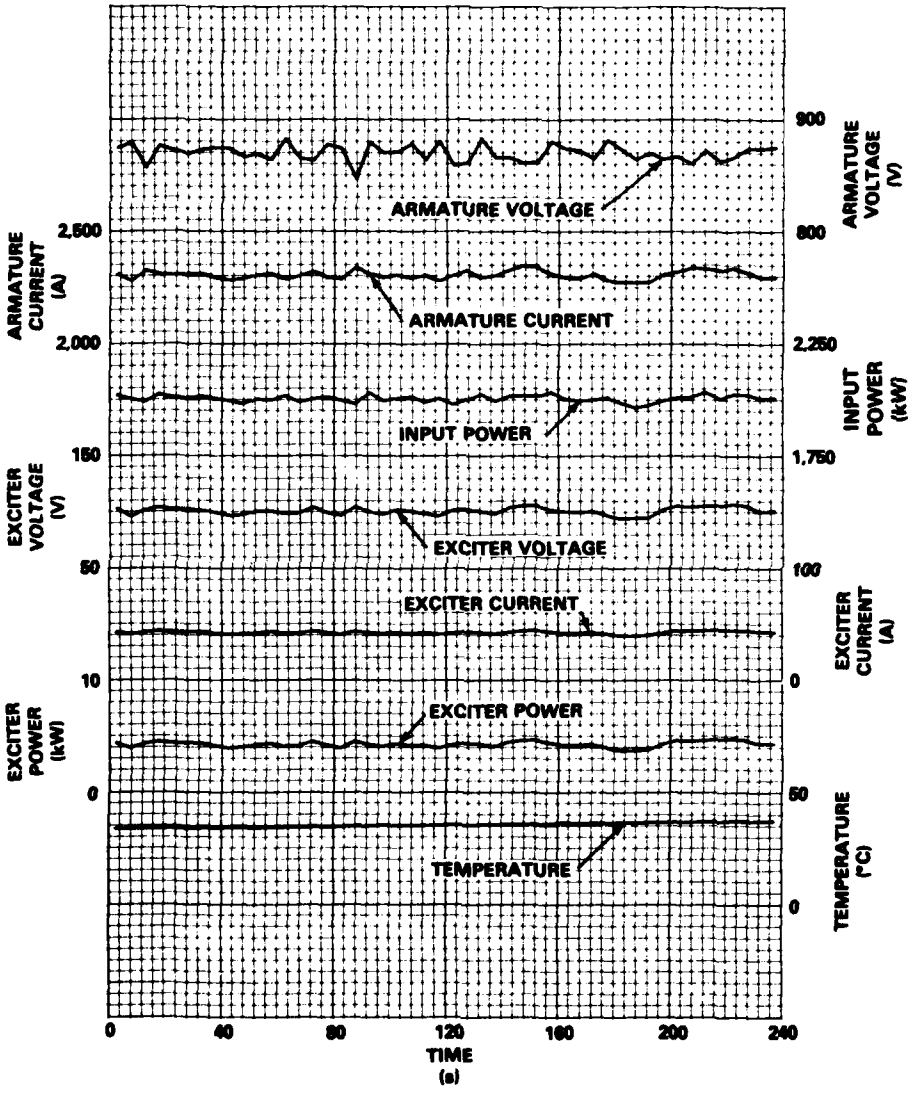


Figure 59 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 2210

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 13 in. (33.0 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 6.5 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

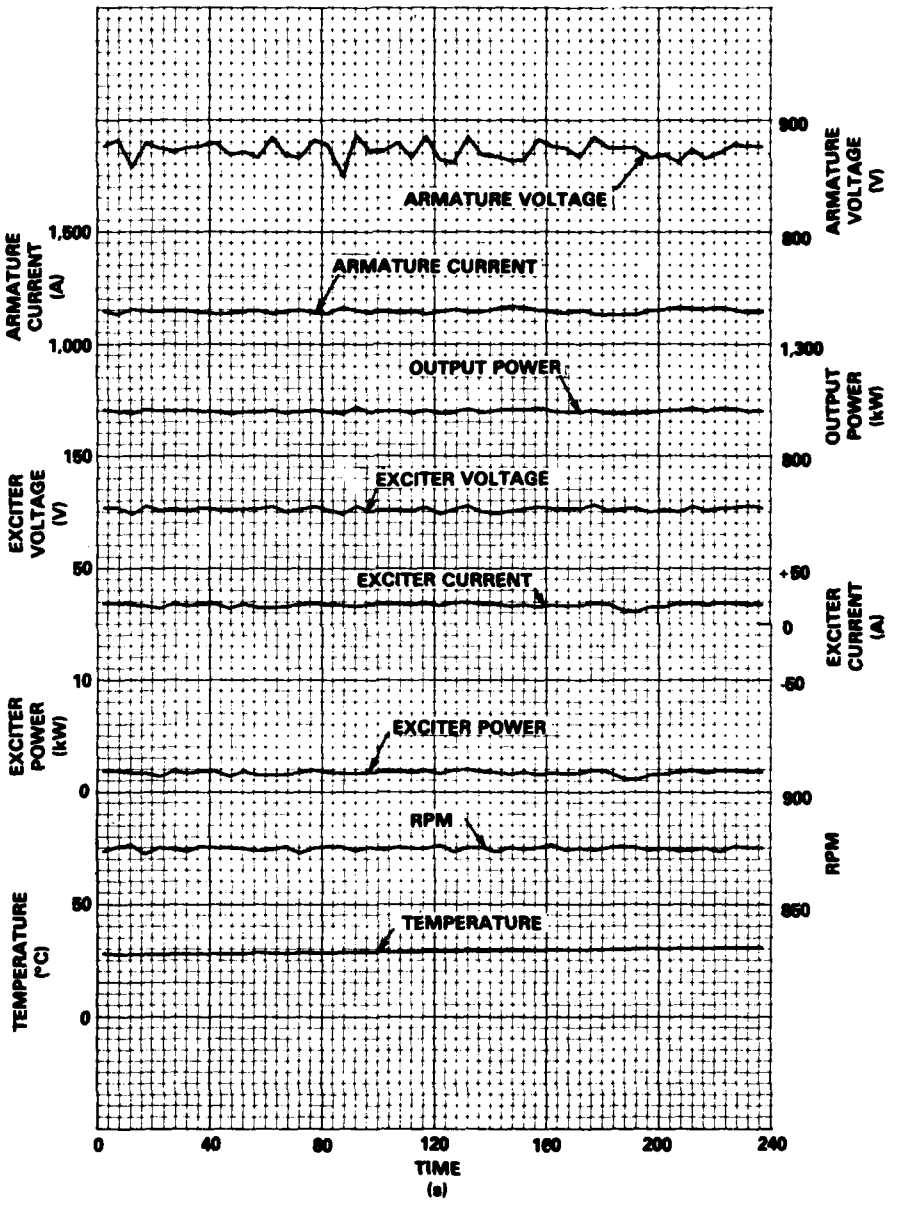


Figure 60 - Generator 1 Data Averaged Over Five-Second Periods, Run 2210

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITH ALL BUBBLERS**
2. **13 in. (33.0 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 6.5 knots**
4. **FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)**

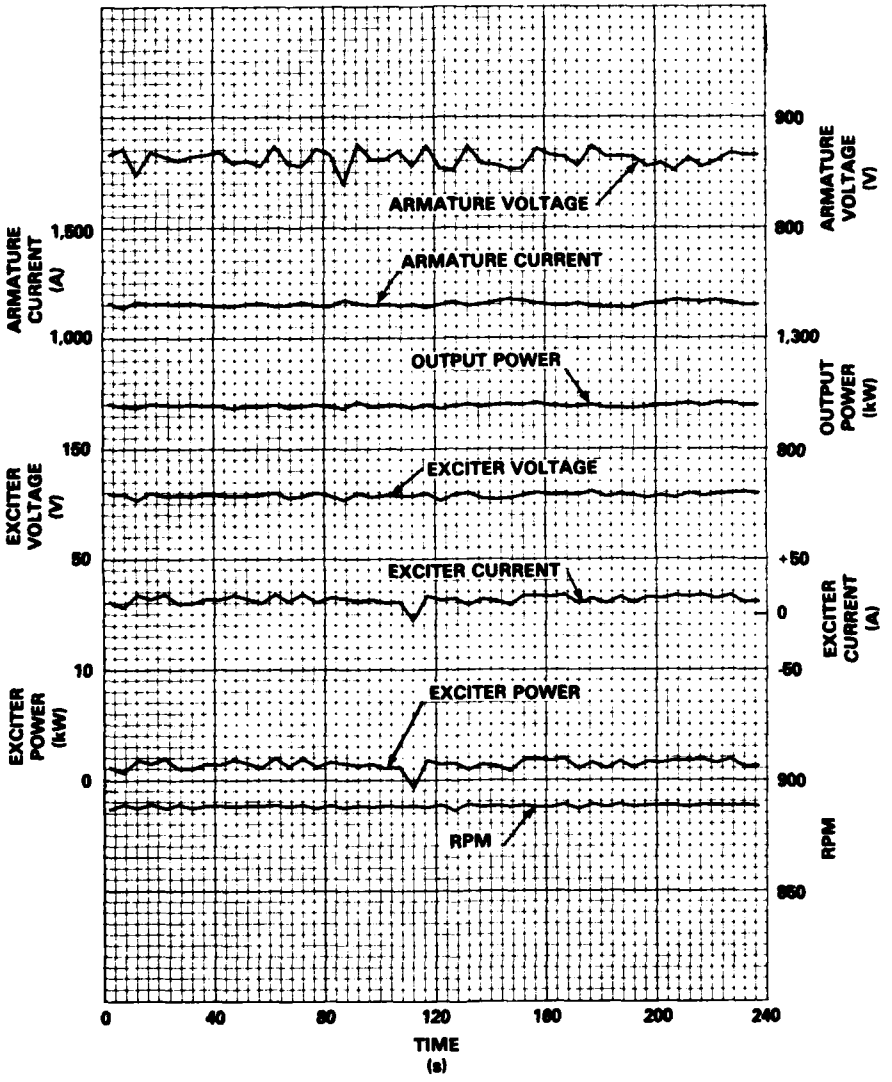


Figure 61 - Generator 2 Data Averaged Over Five-Second Periods, Run 2210

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 13 in. (33.0 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 6.5 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

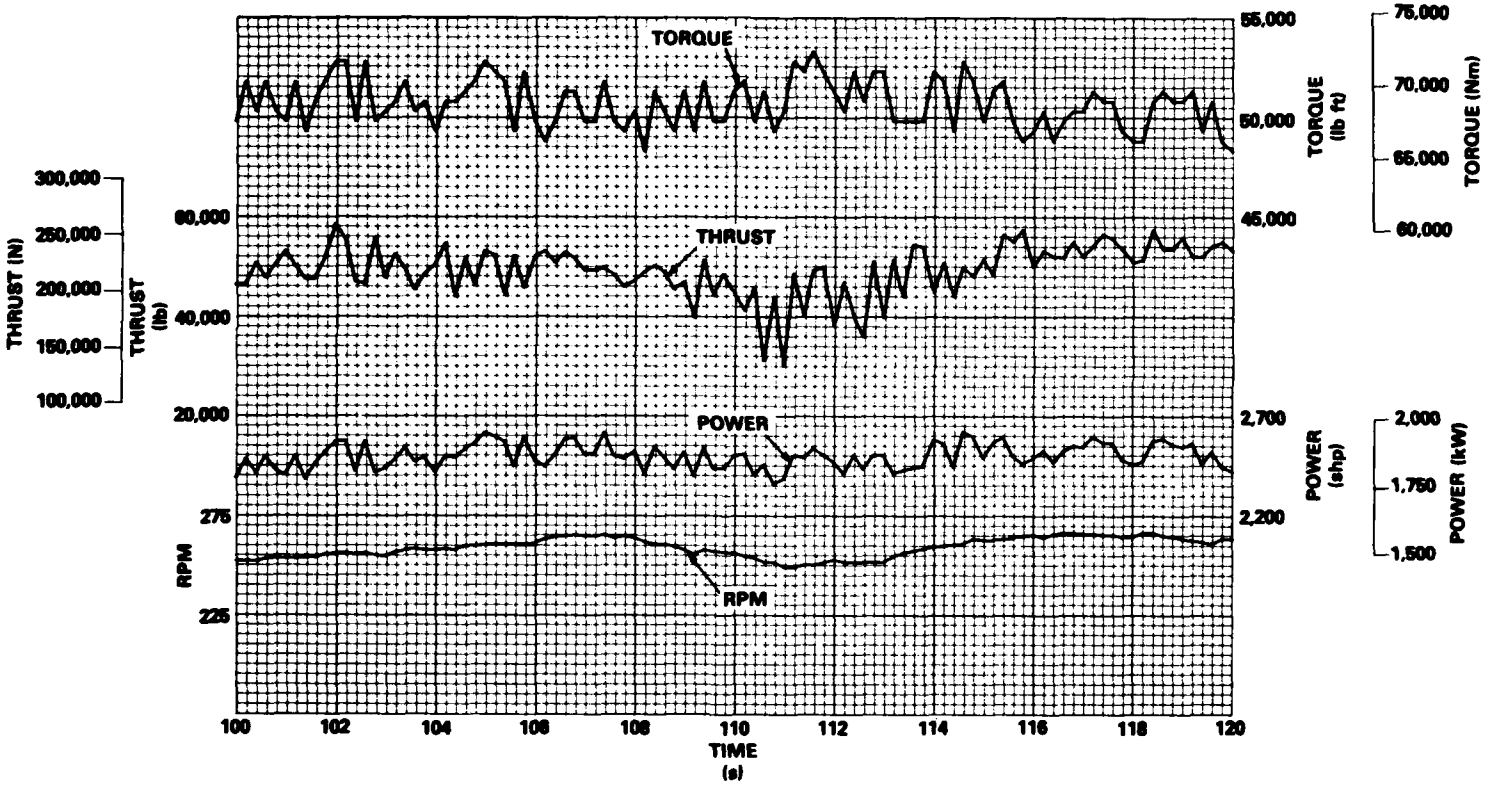


Figure 62 - Propeller Shaft Data, Five Samples per Second Plotted, Run 2210

TRIAL CONDITIONS:

1. LEVEL ICE BREAKING WITH ALL BUBBLERS
2. 13 in. (33.0 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW
3. SHIP SPEED 6.5 knots
4. FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)

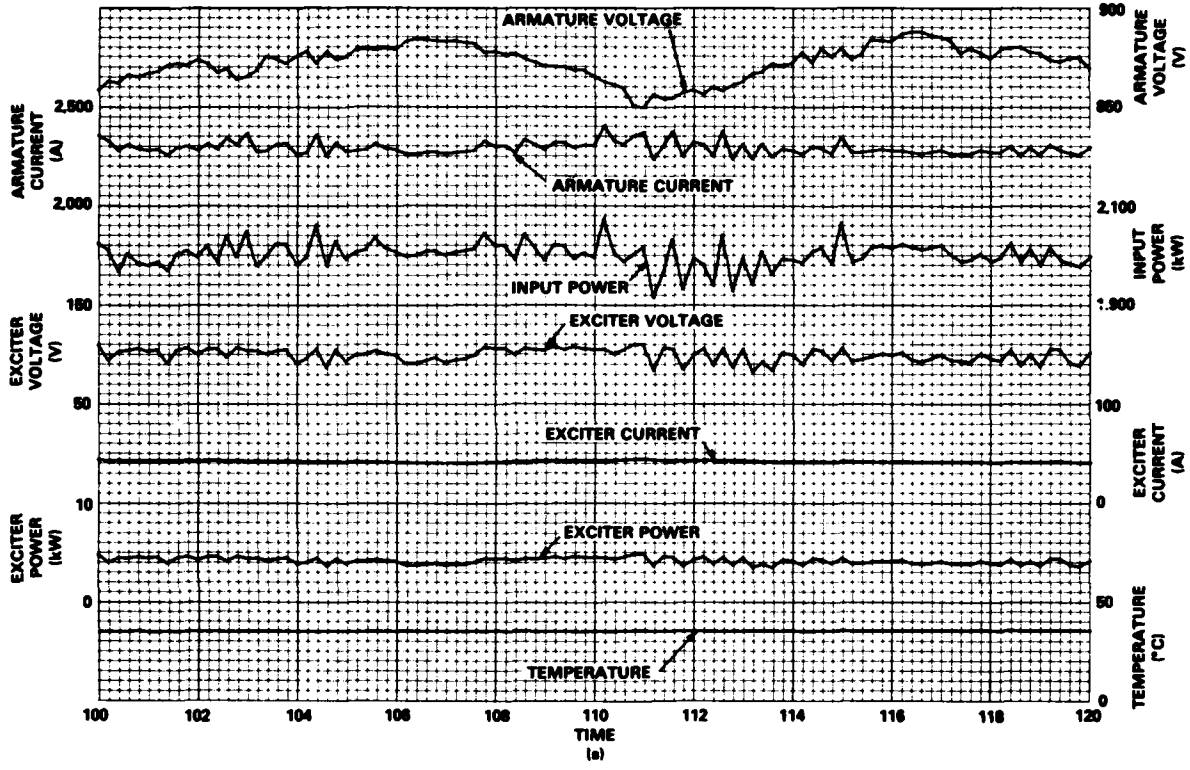


Figure 63 - Propulsion Motor Data, Five Samples per Second Plotted, Run 2210

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITH ALL BUBBLERS**
2. **13 in. (33.0 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 6.5 knots**
4. **FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)**



Figure 64 - Generator 1 Data, Five Samples per Second Plotted, Run 2210

TRIAL CONDITIONS:

1. **LEVEL ICE BREAKING WITH ALL BUBBLERS**
2. **13 in (33.0 cm) OF ICE WITH 3 in. (7.6 cm) OF SNOW**
3. **SHIP SPEED 6.5 knots**
4. **FLEXURAL STRENGTH OF ICE 15660 lb/sq ft (750 kPa)**

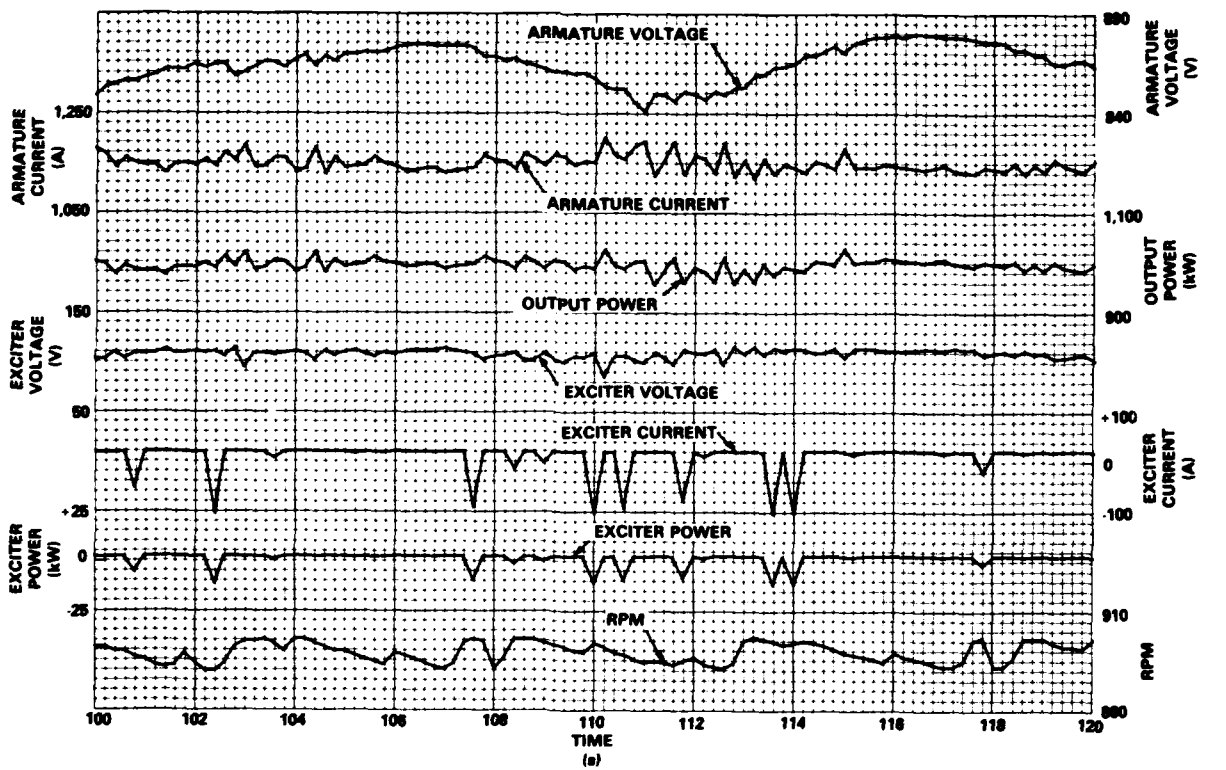


Figure 65 - Generator 2 Data, Five Samples per Second Plotted, Run 2210

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 2.7 knots

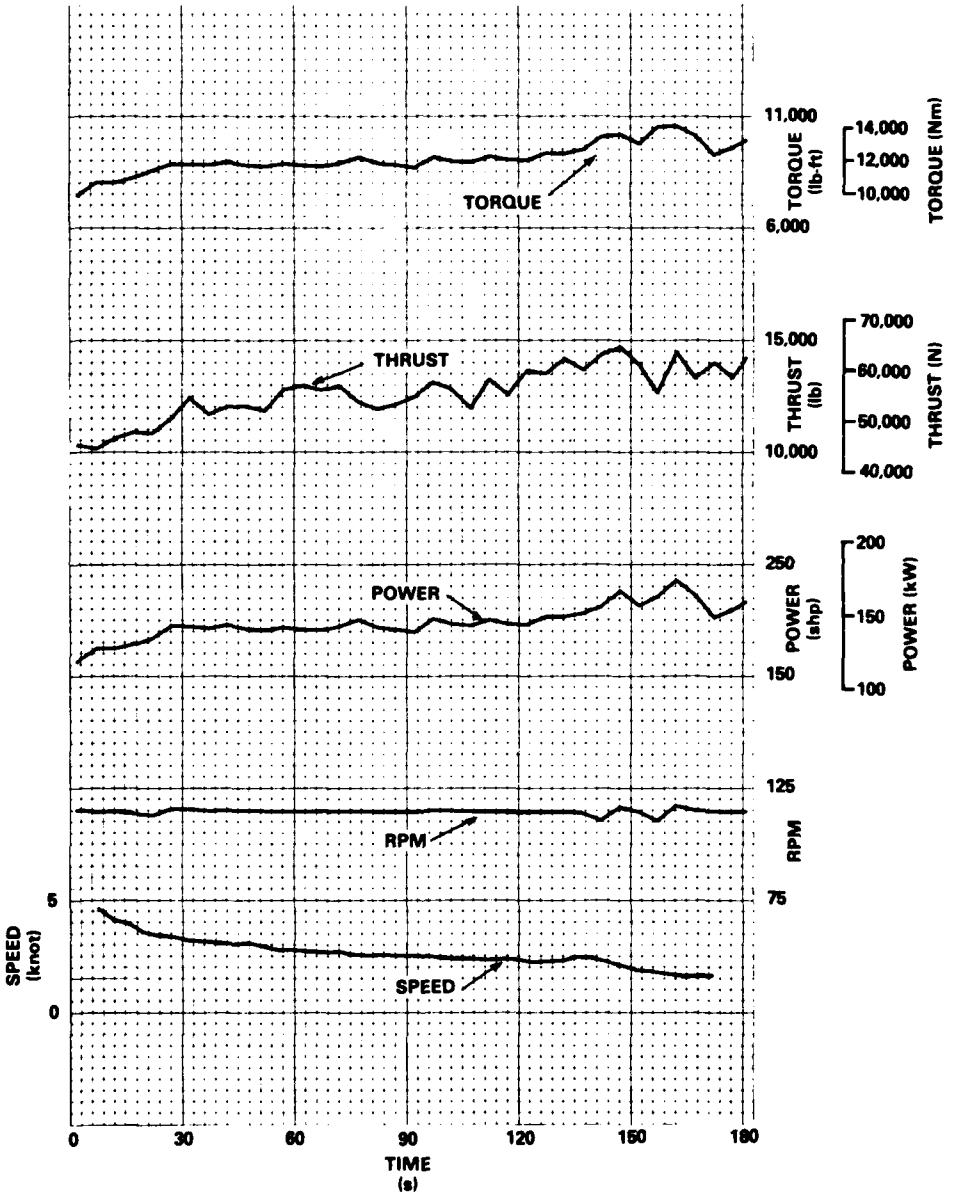


Figure 66 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 3520

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 2.7 knots

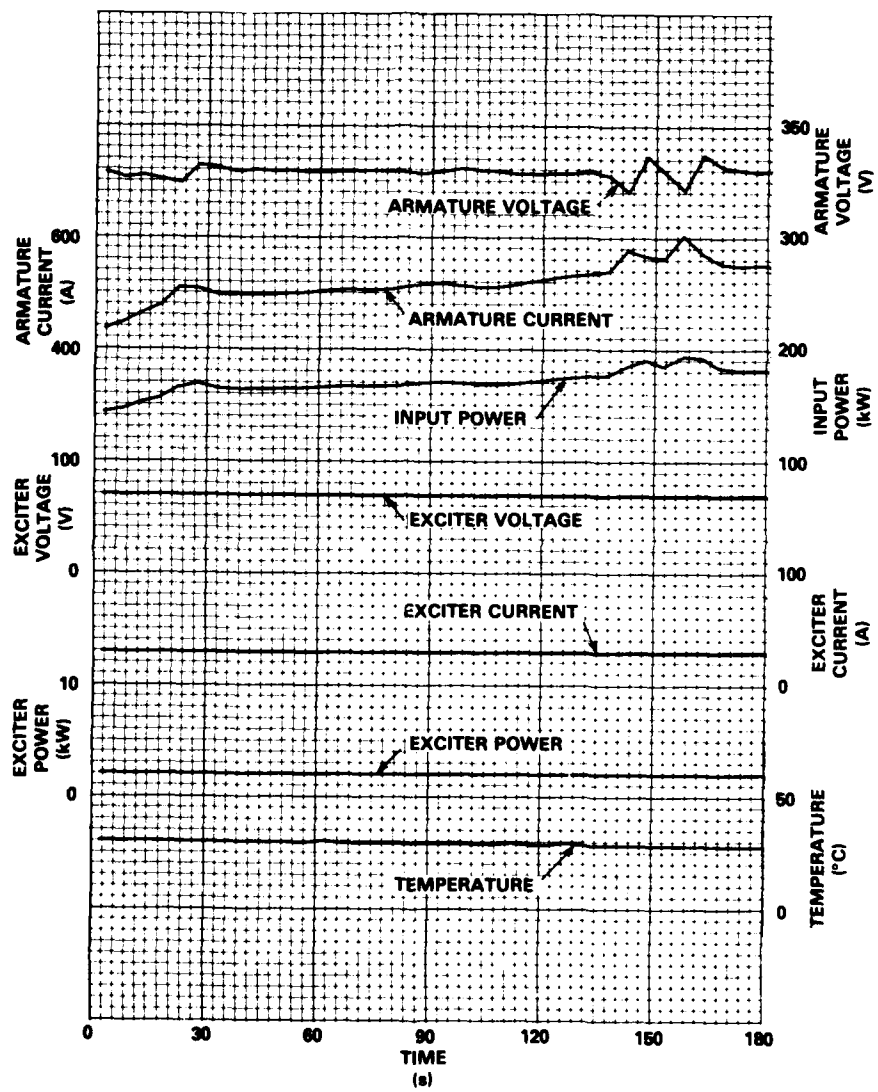
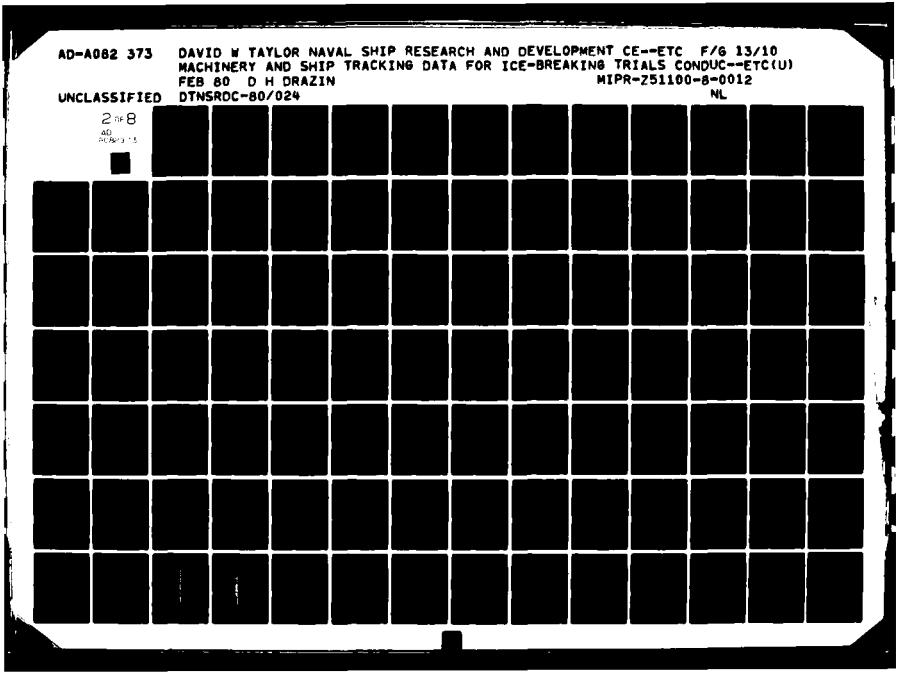
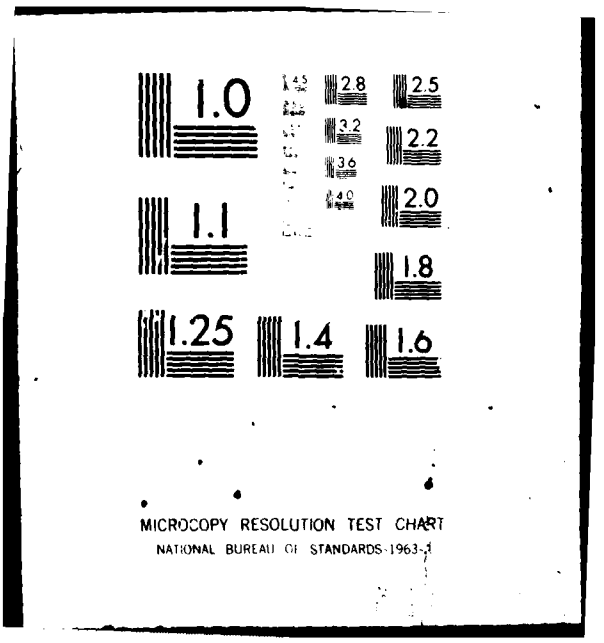


Figure 67 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 3520

AD-A082 373 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUC--ETC(U)
FEB 80 D H DRAZIN MIPR-Z51100-8-0012
UNCLASSIFIED DTNSRDC-80/024 NL




1.0
2.8
2.5
3.2
2.2
3.6
4.0
2.0
1.1
1.8
1.25
1.4
1.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 2.7 knots**

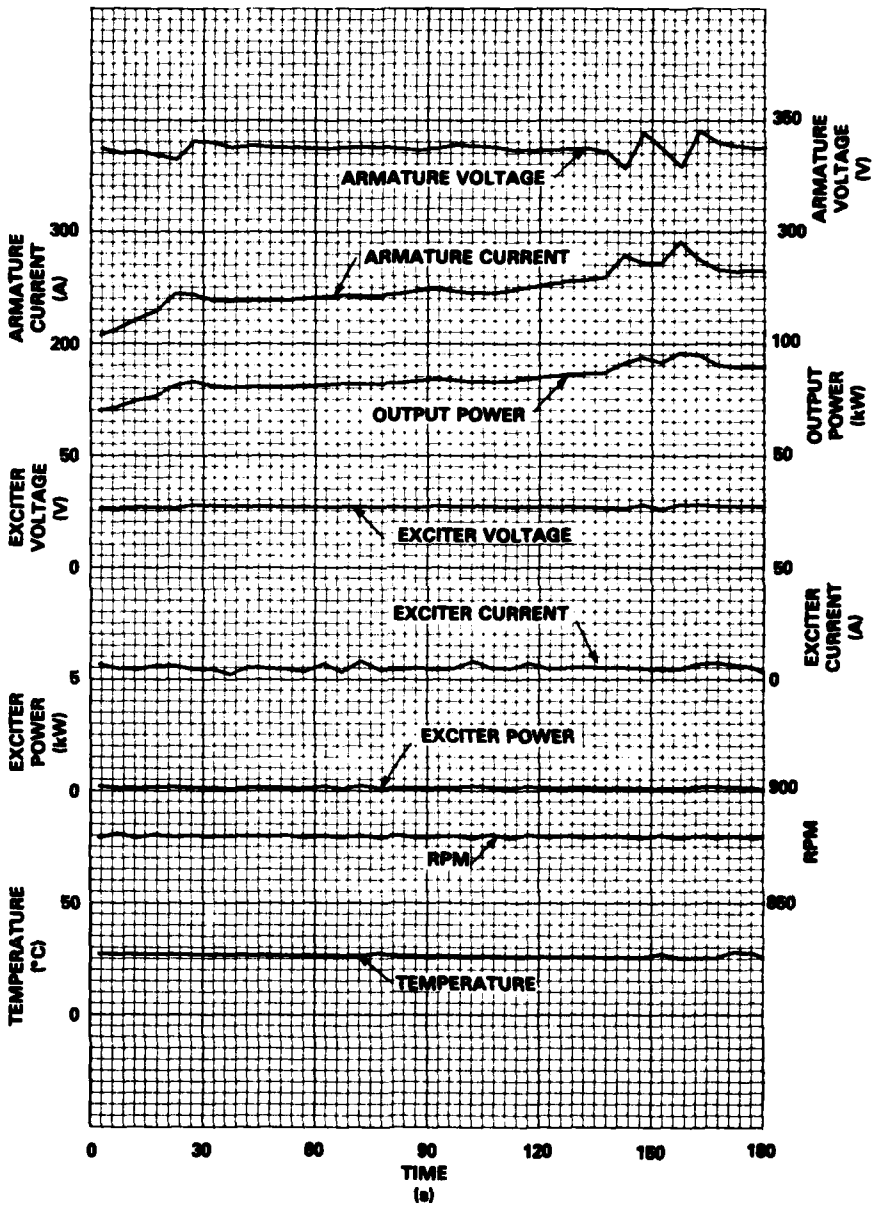


Figure 68 - Generator 1 Data Averaged Over Five-Second Periods, Run 3520

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 2.7 knots**

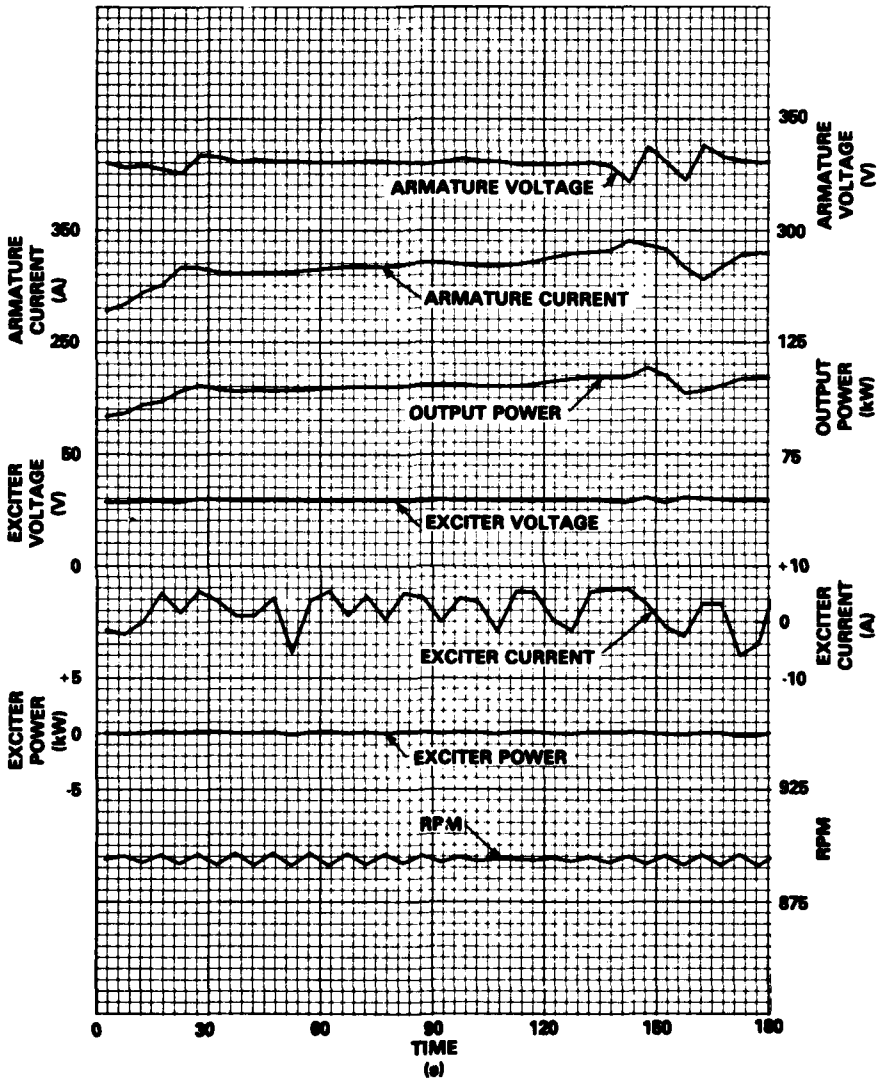


Figure 69 - Generator 2 Data Averaged Over Five-Second Periods, Run 3520

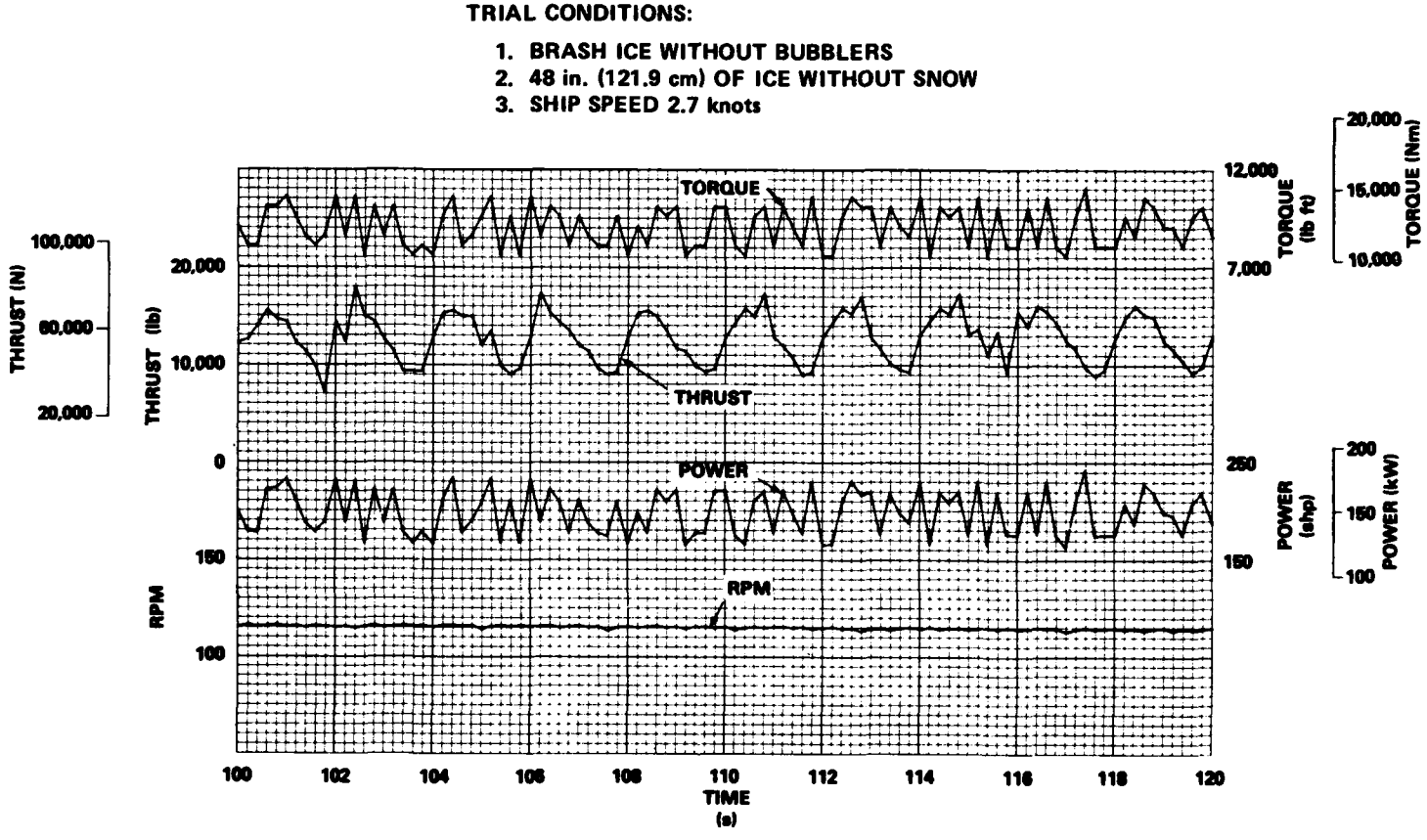


Figure 70 - Propeller Shaft Data, Five Samples per Second Plotted, Run 3520

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 2.7 knots**

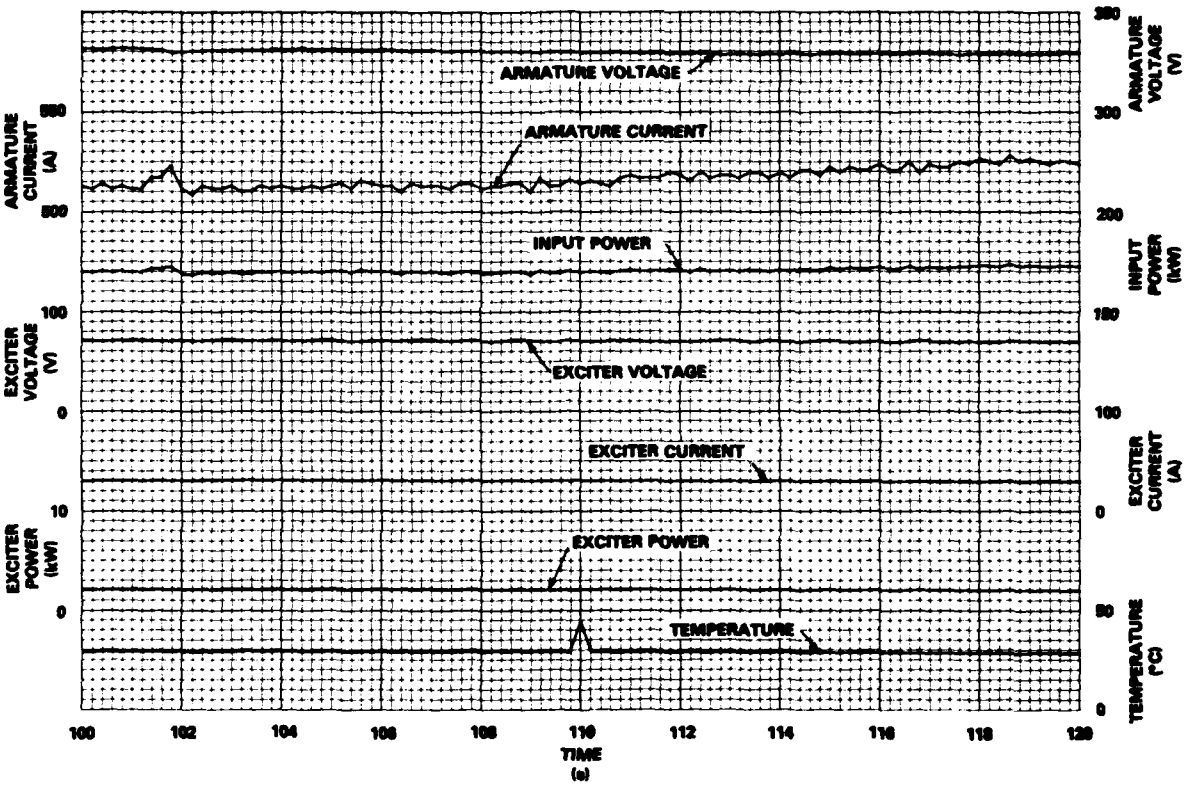


Figure 71 - Propulsion Motor Data, Five Samples per Second Plotted, Run 3520

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 2.7 knots**

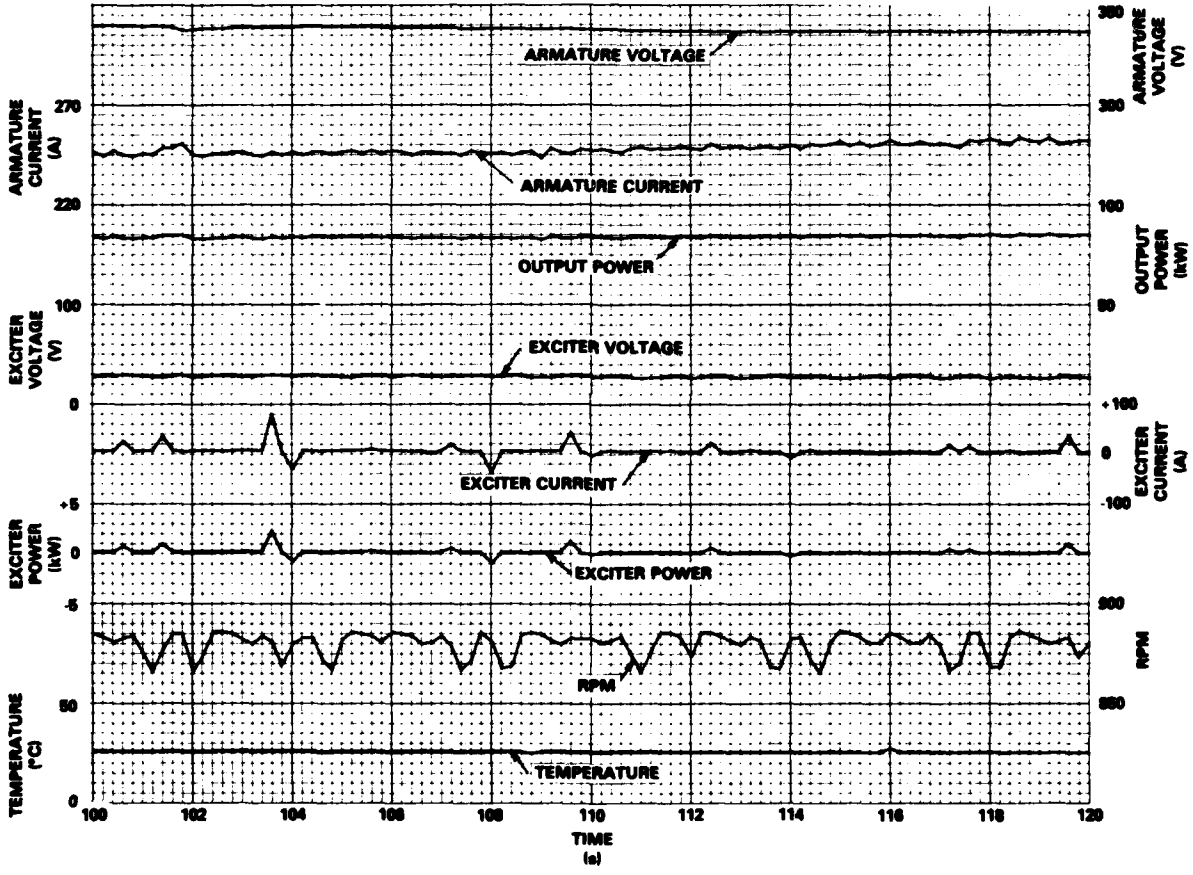


Figure 72 - Generator 1 Data, Five Samples per Second Plotted, Run 3520

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 2.7 knots

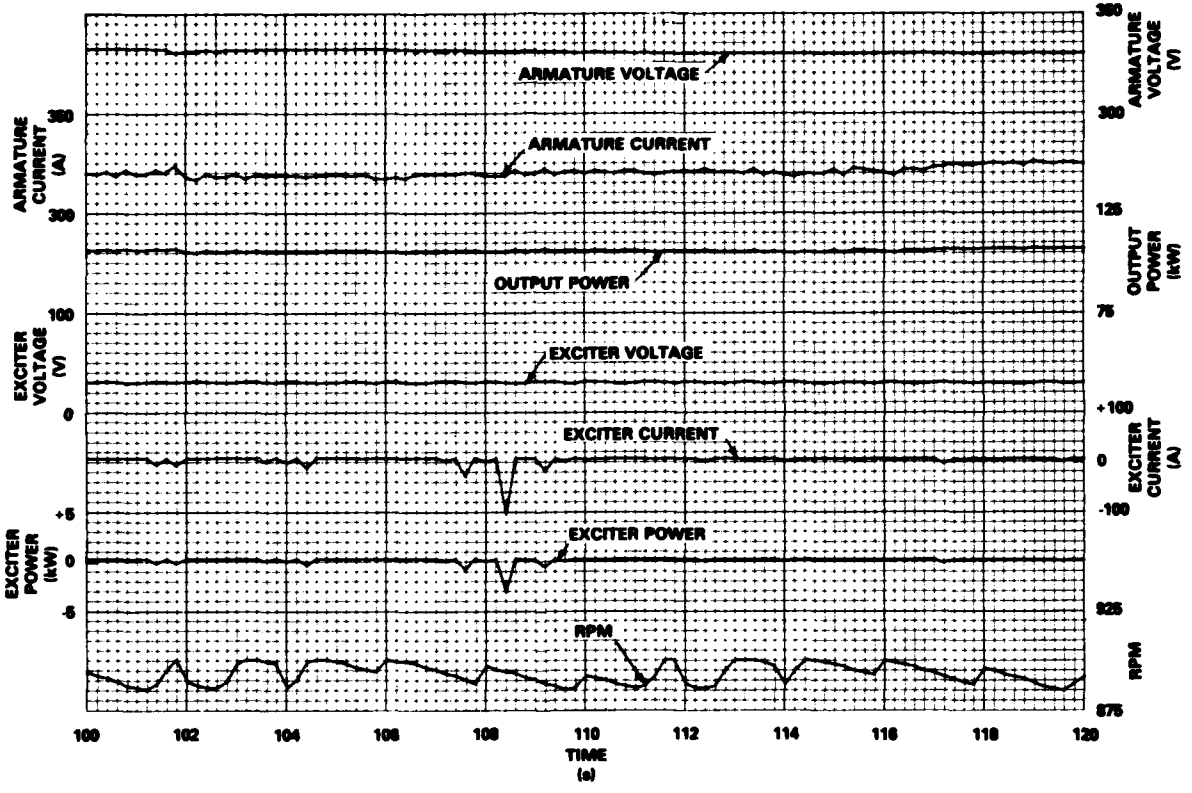


Figure 73 - Generator 2 Data, Five Samples per Second Plotted, Run 3520

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 7.2 knots

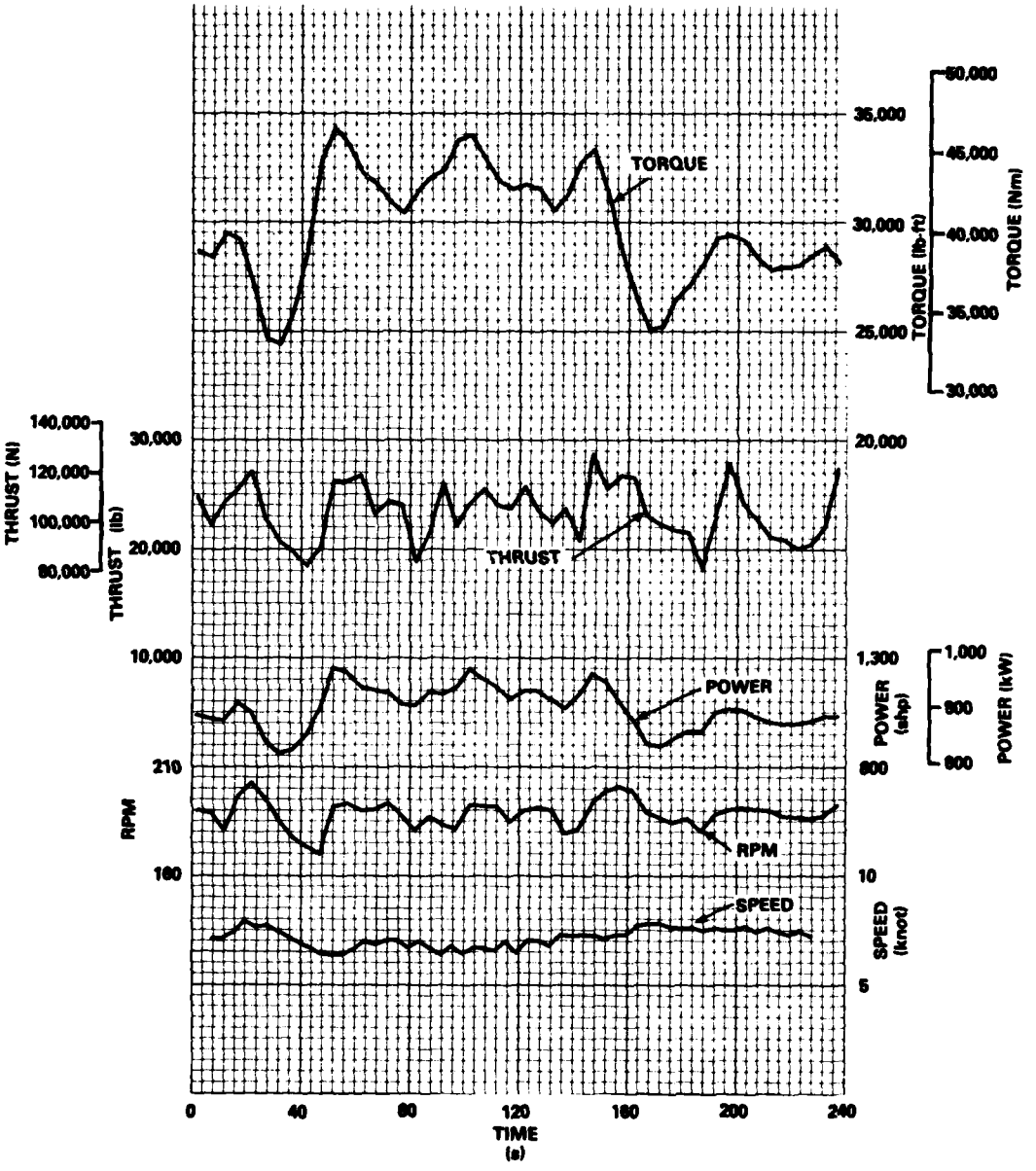


Figure 74 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 3410

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 7.2 knots

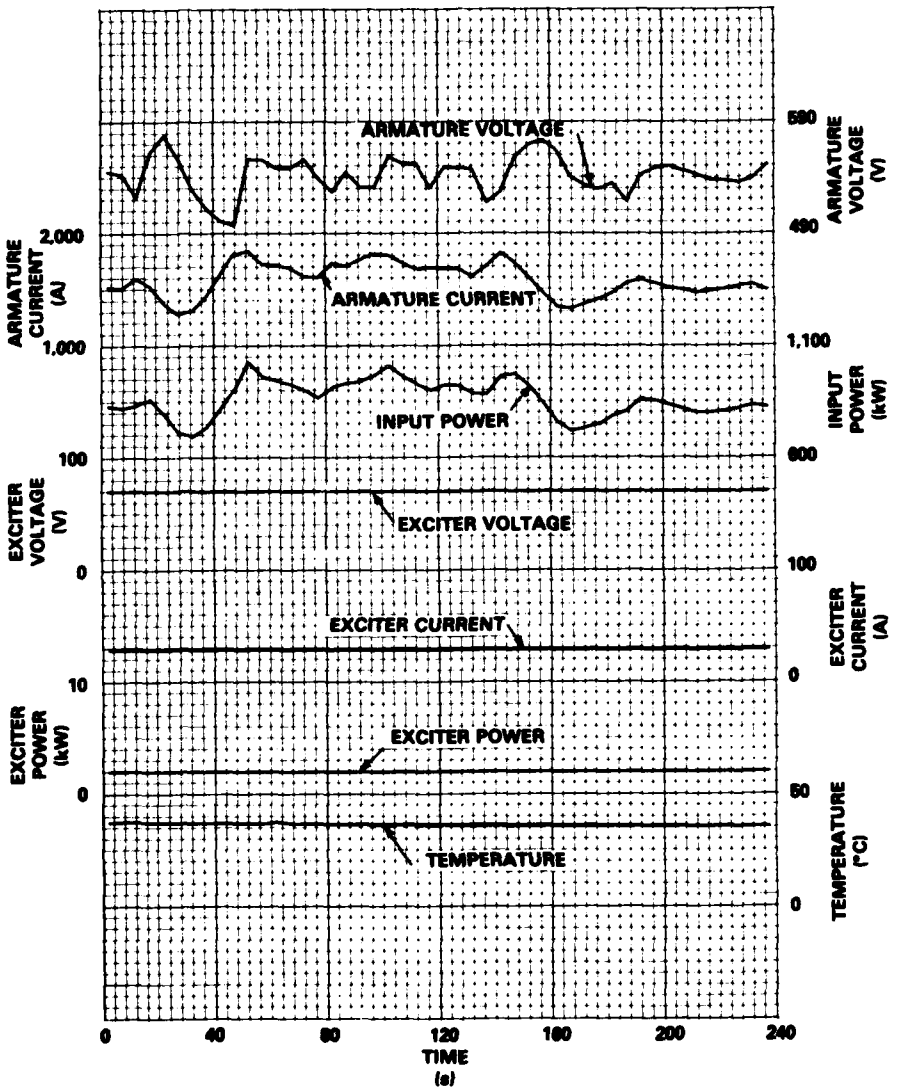


Figure 75 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 3410

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 7.2 knots

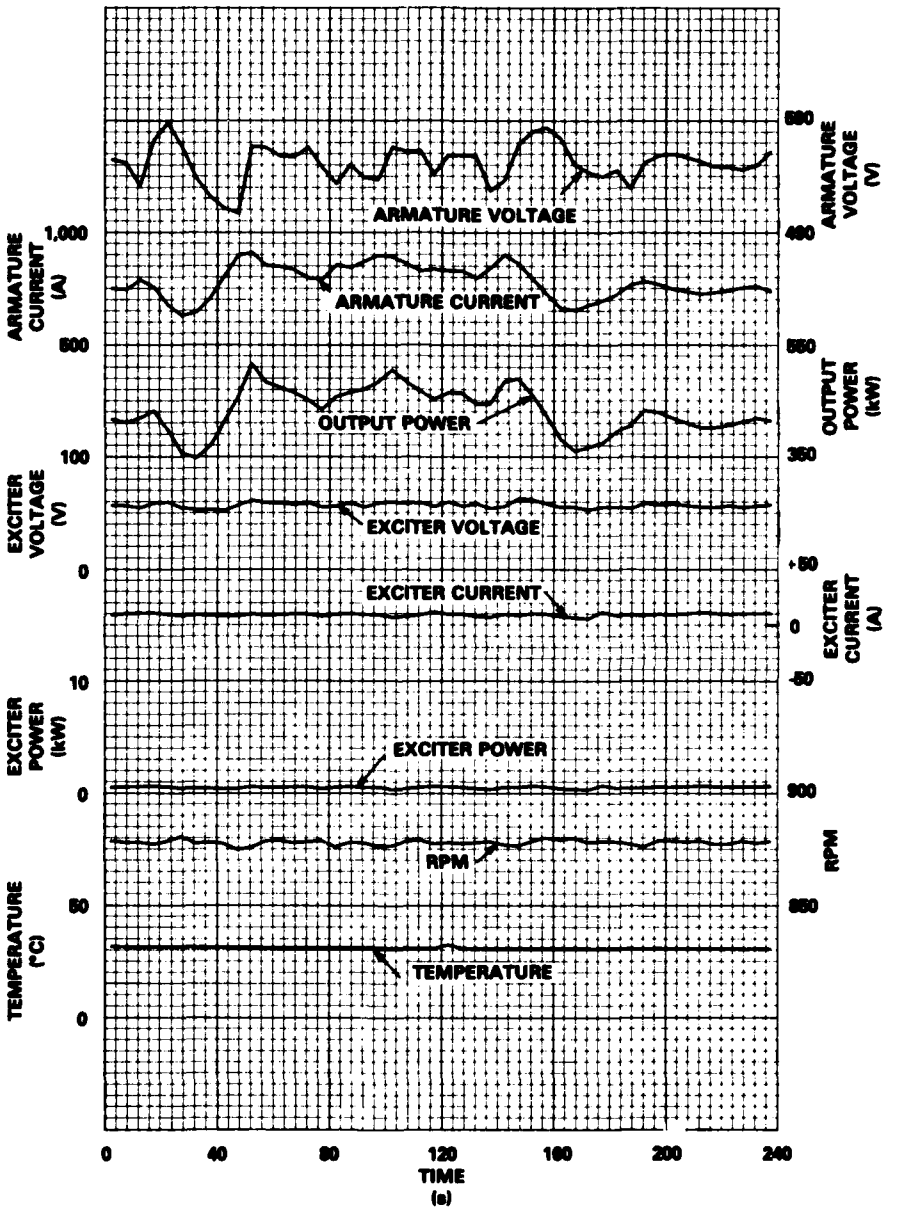


Figure 76 - Generator 1 Data Averaged Over Five-Second Periods, Run 3410

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 7.2 knots

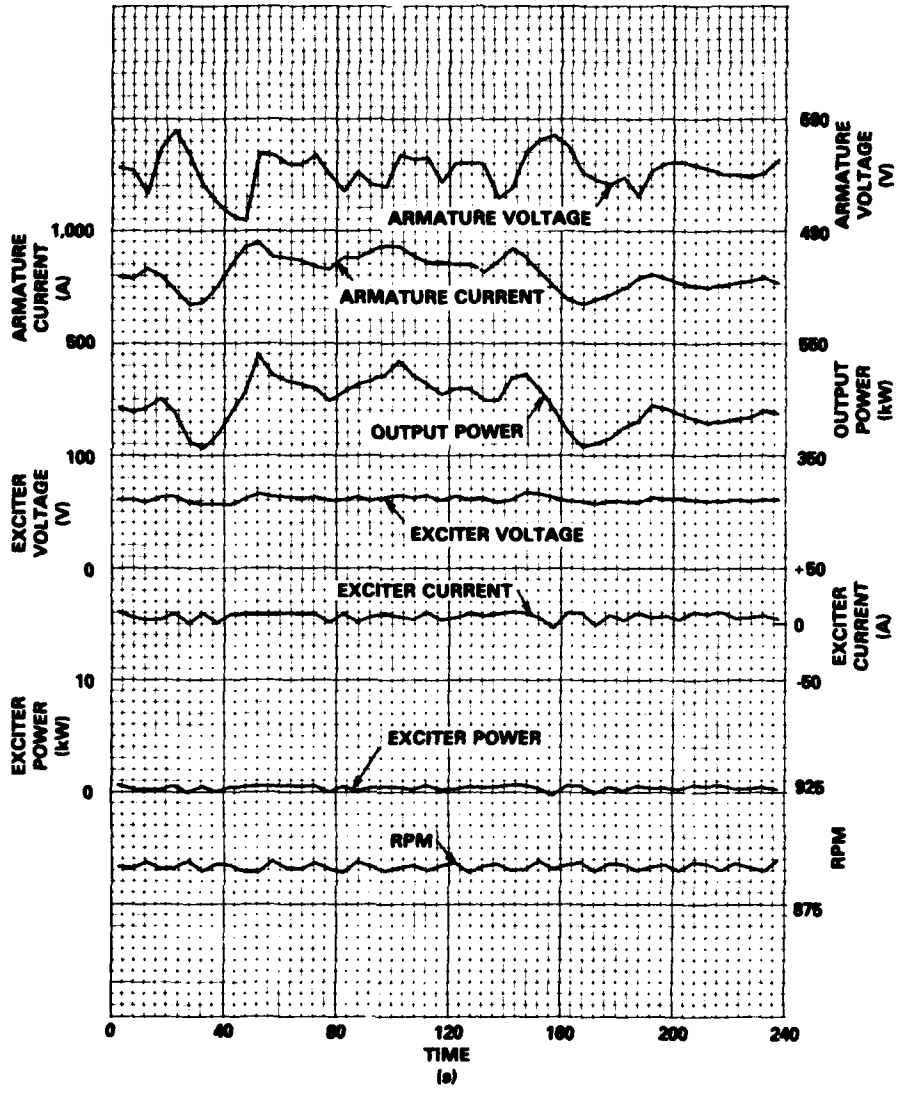


Figure 77 - Generator 2 Data Averaged Over Five-Second Periods, Run 3410

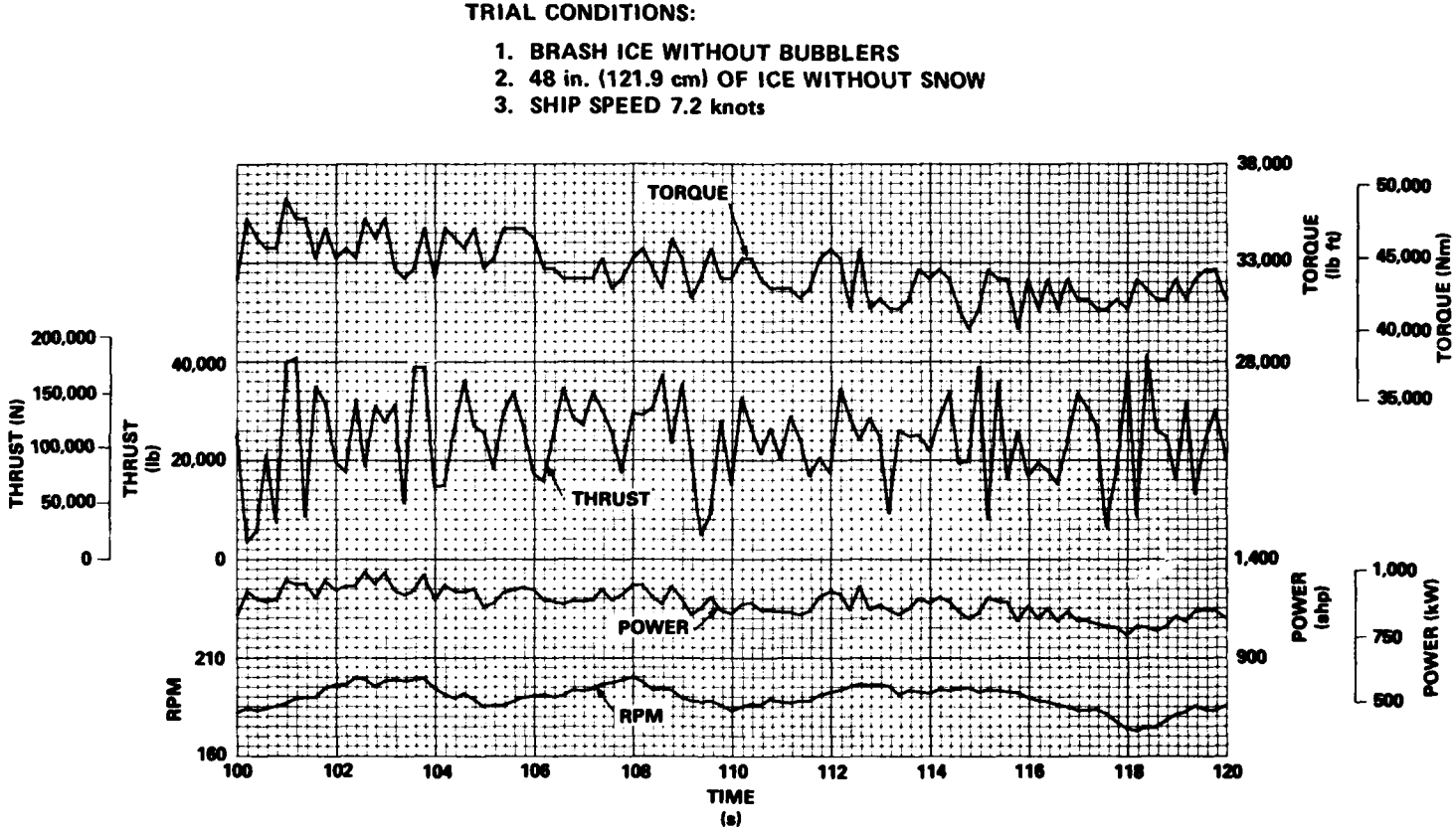


Figure 78 - Propeller Shaft Data, Five Samples per Second Plotted, Run 3410

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 7.2 knots

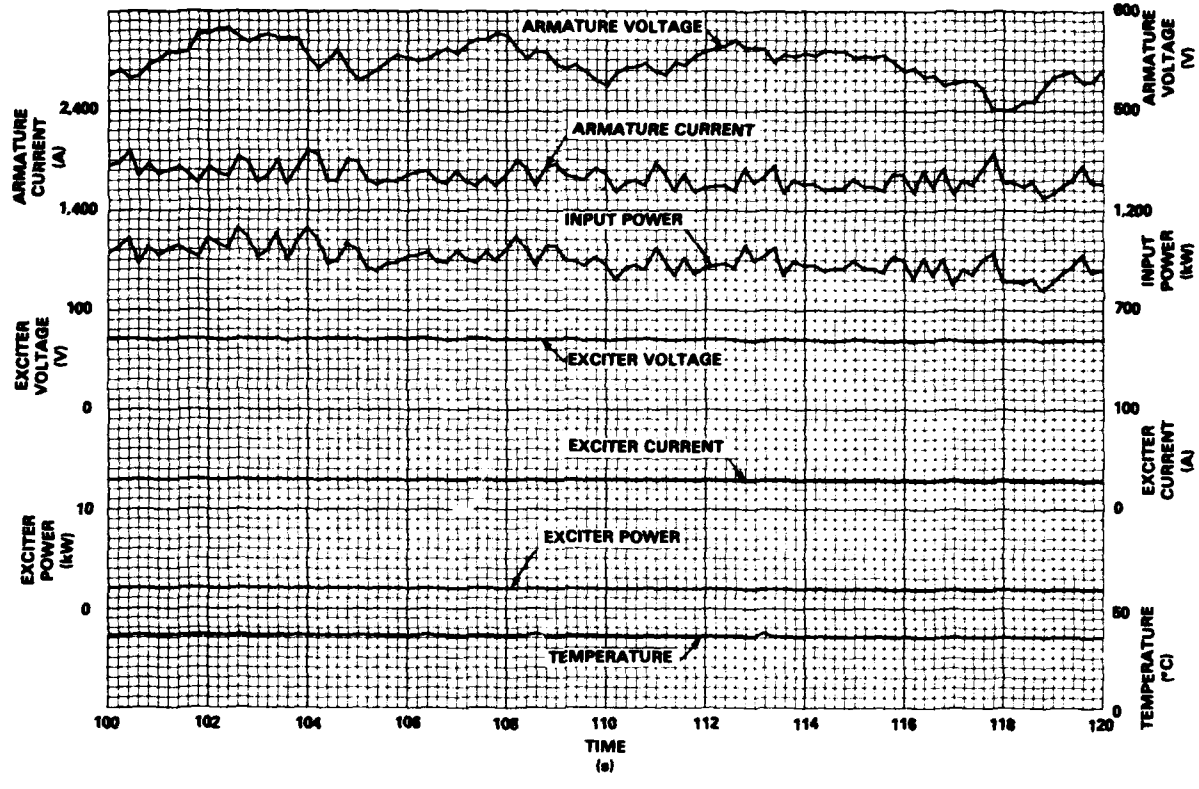


Figure 79 - Propulsion Motor Data, Five Samples per Second Plotted, Run 3410

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 7.2 knots**

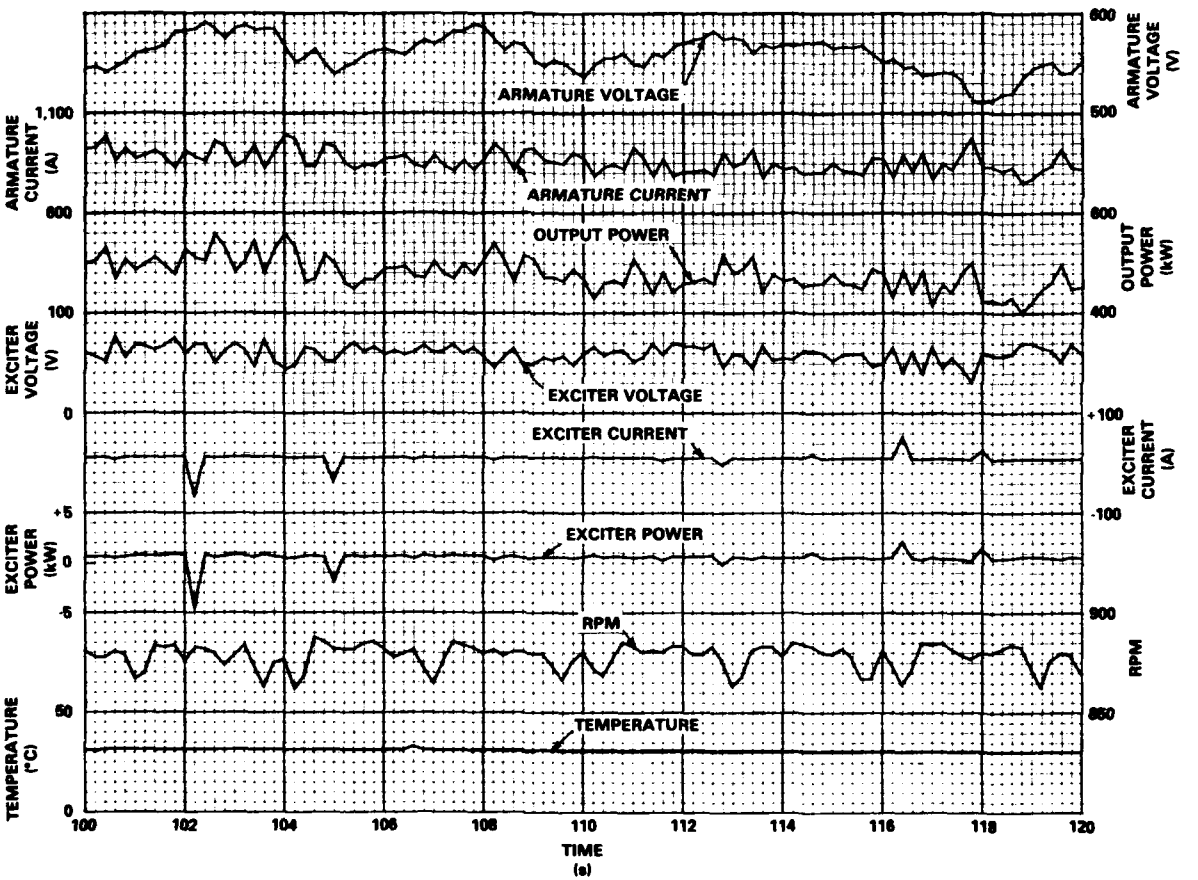


Figure 80 - Generator 1 Data, Five Samples per Second Plotted, Run 3410

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 7.2 knots**

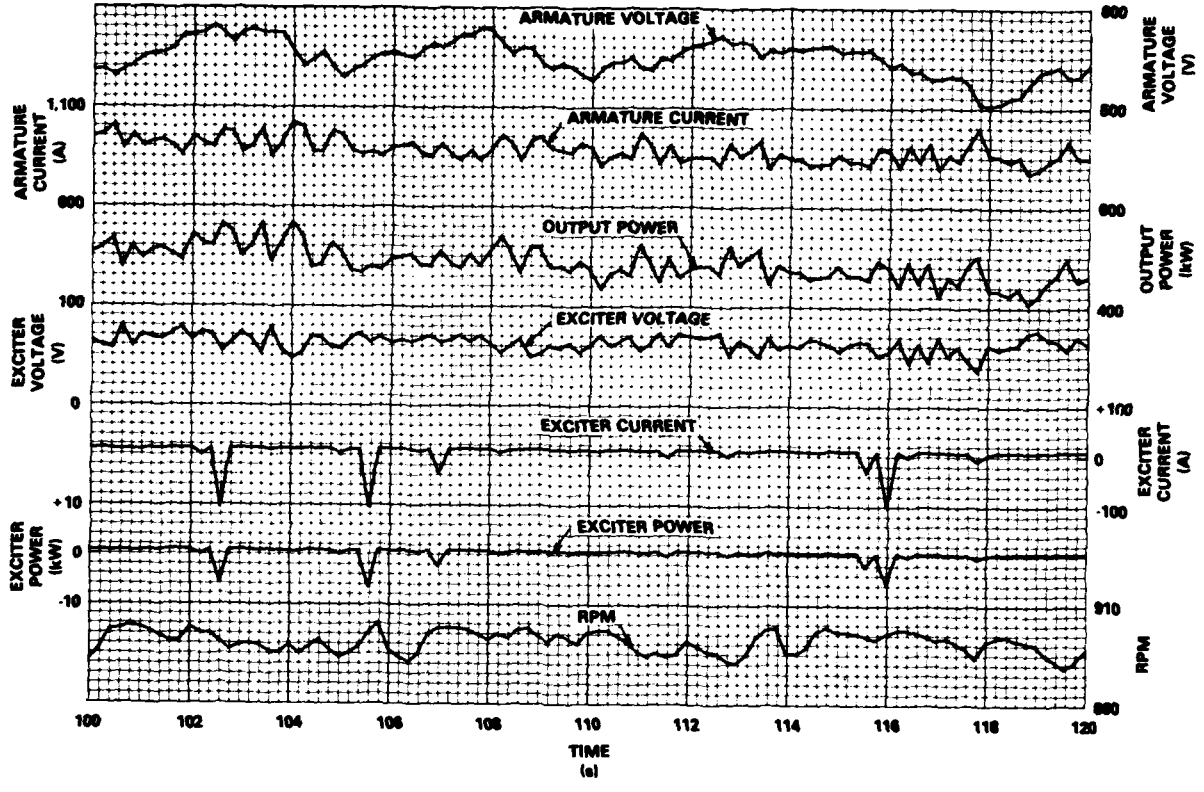


Figure 81 - Generator 2 Data, Five Samples per Second Plotted, Run 3410

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 11.4 knots**

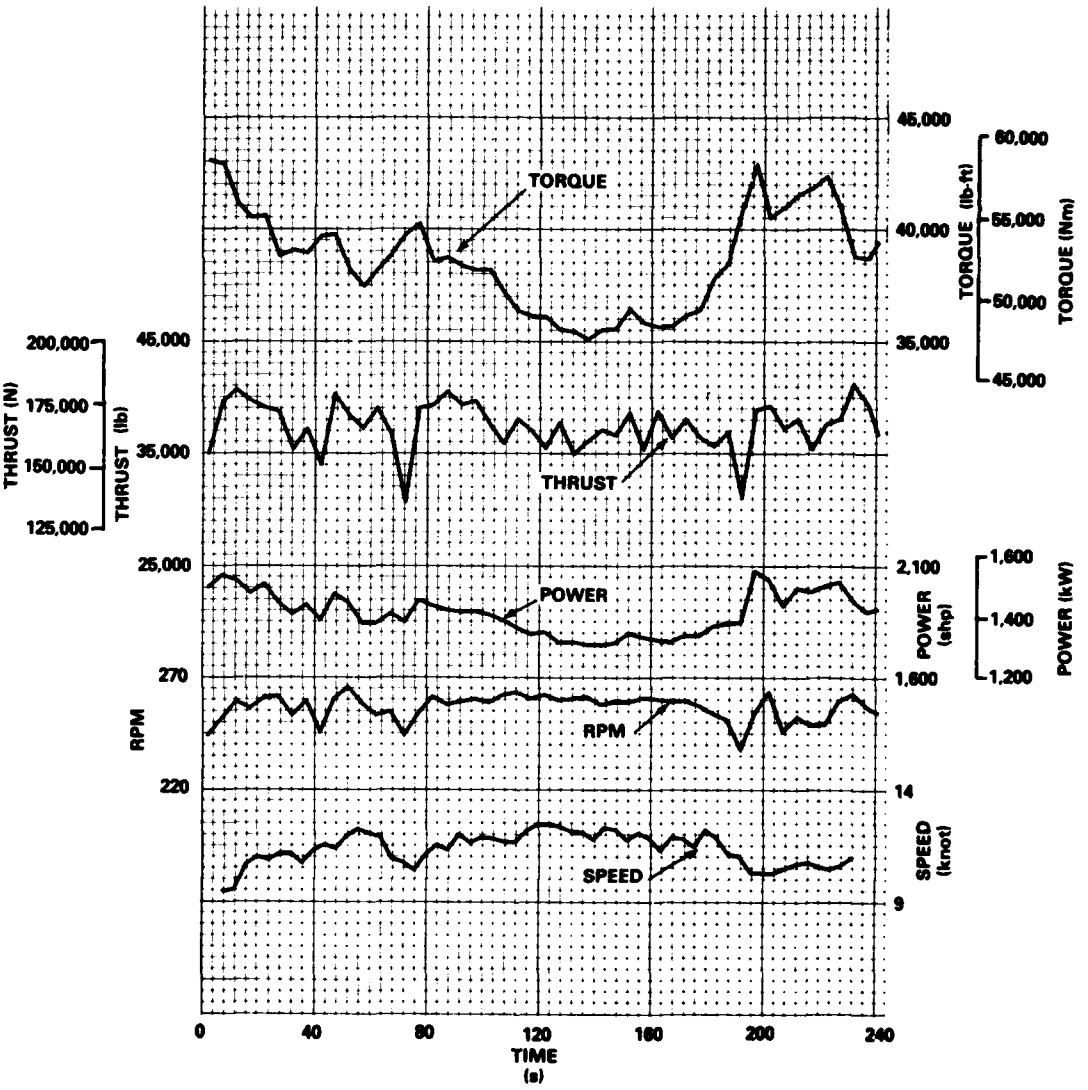


Figure 82 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 3430

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 11.4 knots

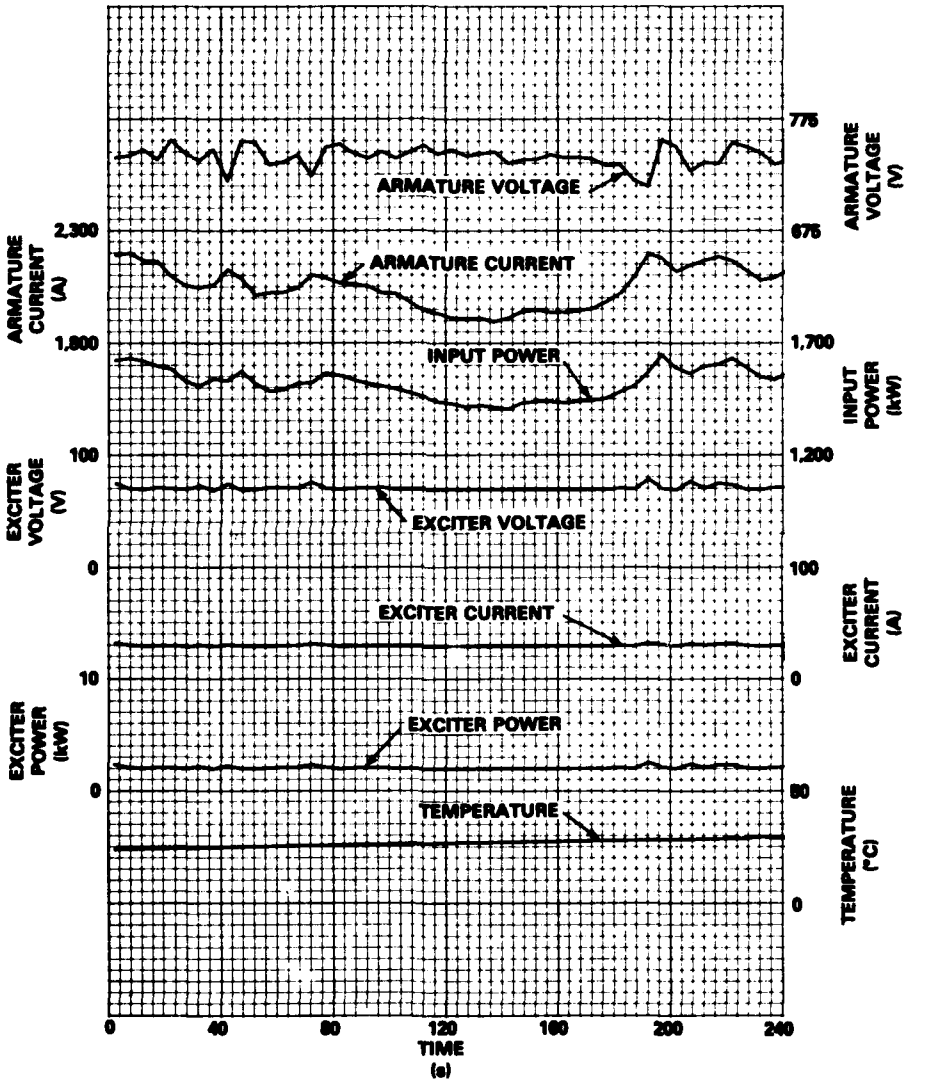


Figure 83 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 3430

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 11.4 knots

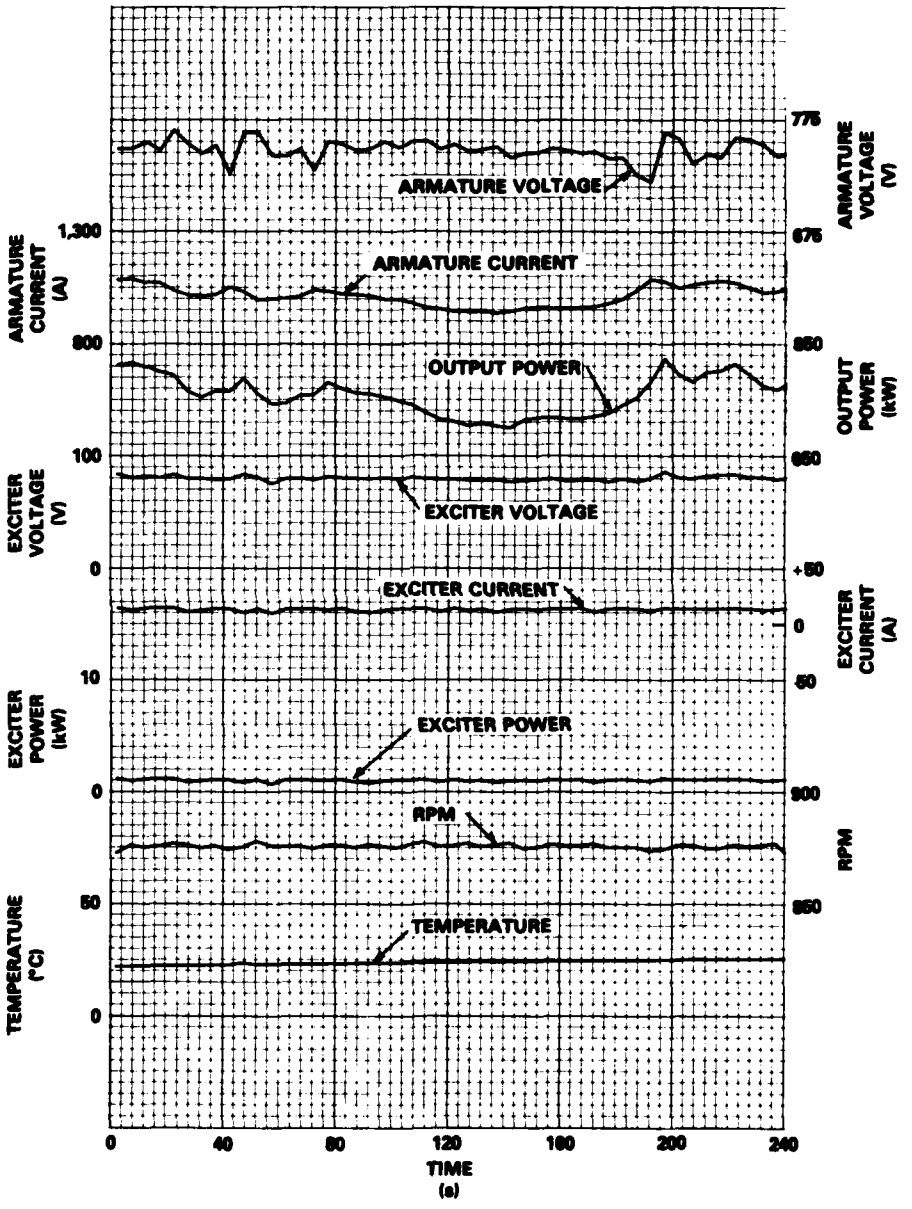


Figure 84 - Generator 1 Data Averaged Over Five-Second Periods, Run 3430

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 11.4 knots

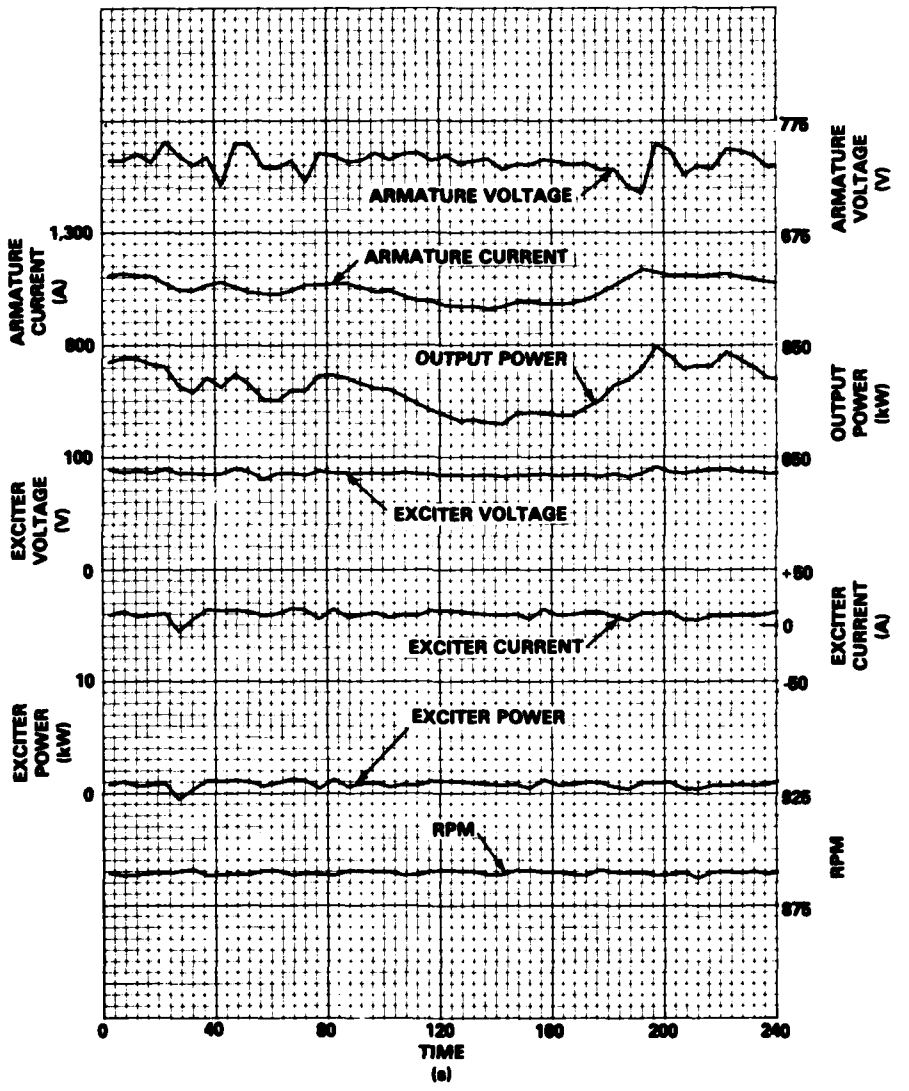


Figure 85 - Generator 2 Data Averaged Over Five-Second Periods, Run 3430

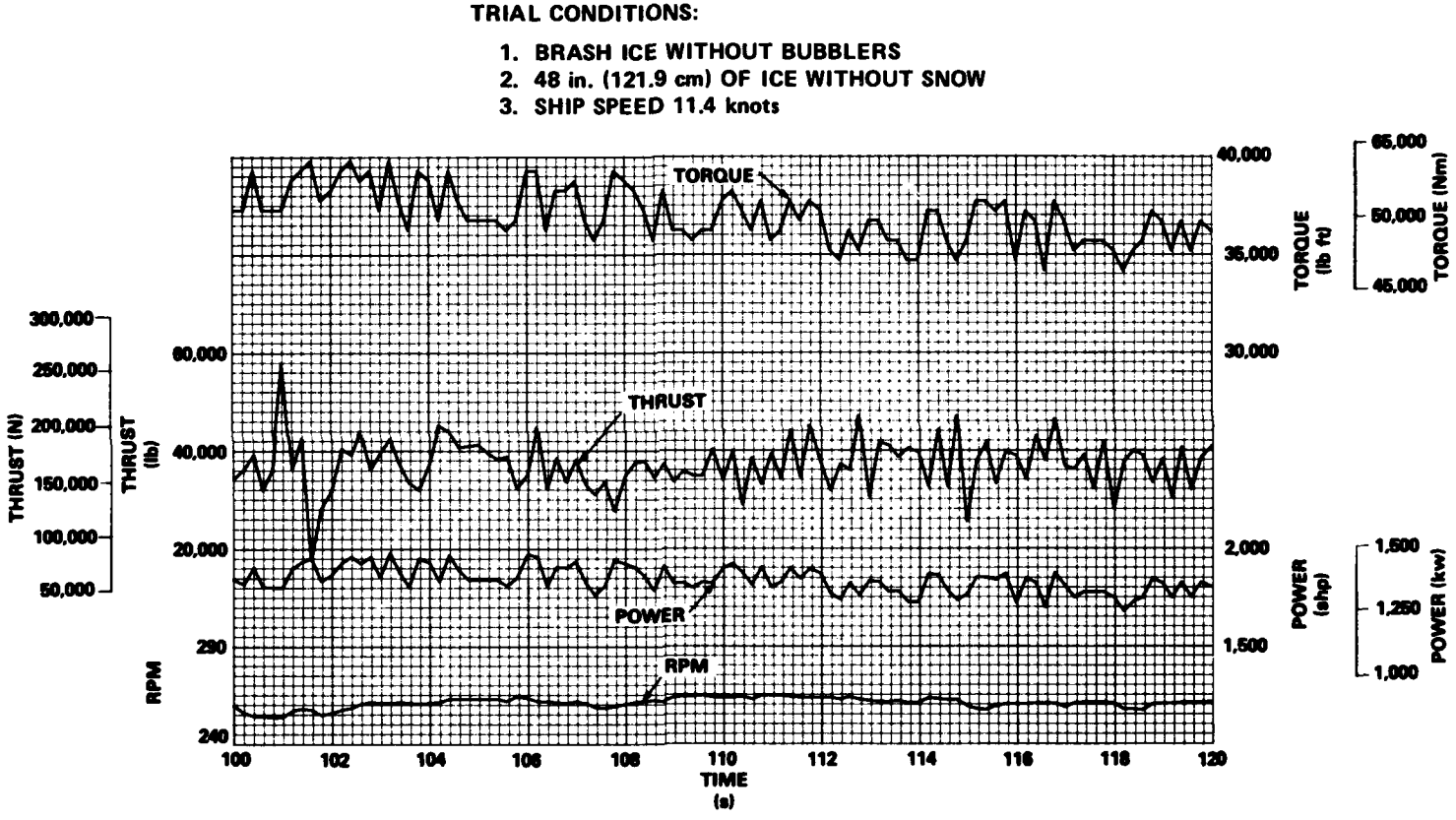


Figure 86 - Propeller Shaft Data, Five Samples per Second Plotted, Run 3430

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 11.4 knots

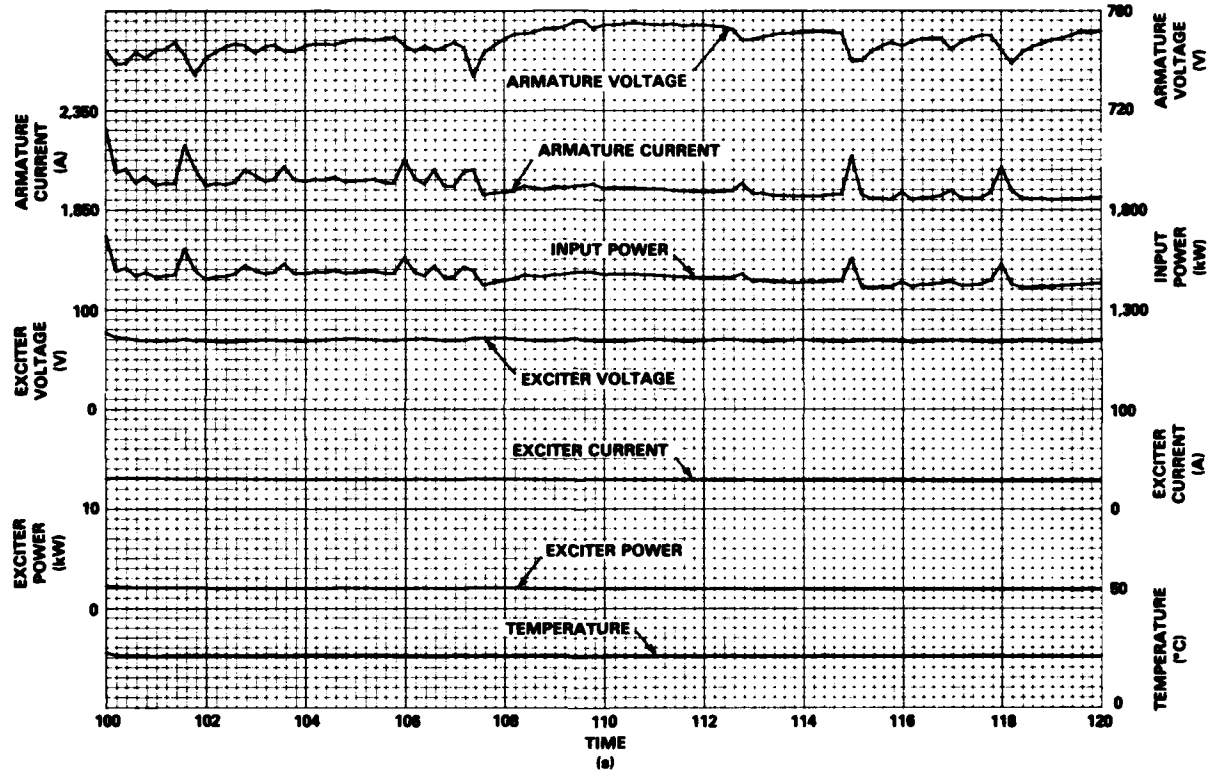


Figure 87 - Propulsion Motor Data, Five Samples per Second Plotted, Run 3430

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 11.4 knots**

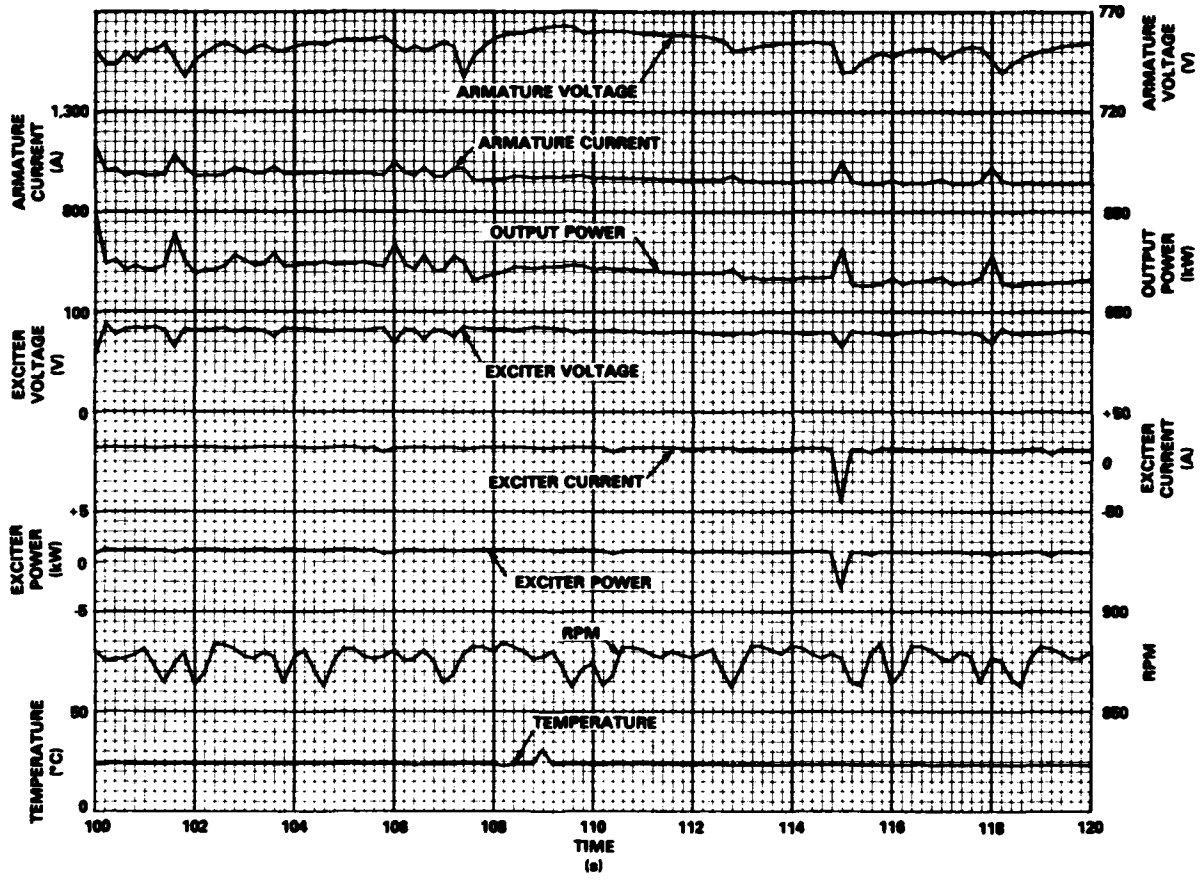


Figure 88 - Generator 1 Data, Five Samples per Second Plotted, Run 3430

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 11.4 knots

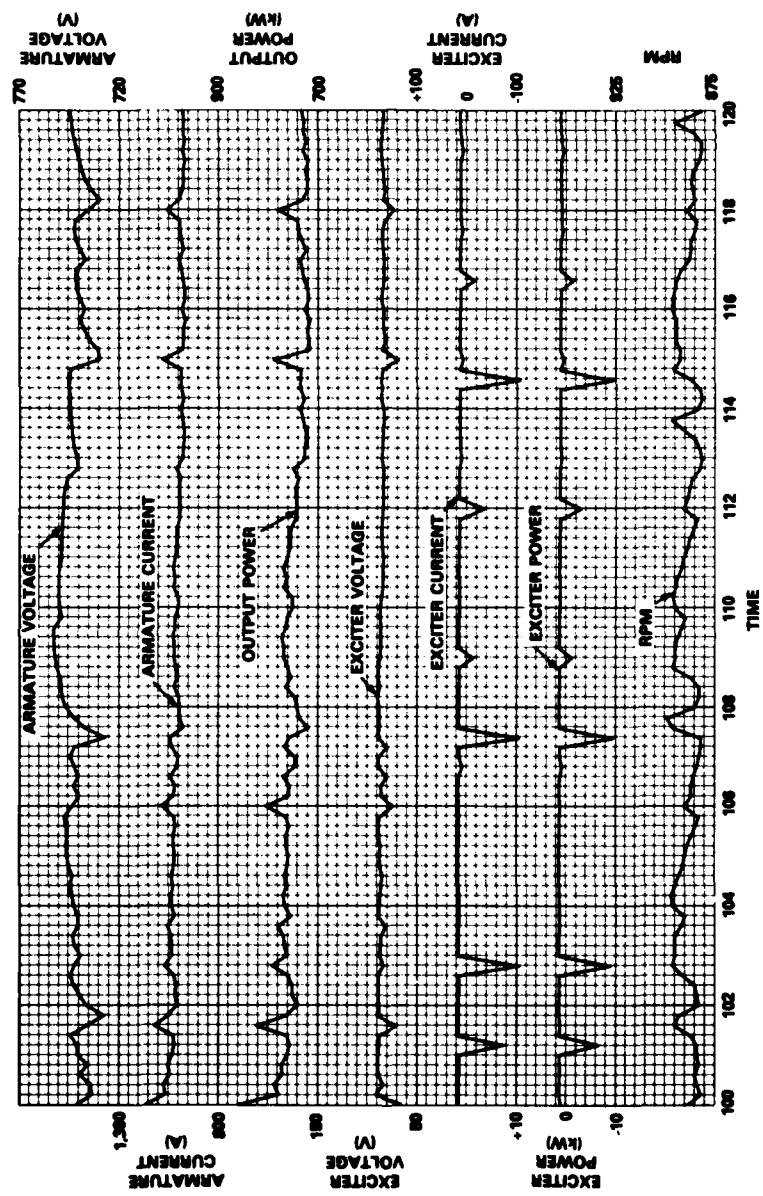


Figure 89 - Generator 2 Data, Five Samples per Second Plotted, Run 3430

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 12.1 knots**

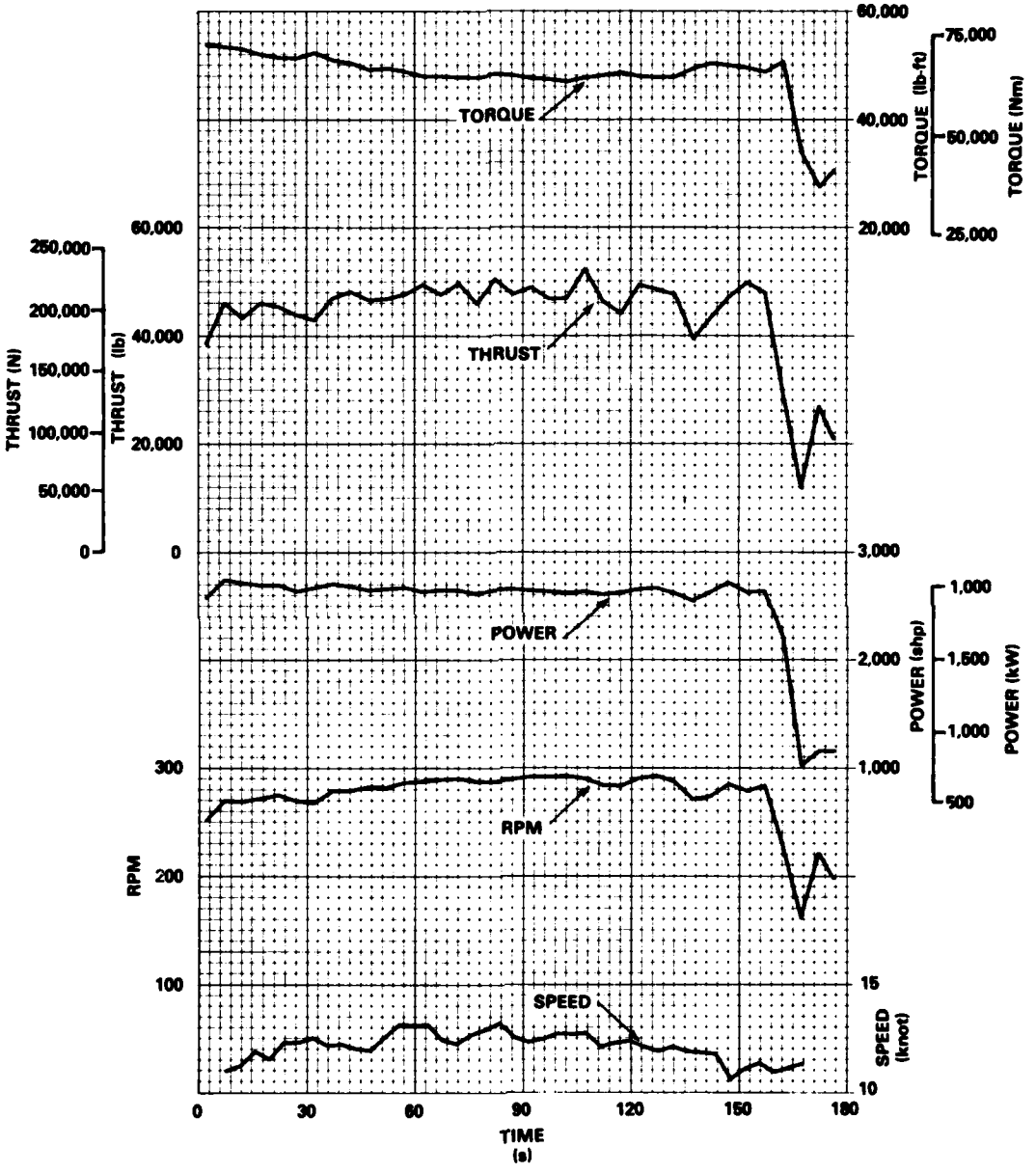


Figure 90 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 3500

TRIAL CONDITIONS:

1. **BRASH ICE WITHOUT BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 12.1 knots**

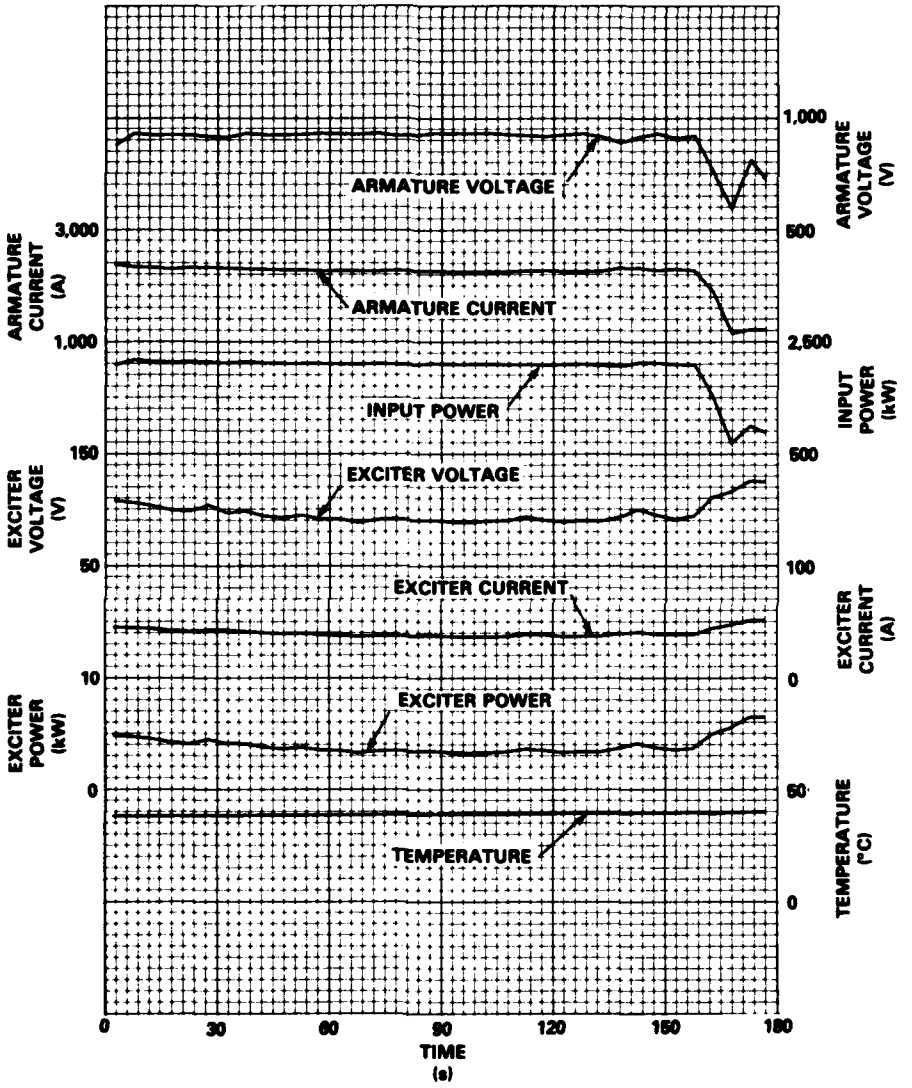


Figure 91 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 3500

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.1 knots

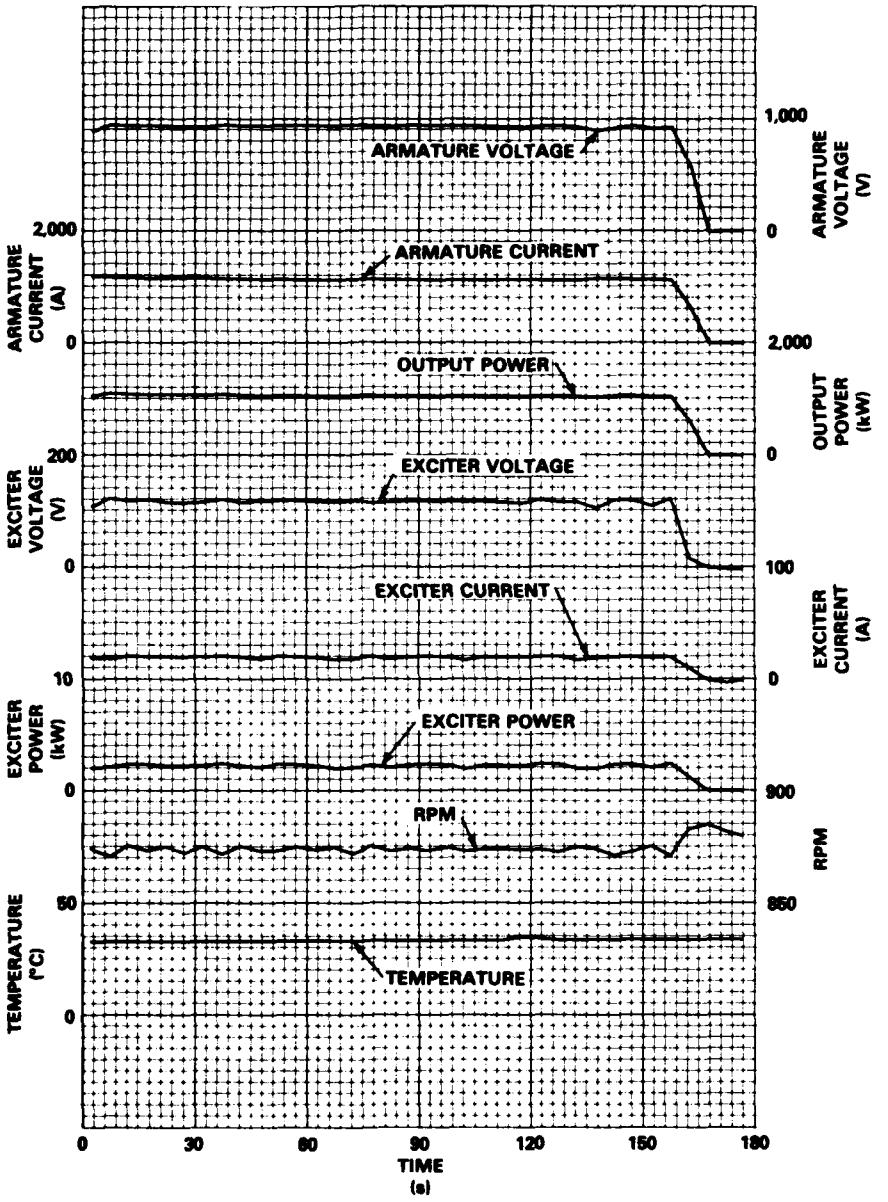


Figure 92 - Generator 1 Data Averaged Over Five-Second Periods, Run 3500

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.1 knots

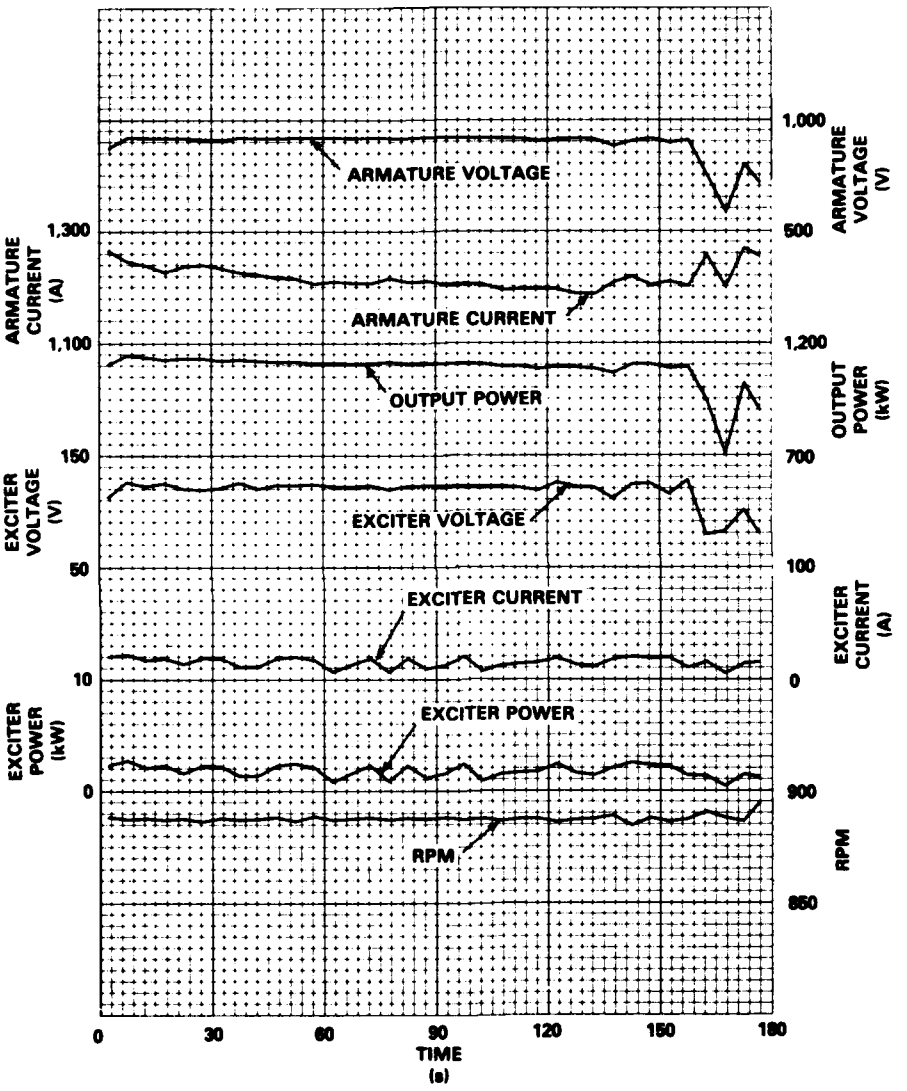


Figure 93 - Generator 2 Data Averaged Over Five-Second Periods, Run 3500

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.1 knots

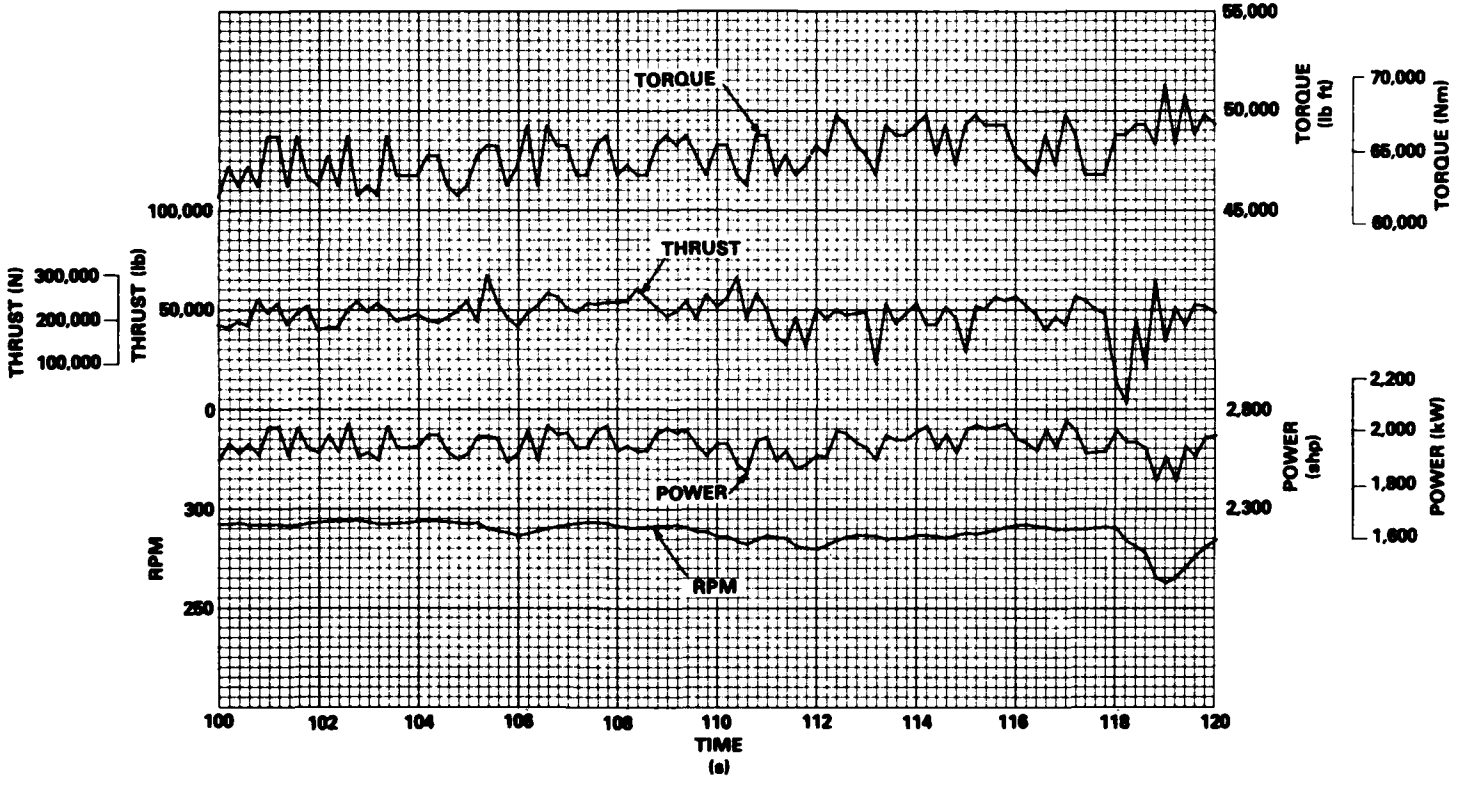


Figure 94 - Propeller Shaft Data, Five Samples per Second Plotted, Run 3500

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.1 knots

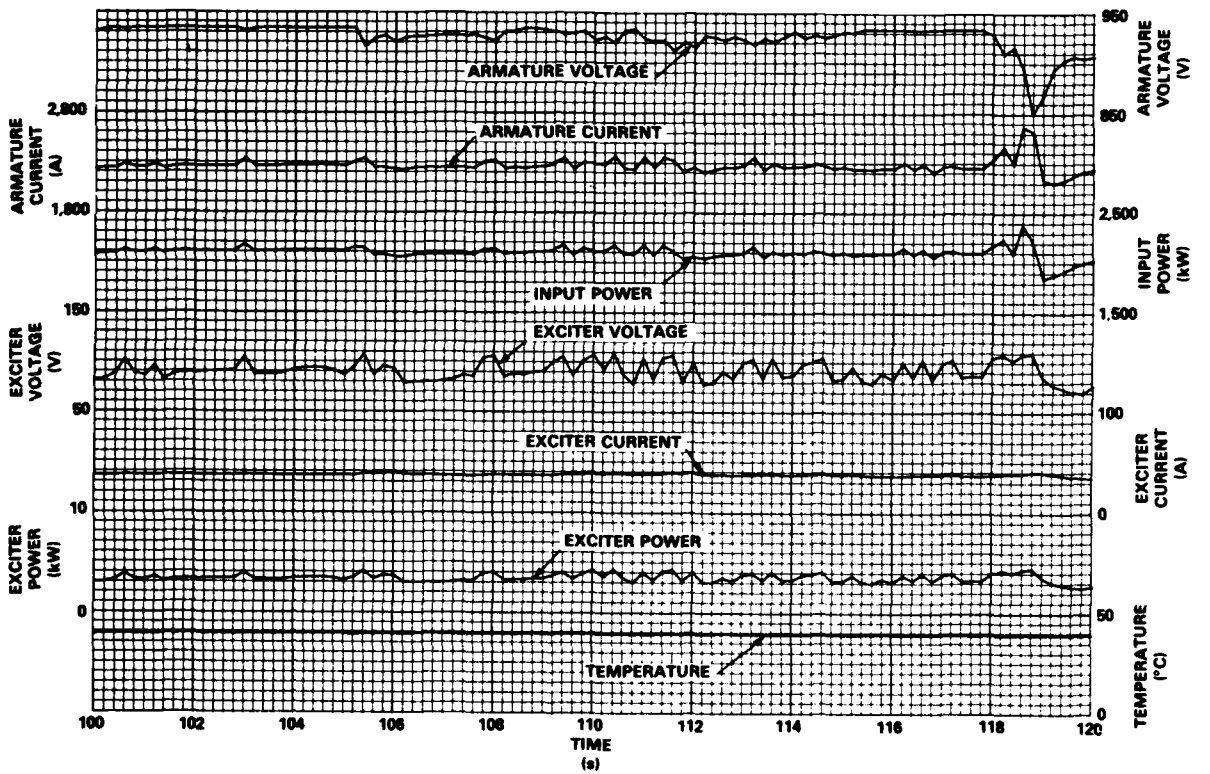


Figure 95 - Propulsion Motor Data, Five Samples per Second Plotted, Run 3500

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.1 knots

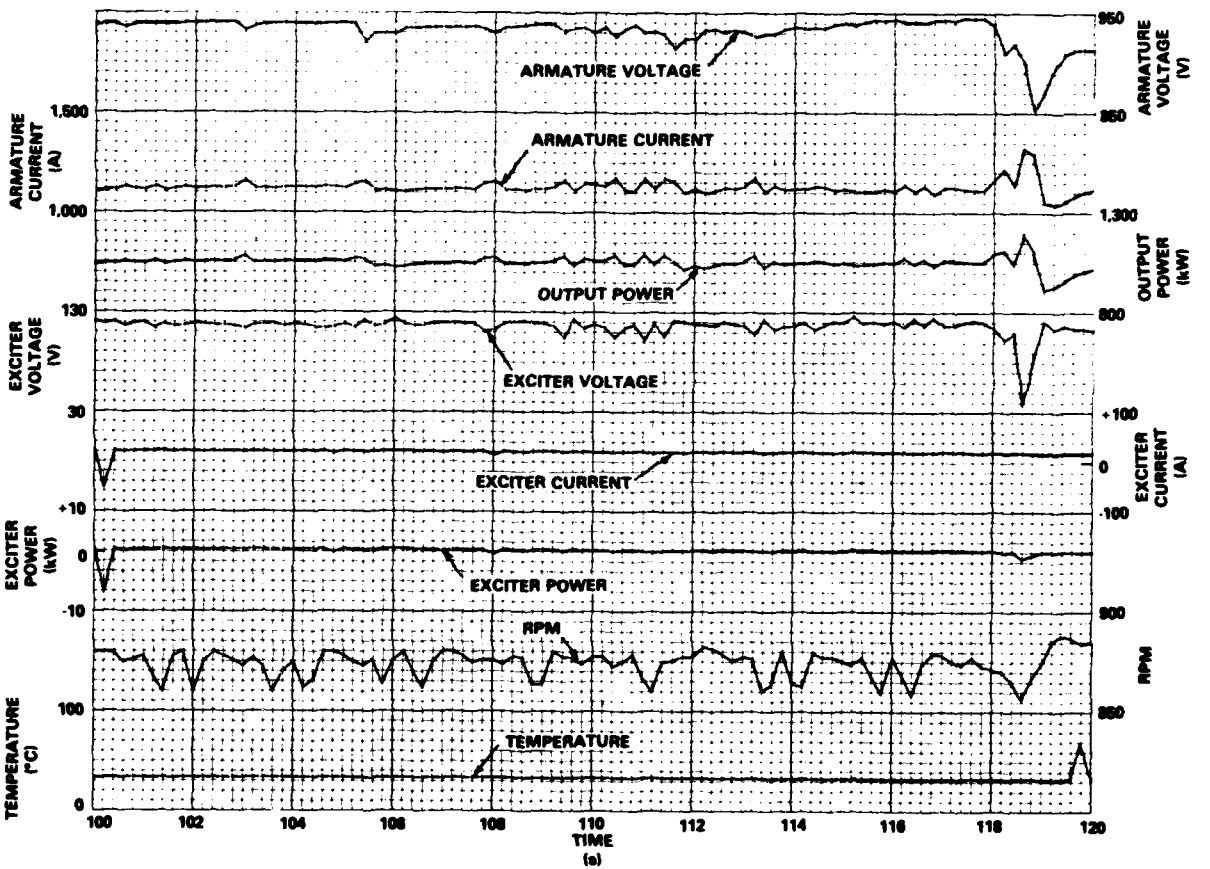


Figure 96 - Generator 1 Data, Five Samples per Second Plotted, Run 3500

TRIAL CONDITIONS:

1. BRASH ICE WITHOUT BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.1 knots

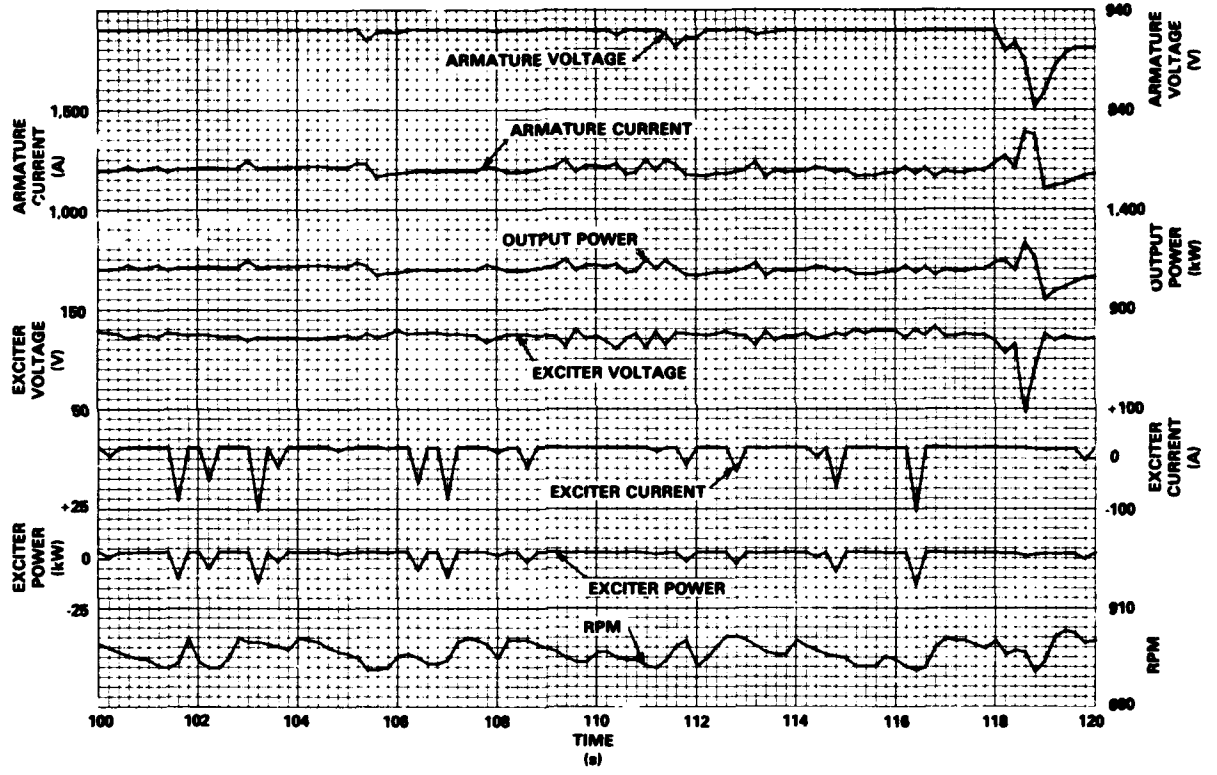


Figure 97 - Generator 2 Data, Five Samples per Second Plotted, Run 3500

TRIAL CONDITIONS:

1. **BRASH ICE WITH ALL BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 2.8 knots**

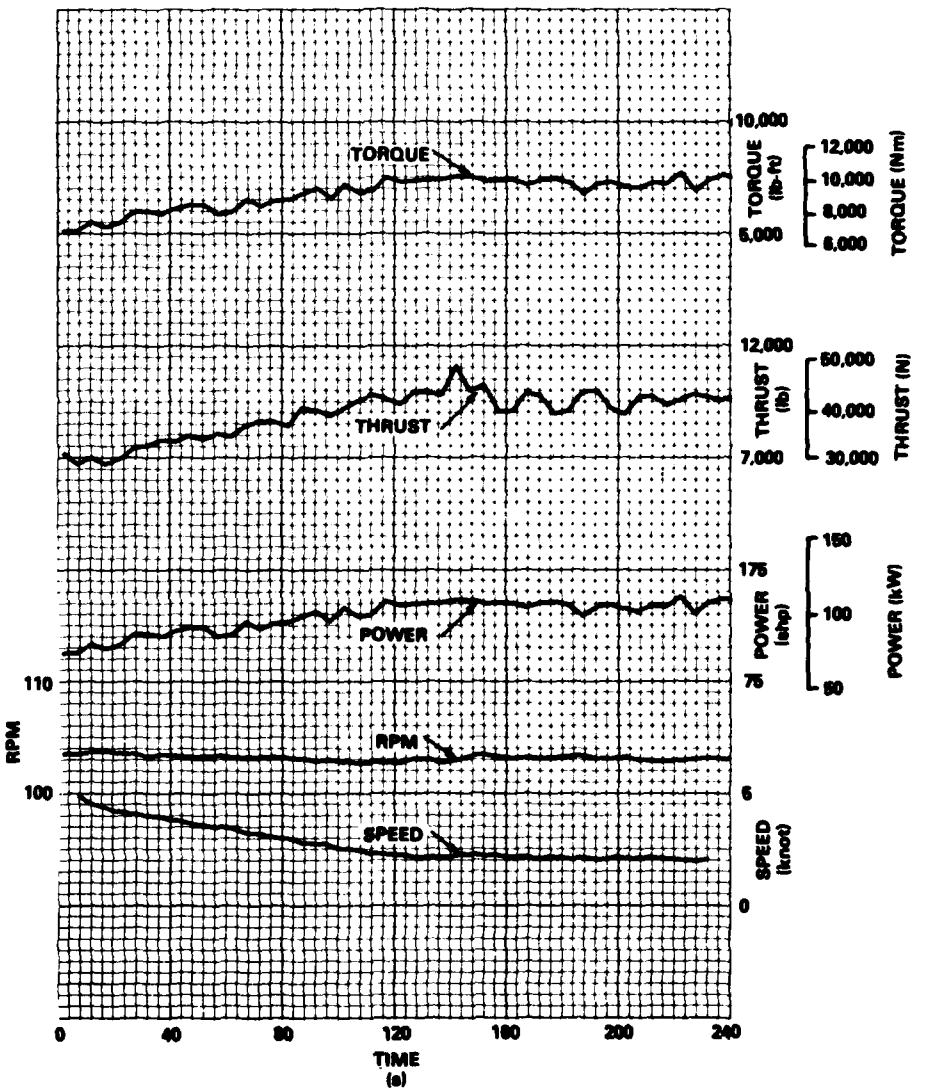


Figure 98 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 4420

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 2.8 knots

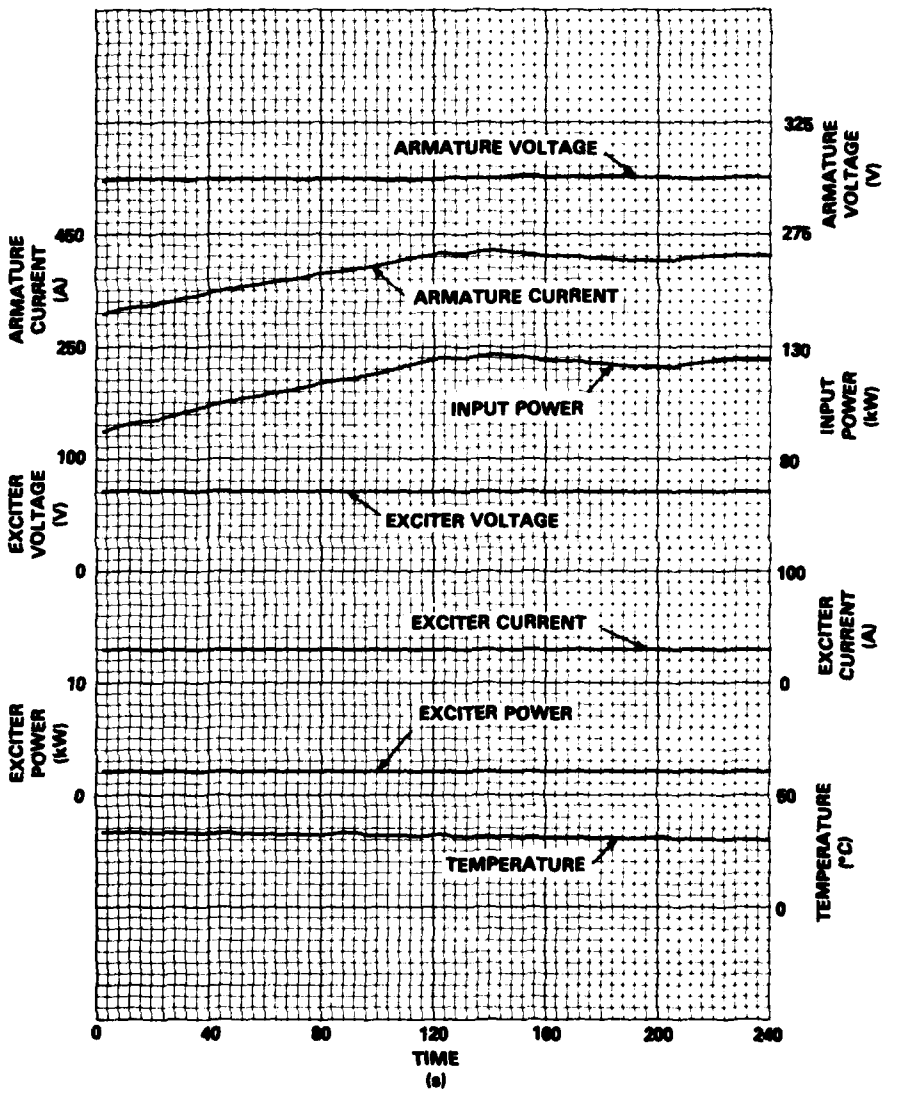


Figure 99 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 4420

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 2.8 knots

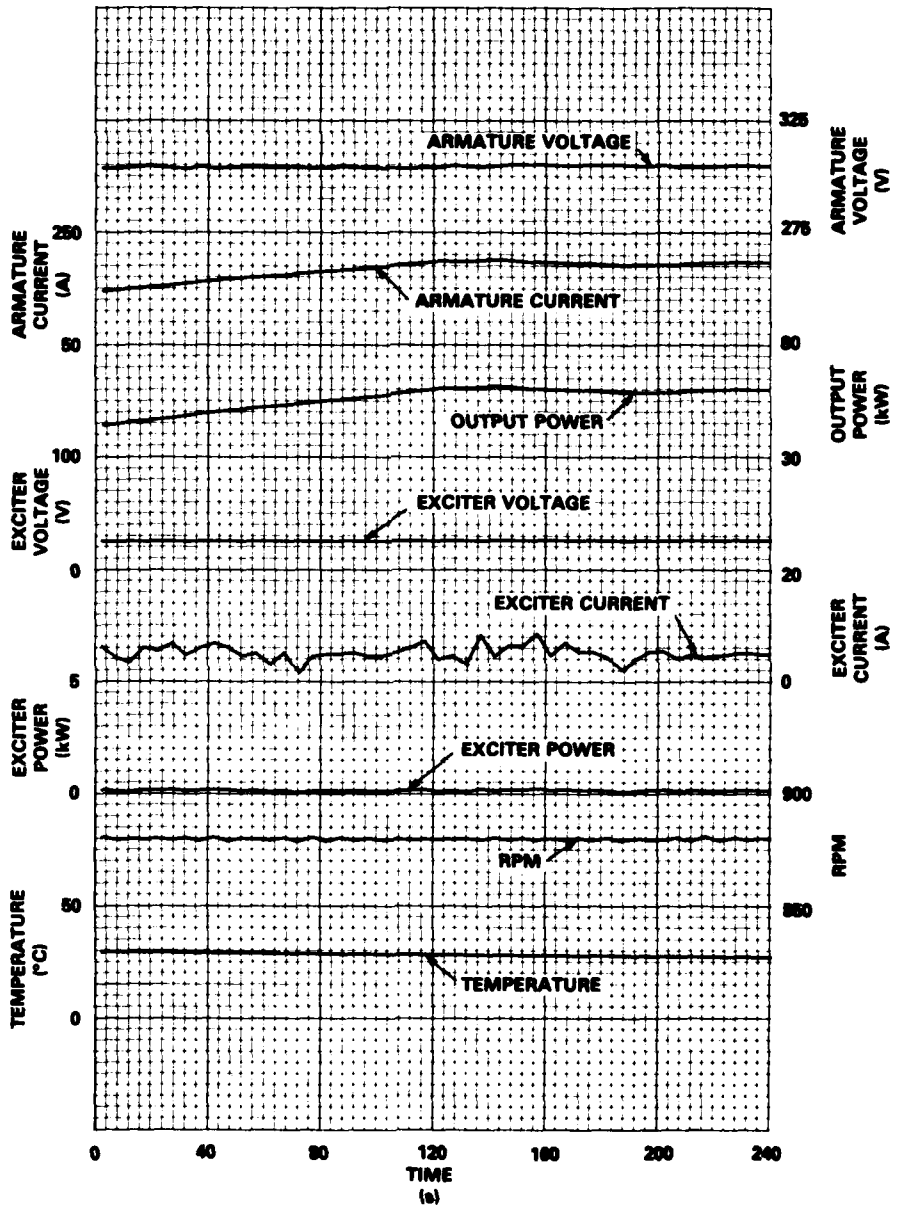


Figure 100 - Generator 1 Data Averaged Over Five-Second Periods, Run 4420

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 2.8 knots

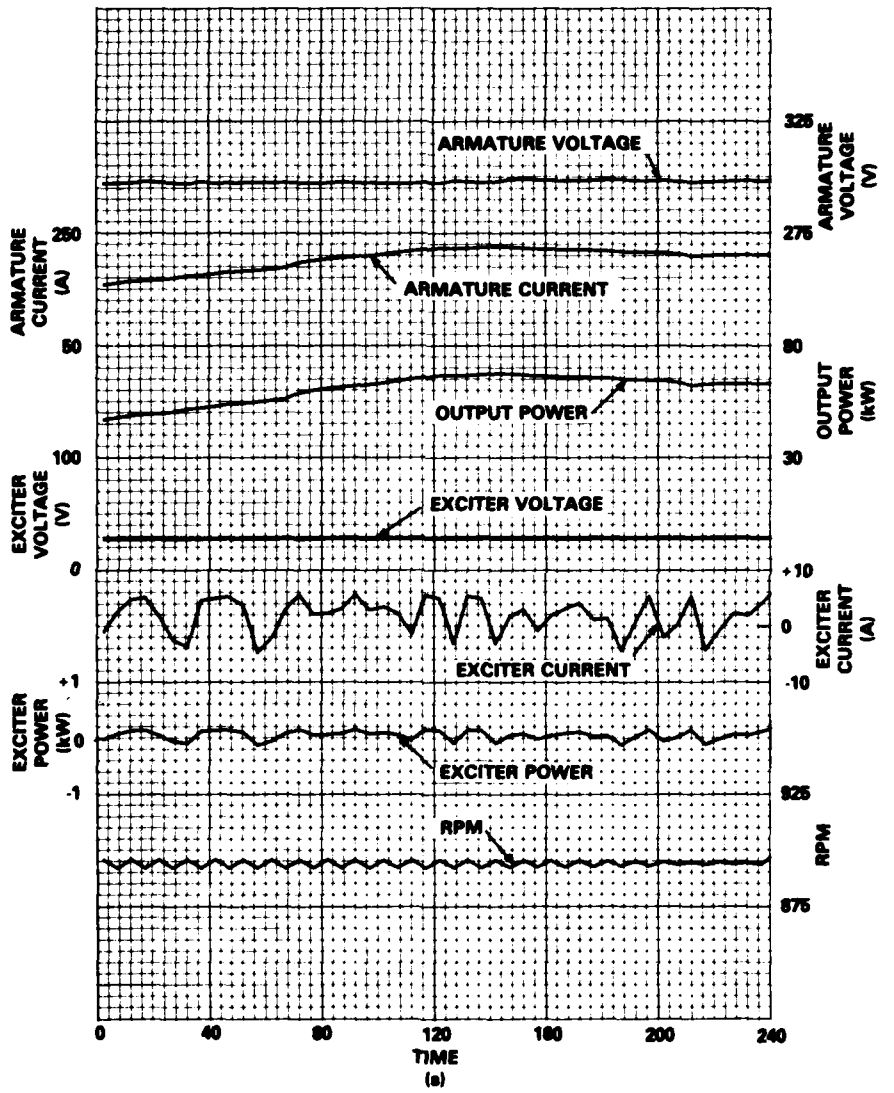


Figure 101 - Generator 2 Data Averaged Over Five-Second Periods, Run 4420

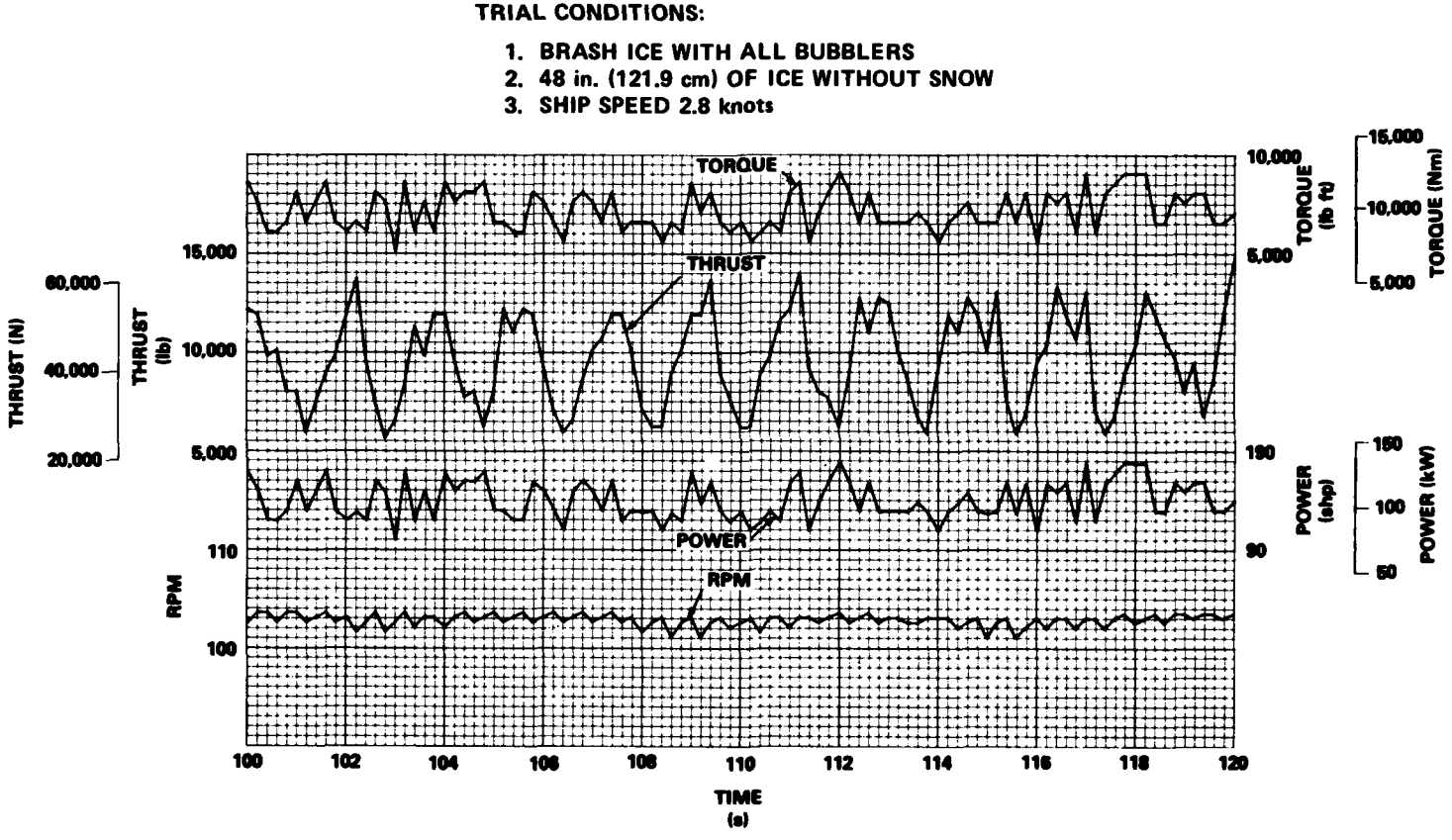


Figure 102 - Propeller Shaft Data, Five Samples per Second Plotted, Run 4420

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 2.8 knots

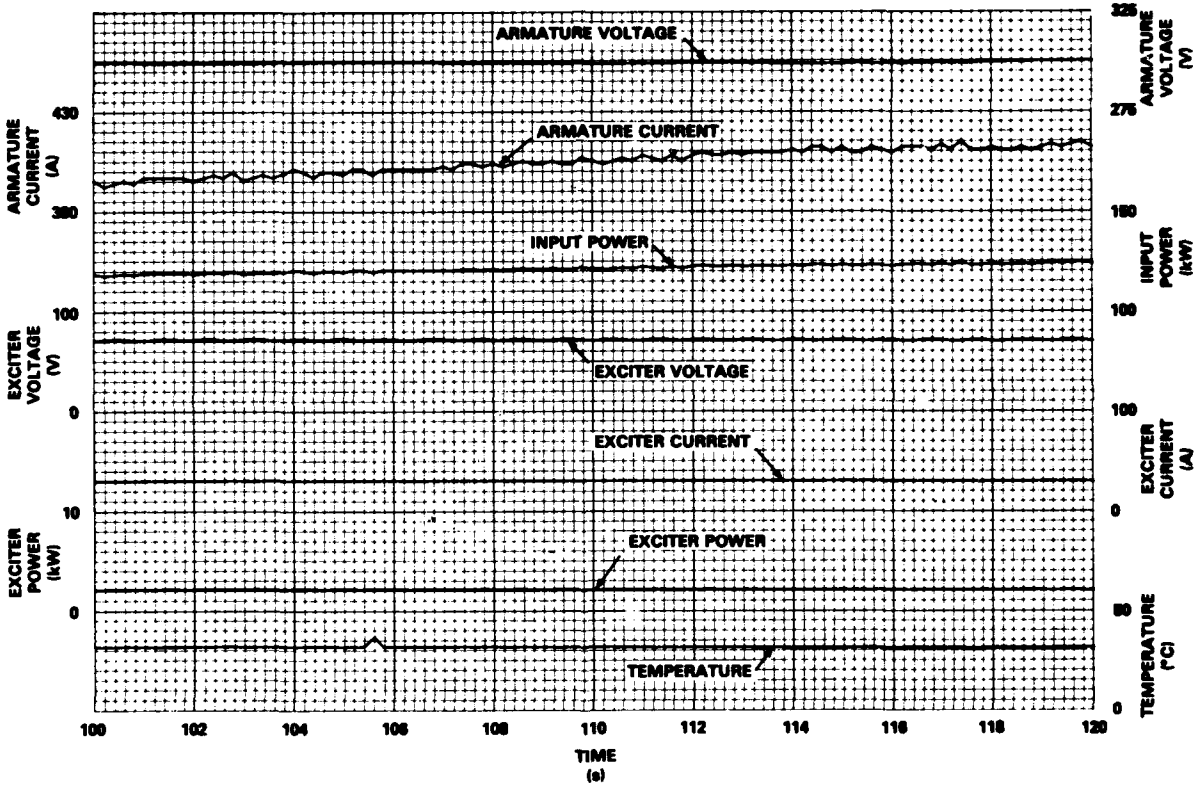


Figure 103 - Propulsion Motor Data, Five Samples per Second Plotted, Run 4420

TRIAL CONDITIONS:

1. **BRASH ICE WITH ALL BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 2.8 knots**

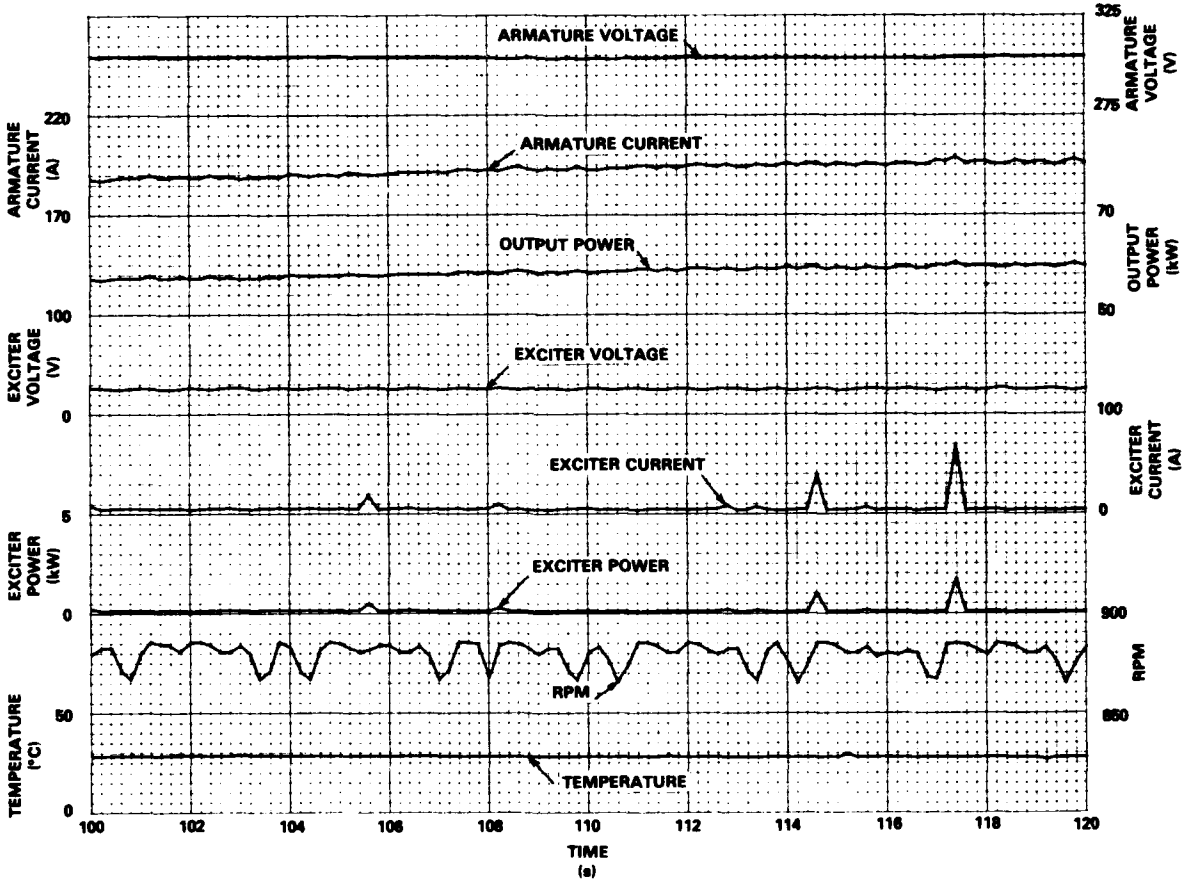


Figure 104 - Generator 1 Data, Five Samples per Second Plotted, Run 4420

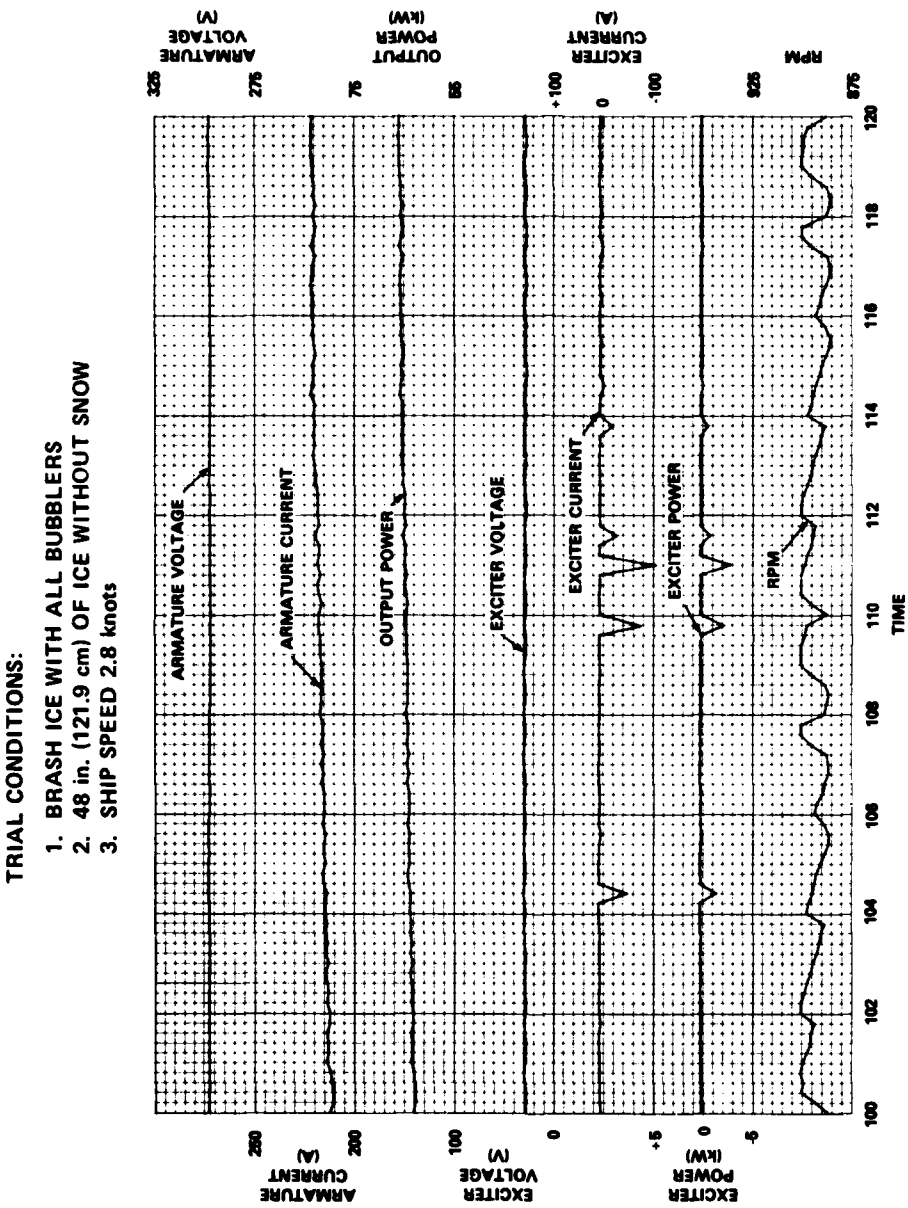


Figure 105 - Generator 2 Data, Five Samples per Second Plotted, Run 4420

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 8.9 knots

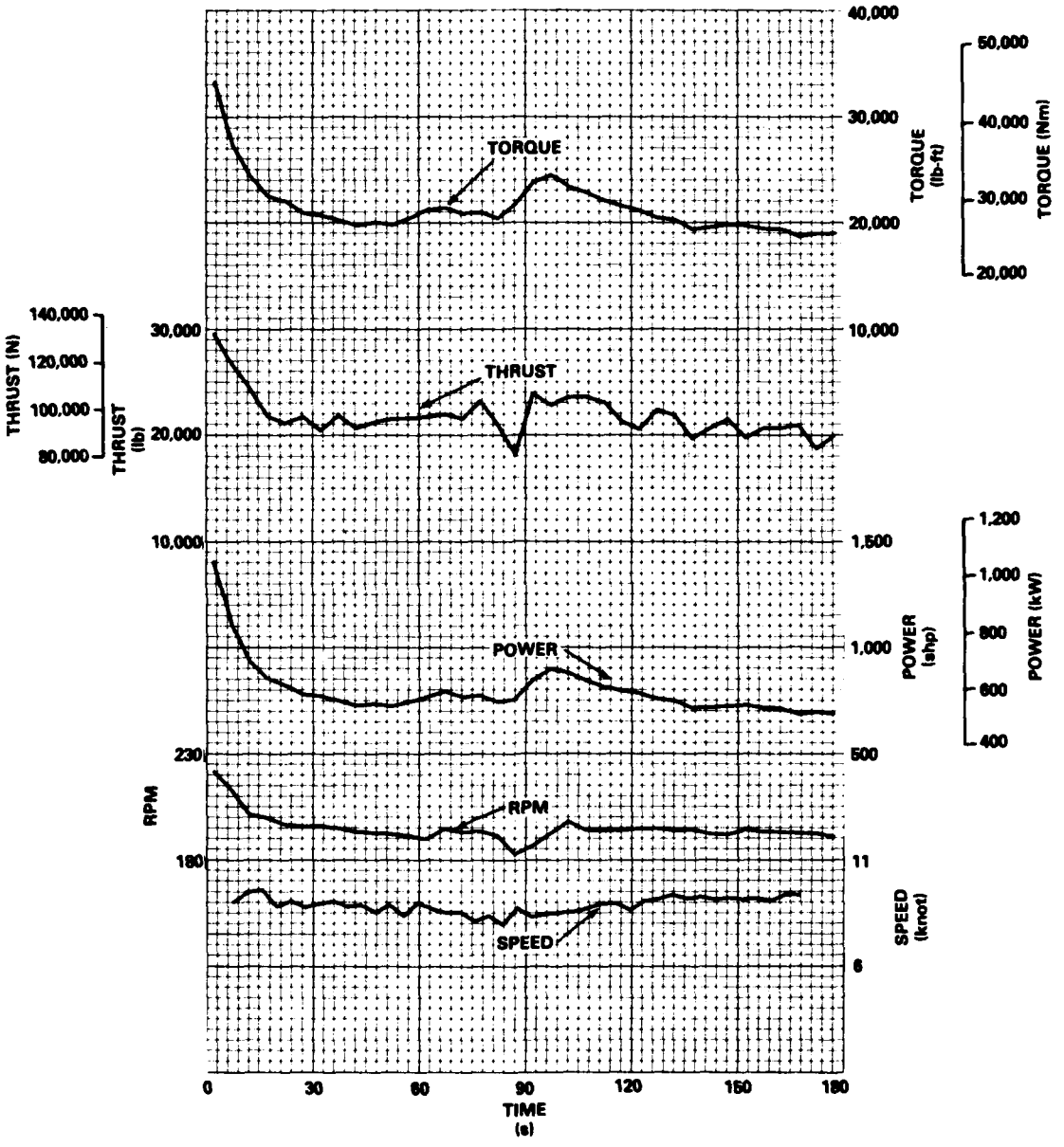


Figure 106 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 4310

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 8.9 knots

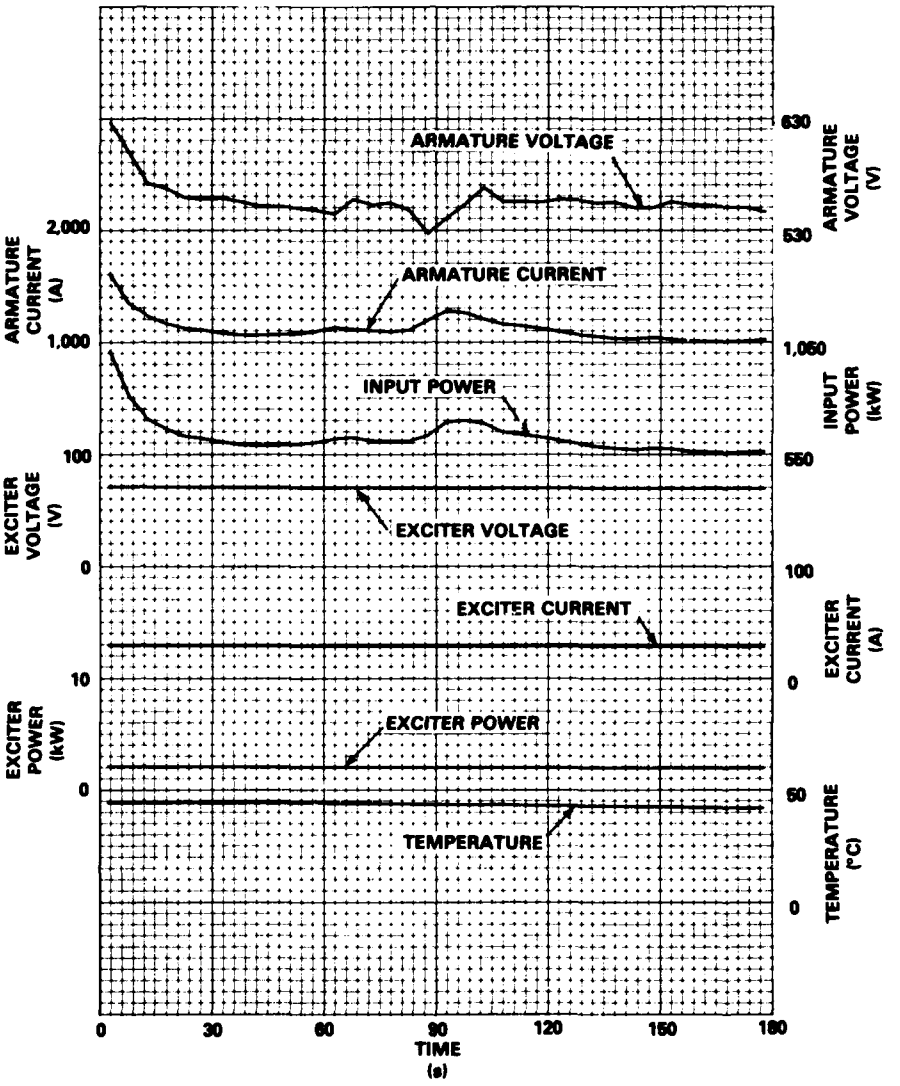


Figure 107 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 4310

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 8.9 knots

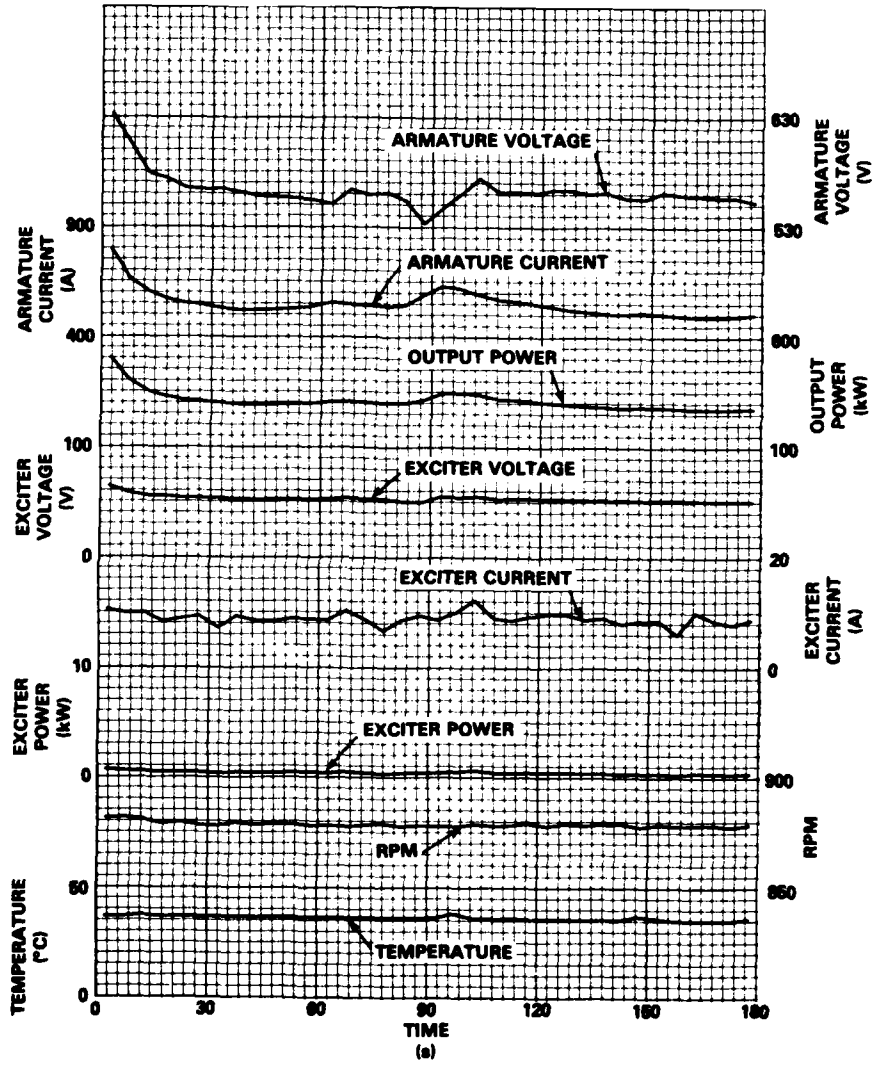


Figure 108 - Generator 1 Data Averaged Over Five-Second Periods, Run 4310

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 8.9 knots

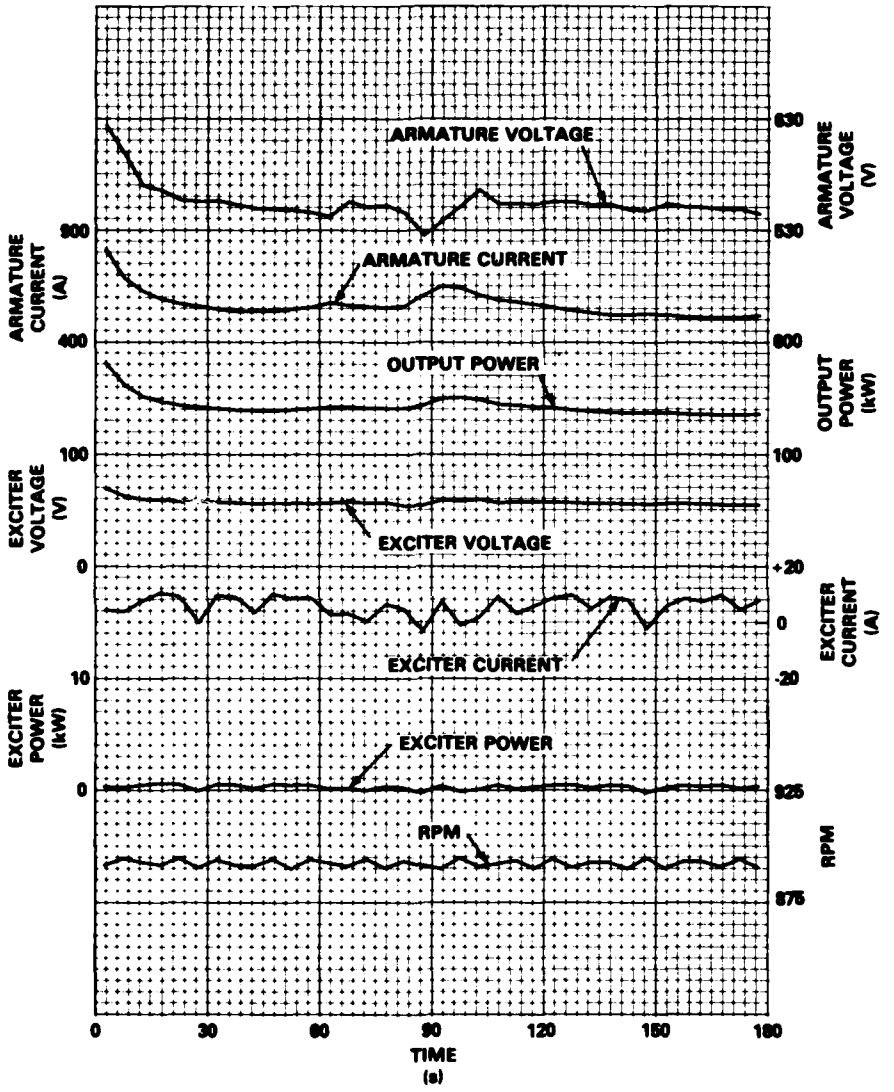


Figure 109 - Generator 2 Data Averaged Over Five-Second Periods, Run 4310

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 8.9 knots

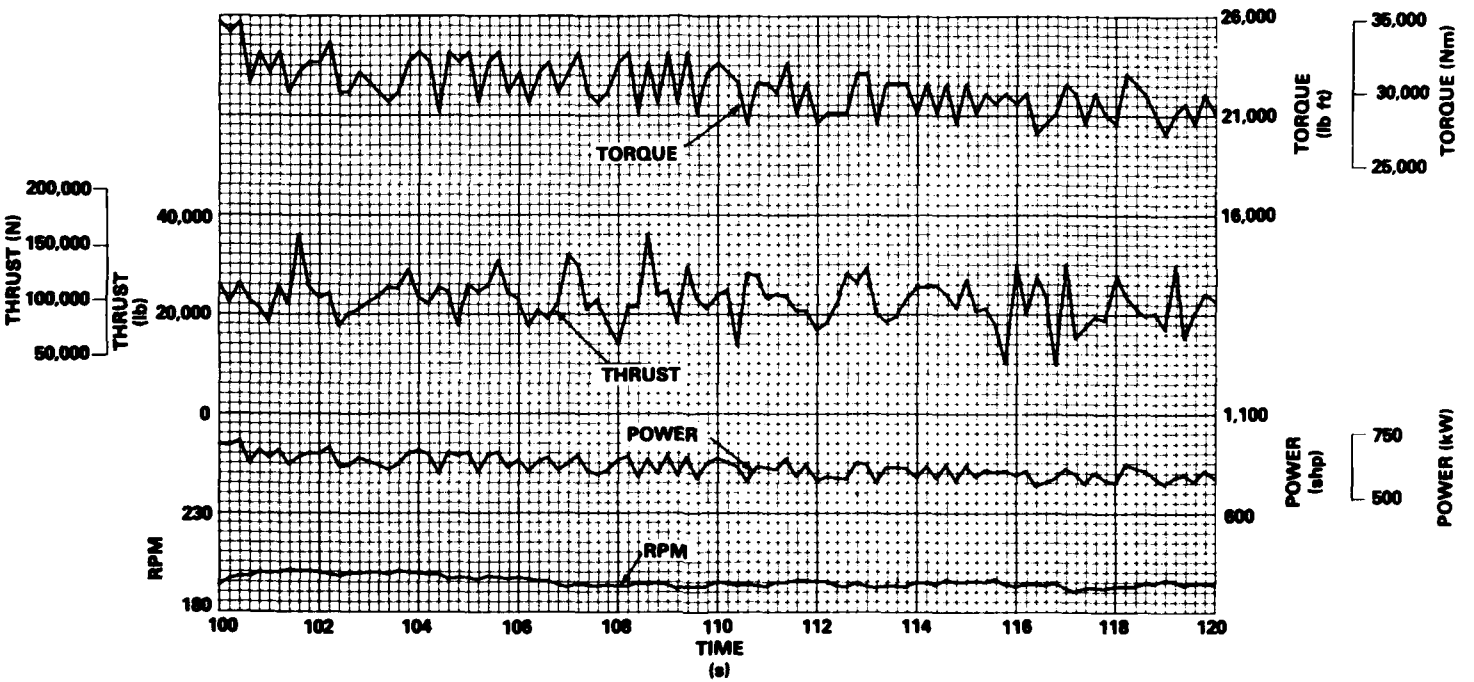


Figure 110 - Propeller Shaft Data, Five Samples per Second Plotted, Run 4310

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 8.9 knots

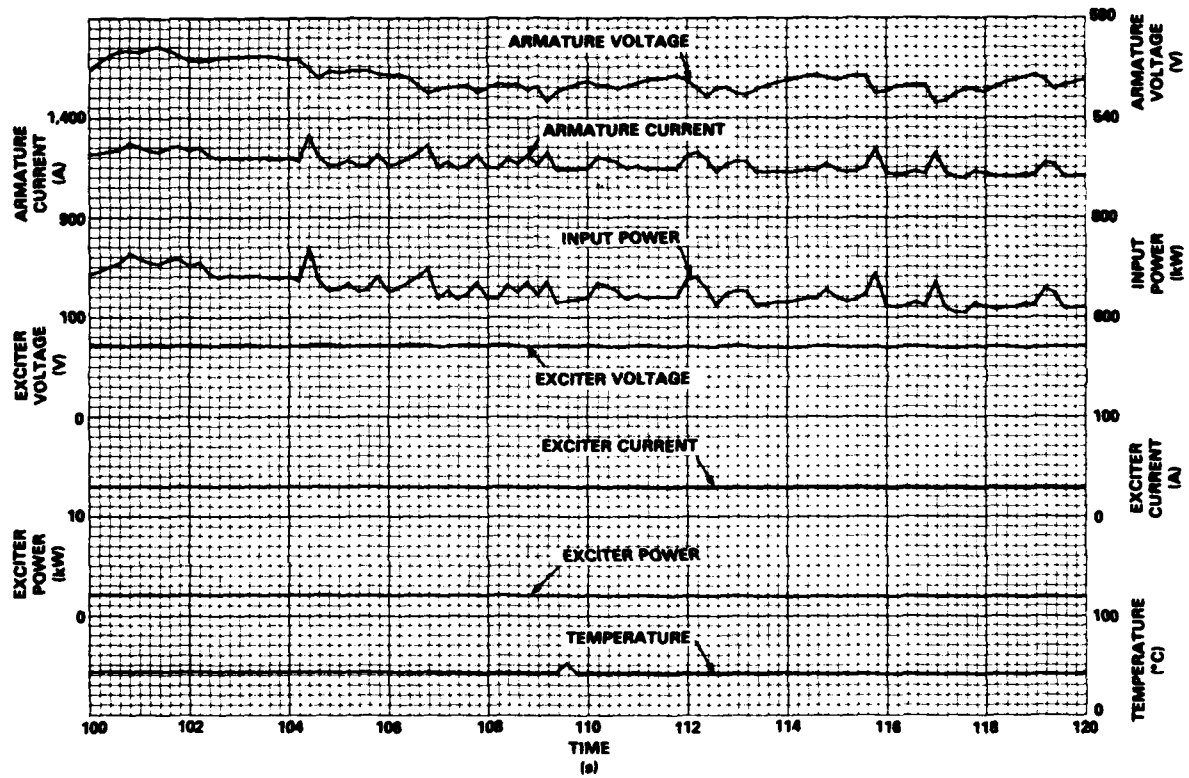


Figure 111 - Propulsion Motor Data, Five Samples per Second Plotted, Run 4310

TRIAL CONDITIONS:

1. **BRASH ICE WITH ALL BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 8.9 knots**

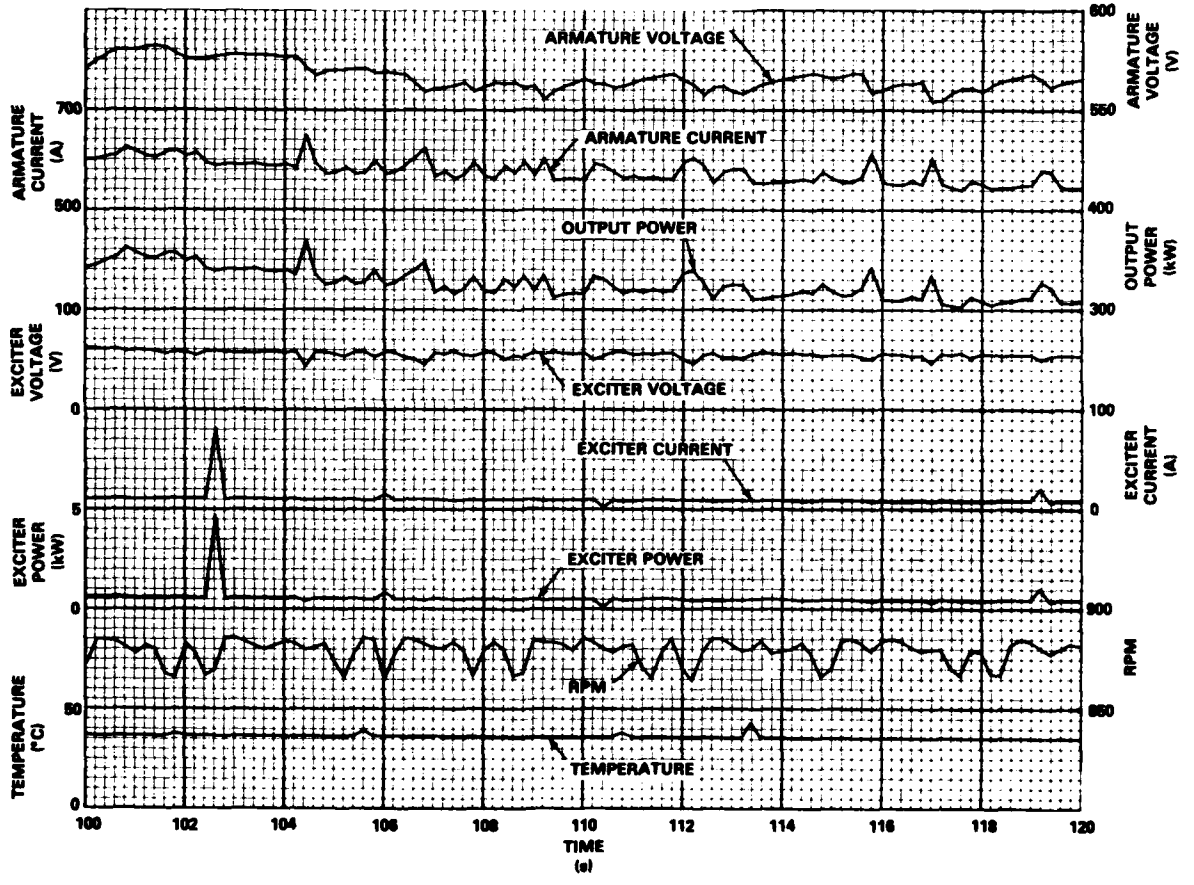


Figure 112 - Generator 1 Data, Five Samples per Second Plotted, Run 4310

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 8.9 knots

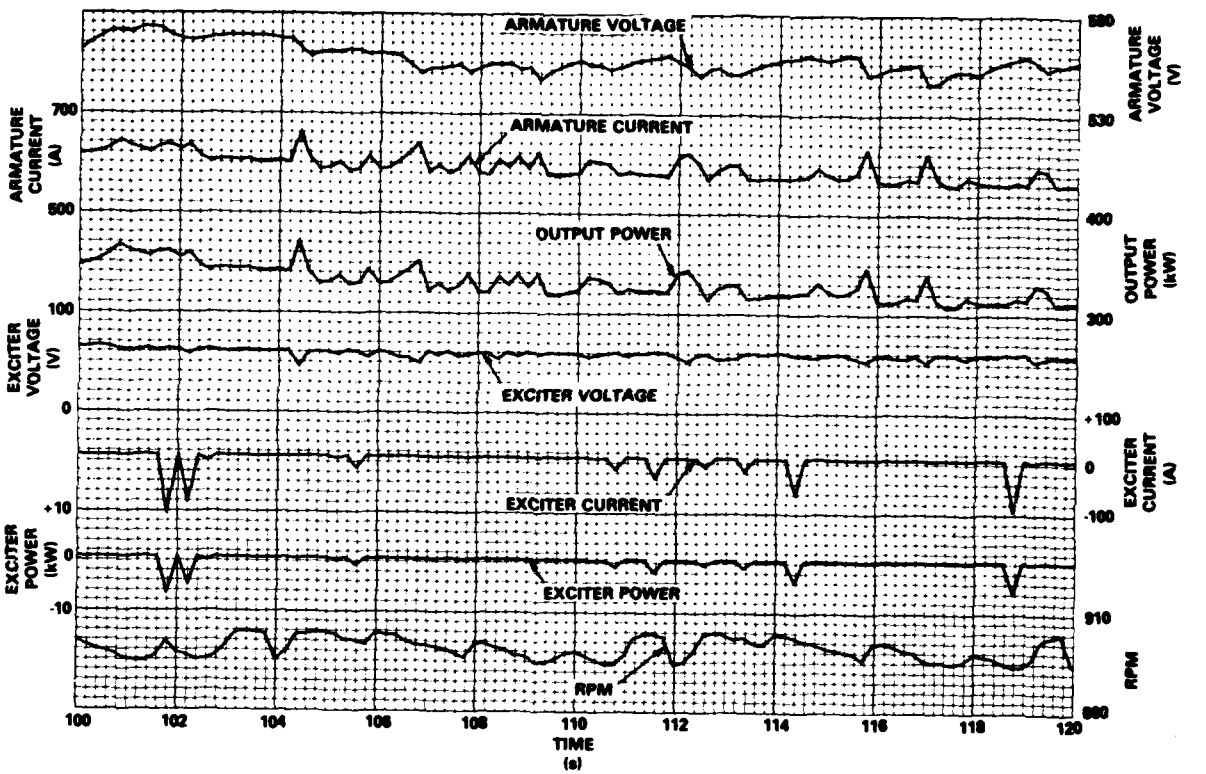


Figure 113 - Generator 2 Data, Five Samples per Second Plotted, Run 4310

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.2 knots

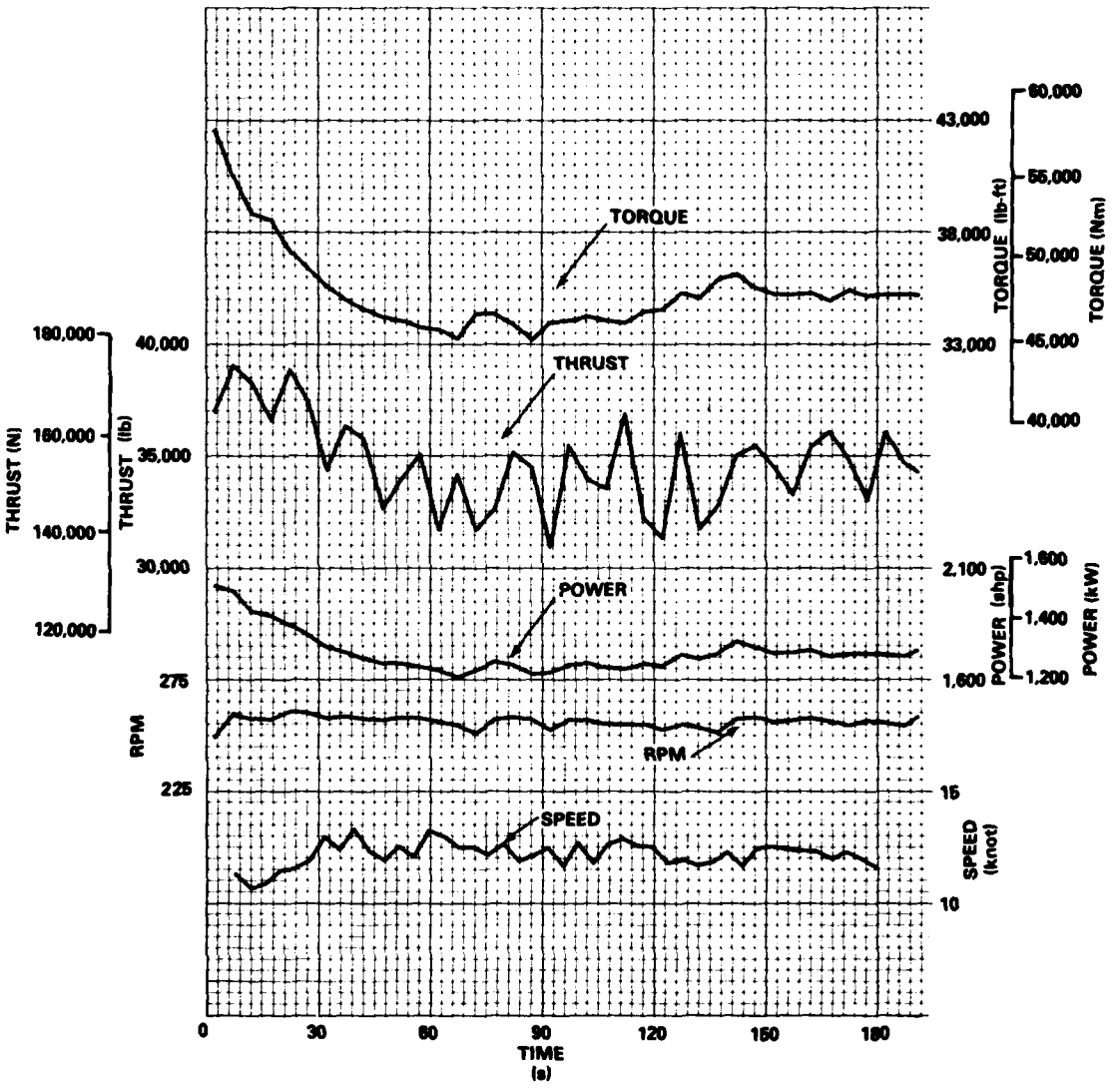


Figure 114 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 4330

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.2 knots

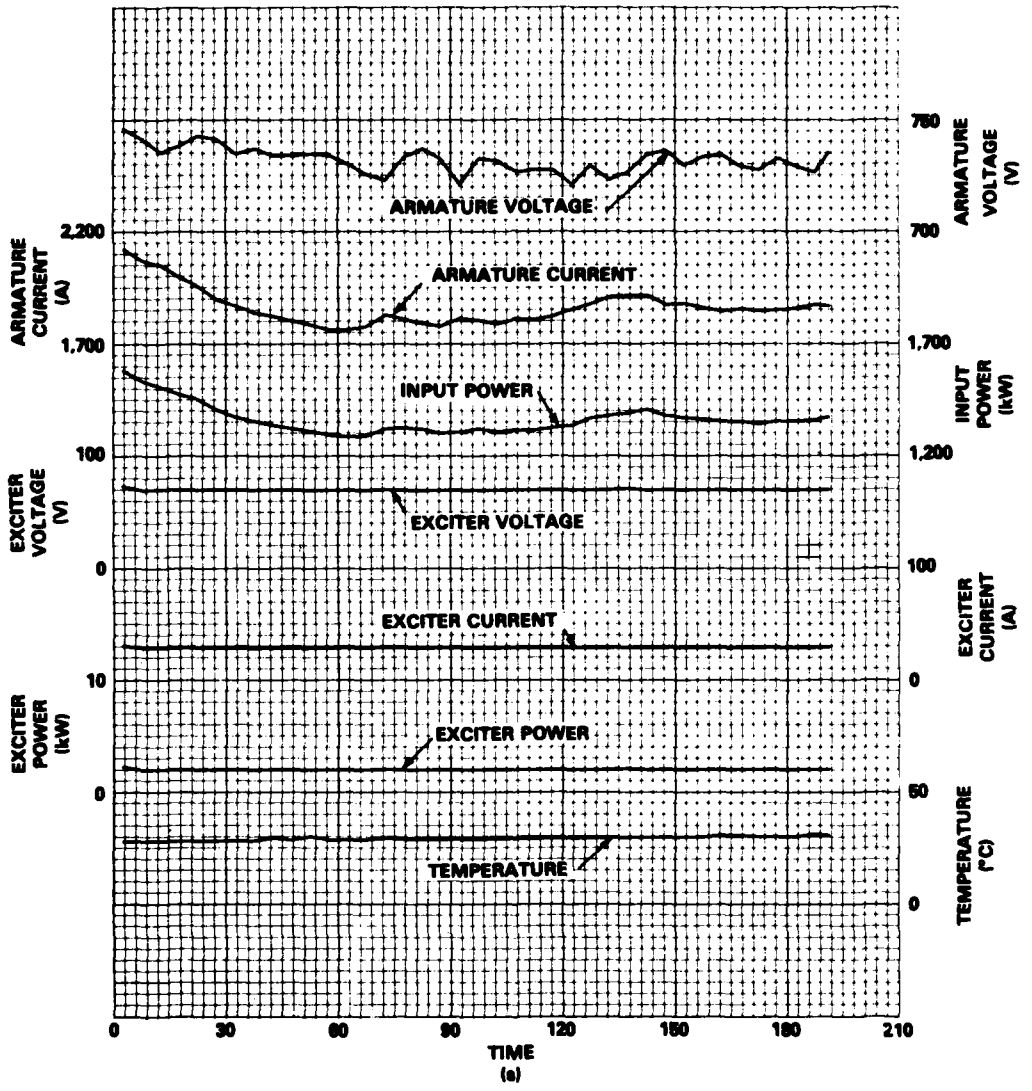


Figure 115 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 4330

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.2 knots

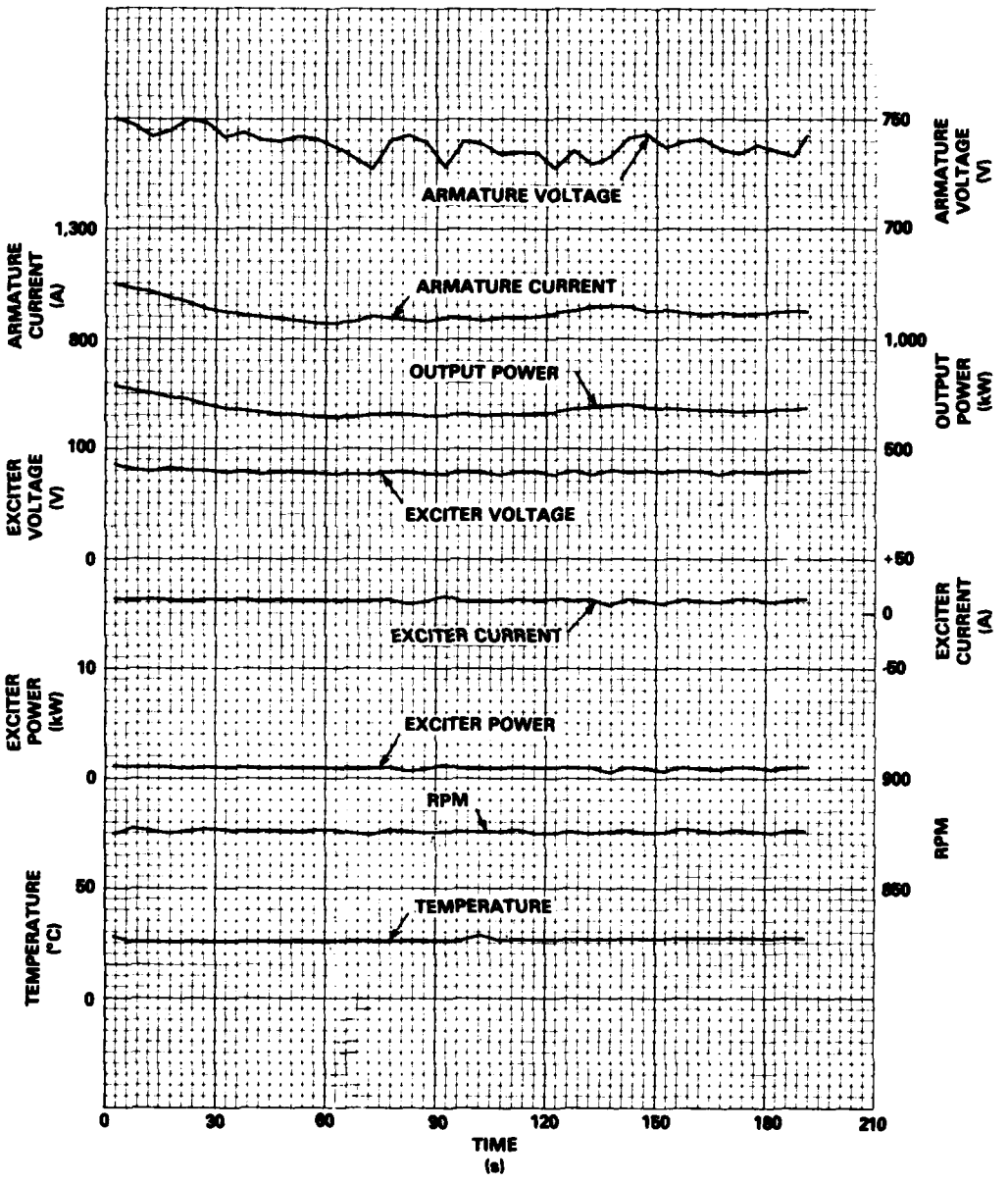


Figure 116 - Generator 1 Data Averaged Over Five-Second Periods, Run 4330

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.2 knots

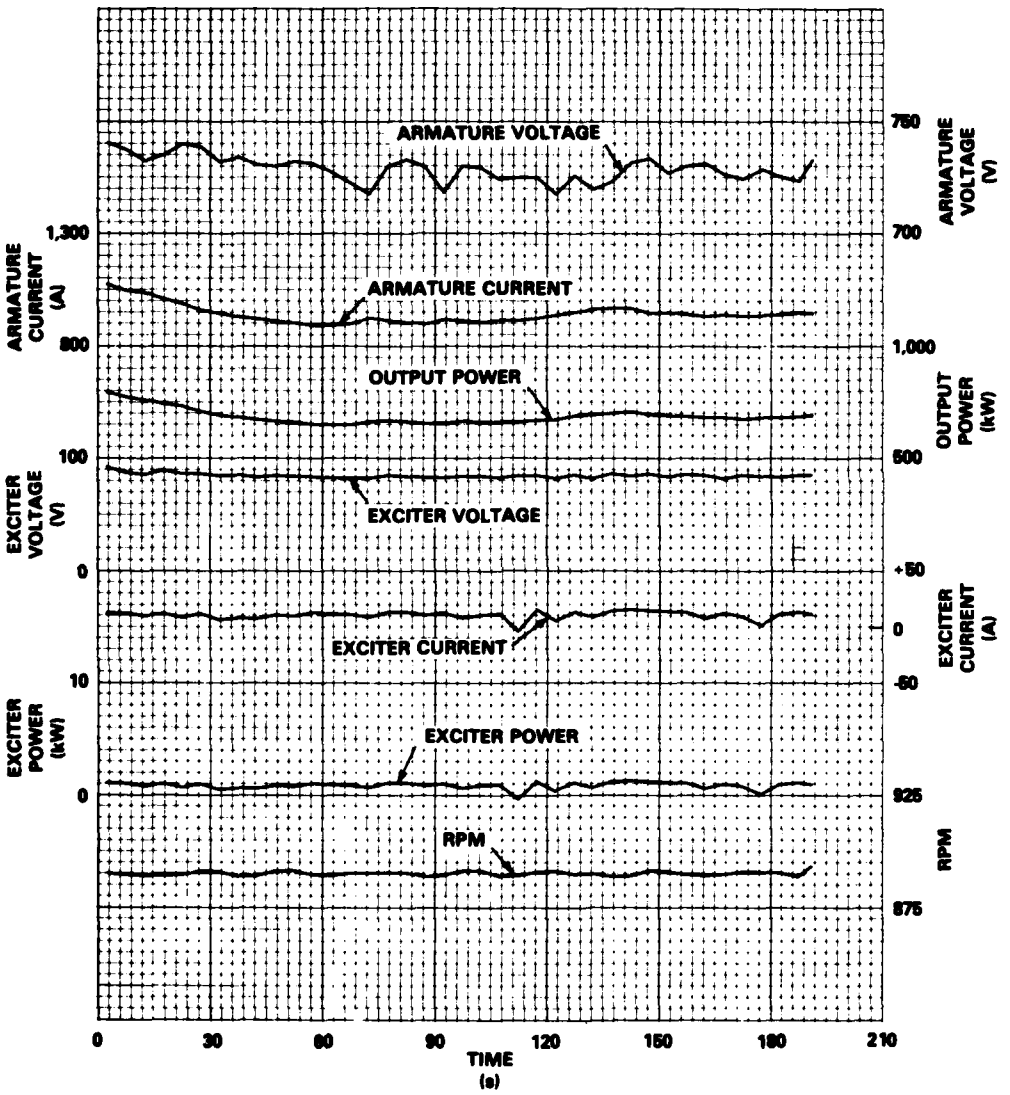


Figure 117 - Generator 2 Data Averaged Over Five-Second Periods, Run 4330

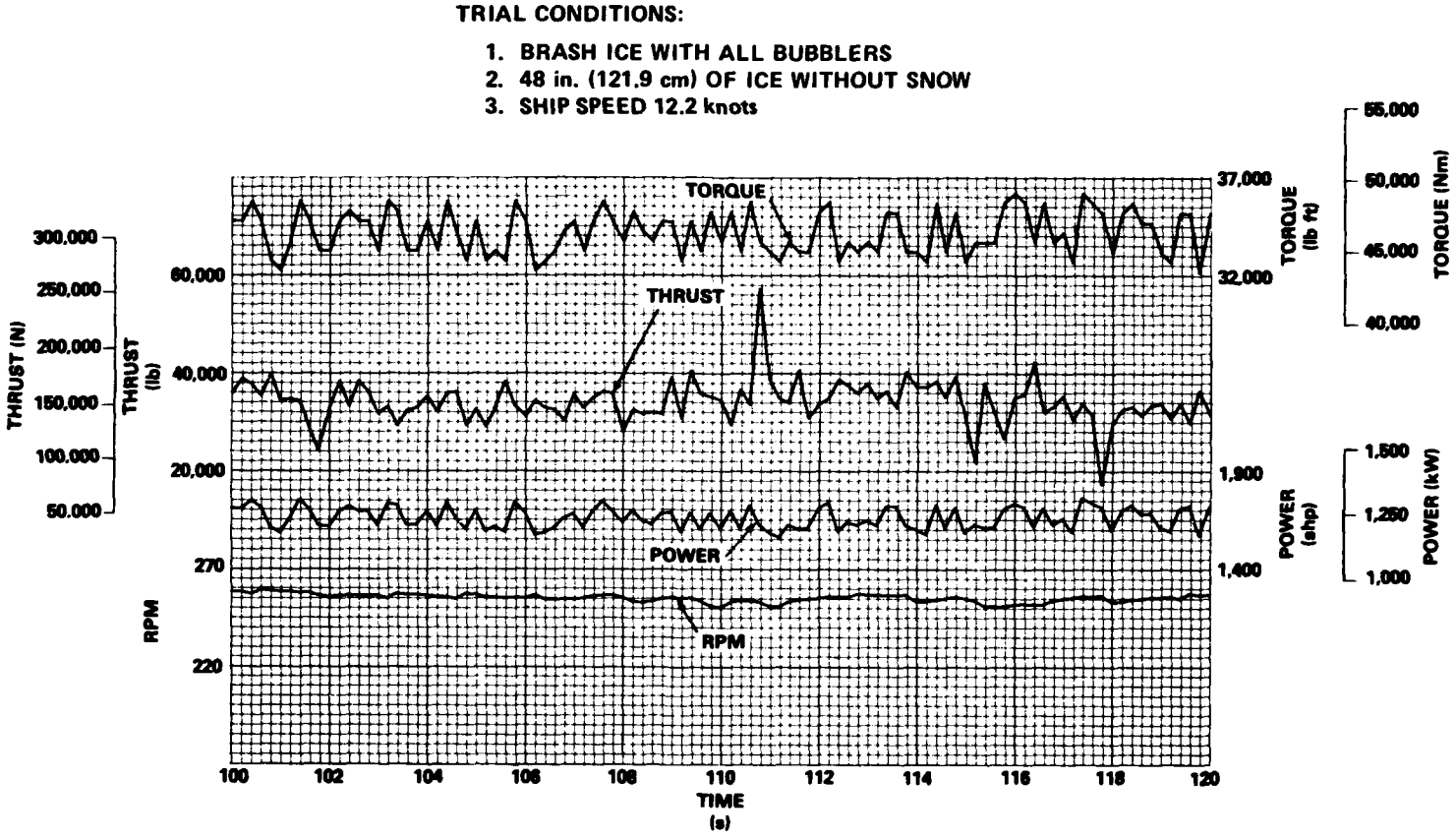


Figure 118 - Propeller Shaft Data, Five Samples per Second Plotted, Run 4330

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.2 knots

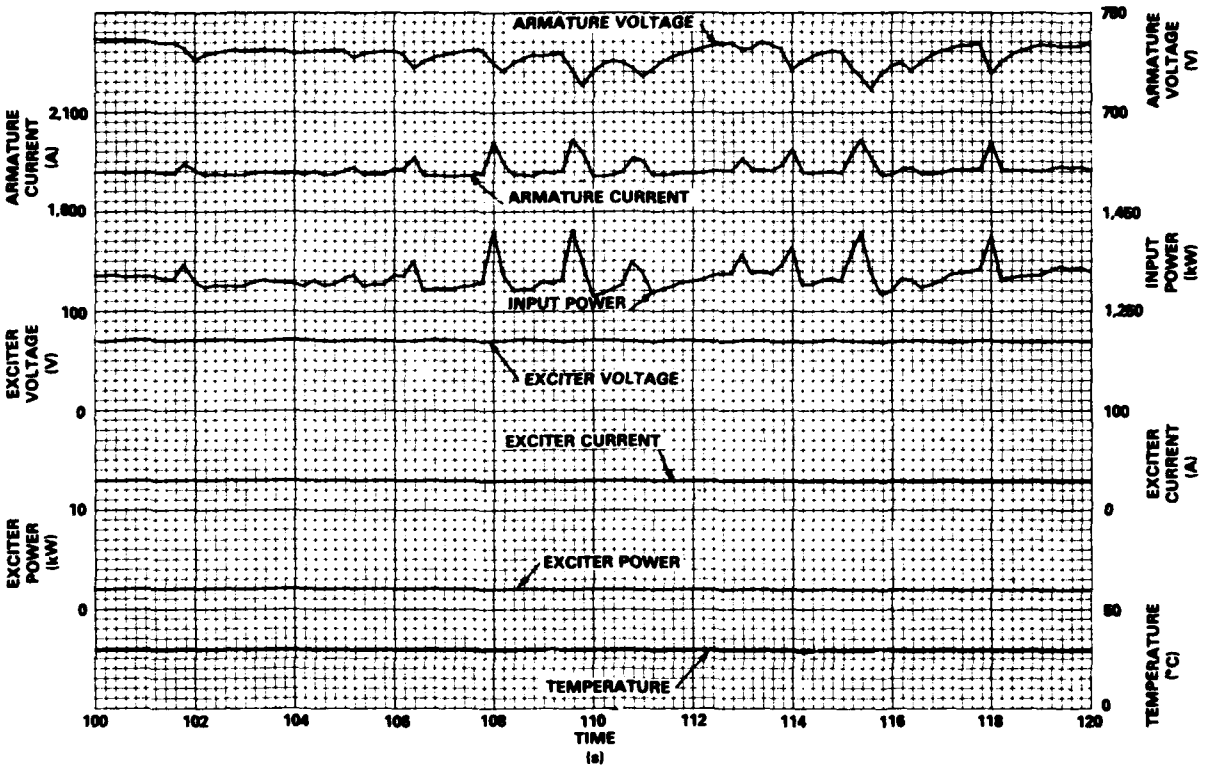


Figure 119 - Propulsion Motor Data, Five Samples per Second Plotted, Run 4330

TRIAL CONDITIONS:

1. **BRASH ICE WITH ALL BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 12.2 knots**

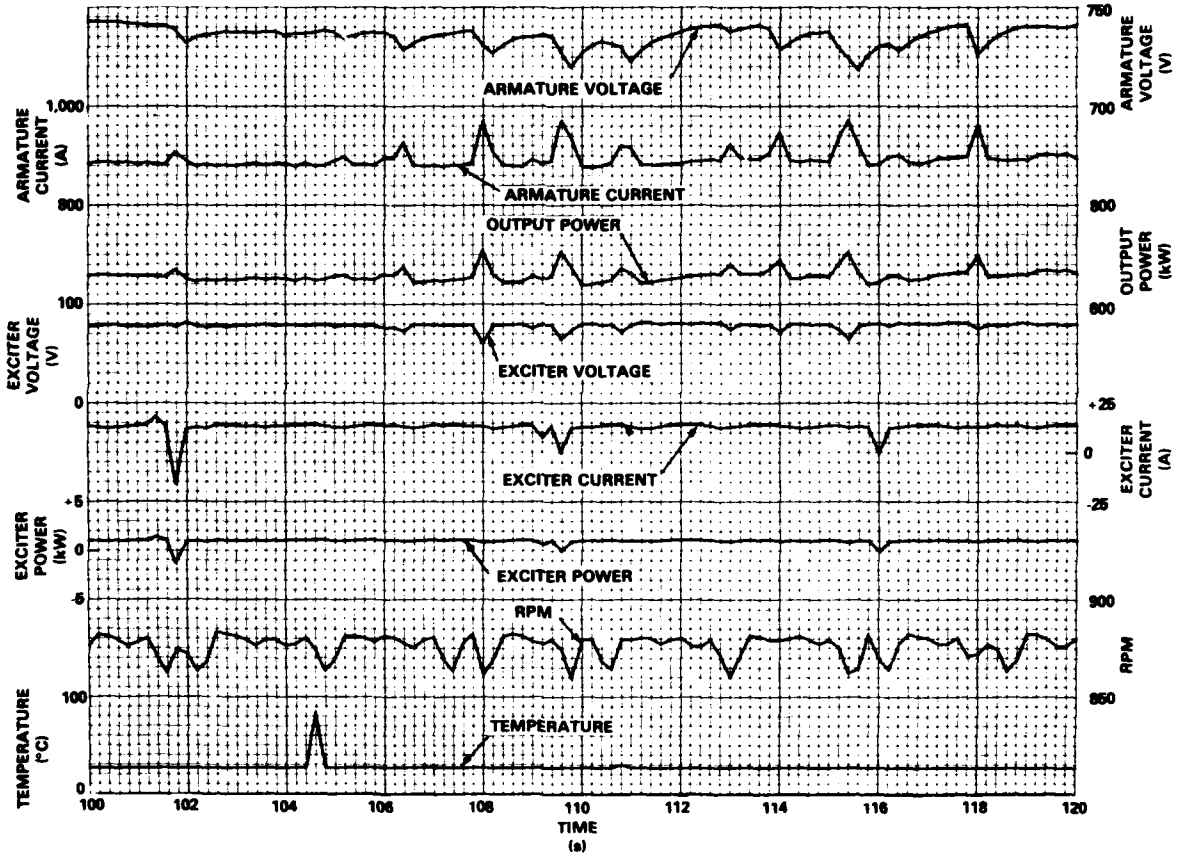


Figure 120 - Generator 1 Data, Five Samples per Second Plotted, Run 4330

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.2 knots

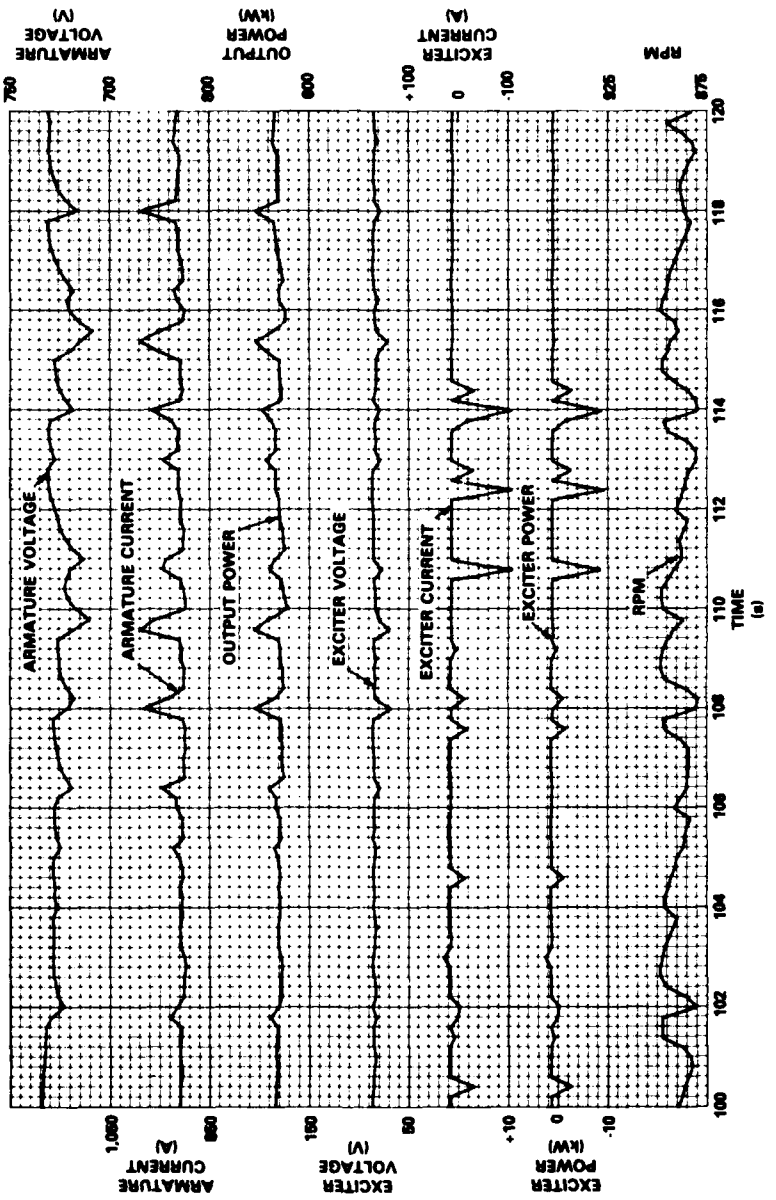


Figure 121 - Generator 2 Data, Five Samples per Second Plotted, Run 4330

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.7 knots

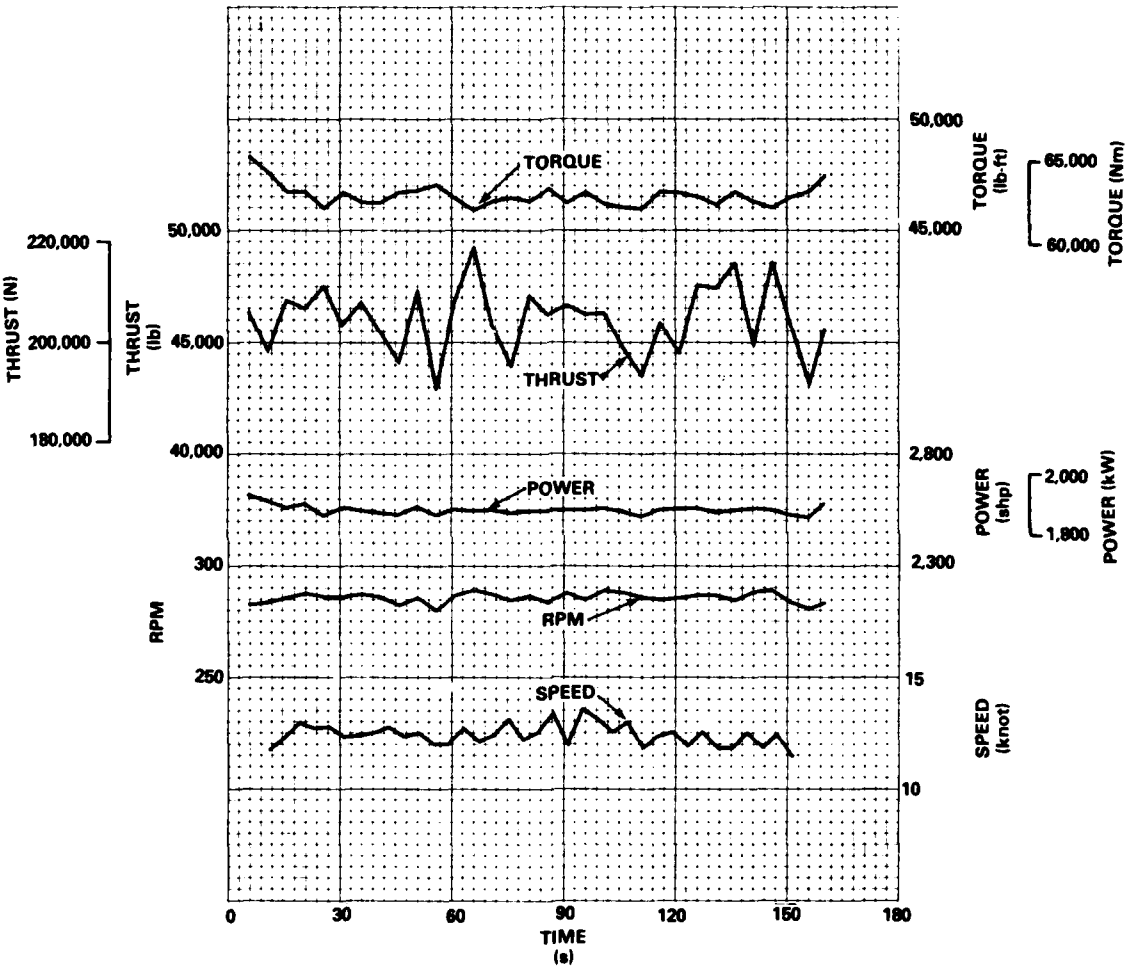


Figure 122 - Propeller Shaft Data Averaged Over Five-Second Periods and Ship Speed, Run 4300

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.7 knots

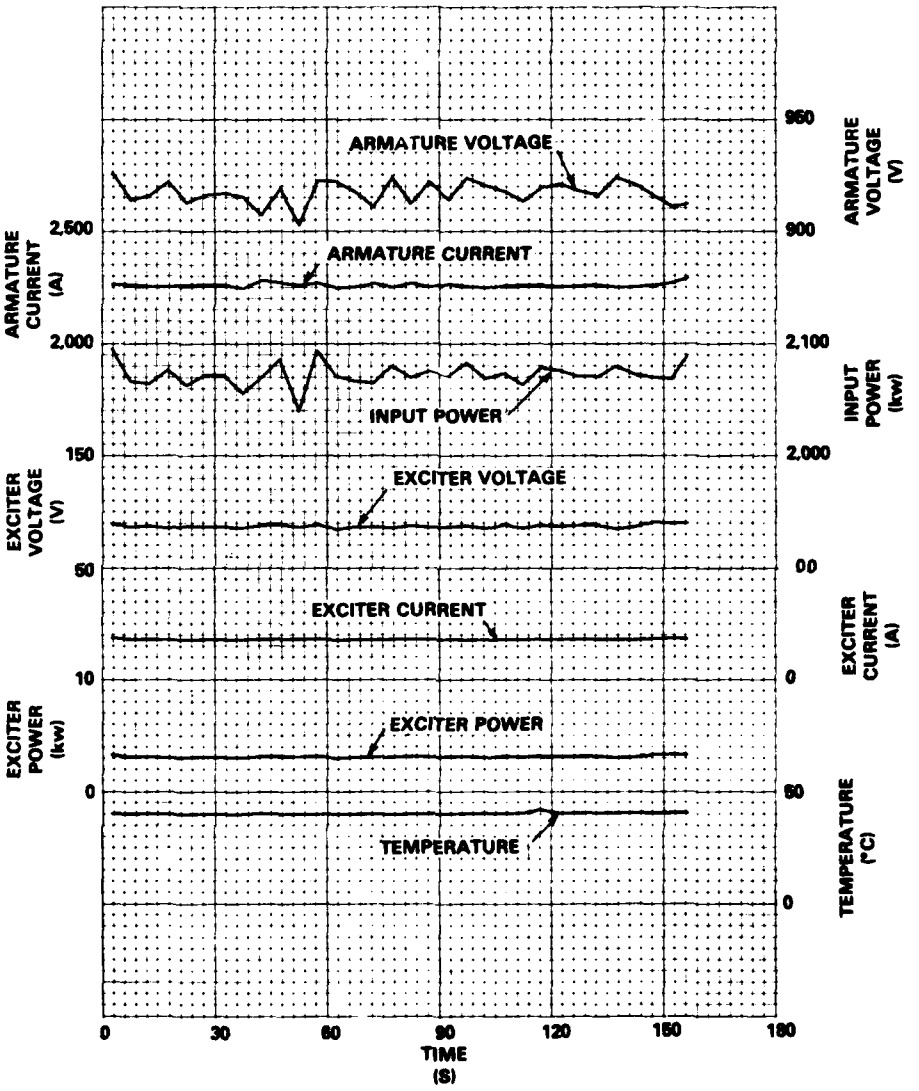


Figure 123 - Propulsion Motor Data Averaged Over Five-Second Periods, Run 4300

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.7 knots

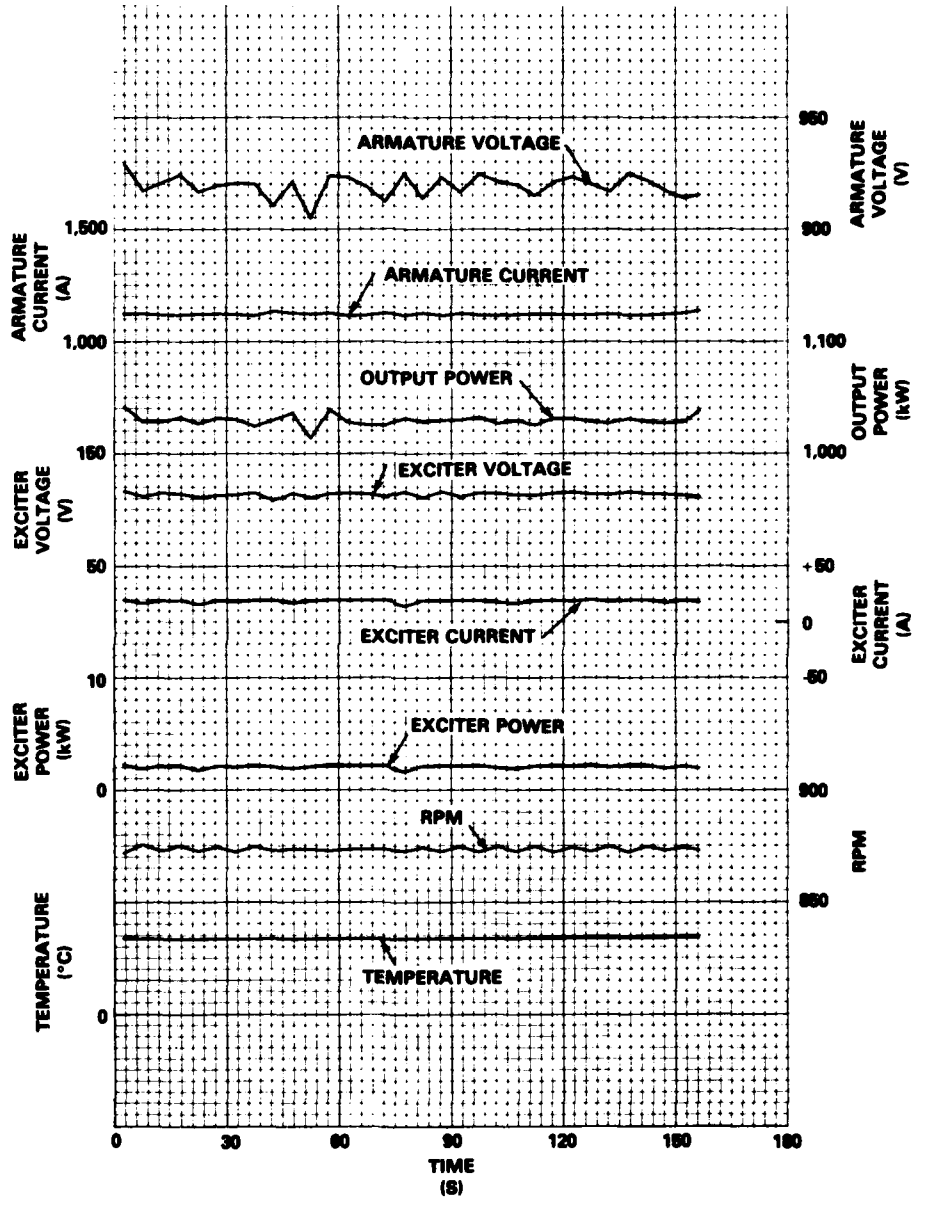


Figure 124 - Generator 1 Data Averaged Over Five-Second Periods, Run 4300

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.7 knots

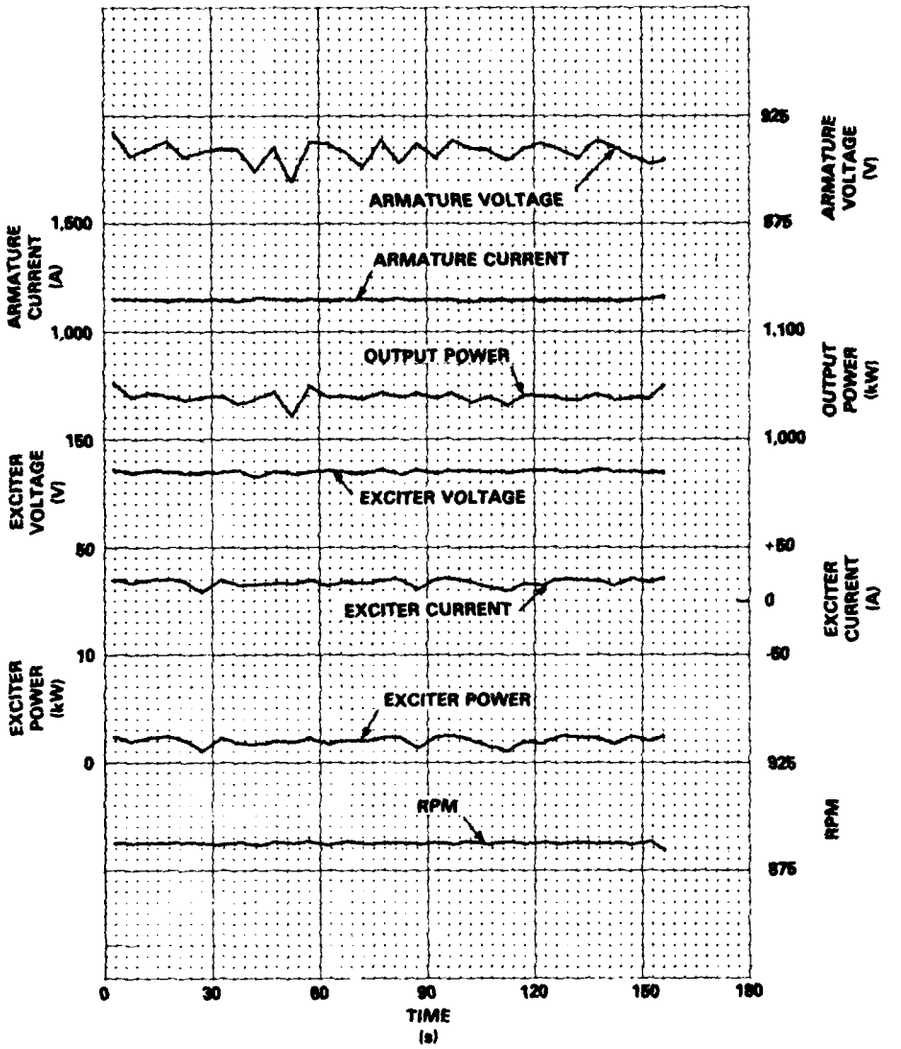


Figure 125 - Generator 2 Data Averaged Over Five-Second Periods, Run 4300

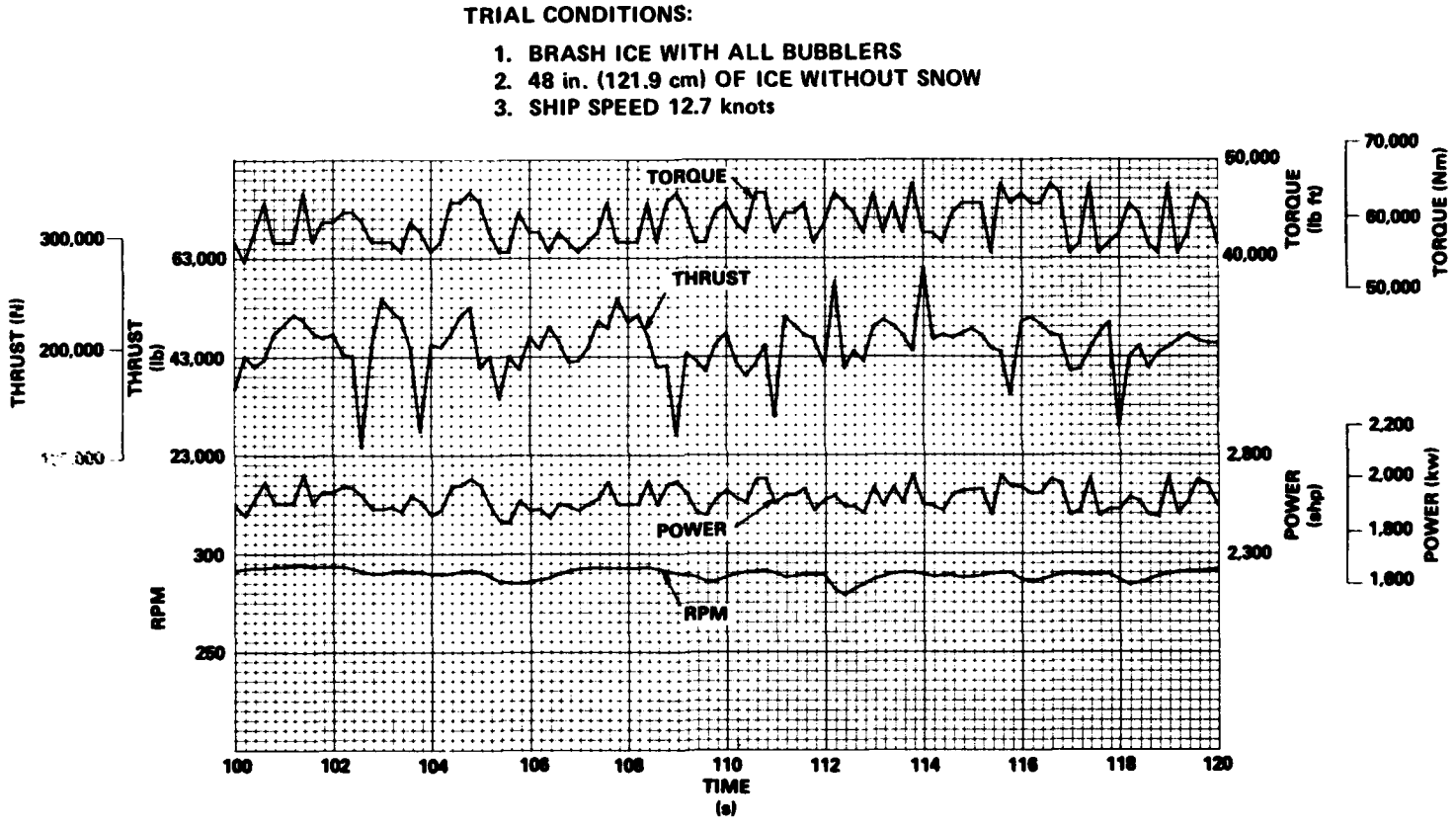


Figure 126 - Propeller Shaft Data, Five Samples per Second Plotted, Run 4300

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.7 knots

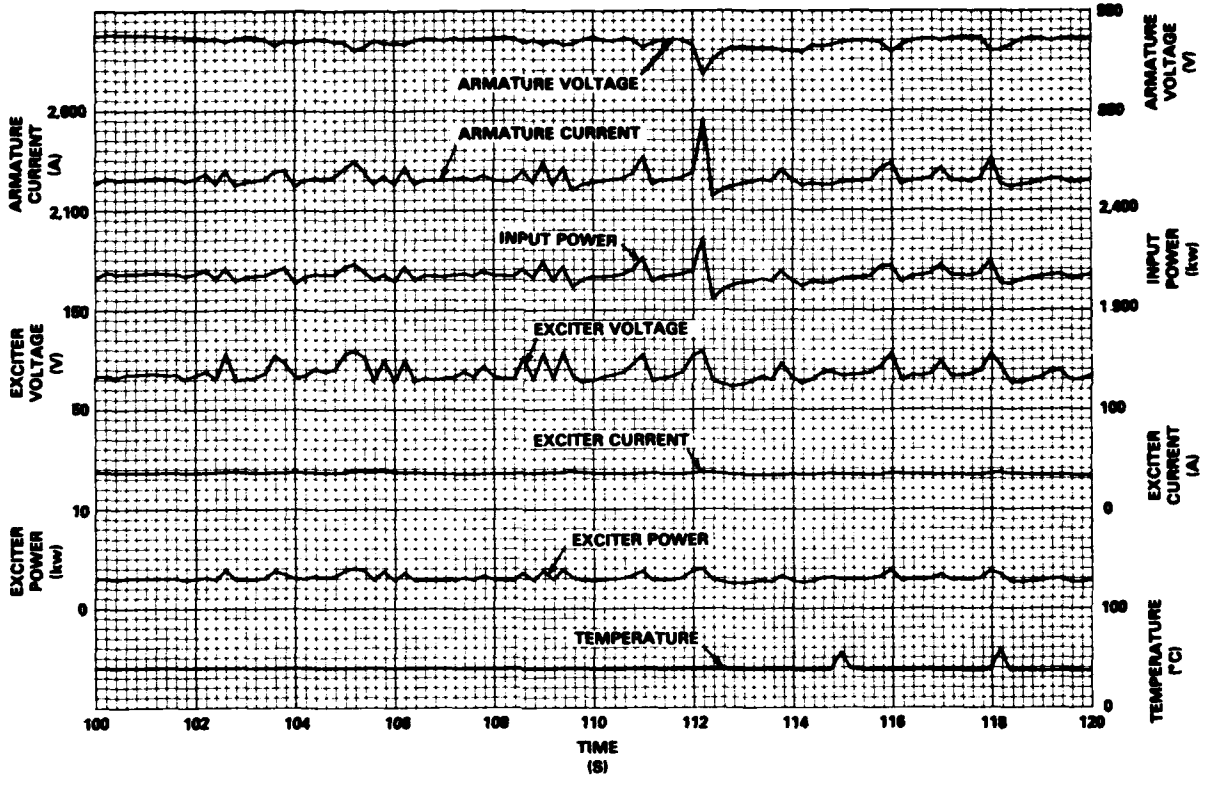


Figure 127 - Propulsion Motor Data, Five Samples per Second Plotted, Run 4300

TRIAL CONDITIONS:

1. **BRASH ICE WITH ALL BUBBLERS**
2. **48 in. (121.9 cm) OF ICE WITHOUT SNOW**
3. **SHIP SPEED 12.7 knots**

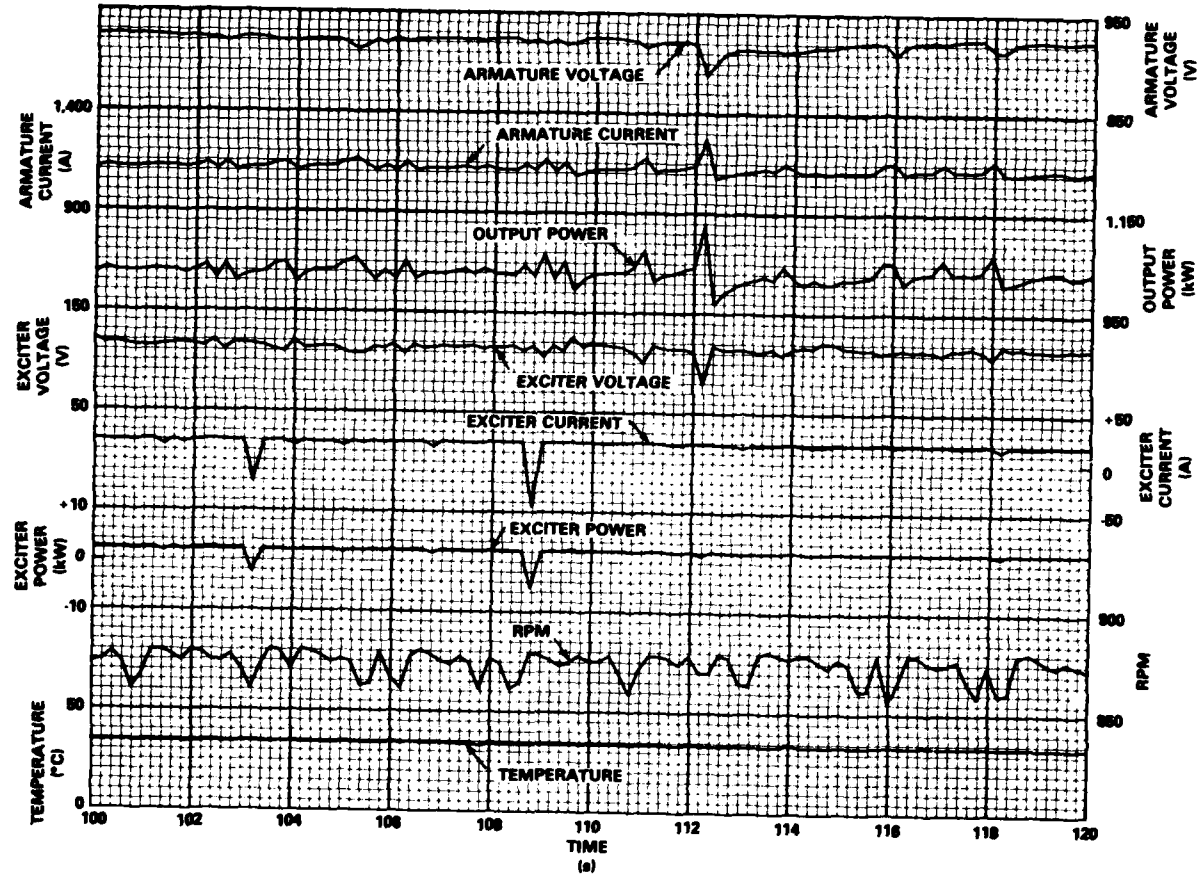


Figure 128 - Generator 1 Data, Five Samples per Second Plotted, Run 4300

TRIAL CONDITIONS:

1. BRASH ICE WITH ALL BUBBLERS
2. 48 in. (121.9 cm) OF ICE WITHOUT SNOW
3. SHIP SPEED 12.7 knots

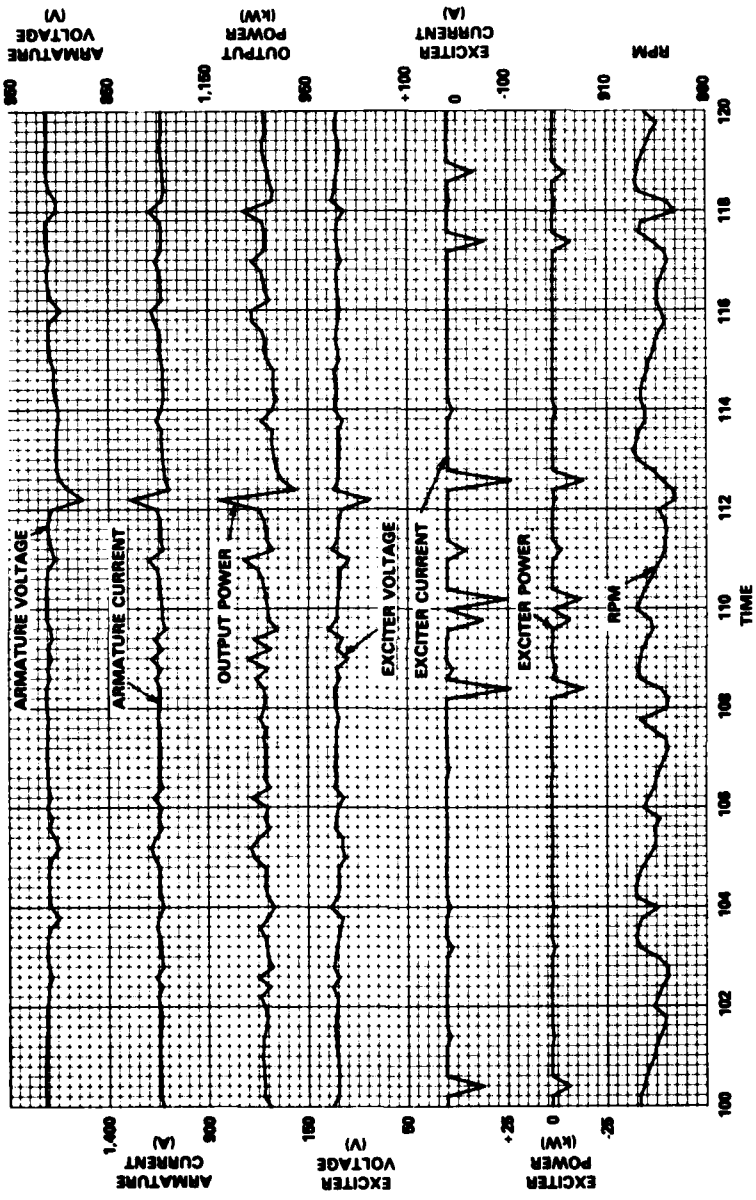


Figure 129 - Generator 2 Data, Five Samples per Second Plotted, Run 4300

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 26 in. (66.0 cm) OF ICE WITH 2 in. (5.1 cm) OF SNOW
3. IMPACT SPEED 8.1 knots
4. FLEXURAL STRENGTH OF ICE 10850 lb/sq ft (520 kPa)

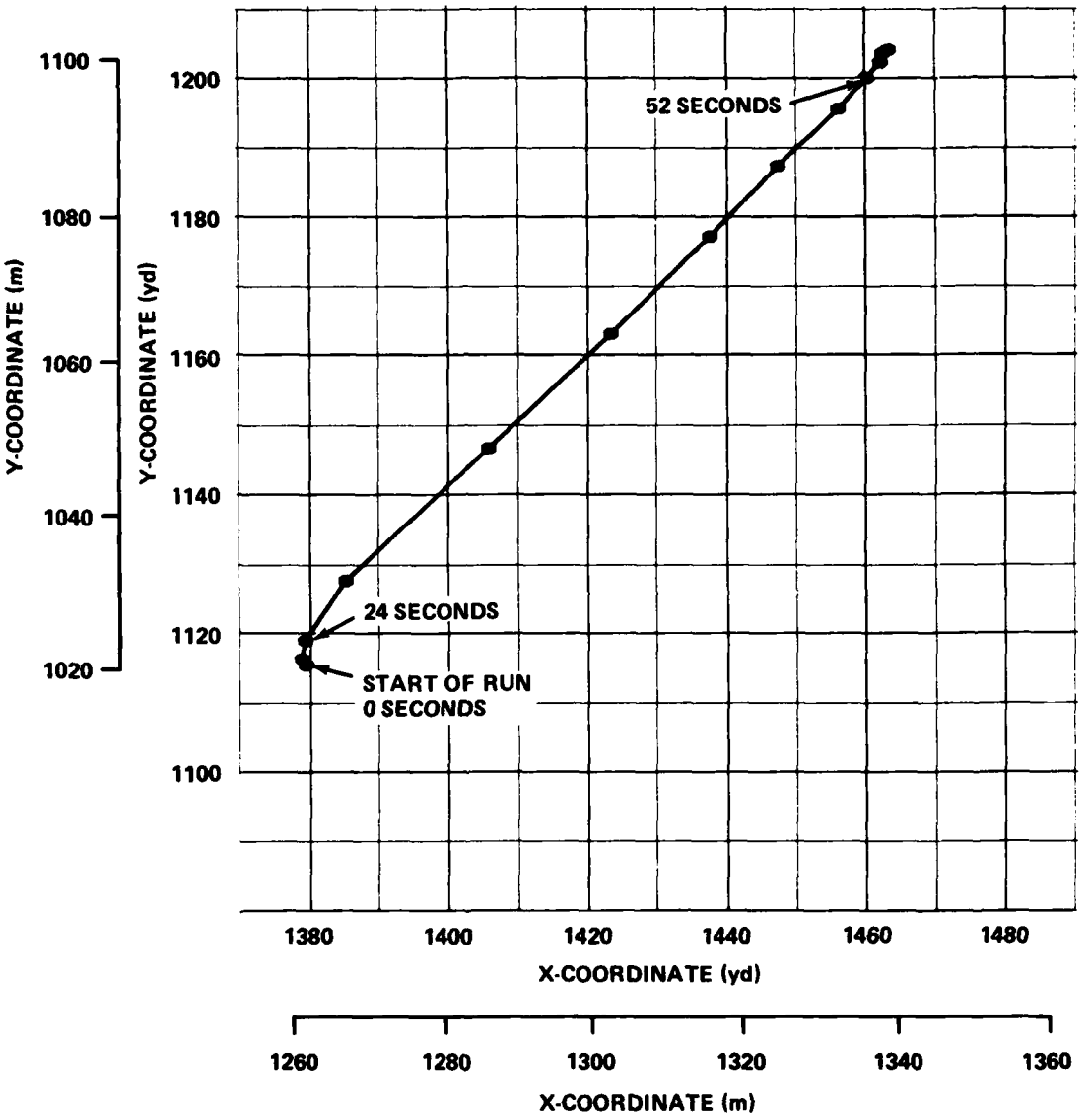


Figure 130 - Ship Track, Ice-Ramming, Run 6500

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 26 in. (66.0 cm) OF ICE WITH 2 in. (5.1 cm) OF SNOW
3. IMPACT SPEED 8.1 knots
4. FLEXURAL STRENGTH OF ICE 10850 lb/sq ft (520 kPa)

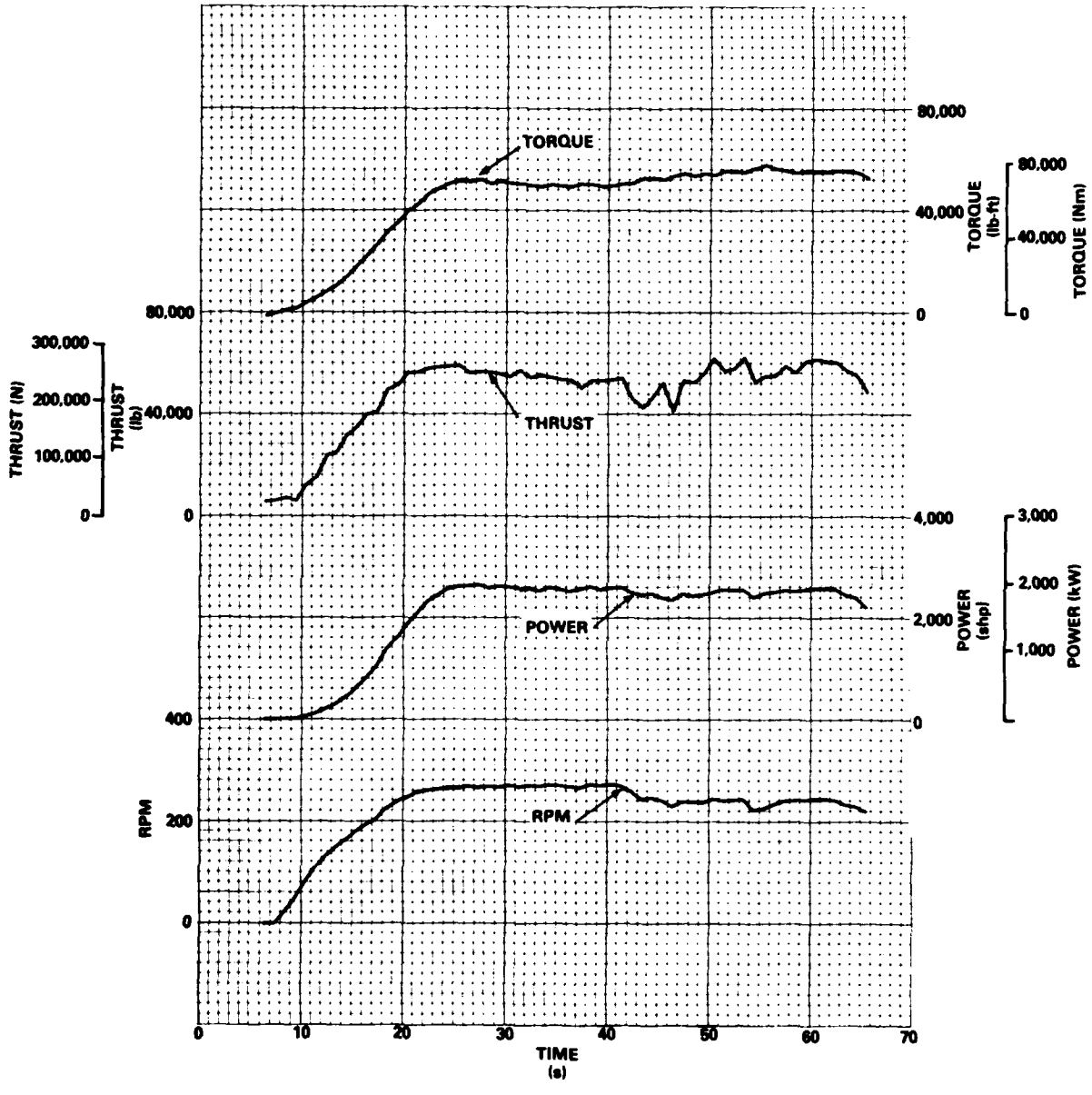


Figure 131 - Propeller Shaft Data Averaged Over One-Second Periods, Run 6500

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 26 in. (66.0 cm) OF ICE WITH 2 in. (5.1 cm) OF SNOW
3. IMPACT SPEED 8.1 knots
4. FLEXURAL STRENGTH OF ICE 10850 lb/sq ft (520 kPa)

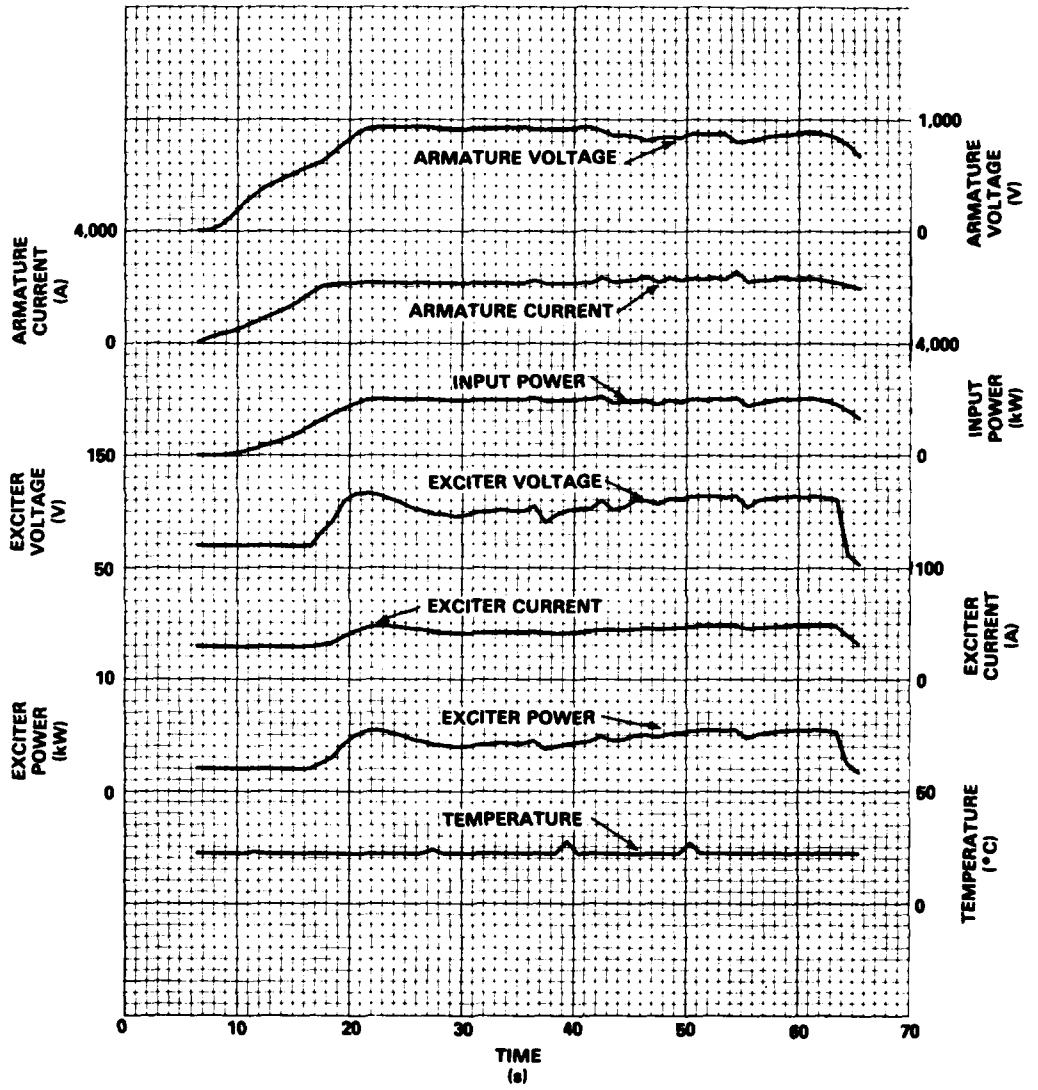


Figure 132 - Propulsion Motor Data Averaged Over One-Second Periods, Run 6500

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 26 in. (66.0 cm) OF ICE WITH 2 in. (5.1 cm) OF SNOW
3. IMPACT SPEED 8.1 knots
4. FLEXURAL STRENGTH OF ICE 10850 lb/sq ft (520 kPa)

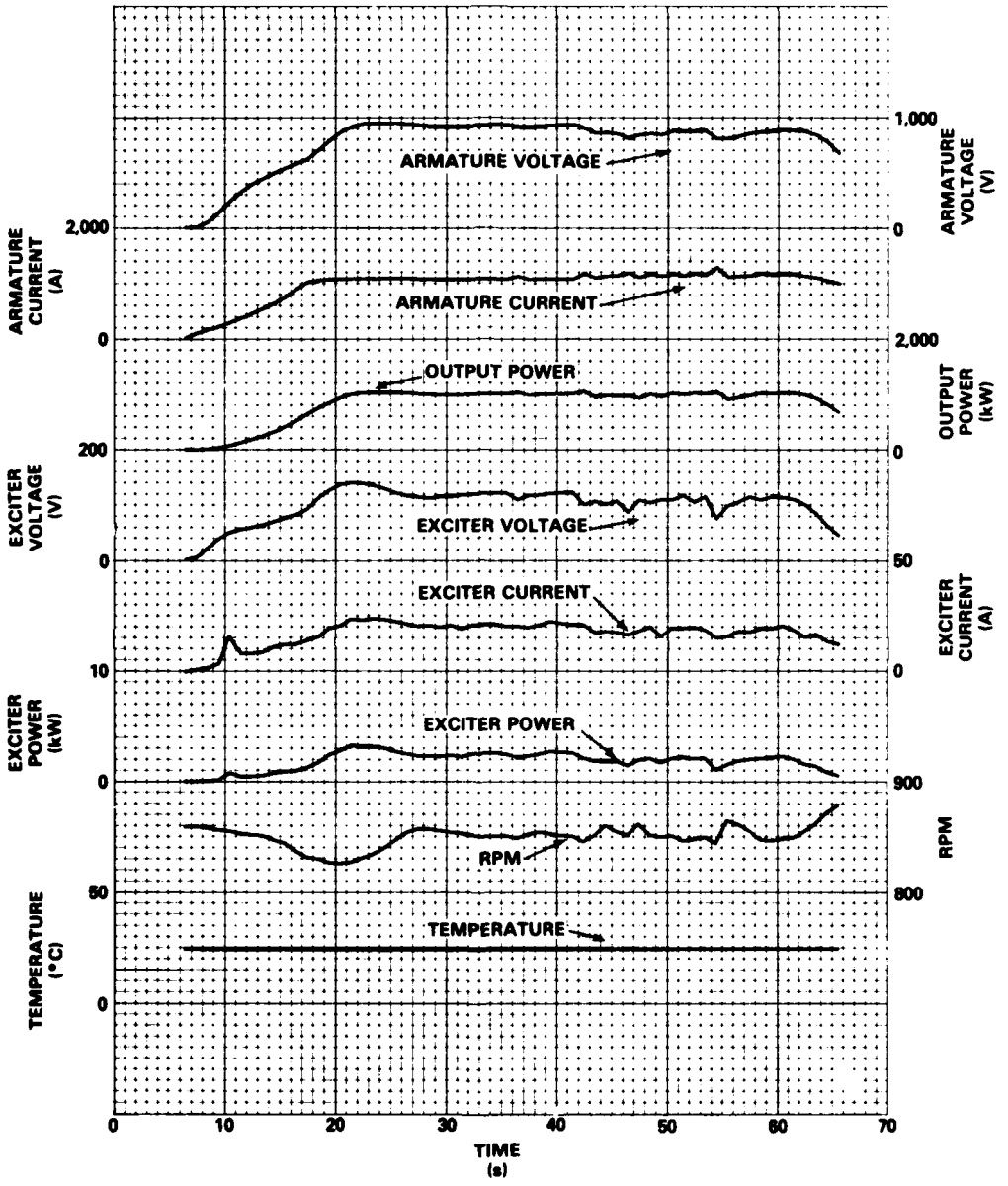


Figure 133 - Generator 1 Data Averaged Over One-Second Periods, Run 6500

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 26 in. (66.0 cm) OF ICE WITH 2 in. (5.1 cm) OF SNOW
3. IMPACT SPEED 8.1 knots
4. FLEXURAL STRENGTH OF ICE 10850 lb/sq ft (520 kPa)

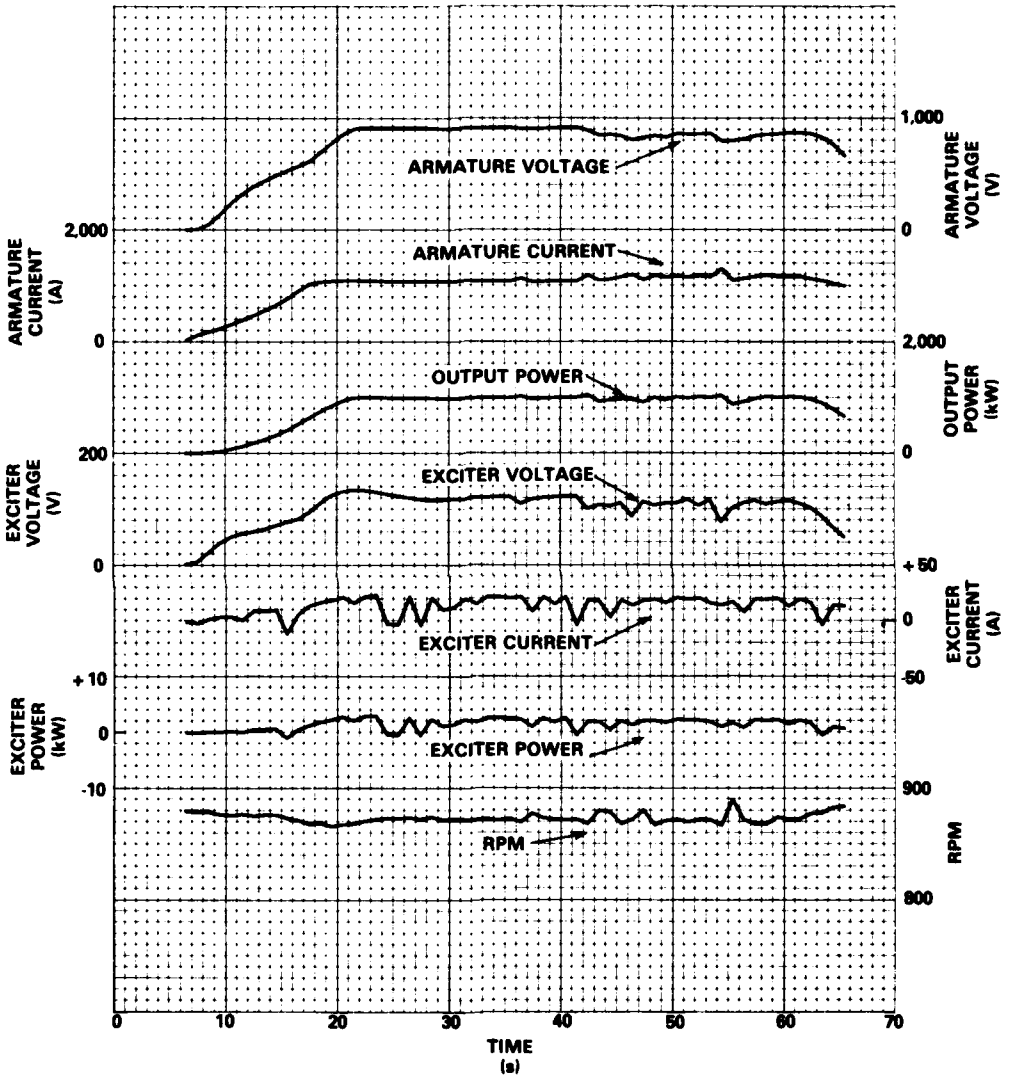


Figure 134 - Generator 2 Data Averaged Over One-Second Periods, Run 6500

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 26 in. (66.0 cm) OF ICE WITH 2 in. (5.1 cm) OF SNOW
3. IMPACT SPEED 8.1 knots
4. FLEXURAL STRENGTH OF ICE 10850 lb/sq ft (520 kPa)

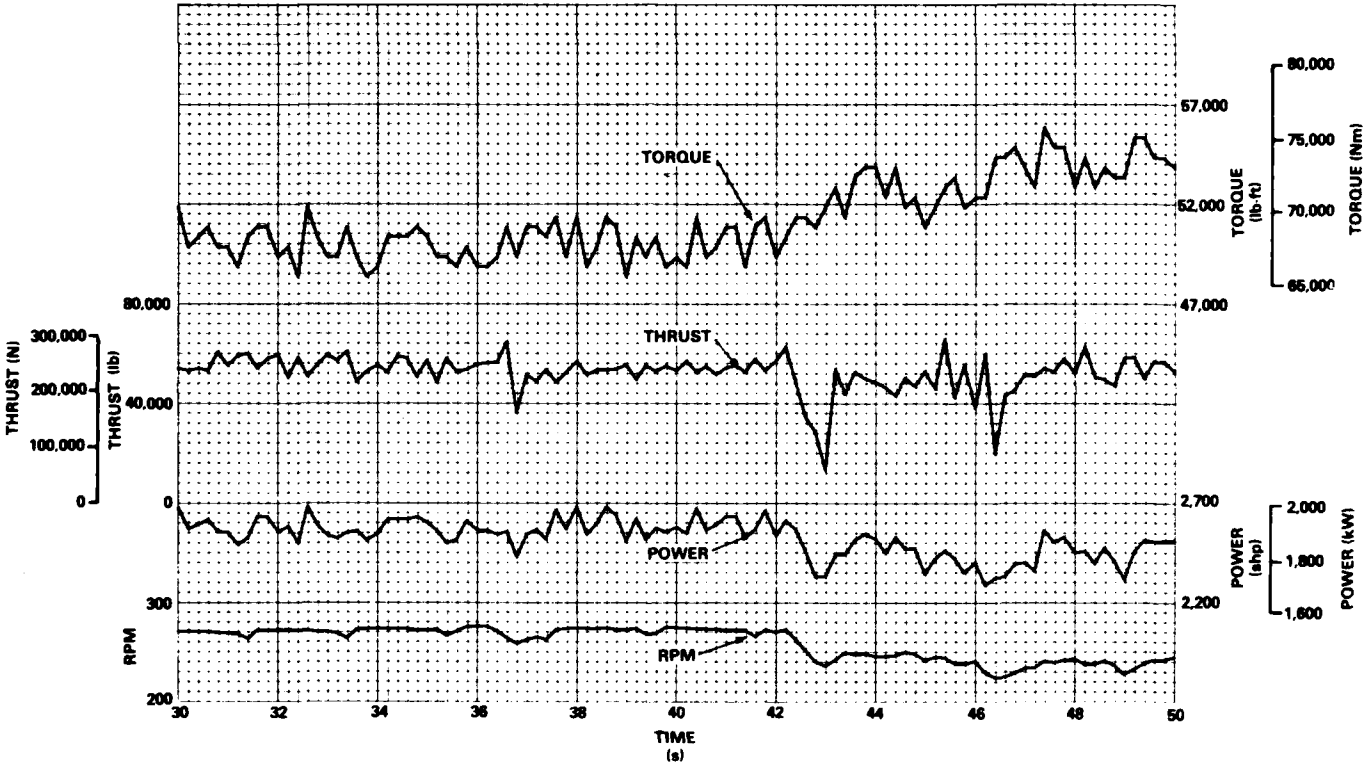


Figure 135 - Propeller Shaft Data, Five Samples per Second Plotted, Run 6500

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 26 in. (66.0 cm) OF ICE WITH 2 in. (5.1 cm) OF SNOW
3. IMPACT SPEED 8.1 knots
4. FLEXURAL STRENGTH OF ICE 10850 lb/sq ft (520 kPa)

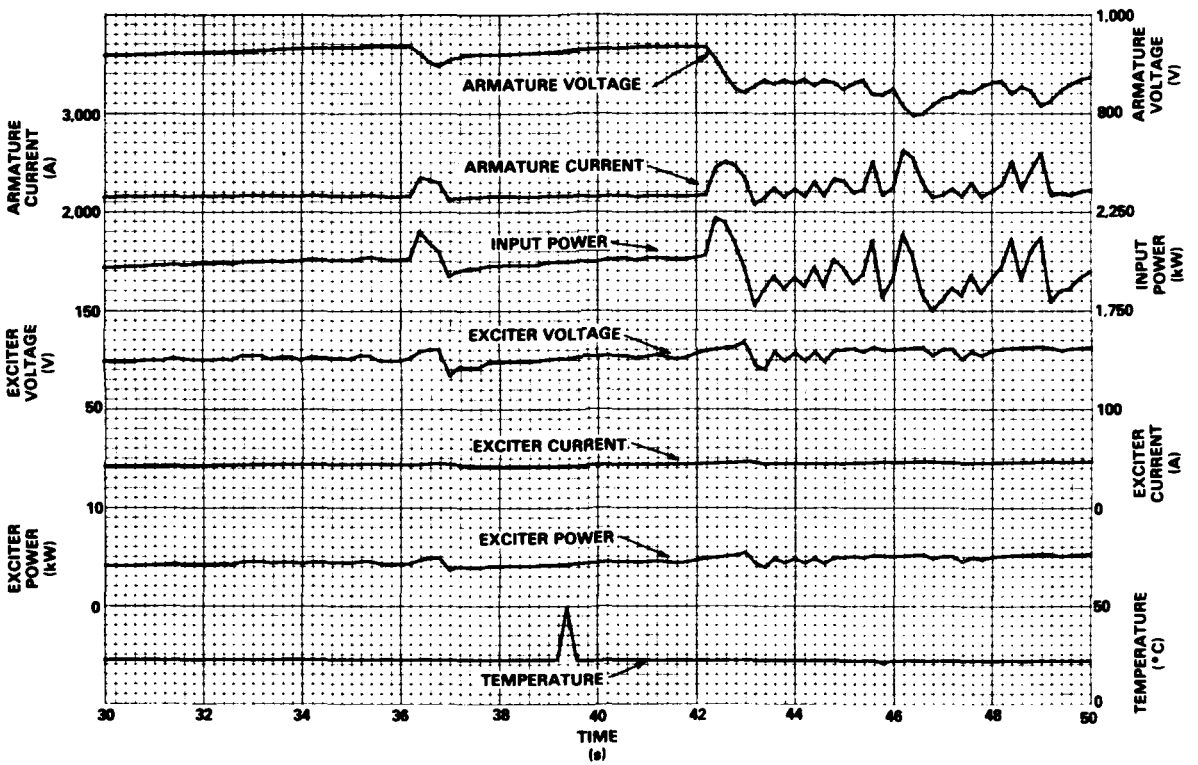


Figure 136 - Propulsion Motor Data, Five Samples per Second Plotted, Run 6500

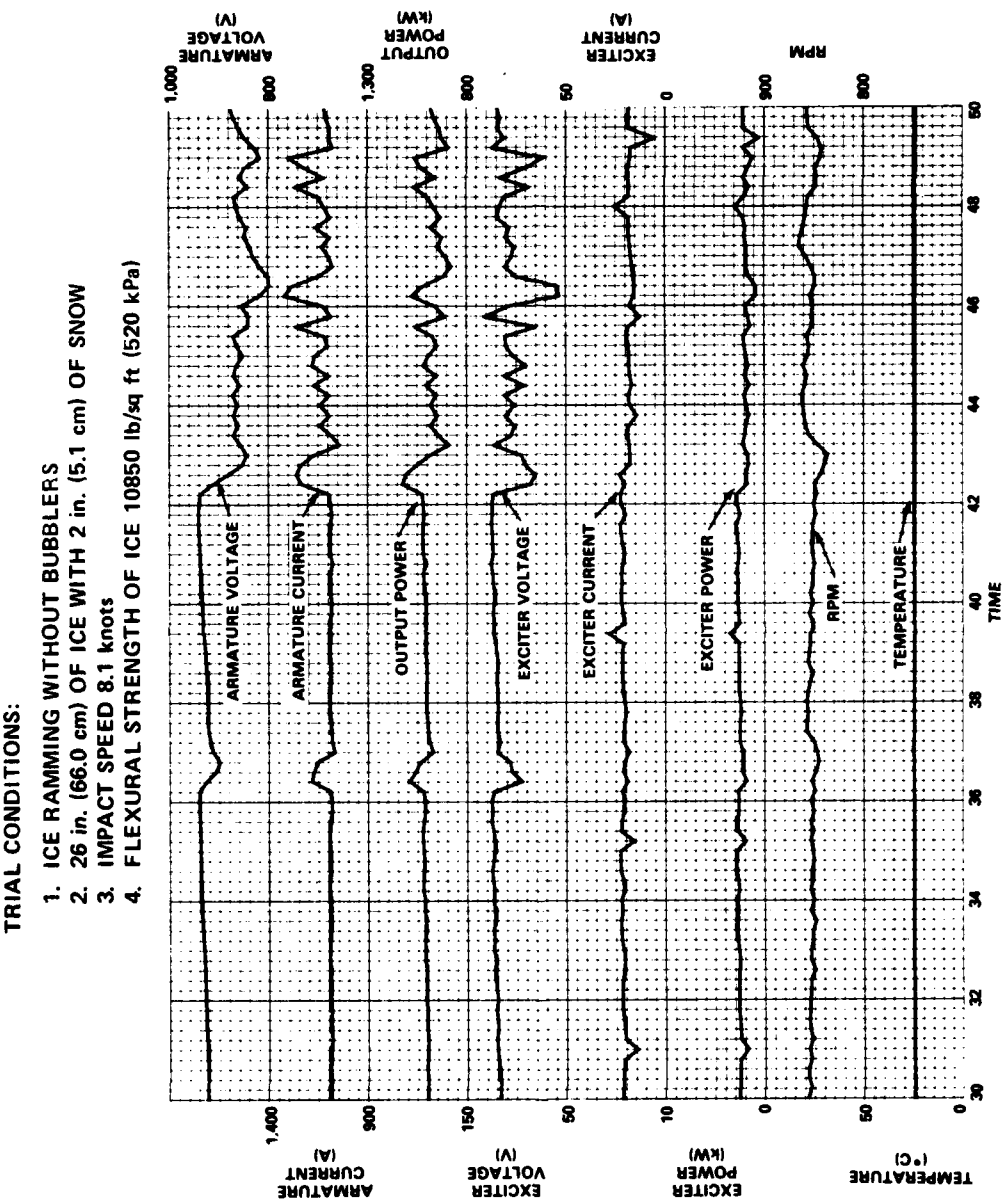


Figure 137 - Generator 1 Data, Five Samples per Second Plotted, Run 6500

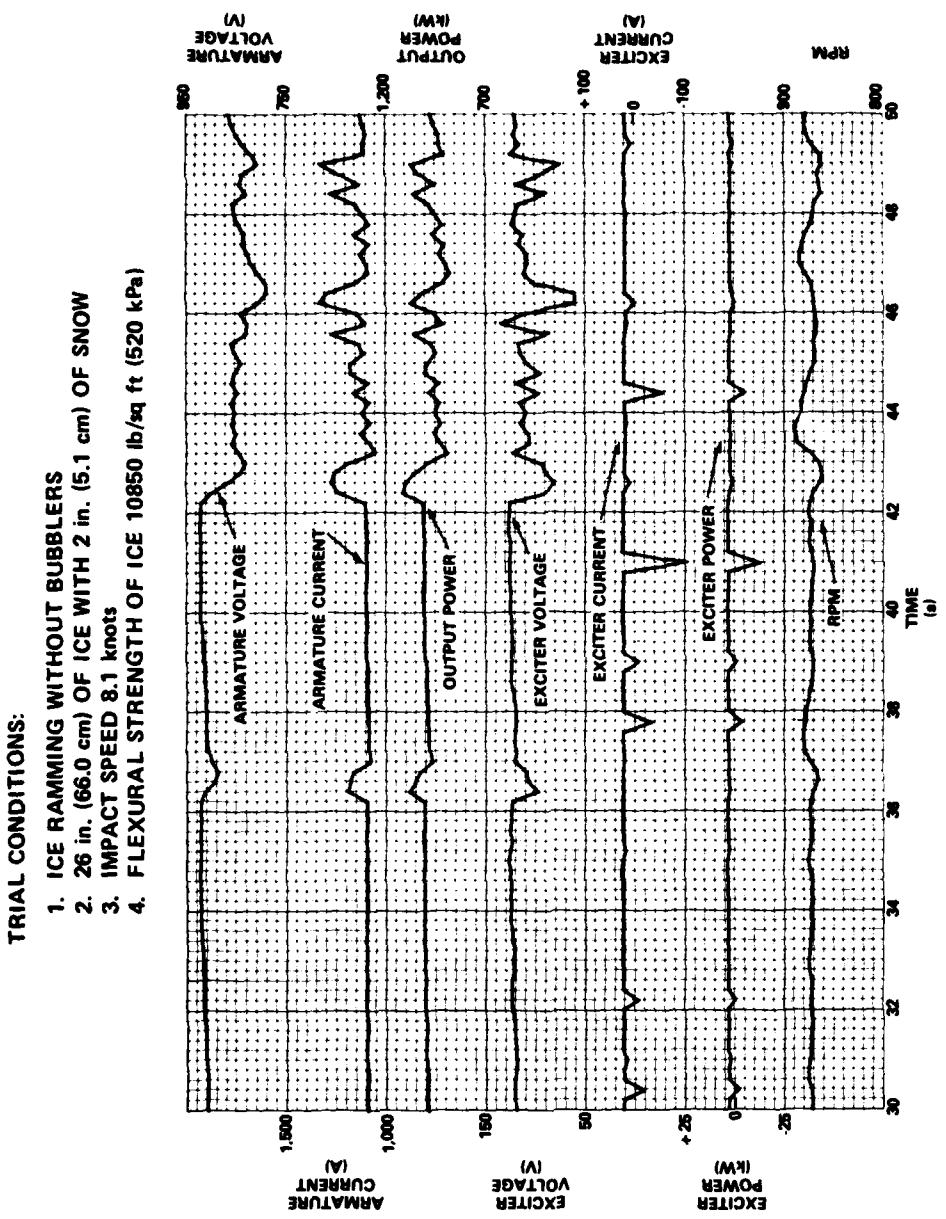


Figure 138 - Generator 2 Data, Five Samples per Second Plotted, Run 6500

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW
3. IMPACT SPEED 13.2 knots
4. FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)

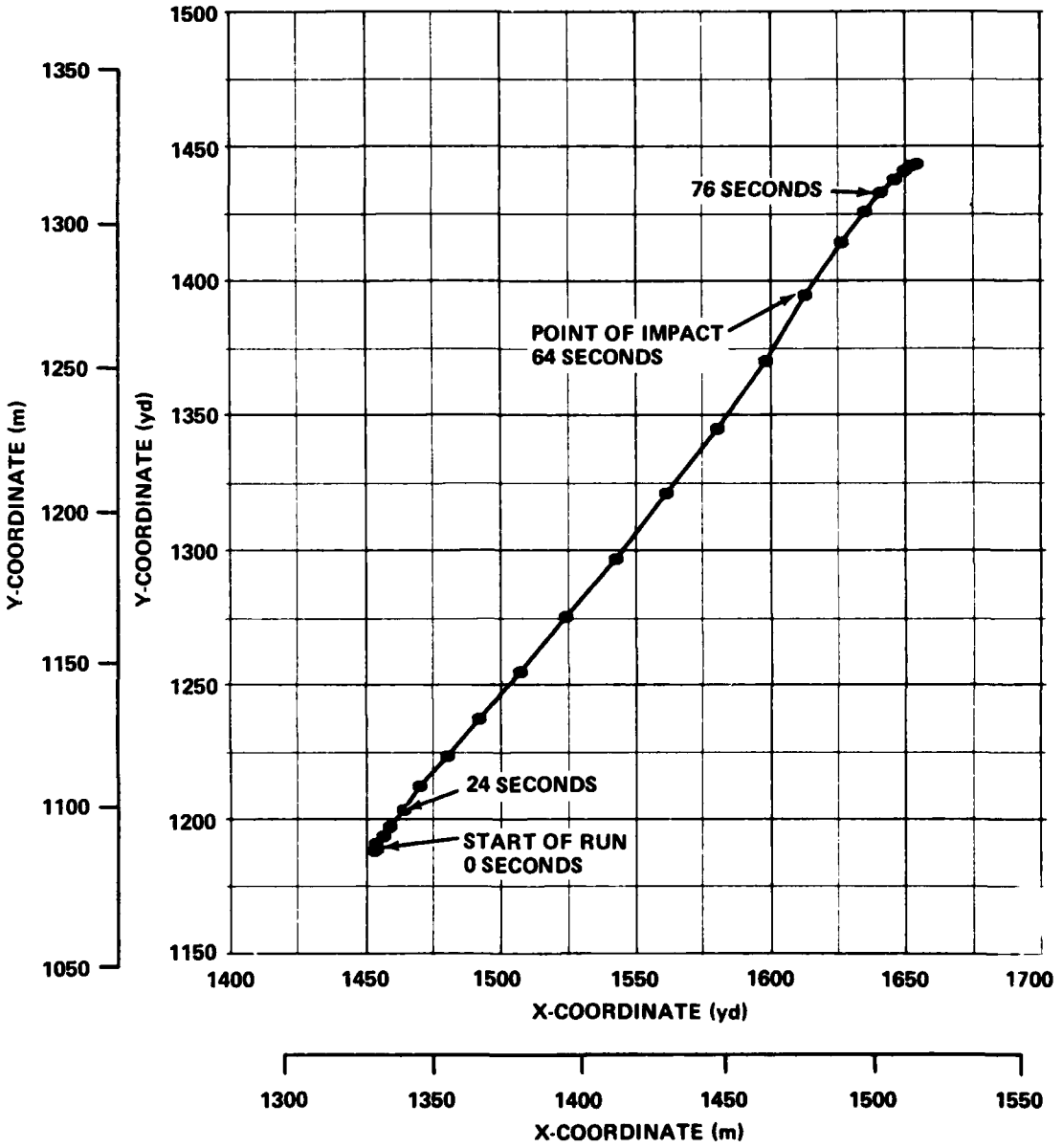


Figure 139 - Ship Track, Ice-Ramming, Run 6612

TRIAL CONDITIONS:

1. **ICE RAMMING WITHOUT BUBBLERS**
2. **23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW**
3. **IMPACT SPEED 13.2 knots**
4. **FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)**

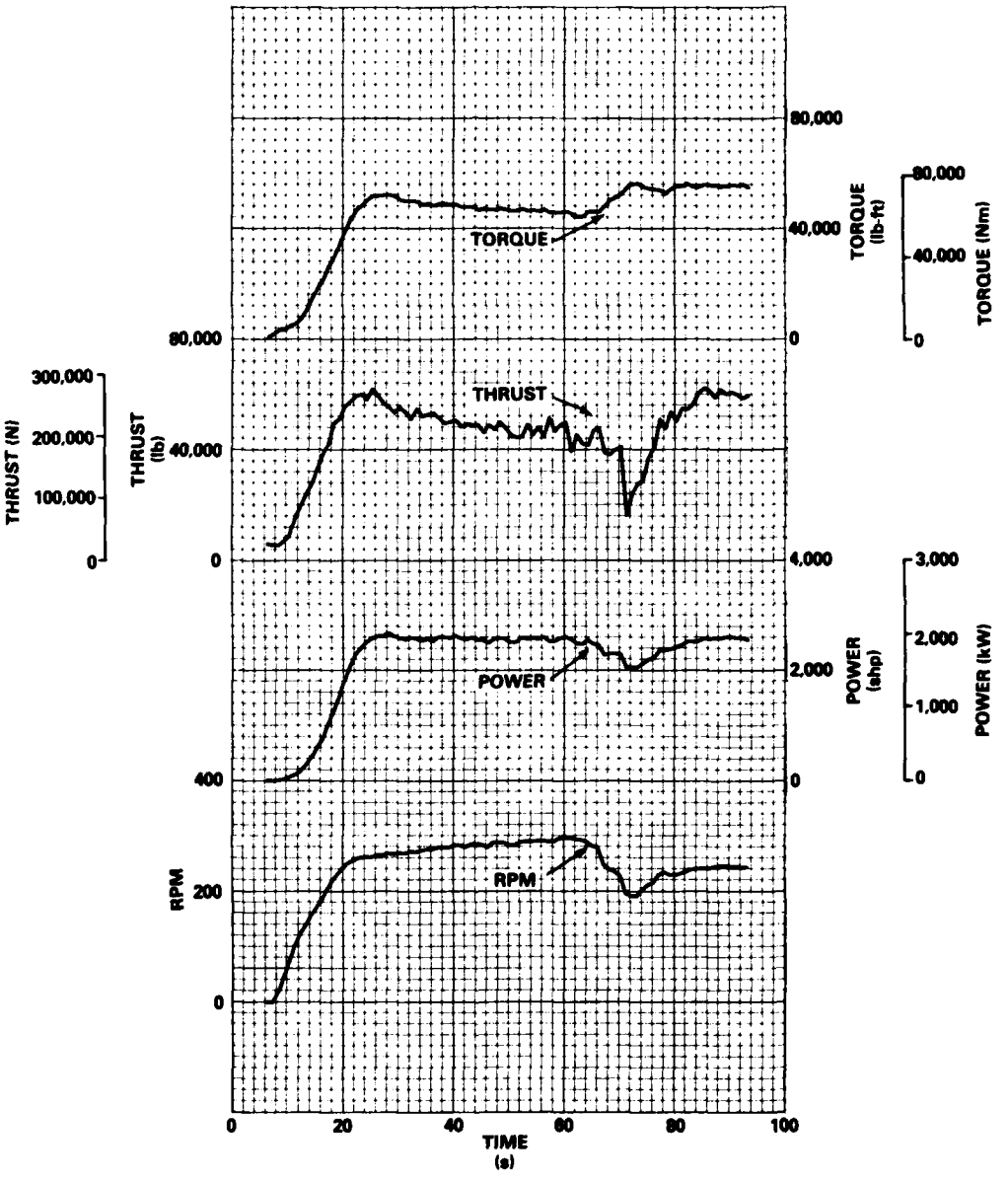


Figure 140 - Propeller Shaft Data Averaged Over One-Second Periods, Run 6612

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW
3. IMPACT SPEED 13.2 knots
4. FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)

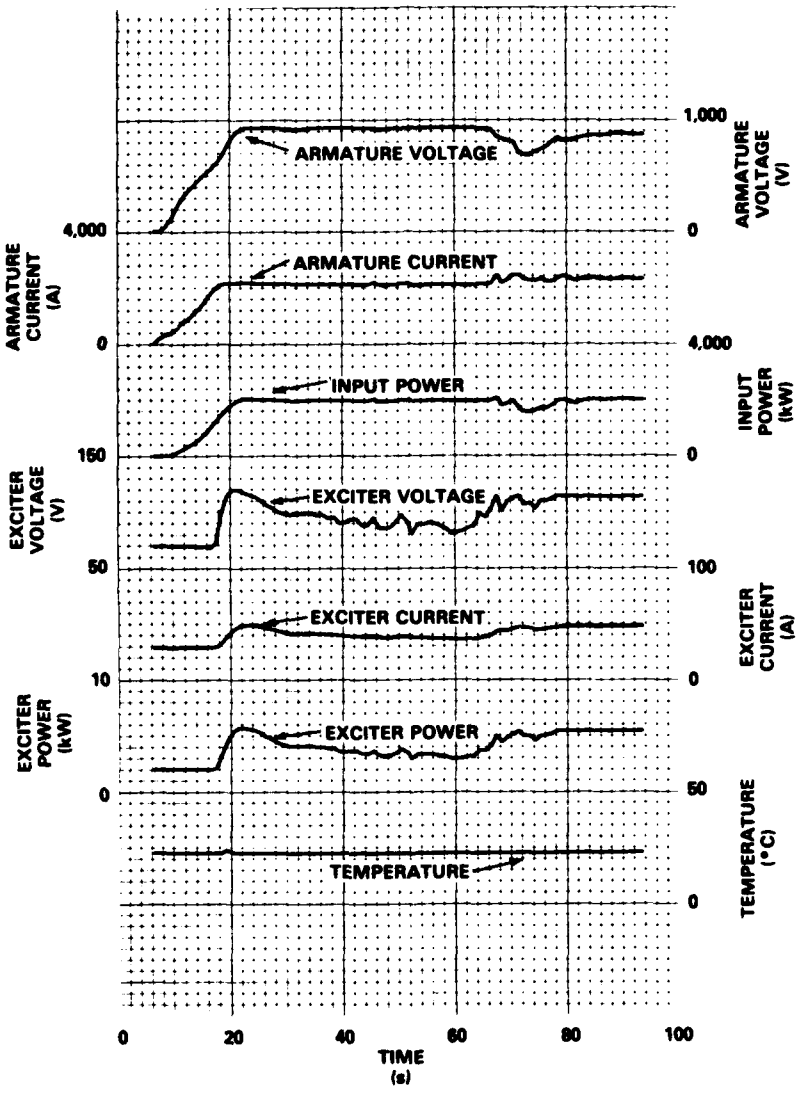


Figure 141 - Propulsion Motor Data Averaged Over One-Second Periods, Run 6612

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW
3. IMPACT SPEED 13.2 knots
4. FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)

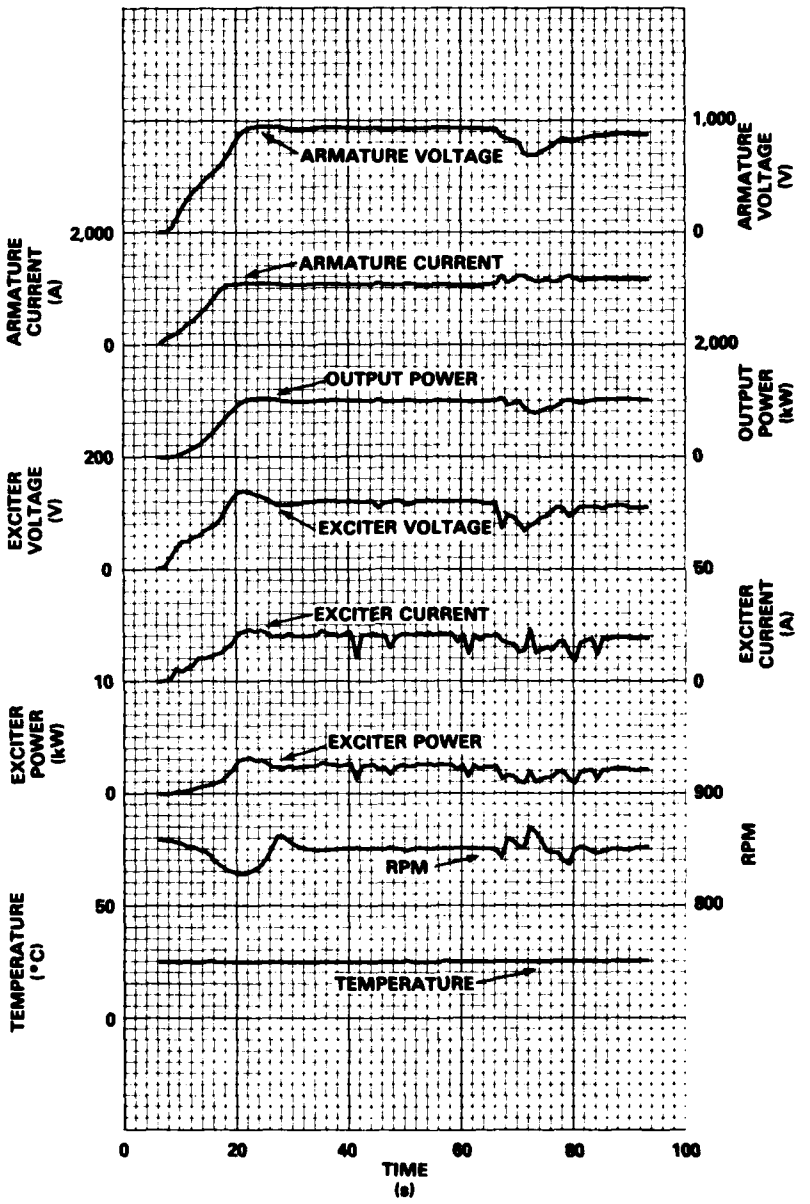


Figure 142 - Generator 1 Data Averaged Over One-Second Periods, Run 6612

TRIAL CONDITIONS:

1. **ICE RAMMING WITHOUT BUBBLERS**
2. **23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW**
3. **IMPACT SPEED 13.2 knots**
4. **FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)**

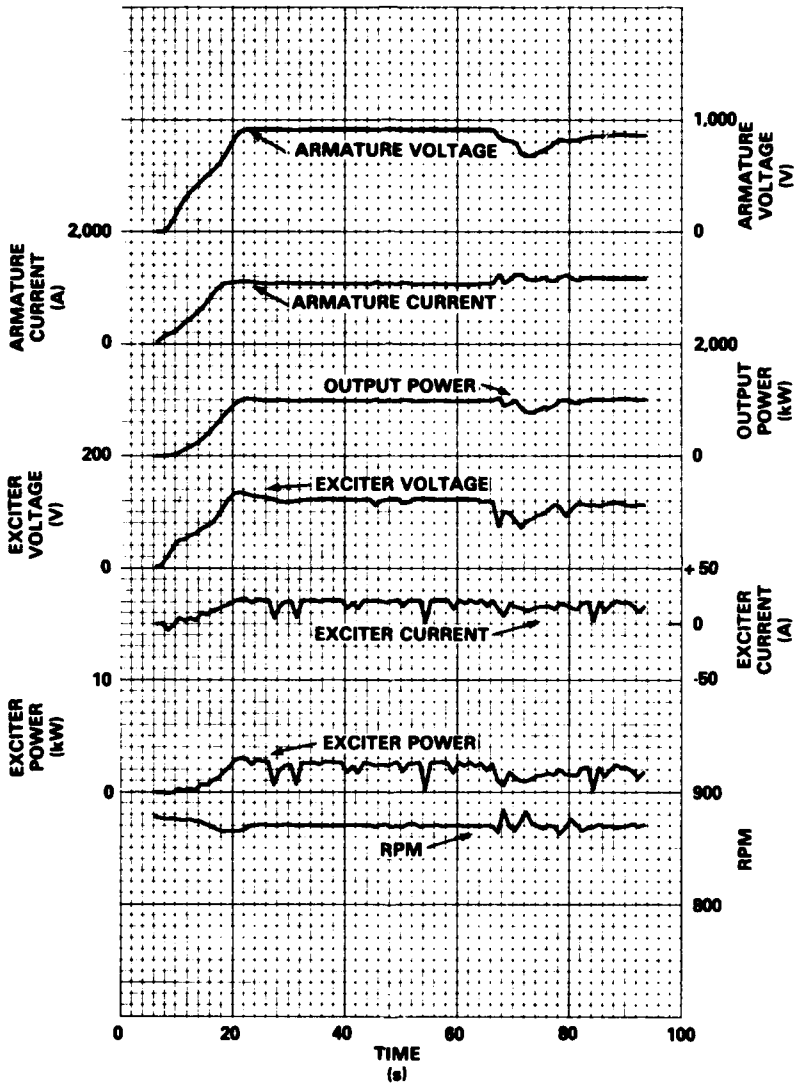


Figure 143 - Generator 2 Data Averaged Over One-Second Periods, Run 6612

TRIAL CONDITIONS:

1. **ICE RAMMING WITHOUT BUBBLERS**
2. **23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW**
3. **IMPACT SPEED 13.2 knots**
4. **FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)**

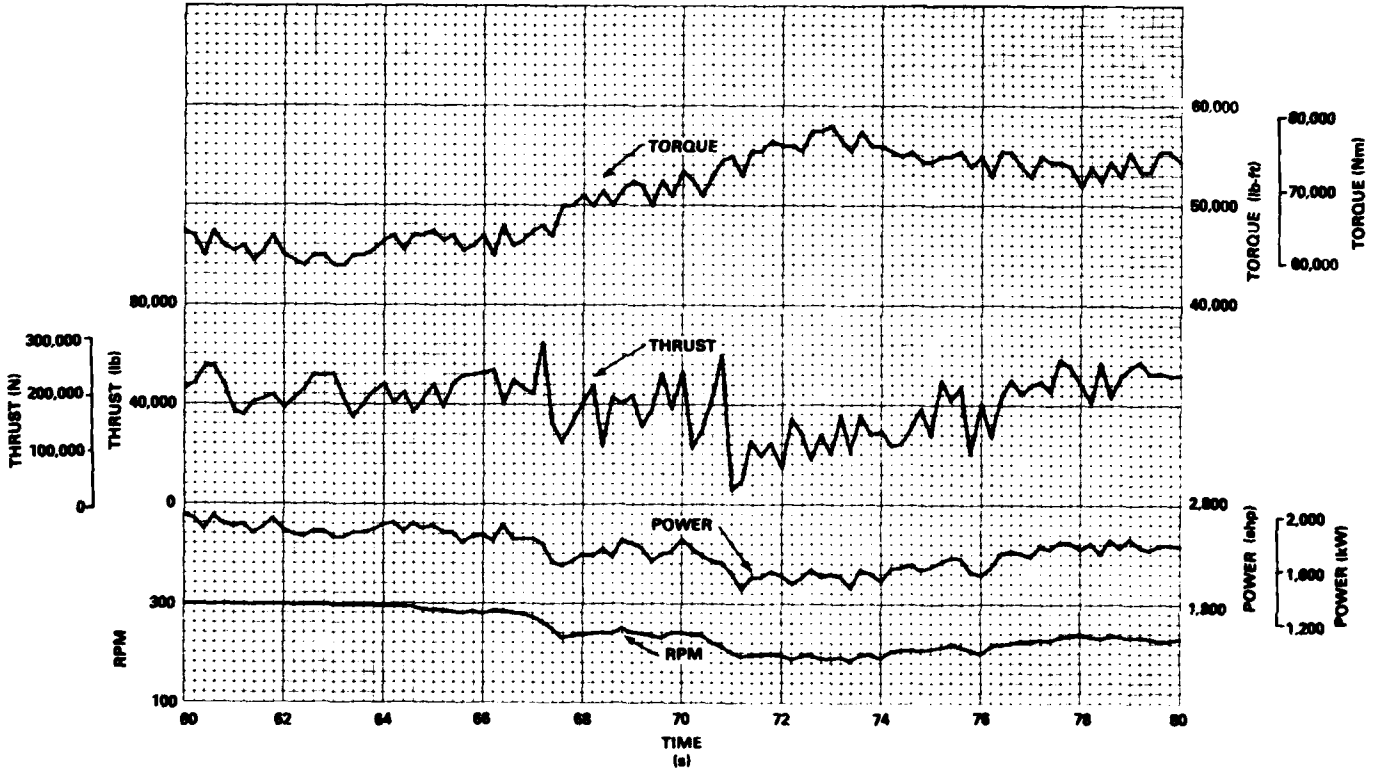


Figure 144 - Propeller Shaft Data, Five Samples per Second Plotted, Run 6612

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW
3. IMPACT SPEED 13.2 knots
4. FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)

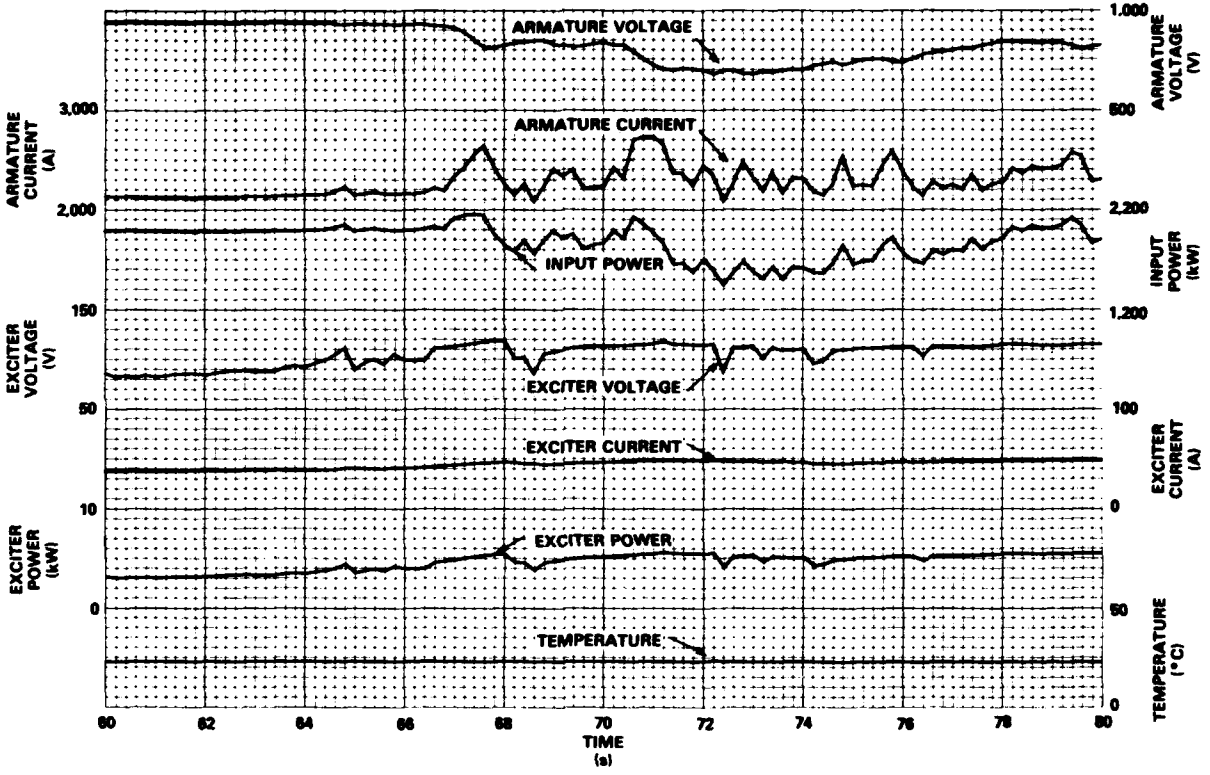


Figure 145 - Propulsion Motor Data, Five Samples per Second Plotted, Run 6612

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW
3. IMPACT SPEED 13.2 knots
4. FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)

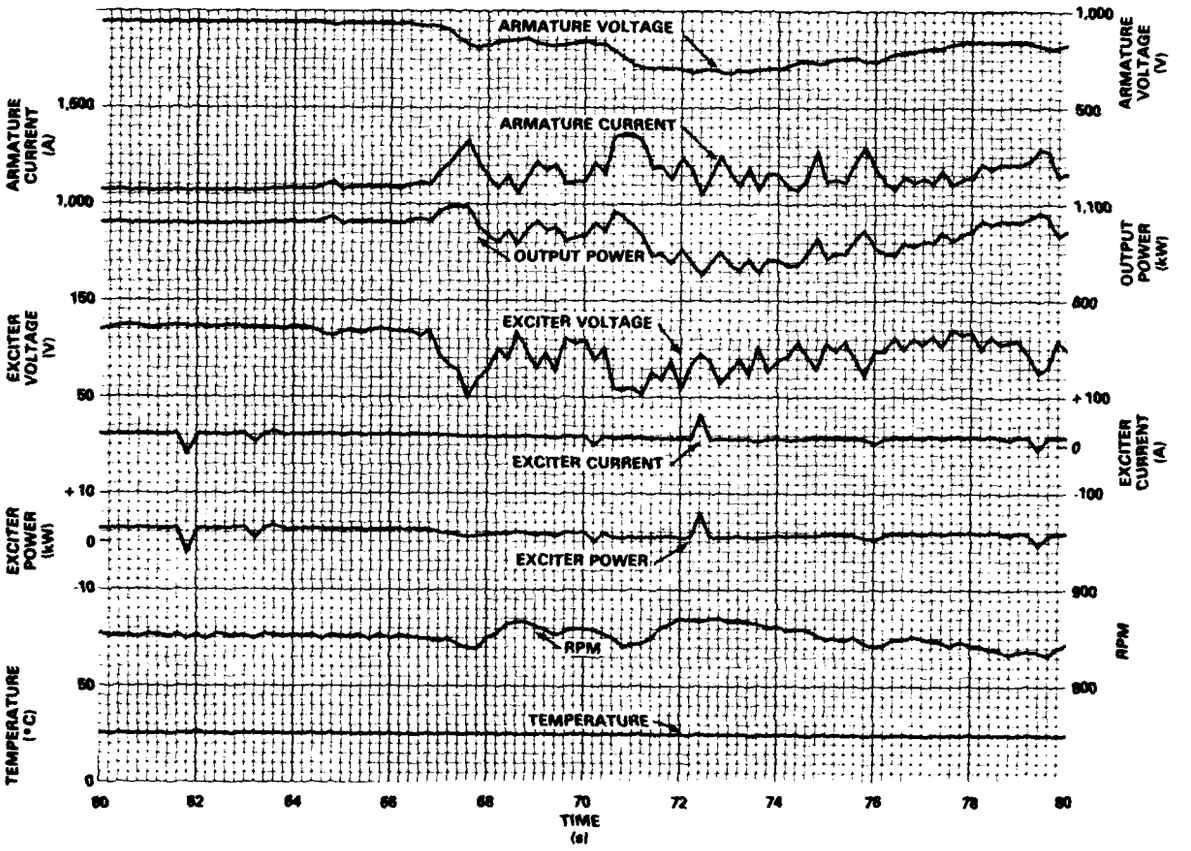


Figure 146 - Generator 1 Data, Five Samples per Second Plotted, Run 6612

TRIAL CONDITIONS:

1. ICE RAMMING WITHOUT BUBBLERS
2. 23 in. (58.4 cm) OF ICE WITH 2.5 in. (6.4 cm) OF SNOW
3. IMPACT SPEED 13.2 knots
4. FLEXURAL STRENGTH OF ICE 11066 lb/sq ft (530 kPa)

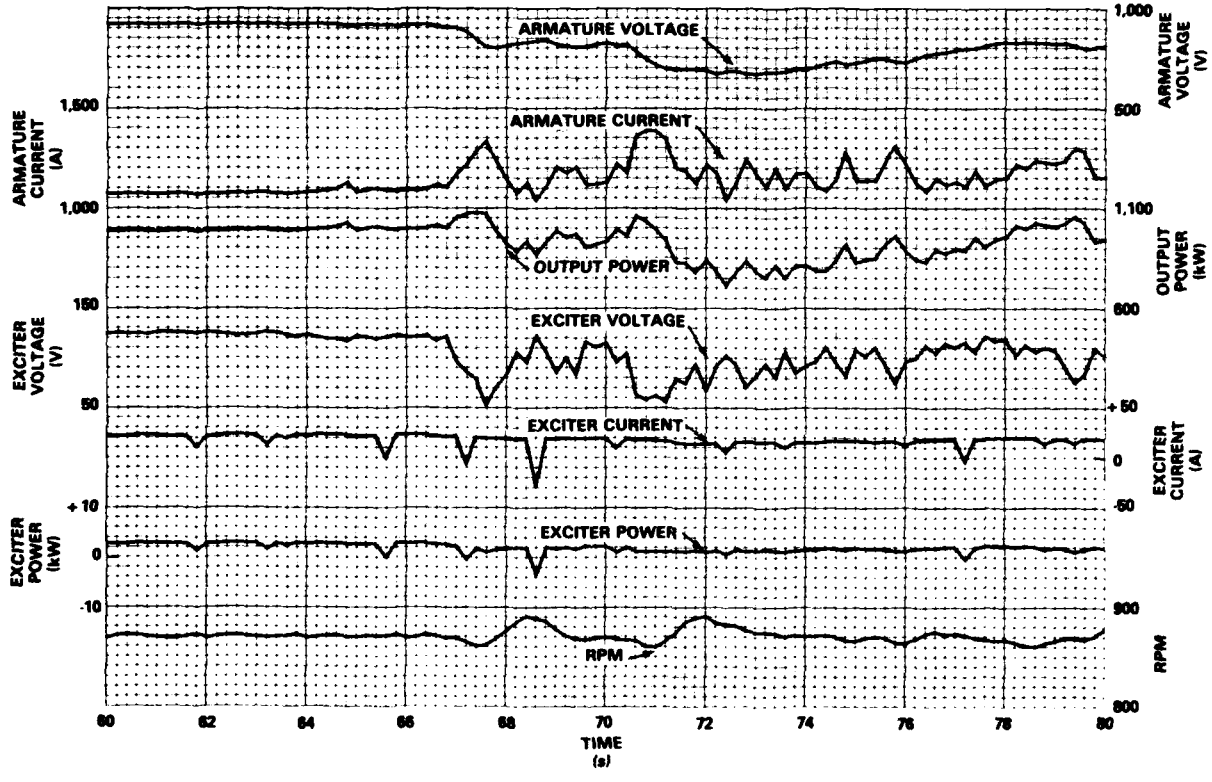


Figure 147 - Generator 2 Data, Five Samples per Second Plotted, Run 6612

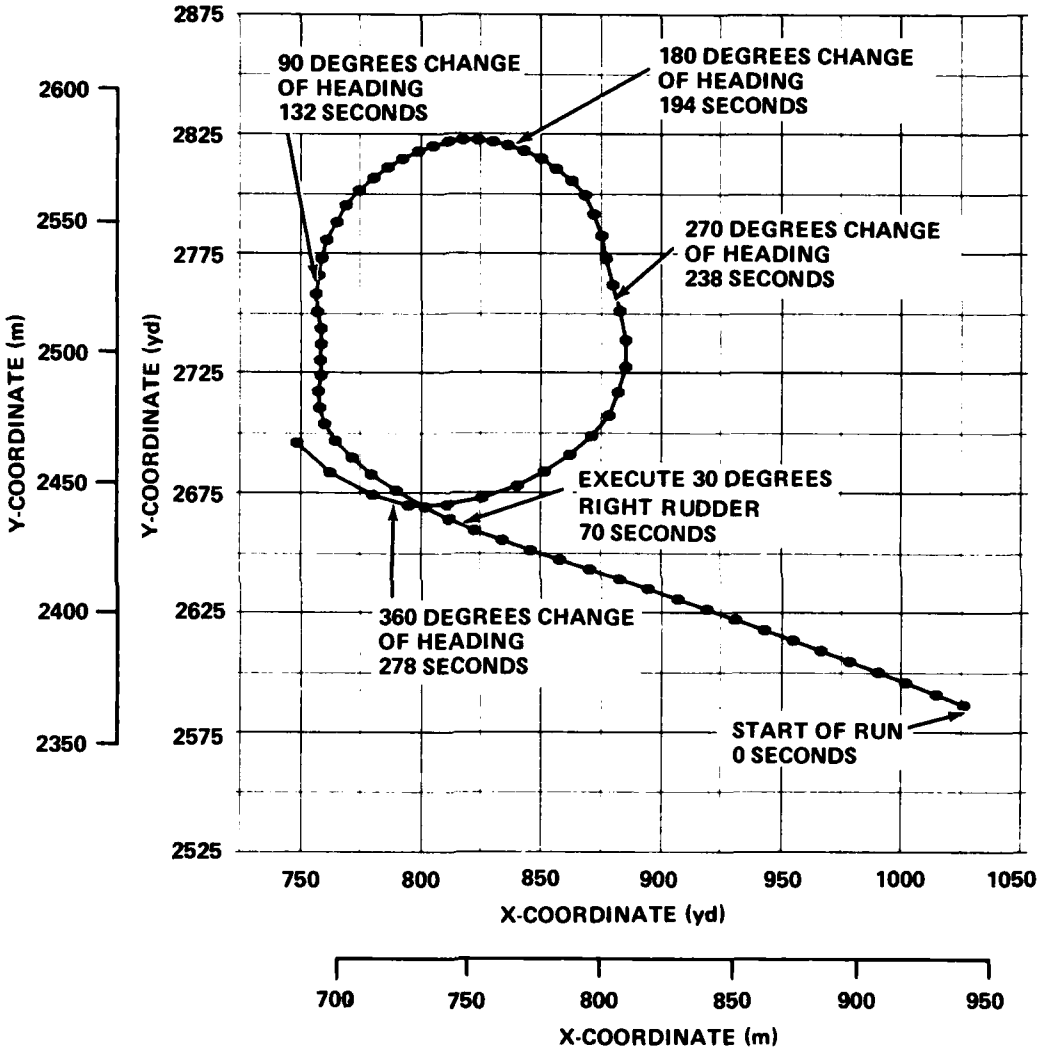


Figure 148 - Ship Track, Maneuvering in Level Ice, 30-Degree Right Rudder, Run 8000

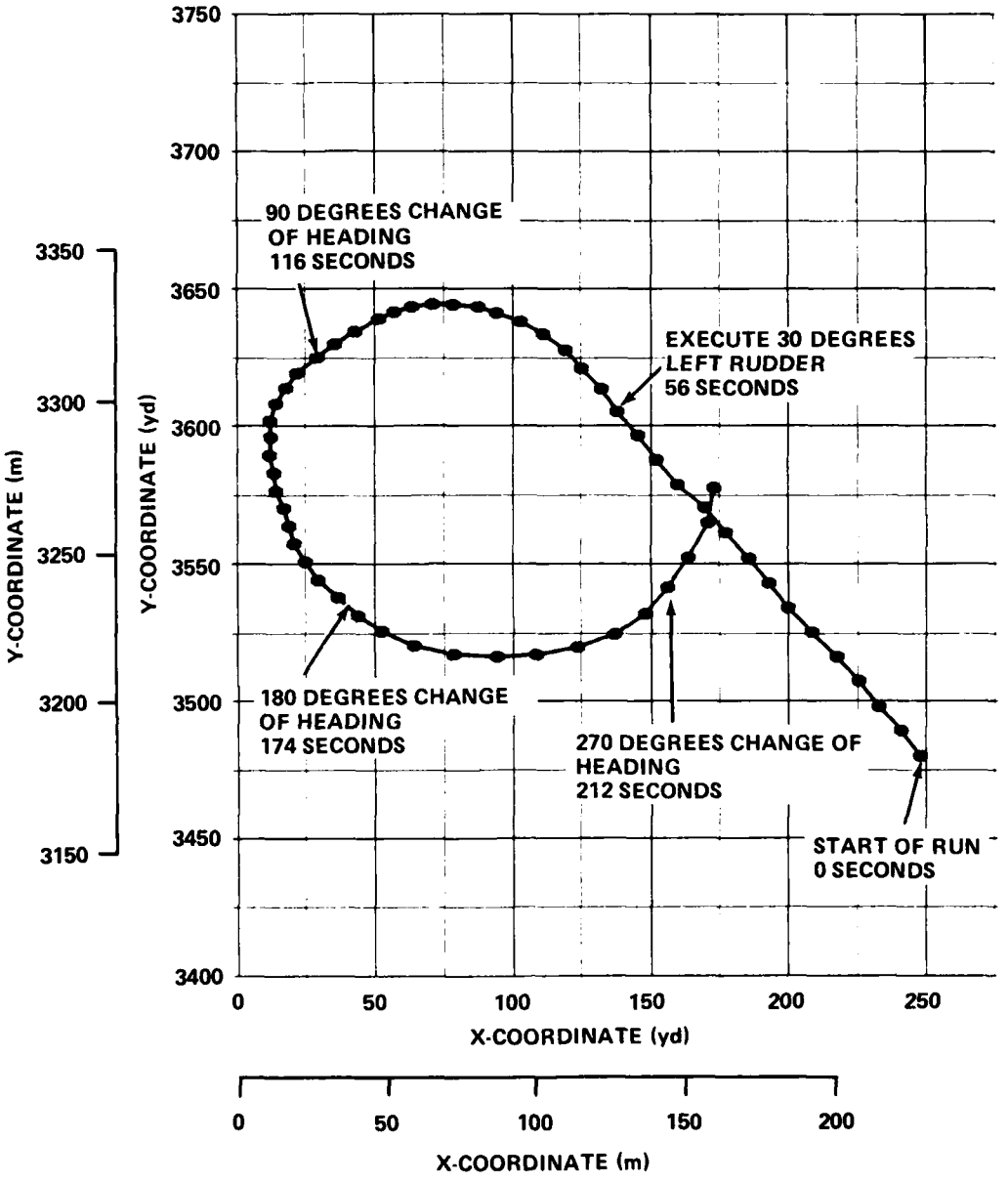


Figure 149 - Ship Track, Maneuvering in Level Ice, 30-Degree Left Rudder, Run 8110

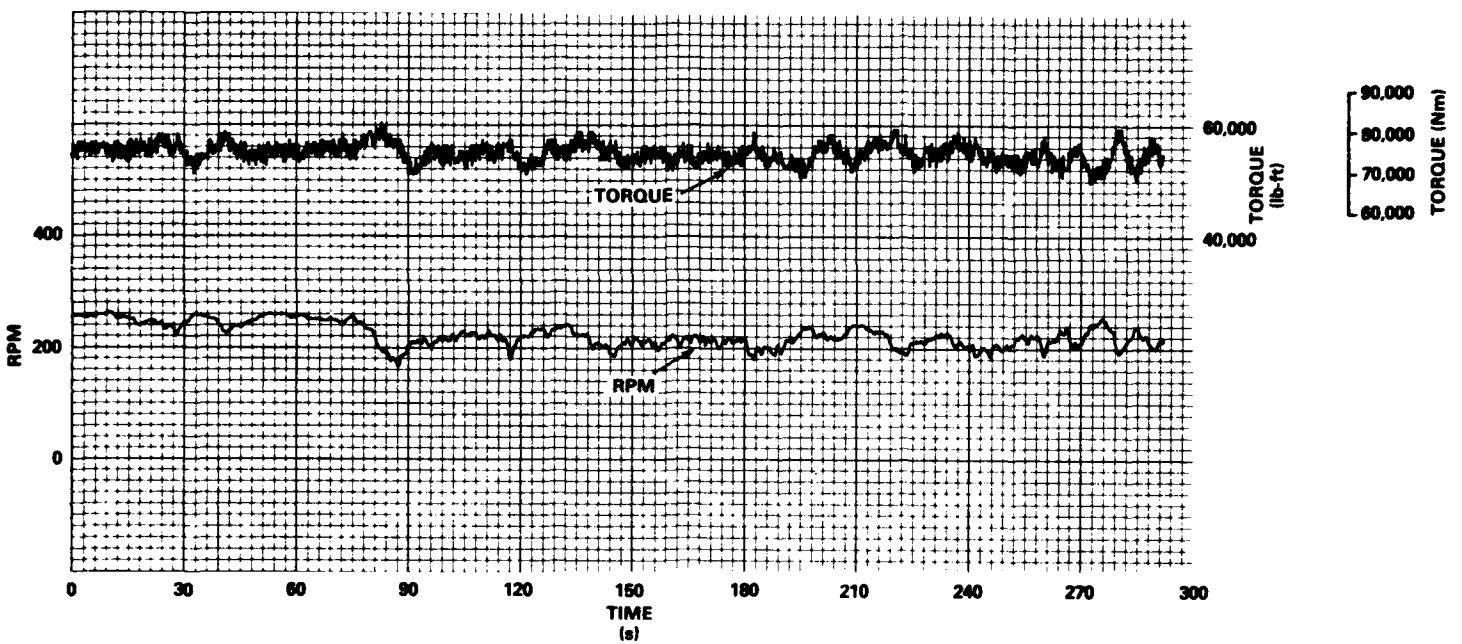


Figure 150 - Propeller Shaft Data for Maneuvering in Level Ice, 30-Degree Right Rudder, Run 8000

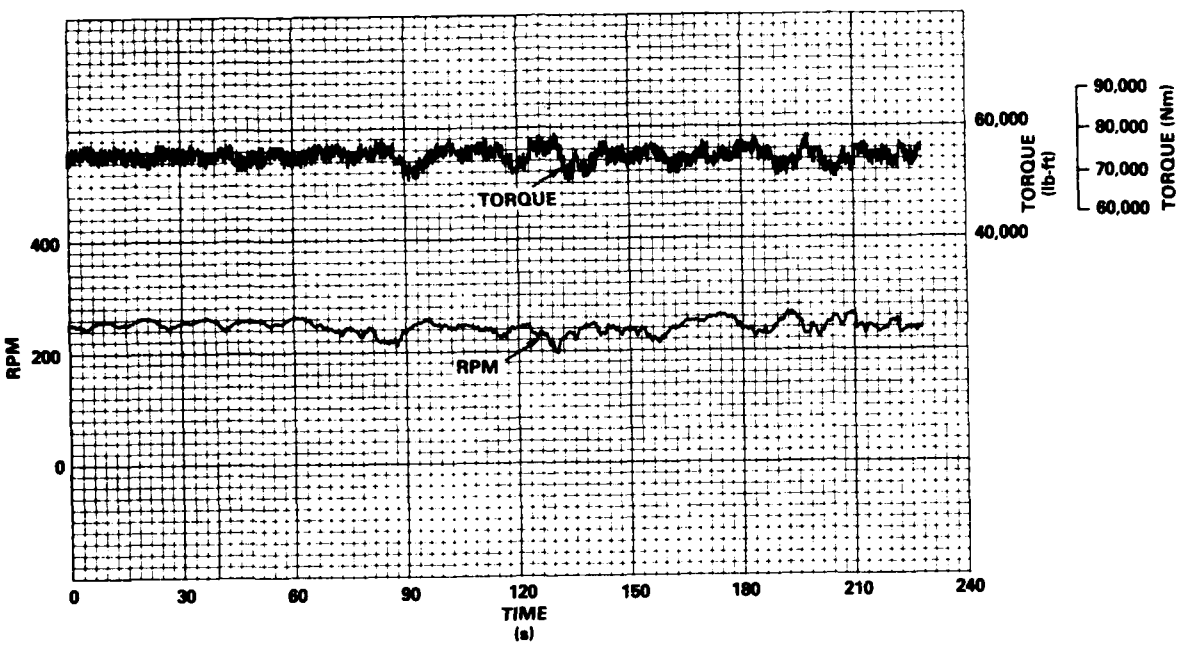


Figure 151 - Propeller Shaft Data for Maneuvering in Level Ice, 30-Degree Left Rudder, Run 8110

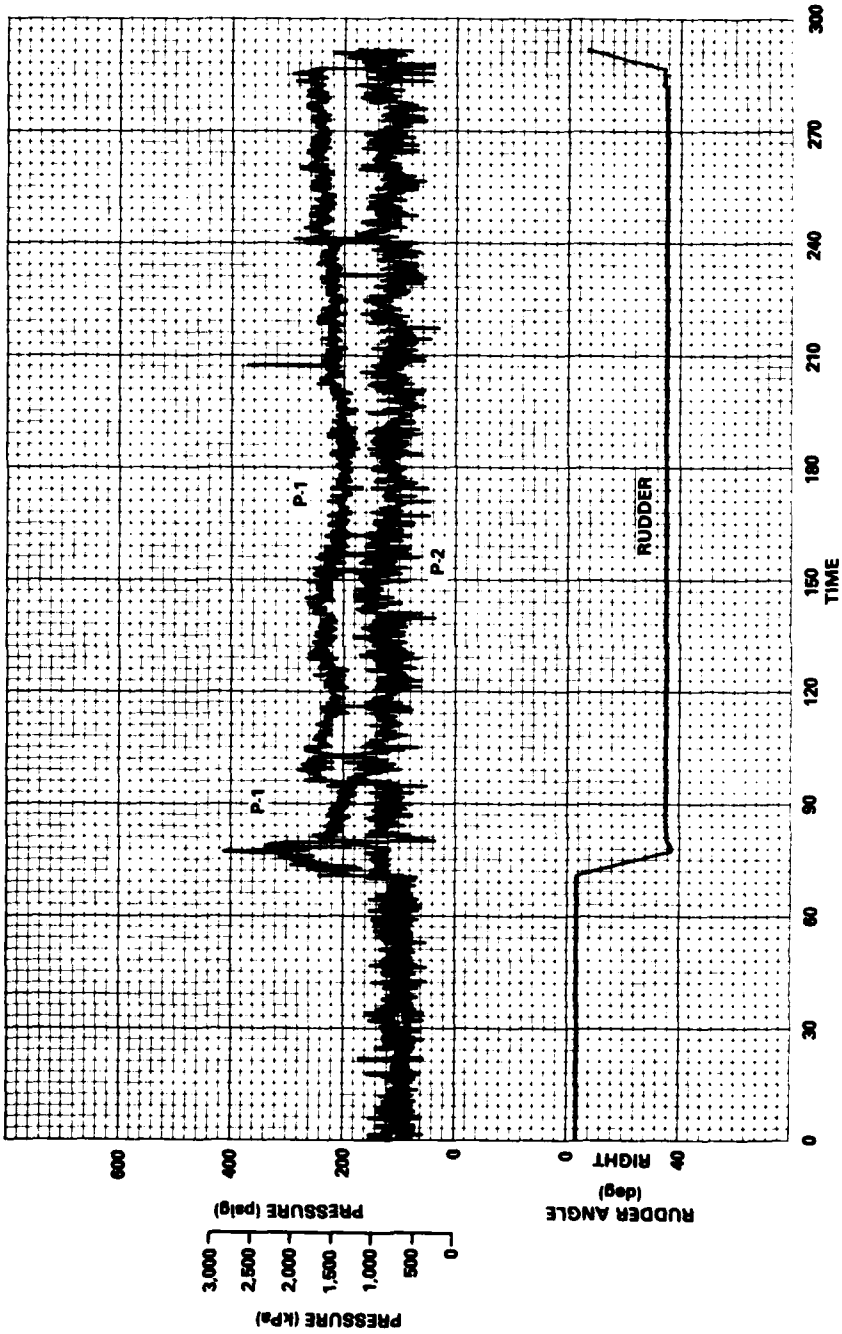


Figure 152 - Rudder Ram Pressures and Rudder Angle for Maneuvering in Level Ice, 30-Degree Right Rudder, Run 8000

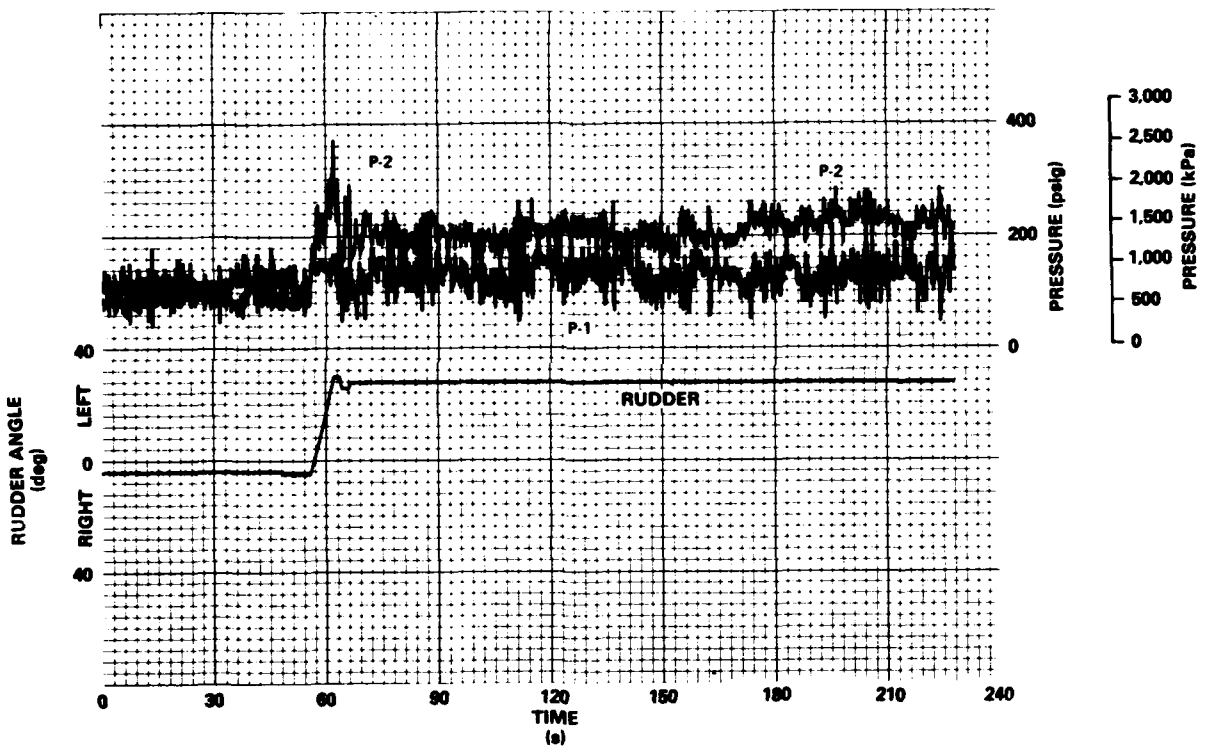


Figure 153 - Rudder Ram Pressures and Rudder Angle for Maneuvering in Level Ice, 30-Degree Left Rudder, Run 8110

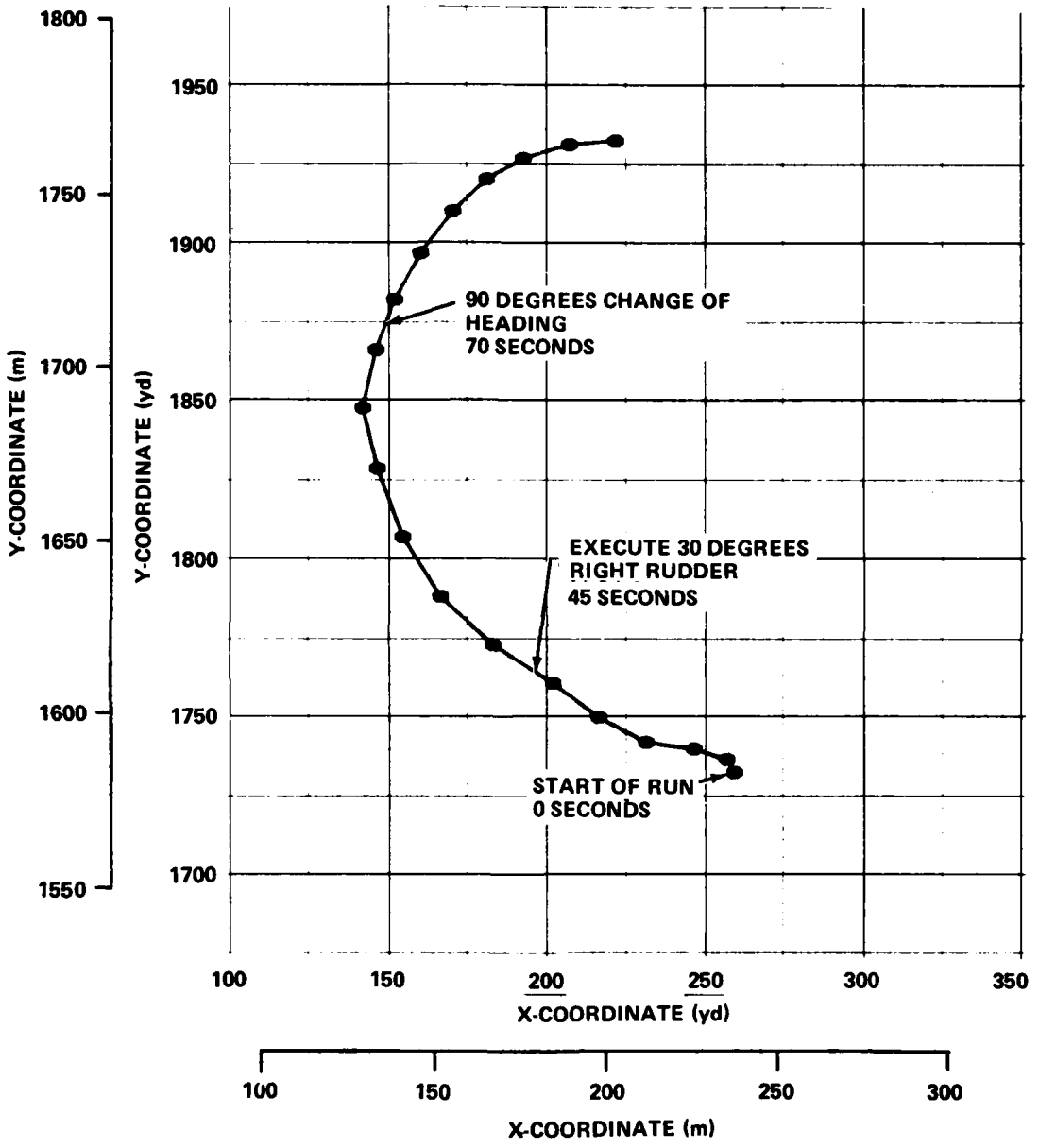


Figure 154 - Ship Track, Maneuvering in Brash Ice, 30-Degree Right Rudder, Run 9701

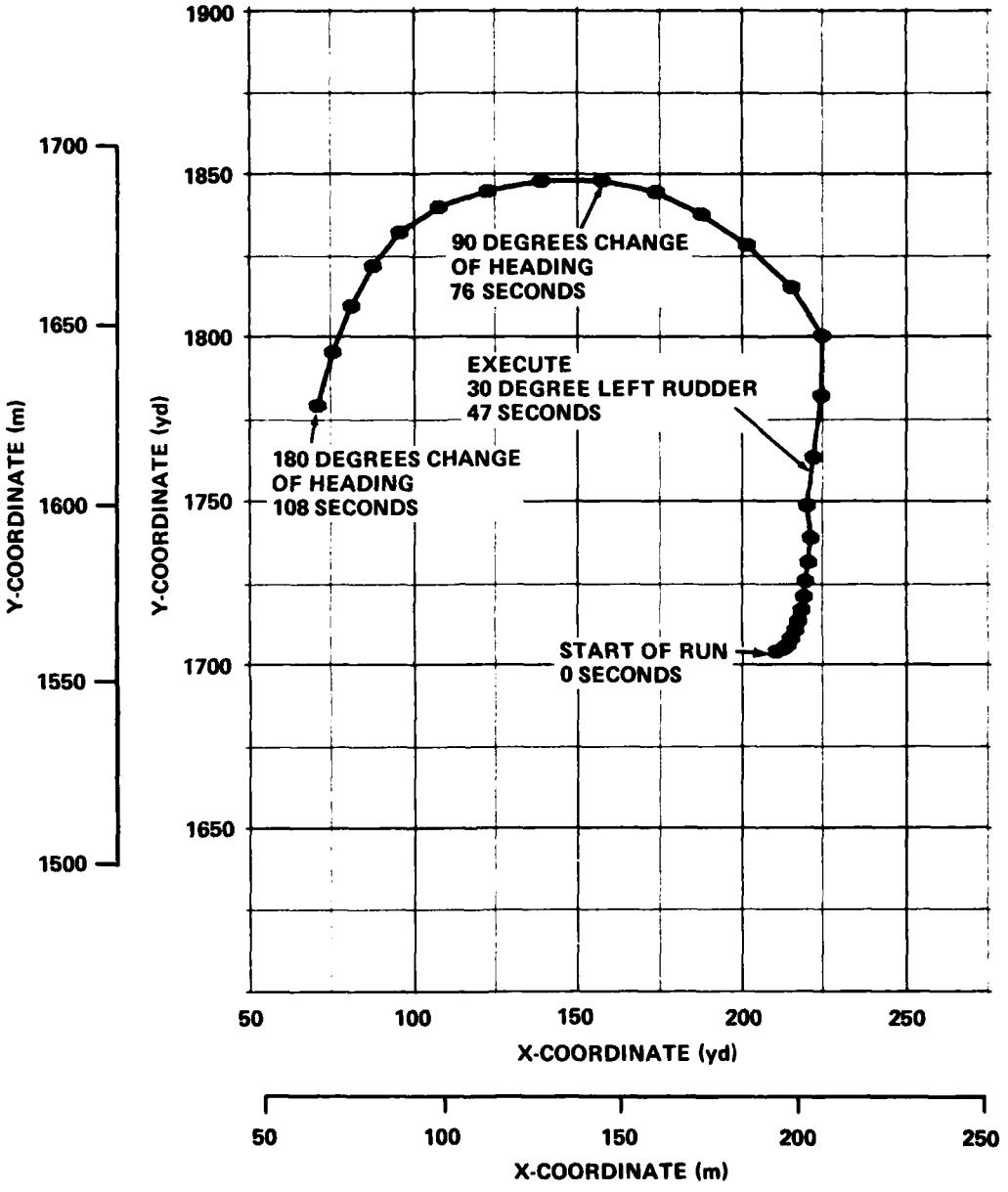


Figure 155 - Ship Track, Maneuvering in Brash Ice, 30-Degree Left Rudder, Run 9600

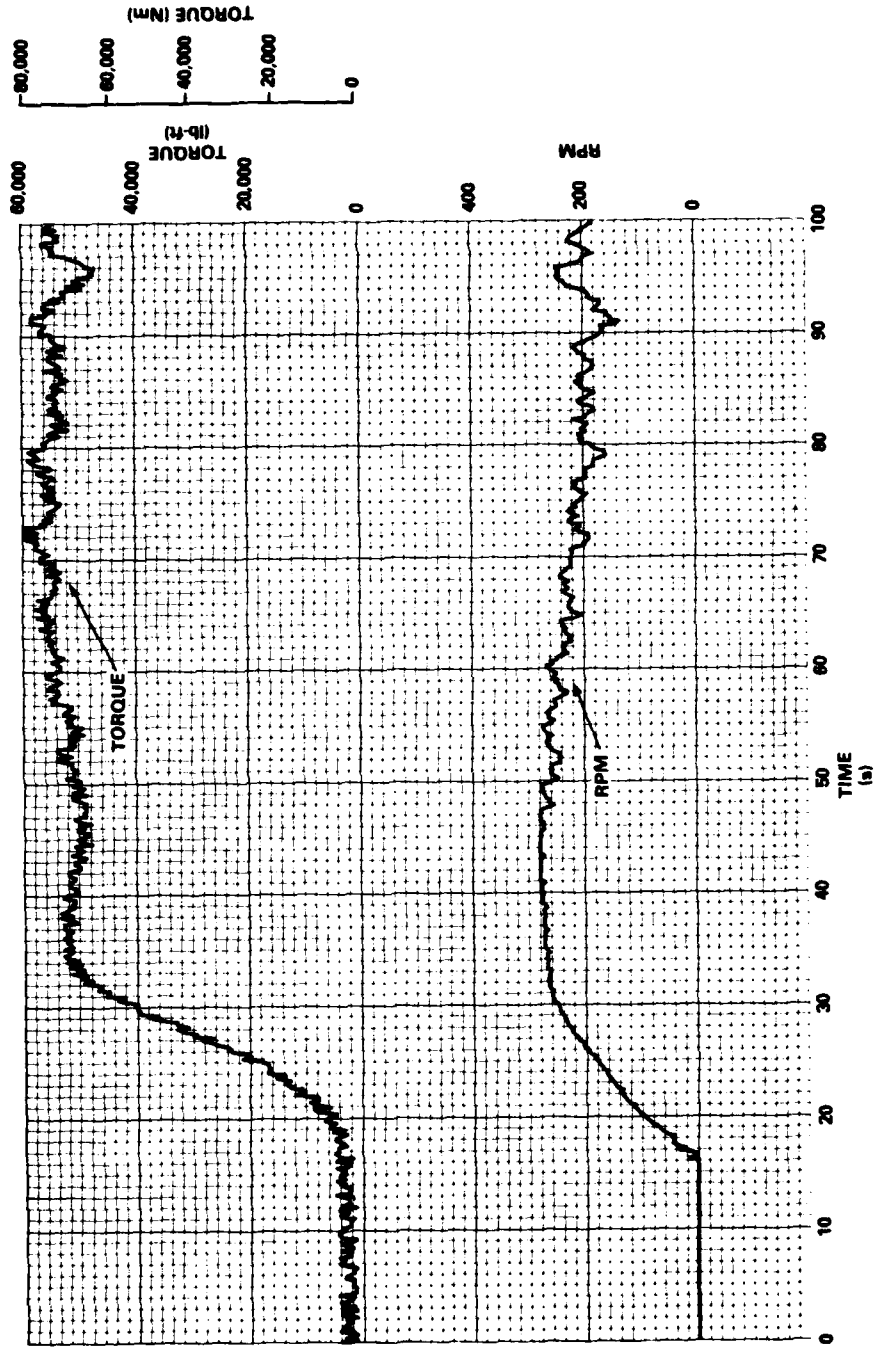


Figure 156 - Propeller Shaft Data for Maneuvering in Brash Ice, 30-Degree Right Rudder, Run 9701

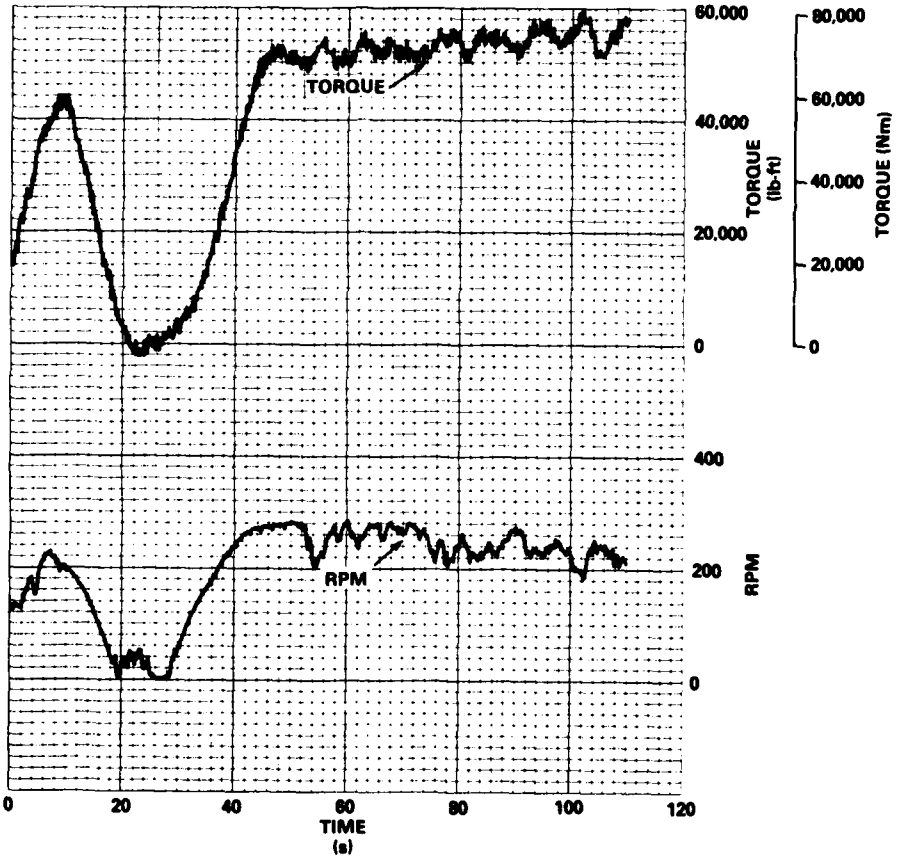


Figure 157 - Propeller Shaft Data for Maneuvering in Brash Ice, 30-Degree Left Rudder, Run 9600

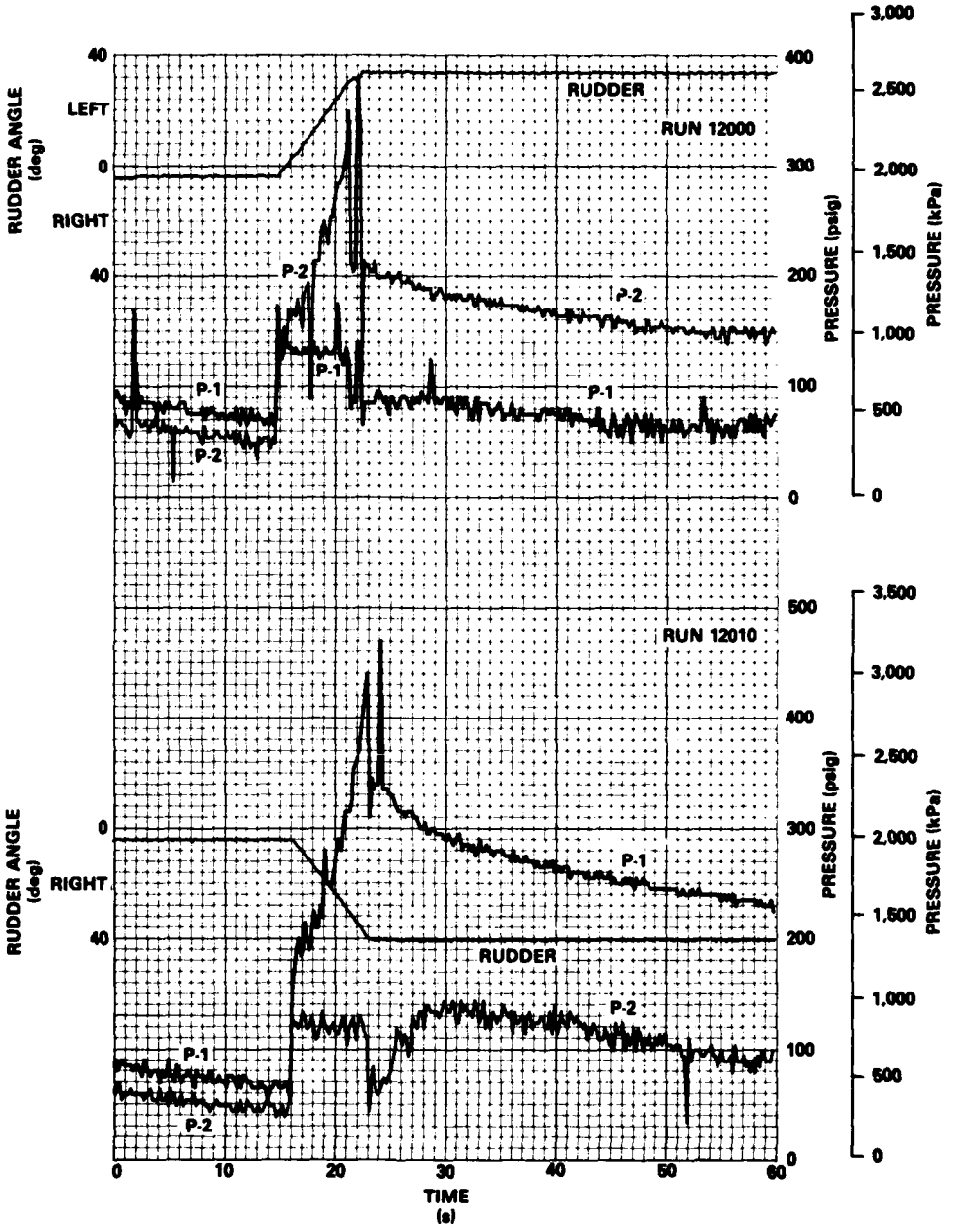


Figure 158 - Rudder Ram Pressures and Rudder Angle, Approach Speed 12 Knots for 35-Degree Left and Right Rudders, Runs 12000 and 12010

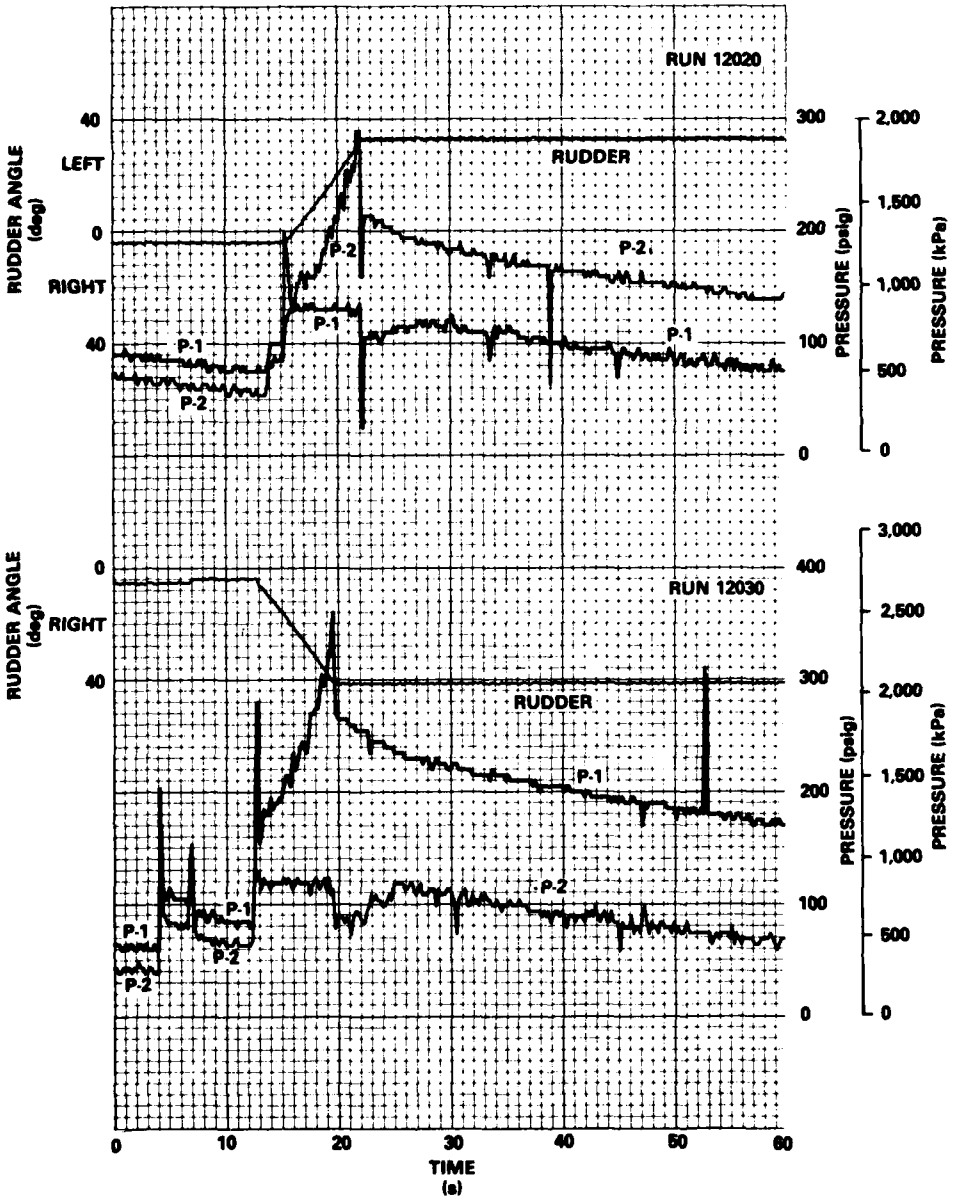


Figure 159 - Rudder Ram Pressures and Rudder Angle, Approach Speed 9 Knots for 35-Degree Left and Right Rudders, Runs 12020 and 12030

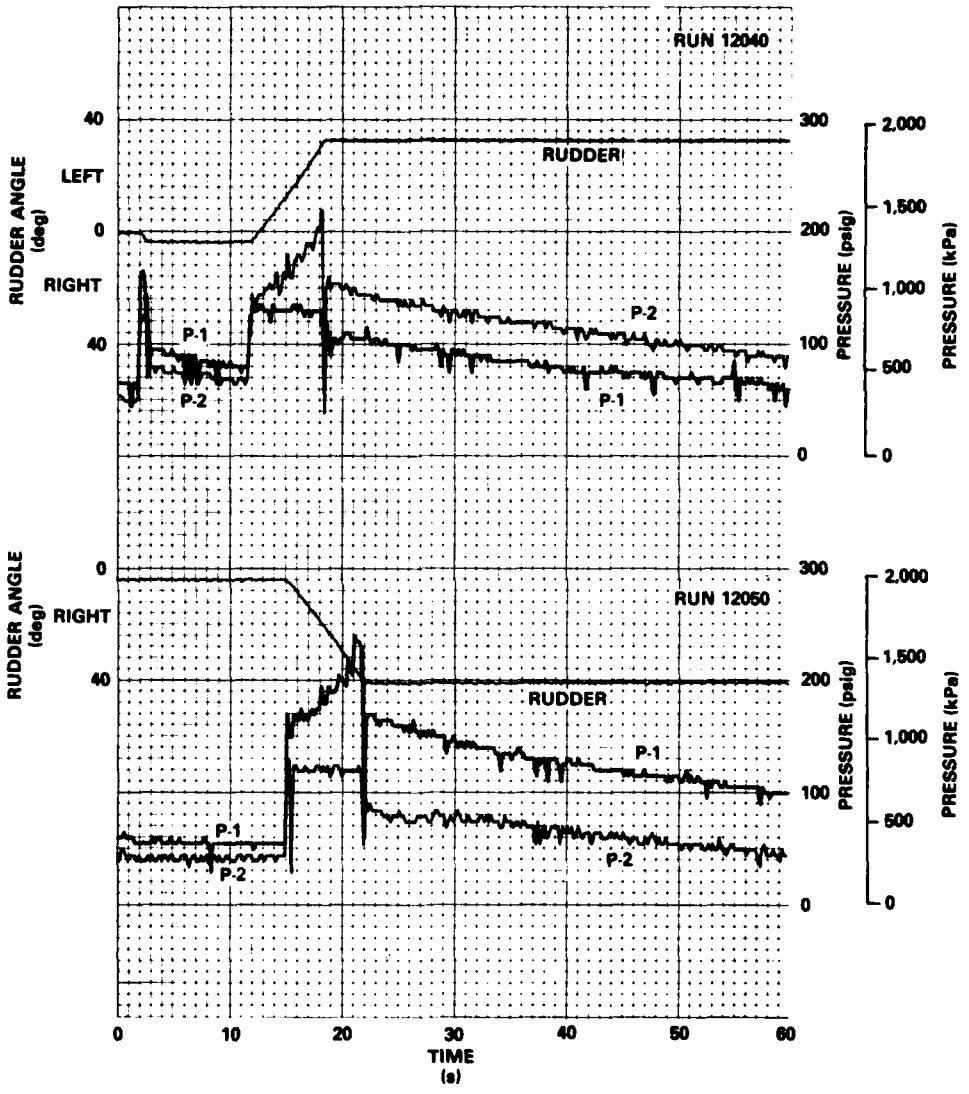


Figure 160 - Rudder Ram Pressures and Rudder Angle, Approach Speed 6 Knots for 35-Degree Left and Right Rudders, Runs 12040 and 12050

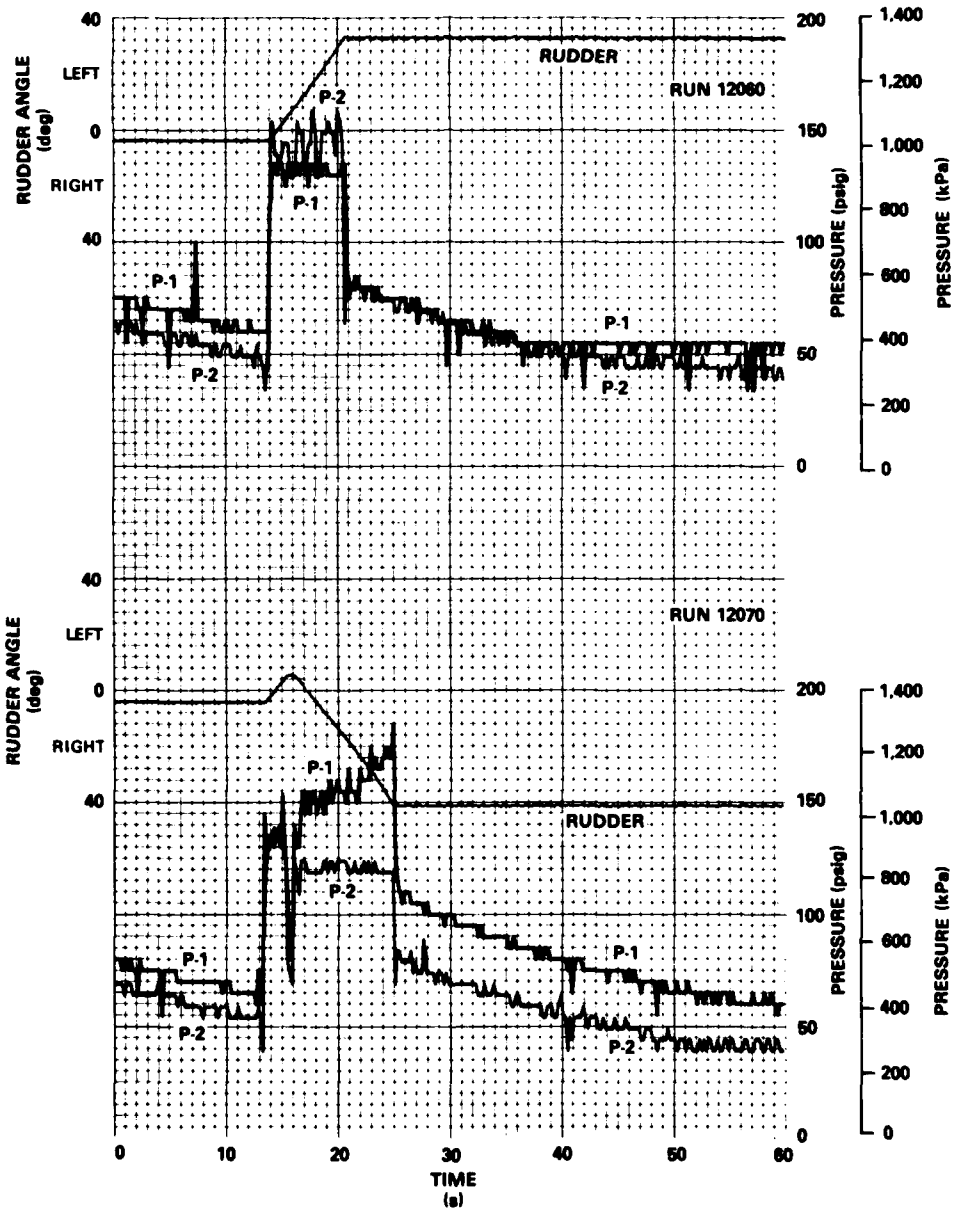


Figure 161 - Rudder Ram Pressures and Rudder Angle, Approach Speed 3 Knots for 35-Degree Left and Right Rudders, Runs 12060 and 12070

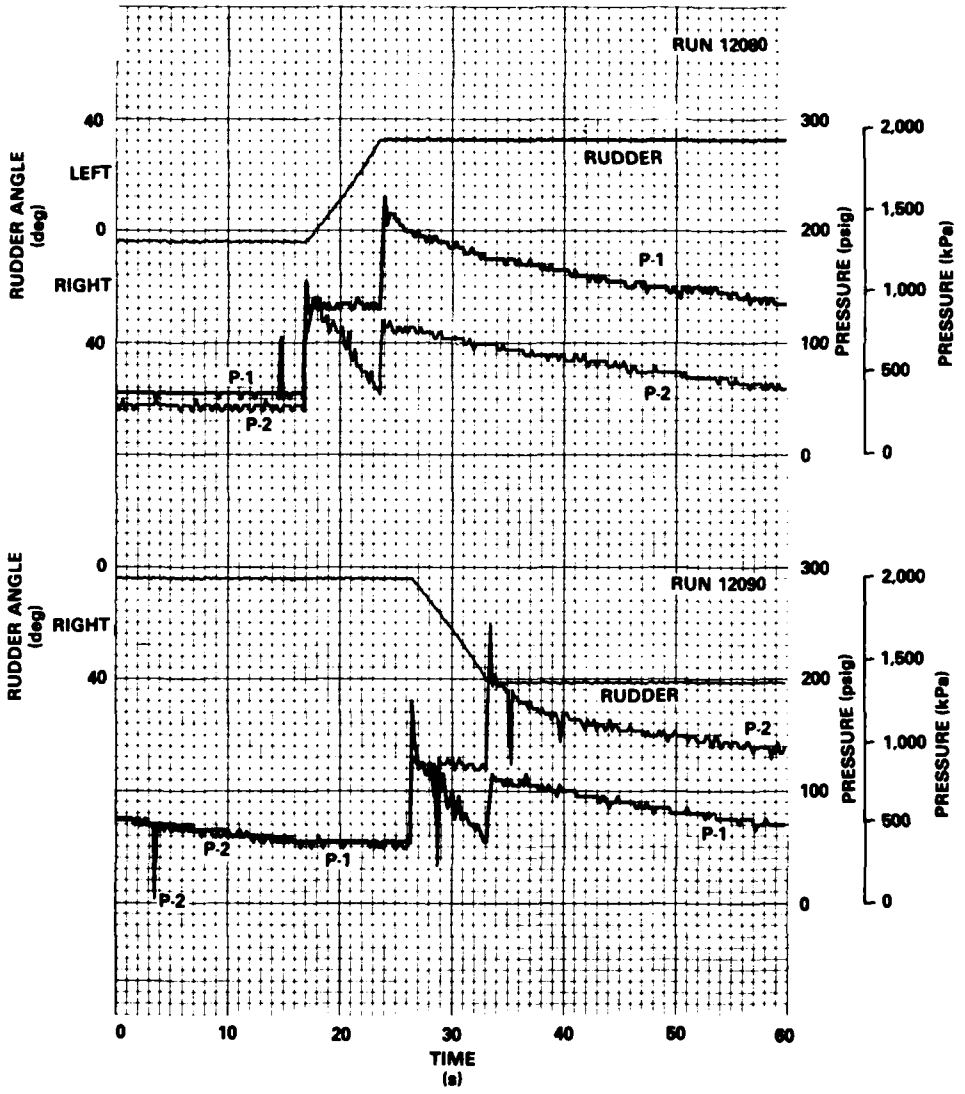


Figure 162 - Rudder Ram Pressures and Rudder Angle, Approach Speed 5 Knots Astern for 35-Degree Left and Right Rudders, Runs 12080 and 12090

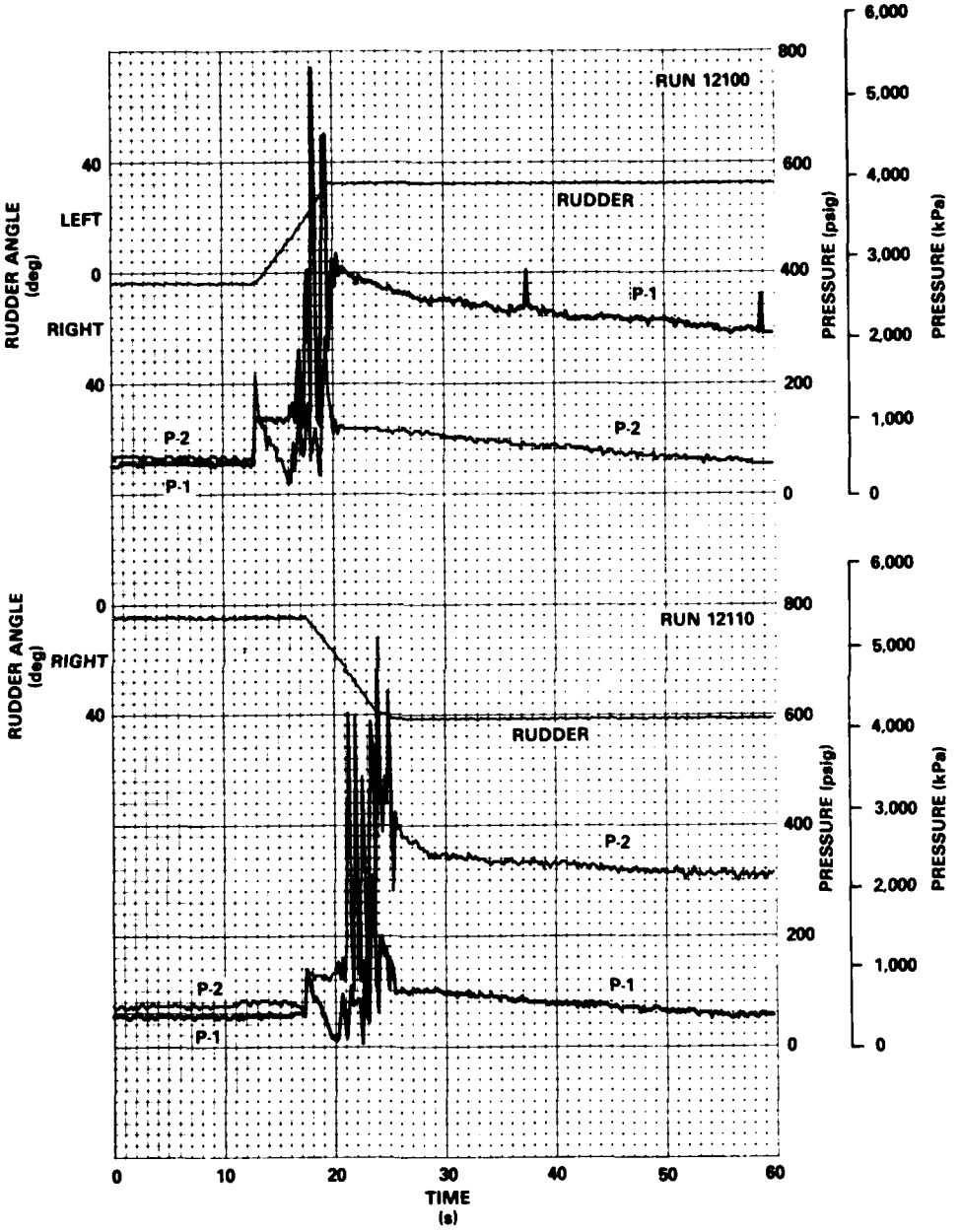
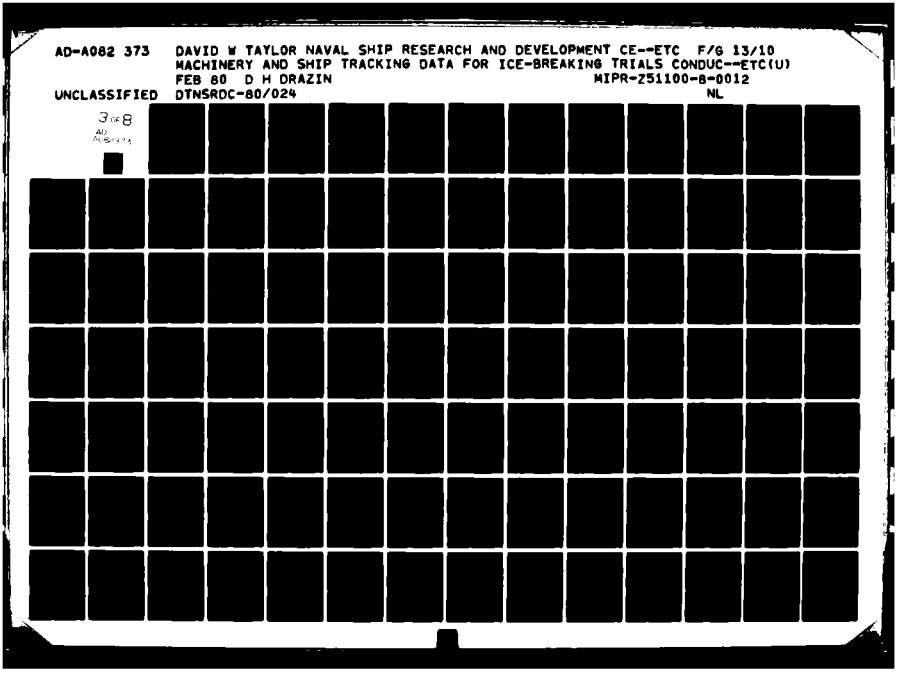
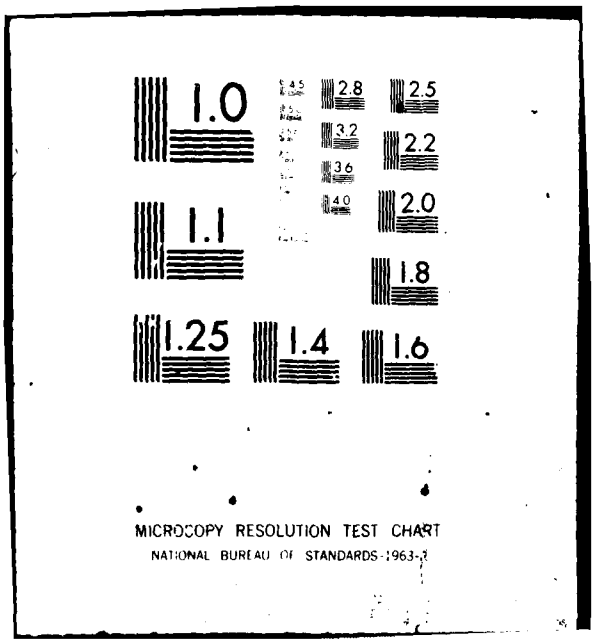


Figure 163 - Rudder Ram Pressures and Rudder Angle, Approach Speed 10 Knots Astern for 35-Degree Left and Right Rudders, Runs 12100 and 12110

AD-A082 373 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUC--ETC(U)
FEB 80 D H DRAZIN
UNCLASSIFIED DTNSRDC-80/024 MIPR-Z51100-8-0012 NL




1.0
2.8
2.5
3.2
2.2
3.6
4.0
2.0
1.1
1.8
1.25
1.4
1.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

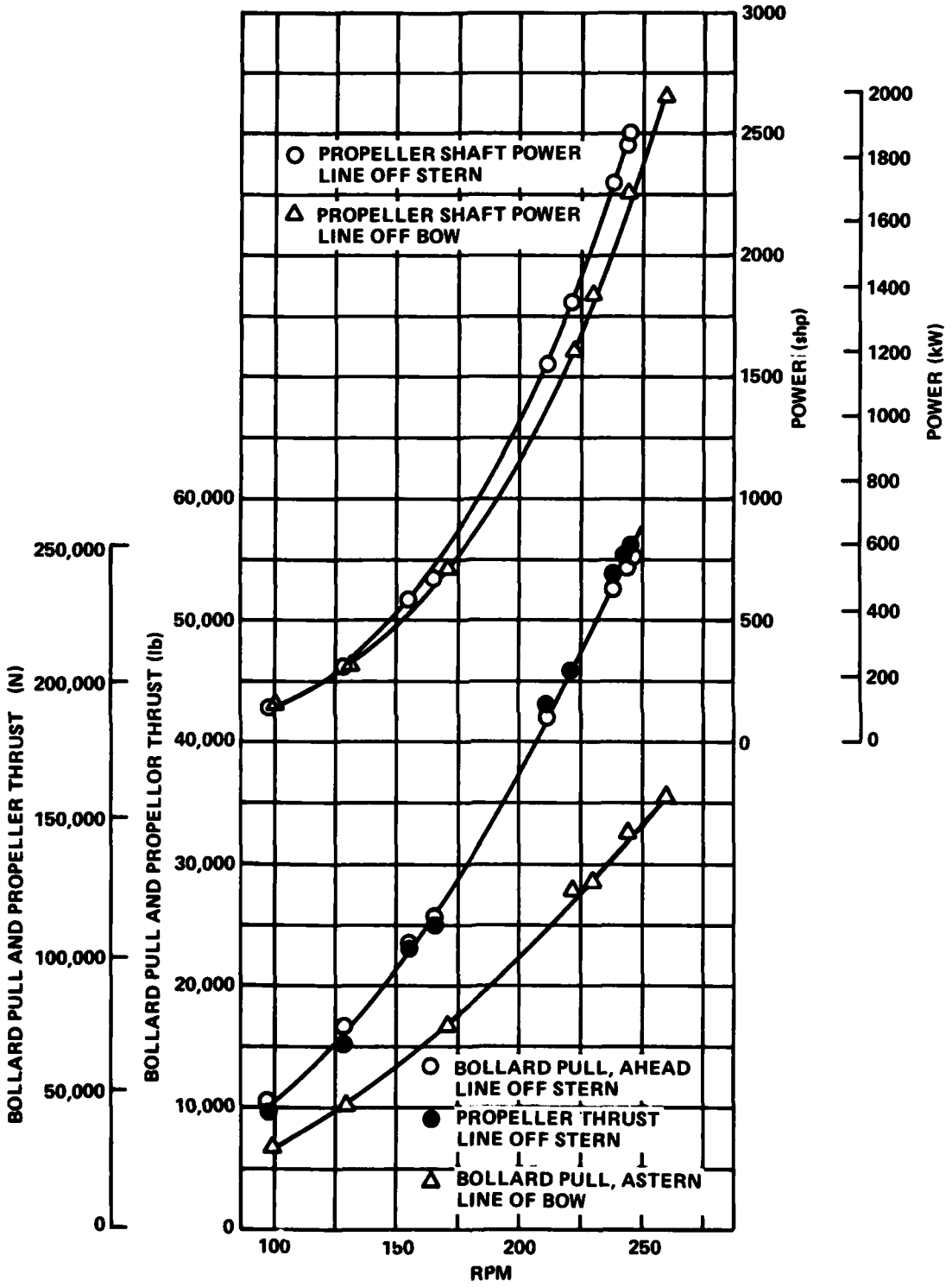


Figure 164 - Bollard Pull, Ahead and Astern

TABLE 1 - SHIP AND PROPELLER CHARACTERISTICS

SHIP CHARACTERISTICS

Length Overall, ft (m)	140.0 (42.7)
Length between Perpendiculars, (LBP), ft (m)	130.0 (39.6)
Maximum Beam, ft (m)	37.5 (11.4)
Mean Draft (Fresh Water), ft (m)	12.0 (3.7)
Maximum Full Load Displacement, ton (metric ton)	650.0 (739.6)
Freeboard to Main Deck (minimum), ft (m)	6.0 (1.8)
Propulsion Power, SHP (kW)	2500 (1864)
Speed (maximum), knot	14.7
Speed (cruising), knot	12.0

PROPELLER CHARACTERISTICS

Propeller Diameter, ft (m)	8.5 (2.6)
Pitch at 0.7 Radius, ft (m)	6.1 (1.9)
Pitch/Diameter Ratio	0.715
Mean Width Ratio	0.356
Projected Area/Developed Area	0.594
Blade Thickness Fraction	0.067
Expanded Area/Developed Area	0.697

TABLE 2 - MACHINERY PARAMETERS, RUN 1100

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	13903	953.1	15593	12575
5- 10	14325	1112.3	16096	12575
10- 15	14527	1009.2	16096	12575
15- 20	13963	891.7	15593	12575
20- 25	14225	1021.2	16096	12575
25- 30	14527	914.5	16096	12575
30- 35	14667	1002.8	16096	13078
35- 40	14607	1020.8	16096	13078
40- 45	14728	871.5	15593	13078
45- 50	14748	907.9	16096	13078
50- 55	14949	1097.6	16096	12575
55- 60	14547	932.1	16096	13078
60- 65	14708	1067.3	16096	12575
65- 70	14587	932.9	16096	13078
70- 75	14426	962.0	16599	13581
75- 80	14627	1044.7	16599	13078
80- 85	15331	945.0	16599	14084
85- 90	15472	998.7	17102	13581
90- 94	15367	906.4	17102	13581
FOR THIS RUN:	14636	1061.6	17102	12575

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	18852	1292.4	21144	17052
5- 10	19425	1508.2	21826	17052
10- 15	19698	1368.5	21826	17052
15- 20	18934	1209.1	21144	17052
20- 25	19289	1384.7	21826	17052
25- 30	19698	1240.1	21826	17052
30- 35	19889	1359.8	21826	17734
35- 40	19807	1384.2	21826	17734
40- 45	19971	1181.7	21144	17734
45- 50	19998	1231.1	21826	17734
50- 55	20271	1488.3	21826	17052
55- 60	19725	1263.9	21826	17734
60- 65	19944	1447.3	21826	17052
65- 70	19780	1265.0	21826	17734
70- 75	19562	1304.4	22508	18416
75- 80	19835	1416.6	22508	17734
80- 85	20789	1281.4	22508	19098
85- 90	20980	1354.3	23190	18416
90- 94	20837	1229.1	23190	18416
FOR THIS RUN:	19847	1439.5	23190	17052

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13700 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	17038	2356.5	21716	13640
5- 10	17205	2233.4	22015	13041
10- 15	17289	2347.6	22314	13640
15- 20	17169	2424.1	21417	13341
20- 25	17600	1918.5	21716	13939
25- 30	17373	2088.0	20818	13640
30- 35	17779	2420.6	22613	13939
35- 40	17540	2270.8	20818	13939
40- 45	17408	2457.8	22015	14238
45- 50	17863	2122.3	21716	13939
50- 55	17802	2134.0	20519	13939
55- 60	17899	2196.8	21117	13939
60- 65	17169	2222.3	20818	12443
65- 70	18114	2054.0	21417	14238
70- 75	17767	2789.2	22613	13041
75- 80	18162	2144.1	22015	14836
80- 85	18701	2178.2	22613	15135
85- 90	18330	2334.9	23211	14836
90- 94	18470	2311.6	23211	14537
FOR THIS RUN:	17669	2322.0	23211	12443

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13700 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	75783	10401.8	96591	60669
5- 10	76528	9934.1	97921	58009
10- 15	76901	10442.0	99252	60669
15- 20	76368	10702.2	95261	59339
20- 25	78284	8533.7	96591	62000
25- 30	77273	9287.3	92600	60669
30- 35	79083	10767.0	100582	62000
35- 40	78018	10100.6	92600	62000
40- 45	77433	10932.2	97921	63330
45- 50	79455	9440.0	96591	62000
50- 55	75623	9492.1	91269	62000
55- 60	79615	9771.4	93930	62000
60- 65	76368	9884.7	92600	55348
65- 70	80573	9136.3	95261	63330
70- 75	79029	12406.6	100582	58009
75- 80	80786	9537.0	97921	65991
80- 85	83180	9688.7	100582	67322
85- 90	81531	10385.7	103243	65991
90- 94	82156	10202.0	103243	64661
FOR THIS RUN:	78593	10328.3	103243	55348

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT POWER (shp) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	352	24.5	396	317
5- 10	361	28.1	408	318
10- 15	367	25.6	408	317
15- 20	354	23.1	396	317
20- 25	360	26.6	411	317
25- 30	366	23.0	405	316
30- 35	370	25.4	408	330
35- 40	370	25.4	409	331
40- 45	373	22.1	398	331
45- 50	373	23.4	408	327
50- 55	379	28.0	411	318
55- 60	369	24.0	409	330
60- 65	371	26.8	405	312
65- 70	369	23.9	408	331
70- 75	363	25.0	420	339
75- 80	370	26.3	419	331
80- 85	386	24.1	419	353
85- 90	390	25.5	433	341
90- 94	389	22.8	431	344
FOR THIS RUN:	370	26.9	433	312

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13700 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	262	18.3	296	237
5- 10	270	21.0	304	237
10- 15	274	19.1	304	237
15- 20	264	17.2	296	237
20- 25	269	19.8	306	237
25- 30	273	17.2	302	236
30- 35	276	18.9	304	246
35- 40	276	19.0	305	247
40- 45	278	16.5	297	247
45- 50	278	17.5	304	244
50- 55	283	20.9	306	237
55- 60	275	17.9	305	246
60- 65	276	20.0	302	233
65- 70	275	17.8	304	247
70- 75	271	18.6	313	253
75- 80	276	19.6	312	247
80- 85	288	18.0	312	263
85- 90	291	19.0	323	255
90- 94	290	17.0	322	256
FOR THIS RUN:	276	20.1	323	233

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	132.8	0.6	133.5	132.0
5- 10	132.5	0.7	133.5	131.0
10- 15	132.7	0.6	133.5	131.0
15- 20	133.1	0.6	134.0	131.5
20- 25	133.0	0.7	134.0	131.5
25- 30	132.4	0.6	133.0	131.0
30- 35	132.4	0.6	133.5	131.0
35- 40	133.0	0.5	134.0	132.0
40- 45	132.9	0.6	134.0	131.5
45- 50	132.8	0.6	134.0	131.5
50- 55	133.3	0.6	134.0	131.5
55- 60	133.1	0.5	133.5	132.0
60- 65	132.4	0.8	133.0	130.0
65- 70	132.9	0.7	134.0	131.0
70- 75	132.3	0.6	133.5	131.0
75- 80	132.8	0.4	133.5	132.0
80- 85	132.1	0.5	133.0	131.0
85- 90	132.3	0.5	133.0	131.5
90- 94	132.8	0.5	133.5	132.0
FOR THIS RUN:	132.7	0.7	134.0	130.0

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	384	0.2	384	383
5- 10	383	0.4	384	382
10- 15	384	0.7	384	382
15- 20	384	0.3	385	384
20- 25	384	0.5	384	383
25- 30	382	0.3	383	382
30- 35	383	0.3	383	382
35- 40	384	0.5	385	383
40- 45	384	0.7	385	383
45- 50	384	0.7	385	383
50- 55	385	0.2	385	384
55- 60	384	0.5	385	384
60- 65	382	1.7	384	377
65- 70	384	1.4	386	381
70- 75	382	1.4	384	378
75- 80	383	0.2	384	383
80- 85	382	0.4	383	381
85- 90	383	0.6	384	382
90- 94	384	0.3	384	383
FOR THIS RUN:	383	1.1	386	377

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13700 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	748	2.7	753	743
5- 10	754	3.3	759	746
10- 15	756	2.3	760	752
15- 20	755	2.4	762	753
20- 25	756	2.7	762	750
25- 30	762	2.4	766	757
30- 35	768	2.2	772	764
35- 40	770	1.3	773	769
40- 45	772	2.2	776	766
45- 50	771	2.6	776	766
50- 55	768	1.8	772	764
55- 60	766	2.0	770	763
60- 65	772	12.8	819	762
65- 70	774	6.8	800	764
70- 75	783	19.1	856	762
75- 80	789	5.0	802	777
80- 85	797	3.3	806	790
85- 90	803	2.5	809	797
90- 94	805	3.8	810	793
FOR THIS RUN:	772	16.9	856	743

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	287	1.0	289	285
5- 10	288	1.0	290	286
10- 15	290	1.1	292	288
15- 20	290	0.9	293	289
20- 25	290	0.9	292	288
25- 30	291	0.9	293	290
30- 35	294	1.0	296	292
35- 40	296	0.5	296	295
40- 45	296	0.9	298	295
45- 50	296	1.0	298	294
50- 55	296	0.7	297	294
55- 60	294	0.7	296	293
60- 65	295	4.4	311	288
65- 70	297	3.1	307	292
70- 75	299	6.7	323	291
75- 80	302	1.8	307	298
80- 85	304	1.1	308	302
85- 90	307	1.3	310	305
90- 94	309	1.6	311	304
FOR THIS RUN:	296	6.3	323	285

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13700 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	66.1	0.6	67.1	65.1
5- 10	66.1	0.6	67.1	65.3
10- 15	66.1	0.6	67.1	65.3
15- 20	66.2	0.6	67.1	65.3
20- 25	66.3	0.6	67.3	65.3
25- 30	66.2	0.6	67.3	65.1
30- 35	66.2	0.6	67.1	65.3
35- 40	66.2	0.6	67.1	65.3
40- 45	66.2	0.6	67.3	65.3
45- 50	66.2	0.6	67.3	65.3
50- 55	66.1	0.6	67.1	65.1
55- 60	66.1	0.7	67.1	65.1
60- 65	66.1	0.6	67.1	65.3
65- 70	66.3	0.6	67.1	65.3
70- 75	66.1	0.6	67.1	65.3
75- 80	66.1	0.6	67.1	65.1
80- 85	66.1	0.6	67.1	65.3
85- 90	66.2	0.6	67.1	65.3
90- 94	66.1	0.6	67.1	65.3
FOR THIS RUN:	66.2	0.6	67.3	65.1

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29.3	0.0	29.4	29.3
5- 10	29.3	0.0	29.4	29.3
10- 15	29.3	0.0	29.4	29.3
15- 20	29.4	0.0	29.4	29.3
20- 25	29.3	0.0	29.4	29.3
25- 30	29.4	0.0	29.4	29.3
30- 35	29.3	0.0	29.4	29.3
35- 40	29.3	0.0	29.4	29.2
40- 45	29.3	0.0	29.4	29.3
45- 50	29.3	0.0	29.4	29.3
50- 55	29.3	0.0	29.4	29.2
55- 60	29.3	0.0	29.4	29.3
60- 65	29.4	0.0	29.4	29.3
65- 70	29.3	0.0	29.4	29.3
70- 75	29.3	0.0	29.4	29.3
75- 80	29.3	0.0	29.5	29.3
80- 85	29.3	0.0	29.4	29.3
85- 90	29.4	0.0	29.4	29.2
90- 94	29.3	0.0	29.4	29.2
FOR THIS RUN:	29.3	0.0	29.5	29.2

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13700 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.9	0.0	2.0	1.9
5- 10	1.9	0.0	2.0	1.9
10- 15	1.9	0.0	2.0	1.9
15- 20	1.9	0.0	2.0	1.9
20- 25	1.9	0.0	2.0	1.9
25- 30	1.9	0.0	2.0	1.9
30- 35	1.9	0.0	2.0	1.9
35- 40	1.9	0.0	2.0	1.9
40- 45	1.9	0.0	2.0	1.9
45- 50	1.9	0.0	2.0	1.9
50- 55	1.9	0.0	2.0	1.9
55- 60	1.9	0.0	2.0	1.9
60- 65	1.9	0.0	2.0	1.9
65- 70	1.9	0.0	2.0	1.9
70- 75	1.9	0.0	2.0	1.9
75- 80	1.9	0.0	2.0	1.9
80- 85	1.9	0.0	2.0	1.9
85- 90	1.9	0.0	2.0	1.9
90- 94	1.9	0.0	2.0	1.9
FOR THIS RUN:	1.9	0.0	2.0	1.9

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	12	0.1	13	12
5- 10	12	0.1	13	12
10- 15	12	0.2	13	12
15- 20	12	0.3	14	12
20- 25	12	0.1	13	12
25- 30	12	0.1	13	12
30- 35	12	0.1	13	12
35- 40	12	0.2	13	12
40- 45	12	0.1	13	12
45- 50	12	0.1	13	12
50- 55	13	0.1	13	12
55- 60	12	0.2	13	12
60- 65	13	0.3	14	12
65- 70	13	0.1	13	12
70- 75	13	0.1	13	12
75- 80	13	0.1	13	12
80- 85	13	0.5	15	13
85- 90	13	0.1	13	13
90- 94	13	0.6	15	12
FOR THIS RUN:	12	0.2	15	12

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	390	0.2	390	389
5- 10	389	0.5	390	389
10- 15	390	0.7	390	389
15- 20	391	0.3	391	390
20- 25	390	0.6	391	389
25- 30	389	0.3	389	388
30- 35	389	0.3	390	389
35- 40	390	0.5	391	390
40- 45	390	0.6	391	389
45- 50	390	0.7	391	389
50- 55	392	0.3	392	391
55- 60	391	0.5	391	390
60- 65	389	1.6	390	383
65- 70	391	1.4	392	388
70- 75	388	1.4	390	384
75- 80	390	0.3	390	389
80- 85	388	0.5	389	388
85- 90	389	0.7	390	388
90- 94	390	0.3	391	389
FOR THIS RUN:	390	1.2	392	383

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	367	2.7	372	363
5- 10	370	2.6	374	363
10- 15	371	2.3	375	366
15- 20	371	2.7	377	367
20- 25	371	2.5	375	366
25- 30	374	2.5	377	368
30- 35	377	2.1	381	373
35- 40	378	2.0	381	373
40- 45	379	2.2	383	374
45- 50	379	2.8	384	375
50- 55	377	2.4	380	373
55- 60	376	2.0	380	373
60- 65	379	6.9	400	373
65- 70	380	3.8	388	372
70- 75	385	10.2	421	374
75- 80	387	2.5	392	383
80- 85	391	2.9	397	385
85- 90	395	2.5	399	390
90- 94	396	2.6	401	391
FOR THIS RUN:	379	8.8	421	363

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13700 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	143	1.0	145	142
5- 10	144	0.9	145	142
10- 15	145	1.0	146	143
15- 20	145	1.1	147	143
20- 25	145	1.0	147	143
25- 30	145	1.0	146	143
30- 35	147	0.8	148	145
35- 40	148	0.8	149	146
40- 45	148	0.9	150	146
45- 50	148	1.1	150	146
50- 55	148	1.0	149	146
55- 60	147	0:8	148	146
60- 65	147	2.4	155	144
65- 70	148	1.7	152	144
70- 75	149	3.6	162	145
75- 80	151	1.0	153	149
80- 85	152	1.0	154	150
85- 90	154	1.1	156	152
90- 94	154	1.0	157	153
FOR THIS RUN:	148	3.3	162	142

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	67.4	1.1	69.5	65.5
5- 10	67.3	1.1	69.8	65.2
10- 15	67.8	1.0	69.8	65.7
15- 20	68.0	1.0	69.8	66.0
20- 25	67.6	1.0	69.5	65.7
25- 30	67.3	1.1	69.3	65.0
30- 35	67.8	1.0	69.5	66.0
35- 40	68.0	1.0	70.1	65.7
40- 45	67.7	1.0	69.8	65.5
45- 50	68.0	1.2	70.3	65.5
50- 55	68.1	1.2	70.6	65.5
55- 60	67.6	1.1	69.3	65.5
60- 65	67.1	1.3	69.3	64.2
65- 70	68.5	1.4	71.3	66.0
70- 75	67.1	2.3	70.1	60.4
75- 80	67.9	1.0	69.5	66.2
80- 85	67.5	1.0	69.5	65.0
85- 90	68.2	1.1	70.8	66.5
90- 94	68.2	1.1	69.5	65.0
FOR THIS RUN:	67.7	1.3	71.3	60.4

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	13.3	2.5	24.1	11.3
5- 10	9.9	15.1	10.6	-63.7
10- 15	14.9	10.5	66.4	11.7
15- 20	15.1	9.0	50.7	12.0
20- 25	12.1	5.1	22.1	-11.1
25- 30	10.3	11.6	13.9	-46.4
30- 35	12.8	0.5	14.1	11.0
35- 40	14.4	5.9	41.0	11.7
40- 45	12.8	0.6	14.7	11.7
45- 50	12.9	1.7	19.9	8.4
50- 55	10.6	11.5	27.6	-42.0
55- 60	12.0	9.9	30.9	-29.1
60- 65	11.8	4.1	13.4	-8.3
65- 70	12.2	2.3	14.1	2.3
70- 75	16.9	18.1	103.7	9.0
75- 80	12.2	1.9	14.6	4.0
80- 85	12.3	2.5	15.8	0.0
85- 90	15.7	10.5	57.7	11.6
90- 94	17.2	19.9	103.7	10.0
FOR THIS RUN:	13.1	9.5	103.7	-63.7

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.9	0.2	1.7	0.7
5- 10	0.7	1.0	1.2	-4.4
10- 15	1.0	0.7	4.5	0.8
15- 20	1.0	0.6	4.1	0.8
20- 25	0.8	0.3	1.5	-0.8
25- 30	0.7	0.8	0.9	-3.2
30- 35	0.9	0.0	1.0	0.8
35- 40	1.0	0.4	2.9	0.8
40- 45	0.9	0.0	1.0	0.8
45- 50	0.9	0.1	1.3	0.6
50- 55	0.7	0.8	1.9	-2.9
55- 60	0.8	0.7	2.7	-2.0
60- 65	0.8	0.3	0.9	-0.5
65- 70	0.8	0.2	1.0	0.2
70- 75	1.1	1.2	7.0	0.7
75- 80	0.8	0.1	1.0	0.3
80- 85	0.8	0.2	1.1	0.1
85- 90	1.1	0.7	4.1	0.8
90- 94	1.2	1.4	7.1	0.7
FOR THIS RUN:	0.9	0.7	7.1	-4.4

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	469.3	3.7	474.0	454.0
5- 10	468.0	5.7	473.0	454.0
10- 15	468.4	5.7	474.0	453.0
15- 20	468.9	4.5	473.0	454.0
20- 25	468.8	4.8	474.0	455.0
25- 30	468.6	5.1	474.0	454.0
30- 35	469.0	4.9	474.0	454.0
35- 40	469.1	4.8	474.0	454.0
40- 45	468.7	4.7	473.0	455.0
45- 50	469.0	5.1	474.0	454.0
50- 55	468.9	5.2	474.0	455.0
55- 60	469.2	4.6	474.0	456.0
60- 65	469.0	4.8	474.0	454.0
65- 70	468.1	5.5	473.0	454.0
70- 75	468.7	4.9	474.0	454.0
75- 80	469.1	4.2	473.0	454.0
80- 85	468.1	4.9	473.0	456.0
85- 90	468.4	5.1	474.0	455.0
90- 94	468.8	4.7	474.0	454.0
FOR THIS RUN:	468.7	4.9	474.0	453.0

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	13	0.1	13	13
5- 10	13	0.2	13	12
10- 15	13	0.1	13	13
15- 20	13	0.1	13	13
20- 25	13	0.1	13	13
25- 30	13	0.4	15	13
30- 35	13	0.1	13	13
35- 40	13	0.1	14	13
40- 45	13	0.3	14	13
45- 50	13	0.1	13	13
50- 55	13	0.1	14	13
55- 60	13	0.9	18	13
60- 65	13	0.1	13	13
65- 70	13	0.1	13	13
70- 75	13	0.5	16	13
75- 80	13	0.1	13	13
80- 85	13	0.4	15	13
85- 90	13	0.4	15	13
90- 94	13	0.1	14	13
FOR THIS RUN:	13	0.3	18	12

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	379	1.3	382	377
5- 10	382	2.1	385	376
10- 15	383	2.0	387	379
15- 20	383	1.8	386	379
20- 25	383	1.7	387	381
25- 30	386	1.8	390	382
30- 35	389	2.1	392	386
35- 40	390	2.2	394	385
40- 45	391	0.9	393	390
45- 50	390	1.5	394	387
50- 55	389	2.1	394	386
55- 60	388	1.7	392	385
60- 65	391	6.7	417	386
65- 70	392	4.6	410	386
70- 75	397	9.7	434	385
75- 80	399	3.6	410	392
80- 85	404	2.6	407	397
85- 90	406	1.6	410	402
90- 94	408	2.1	410	401
FOR THIS RUN:	391	8.7	434	376

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	75.5	0.7	76.9	74.3
5- 10	75.3	0.9	77.1	73.3
10- 15	75.7	0.9	77.4	74.1
15- 20	76.0	0.9	77.9	74.3
20- 25	75.7	0.9	76.9	73.6
25- 30	75.4	0.7	77.1	74.1
30- 35	75.9	0.8	77.6	74.6
35- 40	76.2	0.9	78.1	74.6
40- 45	75.8	0.8	77.1	73.8
45- 50	76.1	0.8	77.4	73.8
50- 55	76.3	0.9	78.1	74.1
55- 60	75.8	0.9	77.1	73.6
60- 65	75.4	1.3	76.9	70.6
65- 70	76.5	1.1	78.9	74.3
70- 75	75.2	2.1	77.9	66.5
75- 80	76.2	0.9	77.6	73.6
80- 85	75.6	1.1	77.9	73.8
85- 90	76.4	0.9	78.4	74.8
90- 94	76.4	0.9	78.4	73.6
FOR THIS RUN:	75.8	1.1	78.9	66.5

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	6.2	26.1	14.8	-106.3
5- 10	8.1	16.7	14.8	-63.5
10- 15	4.9	24.4	14.9	-67.4
15- 20	8.9	23.5	14.6	-106.3
20- 25	12.2	6.8	15.5	-19.4
25- 30	11.4	8.1	14.8	-24.1
30- 35	9.2	23.6	15.4	-106.3
35- 40	5.1	28.7	14.8	-104.3
40- 45	10.3	13.8	14.7	-51.5
45- 50	13.8	0.8	14.9	11.6
50- 55	7.0	23.8	14.8	-106.3
55- 60	4.2	25.3	15.6	-88.2
60- 65	6.6	25.2	14.8	-106.3
65- 70	8.4	23.7	14.7	-106.3
70- 75	8.7	18.6	14.6	-80.5
75- 80	2.6	32.6	15.1	-106.3
80- 85	9.2	12.1	14.6	-26.9
85- 90	7.7	20.9	14.9	-63.3
90- 94	-5.7	40.0	14.9	-106.3
FOR THIS RUN:	7.4	22.8	15.6	-106.3

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.5	2.0	1.1	-8.1
5- 10	0.6	1.3	1.1	-4.8
10- 15	0.4	1.9	1.1	-5.1
15- 20	0.7	1.8	1.1	-8.1
20- 25	0.9	0.5	1.2	-1.5
25- 30	0.9	0.6	1.1	-1.8
30- 35	0.7	1.8	1.2	-8.2
35- 40	0.4	2.2	1.1	-8.8
40- 45	0.8	1.1	1.1	-4.8
45- 50	1.1	0.1	1.1	0.9
50- 55	0.5	1.8	1.1	-8.2
55- 60	0.3	1.9	1.2	-6.6
60- 65	0.5	1.9	1.1	-8.1
65- 70	0.6	1.8	1.1	-7.9
70- 75	0.7	1.4	1.1	-6.8
75- 80	0.2	2.5	1.2	-8.1
80- 85	0.7	0.9	1.1	-2.1
85- 90	0.6	1.6	1.1	-5.8
90- 94	-0.4	3.0	1.1	-8.1
FOR THIS RUN:	0.6	1.7	1.2	-8.2

TABLE 2 (Continued)

RUN NUMBER 1100

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 1.5 in.(3.8 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	452.1	4.9	457.0	441.0
5- 10	449.9	6.1	458.0	440.0
10- 15	453.7	2.7	457.0	448.0
15- 20	450.8	5.4	457.0	440.0
20- 25	450.5	5.5	457.0	441.0
25- 30	453.7	3.1	457.0	446.0
30- 35	451.8	4.7	456.0	440.0
35- 40	449.7	6.1	457.0	441.0
40- 45	453.6	3.4	457.0	446.0
45- 50	451.2	5.2	457.0	441.0
50- 55	450.8	5.7	457.0	441.0
55- 60	454.2	2.7	458.0	448.0
60- 65	450.4	5.7	456.0	440.0
65- 70	451.3	5.7	458.0	442.0
70- 75	453.0	4.0	459.0	442.0
75- 80	449.8	6.1	456.0	440.0
80- 85	452.4	4.6	457.0	443.0
85- 90	453.9	2.5	458.0	447.0
90- 94	449.9	6.0	456.0	440.0
FOR THIS RUN:	451.7	5.1	459.0	440.0

TABLE 3 - MACHINERY PARAMETERS, RUN 1110

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	38148	940.3	40240	36216
5- 10	36598	1175.6	38731	34707
10- 15	36759	974.5	38228	34707
15- 20	37021	1035.7	38731	35210
20- 25	36618	1016.0	38228	34707
25- 30	37162	1158.6	39737	35210
30- 35	38308	1161.7	40240	36216
35- 40	38168	1029.1	39737	36216
40- 45	38288	957.8	39737	36216
45- 50	38771	1110.4	40743	36719
50- 55	38550	1004.8	40240	36719
55- 60	37383	972.4	39234	35713
60- 65	36840	1076.7	38731	34707
65- 70	35069	1021.2	37222	33701
70- 75	35250	1035.0	36719	33701
75- 80	35592	1067.3	37222	33701
80- 85	35874	1286.1	37725	33701
85- 90	35954	986.9	37725	34204
90- 95	35693	1268.4	37725	33701
95-100	34948	945.0	36216	33198
100-105	34767	1029.1	36216	33198
105-110	35109	1147.0	37725	33198
110-115	36075	871.5	37725	34707
115-120	36598	967.9	38228	34707
120-125	38007	996.7	39234	35713
125-130	37866	1060.1	39737	36216
130-135	38107	1076.7	39737	36216
135-140	38389	962.0	40240	36216
140-145	37805	1204.5	39737	36216
145-150	38429	1083.5	40240	36719
150-155	37926	1138.2	39737	36216
155-160	37665	1009.2	39234	36216
160-165	37584	1124.9	39737	35713
165-170	37745	969.9	39234	36216
170-175	38248	1069.2	40240	36719
175-180	39234	985.7	40743	36719
180-185	38912	1014.8	40743	37222
185-190	38731	1016.0	40743	36719
190-195	37121	1102.8	39234	35210
195-200	36679	1110.4	38228	34707
200-205	35854	1011.2	37725	34204
205-210	35693	1000.8	37725	34204
210-215	35109	954.4	36719	33198
215-220	35995	877.9	37222	34707
220-225	36900	1180.8	38731	34707
225-230	36176	1181.1	38228	34204
230-235	35995	866.3	37725	34707
235-240	35572	1001.2	37725	34204
240-245	36196	969.9	37725	34707
245-250	36075	1177.7	37725	34204
250-255	35331	978.3	37222	34204
255-260	35130	1196.1	37222	33198
260-265	35311	964.9	36719	33701
265-270	34848	959.9	36719	33198
270-275	35029	1034.6	36719	33701
275-280	34546	1003.2	36216	32695
280-285	34244	1054.3	36216	32192
285-290	33741	1189.6	35713	32192
290-295	34466	1046.6	36216	32695
295-300	34969	1121.3	36719	32695
300-302	35814	865.4	36719	34204
FOR THIS RUN:	36581	1745.3	40743	32192

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	51728	1275.0	54565	49109
5- 10	49627	1594.1	52519	47063
10- 15	49846	1321.5	51837	47063
15- 20	50200	1404.5	52519	47745
20- 25	49655	1377.7	51837	47063
25- 30	50391	1571.1	53883	47745
30- 35	51946	1575.3	54565	49109
35- 40	51755	1395.4	53883	49109
40- 45	51919	1298.7	53883	49109
45- 50	52574	1505.7	55248	49791
50- 55	52274	1362.5	54565	49791
55- 60	50691	1318.6	53201	48427
60- 65	49955	1460.1	52519	47063
65- 70	47554	1384.7	50473	45699
70- 75	47799	1403.4	49791	45699
75- 80	48263	1447.3	50473	45699
80- 85	48645	1744.0	51155	45699
85- 90	48754	1338.2	51155	46381
90- 95	48400	1719.9	51155	45699
95-100	47390	1281.4	49109	45016
100-105	47145	1395.4	49109	45016
105-110	47608	1555.4	51155	45016
110-115	48918	1181.7	51155	47063
115-120	49627	1312.4	51837	47063
120-125	51537	1351.5	53201	48427
125-130	51346	1437.5	53883	49109
130-135	51673	1460.1	53883	49109
135-140	52055	1304.4	54565	49109
140-145	51264	1633.3	53883	49109
145-150	52110	1469.2	54565	49791
150-155	51428	1543.3	53883	49109
155-160	51073	1368.5	53201	49109
160-165	50964	1525.4	53883	48427
165-170	51182	1315.2	53201	49109
170-175	51864	1449.8	54565	49791
175-180	53201	1336.6	55248	49791
180-185	52765	1376.1	55248	50473
185-190	52519	1377.7	55248	49791
190-195	50337	1494.3	53201	47745
195-200	49736	1505.7	51837	47063
200-205	48618	1371.2	51155	46381
205-210	48400	1357.0	51155	46381
210-215	47608	1294.1	49791	45016
215-220	48809	1190.5	50473	47063
220-225	50037	1601.1	52519	47063
225-230	49054	1601.6	51837	46381
230-235	48809	1174.7	51155	47063
235-240	48236	1357.6	51155	46381
240-245	49082	1315.2	51155	47063
245-250	48918	1596.9	51155	46381
250-255	47908	1326.5	50473	46381
255-260	47636	1621.9	50473	45016
260-265	47881	1308.4	49791	45699
265-270	47254	1301.6	49791	45016
270-275	47499	1402.9	49791	45699
275-280	46844	1360.3	49109	44334
280-285	46435	1429.7	49109	43652
285-290	45753	1613.1	48427	43652
290-295	46735	1419.2	49109	44334
295-300	47417	1520.5	49791	44334
300-302	48563	1173.5	49791	46381
FOR THIS RUN:	49604	2366.7	55248	43652

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	37867	4241.0	44747	30988
5- 10	36492	4438.1	44448	28595
10- 15	32807	3607.1	42952	25903
15- 20	32579	6586.2	43550	15135
20- 25	34278	4491.8	39961	23211
25- 30	30497	6358.5	45345	19024
30- 35	34266	5857.3	46841	19622
35- 40	39327	4054.0	45345	32184
40- 45	37209	4092.4	45046	26501
45- 50	34817	5369.3	44149	23510
50- 55	37221	5090.6	45046	16930
55- 60	39016	2908.2	45345	32184
60- 65	38047	3510.7	45943	30390
65- 70	36755	3217.6	42055	30091
70- 75	32747	4517.5	40858	24108
75- 80	30725	4866.0	39363	21117
80- 85	32675	4995.6	40260	20818
85- 90	35044	5180.1	42354	17229
90- 95	34194	4056.9	42653	25903
95-100	36252	3070.2	40559	30689
100-105	32208	4297.1	38167	23510
105-110	29181	7200.2	42653	11247
110-115	34601	5007.1	45046	16631
115-120	35128	4822.0	43251	25604
120-125	32878	8751.0	57609	9751
125-130	35810	6755.5	51626	25604
130-135	37592	4936.6	48037	28296
135-140	30725	5426.5	40559	17827
140-145	32699	5945.3	45644	17827
145-150	36133	4559.8	42952	25305
150-155	38442	4502.9	46542	30091
155-160	39518	2882.8	44747	33979
160-165	34709	5456.6	44747	25903
165-170	37987	3840.7	43251	27399
170-175	34446	8480.3	52225	8854
175-180	31694	5828.8	42653	21417
180-185	35163	5458.2	43550	22015
185-190	36551	3999.5	42653	24408
190-195	37568	2992.3	44448	29492
195-200	35941	4630.7	48037	28595
200-205	35259	7547.7	65086	24408
205-210	35618	3547.3	44448	29492
210-215	34900	4297.1	45345	26202
215-220	29660	4818.6	38765	19024
220-225	32256	5704.9	44747	21417
225-230	34422	3877.0	41457	26202
230-235	31766	4791.0	45644	19921
235-240	35391	3542.6	41457	28296
240-245	33046	6992.4	42653	8256
245-250	34697	4766.2	42354	22015
250-255	32866	4749.3	41756	22613
255-260	36779	3150.6	43850	30390
260-265	33285	3774.7	39064	25903
265-270	31885	4868.0	40559	20519
270-275	34218	3313.5	40858	26202
275-280	36587	2706.6	41756	32184
280-285	34924	3833.9	42653	27100
285-290	33847	4982.9	46841	23809
290-295	33644	3669.5	39961	25903
295-300	32220	4832.8	39961	16631
300-302	30898	5603.9	41158	23809
FOR THIS RUN:	34626	5511.7	65086	8256

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13700 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	168434	18864.0	199034	137834
5- 10	162314	19740.6	197704	127191
10- 15	145923	16044.4	191052	115217
15- 20	144912	29295.4	193712	67322
20- 25	152469	19979.5	177747	103243
25- 30	135652	28282.5	201695	84617
30- 35	152416	26053.3	200347	87278
35- 40	174927	18032.4	201695	143156
40- 45	165507	18203.1	200365	117878
45- 50	154864	23882.6	196373	104574
50- 55	165561	22642.9	200365	75304
55- 60	173543	12935.6	201695	143156
60- 65	169233	15615.4	204356	135174
65- 70	163485	14312.0	187060	133843
70- 75	145657	20093.7	181739	107234
75- 80	136664	21644.2	175086	93930
80- 85	145338	22220.6	179078	92600
85- 90	155875	23040.9	188391	76635
90- 95	152097	18044.9	189721	115217
95-100	161250	13656.2	180408	136504
100-105	143263	19113.5	169765	104574
105-110	129799	32026.6	189721	50026
110-115	153906	22271.6	200365	73974
115-120	156248	21448.2	192382	113887
120-125	146243	38924.5	256243	43374
125-130	159281	30048.4	229634	113887
130-135	167210	21957.9	213669	125860
135-140	136664	24137.2	180408	79295
140-145	145444	26444.5	203025	79295
145-150	160718	20282.8	191052	112556
150-155	170989	20028.8	207017	133843
155-160	175778	12822.6	199034	151139
160-165	154385	24271.8	199034	115217
165-170	160966	17083.5	192382	121869
170-175	153214	37720.6	232295	39383
175-180	140974	25926.3	189721	95261
180-185	156407	24278.8	193712	97921
185-190	162580	17790.8	189721	108565
190-195	167104	13309.6	197704	131182
195-200	159866	20597.5	213669	127191
200-205	156833	33572.2	289503	108565
205-210	158429	15778.3	197704	131182
210-215	155236	19113.5	201695	116547
215-220	131927	21433.8	172426	84617
220-225	143475	25375.4	199034	95261
225-230	153108	17244.8	184399	116547
230-235	141293	21310.1	203025	88608
235-240	157418	15757.7	184399	125860
240-245	146988	31102.1	189721	36722
245-250	154332	21200.2	188391	97921
250-255	146189	21125.8	185730	100582
255-260	163591	14013.8	195043	135174
260-265	148052	16789.7	173756	115217
265-270	141826	21652.9	180408	91269
270-275	152203	14738.4	181739	116547
275-280	162740	12038.9	185730	143156
280-285	155343	17053.1	189721	120539
285-290	150553	22163.8	200347	105904
290-295	149649	16321.8	177747	115217
295-300	143316	21496.5	177747	73974
300-302	137435	24926.8	183069	105904
FOR THIS RUN:	154017	24516.1	289503	36722

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT POWER (shp) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1575	42.7	1670	1479
5- 10	1492	48.2	1582	1408
10- 15	1460	39.5	1525	1401
15- 20	1491	41.5	1555	1384
20- 25	1485	42.1	1576	1401
25- 30	1435	43.1	1519	1371
30- 35	1515	48.7	1606	1414
35- 40	1576	42.6	1661	1506
40- 45	1528	36.6	1595	1464
45- 50	1535	34.8	1605	1455
50- 55	1571	39.6	1636	1493
55- 60	1537	38.2	1597	1465
60- 65	1531	44.3	1608	1451
65- 70	1461	45.4	1559	1389
70- 75	1429	44.8	1510	1360
75- 80	1412	44.0	1485	1338
80- 85	1455	49.3	1520	1370
85- 90	1467	43.9	1531	1384
90- 95	1470	49.2	1548	1396
95-100	1454	41.1	1514	1375
100-105	1401	45.0	1465	1324
105-110	1391	38.6	1476	1327
110-115	1443	39.4	1520	1374
115-120	1476	42.9	1544	1404
120-125	1493	47.7	1576	1386
125-130	1536	43.6	1612	1465
130-135	1549	46.7	1634	1472
135-140	1549	36.9	1627	1479
140-145	1540	46.0	1630	1479
145-150	1557	43.7	1619	1479
150-155	1539	45.4	1634	1475
155-160	1563	43.4	1625	1493
160-165	1496	42.7	1595	1423
165-170	1549	46.8	1621	1476
170-175	1543	43.3	1630	1458
175-180	1542	41.0	1602	1444
180-185	1578	43.5	1664	1485
185-190	1613	40.1	1687	1534
190-195	1576	51.0	1673	1478
195-200	1503	50.1	1579	1425
200-205	1487	41.9	1562	1407
205-210	1467	45.3	1556	1387
210-215	1461	43.0	1542	1373
215-220	1440	41.5	1517	1375
220-225	1485	47.1	1569	1404
225-230	1513	48.5	1602	1426
230-235	1478	36.5	1562	1421
235-240	1459	40.7	1537	1390
240-245	1472	34.2	1520	1401
245-250	1498	51.7	1588	1411
250-255	1460	50.3	1559	1368
255-260	1457	43.1	1531	1384
260-265	1454	38.6	1517	1386
265-270	1422	40.4	1507	1357
270-275	1442	41.2	1521	1373
275-280	1449	44.7	1514	1363
280-285	1404	42.3	1489	1330
285-290	1390	46.0	1461	1321
290-295	1410	41.2	1472	1338
295-300	1414	47.0	1486	1323
300-302	1420	38.6	1468	1348
FOR THIS RUN:	1489	69.8	1687	1321

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1175	31.8	1245	1103
5- 10	1112	35.9	1180	1050
10- 15	1088	29.5	1137	1045
15- 20	1112	30.9	1160	1032
20- 25	1107	31.4	1175	1045
25- 30	1070	32.1	1133	1022
30- 35	1130	36.3	1198	1054
35- 40	1175	31.8	1238	1123
40- 45	1139	27.3	1189	1091
45- 50	1145	26.0	1197	1085
50- 55	1171	29.5	1220	1113
55- 60	1146	28.5	1191	1093
60- 65	1142	33.0	1199	1082
65- 70	1089	33.9	1163	1036
70- 75	1066	33.4	1126	1014
75- 80	1053	32.8	1107	998
80- 85	1085	36.8	1134	1022
85- 90	1094	32.7	1142	1032
90- 95	1096	36.7	1154	1041
95-100	1084	30.6	1129	1025
100-105	1045	33.5	1093	987
105-110	1037	28.8	1101	990
110-115	1076	29.4	1134	1025
115-120	1100	32.0	1152	1047
120-125	1113	35.6	1175	1034
125-130	1145	32.5	1202	1093
130-135	1155	34.9	1219	1097
135-140	1155	27.5	1213	1103
140-145	1148	34.3	1216	1103
145-150	1161	32.6	1207	1103
150-155	1148	33.9	1219	1100
155-160	1165	32.4	1212	1113
160-165	1116	31.8	1189	1061
165-170	1155	34.9	1209	1100
170-175	1151	32.3	1216	1087
175-180	1150	30.6	1195	1077
180-185	1176	32.4	1241	1107
185-190	1203	29.9	1258	1144
190-195	1175	38.1	1248	1102
195-200	1121	37.4	1178	1062
200-205	1109	31.2	1165	1049
205-210	1094	33.8	1160	1034
210-215	1090	32.1	1150	1024
215-220	1074	30.9	1131	1025
220-225	1107	35.1	1170	1047
225-230	1128	36.1	1194	1064
230-235	1102	27.2	1165	1059
235-240	1088	30.4	1146	1037
240-245	1097	25.5	1134	1045
245-250	1117	38.5	1184	1052
250-255	1088	37.5	1163	1020
255-260	1086	32.2	1141	1032
260-265	1084	28.8	1131	1034
265-270	1060	30.1	1123	1012
270-275	1075	30.8	1134	1024
275-280	1081	33.3	1129	1017
280-285	1047	31.5	1111	992
285-290	1036	34.3	1090	985
290-295	1051	30.7	1098	998
295-300	1055	35.1	1108	986
300-302	1059	28.8	1095	1005
FOR THIS RUN:	1110	52.1	1258	985

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	216.9	2.0	220.0	213.0
5- 10	214.1	0.9	215.5	211.5
10- 15	208.6	2.7	214.0	203.0
15- 20	211.5	2.5	216.5	206.5
20- 25	213.0	1.3	216.5	211.0
25- 30	202.8	2.4	209.0	200.0
30- 35	207.8	3.1	215.0	202.5
35- 40	216.9	2.7	220.0	210.0
40- 45	209.6	2.6	213.5	203.5
45- 50	208.0	5.4	215.0	198.5
50- 55	214.0	1.2	216.0	211.0
55- 60	215.9	2.2	219.0	212.0
60- 65	218.3	1.4	220.5	215.0
65- 70	218.7	1.2	220.5	216.5
70- 75	213.0	2.1	217.0	209.5
75- 80	208.4	1.6	211.0	205.0
80- 85	213.0	1.9	216.0	209.0
85- 90	214.3	3.3	219.0	209.5
90- 95	216.3	1.3	219.0	213.5
95-100	218.4	0.9	220.0	216.5
100-105	211.7	1.6	216.0	209.0
105-110	208.2	2.7	211.5	203.0
110-115	210.1	3.6	216.5	203.0
115-120	211.8	3.0	215.5	204.5
120-125	206.3	4.0	213.0	199.5
125-130	213.0	1.5	215.5	210.0
130-135	213.5	1.0	216.0	210.5
135-140	212.0	2.0	215.5	206.5
140-145	213.9	2.3	217.0	208.0
145-150	212.8	1.0	215.0	210.5
150-155	213.2	2.2	217.0	210.5
155-160	217.9	0.6	219.0	216.5
160-165	209.2	4.7	216.5	202.0
165-170	215.5	2.6	218.5	209.0
170-175	211.9	2.2	215.5	208.5
175-180	206.5	1.9	209.5	202.0
180-185	212.9	3.3	218.0	208.0
185-190	218.7	2.1	223.0	215.5
190-195	223.0	1.5	225.0	220.0
195-200	215.2	1.9	219.5	211.5
200-205	217.8	0.9	219.5	215.5
205-210	215.8	1.9	219.5	213.0
210-215	218.6	3.1	222.5	210.5
215-220	210.1	2.4	214.0	206.5
220-225	211.3	2.0	215.5	207.0
225-230	219.6	1.7	223.0	215.5
230-235	215.6	1.2	218.0	213.0
235-240	215.4	1.9	218.5	212.0
240-245	213.6	2.1	217.0	210.5
245-250	218.2	4.2	224.0	211.5
250-255	217.0	3.0	223.5	210.0
255-260	217.8	2.1	220.0	212.5
260-265	216.2	1.2	218.5	213.0
265-270	214.3	1.5	217.0	211.5
270-275	216.3	2.0	220.0	212.5
275-280	220.3	1.0	222.0	217.5
280-285	215.4	1.6	218.0	213.0
285-290	216.4	1.2	218.0	213.5
290-295	214.9	1.0	218.0	211.5
295-300	212.4	2.0	217.5	209.0
300-302	208.3	1.2	210.5	207.0
FOR THIS RUN:	213.9	4.6	225.0	198.5

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	607	5.8	616	597
5- 10	601	2.2	604	596
10- 15	586	7.2	598	570
15- 20	595	6.5	608	583
20- 25	597	3.1	604	591
25- 30	571	5.1	582	563
30- 35	588	8.7	609	576
35- 40	608	8.0	617	586
40- 45	591	7.0	598	576
45- 50	588	14.1	604	563
50- 55	600	2.9	604	595
55- 60	604	5.4	611	592
60- 65	608	3.0	613	601
65- 70	609	3.1	613	603
70- 75	593	5.0	604	584
75- 80	583	4.1	591	575
80- 85	595	4.8	603	584
85- 90	599	8.3	611	585
90- 95	603	3.3	608	597
95-100	607	2.2	610	601
100-105	589	3.6	596	581
105-110	581	7.3	588	565
110-115	588	8.8	603	572
115-120	590	10.4	601	569
120-125	580	10.0	596	563
125-130	594	3.9	602	587
130-135	596	4.5	604	586
135-140	593	7.0	602	581
140-145	597	4.5	604	582
145-150	592	2.8	599	587
150-155	594	5.8	603	584
155-160	604	1.3	607	601
160-165	585	8.7	600	565
165-170	599	4.0	605	591
170-175	591	5.1	598	580
175-180	582	6.6	596	570
180-185	599	6.6	610	586
185-190	607	5.3	616	597
190-195	614	4.2	619	605
195-200	595	4.6	603	586
200-205	602	2.1	605	597
205-210	596	4.9	604	589
210-215	602	8.8	612	578
215-220	583	6.5	592	573
220-225	587	7.7	599	572
225-230	607	3.7	614	600
230-235	596	2.6	602	592
235-240	595	4.8	603	588
240-245	591	6.1	601	578
245-250	603	10.1	615	586
250-255	597	9.2	611	581
255-260	600	4.9	607	586
260-265	596	2.9	600	591
265-270	592	4.3	599	585
270-275	597	5.1	607	587
275-280	606	2.6	610	600
280-285	594	4.1	600	586
285-290	596	2.9	601	591
290-295	593	4.8	600	585
295-300	586	4.7	598	578
300-302	577	3.5	582	573
FOR THIS RUN:	595	10.4	619	563

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1993	42.0	2086	1920
5- 10	1945	38.6	2018	1887
10- 15	1988	53.5	2110	1895
15- 20	1967	36.6	2059	1924
20- 25	1977	36.2	2049	1913
25- 30	2065	43.6	2131	1960
30- 35	2086	44.1	2166	2000
35- 40	2069	48.9	2240	2013
40- 45	2046	50.7	2136	1956
45- 50	2088	73.6	2241	2000
50- 55	2083	37.8	2212	2036
55- 60	2023	27.8	2117	1987
60- 65	1975	34.7	2091	1933
65- 70	1908	27.4	2000	1867
70- 75	1909	30.6	1974	1853
75- 80	1946	47.4	2056	1837
80- 85	1966	51.3	2067	1880
85- 90	1947	54.4	2103	1877
90- 95	1928	45.1	2023	1860
95-100	1876	21.2	1924	1831
100-105	1890	33.2	1954	1818
105-110	1952	72.2	2157	1840
110-115	1976	45.6	2080	1908
115-120	2029	64.7	2186	1937
120-125	2056	77.1	2248	1944
125-130	2081	51.1	2200	2018
130-135	2066	48.4	2221	2001
135-140	2094	65.6	2275	1970
140-145	2063	41.2	2154	1988
145-150	2087	44.8	2163	2017
150-155	2082	33.7	2164	2043
155-160	2061	18.8	2113	2033
160-165	2084	54.8	2252	1971
165-170	2072	38.8	2164	2003
170-175	2099	56.8	2221	1996
175-180	2132	59.3	2231	2036
180-185	2122	69.4	2247	1993
185-190	2079	47.3	2212	2010
190-195	2008	27.3	2083	1963
195-200	1983	42.6	2099	1920
200-205	1967	26.4	2033	1924
205-210	1949	31.2	2030	1901
210-215	1942	46.7	2079	1898
215-220	1959	52.7	2084	1891
220-225	2005	63.6	2179	1923
225-230	1975	29.2	2038	1924
230-235	1964	33.7	2031	1914
235-240	1972	34.2	2060	1916
240-245	1979	50.1	2116	1900
245-250	1952	55.1	2096	1897
250-255	1962	37.6	2079	1897
255-260	1908	31.0	1988	1851
260-265	1917	31.2	1981	1864
265-270	1932	38.6	2021	1860
270-275	1923	32.7	1986	1881
275-280	1889	18.5	1956	1867
280-285	1880	32.9	1956	1843
285-290	1885	22.8	1950	1850
290-295	1887	30.2	1944	1835
295-300	1936	40.0	2033	1861
300-302	1987	53.4	2101	1897
FOR THIS RUN:	1993	83.7	2275	1818

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1. Level ice breaking without bubblers
2. 14.5 in. (36.8 cm) of ice with 3 in. (7.6 cm) of snow
3. Ship speed 5.4 knots
4. Flexural strength of ice 13780 lb sq ft (660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1211	28.8	1267	1150
5- 10	1168	21.5	1211	1132
10- 15	1165	28.5	1229	1114
15- 20	1171	22.7	1226	1137
20- 25	1181	20.8	1225	1144
25- 30	1180	24.2	1237	1126
30- 35	1226	26.3	1269	1162
35- 40	1254	23.2	1313	1213
40- 45	1209	24.2	1257	1152
45- 50	1228	30.7	1274	1167
50- 55	1244	21.7	1320	1217
55- 60	1223	11.0	1253	1207
60- 65	1201	16.7	1257	1180
65- 70	1162	17.7	1206	1132
70- 75	1132	17.8	1162	1104
75- 80	1134	23.7	1188	1081
80- 85	1170	28.0	1235	1131
85- 90	1166	27.2	1249	1114
90- 95	1162	25.0	1218	1129
95-100	1139	11.9	1164	1111
100-105	1113	17.8	1144	1074
105-110	1134	33.7	1227	1079
110-115	1162	30.8	1217	1098
115-120	1197	30.8	1281	1145
120-125	1193	43.8	1274	1119
125-130	1236	28.1	1296	1194
130-135	1231	24.9	1301	1188
135-140	1242	35.3	1348	1162
140-145	1231	25.9	1279	1176
145-150	1237	24.4	1280	1198
150-155	1236	16.7	1277	1207
155-160	1245	10.7	1271	1228
160-165	1218	30.7	1290	1149
165-170	1241	24.8	1284	1192
170-175	1240	27.5	1288	1190
175-180	1241	28.7	1287	1167
180-185	1270	33.7	1324	1182
185-190	1262	21.8	1321	1231
190-195	1233	18.5	1281	1195
195-200	1179	24.2	1237	1137
200-205	1183	13.8	1223	1156
205-210	1162	13.8	1198	1138
210-215	1169	16.1	1207	1147
215-220	1141	30.2	1219	1102
220-225	1177	30.2	1250	1123
225-230	1199	18.2	1233	1158
230-235	1171	18.3	1212	1144
235-240	1173	17.5	1212	1142
240-245	1169	26.6	1244	1123
245-250	1176	23.2	1233	1142
250-255	1171	23.3	1208	1128
255-260	1145	21.1	1193	1094
260-265	1142	17.8	1183	1113
265-270	1143	19.7	1185	1111
270-275	1148	13.6	1175	1127
275-280	1145	11.1	1182	1127
280-285	1116	17.2	1159	1093
285-290	1124	14.0	1167	1097
290-295	1119	15.5	1152	1093
295-300	1134	22.7	1179	1092
300-302	1145	27.3	1203	1104
FOR THIS RUN:	1186	48.4	1348	1074

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	66.1	0.7	67.6	65.1
5- 10	66.1	0.6	66.8	65.1
10- 15	66.1	0.6	67.1	65.1
15- 20	66.1	0.6	67.1	65.3
20- 25	66.2	0.7	67.6	65.1
25- 30	66.2	0.7	67.1	65.1
30- 35	66.1	0.7	67.1	65.1
35- 40	66.3	0.9	69.6	65.3
40- 45	66.1	0.8	67.8	64.6
45- 50	66.8	2.0	72.6	64.6
50- 55	66.0	0.7	67.1	65.1
55- 60	66.0	0.6	67.1	65.3
60- 65	66.2	0.6	67.3	65.3
65- 70	66.2	0.7	67.3	65.1
70- 75	66.2	0.6	67.1	65.3
75- 80	66.1	0.7	67.1	65.1
80- 85	66.2	0.6	67.3	65.1
85- 90	66.1	0.6	67.3	65.1
90- 95	66.2	0.6	67.1	64.8
95-100	66.3	0.6	67.3	65.3
100-105	66.2	0.7	67.3	65.3
105-110	66.3	0.7	67.6	65.1
110-115	66.2	0.7	67.3	65.3
115-120	66.3	0.7	67.3	65.3
120-125	66.8	2.8	79.9	64.6
125-130	66.1	0.7	67.1	64.6
130-135	66.3	1.2	71.4	65.1
135-140	67.5	4.2	87.3	65.1
140-145	65.9	0.7	67.3	64.6
145-150	66.2	0.7	67.3	65.1
150-155	66.2	0.6	67.3	65.1
155-160	66.1	0.7	67.3	65.1
160-165	67.1	2.0	73.4	65.3
165-170	65.6	0.8	67.3	63.8
170-175	66.7	1.6	72.4	64.8
175-180	67.1	1.9	72.6	63.8
180-185	67.3	3.2	78.2	64.3
185-190	65.7	0.9	67.1	64.1
190-195	66.2	0.6	67.1	65.1
195-200	66.3	0.7	67.3	65.1
200-205	66.3	0.7	67.3	65.1
205-210	66.2	0.6	67.6	65.3
210-215	66.3	0.6	67.3	65.3
215-220	66.3	0.6	67.3	65.3
220-225	66.2	0.6	67.3	65.3
225-230	66.3	0.6	67.3	65.3
230-235	66.3	0.6	67.3	65.1
235-240	66.2	0.6	67.3	65.1
240-245	66.2	0.6	67.6	65.3
245-250	66.2	0.7	67.3	65.1
250-255	66.4	0.6	67.3	65.1
255-260	66.3	0.6	67.6	65.3
260-265	66.4	0.6	67.3	65.3
265-270	66.3	0.6	67.3	65.3
270-275	66.3	0.6	67.3	65.3
275-280	66.3	0.7	67.3	65.3
280-285	66.3	0.7	67.6	65.3
285-290	66.3	0.7	67.6	65.1
290-295	66.3	0.6	67.3	65.6
295-300	66.4	0.7	67.3	65.3
300-302	66.5	0.6	67.3	65.6
FOR THIS RUN:	66.3	1.2	87.3	63.8

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29.3	0.1	29.4	29.2
5- 10	29.3	0.1	29.5	29.2
10- 15	29.3	0.1	29.5	29.1
15- 20	29.4	0.1	29.5	29.2
20- 25	29.3	0.1	29.5	29.2
25- 30	29.3	0.1	29.5	29.2
30- 35	29.3	0.1	29.5	29.2
35- 40	29.3	0.0	29.4	29.2
40- 45	29.4	0.1	29.8	29.2
45- 50	29.7	0.3	30.4	29.1
50- 55	29.3	0.1	29.5	29.1
55- 60	29.4	0.1	29.4	29.3
60- 65	29.3	0.1	29.5	29.2
65- 70	29.3	0.1	29.5	29.2
70- 75	29.3	0.1	29.5	29.2
75- 80	29.4	0.1	29.5	29.2
80- 85	29.3	0.1	29.5	29.1
85- 90	29.3	0.1	29.5	29.1
90- 95	29.3	0.1	29.5	29.2
95-100	29.3	0.1	29.5	29.2
100-105	29.3	0.1	29.5	29.2
105-110	29.4	0.1	29.5	29.1
110-115	29.3	0.1	29.6	29.2
115-120	29.3	0.1	29.5	29.1
120-125	29.6	0.2	30.0	29.2
125-130	29.4	0.1	29.6	29.2
130-135	29.4	0.1	29.6	29.1
135-140	29.7	0.2	30.0	29.3
140-145	29.4	0.2	29.9	29.2
145-150	29.3	0.1	29.5	29.2
150-155	29.4	0.1	29.5	29.2
155-160	29.3	0.1	29.5	29.2
160-165	29.7	0.5	30.9	29.3
165-170	29.4	0.2	29.9	29.1
170-175	29.6	0.3	30.1	29.2
175-180	30.0	0.3	30.7	29.3
180-185	29.9	0.5	30.6	29.2
185-190	29.3	0.1	29.7	29.0
190-195	29.3	0.1	29.5	29.2
195-200	29.4	0.1	29.5	29.2
200-205	29.3	0.1	29.5	29.2
205-210	29.3	0.1	29.5	29.2
210-215	29.3	0.1	29.5	29.2
215-220	29.4	0.1	29.5	29.2
220-225	29.4	0.1	29.5	29.1
225-230	29.3	0.1	29.5	29.2
230-235	29.3	0.1	29.4	29.1
235-240	29.3	0.1	29.5	29.2
240-245	29.3	0.1	29.5	29.2
245-250	29.4	0.1	29.5	29.2
250-255	29.3	0.1	29.5	29.2
255-260	29.3	0.1	29.4	29.2
260-265	29.3	0.1	29.5	29.2
265-270	29.3	0.1	29.5	29.1
270-275	29.3	0.1	29.5	29.2
275-280	29.3	0.0	29.4	29.2
280-285	29.3	0.1	29.5	29.2
285-290	29.3	0.1	29.5	29.2
290-295	29.3	0.1	29.5	29.2
295-300	29.3	0.1	29.4	29.2
300-302	29.4	0.1	29.5	29.3
FOR THIS RUN:	29.4	0.2	30.9	29.0

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.9	0.0	2.0	1.9
5- 10	1.9	0.0	2.0	1.9
10- 15	1.9	0.0	2.0	1.9
15- 20	1.9	0.0	2.0	1.9
20- 25	1.9	0.0	2.0	1.9
25- 30	1.9	0.0	2.0	1.9
30- 35	1.9	0.0	2.0	1.9
35- 40	1.9	0.0	2.0	1.9
40- 45	1.9	0.0	2.0	1.9
45- 50	2.0	0.1	2.1	1.9
50- 55	1.9	0.0	2.0	1.9
55- 60	1.9	0.0	2.0	1.9
60- 65	1.9	0.0	2.0	1.9
65- 70	1.9	0.0	2.0	1.9
70- 75	1.9	0.0	2.0	1.9
75- 80	1.9	0.0	2.0	1.9
80- 85	1.9	0.0	2.0	1.9
85- 90	1.9	0.0	2.0	1.9
90- 95	1.9	0.0	2.0	1.9
95-100	1.9	0.0	2.0	1.9
100-105	1.9	0.0	2.0	1.9
105-110	1.9	0.0	2.0	1.9
110-115	1.9	0.0	2.0	1.9
115-120	1.9	0.0	2.0	1.9
120-125	2.0	0.1	2.4	1.9
125-130	1.9	0.0	2.0	1.9
130-135	1.9	0.0	2.1	1.9
135-140	2.0	0.1	2.6	1.9
140-145	1.9	0.0	2.0	1.9
145-150	1.9	0.0	2.0	1.9
150-155	1.9	0.0	2.0	1.9
155-160	1.9	0.0	2.0	1.9
160-165	2.0	0.1	2.3	1.9
165-170	1.9	0.0	2.0	1.9
170-175	2.0	0.1	2.2	1.9
175-180	2.0	0.1	2.2	1.9
180-185	2.0	0.1	2.4	1.9
185-190	1.9	0.0	2.0	1.9
190-195	1.9	0.0	2.0	1.9
195-200	1.9	0.0	2.0	1.9
200-205	1.9	0.0	2.0	1.9
205-210	1.9	0.0	2.0	1.9
210-215	1.9	0.0	2.0	1.9
215-220	1.9	0.0	2.0	1.9
220-225	1.9	0.0	2.0	1.9
225-230	1.9	0.0	2.0	1.9
230-235	1.9	0.0	2.0	1.9
235-240	1.9	0.0	2.0	1.9
240-245	1.9	0.0	2.0	1.9
245-250	1.9	0.0	2.0	1.9
250-255	1.9	0.0	2.0	1.9
255-260	1.9	0.0	2.0	1.9
260-265	1.9	0.0	2.0	1.9
265-270	1.9	0.0	2.0	1.9
270-275	1.9	0.0	2.0	1.9
275-280	1.9	0.0	2.0	1.9
280-285	1.9	0.0	2.0	1.9
285-290	1.9	0.0	2.0	1.9
290-295	1.9	0.0	2.0	1.9
295-300	1.9	0.0	2.0	1.9
300-302	2.0	0.0	2.0	1.9
FOR THIS RUN:	1.9	0.0	2.6	1.9

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	13	0.1	13	13
5- 10	13	0.4	15	13
10- 15	13	0.1	13	13
15- 20	13	0.1	13	13
20- 25	13	0.1	13	13
25- 30	13	0.2	14	13
30- 35	13	0.1	14	13
35- 40	14	0.9	18	13
40- 45	14	0.1	14	13
45- 50	14	0.2	15	14
50- 55	14	0.1	14	14
55- 60	14	0.1	14	14
60- 65	14	0.1	14	14
65- 70	14	0.3	15	14
70- 75	14	0.2	15	14
75- 80	14	0.3	15	14
80- 85	14	0.1	15	14
85- 90	14	0.1	15	14
90- 95	15	0.3	16	14
95-100	15	0.3	15	14
100-105	15	0.2	16	14
105-110	15	0.1	15	15
110-115	15	1.4	22	15
115-120	15	0.1	15	15
120-125	16	2.9	30	15
125-130	15	0.2	16	15
130-135	15	0.1	16	15
135-140	15	0.1	16	15
140-145	16	0.1	16	15
145-150	16	0.4	18	16
150-155	16	0.1	16	16
155-160	16	0.1	16	15
160-165	16	0.1	16	16
165-170	16	0.1	16	16
170-175	16	0.6	18	16
175-180	16	0.2	17	16
180-185	16	0.3	17	16
185-190	17	0.1	17	16
190-195	17	0.5	19	16
195-200	17	2.2	28	16
200-205	17	0.4	19	17
205-210	17	0.1	17	17
210-215	17	0.1	17	17
215-220	17	0.1	17	17
220-225	17	0.3	19	17
225-230	17	0.1	17	17
230-235	17	0.1	18	17
235-240	18	0.2	18	17
240-245	18	0.3	19	18
245-250	18	0.1	18	18
250-255	18	0.1	18	18
255-260	18	0.2	19	18
260-265	18	0.1	18	18
265-270	18	0.1	18	18
270-275	18	0.2	19	18
275-280	18	0.1	19	18
280-285	18	0.2	19	18
285-290	18	0.1	19	18
290-295	19	0.1	19	18
295-300	19	0.1	19	18
300-302	19	0.1	19	19
FOR THIS RUN:	16	1.8	30	13

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	615	5.8	624	605
5- 10	608	2.2	612	604
10- 15	594	7.3	606	577
15- 20	603	6.4	616	590
20- 25	605	3.2	612	598
25- 30	578	5.2	589	569
30- 35	595	8.8	616	582
35- 40	616	8.0	625	593
40- 45	598	7.1	606	583
45- 50	596	14.3	612	571
50- 55	607	3.0	612	602
55- 60	612	5.3	618	600
60- 65	616	2.9	620	609
65- 70	616	3.1	620	610
70- 75	600	5.2	612	591
75- 80	590	4.1	598	582
80- 85	602	4.9	610	591
85- 90	606	8.3	618	592
90- 95	610	3.3	616	604
95-100	614	2.2	617	608
100-105	596	3.7	603	588
105-110	588	7.5	595	570
110-115	595	9.0	610	579
115-120	597	10.6	607	576
120-125	587	10.6	604	569
125-130	602	4.0	609	595
130-135	603	4.9	611	592
135-140	600	7.2	610	587
140-145	604	4.3	610	590
145-150	599	2.7	606	594
150-155	601	5.9	610	592
155-160	611	1.3	614	608
160-165	592	8.7	607	573
165-170	607	4.1	612	598
170-175	598	5.3	606	587
175-180	590	6.7	603	577
180-185	606	6.7	617	593
185-190	614	5.2	624	605
190-195	621	4.3	626	612
195-200	602	4.8	611	593
200-205	609	2.1	612	604
205-210	603	5.1	612	596
210-215	609	8.7	619	586
215-220	590	6.5	600	580
220-225	594	7.8	606	579
225-230	614	3.7	621	606
230-235	603	2.8	609	599
235-240	602	4.9	611	595
240-245	598	6.2	608	585
245-250	610	10.5	623	593
250-255	604	9.3	618	588
255-260	608	5.0	614	593
260-265	603	2.9	607	598
265-270	598	4.2	606	591
270-275	604	5.1	614	594
275-280	613	2.6	617	606
280-285	600	4.1	607	592
285-290	603	2.9	607	598
290-295	600	4.7	606	592
295-300	593	4.8	606	585
300-302	583	3.7	589	578
FOR THIS RUN:	602	10.5	626	569

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	993	21.5	1046	956
5- 10	969	20.0	1006	941
10- 15	991	27.0	1052	944
15- 20	981	19.2	1028	957
20- 25	985	18.2	1023	953
25- 30	1030	21.9	1066	980
30- 35	1040	21.6	1081	997
35- 40	1032	24.0	1117	1006
40- 45	1022	25.7	1065	975
45- 50	1043	35.2	1114	992
50- 55	1037	18.7	1102	1016
55- 60	1010	15.0	1060	991
60- 65	986	18.3	1044	961
65- 70	950	13.7	994	931
70- 75	951	15.9	988	919
75- 80	969	24.1	1024	917
80- 85	980	25.0	1034	939
85- 90	973	26.6	1053	939
90- 95	960	19.5	1000	928
95-100	935	10.8	959	913
100-105	942	16.1	972	909
105-110	971	35.7	1073	915
110-115	987	23.4	1044	953
115-120	1010	33.9	1095	966
120-125	1027	38.8	1124	971
125-130	1037	27.3	1097	1009
130-135	1031	25.0	1107	993
135-140	1044	34.0	1142	979
140-145	1030	19.3	1070	997
145-150	1042	22.1	1081	1010
150-155	1039	16.8	1081	1019
155-160	1028	9.5	1051	1015
160-165	1039	26.9	1125	984
165-170	1033	18.1	1080	1000
170-175	1050	27.3	1106	1000
175-180	1062	29.9	1112	1013
180-185	1059	33.7	1118	993
185-190	1040	24.6	1107	1004
190-195	1002	14.8	1042	975
195-200	989	20.6	1047	961
200-205	980	13.7	1010	961
205-210	972	15.4	1014	949
210-215	968	24.3	1037	942
215-220	978	25.9	1039	940
220-225	997	32.3	1086	961
225-230	984	11.5	1010	963
230-235	981	17.4	1015	954
235-240	983	16.8	1026	951
240-245	987	26.9	1059	942
245-250	975	26.6	1047	947
250-255	977	19.7	1037	942
255-260	951	14.8	990	924
260-265	957	16.3	988	931
265-270	963	19.5	1004	926
270-275	960	16.3	993	941
275-280	941	10.0	977	926
280-285	939	16.1	977	921
285-290	938	11.9	967	919
290-295	941	15.6	968	912
295-300	965	20.6	1017	924
300-302	992	26.7	1049	948
FOR THIS RUN:	994	42.1	1142	909

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	611	14.6	641	580
5- 10	589	11.3	610	571
10- 15	588	14.4	620	562
15- 20	592	11.6	621	576
20- 25	596	10.4	616	578
25- 30	596	12.5	625	569
30- 35	618	12.5	639	589
35- 40	635	11.4	662	611
40- 45	611	13.0	636	581
45- 50	621	17.1	642	585
50- 55	629	10.9	665	615
55- 60	618	5.6	635	611
60- 65	607	9.1	635	596
65- 70	585	8.7	606	571
70- 75	571	8.8	589	557
75- 80	572	12.4	599	546
80- 85	590	13.8	622	572
85- 90	590	14.2	632	561
90- 95	585	10.8	609	569
95-100	574	6.1	587	560
100-105	561	8.8	576	540
105-110	571	16.9	617	543
110-115	587	15.8	618	554
115-120	603	16.4	649	575
120-125	603	21.9	644	566
125-130	624	14.8	655	605
130-135	622	13.1	655	598
135-140	626	19.0	685	584
140-145	622	11.7	644	597
145-150	624	12.0	643	606
150-155	625	8.4	644	609
155-160	629	5.3	640	621
160-165	615	15.2	651	581
165-170	627	12.0	649	603
170-175	627	13.1	649	603
175-180	626	14.8	651	589
180-185	641	17.0	673	596
185-190	638	11.7	669	622
190-195	623	10.8	648	601
195-200	595	12.0	624	573
200-205	597	7.0	615	584
205-210	587	7.2	605	576
210-215	590	9.1	609	577
215-220	577	15.1	614	554
220-225	592	15.5	630	564
225-230	604	7.0	617	590
230-235	592	9.6	614	577
235-240	592	8.8	610	574
240-245	590	14.8	631	563
245-250	595	11.7	623	575
250-255	590	12.6	610	567
255-260	578	9.9	601	553
260-265	577	9.4	597	561
265-270	576	10.8	599	558
270-275	580	6.9	593	569
275-280	577	6.2	597	567
280-285	563	9.0	585	549
285-290	566	6.8	585	553
290-295	564	8.2	582	550
295-300	572	11.9	596	549
300-302	578	13.6	607	558
FOR THIS RUN:	599	24.8	685	540

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	96.9	4.4	102.8	85.6
5- 10	96.5	3.9	102.1	86.1
10- 15	91.6	5.2	98.5	76.9
15- 20	100.3	4.1	106.4	90.9
20- 25	98.3	4.0	105.4	89.4
25- 30	90.5	5.6	104.4	82.0
30- 35	101.5	4.4	111.0	93.9
35- 40	102.5	6.9	112.2	82.5
40- 45	96.3	3.9	102.6	89.6
45- 50	98.4	8.1	107.7	81.7
50- 55	99.4	4.2	108.2	89.6
55- 60	101.6	2.7	105.9	94.5
60- 65	100.5	2.7	104.1	92.4
65- 70	98.5	3.0	102.1	90.6
70- 75	93.4	3.8	100.0	85.3
75- 80	94.3	4.7	102.6	86.6
80- 85	98.6	4.2	105.1	88.9
85- 90	98.6	5.9	106.4	83.0
90- 95	98.2	2.7	102.8	93.2
95-100	97.8	3.2	103.6	91.7
100-105	93.0	3.0	98.0	88.1
105-110	92.9	6.3	103.6	76.9
110-115	98.4	5.4	105.4	84.5
115-120	95.5	7.1	103.9	76.7
120-125	96.9	8.7	110.0	78.7
125-130	102.4	5.7	110.5	90.4
130-135	100.3	5.0	107.7	84.3
135-140	96.7	6.6	107.7	78.7
140-145	101.3	3.2	107.9	96.2
145-150	97.2	4.4	106.9	90.6
150-155	100.6	3.4	106.1	92.2
155-160	101.4	3.1	105.6	95.7
160-165	95.0	4.9	105.9	78.7
165-170	102.8	3.3	108.4	94.5
170-175	96.9	4.5	107.9	88.9
175-180	97.1	6.9	112.2	86.6
180-185	102.0	6.2	115.3	89.4
185-190	102.2	4.0	107.4	89.6
190-195	102.7	3.8	108.4	92.4
195-200	95.9	4.6	104.4	83.5
200-205	99.7	3.4	104.6	90.4
205-210	97.6	2.8	101.8	89.9
210-215	98.2	6.2	104.9	81.2
215-220	94.6	6.1	104.9	79.0
220-225	98.4	6.4	106.4	81.2
225-230	103.4	3.1	109.7	97.8
230-235	96.4	3.6	105.4	91.2
235-240	96.1	3.5	102.8	90.1
240-245	97.0	6.1	105.9	84.5
245-250	101.6	5.6	108.4	87.1
250-255	95.1	4.9	102.8	78.7
255-260	99.8	3.3	103.9	92.2
260-265	96.1	3.6	101.6	88.4
265-270	95.7	4.6	104.6	82.3
270-275	98.2	4.1	103.4	89.9
275-280	99.4	2.4	102.8	93.7
280-285	94.8	3.7	99.3	87.6
285-290	97.1	2.8	100.8	89.1
290-295	96.4	4.0	102.3	87.8
295-300	93.6	4.2	101.3	86.1
300-302	91.6	5.0	100.6	83.3
FOR THIS RUN:	97.8	5.6	115.3	76.7

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	17.8	2.1	25.4	12.7
5- 10	17.3	2.0	18.7	7.7
10- 15	16.6	1.2	18.0	12.7
15- 20	17.6	1.5	18.9	11.4
20- 25	16.4	4.8	18.9	-4.3
25- 30	16.5	1.7	17.9	8.6
30- 35	14.1	15.0	19.7	-58.3
35- 40	19.1	1.0	21.8	17.1
40- 45	17.4	0.6	18.4	16.4
45- 50	17.7	1.0	19.5	16.2
50- 55	17.0	4.9	21.1	-1.7
55- 60	18.1	1.6	21.3	11.7
60- 65	19.3	6.2	49.2	13.2
65- 70	16.5	5.0	18.9	-5.0
70- 75	17.0	0.7	18.2	15.2
75- 80	13.7	16.8	20.9	-68.4
80- 85	16.3	8.2	18.8	-23.6
85- 90	17.7	0.9	19.1	15.3
90- 95	16.6	5.4	18.7	-8.8
95-100	16.6	7.1	32.2	-5.7
100-105	16.1	2.7	17.5	4.3
105-110	14.3	12.6	18.0	-47.3
110-115	17.7	2.4	27.0	12.5
115-120	17.6	1.2	19.1	13.8
120-125	17.2	1.0	18.9	14.6
125-130	18.2	0.7	19.3	17.0
130-135	13.3	22.6	18.9	-97.2
135-140	17.8	0.7	18.9	15.8
140-145	18.2	3.0	30.6	11.9
145-150	16.8	3.2	18.7	4.6
150-155	18.0	0.6	19.0	16.9
155-160	17.4	5.4	19.3	-8.9
160-165	16.6	3.3	18.7	1.1
165-170	18.5	3.6	33.5	9.5
170-175	16.1	8.4	19.3	-24.8
175-180	17.6	1.7	24.1	13.7
180-185	16.9	6.9	24.9	-13.0
185-190	18.6	0.6	19.4	17.6
190-195	18.4	1.8	23.9	13.4
195-200	12.5	16.2	18.3	-43.4
200-205	17.9	0.6	18.7	16.6
205-210	16.7	2.2	18.4	8.2
210-215	17.7	2.9	23.1	4.9
215-220	16.7	1.3	18.4	11.4
220-225	17.1	1.3	18.5	12.5
225-230	17.8	3.0	19.6	3.7
230-235	17.3	0.7	18.2	15.0
235-240	16.2	5.8	20.2	-11.5
240-245	16.5	4.0	18.5	-2.8
245-250	18.1	1.0	19.6	14.4
250-255	16.9	2.9	19.2	3.2
255-260	16.9	4.4	25.1	-2.2
260-265	17.0	3.2	21.9	2.4
265-270	17.1	1.3	19.5	12.1
270-275	17.5	1.4	18.7	11.7
275-280	17.9	0.7	18.8	16.4
280-285	16.2	4.4	18.0	-5.3
285-290	17.5	0.6	18.3	16.1
290-295	17.1	0.9	18.2	14.0
295-300	17.2	0.6	18.3	15.8
300-302	16.2	1.6	17.5	11.6
FOR THIS RUN:	17.0	6.0	49.2	-97.2

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.7	0.2	2.2	1.2
5- 10	1.7	0.2	1.8	0.8
10- 15	1.5	0.1	1.7	1.2
15- 20	1.8	0.2	2.0	1.0
20- 25	1.6	0.5	1.9	-0.4
25- 30	1.5	0.2	1.8	0.8
30- 35	1.4	1.5	2.2	-5.8
35- 40	2.0	0.2	2.4	1.5
40- 45	1.7	0.1	1.8	1.5
45- 50	1.7	0.2	2.0	1.3
50- 55	1.7	0.5	2.1	-0.2
55- 60	1.8	0.2	2.2	1.2
60- 65	1.9	0.6	5.0	1.4
65- 70	1.6	0.5	1.9	-0.5
70- 75	1.6	0.1	1.8	1.4
75- 80	1.3	1.6	1.8	-6.5
80- 85	1.6	0.8	2.0	-2.3
85- 90	1.7	0.1	2.0	1.4
90- 95	1.6	0.5	1.9	-0.9
95-100	1.6	0.7	3.2	-0.6
100-105	1.5	0.3	1.7	0.4
105-110	1.3	1.2	1.8	-4.5
110-115	1.7	0.3	2.8	1.3
115-120	1.7	0.2	1.9	1.2
120-125	1.7	0.2	2.0	1.3
125-130	1.9	0.1	2.0	1.5
130-135	1.3	2.3	2.0	-10.1
135-140	1.7	0.1	2.0	1.5
140-145	1.8	0.3	3.2	1.2
145-150	1.6	0.3	2.0	0.4
150-155	1.8	0.1	2.0	1.7
155-160	1.8	0.6	2.0	-0.9
160-165	1.6	0.3	1.8	0.1
165-170	1.9	0.3	3.3	1.0
170-175	1.6	0.8	1.9	-2.3
175-180	1.7	0.2	2.4	1.3
180-185	1.7	0.7	2.7	-1.4
185-190	1.9	0.1	2.1	1.6
190-195	1.9	0.2	2.3	1.4
195-200	1.2	1.5	1.8	-4.1
200-205	1.8	0.1	1.9	1.6
205-210	1.6	0.2	1.8	0.8
210-215	1.7	0.3	2.4	0.5
215-220	1.6	0.2	1.8	1.0
220-225	1.7	0.2	1.9	1.2
225-230	1.8	0.3	2.1	0.4
230-235	1.7	0.1	1.8	1.5
235-240	1.6	0.6	2.0	-1.1
240-245	1.6	0.4	1.9	-0.3
245-250	1.8	0.2	2.1	1.4
250-255	1.6	0.3	1.9	0.3
255-260	1.7	0.4	2.3	-0.2
260-265	1.6	0.3	2.0	0.2
265-270	1.6	0.2	1.9	1.2
270-275	1.7	0.2	1.9	1.1
275-280	1.8	0.1	1.9	1.6
280-285	1.5	0.4	1.8	-0.5
285-290	1.7	0.1	1.8	1.6
290-295	1.6	0.1	1.9	1.4
295-300	1.6	0.1	1.7	1.4
300-302	1.5	0.1	1.6	1.2
FOR THIS RUN:	1.7	0.6	5.0	-10.1

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	619.9	6.3	625.4	605.4
5- 10	620.9	5.8	629.4	605.4
10- 15	616.8	6.3	626.4	602.4
15- 20	612.8	7.1	622.4	600.4
20- 25	613.3	2.7	619.4	607.4
25- 30	613.9	3.8	618.4	608.4
30- 35	608.7	2.6	612.4	604.4
35- 40	602.8	9.4	611.4	588.4
40- 45	614.1	7.8	621.4	598.4
45- 50	609.6	4.7	620.4	600.4
50- 55	612.3	3.2	617.4	607.4
55- 60	609.1	7.4	617.4	597.4
60- 65	612.7	6.2	621.4	599.4
65- 70	615.3	7.1	622.4	600.4
70- 75	611.5	7.6	620.4	600.4
75- 80	612.8	5.1	618.4	600.4
80- 85	610.4	2.2	614.4	605.4
85- 90	613.5	2.2	616.4	607.4
90- 95	612.8	5.5	620.4	600.4
95-100	616.9	2.4	620.4	612.4
100-105	617.4	3.1	623.4	613.4
105-110	610.6	4.6	614.4	600.4
110-115	611.3	1.8	615.4	607.4
115-120	608.9	2.4	612.4	605.4
120-125	612.6	5.1	619.4	597.4
125-130	603.6	5.5	609.4	592.4
130-135	606.4	8.3	615.4	592.4
135-140	609.8	7.6	616.4	594.4
140-145	613.9	2.4	617.4	608.4
145-150	614.1	2.1	617.4	608.4
150-155	612.6	2.1	615.4	607.4
155-160	610.2	4.3	614.4	600.4
160-165	610.3	8.3	622.4	597.4
165-170	609.2	3.4	619.4	602.4
170-175	612.8	3.9	620.4	604.4
175-180	613.2	3.4	620.4	608.4
180-185	609.8	3.6	616.4	604.4
185-190	609.6	7.4	619.4	596.4
190-195	613.1	5.3	619.4	600.4
195-200	619.8	2.6	623.4	614.4
200-205	615.8	2.3	620.4	612.4
205-210	611.5	8.8	619.4	596.4
210-215	607.6	5.4	612.4	597.4
215-220	614.6	4.4	619.4	603.4
220-225	605.8	8.7	616.4	591.4
225-230	608.6	5.2	615.4	599.4
230-235	612.8	5.6	621.4	599.4
235-240	614.8	3.7	617.4	602.4
240-245	608.8	6.4	618.4	598.4
245-250	609.9	4.8	618.4	599.4
250-255	614.8	3.4	619.4	608.4
255-260	615.7	2.9	620.4	611.4
260-265	611.8	4.7	616.4	600.4
265-270	614.5	3.7	618.4	606.4
270-275	606.9	7.8	613.4	594.4
275-280	611.8	5.5	616.4	596.4
280-285	612.8	6.1	619.4	599.4
285-290	610.5	4.9	617.4	597.4
290-295	611.5	4.7	617.4	598.4
295-300	612.2	3.2	618.4	604.4
300-302	611.8	1.5	614.4	609.4
FOR THIS RUN:	611.9	6.3	629.4	588.4

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	14	0.2	15	13
5- 10	14	0.1	14	14
10- 15	14	0.1	14	14
15- 20	14	0.7	17	14
20- 25	14	2.2	25	14
25- 30	14	0.0	14	14
30- 35	14	0.1	14	14
35- 40	14	0.1	14	14
40- 45	14	0.1	14	14
45- 50	14	0.0	14	14
50- 55	14	0.1	14	14
55- 60	14	1.0	19	13
60- 65	14	0.2	14	14
65- 70	15	1.8	24	14
70- 75	15	0.1	15	14
75- 80	15	0.1	15	14
80- 85	15	0.1	15	14
85- 90	15	0.1	15	15
90- 95	15	0.1	15	15
95-100	15	0.4	17	15
100-105	15	0.4	17	14
105-110	15	0.5	18	15
110-115	15	0.1	15	15
115-120	15	0.5	18	15
120-125	15	0.1	16	15
125-130	15	0.1	16	15
130-135	15	0.1	16	15
135-140	16	0.1	16	16
140-145	16	0.1	16	16
145-150	16	0.1	16	16
150-155	16	0.1	16	16
155-160	16	0.5	18	16
160-165	16	0.1	16	16
165-170	16	0.1	16	16
170-175	16	0.1	16	16
175-180	16	0.1	16	16
180-185	16	0.1	17	16
185-190	16	0.1	17	16
190-195	17	0.2	18	16
195-200	17	0.5	20	16
200-205	17	0.3	18	17
205-210	17	0.1	17	17
210-215	17	0.1	17	17
215-220	17	0.4	19	17
220-225	17	0.4	19	17
225-230	17	0.1	17	17
230-235	17	0.1	17	17
235-240	17	0.4	19	17
240-245	17	0.1	18	17
245-250	18	0.1	18	17
250-255	18	0.1	18	18
255-260	18	0.1	18	18
260-265	18	0.1	18	18
265-270	18	0.1	18	18
270-275	18	0.1	18	18
275-280	18	0.1	18	18
280-285	22	12.7	80	18
285-290	18	0.1	18	18
290-295	18	0.4	20	17
295-300	18	0.1	18	18
300-302	19	0.6	21	18
FOR THIS RUN:	16	2.3	80	13

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1. Level ice breaking without bubblers
2. 14.5 in. (36.8 cm) of ice
with 3 in. (7.6 cm) of snow
3. Ship speed 5.4 knots
4. Flexural strength of ice
13780 lb sq in. (9680 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1007	21.3	1048	970
5- 10	983	14.2	1021	951
10- 15	1004	24.8	1064	958
15- 20	992	15.0	1039	972
20- 25	999	18.3	1033	966
25- 30	1041	21.5	1077	989
30- 35	1054	21.2	1095	1010
35- 40	1045	25.1	1131	1016
40- 45	1032	24.2	1080	986
45- 50	1051	40.0	1139	1007
50- 55	1054	14.7	1120	1029
55- 60	1031	1..1	1065	1001
60- 65	996	17.1	1057	976
65- 70	965	14.4	1014	943
70- 75	965	15.3	994	940
75- 80	984	24.4	1041	926
80- 85	992	27.1	1044	946
85- 90	981	28.5	1058	943
90- 95	975	26.5	1031	935
95-100	948	10.8	973	925
100-105	954	17.5	989	915
105-110	988	27.4	1043	930
110-115	996	23.0	1044	962
115-120	1027	31.3	1102	979
120-125	1037	34.8	1132	981
125-130	1051	25.0	1111	1017
130-135	1043	24.4	1124	1011
135-140	1059	32.7	1144	997
140-145	1042	23.1	1094	1000
145-150	1054	23.4	1093	1014
150-155	1051	17.3	1092	1030
155-160	1041	10.3	1069	1026
160-165	1053	24.6	1137	995
165-170	1046	20.2	1093	1011
170-175	1059	30.4	1126	1002
175-180	1078	30.3	1129	1028
180-185	1072	36.7	1139	1007
185-190	1048	23.3	1115	1014
190-195	1014	13.5	1049	996
195-200	1001	22.4	1061	965
200-205	994	13.1	1029	970
205-210	984	16.4	1026	959
210-215	983	23.4	1051	961
215-220	988	27.8	1054	952
220-225	1016	32.6	1104	966
225-230	998	18.9	1035	962
230-235	991	16.5	1025	966
235-240	997	17.7	1043	966
240-245	999	24.3	1065	958
245-250	985	28.9	1057	954
250-255	992	18.5	1052	961
255-260	964	16.6	1007	933
260-265	967	15.5	1001	939
265-270	977	19.9	1025	939
270-275	971	16.9	1004	947
275-280	955	9.2	986	946
280-285	949	17.4	987	927
285-290	953	12.2	991	935
290-295	952	14.9	984	930
295-300	978	19.9	1024	944
300-302	1003	27.0	1060	957
FOR THIS RUN:	1007	42.4	1144	915

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	109.2	4.4	115.4	98.3
5- 10	109.0	3.7	114.7	101.8
10- 15	102.4	4.8	108.6	88.7
15- 20	111.4	3.5	119.2	104.1
20- 25	109.3	3.9	116.4	102.3
25- 30	101.5	5.2	113.1	94.5
30- 35	113.0	4.0	123.0	104.8
35- 40	113.2	7.8	123.2	91.5
40- 45	108.6	4.5	114.4	100.0
45- 50	110.6	8.1	123.0	94.0
50- 55	110.8	5.0	121.5	102.3
55- 60	115.1	3.2	119.4	105.3
60- 65	112.9	3.2	115.7	106.3
65- 70	111.7	2.5	115.2	104.1
70- 75	105.9	3.8	111.9	98.3
75- 80	105.1	4.9	115.4	96.0
80- 85	110.0	4.9	116.7	101.6
85- 90	110.7	6.9	119.4	92.7
90- 95	109.1	3.7	115.4	101.8
95-100	110.8	2.6	115.2	105.6
100-105	104.2	3.2	110.4	97.8
105-110	103.3	6.8	114.9	86.7
110-115	109.7	6.1	116.4	94.5
115-120	105.5	7.3	116.2	87.7
120-125	108.3	7.9	120.5	91.7
125-130	111.9	4.9	117.9	99.3
130-135	112.0	4.5	116.9	95.5
135-140	108.6	6.5	117.7	94.7
140-145	113.5	3.8	120.7	103.8
145-150	109.2	4.8	117.2	99.0
150-155	112.0	3.8	117.9	103.1
155-160	113.7	2.1	117.9	109.9
160-165	105.8	5.4	116.7	88.2
165-170	115.1	3.6	119.2	106.3
170-175	108.3	4.5	115.7	100.5
175-180	107.8	6.2	121.7	99.3
180-185	114.0	6.5	127.3	100.8
185-190	115.8	3.9	122.0	102.8
190-195	115.2	4.5	121.5	103.8
195-200	107.9	4.8	116.9	97.0
200-205	112.2	3.8	117.4	105.1
205-210	108.9	3.9	115.2	100.8
210-215	110.5	5.5	115.7	93.5
215-220	106.3	7.3	117.9	89.2
220-225	107.6	6.9	117.7	89.5
225-230	114.9	5.4	124.2	106.3
230-235	108.2	4.1	116.9	102.1
235-240	107.7	4.7	116.7	100.5
240-245	105.3	4.8	116.4	98.0
245-250	113.9	5.1	119.9	99.8
250-255	106.3	5.8	115.4	89.2
255-260	112.2	4.0	117.7	101.6
260-265	107.3	3.2	112.1	100.3
265-270	107.1	4.1	113.9	94.5
270-275	109.8	3.2	114.7	103.1
275-280	110.6	2.9	114.4	104.3
280-285	107.5	3.7	113.9	98.8
285-290	107.5	3.2	112.6	99.8
290-295	108.0	3.8	113.9	100.8
295-300	103.8	4.2	110.4	94.2
300-302	102.8	4.8	110.1	94.0
FOR THIS RUN:	109.5	5.9	127.3	86.7

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	19.9	1.5	21.8	15.5
5- 10	17.2	12.4	21.0	-43.6
10- 15	18.3	2.6	20.1	6.3
15- 20	11.4	24.1	21.1	-97.6
20- 25	14.9	14.7	21.4	-35.3
25- 30	18.8	0.8	20.0	16.6
30- 35	17.3	8.5	21.5	-19.3
35- 40	11.1	29.6	22.7	-106.3
40- 45	13.3	25.3	21.3	-106.3
45- 50	17.6	8.1	22.1	-18.0
50- 55	14.9	24.8	22.1	-106.3
55- 60	18.7	7.8	21.8	-18.2
60- 65	11.7	27.1	34.4	-97.9
65- 70	16.1	15.9	21.6	-57.4
70- 75	12.9	23.0	20.5	-84.2
75- 80	17.3	5.4	20.1	-3.6
80- 85	12.4	25.9	21.7	-89.3
85- 90	18.3	7.1	21.5	-16.0
90- 95	18.8	5.4	21.7	-7.2
95-100	16.1	17.7	21.3	-70.3
100-105	11.6	25.3	20.1	-106.3
105-110	17.0	7.1	20.0	-14.9
110-115	17.9	5.3	21.2	-6.1
115-120	18.6	5.0	21.6	-5.2
120-125	14.3	24.6	21.4	-106.3
125-130	11.7	26.7	21.6	-106.3
130-135	19.2	3.4	21.2	6.0
135-140	17.6	9.0	21.3	-23.3
140-145	15.6	20.2	21.3	-82.9
145-150	18.3	6.1	20.7	-10.6
150-155	10.3	29.6	21.5	-106.3
155-160	15.0	21.6	21.6	-88.0
160-165	9.1	34.1	20.8	-106.3
165-170	20.2	2.0	21.7	11.5
170-175	12.5	25.2	21.8	-106.3
175-180	9.8	31.5	20.4	-106.3
180-185	15.9	14.5	22.6	-46.3
185-190	18.1	9.6	21.7	-23.7
190-195	10.2	29.5	21.9	-85.9
195-200	9.8	27.4	20.5	-106.3
200-205	10.1	27.1	21.2	-91.9
205-210	12.9	21.1	20.8	-75.3
210-215	6.1	30.7	21.6	-106.3
215-220	18.3	2.8	20.6	6.3
220-225	13.8	15.3	20.6	-40.6
225-230	19.4	5.9	22.4	-9.1
230-235	18.4	5.3	20.9	-7.1
235-240	7.9	33.9	20.8	-106.3
240-245	15.0	20.6	20.8	-86.0
245-250	10.4	31.5	22.0	-106.3
250-255	13.9	18.1	21.7	-69.4
255-260	14.6	24.7	21.3	-106.3
260-265	4.0	36.9	20.7	-106.3
265-270	14.0	23.1	20.3	-98.9
270-275	16.4	10.9	20.6	-31.7
275-280	20.0	1.0	21.1	16.4
280-285	15.4	10.5	20.4	-20.9
285-290	12.4	26.3	20.7	-106.3
290-295	14.3	13.9	20.9	-34.9
295-300	8.7	30.3	20.6	-106.3
300-302	18.7	0.7	19.7	17.6
FOR THIS RUN:	14.6	20.4	34.4	-106.3

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.2	0.2	2.4	1.6
5- 10	1.9	1.4	2.3	-4.9
10- 15	1.9	0.3	2.1	0.7
15- 20	1.3	2.6	2.4	-10.2
20- 25	1.6	1.6	2.4	-3.6
25- 30	1.9	0.1	2.2	1.6
30- 35	1.9	1.0	2.6	-2.2
35- 40	1.3	3.4	2.7	-12.3
40- 45	1.4	2.8	2.3	-11.7
45- 50	1.9	0.9	2.6	-2.1
50- 55	1.7	2.7	2.6	-11.5
55- 60	2.2	0.9	2.6	-2.1
60- 65	1.3	3.1	4.0	-11.0
65- 70	1.8	1.8	2.4	-6.6
70- 75	1.4	2.5	2.2	-9.3
75- 80	1.8	0.6	2.2	-0.4
80- 85	1.4	2.8	2.5	-9.1
85- 90	2.1	0.8	2.6	-1.5
90- 95	2.1	0.6	2.4	-0.8
95-100	1.8	1.9	2.4	-7.6
100-105	1.2	2.6	2.2	-10.9
105-110	1.8	0.7	2.2	-1.5
110-115	2.0	0.6	2.4	-0.7
115-120	2.0	0.6	2.5	-0.6
120-125	1.6	2.7	2.5	-11.4
125-130	1.3	3.0	2.5	-12.0
130-135	2.2	0.4	2.4	0.7
135-140	1.9	1.0	2.4	-2.6
140-145	1.8	2.3	2.5	-9.2
145-150	2.0	0.7	2.4	-1.1
150-155	1.1	3.3	2.5	-12.2
155-160	1.7	2.4	2.5	-9.9
160-165	1.0	3.6	2.3	-11.7
165-170	2.3	0.3	2.6	1.2
170-175	1.3	2.9	2.3	-12.2
175-180	1.1	3.4	2.4	-11.3
180-185	1.8	1.6	2.6	-5.1
185-190	2.1	1.1	2.6	-2.6
190-195	1.2	3.4	2.6	-9.8
195-200	1.0	3.0	2.3	-11.5
200-205	1.1	3.0	2.4	-10.1
205-210	1.4	2.3	2.4	-8.6
210-215	.7	3.4	2.4	-12.0
215-220	2.0	0.3	2.4	0.7
220-225	1.5	1.7	2.3	-4.5
225-230	2.2	0.7	2.7	-1.0
230-235	2.0	0.6	2.4	-0.8
235-240	.9	3.5	2.4	-10.9
240-245	1.6	2.2	2.3	-9.1
245-250	1.2	3.5	2.6	-12.1
250-255	1.4	2.0	2.5	-8.0
255-260	1.6	2.9	2.4	-12.4
260-265	.4	4.0	2.3	-11.0
265-270	1.5	2.5	2.2	-10.8
270-275	1.8	1.2	2.3	-3.6
275-280	2.2	0.1	2.4	1.9
280-285	1.6	1.1	2.3	-2.3
285-290	1.4	2.7	2.3	-10.6
290-295	1.5	1.4	2.3	-3.8
295-300	.9	3.2	2.2	-11.6
300-302	1.9	0.1	2.1	1.8
FOR THIS RUN:	1.6	2.2	4.0	-12.4

THIS PAGE INTENTIONALLY LEFT BLANK

TABLE 3 (Continued)

RUN NUMBER 1110

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14.5 in.(36.8 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 5.4 knots
4) Flexural strength of ice 13780 lb/sq ft(660 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	602.6	1.9	607.4	599.4
5- 10	601.4	2.0	606.4	597.4
10- 15	601.2	2.5	605.4	597.4
15- 20	598.2	3.3	605.4	593.4
20- 25	590.7	5.6	601.4	584.4
25- 30	599.3	3.5	604.4	591.4
30- 35	590.8	7.3	602.4	579.4
35- 40	595.7	3.3	602.4	589.4
40- 45	591.4	5.9	601.4	582.4
45- 50	597.7	1.2	608.4	586.4
50- 55	589.5	6.3	605.4	579.4
55- 60	596.3	2.9	601.4	592.4
60- 65	593.7	3.3	599.4	586.4
65- 70	594.6	1.0	603.4	584.4
70- 75	600.6	1.4	602.4	597.4
75- 80	592.4	4.9	600.4	583.4
80- 85	594.8	5.6	601.4	583.4
85- 90	596.0	5.3	601.4	580.4
90- 95	592.2	6.4	603.4	584.4
95-100	600.1	1.4	602.4	597.4
100-105	595.4	3.8	601.4	587.4
105-110	592.6	6.8	602.4	581.4
110-115	594.3	6.3	605.4	582.4
115-120	595.9	1.0	603.4	579.4
120-125	593.8	6.7	605.4	576.4
125-130	595.8	5.8	600.4	574.4
130-135	591.2	5.4	600.4	584.4
135-140	596.9	4.3	602.4	584.4
140-145	590.9	7.3	602.4	580.4
145-150	599.8	3.0	605.4	593.4
150-155	590.4	3.8	597.4	582.4
155-160	597.4	4.0	601.4	584.4
160-165	593.4	3.4	599.4	585.4
165-170	590.4	4.8	596.4	580.4
170-175	593.6	7.0	602.4	576.4
175-180	598.0	5.9	605.4	576.4
180-185	590.3	7.5	605.4	579.4
185-190	597.7	4.9	602.4	584.4
190-195	594.0	3.6	602.4	587.4
195-200	592.2	5.5	602.4	584.4
200-205	596.1	2.3	598.4	587.4
205-210	591.7	3.6	598.4	585.4
210-215	596.0	5.9	601.4	581.4
215-220	595.2	7.2	601.4	576.4
220-225	596.6	8.1	607.4	582.4
225-230	591.5	6.2	603.4	580.4
230-235	596.2	6.4	605.4	586.4
235-240	596.2	2.2	600.4	590.4
240-245	590.6	5.8	600.4	582.4
245-250	598.4	3.4	604.4	591.4
250-255	589.4	3.9	601.4	584.4
255-260	595.7	4.7	605.4	587.4
260-265	595.6	3.0	599.4	586.4
265-270	594.0	7.8	604.4	582.4
270-275	596.4	2.6	601.4	590.4
275-280	591.6	6.3	602.4	584.4
280-285	600.9	2.1	604.4	595.4
285-290	591.0	2.8	595.4	585.4
290-295	596.1	5.9	603.4	584.4
295-300	593.7	3.5	598.4	585.4
300-302	589.7	6.0	598.4	579.4
FOR THIS RUN:	594.9	6.1	608.4	574.4

TABLE 4 - MACHINERY PARAMETERS, RUN 1120

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	50501	1064.7	52815	48288
5- 10	50159	991.0	51809	48288
10- 15	50622	909.6	51809	48791
15- 20	50622	1100.9	52815	49294
20- 25	49696	1111.2	51306	47785
25- 30	48972	909.6	50300	47785
30- 35	48389	995.9	50300	46779
35- 40	49334	1155.1	51306	46779
40- 45	49435	1079.0	50803	47282
45- 50	48449	1042.8	50300	46276
50- 55	48147	1219.9	50300	46276
55- 60	50441	927.7	51809	48791
60- 65	50119	1119.1	52312	48791
65- 70	49435	1124.9	51306	47785
70- 75	49696	985.7	51306	47282
75- 80	50018	842.6	51306	48288
80- 85	49334	974.5	51306	47785
85- 90	49254	964.1	50803	47785
90- 95	51226	861.6	52815	49294
95-100	52372	989.0	53821	50300
100-105	50481	1172.2	52815	48288
105-110	49656	1124.9	51809	48288
110-115	50380	1022.8	52312	48288
115-120	49656	970.4	51809	47785
120-125	50843	1189.6	53318	48791
125-130	50984	1326.1	53821	48791
130-135	49576	1296.8	52312	46779
135-140	48469	1146.0	50803	46779
140-145	49636	896.6	51306	48288
145-150	49475	1034.6	51306	47785
150-155	49737	1141.0	51306	47282
155-160	49898	1035.7	51306	48288
160-165	50018	944.6	51809	48791
165-170	50541	889.8	51809	48791
170-175	50924	1366.7	53318	48288
175-180	51024	1327.6	53821	48288
180-185	48871	1002.8	50300	46779
185-190	49978	963.7	51809	47785
190-195	50380	982.4	51809	48791
195-200	49294	1055.1	51306	47785
200-205	49515	1074.9	51306	47282
205-210	48429	847.9	49797	46779
210-215	49173	925.1	50300	47282
215-220	48791	975.4	50300	46779
220-225	49113	942.4	50803	47282
225-230	50441	1106.8	52312	48791
230-235	49254	1137.4	51809	46779
235-240	49354	1086.5	51306	47282
240-245	49596	888.5	51306	47785
245-250	48147	883.0	50300	46779
250-255	48127	1213.2	49797	46276
255-260	47725	1009.2	49294	46276
260-265	47725	1029.1	49294	45773
265-270	47705	982.4	49294	46276
270-275	48791	1311.7	51306	45773
275-280	49998	1190.3	52312	48288
280-285	49314	916.3	50803	47785
285-290	48449	993.0	50300	47282
290-295	47906	957.3	49797	46276
295-300	48570	1147.7	50300	46276
300-302	48389	804.8	49797	47282
FOR THIS RUN:	49529	1436.3	53821	45773

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	68480	1443.7	71617	65479
5- 10	68016	1343.8	70253	65479
10- 15	68643	1233.5	70253	66161
15- 20	68643	1492.8	71617	66843
20- 25	67388	1506.7	69571	64796
25- 30	66406	1233.5	68207	64796
30- 35	65615	1350.4	68207	63432
35- 40	66897	1566.3	69571	63432
40- 45	67034	1463.1	68889	64114
45- 50	65697	1414.0	68207	62750
50- 55	65288	1654.2	68207	62750
55- 60	68398	1258.0	70253	66161
60- 65	67961	1517.6	70935	66161
65- 70	67034	1525.4	69571	64796
70- 75	67388	1336.6	69571	64114
75- 80	67825	1142.6	69571	65479
80- 85	66897	1321.5	69571	64796
85- 90	66788	1307.3	68889	64796
90- 95	69462	1168.4	71617	66843
95-100	71017	1341.0	72981	68207
100-105	68452	1589.4	71617	65479
105-110	67334	1525.4	70253	65479
110-115	68316	1386.9	70935	65479
115-120	67334	1315.8	70253	64796
120-125	68943	1613.1	72299	66161
125-130	69134	1798.2	72981	66161
130-135	67225	1758.4	70935	63432
135-140	65724	1553.9	68889	63432
140-145	67306	1215.8	69571	65479
145-150	67088	1402.9	69571	64796
150-155	67443	1547.2	69571	64114
155-160	67661	1404.5	69571	65479
160-165	67825	1280.8	70253	66161
165-170	68534	1206.6	70253	66161
170-175	69053	1853.2	72299	65479
175-180	69189	1800.2	72981	65479
180-185	66270	1359.8	68207	63432
185-190	67770	1306.7	70253	64796
190-195	68316	1332.1	70253	66161
195-200	66843	1430.7	69571	64796
200-205	67143	1457.5	69571	64114
205-210	65670	1149.8	67525	63432
210-215	66679	1254.4	68207	64114
215-220	66161	1322.6	68207	63432
220-225	66597	1277.9	68889	64114
225-230	68398	1500.8	70935	66161
230-235	66788	1542.4	70253	63432
235-240	66925	1473.3	69571	64114
240-245	67252	1204.8	69571	64796
245-250	65288	1197.3	68207	63432
250-255	65260	1645.1	67525	62750
255-260	64715	1368.5	66843	62750
260-265	64715	1395.4	66843	62068
265-270	64687	1332.1	66843	62750
270-275	66161	1778.6	69571	62068
275-280	67798	1614.1	70935	65479
280-285	66870	1242.5	68889	64796
285-290	65697	1346.6	68207	64114
290-295	64960	1298.2	67525	62750
295-300	65860	1556.3	68207	62750
300-302	65615	1091.3	67525	64114
FOR THIS RUN:	67161	1947.6	72981	62068

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	46075	4595.8	52823	35774
5- 10	41959	6626.3	58805	28894
10- 15	40583	5351.9	50131	26800
15- 20	41696	4992.1	50131	29792
20- 25	45704	4673.7	54019	36671
25- 30	42581	6172.5	51327	28296
30- 35	43838	3262.9	50131	35774
35- 40	42904	6563.3	57010	28595
40- 45	44998	6162.9	64787	33680
45- 50	45154	3670.0	50131	36671
50- 55	43168	6455.5	53122	22613
55- 60	39231	6926.9	55814	28296
60- 65	42366	6180.2	54617	30390
65- 70	42677	4913.3	51327	31586
70- 75	41552	7161.8	52225	25604
75- 80	41433	5675.7	55515	32703
80- 85	44352	6010.6	52823	22314
85- 90	42222	6231.8	60899	28894
90- 95	35056	7878.3	50729	17827
95-100	42761	5539.1	50131	29792
100-105	47439	3680.8	54019	40559
105-110	42366	6607.8	52524	27399
110-115	45010	3894.7	55515	38167
115-120	44914	5370.7	53421	32403
120-125	36575	9250.8	61796	20818
125-130	43562	5680.5	55216	30988
130-135	45237	3343.5	49832	36671
135-140	43371	6064.7	53720	30988
140-145	41050	6433.5	50131	26501
145-150	41947	8779.7	60300	18725
150-155	42581	5884.6	54318	28296
155-160	40631	6060.2	50729	27100
160-165	42545	7323.6	54318	18126
165-170	40679	4941.0	49533	31885
170-175	36073	6650.1	52225	25903
175-180	45249	6616.0	53122	22912
180-185	44878	4669.2	53122	36970
185-190	40368	7429.9	57010	24408
190-195	45261	4029.4	51925	36671
195-200	43814	6391.3	56711	30988
200-205	45058	4958.0	51925	33381
205-210	42545	5489.2	55515	29193
210-215	42462	4985.6	51626	30988
215-220	45931	5350.9	53122	32703
220-225	38789	6191.4	49533	25305
225-230	38968	7115.3	56412	27997
230-235	45872	4499.2	55216	35175
235-240	43287	6102.0	57010	31287
240-245	45237	4946.7	57908	33680
245-250	44986	5309.0	52524	30091
250-255	45668	3051.4	52225	41158
255-260	45537	3272.1	51626	38765
260-265	47834	6183.2	73162	39961
265-270	45213	3774.0	54318	37867
270-275	39877	6459.9	50729	27399
275-280	41708	6732.3	54019	27698
280-285	43084	5731.7	54617	30091
285-290	45070	2952.4	50430	38765
290-295	43778	4096.2	52225	36372
295-300	42210	5215.2	53720	33381
300-302	44657	3392.1	52225	40559
FOR THIS RUN:	42961	6310.3	73162	17827

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	204941	20442.2	234956	159121
5- 10	186635	29473.7	261564	128521
10- 15	180515	23805.2	222982	119208
15- 20	185464	22205.0	222982	132513
20- 25	203292	20788.8	240277	163113
25- 30	189402	27455.3	228304	125860
30- 35	194990	14513.2	222982	159121
35- 40	190839	29193.6	253582	127191
40- 45	200152	27412.5	288173	149808
45- 50	200844	16324.2	222982	163113
50- 55	192009	28713.9	236286	100582
55- 60	174501	30811.1	248260	125860
60- 65	188444	27489.3	242938	135174
65- 70	189828	21854.5	228304	140495
70- 75	184825	31852.0	232295	113887
75- 80	184293	25245.7	246930	145817
80- 85	197278	26735.3	234956	99252
85- 90	187805	27719.2	270877	128521
90- 95	155928	35042.6	225643	79295
95-100	190200	24638.1	222982	132513
100-105	211008	16372.4	240277	180408
105-110	188444	29391.3	233625	121869
110-115	200205	17323.5	246930	169765
115-120	199779	23888.8	237617	144487
120-125	162687	41147.5	274869	92600
125-130	193766	25266.9	245599	137834
130-135	201216	14871.7	221651	163113
135-140	192914	26975.9	238947	137834
140-145	182590	28616.0	222982	117878
145-150	186581	39051.9	268216	83287
150-155	189402	26174.7	241608	125860
155-160	180727	26955.7	225643	120539
160-165	189242	32575.4	241608	80626
165-170	180940	21977.5	220321	141826
170-175	160452	29579.9	232295	115217
175-180	201269	29428.0	236286	101913
180-185	199620	20768.6	236286	164443
185-190	179557	33048.0	253582	108565
190-195	201322	17922.9	230964	163113
195-200	194883	28428.4	252251	137834
200-205	200418	22053.0	230964	148478
205-210	189242	24415.8	246930	129852
210-215	188870	22175.9	229634	137834
215-220	204303	23800.9	236286	145817
220-225	172532	27539.4	220321	112556
225-230	173330	31649.1	250921	124530
230-235	204037	20012.4	245599	156460
235-240	192542	27141.6	253582	139165
240-245	201216	22002.8	257573	149808
245-250	200098	23614.3	233625	133843
250-255	203132	13572.6	232295	183069
255-260	202546	14554.1	229634	172426
260-265	212764	27502.8	325425	177747
265-270	201110	16787.0	241608	168434
270-275	177375	28733.6	225643	121869
275-280	185517	29945.4	240277	123200
280-285	191637	25494.5	242938	133843
285-290	200471	13132.5	224312	172426
290-295	194724	18219.7	232295	161782
295-300	187752	23197.2	238947	148478
300-302	198635	15087.9	232295	180408
FOR THIS RUN:	191090	28068.4	325425	79295

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT POWER (shp) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2466	48.7	2561	2380
5- 10	2361	50.4	2447	2243
10- 15	2380	51.4	2461	2262
15- 20	2392	54.8	2495	2322
20- 25	2422	54.0	2503	2336
25- 30	2367	52.8	2454	2270
30- 35	2361	54.1	2452	2278
35- 40	2358	51.8	2442	2262
40- 45	2397	55.0	2507	2302
45- 50	2388	37.7	2445	2306
50- 55	2330	72.1	2461	2210
55- 60	2376	67.7	2488	2243
60- 65	2386	67.4	2493	2246
65- 70	2379	51.4	2471	2304
70- 75	2405	50.8	2488	2269
75- 80	2357	46.6	2442	2271
80- 85	2383	53.9	2487	2280
85- 90	2357	48.4	2447	2261
90- 95	2309	52.3	2423	2228
95-100	2438	57.3	2547	2342
100-105	2453	54.9	2562	2335
105-110	2339	50.0	2446	2257
110-115	2392	48.6	2481	2303
115-120	2393	42.7	2491	2322
120-125	2315	60.0	2447	2197
125-130	2442	53.1	2517	2320
130-135	2417	53.1	2522	2322
135-140	2348	75.1	2472	2229
140-145	2389	41.9	2452	2312
145-150	2367	50.6	2457	2276
150-155	2394	53.9	2483	2303
155-160	2354	57.4	2447	2257
160-165	2393	57.7	2520	2276
165-170	2380	63.9	2486	2271
170-175	2339	56.4	2462	2239
175-180	2478	59.2	2565	2363
180-185	2395	89.0	2540	2222
185-190	2345	51.1	2446	2225
190-195	2431	51.8	2527	2328
195-200	2363	53.7	2462	2276
200-205	2389	64.6	2522	2252
205-210	2371	73.7	2475	2242
210-215	2373	57.7	2497	2266
215-220	2391	41.2	2453	2306
220-225	2323	57.5	2437	2234
225-230	2381	59.2	2480	2267
230-235	2431	67.3	2587	2300
235-240	2337	53.5	2442	2242
240-245	2406	47.1	2476	2312
245-250	2365	51.9	2478	2304
250-255	2370	63.2	2467	2271
255-260	2362	58.1	2452	2251
260-265	2371	42.6	2428	2294
265-270	2351	54.6	2422	2242
270-275	2311	58.7	2450	2225
275-280	2402	77.9	2532	2262
280-285	2383	57.5	2483	2279
285-290	2394	50.2	2491	2325
290-295	2349	51.1	2443	2242
295-300	2366	56.6	2486	2260
300-302	2371	43.0	2453	2325
FOR THIS RUN:	2379	66.6	2587	2197

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1839	36.3	1910	1774
5- 10	1761	37.6	1825	1673
10- 15	1775	38.3	1835	1687
15- 20	1784	40.8	1860	1732
20- 25	1806	40.2	1866	1742
25- 30	1765	38.8	1830	1693
30- 35	1760	40.3	1828	1698
35- 40	1759	38.6	1821	1687
40- 45	1787	41.0	1870	1716
45- 50	1781	28.1	1823	1720
50- 55	1737	53.8	1835	1648
55- 60	1772	50.5	1855	1673
60- 65	1779	50.3	1859	1676
65- 70	1774	38.3	1843	1718
70- 75	1793	37.9	1855	1692
75- 80	1757	34.8	1821	1694
80- 85	1777	40.2	1855	1700
85- 90	1758	36.1	1825	1686
90- 95	1722	39.0	1807	1661
95-100	1818	42.7	1899	1746
100-105	1829	40.9	1910	1741
105-110	1744	37.3	1824	1683
110-115	1784	36.2	1850	1717
115-120	1784	31.9	1857	1731
120-125	1726	44.7	1824	1638
125-130	1821	39.6	1877	1730
130-135	1802	39.6	1880	1731
135-140	1751	56.0	1843	1662
140-145	1781	31.2	1828	1724
145-150	1765	37.7	1832	1697
150-155	1785	40.2	1852	1717
155-160	1755	42.8	1825	1683
160-165	1785	43.1	1879	1697
165-170	1775	47.7	1854	1694
170-175	1744	42.0	1836	1669
175-180	1848	44.1	1913	1762
180-185	1786	66.4	1894	1657
185-190	1749	38.1	1824	1659
190-195	1813	38.6	1885	1736
195-200	1762	40.0	1836	1697
200-205	1781	48.1	1880	1679
205-210	1768	55.0	1846	1672
210-215	1770	43.0	1862	1689
215-220	1783	30.8	1829	1720
220-225	1732	42.9	1818	1666
225-230	1775	44.1	1849	1690
230-235	1813	50.2	1929	1715
235-240	1743	39.9	1821	1672
240-245	1794	35.1	1847	1724
245-250	1763	38.7	1847	1718
250-255	1767	47.1	1840	1693
255-260	1761	43.3	1828	1679
260-265	1768	31.8	1811	1710
265-270	1753	40.7	1806	1672
270-275	1723	43.7	1827	1659
275-280	1791	58.1	1888	1687
280-285	1777	42.9	1852	1699
285-290	1785	37.4	1857	1733
290-295	1752	38.1	1822	1672
295-300	1764	42.2	1854	1685
300-302	1768	32.1	1829	1733
FOR THIS RUN:	1774	49.6	1929	1638

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	256.5	4.3	262.2	246.0
5- 10	247.2	3.0	254.5	242.0
10- 15	247.0	1.7	249.5	243.5
15- 20	248.2	3.3	252.0	242.5
20- 25	256.0	1.9	258.2	250.5
25- 30	253.9	3.1	258.7	249.0
30- 35	256.3	2.8	261.7	251.5
35- 40	251.1	1.7	255.0	248.5
40- 45	254.6	2.4	259.2	250.5
45- 50	258.9	3.1	263.2	253.5
50- 55	254.2	6.3	262.2	240.5
55- 60	247.4	6.7	257.2	239.0
60- 65	250.0	5.4	258.2	242.0
65- 70	252.7	2.5	255.5	248.0
70- 75	254.1	2.6	257.2	247.0
75- 80	247.5	3.3	252.5	241.0
80- 85	253.7	3.3	259.7	248.0
85- 90	251.3	2.0	255.0	248.0
90- 95	236.8	5.3	248.0	229.5
95-100	244.5	4.0	250.0	236.5
100-105	255.2	1.9	257.7	250.5
105-110	247.4	2.4	253.5	243.5
110-115	249.4	1.6	252.5	246.5
115-120	253.1	1.8	256.7	248.5
120-125	239.1	2.1	247.5	236.5
125-130	251.7	6.1	259.2	237.5
130-135	256.1	3.9	260.7	250.5
135-140	254.4	7.1	262.7	244.0
140-145	252.8	2.5	257.2	248.0
145-150	251.3	2.8	256.7	247.5
150-155	252.9	1.9	256.7	250.0
155-160	247.8	3.6	252.5	243.0
160-165	251.3	3.4	255.5	242.5
165-170	247.3	4.4	255.5	240.5
170-175	241.4	6.7	255.5	235.0
175-180	255.2	8.8	265.7	239.5
180-185	257.4	7.1	265.7	246.5
185-190	246.5	1.6	250.0	243.5
190-195	253.4	3.7	259.2	247.5
195-200	251.8	3.9	259.7	246.5
200-205	253.4	5.9	261.7	244.0
205-210	257.1	6.3	264.2	246.0
210-215	253.5	4.2	262.7	248.5
215-220	257.4	3.3	263.2	251.0
220-225	248.4	4.1	254.5	242.0
225-230	247.9	2.7	253.0	242.5
230-235	259.3	4.6	264.2	248.5
235-240	248.7	1.4	252.0	245.5
240-245	254.8	2.3	258.7	250.5
245-250	257.9	2.2	261.7	253.5
250-255	258.6	1.3	261.2	256.7
255-260	259.9	2.3	263.7	255.5
260-265	261.0	2.2	263.7	257.2
265-270	258.8	2.7	263.2	254.5
270-275	248.9	7.3	264.2	239.0
275-280	252.3	5.7	259.7	244.0
280-285	253.8	2.5	257.2	249.0
285-290	259.5	2.0	262.7	255.0
290-295	257.6	2.1	260.2	252.5
295-300	255.9	4.5	262.7	251.0
300-302	257.4	1.7	259.2	254.0
FOR THIS RUN:	252.4	6.4	265.7	229.5

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	839	6.4	848	825
5- 10	811	5.9	821	798
10- 15	817	4.2	825	811
15- 20	824	5.6	832	813
20- 25	830	3.5	836	822
25- 30	818	4.6	825	811
30- 35	825	3.8	832	818
35- 40	817	3.3	825	812
40- 45	824	3.0	830	818
45- 50	824	1.4	826	820
50- 55	813	8.1	823	789
55- 60	818	14.9	840	798
60- 65	820	9.5	836	803
65- 70	825	4.0	832	817
70- 75	822	4.7	827	807
75- 80	814	7.8	828	796
80- 85	827	5.8	834	817
85- 90	820	2.8	824	814
90- 95	797	10.0	818	772
95-100	827	13.7	845	796
100-105	834	9.4	846	819
105-110	813	3.0	817	806
110-115	822	3.3	827	812
115-120	826	3.0	831	818
120-125	801	7.6	814	787
125-130	834	12.9	848	797
130-135	826	2.3	831	820
135-140	817	8.2	828	805
140-145	824	4.1	832	817
145-150	819	5.1	828	810
150-155	824	3.7	831	818
155-160	818	5.1	827	807
160-165	824	6.1	832	811
165-170	818	7.5	831	805
170-175	809	10.9	835	796
175-180	841	13.6	853	809
180-185	821	14.1	845	804
185-190	815	7.1	826	803
190-195	831	3.0	836	823
195-200	821	5.9	834	812
200-205	825	10.7	840	803
205-210	825	11.0	840	806
210-215	824	8.1	836	811
215-220	825	6.4	835	813
220-225	810	6.7	820	793
225-230	824	7.3	834	809
230-235	831	7.3	836	803
235-240	815	5.6	827	808
240-245	828	4.1	834	822
245-250	824	3.2	829	816
250-255	824	1.5	827	822
255-260	824	2.7	827	817
260-265	825	2.2	827	820
265-270	822	2.2	827	818
270-275	810	7.8	827	796
275-280	830	8.5	840	816
280-285	823	6.3	832	810
285-290	828	2.8	832	821
290-295	822	3.8	827	813
295-300	822	2.7	827	817
300-302	826	1.5	828	824
FOR THIS RUN:	822	10.4	853	772

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2278	31.7	2337	2217
5- 10	2285	47.9	2384	2192
10- 15	2304	51.3	2461	2222
15- 20	2297	41.5	2441	2245
20- 25	2267	24.5	2311	2222
25- 30	2276	35.0	2394	2232
30- 35	2262	22.9	2315	2211
35- 40	2280	41.4	2385	2212
40- 45	2272	32.9	2353	2220
45- 50	2264	25.7	2311	2221
50- 55	2292	46.3	2418	2217
55- 60	2288	38.8	2360	2211
60- 65	2294	54.4	2390	2200
65- 70	2288	41.5	2434	2197
70- 75	2280	38.6	2397	2224
75- 80	2296	59.2	2457	2221
80- 85	2284	41.4	2370	2227
85- 90	2289	33.3	2375	2234
90- 95	2354	74.0	2521	2252
95-100	2320	51.0	2418	2240
100-105	2280	24.4	2335	2231
105-110	2299	43.0	2398	2232
110-115	2303	41.0	2407	2232
115-120	2288	43.3	2385	2208
120-125	2335	71.7	2508	2200
125-130	2291	50.0	2471	2238
130-135	2271	32.7	2357	2208
135-140	2282	34.4	2397	2234
140-145	2276	30.4	2364	2220
145-150	2297	42.8	2374	2232
150-155	2284	35.7	2377	2215
155-160	2291	40.3	2408	2234
160-165	2297	46.6	2387	2218
165-170	2306	38.9	2383	2238
170-175	2340	60.8	2464	2244
175-180	2275	34.1	2378	2230
180-185	2274	32.1	2350	2237
185-190	2308	56.0	2411	2231
190-195	2282	42.6	2380	2227
195-200	2281	32.7	2337	2201
200-205	2284	42.6	2417	2250
205-210	2273	33.8	2378	2215
210-215	2273	27.6	2365	2228
215-220	2271	27.9	2331	2215
220-225	2312	70.0	2586	2228
225-230	2312	43.2	2410	2238
230-235	2276	48.6	2477	2228
235-240	2289	29.3	2354	2207
240-245	2274	34.2	2403	2234
245-250	2263	21.9	2320	2228
250-255	2268	24.1	2307	2228
255-260	2262	19.1	2314	2227
260-265	2257	17.1	2302	2228
265-270	2263	23.4	2324	2205
270-275	2310	52.9	2450	2225
275-280	2288	28.8	2343	2231
280-285	2284	38.0	2374	2234
285-290	2265	22.9	2328	2227
290-295	2263	32.5	2340	2205
295-300	2274	25.0	2307	2224
300-302	2265	24.4	2298	2211
FOP THIS RUN:	2286	45.1	2586	2192

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1911	30.0	1971	1847
5- 10	1853	38.1	1920	1764
10- 15	1883	38.0	2001	1820
15- 20	1892	31.6	1987	1844
20- 25	1881	20.0	1920	1834
25- 30	1863	25.5	1941	1830
30- 35	1867	19.6	1911	1817
35- 40	1863	29.8	1936	1812
40- 45	1872	25.1	1926	1832
45- 50	1865	19.8	1900	1830
50- 55	1863	28.8	1936	1807
55- 60	1873	39.2	1968	1775
60- 65	1881	43.9	1988	1791
65- 70	1888	32.7	1994	1813
70- 75	1875	26.4	1944	1838
75- 80	1869	45.9	1997	1808
80- 85	1889	29.9	1943	1843
85- 90	1876	24.2	1935	1835
90- 95	1876	50.9	1979	1790
95-100	1917	41.0	1983	1799
100-105	1902	25.2	1943	1845
105-110	1869	34.9	1954	1816
110-115	1892	31.8	1969	1833
115-120	1889	32.4	1967	1826
120-125	1870	56.0	2009	1777
125-130	1912	36.3	1970	1824
130-135	1875	27.6	1933	1828
135-140	1865	20.4	1939	1836
140-145	1875	24.9	1939	1833
145-150	1882	32.1	1937	1830
150-155	1883	27.6	1951	1824
155-160	1873	29.0	1958	1828
160-165	1894	30.5	1959	1835
165-170	1887	30.4	1932	1812
170-175	1893	49.2	1979	1798
175-180	1912	32.1	1966	1822
180-185	1866	31.1	1911	1810
185-190	1882	45.7	1976	1811
190-195	1897	32.0	1975	1854
195-200	1872	25.6	1921	1801
200-205	1883	27.1	1949	1834
205-210	1875	25.9	1952	1824
210-215	1872	19.9	1924	1832
215-220	1873	23.8	1920	1816
220-225	1873	48.3	2050	1794
225-230	1905	37.6	1992	1849
230-235	1891	31.8	2017	1844
235-240	1864	25.4	1922	1792
240-245	1883	26.2	1979	1844
245-250	1866	16.4	1905	1837
250-255	1869	18.5	1898	1839
255-260	1864	13.3	1897	1830
260-265	1861	13.8	1890	1833
265-270	1861	17.7	1904	1811
270-275	1871	39.8	1966	1798
275-280	1899	24.7	1948	1852
280-285	1880	28.8	1939	1828
285-290	1876	16.4	1912	1847
290-295	1860	23.1	1903	1811
295-300	1869	18.0	1900	1828
300-302	1871	18.7	1894	1828
FOR THIS RUN:	1879	34.4	2050	1764

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	90.0	7.9	100.1	74.7
5- 10	92.3	9.4	103.9	72.1
10- 15	96.2	8.2	103.1	69.9
15- 20	95.0	7.4	104.1	78.4
20- 25	87.5	8.4	99.3	72.9
25- 30	90.8	6.7	100.9	77.4
30- 35	86.8	9.2	101.4	68.9
35- 40	91.1	8.9	102.9	71.9
40- 45	89.0	9.4	102.9	69.6
45- 50	86.7	8.4	98.3	70.1
50- 55	93.2	8.7	106.2	72.6
55- 60	92.3	8.6	103.6	71.1
60- 65	90.7	11.7	105.6	69.6
65- 70	93.3	8.8	103.9	69.6
70- 75	91.7	8.3	103.1	71.9
75- 80	93.7	8.3	103.4	70.9
80- 85	90.3	9.5	103.6	73.9
85- 90	93.1	7.2	102.9	81.5
90- 95	100.8	6.9	105.6	78.2
95-100	99.1	5.3	105.1	81.2
100-105	90.0	7.3	100.1	74.4
105-110	97.0	6.5	103.4	73.4
110-115	94.1	8.7	102.9	73.6
115-120	91.3	9.6	104.1	70.1
120-125	100.1	5.7	105.6	81.7
125-130	91.7	9.0	103.9	75.9
130-135	87.8	8.4	102.6	69.9
135-140	93.3	8.3	105.9	76.9
140-145	90.9	9.8	102.9	72.6
145-150	93.1	5.9	101.4	77.7
150-155	92.6	8.0	103.6	74.4
155-160	94.3	9.2	104.1	71.4
160-165	94.5	8.8	106.4	72.1
165-170	95.8	7.0	106.2	76.2
170-175	100.2	6.5	105.9	83.7
175-180	88.7	8.3	100.9	74.9
180-185	90.3	8.4	103.9	76.4
185-190	95.5	8.2	104.4	77.4
190-195	91.0	8.9	102.1	72.9
195-200	93.1	9.3	103.1	71.9
200-205	90.2	7.1	102.6	77.2
205-210	89.8	9.1	104.9	73.9
210-215	89.9	8.4	102.1	72.1
215-220	91.4	8.1	101.6	73.1
220-225	95.8	8.6	104.9	73.4
225-230	98.2	4.8	105.1	85.2
230-235	87.7	10.0	103.6	69.6
235-240	95.5	7.6	103.4	71.4
240-245	89.8	8.5	102.6	75.7
245-250	88.3	9.1	103.1	68.9
250-255	89.5	7.7	99.9	72.9
255-260	87.0	8.2	104.1	75.7
260-265	85.6	7.5	100.4	69.4
265-270	87.0	8.2	102.6	74.4
270-275	97.7	8.8	106.7	75.4
275-280	94.7	7.6	104.4	71.6
280-285	90.6	9.6	103.4	71.1
285-290	87.3	8.9	101.1	72.9
290-295	87.1	10.3	103.4	70.4
295-300	92.1	8.7	104.1	75.7
300-302	87.2	8.6	99.3	68.9
FOR THIS RUN:	92.0	9.1	106.7	68.9

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	40.1	0.9	42.0	38.4
5- 10	40.7	0.7	42.3	39.3
10- 15	41.5	0.6	42.7	40.5
15- 20	41.6	1.0	43.5	40.5
20- 25	39.1	0.7	41.2	38.1
25- 30	39.1	0.9	40.5	37.4
30- 35	38.8	0.7	40.1	37.5
35- 40	40.1	0.5	40.8	39.3
40- 45	39.3	0.7	40.5	38.2
45- 50	38.0	1.0	39.7	36.8
50- 55	39.1	1.6	42.6	36.9
55- 60	41.2	1.1	43.1	39.5
60- 65	40.7	1.3	42.9	39.1
65- 70	40.2	0.8	42.1	39.0
70- 75	39.7	0.8	41.7	38.6
75- 80	41.0	0.8	42.7	39.5
80- 85	40.1	0.9	41.8	38.4
85- 90	40.2	0.7	41.5	38.6
90- 95	43.5	1.1	45.0	40.9
95-100	43.4	0.7	44.8	42.3
100-105	40.1	1.0	42.7	38.8
105-110	41.1	0.7	42.4	39.6
110-115	41.1	0.6	42.1	39.9
115-120	40.1	0.6	41.2	38.9
120-125	43.2	0.6	44.3	41.8
125-130	41.4	0.7	43.8	40.5
130-135	39.1	1.5	42.1	37.4
135-140	39.5	1.8	42.2	37.2
140-145	40.2	0.8	42.2	38.7
145-150	40.3	0.7	41.5	38.8
150-155	40.4	0.6	41.8	39.2
155-160	41.6	1.0	43.2	39.9
160-165	41.2	1.1	43.7	39.5
165-170	41.4	1.1	44.0	39.7
170-175	43.2	1.2	44.5	40.3
175-180	40.7	1.7	44.1	38.3
180-185	38.8	1.2	41.1	37.2
185-190	41.7	0.6	42.7	40.5
190-195	40.6	1.2	42.6	38.8
195-200	40.5	0.8	41.8	38.5
200-205	39.8	1.2	42.1	38.1
205-210	39.2	1.2	42.0	37.8
210-215	39.7	0.9	41.0	37.8
215-220	39.0	0.6	40.6	38.0
220-225	40.6	1.0	42.7	38.7
225-230	42.3	0.5	43.3	41.3
230-235	38.8	0.9	41.2	37.6
235-240	40.9	0.5	41.7	39.9
240-245	40.0	0.8	41.6	38.4
245-250	38.7	0.8	40.4	37.4
250-255	38.5	0.5	39.4	37.5
255-260	38.0	0.7	39.5	36.8
260-265	37.7	0.5	38.9	37.0
265-270	38.3	0.8	39.8	36.9
270-275	41.0	1.7	43.1	36.8
275-280	41.1	1.2	43.2	39.3
280-285	39.9	0.8	41.3	38.4
285-290	38.5	0.5	39.6	37.6
290-295	38.6	0.5	39.9	38.0
295-300	39.4	1.4	41.2	37.0
300-302	38.6	0.5	39.3	37.9
FOR THIS RUN:	40.2	1.6	45.0	36.8

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	3.6	0.3	4.2	3.1
5- 10	3.8	0.4	4.3	3.0
10- 15	4.0	0.4	4.4	2.9
15- 20	4.0	0.4	4.5	3.2
20- 25	3.4	0.3	4.1	2.8
25- 30	3.5	0.3	4.1	2.9
30- 35	3.4	0.4	4.0	2.7
35- 40	3.7	0.4	4.2	2.9
40- 45	3.5	0.4	4.1	2.7
45- 50	3.3	0.4	3.9	2.7
50- 55	3.7	0.4	4.5	2.8
55- 60	3.8	0.4	4.4	2.9
60- 65	3.7	0.5	4.5	2.8
65- 70	3.8	0.4	4.4	2.8
70- 75	3.6	0.4	4.3	2.8
75- 80	3.8	0.4	4.3	2.8
80- 85	3.6	0.4	4.2	2.9
85- 90	3.7	0.3	4.2	3.2
90- 95	4.4	0.3	4.7	3.4
95-100	4.3	0.3	4.7	3.5
100-105	3.6	0.3	4.1	2.9
105-110	4.0	0.3	4.3	3.0
110-115	3.9	0.4	4.3	3.0
115-120	3.7	0.4	4.3	2.8
120-125	4.3	0.3	4.6	3.6
125-130	3.8	0.4	4.6	3.2
130-135	3.4	0.4	4.3	2.8
135-140	3.7	0.5	4.5	2.9
140-145	3.7	0.4	4.3	2.9
145-150	3.7	0.3	4.2	3.2
150-155	3.7	0.4	4.3	3.0
155-160	3.9	0.4	4.5	2.9
160-165	3.9	0.4	4.7	2.9
165-170	4.0	0.3	4.7	3.2
170-175	4.3	0.3	4.7	3.6
175-180	3.6	0.4	4.4	3.1
180-185	3.5	0.4	4.2	2.8
185-190	4.0	0.4	4.4	3.2
190-195	3.7	0.4	4.3	2.9
195-200	3.8	0.4	4.3	2.9
200-205	3.6	0.4	4.3	3.0
205-210	3.5	0.4	4.4	2.8
210-215	3.6	0.4	4.1	2.9
215-220	3.6	0.3	4.1	2.8
220-225	3.9	0.4	4.5	2.9
225-230	4.2	0.2	4.6	3.6
230-235	3.4	0.4	4.3	2.8
235-240	3.9	0.3	4.3	2.9
240-245	3.6	0.4	4.2	3.0
245-250	3.4	0.4	4.2	2.6
250-255	3.4	0.3	3.9	2.7
255-260	3.3	0.3	4.1	2.8
260-265	3.2	0.3	3.9	2.6
265-270	3.3	0.3	4.0	2.8
270-275	4.0	0.4	4.5	2.8
275-280	3.9	0.4	4.5	2.9
280-285	3.6	0.4	4.3	2.8
285-290	3.4	0.4	4.0	2.8
290-295	3.4	0.4	4.1	2.7
295-300	3.6	0.4	4.3	2.8
300-302	3.4	0.4	3.9	2.6
FOR THIS RUN:	3.7	0.5	4.7	2.6

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	17	0.1	18	17
5- 10	17	0.1	18	17
10- 15	18	0.1	18	17
15- 20	18	0.4	20	17
20- 25	18	0.1	18	18
25- 30	18	0.1	18	18
30- 35	18	0.1	18	18
35- 40	18	0.2	18	18
40- 45	18	0.1	18	18
45- 50	18	0.2	19	18
50- 55	18	0.1	19	18
55- 60	18	0.1	19	18
60- 65	19	0.4	21	18
65- 70	19	0.1	19	19
70- 75	19	0.1	19	19
75- 80	19	0.1	19	19
80- 85	19	0.4	21	19
85- 90	19	0.1	19	19
90- 95	19	0.3	21	19
95-100	19	0.1	20	19
100-105	20	0.1	20	19
105-110	20	0.4	22	19
110-115	20	0.4	22	20
115-120	20	0.1	20	20
120-125	20	0.1	20	20
125-130	20	0.2	20	19
130-135	20	0.1	20	20
135-140	20	0.1	21	20
140-145	21	0.1	21	20
145-150	21	0.1	21	21
150-155	21	0.1	21	21
155-160	21	0.1	21	21
160-165	21	0.1	21	21
165-170	21	0.1	21	21
170-175	21	0.1	21	21
175-180	21	0.5	24	21
180-185	22	0.1	22	21
185-190	22	0.1	22	22
190-195	22	0.1	22	22
195-200	22	0.1	22	22
200-205	22	0.1	22	22
205-210	22	0.4	24	22
210-215	22	0.1	22	22
215-220	22	0.1	23	22
220-225	22	0.1	23	22
225-230	23	0.1	23	22
230-235	23	0.1	23	23
235-240	23	0.3	24	23
240-245	23	0.2	24	23
245-250	23	0.3	24	23
250-255	23	0.4	25	23
255-260	23	0.1	23	23
260-265	23	0.1	24	23
265-270	23	0.4	25	23
270-275	23	0.1	24	23
275-280	24	0.6	26	23
280-285	24	0.1	24	24
285-290	24	0.1	24	24
290-295	24	0.1	24	24
295-300	24	0.1	24	24
300-302	24	0.7	26	23
FOR THIS RUN:	21	2.0	26	17

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	847	6.4	856	834
5- 10	819	5.9	829	808
10- 15	826	4.4	833	819
15- 20	831	4.9	838	821
20- 25	835	3.1	839	828
25- 30	824	4.7	831	816
30- 35	832	3.6	838	825
35- 40	824	3.3	831	819
40- 45	831	2.8	836	825
45- 50	832	1.2	833	830
50- 55	821	8.4	831	796
55- 60	826	15.0	846	805
60- 65	827	9.6	844	810
65- 70	831	3.6	837	824
70- 75	829	4.8	834	815
75- 80	821	7.7	835	804
80- 85	833	5.0	840	824
85- 90	826	2.8	830	820
90- 95	803	9.7	823	781
95-100	833	14.0	852	803
100-105	841	9.4	852	826
105-110	819	2.9	824	814
110-115	828	3.3	832	819
115-120	832	2.9	836	824
120-125	807	7.7	820	793
125-130	841	13.1	854	802
130-135	832	2.2	837	826
135-140	824	7.9	834	811
140-145	830	4.0	838	823
145-150	826	4.7	834	816
150-155	830	3.3	836	825
155-160	824	5.1	831	814
160-165	830	6.1	838	816
165-170	824	7.3	836	810
170-175	814	10.7	840	801
175-180	846	13.2	858	815
180-185	826	14.3	851	808
185-190	820	7.1	831	808
190-195	837	3.1	841	829
195-200	826	5.9	838	817
200-205	829	10.8	844	806
205-210	830	11.1	845	811
210-215	828	8.0	840	816
215-220	830	6.2	839	819
220-225	815	6.8	826	797
225-230	830	7.3	840	814
230-235	836	7.4	842	808
235-240	820	5.8	832	813
240-245	834	4.1	840	827
245-250	830	3.1	834	821
250-255	829	1.4	832	827
255-260	829	2.8	832	821
260-265	829	2.2	832	825
265-270	827	2.4	832	823
270-275	816	8.0	832	801
275-280	835	8.6	845	820
280-285	828	6.4	837	815
285-290	833	2.9	837	826
290-295	827	3.7	832	818
295-300	827	2.7	832	822
300-302	831	1.5	833	829
FOR THIS RUN:	828	10.4	858	781

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1138	16.3	1169	1106
5- 10	1141	25.4	1196	1092
10- 15	1151	25.9	1229	1108
15- 20	1147	21.6	1219	1118
20- 25	1132	12.7	1152	1109
25- 30	1137	17.4	1195	1116
30- 35	1129	12.3	1159	1102
35- 40	1139	21.8	1191	1104
40- 45	1134	17.2	1175	1105
45- 50	1131	13.8	1156	1112
50- 55	1145	22.9	1205	1107
55- 60	1143	19.9	1180	1102
60- 65	1146	28.0	1191	1097
65- 70	1143	20.5	1215	1100
70- 75	1139	19.7	1198	1111
75- 80	1147	30.1	1227	1109
80- 85	1141	21.1	1184	1111
85- 90	1143	16.8	1185	1116
90- 95	1176	37.9	1263	1124
95-100	1159	25.3	1207	1118
100-105	1140	12.9	1170	1114
105-110	1148	21.2	1201	1114
110-115	1150	20.9	1202	1112
115-120	1143	21.4	1193	1103
120-125	1166	36.3	1251	1095
125-130	1144	25.8	1236	1116
130-135	1135	16.8	1181	1105
135-140	1140	16.8	1195	1114
140-145	1136	15.4	1181	1106
145-150	1148	21.8	1188	1118
150-155	1141	17.7	1186	1109
155-160	1144	20.7	1202	1117
160-165	1147	24.2	1195	1106
165-170	1152	19.7	1188	1115
170-175	1170	30.3	1231	1123
175-180	1136	17.5	1188	1112
180-185	1136	16.6	1178	1117
185-190	1151	26.8	1205	1115
190-195	1140	21.7	1191	1110
195-200	1139	16.4	1168	1099
200-205	1140	21.5	1206	1124
205-210	1136	17.2	1188	1105
210-215	1135	14.3	1183	1112
215-220	1134	14.6	1164	1104
220-225	1156	35.0	1291	1114
225-230	1155	22.2	1205	1119
230-235	1137	24.3	1237	1111
235-240	1143	15.2	1178	1100
240-245	1137	17.4	1200	1113
245-250	1130	11.4	1162	1113
250-255	1133	12.0	1152	1113
255-260	1130	10.0	1157	1110
260-265	1127	8.8	1151	1112
265-270	1130	11.7	1161	1103
270-275	1154	27.0	1226	1112
275-280	1143	14.5	1172	1112
280-285	1141	19.7	1190	1114
285-290	1131	12.0	1164	1112
290-295	1131	15.9	1167	1103
295-300	1136	12.8	1153	1112
300-302	1132	12.9	1151	1104
FOR THIS RUN:	1142	22.9	1291	1092

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	964	15.2	995	931
5- 10	934	20.4	971	888
10- 15	950	19.4	1008	913
15- 20	953	16.6	1002	926
20- 25	945	10.2	964	922
25- 30	937	12.8	976	920
30- 35	939	10.6	964	912
35- 40	939	15.8	975	911
40- 45	943	13.5	971	920
45- 50	941	10.4	960	926
50- 55	940	14.4	979	915
55- 60	944	19.5	993	896
60- 65	947	23.1	1000	900
65- 70	950	15.7	1002	916
70- 75	945	13.3	979	926
75- 80	941	23.9	1007	907
80- 85	951	15.3	977	927
85- 90	944	12.4	974	924
90- 95	945	26.6	999	902
95-100	965	20.7	999	905
100-105	958	12.7	976	929
105-110	940	17.6	987	914
110-115	952	16.2	991	922
115-120	951	16.3	992	919
120-125	941	28.4	1010	892
125-130	962	18.2	991	917
130-135	944	14.1	976	923
135-140	939	10.0	977	926
140-145	943	12.4	977	920
145-150	948	16.9	978	921
150-155	947	13.6	980	921
155-160	943	14.8	983	918
160-165	953	16.1	986	919
165-170	949	15.8	973	909
170-175	952	24.1	995	907
175-180	961	16.6	989	915
180-185	938	16.1	962	907
185-190	944	21.7	992	908
190-195	954	16.3	994	930
195-200	940	12.8	965	905
200-205	946	13.2	980	922
205-210	942	13.5	981	916
210-215	940	10.3	968	919
215-220	941	12.3	964	910
220-225	942	24.4	1029	901
225-230	958	18.9	1002	931
230-235	951	15.9	1015	928
235-240	937	13.0	967	900
240-245	947	13.3	995	924
245-250	937	8.7	961	922
250-255	940	9.2	955	924
255-260	937	7.2	955	918
260-265	935	7.1	951	921
265-270	935	8.6	956	912
270-275	941	20.3	989	904
275-280	954	12.6	976	930
280-285	945	15.1	978	917
285-290	943	8.4	961	927
290-295	935	11.5	956	911
295-300	939	9.3	955	919
300-302	940	10.0	954	918
FOR THIS RUN:	945	17.5	1029	888

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	98.4	5.2	107.9	90.1
5- 10	92.3	7.8	106.4	73.9
10- 15	94.7	6.7	105.6	74.4
15- 20	94.8	5.8	103.1	72.6
20- 25	94.5	2.9	102.6	88.1
25- 30	92.2	3.0	97.0	83.0
30- 35	96.3	3.0	102.8	90.6
35- 40	92.5	5.3	103.4	78.2
40- 45	94.7	4.3	102.1	84.8
45- 50	93.8	3.7	100.8	87.1
50- 55	89.9	5.1	99.0	77.2
55- 60	95.8	5.2	108.4	84.5
60- 65	93.8	6.2	107.4	86.1
65- 70	93.2	6.1	105.1	72.1
70- 75	93.6	3.6	98.5	83.5
75- 80	93.4	7.3	103.9	74.1
80- 85	94.7	5.2	103.4	83.3
85- 90	93.1	4.2	100.6	84.3
90- 95	87.7	8.8	101.8	69.0
95-100	98.9	5.6	106.4	82.0
100-105	93.9	4.7	100.3	82.5
105-110	91.8	5.3	100.3	77.9
110-115	94.4	4.2	100.8	84.3
115-120	94.8	5.1	105.9	82.0
120-125	92.3	10.2	112.2	65.5
125-130	98.9	6.7	108.9	76.2
130-135	93.5	3.4	100.8	87.1
135-140	92.1	4.4	100.0	79.0
140-145	95.9	3.5	101.1	84.3
145-150	92.7	4.9	98.3	79.5
150-155	94.3	3.8	101.1	85.1
155-160	94.5	5.1	102.6	83.0
160-165	95.5	5.9	105.4	81.2
165-170	93.5	4.3	102.3	84.5
170-175	90.8	8.3	103.1	71.1
175-180	100.7	4.4	108.4	87.8
180-185	90.9	4.5	99.5	81.2
185-190	94.3	7.1	103.6	75.9
190-195	95.8	4.1	103.9	87.3
195-200	93.4	3.6	100.3	85.8
200-205	95.6	4.0	99.8	82.8
205-210	93.0	4.9	100.3	80.0
210-215	95.5	4.0	100.0	82.8
215-220	93.7	3.4	101.3	86.3
220-225	89.8	8.9	100.0	53.0
225-230	95.6	5.4	105.9	84.0
230-235	94.4	6.5	100.0	67.0
235-240	92.8	4.4	101.3	84.8
240-245	95.8	4.6	103.4	81.7
245-250	95.4	3.3	101.6	86.3
250-255	93.9	2.9	99.5	88.6
255-260	94.1	2.7	98.0	86.8
260-265	95.1	2.1	98.5	89.1
265-270	94.0	2.7	99.0	87.6
270-275	91.6	7.9	102.6	66.0
275-280	97.6	4.4	107.2	87.3
280-285	92.9	4.2	98.5	80.0
285-290	95.7	2.6	100.6	90.6
290-295	94.1	3.7	102.8	88.1
295-300	94.3	3.7	104.1	86.8
300-302	95.1	4.6	105.6	89.6
FOR THIS RUN:	94.1	5.6	112.2	53.0

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	17.6	0.7	18.5	15.9
5- 10	15.5	2.8	17.3	3.0
10- 15	16.8	0.7	18.0	14.9
15- 20	17.1	0.6	18.1	15.8
20- 25	13.0	16.9	17.8	-68.9
25- 30	15.9	2.3	17.3	6.2
30- 35	16.6	4.5	29.1	-1.9
35- 40	16.5	0.8	17.5	13.7
40- 45	15.5	5.0	17.8	-7.6
45- 50	16.5	2.2	17.5	5.9
50- 55	15.8	3.0	17.3	2.6
55- 60	14.8	8.7	22.5	-26.4
60- 65	12.1	15.9	17.5	-56.0
65- 70	16.5	1.8	18.0	8.8
70- 75	16.4	1.3	17.5	10.6
75- 80	16.6	0.7	17.6	15.1
80- 85	16.6	2.0	18.0	6.9
85- 90	16.9	1.5	23.4	14.8
90- 95	15.5	2.1	17.1	7.3
95-100	16.1	4.2	18.3	-4.1
100-105	16.4	3.3	18.3	0.4
105-110	15.6	2.8	17.3	3.1
110-115	16.7	1.0	17.8	13.0
115-120	14.6	9.8	17.7	-32.5
120-125	14.2	8.6	17.8	-27.6
125-130	15.2	11.0	22.0	-38.2
130-135	16.3	1.8	17.5	8.9
135-140	13.6	13.6	37.0	-43.4
140-145	17.1	1.3	23.0	15.5
145-150	16.1	2.3	17.6	7.7
150-155	17.0	0.5	17.7	15.8
155-160	16.7	1.0	20.3	15.4
160-165	14.6	9.2	17.8	-29.6
165-170	12.5	12.4	17.7	-35.7
170-175	15.7	2.7	17.8	3.5
175-180	17.3	1.1	19.3	14.3
180-185	16.5	0.7	17.8	15.3
185-190	16.1	2.6	17.6	3.8
190-195	16.9	1.8	19.4	9.3
195-200	13.8	8.9	17.4	-16.8
200-205	16.2	3.2	17.9	0.9
205-210	17.5	3.0	31.4	15.5
210-215	16.8	1.0	20.5	14.5
215-220	16.2	1.0	17.5	13.9
220-225	16.4	1.2	21.3	14.7
225-230	16.0	2.7	18.0	6.6
230-235	14.5	12.2	17.8	-45.5
235-240	15.8	3.5	17.6	-1.2
240-245	16.7	3.4	27.2	7.0
245-250	16.3	1.5	17.5	9.6
250-255	16.6	0.5	17.4	15.7
255-260	16.6	0.0	17.5	14.1
260-265	14.8	9.1	17.6	-29.6
265-270	12.8	16.2	17.5	-65.1
270-275	16.5	0.5	17.2	15.4
275-280	16.6	1.6	18.1	10.0
280-285	16.0	2.7	17.5	3.1
285-290	17.0	0.5	18.0	16.0
290-295	16.0	1.9	17.3	7.1
295-300	15.9	3.2	17.5	2.0
300-302	16.8	0.5	17.4	15.8
FOR THIS RUN:	15.9	6.1	37.0	-68.9

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.7	0.1	2.0	1.5
5- 10	1.4	0.3	1.8	0.3
10- 15	1.6	0.1	1.7	1.2
15- 20	1.6	0.1	1.8	1.2
20- 25	1.2	1.6	1.7	-6.4
25- 30	1.5	0.2	1.7	0.6
30- 35	1.6	0.4	2.9	-0.2
35- 40	1.5	0.1	1.7	1.3
40- 45	1.5	0.5	1.7	-0.7
45- 50	1.5	0.2	1.7	0.6
50- 55	1.4	0.3	1.7	0.2
55- 60	1.4	0.9	2.3	-2.6
60- 65	1.2	1.4	1.9	-4.8
65- 70	1.5	0.2	1.8	0.9
70- 75	1.5	0.1	1.7	1.0
75- 80	1.5	0.1	1.7	1.2
80- 85	1.6	0.2	1.7	0.7
85- 90	1.6	0.2	2.2	1.3
90- 95	1.4	0.2	1.6	0.6
95-100	1.6	0.4	1.9	-0.4
100-105	1.5	0.3	1.8	0.0
105-110	1.4	0.3	1.7	0.3
110-115	1.6	0.1	1.8	1.1
115-120	1.4	0.9	1.8	-2.9
120-125	1.3	0.8	1.9	-2.2
125-130	1.5	1.1	2.1	-4.0
130-135	1.5	0.2	1.7	0.9
135-140	1.3	1.3	3.4	-4.0
140-145	1.6	0.1	2.2	1.4
145-150	1.5	0.2	1.7	0.7
150-155	1.6	0.1	1.8	1.3
155-160	1.6	0.1	2.0	1.4
160-165	1.4	0.9	1.8	-3.0
165-170	1.2	1.2	1.8	-3.3
170-175	1.4	0.3	1.8	0.4
175-180	1.7	0.1	1.9	1.5
180-185	1.5	0.1	1.7	1.3
185-190	1.5	0.3	1.7	0.4
190-195	1.6	0.2	1.8	0.9
195-200	1.3	0.8	1.7	-1.6
200-205	1.5	0.3	1.8	0.1
205-210	1.6	0.3	3.1	1.3
210-215	1.6	0.1	2.0	1.3
215-220	1.5	0.1	1.7	1.2
220-225	1.5	0.2	2.1	0.9
225-230	1.5	0.3	1.8	0.6
230-235	1.4	1.2	1.8	-4.4
235-240	1.5	0.3	1.8	-0.1
240-245	1.6	0.3	2.6	0.6
245-250	1.6	0.1	1.7	1.0
250-255	1.6	0.1	1.7	1.4
255-260	1.6	0.1	1.7	1.3
260-265	1.4	0.9	1.7	-2.8
265-270	1.2	1.5	1.7	-6.2
270-275	1.5	0.1	1.7	1.1
275-280	1.6	0.2	1.9	1.0
280-285	1.5	0.3	1.7	0.3
285-290	1.6	0.1	1.8	1.5
290-295	1.5	0.2	1.7	0.6
295-300	1.5	0.3	1.7	0.2
300-302	1.6	0.1	1.7	1.5
FOR THIS RUN:	1.5	0.6	3.4	-6.4

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in. (35.6 cm) of ice
with 4.5 in. (11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice
13990 lb/sq ft (670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	876.4	5.4	882.4	861.4
5- 10	878.0	7.1	886.4	864.4
10- 15	877.4	6.7	884.4	863.4
15- 20	877.3	5.9	884.4	863.4
20- 25	877.8	6.5	885.4	864.4
25- 30	879.1	6.3	885.4	864.4
30- 35	878.4	5.5	885.4	864.4
35- 40	877.1	6.7	884.4	863.4
40- 45	877.5	6.8	885.4	863.4
45- 50	878.3	5.8	885.4	863.4
50- 55	877.4	6.3	885.4	864.4
55- 60	877.6	6.5	885.4	862.4
60- 65	878.2	6.4	886.4	860.4
65- 70	876.9	6.9	885.4	864.4
70- 75	878.1	6.5	885.4	863.4
75- 80	877.1	6.0	885.4	863.4
80- 85	876.4	6.6	884.4	863.4
85- 90	879.0	5.9	885.4	863.4
90- 95	878.5	5.4	884.4	863.4
95-100	874.7	7.0	883.4	859.4
100-105	879.4	6.1	886.4	864.4
105-110	878.6	6.6	886.4	862.4
110-115	876.4	7.2	884.4	862.4
115-120	879.1	5.8	885.4	863.4
120-125	878.5	6.5	886.4	862.4
125-130	875.6	7.3	884.4	862.4
130-135	879.8	5.9	885.4	866.4
135-140	878.5	6.6	886.4	864.4
140-145	876.5	6.5	886.4	863.4
145-150	878.9	6.0	885.4	862.4
150-155	878.4	5.5	884.4	864.4
155-160	877.5	6.6	886.4	863.4
160-165	877.6	6.5	884.4	863.4
165-170	877.9	6.5	887.4	863.4
170-175	877.4	7.3	885.4	862.4
175-180	878.0	5.6	883.4	862.4
180-185	880.6	6.6	888.4	863.4
185-190	877.1	6.8	884.4	863.4
190-195	877.9	6.5	885.4	863.4
195-200	878.7	6.2	885.4	865.4
200-205	877.4	6.0	884.4	863.4
205-210	879.3	5.8	885.4	865.4
210-215	879.2	5.6	885.4	864.4
215-220	877.7	6.5	885.4	864.4
220-225	877.8	6.6	885.4	864.4
225-230	877.5	5.6	884.4	863.4
230-235	878.1	6.6	885.4	862.4
235-240	879.6	6.5	887.4	863.4
240-245	878.6	5.8	885.4	865.4
245-250	878.0	7.0	886.4	864.4
250-255	877.6	6.9	885.4	863.4
255-260	879.0	5.4	885.4	866.4
260-265	879.2	5.6	885.4	864.4
265-270	877.8	6.7	884.4	864.4
270-275	877.6	6.5	885.4	862.4
275-280	877.2	5.4	883.4	862.4
280-285	878.3	6.2	884.4	864.4
285-290	878.8	6.3	885.4	863.4
290-295	879.9	5.9	886.4	864.4
295-300	877.5	6.2	884.4	864.4
300-302	878.6	6.4	884.4	865.4
FOR THIS RUN:	878.0	6.4	888.4	859.4

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	19	0.1	19	19
5- 10	19	0.6	22	19
10- 15	19	0.2	19	19
15- 20	20	2.5	32	19
20- 25	19	0.1	19	19
25- 30	19	0.1	19	19
30- 35	19	0.3	21	19
35- 40	19	0.1	20	19
40- 45	19	0.0	19	19
45- 50	20	0.1	20	19
50- 55	20	0.2	20	19
55- 60	20	0.1	20	19
60- 65	20	0.1	20	20
65- 70	20	0.1	20	20
70- 75	20	0.7	23	20
75- 80	20	0.1	20	20
80- 85	20	0.1	20	20
85- 90	20	0.1	20	20
90- 95	20	0.3	21	20
95-100	20	0.1	21	20
100-105	21	0.3	22	20
105-110	21	0.3	22	21
110-115	21	0.1	21	21
115-120	21	0.8	25	21
120-125	21	0.1	21	21
125-130	23	7.9	61	21
130-135	21	0.2	21	20
135-140	22	2.0	32	21
140-145	21	0.4	23	21
145-150	21	0.2	22	21
150-155	21	0.2	22	21
155-160	22	0.1	22	21
160-165	22	0.1	22	21
165-170	22	0.3	23	21
170-175	22	0.1	22	22
175-180	22	0.1	22	22
180-185	22	0.1	22	22
185-190	22	0.2	22	21
190-195	24	8.3	64	22
195-200	22	0.1	22	22
200-205	22	0.2	22	22
205-210	22	0.1	22	22
210-215	22	0.1	23	22
215-220	22	0.2	23	21
220-225	23	0.9	26	22
225-230	23	0.1	23	23
230-235	23	0.1	23	23
235-240	23	0.1	23	22
240-245	23	0.3	24	23
245-250	23	0.4	25	23
250-255	23	0.1	23	23
255-260	23	0.6	26	23
260-265	23	0.5	26	23
265-270	23	0.1	23	23
270-275	23	0.1	24	23
275-280	23	0.1	24	23
280-285	24	0.1	24	23
285-290	24	0.6	27	23
290-295	24	0.6	27	23
295-300	24	0.1	24	23
300-302	24	0.1	24	24
FOR THIS RUN:	21	2.2	64	19

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1. Level ice breaking without bubblers
2. 14 in. (35.6 cm) of ice with 4.5 in. (11.4 cm) of snow
3. Ship speed 7.7 knots
4. Flexural strength of ice 13990 lb/sq ft (670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1151	15.8	1179	1121
5- 10	1154	23.2	1201	1109
10- 15	1164	25.9	1243	1124
15- 20	1160	20.6	1234	1136
20- 25	1145	12.4	1170	1122
25- 30	1150	18.1	1211	1128
30- 35	1143	10.9	1167	1119
35- 40	1152	20.3	1306	1119
40- 45	1148	16.2	1189	1124
45- 50	1144	12.5	1166	1119
50- 55	1158	23.9	1225	1119
55- 60	1156	19.4	1192	1117
60- 65	1159	27.3	1210	1113
65- 70	1156	21.4	1230	1106
70- 75	1152	19.1	1210	1124
75- 80	1160	24.3	1240	1120
80- 85	1154	20.7	1197	1125
85- 90	1156	17.2	1200	1129
90- 95	1189	36.9	1270	1138
95-100	1172	26.3	1223	1132
100-105	1151	12.2	1177	1127
105-110	1163	21.3	1208	1127
110-115	1164	20.6	1216	1130
115-120	1156	21.4	1204	1115
120-125	1180	36.5	1271	1115
125-130	1158	25.0	1248	1131
130-135	1147	16.3	1187	1114
135-140	1153	18.1	1214	1128
140-145	1150	15.4	1193	1123
145-150	1160	21.4	1199	1124
150-155	1154	18.3	1202	1117
155-160	1157	20.2	1218	1127
160-165	1161	22.8	1203	1121
165-170	1165	19.7	1206	1133
170-175	1182	31.2	1245	1131
175-180	1150	16.9	1202	1127
180-185	1149	15.8	1185	1130
185-190	1166	26.9	1218	1125
190-195	1153	21.2	1200	1127
195-200	1152	16.6	1181	1112
200-205	1154	21.2	1221	1137
205-210	1148	17.1	1201	1120
210-215	1148	13.5	1194	1126
215-220	1147	13.7	1178	1120
220-225	1168	35.4	1307	1125
225-230	1168	21.5	1217	1130
230-235	1150	24.8	1252	1123
235-240	1156	14.7	1188	1116
240-245	1149	17.4	1215	1126
245-250	1144	11.0	1170	1125
250-255	1146	12.7	1167	1125
255-260	1143	9.6	1167	1127
260-265	1140	8.6	1162	1127
265-270	1144	12.2	1175	1111
270-275	1167	26.5	1237	1124
275-280	1156	14.5	1185	1128
280-285	1154	19.1	1197	1128
285-290	1145	11.4	1176	1126
290-295	1143	17.0	1184	1113
295-300	1149	12.5	1164	1122
300-302	1145	12.2	1162	1116
FOR THIS RUN:	1155	22.7	1307	1106

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice
with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexurol strength of ice
13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	103.0	5.0	113.4	94.5
5- 10	97.3	7.1	108.6	80.9
10- 15	99.6	6.8	110.1	77.4
15- 20	99.8	5.6	106.1	76.9
20- 25	99.6	2.9	104.8	91.7
25- 30	97.2	3.4	102.6	88.4
30- 35	100.8	3.1	106.8	94.2
35- 40	98.0	4.7	106.6	85.7
40- 45	99.6	4.0	105.1	89.2
45- 50	98.8	3.4	104.3	92.2
50- 55	95.0	4.9	103.3	81.4
55- 60	100.9	5.0	112.4	91.0
60- 65	98.4	6.1	112.1	89.5
65- 70	98.4	5.7	110.6	79.4
70- 75	98.6	3.4	103.8	87.9
75- 80	98.2	7.1	108.1	79.6
80- 85	99.5	4.8	106.1	89.2
85- 90	97.8	4.4	106.3	87.9
90- 95	92.3	8.2	103.8	75.1
95-100	103.7	5.4	111.6	88.2
100-105	98.9	4.1	105.3	91.2
105-110	97.1	5.0	105.1	84.2
110-115	99.3	4.1	106.3	89.5
115-120	99.6	4.4	108.9	87.4
120-125	96.9	9.4	116.4	72.3
125-130	103.9	5.9	111.9	83.4
130-135	98.6	3.1	104.3	92.7
135-140	96.9	4.4	104.8	82.4
140-145	100.6	3.3	106.3	91.5
145-150	97.7	5.0	104.6	87.4
150-155	99.3	3.8	106.1	90.5
155-160	99.4	4.5	107.1	87.7
160-165	100.1	5.6	110.4	90.0
165-170	98.5	4.1	107.1	89.2
170-175	96.0	7.6	105.6	79.1
175-180	105.3	4.4	112.1	91.7
180-185	95.9	4.1	102.8	85.9
185-190	93.0	6.5	108.1	83.7
190-195	100.9	4.2	107.3	92.2
195-200	98.2	3.8	105.6	90.7
200-205	100.4	4.1	105.6	87.4
205-210	97.9	4.4	103.8	85.4
210-215	100.5	3.9	104.8	86.7
215-220	98.3	3.7	106.6	91.7
220-225	95.1	8.7	105.3	58.7
225-230	100.1	5.4	109.9	89.2
230-235	99.4	6.4	107.1	73.1
235-240	97.6	4.0	105.8	88.7
240-245	100.7	4.7	107.9	85.4
245-250	100.1	2.8	104.6	92.5
250-255	98.7	3.3	105.3	92.5
255-260	99.1	2.8	102.6	90.7
260-265	99.7	2.3	102.8	94.5
265-270	99.2	2.5	104.3	93.7
270-275	96.4	7.6	108.1	73.6
275-280	102.2	4.2	109.1	92.0
280-285	97.8	3.8	103.3	86.7
285-290	100.5	2.6	105.8	95.5
290-295	99.0	3.7	106.1	93.0
295-300	99.1	3.0	107.3	93.2
300-302	100.2	3.2	108.1	96.3
FOR THIS RUN:	99.0	5.4	116.4	58.7

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	9.5	22.1	19.5	-63.9
5- 10	11.8	16.9	18.5	-57.5
10- 15	17.8	0.7	18.9	16.3
15- 20	9.8	27.9	19.8	-94.5
20- 25	11.5	20.0	19.9	-68.8
25- 30	15.2	10.6	22.1	-34.9
30- 35	13.7	13.9	18.8	-50.5
35- 40	12.4	15.7	18.8	-53.0
40- 45	10.7	24.8	18.7	-104.0
45- 50	14.1	16.7	18.8	-67.0
50- 55	15.9	7.4	18.6	-20.2
55- 60	16.2	4.5	19.8	-0.7
60- 65	11.3	23.7	18.9	-102.7
65- 70	17.4	2.1	19.3	7.9
70- 75	7.7	33.6	18.5	-106.3
75- 80	12.6	24.3	18.8	-106.3
80- 85	16.0	7.3	19.7	-18.7
85- 90	13.6	13.3	18.6	-39.8
90- 95	9.5	15.9	18.5	-39.8
95-100	10.0	20.8	19.3	-63.4
100-105	17.6	1.7	19.6	13.0
105-110	12.8	15.9	19.1	-60.2
110-115	15.6	10.9	18.9	-37.5
115-120	11.7	24.6	18.7	-106.3
120-125	6.7	27.3	18.4	-106.3
125-130	12.1	21.2	19.5	-87.8
130-135	14.7	13.9	19.4	-52.8
135-140	11.5	13.9	18.4	-40.4
140-145	13.5	12.1	19.2	-34.2
145-150	15.2	10.8	18.6	-37.4
150-155	17.9	0.7	19.3	16.6
155-160	7.7	33.4	18.9	-106.3
160-165	10.4	25.5	19.9	-103.9
165-170	9.1	25.2	18.6	-106.3
170-175	10.9	20.1	18.7	-73.8
175-180	10.2	28.4	19.7	-106.3
180-185	6.9	29.9	18.7	-100.5
185-190	16.0	7.4	18.6	-20.0
190-195	14.1	11.2	18.8	-33.8
195-200	12.1	16.6	18.6	-53.5
200-205	12.0	24.4	19.1	-106.3
205-210	16.5	4.1	18.9	-2.4
210-215	16.0	8.0	19.4	-23.9
215-220	16.9	5.1	27.0	-5.7
220-225	16.2	3.9	18.2	-2.2
225-230	13.8	18.5	18.9	-76.4
230-235	12.4	21.1	19.1	-88.7
235-240	13.3	12.6	18.6	-32.9
240-245	8.5	30.8	19.0	-106.3
245-250	16.5	5.2	18.6	-8.8
250-255	13.9	13.0	18.5	-33.2
255-260	4.9	33.7	18.7	-106.3
260-265	15.1	10.4	18.6	-32.9
265-270	14.4	12.4	18.7	-44.3
270-275	14.2	9.9	18.5	-27.7
275-280	15.1	13.0	19.5	-48.0
280-285	15.6	5.9	18.5	-6.3
285-290	9.7	28.4	18.6	-106.3
290-295	12.2	16.8	18.4	-64.2
295-300	2.8	38.3	18.9	-106.3
300-302	9.1	17.8	18.6	-35.7
FOR THIS RUN:	12.7	19.2	27.0	-106.3

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.0	2.3	2.2	-6.8
5- 10	1.1	1.7	2.0	-5.7
10- 15	1.8	0.1	2.0	1.3
15- 20	1.0	2.8	2.0	-9.4
20- 25	1.1	2.0	2.0	-6.7
25- 30	1.5	1.0	2.2	-3.2
30- 35	1.4	1.4	1.9	-5.1
35- 40	1.2	1.5	1.9	-5.1
40- 45	1.1	2.4	2.0	-9.9
45- 50	1.4	1.7	1.9	-7.0
50- 55	1.5	0.7	1.8	-2.0
55- 60	1.6	0.5	2.0	-0.1
60- 65	1.1	2.5	2.0	-10.8
65- 70	1.7	0.2	1.9	0.8
70- 75	.7	3.4	1.9	-10.7
75- 80	1.2	2.4	2.0	-10.4
80- 85	1.6	0.7	2.0	-1.7
85- 90	1.3	1.3	1.9	-3.8
90- 95	.9	1.5	1.8	-3.9
95-100	1.0	2.1	2.1	-6.2
100-105	1.7	0.2	2.0	1.2
105-110	1.2	1.6	1.9	-6.3
110-115	1.6	1.1	1.9	-3.7
115-120	1.1	2.5	2.0	-11.0
120-125	.6	2.7	1.9	-10.7
125-130	1.2	2.3	2.2	-9.5
130-135	1.5	1.3	1.9	-5.0
135-140	1.1	1.4	1.9	-4.1
140-145	1.4	1.2	2.0	-3.6
145-150	1.5	1.0	1.9	-3.4
150-155	1.8	0.1	1.9	1.6
155-160	.7	3.4	1.9	-10.9
160-165	1.1	2.4	2.1	-9.7
165-170	.9	2.6	1.9	-11.0
170-175	1.1	1.8	2.0	-5.9
175-180	1.1	3.0	2.1	-11.1
180-185	.7	2.9	1.8	-9.7
185-190	1.6	0.8	2.0	-2.1
190-195	1.4	1.1	2.0	-3.3
195-200	1.2	1.6	1.9	-5.0
200-205	1.2	2.5	2.0	-10.9
205-210	1.6	0.4	1.9	-0.2
210-215	1.6	0.8	2.0	-2.3
215-220	1.7	0.5	2.9	-0.6
220-225	1.5	0.4	1.8	-0.2
225-230	1.4	1.9	2.0	-7.9
230-235	1.2	2.1	2.0	-8.8
235-240	1.3	1.2	1.9	-3.1
240-245	.8	3.2	2.0	-11.0
245-250	1.7	0.5	1.9	-0.9
250-255	1.4	1.3	1.9	-3.2
255-260	.5	3.4	1.8	-10.5
260-265	1.5	1.0	1.9	-3.2
265-270	1.4	1.3	1.9	-4.5
270-275	1.4	1.0	1.8	-2.9
275-280	1.5	1.3	2.1	-4.9
280-285	1.5	0.6	1.9	-0.6
285-290	1.0	2.9	1.9	-10.7
290-295	1.3	1.7	1.9	-6.7
295-300	.1	3.8	1.9	-10.9
300-305	.9	1.0	1.9	-3.5
[illegible]		1.9	2.9	-11.1

TABLE 4 (Continued)

RUN NUMBER 1120

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 14 in.(35.6 cm) of ice with 4.5 in.(11.4 cm) of snow
3) Ship speed 7.7 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	885.4	5.0	895.4	878.4
5- 10	888.4	4.9	895.4	878.4
10- 15	887.0	4.7	894.4	879.4
15- 20	886.5	4.8	893.4	877.4
20- 25	888.1	5.4	894.4	879.4
25- 30	887.2	5.3	895.4	877.4
30- 35	886.9	5.1	893.4	878.4
35- 40	887.0	5.0	895.4	878.4
40- 45	887.1	4.6	894.4	878.4
45- 50	886.4	5.4	894.4	879.4
50- 55	887.2	5.1	894.4	879.4
55- 60	886.6	5.5	894.4	877.4
60- 65	886.8	5.1	895.4	877.4
65- 70	887.7	4.3	894.4	880.4
70- 75	886.3	5.0	894.4	879.4
75- 80	887.7	5.8	895.4	876.4
80- 85	887.8	5.2	895.4	878.4
85- 90	887.0	4.7	893.4	878.4
90- 95	888.0	5.2	896.4	879.4
95-100	886.2	5.2	895.4	875.4
100-105	888.5	5.1	895.4	879.4
105-110	886.6	5.2	895.4	879.4
110-115	887.3	4.5	894.4	878.4
115-120	886.2	5.2	894.4	878.4
120-125	887.0	5.6	897.4	876.4
125-130	887.0	5.6	895.4	876.4
130-135	887.3	5.8	896.4	878.4
135-140	888.7	5.1	895.4	880.4
140-145	886.2	5.0	895.4	878.4
145-150	887.6	4.9	895.4	879.4
150-155	888.0	5.3	895.4	880.4
155-160	887.2	5.3	895.4	877.4
160-165	887.1	4.8	893.4	878.4
165-170	887.0	4.4	894.4	878.4
170-175	887.8	5.9	897.4	878.4
175-180	885.9	4.5	892.4	878.4
180-185	889.0	4.7	895.4	880.4
185-190	885.6	5.6	895.4	877.4
190-195	887.7	4.6	895.4	880.4
195-200	887.3	5.1	894.4	879.4
200-205	886.5	5.6	895.4	878.4
205-210	888.4	4.5	895.4	881.4
210-215	885.6	4.9	893.4	879.4
215-220	888.7	4.8	894.4	879.4
220-225	886.6	5.0	895.4	879.4
225-230	887.0	6.2	895.4	877.4
230-235	888.2	5.5	896.4	879.4
235-240	887.2	4.9	894.4	878.4
240-245	888.4	5.9	895.4	878.4
245-250	887.1	4.7	894.4	878.4
250-255	887.8	5.4	895.4	878.4
255-260	887.3	4.6	894.4	879.4
260-265	887.3	4.8	894.4	879.4
265-270	887.1	5.7	895.4	878.4
270-275	887.7	5.8	895.4	877.4
275-280	885.8	5.5	894.4	878.4
280-285	888.1	5.1	895.4	881.4
285-290	887.1	5.0	894.4	879.4
290-295	886.8	5.2	895.4	879.4
295-300	888.1	4.4	894.4	880.4
300-302	888.7	4.6	893.4	879.4
FOR THIS RUN:	887.2	5.2	897.4	875.4

TABLE 5 - MACHINERY PARAMETERS, RUN 1130

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice
with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice
13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	52433	1113.7	54324	50300
5- 10	53097	1320.0	55833	50803
10- 15	52956	1069.6	54827	50803
15- 20	53217	1016.0	54827	51306
20- 25	53258	989.0	54827	51809
25- 30	52755	1077.1	54324	50803
30- 35	52976	1033.0	54827	50803
35- 40	52815	899.8	53821	50803
40- 45	52131	1082.4	53821	50300
45- 50	52553	1027.1	54324	50803
50- 55	52574	1027.1	53821	50803
55- 60	52735	1212.9	54324	50803
60- 65	51829	990.6	53318	49797
65- 70	52634	942.4	54324	50803
70- 75	53137	1137.1	54827	50803
75- 80	52574	945.0	53821	50300
80- 85	52674	1079.0	54324	50803
85- 90	51869	999.1	53821	50300
90- 95	51608	899.8	52815	49797
95-100	52050	889.8	53821	50300
100-105	52111	1045.5	53821	49797
105-110	52191	988.5	53821	50300
110-115	52795	905.2	54324	50803
115-120	53056	1056.3	54827	51306
120-125	52312	1035.7	53821	50803
125-130	51829	1030.6	53318	50300
130-135	51588	1129.9	53821	49797
135-140	53117	1147.0	55833	51306
140-145	53298	1151.2	55330	50803
145-150	52755	989.0	54324	51306
150-155	53680	1194.7	55330	50803
155-160	52815	1327.0	55330	50803
160-165	52996	1247.4	55330	50803
165-170	52714	1064.7	54827	50803
170-175	52674	1219.9	54827	50803
175-180	53338	1050.1	54827	51809
180-185	52553	1084.6	54827	50803
185-190	54183	1244.5	55833	51809
190-195	53922	1173.2	55833	51809
195-200	53479	1013.2	54827	51306
200-205	53942	988.5	55833	52312
205-210	54264	1095.8	55833	52312
210-215	54062	934.2	55833	52312
215-220	53680	1069.6	55330	51809
220-225	53177	1079.0	54324	50803
225-230	53077	1139.2	54827	50803
230-235	54123	922.0	55833	52815
235-240	54445	1217.9	56336	52815
240-245	55431	1280.4	57845	52312
245-250	51306	1379.4	54324	48791
250-255	52372	1193.0	54827	50300
255-260	53861	964.1	55833	52312
260-265	53761	989.0	55330	51809
265-270	53680	1050.5	55833	51809
270-275	54183	883.0	55833	52815
275-280	54002	1073.0	56336	52312
280-285	53580	1046.6	55833	52312
285-290	53419	1025.9	55833	51306
290-295	53580	1075.2	55330	51809
295-300	53640	1034.6	55330	51809
300-302	53720	1120.2	55330	51809
FOR THIS RUN:	53052	1342.9	57845	48791

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	71099	1510.2	73663	68207
5- 10	71999	1789.9	75710	68889
10- 15	71808	1450.4	74345	68889
15- 20	72163	1377.7	74345	69571
20- 25	72217	1341.0	74345	70253
25- 30	71535	1460.6	73663	68889
30- 35	71835	1400.7	74345	68889
35- 40	71617	1220.1	72981	68889
40- 45	70690	1467.7	72981	68207
45- 50	71262	1392.8	73663	68889
50- 55	71290	1392.8	72981	68889
55- 60	71508	1644.7	73663	68889
60- 65	70280	1343.2	72299	67525
65- 70	71372	1277.9	73663	68889
70- 75	72054	1541.9	74345	68889
75- 80	71290	1281.4	72981	68207
80- 85	71426	1463.1	73663	68889
85- 90	70335	1354.8	72981	68207
90- 95	69980	1220.1	71617	67525
95-100	70580	1206.6	72981	68207
100-105	70662	1417.7	72981	67525
105-110	70771	1340.5	72981	68207
110-115	71590	1227.4	73663	68889
115-120	71945	1432.3	74345	69571
120-125	70935	1404.5	72981	68889
125-130	70280	1397.6	72299	68207
130-135	69953	1532.2	72981	67525
135-140	72026	1555.4	75710	69571
140-145	72272	1561.1	75027	68889
145-150	71535	1341.0	73663	69571
150-155	72790	1620.1	75027	68889
155-160	71617	1799.4	75027	68889
160-165	71863	1691.5	75027	68889
165-170	71481	1443.7	74345	68889
170-175	71426	1654.2	74345	68889
175-180	72326	1423.9	74345	70253
180-185	71262	1470.7	74345	68889
185-190	73472	1687.6	75710	70253
190-195	73118	1590.8	75710	70253
195-200	72517	1373.9	74345	69571
200-205	73145	1340.5	75710	70935
205-210	73581	1485.8	75710	70935
210-215	73309	1266.8	75710	70935
215-220	72790	1450.4	75027	70253
220-225	72108	1463.1	73663	68889
225-230	71972	1544.8	74345	68889
230-235	73391	1250.3	75710	71617
235-240	73827	1651.4	76392	71617
240-245	75164	1736.3	78438	70935
245-250	69571	1870.4	73663	66161
250-255	71017	1617.8	74345	68207
255-260	73036	1307.3	75710	70935
260-265	72899	1341.0	75027	70253
265-270	72790	1424.5	75710	70253
270-275	73472	1197.3	75710	71617
275-280	73227	1455.0	76392	70935
280-285	72654	1419.2	75710	70935
285-290	72436	1391.2	75710	69571
290-295	72654	1458.0	75027	70253
295-300	72736	1402.9	75027	70253
300-302	72845	1519.0	75027	70253
FOR THIS RUN:	71939	1820.9	78438	66161

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	49939	4625.9	57010	36970
5- 10	41445	6797.3	51028	19921
10- 15	46123	4724.0	54318	35175
15- 20	46314	6146.4	55216	27399
20- 25	44687	4887.1	52225	28894
25- 30	49210	4739.1	56113	37867
30- 35	46530	3596.7	52225	39662
35- 40	48013	4984.2	57908	34577
40- 45	48252	5178.3	60001	39363
45- 50	46577	4547.5	56711	37568
50- 55	47415	5893.5	55814	33680
55- 60	47116	4801.3	61198	33979
60- 65	49425	4029.7	56412	38167
65- 70	42498	7076.7	56412	27100
70- 75	47846	4784.9	58207	38466
75- 80	48001	5627.9	56711	35175
80- 85	47331	5266.2	56711	34577
85- 90	47271	4640.8	56412	33680
90- 95	48863	4252.2	55216	36671
95-100	44675	4824.7	53720	35774
100-105	49223	2635.5	54318	45046
105-110	44950	6999.7	57010	25903
110-115	43754	6511.3	54917	29792
115-120	45848	6923.1	54617	28595
120-125	48922	4243.1	56113	40260
125-130	48898	4435.9	55814	37269
130-135	48743	4010.2	55515	39363
135-140	43885	6566.4	57908	30988
140-145	43000	8137.8	60001	25604
145-150	47104	4671.7	54917	38466
150-155	43586	5761.1	54617	29492
155-160	43598	5637.0	57309	29492
160-165	47271	5389.3	54617	29792
165-170	47128	5580.7	55515	30390
170-175	43144	5372.5	52823	26202
175-180	43515	6062.0	54019	30988
180-185	48061	4482.2	55216	37867
185-190	38645	7249.5	59702	25006
190-195	41887	9162.7	71367	29792
195-200	44149	6733.0	59403	30091
200-205	44053	7104.8	60001	27997
205-210	44615	6459.1	59702	32184
210-215	43897	5189.4	53720	33381
215-220	46350	5341.1	58506	36970
220-225	48982	5572.5	56711	30988
225-230	44041	6397.2	54617	22613
230-235	39578	8367.1	56412	21117
235-240	39638	8255.3	50729	12443
240-245	32005	9227.6	48037	13041
245-250	43802	6712.1	51925	24707
250-255	50370	3290.7	57010	42653
255-260	48743	4749.6	57309	37568
260-265	49461	7543.3	78247	39662
265-270	48910	4716.4	59104	39064
270-275	45728	6677.3	58207	33979
275-280	41313	6515.9	55515	27698
280-285	44137	6814.1	56412	26202
285-290	46242	3530.0	52225	39064
290-295	44795	4381.8	53421	36073
295-300	50143	4021.4	57309	41158
300-302	49323	4033.1	55515	41457
FOR THIS RUN:	45685	6692.5	78247	12443

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	222130	20576.1	253582	164443
5- 10	184346	30234.4	226973	88608
10- 15	205154	21012.4	241608	156460
15- 20	206006	27339.0	245599	121869
20- 25	198768	21737.8	232295	128521
25- 30	218884	21079.4	249590	168434
30- 35	206963	15998.3	232295	176417
35- 40	213562	22169.7	257573	153800
40- 45	214627	23033.0	266886	175086
45- 50	207176	20227.2	252251	167104
50- 55	210902	26214.3	248260	149808
55- 60	209571	21356.3	272208	151139
60- 65	219842	17924.3	250921	169765
65- 70	189029	31477.2	250921	120539
70- 75	212817	21283.2	258903	171095
75- 80	213509	25032.8	252251	156460
80- 85	210529	23424.3	252251	153800
85- 90	210263	20642.1	250921	149808
90- 95	217341	18913.8	245599	163113
95-100	198715	21460.1	238947	159121
100-105	218937	11722.8	241608	200365
105-110	199939	31134.8	253582	115217
110-115	194617	28962.4	244269	132513
115-120	203930	30794.1	242938	127191
120-125	217607	18873.3	249590	179078
125-130	217501	19731.0	248260	165773
130-135	216809	17837.2	246930	175086
135-140	195202	29207.3	257573	137834
140-145	191264	36196.8	266886	113887
145-150	209518	20779.7	244269	171095
150-155	193872	25625.4	242938	131182
155-160	193925	25073.4	254912	131182
160-165	210263	23971.6	242938	132513
165-170	209624	24823.1	246930	135174
170-175	191903	23897.1	234956	116547
175-180	193553	26963.6	240277	137834
180-185	213775	19936.6	245599	168434
185-190	171893	32245.8	265556	111226
190-195	186315	40755.6	317442	132513
195-200	196373	29948.6	264225	133843
200-205	195948	31602.1	266886	124530
205-210	198449	28730.1	265556	143156
210-215	195256	23082.6	238947	148478
215-220	206165	23757.4	260234	164443
220-225	217873	24786.5	252251	137834
225-230	195894	28454.7	242938	100582
230-235	176044	37216.9	250921	93930
235-240	176310	36719.7	225643	55348
240-245	142358	41044.6	213669	58009
245-250	194830	29855.5	230964	109895
250-255	224046	14637.1	253582	189721
255-260	216809	21126.2	254912	167104
260-265	220002	33552.8	348042	176417
265-270	217554	20978.4	262895	173756
270-275	203398	29700.5	258903	151139
275-280	183761	28982.9	246930	123200
280-285	196320	30309.2	250921	116547
285-290	205686	15701.3	232295	173756
290-295	199247	19490.4	237617	160452
295-300	223035	17887.2	254912	183069
300-302	219390	17939.1	246930	184399
FOR THIS RUN:	203207	29768.1	348042	55348

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice
with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice
13990 lb sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2750	53.4	2861	2643
5- 10	2636	78.5	2774	2527
10- 15	2700	53.0	2790	2605
15- 20	2747	52.2	2831	2649
20- 25	2677	54.5	2789	2596
25- 30	2761	62.9	2851	2660
30- 35	2701	47.2	2810	2642
35- 40	2746	62.1	2866	2630
40- 45	2733	56.2	2830	2650
45- 50	2693	56.1	2800	2596
50- 55	2740	68.1	2846	2604
55- 60	2725	64.9	2805	2614
60- 65	2747	61.3	2855	2643
65- 70	2651	48.5	2743	2562
70- 75	2749	69.2	2873	2625
75- 80	2770	56.7	2856	2636
80- 85	2719	48.3	2820	2623
85- 90	2728	55.3	2819	2638
90- 95	2738	48.1	2833	2654
95-100	2671	52.8	2800	2580
100-105	2740	63.1	2830	2631
105-110	2684	48.5	2779	2597
110-115	2674	57.0	2774	2586
115-120	2742	46.1	2842	2675
120-125	2756	67.3	2866	2628
125-130	2714	64.3	2834	2607
130-135	2696	63.3	2804	2590
135-140	2658	66.7	2815	2549
140-145	2689	59.7	2779	2587
145-150	2746	56.6	2861	2630
150-155	2721	71.5	2847	2577
155-160	2674	50.6	2779	2591
160-165	2732	70.5	2873	2582
165-170	2736	54.9	2819	2646
170-175	2666	62.8	2779	2571
175-180	2715	55.5	2821	2606
180-185	2752	56.2	2852	2644
185-190	2659	58.6	2758	2529
190-195	2649	64.6	2777	2535
195-200	2705	66.5	2815	2582
200-205	2714	60.8	2825	2607
205-210	2686	57.4	2777	2581
210-215	2688	53.9	2795	2622
215-220	2743	64.2	2836	2621
220-225	2778	52.7	2878	2686
225-230	2684	62.9	2825	2597
230-235	2622	77.4	2773	2513
235-240	2527	67.9	2660	2413
240-245	2338	62.9	2504	2244
245-250	2432	73.4	2545	2288
250-255	2654	84.4	2800	2470
255-260	2728	59.0	2815	2602
260-265	2740	51.2	2825	2646
265-270	2720	51.0	2800	2622
270-275	2686	61.0	2763	2559
275-280	2640	49.8	2719	2545
280-285	2654	63.9	2768	2530
285-290	2710	59.5	2831	2587
290-295	2703	55.7	2820	2631
295-300	2732	49.7	2831	2652
300-302	2735	52.6	2804	2646
FOR THIS RUN:	2695	93.9	2878	2244

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1. Level ice breaking without bubblers
2. 15 in. (38.1 cm) of ice with 3 in. (7.6 cm) of snow
3. Ship speed 9.0 knots
4. Flexural strength of ice 13990 lb/sq ft (670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2052	47.3	2133	1971
5- 10	1965	58.6	2068	1885
10- 15	2013	34.5	2080	1943
15- 20	2049	38.9	2111	1975
20- 25	1998	40.7	2080	1936
25- 30	2059	46.9	2126	1984
30- 35	2015	35.2	2096	1970
35- 40	2045	46.3	2137	1961
40- 45	2028	41.4	2111	1976
45- 50	2008	41.8	2088	1915
50- 55	2043	50.3	2122	1942
55- 60	2032	43.4	2090	1949
60- 65	2045	45.7	2129	1971
65- 70	1977	36..	2045	1935
70- 75	2050	51.6	2143	1957
75- 80	2066	4..	2130	1965
80- 85	2027	36.0	2103	1956
85- 90	2030	41..	2102	1967
90- 95	2017	36.6	2112	1979
95-100	1995	34.4	2088	1924
100-105	2041	47.1	2111	1962
105-110	2003	3..	2072	1937
110-115	1994	4..6	2068	1929
115-120	2044	34.4	2119	1995
120-125	2055	50..	2137	1960
125-130	2027	51.1	2114	1944
130-135	2011	47..	2091	1932
135-140	1982	44.7	2099	1901
140-145	2005	44.1	2072	1929
145-150	2043	41.4	2133	1961
150-155	2024	5...	2123	1921
155-160	1998	...6	2072	1932
160-165	2030	54.1	2142	1926
165-170	2041	41.0	2102	1971
170-175	1981	4..8	2072	1917
175-180	2025	4..8	2103	1943
180-185	2052	41.4	2127	1972
185-190	1983	47.7	2057	1886
190-195	1975	48..	2071	1890
195-200	2017	44.6	2094	1925
200-205	2034	45.3	2106	1944
205-210	2004	42.8	2071	1925
210-215	2004	40.2	2084	1955
215-220	2046	47.9	2115	1954
220-225	2071	39.3	2146	2003
225-230	2001	46.9	2107	1936
230-235	1955	57.7	2068	1874
235-240	1884	50.7	1984	1800
240-245	1743	46.9	1867	1673
245-250	1814	54.8	1898	1706
250-255	1983	62.9	2088	1847
255-260	2030	44.0	2099	1940
260-265	2043	38.2	2107	1973
265-270	2028	38.0	2088	1955
270-275	2003	45.5	2060	1908
275-280	1969	37.2	2028	1898
280-285	1979	47.7	2064	1886
285-290	2021	44.4	2111	1929
290-295	2016	41.6	2103	1962
295-300	2037	37.1	2111	1977
300-302	2039	39.3	2091	1973
FOR THIS RUN:	2009	70.0	2146	1673

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	275.7	3.3	279.7	268.2
5- 10	260.8	7.1	273.2	251.5
10- 15	267.8	2.9	270.7	260.2
15- 20	271.1	1.0	273.2	269.2
20- 25	264.2	1.7	269.2	260.2
25- 30	274.9	4.7	281.7	266.2
30- 35	268.0	5.1	275.7	261.2
35- 40	273.7	3.2	279.7	267.7
40- 45	275.3	1.4	276.7	271.2
45- 50	269.1	1.8	273.7	265.7
50- 55	273.7	3.6	279.2	267.7
55- 60	271.4	1.9	274.7	268.2
60- 65	277.9	3.3	281.2	270.7
65- 70	264.6	3.7	270.2	258.2
70- 75	271.7	3.0	275.7	266.2
75- 80	276.8	2.7	280.7	270.2
80- 85	271.1	4.0	275.7	265.2
85- 90	275.7	3.0	279.7	270.2
90- 95	278.0	2.9	281.7	271.2
95-100	269.6	2.9	273.7	263.7
100-105	276.2	6.0	281.7	265.2
105-110	270.3	5.0	281.7	264.7
110-115	266.1	5.6	273.2	257.2
115-120	271.4	2.8	276.2	267.2
120-125	276.7	2.7	280.7	271.2
125-130	275.5	2.6	279.2	270.7
130-135	274.5	3.6	277.7	270.2
135-140	262.9	7.3	272.2	251.5
140-145	265.0	2.4	268.7	260.2
145-150	272.8	3.7	279.2	267.7
150-155	266.3	6.1	276.7	257.2
155-160	266.5	4.1	271.7	258.7
160-165	269.8	7.2	278.2	259.2
165-170	272.3	3.8	277.7	265.7
170-175	265.8	2.2	270.2	262.2
175-180	267.4	3.2	272.7	261.7
180-185	275.0	2.9	279.7	269.7
185-190	257.8	4.6	269.2	251.5
190-195	258.0	2.8	262.7	253.5
195-200	265.7	3.7	270.2	259.2
200-205	264.2	2.2	267.2	259.2
205-210	260.1	2.5	263.2	255.0
210-215	261.2	3.9	267.7	255.5
215-220	268.4	2.3	271.2	263.7
220-225	274.4	2.6	278.7	271.2
225-230	265.7	6.4	276.2	256.2
230-235	254.4	6.3	263.2	244.0
235-240	243.8	3.0	248.5	238.5
240-245	241.6	6.2	255.5	212.0
245-250	249.2	10.0	259.7	229.0
250-255	266.7	4.1	270.7	258.2
255-260	265.4	3.7	271.2	258.7
260-265	267.7	0.9	269.2	265.7
265-270	266.1	2.1	269.7	262.7
270-275	260.4	4.0	264.7	250.5
275-280	256.8	2.8	260.7	252.5
280-285	260.2	4.8	269.7	253.5
285-290	266.5	4.3	272.2	259.7
290-295	265.0	1.9	267.7	261.2
295-300	267.5	3.8	271.2	260.2
300-302	267.4	1.6	270.2	265.7
FOR THIS RUN:	266.9	9.9	281.7	212.0

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	930	5.2	934	919
5- 10	890	19.4	924	862
10- 15	911	10.9	929	887
15- 20	924	4.1	930	912
20- 25	903	5.5	914	892
25- 30	927	9.2	934	900
30- 35	912	13.2	934	893
35- 40	923	6.6	934	914
40- 45	930	3.9	934	917
45- 50	913	4.8	926	905
50- 55	922	7.9	934	909
55- 60	920	3.6	927	913
60- 65	930	6.2	934	913
65- 70	900	9.6	915	884
70- 75	926	8.3	934	910
75- 80	930	5.5	934	913
80- 85	915	7.9	926	902
85- 90	929	5.3	934	915
90- 95	929	7.3	934	912
95-100	911	7.1	922	899
100-105	927	9.5	934	906
105-110	912	11.0	934	900
110-115	902	14.8	925	876
115-120	925	5.5	934	917
120-125	931	3.0	934	924
125-130	924	4.7	930	916
130-135	926	4.7	933	915
135-140	893	31.8	923	860
140-145	897	8.3	912	874
145-150	926	7.0	934	914
150-155	904	15.9	934	878
155-160	906	11.1	917	885
160-165	917	17.2	934	887
165-170	923	8.6	934	911
170-175	904	4.3	914	898
175-180	911	8.7	925	894
180-185	930	5.5	934	916
185-190	881	18.8	917	865
190-195	886	8.9	901	872
195-200	909	10.9	927	885
200-205	905	7.7	917	888
205-210	891	8.2	903	876
210-215	897	12.1	915	876
215-220	919	6.6	928	907
220-225	930	4.0	934	921
225-230	903	18.4	933	876
230-235	866	18.3	893	834
235-240	834	9.8	850	811
240-245	754	19.0	801	730
245-250	835	37.9	885	772
250-255	914	13.6	932	887
255-260	907	11.1	924	886
260-265	916	3.8	923	909
265-270	910	7.4	922	898
270-275	890	15.5	908	856
275-280	873	6.1	882	861
280-285	890	13.5	918	873
285-290	909	12.1	924	889
290-295	906	7.2	919	892
295-300	915	11.2	929	890
300-302	913	5.5	924	905
FOR THIS RUN:	906	30.5	934	730

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2301	30.4	2400	2267
5- 10	2357	61.1	2494	2262
10- 15	2346	46.6	2500	2271
15- 20	2335	36.3	2421	2278
20- 25	2346	35.5	2461	2280
25- 30	2329	41.3	2440	2271
30- 35	2316	37.1	2387	2260
35- 40	2318	28.3	2384	2264
40- 45	2313	26.3	2370	2272
45- 50	2321	45.7	2424	2255
50- 55	2320	39.0	2411	2260
55- 60	2320	26.9	2371	2267
60- 65	2298	28.0	2388	2264
65- 70	2340	44.4	2427	2270
70- 75	2323	25.6	2380	2278
75- 80	2306	27.1	2368	2257
80- 85	2316	37.2	2401	2260
85- 90	2308	24.7	2361	2262
90- 95	2303	27.7	2371	2265
95-100	2329	37.9	2410	2268
100-105	2299	25.0	2353	2250
105-110	2343	33.3	2401	2274
110-115	2345	50.4	2455	2261
115-120	2335	38.2	2397	2262
120-125	2306	31.7	2374	2251
125-130	2300	27.0	2373	2255
130-135	2308	26.4	2358	2265
135-140	2346	60.5	2474	2240
140-145	2351	48.9	2460	2254
145-150	2328	38.8	2417	2270
150-155	2348	60.4	2521	2277
155-160	2376	38.1	2498	2307
160-165	2322	28.6	2388	2287
165-170	2323	30.6	2394	2278
170-175	2347	38.2	2421	2254
175-180	2347	36.8	2424	2282
180-185	2320	38.2	2418	2270
185-190	2371	54.3	2463	2272
190-195	2367	50.8	2468	2274
195-200	2354	51.3	2471	2270
200-205	2377	41.9	2443	2275
205-210	2373	44.4	2470	2290
210-215	2341	34.5	2418	2268
215-220	2357	40.4	2435	2290
220-225	2318	34.0	2398	2262
225-230	2358	63.7	2578	2258
230-235	2408	59.2	2513	2275
235-240	2385	63.2	2531	2237
240-245	2395	83.5	2537	2251
245-250	2322	54.5	2463	2212
250-255	2354	37.5	2465	2301
255-260	2351	51.7	2510	2281
260-265	2350	28.9	2430	2297
265-270	2363	43.4	2460	2284
270-275	2388	61.0	2500	2277
275-280	2364	54.3	2498	2277
280-285	2342	48.9	2453	2265
285-290	2365	46.2	2454	2260
290-295	2371	40.7	2475	2308
295-300	2346	33.0	2418	2288
300-302	2361	48.3	2450	2284
FOR THIS RUN:	2340	50.3	2578	2212

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2139	29.5	2221	2085
5- 10	2098	58.8	2186	1982
10- 15	2137	41.5	2253	2057
15- 20	2159	28.7	2210	2109
20- 25	2119	32.4	2219	2056
25- 30	2159	26.1	2213	2102
30- 35	2112	37.3	2195	2035
35- 40	2140	25.8	2222	2082
40- 45	2151	19.6	2189	2115
45- 50	2119	36.5	2195	2058
50- 55	2140	32.3	2209	2070
55- 60	2134	20.5	2180	2087
60- 65	2137	23.6	2203	2083
65- 70	2106	32.7	2169	2040
70- 75	2151	26.1	2197	2082
75- 80	2145	22.2	2195	2107
80- 85	2119	38.7	2183	2046
85- 90	2146	20.6	2185	2107
90- 95	2139	19.4	2193	2107
95-100	2122	27.8	2186	2074
100-105	2132	20.4	2169	2077
105-110	2137	34.9	2195	2065
110-115	2116	46.6	2188	2026
115-120	2159	29.4	2221	2099
120-125	2147	29.4	2209	2089
125-130	2125	23.6	2175	2086
130-135	2136	23.6	2183	2091
135-140	2094	60.2	2187	1980
140-145	2109	42.6	2194	1989
145-150	2156	27.8	2222	2119
150-155	2123	64.3	2265	2023
155-160	2153	29.7	2239	2086
160-165	2130	41.2	2221	2061
165-170	2145	33.4	2199	2090
170-175	2122	29.9	2194	2058
175-180	2138	31.0	2183	2083
180-185	2158	34.1	2251	2107
185-190	2089	57.0	2220	1994
190-195	2098	42.4	2194	2014
195-200	2140	47.1	2238	2066
200-205	2150	32.3	2218	2086
205-210	2114	39.0	2189	2034
210-215	2099	39.2	2160	2005
215-220	2165	30.7	2227	2107
220-225	2156	27.5	2229	2113
225-230	2129	61.9	2291	2022
230-235	2085	56.9	2186	1995
235-240	1989	44.4	2064	1887
240-245	1808	95.9	2021	1675
245-250	1940	114.1	2144	1714
250-255	2152	47.4	2246	2071
255-260	2132	47.8	2224	2045
260-265	2153	22.0	2216	2112
265-270	2151	34.0	2224	2098
270-275	2124	40.7	2213	2050
275-280	2065	47.5	2173	1983
280-285	2084	40.5	2172	1999
285-290	2149	49.3	2212	2037
290-295	2149	32.6	2220	2087
295-300	2146	34.8	2218	2072
300-302	2156	37.9	2229	2098
FOR THIS RUN:	2121	69.1	2291	1675

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	100.6	3.4	104.6	88.0
5- 10	104.1	3.2	106.9	93.6
10- 15	103.0	2.6	106.9	98.1
15- 20	104.1	1.5	106.2	99.6
20- 25	104.5	2.6	106.7	95.6
25- 30	102.8	3.2	106.9	94.6
30- 35	102.3	3.5	106.9	91.5
35- 40	102.8	3.0	106.2	92.5
40- 45	102.6	2.2	105.1	97.3
45- 50	101.5	4.7	106.4	84.0
50- 55	101.7	3.3	105.9	91.3
55- 60	102.9	2.7	106.7	95.1
60- 65	101.0	3.7	106.9	92.3
65- 70	103.6	3.4	106.7	93.0
70- 75	104.0	2.2	106.2	95.3
75- 80	101.0	4.1	105.6	90.5
80- 85	100.5	5.0	106.4	90.8
85- 90	101.9	3.0	106.9	96.1
90- 95	100.5	4.0	105.6	92.5
95-100	103.6	3.4	106.7	90.8
100-105	100.1	5.3	106.7	83.0
105-110	103.4	4.2	107.4	89.0
110-115	103.0	4.2	107.4	90.5
115-120	103.8	4.1	107.7	89.0
120-125	101.1	5.4	106.9	86.0
125-130	100.6	3.9	105.6	90.0
130-135	103.0	2.9	105.9	93.6
135-140	102.0	5.9	107.7	83.0
140-145	103.7	3.8	106.9	90.8
145-150	104.2	1.9	107.2	99.1
150-155	103.6	3.7	107.4	95.3
155-160	106.1	1.0	107.4	103.4
160-165	104.3	1.7	106.9	100.1
165-170	103.4	4.0	106.9	90.8
170-175	104.9	2.7	107.7	94.6
175-180	104.7	1.8	106.9	98.3
180-185	104.0	2.8	106.9	95.1
185-190	105.3	2.0	107.4	96.3
190-195	105.9	1.6	107.7	101.1
195-200	105.0	2.8	107.2	92.3
200-205	105.9	1.8	107.2	98.1
205-210	106.2	0.8	107.7	103.6
210-215	105.5	1.7	106.9	100.1
215-220	105.7	1.0	107.4	102.6
220-225	103.7	2.6	106.4	96.1
225-230	105.2	3.6	107.7	89.0
230-235	106.0	1.2	107.9	104.1
235-240	104.9	3.0	107.7	93.3
240-245	101.1	8.1	107.7	77.4
245-250	100.2	8.9	108.7	72.6
250-255	107.2	0.8	108.7	105.9
255-260	105.6	1.9	107.7	99.1
260-265	106.8	0.6	107.7	105.6
265-270	106.2	1.2	107.7	102.1
270-275	106.0	0.8	107.2	104.1
275-280	104.8	2.9	107.9	96.3
280-285	104.3	2.8	107.7	96.6
285-290	105.7	3.2	107.9	92.3
290-295	106.7	0.7	107.9	105.4
295-300	106.0	0.9	107.7	104.4
300-302	106.6	1.4	108.2	102.9
FOR THIS RUN:	103.8	3.9	108.7	72.6

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

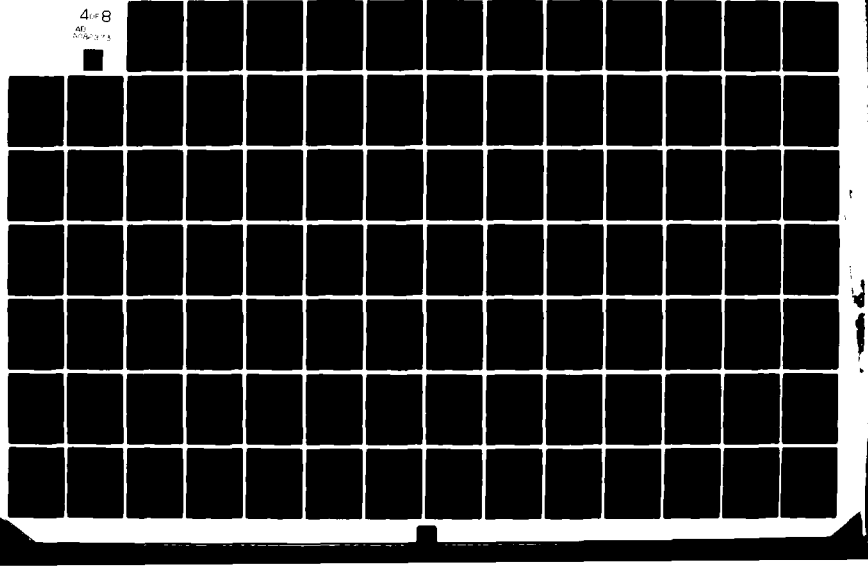
DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	43.8	0.4	44.6	43.2
5- 10	45.3	0.5	46.1	44.1
10- 15	44.4	0.7	45.3	43.4
15- 20	45.2	0.2	45.6	44.7
20- 25	45.3	0.2	45.6	44.8
25- 30	44.5	0.7	45.8	43.7
30- 35	44.8	0.7	45.9	43.6
35- 40	44.5	0.4	45.3	44.0
40- 45	44.3	0.3	44.9	43.9
45- 50	44.6	0.5	45.3	43.5
50- 55	44.0	0.6	45.2	43.0
55- 60	44.5	0.6	45.3	43.5
60- 65	43.7	0.6	44.8	43.0
65- 70	45.0	0.4	45.6	44.3
70- 75	45.1	0.2	45.5	44.7
75- 80	44.1	0.4	44.9	43.3
80- 85	43.9	0.9	45.1	42.4
85- 90	44.1	0.6	45.5	43.3
90- 95	43.3	0.7	44.5	42.3
95-100	44.6	0.4	45.4	43.9
100-105	43.8	0.8	45.4	42.9
105-110	44.5	0.7	45.7	43.5
110-115	44.4	0.8	45.8	43.2
115-120	45.1	0.7	46.0	44.0
120-125	44.2	0.6	45.2	43.2
125-130	43.6	0.6	44.6	42.8
130-135	44.3	0.7	45.3	43.2
135-140	44.7	0.7	45.8	43.4
140-145	44.2	1.1	45.5	42.4
145-150	45.0	0.3	45.6	44.5
150-155	44.8	1.1	46.0	42.9
155-160	45.2	0.7	46.0	43.7
160-165	45.1	0.4	45.9	44.5
165-170	44.9	0.6	45.8	43.8
170-175	45.1	0.5	45.8	44.2
175-180	45.0	0.3	45.7	44.4
180-185	45.0	0.3	45.5	44.5
185-190	45.4	0.3	46.0	44.7
190-195	45.6	0.2	46.0	45.2
195-200	45.5	0.3	46.0	45.0
200-205	45.7	0.1	46.0	45.4
205-210	45.7	0.1	46.0	45.5
210-215	45.6	0.2	45.9	45.3
215-220	45.5	0.2	45.9	45.0
220-225	44.9	0.5	45.4	44.1
225-230	45.3	0.4	45.8	44.6
230-235	45.3	0.4	45.9	44.5
235-240	45.3	0.4	46.0	44.4
240-245	44.3	1.7	46.1	41.4
245-250	42.6	1.6	45.6	40.7
250-255	45.9	0.1	46.2	45.6
255-260	45.5	0.4	46.1	44.8
260-265	45.9	0.1	46.0	45.4
265-270	45.7	0.1	46.0	45.3
270-275	45.6	0.2	46.0	45.1
275-280	44.8	0.6	45.7	43.8
280-285	45.2	0.5	46.0	44.3
285-290	45.4	0.4	46.2	44.7
290-295	45.7	0.2	46.1	45.4
295-300	45.5	0.3	46.0	45.2
300-302	45.8	0.2	46.1	45.6
FOR THIS RUN:	44.8	0.9	46.2	40.7

AD-A082 373 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUC--ETC(U)
FEB 80 D H DRAZIN MIPR-251100-8-0012
UNCLASSIFIED DTNSRDC-80/024 NL

4 OF 8
AD A082373



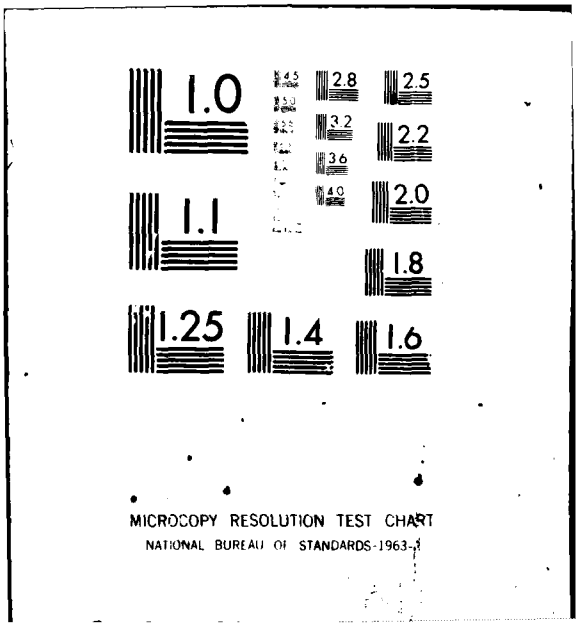

1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	4.4	0.2	4.6	3.9
5- 10	4.7	0.2	4.9	4.1
10- 15	4.6	0.2	4.8	4.3
15- 20	4.7	0.1	4.8	4.5
20- 25	4.7	0.1	4.9	4.3
25- 30	4.6	0.2	4.9	4.2
30- 35	4.6	0.2	4.9	4.1
35- 40	4.6	0.1	4.8	4.2
40- 45	4.5	0.1	4.7	4.3
45- 50	4.5	0.2	4.8	3.7
50- 55	4.5	0.2	4.7	4.1
55- 60	4.6	0.2	4.8	4.2
60- 65	4.4	0.2	4.8	4.0
65- 70	4.7	0.2	4.8	4.1
70- 75	4.7	0.1	4.8	4.3
75- 80	4.5	0.2	4.7	4.0
80- 85	4.4	0.3	4.8	3.9
85- 90	4.5	0.2	4.8	4.2
90- 95	4.4	0.2	4.7	4.0
95-100	4.6	0.2	4.8	4.0
100-105	4.4	0.3	4.8	3.6
105-110	4.6	0.2	4.9	3.9
110-115	4.6	0.2	4.9	3.9
115-120	4.7	0.2	4.9	4.0
120-125	4.5	0.3	4.8	3.8
125-130	4.4	0.2	4.7	4.0
130-135	4.6	0.2	4.8	4.1
135-140	4.6	0.3	4.9	3.6
140-145	4.6	0.3	4.8	3.9
145-150	4.7	0.1	4.9	4.5
150-155	4.6	0.3	4.9	4.1
155-160	4.8	0.1	4.9	4.5
160-165	4.7	0.1	4.9	4.5
165-170	4.6	0.2	4.9	4.0
170-175	4.7	0.1	4.9	4.3
175-180	4.7	0.1	4.8	4.4
180-185	4.7	0.1	4.8	4.2
185-190	4.8	0.1	4.9	4.4
190-195	4.8	0.1	4.9	4.6
195-200	4.8	0.1	4.9	4.2
200-205	4.8	0.1	4.9	4.5
205-210	4.9	0.0	4.9	4.7
210-215	4.8	0.1	4.9	4.6
215-220	4.8	0.1	4.9	4.7
220-225	4.7	0.1	4.8	4.3
225-230	4.8	0.2	4.9	4.0
230-235	4.8	0.1	4.9	4.6
235-240	4.8	0.2	4.9	4.3
240-245	4.5	0.5	5.0	3.3
245-250	4.3	0.5	4.9	3.0
250-255	4.9	0.0	5.0	4.9
255-260	4.8	0.1	4.9	4.5
260-265	4.9	0.0	4.9	4.8
265-270	4.9	0.1	4.9	4.6
270-275	4.8	0.1	4.9	4.7
275-280	4.7	0.2	4.9	4.3
280-285	4.7	0.2	4.9	4.4
285-290	4.8	0.2	4.9	4.2
290-295	4.9	0.0	5.0	4.8
295-300	4.8	0.1	4.9	4.7
300-302	4.9	0.1	5.0	4.7
FOR THIS RUN:	4.7	0.2	5.0	3.0

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	22	0.2	23	22
5- 10	22	0.1	23	22
10- 15	22	0.1	23	22
15- 20	22	0.1	23	22
20- 25	22	0.1	23	22
25- 30	22	0.1	23	22
30- 35	23	0.4	24	22
35- 40	23	0.1	23	23
40- 45	23	0.1	23	23
45- 50	23	0.1	23	23
50- 55	23	0.1	23	23
55- 60	23	0.1	23	23
60- 65	23	0.1	23	23
65- 70	23	0.1	23	23
70- 75	23	0.1	23	23
75- 80	23	0.1	23	23
80- 85	23	0.1	24	23
85- 90	23	0.1	24	23
90- 95	23	0.2	24	23
95-100	24	0.1	24	23
100-105	24	0.1	24	23
105-110	24	0.1	24	24
110-115	24	0.1	24	24
115-120	24	0.1	24	24
120-125	24	0.1	24	24
125-130	24	0.2	25	24
130-135	24	0.1	24	24
135-140	24	0.1	24	24
140-145	24	0.2	25	24
145-150	24	0.1	25	24
150-155	25	0.3	26	24
155-160	25	0.4	27	24
160-165	25	0.1	25	25
165-170	25	0.3	27	25
170-175	25	0.1	25	25
175-180	25	0.1	25	25
180-185	25	0.2	26	24
185-190	25	0.1	25	25
190-195	25	0.2	26	25
195-200	25	0.1	26	25
200-205	26	0.3	27	25
205-210	26	0.1	26	25
210-215	26	0.2	26	25
215-220	26	0.1	26	26
220-225	26	0.1	26	26
225-230	26	0.1	26	26
230-235	26	0.2	26	26
235-240	26	0.3	28	26
240-245	26	0.1	27	26
245-250	26	0.1	27	26
250-255	27	0.1	27	26
255-260	27	0.2	28	26
260-265	27	0.1	27	27
265-270	27	0.4	29	27
270-275	27	0.1	27	27
275-280	27	0.1	27	27
280-285	27	0.4	29	27
285-290	27	0.1	27	27
290-295	27	0.1	28	27
295-300	27	0.1	28	27
300-302	27	0.1	28	27
FOR THIS RUN:	25	1.6	29	22

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.8 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	937	6.5	946	925
5- 10	896	19.6	929	868
10- 15	917	11.0	935	892
15- 20	931	4.1	937	918
20- 25	910	5.7	920	898
25- 30	936	11.2	947	907
30- 35	919	13.2	942	900
35- 40	931	8.6	947	921
40- 45	936	4.0	941	923
45- 50	919	4.8	932	911
50- 55	928	8.3	942	915
55- 60	926	3.8	933	919
60- 65	938	8.0	946	919
65- 70	906	9.5	921	889
70- 75	932	8.7	942	917
75- 80	938	8.1	947	918
80- 85	920	7.8	930	907
85- 90	935	5.9	943	921
90- 95	934	7.3	940	917
95-100	917	7.4	929	905
100-105	936	12.3	947	911
105-110	918	12.3	947	905
110-115	908	14.9	931	888
115-120	930	5.5	940	922
120-125	939	6.1	947	929
125-130	929	4.7	935	920
130-135	930	4.5	937	920
135-140	898	22.0	928	864
140-145	902	8.4	917	879
145-150	934	9.8	947	919
150-155	909	16.1	943	883
155-160	912	11.2	922	889
160-165	925	19.8	947	892
165-170	931	11.8	947	917
170-175	910	4.2	920	903
175-180	916	9.5	930	898
180-185	938	7.9	947	920
185-190	887	12.9	922	870
190-195	891	9.0	906	877
195-200	914	11.0	932	890
200-205	909	7.6	922	894
205-210	896	8.4	908	882
210-215	901	12.0	919	881
215-220	923	6.6	932	911
220-225	937	5.4	946	926
225-230	908	18.3	937	881
230-235	871	18.5	899	840
235-240	839	9.9	856	816
240-245	759	19.2	805	734
245-250	840	38.0	890	777
250-255	919	13.8	936	891
255-260	912	11.4	928	890
260-265	921	3.8	928	914
265-270	915	7.5	927	902
270-275	894	15.4	912	860
275-280	878	6.2	887	866
280-285	895	13.4	923	878
285-290	914	11.9	929	894
290-295	912	7.0	924	898
295-300	920	11.1	934	896
300-302	918	5.1	928	911
FOR THIS RUN:	912	31.2	947	734

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1149	16.0	1203	1130
5- 10	1178	31.4	1247	1130
10- 15	1171	22.5	1246	1139
15- 20	1167	18.5	1210	1138
20- 25	1172	18.4	1231	1139
25- 30	1163	22.0	1225	1135
30- 35	1157	19.3	1197	1129
35- 40	1159	14.4	1191	1130
40- 45	1156	14.1	1185	1134
45- 50	1160	22.4	1210	1127
50- 55	1159	20.2	1210	1132
55- 60	1159	13.1	1185	1131
60- 65	1147	14.0	1191	1127
65- 70	1170	23.0	1215	1136
70- 75	1160	12.6	1186	1139
75- 80	1152	14.0	1184	1128
80- 85	1157	18.8	1200	1126
85- 90	1153	12.2	1179	1130
90- 95	1150	13.1	1185	1129
95-100	1164	17.9	1201	1132
100-105	1148	13.1	1179	1126
105-110	1172	16.6	1202	1136
110-115	1171	25.3	1227	1130
115-120	1167	18.9	1197	1131
120-125	1152	15.7	1187	1124
125-130	1149	13.4	1184	1126
130-135	1153	13.9	1178	1129
135-140	1173	29.5	1238	1119
140-145	1174	24.1	1227	1127
145-150	1163	18.8	1204	1137
150-155	1175	30.3	1266	1141
155-160	1186	20.6	1252	1152
160-165	1160	14.4	1195	1143
165-170	1162	15.0	1197	1141
170-175	1172	19.7	1210	1124
175-180	1173	18.5	1210	1142
180-185	1159	19.1	1207	1133
185-190	1186	27.4	1234	1136
190-195	1183	25.5	1233	1136
195-200	1176	24.7	1234	1138
200-205	1188	21.2	1224	1139
205-210	1186	22.0	1232	1141
210-215	1170	17.6	1207	1137
215-220	1178	20.5	1218	1141
220-225	1159	17.6	1200	1131
225-230	1178	32.2	1291	1130
230-235	1204	30.6	1256	1134
235-240	1192	32.9	1271	1115
240-245	1198	42.0	1268	1126
245-250	1158	27.2	1226	1100
250-255	1177	19.0	1235	1151
255-260	1176	27.0	1259	1138
260-265	1174	14.5	1209	1146
265-270	1181	21.9	1228	1145
270-275	1193	29.5	1246	1139
275-280	1182	27.1	1247	1139
280-285	1170	25.1	1223	1130
285-290	1183	22.2	1228	1132
290-295	1185	21.2	1241	1153
295-300	1172	17.0	1210	1144
300-302	1181	24.0	1225	1144
FOR THIS RUN:	1169	25.5	1291	1100

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1077	15.0	1121	1047
5- 10	1056	30.1	1102	994
10- 15	1074	20.4	1130	1034
15- 20	1086	14.6	1113	1061
20- 25	1066	16.6	1117	1035
25- 30	1089	14.0	1118	1056
30- 35	1063	17.4	1101	1027
35- 40	1078	13.2	1118	1046
40- 45	1082	10.4	1104	1063
45- 50	1066	17.9	1103	1036
50- 55	1076	15.0	1108	1045
55- 60	1073	10.2	1097	1049
60- 65	1076	12.6	1106	1045
65- 70	1060	17.9	1094	1023
70- 75	1081	13.4	1108	1045
75- 80	1081	10.5	1101	1061
80- 85	1065	19.4	1096	1025
85- 90	1078	10.2	1099	1058
90- 95	1074	9.5	1098	1057
95-100	1068	13.5	1101	1044
100-105	1075	12.0	1092	1045
105-110	1075	17.9	1110	1038
110-115	1063	22.9	1098	1018
115-120	1085	14.6	1114	1055
120-125	1082	15.2	1110	1051
125-130	1067	11.8	1091	1049
130-135	1072	12.4	1096	1048
135-140	1053	29.9	1097	994
140-145	1059	21.2	1102	1000
145-150	1086	13.5	1116	1068
150-155	1069	31.3	1140	1020
155-160	1081	15.5	1129	1048
160-165	1073	21.5	1118	1038
165-170	1082	18.7	1118	1053
170-175	1066	15.6	1103	1032
175-180	1074	15.6	1097	1047
180-185	1087	16.2	1130	1057
185-190	1051	28.2	1115	1002
190-195	1054	21.6	1101	1012
195-200	1075	22.9	1123	1038
200-205	1081	16.5	1115	1050
205-210	1063	19.4	1099	1023
210-215	1054	19.1	1084	1011
215-220	1087	16.1	1119	1056
220-225	1085	14.4	1123	1062
225-230	1070	30.4	1152	1018
230-235	1049	29.0	1101	1003
235-240	1000	23.2	1040	946
240-245	910	47.9	1015	845
245-250	973	57.0	1073	857
250-255	1082	23.5	1130	1042
255-260	1072	24.0	1120	1029
260-265	1082	11.4	1108	1058
265-270	1080	17.4	1115	1051
270-275	1067	19.9	1109	1029
275-280	1038	23.6	1091	995
280-285	1048	20.4	1089	1008
285-290	1081	23.1	1110	1027
290-295	1080	16.6	1118	1049
295-300	1078	16.7	1116	1042
300-302	1084	19.4	1122	1054
FOR THIS RUN:	1066	34.8	1152	845

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	116.3	4.8	122.4	99.5
5- 10	102.4	10.1	119.9	75.9
10- 15	113.3	8.1	124.4	89.6
15- 20	115.0	6.4	127.7	99.8
20- 25	110.4	5.7	118.1	90.1
25- 30	116.1	8.5	124.7	92.4
30- 35	112.8	7.2	122.7	95.2
35- 40	114.9	5.6	123.7	101.1
40- 45	114.5	4.6	122.4	101.1
45- 50	110.7	7.2	120.4	92.2
50- 55	114.9	6.6	124.2	95.2
55- 60	113.8	4.0	121.9	104.9
60- 65	117.6	4.2	122.4	106.1
65- 70	107.5	8.5	118.1	84.0
70- 75	118.8	3.8	129.5	110.0
75- 80	116.2	4.7	121.6	106.1
80- 85	113.0	5.3	121.6	98.3
85- 90	116.7	3.2	122.4	108.7
90- 95	114.3	4.1	119.9	100.3
95-100	109.7	5.5	118.1	95.2
100-105	118.0	5.2	125.2	104.4
105-110	108.3	6.2	119.9	97.0
110-115	110.8	8.1	121.6	90.4
115-120	115.2	5.1	123.2	104.1
120-125	116.3	4.1	121.6	105.6
125-130	114.6	3.1	118.9	106.9
130-135	115.3	3.6	122.2	105.9
135-140	106.3	8.4	123.7	91.4
140-145	111.2	7.2	121.1	89.1
145-150	118.4	5.2	126.2	105.1
150-155	108.2	10.2	121.1	73.4
155-160	109.3	7.7	122.2	91.7
160-165	117.1	6.9	128.3	101.6
165-170	114.2	5.6	121.6	101.6
170-175	110.4	6.0	120.4	92.2
175-180	113.3	6.3	121.6	101.1
180-185	118.1	7.2	126.2	97.8
185-190	101.4	9.2	114.0	77.7
190-195	107.3	7.8	123.2	87.8
195-200	113.1	7.5	123.2	97.5
200-205	108.1	6.6	125.2	97.8
205-210	107.5	6.0	121.1	94.5
210-215	112.5	5.6	122.7	100.0
215-220	114.2	6.7	127.7	102.1
220-225	117.5	5.2	124.7	102.8
225-230	105.7	12.0	117.8	60.4
230-235	97.8	9.9	116.6	76.7
235-240	95.0	7.0	112.8	77.9
240-245	80.7	6.9	97.0	71.1
245-250	107.1	7.7	116.6	87.1
250-255	117.6	7.0	127.5	95.2
255-260	111.9	7.8	121.6	92.7
260-265	114.5	4.5	124.2	105.6
265-270	111.5	6.5	121.9	97.5
270-275	105.1	9.5	121.9	83.5
275-280	104.8	6.4	115.8	91.2
280-285	111.9	6.9	123.9	99.8
285-290	112.3	8.2	122.2	91.7
290-295	111.4	7.6	121.6	92.7
295-300	114.5	6.4	124.2	99.8
300-302	111.7	6.4	121.1	99.3
FOR THIS RUN:	111.3	9.3	129.5	60.4

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	20.3	1.4	21.6	14.1
5- 10	18.7	1.0	20.7	16.7
10- 15	19.1	3.1	21.3	5.0
15- 20	20.3	0.7	21.3	18.0
20- 25	19.2	1.1	20.6	15.5
25- 30	17.3	12.6	22.0	-43.2
30- 35	19.5	0.9	21.1	17.9
35- 40	19.9	2.0	21.8	11.1
40- 45	20.5	0.6	21.3	19.2
45- 50	19.7	0.6	20.7	18.5
50- 55	19.9	1.2	22.6	16.6
55- 60	19.6	1.6	20.9	13.9
60- 65	20.2	1.6	21.6	14.1
65- 70	18.9	1.5	21.9	13.6
70- 75	18.6	7.1	21.6	-14.8
75- 80	17.7	12.6	21.8	-44.0
80- 85	19.3	2.1	20.8	10.0
85- 90	20.2	1.6	21.5	13.0
90- 95	20.4	1.5	26.3	17.5
95-100	19.2	1.5	21.3	14.3
100-105	19.8	3.6	22.0	3.2
105-110	19.6	0.9	21.9	18.1
110-115	16.8	12.0	21.2	-41.5
115-120	21.0	5.7	47.1	11.4
120-125	20.6	0.8	21.9	18.7
125-130	18.9	4.2	21.0	-0.7
130-135	20.2	0.6	21.0	18.9
135-140	15.6	9.7	20.5	-24.0
140-145	18.6	3.1	20.4	4.0
145-150	19.6	3.7	21.8	2.5
150-155	19.4	0.9	21.7	17.7
155-160	18.4	5.6	25.2	-4.6
160-165	19.8	1.5	22.0	16.2
165-170	20.9	2.7	32.9	18.4
170-175	19.1	1.7	20.2	11.1
175-180	16.6	14.9	47.8	-38.9
180-185	20.3	1.2	21.8	16.0
185-190	17.4	4.7	20.4	-5.4
190-195	19.1	1.9	27.4	17.1
195-200	20.4	3.1	35.1	17.9
200-205	18.3	3.6	20.7	4.8
205-210	18.4	1.6	20.0	11.8
210-215	18.0	4.8	20.8	-3.9
215-220	20.0	0.9	21.1	17.1
220-225	20.2	1.3	21.3	15.0
225-230	19.8	7.4	50.7	0.2
230-235	16.6	15.8	50.7	-54.0
235-240	16.7	2.7	26.6	10.1
240-245	14.3	1.5	16.0	9.1
245-250	17.5	1.7	19.9	14.7
250-255	20.0	1.5	21.7	14.2
255-260	19.4	1.4	21.1	14.1
260-265	19.9	1.0	20.9	16.1
265-270	19.8	0.6	21.1	18.6
270-275	18.9	1.2	22.1	15.4
275-280	15.7	10.7	19.3	-36.1
280-285	19.0	0.7	20.8	17.8
285-290	18.9	2.9	22.5	7.7
290-295	19.3	0.9	20.9	16.7
295-300	18.2	7.4	22.5	-17.1
300-302	19.5	1.9	20.7	13.8
FOR THIS RUN:	19.0	5.3	50.7	-54.0

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.4	0.2	2.6	1.6
5- 10	1.9	0.3	2.4	1.3
10- 15	2.2	0.4	2.6	0.6
15- 20	2.3	0.2	2.6	2.0
20- 25	2.1	0.2	2.4	1.6
25- 30	2.1	1.3	2.7	-4.0
30- 35	2.2	0.2	2.5	1.8
35- 40	2.3	0.3	2.7	1.4
40- 45	2.3	0.1	2.5	2.1
45- 50	2.2	0.2	2.5	1.8
50- 55	2.3	0.2	2.7	1.8
55- 60	2.2	0.2	2.5	1.6
60- 65	2.4	0.2	2.6	1.7
65- 70	2.0	0.2	2.5	1.6
70- 75	2.2	0.8	2.8	-1.7
75- 80	2.1	1.5	2.7	-5.0
80- 85	2.2	0.3	2.5	1.2
85- 90	2.4	0.2	2.6	1.5
90- 95	2.3	0.2	3.2	1.9
95-100	2.1	0.2	2.4	1.7
100-105	2.3	0.4	2.6	0.4
105-110	2.1	0.2	2.6	1.9
110-115	1.8	1.4	2.5	-4.9
115-120	2.4	0.7	5.5	1.4
120-125	2.4	0.1	2.6	2.1
125-130	2.2	0.5	2.5	-0.1
130-135	2.3	0.1	2.5	2.2
135-140	1.7	1.0	2.5	-2.3
140-145	2.1	0.4	2.4	0.5
145-150	2.3	0.5	2.7	0.3
150-155	2.1	0.2	2.6	1.4
155-160	2.0	0.6	2.5	-0.4
160-165	2.3	0.3	2.7	1.6
165-170	2.4	0.4	4.0	2.0
170-175	2.1	0.2	2.4	1.3
175-180	1.9	1.7	5.0	-4.5
180-185	2.4	0.2	2.7	1.9
185-190	1.8	0.5	2.3	-0.6
190-195	2.1	0.3	3.1	1.7
195-200	2.3	0.4	4.3	1.9
200-205	2.0	0.4	2.5	0.5
205-210	2.0	0.2	2.3	1.3
210-215	2.0	0.6	2.5	-0.5
215-220	2.3	0.2	2.7	1.8
220-225	2.4	0.2	2.6	1.8
225-230	2.1	0.8	4.9	0.0
230-235	1.6	1.5	4.6	-5.2
235-240	1.6	0.3	2.6	1.0
240-245	1.2	0.2	1.5	0.7
245-250	1.9	0.3	2.2	1.3
250-255	2.4	0.2	2.7	1.8
255-260	2.2	0.2	2.5	1.5
260-265	2.3	0.1	2.5	1.9
265-270	2.2	0.2	2.5	1.9
270-275	2.0	0.3	2.3	1.3
275-280	1.6	1.1	2.2	-3.7
280-285	2.1	0.2	2.5	1.9
285-290	2.1	0.4	2.6	0.9
290-295	2.2	0.2	2.5	1.7
295-300	2.1	0.8	2.8	-1.8
300-302	2.2	0.2	2.5	1.6
FOR THIS RUN:	2.1	0.6	5.5	-5.2

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	874.0	7.1	882.4	862.4
5- 10	875.4	6.7	885.4	861.4
10- 15	874.0	5.4	884.4	859.4
15- 20	871.8	6.9	878.4	858.4
20- 25	874.5	6.5	881.4	858.4
25- 30	873.2	5.7	881.4	857.4
30- 35	875.3	7.2	884.4	859.4
35- 40	874.2	6.3	882.4	856.4
40- 45	874.7	5.4	880.4	859.4
45- 50	874.6	7.1	884.4	859.4
50- 55	874.2	5.6	880.4	858.4
55- 60	874.5	6.4	882.4	860.4
60- 65	871.7	7.1	881.4	858.4
65- 70	877.0	5.1	882.4	861.4
70- 75	871.4	7.1	881.4	857.4
75- 80	872.5	6.3	881.4	859.4
80- 85	876.4	5.5	883.4	863.4
85- 90	872.3	6.7	881.4	859.4
90- 95	873.6	6.4	881.4	859.4
95-100	876.1	5.7	882.4	861.4
100-105	872.4	7.2	882.4	857.4
105-110	874.9	6.7	883.4	857.4
110-115	874.9	7.5	885.4	858.4
115-120	871.2	6.7	881.4	855.4
120-125	874.9	5.6	881.4	859.4
125-130	874.8	7.0	882.4	860.4
130-135	872.8	6.1	880.4	862.4
135-140	877.0	5.9	886.4	861.4
140-145	872.6	7.5	885.4	857.4
145-150	872.8	5.7	879.4	856.4
150-155	876.5	6.8	869.4	858.4
155-160	871.0	6.3	879.4	859.4
160-165	875.3	6.4	885.4	861.4
165-170	874.6	6.6	883.4	858.4
170-175	874.0	6.6	881.4	860.4
175-180	875.3	5.8	882.4	860.4
180-185	873.3	6.5	880.4	856.4
185-190	877.2	7.0	885.4	861.4
190-195	874.7	6.7	882.4	858.4
195-200	870.4	6.9	881.4	855.4
200-205	873.9	5.3	881.4	859.4
205-210	875.9	5.8	882.4	862.4
210-215	874.5	7.2	885.4	859.4
215-220	873.4	5.4	880.4	859.4
220-225	875.0	6.0	881.4	861.4
225-230	875.1	7.9	887.4	860.4
230-235	877.1	6.5	887.4	861.4
235-240	878.4	5.9	886.4	863.4
240-245	883.2	5.7	894.4	870.4
245-250	868.9	8.9	885.4	853.4
250-255	867.0	5.6	872.4	852.4
255-260	874.6	7.2	884.4	855.4
260-265	871.6	6.9	880.4	860.4
265-270	875.2	5.5	882.4	859.4
270-275	875.2	8.0	884.4	858.4
275-280	877.2	5.9	885.4	860.4
280-285	874.3	6.8	881.4	861.4
285-290	870.9	7.0	882.4	855.4
290-295	874.1	5.4	880.4	857.4
295-300	874.7	7.2	883.4	859.4
300-302	871.3	6.4	879.4	857.4
FOR THIS RUN:	874.2	6.9	894.4	852.4

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	22	0.1	22	22
5- 10	22	0.1	23	22
10- 15	23	0.1	23	22
15- 20	23	0.1	23	22
20- 25	23	0.1	23	22
25- 30	23	0.1	23	22
30- 35	23	0.6	26	22
35- 40	23	0.6	26	23
40- 45	23	0.1	23	22
45- 50	23	0.3	24	23
50- 55	23	0.2	24	23
55- 60	23	0.1	23	23
60- 65	23	0.1	23	23
65- 70	23	0.3	25	23
70- 75	23	1.2	29	23
75- 80	23	0.1	23	23
80- 85	23	0.1	23	23
85- 90	23	0.1	24	23
90- 95	23	0.2	24	23
95-100	24	0.1	24	23
100-105	24	0.1	24	23
105-110	24	0.1	24	24
110-115	24	1.5	31	24
115-120	24	0.1	24	24
120-125	24	0.6	27	24
125-130	24	0.1	25	24
130-135	24	0.1	24	24
135-140	24	0.1	24	24
140-145	24	0.6	27	24
145-150	24	0.1	24	24
150-155	24	0.1	24	24
155-160	24	0.1	25	24
160-165	24	0.1	25	24
165-170	25	0.1	25	24
170-175	25	0.1	25	24
175-180	25	0.1	25	25
180-185	25	0.1	25	25
185-190	25	0.1	25	25
190-195	25	0.1	25	24
195-200	25	0.1	25	25
200-205	25	0.1	25	25
205-210	25	0.1	25	25
210-215	25	0.9	30	25
215-220	25	0.1	26	25
220-225	25	0.2	26	25
225-230	25	0.1	26	25
230-235	26	0.2	26	26
235-240	26	0.1	26	26
240-245	26	0.1	26	26
245-250	26	0.1	26	26
250-255	26	0.1	26	26
255-260	26	0.2	26	25
260-265	26	0.1	26	26
265-270	26	0.5	29	26
270-275	27	1.6	34	26
275-280	26	0.1	26	26
280-285	26	0.5	29	26
285-290	26	0.2	27	26
290-295	27	0.1	27	26
295-300	27	0.1	27	26
300-302	27	0.1	27	27
FOR THIS RUN:	24	1.3	34	22

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1163	15.0	1210	1146
5- 10	1190	30.4	1260	1143
10- 15	1186	24.6	1266	1144
15- 20	1179	18.2	1224	1152
20- 25	1186	17.5	1243	1152
25- 30	1177	19.8	1226	1147
30- 35	1170	18.7	1205	1139
35- 40	1171	14.6	1204	1144
40- 45	1169	12.7	1197	1149
45- 50	1173	23.8	1227	1139
50- 55	1172	19.4	1215	1138
55- 60	1172	14.2	1197	1147
60- 65	1162	14.7	1210	1146
65- 70	1181	22.2	1227	1144
70- 75	1174	13.3	1205	1151
75- 80	1165	13.6	1195	1140
80- 85	1170	18.7	1212	1142
85- 90	1167	13.1	1195	1143
90- 95	1164	14.9	1199	1143
95-100	1176	20.4	1220	1145
100-105	1162	12.9	1190	1134
105-110	1183	17.2	1213	1147
110-115	1185	25.6	1240	1142
115-120	1180	20.0	1213	1142
120-125	1165	16.5	1200	1137
125-130	1162	13.6	1198	1140
130-135	1167	12.8	1193	1147
135-140	1184	31.9	1250	1131
140-145	1189	25.7	1246	1137
145-150	1176	20.7	1226	1144
150-155	1185	30.7	1271	1146
155-160	1201	18.4	1259	1165
160-165	1174	15.0	1205	1153
165-170	1172	16.2	1211	1149
170-175	1187	19.2	1223	1139
175-180	1185	19.2	1227	1150
180-185	1173	19.8	1225	1147
185-190	1197	27.6	1241	1147
190-195	1196	25.8	1248	1150
195-200	1191	27.3	1250	1143
200-205	1201	20.9	1234	1148
205-210	1199	23.2	1250	1158
210-215	1184	17.7	1227	1143
215-220	1191	20.5	1231	1155
220-225	1171	16.8	1210	1142
225-230	1191	32.3	1303	1139
230-235	1217	29.2	1270	1152
235-240	1205	31.3	1276	1133
240-245	1210	42.4	1283	1134
245-250	1176	27.7	1249	1124
250-255	1189	19.1	1244	1162
255-260	1187	25.6	1264	1151
260-265	1188	14.7	1233	1163
265-270	1194	22.3	1244	1151
270-275	1207	32.4	1268	1150
275-280	1195	27.6	1264	1151
280-285	1183	24.2	1240	1144
285-290	1195	24.8	1239	1137
290-295	1198	20.1	1250	1167
295-300	1185	16.4	1221	1155
300-302	1193	24.8	1238	1152
FOR THIS RUN:	1183	25.6	1303	1124

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	121.0	4.2	126.0	108.1
5- 10	107.2	9.9	123.7	80.6
10- 15	117.4	7.8	131.4	94.2
15- 20	119.1	6.0	128.8	104.8
20- 25	115.0	5.4	122.0	96.8
25- 30	120.2	8.2	128.8	96.8
30- 35	117.8	7.2	127.0	102.3
35- 40	119.0	5.3	125.5	103.8
40- 45	119.1	4.3	124.7	107.6
45- 50	115.4	6.5	124.2	99.8
50- 55	118.5	6.2	127.8	99.0
55- 60	118.6	4.5	126.2	108.1
60- 65	121.8	4.2	127.5	110.6
65- 70	112.3	8.0	122.7	89.5
70- 75	122.7	4.2	133.2	112.1
75- 80	120.1	4.1	125.2	113.1
80- 85	117.5	5.6	125.5	103.1
85- 90	121.0	3.6	127.3	112.6
90- 95	118.5	4.0	123.5	105.6
95-100	114.7	5.3	123.7	103.3
100-105	122.7	4.6	127 5	110.1
105-110	112.8	6.1	124.7	102.8
110-115	115.6	7.7	126.2	94.2
115-120	119.4	5.2	125.2	107.6
120-125	120.3	4.3	126.2	108.6
125-130	119.4	3.0	125.0	111.9
130-135	119.5	3.5	125.0	110.9
135-140	111.1	7.9	126.0	96.0
140-145	115.6	6.5	124.0	95.8
145-150	122.0	5.2	130.1	110.6
150-155	113.2	10.1	126.2	80.1
155-160	113.4	7.3	125.5	96.8
160-165	121.6	6.1	130.6	107.6
165-170	118.7	4.9	125.0	105.6
170-175	115.3	6.1	125.5	96.8
175-180	117.7	6.4	126.2	104.6
180-185	122.0	7.5	131.6	101.6
185-190	106.7	8.9	119.9	83.9
190-195	111.7	7.4	126.8	94.2
195-200	117.3	7.0	127.3	103.3
200-205	112.3	6.5	128.8	101.8
205-210	111.9	5.7	123.7	99.0
210-215	116.9	5.3	125.0	105.8
215-220	117.8	6.9	132.1	106.1
220-225	121.9	5.3	128.0	105.6
225-230	110.3	11.9	124.5	67.0
230-235	102.8	9.7	121.5	80.6
235-240	100.1	6.8	116.4	85.9
240-245	85.7	6.8	101.8	75.8
245-250	110.5	7.0	119.4	93.2
250-255	120.4	6.8	128.5	97.3
255-260	116.7	8.1	129.1	95.8
260-265	118.6	4.9	127.0	108.9
265-270	116.1	6.6	126.8	102.6
270-275	110.0	9.3	124.0	88.7
275-280	109.5	6.2	119.4	93.0
280-285	116.6	6.6	129.1	106.1
285-290	116.6	8.0	126.5	97.0
290-295	116.1	7.4	125.2	96.8
295-300	119.3	6.3	130.1	106.3
300-302	116.1	5.8	123.7	105.8
FOR THIS RUN:	115.7	9.0	133.2	67.0

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	7.1	34.6	22.8	-106.3
5- 10	13.2	25.4	21.5	-106.3
10- 15	8.4	29.9	22.1	-106.3
15- 20	11.6	24.4	22.3	-81.2
20- 25	20.0	1.7	21.5	12.9
25- 30	19.3	6.3	23.2	-3.6
30- 35	17.9	13.6	22.6	-48.5
35- 40	9.5	34.9	22.9	-106.3
40- 45	15.7	16.1	22.6	-41.0
45- 50	16.6	19.8	21.9	-80.2
50- 55	17.5	17.5	22.8	-68.0
55- 60	20.2	3.3	22.6	5.0
60- 65	9.1	34.0	22.8	-106.3
65- 70	17.4	7.9	20.9	-15.4
70- 75	19.6	5.5	23.7	-4.6
75- 80	19.8	5.5	22.9	-4.1
80- 85	20.5	1.4	22.5	15.4
85- 90	17.7	14.0	23.0	-47.1
90- 95	10.9	34.6	22.2	-106.3
95-100	14.9	15.7	21.9	-47.1
100-105	10.6	29.0	23.0	-106.3
105-110	13.6	26.3	22.3	-106.3
110-115	18.4	6.1	22.3	-8.1
115-120	11.1	25.5	22.6	-78.8
120-125	8.8	35.7	22.6	-106.3
125-130	13.4	25.9	22.2	-96.0
130-135	16.4	23.3	22.3	-97.7
135-140	18.8	2.9	22.1	7.7
140-145	10.6	23.2	21.8	-67.6
145-150	15.5	20.0	24.1	-78.9
150-155	20.1	1.0	22.2	18.2
155-160	15.8	15.9	22.9	-57.9
160-165	20.5	2.4	23.6	11.3
165-170	13.1	20.5	23.0	-50.4
170-175	14.7	24.8	21.3	-106.3
175-180	19.5	3.4	22.3	9.2
180-185	12.6	28.6	22.6	-91.8
185-190	9.8	27.7	20.5	-106.3
190-195	15.3	20.9	21.2	-86.9
195-200	15.1	24.9	22.9	-106.3
200-205	9.2	29.8	21.4	-97.1
205-210	19.5	1.5	21.2	13.6
210-215	18.1	6.2	21.8	-5.0
215-220	21.4	1.9	30.1	19.7
220-225	16.4	16.6	22.6	-53.5
225-230	10.2	28.6	22.2	-106.3
230-235	15.8	9.5	20.5	-27.5
235-240	8.6	29.9	18.8	-106.3
240-245	15.3	2.1	17.3	6.5
245-250	15.4	15.8	21.7	-61.5
250-255	15.8	15.1	22.4	-45.8
255-260	15.5	24.9	22.1	-106.3
260-265	10.1	34.4	21.8	-106.3
265-270	4.7	35.5	21.8	-106.3
270-275	15.4	20.3	21.5	-84.0
275-280	3.0	40.5	20.4	-106.3
280-285	18.4	4.7	23.1	2.0
285-290	17.3	7.7	22.1	-11.1
290-295	17.0	16.5	22.3	-63.4
295-300	19.8	3.5	22.7	5.7
300-302	20.7	0.9	22.0	19.0
FOR THIS RUN:	14.8	21.7	30.1	-106.3

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.9	4.2	2.8	-13.1
5- 10	1.5	2.6	2.5	-11.0
10- 15	1.0	3.6	2.9	-13.1
15- 20	1.4	3.0	2.8	-10.0
20- 25	2.3	0.2	2.5	1.5
25- 30	2.3	0.8	2.9	-0.4
30- 35	2.1	1.7	2.8	-6.0
35- 40	1.2	4.0	2.8	-12.3
40- 45	1.9	1.9	2.8	-4.6
45- 50	1.9	2.4	2.6	-9.8
50- 55	2.1	2.1	2.8	-7.9
55- 60	2.4	0.4	2.7	0.6
60- 65	1.1	4.1	2.8	-12.6
65- 70	2.0	0.9	2.5	-1.5
70- 75	2.4	0.7	2.9	-0.5
75- 80	2.4	0.7	2.9	-0.5
80- 85	2.4	0.2	2.8	1.9
85- 90	2.1	1.7	2.8	-5.6
90- 95	1.3	4.1	2.7	-12.8
95-100	1.7	1.8	2.6	-5.5
100-105	1.4	3.4	2.9	-11.7
105-110	1.5	2.9	2.7	-11.7
110-115	2.1	0.7	2.8	-1.0
115-120	1.3	3.0	2.8	-9.6
120-125	1.2	4.1	2.8	-12.4
125-130	1.6	3.1	2.7	-11.5
130-135	2.0	2.8	2.7	-11.7
135-140	2.1	0.4	2.8	0.9
140-145	1.2	2.6	2.7	-7.2
145-150	1.9	2.3	2.9	-8.8
150-155	2.3	0.3	2.7	1.5
155-160	1.8	1.9	2.8	-6.9
160-165	2.5	0.3	3.0	1.5
165-170	1.6	2.4	2.8	-5.6
170-175	1.7	2.7	2.6	-11.6
175-180	2.3	0.4	2.8	1.1
180-185	1.5	3.5	2.9	-11.0
185-190	1.0	3.1	2.3	-12.0
190-195	1.7	2.5	2.5	-10.6
195-200	1.8	2.7	2.8	-11.2
200-205	1.0	3.6	2.7	-12.4
205-210	2.2	0.2	2.4	1.5
210-215	2.1	0.7	2.7	-0.6
215-220	2.5	0.3	3.6	2.2
220-225	2.0	2.0	2.8	-6.4
225-230	1.1	3.3	2.7	-12.3
230-235	1.7	0.9	2.5	-2.5
235-240	0.9	2.9	2.1	-10.6
240-245	1.3	0.2	1.6	0.6
245-250	1.8	1.5	2.5	-5.7
250-255	1.9	1.8	2.8	-5.4
255-260	1.8	2.9	2.7	-12.6
260-265	1.2	4.0	2.8	-12.5
265-270	0.5	4.2	2.6	-13.5
270-275	1.7	2.1	2.5	-8.4
275-280	0.3	4.6	2.4	-12.5
280-285	2.1	0.6	2.9	0.2
285-290	2.0	0.9	2.7	-1.1
290-295	2.0	1.8	2.6	-6.7
295-300	2.4	0.4	2.8	0.7
300-302	2.4	0.2	2.7	2.1
FOR THIS RUN:	1.7	2.5	3.6	-13.5

TABLE 5 (Continued)

RUN NUMBER 1130

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 9.0 knots
4) Flexural strength of ice 13990 lb/sq ft(670 kPa)

DATE: 31 January 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	884.8	5.2	893.4	877.4
5- 10	888.6	4.1	894.4	879.4
10- 15	884.4	5.1	892.4	877.4
15- 20	885.8	4.6	893.4	878.4
20- 25	886.2	3.7	891.4	878.4
25- 30	884.0	4.3	891.4	876.4
30- 35	886.1	5.3	895.4	878.4
35- 40	887.0	4.4	893.4	878.4
40- 45	885.4	5.2	893.4	877.4
45- 50	886.9	5.6	894.4	877.4
50- 55	887.0	6.9	895.4	875.4
55- 60	885.7	5.9	894.4	876.4
60- 65	885.2	4.6	892.4	877.4
65- 70	887.1	4.9	895.4	879.4
70- 75	883.9	4.8	892.4	877.4
75- 80	886.7	5.0	893.4	877.4
80- 85	887.2	4.3	893.4	876.4
85- 90	885.5	4.5	892.4	879.4
90- 95	886.1	4.5	893.4	878.4
95-100	885.4	5.1	896.4	879.4
100-105	885.1	5.6	894.4	877.4
105-110	887.1	3.9	893.4	877.4
110-115	886.5	4.3	891.4	876.4
115-120	886.0	5.1	895.4	878.4
120-125	886.5	4.7	893.4	877.4
125-130	885.2	4.9	893.4	877.4
130-135	884.6	4.9	893.4	877.4
135-140	888.0	4.4	896.4	880.4
140-145	884.9	6.0	895.4	877.4
145-150	885.7	5.3	895.4	879.4
150-155	888.2	6.3	898.4	879.4
155-160	884.4	6.5	895.4	874.4
160-165	884.7	5.3	894.4	876.4
165-170	887.6	4.6	893.4	878.4
170-175	885.4	5.1	892.4	877.4
175-180	885.7	4.4	892.4	877.4
180-185	886.2	5.1	893.4	877.4
185-190	887.4	5.8	898.4	880.4
190-195	885.9	5.7	895.4	875.4
195-200	884.6	5.7	895.4	875.4
200-205	885.2	5.4	893.4	877.4
205-210	888.1	6.6	895.4	875.4
210-215	886.8	5.8	896.4	876.4
215-220	885.6	4.5	891.4	877.4
220-225	886.2	4.8	893.4	878.4
225-230	887.0	5.8	895.4	876.4
230-235	887.2	4.8	893.4	875.4
235-240	886.8	4.8	897.4	878.4
240-245	892.4	7.9	905.4	877.4
245-250	882.4	5.3	892.4	872.4
250-255	885.5	6.1	893.4	875.4
255-260	886.0	4.6	891.4	875.4
260-265	886.6	4.5	893.4	878.4
265-270	885.6	4.7	894.4	877.4
270-275	886.3	4.6	893.4	877.4
275-280	885.6	4.8	895.4	878.4
280-285	885.4	5.4	895.4	877.4
285-290	886.8	5.3	897.4	877.4
290-295	886.8	5.5	893.4	875.4
295-300	885.8	4.7	891.4	875.4
300-302	885.4	4.9	895.4	880.4
FOR THIS RUN:	886.1	5.4	905.4	872.4

TABLE 6 - MACHINERY PARAMETERS, RUN 1320

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	50401	1064.7	52312	48791
5- 10	51145	1062.0	52815	49294
10- 15	50421	891.7	51809	48791
15- 20	50018	996.7	51809	48791
20- 25	50260	887.6	51809	48791
25- 30	49636	1162.1	51809	47785
30- 35	50139	993.0	51809	48288
35- 40	49515	965.8	51306	47785
40- 45	49656	1186.2	51306	47785
45- 50	49354	1267.1	51809	47282
50- 55	50059	1121.3	51809	48288
55- 60	50179	1131.7	52815	48288
60- 65	51326	1097.2	52815	49294
65- 70	50984	1034.6	52312	49294
70- 75	50562	945.0	52312	48791
75- 80	50944	1142.8	52312	48791
80- 85	51226	896.2	52815	49797
85- 90	50421	1008.8	51809	48791
90- 95	49696	1207.2	51809	48288
95-100	50240	1038.9	51809	48288
100-105	50360	978.7	52312	48791
105-110	49817	1244.2	51306	47785
110-115	49294	888.5	50803	48288
115-120	50260	995.1	52312	48791
120-125	50461	1080.9	52312	48288
125-130	51246	978.7	52815	49294
130-135	50763	1063.9	52815	49294
135-140	50179	1149.5	51809	48288
140-145	49898	964.9	51809	48791
145-150	50421	808.3	51809	48791
150-155	49415	1226.2	51306	47785
155-160	50340	1172.5	51809	48288
160-165	49998	1138.2	51306	47785
165-170	49837	1231.4	51306	47785
170-175	49817	1078.6	51809	47785
175-180	49777	1133.5	51306	47785
180-185	49978	1034.6	51809	48288
185-190	48851	925.5	50300	46779
190-195	48811	798.2	50300	47785
195-200	49737	1038.9	51306	47785
200-205	49193	1074.1	51306	47785
205-210	49395	1025.9	51306	47785
210-215	50059	1130.3	52312	48288
215-220	50038	1103.1	52312	48288
220-225	49173	957.3	50803	47282
225-230	49515	996.7	51306	48288
230-235	49857	968.3	51809	47785
235-240	49817	1069.2	51809	48288
240-242	49495	1083.5	51809	48288
FOR THIS RUN:	50047	1210.9	52815	46779

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	68343	1443.7	70935	66161
5- 10	69353	1440.1	71617	66843
10- 15	68370	1209.1	70253	66161
15- 20	67825	1351.5	70253	66161
20- 25	68152	1203.5	70253	66161
25- 30	67306	1575.8	70253	64796
30- 35	67989	1346.6	70253	65479
35- 40	67143	1309.6	69571	64796
40- 45	67334	1608.5	69571	64796
45- 50	66925	1718.2	70253	64114
50- 55	67879	1520.5	70253	65479
55- 60	68043	1534.6	71617	65479
60- 65	69598	1487.8	71617	66843
65- 70	69134	1402.9	70935	66843
70- 75	68561	1281.4	70935	66161
75- 80	69080	1549.6	70935	66161
80- 85	69462	1215.2	71617	67525
85- 90	68370	1368.0	70253	66161
90- 95	67388	1637.0	70253	65479
95-100	68125	1408.7	70253	65479
100-105	68289	1327.1	70935	66161
105-110	67552	1687.1	69571	64796
110-115	66843	1204.8	68889	65479
115-120	68152	1349.3	70935	66161
120-125	68425	1465.7	70935	65479
125-130	69489	1327.1	71617	66843
130-135	68034	1442.6	71617	66843
135-140	68043	1558.7	70253	65479
140-145	67661	1308.4	70253	66161
145-150	68370	1096.1	70253	66161
150-155	67006	1662.7	69571	64796
155-160	68261	1589.9	70253	65479
160-165	67798	1543.3	69571	64796
165-170	67579	1669.8	69571	64796
170-175	67552	1462.6	70253	64796
175-180	67497	1537.1	69571	64796
180-185	67770	1402.9	70253	65479
185-190	66242	1255.0	68207	63432
190-195	66188	1082.4	68207	64796
195-200	67443	1408.7	69571	64796
200-205	66706	1456.5	69571	64796
205-210	66979	1391.2	69571	64796
210-215	67879	1532.7	70935	65479
215-220	67852	1495.8	70935	65479
220-225	66679	1298.2	68889	64114
225-230	67143	1351.5	69571	65479
230-235	67607	1313.0	70253	64796
235-240	67552	1449.8	70253	65479
240-242	67115	1469.2	70253	65479
FOR THIS RUN:	67864	1642.0	71617	63432

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	46135	3539.0	54917	40559
5- 10	47212	5203.6	63890	37867
10- 15	49939	3582.2	54318	42653
15- 20	47977	3471.7	58207	42653
20- 25	48121	2562.6	53421	43850
25- 30	46051	3573.2	52524	37568
30- 35	45872	4567.9	55216	34278
35- 40	49210	4052.8	55814	39662
40- 45	49257	3409.2	57609	40858
45- 50	45752	2946.3	53421	41457
50- 55	46972	3535.1	54318	40260
55- 60	44208	5261.6	57309	34278
60- 65	47164	4691.3	54617	35475
65- 70	48659	4660.6	61198	39662
70- 75	45907	2878.1	54019	42354
75- 80	46446	5175.7	55216	34278
80- 85	47977	4990.7	54917	33979
85- 90	47953	3891.2	55216	41158
90- 95	45752	3989.6	51327	36372
95-100	45668	4339.4	53122	35475
100-105	50753	4155.7	56412	36372
105-110	47642	3339.0	54318	39961
110-115	47235	3154.9	55814	39363
115-120	49353	3113.0	57309	40559
120-125	49054	2683.3	57908	44448
125-130	44508	4573.1	54617	32184
130-135	50502	3950.3	56412	40559
135-140	48803	3352.2	56113	40559
140-145	46565	3057.2	52524	38466
145-150	50262	3816.5	57609	40260
150-155	49090	4437.4	56113	33381
155-160	47176	3333.2	54318	39064
160-165	47128	4258.2	54019	34577
165-170	48875	4403.3	54917	37269
170-175	49772	3523.9	55216	42354
175-180	46111	3589.4	53421	39363
180-185	46661	3009.0	52524	40858
185-190	52356	2211.1	59104	49233
190-195	50298	2658.0	56412	46242
195-200	47953	3951.4	60001	40559
200-205	47283	3795.8	52225	37269
205-210	49616	3750.7	58805	41457
210-215	47642	4125.3	56113	39662
215-220	48456	2971.9	54019	40260
220-225	52248	2176.6	56711	47738
225-230	48097	3722.4	55515	39961
230-235	44555	4386.9	50430	34876
235-240	49066	3236.0	55216	41457
240-242	48157	2728.9	52524	42354
FOR THIS RUN:	47904	4224.8	63890	32184

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	205207	15741.3	244269	180408
5- 10	209997	23145.7	284182	168434
10- 15	222130	15933.6	241608	189721
15- 20	213403	15442.2	258903	189721
20- 25	214041	11398.4	237617	195043
25- 30	204835	15893.5	233625	167104
30- 35	204037	20317.8	245599	152469
35- 40	218884	18026.9	248260	176417
40- 45	219097	15164.2	256243	181739
45- 50	203504	13105.3	237617	184399
50- 55	208933	15724.2	241608	179078
55- 60	196639	23403.5	254912	152469
60- 65	209784	20866.7	242938	157791
65- 70	216436	20730.5	272208	176417
70- 75	204196	12801.6	240277	188391
75- 80	206591	23021.3	245599	152469
80- 85	213403	22198.7	244269	151139
85- 90	213296	17307.9	245599	183069
90- 95	203504	17745.7	228304	161782
95-100	203132	19301.5	236286	157791
100-105	225749	18484.5	250921	161782
105-110	211913	14851.9	241608	177747
110-115	210103	14033.2	248260	175086
115-120	219523	13846.7	254912	180408
120-125	218192	11935.4	257573	197704
125-130	197970	20341.2	242938	143156
130-135	224632	17570.9	250921	180408
135-140	217075	14910.7	249590	180408
140-145	207123	13598.6	233625	171095
145-150	223567	16975.7	256243	179078
150-155	218352	19737.5	249590	148478
155-160	209837	14826.1	241608	173756
160-165	209624	18940.7	240277	153830
165-170	217394	19585.8	244269	165773
170-175	221385	15674.2	245599	188391
175-180	205101	15965.5	237617	175086
180-185	207549	13383.9	233625	181739
185-190	232880	9835.0	262895	218991
190-195	223727	11822.6	250921	205686
195-200	213296	17575.9	266886	180408
200-205	210316	16883.9	232295	165773
205-210	220694	16683.1	261564	184399
210-215	211913	18349.2	249590	176417
215-220	215531	13218.9	240277	179078
220-225	232401	9681.4	252251	212338
225-230	213935	16557.3	246930	177747
230-235	198183	19512.9	224312	155130
235-240	218246	14393.7	245599	184399
240-242	214201	12138.3	233625	188391
FOR THIS RUN:	213077	18792.0	284182	143156

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2335	51.9	2430	2253
5- 10	2376	52.0	2440	2290
10- 15	2387	46.4	2471	2300
15- 20	2337	45.3	2427	2281
20- 25	2375	51.0	2461	2262
25- 30	2341	57.2	2428	2243
30- 35	2342	49.2	2427	2234
35- 40	2357	48.3	2447	2284
40- 45	2350	54.4	2418	2256
45- 50	2325	55.2	2432	2243
50- 55	2351	67.7	2447	2230
55- 60	2309	61.5	2442	2220
60- 65	2373	59.5	2469	2257
65- 70	2384	48.3	2465	2309
70- 75	2360	42.8	2435	2253
75- 80	2371	53.0	2450	2271
80- 85	2379	53.2	2484	2266
85- 90	2386	50.3	2476	2309
90- 95	2351	62.9	2472	2230
95-100	2350	52.0	2428	2239
100-105	2383	49.6	2470	2276
105-110	2347	57.5	2428	2243
110-115	2321	42.5	2409	2253
115-120	2337	50.9	2435	2262
120-125	2368	51.3	2455	2253
125-130	2336	47.3	2429	2261
130-135	2389	58.8	2490	2276
135-140	2362	58.9	2451	2257
140-145	2337	45.7	2451	2276
145-150	2380	38.7	2442	2304
150-155	2334	66.9	2452	2234
155-160	2356	57.1	2461	2239
160-165	2377	58.0	2481	2252
165-170	2347	66.4	2447	2234
170-175	2358	50.2	2446	2262
175-180	2347	52.0	2428	2262
180-185	2365	51.5	2447	2276
185-190	2349	43.3	2428	2245
190-195	2311	38.7	2390	2256
195-200	2355	49.8	2432	2261
200-205	2337	54.0	2447	2252
205-210	2327	44.0	2398	2229
210-215	2327	53.4	2417	2248
215-220	2379	46.0	2475	2303
220-225	2367	47.4	2457	2279
225-230	2334	46.4	2413	2266
230-235	2319	43.5	2398	2243
235-240	2359	52.0	2466	2285
240-242	2323	54.3	2451	2248
FOR THIS RUN:	2353	56.4	2490	2220

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1741	38.7	1812	1680
5- 10	1771	38.8	1820	1707
10- 15	1780	34.6	1843	1715
15- 20	1743	33.8	1810	1701
20- 25	1771	38.1	1835	1687
25- 30	1745	42.7	1810	1672
30- 35	1746	36.7	1810	1666
35- 40	1758	36.0	1825	1703
40- 45	1752	40.6	1803	1683
45- 50	1734	41.2	1814	1673
50- 55	1753	50.4	1825	1663
55- 60	1721	45.9	1821	1655
60- 65	1769	44.3	1841	1683
65- 70	1777	36.0	1838	1722
70- 75	1760	31.9	1816	1680
75- 80	1768	39.5	1827	1694
80- 85	1774	39.7	1852	1690
85- 90	1779	37.5	1846	1721
90- 95	1753	46.9	1843	1663
95-100	1752	38.8	1810	1669
100-105	1777	37.0	1842	1697
105-110	1750	42.9	1810	1672
110-115	1731	31.7	1796	1680
115-120	1742	37.9	1816	1687
120-125	1766	38.3	1831	1680
125-130	1742	35.2	1811	1686
130-135	1782	43.8	1857	1697
135-140	1762	43.9	1828	1683
140-145	1743	34.1	1828	1697
145-150	1775	28.8	1821	1710
150-155	1741	49.9	1828	1666
155-160	1757	42.6	1835	1669
160-165	1773	43.2	1850	1679
165-170	1750	49.5	1825	1666
170-175	1759	37.4	1824	1687
175-180	1750	38.8	1810	1687
180-185	1764	38.4	1825	1697
185-190	1751	32.3	1810	1674
190-195	1724	28.9	1782	1683
195-200	1756	37.1	1814	1686
200-205	1743	40.3	1825	1679
205-210	1735	32.8	1788	1662
210-215	1735	39.8	1802	1676
215-220	1774	34.3	1846	1717
220-225	1765	35.4	1832	1699
225-230	1740	34.6	1799	1690
230-235	1729	32.4	1788	1672
235-240	1759	38.8	1839	1704
240-242	1732	40.5	1828	1676
FOR THIS RUN:	1754	42.0	1857	1655

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	243.3	1.5	246.0	240.5
5- 10	243.9	1.4	246.5	241.0
10- 15	248.7	1.9	251.5	245.0
15- 20	245.4	1.4	248.0	243.0
20- 25	248.2	2.4	251.5	243.5
25- 30	247.7	1.9	250.5	244.0
30- 35	245.3	1.8	248.0	241.5
35- 40	250.0	0.9	251.5	247.5
40- 45	248.5	1.3	250.5	245.0
45- 50	247.4	2.2	252.0	244.0
50- 55	246.6	2.7	251.5	241.5
55- 60	241.7	5.5	251.5	235.5
60- 65	242.8	2.9	247.5	237.5
65- 70	245.5	1.7	248.5	242.0
70- 75	245.1	1.5	247.5	242.5
75- 80	244.4	1.0	246.0	242.0
80- 85	243.9	2.7	248.0	239.0
85- 90	248.6	1.5	251.5	246.0
90- 95	248.5	4.3	254.0	242.0
95-100	245.7	1.8	249.5	243.0
100-105	248.5	2.8	251.5	242.5
105-110	247.5	1.2	250.0	245.5
110-115	247.3	1.2	249.0	245.0
115-120	244.2	1.3	247.0	241.5
120-125	246.4	1.4	248.5	242.5
125-130	239.4	1.8	242.5	236.5
130-135	247.2	3.5	252.0	240.0
135-140	247.3	1.3	249.5	245.0
140-145	246.0	1.1	248.5	244.0
145-150	248.0	1.2	250.0	245.5
150-155	248.1	1.6	251.0	245.5
155-160	245.9	4.0	252.5	240.5
160-165	249.7	2.5	254.0	246.0
165-170	247.3	3.3	253.0	242.0
170-175	248.6	2.4	253.5	245.0
175-180	247.6	1.4	250.5	245.0
180-185	248.5	1.7	251.5	245.5
185-190	252.5	0.9	254.5	250.0
190-195	248.7	1.0	250.5	247.0
195-200	248.7	1.0	250.5	247.0
200-205	249.5	1.3	251.5	246.5
205-210	247.4	2.2	251.5	244.0
210-215	244.2	1.2	246.0	242.0
215-220	249.8	3.0	254.0	245.0
220-225	252.8	2.0	255.0	248.0
225-230	247.6	0.9	248.5	246.0
230-235	244.3	2.3	248.0	240.0
235-240	248.7	1.0	250.0	247.0
240-242	246.5	1.3	248.5	244.5
FOR THIS RUN:	246.9	3.3	255.0	235.5

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	812	7.1	826	800
5- 10	814	5.1	826	803
10- 15	816	4.3	827	808
15- 20	806	4.9	814	796
20- 25	817	4.0	825	809
25- 30	813	4.4	821	805
30- 35	811	6.0	827	800
35- 40	819	5.5	830	809
40- 45	809	4.1	818	803
45- 50	810	4.0	818	803
50- 55	812	4.5	822	802
55- 60	805	9.2	822	793
60- 65	813	6.6	822	797
65- 70	813	6.3	824	797
70- 75	815	6.1	827	808
75- 80	816	6.4	827	804
80- 85	816	5.5	825	803
85- 90	817	5.2	830	810
90- 95	807	6.0	817	798
95-100	811	6.6	826	804
100-105	823	8.5	834	806
105-110	815	7.7	829	807
110-115	816	6.6	826	807
115-120	821	4.0	830	811
120-125	818	4.1	827	812
125-130	806	6.0	821	794
130-135	826	8.1	840	815
135-140	822	4.9	830	811
140-145	823	5.0	828	803
145-150	825	6.1	832	809
150-155	824	4.6	830	813
155-160	810	10.3	825	793
160-165	826	7.3	840	813
165-170	814	8.3	831	793
170-175	827	3.0	834	822
175-180	820	5.9	830	809
180-185	827	4.7	831	813
185-190	829	1.6	832	825
190-195	823	2.0	826	817
195-200	826	1.0	829	823
200-205	818	6.0	828	808
205-210	823	4.2	830	815
210-215	820	6.0	829	805
215-220	830	5.9	836	814
220-225	822	7.7	832	809
225-230	820	4.7	827	809
230-235	818	6.2	833	808
235-240	827	5.0	836	817
240-242	817	7.2	828	806
FOR THIS RUN:	818	8.0	840	793

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2297	45.4	2403	2221
5- 10	2307	42.7	2398	2250
10- 15	2283	29.7	2354	2237
15- 20	2289	36.0	2381	2235
20- 25	2275	22.5	2334	2247
25- 30	2287	34.8	2390	2242
30- 35	2288	37.8	2371	2215
35- 40	2273	25.8	2353	2230
40- 45	2270	25.8	2335	2231
45- 50	2288	37.5	2374	2217
50- 55	2284	40.7	2405	2221
55- 60	2310	56.2	2455	2227
60- 65	2308	59.2	2424	2201
65- 70	2296	48.9	2434	2240
70- 75	2287	27.9	2350	2238
75- 80	2292	36.7	2374	2238
80- 85	2298	32.1	2354	2232
85- 90	2283	36.8	2404	2238
90- 95	2276	38.9	2428	2208
95-100	2300	37.4	2380	2251
100-105	2279	17.5	2308	2251
105-110	2284	25.9	2348	2241
110-115	2278	32.4	2373	2240
115-120	2289	33.3	2388	2247
120-125	2289	31.4	2341	2235
125-130	2313	52.3	2443	2241
130-135	2290	33.9	2377	2225
135-140	2282	26.1	2330	2241
140-145	2276	31.1	2394	2240
145-150	2279	20.4	2324	2247
150-155	2289	29.4	2388	2245
155-160	2286	43.3	2387	2225
160-165	2282	25.3	2363	2241
165-170	2282	50.1	2390	2202
170-175	2284	34.6	2360	2227
175-180	2275	29.0	2357	2234
180-185	2274	31.8	2355	2217
185-190	2262	10.4	2287	2244
190-195	2278	26.1	2343	2242
195-200	2272	25.6	2347	2235
200-205	2276	30.2	2365	2241
205-210	2281	34.3	2365	2222
210-215	2282	33.7	2341	2230
215-220	2276	22.6	2343	2254
220-225	2268	12.2	2301	2254
225-230	2276	27.4	2331	2234
230-235	2296	37.4	2361	2241
235-240	2279	29.9	2341	2237
240-242	2291	39.8	2364	2250
FOR THIS RUN:	2285	36.3	2455	2201

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1865	33.6	1928	1800
5- 10	1877	33.3	1942	1824
10- 15	1863	25.1	1906	1810
15- 20	1845	26.5	1915	1813
20- 25	1858	14.9	1889	1832
25- 30	1858	26.7	1924	1815
30- 35	1856	28.4	1922	1798
35- 40	1861	26.6	1932	1803
40- 45	1837	21.5	1902	1801
45- 50	1852	27.7	1919	1799
50- 55	1854	28.8	1937	1801
55- 60	1860	41.6	1982	1789
60- 65	1877	44.8	1965	1776
65- 70	1867	34.5	1939	1816
70- 75	1864	27.0	1921	1821
75- 80	1871	30.6	1928	1814
80- 85	1874	24.2	1929	1822
85- 90	1865	26.6	1947	1828
90- 95	1836	29.3	1944	1769
95-100	1865	29.4	1913	1821
100-105	1876	19.7	1913	1833
105-110	1860	27.5	1945	1813
110-115	1858	30.5	1945	1822
115-120	1880	26.6	1956	1838
120-125	1872	27.8	1919	1825
125-130	1864	38.3	1954	1816
130-135	1892	30.4	1966	1836
135-140	1876	20.5	1914	1835
140-145	1872	25.7	1960	1815
145-150	1880	18.9	1916	1835
150-155	1886	21.1	1948	1846
155-160	1851	28.8	1893	1781
160-165	1885	23.2	1941	1847
165-170	1858	34.4	1931	1805
170-175	1889	27.0	1942	1844
175-180	1866	20.4	1907	1833
180-185	1880	22.6	1940	1838
185-190	1876	9.0	1895	1858
190-195	1874	20.2	1928	1847
195-200	1877	19.7	1934	1850
200-205	1862	23.1	1929	1834
205-210	1877	27.2	1940	1825
210-215	1870	26.4	1923	1796
215-220	1889	19.5	1936	1853
220-225	1863	18.0	1891	1831
225-230	1867	24.5	1915	1814
230-235	1877	31.3	1936	1816
235-240	1883	26.7	1930	1837
240-242	1871	27.3	1930	1838
FOR THIS RUN:	1868	29.9	1982	1769

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	100.0	8.9	108.9	78.9
5- 10	100.7	6.9	108.4	84.7
10- 15	97.1	6.2	107.4	85.5
15- 20	99.5	6.6	107.4	84.0
20- 25	96.2	6.5	108.4	85.5
25- 30	97.3	8.3	109.4	79.9
30- 35	98.2	9.0	109.4	76.7
35- 40	94.5	7.9	106.9	79.4
40- 45	94.2	7.6	107.4	81.7
45- 50	97.7	8.6	108.4	77.4
50- 55	97.4	9.5	109.2	75.9
55- 60	103.0	6.6	110.9	85.2
60- 65	100.3	9.6	109.9	75.7
65- 70	97.2	9.2	109.4	80.2
70- 75	99.5	6.8	109.2	79.2
75- 80	100.3	7.9	108.9	84.5
80- 85	100.9	7.8	111.4	79.9
85- 90	96.4	7.7	108.4	81.7
90- 95	96.1	8.4	109.4	78.4
95-100	100.9	7.0	109.2	82.2
100-105	98.1	5.2	107.7	89.5
105-110	99.3	7.0	107.9	82.0
110-115	96.7	6.6	107.9	83.2
115-120	99.2	6.6	108.7	83.5
120-125	100.0	7.0	108.9	83.2
125-130	102.4	6.4	109.7	87.0
130-135	100.0	7.5	110.4	77.2
135-140	98.6	7.2	108.2	81.0
140-145	97.9	6.4	107.9	87.0
145-150	98.0	6.3	107.2	87.3
150-155	99.8	5.6	108.2	87.0
155-160	96.0	8.9	108.7	74.7
160-165	98.4	6.9	109.2	81.2
165-170	94.2	9.6	110.2	75.4
170-175	97.1	8.7	110.7	79.4
175-180	97.0	6.8	106.4	80.2
180-185	95.6	7.2	108.4	82.7
185-190	91.6	4.2	103.4	84.5
190-195	97.1	7.5	107.4	84.7
195-200	95.9	7.8	107.2	80.2
200-205	95.3	6.4	107.7	85.5
205-210	97.1	8.1	107.7	79.9
210-215	98.1	8.9	109.4	82.0
215-220	95.6	5.4	105.4	88.0
220-225	95.1	5.5	104.9	87.0
225-230	97.0	7.4	106.2	81.0
230-235	100.6	7.3	108.9	84.7
235-240	97.5	7.3	108.2	82.7
240-242	97.2	6.9	106.7	85.0
FOR THIS RUN:	97.8	7.8	111.4	74.7

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	41.3	0.5	42.0	40.4
5- 10	41.2	0.5	42.3	40.2
10- 15	40.2	0.5	41.4	39.5
15- 20	40.4	0.4	41.1	39.7
20- 25	40.2	0.5	41.2	39.4
25- 30	39.7	0.6	40.9	38.8
30- 35	40.7	0.6	42.0	39.9
35- 40	39.5	0.4	40.3	38.9
40- 45	39.4	0.5	40.6	38.5
45- 50	39.9	0.6	40.9	38.7
50- 55	40.4	0.7	42.0	39.4
55- 60	41.6	1.1	43.4	39.7
60- 65	41.8	0.7	43.1	40.5
65- 70	40.8	0.5	41.6	39.8
70- 75	41.2	0.5	42.5	40.4
75- 80	41.1	0.4	41.9	40.7
80- 85	41.3	0.9	43.3	40.0
85- 90	40.1	0.7	41.4	39.0
90- 95	39.6	1.2	42.0	38.1
95-100	40.7	0.7	42.2	39.5
100-105	40.0	0.6	41.6	39.3
105-110	40.1	0.4	40.9	39.3
110-115	40.1	0.5	40.9	39.2
115-120	41.0	0.4	42.3	40.2
120-125	40.9	0.5	42.2	40.0
125-130	42.1	0.5	43.1	41.0
130-135	41.0	0.8	43.1	39.9
135-140	40.2	0.3	41.0	39.8
140-145	40.5	0.4	41.4	39.7
145-150	40.0	0.5	41.1	39.2
150-155	39.9	0.5	40.7	39.0
155-160	40.1	0.8	41.5	38.7
160-165	39.9	0.6	41.4	38.8
165-170	39.6	0.9	41.5	38.6
170-175	40.0	0.8	41.1	38.5
175-180	40.2	0.5	40.9	39.1
180-185	39.9	0.6	41.1	38.9
185-190	38.5	0.3	39.0	38.1
190-195	39.4	0.3	39.9	38.7
195-200	39.8	0.4	40.6	39.0
200-205	39.4	0.5	41.0	38.8
205-210	40.1	0.6	41.3	38.9
210-215	41.1	0.5	42.1	40.2
215-220	39.7	0.8	41.3	38.6
220-225	38.5	0.6	39.9	37.8
225-230	39.8	0.5	40.7	38.7
230-235	40.9	0.6	42.3	40.0
235-240	40.3	0.3	41.0	39.9
240-242	40.1	0.3	40.5	39.5
FOR THIS RUN:	40.3	1.0	43.4	37.8

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	4.1	0.4	4.5	3.2
5- 10	4.2	0.3	4.6	3.5
10- 15	3.9	0.3	4.4	3.4
15- 20	4.0	0.3	4.4	3.4
20- 25	3.9	0.3	4.5	3.5
25- 30	3.9	0.4	4.5	3.1
30- 35	4.0	0.4	4.5	3.2
35- 40	3.7	0.3	4.3	3.1
40- 45	3.7	0.3	4.4	3.2
45- 50	3.9	0.4	4.4	3.1
50- 55	3.9	0.4	4.6	3.1
55- 60	4.3	0.3	4.8	3.6
60- 65	4.2	0.4	4.7	3.2
65- 70	4.0	0.4	4.5	3.3
70- 75	4.1	0.3	4.6	3.3
75- 80	4.1	0.3	4.5	3.4
80- 85	4.2	0.4	4.8	3.2
85- 90	3.9	0.3	4.5	3.2
90- 95	3.8	0.4	4.6	3.1
95-100	4.1	0.3	4.6	3.3
100-105	3.9	0.2	4.5	3.6
105-110	4.0	0.3	4.4	3.3
110-115	3.9	0.3	4.4	3.4
115-120	4.1	0.3	4.5	3.4
120-125	4.1	0.3	4.6	3.3
125-130	4.3	0.3	4.7	3.6
130-135	4.1	0.3	4.8	3.2
135-140	4.0	0.3	4.4	3.2
140-145	4.0	0.3	4.4	3.5
145-150	3.9	0.3	4.4	3.4
150-155	4.0	0.3	4.4	3.5
155-160	3.8	0.4	4.5	3.0
160-165	3.9	0.3	4.4	3.2
165-170	3.7	0.4	4.5	3.0
170-175	3.9	0.4	4.6	3.2
175-180	3.9	0.3	4.3	3.2
180-185	3.8	0.3	4.3	3.3
185-190	3.5	0.2	4.0	3.3
190-195	3.8	0.3	4.3	3.3
195-200	3.8	0.3	4.3	3.2
200-205	3.8	0.3	4.3	3.3
205-210	3.9	0.3	4.4	3.2
210-215	4.0	0.4	4.6	3.3
215-220	3.8	0.3	4.4	3.5
220-225	3.7	0.3	4.1	3.3
225-230	3.9	0.3	4.3	3.1
230-235	4.1	0.3	4.5	3.4
235-240	3.9	0.3	4.4	3.3
240-242	3.9	0.3	4.3	3.4
FOR THIS RUN:	3.9	0.4	4.8	3.0

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	38	0.4	40	38
5- 10	39	4.4	61	38
10- 15	38	0.1	38	38
15- 20	39	1.4	45	38
20- 25	39	2.4	50	38
25- 30	38	0.1	39	38
30- 35	39	3.7	57	38
35- 40	38	0.2	39	38
40- 45	38	0.1	39	38
45- 50	39	0.1	39	38
50- 55	39	0.1	39	38
55- 60	39	0.4	39	37
60- 65	39	0.1	39	38
65- 70	39	0.3	40	38
70- 75	39	0.1	39	39
75- 80	39	0.1	39	39
80- 85	39	0.1	39	39
85- 90	39	0.2	39	38
90- 95	39	0.2	39	38
95-100	39	0.1	39	39
100-105	39	0.3	41	39
105-110	39	0.1	39	39
110-115	39	0.1	39	39
115-120	39	0.1	40	39
120-125	39	0.2	41	39
125-130	39	0.1	40	39
130-135	40	0.1	40	39
135-140	40	0.1	40	39
140-145	40	0.1	40	39
145-150	40	0.1	40	39
150-155	40	0.2	40	40
155-160	40	0.2	41	40
160-165	41	3.1	56	39
165-170	40	0.4	42	40
170-175	40	0.2	41	40
175-180	41	2.2	51	40
180-185	40	0.2	40	39
185-190	40	0.2	40	40
190-195	40	0.1	40	40
195-200	40	0.1	41	40
200-205	40	0.1	41	40
205-210	41	0.1	41	40
210-215	41	0.2	42	40
215-220	41	0.1	41	40
220-225	41	0.1	41	41
225-230	41	0.1	41	41
230-235	41	0.1	41	41
235-240	41	1.4	48	41
240-242	42	2.1	48	41
FOR THIS RUN:	40	1.4	61	37

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	825	3.8	833	819
5- 10	827	3.3	833	821
10- 15	834	3.3	839	827
15- 20	823	4.1	831	815
20- 25	833	4.4	838	823
25- 30	826	4.5	833	818
30- 35	826	3.8	834	818
35- 40	833	2.5	836	827
40- 45	827	2.3	832	822
45- 50	825	3.7	831	814
50- 55	829	5.5	836	815
55- 60	819	10.4	837	807
60- 65	828	7.3	839	808
65- 70	830	4.9	836	815
70- 75	830	2.7	836	825
75- 80	827	2.1	831	822
80- 85	827	5.5	836	817
85- 90	833	2.6	838	829
90- 95	826	6.3	833	817
95-100	827	3.2	832	821
100-105	832	4.2	837	822
105-110	827	2.2	832	823
110-115	828	2.0	830	822
115-120	825	4.0	832	819
120-125	831	3.4	834	820
125-130	818	4.7	828	808
130-135	837	6.2	844	820
135-140	829	4.3	835	821
140-145	827	2.2	831	822
145-150	830	1.6	833	826
150-155	827	2.9	831	819
155-160	825	8.7	839	810
160-165	833	6.0	841	824
165-170	824	6.6	836	811
170-175	830	3.4	836	826
175-180	828	1.8	831	825
180-185	830	2.4	833	825
185-190	831	1.5	832	828
190-195	825	1.6	828	822
195-200	829	1.8	832	826
200-205	829	1.9	831	824
205-210	826	3.1	832	821
210-215	825	2.6	830	820
215-220	834	2.9	838	828
220-225	830	4.3	836	822
225-230	824	2.3	829	820
230-235	824	5.9	834	813
235-240	834	3.3	838	826
240-242	824	3.7	830	818
FOR THIS RUN:	828	5.6	844	807

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1147	23.3	1201	1110
5- 10	1153	21.6	1197	1121
10- 15	1140	15.0	1174	1117
15- 20	1143	17.7	1188	1117
20- 25	1136	11.7	1165	1121
25- 30	1143	17.9	1199	1121
30- 35	1143	19.4	1185	1109
35- 40	1136	12.9	1175	1111
40- 45	1134	13.4	1169	1111
45- 50	1143	19.0	1188	1106
50- 55	1141	20.5	1202	1111
55- 60	1154	28.2	1227	1112
60- 65	1153	30.4	1211	1099
65- 70	1147	25.6	1220	1115
70- 75	1143	14.4	1176	1117
75- 80	1145	19.9	1188	1116
80- 85	1148	16.5	1175	1118
85- 90	1141	18.9	1202	1118
90- 95	1137	20.1	1213	1101
95-100	1149	19.0	1190	1124
100-105	1139	9.1	1153	1125
105-110	1141	13.0	1175	1119
110-115	1138	16.9	1188	1118
115-120	1143	17.2	1192	1120
120-125	1144	16.9	1173	1117
125-130	1155	26.4	1219	1118
130-135	1144	17.1	1188	1109
135-140	1141	13.4	1164	1117
140-145	1136	15.9	1194	1115
145-150	1139	10.9	1165	1121
150-155	1144	15.0	1193	1122
155-160	1142	22.1	1195	1112
160-165	1141	13.5	1180	1119
165-170	1139	24.6	1190	1103
170-175	1141	17.9	1177	1110
175-180	1137	15.0	1178	1116
180-185	1136	16.7	1178	1107
185-190	1129	5.6	1141	1120
190-195	1137	14.0	1175	1117
195-200	1135	13.3	1175	1118
200-205	1136	15.5	1182	1120
205-210	1140	17.8	1182	1109
210-215	1140	17.1	1171	1112
215-220	1136	10.8	1168	1124
220-225	1132	5.6	1148	1124
225-230	1137	13.4	1163	1114
230-235	1147	19.5	1181	1119
235-240	1138	15.4	1173	1120
240-242	1144	19.3	1181	1125
FOR THIS RUN:	1141	18.6	1227	1099

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	946	17.5	984	919
5- 10	953	16.6	986	924
10- 15	951	11.6	973	929
15- 20	941	12.9	975	921
20- 25	946	8.7	967	926
25- 30	944	13.6	981	923
30- 35	944	13.5	972	916
35- 40	946	10.5	976	921
40- 45	937	10.1	967	918
45- 50	943	14.5	976	914
50- 55	945	14.5	985	913
55- 60	945	21.3	1006	912
60- 65	954	23.3	996	901
65- 70	952	18.8	994	925
70- 75	948	11.8	975	926
75- 80	947	15.1	980	922
80- 85	949	11.5	969	923
85- 90	950	14.2	997	931
90- 95	939	15.2	994	904
95-100	949	14.6	980	928
100-105	948	6.6	961	936
105-110	944	10.7	976	927
110-115	942	12.0	977	927
115-120	943	12.7	978	924
120-125	950	12.3	971	926
125-130	945	19.8	986	912
130-135	957	12.5	985	920
135-140	945	10.3	971	923
140-145	940	12.1	981	922
145-150	946	8.1	963	930
150-155	947	10.2	976	930
155-160	942	14.8	968	912
160-165	950	11.5	973	929
165-170	939	17.1	968	904
170-175	947	13.5	972	922
175-180	941	11.5	975	927
180-185	943	12.3	972	920
185-190	938	4.7	949	931
190-195	939	10.5	969	923
195-200	941	9.9	970	928
200-205	942	11.7	976	923
205-210	941	13.5	971	916
210-215	941	12.1	963	918
215-220	948	7.5	969	937
220-225	939	4.4	949	931
225-230	937	10.0	958	922
230-235	945	15.7	975	916
235-240	949	12.1	976	929
240-242	943	12.5	966	930
FOR THIS RUN:	945	14.0	1006	901

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	96.2	4.8	102.3	84.3
5- 10	95.7	5.7	105.6	81.2
10- 15	97.4	4.1	105.4	87.3
15- 20	94.8	4.7	102.8	86.6
20- 25	98.1	3.0	103.9	90.6
25- 30	94.4	3.8	101.1	85.1
30- 35	96.7	3.7	104.4	88.4
35- 40	97.3	3.7	104.9	86.8
40- 45	96.9	2.5	101.8	91.4
45- 50	95.0	4.4	102.1	83.5
50- 55	97.4	4.0	103.6	84.5
55- 60	93.1	7.7	103.1	74.6
60- 65	98.0	6.1	107.7	85.6
65- 70	96.8	5.5	105.1	85.1
70- 75	96.9	3.6	103.9	90.1
75- 80	96.5	5.1	104.1	84.5
80- 85	97.2	4.3	105.9	87.6
85- 90	97.0	5.1	104.6	79.5
90- 95	96.4	4.3	102.3	79.0
95-100	95.2	4.4	100.3	84.5
100-105	97.0	2.4	101.1	91.2
105-110	94.4	3.4	99.8	87.3
110-115	96.3	4.1	101.6	83.3
115-120	96.9	3.8	103.9	87.1
120-125	96.4	3.6	102.6	89.1
125-130	94.9	5.5	102.6	77.2
130-135	98.9	3.2	104.6	91.2
135-140	94.7	3.5	102.3	89.1
140-145	97.6	3.8	104.9	88.4
145-150	96.5	3.2	105.6	90.4
150-155	94.4	4.0	101.1	82.3
155-160	96.8	4.5	103.6	87.6
160-165	95.5	4.2	102.3	84.0
165-170	96.8	5.1	103.6	83.5
170-175	96.7	4.1	105.1	89.4
175-180	97.4	3.8	103.6	87.8
180-185	97.4	4.0	104.4	88.1
185-190	97.4	1.5	100.3	94.2
190-195	95.3	4.0	104.1	85.8
195-200	97.8	3.2	103.4	87.8
200-205	97.0	3.7	103.4	87.3
205-210	95.8	4.1	103.6	88.6
210-215	98.3	3.5	104.6	89.9
215-220	98.5	2.0	102.8	92.9
220-225	95.8	1.9	99.5	92.2
225-230	97.2	3.5	104.9	92.7
230-235	97.6	4.1	103.4	88.1
235-240	97.4	3.7	103.1	88.6
240-242	95.4	3.0	99.3	90.9
FOR THIS RUN:	96.5	4.3	107.7	74.6

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	16.7	1.0	17.7	13.4
5- 10	13.0	16.3	17.8	-65.8
10- 15	15.1	7.4	18.0	-13.6
15- 20	16.7	1.7	17.6	8.7
20- 25	17.3	1.0	20.7	14.6
25- 30	16.0	3.5	17.6	-0.9
30- 35	14.8	6.3	18.0	-7.2
35- 40	14.0	9.6	17.9	-21.0
40- 45	16.4	1.5	17.6	10.5
45- 50	13.8	13.7	17.7	-53.3
50- 55	16.8	0.9	17.8	13.9
55- 60	16.2	3.0	18.0	2.0
60- 65	16.0	4.6	18.0	-6.2
65- 70	16.9	1.8	19.5	9.9
70- 75	17.3	1.4	23.7	16.1
75- 80	16.8	1.0	17.8	13.5
80- 85	16.1	3.2	18.0	2.5
85- 90	16.4	3.4	17.8	0.1
90- 95	16.7	0.9	17.7	14.1
95-100	16.8	1.3	18.1	11.6
100-105	12.2	17.0	17.9	-68.8
105-110	16.9	0.8	17.8	15.1
110-115	16.6	1.6	17.8	9.0
115-120	16.7	0.8	17.8	14.6
120-125	17.0	1.0	17.8	12.9
125-130	16.4	2.5	23.0	8.8
130-135	16.6	1.9	18.3	11.4
135-140	16.8	0.7	17.9	15.6
140-145	15.1	7.0	17.7	-18.3
145-150	16.2	3.4	17.8	3.7
150-155	16.3	2.3	17.9	5.8
155-160	16.9	0.7	17.8	14.9
160-165	16.0	4.3	18.1	-4.7
165-170	16.8	0.9	17.6	12.9
170-175	15.5	5.8	18.1	-12.2
175-180	17.0	0.8	17.7	13.8
180-185	17.0	0.6	17.9	15.2
185-190	16.4	2.2	17.8	7.0
190-195	16.1	2.7	17.4	3.6
195-200	17.0	0.8	18.9	15.1
200-205	16.2	2.6	17.9	4.4
205-210	16.2	2.2	17.7	8.5
210-215	15.8	2.3	17.6	9.7
215-220	16.4	4.0	17.9	-3.0
220-225	16.7	1.4	17.8	10.3
225-230	15.0	8.0	17.6	-24.1
230-235	15.7	3.4	17.7	4.6
235-240	16.3	3.3	18.2	3.6
240-242	15.0	4.6	17.6	1.6
FOR THIS RUN:	16.1	5.3	23.7	-68.8

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.6	0.1	1.8	1.4
5- 10	1.3	1.4	1.8	-5.3
10- 15	1.5	0.7	1.9	-1.2
15- 20	1.6	0.2	1.7	0.8
20- 25	1.7	0.1	2.1	1.4
25- 30	1.5	0.3	1.7	-0.1
30- 35	1.4	0.6	1.8	-0.7
35- 40	1.4	1.0	1.8	-2.1
40- 45	1.6	0.2	1.8	1.0
45- 50	1.3	1.3	1.8	-4.8
50- 55	1.6	0.1	1.8	1.3
55- 60	1.5	0.3	1.8	0.2
60- 65	1.6	0.5	1.9	-0.6
65- 70	1.6	0.2	2.0	0.9
70- 75	1.7	0.1	2.3	1.5
75- 80	1.6	0.1	1.8	1.3
80- 85	1.6	0.3	1.8	0.3
85- 90	1.6	0.3	1.8	0.0
90- 95	1.6	0.1	1.7	1.4
95-100	1.6	0.1	1.8	1.1
100-105	1.2	1.7	1.8	-6.7
105-110	1.6	0.1	1.7	1.3
110-115	1.6	0.2	1.8	0.9
115-120	1.6	0.1	1.8	1.4
120-125	1.6	0.1	1.8	1.3
125-130	1.6	0.2	2.0	0.8
130-135	1.6	0.2	1.9	1.1
135-140	1.6	0.1	1.8	1.4
140-145	1.5	0.7	1.8	-1.9
145-150	1.6	0.3	1.8	0.4
150-155	1.5	0.2	1.7	0.5
155-160	1.6	0.1	1.8	1.4
160-165	1.5	0.4	1.8	-0.4
165-170	1.6	0.1	1.8	1.3
170-175	1.5	0.6	1.8	-1.2
175-180	1.7	0.1	1.8	1.4
180-185	1.7	0.1	1.8	1.4
185-190	1.6	0.2	1.7	0.7
190-195	1.5	0.3	1.8	0.3
195-200	1.7	0.1	1.9	1.4
200-205	1.6	0.3	1.8	0.4
205-210	1.5	0.2	1.8	0.9
210-215	1.6	0.2	1.8	0.9
215-220	1.6	0.4	1.8	-0.3
220-225	1.6	0.1	1.7	1.0
225-230	1.5	0.8	1.8	-2.2
230-235	1.5	0.3	1.8	0.5
235-240	1.6	0.3	1.8	0.4
240-242	1.4	0.4	1.7	0.2
FOR THIS RUN:	1.6	0.5	2.3	-6.7

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	874.4	5.9	882.4	862.4
5- 10	876.1	5.8	883.4	862.4
10- 15	876.5	5.6	882.4	861.4
15- 20	875.3	6.4	882.4	862.4
20- 25	875.1	6.2	881.4	861.4
25- 30	876.6	5.4	882.4	864.4
30- 35	874.9	6.5	882.4	860.4
35- 40	875.7	6.5	882.4	860.4
40- 45	876.7	5.4	882.4	863.4
45- 50	875.0	6.4	882.4	860.4
50- 55	874.6	6.6	882.4	861.4
55- 60	876.9	6.1	885.4	861.4
60- 65	874.1	6.5	881.4	861.4
65- 70	876.1	6.3	882.4	862.4
70- 75	876.5	5.5	882.4	862.4
75- 80	875.0	5.9	881.4	862.4
80- 85	875.2	6.8	883.4	861.4
85- 90	876.6	5.7	883.4	862.4
90- 95	876.7	5.9	882.4	860.4
95-100	874.2	6.6	881.4	861.4
100-105	876.0	6.1	882.4	862.4
105-110	875.6	6.3	882.4	861.4
110-115	875.0	6.1	881.4	862.4
115-120	876.4	5.7	883.4	863.4
120-125	875.8	5.3	882.4	861.4
125-130	875.1	6.7	883.4	861.4
130-135	875.0	6.4	881.4	859.4
135-140	876.1	6.0	883.4	863.4
140-145	875.1	6.1	882.4	862.4
145-150	876.1	6.0	881.4	861.4
150-155	876.6	5.6	882.4	861.4
155-160	875.1	6.6	883.4	861.4
160-165	875.3	6.4	882.4	862.4
165-170	876.6	5.6	882.4	861.4
170-175	875.0	6.1	882.4	861.4
175-180	875.8	6.2	882.4	862.4
180-185	876.6	5.4	882.4	862.4
185-190	875.2	6.4	881.4	861.4
190-195	875.1	6.7	882.4	862.4
195-200	876.5	5.5	882.4	862.4
200-205	876.2	5.7	882.4	861.4
205-210	875.2	6.2	882.4	861.4
210-215	876.0	6.1	881.4	861.4
215-220	875.3	6.2	881.4	861.4
220-225	875.6	6.6	882.4	863.4
225-230	876.3	6.1	882.4	861.4
230-235	876.2	5.3	882.4	862.4
235-240	874.8	6.8	882.4	862.4
240-242	876.4	5.8	882.4	863.4
FOR THIS RUN:	875.7	6.1	885.4	859.4

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	33	0.2	34	33
5- 10	33	0.2	34	32
10- 15	33	0.1	34	33
15- 20	33	0.1	34	33
20- 25	33	0.1	34	33
25- 30	34	0.1	34	33
30- 35	34	0.1	34	33
35- 40	34	0.1	34	33
40- 45	34	0.1	34	34
45- 50	34	0.2	34	33
50- 55	34	0.3	34	33
55- 60	34	0.1	34	33
60- 65	34	0.1	34	34
65- 70	34	0.1	34	34
70- 75	34	0.2	34	33
75- 80	34	0.1	34	34
80- 85	34	0.2	35	34
85- 90	34	0.1	35	34
90- 95	34	0.1	34	34
95-100	34	0.1	35	34
100-105	34	0.1	34	34
105-110	34	0.2	35	34
110-115	34	0.1	34	34
115-120	34	0.1	34	34
120-125	34	0.1	35	34
125-130	34	0.1	35	34
130-135	34	0.1	35	34
135-140	34	0.1	35	34
140-145	35	0.1	35	34
145-150	35	0.1	35	34
150-155	35	0.1	35	35
155-160	35	0.1	35	34
160-165	35	0.1	35	34
165-170	35	0.1	35	35
170-175	35	0.5	37	35
175-180	35	0.1	35	35
180-185	35	0.1	35	35
185-190	35	0.1	35	35
190-195	35	0.1	35	35
195-200	35	0.1	35	35
200-205	35	0.1	35	35
205-210	35	0.1	35	35
210-215	35	0.1	35	35
215-220	35	0.3	37	35
220-225	35	0.1	35	35
225-230	35	0.1	35	35
230-235	35	0.1	35	35
235-240	35	0.4	38	35
240-242	35	0.2	36	35
FOR THIS RUN:	34	0.7	38	32

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	814	3.8	823	808
5- 10	816	3.2	823	811
10- 15	824	3.2	828	816
15- 20	813	4.0	820	805
20- 25	822	4.4	827	813
25- 30	815	4.4	823	807
30- 35	816	3.8	823	807
35- 40	822	2.5	826	816
40- 45	816	2.3	821	811
45- 50	815	3.7	820	805
50- 55	818	5.4	826	805
55- 60	809	10.4	826	796
60- 65	818	7.2	829	798
65- 70	819	4.9	826	805
70- 75	820	2.7	825	814
75- 80	816	2.2	820	812
80- 85	817	5.4	826	807
85- 90	822	2.6	828	818
90- 95	816	6.2	823	807
95-100	816	3.2	822	811
100-105	822	4.2	826	812
105-110	817	2.1	821	813
110-115	817	2.0	819	811
115-120	815	4.0	822	809
120-125	820	3.4	823	810
125-130	808	4.6	818	798
130-135	826	6.2	833	809
135-140	818	4.2	825	811
140-145	817	2.1	821	811
145-150	820	1.5	823	816
150-155	817	2.9	821	808
155-160	814	8.7	829	799
160-165	822	5.9	831	814
165-170	814	6.5	825	801
170-175	819	3.4	826	815
175-180	818	1.8	821	814
180-185	819	2.4	823	814
185-190	820	1.5	822	817
190-195	815	1.6	818	811
195-200	818	1.8	821	815
200-205	818	1.9	821	813
205-210	816	3.0	821	810
210-215	815	2.6	819	809
215-220	824	3.0	828	818
220-225	819	4.3	825	812
225-230	814	2.3	819	810
230-235	813	5.9	823	803
235-240	823	3.2	828	816
240-242	814	3.7	819	808
FOR THIS RUN:	818	5.6	833	796

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1155	22.6	1207	1116
5- 10	1159	21.5	1206	1129
10- 15	1148	15.2	1185	1122
15- 20	1151	18.6	1198	1122
20- 25	1144	11.6	1174	1128
25- 30	1149	17.2	1197	1124
30- 35	1151	18.9	1194	1113
35- 40	1142	13.5	1183	1124
40- 45	1141	12.9	1172	1122
45- 50	1150	19.1	1197	1116
50- 55	1148	20.7	1210	1116
55- 60	1161	28.3	1232	1119
60- 65	1161	29.5	1219	1106
65- 70	1154	23.9	1220	1124
70- 75	1150	14.1	1180	1124
75- 80	1153	17.4	1192	1126
80- 85	1155	16.3	1187	1120
85- 90	1147	18.5	1208	1125
90- 95	1144	19.4	1223	1113
95-100	1157	19.0	1195	1133
100-105	1146	8.5	1161	1133
105-110	1148	13.6	1180	1124
110-115	1145	16.0	1190	1127
115-120	1151	16.7	1201	1132
120-125	1151	14.8	1173	1124
125-130	1163	26.6	1230	1127
130-135	1151	16.3	1195	1121
135-140	1147	13.4	1175	1127
140-145	1145	15.7	1206	1130
145-150	1146	10.1	1166	1131
150-155	1150	15.1	1202	1127
155-160	1150	21.9	1197	1116
160-165	1147	12.6	1188	1126
165-170	1147	26.2	1206	1103
170-175	1148	17.5	1189	1121
175-180	1144	14.4	1185	1122
180-185	1143	15.7	1185	1115
185-190	1138	5.3	1150	1125
190-195	1146	12.7	1174	1128
195-200	1142	12.6	1179	1121
200-205	1144	15.1	1188	1126
205-210	1147	17.1	1190	1119
210-215	1147	17.2	1180	1122
215-220	1144	10.9	1180	1132
220-225	1140	5.4	1153	1131
225-230	1145	14.1	1172	1124
230-235	1154	18.5	1186	1126
235-240	1146	15.2	1177	1121
240-242	1152	20.8	1190	1131
FOR THIS RUN:	1149	18.2	1232	1103

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	941	16.5	976	910
5- 10	946	15.9	981	922
10- 15	945	11.6	969	920
15- 20	935	13.1	971	913
20- 25	941	8.5	956	922
25- 30	937	13.0	967	913
30- 35	939	13.1	964	908
35- 40	939	10.6	971	920
40- 45	932	9.4	956	916
45- 50	937	14.5	973	911
50- 55	940	14.1	979	912
55- 60	939	21.2	998	906
60- 65	949	22.5	991	896
65- 70	946	17.4	982	918
70- 75	942	11.4	966	921
75- 80	941	12.8	971	921
80- 85	944	12.2	965	913
85- 90	944	13.6	988	928
90- 95	933	14.7	989	903
95-100	944	14.0	971	925
100-105	941	5.4	952	931
105-110	938	11.2	968	918
110-115	936	11.2	966	923
115-120	937	11.9	973	922
120-125	944	10.6	959	920
125-130	939	19.3	982	911
130-135	951	12.0	982	919
135-140	939	9.7	961	921
140-145	935	11.7	978	923
145-150	939	7.5	954	925
150-155	940	10.2	972	922
155-160	936	14.9	960	904
160-165	943	11.2	967	923
165-170	934	18.2	967	895
170-175	941	13.1	969	919
175-180	936	10.7	968	921
180-185	937	11.3	965	915
185-190	933	4.4	942	921
190-195	934	9.3	955	921
195-200	934	9.4	962	918
200-205	936	11.3	969	919
205-210	935	12.4	965	914
210-215	935	12.0	957	915
215-220	942	7.3	966	932
220-225	934	4.6	941	924
225-230	932	10.4	953	918
230-235	939	13.9	963	915
235-240	943	12.1	968	917
240-242	938	13.6	963	923
FOR THIS RUN:	939	13.5	998	895

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	101.6	4.7	109.4	89.5
5- 10	101.1	5.6	108.9	84.2
10- 15	102.7	3.7	110.6	93.5
15- 20	100.4	4.4	109.1	90.7
20- 25	103.9	2.6	109.1	98.0
25- 30	99.7	3.8	104.8	90.0
30- 35	102.0	3.5	108.1	94.0
35- 40	102.9	3.2	107.9	95.3
40- 45	102.0	2.5	106.8	97.0
45- 50	100.9	4.1	109.6	90.0
50- 55	102.9	4.5	110.9	87.9
55- 60	99.0	7.4	108.9	77.6
60- 65	103.4	5.7	112.9	90.2
65- 70	102.5	5.0	112.4	92.0
70- 75	102.3	3.9	108.9	93.2
75- 80	102.1	4.7	107.3	90.2
80- 85	102.5	4.4	111.4	92.2
85- 90	102.6	4.5	110.1	85.9
90- 95	101.6	3.8	105.1	86.7
95-100	100.7	4.2	106.6	90.2
100-105	102.8	3.0	107.6	94.2
105-110	100.2	3.4	105.8	91.2
110-115	101.9	3.6	106.1	91.0
115-120	102.3	3.6	108.1	92.0
120-125	101.9	3.4	108.9	96.0
125-130	100.4	5.6	107.9	82.4
130-135	104.4	2.6	109.1	98.0
135-140	100.2	3.4	106.6	93.7
140-145	102.7	3.7	109.9	93.5
145-150	102.3	2.8	108.4	96.8
150-155	99.6	4.2	105.6	86.2
155-160	102.7	3.6	108.6	93.7
160-165	101.0	3.7	107.1	90.7
165-170	102.4	5.0	108.9	87.7
170-175	102.0	4.1	109.4	95.3
175-180	103.1	4.0	110.1	92.5
180-185	102.8	3.4	107.6	95.3
185-190	102.9	1.5	105.6	99.5
190-195	100.7	3.0	105.8	94.0
195-200	103.2	2.6	108.1	96.0
200-205	101.7	3.2	107.9	92.0
205-210	101.8	3.9	108.9	93.0
210-215	103.7	3.3	109.4	97.8
215-220	103.9	1.8	107.3	98.8
220-225	101.4	2.2	104.1	95.8
225-230	102.3	3.6	109.1	96.5
230-235	102.9	3.6	108.4	95.8
235-240	103.0	3.3	107.9	96.5
240-242	100.5	3.3	104.3	94.0
FOR THIS RUN:	102.0	4.1	112.9	77.6

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	8.1	27.9	18.5	-106.3
5- 10	16.9	3.5	18.7	3.1
10- 15	13.8	12.8	19.0	-35.3
15- 20	11.6	20.5	18.6	-59.5
20- 25	8.9	29.7	18.6	-106.3
25- 30	12.0	16.0	19.2	-44.1
30- 35	8.8	27.4	18.7	-106.3
35- 40	10.0	26.1	18.6	-106.3
40- 45	12.1	22.9	19.6	-98.2
45- 50	16.8	3.2	18.7	1.7
50- 55	14.4	11.5	18.6	-32.5
55- 60	14.9	10.9	18.7	-38.1
60- 65	13.4	12.9	18.8	-32.8
65- 70	16.1	5.2	18.9	-5.3
70- 75	12.7	15.6	18.7	-40.8
75- 80	15.0	12.3	19.2	-44.7
80- 85	15.3	10.9	18.7	-37.9
85- 90	9.3	26.4	19.6	-106.3
90- 95	7.6	27.4	18.7	-106.3
95-100	16.8	3.7	18.6	2.7
100-105	17.2	2.5	19.1	6.0
105-110	15.1	12.0	18.5	-43.8
110-115	15.7	9.4	18.6	-29.9
115-120	11.5	20.6	19.0	-69.7
120-125	10.1	25.5	18.8	-106.3
125-130	11.5	24.4	18.4	-106.3
130-135	12.7	24.4	18.9	-106.3
135-140	16.7	3.8	19.4	0.7
140-145	14.8	12.3	18.5	-45.0
145-150	12.3	17.9	18.6	-58.8
150-155	16.3	6.5	19.5	-14.9
155-160	10.5	26.1	18.8	-106.3
160-165	17.2	2.1	18.9	10.8
165-170	11.5	24.5	18.8	-105.5
170-175	12.8	24.3	18.6	-106.3
175-180	9.5	28.6	19.6	-106.3
180-185	16.8	8.4	31.0	-22.1
185-190	16.0	5.6	18.6	-9.8
190-195	11.3	24.7	18.5	-106.1
195-200	8.7	25.1	19.2	-78.0
200-205	14.6	9.2	18.7	-21.7
205-210	15.6	5.9	18.6	-6.4
210-215	16.1	5.3	18.4	-8.3
215-220	14.8	9.5	18.9	-24.2
220-225	10.0	25.4	18.6	-106.3
225-230	15.7	7.6	19.3	-18.8
230-235	17.0	1.8	18.6	10.7
235-240	12.4	24.3	18.8	-106.3
240-242	16.6	2.0	18.4	12.4
FOR THIS RUN:	13.3	18.1	31.0	-106.3

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS:
1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.8	2.8	2.0	-10.6
5- 10	1.7	0.4	2.0	0.3
10- 15	1.4	1.3	2.0	-3.5
15- 20	1.2	2.1	1.9	-6.3
20- 25	0.9	3.1	2.0	-11.2
25- 30	1.2	1.6	1.9	-4.6
30- 35	0.9	2.9	2.0	-11.3
35- 40	1.1	2.6	2.0	-10.1
40- 45	1.2	2.4	2.0	-10.4
45- 50	1.7	0.3	2.0	0.2
50- 55	1.5	1.2	2.0	-3.4
55- 60	1.5	1.1	1.9	-3.9
60- 65	1.4	1.3	2.0	-3.0
65- 70	1.6	0.5	2.0	-0.6
70- 75	1.3	1.6	1.9	-4.0
75- 80	1.5	1.2	2.0	-4.4
80- 85	1.6	1.2	2.0	-4.1
85- 90	1.0	2.7	2.1	-11.1
90- 95	0.8	2.8	1.9	-10.7
95-100	1.7	0.4	2.0	0.3
100-105	1.8	0.3	2.0	0.6
105-110	1.5	1.2	1.9	-4.5
110-115	1.6	1.0	2.0	-3.1
115-120	1.2	2.2	2.0	-7.4
120-125	1.0	2.5	2.0	-10.4
125-130	1.1	2.5	2.0	-11.1
130-135	1.3	2.5	2.0	-11.0
135-140	1.7	0.4	2.0	0.1
140-145	1.5	1.3	2.0	-4.6
145-150	1.2	1.9	1.9	-6.2
150-155	1.6	0.7	2.0	-1.6
155-160	1.1	2.7	2.0	-11.3
160-165	1.7	0.2	2.0	1.1
165-170	1.2	2.5	2.0	-10.8
170-175	1.3	2.5	2.0	-11.0
175-180	1.0	3.0	2.1	-11.2
180-185	1.7	0.9	3.3	-2.3
185-190	1.6	0.6	1.9	-1.0
190-195	1.1	2.6	1.9	-11.0
195-200	0.9	2.6	2.0	-8.1
200-205	1.5	0.9	1.9	-2.0
205-210	1.6	0.6	1.9	-0.6
210-215	1.7	0.5	2.0	-0.8
215-220	1.5	1.0	2.0	-2.5
220-225	1.0	2.6	1.9	-11.0
225-230	1.6	0.8	2.0	-1.9
230-235	1.8	0.2	2.0	1.0
235-240	1.3	2.4	2.0	-10.3
240-242	1.7	0.2	1.9	1.3
FOR THIS RUN:	1.4	1.9	3.3	-11.3

TABLE 6 (Continued)

RUN NUMBER 1320

TRIAL CONDITIONS: 1) Level ice breaking without bubblers
2) 16.5 in.(41.9 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 5.0 knots
4) Flexural strength of ice 13360 lb/sq ft(640kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	887.8	5.6	896.4	879.4
5- 10	890.1	4.3	896.4	882.4
10- 15	889.4	5.0	896.4	880.4
15- 20	889.6	5.6	896.4	880.4
20- 25	889.6	4.8	896.4	881.4
25- 30	889.2	5.4	897.4	881.4
30- 35	889.3	5.4	897.4	881.4
35- 40	888.7	5.1	896.4	880.4
40- 45	889.3	5.4	896.4	881.4
45- 50	888.2	4.6	896.4	881.4
50- 55	888.3	4.9	895.4	880.4
55- 60	889.4	4.9	896.4	878.4
60- 65	887.3	5.4	896.4	879.4
65- 70	890.4	5.1	898.4	881.4
70- 75	889.4	4.8	896.4	881.4
75- 80	889.1	5.3	896.4	880.4
80- 85	889.9	5.1	897.4	879.4
85- 90	889.1	5.5	897.4	880.4
90- 95	889.6	5.8	897.4	880.4
95-100	888.3	5.2	896.4	879.4
100-105	889.2	5.6	896.4	880.4
105-110	888.2	4.6	896.4	881.4
110-115	888.5	5.2	896.4	880.4
115-120	889.4	4.9	895.4	881.4
120-125	887.8	5.0	895.4	880.4
125-130	890.4	4.8	897.4	881.4
130-135	888.5	5.6	897.4	879.4
135-140	889.9	5.2	897.4	881.4
140-145	889.8	4.6	895.4	881.4
145-150	889.0	5.5	896.4	880.4
150-155	889.4	5.1	895.4	881.4
155-160	888.4	5.2	896.4	880.4
160-165	889.4	5.4	896.4	881.4
165-170	888.1	4.3	895.4	880.4
170-175	888.5	5.1	896.4	880.4
175-180	889.2	5.1	896.4	879.4
180-185	887.8	4.9	896.4	880.4
185-190	890.4	4.9	897.4	881.4
190-195	889.2	5.1	896.4	881.4
195-200	889.1	5.3	895.4	880.4
200-205	890.2	4.7	896.4	881.4
205-210	888.7	5.7	896.4	880.4
210-215	889.5	5.1	896.4	880.4
215-220	888.7	5.4	896.4	879.4
220-225	889.4	5.4	896.4	881.4
225-230	888.1	4.6	895.4	880.4
230-235	888.6	5.0	896.4	880.4
235-240	888.9	5.0	896.4	881.4
240-242	891.7	3.6	895.4	883.4
FOR THIS RUN:	889.1	5.2	898.4	878.4

TABLE 7 - MACHINERY PARAMETERS, RUN 2231

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	18168	1114.1	19617	16096
5- 10	17263	1013.2	19114	15090
10- 15	16861	945.0	18611	15090
15- 20	16197	1064.7	18108	14587
20- 25	17042	1175.9	18611	15090
25- 30	17122	893.9	18611	15090
30- 35	17162	1019.2	18611	15593
35- 40	16861	1065.8	18611	15090
40- 45	16700	975.4	18611	15090
45- 50	17162	1095.8	18611	15090
50- 55	17162	999.1	18611	15593
55- 60	17182	1002.8	18611	15090
60- 65	16780	1004.8	18611	15090
65- 70	16840	1027.1	18611	15090
70- 75	17082	1040.4	18611	15593
75- 80	16901	1074.1	18611	15090
80- 85	16559	1015.2	18108	15090
85- 90	16599	792.1	17605	15593
90- 95	16679	1042.4	18611	14587
95-100	16820	1016.8	18108	15090
100-105	16458	1106.8	18108	15090
105-110	16579	1088.0	18108	14587
110-115	16539	869.1	17605	14587
115-120	16619	1030.6	18611	15090
120-125	16881	1121.0	18611	15090
125-130	16760	1052.4	18108	15090
130-135	16418	963.7	18108	15090
135-140	16599	975.4	18108	15090
140-145	16478	891.7	18611	15090
145-150	16398	954.4	18108	15090
150-155	16881	922.9	18611	15593
155-160	16559	1146.3	18108	14587
160-165	16559	1128.5	18108	14587
165-170	16579	1211.2	18108	14587
170-175	16358	1036.9	18108	14587
175-180	16599	943.7	18108	15090
180-185	16599	995.9	18108	14587
185-190	16740	938.6	18108	15090
190-195	16478	988.5	18108	14587
195-200	16398	865.4	18108	15090
200-205	16780	1014.8	18108	14587
205-210	16297	1016.0	18108	14587
210-215	16659	914.5	18108	15090
215-220	16458	1031.0	18108	15090
220-225	16579	1020.8	18108	15090
225-230	17223	1086.1	19114	15593
230-235	16981	998.7	18611	15593
235-240	16780	764.6	18108	15593
FOR THIS RUN:	16758	1067.4	19617	14587

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	24636	1510.7	26601	21826
5- 10	23409	1373.9	25919	20462
10- 15	22863	1281.4	25237	20462
15- 20	21963	1443.7	24554	19780
20- 25	23108	1594.6	25237	20462
25- 30	23218	1212.2	25237	20462
30- 35	23272	1382.0	25237	21144
35- 40	22863	1445.2	25237	20462
40- 45	22645	1322.6	25237	20462
45- 50	23272	1485.8	25237	20462
50- 55	23272	1354.8	25237	21144
55- 60	23299	1359.8	25237	20462
60- 65	22754	1362.5	25237	20462
65- 70	22836	1392.8	25237	20462
70- 75	23163	1410.8	25237	21144
75- 80	22917	1456.5	25237	20462
80- 85	22454	1376.6	24554	20462
85- 90	22508	1074.1	23872	21144
90- 95	22617	1413.4	25237	19780
95-100	22808	1378.8	24554	20462
100-105	22317	1500.8	24554	20462
105-110	22481	1475.3	24554	19780
110-115	22426	1178.5	23872	19780
115-120	22536	1397.6	25237	20462
120-125	22890	1520.0	25237	20462
125-130	22727	1427.1	24554	20462
130-135	22263	1306.7	24554	20462
135-140	22508	1322.6	24554	20462
140-145	22345	1209.1	25237	20462
145-150	22235	1294.1	24554	20462
150-155	22890	1251.4	25237	21144
155-160	22454	1554.4	24554	19780
160-165	22454	1530.3	24554	19780
165-170	22481	1642.4	24554	19780
170-175	22181	1406.1	24554	19780
175-180	22508	1279.7	24554	20462
180-185	22508	1350.4	24554	19780
185-190	22699	1272.7	24554	20462
190-195	22345	1340.5	24554	19780
195-200	22235	1173.5	24554	20462
200-205	22754	1376.1	24554	19780
205-210	22099	1377.7	24554	19780
210-215	22590	1240.1	24554	20462
215-220	22317	1398.1	24554	20462
220-225	22481	1384.2	24554	20462
225-230	23354	1472.8	25919	21144
230-235	23027	1354.3	25237	21144
235-240	22754	1036.7	24554	21144
FOR THIS RUN:	22724	1447.3	26601	19780

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	21752	2718.2	27997	16930
5- 10	21369	1650.6	24408	16033
10- 15	20687	2148.7	23510	16631
15- 20	20471	2119.5	24108	17229
20- 25	19742	1776.6	22912	17229
25- 30	19909	2115.8	24108	17528
30- 35	21405	2542.9	25305	16631
35- 40	21369	1708.2	24707	17827
40- 45	20328	2291.8	23809	17229
45- 50	20543	2230.2	25006	17229
50- 55	20244	2082.5	24108	16930
55- 60	20316	2221.8	23809	17229
60- 65	21943	1759.0	25903	18725
65- 70	21835	1980.4	26202	17528
70- 75	20328	2434.2	24108	17229
75- 80	20352	2326.2	26202	16930
80- 85	20627	2246.1	24707	16930
85- 90	20160	2540.8	24707	16930
90- 95	21273	1792.9	25305	17827
95-100	21141	1927.2	24707	16930
100-105	20029	2403.1	23809	16631
105-110	19813	1750.0	24408	17229
110-115	20160	1956.8	24408	16930
115-120	20507	2258.2	25006	17229
120-125	21680	1715.8	24408	17827
125-130	21357	2260.6	25903	17229
130-135	19897	2344.4	25006	16930
135-140	19694	1966.4	25305	17229
140-145	21022	2195.9	23510	16930
145-150	21369	1835.4	25903	18425
150-155	20723	2121.3	25305	17229
155-160	20770	2652.0	25903	16631
160-165	19251	1754.9	24108	16631
165-170	19418	1919.4	23211	16930
170-175	20747	2531.3	25604	16930
175-180	20615	2159.7	24108	16930
180-185	21464	1712.4	23809	17827
185-190	21093	1631.5	23809	17528
190-195	20818	2193.1	25305	16930
195-200	20747	2225.9	25305	16930
200-205	19694	2208.2	24408	16332
205-210	19861	1382.4	22613	17528
210-215	20053	1824.5	23211	16930
215-220	20483	2511.5	25604	16930
220-225	22338	1804.4	24408	18126
225-230	22182	2120.2	26202	18126
230-235	21381	2208.2	24707	17827
235-240	21799	2326.9	25903	17229
FOR THIS RUN:	20724	2245.3	27997	16033

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	96751	12090.5	124530	75304
5- 10	95048	7342.0	108565	71313
10- 15	92014	9557.5	104574	73974
15- 20	91056	9427.7	107234	76635
20- 25	87810	7902.4	101913	76635
25- 30	88555	9411.2	107234	77965
30- 35	95207	11310.9	112556	73974
35- 40	95048	7598.0	109895	79295
40- 45	90418	10194.1	105904	76635
45- 50	91376	9919.8	111226	76635
50- 55	90045	9262.9	107234	75304
55- 60	90365	9882.6	105904	76635
60- 65	97602	7823.8	115217	83287
65- 70	97123	8809.0	116547	77965
70- 75	90418	10827.3	107234	76635
75- 80	90524	10347.2	116547	75304
80- 85	91748	9990.7	109895	75304
85- 90	89673	11301.6	109895	75304
90- 95	94622	7974.8	112556	79295
95-100	94037	8572.1	109895	75304
100-105	89087	10689.1	105904	73974
105-110	88129	7783.9	108565	76635
110-115	89673	8703.9	108565	75304
115-120	91216	10044.4	111226	76635
120-125	96431	7631.8	108565	79295
125-130	94995	10055.1	115217	76635
130-135	88502	10427.9	111226	75304
135-140	87597	8746.7	112556	76635
140-145	93504	9767.3	104574	75304
145-150	95048	8163.9	115217	81956
150-155	92174	9435.5	112556	76635
155-160	92387	11796.2	115217	73974
160-165	85628	7805.7	107234	73974
165-170	86373	8537.3	103243	75304
170-175	92280	11259.4	113887	75304
175-180	91695	9606.6	107234	75304
180-185	95473	7616.6	105904	79295
185-190	93824	7257.1	105904	77965
190-195	92600	9754.9	112556	75304
195-200	92280	9901.0	112556	75304
200-205	87597	9822.0	108565	72643
205-210	88342	6148.8	100582	77965
210-215	89194	8115.2	103243	75304
215-220	91110	11171.3	113887	75304
220-225	99358	8026.1	108565	80626
225-230	98667	9430.7	116547	80626
230-235	95101	9822.3	109895	79295
235-240	96964	10350.2	115217	76635
FOR THIS RUN:	92181	9987.3	124530	71313

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	498	31.2	540	434
5- 10	480	28.4	531	419
10- 15	464	25.7	512	418
15- 20	441	28.5	490	397
20- 25	462	31.6	509	408
25- 30	467	24.5	509	409
30- 35	468	28.3	510	425
35- 40	460	29.3	510	411
40- 45	453	26.3	507	408
45- 50	467	29.8	509	409
50- 55	469	27.0	510	428
55- 60	468	27.1	509	409
60- 65	457	27.3	507	411
65- 70	458	28.1	507	412
70- 75	466	28.8	509	425
75- 80	463	29.8	510	409
80- 85	452	27.6	498	408
85- 90	452	22.1	483	422
90- 95	455	28.2	501	396
95-100	458	27.4	495	409
100-105	449	29.7	495	411
105-110	451	29.3	495	397
110-115	449	24.0	479	396
115-120	452	28.2	507	411
120-125	459	30.6	507	409
125-130	457	28.5	496	412
130-135	447	26.3	495	409
135-140	451	26.8	493	411
140-145	447	24.0	505	411
145-150	446	26.0	495	411
150-155	460	24.7	505	425
155-160	452	31.5	496	399
160-165	452	30.4	496	399
165-170	451	32.7	493	397
170-175	443	27.8	493	396
175-180	451	26.0	493	408
180-185	452	26.6	495	399
185-190	456	25.2	493	409
190-195	448	26.9	488	396
195-200	446	23.9	491	408
200-205	457	27.1	493	397
205-210	442	28.4	493	397
210-215	451	24.5	490	405
215-220	445	27.8	493	407
220-225	448	27.8	491	408
225-230	465	29.4	517	420
230-235	461	26.8	505	420
235-240	456	20.4	493	425
FOR THIS RUN:	456	29.4	540	396

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	371	23.3	402	323
5- 10	358	21.2	396	313
10- 15	346	19.2	382	312
15- 20	329	21.3	365	296
20- 25	345	23.6	379	304
25- 30	348	18.3	379	305
30- 35	349	21.1	380	317
35- 40	343	21.9	380	306
40- 45	338	19.6	378	304
45- 50	348	22.2	379	305
50- 55	349	20.1	380	319
55- 60	349	20.2	379	305
60- 65	341	20.4	378	306
65- 70	342	20.9	378	307
70- 75	347	21.4	379	317
75- 80	345	22.2	380	305
80- 85	337	20.6	371	304
85- 90	337	16.4	360	314
90- 95	339	21.0	374	295
95-100	341	20.5	369	305
100-105	335	22.1	369	306
105-110	337	21.9	369	296
110-115	335	17.9	357	295
115-120	337	21.0	378	306
120-125	342	22.8	378	305
125-130	341	21.3	370	307
130-135	334	19.6	369	305
135-140	336	19.9	368	306
140-145	334	17.9	377	306
145-150	333	19.4	369	306
150-155	343	18.4	377	317
155-160	337	23.5	370	297
160-165	337	22.7	370	297
165-170	336	24.4	368	296
170-175	331	20.7	368	295
175-180	336	19.4	368	304
180-185	337	19.8	369	297
185-190	340	18.8	368	305
190-195	334	20.1	364	295
195-200	332	17.8	366	304
200-205	340	20.2	368	296
205-210	330	21.1	368	296
210-215	336	18.3	365	302
215-220	332	20.8	368	303
220-225	334	20.7	366	304
225-230	347	21.9	385	313
230-235	344	20.0	377	313
235-240	340	15.2	368	317
FOR THIS RUN:	340	21.9	402	295

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	144.0	1.3	145.5	140.5
5- 10	145.9	0.6	146.5	144.0
10- 15	144.4	0.8	145.5	143.0
15- 20	142.9	0.5	143.5	142.0
20- 25	142.4	0.6	143.5	140.5
25- 30	143.2	0.5	144.0	142.5
30- 35	143.3	0.5	144.0	142.0
35- 40	143.3	0.7	144.5	141.5
40- 45	142.5	0.6	143.5	141.0
45- 50	143.0	0.6	144.0	141.5
50- 55	143.4	0.6	144.0	142.0
55- 60	143.2	0.6	144.0	141.5
60- 65	142.9	0.5	144.0	141.5
65- 70	143.0	0.5	144.0	141.5
70- 75	143.1	0.5	144.0	141.5
75- 80	143.8	0.5	144.5	142.5
80- 85	143.5	0.6	144.5	142.0
85- 90	142.9	0.7	144.0	141.0
90- 95	143.1	0.5	143.5	141.5
95-100	142.9	0.6	143.5	141.5
100-105	143.2	0.5	144.0	142.0
105-110	143.0	0.5	143.5	142.0
110-115	142.7	0.6	143.5	141.0
115-120	142.8	0.6	143.5	141.5
120-125	142.8	0.4	143.5	141.5
125-130	143.2	0.6	144.0	142.0
130-135	143.1	0.5	144.0	142.0
135-140	142.7	0.6	143.5	141.0
140-145	142.6	0.5	143.0	141.5
145-150	143.0	0.5	143.5	141.5
150-155	143.1	0.5	144.0	142.0
155-160	143.5	0.5	144.0	142.5
160-165	143.3	0.5	144.0	142.0
165-170	142.7	0.5	143.5	141.5
170-175	142.4	0.5	143.0	141.0
175-180	142.7	0.6	143.5	141.5
180-185	143.0	0.5	143.5	141.5
185-190	143.0	0.5	143.5	141.5
190-195	142.7	0.5	143.5	141.5
195-200	142.7	0.6	143.5	141.5
200-205	142.9	0.5	143.5	141.5
205-210	142.5	0.5	143.0	141.0
210-215	142.1	0.5	143.0	141.0
215-220	142.1	0.6	143.0	140.5
220-225	142.0	0.6	143.0	140.5
225-230	141.9	0.5	142.5	141.0
230-235	142.5	0.5	143.0	141.0
235-240	142.7	0.5	143.5	141.0
FOR THIS RUN:	143.0	0.9	146.5	140.5

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	407	3.4	411	399
5- 10	412	2.1	420	410
10- 15	407	1.9	410	404
15- 20	406	4.1	415	401
20- 25	402	2.1	411	400
25- 30	405	1.0	408	404
30- 35	408	4.9	418	404
35- 40	405	0.8	406	403
40- 45	409	5.9	416	402
45- 50	411	5.7	417	404
50- 55	417	0.4	418	417
55- 60	416	2.4	417	404
60- 65	404	1.4	410	403
65- 70	405	2.8	416	403
70- 75	405	0.3	405	404
75- 80	406	0.4	407	405
80- 85	409	5.3	417	404
85- 90	404	0.9	405	402
90- 95	404	0.8	408	404
95-100	404	0.5	404	403
100-105	404	0.3	405	404
105-110	404	0.6	406	404
110-115	404	0.6	404	403
115-120	404	1.0	405	402
120-125	404	0.2	404	404
125-130	405	0.5	407	404
130-135	405	0.4	405	404
135-140	404	0.6	405	403
140-145	404	0.6	406	403
145-150	405	0.6	406	404
150-155	405	0.5	406	404
155-160	406	0.2	407	406
160-165	406	0.5	408	405
165-170	404	0.3	405	404
170-175	403	0.3	404	403
175-180	405	0.8	405	403
180-185	405	0.2	406	405
185-190	405	0.4	406	404
190-195	405	0.3	405	404
195-200	405	0.4	405	404
200-205	405	0.6	406	404
205-210	404	0.4	404	404
210-215	403	0.4	404	403
215-220	403	0.4	404	403
220-225	403	0.5	404	402
225-230	403	0.4	404	402
230-235	405	0.5	405	404
235-240	405	0.4	406	404
FOR THIS RUN:	406	3.6	420	399

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	937	20.4	985	913
5- 10	912	11.1	946	895
10- 15	893	2.1	897	890
15- 20	896	4.6	906	889
20- 25	906	2.5	910	900
25- 30	907	2.0	910	902
30- 35	905	2.8	910	897
35- 40	903	2.1	906	899
40- 45	907	2.6	912	903
45- 50	910	2.7	915	905
50- 55	906	2.3	910	902
55- 60	904	2.1	910	900
60- 65	905	2.4	910	902
65- 70	907	2.8	913	903
70- 75	905	2.4	909	900
75- 80	897	4.3	905	889
80- 85	892	2.3	896	889
85- 90	892	3.4	899	887
90- 95	892	2.6	897	887
95-100	894	2.1	897	890
100-105	893	1.9	897	890
105-110	892	1.6	896	890
110-115	896	2.5	900	892
115-120	899	3.3	905	893
120-125	899	1.9	903	896
125-130	896	1.6	899	893
130-135	894	1.9	897	890
135-140	894	2.2	899	890
140-145	896	1.9	899	890
145-150	895	2.9	902	892
150-155	894	2.9	899	889
155-160	888	2.8	892	882
160-165	882	1.7	886	879
165-170	883	1.7	887	880
170-175	889	2.6	893	884
175-180	893	2.4	897	887
180-185	890	2.2	895	886
185-190	888	2.8	893	883
190-195	888	2.0	893	884
195-200	888	1.9	892	884
200-205	887	2.8	892	883
205-210	888	2.3	892	884
210-215	894	2.2	897	890
215-220	900	2.6	906	895
220-225	909	3.1	915	902
225-230	916	2.4	920	910
230-235	917	1.9	920	913
235-240	912	2.2	916	906
FOR THIS RUN:	899	11.0	985	879

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	381	7.9	396	367
5- 10	376	5.0	391	367
10- 15	363	2.2	368	360
15- 20	364	4.7	373	359
20- 25	365	2.4	372	361
25- 30	367	1.0	370	365
30- 35	369	4.1	376	364
35- 40	365	0.9	367	363
40- 45	371	5.2	377	364
45- 50	374	4.6	379	367
50- 55	378	1.2	380	376
55- 60	376	2.4	379	365
60- 65	366	1.3	371	364
65- 70	368	2.7	377	365
70- 75	366	0.9	368	364
75- 80	365	1.8	367	361
80- 85	364	4.4	372	359
85- 90	360	1.3	363	357
90- 95	361	1.4	364	358
95-100	361	0.9	362	359
100-105	361	0.8	363	360
105-110	361	0.7	363	360
110-115	362	1.1	364	360
115-120	363	1.5	366	360
120-125	364	0.8	365	362
125-130	363	0.8	365	362
130-135	362	0.8	364	361
135-140	362	0.7	363	360
140-145	362	1.0	364	360
145-150	362	0.9	364	361
150-155	362	1.1	364	360
155-160	361	1.2	362	358
160-165	358	0.8	359	357
165-170	357	0.6	358	356
170-175	358	0.9	360	357
175-180	361	0.8	363	360
180-185	361	0.9	363	359
185-190	360	1.1	362	358
190-195	359	0.9	362	358
195-200	359	0.7	361	358
200-205	359	1.0	361	358
205-210	359	1.1	361	357
210-215	361	1.1	362	358
215-220	363	0.8	365	361
220-225	366	1.2	369	364
225-230	369	1.0	371	367
230-235	371	0.8	373	370
235-240	370	0.9	372	367
FOR THIS RUN:	364	5.9	396	356

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	70.4	0.5	71.4	69.6
5- 10	70.7	0.7	71.6	69.6
10- 15	70.7	0.6	71.4	69.6
15- 20	70.4	0.6	71.4	69.4
20- 25	70.6	0.6	71.4	69.6
25- 30	70.7	0.6	71.6	69.6
30- 35	70.3	0.6	71.4	69.4
35- 40	70.6	0.7	71.6	69.4
40- 45	70.5	0.6	71.6	69.6
45- 50	70.4	0.6	71.4	69.6
50- 55	70.7	0.7	71.6	69.6
55- 60	70.4	0.6	71.4	69.4
60- 65	70.5	0.7	71.6	69.6
65- 70	70.7	0.6	71.4	69.4
70- 75	70.5	0.6	71.6	69.9
75- 80	70.4	0.7	71.6	69.4
80- 85	70.7	0.6	71.4	69.6
85- 90	70.4	0.7	71.6	69.6
90- 95	70.4	0.6	71.4	69.6
95-100	70.6	0.6	71.6	69.6
100-105	70.4	0.6	71.6	69.6
105-110	70.5	0.5	71.4	69.6
110-115	70.7	0.7	71.6	69.6
115-120	70.3	0.6	71.4	69.6
120-125	70.5	0.6	71.4	69.6
125-130	70.7	0.6	71.6	69.6
130-135	70.3	0.6	71.6	69.4
135-140	70.6	0.6	71.6	69.6
140-145	70.3	0.6	71.4	69.6
145-150	70.6	0.6	71.4	69.6
150-155	70.6	0.7	71.6	69.6
155-160	70.3	0.6	71.4	69.4
160-165	70.5	0.7	71.4	69.6
165-170	70.7	0.6	71.4	69.4
170-175	70.5	0.6	71.4	69.4
175-180	70.2	0.6	71.4	69.4
180-185	70.4	0.6	71.4	69.6
185-190	70.6	0.6	71.4	69.4
190-195	70.6	0.7	71.4	69.4
195-200	70.3	0.6	71.6	69.6
200-205	70.2	0.6	71.1	69.6
205-210	70.5	0.6	71.4	69.4
210-215	70.6	0.6	71.4	69.4
215-220	70.4	0.6	71.6	69.4
220-225	70.3	0.6	71.4	69.6
225-230	70.6	0.6	71.4	69.4
230-235	70.6	0.6	71.4	69.4
235-240	70.5	0.6	71.4	69.6
FOR THIS RUN:	70.5	0.6	71.6	69.4

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29.3	0.0	29.3	29.2
5- 10	29.2	0.0	29.3	29.1
10- 15	29.2	0.0	29.3	29.1
15- 20	29.2	0.0	29.3	29.2
20- 25	29.2	0.0	29.3	29.2
25- 30	29.2	0.0	29.3	29.2
30- 35	29.2	0.0	29.3	29.2
35- 40	29.2	0.0	29.3	29.2
40- 45	29.2	0.0	29.3	29.2
45- 50	29.2	0.0	29.3	29.2
50- 55	29.2	0.0	29.3	29.2
55- 60	29.2	0.0	29.3	29.2
60- 65	29.3	0.0	29.3	29.2
65- 70	29.2	0.0	29.3	29.2
70- 75	29.2	0.0	29.3	29.2
75- 80	29.2	0.0	29.3	29.1
80- 85	29.2	0.0	29.3	29.1
85- 90	29.2	0.0	29.3	29.1
90- 95	29.2	0.0	29.3	29.2
95-100	29.2	0.0	29.3	29.2
100-105	29.2	0.0	29.3	29.2
105-110	29.2	0.0	29.3	29.2
110-115	29.2	0.0	29.3	29.2
115-120	29.2	0.0	29.3	29.2
120-125	29.2	0.0	29.3	29.1
125-130	29.2	0.0	29.3	29.1
130-135	29.2	0.0	29.3	29.2
135-140	29.2	0.0	29.3	29.2
140-145	29.2	0.0	29.3	29.2
145-150	29.2	0.0	29.3	29.2
150-155	29.2	0.0	29.3	29.1
155-160	29.2	0.0	29.3	29.2
160-165	29.2	0.0	29.3	29.2
165-170	29.2	0.0	29.3	29.1
170-175	29.2	0.0	29.3	29.2
175-180	29.2	0.0	29.3	29.2
180-185	29.2	0.0	29.3	29.2
185-190	29.2	0.0	29.3	29.2
190-195	29.2	0.0	29.3	29.2
195-200	29.2	0.0	29.3	29.1
200-205	29.2	0.0	29.3	29.2
205-210	29.2	0.0	29.3	29.2
210-215	29.2	0.0	29.3	29.1
215-220	29.2	0.0	29.3	29.2
220-225	29.2	0.0	29.3	29.2
225-230	29.2	0.0	29.3	29.2
230-235	29.2	0.0	29.3	29.2
235-240	29.2	0.0	29.3	29.2
FOR THIS RUN:	29.2	0.0	29.3	29.1

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.1	0.0	2.1	2.0
5- 10	2.1	0.0	2.1	2.0
10- 15	2.1	0.0	2.1	2.0
15- 20	2.1	0.0	2.1	2.0
20- 25	2.1	0.0	2.1	2.0
25- 30	2.1	0.0	2.1	2.0
30- 35	2.1	0.0	2.1	2.0
35- 40	2.1	0.0	2.1	2.0
40- 45	2.1	0.0	2.1	2.0
45- 50	2.1	0.0	2.1	2.0
50- 55	2.1	0.0	2.1	2.0
55- 60	2.1	0.0	2.1	2.0
60- 65	2.1	0.0	2.1	2.0
65- 70	2.1	0.0	2.1	2.0
70- 75	2.1	0.0	2.1	2.0
75- 80	2.1	0.0	2.1	2.0
80- 85	2.1	0.0	2.1	2.0
85- 90	2.1	0.0	2.1	2.0
90- 95	2.1	0.0	2.1	2.0
95-100	2.1	0.0	2.1	2.0
100-105	2.1	0.0	2.1	2.0
105-110	2.1	0.0	2.1	2.0
110-115	2.1	0.0	2.1	2.0
115-120	2.1	0.0	2.1	2.0
120-125	2.1	0.0	2.1	2.0
125-130	2.1	0.0	2.1	2.0
130-135	2.1	0.0	2.1	2.0
135-140	2.1	0.0	2.1	2.0
140-145	2.1	0.0	2.1	2.0
145-150	2.1	0.0	2.1	2.0
150-155	2.1	0.0	2.1	2.0
155-160	2.1	0.0	2.1	2.0
160-165	2.1	0.0	2.1	2.0
165-170	2.1	0.0	2.1	2.0
170-175	2.1	0.0	2.1	2.0
175-180	2.1	0.0	2.1	2.0
180-185	2.1	0.0	2.1	2.0
185-190	2.1	0.0	2.1	2.0
190-195	2.1	0.0	2.1	2.0
195-200	2.1	0.0	2.1	2.0
200-205	2.1	0.0	2.1	2.0
205-210	2.1	0.0	2.1	2.0
210-215	2.1	0.0	2.1	2.0
215-220	2.1	0.0	2.1	2.0
220-225	2.1	0.0	2.1	2.0
225-230	2.1	0.0	2.1	2.0
230-235	2.1	0.0	2.1	2.0
235-240	2.1	0.0	2.1	2.0
FOR THIS RUN:	2.1	0.0	2.1	2.0

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	36	0.0	36	36
5- 10	36	0.1	36	36
10- 15	36	0.3	36	35
15- 20	36	0.2	37	36
20- 25	37	2.1	47	36
25- 30	36	0.1	36	36
30- 35	36	0.1	36	36
35- 40	36	0.1	36	36
40- 45	36	0.1	36	36
45- 50	36	0.1	36	35
50- 55	36	0.4	38	36
55- 60	36	0.1	36	36
60- 65	37	5.2	62	35
65- 70	36	0.4	37	35
70- 75	35	0.1	36	35
75- 80	36	1.0	41	35
80- 85	35	0.1	36	35
85- 90	35	0.2	36	35
90- 95	36	3.4	52	35
95-100	35	0.1	36	35
100-105	35	0.1	35	35
105-110	35	0.1	35	35
110-115	35	0.1	35	35
115-120	35	0.1	35	35
120-125	35	0.4	37	35
125-130	35	0.2	35	34
130-135	35	0.1	35	35
135-140	35	0.2	35	34
140-145	35	0.2	35	34
145-150	34	0.1	35	34
150-155	34	0.1	35	34
155-160	34	0.1	35	34
160-165	35	3.6	53	34
165-170	34	0.1	35	34
170-175	34	0.1	35	34
175-180	34	0.1	34	34
180-185	34	0.1	34	34
185-190	35	2.9	49	34
190-195	34	0.2	34	33
195-200	35	4.4	57	34
200-205	34	1.5	41	34
205-210	34	0.1	34	34
210-215	34	0.1	34	34
215-220	34	0.1	34	34
220-225	34	0.1	34	33
225-230	34	0.2	34	33
230-235	33	0.1	34	33
235-240	33	0.2	34	33
FOR THIS RUN:	35	1.6	62	33

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	420	3.4	425	413
5- 10	425	0.6	426	424
10- 15	420	1.9	424	418
15- 20	417	1.0	418	415
20- 25	416	1.2	418	414
25- 30	418	0.4	419	418
30- 35	418	0.5	419	418
35- 40	418	0.8	419	417
40- 45	416	0.6	418	416
45- 50	417	0.5	419	417
50- 55	419	0.3	419	418
55- 60	418	0.3	419	418
60- 65	417	0.6	418	416
65- 70	418	0.5	419	416
70- 75	418	0.3	419	418
75- 80	420	0.3	420	419
80- 85	418	0.5	420	418
85- 90	417	0.9	419	416
90- 95	418	0.3	419	418
95-100	417	0.5	418	417
100-105	418	0.6	419	417
105-110	418	0.5	418	417
110-115	417	0.5	418	416
115-120	417	0.9	418	416
120-125	417	0.2	418	417
125-130	418	0.4	419	418
130-135	418	0.2	419	418
135-140	417	0.6	418	416
140-145	417	0.5	418	417
145-150	418	0.7	419	417
150-155	418	0.5	419	417
155-160	419	0.2	419	419
160-165	419	0.4	419	418
165-170	417	0.3	418	417
170-175	416	0.3	417	416
175-180	417	0.8	418	416
180-185	418	0.2	419	418
185-190	418	0.4	419	417
190-195	418	0.3	419	417
195-200	417	0.5	418	417
200-205	418	0.5	419	417
205-210	417	0.3	418	417
210-215	416	0.4	417	416
215-220	416	0.5	417	415
220-225	416	0.5	417	415
225-230	416	0.4	417	415
230-235	418	0.5	418	417
235-240	418	0.4	419	418
FOR THIS RUN:	418	1.7	426	413

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	461	10.2	485	449
5- 10	448	5.7	465	439
10- 15	438	1.3	441	436
15- 20	440	2.4	444	435
20- 25	445	1.5	448	442
25- 30	445	1.5	449	442
30- 35	444	1.6	448	441
35- 40	444	1.3	446	441
40- 45	446	1.5	449	443
45- 50	447	1.5	449	444
50- 55	445	1.2	447	443
55- 60	444	1.4	446	441
60- 65	445	1.5	448	442
65- 70	446	1.8	449	442
70- 75	445	1.3	448	441
75- 80	441	2.4	444	436
80- 85	438	1.3	441	436
85- 90	438	2.1	443	435
90- 95	438	1.8	441	434
95-100	439	1.2	441	436
100-105	439	1.0	441	437
105-110	438	1.2	440	436
110-115	440	1.4	443	437
115-120	442	2.0	445	438
120-125	442	1.5	445	439
125-130	440	1.0	442	439
130-135	439	1.2	442	436
135-140	439	1.6	443	436
140-145	440	1.3	443	438
145-150	440	1.7	444	437
150-155	439	1.8	442	436
155-160	436	1.7	438	432
160-165	433	1.1	435	431
165-170	434	1.2	436	432
170-175	437	1.4	439	434
175-180	438	1.6	442	435
180-185	437	1.3	439	435
185-190	436	1.8	440	433
190-195	436	1.3	439	434
195-200	436	1.2	439	434
200-205	436	1.7	439	432
205-210	436	1.3	439	434
210-215	439	1.3	441	437
215-220	442	1.7	446	439
220-225	446	1.8	451	442
225-230	450	1.3	453	448
230-235	450	1.0	453	449
235-240	448	1.5	451	445
FOR THIS RUN:	441	5.6	485	431

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	194	4.1	202	187
5- 10	191	2.6	198	186
10- 15	184	1.1	187	182
15- 20	183	0.7	185	182
20- 25	185	1.0	187	183
25- 30	186	0.5	187	185
30- 35	186	0.6	187	184
35- 40	185	0.6	187	185
40- 45	186	0.5	186	185
45- 50	187	0.5	188	186
50- 55	186	0.5	187	185
55- 60	186	0.5	187	185
60- 65	186	0.5	187	185
65- 70	186	0.8	188	185
70- 75	186	0.5	187	185
75- 80	185	1.0	186	183
80- 85	183	0.7	185	182
85- 90	183	0.8	184	181
90- 95	183	0.8	185	181
95-100	183	0.5	184	182
100-105	183	0.5	185	183
105-110	183	0.5	184	182
110-115	184	0.6	185	182
115-120	184	0.8	186	182
120-125	184	0.6	186	183
125-130	184	0.4	185	183
130-135	184	0.5	185	182
135-140	183	0.5	185	182
140-145	184	0.6	185	182
145-150	184	0.6	185	183
150-155	184	0.7	185	182
155-160	183	0.7	184	181
160-165	181	0.5	182	180
165-170	181	0.5	182	180
170-175	182	0.5	183	181
175-180	183	0.6	184	182
180-185	183	0.5	184	182
185-190	182	0.8	184	181
190-195	182	0.6	184	181
195-200	182	0.5	183	181
200-205	182	0.6	183	181
205-210	182	0.6	183	181
210-215	183	0.6	184	182
215-220	184	0.6	185	183
220-225	186	0.7	188	184
225-230	187	0.5	188	186
230-235	188	0.5	189	187
235-240	188	0.6	188	186
FOR THIS RUN:	184	2.5	202	180

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	38.3	2.0	41.1	34.2
5- 10	38.1	0.8	39.8	36.3
10- 15	37.4	0.7	38.8	35.7
15- 20	37.3	0.9	39.3	36.0
20- 25	37.1	0.7	38.5	36.0
25- 30	37.9	0.8	39.6	36.5
30- 35	37.7	0.7	39.0	36.5
35- 40	37.3	0.8	38.8	36.3
40- 45	37.6	0.7	39.0	36.5
45- 50	37.5	0.7	38.5	36.3
50- 55	37.6	0.9	39.0	36.0
55- 60	37.6	0.8	38.8	36.3
60- 65	37.3	0.7	38.8	36.0
65- 70	37.4	0.6	39.0	36.5
70- 75	37.7	0.7	39.0	36.5
75- 80	37.7	0.8	39.3	36.0
80- 85	37.3	0.6	38.8	36.0
85- 90	37.5	0.8	38.8	35.5
90- 95	37.3	0.7	38.8	36.3
95-100	37.3	0.7	38.5	36.3
100-105	37.6	0.6	38.5	36.3
105-110	37.2	0.6	38.3	36.0
110-115	37.3	0.6	38.8	36.3
115-120	37.4	0.8	38.8	36.3
120-125	37.3	0.6	38.8	36.3
125-130	37.5	0.8	39.0	36.0
130-135	37.5	0.7	38.5	35.7
135-140	37.1	0.6	38.3	36.0
140-145	37.6	0.9	38.8	36.0
145-150	37.2	0.7	38.5	36.0
150-155	37.5	0.6	39.0	36.3
155-160	37.7	0.8	39.0	36.0
160-165	37.1	0.8	38.8	35.7
165-170	37.0	0.8	38.5	35.7
170-175	37.3	0.7	38.8	36.3
175-180	37.4	0.7	38.8	36.3
180-185	37.3	0.7	38.5	36.3
185-190	37.1	0.8	38.3	35.7
190-195	37.2	0.7	38.5	35.7
195-200	37.5	0.7	38.5	36.3
200-205	37.3	0.8	38.8	36.0
205-210	37.1	0.7	38.5	36.0
210-215	37.0	0.6	38.3	36.0
215-220	37.5	0.8	38.8	35.7
220-225	37.1	0.7	38.5	36.0
225-230	37.3	0.7	38.5	36.3
230-235	37.7	0.7	39.0	36.5
235-240	37.8	0.7	39.3	36.5
FOR THIS RUN:	37.4	0.8	41.1	34.2

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	5.9	5.4	7.7	-20.5
5- 10	5.0	6.2	7.7	-15.5
10- 15	7.0	0.5	7.9	6.0
15- 20	8.5	5.5	32.0	-0.3
20- 25	6.9	1.5	7.9	-0.2
25- 30	7.0	1.3	12.2	4.7
30- 35	7.1	0.6	8.5	6.0
35- 40	6.9	0.8	7.6	4.4
40- 45	5.7	5.4	7.7	-20.4
45- 50	7.2	0.5	8.7	6.1
50- 55	7.0	0.5	7.6	6.2
55- 60	5.9	8.9	20.5	-35.5
60- 65	6.7	1.1	7.6	2.7
65- 70	6.4	3.0	7.5	-7.8
70- 75	7.0	0.5	8.0	6.0
75- 80	7.1	0.5	7.6	5.9
80- 85	6.5	2.5	7.5	-5.3
85- 90	7.4	1.6	13.8	6.1
90- 95	6.7	1.2	7.5	1.5
95-100	7.0	0.5	7.6	6.0
100-105	7.2	2.4	16.6	0.8
105-110	5.3	10.6	15.2	-46.0
110-115	6.8	0.6	7.5	4.6
115-120	7.0	6.9	31.8	-16.7
120-125	6.9	1.1	7.6	2.2
125-130	7.0	0.5	7.5	6.0
130-135	7.0	0.5	7.5	5.9
135-140	7.3	1.1	12.6	6.2
140-145	7.0	1.1	11.8	5.5
145-150	6.1	3.3	7.5	-7.1
150-155	6.8	0.6	7.5	5.0
155-160	5.8	9.0	21.3	-35.9
160-165	7.1	2.0	14.9	1.6
165-170	7.8	3.0	21.6	6.2
170-175	7.1	1.3	13.0	5.3
175-180	4.0	17.9	21.1	-82.8
180-185	7.0	1.2	10.3	3.0
185-190	7.2	1.7	14.4	2.9
190-195	8.0	4.9	32.0	6.3
195-200	4.6	13.5	20.6	-60.2
200-205	3.5	17.6	12.8	-82.3
205-210	5.5	5.6	7.8	-19.8
210-215	7.0	0.4	7.5	6.0
215-220	9.6	11.5	55.9	-2.6
220-225	7.1	0.4	7.6	6.1
225-230	6.8	1.1	7.6	1.9
230-235	7.4	1.9	16.4	6.3
235-240	7.4	1.6	14.6	6.0
FOR THIS RUN:	6.7	5.7	55.9	-82.8

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.2	0.2	0.3	-0.7
5- 10	0.2	0.2	0.3	-0.6
10- 15	0.3	0.0	0.3	0.2
15- 20	0.3	0.2	1.2	-0.0
20- 25	0.3	0.1	0.3	-0.0
25- 30	0.3	0.1	0.5	0.2
30- 35	0.3	0.0	0.3	0.2
35- 40	0.3	0.0	0.3	0.2
40- 45	0.2	0.2	0.3	-0.8
45- 50	0.3	0.0	0.3	0.2
50- 55	0.3	0.0	0.3	0.2
55- 60	0.2	0.3	0.8	-1.4
60- 65	0.3	0.0	0.3	0.1
65- 70	0.2	0.1	0.3	-0.3
70- 75	0.3	0.0	0.3	0.2
75- 80	0.3	0.0	0.3	0.2
80- 85	0.2	0.1	0.3	-0.2
85- 90	0.3	0.1	0.5	0.2
90- 95	0.3	0.0	0.3	0.1
95-100	0.3	0.0	0.3	0.2
100-105	0.3	0.1	0.6	0.0
105-110	0.2	0.4	0.6	-1.7
110-115	0.3	0.0	0.3	0.2
115-120	0.3	0.3	1.2	-0.6
120-125	0.3	0.0	0.3	0.1
125-130	0.3	0.0	0.3	0.2
130-135	0.3	0.0	0.3	0.2
135-140	0.3	0.0	0.5	0.2
140-145	0.3	0.0	0.5	0.2
145-150	0.2	0.1	0.3	-0.3
150-155	0.3	0.0	0.3	0.2
155-160	0.2	0.3	0.8	-1.4
160-165	0.3	0.1	0.6	0.1
165-170	0.3	0.1	0.8	0.2
170-175	0.3	0.1	0.5	0.2
175-180	0.2	0.7	0.8	-3.1
180-185	0.3	0.0	0.4	0.1
185-190	0.3	0.1	0.5	0.1
190-195	0.3	0.2	1.2	0.2
195-200	0.2	0.5	0.8	-2.2
200-205	0.1	0.6	0.5	-3.0
205-210	0.2	0.2	0.3	-0.7
210-215	0.3	0.0	0.3	0.2
215-220	0.4	0.4	2.2	-0.1
220-225	0.3	0.0	0.3	0.2
225-230	0.3	0.0	0.3	0.1
230-235	0.3	0.1	0.6	0.2
235-240	0.3	0.1	0.6	0.2
FOR THIS RUN:	.3	0.2	2.2	-3.1

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	881.2	6.0	887.4	866.4
5- 10	880.1	6.2	886.4	865.4
10- 15	880.2	6.6	886.4	866.4
15- 20	881.0	5.6	886.4	866.4
20- 25	879.9	6.5	887.4	866.4
25- 30	881.0	5.6	886.4	866.4
30- 35	880.0	6.4	886.4	866.4
35- 40	881.3	5.9	887.4	866.4
40- 45	881.0	5.7	886.4	866.4
45- 50	880.0	6.6	886.4	867.4
50- 55	881.1	5.8	886.4	866.4
55- 60	880.1	6.5	886.4	866.4
60- 65	881.1	6.0	886.4	866.4
65- 70	879.7	6.4	886.4	866.4
70- 75	880.8	6.4	886.4	866.4
75- 80	880.4	6.0	886.4	866.4
80- 85	880.2	6.6	886.4	866.4
85- 90	881.1	5.6	886.4	867.4
90- 95	880.0	6.5	886.4	866.4
95-100	881.0	5.8	886.4	866.4
100-105	880.0	6.4	886.4	866.4
105-110	881.1	5.9	887.4	867.4
110-115	881.0	5.5	886.4	866.4
115-120	880.2	6.6	886.4	865.4
120-125	881.1	5.8	887.4	866.4
125-130	879.9	6.5	886.4	866.4
130-135	881.2	5.8	886.4	866.4
135-140	879.8	6.5	887.4	866.4
140-145	880.4	6.5	886.4	866.4
145-150	880.6	5.7	887.4	867.4
150-155	880.1	6.4	886.4	866.4
155-160	881.0	5.6	886.4	866.4
160-165	879.8	6.4	886.4	866.4
165-170	881.2	5.7	886.4	867.4
170-175	880.6	5.9	887.4	866.4
175-180	880.7	6.2	886.4	866.4
180-185	880.9	5.6	886.4	866.4
185-190	879.9	6.5	886.4	866.4
190-195	881.1	5.7	886.4	866.4
195-200	879.8	6.7	887.4	865.4
200-205	880.8	6.1	886.4	866.4
205-210	879.8	6.3	886.4	866.4
210-215	879.8	6.6	886.4	866.4
215-220	880.9	5.5	886.4	866.4
220-225	879.8	6.4	886.4	866.4
225-230	881.0	5.8	886.4	867.4
230-235	879.6	6.3	886.4	866.4
235-240	881.3	5.9	887.4	865.4
FOR THIS RUN:	880.5	6.1	887.4	865.4

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	31	0.1	32	31
5- 10	31	0.1	32	31
10- 15	31	0.1	31	31
15- 20	31	0.1	31	31
20- 25	31	0.2	31	30
25- 30	31	0.5	34	31
30- 35	34	14.3	104	31
35- 40	31	0.1	31	31
40- 45	31	0.1	31	31
45- 50	31	0.1	31	31
50- 55	31	0.1	31	31
55- 60	31	0.1	31	31
60- 65	31	0.6	34	31
65- 70	31	0.1	31	31
70- 75	31	0.6	33	31
75- 80	31	0.1	31	31
80- 85	31	0.1	31	31
85- 90	31	0.1	31	30
90- 95	31	0.1	31	30
95-100	31	0.1	31	30
100-105	31	0.1	31	30
105-110	30	0.1	30	30
110-115	30	0.1	30	30
115-120	30	0.1	30	30
120-125	30	0.1	30	30
125-130	30	0.3	32	30
130-135	30	0.1	30	30
135-140	30	0.1	30	30
140-145	30	0.1	30	30
145-150	30	0.1	30	30
150-155	30	0.3	31	29
155-160	30	0.1	30	30
160-165	30	1.0	34	30
165-170	30	0.1	30	30
170-175	30	0.1	30	30
175-180	30	0.1	30	30
180-185	30	0.3	31	30
185-190	30	0.1	30	30
190-195	30	0.1	30	29
195-200	30	0.1	30	29
200-205	30	0.1	30	29
205-210	30	1.9	39	29
210-215	30	0.3	31	29
215-220	29	0.2	30	29
220-225	29	0.1	29	29
225-230	29	0.1	29	29
230-235	29	0.4	31	29
235-240	29	0.1	30	29
FOR THIS RUN:	30	2.2	104	29

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	413	3.4	417	405
5- 10	418	0.6	419	417
10- 15	413	1.9	416	411
15- 20	409	1.0	411	407
20- 25	409	1.1	411	407
25- 30	411	0.5	411	410
30- 35	411	0.5	412	410
35- 40	411	0.8	412	410
40- 45	409	0.6	411	408
45- 50	410	0.5	411	410
50- 55	411	0.4	412	411
55- 60	411	0.2	411	411
60- 65	410	0.7	411	409
65- 70	410	0.5	411	409
70- 75	411	0.3	411	410
75- 80	412	0.3	413	412
80- 85	411	0.5	412	411
85- 90	410	1.0	411	408
90- 95	410	0.3	411	410
95-100	410	0.6	411	409
100-105	411	0.5	411	410
105-110	410	0.5	411	410
110-115	410	0.5	411	409
115-120	410	0.8	411	408
120-125	410	0.2	411	410
125-130	411	0.4	412	411
130-135	411	0.2	411	410
135-140	410	0.6	411	409
140-145	410	0.5	411	409
145-150	410	0.7	411	409
150-155	411	0.5	411	410
155-160	412	0.2	412	411
160-165	411	0.3	412	411
165-170	410	0.2	410	409
170-175	409	0.3	409	408
175-180	410	0.8	411	409
180-185	411	0.2	411	411
185-190	411	0.4	411	410
190-195	410	0.3	411	410
195-200	410	0.4	411	410
200-205	411	0.5	411	410
205-210	410	0.3	410	409
210-215	409	0.3	409	408
215-220	409	0.4	410	408
220-225	408	0.5	409	408
225-230	409	0.3	409	408
230-235	411	0.4	411	410
235-240	411	0.4	411	410
FOR THIS RUN:	410	1.7	419	405

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	475	10.4	499	463
5- 10	463	5.5	480	455
10- 15	453	1.5	457	451
15- 20	455	2.7	462	452
20- 25	460	1.3	463	458
25- 30	461	1.2	463	458
30- 35	459	1.4	461	457
35- 40	459	1.3	461	455
40- 45	461	1.4	463	458
45- 50	462	1.4	465	460
50- 55	460	1.6	463	457
55- 60	460	1.2	463	458
60- 65	460	1.2	463	458
65- 70	461	1.5	465	458
70- 75	460	1.5	462	457
75- 80	456	2.0	460	453
80- 85	453	1.1	455	452
85- 90	454	1.7	457	451
90- 95	454	1.2	456	451
95-100	455	1.3	456	452
100-105	454	1.3	458	452
105-110	454	0.9	455	453
110-115	456	1.5	460	453
115-120	458	1.6	462	455
120-125	457	1.2	459	455
125-130	456	1.4	458	453
130-135	455	1.2	458	453
135-140	455	1.4	458	453
140-145	456	1.2	458	453
145-150	456	1.7	460	453
150-155	455	1.4	457	452
155-160	452	1.5	455	449
160-165	449	1.0	451	448
165-170	450	1.2	452	448
170-175	453	1.3	455	450
175-180	454	1.3	456	451
180-185	453	1.1	455	451
185-190	452	1.4	456	450
190-195	452	1.0	454	450
195-200	452	1.3	455	450
200-205	451	1.5	454	449
205-210	452	1.3	455	450
210-215	455	1.4	458	453
215-220	458	1.4	460	454
220-225	463	1.6	466	459
225-230	466	1.5	470	463
230-235	467	1.2	468	465
235-240	464	1.3	466	462
FOR THIS RUN:	457	5.4	499	448

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	196	4.1	204	190
5- 10	193	2.5	200	190
10- 15	187	1.3	190	185
15- 20	186	0.7	188	185
20- 25	188	0.9	190	186
25- 30	189	0.3	190	189
30- 35	189	0.5	190	188
35- 40	188	0.4	189	187
40- 45	188	0.5	189	188
45- 50	190	0.5	191	189
50- 55	189	0.7	190	188
55- 60	189	0.5	190	188
60- 65	189	0.5	189	188
65- 70	189	0.7	191	188
70- 75	189	0.6	190	188
75- 80	188	0.8	190	187
80- 85	186	0.6	188	185
85- 90	186	0.7	187	184
90- 95	186	0.5	187	185
95-100	186	0.6	187	185
100-105	186	0.5	188	185
105-110	186	0.4	187	185
110-115	187	0.7	189	185
115-120	188	0.7	189	186
120-125	188	0.5	188	186
125-130	187	0.6	188	186
130-135	187	0.5	188	186
135-140	187	0.5	188	186
140-145	187	0.6	188	185
145-150	187	0.7	189	186
150-155	187	0.5	188	185
155-160	186	0.7	187	185
160-165	185	0.4	185	184
165-170	184	0.5	185	183
170-175	185	0.5	186	184
175-180	186	0.5	187	185
180-185	186	0.5	187	185
185-190	186	0.6	187	185
190-195	185	0.5	186	185
195-200	185	0.6	187	184
200-205	185	0.5	186	184
205-210	185	0.6	186	184
210-215	186	0.6	188	185
215-220	187	0.6	188	186
220-225	189	0.6	190	188
225-230	190	0.6	192	189
230-235	192	0.5	192	191
235-240	191	0.5	192	190
FOR THIS RUN:	188	2.4	204	183

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	41.9	1.5	44.3	38.5
5- 10	41.3	0.9	42.8	39.6
10- 15	40.4	0.8	42.3	39.1
15- 20	40.3	0.7	41.1	38.8
20- 25	40.7	0.8	42.1	39.6
25- 30	40.5	0.7	41.8	39.1
30- 35	40.9	0.7	42.1	39.6
35- 40	40.4	0.7	41.8	39.3
40- 45	40.6	0.8	42.3	39.1
45- 50	40.9	0.7	42.3	39.6
50- 55	40.7	0.6	41.8	39.8
55- 60	40.5	0.7	41.6	39.3
60- 65	40.6	0.7	41.8	39.3
65- 70	40.7	0.7	42.1	39.1
70- 75	40.6	0.8	42.1	39.3
75- 80	41.1	0.6	41.8	40.1
80- 85	40.4	0.7	41.6	39.3
85- 90	40.3	0.6	41.6	39.1
90- 95	40.7	0.7	42.1	39.6
95-100	40.3	0.6	41.8	39.3
100-105	40.5	0.8	41.8	39.1
105-110	40.7	0.7	41.8	39.6
110-115	40.2	0.6	41.3	39.3
115-120	40.6	0.8	41.8	38.8
120-125	40.7	0.7	41.8	39.3
125-130	40.5	0.8	42.1	39.1
130-135	40.5	0.7	41.6	39.1
135-140	40.3	0.7	42.1	39.3
140-145	40.5	0.6	41.3	39.3
145-150	40.6	0.7	42.3	39.3
150-155	40.4	0.6	42.1	39.3
155-160	40.8	0.7	42.1	39.6
160-165	40.5	0.8	42.1	39.1
165-170	40.2	0.7	41.8	38.8
170-175	40.0	0.6	41.1	39.1
175-180	40.8	0.7	42.1	39.3
180-185	40.7	0.7	41.8	39.6
185-190	40.4	0.6	41.8	39.6
190-195	40.2	0.6	41.3	39.3
195-200	40.4	0.7	41.8	39.3
200-205	40.7	0.7	42.1	39.6
205-210	40.4	0.7	41.8	38.8
210-215	40.2	0.7	42.1	39.1
215-220	40.3	0.7	41.8	39.3
220-225	40.6	0.7	42.1	39.1
225-230	40.5	0.6	41.8	39.6
230-235	40.7	0.7	42.3	39.6
235-240	40.5	0.6	41.6	39.6
FOR THIS RUN:	40.6	0.8	44.3	38.5

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.7	14.6	8.1	-51.6
5- 10	6.9	2.2	8.4	-1.5
10- 15	4.6	9.3	8.0	-35.7
15- 20	4.3	7.4	7.9	-26.3
20- 25	2.6	22.2	8.0	-106.3
25- 30	2.8	22.3	8.0	-106.3
30- 35	1.3	15.8	8.0	-56.5
35- 40	-2.9	30.5	8.9	-106.3
40- 45	3.8	10.7	8.0	-39.8
45- 50	-0.2	25.2	8.1	-97.7
50- 55	3.4	20.5	8.1	-97.0
55- 60	1.7	17.4	8.1	-60.2
60- 65	6.4	6.1	17.8	-21.4
65- 70	1.4	22.2	8.8	-101.3
70- 75	4.2	7.8	8.0	-26.1
75- 80	5.2	7.4	8.0	-20.1
80- 85	2.9	22.3	8.4	-106.3
85- 90	5.5	7.5	8.1	-30.5
90- 95	0.8	18.8	8.1	-66.9
95-100	1.6	15.2	8.5	-53.2
100-105	1.1	18.8	8.0	-77.6
105-110	4.9	9.4	7.9	-39.6
110-115	3.0	13.9	8.6	-55.5
115-120	3.9	8.9	8.8	-25.8
120-125	1.9	21.6	8.3	-102.6
125-130	2.4	14.9	8.2	-49.0
130-135	-0.9	21.1	8.1	-79.0
135-140	6.5	3.5	8.2	-7.5
140-145	2.7	14.3	8.1	-62.1
145-150	4.1	12.1	8.8	-53.7
150-155	3.8	15.0	8.0	-68.5
155-160	1.5	15.0	8.0	-56.9
160-165	3.1	15.1	8.0	-63.4
165-170	7.3	1.0	8.9	3.5
170-175	1.7	22.3	8.0	-106.3
175-180	5.0	8.3	8.2	-33.5
180-185	0.2	23.0	8.0	-106.3
185-190	4.5	13.5	8.9	-61.6
190-195	5.2	9.8	8.0	-42.6
195-200	6.7	2.0	8.1	-1.2
200-205	3.0	15.3	8.5	-70.5
205-210	5.0	9.0	7.9	-38.3
210-215	6.6	4.4	8.6	-15.0
215-220	6.0	3.3	8.6	-3.8
220-225	-1.8	26.9	8.0	-106.3
225-230	0.7	23.1	8.5	-89.3
230-235	5.7	7.3	9.0	-28.5
235-240	3.9	12.3	8.9	-41.9
FOR THIS RUN:	3.3	15.9	17.8	-106.3

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.1	0.6	0.3	-2.3
5- 10	0.3	0.1	0.3	-0.1
10- 15	0.2	0.4	0.3	-1.5
15- 20	0.2	0.3	0.3	-1.1
20- 25	0.1	0.9	0.3	-4.4
25- 30	0.1	0.9	0.3	-4.3
30- 35	0.0	0.6	0.3	-2.3
35- 40	-0.1	1.3	0.4	-4.3
40- 45	0.1	0.4	0.3	-1.7
45- 50	-0.0	1.0	0.3	-4.0
50- 55	0.1	0.8	0.3	-4.0
55- 60	0.1	0.7	0.3	-2.5
60- 65	0.3	0.2	0.7	-0.9
65- 70	0.1	0.9	0.4	-4.1
70- 75	0.2	0.3	0.3	-1.1
75- 80	0.2	0.3	0.3	-0.8
80- 85	0.1	0.9	0.3	-4.3
85- 90	0.2	0.3	0.3	-1.3
90- 95	0.0	0.8	0.3	-2.8
95-100	0.1	0.6	0.3	-2.1
100-105	0.0	0.8	0.3	-3.2
105-110	0.2	0.4	0.3	-1.6
110-115	0.1	0.6	0.3	-2.2
115-120	0.2	0.4	0.4	-1.1
120-125	0.1	0.9	0.3	-4.2
125-130	0.1	0.6	0.3	-2.0
130-135	-0.0	0.9	0.3	-3.2
135-140	0.3	0.1	0.3	-0.3
140-145	0.1	0.6	0.3	-2.5
145-150	0.2	0.5	0.3	-2.1
150-155	0.2	0.6	0.3	-2.7
155-160	0.1	0.6	0.3	-2.3
160-165	0.1	0.6	0.3	-2.6
165-170	0.3	0.0	0.4	0.1
170-175	0.1	0.9	0.3	-4.2
175-180	0.2	0.3	0.3	-1.4
180-185	0.0	1.0	0.3	-4.4
185-190	0.2	0.6	0.4	-2.5
190-195	0.2	0.4	0.3	-1.7
195-200	0.3	0.1	0.3	-0.0
200-205	0.1	0.6	0.3	-2.9
205-210	0.2	0.4	0.3	-1.5
210-215	0.3	0.2	0.3	-0.6
215-220	0.2	0.1	0.3	-0.2
220-225	-0.1	1.1	0.3	-4.3
225-230	0.0	0.9	0.3	-3.6
230-235	0.2	0.3	0.4	-1.2
235-240	0.2	0.5	0.4	-1.7
FOR THIS RUN:	.1	0.6	.7	-4.4

TABLE 7 (Continued)

RUN NUMBER 2231

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(38.1 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 1.0 knot
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	891.5	4.5	900.4	885.4
5- 10	896.6	3.8	900.4	888.4
10- 15	891.4	4.9	901.4	885.4
15- 20	896.2	3.8	900.4	887.4
20- 25	891.6	4.9	901.4	886.4
25- 30	895.8	4.2	900.4	886.4
30- 35	892.4	5.3	900.4	886.4
35- 40	895.2	4.1	900.4	886.4
40- 45	892.9	5.6	900.4	886.4
45- 50	894.2	4.2	900.4	886.4
50- 55	893.8	5.7	901.4	885.4
55- 60	893.6	4.2	900.4	886.4
60- 65	894.6	5.8	901.4	886.4
65- 70	893.0	3.9	900.4	886.4
70- 75	895.0	5.6	900.4	886.4
75- 80	892.7	3.9	900.4	886.4
80- 85	895.5	5.5	900.4	885.4
85- 90	892.1	3.9	900.4	886.4
90- 95	895.8	5.1	900.4	886.4
95-100	891.9	4.0	900.4	886.4
100-105	896.0	4.0	900.4	886.4
105-110	891.6	4.0	900.4	886.4
110-115	896.2	4.7	901.4	886.4
115-120	891.6	4.2	900.4	886.4
120-125	896.2	4.2	900.4	886.4
125-130	891.4	4.3	900.4	885.4
130-135	896.2	4.3	900.4	885.4
135-140	891.6	4.9	900.4	886.4
140-145	896.1	4.1	900.4	885.4
145-150	891.5	5.1	900.4	885.4
150-155	895.8	3.8	900.4	886.4
155-160	892.0	5.3	900.4	886.4
160-165	895.6	3.6	901.4	888.4
165-170	892.1	5.6	900.4	886.4
170-175	895.2	3.6	900.4	888.4
175-180	892.5	5.8	900.4	885.4
180-185	894.7	3.8	900.4	886.4
185-190	893.2	5.8	900.4	886.4
190-195	894.3	4.1	900.4	886.4
195-200	893.8	5.7	900.4	886.4
200-205	893.4	4.1	900.4	886.4
205-210	894.7	5.6	900.4	886.4
210-215	892.7	4.0	900.4	886.4
215-220	895.0	5.3	900.4	886.4
220-225	892.0	4.1	900.4	886.4
225-230	895.7	5.1	900.4	885.4
230-235	891.4	4.1	900.4	886.4
235-240	896.5	4.5	901.4	886.4
FOR THIS RUN:	893.9	5.0	901.4	885.4

TABLE 8 - MACHINERY PARAMETERS, RUN 2221

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	40502	955.6	42252	38731
5- 10	40562	1163.5	42252	38731
10- 15	41226	1010.8	43258	39737
15- 20	40582	1033.0	42755	38731
20- 25	40481	1289.3	42252	38228
25- 30	40481	976.6	42252	38731
30- 35	40441	1006.0	42252	38731
35- 40	41367	998.7	42755	39234
40- 45	41065	1063.5	42755	38731
45- 50	40924	1110.1	42252	38731
50- 55	41306	947.1	42755	39234
55- 60	40059	974.1	42252	38731
60- 65	39958	965.8	41749	38228
65- 70	40522	1129.9	42252	38731
70- 75	40582	962.0	42252	38731
75- 80	39717	927.3	41749	38228
80- 85	39335	899.8	40743	37725
85- 90	40280	1214.9	42252	38731
90- 95	40542	943.7	41749	38731
95-100	39496	997.1	41246	37725
100-105	39858	998.7	41749	38228
105-110	40019	965.8	41749	38731
110-115	41347	1045.5	43258	39737
115-120	40039	995.9	42252	38731
120-125	40683	1095.8	42252	38731
125-130	40522	1055.9	42252	38731
130-135	41186	989.0	42755	38731
135-140	40361	891.7	42252	38731
140-145	40602	894.4	42252	39234
145-150	40421	942.4	42252	38731
150-155	40019	900.7	41749	38731
155-160	39938	1120.2	41749	38228
160-165	39475	1065.8	40743	37725
165-170	39938	1173.2	41749	37725
170-175	40361	1104.6	42252	38731
175-180	39898	1003.2	41749	38228
180-185	40260	882.5	41749	38731
185-190	40703	876.1	42252	39234
190-195	40703	828.6	42755	39234
195-200	40642	888.5	42252	39234
200-205	40663	907.4	42252	39234
205-210	41085	1144.5	42755	38731
210-215	41125	957.3	42755	39737
215-220	40562	1054.0	42252	38731
220-225	40884	1151.6	43258	39234
225-230	42534	922.9	43761	40240
230-235	42614	1021.2	44264	40743
235-240	42916	1090.2	44767	41246
FOR THIS RUN:	40600	1249.6	44767	37725

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm)of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	54920	1295.9	57294	52519
5- 10	55002	1577.7	57294	52519
10- 15	55902	1370.7	58658	53883
15- 20	55029	1400.7	57976	52519
20- 25	54893	1748.2	57294	51837
25- 30	54893	1324.3	57294	52519
30- 35	54838	1364.1	57294	52519
35- 40	56093	1354.3	57976	53201
40- 45	55684	1442.1	57976	52519
45- 50	55493	1505.3	57294	52519
50- 55	56011	1284.3	57976	53201
55- 60	54320	1320.9	57294	52519
60- 65	54183	1309.6	56612	51837
65- 70	54947	1532.2	57294	52519
70- 75	55029	1304.4	57294	52519
75- 80	53856	1257.4	56612	51837
80- 85	53338	1220.1	55248	51155
85- 90	54620	1647.4	57294	52519
90- 95	54975	1279.7	56612	52519
95-100	53556	1352.1	55930	51155
100-105	54047	1354.3	56612	51837
105-110	54265	1309.6	56612	52519
110-115	56066	1417.7	58658	53883
115-120	54293	1350.4	57294	52519
120-125	55166	1485.8	57294	52519
125-130	54947	1431.8	57294	52519
130-135	55848	1341.0	57976	52519
135-140	54729	1209.1	57294	52519
140-145	55057	1212.8	57294	53201
145-150	54811	1277.9	57294	52519
150-155	54265	1221.3	56612	52519
155-160	54156	1519.0	56612	51837
160-165	53529	1445.2	55248	51155
165-170	54156	1590.8	56612	51155
170-175	54729	1497.8	57294	52519
175-180	54102	1360.3	56612	51837
180-185	54593	1196.7	56612	52519
185-190	55193	1188.0	57294	53201
190-195	55193	1123.6	57976	53201
195-200	55111	1204.8	57294	53201
200-205	55138	1230.4	57294	53201
205-210	55711	1552.0	57976	52519
210-215	55766	1298.2	57976	53883
215-220	55002	1429.2	57294	52519
220-225	55438	1561.6	58658	53201
225-230	57676	1251.4	59340	54565
230-235	57785	1384.7	60022	55248
235-240	58194	1478.3	60704	55930
FOR THIS RUN:	55053	1694.5	60704	51155

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	43826	2567.3	48037	38167
5- 10	43467	2744.7	48037	37867
10- 15	43192	5596.4	54019	27997
15- 20	43993	2341.6	47439	39064
20- 25	42306	4387.6	54019	36073
25- 30	41505	4364.7	50430	32184
30- 35	41050	4145.3	49533	30988
35- 40	40607	4448.3	46542	28595
40- 45	43610	3145.0	51925	35774
45- 50	43108	3692.6	52524	36073
50- 55	42821	2545.2	46542	37568
55- 60	43012	3163.2	51327	36073
60- 65	41517	3277.6	46841	32783
65- 70	39614	4385.9	45345	29193
70- 75	40643	2870.8	46242	33082
75- 80	41205	1556.9	44149	37867
80- 85	39830	3162.2	45644	31287
85- 90	37676	3490.1	44448	29492
90- 95	42940	2770.6	47439	36970
95-100	43562	2659.8	52225	39064
100-105	42928	2401.7	46841	37269
105-110	39746	5921.7	48336	26501
110-115	40380	3982.5	51327	32783
115-120	40009	2713.4	45345	35175
120-125	40619	2382.4	44747	36073
125-130	41780	2614.3	47738	36970
130-135	43239	3608.7	49533	35774
135-140	43395	3108.6	49233	35774
140-145	41122	3832.6	46841	33082
145-150	40404	3771.2	48037	34876
150-155	39913	2587.8	44448	32483
155-160	41098	2600.7	46242	34577
160-165	41050	2412.0	45345	36970
165-170	38238	3004.5	45644	32483
170-175	39423	2823.7	43850	34876
175-180	40930	1578.8	44747	37867
180-185	38621	3175.7	44448	30689
185-190	36563	5344.5	47140	21417
190-195	39195	2698.0	44448	32483
195-200	39530	3913.7	49832	33680
200-205	39626	3573.6	46242	30091
205-210	39518	3163.3	45644	33979
210-215	39782	4012.9	51626	32783
215-220	42737	2798.9	47140	36671
220-225	40739	4938.1	54917	31586
225-230	42438	3267.3	47439	36671
230-235	44185	3107.6	49533	37568
235-240	44735	3686.2	54019	36970
FOR THIS RUN:	41280	3932.6	54917	21417

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm)of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	194936	11419.5	213669	169765
5- 10	193340	12208.2	213669	168434
10- 15	192116	24892.9	240277	124530
15- 20	195681	10415.6	211008	173756
20- 25	188178	19515.8	240277	160452
25- 30	184612	19414.0	224312	143156
30- 35	182590	18438.4	220321	137834
35- 40	180621	19786.1	207017	127191
40- 45	193979	13989.1	230964	159121
45- 50	191743	16424.7	233625	160452
50- 55	190466	11320.9	207017	167104
55- 60	191318	14069.9	228304	160452
60- 65	184665	14579.0	208347	145817
65- 70	176204	19508.6	201695	129852
70- 75	180781	12769.5	205686	147147
75- 80	183282	6925.2	196373	168434
80- 85	177162	14065.3	203025	139165
85- 90	167583	15523.9	197704	131182
90- 95	190998	12323.4	211008	164443
95-100	193766	11831.0	232295	173756
100-105	190945	10682.7	208347	165773
105-110	176789	26339.9	214999	117878
110-115	179610	17714.2	228304	145817
115-120	177960	12069.2	201695	156460
120-125	180674	10596.8	199034	160452
125-130	185836	11628.4	212338	164443
130-135	192329	16051.3	220321	159121
135-140	193021	13826.8	218991	159121
140-145	182909	17047.5	208347	147147
145-150	179716	16774.5	213669	155130
150-155	177534	11510.7	197704	144487
155-160	182803	11567.9	205686	153800
160-165	182590	10728.8	201695	164443
165-170	170084	13364.2	203025	144487
170-175	175352	12559.7	195043	155130
175-180	182058	7022.7	199034	168434
180-185	171787	14125.7	197704	136504
185-190	162634	23772.3	209678	95261
190-195	174341	12000.9	197704	144487
195-200	175831	17408.1	221651	149808
200-205	176257	15895.5	205686	133843
205-210	175778	14070.5	203025	151139
210-215	176949	17849.6	229634	145817
215-220	190094	12449.4	209678	163113
220-225	181206	21964.6	244269	140495
225-230	188763	14532.9	211008	163113
230-235	196533	13822.8	220321	167104
235-240	198981	16396.1	240277	164443
FOR THIS RUN:	183612	17492.0	244269	95261

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1752	41.7	1834	1670
5- 10	1749	48.3	1838	1670
10- 15	1756	50.6	1850	1676
15- 20	1769	51.6	1866	1674
20- 25	1757	54.3	1838	1663
25- 30	1748	45.0	1830	1652
30- 35	1734	52.2	1830	1655
35- 40	1762	53.3	1852	1643
40- 45	1758	40.9	1814	1663
45- 50	1751	46.8	1814	1659
50- 55	1776	44.6	1850	1692
55- 60	1744	46.0	1854	1670
60- 65	1739	53.0	1836	1641
65- 70	1740	50.6	1826	1663
70- 75	1769	45.5	1836	1663
75- 80	1750	41.3	1848	1681
80- 85	1710	41.5	1781	1645
85- 90	1713	52.4	1806	1641
90- 95	1778	36.4	1836	1707
95-100	1728	44.2	1810	1634
100-105	1734	41.2	1804	1670
105-110	1697	45.8	1775	1630
110-115	1769	46.4	1844	1672
115-120	1731	46.4	1826	1659
120-125	1761	49.6	1846	1685
125-130	1765	58.1	1870	1670
130-135	1778	43.4	1854	1685
135-140	1737	41.2	1830	1656
140-145	1757	39.7	1838	1706
145-150	1736	42.0	1830	1670
150-155	1735	41.2	1820	1681
155-160	1761	42.4	1834	1696
160-165	1726	52.1	1804	1631
165-170	1728	49.6	1810	1623
170-175	1736	53.0	1834	1662
175-180	1747	42.9	1820	1681
180-185	1737	43.3	1816	1670
185-190	1723	42.2	1798	1638
190-195	1756	39.7	1824	1683
195-200	1736	36.6	1810	1676
200-205	1748	43.2	1822	1673
205-210	1758	48.3	1832	1678
210-215	1747	41.3	1811	1668
215-220	1755	51.2	1832	1648
220-225	1699	43.9	1783	1627
225-230	1772	41.8	1829	1670
230-235	1778	44.3	1854	1703
235-240	1773	46.6	1845	1688
FOR THIS RUN:	1747	50.1	1870	1623

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm)of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1307	31.1	1368	1246
5- 10	1304	36.0	1371	1246
10- 15	1310	37.7	1380	1250
15- 20	1319	38.5	1392	1248
20- 25	1310	40.5	1371	1240
25- 30	1303	33.6	1365	1232
30- 35	1293	39.0	1365	1234
35- 40	1314	39.7	1381	1225
40- 45	1311	30.5	1353	1240
45- 50	1306	34.9	1353	1237
50- 55	1324	33.2	1380	1262
55- 60	1300	34.3	1383	1246
60- 65	1297	39.5	1369	1224
65- 70	1298	37.8	1362	1240
70- 75	1319	33.9	1369	1240
75- 80	1305	30.8	1378	1254
80- 85	1275	30.9	1328	1227
85- 90	1277	39.1	1347	1224
90- 95	1326	27.1	1369	1273
95-100	1289	33.0	1350	1219
100-105	1293	30.7	1345	1246
105-110	1265	34.2	1323	1215
110-115	1319	34.6	1375	1247
115-120	1291	34.6	1362	1237
120-125	1313	37.0	1377	1257
125-130	1316	43.4	1395	1245
130-135	1326	32.4	1383	1257
135-140	1295	30.7	1365	1235
140-145	1310	29.6	1371	1272
145-150	1294	31.3	1365	1245
150-155	1294	30.7	1357	1253
155-160	1313	31.6	1367	1265
160-165	1287	38.9	1345	1216
165-170	1289	37.0	1350	1210
170-175	1294	39.5	1368	1239
175-180	1302	32.0	1357	1254
180-185	1295	32.3	1354	1245
185-190	1285	31.5	1341	1221
190-195	1310	29.6	1360	1255
195-200	1294	27.3	1350	1250
200-205	1304	32.2	1359	1248
205-210	1311	36.0	1366	1251
210-215	1303	30.8	1351	1244
215-220	1308	38.1	1366	1229
220-225	1267	32.7	1330	1213
225-230	1321	31.1	1364	1245
230-235	1326	33.0	1383	1270
235-240	1322	34.7	1376	1259
FOR THIS RUN:	1303	37.4	1395	1210

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	227.2	0.8	228.5	225.0
5- 10	226.5	1.9	228.5	221.5
10- 15	223.7	2.6	230.0	219.0
15- 20	228.9	1.9	232.0	226.5
20- 25	228.0	0.9	230.0	226.0
25- 30	226.8	0.9	228.5	224.0
30- 35	225.2	2.4	228.5	220.5
35- 40	223.7	3.4	229.0	218.0
40- 45	224.8	1.3	227.5	222.0
45- 50	224.7	0.9	227.0	223.0
50- 55	225.8	3.4	231.0	219.5
55- 60	228.6	1.1	230.5	226.5
60- 65	228.5	3.1	232.5	222.0
65- 70	225.5	1.7	228.0	222.0
70- 75	228.9	2.4	232.5	225.0
75- 80	231.4	0.8	232.5	229.5
80- 85	228.3	2.5	232.5	225.0
85- 90	223.4	0.9	225.0	221.5
90- 95	230.4	1.5	232.5	225.0
95-100	229.8	1.1	232.0	227.5
100-105	228.5	2.0	232.5	225.5
105-110	222.7	3.4	227.5	216.5
110-115	224.7	4.1	231.0	219.0
115-120	227.1	1.9	231.5	224.5
120-125	227.4	1.4	229.5	224.5
125-130	228.8	3.4	232.5	222.0
130-135	226.8	2.8	231.0	222.0
135-140	226.0	1.3	228.0	223.5
140-145	227.3	1.6	230.0	224.5
145-150	225.6	1.8	228.5	222.0
150-155	227.7	1.5	229.5	224.5
155-160	231.6	2.1	234.0	227.5
160-165	229.7	1.6	232.5	227.0
165-170	227.3	1.8	231.0	224.5
170-175	225.9	2.3	230.0	221.5
175-180	229.9	0.9	231.5	228.0
180-185	226.6	2.2	230.0	223.5
185-190	222.3	2.2	225.5	216.5
190-195	226.6	2.8	231.0	221.0
195-200	224.3	1.5	227.0	221.5
200-205	225.8	1.7	228.5	222.5
205-210	224.7	1.6	227.5	222.0
210-215	223.2	1.8	228.0	219.5
215-220	227.2	2.4	230.5	222.5
220-225	218.2	2.1	223.0	214.5
225-230	218.8	0.9	220.0	216.5
230-235	219.1	1.5	222.5	216.0
235-240	217.0	1.7	219.5	213.5
FOR THIS RUN:	226.1	3.8	234.0	213.5

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	640	1.4	642	636
5- 10	639	1.6	642	635
10- 15	647	7.5	661	639
15- 20	642	7.7	657	634
20- 25	643	2.3	646	637
25- 30	644	4.6	653	635
30- 35	644	4.5	650	632
35- 40	643	3.7	648	634
40- 45	641	3.4	651	633
45- 50	641	3.4	647	635
50- 55	650	5.6	662	640
55- 60	641	5.7	655	633
60- 65	643	6.6	652	631
65- 70	642	2.9	648	637
70- 75	644	3.6	648	636
75- 80	646	2.6	653	641
80- 85	641	5.4	653	631
85- 90	644	6.6	658	629
90- 95	656	4.7	665	647
95-100	643	5.4	655	637
100-105	648	5.3	656	639
105-110	640	5.8	647	626
110-115	646	3.9	657	640
115-120	643	4.1	654	635
120-125	643	2.7	650	638
125-130	645	7.7	658	632
130-135	646	5.0	655	637
135-140	642	4.5	656	634
140-145	641	3.3	649	636
145-150	643	4.0	650	635
150-155	641	2.2	644	636
155-160	648	3.1	653	639
160-165	639	3.7	645	631
165-170	641	5.2	650	634
170-175	641	3.2	646	633
175-180	641	2.2	644	637
180-185	638	2.0	642	635
185-190	643	6.1	654	631
190-195	646	7.9	659	635
195-200	639	4.6	651	633
200-205	643	3.0	650	638
205-210	642	3.8	648	636
210-215	644	5.3	655	635
215-220	648	8.0	660	633
220-225	638	4.8	648	629
225-230	645	2.7	651	639
230-235	649	3.5	655	643
235-240	651	4.3	660	645
FOR THIS RUN:	643	5.9	665	626

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15060 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2195	10.8	2217	2174
5- 10	2213	16.7	2274	2192
10- 15	2197	38.2	2268	2111
15- 20	2192	17.5	2224	2153
20- 25	2197	24.4	2254	2150
25- 30	2186	37.1	2295	2116
30- 35	2173	41.6	2267	2117
35- 40	2180	43.3	2304	2084
40- 45	2185	38.8	2268	2106
45- 50	2199	29.1	2245	2153
50- 55	2182	37.2	2280	2107
55- 60	2176	20.5	2238	2144
60- 65	2179	28.3	2258	2136
65- 70	2188	32.5	2247	2136
70- 75	2182	18.6	2228	2150
75- 80	2159	12.3	2190	2144
80- 85	2169	26.1	2224	2130
85- 90	2188	45.2	2280	2104
90- 95	2164	19.1	2222	2121
95-100	2160	14.6	2204	2141
100-105	2167	27.3	2232	2129
105-110	2184	45.9	2291	2109
110-115	2192	31.3	2254	2144
115-120	2204	22.8	2268	2166
120-125	2201	16.5	2230	2170
125-130	2199	19.6	2241	2167
130-135	2188	31.9	2238	2103
135-140	2188	39.4	2310	2123
140-145	2190	28.1	2251	2136
145-150	2194	32.8	2268	2137
150-155	2185	27.1	2274	2153
155-160	2164	27.8	2292	2147
160-165	2156	21.5	2220	2130
165-170	2179	39.8	2250	2129
170-175	2184	35.3	2274	2113
175-180	2181	18.7	2218	2159
180-185	2190	30.0	2251	2131
185-190	2188	33.8	2247	2109
190-195	2184	30.7	2244	2119
195-200	2199	35.9	2270	2137
200-205	2201	26.7	2275	2157
205-210	2198	35.8	2281	2127
210-215	2187	50.1	2277	2090
215-220	2192	25.3	2265	2153
220-225	2212	39.8	2285	2146
225-230	2226	25.1	2290	2181
230-235	2231	34.6	2300	2153
235-240	2204	42.5	2280	2109
FOR THIS RUN:	2188	34.8	2310	2084

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER kW (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1405	7.5	1417	1391
5- 10	1413	8.3	1444	1401
10- 15	1422	22.0	1465	1361
15- 20	1407	21.5	1451	1371
20- 25	1412	14.1	1451	1384
25- 30	1409	22.6	1473	1368
30- 35	1399	25.7	1457	1357
35- 40	1401	24.1	1460	1343
40- 45	1400	21.9	1449	1349
45- 50	1409	18.9	1439	1373
50- 55	1417	23.6	1475	1358
55- 60	1396	12.7	1420	1368
60- 65	1401	20.7	1435	1358
65- 70	1404	22.2	1443	1361
70- 75	1404	11.5	1421	1373
75- 80	1396	6.6	1413	1387
80- 85	1391	17.7	1429	1356
85- 90	1409	28.6	1473	1350
90- 95	1420	16.5	1467	1393
95-100	1390	12.8	1420	1373
100-105	1403	17.3	1443	1363
105-110	1396	23.0	1457	1358
110-115	1416	18.0	1449	1383
115-120	1417	14.9	1447	1397
120-125	1414	11.4	1435	1393
125-130	1418	15.0	1443	1393
130-135	1413	21.0	1444	1358
135-140	1405	23.4	1469	1363
140-145	1405	17.2	1440	1365
145-150	1410	16.8	1439	1380
150-155	1401	15.0	1448	1385
155-160	1403	15.2	1465	1382
160-165	1378	12.9	1405	1354
165-170	1397	27.1	1447	1351
170-175	1400	21.9	1440	1342
175-180	1398	8.8	1415	1380
180-185	1398	17.9	1433	1362
185-190	1406	19.9	1444	1362
190-195	1410	20.9	1458	1375
195-200	1406	23.2	1446	1365
200-205	1416	16.3	1454	1390
205-210	1411	22.4	1468	1363
210-215	1408	27.0	1456	1358
215-220	1420	23.5	1459	1366
220-225	1411	24.6	1459	1359
225-230	1437	17.1	1481	1398
230-235	1448	19.4	1486	1404
235-240	1436	24.9	1490	1375
FOR THIS RUN:	1408	22.8	1490	1342

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	71.3	1.8	78.9	69.9
5- 10	72.9	4.6	90.3	69.4
10- 15	74.2	5.4	88.3	68.6
15- 20	69.8	1.5	72.1	67.1
20- 25	72.4	3.2	83.2	69.4
25- 30	73.1	5.2	95.1	69.4
30- 35	73.8	6.8	94.1	68.6
35- 40	72.1	7.1	105.1	67.6
40- 45	74.2	5.9	90.8	69.1
45- 50	73.7	4.3	86.5	70.1
50- 55	72.8	7.0	96.8	68.4
55- 60	71.6	4.0	87.0	68.1
60- 65	72.2	3.7	85.0	69.4
65- 70	72.4	2.9	81.5	69.1
70- 75	70.5	1.1	73.9	69.1
75- 80	70.8	0.8	73.6	69.6
80- 85	71.1	0.8	73.1	69.9
85- 90	75.9	7.5	96.6	69.6
90- 95	69.8	1.2	72.9	67.8
95-100	70.7	0.6	71.6	69.6
100-105	71.8	3.3	85.2	69.6
105-110	76.1	6.5	93.8	69.6
110-115	71.8	4.5	85.7	68.6
115-120	72.8	5.2	93.6	69.6
120-125	71.2	1.4	75.4	69.4
125-130	72.4	3.8	88.5	69.6
130-135	72.0	3.6	82.0	68.1
135-140	72.4	4.3	92.8	69.6
140-145	72.0	3.1	84.0	68.6
145-150	72.6	3.8	85.0	68.6
150-155	72.0	3.9	87.5	69.4
155-160	71.5	5.5	98.1	69.1
160-165	70.8	0.7	72.1	69.6
165-170	72.3	2.4	77.7	69.4
170-175	72.1	4.0	90.0	68.9
175-180	70.6	0.7	71.6	69.4
180-185	72.9	3.4	87.5	70.1
185-190	74.0	5.2	91.0	67.8
190-195	70.6	1.9	76.4	68.1
195-200	73.6	4.2	89.0	69.6
200-205	72.2	5.2	93.3	68.1
205-210	74.8	5.5	88.5	69.6
210-215	75.2	7.9	99.9	69.6
215-220	71.4	4.8	89.8	67.1
220-225	78.7	9.1	102.6	70.4
225-230	76.0	7.6	100.1	69.1
230-235	79.8	10.1	101.9	70.6
235-240	76.6	8.9	100.6	68.9
FOR THIS RUN:	72.8	5.3	105.1	67.1

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29.5	0.2	30.1	29.3
5- 10	29.7	0.5	30.7	29.2
10- 15	30.9	0.5	32.0	30.1
15- 20	29.2	0.2	29.9	29.0
20- 25	29.7	0.2	30.1	29.4
25- 30	30.1	0.3	30.7	29.6
30- 35	30.5	0.6	31.6	29.4
35- 40	30.5	0.8	31.7	29.2
40- 45	30.3	0.3	31.1	29.8
45- 50	30.2	0.4	31.2	29.7
50- 55	30.5	0.7	31.7	29.2
55- 60	29.4	0.3	30.1	28.9
60- 65	29.6	0.4	30.7	29.1
65- 70	30.1	0.3	30.7	29.6
70- 75	29.5	0.3	30.1	29.1
75- 80	29.3	0.1	29.6	29.1
80- 85	29.3	0.2	29.8	29.1
85- 90	30.6	0.5	31.4	29.6
90- 95	29.5	0.5	30.8	29.0
95-100	29.2	0.1	29.3	29.1
100-105	29.5	0.2	29.9	29.2
105-110	30.6	1.0	32.6	29.3
110-115	30.3	0.7	31.3	29.2
115-120	29.5	0.3	30.4	29.0
120-125	29.8	0.3	30.4	29.3
125-130	29.6	0.4	30.4	29.2
130-135	30.2	0.5	31.4	29.5
135-140	30.1	0.3	30.7	29.5
140-145	29.8	0.3	30.3	29.4
145-150	30.3	0.4	31.1	29.6
150-155	29.7	0.2	30.2	29.4
155-160	29.5	0.3	30.1	29.1
160-165	29.2	0.1	29.3	29.1
165-170	29.6	0.3	30.5	29.1
170-175	30.0	0.5	30.8	29.3
175-180	29.2	0.0	29.3	29.1
180-185	29.8	0.6	30.8	29.1
185-190	31.1	0.6	32.7	29.9
190-195	29.9	0.6	31.4	29.3
195-200	30.3	0.4	31.1	29.6
200-205	30.1	0.5	31.1	29.5
205-210	30.6	0.5	31.4	29.5
210-215	31.0	0.4	32.0	30.3
215-220	29.7	0.3	30.5	29.1
220-225	31.8	0.6	32.8	30.3
225-230	31.6	0.4	32.6	31.0
230-235	31.9	0.7	33.6	30.9
235-240	32.4	0.6	33.9	31.0
FOR THIS RUN:	30.1	0.9	33.9	28.9

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.1	0.1	2.4	2.1
5- 10	2.2	0.2	2.7	2.0
10- 15	2.3	0.2	2.7	2.1
15- 20	2.0	0.0	2.1	2.0
20- 25	2.1	0.1	2.5	2.0
25- 30	2.2	0.2	2.9	2.1
30- 35	2.3	0.2	2.9	2.0
35- 40	2.2	0.3	3.3	2.0
40- 45	2.2	0.2	2.8	2.1
45- 50	2.2	0.2	2.7	2.1
50- 55	2.2	0.2	3.1	2.0
55- 60	2.1	0.1	2.6	2.0
60- 65	2.1	0.1	2.5	2.0
65- 70	2.2	0.1	2.4	2.1
70- 75	2.1	0.0	2.2	2.0
75- 80	2.1	0.0	2.2	2.0
80- 85	2.1	0.0	2.2	2.0
85- 90	2.3	0.2	3.0	2.1
90- 95	2.1	0.1	2.2	2.0
95-100	2.1	0.0	2.1	2.0
100-105	2.1	0.1	2.5	2.0
105-110	2.3	0.2	2.9	2.0
110-115	2.2	0.2	2.6	2.0
115-120	2.1	0.2	2.8	2.0
120-125	2.1	0.1	2.3	2.0
125-130	2.1	0.1	2.7	2.0
130-135	2.2	0.1	2.5	2.0
135-140	2.2	0.1	2.8	2.1
140-145	2.1	0.1	2.5	2.0
145-150	2.2	0.1	2.6	2.1
150-155	2.1	0.1	2.6	2.0
155-160	2.1	0.2	2.9	2.0
160-165	2.1	0.0	2.1	2.0
165-170	2.1	0.1	2.3	2.0
170-175	2.2	0.1	2.7	2.0
175-180	2.1	0.0	2.1	2.0
180-185	2.2	0.1	2.6	2.1
185-190	2.3	0.2	3.0	2.0
190-195	2.1	0.1	2.3	2.0
195-200	2.2	0.1	2.6	2.1
200-205	2.2	0.2	2.9	2.0
205-210	2.3	0.2	2.8	2.1
210-215	2.3	0.3	3.2	2.1
215-220	2.1	0.1	2.7	2.0
220-225	2.5	0.3	3.3	2.2
225-230	2.4	0.3	3.2	2.1
230-235	2.5	0.4	3.4	2.2
235-240	2.5	0.3	3.3	2.2
FOR THIS RUN:	2.2	0.2	3.4	2.0

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	39	0.1	39	38
5- 10	39	0.1	39	39
10- 15	39	0.1	39	38
15- 20	39	0.1	39	39
20- 25	39	0.3	40	39
25- 30	39	0.2	39	38
30- 35	39	0.1	39	39
35- 40	39	0.1	39	39
40- 45	39	0.1	39	39
45- 50	39	0.1	39	39
50- 55	40	4.7	63	39
55- 60	39	0.1	39	39
60- 65	39	0.2	40	39
65- 70	39	0.1	39	39
70- 75	39	0.3	41	39
75- 80	39	0.1	39	39
80- 85	39	0.1	40	39
85- 90	39	0.1	40	39
90- 95	39	0.1	39	39
95-100	39	0.2	40	39
100-105	39	0.1	40	39
105-110	39	0.1	40	39
110-115	40	0.1	40	39
115-120	40	0.1	40	39
120-125	40	0.1	40	39
125-130	40	0.1	40	40
130-135	40	0.2	40	39
135-140	40	0.1	40	40
140-145	40	0.2	41	40
145-150	40	0.7	43	39
150-155	40	0.1	40	40
155-160	40	0.1	40	40
160-165	40	0.1	40	40
165-170	40	0.1	40	40
170-175	40	0.1	40	40
175-180	40	0.2	40	39
180-185	40	0.1	40	40
185-190	40	0.1	40	40
190-195	40	0.1	40	40
195-200	40	0.2	41	40
200-205	40	0.4	42	40
205-210	40	0.1	40	40
210-215	40	0.1	40	40
215-220	40	0.1	41	40
220-225	40	0.1	40	40
225-230	40	0.1	41	40
230-235	41	4.3	63	40
235-240	41	0.1	41	40
FOR THIS RUN:	40	1.1	63	38

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	651	1.4	653	648
5- 10	649	1.5	652	646
10- 15	658	7.5	672	650
15- 20	652	7.8	667	644
20- 25	653	2.1	656	648
25- 30	655	4.7	663	645
30- 35	654	4.6	660	642
35- 40	652	3.5	658	644
40- 45	651	2.8	654	642
45- 50	650	2.2	654	645
50- 55	658	4.8	665	648
55- 60	652	4.1	660	644
60- 65	652	6.1	661	642
65- 70	652	2.6	656	646
70- 75	655	3.3	659	648
75- 80	658	1.7	659	652
80- 85	649	5.0	658	643
85- 90	650	5.0	660	640
90- 95	659	4.0	666	654
95-100	652	2.4	656	648
100-105	652	3.6	658	645
105-110	647	4.7	657	638
110-115	655	3.5	660	649
115-120	648	3.2	657	645
120-125	653	1.4	657	650
125-130	653	6.0	660	644
130-135	656	5.6	664	645
135-140	653	3.3	659	647
140-145	652	3.5	660	646
145-150	654	3.4	659	647
150-155	653	2.3	656	648
155-160	660	3.3	665	651
160-165	651	3.6	658	644
165-170	649	3.5	655	642
170-175	652	3.6	657	643
175-180	653	1.9	656	650
180-185	649	2.5	654	642
185-190	654	5.6	663	643
190-195	654	6.7	664	644
195-200	650	4.2	658	644
200-205	653	2.9	658	647
205-210	654	3.9	660	647
210-215	655	5.2	666	645
215-220	651	7.1	665	642
220-225	649	4.1	657	639
225-230	651	2.1	655	647
230-235	653	3.4	659	648
235-240	655	4.2	664	648
FOR THIS RUN:	653	5.0	672	638

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 15 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1093	5.8	1102	1083
5- 10	1102	8.7	1132	1092
10- 15	1094	18.7	1129	1054
15- 20	1092	8.9	1106	1072
20- 25	1094	12.2	1125	1070
25- 30	1088	18.6	1146	1056
30- 35	1083	21.2	1129	1056
35- 40	1085	21.7	1146	1037
40- 45	1088	20.1	1132	1046
45- 50	1095	15.0	1119	1071
50- 55	1087	18.5	1136	1048
55- 60	1084	10.9	1119	1067
60- 65	1085	14.4	1126	1064
65- 70	1089	16.5	1121	1061
70- 75	1087	9.7	1112	1073
75- 80	1075	6.3	1090	1066
80- 85	1080	13.4	1107	1061
85- 90	1090	23.0	1136	1047
90- 95	1078	9.9	.108	1054
95-100	1076	7.9	1100	1066
100-105	1079	13.7	1110	1059
105-110	1087	23.4	1142	1049
110-115	1092	15.6	1121	1068
115-120	1098	11.4	1130	1078
120-125	1096	9.3	1112	1079
125-130	1095	10.5	1118	1078
130-135	1089	16.2	1117	1047
135-140	1090	19.9	1153	1058
140-145	1091	14.7	1124	1064
145-150	1092	16.5	1130	1064
150-155	1088	13.7	1133	1072
155-160	1078	14.4	1144	1069
160-165	1074	11.2	1107	1059
165-170	1086	20.0	1119	1057
170-175	1088	18.2	1134	1051
175-180	1086	7.0	1103	1075
180-185	1090	15.7	1123	1058
185-190	1090	17.6	1121	1051
190-195	1088	15.3	1117	1052
195-200	1095	18.0	1129	1063
200-205	1097	13.4	1136	1075
205-210	1095	18.1	1134	1059
210-215	1069	25.0	1134	1040
215-220	1092	12.5	1129	1073
220-225	1102	19.9	1136	1069
225-230	1109	13.3	1142	1083
230-235	1111	17.5	1147	1073
235-240	1099	21.6	1136	1051
FOR THIS RUN:	1090	17.6	1153	1037

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	712	4.1	718	704
5- 10	716	4.8	731	709
10- 15	720	10.1	740	700
15- 20	712	11.1	733	693
20- 25	715	6.9	735	701
25- 30	713	11.6	748	694
30- 35	708	12.9	738	687
35- 40	708	12.8	739	676
40- 45	708	11.4	736	680
45- 50	712	9.0	727	695
50- 55	715	10.5	746	687
55- 60	706	6.1	720	693
60- 65	708	9.6	725	690
65- 70	710	10.3	730	688
70- 75	712	5.6	721	699
75- 80	707	3.4	716	702
80- 85	701	8.5	720	685
85- 90	708	13.6	738	682
90- 95	710	7.7	733	700
95-100	702	4.8	714	695
100-105	703	7.6	721	688
105-110	704	13.2	740	687
110-115	715	9.3	734	699
115-120	712	7.4	730	700
120-125	716	5.4	725	706
125-130	715	7.2	727	698
130-135	714	11.2	730	687
135-140	711	11.6	746	691
140-145	712	9.1	731	693
145-150	714	9.0	731	696
150-155	711	7.7	735	701
155-160	712	7.8	745	702
160-165	699	6.9	713	686
165-170	705	11.4	724	686
170-175	710	11.5	729	681
175-180	709	4.2	718	701
180-185	708	9.4	727	689
185-190	713	11.1	732	685
190-195	712	10.3	729	691
195-200	712	11.8	733	688
200-205	716	7.8	738	704
205-210	716	11.0	742	693
210-215	714	13.8	739	686
215-220	711	10.4	729	693
220-225	715	12.5	740	688
225-230	721	8.1	743	707
230-235	726	10.0	746	704
235-240	719	12.6	747	690
FOR THIS RUN:	711	10.9	748	676

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	71.8	1.3	75.1	69.5
5- 10	70.7	1.7	75.1	65.5
10- 15	73.5	3.9	78.4	62.9
15- 20	70.1	2.3	75.1	65.2
20- 25	70.9	3.0	76.7	62.7
25- 30	71.9	4.2	77.9	58.1
30- 35	72.0	3.3	78.2	66.2
35- 40	71.1	4.6	79.7	59.1
40- 45	70.8	3.6	76.9	60.7
45- 50	71.2	3.5	77.2	62.7
50- 55	72.0	3.8	77.9	62.9
55- 60	71.3	2.2	74.4	65.7
60- 65	70.5	3.2	75.6	60.7
65- 70	71.3	3.4	77.2	63.7
70- 75	71.7	1.5	74.6	68.5
75- 80	71.7	1.4	73.6	67.5
80- 85	69.6	3.1	76.7	64.2
85- 90	70.5	4.5	79.2	60.1
90- 95	71.5	2.1	76.9	67.8
95-100	70.5	2.1	73.6	65.0
100-105	70.7	2.6	75.4	65.2
105-110	72.2	4.2	80.0	61.9
110-115	71.7	3.4	80.2	64.7
115-120	69.9	2.5	74.4	64.2
120-125	72.2	2.1	76.2	68.3
125-130	71.1	2.5	74.6	66.0
130-135	72.6	3.4	81.7	66.5
135-140	71.5	3.8	76.4	58.6
140-145	70.9	3.1	76.7	65.2
145-150	71.8	3.3	77.2	64.5
150-155	71.2	3.9	76.4	57.9
155-160	71.8	2.8	75.1	60.7
160-165	70.3	2.0	74.1	65.0
165-170	70.6	3.4	75.1	62.7
170-175	71.0	4.0	77.9	58.1
175-180	71.3	1.7	73.6	66.5
180-185	71.5	3.5	79.2	65.2
185-190	72.4	3.5	78.7	65.0
190-195	71.6	3.4	77.7	62.9
195-200	72.1	3.6	78.7	64.2
200-205	71.1	3.1	76.2	61.7
205-210	72.1	3.7	79.2	65.0
210-215	72.1	4.4	81.0	64.0
215-220	70.5	2.6	74.1	61.7
220-225	71.4	3.5	77.4	66.0
225-230	71.1	3.2	76.2	62.7
230-235	71.4	3.8	80.0	63.7
235-240	72.7	3.4	80.2	66.5
FOR THIS RUN:	71.4	3.3	81.7	57.9

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	15.6	18.9	95.8	-20.5
5- 10	11.8	4.4	16.4	-8.9
10- 15	10.7	18.5	45.7	-74.3
15- 20	12.7	2.7	20.4	1.9
20- 25	12.2	2.9	13.9	-1.6
25- 30	12.9	0.8	15.3	10.9
30- 35	12.5	1.3	13.9	6.7
35- 40	12.7	1.5	17.8	8.0
40- 45	12.1	4.0	19.2	-3.5
45- 50	12.4	1.8	14.6	4.0
50- 55	12.8	0.6	14.3	11.8
55- 60	16.4	17.8	103.7	11.7
60- 65	14.8	5.9	36.1	10.8
65- 70	14.3	12.3	72.9	-0.9
70- 75	14.9	19.1	103.7	-10.9
75- 80	16.4	17.8	103.7	10.2
80- 85	12.4	3.0	23.0	4.9
85- 90	14.6	6.9	40.4	8.7
90- 95	14.5	6.5	38.1	5.2
95-100	11.9	3.6	13.2	-5.2
100-105	12.6	0.8	13.8	9.8
105-110	12.0	2.9	16.2	0.2
110-115	12.8	0.6	13.9	10.7
115-120	15.9	12.9	78.2	11.7
120-125	12.8	4.2	24.8	-1.3
125-130	13.4	3.3	29.1	10.1
130-135	13.8	4.5	35.8	10.9
135-140	13.0	2.6	24.1	6.9
140-145	12.9	1.3	17.6	11.1
145-150	12.0	11.9	42.6	-38.6
150-155	14.3	5.3	36.5	11.7
155-160	18.7	20.3	103.7	11.9
160-165	10.7	21.0	57.1	-83.0
165-170	13.9	4.7	34.7	11.6
170-175	12.5	2.4	16.0	1.5
175-180	17.2	18.1	103.7	10.7
180-185	12.8	1.1	17.2	11.1
185-190	13.3	3.4	26.8	6.6
190-195	13.9	5.2	37.3	7.2
195-200	21.1	24.9	103.7	11.5
200-205	10.5	12.1	16.0	-48.6
205-210	13.7	4.6	35.9	9.2
210-215	16.7	17.9	103.7	9.1
215-220	12.9	1.6	19.7	10.6
220-225	13.0	5.5	36.4	-1.0
225-230	12.9	0.9	16.5	11.7
230-235	11.3	5.8	13.4	-14.5
235-240	13.2	1.9	22.0	11.3
FOR THIS RUN:	13.6	10.3	103.7	-83.0

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.1	1.4	7.0	-1.5
5- 10	0.8	0.3	1.2	-0.6
10- 15	0.8	1.3	3.2	-5.5
15- 20	0.9	0.2	1.4	0.1
20- 25	0.9	0.2	1.0	-0.1
25- 30	0.9	0.1	1.1	0.8
30- 35	0.9	0.1	1.1	0.5
35- 40	0.9	0.1	1.2	0.6
40- 45	0.9	0.3	1.4	-0.2
45- 50	0.9	0.1	1.1	0.3
50- 55	0.9	0.1	1.0	0.8
55- 60	1.2	1.3	7.7	0.8
60- 65	1.0	0.4	2.7	0.7
65- 70	1.0	0.9	5.3	-0.1
70- 75	1.1	1.4	7.6	-0.8
75- 80	1.2	1.3	7.6	0.7
80- 85	0.9	0.2	1.6	0.3
85- 90	1.0	0.5	3.1	0.6
90- 95	1.0	0.5	2.8	0.4
95-100	0.8	0.3	1.0	-0.4
100-105	0.9	0.1	1.0	0.7
105-110	0.9	0.2	1.2	0.0
110-115	0.9	0.1	1.0	0.7
115-120	1.1	0.8	5.1	0.8
120-125	0.9	0.3	1.9	-0.1
125-130	1.0	0.2	2.0	0.7
130-135	1.0	0.3	2.5	0.7
135-140	0.9	0.2	1.8	0.5
140-145	0.9	0.1	1.2	0.7
145-150	0.9	0.9	3.2	-2.9
150-155	1.0	0.4	2.6	0.7
155-160	1.3	1.3	6.3	0.9
160-165	0.8	1.5	3.9	-5.8
165-170	1.0	0.3	2.4	0.8
170-175	0.9	0.2	1.1	0.1
175-180	1.2	1.3	7.6	0.8
180-185	0.9	0.1	1.3	0.7
185-190	1.0	0.2	1.8	0.5
190-195	1.0	0.4	2.9	0.5
195-200	1.5	1.8	7.7	0.8
200-205	0.7	0.9	1.2	-3.5
205-210	1.0	0.3	2.5	0.6
210-215	1.2	1.2	7.2	0.6
215-220	0.9	0.1	1.4	0.7
220-225	0.9	0.4	2.5	-0.1
225-230	0.9	0.1	1.2	0.8
230-235	0.8	0.4	1.0	-1.2
235-240	1.0	0.2	1.7	0.8
FOR THIS RUN:	1.0	0.7	7.7	-5.8

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	877.7	6.3	884.4	863.4
5- 10	877.0	6.0	883.4	863.4
10- 15	877.2	6.1	883.4	862.4
15- 20	877.3	6.6	884.4	864.4
20- 25	876.6	6.5	883.4	863.4
25- 30	878.0	5.8	884.4	864.4
30- 35	878.3	5.6	885.4	862.4
35- 40	876.7	6.2	883.4	863.4
40- 45	877.3	5.2	882.4	864.4
45- 50	877.4	6.1	883.4	863.4
50- 55	876.9	6.8	885.4	862.4
55- 60	878.6	5.6	884.4	865.4
60- 65	878.0	5.7	884.4	862.4
65- 70	876.5	6.3	883.4	862.4
70- 75	876.6	6.3	884.4	863.4
75- 80	878.4	5.7	884.4	864.4
80- 85	877.5	6.5	884.4	863.4
85- 90	877.6	5.4	884.4	863.4
90- 95	877.8	5.8	884.4	864.4
95-100	877.4	6.5	884.4	864.4
100-105	876.8	6.7	884.4	863.4
105-110	877.8	6.0	884.4	862.4
110-115	877.4	6.1	883.4	862.4
115-120	877.0	6.5	884.4	863.4
120-125	877.3	5.7	883.4	863.4
125-130	877.4	6.4	884.4	863.4
130-135	876.5	6.1	883.4	863.4
135-140	878.3	5.4	883.4	864.4
140-145	878.4	5.7	884.4	863.4
145-150	876.6	6.1	882.4	862.4
150-155	877.6	6.0	883.4	863.4
155-160	877.9	6.4	884.4	863.4
160-165	877.6	6.5	885.4	863.4
165-170	878.0	5.7	884.4	862.4
170-175	878.0	5.7	883.4	864.4
175-180	877.0	6.2	884.4	863.4
180-185	877.1	6.2	883.4	863.4
185-190	87 .8	5.9	885.4	862.4
190-195	877.6	6.5	885.4	863.4
195-200	877.9	5.7	883.4	863.4
200-205	877.8	6.1	883.4	862.4
205-210	876.5	6.8	884.4	861.4
210-215	876.8	6.7	884.4	863.4
215-220	878.1	6.0	885.4	863.4
220-225	877.5	5.9	884.4	863.4
225-230	876.7	6.4	883.4	863.4
230-235	877.1	5.9	884.4	862.4
235-240	877.8	6.0	885.4	864.4
FOR THIS RUN:	877.4	6.1	885.4	861.4

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	33	0.1	33	33
5- 10	33	0.1	33	33
10- 15	33	0.1	33	33
15- 20	33	0.2	34	33
20- 25	36	11.5	90	33
25- 30	33	0.4	35	33
30- 35	33	0.6	36	33
35- 40	33	0.1	33	33
40- 45	33	0.1	33	33
45- 50	33	0.5	36	33
50- 55	33	0.1	33	33
55- 60	33	0.1	34	33
60- 65	33	0.1	33	33
65- 70	33	0.5	36	33
70- 75	33	0.6	36	33
75- 80	33	0.1	34	33
80- 85	33	0.2	35	33
85- 90	33	0.2	34	33
90- 95	33	0.1	34	33
95-100	33	0.1	34	33
100-105	33	0.2	34	33
105-110	34	0.1	34	34
110-115	34	0.6	36	33
115-120	34	0.5	36	34
120-125	34	0.1	34	34
125-130	34	0.7	37	34
130-135	34	0.6	37	34
135-140	34	0.3	35	34
140-145	34	0.2	34	34
145-150	34	0.5	36	34
150-155	35	3.3	51	34
155-160	34	0.1	34	34
160-165	34	0.1	34	34
165-170	34	0.1	34	34
170-175	34	0.1	34	34
175-180	34	0.1	34	34
180-185	35	5.5	62	33
185-190	34	0.5	36	34
190-195	34	0.1	34	34
195-200	34	0.1	34	34
200-205	35	2.7	48	34
205-210	34	0.1	35	34
210-215	34	0.4	36	34
215-220	34	0.2	35	34
220-225	34	0.1	34	34
225-230	34	0.1	34	34
230-235	34	0.1	34	34
235-240	34	0.2	35	33
FOR THIS RUN:	34	2.1	90	33

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

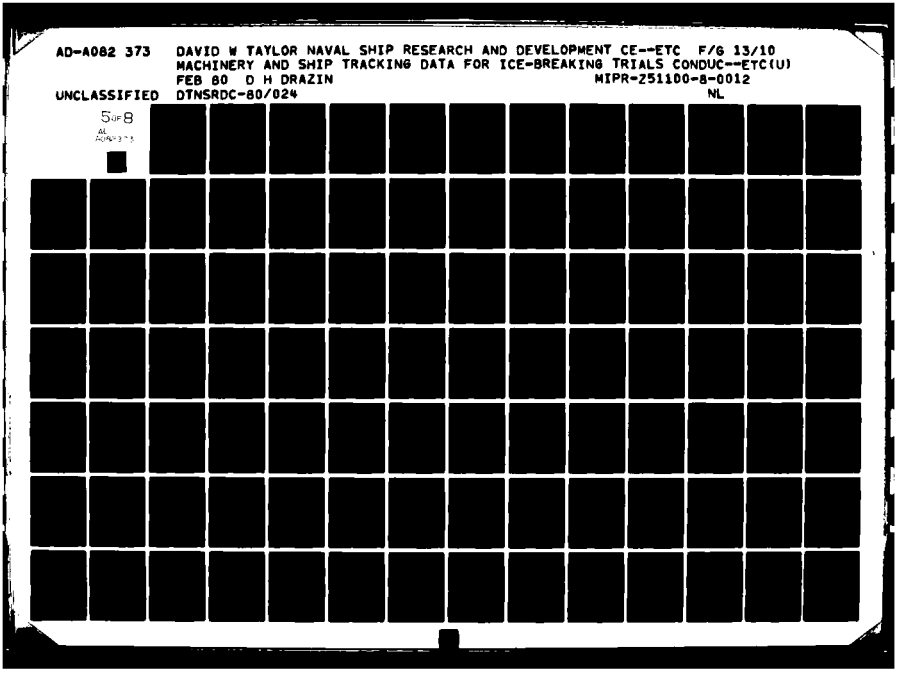
DATE: 9 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	642	1.5	644	638
5- 10	640	1.6	643	636
10- 15	649	7.5	663	641
15- 20	643	7.7	658	635
20- 25	644	3.1	647	638
25- 30	646	4.6	653	636
30- 35	645	4.6	652	634
35- 40	643	3.5	649	635
40- 45	642	2.8	645	634
45- 50	641	2.3	645	636
50- 55	649	4.8	655	638
55- 60	643	4.0	651	635
60- 65	643	6.1	652	634
65- 70	643	2.5	647	637
70- 75	646	3.3	649	639
75- 80	648	1.7	650	643
80- 85	640	5.0	649	634
85- 90	641	5.0	651	631
90- 95	650	3.9	657	645
95-100	643	2.3	647	639
100-105	643	3.6	648	635
105-110	638	4.6	648	629
110-115	646	3.4	651	640
115-120	639	3.1	648	636
120-125	644	1.4	648	641
125-130	644	6.0	651	635
130-135	647	5.6	655	636
135-140	643	3.3	649	638
140-145	643	3.4	650	637
145-150	645	3.4	650	638
150-155	644	2.3	647	638
155-160	651	3.3	656	642
160-165	642	3.5	648	635
165-170	640	3.4	646	634
170-175	643	3.6	648	634
175-180	644	1.8	647	641
180-185	640	2.5	645	633
185-190	645	5.7	654	634
190-195	645	5.6	654	635
195-200	641	4.2	649	635
200-205	644	3.0	649	638
205-210	644	3.9	651	638
210-215	646	5.2	657	636
215-220	642	7.0	655	633
220-225	639	4.1	648	630
225-230	642	2.2	647	638
230-235	644	3.4	650	639
235-240	646	4.2	655	639
FOR THIS RUN:	644	5.0	663	629

AD-A082 373 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUC--ETC(U)
FEB 80 D H DRAZIN MIPR-Z51100-8-0012
UNCLASSIFIED DTNSRDC-80/024 NL

5 OF 8
AD A082373



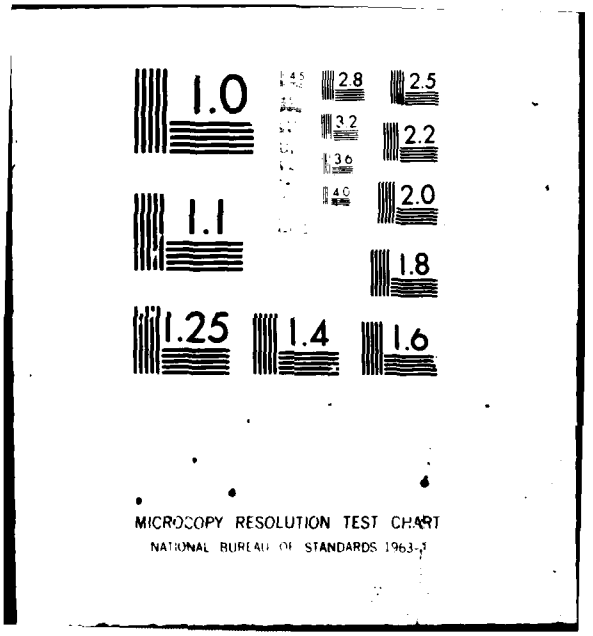

1.0
2.8
2.5
3.2
2.2
3.6
4.0
2.0
1.1
1.8
1.25
1.4
1.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1101	5.3	1114	1092
5- 10	1110	8.4	1142	1099
10- 15	1102	19.9	1139	1057
15- 20	1100	8.9	1116	1080
20- 25	1102	12.7	1129	1080
25- 30	1096	18.8	1149	1058
30- 35	1090	20.8	1138	1060
35- 40	1094	21.8	1157	1047
40- 45	1097	19.1	1136	1059
45- 50	1103	14.5	1126	1080
50- 55	1094	19.2	1142	1057
55- 60	1092	10.2	1121	1077
60- 65	1093	14.0	1131	1072
65- 70	1098	16.2	1127	1074
70- 75	1094	9.5	1117	1076
75- 80	1083	6.6	1100	1075
80- 85	1088	13.2	1117	1068
85- 90	1097	22.3	1143	1057
90- 95	1085	9.5	1115	1067
95-100	1084	7.2	1103	1075
100-105	1087	14.1	1122	1067
105-110	1096	22.8	1149	1058
110-115	1100	16.1	1132	1074
115-120	1106	11.6	1137	1087
120-125	1104	7.4	1117	1091
125-130	1103	9.5	1123	1087
130-135	1098	16.0	1124	1055
135-140	1097	19.9	1157	1064
140-145	1099	13.6	1127	1071
145-150	1101	16.6	1138	1072
150-155	1096	13.9	1142	1080
155-160	1086	13.8	1149	1074
160-165	1082	10.7	1112	1069
165-170	1093	20.1	1131	1068
170-175	1096	17.5	1140	1062
175-180	1094	7.0	1115	1083
180-185	1100	14.6	1129	1073
185-190	1098	16.7	1127	1056
190-195	1095	15.7	1128	1066
195-200	1104	18.2	1140	1069
200-205	1104	13.8	1141	1082
205-210	1103	18.4	1147	1067
210-215	1097	25.6	1144	1049
215-220	1100	12.9	1137	1078
220-225	1110	20.3	1149	1077
225-230	1117	12.5	1149	1098
230-235	1120	17.7	1153	1080
235-240	1105	21.3	1143	1057
FOR THIS RUN:	1098	17.5	1157	1047

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	706	3.7	713	700
5- 10	710	4.3	726	705
10- 15	715	10.1	733	692
15- 20	707	10.8	730	689
20- 25	710	6.9	728	697
25- 30	708	11.6	739	686
30- 35	703	12.6	734	683
35- 40	704	12.5	736	672
40- 45	704	10.5	728	679
45- 50	707	8.5	721	693
50- 55	710	10.5	740	684
55- 60	702	5.5	712	689
60- 65	703	9.4	717	685
65- 70	706	10.1	723	686
70- 75	707	5.7	717	691
75- 80	702	3.7	712	698
80- 85	697	8.3	714	682
85- 90	703	12.9	734	679
90- 95	705	7.3	728	697
95-100	697	4.4	706	691
100-105	699	7.8	719	684
105-110	699	12.3	734	683
110-115	710	9.5	731	693
115-120	707	7.8	725	694
120-125	711	4.2	719	704
125-130	710	7.4	722	693
130-135	710	11.1	727	683
135-140	706	11.7	739	685
140-145	707	8.5	723	688
145-150	710	8.7	726	693
150-155	706	7.8	730	696
155-160	707	7.7	737	696
160-165	695	6.5	709	684
165-170	700	11.4	720	681
170-175	705	10.8	725	678
175-180	704	4.5	714	696
180-185	704	8.5	722	685
185-190	708	10.0	728	686
190-195	706	10.2	725	690
195-200	708	11.4	728	688
200-205	711	8.1	730	699
205-210	711	11.3	741	688
210-215	709	13.8	734	682
215-220	706	10.6	724	689
220-225	710	12.1	731	684
225-230	717	7.3	737	706
230-235	721	10.1	740	699
235-240	714	12.2	739	684
FOR THIS RUN:	707	10.7	741	672

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	76.7	1.1	79.4	74.1
5- 10	76.0	1.7	78.6	70.6
10- 15	78.4	4.0	84.4	67.8
15- 20	75.4	2.6	80.9	69.3
20- 25	76.0	2.6	79.6	70.0
25- 30	76.9	3.8	83.7	64.0
30- 35	77.1	3.3	83.9	68.3
35- 40	76.3	4.3	83.2	64.8
40- 45	76.0	3.8	81.6	66.0
45- 50	76.1	3.1	80.1	69.0
50- 55	77.1	3.5	83.9	67.3
55- 60	76.4	2.1	79.4	72.3
60- 65	75.5	2.6	79.1	69.3
65- 70	76.2	3.5	82.6	68.3
70- 75	77.0	1.6	79.6	73.1
75- 80	77.0	1.2	79.1	73.8
80- 85	75.2	3.0	81.4	69.5
85- 90	75.7	4.4	82.4	64.8
90- 95	76.3	2.0	80.4	73.1
95-100	75.9	1.7	79.1	71.1
100-105	76.1	2.4	80.4	70.6
105-110	77.1	3.9	85.2	68.5
110-115	76.7	3.3	82.1	68.8
115-120	75.0	2.3	80.1	70.8
120-125	77.3	1.6	79.6	73.6
125-130	76.0	2.2	79.1	71.3
130-135	77.7	3.0	84.7	72.6
135-140	76.5	3.7	81.9	64.3
140-145	75.9	2.4	81.1	69.8
145-150	77.1	3.1	82.1	67.8
150-155	76.5	3.2	81.1	66.0
155-160	76.6	2.5	80.1	66.0
160-165	75.6	2.0	77.9	71.1
165-170	75.5	3.3	80.4	69.8
170-175	76.5	3.6	83.4	66.3
175-180	76.4	1.9	78.9	71.3
180-185	76.4	2.5	83.2	72.6
185-190	77.4	3.2	83.9	69.0
190-195	77.1	3.2	82.9	70.3
195-200	76.7	3.3	82.4	68.5
200-205	76.1	2.8	79.6	68.5
205-210	77.4	3.5	83.4	67.5
210-215	77.0	4.0	83.2	69.3
215-220	75.8	2.4	79.9	69.5
220-225	76.6	4.1	84.7	69.3
225-230	76.0	2.9	79.9	67.8
230-235	76.2	3.4	83.7	68.3
235-240	77.8	3.8	87.9	72.1
FOR THIS RUN:	76.5	3.1	87.9	64.0

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	8.6	14.8	14.1	-59.9
5- 10	10.7	10.4	14.2	-39.4
10- 15	9.1	17.4	14.6	-74.8
15- 20	7.4	15.5	14.8	-38.3
20- 25	4.9	24.5	14.3	-106.3
25- 30	4.9	23.6	14.4	-77.0
30- 35	6.4	25.0	14.1	-106.3
35- 40	6.3	25.0	14.5	-106.3
40- 45	11.4	5.2	14.0	-10.2
45- 50	12.3	5.1	14.0	-12.5
50- 55	4.5	30.5	14.2	-106.3
55- 60	11.3	7.1	14.1	-21.9
60- 65	9.6	17.0	14.2	-73.5
65- 70	11.2	5.8	14.2	-12.2
70- 75	7.6	15.4	14.2	-57.7
75- 80	6.9	22.4	15.0	-97.1
80- 85	9.8	15.0	14.3	-63.3
85- 90	7.7	23.4	14.8	-106.3
90- 95	12.7	2.2	15.1	5.4
95-100	11.6	6.2	14.2	-17.4
100-105	12.9	1.0	13.8	8.8
105-110	9.1	14.4	13.9	-58.8
110-115	6.2	24.3	14.6	-106.3
115-120	4.5	25.7	14.1	-82.9
120-125	7.0	19.5	14.1	-74.3
125-130	9.9	11.5	14.2	-31.4
130-135	11.4	8.0	14.3	-27.0
135-140	10.7	9.8	14.1	-36.0
140-145	2.4	32.2	14.0	-106.3
145-150	6.5	20.3	14.3	-77.5
150-155	7.3	23.8	13.9	-106.3
155-160	8.1	23.4	14.6	-106.3
160-165	12.5	3.0	14.3	-1.3
165-170	5.6	24.0	14.2	-100.7
170-175	7.3	18.1	14.7	-64.9
175-180	10.4	13.0	14.6	-52.7
180-185	2.4	32.6	13.9	-106.3
185-190	7.4	23.8	14.3	-106.3
190-195	11.8	5.3	14.2	-11.9
195-200	10.1	11.2	14.1	-42.7
200-205	9.6	8.5	14.5	-14.1
205-210	12.9	1.3	14.1	7.5
210-215	10.1	13.8	14.4	-56.7
215-220	4.2	25.5	14.0	-89.2
220-225	3.0	32.4	14.1	-106.3
225-230	8.3	23.4	14.0	-106.3
230-235	8.7	17.9	14.5	-76.5
235-240	13.2	1.2	14.4	8.2
FOR THIS RUN:	8.5	18.8	15.1	-106.3

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.7	1.1	1.1	-4.6
5- 10	0.8	0.8	1.1	-3.0
10- 15	0.7	1.4	1.1	-6.0
15- 20	0.5	1.2	1.1	-2.9
20- 25	0.4	1.8	1.1	-8.0
25- 30	0.4	1.8	1.1	-6.1
30- 35	0.5	1.9	1.1	-8.2
35- 40	0.5	2.0	1.2	-8.5
40- 45	0.9	0.4	1.1	-0.8
45- 50	0.9	0.4	1.1	-1.0
50- 55	0.3	2.4	1.2	-8.1
55- 60	0.9	0.5	1.1	-1.7
60- 65	0.7	1.3	1.1	-5.5
65- 70	0.9	0.4	1.1	-0.9
70- 75	0.6	1.2	1.1	-4.4
75- 80	0.5	1.8	1.1	-7.7
80- 85	0.7	1.1	1.1	-4.8
85- 90	0.6	1.8	1.1	-8.0
90- 95	1.0	0.2	1.2	0.4
95-100	0.9	0.5	1.1	-1.2
100-105	1.0	0.1	1.1	0.7
105-110	0.7	1.1	1.1	-4.4
110-115	0.5	1.9	1.1	-8.5
115-120	0.3	1.9	1.1	-6.3
120-125	0.5	1.5	1.1	-5.8
125-130	0.8	0.9	1.1	-2.4
130-135	0.9	0.6	1.1	-2.2
135-140	0.8	0.8	1.1	-2.8
140-145	0.2	2.4	1.1	-7.9
145-150	0.5	1.6	1.1	-5.8
150-155	0.6	1.9	1.1	-8.3
155-160	0.6	1.8	1.1	-8.1
160-165	0.9	0.2	1.1	-0.1
165-170	0.4	1.8	1.1	-7.8
170-175	0.5	1.5	1.2	-5.4
175-180	0.8	1.0	1.1	-4.1
180-185	0.2	2.5	1.1	-8.3
185-190	0.6	1.9	1.1	-8.4
190-195	0.9	0.4	1.2	-0.9
195-200	0.8	0.8	1.2	-3.2
200-205	0.7	0.7	1.1	-1.1
205-210	1.0	0.1	1.1	0.5
210-215	0.8	1.1	1.1	-4.6
215-220	0.3	1.9	1.1	-6.6
220-225	0.3	2.4	1.1	-8.1
225-230	0.7	1.7	1.1	-7.6
230-235	0.7	1.4	1.1	-5.8
235-240	1.0	0.1	1.1	0.7
FOR THIS RUN:	.6	1.4	1.2	-8.5

TABLE 8 (Continued)

RUN NUMBER 2221

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 16 in.(40.6 cm) of ice with 4 in.(10.2 cm) of snow
3) Ship speed 4.7 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	891.4	5.3	898.4	882.4
5- 10	889.5	5.0	897.4	882.4
10- 15	889.2	5.0	897.4	880.4
15- 20	892.0	4.7	898.4	882.4
20- 25	891.9	5.0	898.4	881.4
25- 30	890.2	5.6	898.4	882.4
30- 35	889.6	5.4	898.4	881.4
35- 40	890.6	5.2	899.4	881.4
40- 45	891.4	4.9	897.4	882.4
45- 50	891.3	5.5	898.4	882.4
50- 55	890.6	5.6	898.4	880.4
55- 60	889.7	4.8	897.4	882.4
60- 65	890.1	4.5	896.4	882.4
65- 70	891.6	4.8	897.4	882.4
70- 75	891.5	5.3	898.4	882.4
75- 80	889.9	5.1	897.4	882.4
80- 85	889.2	4.8	898.4	881.4
85- 90	891.8	4.9	898.4	881.4
90- 95	892.1	4.9	898.4	881.4
95-100	890.1	5.5	998.4	882.4
100-105	889.4	4.8	897.4	883.4
105-110	891.0	4.8	897.4	882.4
110-115	891.4	5.1	898.4	881.4
115-120	891.2	5.5	897.4	882.4
120-125	890.4	5.6	897.4	882.4
125-130	889.6	4.9	898.4	882.4
130-135	890.2	4.6	898.4	882.4
135-140	891.7	5.5	898.4	882.4
140-145	891.5	5.7	898.4	882.4
145-150	889.3	5.1	897.4	882.4
150-155	889.4	4.8	898.4	882.4
155-160	892.1	4.5	898.4	883.4
160-165	892.1	4.8	898.4	883.4
165-170	889.4	5.0	898.4	882.4
170-175	889.6	5.4	898.4	882.4
175-180	891.2	4.9	898.4	882.4
180-185	891.9	4.6	897.4	883.4
185-190	890.9	5.4	897.4	882.4
190-195	890.4	5.9	898.4	881.4
195-200	889.8	4.7	897.4	882.4
200-205	890.7	4.8	898.4	882.4
205-210	891.4	5.2	898.4	882.4
210-215	891.6	5.6	899.4	882.4
215-220	889.2	4.8	897.4	883.4
220-225	889.2	4.6	897.4	882.4
225-230	891.7	4.5	897.4	882.4
230-235	891.5	4.9	898.4	882.4
235-240	890.1	5.8	899.4	881.4
FOR THIS RUN:	890.7	5.2	899.4	880.4

TABLE 9 - MACHINERY PARAMETERS, RUN 2210

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	51547	1139.2	53318	49294
5- 10	50783	1323.0	52815	48288
10- 15	50924	880.2	52815	49797
15- 20	51527	1138.9	53318	49797
20- 25	51950	1115.9	53318	49294
25- 30	51608	1138.2	53821	49797
30- 35	51688	957.3	53318	50300
35- 40	51568	1265.5	53821	49294
40- 45	50501	1025.9	52312	48791
45- 50	50481	1231.1	52312	48791
50- 55	50783	1219.5	52815	48791
55- 60	51749	1019.2	53821	50300
60- 65	51165	1021.2	53318	49294
65- 70	50682	998.7	52815	49294
70- 75	51568	1093.9	53318	49797
75- 80	51547	1007.2	52815	49797
80- 85	50602	1035.7	52312	48288
85- 90	51708	1064.7	53318	49294
90- 95	51608	943.7	53821	50300
95-100	50763	910.1	52815	49294
100-105	50944	1050.5	52815	49294
105-110	50461	1213.2	52815	48288
110-115	51246	1218.2	53318	49294
115-120	50159	949.3	51809	48791
120-125	50199	877.0	51809	48288
125-130	51809	1138.2	53821	49797
130-135	51688	1076.7	53821	49797
135-140	51226	1144.2	52815	48791
140-145	51105	1232.1	52815	48791
145-150	52332	1284.2	54324	50300
150-155	52956	991.0	54827	51306
155-160	52050	966.2	54324	50300
160-165	51065	923.3	52815	49797
165-170	50541	1036.9	52312	48791
170-175	51608	1102.0	53318	49797
175-180	50783	1133.5	52815	49294
180-185	49817	1040.4	51809	48288
185-190	49334	984.9	50803	47282
190-195	49032	976.6	50803	47282
195-200	50099	1164.5	52312	47785
200-205	51568	1056.3	53318	49294
205-210	52433	925.1	54324	50803
210-215	52574	1084.6	54324	50803
215-220	52855	1247.8	54827	50803
220-225	52996	1034.6	54827	51306
225-230	52634	1024.7	54324	51306
230-235	51990	994.7	53318	49797
235-240	51205	1083.5	52815	49797
FOR THIS RUN:	51280	1390.0	54827	47282

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	69898	1544.8	72299	66843
5- 10	68862	1794.0	71617	65479
10- 15	69053	1193.6	71617	67525
15- 20	69871	1544.3	72299	67525
20- 25	70444	1513.1	72299	66843
25- 30	69980	1543.3	72981	67525
30- 35	70089	1298.2	72299	68207
35- 40	69926	1716.0	72981	66843
40- 45	68480	1391.2	70935	66161
45- 50	68452	1669.4	70935	66161
50- 55	68862	1653.7	71617	66161
55- 60	70171	1382.0	72981	68207
60- 65	69380	1384.7	72299	66843
65- 70	68725	1354.3	71617	66843
70- 75	69926	1483.3	72299	67525
75- 80	69898	1365.8	71617	67525
80- 85	68616	1404.5	70935	65479
85- 90	70117	1443.7	72299	66843
90- 95	69980	1279.7	72981	68207
95-100	68834	1234.1	71617	66843
100-105	69080	1424.5	71617	66843
105-110	68425	1645.1	71617	65479
110-115	69489	1651.9	72299	66843
115-120	68016	1287.2	70253	66161
120-125	68070	1189.2	70253	65479
125-130	70253	1543.3	72981	67525
130-135	70089	1460.1	72981	67525
135-140	69462	1551.5	71617	66161
140-145	69298	1670.7	71617	66161
145-150	70962	1741.4	73663	68207
150-155	71008	1343.8	74345	69571
155-160	70580	1310.1	73663	68207
160-165	69244	1252.0	71617	67525
165-170	68534	1406.1	70935	66161
170-175	69980	1494.3	72299	67525
175-180	68862	1537.1	71617	66843
180-185	67552	1410.8	70253	65479
185-190	66897	1335.5	68889	64114
190-195	66488	1324.3	68889	64114
195-200	67934	1579.1	70935	64796
200-205	69926	1432.3	72299	66843
205-210	71099	1254.4	73663	68889
210-215	71290	1470.7	73663	68889
215-220	71672	1692.0	74345	68889
220-225	71863	1402.9	74345	69571
225-230	71372	1389.5	73663	69571
230-235	70499	1348.8	72299	67525
235-240	69435	1469.2	71617	67525
FOR THIS RUN:	69536	1884.9	74345	64114

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	47618	5788.2	59104	34876
5- 10	49305	3693.7	54019	40260
10- 15	44627	5953.4	56711	30689
15- 20	48372	6452.6	55515	26501
20- 25	46051	6142.6	55216	28595
25- 30	48073	3764.8	54318	38765
30- 35	47451	4722.1	55814	36372
35- 40	47379	3475.8	53421	39064
40- 45	50813	3390.9	58207	42952
45- 50	48803	4455.1	58805	38466
50- 55	44340	3952.6	51925	35475
55- 60	45704	6883.9	54617	26202
60- 65	48743	4159.1	56113	39662
65- 70	45142	4491.6	55814	29792
70- 75	46625	5338.9	56113	36970
75- 80	48552	3039.2	54617	42055
80- 85	50071	4002.2	55515	37867
85- 90	41899	6760.7	54617	33082
90- 95	48970	4725.8	56711	34577
95-100	51112	3850.5	58506	43550
100-105	49784	3598.9	58506	43850
105-110	48827	3294.9	53122	39662
110-115	44627	6377.1	54318	30091
115-120	53433	2303.7	57309	48336
120-125	47726	6394.7	59104	35475
125-130	42988	7482.4	54318	27698
130-135	47032	4130.6	60300	38466
135-140	48169	4857.8	55814	35774
140-145	48205	5180.7	55814	33979
145-150	44185	7948.1	61497	29193
150-155	45728	6767.2	55515	29492
155-160	46924	4946.4	56113	33979
160-165	49329	3202.2	57309	43550
165-170	49951	4175.5	56412	39064
170-175	47547	5964.1	57908	36372
175-180	49401	2027.0	53720	45644
180-185	48528	2316.7	53421	43550
185-190	52679	1583.0	55814	50430
190-195	52799	2848.8	59403	47439
195-200	47188	4642.8	60300	40559
200-205	44244	4628.9	51028	35774
205-210	42282	5573.5	52823	29492
210-215	42880	5117.6	52524	29792
215-220	42892	5470.3	55216	33381
220-225	47977	4880.5	57908	38466
225-230	51196	4089.9	61198	42653
230-235	50849	4869.5	59104	36671
235-240	51495	4634.6	57908	40559
FOR THIS RUN:	47677	5634.8	61497	26202

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	211806	25745.8	262895	155130
5- 10	219310	16429.7	240277	179078
10- 15	198502	26480.6	252251	136504
15- 20	215159	28701.1	246930	117878
20- 25	204835	27322.5	245599	127191
25- 30	213829	16745.8	241608	172426
30- 35	211061	21003.9	248260	161782
35- 40	210742	15460.5	237617	173756
40- 45	226015	15082.7	258903	191052
45- 50	217075	19816.1	261564	171095
50- 55	197225	17581.3	230964	157791
55- 60	203292	30619.5	242938	116547
60- 65	216809	18499.7	249590	176417
65- 70	200790	19978.5	248260	132513
70- 75	207389	23747.4	249590	164443
75- 80	215957	13518.2	242938	187060
80- 85	222716	17801.9	246930	168434
85- 90	186368	30071.5	242938	147147
90- 95	217820	21020.2	252251	153800
95-100	227346	17127.0	260234	193712
100-105	221439	16008.0	260234	195043
105-110	217181	14655.9	236286	176417
110-115	198502	28365.3	241608	133843
115-120	237670	10246.8	254912	214999
120-125	212285	28443.8	262895	157791
125-130	191211	33281.6	241608	123200
130-135	209199	18373.0	268216	171095
135-140	214254	21607.4	248260	159121
140-145	214414	23044.0	248260	151139
145-150	196533	35353.0	273538	129852
150-155	203398	30100.7	246930	131182
155-160	208720	22001.7	249590	151139
160-165	219416	14243.5	254912	193712
165-170	222184	18572.7	250921	173756
170-175	211487	26528.3	257573	161782
175-180	219736	9016.2	238947	203025
180-185	215851	10304.6	237617	193712
185-190	234317	7041.2	248260	224312
190-195	234849	12671.5	264225	211008
195-200	209890	20651.0	268216	180408
200-205	196799	20589.3	226973	159121
205-210	188071	24791.1	234956	131182
210-215	190732	22763.3	233625	132513
215-220	190785	24332.0	245599	148478
220-225	213403	21708.4	257573	171095
225-230	227718	18191.7	272208	189721
230-235	226175	21659.5	262895	163113
235-240	229049	20614.6	257573	180408
FOR THIS RUN:	212069	25063.4	273538	116547

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2518	64.8	2611	2366
5- 10	2534	58.1	2632	2431
10- 15	2434	59.7	2539	2309
15- 20	2502	59.4	2594	2418
20- 25	2534	64.4	2642	2413
25- 30	2496	60.0	2584	2390
30- 35	2506	59.0	2621	2399
35- 40	2531	47.7	2611	2442
40- 45	2521	53.7	2602	2427
45- 50	2473	60.7	2577	2369
50- 55	2475	61.9	2581	2380
55- 60	2484	61.2	2577	2361
60- 65	2541	47.9	2641	2467
65- 70	2472	53.6	2566	2380
70- 75	2469	48.0	2558	2385
75- 80	2536	51.5	2627	2448
80- 85	2520	52.6	2587	2403
85- 90	2425	63.0	2533	2331
90- 95	2553	57.1	2662	2462
95-100	2496	46.6	2592	2399
100-105	2474	59.0	2569	2379
105-110	2506	65.5	2612	2393
110-115	2475	65.4	2617	2356
115-120	2519	47.4	2591	2440
120-125	2450	69.2	2572	2332
125-130	2470	76.6	2621	2323
130-135	2546	57.8	2661	2415
135-140	2511	72.8	2627	2389
140-145	2466	56.6	2547	2361
145-150	2485	50.8	2577	2379
150-155	2494	58.0	2627	2368
155-160	2542	47.3	2643	2468
160-165	2497	43.1	2576	2418
165-170	2485	51.7	2597	2389
170-175	2488	52.5	2572	2356
175-180	2539	56.9	2637	2433
180-185	2510	62.6	2631	2397
185-190	2493	49.5	2575	2397
190-195	2463	49.5	2551	2360
195-200	2438	58.2	2572	2355
200-205	2475	49.3	2569	2370
205-210	2493	54.8	2608	2397
210-215	2527	52.0	2603	2447
215-220	2499	58.5	2596	2398
220-225	2527	54.6	2625	2432
225-230	2541	51.6	2643	2442
230-235	2518	46.9	2616	2442
235-240	2502	57.3	2597	2413
FOR THIS RUN:	2499	64.6	2662	2309

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1877	48.3	1947	1764
5- 10	1890	43.3	1962	1813
10- 15	1815	44.5	1893	1722
15- 20	1866	44.3	1934	1803
20- 25	1889	48.0	1970	1799
25- 30	1862	44.7	1927	1782
30- 35	1869	44.0	1955	1789
35- 40	1887	35.5	1947	1821
40- 45	1880	40.0	1940	1809
45- 50	1844	45.3	1921	1766
50- 55	1846	46.2	1925	1775
55- 60	1852	45.7	1922	1760
60- 65	1895	35.7	1970	1840
65- 70	1843	39.9	1914	1775
70- 75	1841	35.8	1908	1778
75- 80	1891	38.4	1959	1825
80- 85	1879	39.2	1929	1792
85- 90	1808	47.0	1889	1738
90- 95	1904	42.6	1985	1836
95-100	1861	34.7	1933	1789
100-105	1845	44.0	1916	1774
105-110	1869	48.8	1947	1785
110-115	1846	48.8	1951	1757
115-120	1878	35.3	1932	1820
120-125	1827	51.6	1918	1739
125-130	1841	57.1	1955	1732
130-135	1898	43.1	1984	1803
135-140	1872	54.3	1959	1781
140-145	1838	42.2	1899	1760
145-150	1853	37.9	1922	1774
150-155	1860	43.3	1959	1765
155-160	1895	35.3	1971	1840
160-165	1862	32.1	1921	1803
165-170	1853	38.6	1936	1782
170-175	1855	39.1	1918	1757
175-180	1893	42.4	1966	1814
180-185	1871	46.7	1962	1787
185-190	1859	36.9	1920	1787
190-195	1836	36.9	1902	1760
195-200	1818	43.4	1918	1756
200-205	1845	36.8	1916	1767
205-210	1859	40.9	1945	1787
210-215	1885	38.8	1941	1825
215-220	1863	43.6	1936	1788
220-225	1884	40.7	1958	1814
225-230	1895	38.5	1971	1821
230-235	1878	35.0	1951	1821
235-240	1866	42.7	1936	1799
FOR THIS RUN:	1863	48.2	1985	1722

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	256.5	3.0	259.7	248.5
5- 10	262.2	3.6	266.2	255.0
10- 15	251.0	4.1	258.2	243.5
15- 20	255.0	1.9	258.2	252.0
20- 25	256.2	3.9	262.2	249.5
25- 30	254.1	2.2	256.7	249.0
30- 35	254.6	2.5	258.7	250.5
35- 40	257.8	3.1	261.7	251.5
40- 45	262.1	0.8	263.7	260.7
45- 50	257.3	2.5	261.7	253.5
50- 55	256.0	3.3	261.7	251.0
55- 60	252.1	3.2	258.2	246.5
60- 65	260.8	2.8	265.7	256.7
65- 70	256.2	4.2	262.7	250.0
70- 75	251.5	1.9	256.2	246.5
75- 80	258.4	1.8	261.2	254.5
80- 85	261.5	2.5	264.7	257.2
85- 90	246.3	4.1	253.0	240.5
90- 95	259.8	3.4	265.7	254.5
95-100	258.2	2.1	261.2	253.0
100-105	255.1	2.3	259.2	251.5
105-110	260.9	2.9	264.7	255.0
110-115	253.7	4.0	262.7	248.5
115-120	263.8	1.5	265.7	260.2
120-125	256.3	5.7	262.7	246.5
125-130	250.4	7.1	262.2	240.0
130-135	258.7	2.4	262.7	255.0
135-140	257.4	3.4	262.7	253.5
140-145	253.4	3.6	258.7	245.5
145-150	249.4	3.9	254.5	243.5
150-155	247.4	3.9	255.0	240.0
155-160	256.5	1.4	258.7	253.5
160-165	256.8	2.1	260.7	253.5
165-170	258.3	2.9	261.7	253.5
170-175	253.2	3.0	258.2	248.5
175-180	262.6	2.9	266.7	258.7
180-185	264.6	2.6	267.2	260.7
185-190	265.4	1.3	267.2	262.2
190-195	263.8	1.0	265.7	261.7
195-200	255.6	3.0	261.2	249.0
200-205	252.0	2.5	257.7	249.0
205-210	249.7	4.8	256.7	243.0
210-215	252.5	1.3	255.0	250.0
215-220	248.3	2.4	251.5	243.5
220-225	250.4	1.7	253.5	247.5
225-230	253.6	2.3	256.2	248.5
230-235	254.4	3.3	259.2	248.5
235-240	256.6	1.8	259.7	253.0
FOR THIS RUN:	256.0	5.6	267.2	240.0

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	874	7.2	882	854
5- 10	878	4.5	883	867
10- 15	856	9.6	871	838
15- 20	876	4.3	883	866
20- 25	871	9.5	883	855
25- 30	869	6.1	876	856
30- 35	872	7.4	882	858
35- 40	874	6.2	883	861
40- 45	874	5.2	880	864
45- 50	866	4.6	874	855
50- 55	868	5.4	876	851
55- 60	864	7.3	877	850
60- 65	882	4.5	890	873
65- 70	865	6.5	877	853
70- 75	863	5.7	872	851
75- 80	877	3.3	882	867
80- 85	874	5.8	879	856
85- 90	846	15.2	882	819
90- 95	879	4.3	887	869
95-100	870	5.5	881	860
100-105	870	5.0	879	859
105-110	878	5.0	885	869
110-115	863	8.2	880	850
115-120	880	4.7	888	873
120-125	858	10.3	873	837
125-130	860	19.3	891	830
130-135	883	3.7	888	876
135-140	865	8.6	880	848
140-145	866	6.1	875	851
145-150	860	8.8	875	847
150-155	862	13.5	887	835
155-160	880	5.4	890	873
160-165	874	3.5	879	864
165-170	872	5.4	879	860
170-175	865	6.8	879	851
175-180	881	4.9	887	869
180-185	873	6.5	883	862
185-190	864	3.2	871	858
190-195	869	4.3	875	856
195-200	864	4.9	872	855
200-205	866	4.0	872	859
205-210	860	11.6	879	843
210-215	872	5.0	880	858
215-220	862	7.8	874	848
220-225	866	6.7	882	853
225-230	873	5.3	880	862
230-235	874	5.9	883	862
235-240	875	4.7	882	868
FOR THIS RUN:	869	10.5	891	819

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2305	34.9	2367	2244
5- 10	2274	26.1	2370	2214
10- 15	2321	58.8	2480	2240
15- 20	2305	37.9	2417	2245
20- 25	2301	37.5	2404	2248
25- 30	2307	36.1	2391	2252
30- 35	2307	41.8	2400	2242
35- 40	2291	24.6	2344	2242
40- 45	2280	22.3	2325	2247
45- 50	2286	30.7	2363	2244
50- 55	2303	40.8	2374	2238
55- 60	2310	51.7	2404	2227
60- 65	2285	31.6	2383	2247
65- 70	2299	41.2	2423	2235
70- 75	2318	52.5	2424	2248
75- 80	2292	27.7	2337	2245
80- 85	2285	34.2	2384	2241
85- 90	2338	51.7	2488	2257
90- 95	2309	55.4	2467	2238
95-100	2292	42.8	2407	2240
100-105	2303	31.2	2367	2252
105-110	2290	21.5	2335	2261
110-115	2302	47.0	2404	2235
115-120	2277	19.3	2348	2254
120-125	2302	46.6	2430	2232
125-130	2322	64.9	2483	2221
130-135	2293	26.1	2347	2252
135-140	2302	47.3	2425	2238
140-145	2327	69.8	2564	2238
145-150	2345	57.0	2491	2257
150-155	2338	64.2	2524	2227
155-160	2310	42.2	2423	2251
160-165	2293	30.3	2375	2240
165-170	2287	23.1	2341	2245
170-175	2310	44.1	2401	2245
175-180	2278	20.7	2332	2245
180-185	2273	25.9	2381	2235
185-190	2271	15.4	2331	2258
190-195	2272	18.2	2308	2242
195-200	2308	34.1	2361	2242
200-205	2317	42.3	2400	2241
205-210	2337	61.9	2493	2231
210-215	2332	44.2	2427	2251
215-220	2323	61.1	2471	2240
220-225	2336	49.5	2443	2270
225-230	2314	32.7	2391	2271
230-235	2293	37.2	2410	2248
235-240	2294	28.5	2365	2235
FOR THIS RUN:	2303	45.8	2564	2214

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2014	36.8	2077	1929
5- 10	1997	20.8	2055	1947
10- 15	1986	46.3	2081	1916
15- 20	2019	32.7	2118	1964
20- 25	2005	26.0	2056	1952
25- 30	2004	31.0	2058	1945
30- 35	2011	29.6	2060	1955
35- 40	2002	24.2	2056	1959
40- 45	1992	21.5	2037	1948
45- 50	1979	23.7	2033	1940
50- 55	2000	32.9	2066	1934
55- 60	1995	38.6	2067	1918
60- 65	2015	29.4	2096	1974
65- 70	1988	34.6	2078	1929
70- 75	2000	37.5	2083	1940
75- 80	2010	24.1	2060	1975
80- 85	1996	21.7	2047	1961
85- 90	1978	38.0	2073	1908
90- 95	2030	42.8	2161	1977
95-100	1993	33.4	2094	1951
100-105	2004	24.5	2062	1967
105-110	2011	14.4	2044	1989
110-115	1987	36.7	2074	1914
115-120	2004	19.5	2065	1976
120-125	1976	33.8	2053	1886
125-130	1997	59.4	2112	1863
130-135	2024	25.8	2075	1973
135-140	1992	35.4	2078	1936
140-145	2014	52.9	2190	1942
145-150	2017	43.8	2123	1947
150-155	2014	47.6	2114	1898
155-160	2033	34.9	2130	1986
160-165	2003	24.4	2074	1959
165-170	1994	22.6	2034	1951
170-175	1997	34.9	2072	1933
175-180	2007	17.2	2043	1965
180-185	1984	21.9	2061	1942
185-190	1963	13.6	2005	1941
190-195	1976	19.5	2015	1940
195-200	1994	28.0	2034	1935
200-205	2007	32.1	2066	1953
205-210	2010	48.1	2125	1937
210-215	2033	34.7	2119	1973
215-220	2002	47.5	2095	1925
220-225	2023	37.2	2100	1967
225-230	2021	26.4	2078	1969
230-235	2004	29.8	2102	1960
235-240	2007	23.1	2066	1955
FOR THIS RUN:	2002	36.4	2190	1863

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	101.7	5.2	107.4	85.5
5- 10	94.8	6.6	108.2	77.4
10- 15	100.9	8.5	109.4	82.0
15- 20	103.1	4.5	109.2	87.5
20- 25	101.4	6.1	107.9	87.8
25- 30	102.1	6.0	107.9	85.7
30- 35	100.6	6.1	107.2	84.2
35- 40	99.2	5.5	105.6	83.0
40- 45	96.1	5.5	106.2	83.5
45- 50	96.9	6.9	107.4	82.7
50- 55	100.3	7.5	110.7	82.2
55- 60	100.4	7.4	109.7	85.0
60- 65	97.9	8.3	109.4	78.7
65- 70	98.5	7.2	109.4	76.7
70- 75	103.5	4.8	108.7	90.5
75- 80	98.9	6.4	106.4	87.3
80- 85	96.3	5.8	106.9	86.7
85- 90	104.1	5.7	110.7	90.5
90- 95	100.0	6.7	108.2	85.2
95-100	97.2	8.9	109.2	82.0
100-105	101.5	5.8	109.2	86.2
105-110	100.0	5.5	107.4	90.3
110-115	97.9	9.0	109.9	81.5
115-120	95.9	5.4	105.6	86.7
120-125	100.9	6.5	108.9	88.5
125-130	101.7	8.0	108.7	79.2
130-135	100.0	5.8	109.9	92.5
135-140	97.8	9.0	108.9	79.2
140-145	103.4	6.5	109.9	84.0
145-150	105.2	5.8	111.9	87.0
150-155	105.2	5.9	109.7	81.7
155-160	101.6	4.7	108.7	92.0
160-165	100.0	5.9	107.2	87.8
165-170	99.4	6.6	107.2	84.0
170-175	100.2	6.3	109.7	89.3
175-180	96.3	5.2	106.7	90.3
180-185	93.6	5.8	106.4	81.0
185-190	94.1	5.3	106.9	86.5
190-195	94.2	6.4	104.4	81.0
195-200	101.5	8.7	110.4	82.5
200-205	104.7	5.4	110.4	90.0
205-210	104.2	6.7	109.4	81.5
210-215	104.9	5.2	109.2	88.3
215-220	105.2	4.8	110.4	93.3
220-225	106.5	2.7	109.9	99.6
225-230	105.1	3.5	109.2	96.3
230-235	99.8	5.0	108.7	87.5
235-240	100.7	6.2	107.4	80.7
FOR THIS RUN:	100.3	7.1	111.9	76.7

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	41.9	0.5	43.0	40.8
5- 10	40.5	1.1	43.2	39.2
10- 15	42.0	0.8	43.4	40.7
15- 20	43.0	0.6	44.1	42.3
20- 25	42.2	0.9	43.5	40.4
25- 30	42.4	0.7	43.9	41.6
30- 35	42.6	0.5	43.9	41.7
35- 40	41.4	0.5	42.7	40.6
40- 45	40.3	0.4	41.2	39.6
45- 50	40.8	0.7	42.2	39.7
50- 55	41.8	0.9	43.6	40.2
55- 60	42.6	0.9	44.3	41.1
60- 65	41.4	0.9	43.1	39.9
65- 70	41.3	1.0	43.0	39.6
70- 75	43.1	0.4	43.7	42.0
75- 80	41.9	0.3	42.4	41.2
80- 85	40.3	0.8	42.1	39.3
85- 90	42.9	0.5	44.0	41.8
90- 95	42.0	0.9	43.4	40.6
95-100	41.0	0.8	42.5	39.9
100-105	42.1	0.6	43.2	41.2
105-110	40.9	0.8	42.3	39.9
110-115	41.8	0.9	43.6	40.6
115-120	40.4	0.3	41.1	39.6
120-125	41.2	1.5	43.8	39.3
125-130	42.7	0.7	43.8	41.6
130-135	42.3	1.3	44.6	40.9
135-140	40.9	0.8	42.4	39.7
140-145	42.5	1.1	44.2	40.6
145-150	43.5	0.9	45.2	41.9
150-155	44.2	0.6	45.1	42.8
155-160	42.8	0.7	44.1	41.7
160-165	41.8	0.7	42.8	40.4
165-170	41.5	0.6	42.7	40.5
170-175	42.1	0.8	43.5	40.7
175-180	40.7	1.0	42.2	39.3
180-185	39.2	0.5	40.1	38.6
185-190	38.9	0.5	39.9	38.2
190-195	39.5	0.4	40.1	38.9
195-200	41.6	0.8	43.4	39.9
200-205	43.3	0.8	44.5	41.8
205-210	43.4	0.8	44.5	41.8
210-215	43.6	0.5	44.5	42.7
215-220	44.3	0.4	44.9	43.5
220-225	44.0	0.3	44.5	43.3
225-230	43.6	0.5	44.6	42.9
230-235	42.8	0.7	44.1	41.6
235-240	42.2	0.3	43.1	41.6
FOR THIS RUN:	41.9	1.4	45.2	38.2

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	4.3	0.2	4.6	3.6
5- 10	3.8	0.3	4.7	3.3
10- 15	4.2	0.4	4.7	3.3
15- 20	4.4	0.2	4.7	3.7
20- 25	4.3	0.3	4.6	3.5
25- 30	4.3	0.3	4.7	3.6
30- 35	4.3	0.3	4.6	3.7
35- 40	4.1	0.3	4.4	3.4
40- 45	3.9	0.2	4.4	3.3
45- 50	4.0	0.3	4.5	3.3
50- 55	4.2	0.4	4.8	3.5
55- 60	4.3	0.4	4.9	3.5
60- 65	4.1	0.4	4.6	3.2
65- 70	4.1	0.3	4.7	3.2
70- 75	4.5	0.2	4.8	3.9
75- 80	4.1	0.3	4.4	3.6
80- 85	3.9	0.3	4.5	3.5
85- 90	4.5	0.3	4.8	3.8
90- 95	4.2	0.3	4.7	3.7
95-100	4.0	0.4	4.6	3.3
100-105	4.3	0.3	4.7	3.6
105-110	4.1	0.3	4.5	3.6
110-115	4.1	0.4	4.8	3.4
115-120	3.9	0.2	4.3	3.5
120-125	4.2	0.4	4.7	3.5
125-130	4.3	0.4	4.7	3.4
130-135	4.2	0.3	4.9	3.8
135-140	4.0	0.4	4.6	3.2
140-145	4.4	0.3	4.9	3.5
145-150	4.6	0.3	5.1	3.7
150-155	4.6	0.3	4.9	3.6
155-160	4.4	0.2	4.8	4.0
160-165	4.2	0.3	4.6	3.6
165-170	4.1	0.3	4.6	3.5
170-175	4.2	0.3	4.8	3.6
175-180	3.9	0.3	4.5	3.6
180-185	3.7	0.2	4.2	3.2
185-190	3.7	0.2	4.3	3.3
190-195	3.7	0.3	4.2	3.2
195-200	4.2	0.4	4.8	3.5
200-205	4.5	0.3	4.9	3.9
205-210	4.5	0.3	4.9	3.5
210-215	4.6	0.2	4.8	3.8
215-220	4.7	0.2	4.9	4.1
220-225	4.7	0.1	4.9	4.4
225-230	4.6	0.2	4.8	4.2
230-235	4.3	0.3	4.8	3.7
235-240	4.2	0.3	4.6	3.4
FOR THIS RUN:	4.2	0.4	5.1	3.2

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	33	0.4	35	33
5- 10	33	0.1	33	33
10- 15	33	0.1	34	33
15- 20	33	0.1	34	33
20- 25	34	0.1	34	33
25- 30	34	0.1	34	33
30- 35	34	0.1	34	34
35- 40	34	0.1	34	34
40- 45	34	0.4	36	34
45- 50	34	0.1	34	34
50- 55	34	0.1	34	34
55- 60	34	0.1	35	34
60- 65	34	0.1	34	34
65- 70	34	0.1	34	34
70- 75	34	0.1	35	34
75- 80	34	0.3	36	34
80- 85	34	0.1	35	34
85- 90	35	0.5	37	34
90- 95	35	0.1	35	34
95-100	35	1.5	42	35
100-105	35	0.1	35	35
105-110	35	0.1	35	35
110-115	35	0.1	35	35
115-120	35	0.1	35	35
120-125	35	0.1	36	35
125-130	35	0.2	35	35
130-135	35	0.1	35	35
135-140	35	0.1	36	35
140-145	35	0.1	36	35
145-150	35	0.1	36	35
150-155	36	0.1	36	35
155-160	36	0.1	36	35
160-165	36	2.7	49	35
165-170	36	0.1	36	35
170-175	36	0.1	36	36
175-180	36	0.1	36	36
180-185	36	0.2	37	36
185-190	36	0.2	36	35
190-195	36	0.1	37	36
195-200	36	0.1	37	36
200-205	36	0.2	37	36
205-210	36	0.1	37	36
210-215	37	0.4	38	36
215-220	37	0.1	37	36
220-225	37	1.3	43	37
225-230	37	0.1	37	37
230-235	37	0.1	37	37
235-240	37	0.1	37	37
FOR THIS RUN:	35	1.2	49	33

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	877	7.7	885	856
5- 10	882	3.7	885	869
10- 15	858	9.7	874	839
15- 20	879	4.6	885	868
20- 25	875	8.7	885	858
25- 30	872	6.2	879	859
30- 35	875	7.2	884	860
35- 40	877	6.5	885	863
40- 45	880	3.1	885	871
45- 50	869	5.2	879	857
50- 55	872	5.2	879	859
55- 60	866	6.9	879	852
60- 65	885	4.0	892	880
65- 70	868	7.1	881	855
70- 75	866	5.9	874	851
75- 80	882	3.1	888	876
80- 85	877	4.2	881	864
85- 90	850	14.7	884	828
90- 95	887	5.7	894	874
95-100	872	5.6	884	862
100-105	873	4.9	881	860
105-110	880	5.0	886	871
110-115	866	8.7	885	852
115-120	885	5.0	891	875
120-125	864	8.3	875	848
125-130	863	19.6	892	832
130-135	885	3.5	890	878
135-140	869	7.1	881	858
140-145	868	6.0	876	854
145-150	864	9.8	878	849
150-155	865	14.1	890	837
155-160	883	5.3	893	875
160-165	876	2.4	881	869
165-170	875	5.2	881	867
170-175	867	7.0	880	853
175-180	885	3.2	889	877
180-185	875	6.2	885	867
185-190	875	1.9	878	871
190-195	875	1.0	877	872
195-200	866	4.3	874	858
200-205	869	4.3	876	861
205-210	863	11.4	880	845
210-215	874	4.2	881	863
215-220	866	7.4	875	851
220-225	871	6.4	883	860
225-230	878	6.3	886	864
230-235	877	5.6	885	865
235-240	876	4.4	884	869
FOR THIS RUN:	873	10.5	894	828

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1147	17.4	1176	1117
5- 10	1132	13.7	1179	1102
10- 15	1155	30.7	1237	1112
15- 20	1146	18.9	1200	1118
20- 25	1145	19.0	1197	1119
25- 30	1148	18.4	1194	1120
30- 35	1148	20.9	1193	1117
35- 40	1140	13.5	1169	1113
40- 45	1135	11.5	1158	1117
45- 50	1138	15.6	1178	1117
50- 55	1146	20.3	1180	1117
55- 60	1150	27.2	1198	1107
60- 65	1137	16.0	1187	1117
65- 70	1144	21.0	1209	1115
70- 75	1153	26.5	1210	1115
75- 80	1140	14.6	1169	1114
80- 85	1137	16.5	1183	1113
85- 90	1164	27.5	1245	1117
90- 95	1149	27.3	1229	1117
95-100	1141	22.0	1202	1112
100-105	1147	16.0	1180	1121
105-110	1140	10.9	1163	1124
110-115	1145	23.8	1200	1107
115-120	1133	9.9	1168	1121
120-125	1146	24.4	1212	1114
125-130	1155	32.3	1237	1106
130-135	1142	13.2	1174	1123
135-140	1145	24.2	1210	1113
140-145	1159	35.7	1279	1114
145-150	1167	28.2	1238	1124
150-155	1164	32.9	1263	1112
155-160	1151	21.1	1202	1117
160-165	1141	15.1	1183	1114
165-170	1138	11.4	1162	1114
170-175	1150	21.7	1195	1117
175-180	1134	10.9	1160	1114
180-185	1131	13.1	1186	1110
185-190	1131	7.3	1161	1125
190-195	1131	9.5	1148	1113
195-200	1149	17.9	1178	1117
200-205	1154	22.6	1197	1114
205-210	1164	31.4	1245	1112
210-215	1161	22.8	1206	1117
215-220	1157	31.4	1234	1117
220-225	1163	25.4	1215	1129
225-230	1153	16.1	1193	1129
230-235	1141	18.9	1198	1117
235-240	1143	14.3	1181	1113
FOR THIS RUN:	1146	23.3	1279	1102

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1005	18.7	1037	962
5- 10	998	9.6	1025	973
10- 15	991	24.5	1040	953
15- 20	1008	15.4	1053	983
20- 25	1002	13.2	1028	976
25- 30	1001	15.8	1033	974
30- 35	1005	14.4	1026	974
35- 40	1000	12.9	1028	980
40- 45	998	9.9	1020	980
45- 50	989	11.7	1016	968
50- 55	999	16.2	1028	968
55- 60	996	20.0	1035	956
60- 65	1006	15.0	1047	986
65- 70	993	17.1	1036	964
70- 75	999	19.2	1040	965
75- 80	1006	12.1	1033	986
80- 85	997	11.3	1025	976
85- 90	989	18.3	1039	957
90- 95	1019	20.2	1082	989
95-100	995	17.6	1049	971
100-105	1001	13.3	1032	983
105-110	1003	7.0	1020	992
110-115	992	18.6	1036	952
115-120	1003	9.4	1030	986
120-125	991	16.7	1034	951
125-130	996	29.8	1054	929
130-135	1010	13.0	1039	987
135-140	995	18.1	1041	970
140-145	1005	27.3	1094	968
145-150	1008	21.1	1056	972
150-155	1006	24.0	1061	950
155-160	1016	17.3	1059	988
160-165	1000	11.8	1034	978
165-170	996	9.9	1012	973
170-175	997	16.9	1032	967
175-180	1003	8.0	1023	982
180-185	990	11.2	1028	966
185-190	990	6.1	1012	981
190-195	989	7.9	1004	974
195-200	995	14.6	1014	965
200-205	1003	17.2	1033	973
205-210	1004	25.1	1066	966
210-215	1015	18.1	1054	981
215-220	1002	25.4	1054	960
220-225	1013	18.1	1045	984
225-230	1012	14.9	1052	982
230-235	1000	14.5	1047	983
235-240	1001	11.7	1033	975
FOR THIS RUN:	1001	18.3	1094	929

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	103.8	4.3	111.5	95.7
5- 10	103.9	3.5	112.8	92.7
10- 15	98.3	8.7	111.2	73.1
15- 20	105.3	4.6	113.8	90.9
20- 25	101.7	5.2	111.2	89.9
25- 30	102.9	5.3	110.5	86.3
30- 35	101.7	5.8	109.5	87.6
35- 40	103.9	4.3	113.5	93.2
40- 45	102.5	2.6	106.9	96.2
45- 50	102.4	4.0	108.4	95.2
50- 55	103.0	3.8	109.7	95.7
55- 60	103.0	5.4	111.5	91.7
60- 65	105.4	4.0	114.0	96.2
65- 70	100.8	6.9	107.9	79.2
70- 75	102.4	4.5	108.2	90.6
75- 80	105.4	3.6	113.0	99.5
80- 85	102.4	3.6	107.2	89.6
85- 90	98.3	11.3	116.3	68.0
90- 95	105.5	6.5	114.3	82.0
95-100	100.8	5.1	107.7	83.3
100-105	102.3	4.1	111.2	89.6
105-110	102.2	3.2	107.2	94.2
110-115	102.1	7.4	110.7	79.0
115-120	104.2	2.8	107.9	97.8
120-125	98.6	6.5	110.5	78.2
125-130	103.0	10.3	115.6	71.8
130-135	105.4	3.1	111.0	99.3
135-140	100.2	6.0	110.2	79.5
140-145	98.8	11.7	109.5	54.0
145-150	100.6	8.2	109.5	73.9
150-155	102.9	9.6	111.2	74.6
155-160	104.8	5.3	114.8	95.0
160-165	103.0	3.6	111.0	93.4
165-170	103.1	2.9	107.2	97.5
170-175	103.1	5.8	112.8	91.7
175-180	106.5	2.1	112.2	104.6
180-185	101.6	3.3	105.4	89.9
185-190	102.9	1.8	104.9	96.0
190-195	103.2	2.5	107.4	97.0
195-200	100.0	5.2	107.9	89.1
200-205	102.6	5.9	109.5	89.1
205-210	99.9	9.3	113.5	76.9
210-215	105.0	6.0	116.6	92.4
215-220	101.8	8.3	114.3	80.0
220-225	103.2	7.1	113.3	82.5
225-230	104.0	4.6	112.0	90.6
230-235	105.6	4.0	113.5	92.9
235-240	103.6	3.9	111.0	96.2
FOR THIS RUN:	102.7	6.2	116.6	54.0

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	18.3	0.9	19.4	16.2
5- 10	18.6	0.6	19.3	17.1
10- 15	17.8	0.8	19.2	15.1
15- 20	16.3	11.0	19.4	-37.5
20- 25	14.5	18.9	19.3	-77.9
25- 30	18.4	0.6	19.3	17.3
30- 35	16.8	7.0	19.3	-17.3
35- 40	18.3	1.4	20.1	12.0
40- 45	18.4	0.8	19.3	15.1
45- 50	14.4	11.9	19.0	-40.0
50- 55	18.4	0.5	19.4	17.3
55- 60	15.2	10.9	19.3	-33.7
60- 65	15.2	16.6	19.7	-66.2
65- 70	16.3	8.3	18.9	-24.4
70- 75	17.5	3.1	18.9	2.7
75- 80	19.0	1.6	26.1	15.9
80- 85	17.8	2.2	19.3	8.1
85- 90	17.2	1.4	18.8	12.8
90- 95	16.3	12.9	19.6	-47.0
95-100	17.8	1.4	19.1	12.2
100-105	18.2	0.8	19.1	15.0
105-110	18.3	1.6	20.1	11.5
110-115	17.8	2.2	19.5	7.3
115-120	18.3	1.4	19.7	13.3
120-125	17.0	3.7	18.7	-0.6
125-130	19.6	6.8	52.7	16.8
130-135	19.5	3.2	34.7	17.4
135-140	18.3	0.7	19.2	16.5
140-145	17.9	1.4	18.9	11.5
145-150	16.0	9.6	19.2	-30.9
150-155	17.5	2.3	19.6	7.1
155-160	15.6	14.9	20.0	-57.1
160-165	17.0	7.2	19.3	-18.3
165-170	16.3	6.4	19.2	-14.0
170-175	16.9	4.4	19.2	-3.9
175-180	18.5	1.2	19.4	13.9
180-185	18.1	0.5	19.1	17.1
185-190	12.9	24.0	18.9	-103.9
190-195	10.9	25.9	18.9	-103.9
195-200	15.4	11.6	31.2	-32.5
200-205	15.8	13.7	25.9	-50.6
205-210	18.1	0.7	19.1	16.9
210-215	18.7	1.5	25.8	17.7
215-220	17.4	5.5	23.6	-8.8
220-225	18.6	1.6	25.8	15.8
225-230	18.4	1.2	19.4	14.6
230-235	17.6	2.6	19.4	9.9
235-240	17.3	2.2	19.2	8.9
FOR THIS RUN:	17.2	8.7	52.7	-103.9

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.9	0.1	2.2	1.6
5- 10	1.9	0.1	2.2	1.7
10- 15	1.7	0.2	2.1	1.3
15- 20	1.7	1.2	2.1	-4.3
20- 25	1.5	2.0	2.0	-8.2
25- 30	1.9	0.1	2.1	1.5
30- 35	1.7	0.7	2.1	-1.7
35- 40	1.9	0.2	2.2	1.3
40- 45	1.9	0.1	2.0	1.6
45- 50	1.5	1.2	2.0	-4.2
50- 55	1.9	0.1	2.0	1.7
55- 60	1.6	1.1	2.1	-3.4
60- 65	1.6	1.9	2.1	-7.6
65- 70	1.6	0.9	2.0	-2.6
70- 75	1.8	0.3	2.0	0.3
75- 80	2.0	0.2	2.8	1.8
80- 85	1.8	0.2	2.0	0.8
85- 90	1.7	0.3	2.2	0.9
90- 95	1.7	1.4	2.2	-5.0
95-100	1.8	0.2	2.0	1.3
100-105	1.9	0.1	2.1	1.5
105-110	1.9	0.2	2.1	1.2
110-115	1.8	0.3	2.1	0.7
115-120	1.9	0.2	2.1	1.3
120-125	1.7	0.4	1.9	-0.1
125-130	2.0	0.7	5.4	1.2
130-135	2.1	0.4	3.7	1.8
135-140	1.8	0.1	2.0	1.4
140-145	1.8	0.3	2.1	1.0
145-150	1.6	1.0	2.0	-3.3
150-155	1.8	0.3	2.1	0.8
155-160	1.6	1.6	2.2	-6.4
160-165	1.8	0.7	2.0	-1.8
165-170	1.7	0.7	2.0	-1.5
170-175	1.7	0.5	2.1	-0.4
175-180	2.0	0.1	2.1	1.5
180-185	1.8	0.1	2.0	1.6
185-190	1.3	2.5	2.0	-10.9
190-195	1.1	2.7	2.0	-10.8
195-200	1.6	1.1	3.0	-3.2
200-205	1.6	1.3	2.6	-4.8
205-210	1.8	0.2	2.1	1.4
210-215	2.0	0.2	2.8	1.7
215-220	1.8	0.6	2.5	-0.9
220-225	1.9	0.2	2.5	1.5
225-230	1.9	0.2	2.1	1.4
230-235	1.9	0.3	2.1	1.1
235-240	1.8	0.2	2.1	0.9
FOR THIS RUN:	1.8	0.9	5.4	-10.9

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	873.8	6.2	882.4	858.4
5- 10	875.8	6.3	882.4	860.4
10- 15	876.6	5.4	883.4	861.4
15- 20	872.7	7.0	880.4	855.4
20- 25	875.6	6.2	881.4	862.4
25- 30	874.9	6.0	882.4	861.4
30- 35	874.0	6.7	882.4	859.4
35- 40	876.2	5.7	881.4	859.4
40- 45	875.4	5.9	881.4	861.4
45- 50	875.6	6.5	882.4	861.4
50- 55	875.3	5.6	881.4	859.4
55- 60	874.2	6.7	881.4	861.4
60- 65	874.8	6.3	882.4	861.4
65- 70	876.2	5.7	882.4	862.4
70- 75	873.1	5.6	880.4	861.4
75- 80	875.5	5.6	882.4	859.4
80- 85	876.2	5.7	882.4	862.4
85- 90	875.8	7.0	885.4	860.4
90- 95	874.2	5.7	880.4	858.4
95-100	875.7	6.8	884.4	861.4
100-105	874.4	6.2	881.4	861.4
105-110	875.7	5.4	881.4	862.4
110-115	875.2	6.0	881.4	860.4
115-120	874.9	5.3	881.4	859.4
120-125	876.5	5.3	882.4	863.4
125-130	873.7	7.0	882.4	860.4
130-135	875.4	5.9	881.4	859.4
135-140	875.5	6.0	881.4	863.4
140-145	873.6	7.1	882.4	860.4
145-150	875.4	6.3	882.4	856.4
150-155	874.7	6.4	882.4	861.4
155-160	875.6	5.4	881.4	861.4
160-165	876.7	5.6	882.4	861.4
165-170	874.3	7.0	881.4	860.4
170-175	875.3	6.3	882.4	859.4
175-180	874.3	6.3	881.4	859.4
180-185	875.6	6.3	882.4	862.4
185-190	876.1	5.7	882.4	860.4
190-195	875.4	5.7	882.4	860.4
195-200	874.2	6.3	880.4	861.4
200-205	875.2	5.6	882.4	859.4
205-210	874.0	7.2	884.4	858.4
210-215	874.4	6.0	880.4	860.4
215-220	875.2	6.2	883.4	861.4
220-225	873.6	6.6	881.4	858.4
225-230	875.8	5.4	882.4	861.4
230-235	875.4	6.0	882.4	862.4
235-240	875.2	6.4	881.4	861.4
FOR THIS RUN:	875.1	6.2	885.4	855.4

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS: 1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	28	1.5	35	28
5- 10	28	0.1	28	27
10- 15	28	0.1	28	28
15- 20	28	0.1	28	28
20- 25	28	0.1	28	28
25- 30	28	0.1	29	28
30- 35	28	0.1	29	28
35- 40	28	0.1	29	28
40- 45	28	0.1	29	28
45- 50	28	0.1	29	28
50- 55	29	0.1	29	28
55- 60	29	2.7	43	28
60- 65	29	0.1	29	29
65- 70	29	0.1	29	29
70- 75	29	0.6	32	29
75- 80	29	0.6	32	29
80- 85	29	0.1	29	29
85- 90	29	0.5	32	29
90- 95	29	0.4	31	29
95-100	29	0.2	30	29
100-105	29	0.1	30	29
105-110	29	0.2	29	28
110-115	29	0.3	30	29
115-120	29	0.1	29	29
120-125	29	0.1	30	29
125-130	29	0.1	30	29
130-135	30	0.1	30	29
135-140	30	0.1	30	29
140-145	30	0.4	32	30
145-150	30	0.1	30	30
150-155	30	0.1	30	30
155-160	30	0.3	31	30
160-165	30	0.1	30	30
165-170	30	0.1	30	30
170-175	30	0.4	32	29
175-180	30	0.1	30	30
180-185	30	0.1	30	30
185-190	30	0.1	30	30
190-195	30	0.1	30	30
195-200	30	0.7	34	30
200-205	30	0.2	30	29
205-210	31	0.3	32	30
210-215	31	0.1	31	30
215-220	31	0.1	31	30
220-225	31	0.1	31	30
225-230	31	0.1	31	31
230-235	31	0.1	31	30
235-240	31	0.1	31	30
FOR THIS RUN:	29	1.0	43	27

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	866	7.7	874	845
5- 10	871	3.6	874	859
10- 15	847	9.7	863	829
15- 20	868	4.6	874	857
20- 25	864	8.6	874	848
25- 30	861	6.2	868	849
30- 35	864	7.1	873	849
35- 40	866	6.3	874	853
40- 45	869	3.1	874	860
45- 50	858	5.2	868	847
50- 55	861	5.2	869	848
55- 60	856	6.8	868	841
60- 65	874	3.9	881	869
65- 70	858	7.1	870	845
70- 75	856	5.9	864	841
75- 80	872	3.2	878	865
80- 85	866	4.2	870	853
85- 90	839	14.6	873	818
90- 95	876	5.6	883	864
95-100	862	5.5	873	851
100-105	862	4.9	869	849
105-110	869	5.0	875	860
110-115	856	8.7	874	841
115-120	874	5.0	880	864
120-125	854	8.3	864	837
125-130	852	19.5	881	822
130-135	874	3.5	879	867
135-140	858	7.0	870	848
140-145	857	5.9	865	843
145-150	853	9.8	867	838
150-155	854	13.9	879	827
155-160	872	5.2	882	864
160-165	866	2.5	870	859
165-170	864	5.1	871	856
170-175	856	7.0	869	843
175-180	874	3.2	878	866
180-185	864	6.1	874	856
185-190	864	1.8	867	860
190-195	864	1.1	866	861
195-200	856	4.2	863	847
200-205	858	4.3	866	850
205-210	852	11.4	869	835
210-215	863	4.1	870	852
215-220	855	7.3	864	840
220-225	860	6.4	873	849
225-230	867	6.3	875	854
230-235	866	5.6	874	854
235-240	865	4.4	873	858
FOR THIS RUN:	862	10.5	883	818

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1157	17.6	1192	1125
5- 10	1139	12.9	1187	1109
10- 15	1164	29.0	1243	1124
15- 20	1156	20.1	1220	1126
20- 25	1155	19.3	1205	1131
25- 30	1157	18.0	1195	1127
30- 35	1158	21.1	1205	1124
35- 40	1149	12.0	1172	1125
40- 45	1145	12.3	1169	1127
45- 50	1146	15.9	1184	1126
50- 55	1155	20.9	1190	1119
55- 60	1159	25.6	1205	1118
60- 65	1145	16.1	1193	1124
65- 70	1152	20.9	1212	1116
70- 75	1162	26.3	1218	1129
75- 80	1149	13.7	1173	1129
80- 85	1145	17.9	1198	1125
85- 90	1172	25.4	1242	1134
90- 95	1157	28.8	1236	1119
95-100	1149	21.3	1203	1122
100-105	1154	15.3	1186	1129
105-110	1148	10.9	1169	1130
110-115	1154	23.9	1202	1119
115-120	1141	10.3	1180	1127
120-125	1154	22.6	1217	1116
125-130	1165	33.3	1245	1112
130-135	1148	13.3	1176	1125
135-140	1154	23.8	1215	1123
140-145	1167	35.1	1286	1121
145-150	1175	29.2	1251	1129
150-155	1171	32.3	1262	1111
155-160	1157	21.6	1218	1131
160-165	1149	15.9	1190	1122
165-170	1146	12.3	1177	1127
170-175	1158	22.6	1204	1127
175-180	1142	10.6	.171	1128
180-185	1139	13.2	1194	1124
185-190	1138	8.7	1169	1129
190-195	1139	9.2	1159	1127
195-200	1156	17.0	1185	1123
200-205	1161	20.4	1202	1123
205-210	1171	31.2	1248	1118
210-215	1169	22.1	1220	1132
215-220	1164	30.1	1236	1121
220-225	1171	24.6	1226	1137
225-230	1160	16.8	1197	1137
230-235	1150	18.7	1209	1129
235-240	1150	14.3	1182	1121
FOR THIS RUN:	1155	23.1	1286	1109

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1002	18.9	1033	958
5- 10	993	9.0	1020	967
10- 15	986	23.3	1033	951
15- 20	1004	16.4	1057	982
20- 25	998	12.3	1023	970
25- 30	997	16.2	1031	968
30- 35	1001	14.1	1023	973
35- 40	995	13.5	1020	969
40- 45	994	9.1	1014	983
45- 50	984	11.7	1008	962
50- 55	994	17.2	1024	958
55- 60	992	18.4	1024	954
60- 65	1001	14.7	1040	979
65- 70	988	17.2	1030	953
70- 75	995	18.2	1035	967
75- 80	1001	10.8	1019	984
80- 85	992	11.8	1022	976
85- 90	983	19.5	1023	949
90- 95	1013	20.8	1076	979
95-100	990	16.5	1037	968
100-105	994	12.2	1022	974
105-110	997	7.2	1013	986
110-115	987	18.0	1026	955
115-120	998	9.5	1028	981
120-125	985	16.1	1026	941
125-130	992	30.1	1047	923
130-135	1004	13.1	1029	976
135-140	991	18.0	1032	963
140-145	1000	26.8	1085	962
145-150	1002	22.3	1055	965
150-155	1000	24.4	1047	938
155-160	1009	17.3	1060	986
160-165	995	12.1	1028	972
165-170	990	11.0	1011	967
170-175	991	16.9	1027	960
175-180	998	7.4	1016	981
180-185	985	10.2	1022	965
185-190	984	7.6	1007	972
190-195	984	7.3	1001	973
195-200	989	14.5	1011	959
200-205	996	15.3	1025	968
205-210	998	24.4	1056	960
210-215	1010	17.0	1053	981
215-220	995	23.2	1044	961
220-225	1007	17.5	1041	977
225-230	1006	14.8	1043	977
230-235	996	14.4	1043	976
235-240	995	11.0	1021	969
FOR THIS RUN:	995	18.0	1085	923

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	109.0	4.1	116.2	102.3
5- 10	109.4	3.5	116.7	97.0
10- 15	103.6	8.9	116.2	80.1
15- 20	110.4	4.9	119.4	94.2
20- 25	107.1	4.7	114.9	95.3
25- 30	108.0	5.3	114.9	90.7
30- 35	107.2	5.3	116.9	93.0
35- 40	109.0	3.6	115.7	99.0
40- 45	108.1	3.0	114.2	100.0
45- 50	107.6	3.9	114.2	100.0
50- 55	107.8	3.7	113.9	99.8
55- 60	108.5	5.2	116.4	96.8
60- 65	110.6	4.2	118.2	100.0
65- 70	106.0	6.4	112.9	86.4
70- 75	107.4	4.8	112.9	94.5
75- 80	110.6	3.0	118.9	104.3
80- 85	107.7	3.9	112.6	94.0
85- 90	103.8	10.3	118.9	76.1
90- 95	109.8	6.4	117.2	87.7
95-100	106.8	4.5	113.4	92.5
100-105	107.9	4.1	114.7	94.2
105-110	107.6	3.9	113.9	99.5
110-115	107.4	6.8	115.4	84.7
115-120	109.7	3.1	113.6	103.3
120-125	103.6	6.3	113.4	83.2
125-130	108.4	10.1	118.9	77.9
130-135	110.5	2.8	115.4	105.6
135-140	105.6	5.3	112.1	85.9
140-145	104.6	11.2	115.2	62.0
145-150	105.5	8.9	114.9	78.9
150-155	108.2	8.8	117.2	82.4
155-160	110.5	4.7	121.2	103.1
160-165	108.3	3.7	114.9	97.0
165-170	108.7	2.3	112.6	102.8
170-175	108.5	5.8	118.4	94.7
175-180	111.5	1.8	115.7	108.1
180-185	106.7	3.2	112.4	94.5
185-190	108.5	1.8	110.6	101.6
190-195	108.1	2.5	111.9	100.5
195-200	105.5	4.8	113.4	95.8
200-205	108.0	6.0	116.9	91.7
205-210	105.5	9.6	118.2	83.9
210-215	109.9	5.7	118.2	96.3
215-220	107.4	8.5	116.7	83.9
220-225	108.6	6.8	119.4	88.4
225-230	109.5	4.6	119.4	98.3
230-235	111.0	3.9	116.2	99.8
235-240	109.0	4.2	117.9	102.6
FOR THIS RUN:	108.0	6.0	121.2	62.0

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	11.5	22.7	20.7	-78.0
5- 10	6.9	34.8	20.4	-103.3
10- 15	18.1	2.0	20.0	9.3
15- 20	14.2	16.6	21.1	-62.6
20- 25	18.5	1.9	20.0	10.3
25- 30	10.1	30.6	19.9	-106.3
30- 35	10.5	26.2	20.7	-105.4
35- 40	14.2	15.5	20.1	-49.9
40- 45	13.7	24.5	20.0	-106.3
45- 50	18.0	2.9	19.9	5.3
50- 55	14.5	24.7	28.5	-106.3
55- 60	10.7	25.8	19.7	-106.3
60- 65	18.6	2.5	20.7	10.3
65- 70	12.1	24.0	19.9	-94.7
70- 75	18.9	0.8	20.5	17.4
75- 80	11.3	26.7	20.3	-98.1
80- 85	15.8	15.3	20.2	-58.8
85- 90	14.9	15.0	20.2	-58.0
90- 95	12.4	25.0	20.4	-106.3
95-100	13.9	20.8	19.8	-87.2
100-105	10.6	27.9	19.9	-106.3
105-110	11.9	23.1	20.0	-93.7
110-115	-5.1	47.3	20.0	-106.3
115-120	16.9	8.4	20.1	-23.5
120-125	13.6	24.5	19.6	-106.3
125-130	14.6	12.5	20.2	-27.9
130-135	9.0	33.7	20.2	-106.3
135-140	14.1	14.8	20.0	-53.5
140-145	12.9	24.5	19.4	-106.3
145-150	8.6	33.9	19.6	-106.3
150-155	17.5	6.6	20.2	-14.5
155-160	17.2	5.9	21.2	-5.4
160-165	16.5	10.4	20.5	-32.2
165-170	18.0	2.4	19.9	9.0
170-175	10.4	25.9	20.7	-106.3
175-180	14.6	13.9	20.4	-45.4
180-185	10.2	24.8	19.7	-77.7
185-190	15.9	12.2	19.5	-43.5
190-195	11.2	25.9	19.7	-106.3
195-200	15.9	7.8	19.9	-14.7
200-205	14.7	16.3	20.4	-63.1
205-210	17.2	5.6	19.8	-9.8
210-215	16.5	10.1	20.3	-30.4
215-220	17.7	4.9	19.7	-6.0
220-225	14.5	17.4	20.0	-68.5
225-230	17.5	5.8	20.1	-9.6
230-235	11.1	24.8	20.0	-80.2
235-240	11.8	21.1	19.9	-81.4
FOR THIS RUN:	13.6	21.0	28.5	-106.3

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.2	2.5	2.3	-8.7
5- 10	0.8	3.8	2.2	-11.3
10- 15	1.9	0.3	2.2	1.0
15- 20	1.6	1.8	2.4	-6.9
20- 25	2.0	0.2	2.2	1.1
25- 30	1.1	3.2	2.3	-10.7
30- 35	1.1	2.9	2.3	-11.7
35- 40	1.5	1.7	2.3	-5.5
40- 45	1.5	2.7	2.3	-11.8
45- 50	1.9	0.3	2.3	0.6
50- 55	1.6	2.6	3.0	-11.0
55- 60	1.2	2.7	2.3	-10.9
60- 65	2.1	0.3	2.3	1.1
65- 70	1.3	2.4	2.2	-9.2
70- 75	2.0	0.1	2.3	1.8
75- 80	1.3	3.0	2.3	-11.0
80- 85	1.7	1.7	2.3	-6.4
85- 90	1.5	1.6	2.4	-6.4
90- 95	1.4	2.7	2.4	-11.7
95-100	1.5	2.1	2.2	-8.8
100-105	1.1	3.1	2.3	-11.8
105-110	1.3	2.5	2.2	-10.1
110-115	-0.6	5.2	2.3	-12.1
115-120	1.9	0.9	2.2	-2.5
120-125	1.5	2.1	2.1	-8.8
125-130	1.6	1.3	2.3	-3.2
130-135	1.0	3.7	2.3	-12.0
135-140	1.5	1.6	2.2	-5.7
140-145	1.3	2.7	2.2	-11.7
145-150	0.9	3.7	2.2	-12.2
150-155	1.9	0.7	2.3	-1.6
155-160	1.9	0.7	2.4	-0.6
160-165	1.8	1.1	2.2	-3.5
165-170	2.0	0.3	2.2	0.9
170-175	1.1	3.0	2.5	-12.4
175-180	1.6	1.5	2.2	-5.0
180-185	1.1	2.7	2.1	-8.6
185-190	1.7	1.3	2.1	-4.8
190-195	1.2	2.8	2.2	-11.7
195-200	1.7	0.8	2.2	-1.7
200-205	1.6	1.8	2.3	-7.1
205-210	1.8	0.6	2.3	-1.1
210-215	1.8	1.1	2.3	-3.4
215-220	1.9	0.6	2.3	-0.7
220-225	1.6	2.0	2.4	-7.8
225-230	1.9	0.7	2.3	-1.1
230-235	1.3	2.7	2.2	-9.0
235-240	1.3	2.2	2.2	-8.5
FOR THIS RUN:	1.5	2.3	3.0	-12.4

TABLE 9 (Continued)

RUN NUMBER 2210

TRIAL CONDITIONS:
1) Level ice breaking with all bubblers
2) 13 in.(33.0 cm) of ice with 3 in.(7.6 cm) of snow
3) Ship speed 6.5 knots
4) Flexural strength of ice 15660 lb/sq ft(750 kPa)

DATE: 9 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	887.2	5.2	896.4	880.4
5- 10	889.4	5.0	896.4	880.4
10- 15	887.7	6.2	897.4	877.4
15- 20	889.5	5.0	895.4	879.4
20- 25	887.6	5.3	896.4	879.4
25- 30	889.3	5.1	896.4	881.4
30- 35	887.8	5.0	896.4	881.4
35- 40	888.9	4.9	896.4	880.4
40- 45	888.9	5.1	895.4	880.4
45- 50	888.6	5.7	896.4	879.4
50- 55	888.8	5.0	898.4	879.4
55- 60	888.7	6.0	896.4	879.4
60- 65	889.0	4.4	895.4	880.4
65- 70	888.4	6.2	897.4	879.4
70- 75	889.0	4.7	896.4	881.4
75- 80	887.6	5.6	896.4	879.4
80- 85	888.9	4.7	895.4	881.4
85- 90	887.9	4.9	896.4	881.4
90- 95	888.6	5.5	898.4	878.4
95-100	888.1	4.8	896.4	879.4
100-105	888.7	5.1	895.4	879.4
105-110	888.4	4.9	895.4	880.4
110-115	888.6	5.1	896.4	880.4
115-120	887.9	4.9	896.4	881.4
120-125	889.1	5.6	896.4	880.4
125-130	886.8	4.3	893.4	878.4
130-135	889.2	5.4	896.4	880.4
135-140	888.2	4.7	895.4	881.4
140-145	888.6	5.7	896.4	880.4
145-150	888.1	6.2	896.4	879.4
150-155	888.9	6.4	898.4	878.4
155-160	888.0	4.7	896.4	881.4
160-165	887.9	5.0	895.4	879.4
165-170	889.2	5.2	896.4	880.4
170-175	887.2	4.9	895.4	879.4
175-180	889.3	4.9	895.4	880.4
180-185	888.0	5.1	895.4	881.4
185-190	889.2	4.6	895.4	881.4
190-195	888.3	5.2	895.4	880.4
195-200	888.7	5.5	896.4	879.4
200-205	888.7	5.2	896.4	880.4
205-210	888.6	5.4	895.4	878.4
210-215	888.2	5.2	895.4	876.4
215-220	888.8	5.6	897.4	878.4
220-225	888.6	5.7	897.4	877.4
225-230	888.4	5.1	895.4	881.4
230-235	888.9	4.2	895.4	881.4
235-240	888.3	5.6	895.4	879.4
FOR THIS RUN:	888.5	5.3	898.4	876.4

TABLE 10 - MACHINERY PARAMETERS, RUN 3520

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	7444	1147.0	9054	5533
5- 10	8028	1078.6	9557	5533
10- 15	8028	1142.4	9557	6036
15- 20	8249	1045.5	10060	6539
20- 25	8571	1177.3	10563	6539
25- 30	8853	1025.9	10563	7042
30- 35	8833	1065.4	10563	7042
35- 40	8813	955.6	10563	7042
40- 45	8933	988.5	10563	7042
45- 50	8792	1112.3	10563	7042
50- 55	8752	888.5	10563	7042
55- 60	8873	1073.0	10563	7042
60- 65	8792	1112.3	10563	7042
65- 70	8752	1111.2	10563	7042
70- 75	8913	1021.2	10563	7042
75- 80	9175	967.9	10563	8048
80- 85	8893	929.9	10563	7545
85- 90	8813	1036.9	10563	7042
90- 95	8692	970.4	10060	7545
95-100	9175	1018.8	11066	7545
100-105	8974	1052.0	10563	7545
105-110	8933	1008.8	10563	7545
110-115	9195	1069.6	10563	7545
115-120	9034	1088.0	11066	7545
120-125	9014	1015.2	11066	7545
125-130	9336	842.6	11066	8048
130-135	9316	1007.2	11066	7545
135-140	9497	1086.5	11569	7545
140-145	10080	1168.7	11569	8048
145-150	10181	978.3	12072	8551
150-155	9758	1164.5	11569	8048
155-160	10523	984.9	11569	8551
160-165	10563	1025.9	12575	9054
165-170	10140	961.6	11569	8048
170-175	9275	1093.5	11569	8048
175-180	9617	957.8	11569	8048
180-182	9909	1103.2	11569	8551
FOR THIS RUN:	9087	1232.5	12575	5533

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	10095	1555.4	12277	7503
5- 10	10886	1462.6	12959	7503
10- 15	10886	1549.1	12959	8185
15- 20	11186	1417.7	13641	8867
20- 25	11622	1596.4	14323	8867
25- 30	12004	1391.2	14323	9549
30- 35	11977	1444.7	14323	9549
35- 40	11950	1295.9	14323	9549
40- 45	12114	1340.5	14323	9549
45- 50	11923	1508.2	14323	9549
50- 55	11868	1204.8	14323	9549
55- 60	12032	1455.0	14323	9549
60- 65	11923	1508.2	14323	9549
65- 70	11868	1506.7	14323	9549
70- 75	12086	1384.7	14323	9549
75- 80	12441	1312.4	14323	10913
80- 85	12059	1260.9	14323	10231
85- 90	11950	1406.1	14323	9549
90- 95	11786	1315.8	13641	10231
95-100	12441	1381.5	15005	10231
100-105	12168	1426.5	14323	10231
105-110	12114	1368.0	14323	10231
110-115	12468	1450.4	14323	10231
115-120	12250	1475.3	15005	10231
120-125	12223	1376.6	15005	10231
125-130	12659	1142.6	15005	10913
130-135	12632	1365.8	15005	10231
135-140	12877	1473.3	15688	10231
140-145	13669	1584.7	15688	10913
145-150	13805	1326.5	16370	11595
150-155	13232	1579.1	15688	10913
155-160	14269	1335.5	15688	11595
160-165	14323	1391.2	17052	12277
165-170	13750	1303.9	15688	10913
170-175	12577	1482.8	15688	10913
175-180	13041	1298.7	15688	10913
180-182	13437	1495.9	15688	11595
FOR THIS RUN:	12322	1671.3	17052	7503

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	10302	2158.0	13341	6461
5- 10	10146	2954.6	19921	5265
10- 15	10625	2362.6	13939	6760
15- 20	10888	2498.2	15434	5863
20- 25	10852	2982.4	18425	7059
25- 30	11522	2602.0	16033	5863
30- 35	12419	1776.4	15135	8555
35- 40	11690	2216.0	14836	7957
40- 45	12036	2332.1	17229	8555
45- 50	12048	2040.5	14836	8555
50- 55	11845	2379.4	16033	8256
55- 60	12790	2208.8	17827	8555
60- 65	12970	1942.6	17229	9153
65- 70	12778	2208.2	16930	8854
70- 75	12958	2488.9	17528	8555
75- 80	12240	1997.9	15135	8854
80- 85	11929	2177.6	16332	8854
85- 90	12144	2356.7	15733	5863
90- 95	12467	2284.1	16033	7658
95-100	13137	1902.5	16631	8854
100-105	12814	2498.6	17827	7059
105-110	11965	2410.7	17229	8854
110-115	13257	2586.2	17229	8854
115-120	12563	2335.3	16033	8854
120-125	13652	2227.9	18126	9452
125-130	13520	1653.5	16631	10350
130-135	14178	1768.5	16332	10350
135-140	13676	1896.1	17528	10649
140-145	14370	4455.1	28296	4666
145-150	14705	2000.4	18725	11546
150-155	13903	3164.7	21417	5863
155-160	12647	3123.0	19323	5863
160-165	14465	2173.9	18725	10050
165-170	13305	2555.3	18725	9452
170-175	13999	2556.3	18126	10050
175-180	13329	2374.1	17229	9751
180-182	14208	2525.5	18425	10050
FOR THIS RUN:	12632	2694.6	28296	4666

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (N)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	45822	9598.9	59339	28739
5- 10	45130	13142.2	88608	23417
10- 15	47259	10509.0	62000	30070
15- 20	48429	11112.1	68652	26078
20- 25	48270	13265.5	81956	31400
25- 30	51250	11573.5	71313	26078
30- 35	55241	7901.6	67322	38052
35- 40	51995	9856.8	65991	35391
40- 45	53538	10373.1	76635	38052
45- 50	53592	9076.0	65991	38052
50- 55	52687	10583.4	71313	36722
55- 60	56891	9824.9	79295	38052
60- 65	57689	8640.9	76635	40713
65- 70	56838	9822.3	75304	39383
70- 75	57636	11070.7	77965	38052
75- 80	54443	8886.8	67322	39383
80- 85	53059	9685.8	72643	39383
85- 90	54017	10482.6	69982	26078
90- 95	55454	10159.6	71313	34061
95-100	58434	8462.4	73974	39383
100-105	56997	11113.9	79295	31400
105-110	53219	10723.0	76635	39383
110-115	58966	11503.5	76635	39383
115-120	55880	10387.6	71313	39383
120-125	60723	9909.6	80626	42043
125-130	60137	7354.8	73974	46035
130-135	63064	7866.4	72643	46035
135-140	60829	8433.9	77965	47365
140-145	63916	19816.1	125860	20757
145-150	65406	8897.6	83287	51356
150-155	61840	14076.5	95261	26078
155-160	56252	13891.2	85948	26078
160-165	64341	9669.4	83287	44704
165-170	59179	11366.1	83287	42043
170-175	62266	11370.3	80626	44704
175-180	59286	10559.8	76635	43374
180-182	63197	11233.3	81956	44704
FOR THIS RUN:	56188	11985.7	125860	20757

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	164	25.3	200	121
5- 10	175	23.6	210	122
10- 15	175	24.8	209	132
15- 20	179	21.7	218	142
20- 25	184	25.1	228	143
25- 30	195	23.3	233	157
30- 35	195	23.4	234	155
35- 40	193	21.2	233	155
40- 45	196	21.8	232	154
45- 50	193	24.6	232	154
50- 55	192	19.3	230	154
55- 60	194	23.3	232	154
60- 65	192	24.2	232	154
65- 70	191	24.4	232	154
70- 75	195	22.5	232	155
75- 80	201	21.2	232	175
80- 85	194	20.8	230	164
85- 90	192	22.4	226	154
90- 95	190	21.2	222	162
95-100	201	22.7	243	165
100-105	197	23.0	232	164
105-110	195	22.2	231	164
110-115	200	23.0	230	164
115-120	197	23.7	242	162
120-125	196	22.2	241	164
125-130	203	18.4	241	175
130-135	203	21.7	241	165
135-140	206	23.5	248	164
140-145	213	24.6	253	174
145-150	226	21.5	269	190
150-155	213	25.2	254	169
155-160	221	22.9	262	176
160-165	236	22.7	281	202
165-170	223	21.3	256	175
170-175	203	23.8	251	175
175-180	209	20.5	251	175
180-182	216	24.4	253	187
FOR THIS RUN:	198	26.8	281	121

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	122	18.8	149	90
5- 10	131	17.6	157	91
10- 15	131	18.5	156	99
15- 20	133	16.2	163	106
20- 25	137	18.7	170	106
25- 30	146	17.4	174	117
30- 35	145	17.5	175	115
35- 40	144	15.8	174	115
40- 45	146	16.2	173	115
45- 50	144	18.4	173	115
50- 55	143	14.4	172	114
55- 60	145	17.4	173	115
60- 65	143	18.0	173	115
65- 70	143	18.2	173	115
70- 75	146	16.8	173	115
75- 80	150	15.8	173	131
80- 85	145	15.5	172	122
85- 90	143	16.7	169	115
90- 95	141	15.8	166	121
95-100	150	16.9	181	123
100-105	147	17.2	173	123
105-110	146	16.5	172	122
110-115	149	17.1	172	123
115-120	147	17.7	181	121
120-125	146	16.5	180	123
125-130	151	13.7	180	130
130-135	151	16.2	180	123
135-140	154	17.5	185	123
140-145	159	18.4	189	130
145-150	169	16.0	201	141
150-155	159	18.8	190	126
155-160	165	17.1	195	131
160-165	176	16.9	210	150
165-170	166	15.9	191	131
170-175	151	17.7	187	130
175-180	156	15.3	187	130
180-182	161	18.2	189	140
FOR THIS RUN:	148	20.0	210	90

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	115.4	0.5	116.0	114.0
5- 10	114.6	1.0	116.0	112.5
10- 15	114.7	0.6	115.5	113.5
15- 20	113.9	1.0	115.5	112.0
20- 25	113.0	2.0	115.5	109.0
25- 30	115.9	1.2	117.5	113.0
30- 35	115.8	0.5	116.5	115.0
35- 40	115.1	0.7	116.0	113.5
40- 45	115.4	0.5	116.0	114.5
45- 50	115.1	0.5	116.0	113.5
50- 55	115.0	0.5	115.5	113.5
55- 60	114.9	0.6	115.5	113.0
60- 65	114.7	0.5	115.5	113.5
65- 70	114.9	0.5	115.5	113.5
70- 75	115.0	0.6	115.5	113.5
75- 80	115.0	0.4	115.5	114.0
80- 85	114.6	0.6	115.5	113.0
85- 90	114.5	0.8	115.5	112.5
90- 95	114.6	1.1	116.0	112.5
95-100	115.3	0.6	116.0	114.0
100-105	115.1	0.5	116.0	114.0
105-110	114.8	0.6	115.5	113.0
110-115	114.4	0.5	115.0	113.0
115-120	114.3	0.5	115.0	113.0
120-125	114.3	0.6	115.0	113.0
125-130	114.3	0.5	115.0	113.0
130-135	114.5	0.5	115.0	113.0
135-140	114.0	0.9	115.0	112.0
140-145	110.8	2.7	115.0	106.5
145-150	116.7	0.9	118.0	114.5
150-155	114.6	1.9	116.5	108.0
155-160	110.5	6.4	119.0	101.0
160-165	117.2	0.9	118.5	115.5
165-170	115.3	0.6	116.5	113.5
170-175	114.7	0.7	115.5	113.0
175-180	114.4	0.7	115.5	112.5
180-182	114.7	0.7	115.5	113.0
FOR THIS RUN:	114.7	1.9	119.0	101.0

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	329	0.5	330	328
5- 10	327	2.3	329	321
10- 15	328	1.1	329	325
15- 20	326	2.7	329	318
20- 25	324	5.9	330	311
25- 30	332	2.6	336	325
30- 35	331	0.4	332	331
35- 40	329	1.3	331	326
40- 45	330	0.3	331	330
45- 50	330	0.2	330	329
50- 55	330	0.2	330	330
55- 60	329	0.3	330	329
60- 65	329	0.3	330	329
65- 70	330	0.2	330	329
70- 75	330	0.2	331	330
75- 80	330	0.3	330	329
80- 85	329	0.2	330	329
85- 90	329	1.6	330	323
90- 95	330	2.5	332	324
95-100	331	0.1	331	331
100-105	330	0.6	331	329
105-110	330	0.4	331	329
110-115	329	0.3	329	328
115-120	329	0.2	329	328
120-125	329	0.2	329	329
125-130	329	0.2	330	329
130-135	330	0.4	331	329
135-140	328	2.0	330	324
140-145	321	8.1	331	307
145-150	337	1.6	339	333
150-155	329	6.5	334	309
155-160	322	18.8	343	292
160-165	337	2.2	341	334
165-170	332	0.6	334	331
170-175	331	0.7	332	330
175-180	330	1.3	331	327
180-182	331	0.3	331	330
FOR THIS RUN:	329	4.9	343	292

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	435	4.2	449	428
5- 10	448	16.8	516	435
10- 15	465	12.3	502	452
15- 20	479	20.6	564	459
20- 25	510	41.1	667	472
25- 30	509	11.1	549	498
30- 35	498	1.8	501	495
35- 40	498	5.7	516	489
40- 45	498	1.8	502	495
45- 50	498	1.6	501	495
50- 55	500	1.4	502	498
55- 60	502	1.9	506	499
60- 65	505	1.7	508	502
65- 70	508	1.9	511	505
70- 75	507	1.5	511	505
75- 80	508	1.4	511	505
80- 85	511	1.7	514	508
85- 90	518	9.6	552	511
90- 95	519	3.5	524	511
95-100	515	2.1	519	512
100-105	512	2.8	522	508
105-110	513	1.6	516	509
110-115	517	2.1	521	512
115-120	523	2.2	528	519
120-125	529	2.3	534	524
125-130	533	2.0	536	529
130-135	536	1.4	538	534
135-140	542	8.6	569	535
140-145	579	43.8	725	541
145-150	568	8.9	582	554
150-155	565	33.6	668	546
155-160	606	29.0	674	555
160-165	573	9.2	598	561
165-170	555	3.2	562	551
170-175	551	1.8	554	546
175-180	553	5.5	574	548
180-182	552	2.3	556	548
FOR THIS RUN:	519	37.3	725	428

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	143	1.4	147	141
5- 10	146	5.2	168	141
10- 15	152	3.8	164	148
15- 20	156	6.6	183	147
20- 25	165	12.8	211	149
25- 30	169	3.5	178	164
30- 35	165	0.7	166	164
35- 40	164	1.9	169	160
40- 45	165	0.6	166	163
45- 50	164	0.5	165	163
50- 55	165	0.4	166	164
55- 60	165	0.6	167	165
60- 65	166	0.6	167	165
65- 70	167	0.6	168	166
70- 75	167	0.5	169	166
75- 80	167	0.4	168	167
80- 85	168	0.6	169	167
85- 90	170	2.6	179	168
90- 95	171	2.2	174	166
95-100	171	0.7	172	170
100-105	169	0.9	172	167
105-110	169	0.5	170	168
110-115	170	0.6	171	169
115-120	172	0.7	174	171
120-125	174	0.8	176	172
125-130	176	0.7	177	174
130-135	177	0.5	178	176
135-140	178	2.4	185	174
140-145	186	13.0	231	170
145-150	191	3.4	196	185
150-155	186	8.1	215	181
155-160	195	13.9	223	168
160-165	193	4.3	204	187
165-170	184	1.3	187	183
170-175	182	0.7	183	181
175-180	182	1.8	188	180
180-182	182	0.7	184	181
FOR THIS RUN:	171	12.4	231	141

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	69.6	0.6	70.6	68.6
5- 10	69.6	0.7	70.6	68.6
10- 15	69.6	0.6	70.6	68.9
15- 20	69.6	0.6	70.9	68.6
20- 25	69.6	0.6	70.6	68.6
25- 30	69.5	0.6	70.6	68.6
30- 35	69.7	0.6	70.6	68.6
35- 40	69.6	0.7	70.6	68.6
40- 45	69.5	0.6	70.6	68.6
45- 50	69.5	0.6	70.6	68.6
50- 55	69.5	0.6	70.6	68.6
55- 60	69.6	0.6	70.6	68.6
60- 65	69.7	0.6	70.6	68.6
65- 70	69.5	0.7	70.6	68.6
70- 75	69.5	0.6	70.6	68.6
75- 80	69.5	0.7	70.6	68.6
80- 85	69.5	0.6	70.4	68.6
85- 90	69.5	0.6	70.6	68.6
90- 95	69.5	0.7	70.6	68.4
95-100	69.5	0.7	70.6	68.6
100-105	69.4	0.6	70.4	68.6
105-110	69.4	0.6	70.6	68.4
110-115	69.4	0.6	70.6	68.6
115-120	69.3	0.6	70.6	68.6
120-125	69.3	0.6	70.4	68.4
125-130	69.3	0.6	70.4	68.6
130-135	69.4	0.7	70.4	68.6
135-140	69.4	0.7	70.6	68.6
140-145	69.6	0.7	70.6	68.4
145-150	69.5	0.6	70.6	68.6
150-155	69.4	0.6	70.4	68.4
155-160	69.3	0.6	70.6	68.6
160-165	69.2	0.6	70.6	68.4
165-170	69.2	0.6	70.6	68.4
170-175	69.3	0.6	70.4	68.6
175-180	69.3	0.6	70.4	68.4
180-182	69.3	0.6	70.4	68.6
FOR THIS RUN:	69.5	0.6	70.9	68.4

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29.2	0.0	29.3	29.1
5- 10	29.2	0.0	29.3	29.0
10- 15	29.2	0.0	29.2	29.1
15- 20	29.2	0.0	29.3	29.0
20- 25	29.2	0.0	29.3	29.0
25- 30	29.2	0.0	29.3	29.1
30- 35	29.2	0.0	29.2	29.1
35- 40	29.2	0.0	29.2	29.1
40- 45	29.2	0.0	29.3	29.1
45- 50	29.2	0.0	29.2	29.1
50- 55	29.2	0.0	29.3	29.1
55- 60	29.2	0.0	29.3	29.1
60- 65	29.2	0.0	29.2	29.1
65- 70	29.2	0.0	29.3	29.1
70- 75	29.2	0.0	29.3	29.0
75- 80	29.2	0.0	29.3	29.1
80- 85	29.2	0.0	29.3	29.1
85- 90	29.2	0.0	29.3	29.1
90- 95	29.2	0.0	29.2	29.1
95-100	29.2	0.0	29.2	29.1
100-105	29.2	0.0	29.2	29.1
105-110	29.2	0.0	29.2	29.1
110-115	29.2	0.0	29.2	29.1
115-120	29.2	0.0	29.2	29.1
120-125	29.2	0.0	29.2	29.1
125-130	29.2	0.0	29.3	29.1
130-135	29.2	0.0	29.3	29.1
135-140	29.2	0.0	29.3	29.1
140-145	29.2	0.0	29.3	28.9
145-150	29.2	0.0	29.3	29.1
150-155	29.2	0.0	29.3	29.0
155-160	29.2	0.0	29.3	29.1
160-165	29.2	0.0	29.2	29.1
165-170	29.2	0.0	29.3	29.1
170-175	29.2	0.0	29.2	29.1
175-180	29.2	0.0	29.3	29.1
180-182	29.2	0.0	29.2	29.1
FOR THIS RUN:	29.2	0.0	29.3	28.9

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.0	0.0	2.1	2.0
5- 10	2.0	0.0	2.1	2.0
10- 15	2.0	0.0	2.1	2.0
15- 20	2.0	0.0	2.1	2.0
20- 25	2.0	0.0	2.1	2.0
25- 30	2.0	0.0	2.1	2.0
30- 35	2.0	0.0	2.1	2.0
35- 40	2.0	0.0	2.1	2.0
40- 45	2.0	0.0	2.1	2.0
45- 50	2.0	0.0	2.1	2.0
50- 55	2.0	0.0	2.1	2.0
55- 60	2.0	0.0	2.1	2.0
60- 65	2.0	0.0	2.1	2.0
65- 70	2.0	0.0	2.1	2.0
70- 75	2.0	0.0	2.1	2.0
75- 80	2.0	0.0	2.1	2.0
80- 85	2.0	0.0	2.1	2.0
85- 90	2.0	0.0	2.1	2.0
90- 95	2.0	0.0	2.1	2.0
95-100	2.0	0.0	2.1	2.0
100-105	2.0	0.0	2.1	2.0
105-110	2.0	0.0	2.1	2.0
110-115	2.0	0.0	2.1	2.0
115-120	2.0	0.0	2.1	2.0
120-125	2.0	0.0	2.1	2.0
125-130	2.0	0.0	2.1	2.0
130-135	2.0	0.0	2.1	2.0
135-140	2.0	0.0	2.1	2.0
140-145	2.0	0.0	2.1	2.0
145-150	2.0	0.0	2.1	2.0
150-155	2.0	0.0	2.1	2.0
155-160	2.0	0.0	2.1	2.0
160-165	2.0	0.0	2.1	2.0
165-170	2.0	0.0	2.1	2.0
170-175	2.0	0.0	2.1	2.0
175-180	2.0	0.0	2.1	2.0
180-182	2.0	0.0	2.1	2.0
FOR THIS RUN:	2.0	0.0	2.1	2.0

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	30	0.0	30	30
5- 10	30	0.1	30	30
10- 15	30	1.0	35	30
15- 20	30	0.1	30	30
20- 25	30	0.0	30	30
25- 30	30	0.2	30	29
30- 35	30	0.0	30	30
35- 40	30	0.1	30	29
40- 45	30	0.2	31	30
45- 50	30	0.1	30	29
50- 55	30	0.0	30	29
55- 60	30	0.1	30	29
60- 65	30	3.9	49	29
65- 70	29	0.1	30	29
70- 75	29	0.0	29	29
75- 80	29	0.2	29	28
80- 85	29	0.0	29	29
85- 90	29	0.4	31	29
90- 95	29	0.2	30	29
95-100	29	0.4	30	29
100-105	29	0.1	29	29
105-110	29	0.0	29	29
110-115	29	3.0	44	29
115-120	29	0.0	29	29
120-125	29	0.0	29	28
125-130	30	4.1	50	28
130-135	29	0.4	30	28
135-140	29	0.4	31	28
140-145	28	0.0	29	28
145-150	28	0.1	29	28
150-155	28	0.2	29	28
155-160	28	0.0	28	28
160-165	28	0.0	28	28
165-170	28	0.0	28	28
170-175	28	0.0	28	28
175-180	28	0.1	28	28
180-182	28	0.1	28	28
FOR THIS RUN:	29	1.3	50	28

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	337	0.4	338	336
5- 10	335	2.4	337	328
10- 15	336	1.2	337	333
15- 20	334	2.7	337	326
20- 25	332	5.9	338	319
25- 30	341	2.6	344	333
30- 35	340	0.4	340	339
35- 40	338	1.3	339	335
40- 45	339	0.2	339	338
45- 50	338	0.3	338	337
50- 55	338	0.0	338	338
55- 60	337	0.2	338	337
60- 65	337	0.2	338	337
65- 70	338	0.0	338	338
70- 75	338	0.1	338	338
75- 80	338	0.3	338	337
80- 85	337	0.0	337	337
85- 90	337	1.6	338	331
90- 95	338	2.4	340	332
95-100	339	0.2	340	339
100-105	338	0.6	339	337
105-110	338	0.4	339	337
110-115	337	0.3	337	336
115-120	337	0.0	337	337
120-125	337	0.2	337	337
125-130	337	0.2	337	337
130-135	338	0.4	338	337
135-140	336	2.0	338	332
140-145	329	8.1	340	315
145-150	345	1.6	347	341
150-155	337	6.5	342	317
155-160	330	18.9	351	300
160-165	345	2.3	349	342
165-170	340	0.7	341	340
170-175	339	0.6	340	338
175-180	338	1.4	339	335
180-182	338	0.2	339	338
FOR THIS RUN:	337	4.9	351	300

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	207	2.2	215	204
5- 10	213	8.6	249	208
10- 15	222	5.9	240	216
15- 20	229	10.6	273	218
20- 25	245	21.0	324	225
25- 30	244	5.6	264	237
30- 35	238	1.1	240	237
35- 40	238	3.0	248	235
40- 45	238	1.2	241	237
45- 50	239	0.8	240	237
50- 55	239	1.2	242	238
55- 60	241	1.0	243	239
60- 65	242	1.0	244	240
65- 70	243	1.1	245	241
70- 75	243	0.9	244	241
75- 80	243	0.8	245	242
80- 85	245	1.3	248	242
85- 90	248	4.8	264	244
90- 95	249	1.9	252	245
95-100	247	1.4	251	244
100-105	245	1.5	250	244
105-110	246	1.0	248	243
110-115	248	1.1	250	246
115-120	251	1.3	254	249
120-125	254	1.1	257	252
125-130	256	1.2	259	254
130-135	258	1.0	259	255
135-140	260	4.3	274	256
140-145	279	22.7	355	259
145-150	273	4.4	279	266
150-155	272	17.0	325	263
155-160	292	14.8	327	266
160-165	276	4.8	288	269
165-170	267	1.6	271	265
170-175	265	0.9	267	264
175-180	266	2.5	275	264
180-182	266	1.1	268	264
FOR THIS RUN:	249	18.8	355	204

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	70	0.7	72	69
5- 10	71	2.7	83	69
10- 15	74	1.9	80	73
15- 20	76	3.5	91	72
20- 25	81	6.7	105	73
25- 30	83	1.8	88	80
30- 35	81	0.4	82	80
35- 40	80	1.0	83	79
40- 45	81	0.4	82	80
45- 50	81	0.2	81	80
50- 55	81	0.4	82	80
55- 60	81	0.3	82	81
60- 65	82	0.4	83	81
65- 70	82	0.4	83	81
70- 75	82	0.3	83	81
75- 80	82	0.3	83	82
80- 85	83	0.4	84	82
85- 90	84	1.3	88	82
90- 95	84	1.1	85	82
95-100	84	0.5	85	83
100-105	83	0.5	84	82
105-110	83	0.4	84	82
110-115	84	0.3	84	83
115-120	85	0.4	85	84
120-125	86	0.4	86	85
125-130	86	0.4	87	86
130-135	87	0.3	88	86
135-140	87	1.2	91	86
140-145	92	6.9	116	84
145-150	94	1.7	97	91
150-155	92	4.3	107	89
155-160	96	7.0	111	83
160-165	95	2.3	101	92
165-170	91	0.6	92	90
170-175	90	0.4	91	89
175-180	90	0.9	92	89
180-182	90	0.3	91	89
FOR THIS RUN:	84	6.3	116	69

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	26.2	1.0	27.9	23.3
5- 10	26.0	1.8	27.9	18.0
10- 15	26.6	0.9	28.6	24.6
15- 20	26.6	2.5	30.4	15.9
20- 25	26.3	3.7	29.1	12.6
25- 30	27.8	1.2	29.9	25.6
30- 35	27.2	0.7	28.6	25.8
35- 40	27.1	0.8	28.4	25.1
40- 45	27.1	0.8	28.4	25.8
45- 50	27.1	0.6	28.1	26.1
50- 55	27.1	0.7	28.1	25.6
55- 60	27.0	0.7	28.1	25.8
60- 65	27.0	0.6	28.1	25.8
65- 70	27.0	0.6	28.4	25.8
70- 75	27.2	0.7	28.6	26.1
75- 80	27.1	0.6	28.1	25.8
80- 85	26.9	0.6	28.1	25.8
85- 90	27.0	0.9	28.1	24.3
90- 95	27.5	0.6	28.6	26.3
95-100	27.2	0.7	28.4	26.1
100-105	27.3	0.7	28.9	26.1
105-110	27.2	0.7	28.6	26.1
110-115	27.1	0.6	27.9	25.6
115-120	27.2	0.7	28.4	25.8
120-125	27.2	0.7	28.4	25.6
125-130	27.2	0.6	28.6	26.1
130-135	27.2	0.7	28.4	26.1
135-140	26.9	1.0	28.1	23.3
140-145	26.4	5.3	32.2	7.5
145-150	28.3	1.0	31.2	26.6
150-155	26.1	3.3	28.4	13.6
155-160	28.5	5.2	32.9	15.7
160-165	28.2	0.8	29.9	26.9
165-170	27.7	0.7	28.9	26.6
170-175	27.6	0.6	28.4	26.3
175-180	27.6	1.0	28.6	24.3
180-182	27.4	0.6	28.1	26.3
FOR THIS RUN:	27.1	1.8	32.9	7.5

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	6.2	5.6	31.1	3.5
5- 10	4.4	1.0	5.1	0.1
10- 15	3.9	8.4	20.9	-34.0
15- 20	5.8	5.2	31.0	3.7
20- 25	5.8	5.7	32.0	-0.5
25- 30	4.2	14.1	33.3	-57.8
30- 35	4.3	9.4	36.5	-28.0
35- 40	2.0	14.6	21.3	-63.3
40- 45	5.3	4.2	24.9	-1.5
45- 50	4.7	4.2	14.8	-12.6
50- 55	4.5	0.6	5.3	3.4
55- 60	3.3	7.0	5.9	-31.1
60- 65	6.8	11.6	62.4	-6.5
65- 70	3.3	6.8	12.7	-21.0
70- 75	8.1	11.6	49.7	-2.1
75- 80	4.3	6.7	23.6	-23.2
80- 85	4.2	5.9	14.9	-22.9
85- 90	5.3	2.9	17.0	0.5
90- 95	4.2	2.3	5.3	-6.6
95-100	4.9	0.6	6.3	3.7
100-105	8.1	17.7	78.5	-32.6
105-110	4.9	11.8	42.5	-38.4
110-115	4.8	4.6	21.2	-7.8
115-120	7.2	7.0	37.9	3.6
120-125	4.8	0.6	6.4	3.7
125-130	5.1	3.0	13.6	-5.5
130-135	5.6	3.8	24.1	4.1
135-140	5.3	1.9	12.8	2.8
140-145	5.1	0.7	6.9	3.7
145-150	5.0	0.4	5.5	4.0
150-155	4.3	2.6	5.6	-8.1
155-160	4.7	0.7	6.2	3.3
160-165	6.8	11.8	35.5	-25.5
165-170	7.5	7.7	35.5	3.8
170-175	6.5	7.7	43.9	3.8
175-180	5.2	2.4	16.6	3.8
180-182	2.3	7.5	5.3	-20.3
FOR THIS RUN:	5.1	7.5	78.5	-63.3

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.2	0.1	0.8	0.1
5- 10	0.1	0.0	0.1	0.0
10- 15	0.1	0.2	0.6	-0.9
15- 20	0.2	0.1	0.8	0.1
20- 25	0.2	0.2	0.9	-0.0
25- 30	0.1	0.4	1.0	-1.6
30- 35	0.1	0.3	1.0	-0.8
35- 40	0.1	0.4	0.6	-1.7
40- 45	0.1	0.1	0.7	-0.0
45- 50	0.1	0.1	0.4	-0.3
50- 55	0.1	0.0	0.1	0.1
55- 60	0.1	0.2	0.2	-0.8
60- 65	0.2	0.3	1.7	-0.2
65- 70	0.1	0.2	0.4	-0.6
70- 75	0.2	0.3	1.4	-0.1
75- 80	0.1	0.2	0.6	-0.6
80- 85	0.1	0.2	0.4	-0.6
85- 90	0.1	0.0	0.5	0.0
90- 95	0.1	0.0	0.1	-0.2
95-100	0.1	0.0	0.2	0.1
100-105	0.2	0.5	2.2	-0.9
105-110	0.1	0.3	1.2	-1.0
110-115	0.1	0.1	0.6	-0.2
115-120	0.2	0.2	1.1	0.1
120-125	0.1	0.0	0.2	0.1
125-130	0.1	0.0	0.4	-0.1
130-135	0.2	0.1	0.7	0.1
135-140	0.1	0.0	0.4	0.1
140-145	0.1	0.0	0.2	0.0
145-150	0.1	0.0	0.2	0.1
150-155	0.1	0.0	0.2	-0.2
155-160	0.1	0.0	0.2	0.1
160-165	0.2	0.3	1.0	-0.7
165-170	0.2	0.2	1.0	0.1
170-175	0.2	0.2	1.2	0.1
175-180	0.1	0.0	0.5	0.1
180-182	0.1	0.2	0.1	-0.6
FOR THIS RUN:	0.1	0.2	2.2	-1.7

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	878.7	6.6	886.4	865.4
5- 10	880.6	5.8	886.4	865.4
10- 15	878.8	6.4	885.4	865.4
15- 20	880.3	5.9	886.4	865.4
20- 25	879.3	6.4	885.4	865.4
25- 30	879.9	5.9	885.4	865.4
30- 35	879.3	6.5	885.4	865.4
35- 40	879.7	5.5	885.4	865.4
40- 45	879.9	6.2	886.4	865.4
45- 50	879.4	6.1	886.4	865.4
50- 55	880.1	5.6	885.4	865.4
55- 60	879.0	6.3	885.4	865.4
60- 65	879.9	6.0	885.4	865.4
65- 70	879.2	6.3	885.4	865.4
70- 75	880.0	5.8	885.4	865.4
75- 80	879.0	6.5	885.4	866.4
80- 85	880.2	5.5	886.4	865.4
85- 90	879.0	6.8	886.4	865.4
90- 95	879.4	5.7	885.4	865.4
95-100	879.8	6.2	886.4	865.4
100-105	878.7	6.4	885.4	865.4
105-110	880.4	5.6	885.4	866.4
110-115	878.8	6.5	885.4	865.4
115-120	880.4	5.9	886.4	866.4
120-125	879.3	6.4	886.4	865.4
125-130	880.0	6.0	885.4	865.4
130-135	879.2	6.5	886.4	865.4
135-140	880.0	5.4	885.4	865.4
140-145	879.7	6.3	885.4	864.4
145-150	879.0	6.2	885.4	865.4
150-155	880.2	5.5	886.4	865.4
155-160	879.0	6.3	885.4	865.4
160-165	880.0	5.9	885.4	865.4
165-170	879.1	6.3	885.4	865.4
170-175	879.9	5.7	885.4	865.4
175-180	878.9	6.6	886.4	865.4
180-182	879.7	6.1	885.4	865.4
FOR THIS RUN:	879.6	6.1	886.4	864.4

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	27	0.0	27	27
5- 10	27	0.1	27	27
10- 15	27	0.1	27	27
15- 20	27	0.1	27	27
20- 25	27	0.2	27	27
25- 30	27	0.0	27	26
30- 35	27	0.0	27	26
35- 40	27	0.0	27	26
40- 45	27	0.3	28	26
45- 50	26	0.0	27	26
50- 55	26	0.3	28	26
55- 60	26	0.0	26	26
60- 65	26	0.1	27	26
65- 70	26	0.2	27	26
70- 75	26	0.1	26	26
75- 80	27	6.2	58	26
80- 85	26	0.0	26	26
85- 90	26	0.2	26	25
90- 95	26	0.1	26	25
95-100	26	0.2	26	25
100-105	26	0.1	26	26
105-110	26	0.2	26	25
110-115	26	0.0	26	26
115-120	26	0.4	28	26
120-125	26	0.2	26	25
125-130	26	0.0	26	26
130-135	26	0.1	26	25
135-140	26	0.0	26	25
140-145	25	0.0	26	25
145-150	25	0.2	26	24
150-155	27	8.2	67	25
155-160	25	0.0	26	25
160-165	25	0.0	26	25
165-170	25	0.0	25	25
170-175	28	14.6	100	25
175-180	27	11.1	82	25
180-182	25	0.1	25	25
FOR THIS RUN:	26	3.5	100	24

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	330	0.5	331	329
5- 10	328	2.3	330	322
10- 15	329	1.1	331	326
15- 20	327	2.6	330	320
20- 25	326	5.9	331	312
25- 30	334	2.6	337	326
30- 35	333	0.5	334	332
35- 40	331	1.2	332	328
40- 45	332	0.2	332	331
45- 50	331	0.3	332	331
50- 55	331	0.2	331	331
55- 60	331	0.2	331	330
60- 65	331	0.3	331	330
65- 70	331	0.2	331	331
70- 75	331	0.2	332	331
75- 80	331	0.2	332	331
80- 85	330	0.2	331	330
85- 90	330	1.6	331	324
90- 95	331	2.5	333	325
95-100	332	0.2	333	332
100-105	332	0.6	332	330
105-110	331	0.4	332	330
110-115	330	0.2	331	330
115-120	330	0.2	330	330
120-125	330	0.2	330	330
125-130	330	0.0	330	330
130-135	331	0.4	331	330
135-140	329	2.0	331	325
140-145	322	8.1	333	309
145-150	338	1.6	340	334
150-155	331	6.4	335	311
155-160	323	18.7	344	294
160-165	339	2.2	342	335
165-170	333	0.6	335	333
170-175	332	0.6	333	331
175-180	331	1.3	332	329
180-182	332	0.3	332	331
FOR THIS RUN:	331	4.9	344	294

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	278	3.0	283	272
5- 10	284	7.6	313	272
10- 15	295	6.4	313	287
15- 20	301	9.6	339	287
20- 25	317	18.8	384	296
25- 30	317	5.5	334	307
30- 35	312	1.0	313	309
35- 40	312	3.3	320	305
40- 45	312	1.2	315	310
45- 50	312	0.9	314	310
50- 55	313	0.9	315	310
55- 60	315	1.1	318	313
60- 65	317	1.1	319	315
65- 70	318	1.0	320	316
70- 75	318	1.0	320	316
75- 80	318	1.1	320	315
80- 85	320	0.9	322	318
85- 90	322	4.5	337	313
90- 95	322	2.7	325	314
95-100	320	0.8	322	319
100-105	319	1.5	323	316
105-110	319	1.2	322	317
110-115	320	0.9	322	318
115-120	323	2.0	326	319
120-125	327	1.2	330	325
125-130	330	1.1	333	328
130-135	331	0.8	333	330
135-140	333	4.3	345	325
140-145	341	18.9	405	310
145-150	338	4.3	346	331
150-155	334	9.3	368	323
155-160	318	16.6	364	292
160-165	307	3.2	314	301
165-170	319	7.6	333	302
170-175	329	3.7	333	315
175-180	331	4.1	343	322
180-182	331	1.4	332	328
FOR THIS RUN:	318	14.6	405	272

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	92	1.0	93	90
5- 10	93	2.5	102	88
10- 15	97	2.0	103	94
15- 20	99	3.2	110	93
20- 25	103	6.0	122	94
25- 30	106	1.9	110	101
30- 35	104	0.4	104	103
35- 40	103	1.2	105	100
40- 45	104	0.4	105	103
45- 50	103	0.3	104	103
50- 55	104	0.3	104	103
55- 60	104	0.3	105	104
60- 65	105	0.4	105	104
65- 70	105	0.3	106	105
70- 75	105	0.3	106	105
75- 80	105	0.3	106	104
80- 85	106	0.3	106	105
85- 90	106	1.4	110	102
90- 95	107	1.6	108	102
95-100	106	0.2	107	106
100-105	106	0.5	107	105
105-110	106	0.3	106	105
110-115	106	0.3	106	105
115-120	107	0.7	108	105
120-125	108	0.4	109	107
125-130	109	0.3	110	108
130-135	110	0.3	110	109
135-140	110	1.5	112	106
140-145	110	6.1	129	100
145-150	114	1.7	117	111
150-155	110	2.6	116	100
155-160	103	7.1	116	89
160-165	104	1.4	107	102
165-170	106	2.4	111	101
170-175	109	1.2	111	105
175-180	110	1.5	113	106
180-182	110	0.5	110	109
FOR THIS RUN:	105	5.0	129	88

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	28.4	0.8	29.7	25.9
5- 10	28.3	1.6	29.7	20.9
10- 15	28.8	1.0	30.0	25.2
15- 20	28.8	2.0	30.5	19.6
20- 25	28.5	3.5	32.0	17.1
25- 30	29.9	1.3	31.7	27.0
30- 35	29.5	0.6	30.5	28.2
35- 40	29.3	0.7	30.7	27.7
40- 45	29.4	0.7	30.2	28.2
45- 50	29.3	0.6	30.2	28.2
50- 55	29.4	0.7	30.5	28.5
55- 60	29.2	0.6	30.2	28.2
60- 65	29.4	0.6	30.5	28.0
65- 70	29.4	0.7	30.5	28.2
70- 75	29.6	0.6	30.7	28.5
75- 80	29.3	0.6	30.7	28.2
80- 85	29.5	0.7	30.7	28.2
85- 90	29.2	0.9	31.0	27.2
90- 95	29.8	0.6	31.0	29.0
95-100	29.6	0.6	30.5	28.7
100-105	29.7	0.6	31.0	28.7
105-110	29.4	0.7	30.5	28.2
110-115	29.4	0.7	30.5	28.2
115-120	29.5	0.6	30.5	28.5
120-125	29.6	0.6	30.7	28.7
125-130	29.7	0.6	30.5	28.7
130-135	29.9	0.6	30.7	28.7
135-140	29.5	0.9	31.2	27.0
140-145	29.0	4.8	33.3	11.8
145-150	30.9	0.9	33.0	29.2
150-155	28.7	3.1	30.7	16.4
155-160	31.0	4.7	35.8	18.1
160-165	30.6	0.8	32.5	29.0
165-170	30.2	0.6	31.5	29.2
170-175	29.7	0.6	30.7	28.5
175-180	29.9	0.7	31.0	28.2
180-182	29.6	0.7	31.0	28.7
FOR THIS RUN:	29.5	1.7	35.8	11.8

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	-1.6	23.3	6.5	-106.3
5- 10	-2.3	24.1	6.6	-95.8
10- 15	-0.1	22.4	6.6	-106.3
15- 20	5.1	3.8	7.2	-12.8
20- 25	1.5	15.0	7.1	-68.8
25- 30	5.4	1.8	6.7	-0.9
30- 35	3.6	10.2	6.8	-45.4
35- 40	1.0	18.2	7.4	-85.6
40- 45	1.1	22.0	7.3	-106.3
45- 50	4.2	6.9	6.6	-29.1
50- 55	-5.5	25.2	6.7	-80.4
55- 60	3.8	9.7	7.1	-42.8
60- 65	5.5	2.4	6.7	-5.5
65- 70	1.1	22.0	6.6	-106.3
70- 75	4.7	4.0	6.8	-13.6
75- 80	0.4	20.3	6.8	-94.6
80- 85	5.2	2.8	7.7	-5.5
85- 90	4.4	6.5	15.2	-16.9
90- 95	-0.0	19.5	7.4	-82.8
95-100	4.3	6.3	6.8	-19.1
100-105	3.5	5.4	6.6	-14.1
105-110	-1.7	23.0	6.5	-106.3
110-115	5.5	1.3	6.6	1.5
115-120	5.3	2.0	6.6	-3.1
120-125	0.3	22.4	7.4	-106.3
125-130	-1.6	25.4	6.7	-106.3
130-135	5.4	2.5	7.1	-6.5
135-140	5.8	0.8	6.8	3.4
140-145	5.9	0.7	6.7	4.5
145-150	3.2	15.2	7.4	-71.0
150-155	-0.8	22.5	6.8	-106.3
155-160	-2.6	28.7	7.1	-106.3
160-165	3.3	8.3	7.6	-34.3
165-170	3.3	8.3	6.8	-33.7
170-175	-5.9	31.0	6.7	-106.3
175-180	-3.8	29.4	6.7	-106.3
180-182	4.6	4.7	6.7	-9.5
FOR THIS RUN:	1.9	17.1	15.2	-106.3

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	-0.0	0.7	0.2	-3.1
5- 10	-0.1	0.7	0.2	-2.8
10- 15	-0.0	0.7	0.2	-3.1
15- 20	0.1	0.1	0.2	-0.4
20- 25	0.0	0.5	0.2	-2.2
25- 30	0.2	0.0	0.2	-0.0
30- 35	0.1	0.3	0.2	-1.4
35- 40	0.0	0.5	0.2	-2.5
40- 45	0.0	0.7	0.2	-3.2
45- 50	0.1	0.2	0.2	-0.9
50- 55	-0.2	0.7	0.2	-2.5
55- 60	0.1	0.3	0.2	-1.2
60- 65	0.2	0.0	0.2	-0.2
65- 70	0.0	0.6	0.2	-3.1
70- 75	0.1	0.1	0.2	-0.4
75- 80	0.0	0.6	0.2	-2.8
80- 85	0.2	0.0	0.2	-0.2
85- 90	0.1	0.2	0.5	-0.5
90- 95	0.0	0.6	0.2	-2.4
95-100	0.1	0.2	0.2	-0.6
100-105	0.1	0.2	0.2	-0.4
105-110	-0.0	0.7	0.2	-3.1
110-115	0.2	0.0	0.2	0.0
115-120	0.2	0.0	0.2	-0.1
120-125	0.0	0.7	0.2	-3.2
125-130	-0.1	0.8	0.2	-3.2
130-135	0.2	0.0	0.2	-0.2
135-140	0.2	0.0	0.2	0.1
140-145	0.2	0.0	0.2	0.1
145-150	0.1	0.5	0.2	-2.2
150-155	-0.0	0.7	0.2	-3.2
155-160	-0.1	0.8	0.2	-3.5
160-165	0.1	0.3	0.2	-1.1
165-170	0.1	0.3	0.2	-1.0
170-175	-0.2	0.9	0.2	-3.2
175-180	-0.1	0.9	0.2	-3.3
180-182	0.1	0.1	0.2	-0.3
FOR THIS RUN:	0.1	0.5	0.5	-3.5

TABLE 10 (Continued)

RUN NUMBER 3520

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	893.3	4.3	900.4	886.4
5- 10	895.0	5.5	901.4	886.4
10- 15	892.1	4.2	900.4	885.4
15- 20	895.5	5.1	900.4	886.4
20- 25	891.6	4.1	900.4	886.4
25- 30	895.9	4.7	900.4	885.4
30- 35	891.1	4.1	899.4	885.4
35- 40	896.4	4.5	900.4	886.4
40- 45	891.0	4.0	900.4	886.4
45- 50	896.4	3.9	900.4	886.4
50- 55	890.9	4.4	900.4	885.4
55- 60	896.4	3.8	900.4	887.4
60- 65	890.9	4.6	900.4	885.4
65- 70	896.2	3.9	900.4	887.4
70- 75	891.4	4.8	900.4	886.4
75- 80	896.0	3.9	900.4	886.4
80- 85	892.0	5.1	900.4	885.4
85- 90	895.6	4.2	900.4	885.4
90- 95	892.5	5.4	900.4	885.4
95-100	894.6	4.2	900.4	886.4
100-105	893.0	5.6	900.4	885.4
105-110	893.9	4.3	900.4	885.4
110-115	893.7	5.6	900.4	886.4
115-120	893.3	4.2	900.4	885.4
120-125	894.4	5.7	900.4	886.4
125-130	892.9	4.0	900.4	885.4
130-135	894.8	5.6	900.4	885.4
135-140	892.4	3.9	899.4	886.4
140-145	895.3	5.3	901.4	886.4
145-150	891.9	3.9	900.4	885.4
150-155	895.4	5.1	900.4	886.4
155-160	891.4	4.3	900.4	885.4
160-165	895.9	4.7	900.4	886.4
165-170	891.4	4.0	900.4	886.4
170-175	896.0	4.6	900.4	885.4
175-180	891.2	4.3	900.4	885.4
180-182	894.7	5.6	900.4	885.4
FOR THIS RUN:	893.7	5.0	901.4	885.4

TABLE 11 - MACHINERY PARAMETERS, RUN 3410

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	28651	1059.7	30180	26659
5- 10	28389	866.3	30180	26659
10- 15	29456	1102.8	31689	27665
15- 20	29194	1106.4	30683	27665
20- 25	27202	1457.3	30180	24144
25- 30	24627	1133.5	26659	23138
30- 35	24385	1199.8	26659	22635
35- 40	25935	1249.1	28168	23641
40- 45	28671	1671.3	32192	26156
45- 50	32836	1846.9	35713	29174
50- 55	34345	1079.0	36216	32192
55- 60	33540	1117.7	35210	31689
60- 65	32252	1048.6	33701	30180
65- 70	31790	1083.5	33701	29677
70- 75	30945	1007.2	32695	29174
75- 80	30442	1075.2	32192	28671
80- 85	31407	900.7	33198	29677
85- 90	32071	1122.8	34204	30683
90- 95	32454	1056.3	34707	30683
95-100	33781	951.0	35713	31689
100-105	34003	1092.8	36216	32192
105-110	32936	986.9	34707	31186
110-115	31910	1074.9	33701	29677
115-120	31528	801.3	32695	29677
120-125	31769	982.4	33198	30180
125-130	31548	1011.2	33198	29677
130-135	30542	1106.8	32695	28671
135-140	31266	1221.2	33701	29174
140-145	32775	1339.8	34707	30180
145-150	33359	982.8	34707	31689
150-155	31387	1111.2	33701	29174
155-160	28711	1287.7	31689	26659
160-165	26719	1048.6	28671	24647
165-170	25130	859.3	27162	24144
170-175	25210	1242.9	27162	23138
175-180	26498	1246.1	28671	24647
180-185	27182	1219.5	29174	25150
185-190	28088	1144.2	30683	26659
190-195	29295	1209.5	31186	27665
195-200	29436	1056.3	31689	27665
200-205	29194	1040.4	30683	27162
205-210	28369	1035.7	30180	26659
210-215	27846	1014.8	29677	26156
215-220	27947	1093.5	29677	26156
220-225	28027	980.7	29174	26156
225-230	28510	1324.9	30180	26156
230-235	28912	1249.4	30683	26659
235-240	28168	1083.5	30180	26659
FOR THIS RUN:	*29763*	*2859.5*	*36216*	*22635*

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	38851	1436.9	40924	36150
5- 10	38496	1174.7	40924	36150
10- 15	39942	1495.3	42970	37514
15- 20	39587	1500.3	41606	37514
20- 25	36886	1976.1	40924	32739
25- 30	33394	1537.1	36150	31375
30- 35	33067	1626.9	36150	30693
35- 40	35167	1693.7	38196	32057
40- 45	38878	2266.3	43652	35468
45- 50	44525	2504.4	48427	39560
50- 55	46572	1463.1	49109	43652
55- 60	45480	1515.6	47745	42970
60- 65	43734	1421.8	45699	40924
65- 70	43107	1469.2	45699	40242
70- 75	41961	1365.8	44334	39560
75- 80	41279	1458.0	43652	38878
80- 85	42588	1221.3	45016	40242
85- 90	43489	1522.5	46381	41606
90- 95	44007	1432.3	47063	41606
95-100	45808	1289.5	48427	42970
100-105	46108	1481.8	49109	43652
105-110	44662	1338.2	47063	42288
110-115	43270	1457.5	45699	40242
115-120	42752	1086.5	44334	40242
120-125	43079	1332.1	45016	40924
125-130	42779	1371.2	45016	40242
130-135	41415	1500.8	44334	38878
135-140	42397	1656.0	45699	39560
140-145	44444	1816.7	47063	40924
145-150	45235	1332.7	47063	42970
150-155	42561	1506.7	45699	39560
155-160	38932	1746.1	42970	36150
160-165	36231	1421.8	38878	33421
165-170	34076	1165.2	36832	32739
170-175	34185	1685.4	36832	31375
175-180	35931	1689.8	38878	33421
180-185	36859	1653.7	39560	34103
185-190	38087	1551.5	41606	36150
190-195	39724	1640.1	42288	37514
195-200	39915	1432.3	42970	37514
200-205	39587	1410.8	41606	36832
205-210	38469	1404.5	40924	36150
210-215	37759	1376.1	40242	35468
215-220	37896	1482.8	40242	35468
220-225	38005	1329.9	39560	35468
225-230	38660	1796.5	40924	35468
230-235	39205	1694.2	41606	36150
235-240	38196	1469.2	40924	36150
FOR THIS RUN:	40359	3877.4	49109	30693

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	24731	7443.8	34278	-418
5- 10	22206	6671.6	36073	9452
10- 15	24288	10104.7	45046	5863
15- 20	25532	7130.7	43550	8555
20- 25	27100	3918.2	33381	19024
25- 30	22697	5426.0	29792	7957
30- 35	20639	6020.3	32783	10649
35- 40	19777	7261.4	31287	5265
40- 45	18425	7229.7	29492	3171
45- 50	20029	11303.2	51028	4068
50- 55	26262	7384.0	43251	11546
55- 60	26166	8620.7	45943	9153
60- 65	26753	8600.4	43251	12144
65- 70	23235	9597.9	45345	8256
70- 75	24384	9807.0	41457	7658
75- 80	24061	8216.6	36372	9452
80- 85	18856	10466.2	39363	778
85- 90	21476	7646.4	39363	5265
90- 95	26083	12386.1	47738	1975
95-100	22242	10558.2	48037	778
100-105	24168	11270.6	40559	3470
105-110	25532	7905.6	37269	4966
110-115	24073	5837.6	34577	9452
115-120	23666	9683.4	41457	6760
120-125	25724	5923.2	36073	14836
125-130	23582	7110.1	34876	6461
130-135	22302	7017.5	32184	4068
135-140	23714	11453.2	58506	4666
140-145	20782	11490.5	40559	2274
145-150	28703	10772.8	69573	13640
150-155	25556	6281.9	35175	11845
155-160	26753	5320.9	36073	17229
160-165	26549	4958.1	36073	18725
165-170	22972	5939.5	35774	11247
170-175	22242	7973.2	33979	1975
175-180	21668	7852.7	39064	4068
180-185	21536	6734.6	35774	7957
185-190	18222	12137.6	55814	-119
190-195	22972	7514.2	43251	7059
195-200	27937	6267.9	39961	16631
200-205	24312	6214.4	38466	7059
205-210	22685	6208.4	35774	7957
210-215	21129	6546.3	35175	2274
215-220	20866	6190.7	32184	8854
220-225	20017	6486.0	33381	7957
225-230	20471	8947.5	32483	-1017
230-235	22075	7879.7	48934	7059
235-240	27423	13717.5	83033	11845
FOR THIS RUN:	23387	8758.7	83033	-1017

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (N)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	110002	33110.2	152469	-1861
5- 10	98773	29675.2	160452	42043
10- 15	108033	44945.7	200365	26078
15- 20	113567	31717.4	193712	38052
20- 25	120539	17428.1	148478	84617
25- 30	100955	24134.8	132513	35391
30- 35	91801	26778.4	145817	47365
35- 40	87970	32298.8	139165	23417
40- 45	81956	32157.9	131182	14104
45- 50	89087	50276.7	226973	18096
50- 55	116814	32844.1	192382	51356
55- 60	116388	38344.7	204356	40713
60- 65	118995	38254.8	192382	54017
65- 70	103350	42691.5	201695	36722
70- 75	108458	43621.7	184399	34061
75- 80	107022	36547.2	161782	42043
80- 85	83872	46553.8	175086	3461
85- 90	95527	34011.2	175086	23417
90- 95	116015	55093.3	212338	8783
95-100	98933	46962.9	213669	3461
100-105	107501	50131.6	180408	15435
105-110	113567	35164.2	165773	22087
110-115	107075	25965.7	153800	42043
115-120	105265	43071.6	184399	30070
120-125	114419	26346.5	160452	65991
125-130	104893	31625.7	155130	28739
130-135	99199	31213.8	143156	18096
135-140	105478	50943.8	260234	20757
140-145	92440	51109.7	180408	10113
145-150	127670	47917.5	309460	60669
150-155	113674	27942.0	156460	52687
155-160	118995	23667.2	160452	76635
160-165	118091	22053.6	160452	83287
165-170	102179	26419.0	159121	50026
170-175	98933	35464.9	151139	8783
175-180	96378	34928.6	173756	18096
180-185	95793	29955.7	159121	35391
185-190	81052	53988.2	248260	-530
190-195	102179	33423.2	192382	31400
195-200	124264	27879.4	177747	73974
200-205	108139	27641.5	171095	31400
205-210	100902	27614.8	159121	35391
210-215	93983	29117.8	156460	10113
215-220	92813	27536.2	143156	39383
220-225	89034	28849.7	148478	35391
225-230	91056	39798.6	144487	-4522
230-235	98188	35048.7	217660	31400
235-240	121976	61015.5	369329	52687
FOR THIS RUN:	104025	38958.7	369329	-4522

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1035	33.6	1095	972
5- 10	1020	33.1	1095	954
10- 15	1013	39.7	1119	936
15- 20	1090	46.1	1171	1014
20- 25	1049	56.2	1141	926
25- 30	918	44.4	1008	844
30- 35	859	43.6	934	797
35- 40	877	37.0	931	814
40- 45	945	37.6	1008	890
45- 50	1061	61.4	1207	936
50- 55	1254	46.3	1338	1161
55- 60	1235	61.9	1337	1125
60- 65	1165	34.7	1222	1096
65- 70	1153	48.3	1239	1063
70- 75	1141	39.7	1192	1066
75- 80	1087	55.1	1189	996
80- 85	1081	59.6	1176	955
85- 90	1143	45.5	1219	1063
90- 95	1133	32.5	1192	1059
95-100	1168	28.4	1224	1104
100-105	1246	48.6	1334	1119
105-110	1203	40.2	1271	1119
110-115	1165	40.4	1264	1105
115-120	1110	48.6	1211	1022
120-125	1148	42.3	1271	1087
125-130	1150	32.3	1226	1104
130-135	1106	32.0	1177	1043
135-140	1067	35.7	1134	1008
140-145	1133	61.7	1242	1028
145-150	1227	43.5	1309	1155
150-155	1187	37.0	1277	1105
155-160	1099	48.7	1210	1020
160-165	1011	52.5	1111	899
165-170	905	28.9	959	867
170-175	896	38.4	954	830
175-180	929	45.3	1008	855
180-185	964	42.4	1036	893
185-190	965	34.3	1031	919
190-195	1047	31.8	1113	994
195-200	1067	39.0	1134	1003
200-205	1064	41.0	1145	996
205-210	1028	36.2	1089	981
210-215	1007	41.2	1093	934
215-220	998	37.9	1064	936
220-225	997	42.5	1053	921
225-230	1011	44.8	1077	941
230-235	1033	41.3	1119	968
235-240	1032	38.9	1115	954
FOR THIS RUN:	1067	108.1	1338	797

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	772	25.1	816	725
5- 10	760	24.7	816	712
10- 15	755	29.6	835	698
15- 20	813	34.4	873	756
20- 25	782	41.9	851	691
25- 30	684	33.1	751	629
30- 35	641	32.5	696	595
35- 40	654	27.6	694	607
40- 45	705	28.1	752	663
45- 50	791	45.7	900	698
50- 55	935	34.5	998	866
55- 60	921	46.2	997	839
60- 65	869	25.9	911	817
65- 70	859	36.0	924	793
70- 75	850	29.6	889	795
75- 80	810	41.1	886	743
80- 85	806	44.4	877	712
85- 90	852	33.9	909	793
90- 95	845	24.2	889	790
95-100	871	21.2	913	823
100-105	929	36.2	995	834
105-110	897	30.0	947	835
110-115	869	30.1	943	824
115-120	828	36.2	903	762
120-125	856	31.5	947	810
125-130	857	24.1	914	823
130-135	825	23.9	877	777
135-140	796	26.7	846	751
140-145	845	46.0	926	767
145-150	915	32.4	976	861
150-155	885	27.6	952	824
155-160	820	36.3	902	761
160-165	754	39.2	828	670
165-170	675	21.6	715	646
170-175	668	28.6	712	619
175-180	693	33.8	752	637
180-185	719	31.6	772	666
185-190	720	25.6	769	685
190-195	781	23.7	830	741
195-200	795	29.1	846	748
200-205	794	30.6	854	742
205-210	766	27.0	812	732
210-215	751	30.7	815	696
215-220	744	28.2	793	698
220-225	743	31.7	785	687
225-230	754	33.4	803	702
230-235	770	30.8	834	722
235-240	770	29.0	831	712
FOR THIS RUN:	796	80.6	998	595

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	189.8	2.0	194.0	185.5
5- 10	188.7	1.5	191.0	186.0
10- 15	180.7	5.8	193.0	172.5
15- 20	196.1	4.2	201.5	185.5
20- 25	202.6	2.7	207.5	196.5
25- 30	195.7	2.6	199.0	190.5
30- 35	185.1	2.7	189.5	179.5
35- 40	177.7	3.0	182.5	173.5
40- 45	173.3	5.0	179.5	164.5
45- 50	169.7	5.5	179.0	159.0
50- 55	191.8	4.4	199.5	181.0
55- 60	193.3	5.2	200.0	183.5
60- 65	189.8	4.3	199.0	183.5
65- 70	190.4	5.8	199.0	180.0
70- 75	193.6	3.8	199.0	185.5
75- 80	187.5	7.3	198.5	178.5
80- 85	180.9	9.7	193.0	161.5
85- 90	187.2	3.3	191.5	182.0
90- 95	183.4	4.5	191.5	175.5
95-100	181.6	2.5	186.0	176.5
100-105	192.4	5.6	200.0	182.5
105-110	191.9	4.3	200.5	185.5
110-115	191.9	3.9	197.0	183.5
115-120	184.9	6.2	194.5	174.0
120-125	189.9	5.3	201.0	180.5
125-130	191.4	3.3	200.0	185.5
130-135	190.3	3.6	194.0	181.5
135-140	179.4	5.3	190.5	170.0
140-145	181.4	4.1	189.0	175.5
145-150	193.2	4.6	201.0	185.5
150-155	198.7	3.0	205.0	193.5
155-160	201.1	1.1	203.5	199.5
160-165	198.7	3.9	205.0	191.5
165-170	189.1	2.7	195.0	184.5
170-175	186.7	3.8	195.0	182.5
175-180	184.2	3.6	189.5	177.5
180-185	186.4	1.4	188.5	184.0
185-190	180.5	4.2	189.5	173.5
190-195	187.9	4.6	193.5	178.0
195-200	190.3	2.5	194.5	185.5
200-205	191.5	3.0	196.0	186.5
205-210	190.3	4.4	198.5	183.0
210-215	189.9	3.1	196.5	182.5
215-220	187.5	2.6	191.5	182.5
220-225	186.8	3.2	192.5	180.5
225-230	186.2	3.2	191.5	179.5
230-235	187.6	3.3	192.0	180.5
235-240	192.4	2.9	197.5	186.0
FOR THIS RUN:	188.4	7.7	207.5	159.0

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	545	6.8	560	531
5- 10	543	4.6	549	534
10- 15	523	17.7	563	499
15- 20	563	13.3	578	528
20- 25	578	7.1	590	562
25- 30	557	8.2	565	538
30- 35	530	8.5	544	517
35- 40	513	8.3	524	498
40- 45	502	13.2	518	477
45- 50	497	17.3	529	465
50- 55	557	10.6	578	536
55- 60	556	14.5	578	530
60- 65	549	13.3	577	519
65- 70	549	16.8	574	512
70- 75	557	12.4	573	531
75- 80	539	21.4	576	510
80- 85	528	28.6	565	461
85- 90	545	9.5	560	527
90- 95	532	14.6	560	506
95-100	532	8.5	544	511
100-105	559	15.6	582	532
105-110	553	12.9	577	530
110-115	553	10.9	571	524
115-120	531	16.4	556	501
120-125	549	16.6	579	522
125-130	548	10.3	569	529
130-135	548	11.9	562	520
135-140	518	14.1	545	491
140-145	527	11.9	548	506
145-150	559	13.1	579	535
150-155	570	9.2	587	553
155-160	574	3.9	582	566
160-165	564	11.1	582	545
165-170	541	8.3	558	527
170-175	533	10.0	558	519
175-180	530	11.7	547	507
180-185	535	5.0	543	524
185-190	519	12.0	544	497
190-195	542	11.9	556	520
195-200	549	7.2	559	534
200-205	550	8.8	563	534
205-210	546	13.4	571	522
210-215	543	8.7	558	521
215-220	538	9.4	552	520
220-225	538	9.4	553	518
225-230	536	9.6	551	514
230-235	539	9.7	551	517
235-240	552	9.0	565	529
FOR THIS RUN:	542	20.8	590	461

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1524	69.0	1701	1412
5- 10	1514	47.9	1634	1442
10- 15	1600	99.7	1881	1469
15- 20	1533	107.3	1791	1323
20- 25	1373	44.9	1446	1296
25- 30	1278	58.6	1395	1191
30- 35	1316	91.2	1564	1195
35- 40	1439	79.9	1585	1282
40- 45	1633	94.6	1887	1479
45- 50	1822	105.5	2066	1632
50- 55	1847	85.5	2056	1732
55- 60	1732	69.7	1861	1614
60- 65	1722	125.4	2046	1582
65- 70	1693	110.6	1976	1531
70- 75	1619	90.2	1818	1479
75- 80	1609	106.7	2000	1444
80- 85	1739	177.9	2149	1435
85- 90	1714	93.6	1977	1565
90- 95	1771	125.1	2050	1581
95-100	1825	101.5	2031	1628
100-105	1810	98.7	1997	1658
105-110	1743	75.3	1897	1635
110-115	1682	83.4	1877	1574
115-120	1699	101.3	1978	1537
120-125	1687	108.1	2089	1542
125-130	1683	105.9	1936	1479
130-135	1619	113.6	1990	1454
135-140	1710	138.8	2167	1532
140-145	1828	104.8	2110	1662
145-150	1747	91.0	1908	1594
150-155	1614	104.1	1914	1454
155-160	1476	78.7	1692	1352
160-165	1350	48.7	1471	1281
165-170	1331	55.0	1455	1236
170-175	1375	91.0	1599	1231
175-180	1416	119.9	1788	1276
180-185	1473	71.8	1621	1369
185-190	1558	118.4	1843	1401
190-195	1591	54.2	1735	1505
195-200	1558	67.7	1704	1464
200-205	1519	62.3	1654	1415
205-210	1497	78.9	1717	1386
210-215	1475	65.2	1614	1369
215-220	1489	104.5	1735	1344
220-225	1506	69.5	1684	1401
225-230	1533	78.9	1725	1442
230-235	1547	60.1	1657	1434
235-240	1497	69.2	1681	1372
FOR THIS RUN:	1590	174.7	2167	1191

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	831	33.2	929	773
5- 10	822	24.7	879	784
10- 15	835	48.0	977	763
15- 20	863	60.4	946	718
20- 25	794	30.0	834	746
25- 30	711	31.1	770	648
30- 35	696	43.6	817	636
35- 40	737	35.9	812	670
40- 45	818	34.5	912	760
45- 50	906	56.2	990	800
50- 55	1028	42.0	1106	956
55- 60	963	43.1	1041	872
60- 65	943	58.4	1116	851
65- 70	928	62.5	1047	813
70- 75	901	49.4	1011	807
75- 80	868	57.4	1047	760
80- 85	917	94.3	1075	688
85- 90	934	47.0	1066	858
90- 95	941	59.8	1058	827
95-100	970	52.1	1071	868
100-105	1012	50.6	1106	926
105-110	964	40.7	1067	889
110-115	929	42.8	1028	850
115-120	902	52.8	992	804
120-125	926	54.2	1116	858
125-130	923	56.8	1065	813
130-135	886	57.2	1034	784
135-140	885	63.8	1064	770
140-145	963	53.6	1090	873
145-150	975	42.4	1047	899
150-155	919	51.5	1058	839
155-160	846	43.0	961	781
160-165	762	36.0	842	703
165-170	720	27.2	766	663
170-175	733	45.0	838	660
175-180	749	56.8	919	672
180-185	788	35.7	866	740
185-190	808	55.7	946	726
190-195	862	31.7	924	812
195-200	855	33.3	919	796
200-205	836	30.8	884	785
205-210	818	41.6	926	743
210-215	801	34.2	885	735
215-220	801	51.2	908	727
220-225	809	35.7	905	739
225-230	821	38.6	904	764
230-235	835	34.8	883	763
235-240	826	36.2	890	748
FOR THIS RUN:	862	93.6	1116	636

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	70.4	0.7	71.6	69.4
5- 10	70.3	0.7	71.4	69.1
10- 15	70.4	0.6	71.6	69.4
15- 20	70.5	0.7	71.6	69.4
20- 25	70.2	0.6	71.4	69.4
25- 30	70.5	0.7	71.6	69.6
30- 35	70.5	0.6	71.6	69.4
35- 40	70.1	0.6	71.6	69.4
40- 45	70.4	0.7	71.4	69.1
45- 50	70.2	0.6	71.1	69.4
50- 55	70.2	0.7	71.6	69.1
55- 60	70.3	0.6	71.4	69.1
60- 65	70.2	0.6	71.4	69.1
65- 70	70.2	0.7	71.4	69.1
70- 75	70.4	0.6	71.4	69.4
75- 80	70.3	0.6	71.6	69.4
80- 85	70.3	0.8	71.9	68.6
85- 90	70.3	0.6	71.4	69.4
90- 95	70.3	0.7	71.9	69.1
95-100	70.3	0.6	71.4	68.9
100-105	70.3	0.6	71.1	68.9
105-110	70.4	0.6	71.4	69.4
110-115	70.3	0.6	71.1	69.1
115-120	70.3	0.7	71.6	69.1
120-125	70.2	0.6	71.1	69.1
125-130	70.4	0.6	71.4	69.4
130-135	70.2	0.6	71.4	69.1
135-140	70.7	1.8	78.9	69.1
140-145	70.2	0.8	71.9	69.1
145-150	70.3	0.7	71.4	68.6
150-155	70.2	0.6	71.1	69.4
155-160	70.2	0.7	71.4	69.1
160-165	70.4	0.7	71.6	69.1
165-170	70.3	0.6	71.4	69.4
170-175	70.2	0.7	71.4	69.1
175-180	70.2	0.8	71.9	69.1
180-185	70.0	0.6	71.1	69.1
185-190	70.2	0.7	71.4	69.1
190-195	70.2	0.7	71.4	68.9
195-200	70.3	0.7	71.4	69.1
200-205	70.1	0.6	71.1	69.1
205-210	70.1	0.6	71.4	68.9
210-215	70.4	0.6	71.4	69.4
215-220	70.3	0.7	71.4	69.1
220-225	70.1	0.6	71.4	69.1
225-230	70.2	0.6	71.4	69.4
230-235	70.0	0.7	71.1	68.9
235-240	70.1	0.6	71.1	69.1
FOR THIS RUN:	70.3	0.7	78.9	68.6

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29.2	0.1	29.4	29.0
5- 10	29.2	0.1	29.3	29.0
10- 15	29.2	0.1	29.4	28.8
15- 20	29.2	0.1	29.4	28.9
20- 25	29.2	0.0	29.2	29.0
25- 30	29.2	0.1	29.3	29.0
30- 35	29.2	0.1	29.4	28.9
35- 40	29.2	0.1	29.4	28.9
40- 45	29.2	0.1	29.4	29.0
45- 50	29.2	0.1	29.5	28.9
50- 55	29.2	0.1	29.4	28.9
55- 60	29.2	0.1	29.3	29.0
60- 65	29.2	0.1	29.4	28.8
65- 70	29.2	0.1	29.3	29.0
70- 75	29.2	0.1	29.4	28.9
75- 80	29.2	0.1	29.4	29.0
80- 85	29.2	0.2	29.7	28.9
85- 90	29.2	0.1	29.4	29.0
90- 95	29.2	0.1	29.4	28.9
95-100	29.2	0.1	29.4	28.9
100-105	29.2	0.1	29.3	28.9
105-110	29.1	0.1	29.3	28.9
110-115	29.2	0.1	29.3	29.0
115-120	29.2	0.1	29.4	28.9
120-125	29.2	0.1	29.5	28.9
125-130	29.2	0.1	29.3	28.9
130-135	29.2	0.1	29.4	28.9
135-140	29.2	0.2	29.8	28.9
140-145	29.2	0.1	29.6	28.7
145-150	29.2	0.1	29.4	29.0
150-155	29.2	0.1	29.4	29.0
155-160	29.2	0.1	29.3	29.0
160-165	29.1	0.1	29.3	29.0
165-170	29.2	0.1	29.4	29.1
170-175	29.2	0.1	29.3	28.9
175-180	29.2	0.1	29.4	29.0
180-185	29.2	0.1	29.3	29.0
185-190	29.2	0.1	29.4	29.0
190-195	29.2	0.1	29.3	29.1
195-200	29.2	0.1	29.3	28.9
200-205	29.2	0.1	29.4	29.1
205-210	29.2	0.1	29.3	28.9
210-215	29.2	0.1	29.3	29.0
215-220	29.2	0.1	29.5	29.0
220-225	29.2	0.1	29.3	29.0
225-230	29.2	0.1	29.4	29.0
230-235	29.2	0.1	29.3	29.0
235-240	29.2	0.1	29.4	29.0
FOR THIS RUN:	29.2	0.1	29.8	28.7

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.1	0.0	2.1	2.0
5- 10	2.0	0.0	2.1	2.0
10- 15	2.1	0.0	2.1	2.0
15- 20	2.1	0.0	2.1	2.0
20- 25	2.0	0.0	2.1	2.0
25- 30	2.1	0.0	2.1	2.0
30- 35	2.1	0.0	2.1	2.0
35- 40	2.0	0.0	2.1	2.0
40- 45	2.1	0.0	2.1	2.0
45- 50	2.0	0.0	2.1	2.0
50- 55	2.0	0.0	2.1	2.0
55- 60	2.1	0.0	2.1	2.0
60- 65	2.0	0.0	2.1	2.0
65- 70	2.0	0.0	2.1	2.0
70- 75	2.1	0.0	2.1	2.0
75- 80	2.1	0.0	2.1	2.0
80- 85	2.1	0.0	2.1	2.0
85- 90	2.1	0.0	2.1	2.0
90- 95	2.1	0.0	2.1	2.0
95-100	2.1	0.0	2.1	2.0
100-105	2.0	0.0	2.1	2.0
105-110	2.1	0.0	2.1	2.0
110-115	2.1	0.0	2.1	2.0
115-120	2.1	0.0	2.1	2.0
120-125	2.0	0.0	2.1	2.0
125-130	2.1	0.0	2.1	2.0
130-135	2.0	0.0	2.1	2.0
135-140	2.1	0.1	2.3	2.0
140-145	2.0	0.0	2.1	2.0
145-150	2.0	0.0	2.1	2.0
150-155	2.0	0.0	2.1	2.0
155-160	2.0	0.0	2.1	2.0
160-165	2.1	0.0	2.1	2.0
165-170	2.1	0.0	2.1	2.0
170-175	2.0	0.0	2.1	2.0
175-180	2.0	0.0	2.1	2.0
180-185	2.0	0.0	2.1	2.0
185-190	2.0	0.0	2.1	2.0
190-195	2.0	0.0	2.1	2.0
195-200	2.0	0.0	2.1	2.0
200-205	2.0	0.0	2.1	2.0
205-210	2.0	0.0	2.1	2.0
210-215	2.1	0.0	2.1	2.0
215-220	2.1	0.0	2.1	2.0
220-225	2.0	0.0	2.1	2.0
225-230	2.0	0.0	2.1	2.0
230-235	2.0	0.0	2.1	2.0
235-240	2.0	0.0	2.1	2.0
FOR THIS RUN:	2.0	0.0	2.3	2.0

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	38	0.1	38	38
5- 10	38	1.4	45	38
10- 15	38	1.4	45	37
15- 20	38	0.1	38	38
20- 25	38	0.1	38	37
25- 30	37	0.1	38	37
30- 35	37	0.1	38	37
35- 40	37	0.1	38	37
40- 45	37	0.1	38	37
45- 50	37	0.2	38	37
50- 55	37	0.1	37	37
55- 60	37	0.1	37	37
60- 65	38	3.9	57	37
65- 70	37	0.1	37	37
70- 75	37	0.1	37	37
75- 80	37	0.2	37	36
80- 85	37	0.3	38	37
85- 90	37	0.1	37	36
90- 95	37	0.1	37	37
95-100	37	0.1	37	37
100-105	37	0.1	37	37
105-110	37	0.2	38	37
110-115	37	0.4	38	37
115-120	37	0.1	37	37
120-125	37	0.1	37	36
125-130	37	0.1	37	36
130-135	37	0.2	38	36
135-140	37	0.1	37	36
140-145	36	0.1	37	36
145-150	36	0.1	37	36
150-155	36	0.1	37	36
155-160	36	0.1	37	36
160-165	36	0.1	37	36
165-170	36	0.1	36	36
170-175	36	0.1	37	36
175-180	36	0.1	36	36
180-185	36	0.1	36	36
185-190	36	0.1	36	36
190-195	36	0.1	36	36
195-200	36	0.1	36	36
200-205	36	0.3	38	36
205-210	36	0.1	36	36
210-215	36	0.1	36	36
215-220	36	0.1	36	36
220-225	36	0.3	38	36
225-230	36	0.1	36	36
230-235	36	0.1	36	36
235-240	36	0.3	37	36
FOR THIS RUN:	37	0.9	57	36

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	555	6.9	570	539
5- 10	552	4.9	559	542
10- 15	531	17.8	572	506
15- 20	572	13.5	587	537
20- 25	588	7.2	600	571
25- 30	566	8.2	575	547
30- 35	539	8.3	554	526
35- 40	522	8.4	533	507
40- 45	512	13.4	528	486
45- 50	507	17.3	538	474
50- 55	567	10.5	586	546
55- 60	566	14.7	588	540
60- 65	558	13.7	587	530
65- 70	557	17.2	584	519
70- 75	566	12.2	584	541
75- 80	548	20.5	580	518
80- 85	534	29.0	569	468
85- 90	551	10.8	565	532
90- 95	539	12.6	563	517
95-100	537	8.5	550	521
100-105	566	15.8	589	539
105-110	562	13.4	588	538
110-115	563	11.0	581	535
115-120	542	16.4	567	511
120-125	559	16.2	588	531
125-130	559	10.3	580	539
130-135	558	12.2	572	527
135-140	527	14.4	556	497
140-145	537	12.4	558	513
145-150	569	12.9	589	546
150-155	580	9.3	598	563
155-160	584	4.0	593	576
160-165	574	10.9	592	556
165-170	551	8.4	568	536
170-175	544	10.3	568	528
175-180	540	11.9	557	517
180-185	546	5.0	553	534
185-190	529	12.2	553	505
190-195	552	12.1	566	530
195-200	558	7.0	570	544
200-205	560	8.9	573	543
205-210	557	13.3	582	533
210-215	553	8.7	569	531
215-220	549	9.4	563	530
220-225	548	9.4	564	529
225-230	546	9.7	561	524
230-235	550	9.5	562	528
235-240	562	8.8	576	540
FOR THIS RUN:	552	20.9	600	468

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	750	34.8	840	695
5- 10	745	24.1	804	711
10- 15	788	51.0	935	724
15- 20	755	54.0	883	650
20- 25	675	22.6	711	637
25- 30	628	29.7	687	584
30- 35	646	46.1	772	583
35- 40	708	39.7	777	630
40- 45	805	47.8	934	728
45- 50	899	53.0	1017	802
50- 55	911	43.0	1019	855
55- 60	854	35.1	921	795
60- 65	849	63.4	1011	779
65- 70	834	55.3	975	752
70- 75	798	45.7	899	727
75- 80	793	54.4	993	712
80- 85	858	89.9	1065	697
85- 90	845	47.6	978	770
90- 95	874	63.4	1017	780
95-100	900	50.9	1002	801
100-105	893	50.2	985	817
105-110	860	37.9	941	805
110-115	829	41.7	926	775
115-120	837	51.8	978	753
120-125	832	55.0	1034	759
125-130	830	53.3	956	725
130-135	797	57.0	985	715
135-140	844	70.2	1076	749
140-145	902	53.2	1046	818
145-150	861	45.9	943	782
150-155	795	52.4	945	715
155-160	727	40.0	837	664
160-165	663	25.0	724	627
165-170	654	27.5	715	607
170-175	676	46.0	792	603
175-180	696	60.9	885	626
180-185	725	36.4	803	673
185-190	767	59.7	911	688
190-195	783	27.9	857	741
195-200	768	34.8	843	719
200-205	748	31.2	815	696
205-210	737	40.1	849	681
210-215	726	33.3	797	674
215-220	733	54.1	860	657
220-225	741	34.7	832	692
225-230	755	40.9	855	708
230-235	762	30.9	817	706
235-240	737	34.7	829	674
FOR THIS RUN:	783	87.6	1076	583

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	416	17.3	467	387
5- 10	411	12.6	440	392
10- 15	419	24.5	492	381
15- 20	432	30.7	474	359
20- 25	397	15.2	417	373
25- 30	355	15.9	384	323
30- 35	348	22.7	411	317
35- 40	369	18.2	408	336
40- 45	411	18.1	461	381
45- 50	456	28.4	500	401
50- 55	516	21.3	556	480
55- 60	483	21.8	523	438
60- 65	474	30.2	556	424
65- 70	465	31.0	524	406
70- 75	452	25.4	509	404
75- 80	434	29.2	528	377
80- 85	457	49.2	543	335
85- 90	465	24.6	530	425
90- 95	471	30.4	532	417
95-100	483	26.2	537	435
100-105	505	26.4	556	460
105-110	483	20.8	538	446
110-115	467	21.8	517	427
115-120	453	27.6	502	402
120-125	464	28.0	562	429
125-130	464	29.1	535	406
130-135	445	29.1	519	392
135-140	444	32.5	534	384
140-145	484	27.9	552	439
145-150	490	21.9	528	450
150-155	461	26.6	532	419
155-160	424	22.3	483	390
160-165	381	18.5	422	350
165-170	360	14.0	383	332
170-175	367	23.2	421	330
175-180	376	29.3	463	336
180-185	396	18.5	437	372
185-190	406	28.6	477	363
190-195	432	16.3	465	410
195-200	429	17.7	464	396
200-205	419	15.6	444	393
205-210	410	21.5	467	373
210-215	402	17.8	446	368
215-220	402	27.2	459	362
220-225	406	18.0	456	372
225-230	412	20.4	456	381
230-235	419	18.1	445	383
235-240	414	18.7	448	375
FOR THIS RUN:	432	47.3	562	317

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	56.5	6.1	65.7	41.8
5- 10	56.3	4.9	64.2	45.7
10- 15	54.5	11.1	73.4	22.5
15- 20	58.6	8.6	66.2	33.5
20- 25	59.5	4.1	65.7	48.2
25- 30	54.4	5.2	59.4	37.8
30- 35	52.5	7.8	63.4	30.9
35- 40	52.9	6.2	63.7	34.7
40- 45	52.0	7.7	62.4	33.5
45- 50	57.0	8.9	71.8	36.8
50- 55	61.4	6.9	70.1	43.4
55- 60	59.0	6.8	73.1	43.6
60- 65	58.8	10.8	73.6	27.4
65- 70	57.4	8.8	73.1	34.2
70- 75	59.0	8.5	72.3	36.3
75- 80	55.5	8.6	69.8	25.6
80- 85	56.3	16.5	81.7	13.4
85- 90	59.1	7.5	74.6	42.1
90- 95	55.4	11.2	71.8	25.3
95-100	58.8	8.1	77.9	46.4
100-105	60.2	9.0	75.9	42.9
105-110	58.2	6.7	69.5	44.9
110-115	59.8	6.7	69.0	44.9
115-120	56.2	10.1	70.6	31.7
120-125	60.0	10.2	74.9	27.9
125-130	56.3	8.3	72.6	37.8
130-135	58.4	9.0	70.3	30.7
135-140	54.3	11.5	81.0	22.5
140-145	56.1	11.3	71.3	14.9
145-150	62.8	6.8	74.6	48.7
150-155	62.1	6.5	72.3	44.4
155-160	58.3	5.5	65.5	40.3
160-165	55.5	4.2	61.9	43.4
165-170	55.2	4.9	63.4	45.1
170-175	52.8	7.6	63.2	33.7
175-180	55.4	10.5	67.0	22.0
180-185	55.3	6.5	64.0	38.5
185-190	53.9	9.1	65.0	29.9
190-195	58.6	5.2	66.5	47.4
195-200	57.1	6.4	67.3	41.8
200-205	57.9	5.4	66.8	46.2
205-210	56.5	7.2	69.3	40.6
210-215	55.2	6.1	65.0	40.3
215-220	54.8	9.3	67.0	31.7
220-225	56.6	5.5	66.8	43.4
225-230	54.7	7.8	66.8	39.8
230-235	56.2	6.1	66.8	43.1
235-240	57.3	6.1	66.0	39.6
FOR THIS RUN:	56.9	8.5	81.7	13.4

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	9.0	2.7	10.6	-4.1
5- 10	10.4	3.1	24.3	8.3
10- 15	10.9	7.8	48.5	6.6
15- 20	11.0	4.0	27.9	5.6
20- 25	9.6	2.5	10.8	-2.3
25- 30	8.2	7.0	13.9	-25.6
30- 35	9.2	2.8	20.7	2.2
35- 40	8.8	0.5	9.5	7.5
40- 45	8.2	2.2	9.7	-1.6
45- 50	8.1	4.1	10.5	-6.4
50- 55	10.1	1.3	11.9	6.4
55- 60	8.9	5.2	11.0	-15.5
60- 65	9.6	1.6	12.3	4.1
65- 70	10.2	1.0	13.3	8.9
70- 75	10.0	2.2	17.8	3.6
75- 80	7.8	9.4	11.8	-37.9
80- 85	9.9	1.9	17.5	6.8
85- 90	10.6	2.8	23.7	7.2
90- 95	9.6	0.5	10.6	8.5
95-100	9.2	2.1	10.6	0.1
100-105	7.0	15.4	11.1	-68.5
105-110	7.8	9.3	11.1	-37.6
110-115	9.7	3.3	17.4	-3.3
115-120	12.1	9.3	54.6	8.2
120-125	10.0	0.6	11.1	8.4
125-130	9.8	1.0	11.1	5.5
130-135	7.8	7.9	10.5	-29.7
135-140	7.1	10.5	10.2	-44.4
140-145	9.9	1.9	17.7	6.4
145-150	8.7	9.6	24.7	-35.8
150-155	10.5	0.7	13.3	9.6
155-160	10.0	0.5	11.0	9.0
160-165	7.9	8.8	10.4	-35.4
165-170	6.9	10.8	10.1	-45.7
170-175	5.8	16.5	10.0	-75.2
175-180	12.0	14.1	80.9	7.0
180-185	8.6	2.9	12.2	-1.5
185-190	9.0	1.0	10.2	5.8
190-195	8.7	6.4	14.0	-22.5
195-200	9.6	2.0	14.1	1.0
200-205	9.3	3.3	16.1	-4.2
205-210	10.1	3.1	24.0	4.9
210-215	11.3	8.9	55.0	8.3
[illegible]	10.4	3.3	23.7	6.3
[illegible]	9.5	1.2	13.0	5.5
[illegible]	10.3	4.8	29.6	-0.8
[illegible]	10.4	2.8	23.5	8.?
[illegible]	10.5	3.2	26.1	8.5
[illegible]	9.4	6.4	80.9	-75.2

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.5	0.2	0.6	-0.2
5- 10	0.6	0.2	1.4	0.4
10- 15	0.6	0.5	3.0	0.2
15- 20	0.6	0.3	1.8	0.2
20- 25	0.6	0.2	0.7	-0.1
25- 30	0.5	0.4	0.8	-1.2
30- 35	0.5	0.2	1.2	0.1
35- 40	0.5	0.1	0.6	0.3
40- 45	0.4	0.1	0.6	-0.1
45- 50	0.5	0.2	0.7	-0.5
50- 55	0.6	0.1	0.8	0.4
55- 60	0.5	0.3	0.7	-0.9
60- 65	0.6	0.1	0.7	0.3
65- 70	0.6	0.1	1.0	0.3
70- 75	0.6	0.2	1.3	0.1
75- 80	0.4	0.5	0.7	-1.9
80- 85	0.6	0.2	1.1	0.1
85- 90	0.6	0.2	1.5	0.4
90- 95	0.5	0.1	0.7	0.3
95-100	0.5	0.1	0.8	0.0
100-105	0.4	1.0	0.8	-4.7
105-110	0.5	0.5	0.7	-1.9
110-115	0.6	0.2	1.1	-0.2
115-120	0.7	0.4	2.2	0.3
120-125	0.6	0.1	0.7	0.3
125-130	0.5	0.1	0.7	0.4
130-135	0.5	0.5	0.7	-1.7
135-140	0.4	0.6	0.7	-2.5
140-145	0.6	0.2	1.2	0.2
145-150	0.5	0.6	1.6	-2.2
150-155	0.7	0.1	0.8	0.5
155-160	0.6	0.0	0.7	0.4
160-165	0.4	0.5	0.6	-2.0
165-170	0.4	0.6	0.6	-2.8
170-175	0.3	0.8	0.6	-3.7
175-180	0.7	0.9	5.1	0.2
180-185	0.5	0.2	0.7	-0.1
185-190	0.5	0.1	0.6	0.3
190-195	0.5	0.4	0.9	-1.4
195-200	0.6	0.1	0.8	0.0
200-205	0.5	0.2	0.9	-0.2
205-210	0.6	0.2	1.4	0.2
210-215	0.6	0.5	3.2	0.4
215-220	0.6	0.2	1.5	0.3
220-225	0.5	0.1	0.7	0.3
225-230	0.6	0.3	1.8	-0.0
230-235	0.6	0.2	1.5	0.4
235-240	0.6	0.2	1.7	0.4
FOR THIS RUN:	0.5	0.4	5.1	-4.7

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	878.8	6.2	886.4	865.4
5- 10	878.2	6.0	884.4	865.4
10- 15	878.3	6.6	885.4	861.4
15- 20	877.4	7.4	885.4	861.4
20- 25	878.8	6.7	885.4	864.4
25- 30	880.8	6.0	887.4	865.4
30- 35	877.9	6.6	887.4	866.4
35- 40	878.5	5.9	885.4	863.4
40- 45	877.7	5.9	884.4	861.4
45- 50	875.1	7.0	884.4	860.4
50- 55	876.1	6.8	885.4	861.4
55- 60	878.8	5.9	885.4	865.4
60- 65	879.1	6.1	887.4	863.4
65- 70	878.2	7.5	885.4	862.4
70- 75	878.7	6.5	887.4	863.4
75- 80	879.1	6.1	886.4	865.4
80- 85	876.3	6.2	885.4	863.4
85- 90	878.4	5.5	885.4	863.4
90- 95	878.1	6.3	888.4	861.4
95-100	876.5	7.5	886.4	861.4
100-105	876.9	6.8	887.4	861.4
105-110	878.8	5.1	885.4	864.4
110-115	879.4	5.6	885.4	863.4
115-120	877.8	6.4	885.4	863.4
120-125	878.2	6.3	885.4	863.4
125-130	877.8	6.9	885.4	862.4
130-135	878.2	7.7	886.4	861.4
135-140	878.7	6.5	886.4	862.4
140-145	877.2	5.9	883.4	862.4
145-150	876.6	6.2	885.4	862.4
150-155	878.7	6.6	886.4	865.4
155-160	880.3	5.5	886.4	866.4
160-165	879.3	6.7	887.4	866.4
165-170	880.1	6.2	886.4	864.4
170-175	878.2	7.3	887.4	861.4
175-180	878.6	5.8	885.4	863.4
180-185	878.5	6.2	886.4	861.4
185-190	877.4	7.5	887.4	862.4
190-195	876.2	7.2	885.4	861.4
195-200	878.8	6.5	887.4	862.4
200-205	878.8	6.4	885.4	864.4
205-210	878.4	6.5	887.4	864.4
210-215	878.8	5.8	885.4	863.4
215-220	877.3	6.2	885.4	863.4
220-225	877.4	6.6	886.4	865.4
225-230	878.7	5.5	885.4	865.4
230-235	877.8	6.3	885.4	863.4
235-240	878.6	6.6	888.4	863.4
FOR THIS RUN:	878.2	6.5	888.4	860.4

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	32	0.3	33	32
5- 10	32	0.1	32	31
10- 15	32	0.1	32	32
15- 20	32	0.2	33	32
20- 25	32	0.1	32	32
25- 30	32	0.4	33	31
30- 35	32	0.2	33	32
35- 40	32	0.1	32	32
40- 45	32	0.1	32	31
45- 50	32	0.1	32	31
50- 55	32	0.1	32	31
55- 60	31	0.1	32	31
60- 65	31	0.1	32	31
65- 70	31	0.2	32	31
70- 75	31	0.1	32	31
75- 80	31	0.1	31	31
80- 85	31	0.1	31	31
85- 90	31	0.1	31	31
90- 95	31	0.1	31	31
95-100	31	0.5	34	31
100-105	31	0.1	31	31
105-110	31	0.3	33	31
110-115	31	0.1	32	31
115-120	31	0.1	31	31
120-125	33	7.3	69	31
125-130	31	0.1	32	31
130-135	31	0.0	31	31
135-140	31	0.1	31	31
140-145	31	0.1	32	31
145-150	31	0.0	31	31
150-155	31	0.1	31	31
155-160	31	0.3	32	31
160-165	31	0.1	31	31
165-170	31	0.5	34	31
170-175	31	0.1	31	31
175-180	31	0.1	31	31
180-185	31	0.1	31	31
185-190	31	0.1	31	31
190-195	31	0.1	31	31
195-200	31	0.1	31	31
200-205	31	0.2	32	31
205-210	31	0.0	31	31
210-215	31	0.1	31	30
215-220	31	0.1	31	30
220-225	31	0.3	32	30
225-230	31	0.1	31	30
230-235	31	0.1	31	31
235-240	31	0.1	31	30
FOR THIS RUN:	31	1.1	69	30

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	546	6.8	561	531
5- 10	544	4.9	551	534
10- 15	523	17.8	564	490
15- 20	564	13.3	579	529
20- 25	579	7.2	592	563
25- 30	558	8.1	566	539
30- 35	531	8.4	546	518
35- 40	514	8.3	525	500
40- 45	504	13.3	520	479
45- 50	499	17.1	530	467
50- 55	558	10.4	577	537
55- 60	557	14.6	579	532
60- 65	550	13.7	578	522
65- 70	549	17.0	576	511
70- 75	558	12.1	575	533
75- 80	540	20.3	571	510
80- 85	525	28.8	560	461
85- 90	542	10.7	557	524
90- 95	531	12.6	555	509
95-100	529	8.4	542	514
100-105	558	15.7	581	531
105-110	554	13.3	579	529
110-115	555	11.0	573	527
115-120	533	16.3	559	503
120-125	550	16.1	580	523
125-130	551	10.2	572	532
130-135	549	12.2	564	519
135-140	519	14.2	547	489
140-145	528	12.3	550	505
145-150	560	12.8	580	537
150-155	572	9.3	589	554
155-160	575	3.9	584	568
160-165	566	10.8	584	547
165-170	543	8.3	560	528
170-175	535	10.2	560	520
175-180	532	11.8	549	509
180-185	537	5.0	545	526
185-190	521	12.2	545	497
190-195	544	11.9	558	522
195-200	550	7.0	561	536
200-205	552	8.8	565	535
205-210	549	13.2	573	525
210-215	545	8.6	561	523
215-220	540	9.3	555	522
220-225	540	9.4	556	521
225-230	538	9.7	552	516
230-235	542	9.4	554	520
235-240	554	8.7	567	532
FOR THIS RUN:	544	20.8	592	461

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	797	33.8	897	734
5- 10	786	25.6	839	736
10- 15	833	50.0	964	756
15- 20	800	59.6	928	679
20- 25	735	23.7	776	688
25- 30	672	31.5	734	609
30- 35	684	48.3	794	609
35- 40	752	40.0	824	675
40- 45	845	47.8	978	755
45- 50	930	55.3	1054	838
50- 55	948	45.5	1050	885
55- 60	884	35.4	951	824
60- 65	879	65.7	1055	798
65- 70	869	57.7	1026	782
70- 75	841	48.6	948	761
75- 80	828	54.3	1018	736
80- 85	882	92.1	1117	737
85- 90	879	47.0	1019	801
90- 95	911	65.8	1056	802
95-100	935	52.7	1035	829
100-105	930	48.1	1020	852
105-110	888	36.4	961	832
110-115	859	44.0	972	800
115-120	861	49.7	998	780
120-125	853	53.8	1054	779
125-130	851	53.0	983	753
130-135	818	57.2	1002	734
135-140	863	69.6	1092	779
140-145	922	51.9	1062	842
145-150	882	45.5	964	810
150-155	818	51.2	966	743
155-160	752	37.4	857	693
160-165	692	28.4	756	651
165-170	674	27.9	738	624
170-175	696	46.2	809	623
175-180	716	59.9	904	647
180-185	745	35.6	815	692
185-190	789	59.1	931	710
190-195	807	28.2	882	762
195-200	787	33.1	859	744
200-205	768	31.9	837	716
205-210	757	38.7	865	701
210-215	747	32.3	815	691
215-220	759	52.8	877	685
220-225	769	35.8	859	717
225-230	777	39.3	870	730
230-235	792	32.7	844	726
235-240	767	34.6	857	704
FOR THIS RUN:	813	87.5	1117	609

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	436	17.7	491	403
5- 10	427	13.4	455	401
10- 15	436	26.2	500	393
15- 20	451	34.1	491	369
20- 25	426	16.6	448	396
25- 30	375	17.6	408	331
30- 35	363	22.8	416	325
35- 40	387	18.5	423	354
40- 45	425	17.8	475	390
45- 50	464	30.3	514	409
50- 55	529	22.0	566	492
55- 60	492	21.2	531	447
60- 65	483	30.0	572	443
65- 70	477	30.3	543	434
70- 75	469	28.2	528	416
75- 80	447	30.0	533	388
80- 85	463	48.5	560	348
85- 90	477	25.3	544	432
90- 95	483	31.2	544	422
95-100	494	26.2	546	444
100-105	519	25.8	567	476
105-110	491	18.6	540	467
110-115	477	22.2	525	435
115-120	459	25.8	504	410
120-125	469	27.1	565	435
125-130	469	28.6	543	416
130-135	449	28.8	520	398
135-140	448	31.3	534	393
140-145	487	26.6	551	444
145-150	494	21.0	532	457
150-155	467	25.5	536	426
155-160	433	20.7	488	402
160-165	391	21.2	433	360
165-170	366	13.8	390	336
170-175	372	23.0	426	336
175-180	380	28.3	466	342
180-185	400	17.7	438	377
185-190	411	27.8	480	371
190-195	439	16.9	472	410
195-200	433	16.4	465	403
200-205	423	15.7	449	398
205-210	415	20.5	469	378
210-215	407	17.1	451	373
215-220	410	26.2	462	371
220-225	415	17.8	464	383
225-230	418	19.6	458	389
230-235	429	18.9	460	388
235-240	425	18.7	456	385
FOR THIS RUN:	442	46.8	572	325

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	60.7	5.7	68.5	45.9
5- 10	60.7	4.5	68.0	51.4
10- 15	58.5	10.9	75.8	28.5
15- 20	63.0	8.4	71.3	39.6
20- 25	63.8	4.2	71.3	54.2
25- 30	58.4	4.6	63.5	44.6
30- 35	56.8	7.3	65.3	34.3
35- 40	56.8	6.1	65.0	37.5
40- 45	55.9	7.4	67.3	38.0
45- 50	61.5	9.0	76.6	41.1
50- 55	66.1	6.6	74.8	49.4
55- 60	63.4	7.0	75.6	50.1
60- 65	63.6	10.1	78.6	33.5
65- 70	61.9	8.3	75.3	37.3
70- 75	63.2	7.9	75.3	42.1
75- 80	59.9	8.2	71.8	31.0
80- 85	60.7	16.1	82.1	17.4
85- 90	63.4	7.1	77.4	46.1
90- 95	59.8	10.6	73.6	31.0
95-100	63.1	7.9	82.6	49.6
100-105	64.6	8.8	79.6	46.6
105-110	62.7	6.2	72.6	48.6
110-115	64.4	6.3	74.1	50.4
115-120	60.6	9.9	77.4	36.5
120-125	64.1	9.5	77.1	33.5
125-130	61.1	7.8	75.1	42.1
130-135	62.7	8.7	73.6	38.3
135-140	58.3	10.9	82.9	28.5
140-145	60.8	11.0	75.3	20.4
145-150	67.3	6.7	78.6	55.4
150-155	66.2	6.3	76.9	49.6
155-160	62.8	4.5	68.8	47.9
160-165	59.6	4.0	65.3	48.4
165-170	59.3	4.3	66.0	49.9
170-175	57.0	7.5	67.0	39.3
175-180	59.3	10.4	71.8	26.5
180-185	59.3	6.3	67.8	42.3
185-190	58.1	8.3	67.8	34.8
190-195	62.8	4.7	71.1	53.2
195-200	61.5	6.2	71.8	45.4
200-205	62.3	5.4	69.8	49.1
205-210	60.5	7.4	72.8	44.6
210-215	59.2	5.6	68.3	45.4
215-220	59.2	8.7	69.5	37.0
220-225	60.8	5.2	68.5	47.9
225-230	59.2	7.5	70.6	43.1
230-235	60.6	5.4	70.3	49.4
235-240	61.2	5.4	68.3	45.4
FOR THIS RUN:	61.2	8.2	82.9	17.4

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	10.9	1.4	12.0	4.9
5- 10	5.7	23.0	12.3	-106.3
10- 15	3.9	17.6	12.0	-53.3
15- 20	4.2	24.8	12.5	-106.3
20- 25	9.4	7.7	12.4	-26.3
25- 30	1.0	31.1	11.7	-106.3
30- 35	9.8	2.0	11.4	2.7
35- 40	1.4	22.9	11.3	-89.5
40- 45	8.4	7.4	11.3	-21.7
45- 50	8.6	6.9	11.9	-21.9
50- 55	8.8	9.7	12.9	-25.9
55- 60	8.1	14.2	12.6	-60.7
60- 65	10.2	3.1	12.7	-0.1
65- 70	8.9	8.3	13.6	-22.8
70- 75	9.2	8.2	12.6	-29.1
75- 80	1.6	27.2	12.3	-106.3
80- 85	9.2	6.9	12.2	-22.6
85- 90	2.3	30.4	12.4	-106.3
90- 95	6.4	23.0	12.1	-106.3
95-100	8.8	9.2	12.1	-33.2
100-105	6.6	23.2	12.8	-106.3
105-110	4.3	24.5	12.7	-106.3
110-115	10.3	3.4	12.6	-2.1
115-120	3.9	22.6	12.1	-98.7
120-125	5.8	23.4	12.9	-106.3
125-130	9.0	12.0	12.4	-49.7
130-135	7.4	15.4	12.9	-66.5
135-140	8.9	6.7	11.4	-21.5
140-145	10.9	1.0	11.9	7.2
145-150	9.8	5.6	12.7	-6.9
150-155	5.8	16.5	13.1	-48.6
155-160	-3.2	31.5	12.6	-106.3
160-165	10.1	5.2	13.2	-15.0
165-170	10.0	2.6	11.6	-1.2
170-175	-0.7	32.1	12.1	-106.3
175-180	7.9	8.4	11.6	-26.4
180-185	3.7	21.4	12.2	-74.6
185-190	9.8	3.8	11.8	-8.0
190-195	6.0	23.1	12.3	-106.3
195-200	7.0	16.1	12.2	-69.5
200-205	4.1	20.6	12.2	-87.0
205-210	10.7	1.2	12.1	6.6
210-215	8.7	10.1	12.7	-39.6
215-220	10.8	1.3	11.9	6.0
220-225	5.0	20.1	11.9	-76.1
225-230	5.8	22.9	12.4	-106.3
230-235	7.6	13.6	12.0	-56.8
235-240	4.4	22.3	12.3	-86.0
FOR THIS RUN:	6.8	17.6	13.6	-106.3

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.7	0.1	0.8	0.3
5- 10	0.3	1.5	0.8	-6.7
10- 15	0.2	1.1	0.9	-3.5
15- 20	0.2	1.7	0.9	-7.2
20- 25	0.6	0.5	0.8	-1.6
25- 30	0.0	1.9	0.7	-6.6
30- 35	0.6	0.1	0.7	0.2
35- 40	0.0	1.4	0.7	-5.2
40- 45	0.5	0.4	0.7	-1.4
45- 50	0.5	0.5	0.8	-1.6
50- 55	0.6	0.6	0.9	-1.5
55- 60	0.6	0.8	0.9	-3.0
60- 65	0.6	0.2	0.9	-0.0
65- 70	0.5	0.5	0.9	-1.5
70- 75	0.6	0.4	0.9	-1.2
75- 80	0.1	1.7	0.8	-6.7
80- 85	0.5	0.5	0.9	-1.6
85- 90	0.2	1.8	0.9	-6.2
90- 95	0.4	1.3	0.8	-6.1
95-100	0.6	0.6	0.9	-2.3
100-105	0.5	1.3	0.9	-5.7
105-110	0.3	1.6	0.9	-6.7
110-115	0.7	0.2	0.9	-0.1
115-120	0.3	1.3	0.8	-5.5
120-125	0.3	1.8	0.9	-8.2
125-130	0.5	0.8	0.8	-3.2
130-135	0.5	0.9	0.9	-3.7
135-140	0.5	0.4	0.9	-1.2
140-145	0.7	0.1	0.9	0.2
145-150	0.7	0.4	0.9	-0.4
150-155	0.4	1.1	0.9	-3.1
155-160	-0.2	2.0	0.8	-6.9
160-165	0.6	0.3	0.8	-1.0
165-170	0.6	0.2	0.7	-0.1
170-175	-0.0	1.8	0.8	-6.2
175-180	0.5	0.5	0.8	-1.5
180-185	0.2	1.4	0.7	-5.0
185-190	0.6	0.2	0.8	-0.5
190-195	0.4	1.4	0.8	-6.5
195-200	0.4	1.1	0.8	-5.0
200-205	0.3	1.3	0.8	-5.4
205-210	0.6	0.1	0.8	0.4
210-215	0.5	0.6	0.8	-2.1
215-220	0.6	0.1	0.8	0.4
220-225	0.3	1.2	0.8	-4.2
225-230	0.3	1.5	0.8	-6.8
230-235	0.5	0.8	0.8	-3.3
235-240	0.3	1.4	0.8	-5.2
FOR THIS RUN:	0.4	1.1	0.9	-8.2

TABLE 11 (Continued)

RUN NUMBER 3410

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 7.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	892.0	5.6	900.4	883.4
5- 10	891.4	4.6	899.4	881.4
10- 15	894.1	5.5	903.4	883.4
15- 20	891.1	6.1	902.4	883.4
20- 25	891.6	4.1	898.4	883.4
25- 30	894.4	4.9	900.4	884.4
30- 35	890.1	4.8	900.4	884.4
35- 40	893.2	4.8	899.4	884.4
40- 45	892.6	5.6	899.4	883.4
45- 50	889.8	5.2	898.4	879.4
50- 55	889.6	4.3	896.4	883.4
55- 60	894.5	4.2	900.4	884.4
60- 65	891.5	6.0	900.4	882.4
65- 70	891.0	5.7	902.4	878.4
70- 75	893.7	4.5	901.4	885.4
75- 80	891.2	7.0	905.4	879.4
80- 85	889.4	5.7	903.4	880.4
85- 90	894.2	5.1	902.4	883.4
90- 95	892.2	6.9	903.4	880.4
95-100	890.1	5.2	899.4	879.4
100-105	891.6	4.7	899.4	882.4
105-110	892.6	5.4	900.4	881.4
110-115	890.4	5.6	899.4	881.4
115-120	892.4	5.2	898.4	879.4
120-125	893.8	5.4	902.4	882.4
125-130	889.4	4.3	897.4	883.4
130-135	892.3	5.7	904.4	882.4
135-140	893.2	5.8	901.4	884.4
140-145	890.2	5.9	899.4	879.4
145-150	890.8	4.5	899.4	884.4
150-155	894.4	5.3	901.4	883.4
155-160	891.0	5.9	901.4	882.4
160-165	892.6	4.2	899.4	884.4
165-170	893.8	5.5	900.4	883.4
170-175	889.9	4.6	899.4	883.4
175-180	893.2	5.1	900.4	881.4
180-185	893.0	5.7	901.4	884.4
185-190	890.2	5.8	902.4	882.4
190-195	891.8	4.3	898.4	884.4
195-200	892.8	4.9	898.4	884.4
200-205	890.1	4.7	900.4	884.4
205-210	893.7	4.9	899.4	881.4
210-215	893.0	5.5	900.4	884.4
215-220	890.3	4.7	898.4	883.4
220-225	893.4	4.3	900.4	885.4
225-230	891.6	6.6	902.4	880.4
230-235	889.8	4.8	897.4	882.4
235-240	894.4	4.2	900.4	887.4
FOR THIS RUN:	892.0	5.5	905.4	878.4

TABLE 12 - MACHINERY PARAMETERS, RUN 3430

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	43077	1034.6	45270	41749
5- 10	42896	1142.8	44767	40743
10- 15	41186	1086.5	42755	39234
15- 20	40522	965.8	42252	38731
20- 25	40622	1008.8	42252	38731
25- 30	38811	1080.5	40743	37222
30- 35	39073	1221.5	41246	36719
35- 40	38952	965.8	40240	37222
40- 45	39717	1299.9	42252	37725
45- 50	39777	1137.4	41749	37725
50- 55	38188	1287.7	40743	36216
55- 60	37463	1065.8	39234	35713
60- 65	38228	1147.0	39737	36216
65- 70	38872	1133.9	40743	36719
70- 75	39777	1005.2	42252	38228
75- 80	40260	980.3	42252	38228
80- 85	38590	1069.6	41246	36719
85- 90	38751	1059.7	40240	37222
90- 95	38369	1106.8	40240	36719
95-100	38188	1101.3	39737	36216
100-105	38208	1078.6	39737	36216
105-110	37202	1185.9	39234	35713
110-115	36357	1088.3	38228	34707
115-120	36156	1095.8	37725	34204
120-125	36115	1025.9	37222	34204
125-130	35532	994.7	37725	34204
130-135	35451	1182.8	37222	33701
135-140	35109	1120.2	37222	33701
140-145	35532	887.1	36719	33701
145-150	35572	1040.8	37725	34204
150-155	36457	986.9	38228	34204
155-160	35834	1008.8	37725	34204
160-165	35673	1206.5	37725	34204
165-170	35693	1078.6	37222	34204
170-175	36176	1035.0	38228	34204
175-180	36417	1232.1	38228	34707
180-185	37846	1298.3	39737	35210
185-190	38496	1056.3	40240	36719
190-195	40823	1864.1	44767	38228
195-200	42916	1278.2	45270	40743
200-205	40542	1083.5	42252	38731
205-210	41025	1240.9	43258	38731
210-215	41588	885.3	43258	40240
215-220	41870	1217.9	43761	39737
220-225	42393	959.9	44264	40743
225-230	40984	1304.9	43761	38228
230-235	38811	1099.1	41246	37222
235-240	38731	1064.7	40743	36719
240-242	39435	1083.5	41246	37725
FOR THIS RUN:	38649	2515.5	45270	33701

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	58412	1402.9	61386	56612
5- 10	58167	1549.6	60704	55248
10- 15	55848	1473.3	57976	53201
15- 20	54947	1309.6	57294	52519
20- 25	55084	1368.0	57294	52519
25- 30	52628	1465.2	55248	50473
30- 35	52983	1656.4	55930	49791
35- 40	52819	1309.6	54565	50473
40- 45	53856	1762.6	57294	51155
45- 50	53938	1542.4	56612	51155
50- 55	51783	1746.1	55248	49109
55- 60	50800	1445.2	53201	48427
60- 65	51837	1555.4	53883	49109
65- 70	52710	1537.5	55248	49791
70- 75	53938	1363.0	57294	51837
75- 80	54593	1329.3	57294	51837
80- 85	52328	1450.4	55930	49791
85- 90	52547	1436.9	54565	50473
90- 95	52028	1500.8	54565	49791
95-100	51783	1493.3	53883	49109
100-105	51810	1462.6	53883	49109
105-110	50446	1608.1	53201	48427
110-115	49300	1475.8	51837	47063
115-120	49027	1485.8	51155	46381
120-125	48972	1391.2	50473	46381
125-130	48181	1348.8	51155	46381
130-135	48072	1603.9	50473	45699
135-140	47608	1519.0	50473	45699
140-145	48181	1202.9	49791	45699
145-150	48236	1411.3	51155	46381
150-155	49436	1338.2	51837	46381
155-160	48591	1368.0	51155	46381
160-165	48372	1636.1	51155	46381
165-170	48400	1462.6	50473	46381
170-175	49054	1403.4	51837	46381
175-180	49382	1670.7	51837	47063
180-185	51319	1760.5	53883	47745
185-190	52192	1432.3	54565	49791
190-195	55357	2527.7	60704	51837
195-200	58194	1733.3	61386	55248
200-205	54975	1469.2	57294	52519
205-210	55629	1682.7	58658	52519
210-215	56393	1200.4	58658	54565
215-220	56775	1651.4	59340	53883
220-225	57485	1301.6	60022	55248
225-230	55575	1769.4	59340	51837
230-235	52628	1490.3	55930	50473
235-240	52519	1443.7	55248	49791
240-242	53474	1469.2	55930	51155
FOR THIS RUN:	52408	3411.0	61386	45699

TABLE 12 (Continued)

RUN NUMBER 3430

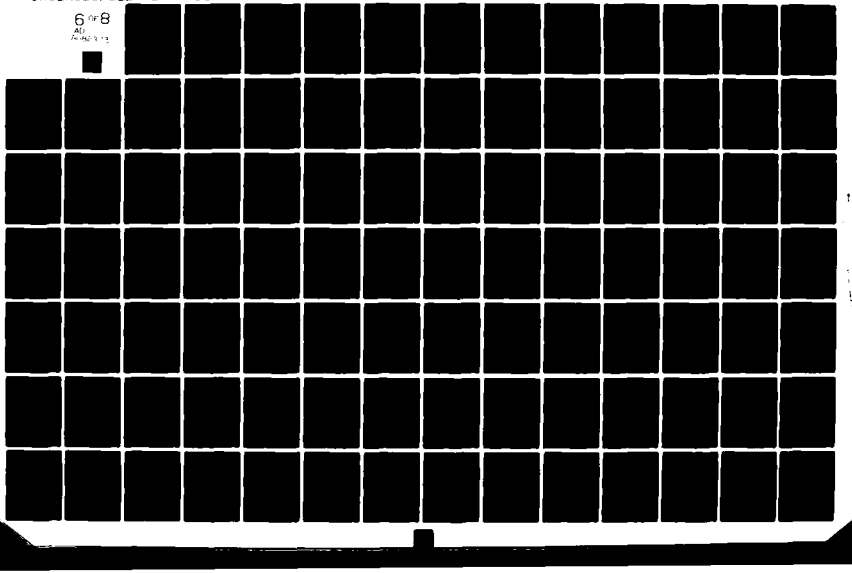
TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	35032	6285.0	48037	24108
5- 10	39602	4526.7	48336	29792
10- 15	40691	2903.8	46242	33381
15- 20	39710	5589.2	48934	30988
20- 25	39100	4441.6	44448	27100
25- 30	38729	3801.7	48336	32783
30- 35	35379	11480.3	44149	4068
35- 40	37233	5320.0	45345	21117
40- 45	34003	6969.1	45943	15135
45- 50	40344	3463.0	47439	30091
50- 55	38430	3570.6	43550	31885
55- 60	37281	5879.3	54019	19323
60- 65	39076	11121.2	74059	5863
65- 70	36755	6434.4	46242	18725
70- 75	30689	12033.2	46542	180
75- 80	39124	9303.3	76452	25903
80- 85	39387	5123.0	47439	28894
85- 90	40535	4825.1	50430	33082
90- 95	39387	6694.6	49233	14238
95-100	39734	4241.2	50430	30091
100-105	37676	7054.8	57609	17528
105-110	35965	3564.2	44747	27698
110-115	38059	5037.7	47140	28894
115-120	37102	4716.5	46542	25604
120-125	35522	3429.9	41158	29193
125-130	37808	3968.1	45644	28894
130-135	35008	4475.1	42952	20818
135-140	36145	4936.1	42952	25305
140-145	37138	5354.7	50131	27698
145-150	36647	5174.4	50131	26501
150-155	38657	3722.3	45644	32783
155-160	35391	3406.7	42653	27100
160-165	38813	4735.9	54917	30390
165-170	36420	3455.9	43850	30390
170-175	38083	4176.0	46542	29792
175-180	36480	4733.0	43850	27698
180-185	35666	9446.8	48635	2872
185-190	36946	6115.2	44149	15135
190-195	31203	8605.4	44448	11546
195-200	38944	6242.7	51028	25903
200-205	39327	4053.2	47738	30091
205-210	37281	13499.4	72265	6162
210-215	38143	4698.1	47738	30091
215-220	35415	6377.7	45046	18725
220-225	37688	7108.4	53421	22015
225-230	38131	4104.1	44747	25305
230-235	41229	3713.1	49233	33979
235-240	39423	5252.7	48336	24707
240-242	36791	9000.3	58506	24707
FOR THIS RUN:	37505	6612.6	76452	180

AD-A082 373 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUC--ETC(U)
FEB 80 D H DRAZIN MIPR-Z51100-8-0012
UNCLASSIFIED DTNSRDC-80/024 NL



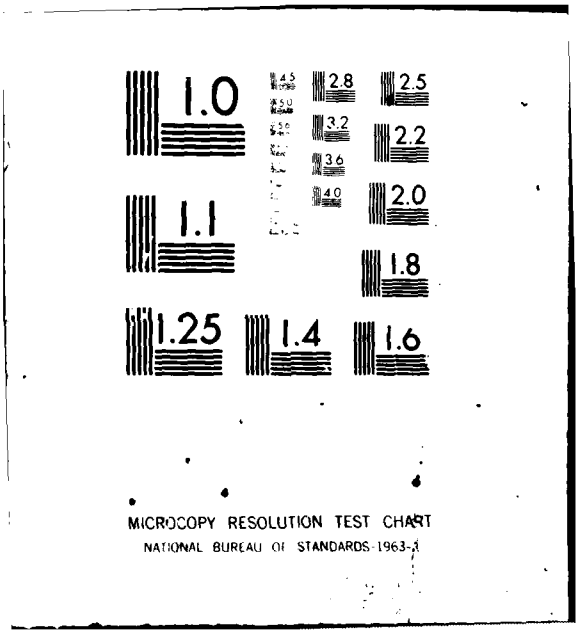

1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
4.5
5.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (N)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	155822	27955.8	213669	107234
5- 10	176151	20134.8	214999	132513
10- 15	180994	12915.9	205686	148478
15- 20	176630	24860.7	217660	137834
20- 25	173916	19756.1	197704	120539
25- 30	172266	16909.8	214999	145817
30- 35	157365	51064.6	196373	18096
35- 40	165614	23663.2	201695	93930
40- 45	151245	30998.5	204356	67322
45- 50	179450	15403.2	211008	133843
50- 55	170935	15882.1	193712	141826
55- 60	165827	26150.9	240277	85948
60- 65	173809	49466.9	329416	26078
65- 70	163485	28620.1	205686	83287
70- 75	136504	53523.6	207017	800
75- 80	174022	41381.3	340060	115217
80- 85	175193	22787.0	211008	128521
85- 90	180302	21462.2	224312	147147
90- 95	175193	29777.7	218991	63330
95-100	176736	18865.0	224312	133843
100-105	167583	31379.8	256243	77965
105-110	159973	15853.4	199034	123200
110-115	169286	22407.8	209678	128521
115-120	165028	20978.9	207017	113887
120-125	158004	15256.2	183069	129852
125-130	168168	17650.1	203025	128521
130-135	155715	19905.2	191052	92600
135-140	160771	21955.8	191052	112556
140-145	165188	23817.5	222982	123200
145-150	163006	23015.8	222982	117878
150-155	171947	16556.8	203025	145817
155-160	157418	15153.0	189721	120539
160-165	172638	21065.1	244269	135174
165-170	161995	15371.8	195043	135174
170-175	169392	18574.7	207017	132513
175-180	162261	21052.4	195043	123200
180-185	158642	42019.5	216330	12774
185-190	164337	27200.5	196373	67322
190-195	138792	38276.7	197704	51356
195-200	173224	27767.4	226973	115217
200-205	174927	18028.5	212338	133843
205-210	165827	60045.3	321434	27409
210-215	169658	20897.2	212338	133843
215-220	157525	28367.8	200365	83287
220-225	167636	31618.4	237617	97921
225-230	169605	18254.8	199034	112556
230-235	183388	16515.7	218991	151139
235-240	175352	23364.1	214999	109895
240-242	163645	40033.3	260234	109895
FOR THIS RUN:	166822	29413.0	340060	800

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2005	56.8	2118	1888
5- 10	2058	47.9	2141	1982
10- 15	2036	53.6	2122	1929
15- 20	1978	49.3	2076	1911
20- 25	2019	58.7	2129	1908
25- 30	1936	53.4	2046	1844
30- 35	1884	58.4	2017	1786
35- 40	1927	55.7	2013	1831
40- 45	1859	64.5	1987	1738
45- 50	1976	60.5	2087	1881
50- 55	1934	66.3	2065	1825
55- 60	1844	59.9	1970	1704
60- 65	1844	52.5	1984	1767
65- 70	1888	57.9	1972	1723
70- 75	1851	56.6	1936	1729
75- 80	1947	56.9	2052	1812
80- 85	1922	55.3	2067	1809
85- 90	1905	52.9	1988	1823
90- 95	1895	60.3	2017	1797
95-100	1895	62.0	1999	1776
100-105	1884	58.1	1976	1800
105-110	1859	56.5	1970	1763
110-115	1825	58.9	1923	1729
115-120	1796	54.2	1880	1685
120-125	1806	52.3	1869	1708
125-130	1760	51.7	1862	1688
130-135	1761	59.2	1858	1663
135-140	1750	56.1	1851	1670
140-145	1747	50.2	1833	1669
145-150	1757	53.2	1876	1688
150-155	1799	49.8	1905	1701
155-160	1782	51.0	1891	1701
160-165	1770	57.0	1865	1685
165-170	1762	52.0	1848	1688
170-175	1790	49.6	1894	1695
175-180	1787	61.1	1887	1693
180-185	1831	73.6	1925	1663
185-190	1842	45.8	1927	1755
190-195	1847	53.3	1943	1766
195-200	2079	84.3	2218	1937
200-205	2037	62.5	2158	1923
205-210	1922	68.4	2039	1748
210-215	2000	46.0	2073	1912
215-220	1984	59.0	2072	1877
220-225	2013	55.6	2114	1916
225-230	2028	66.9	2168	1916
230-235	1942	54.6	2067	1855
235-240	1895	53.8	2005	1809
240-242	1911	50.2	1987	1835
FOR THIS RUN:	1889	189.3	2218	1663

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1495	42.4	1579	1408
5- 10	1534	35.7	1596	1478
10- 15	1518	39.9	1583	1438
15- 20	1475	36.8	1548	1425
20- 25	1506	43.8	1588	1423
25- 30	1444	39.8	1525	1375
30- 35	1405	43.5	1504	1332
35- 40	1437	41.5	1501	1365
40- 45	1386	48.1	1482	1296
45- 50	1473	45.1	1556	1403
50- 55	1442	49.4	1540	1361
55- 60	1375	44.6	1469	1271
60- 65	1375	39.2	1479	1317
65- 70	1408	43.2	1471	1285
70- 75	1380	42.2	1443	1290
75- 80	1452	42.4	1530	1351
80- 85	1433	41.2	1541	1349
85- 90	1420	39.4	1482	1359
90- 95	1413	44.9	1504	1340
95-100	1413	46.2	1491	1324
100-105	1405	43.4	1474	1342
105-110	1386	42.1	1469	1314
110-115	1361	43.9	1434	1290
115-120	1339	40.4	1402	1256
120-125	1347	39.0	1394	1273
125-130	1313	38.6	1388	1259
130-135	1313	44.1	1386	1240
135-140	1305	41.8	1380	1245
140-145	1303	37.5	1367	1244
145-150	1310	39.7	1399	1259
150-155	1342	37.2	1420	1268
155-160	1329	38.0	1410	1268
160-165	1320	42.5	1391	1256
165-170	1314	38.8	1378	1259
170-175	1335	37.0	1412	1264
175-180	1332	45.6	1407	1262
180-185	1365	54.9	1435	1248
185-190	1373	34.2	1437	1309
190-195	1377	39.8	1449	1317
195-200	1550	62.8	1654	1445
200-205	1519	46.6	1609	1434
205-210	1433	51.0	1521	1303
210-215	1491	35.8	1546	1425
215-220	1479	44.0	1545	1400
220-225	1501	41.5	1577	1429
225-230	1512	49.9	1617	1429
230-235	1448	40.7	1541	1383
235-240	1413	40.1	1495	1349
240-242	1425	37.4	1482	1368
FOR THIS RUN:	1408	81.5	1654	1240

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	244.4	2.7	248.5	237.5
5- 10	252.0	2.7	256.2	247.0
10- 15	259.6	1.2	261.7	255.5
15- 20	256.4	2.5	261.2	252.5
20- 25	261.1	5.8	265.7	249.0
25- 30	262.0	1.9	264.7	258.2
30- 35	253.3	8.3	263.2	234.5
35- 40	259.9	2.9	263.7	251.5
40- 45	245.8	2.3	250.5	242.0
45- 50	261.0	7.4	267.2	242.0
50- 55	266.0	0.7	267.2	264.7
55- 60	250.5	6.5	264.7	240.5
60- 65	253.4	6.7	262.7	242.5
65- 70	255.1	4.4	261.7	245.5
70- 75	244.4	6.8	252.5	231.5
75- 80	254.1	5.5	259.2	239.5
80- 85	261.6	1.3	263.2	258.2
85- 90	258.2	3.1	262.7	251.5
90- 95	259.4	2.4	263.2	253.5
95-100	260.7	3.3	264.7	254.0
100-105	259.0	3.0	263.2	254.0
105-110	262.4	1.7	265.2	258.7
110-115	263.7	1.0	265.2	261.7
115-120	260.9	1.4	262.2	258.2
120-125	262.6	1.0	264.2	260.7
125-130	260.2	1.2	262.2	256.7
130-135	260.9	1.1	262.2	259.2
135-140	261.7	0.6	262.7	260.2
140-145	258.2	3.1	262.2	252.5
145-150	259.4	1.4	261.7	256.7
150-155	259.2	2.5	262.2	255.0
155-160	261.2	0.8	263.2	259.2
160-165	260.6	1.7	263.2	257.2
165-170	259.3	0.9	260.7	257.7
170-175	259.9	0.7	260.7	258.2
175-180	257.6	1.4	260.2	255.0
180-185	254.1	5.6	260.2	241.5
185-190	251.4	2.2	257.2	247.5
190-195	238.0	10.6	250.5	222.5
195-200	254.5	10.4	265.2	232.5
200-205	263.8	2.3	268.2	258.7
205-210	246.0	4.5	256.2	237.0
210-215	252.6	3.9	258.7	246.0
215-220	248.9	4.4	255.5	240.0
220-225	249.3	4.8	260.7	240.0
225-230	259.9	3.7	264.7	253.0
230-235	262.9	0.8	264.2	261.7
235-240	257.0	5.1	262.7	248.0
240-242	254.5	1.0	256.2	253.0
FOR THIS RUN:	256.9	7.2	268.2	222.5

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	740	5.8	749	722
5- 10	742	3.2	747	735
10- 15	747	4.0	755	739
15- 20	738	4.4	745	727
20- 25	756	11.9	770	725
25- 30	743	4.3	747	731
30- 35	737	15.9	763	702
35- 40	747	16.1	770	708
40- 45	719	9.7	738	699
45- 50	755	9.7	767	724
50- 55	754	1.2	755	751
55- 60	733	15.1	750	695
60- 65	736	15.9	756	699
65- 70	742	11.6	758	711
70- 75	724	12.3	747	699
75- 80	749	5.6	758	739
80- 85	752	3.6	758	742
85- 90	744	8.3	756	725
90- 95	739	7.2	754	720
95-100	745	9.4	755	716
100-105	739	3.9	744	727
105-110	745	5.8	755	726
110-115	751	2.5	754	745
115-120	743	4.3	750	734
120-125	747	2.8	751	741
125-130	742	3.5	745	732
130-135	743	3.8	747	731
135-140	746	1.2	747	742
140-145	735	9.1	746	712
145-150	738	4.1	744	729
150-155	739	6.5	747	726
155-160	742	2.1	745	737
160-165	740	4.6	745	730
165-170	740	4.0	746	730
170-175	739	1.7	741	735
175-180	733	4.0	740	722
180-185	734	15.3	751	686
185-190	719	5.9	731	702
190-195	714	14.4	734	688
195-200	756	10.7	766	729
200-205	750	8.7	764	732
205-210	728	12.7	746	700
210-215	736	7.1	746	722
215-220	734	6.1	749	723
220-225	753	8.9	769	732
225-230	750	6.1	757	731
230-235	744	1.7	746	741
235-240	734	8.5	744	710
240-242	736	4.9	743	727
FOR THIS RUN:	741	12.4	770	686

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2190	50.2	2281	2086
5- 10	2198	27.4	2254	2149
10- 15	2164	21.6	2238	2141
15- 20	2161	37.8	2252	2103
20- 25	2094	63.2	2355	1994
25- 30	2053	33.0	2194	2023
30- 35	2047	117.3	2353	1853
35- 40	2058	52.5	2250	1993
40- 45	2127	78.1	2317	2021
45- 50	2085	39.5	2251	2041
50- 55	2013	19.2	2049	1987
55- 60	2023	88.7	2371	1964
60- 65	2025	104.1	2298	1895
65- 70	2046	96.4	2328	1908
70- 75	2102	125.0	2373	1907
75- 80	2088	94.1	2292	1918
80- 85	2066	46.7	2225	2018
85- 90	2062	78.8	2257	1971
90- 95	2051	71.5	2275	1963
95-100	2021	85.9	2355	1927
100-105	2019	63.6	2250	1967
105-110	1981	40.5	2100	1921
110-115	1941	16.2	1984	1920
115-120	1932	50.9	2123	1904
120-125	1911	9.8	1941	1893
125-130	1906	21.6	1977	1885
130-135	1911	39.8	2083	1885
135-140	1895	7.8	1921	1881
140-145	1911	44.0	2076	1867
145-150	1940	44.6	2069	1895
150-155	1947	26.1	2014	1914
155-160	1937	11.9	1977	1924
160-165	1936	28.8	2050	1914
165-170	1943	28.5	2050	1920
170-175	1952	18.7	2003	1930
175-180	1982	44.8	2120	1940
180-185	2020	103.7	2378	1865
185-190	2096	56.3	2231	2000
190-195	2195	80.4	2408	2087
195-200	2176	49.3	2261	2110
200-205	2118	34.7	2210	2066
205-210	2146	104.7	2321	1946
210-215	2168	41.0	2232	2071
215-220	2184	52.8	2331	2084
220-225	2165	82.1	2350	2014
225-230	2121	77.4	2443	2040
230-235	2079	11.7	2116	2063
235-240	2089	54.4	2265	2014
240-242	2115	68.4	2261	2047
FOR THIS RUN:	2048	110.0	2443	1853

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1620	38.6	1696	1527
5- 10	1630	20.3	1669	1593
10- 15	1616	17.8	1653	1591
15- 20	1595	26.0	1652	1554
20- 25	1582	45.3	1708	1479
25- 30	1526	22.6	1613	1497
30- 35	1508	72.3	1676	1341
35- 40	1538	40.9	1686	1476
40- 45	1529	58.8	1661	1439
45- 50	1573	39.0	1705	1500
50- 55	1517	15.8	1545	1492
55- 60	1483	50.0	1648	1369
60- 65	1490	70.6	1635	1369
65- 70	1518	62.0	1656	1398
70- 75	1520	80.5	1725	1383
75- 80	1564	68.3	1693	1417
80- 85	1554	31.7	1651	1511
85- 90	1533	50.6	1654	1450
90- 95	1516	45.9	1644	1439
95-100	1506	56.7	1686	1405
100-105	1492	45.5	1664	1447
105-110	1476	26.8	1558	1418
110-115	1457	14.6	1478	1437
115-120	1436	34.0	1559	1412
120-125	1428	10.3	1444	1408
125-130	1414	14.3	1452	1388
130-135	1421	25.6	1523	1391
135-140	1413	5.6	1426	1402
140-145	1405	29.3	1504	1349
145-150	1432	29.2	1519	1396
150-155	1438	21.4	1480	1408
155-160	1438	7.1	1458	1429
160-165	1433	19.1	1497	1408
165-170	1438	18.8	1496	1415
170-175	1442	12.4	1472	1426
175-180	1452	27.9	1531	1428
180-185	1481	68.2	1632	1312
185-190	1508	39.2	1592	1439
190-195	1567	49.3	1699	1494
195-200	1645	40.5	1720	1564
200-205	1588	30.7	1653	1543
205-210	1562	70.1	1678	1413
210-215	1596	28.0	1638	1536
215-220	1604	35.6	1706	1528
220-225	1630	53.1	1735	1502
225-230	1590	52.6	1785	1501
230-235	1548	9.6	1568	1528
235-240	1533	34.3	1624	1458
240-242	1557	43.9	1656	1513
FOR THIS RUN:	1517	79.3	1785	1312

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	74.4	6.3	89.0	68.1
5- 10	69.6	4.0	83.0	66.3
10- 15	69.1	2.1	78.7	67.3
15- 20	70.9	3.6	85.7	67.8
20- 25	69.9	7.3	103.1	66.1
25- 30	69.1	0.7	70.4	67.8
30- 35	72.7	7.3	103.9	67.8
35- 40	68.1	2.0	74.7	65.3
40- 45	74.2	9.5	102.1	67.6
45- 50	68.3	2.6	79.4	65.6
50- 55	69.1	0.5	69.9	68.1
55- 60	71.0	6.9	103.6	68.1
60- 65	70.9	4.9	85.5	66.6
65- 70	70.6	7.3	104.4	66.8
70- 75	75.5	10.6	106.7	67.8
75- 80	70.1	7.4	94.1	65.3
80- 85	68.9	1.1	72.6	67.6
85- 90	70.1	3.8	87.5	67.3
90- 95	70.4	5.6	97.1	67.6
95-100	70.8	7.0	103.6	67.3
100-105	68.7	1.7	75.7	66.6
105-110	69.3	0.8	70.9	68.4
110-115	68.9	0.7	70.1	67.8
115-120	69.0	0.5	69.9	68.1
120-125	69.1	0.6	69.9	68.1
125-130	69.0	0.6	69.9	68.1
130-135	69.0	0.6	70.1	68.1
135-140	69.1	0.6	70.1	68.1
140-145	69.0	0.7	70.1	68.1
145-150	69.0	0.6	70.1	68.1
150-155	69.1	0.6	70.1	68.1
155-160	69.0	0.6	70.1	68.1
160-165	69.0	0.6	70.1	68.4
165-170	69.1	0.6	69.9	68.1
170-175	68.9	0.7	69.9	67.8
175-180	69.0	0.6	70.1	68.1
180-185	70.6	7.6	106.2	66.1
185-190	69.5	1.7	74.1	67.1
190-195	78.3	11.1	107.7	68.6
195-200	70.0	5.5	87.0	64.8
200-205	68.8	1.5	74.4	66.8
205-210	76.4	12.0	110.7	65.6
210-215	70.3	4.6	89.5	66.6
215-220	74.8	7.9	97.8	68.1
220-225	73.3	9.6	100.6	64.8
225-230	69.1	6.7	100.6	64.6
230-235	68.9	0.7	70.1	67.3
235-240	71.1	6.5	101.4	68.1
240-242	70.8	3.8	79.9	67.8
FOR THIS RUN:	70.4	5.7	110.7	64.6

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	32.2	0.5	33.5	31.4
5- 10	30.3	0.6	31.5	29.5
10- 15	29.4	0.1	29.7	29.2
15- 20	29.7	0.4	30.5	29.1
20- 25	30.0	1.0	32.1	28.9
25- 30	29.1	0.1	29.3	28.9
30- 35	30.5	1.1	32.6	29.0
35- 40	29.3	0.4	30.5	28.9
40- 45	30.6	0.7	31.9	29.3
45- 50	29.7	0.8	31.9	29.0
50- 55	29.2	0.0	29.2	29.1
55- 60	29.4	0.5	31.0	29.0
60- 65	30.0	0.6	31.3	29.0
65- 70	30.2	0.7	31.7	29.0
70- 75	31.4	1.4	33.9	29.6
75- 80	30.5	1.0	32.5	29.5
80- 85	29.1	0.1	29.3	29.0
85- 90	29.5	0.3	30.1	29.2
90- 95	29.4	0.5	30.4	29.0
95-100	29.7	0.5	30.6	29.2
100-105	29.5	0.5	30.7	29.0
105-110	29.3	0.2	29.9	28.9
110-115	29.2	0.1	29.3	29.1
115-120	29.2	0.1	29.3	28.9
120-125	29.2	0.0	29.3	29.1
125-130	29.2	0.0	29.3	29.1
130-135	29.2	0.0	29.3	29.1
135-140	29.2	0.0	29.2	29.1
140-145	29.2	0.1	29.4	29.0
145-150	29.2	0.1	29.3	29.0
150-155	29.2	0.0	29.3	29.1
155-160	29.2	0.0	29.3	29.1
160-165	29.2	0.0	29.3	29.1
165-170	29.2	0.1	29.3	29.0
170-175	29.2	0.1	29.3	29.1
175-180	29.2	0.1	29.3	29.0
180-185	29.9	0.8	31.4	29.0
185-190	29.3	0.3	30.2	28.9
190-195	32.2	2.0	35.3	29.5
195-200	31.0	1.3	33.8	29.5
200-205	29.2	0.1	29.5	29.0
205-210	31.5	1.0	33.5	29.7
210-215	30.4	0.7	31.4	29.3
215-220	31.2	1.1	33.6	29.7
220-225	32.1	1.1	34.7	30.1
225-230	29.8	0.7	31.2	28.8
230-235	29.1	0.1	29.2	29.0
235-240	29.7	0.7	31.2	29.0
240-242	30.0	0.1	30.3	29.9
FOR THIS RUN:	29.8	1.1	35.3	28.8

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.4	0.2	2.8	2.2
5- 10	2.1	0.1	2.5	2.0
10- 15	2.0	0.1	2.3	2.0
15- 20	2.1	0.1	2.5	2.0
20- 25	2.1	0.3	3.2	1.9
25- 30	2.0	0.0	2.0	2.0
30- 35	2.2	0.3	3.2	2.0
35- 40	2.0	0.1	2.2	1.9
40- 45	2.3	0.3	3.2	2.0
45- 50	2.0	0.1	2.3	1.9
50- 55	2.0	0.0	2.0	2.0
55- 60	2.1	0.2	3.2	2.0
60- 65	2.1	0.2	2.5	2.0
65- 70	2.1	0.3	3.3	2.0
70- 75	2.4	0.4	3.6	2.0
75- 80	2.1	0.2	2.9	1.9
80- 85	2.0	0.0	2.1	2.0
85- 90	2.1	0.1	2.6	2.0
90- 95	2.1	0.2	2.9	2.0
95-100	2.1	0.2	3.1	2.0
100-105	2.0	0.1	2.3	2.0
105-110	2.0	0.0	2.1	2.0
110-115	2.0	0.0	2.0	2.0
115-120	2.0	0.0	2.0	2.0
120-125	2.0	0.0	2.0	2.0
125-130	2.0	0.0	2.0	2.0
130-135	2.0	0.0	2.0	2.0
135-140	2.0	0.0	2.0	2.0
140-145	2.0	0.0	2.0	2.0
145-150	2.0	0.0	2.0	2.0
150-155	2.0	0.0	2.0	2.0
155-160	2.0	0.0	2.1	2.0
160-165	2.0	0.0	2.0	2.0
165-170	2.0	0.0	2.0	2.0
170-175	2.0	0.0	2.0	2.0
175-180	2.0	0.0	2.0	2.0
180-185	2.1	0.3	3.3	1.9
185-190	2.0	0.1	2.2	2.0
190-195	2.5	0.5	3.7	2.0
195-200	2.2	0.2	2.7	2.0
200-205	2.0	0.0	2.2	2.0
205-210	2.4	0.4	3.6	2.0
210-215	2.1	0.2	2.8	2.0
215-220	2.3	0.3	3.0	2.0
220-225	2.4	0.4	3.3	2.0
225-230	2.1	0.2	3.1	1.9
230-235	2.0	0.0	2.0	2.0
235-240	2.1	0.2	3.2	2.0
240-242	2.1	0.1	2.4	2.0
FOR THIS RUN:	2.1	0.2	3.7	1.9

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	24	0.1	24	24
5- 10	24	0.5	26	24
10- 15	24	0.1	25	24
15- 20	24	0.1	25	24
20- 25	25	0.1	25	24
25- 30	25	0.2	25	24
30- 35	25	0.1	25	25
35- 40	25	0.2	25	24
40- 45	25	0.3	26	24
45- 50	25	0.2	26	25
50- 55	25	0.1	26	25
55- 60	25	0.1	26	25
60- 65	26	0.3	27	25
65- 70	26	0.1	26	26
70- 75	26	0.1	26	26
75- 80	26	0.1	26	26
80- 85	26	0.5	29	26
85- 90	26	0.3	28	26
90- 95	26	0.1	27	26
95-100	26	0.1	27	26
100-105	27	0.3	28	26
105-110	27	0.1	27	26
110-115	27	0.1	27	27
115-120	27	0.1	27	27
120-125	27	0.1	27	27
125-130	27	0.1	27	27
130-135	27	0.1	27	27
135-140	27	0.1	27	27
140-145	27	0.1	27	27
145-150	28	0.3	29	27
150-155	28	0.2	28	27
155-160	28	0.1	28	28
160-165	28	0.1	28	28
165-170	28	0.2	29	28
170-175	28	0.4	30	28
175-180	28	0.3	30	28
180-185	28	0.1	28	28
185-190	28	0.1	28	28
190-195	28	0.1	28	28
195-200	28	0.3	30	28
200-205	28	0.1	29	28
205-210	28	0.1	29	28
210-215	29	0.1	29	28
215-220	29	0.1	29	28
220-225	29	0.2	30	29
225-230	29	0.1	29	29
230-235	30	2.8	42	29
235-240	29	0.1	29	29
240-242	29	0.1	29	29
FOR THIS RUN:	27	1.6	42	24

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	749	5.4	759	733
5- 10	749	1.9	752	745
10- 15	755	1.7	757	748
15- 20	747	4.0	753	737
20- 25	765	12.0	780	735
25- 30	753	4.3	757	741
30- 35	745	16.8	768	705
35- 40	752	14.0	771	718
40- 45	727	9.4	740	709
45- 50	763	9.7	775	733
50- 55	764	1.2	765	761
55- 60	743	16.4	760	697
60- 65	742	15.8	759	706
65- 70	749	11.1	760	718
70- 75	730	11.7	749	704
75- 80	755	6.9	768	742
80- 85	753	3.8	759	742
85- 90	747	7.9	758	725
90- 95	749	7.4	763	730
95-100	756	9.4	765	726
100-105	749	4.1	754	737
105-110	755	5.7	762	736
110-115	756	2.9	760	750
115-120	749	4.2	754	740
120-125	753	2.9	756	746
125-130	747	3.4	750	738
130-135	749	3.7	752	736
135-140	751	1.1	753	748
140-145	741	8.4	751	721
145-150	745	4.0	750	735
150-155	745	6.6	754	732
155-160	750	2.1	753	744
160-165	748	4.7	753	737
165-170	745	2.7	748	737
170-175	746	1.8	748	742
175-180	741	4.1	748	730
180-185	741	15.8	760	692
185-190	725	6.5	739	710
190-195	720	12.4	736	696
195-200	764	10.8	774	736
200-205	758	8.6	772	741
205-210	736	13.1	754	708
210-215	744	7.1	755	730
215-220	741	5.0	750	731
220-225	759	9.2	773	737
225-230	758	6.4	766	739
230-235	753	1.7	754	749
235-240	742	8.5	752	718
240-242	744	4.8	751	736
FOR THIS RUN:	748	12.6	780	692

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1084	25.8	1132	1031
5- 10	1089	13.9	1117	1062
10- 15	1072	10.8	1109	1058
15- 20	1070	18.9	1117	1041
20- 25	1037	31.3	1170	988
25- 30	1016	16.8	1089	1001
30- 35	1014	57.9	1166	916
35- 40	1019	26.0	1114	985
40- 45	1053	40.5	1151	997
45- 50	1032	19.9	1118	1010
50- 55	996	9.7	1015	983
55- 60	1001	44.6	1175	970
60- 65	1003	50.9	1137	940
65- 70	1012	47.4	1154	948
70- 75	1040	63.5	1178	944
75- 80	1034	48.7	1141	946
80- 85	1023	23.6	1104	997
85- 90	1021	39.5	1118	975
90- 95	1016	36.6	1131	970
95-100	1000	44.0	1172	953
100-105	999	33.1	1119	971
105-110	981	20.6	1042	953
110-115	961	7.5	981	949
115-120	955	25.4	1051	942
120-125	945	5.1	958	936
125-130	943	11.1	977	932
130-135	945	20.2	1032	930
135-140	937	3.3	948	932
140-145	945	22.3	1030	924
145-150	959	22.7	1024	939
150-155	963	13.6	998	948
155-160	958	6.2	978	951
160-165	958	15.2	1017	947
165-170	961	14.9	1018	949
170-175	966	9.7	991	954
175-180	981	22.7	1051	959
180-185	1000	51.6	1178	917
185-190	1038	27.9	1106	991
190-195	1086	41.4	1197	1032
195-200	1078	24.8	1121	1044
200-205	1049	17.6	1098	1022
205-210	1063	51.4	1150	968
210-215	1074	20.7	1104	1027
215-220	1082	26.7	1156	1031
220-225	1072	41.0	1163	995
225-230	1050	39.2	1215	1007
230-235	1029	6.0	1049	1020
235-240	1035	27.3	1122	997
240-242	1046	34.8	1121	1014
FOR THIS RUN:	1014	55.1	1215	916

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	812	20.2	852	764
5- 10	816	9.9	833	796
10- 15	809	7.2	830	796
15- 20	800	13.2	830	777
20- 25	794	22.4	859	742
25- 30	765	11.8	811	749
30- 35	754	37.1	843	666
35- 40	766	19.0	839	739
40- 45	765	30.3	835	720
45- 50	788	19.0	853	750
50- 55	761	8.0	775	748
55- 60	743	24.8	820	683
60- 65	744	35.3	814	684
65- 70	758	31.1	828	699
70- 75	759	41.8	869	694
75- 80	781	34.9	848	709
80- 85	770	16.0	819	748
85- 90	763	25.9	822	717
90- 95	761	23.4	829	721
95-100	755	29.4	851	704
100-105	749	23.9	839	724
105-110	740	13.9	784	712
110-115	726	7.2	738	716
115-120	715	17.2	777	703
120-125	711	5.4	717	700
125-130	704	7.3	722	694
130-135	707	13.1	760	693
135-140	704	2.5	709	700
140-145	700	14.8	752	673
145-150	715	15.0	760	698
150-155	718	11.1	740	697
155-160	718	3.6	728	713
160-165	716	10.1	750	705
165-170	716	9.7	750	704
170-175	721	6.4	736	712
175-180	726	14.3	767	709
180-185	740	34.2	815	651
185-190	753	19.5	797	721
190-195	781	25.0	852	746
195-200	823	21.1	861	783
200-205	795	15.3	826	772
205-210	782	35.0	842	708
210-215	799	13.9	821	770
215-220	802	18.7	855	763
220-225	814	26.7	873	749
225-230	796	27.0	897	749
230-235	775	4.9	785	766
235-240	768	17.3	813	729
240-242	778	23.0	830	757
FOR THIS RUN:	758	40.5	897	651

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	83.4	5.1	91.4	73.9
5- 10	80.4	3.3	86.1	73.1
10- 15	81.7	1.9	85.3	75.4
15- 20	80.3	3.4	84.8	70.6
20- 25	83.1	6.3	92.7	63.2
25- 30	79.9	3.0	83.3	66.8
30- 35	79.9	9.5	93.2	57.3
35- 40	78.8	5.0	88.4	65.2
40- 45	79.5	6.2	93.7	65.5
45- 50	83.6	4.3	90.6	68.5
50- 55	81.0	1.3	83.8	79.0
55- 60	75.3	7.8	82.3	46.9
60- 65	79.7	8.4	88.1	58.9
65- 70	80.2	7.2	89.9	60.7
70- 75	78.7	10.3	95.7	52.3
75- 80	81.8	8.8	97.0	63.2
80- 85	80.4	4.0	85.1	65.0
85- 90	80.1	6.9	87.1	60.7
90- 95	79.9	6.1	86.6	61.7
95-100	80.5	6.8	86.8	53.8
100-105	79.8	6.0	87.3	58.4
105-110	80.7	3.8	84.5	68.0
110-115	79.7	1.1	82.0	77.4
115-120	79.2	3.8	84.0	65.0
120-125	79.0	1.4	81.2	75.4
125-130	78.5	1.9	81.7	73.1
130-135	78.5	3.4	81.2	65.0
135-140	78.9	0.8	80.5	77.4
140-145	77.2	4.5	81.2	56.8
145-130	78.3	4.4	82.0	65.0
150-155	79.3	3.2	82.8	68.0
155-160	79.7	0.9	81.7	77.9
160-165	77.9	2.8	81.0	67.5
165-170	78.4	2.6	83.0	69.5
170-175	79.0	1.7	81.5	75.1
175-180	77.0	4.1	82.3	65.0
180-185	79.7	7.8	91.7	55.3
185-190	77.1	4.6	89.9	68.0
190-195	80.0	8.0	93.2	59.9
195-200	86.1	4.4	95.2	73.9
200-205	80.5	3.6	84.5	68.8
205-210	79.7	9.2	93.9	58.6
210-215	82.1	3.8	89.9	75.6
215-220	83.1	5.6	92.7	69.0
220-225	83.5	7.0	96.0	65.7
225-230	81.0	7.0	89.6	53.3
230-235	80.9	1.2	82.5	76.2
235-240	79.3	3.7	83.0	66.0
240-242	80.4	5.5	85.6	67.8
FOR THIS RUN:	80.1	5.7	97.0	46.9

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	13.9	2.0	15.1	4.7
5- 10	12.1	6.5	14.8	-16.2
10- 15	13.9	1.3	14.9	8.8
15- 20	14.0	0.6	14.8	12.9
20- 25	14.2	1.0	15.6	11.7
25- 30	11.0	16.1	20.8	-67.8
30- 35	12.3	5.8	14.9	-15.5
35- 40	13.8	0.8	15.2	12.1
40- 45	13.5	0.9	14.6	10.3
45- 50	10.3	18.8	15.2	-81.6
50- 55	13.6	2.3	14.8	3.1
55- 60	9.5	18.5	14.4	-81.1
60- 65	13.4	1.6	14.8	7.9
65- 70	13.4	3.6	22.2	2.2
70- 75	13.5	0.5	14.6	12.5
75- 80	12.8	4.7	15.0	-5.6
80- 85	14.0	1.3	19.1	11.3
85- 90	11.4	7.3	14.7	-17.1
90- 95	10.3	16.4	21.2	-68.3
95-100	12.7	4.8	14.9	-8.2
100-105	13.9	0.5	14.5	12.8
105-110	13.8	1.1	14.8	9.4
110-115	13.7	0.9	14.5	10.1
115-120	11.1	10.4	14.4	-39.4
120-125	14.1	1.4	20.7	12.8
125-130	12.1	4.0	14.3	-2.8
130-135	13.3	1.3	14.3	8.4
135-140	10.5	13.5	14.4	-53.8
140-145	13.0	4.3	21.5	-6.3
145-150	13.4	0.8	14.4	10.5
150-155	12.4	5.5	14.5	-14.1
155-160	13.7	3.0	25.8	7.1
160-165	13.5	0.7	14.4	12.1
165-170	14.0	1.2	19.5	12.7
170-175	10.6	14.9	14.3	-62.1
175-180	13.6	0.5	14.2	12.4
180-185	13.9	1.3	18.2	9.9
185-190	13.4	0.6	14.3	11.8
190-195	11.9	6.0	14.4	-15.2
195-200	14.2	1.7	15.5	6.8
200-205	13.4	3.1	15.2	0.3
205-210	13.4	2.2	15.1	3.1
210-215	13.4	3.5	14.7	-3.8
215-220	13.8	0.9	14.9	11.1
220-225	13.9	1.9	15.4	7.8
225-230	13.7	2.8	15.1	0.6
230-235	12.4	4.4	14.6	-1.1
235-240	13.1	2.1	14.7	6.1
240-242	14.0	0.5	14.6	13.1
FOR THIS RUN:	12.9	6.7	25.8	-81.6

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.2	0.2	1.3	0.4
5- 10	1.0	0.5	1.2	-1.3
10- 15	1.1	0.1	1.2	0.7
15- 20	1.1	0.1	1.2	1.0
20- 25	1.2	0.1	1.4	0.9
25- 30	0.9	1.3	1.7	-5.4
30- 35	1.0	0.4	1.3	-1.0
35- 40	1.1	0.1	1.3	0.9
40- 45	1.1	0.1	1.2	0.9
45- 50	0.9	1.6	1.3	-7.0
50- 55	1.1	0.2	1.2	0.2
55- 60	0.7	1.5	1.1	-6.5
60- 65	1.1	0.2	1.3	0.7
65- 70	1.1	0.3	2.0	0.2
70- 75	1.1	0.1	1.3	0.7
75- 80	1.0	0.4	1.4	-0.4
80- 85	1.1	0.1	1.6	0.9
85- 90	0.9	0.6	1.2	-1.4
90- 95	0.8	1.4	1.6	-5.7
95-100	1.0	0.4	1.2	-0.7
100-105	1.1	0.1	1.2	0.8
105-110	1.1	0.1	1.2	0.8
110-115	1.1	0.1	1.2	0.8
115-120	0.9	0.7	1.1	-2.6
120-125	1.1	0.1	1.6	1.0
125-130	0.9	0.3	1.1	-0.2
130-135	1.0	0.1	1.1	0.7
135-140	0.8	1.1	1.1	-4.2
140-145	1.0	0.3	1.7	-0.5
145-150	1.1	0.1	1.2	0.9
150-155	1.0	0.4	1.2	-1.0
155-160	1.1	0.2	2.0	0.6
160-165	1.0	0.1	1.1	0.8
165-170	1.1	0.1	1.6	1.0
170-175	0.8	1.2	1.1	-5.0
175-180	1.0	0.1	1.1	0.9
180-185	1.1	0.2	1.6	0.7
185-190	1.0	0.1	1.2	0.9
190-195	0.9	0.5	1.3	-1.4
195-200	1.2	0.2	1.4	0.6
200-205	1.1	0.3	1.3	0.0
205-210	1.1	0.2	1.4	0.3
210-215	1.1	0.3	1.3	-0.3
215-220	1.1	0.1	1.3	0.9
220-225	1.2	0.1	1.3	0.7
225-230	1.1	0.3	1.3	0.0
230-235	1.0	0.4	1.2	-0.1
235-240	1.0	0.2	1.2	0.5
240-242	1.1	0.1	1.2	1.0
FOR THIS RUN:	1.0	0.5	2.0	-7.0

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	872.8	7.2	882.4	859.4
5- 10	876.2	5.7	881.4	860.4
10- 15	875.2	6.4	882.4	861.4
15- 20	875.8	6.3	883.4	862.4
20- 25	876.9	5.9	885.4	859.4
25- 30	876.5	6.1	883.4	863.4
30- 35	875.0	6.6	887.4	863.4
35- 40	876.0	5.7	883.4	862.4
40- 45	874.3	7.2	883.4	857.4
45- 50	875.4	6.3	883.4	859.4
50- 55	878.0	5.5	883.4	864.4
55- 60	876.1	6.3	882.4	860.4
60- 65	875.6	8.4	888.4	856.4
65- 70	876.0	6.4	885.4	858.4
70- 75	874.8	7.1	886.4	861.4
75- 80	876.4	6.4	887.4	861.4
80- 85	876.4	5.3	883.4	863.4
85- 90	875.2	5.9	884.4	864.4
90- 95	876.8	5.9	886.4	862.4
95-100	875.8	6.4	885.4	861.4
100-105	875.2	6.1	883.4	862.4
105-110	877.0	5.5	884.4	862.4
110-115	877.7	5.7	883.4	862.4
115-120	875.8	6.8	884.4	863.4
120-125	876.1	6.3	883.4	861.4
125-130	877.2	5.2	882.4	862.4
130-135	875.6	6.2	882.4	862.4
135-140	876.3	6.1	882.4	863.4
140-145	877.2	6.1	885.4	862.4
145-150	874.7	6.0	880.4	862.4
150-155	875.3	6.6	882.4	861.4
155-160	876.7	5.6	883.4	862.4
160-165	876.0	6.1	882.4	862.4
165-170	876.0	6.2	882.4	863.4
170-175	876.8	5.5	882.4	860.4
175-180	875.3	6.5	883.4	862.4
180-185	875.2	7.6	886.4	858.4
185-190	875.3	6.1	882.4	859.4
190-195	873.6	6.6	882.4	858.4
195-200	874.4	5.8	882.4	859.4
200-205	876.2	6.8	884.4	862.4
205-210	876.3	6.4	888.4	859.4
210-215	874.9	5.6	881.4	859.4
215-220	874.8	6.8	883.4	859.4
220-225	876.3	5.9	883.4	859.4
225-230	875.7	6.9	884.4	859.4
230-235	876.1	6.6	883.4	862.4
235-240	877.0	5.5	883.4	862.4
240-242	872.9	6.1	881.4	862.4
FOR THIS RUN:	875.8	6.4	888.4	856.4

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	22	0.1	22	22
5- 10	22	0.1	22	22
10- 15	22	0.1	22	22
15- 20	22	0.1	22	22
20- 25	23	0.4	24	22
25- 30	23	0.1	23	22
30- 35	23	0.3	24	22
35- 40	23	0.3	24	23
40- 45	23	0.1	23	23
45- 50	24	4.5	46	23
50- 55	23	0.1	24	23
55- 60	23	0.2	24	23
60- 65	23	0.6	26	23
65- 70	23	0.1	23	23
70- 75	23	0.1	24	23
75- 80	23	0.1	24	23
80- 85	24	0.0	24	23
85- 90	24	0.1	24	23
90- 95	24	0.1	24	24
95-100	24	0.1	24	23
100-105	24	0.1	24	24
105-110	24	1.5	31	23
110-115	24	0.1	24	24
115-120	24	0.1	25	24
120-125	24	0.1	24	24
125-130	24	0.1	24	24
130-135	24	0.2	26	24
135-140	24	0.1	25	24
140-145	24	0.1	25	24
145-150	25	0.1	25	24
150-155	25	0.1	25	24
155-160	25	0.2	25	24
160-165	25	0.1	25	24
165-170	25	0.1	25	25
170-175	25	0.4	27	25
175-180	25	0.1	25	25
180-185	25	0.1	25	25
185-190	25	0.1	25	25
190-195	25	0.1	25	25
195-200	25	0.6	28	24
200-205	25	0.2	25	24
205-210	25	0.5	27	25
210-215	25	0.2	26	25
215-220	25	0.1	26	25
220-225	25	0.1	26	25
225-230	25	0.1	26	25
230-235	25	0.1	26	25
235-240	26	0.1	26	25
240-242	26	0.1	26	26
FOR THIS RUN:	24	1.2	46	22

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	739	5.3	749	723
5- 10	739	1.9	742	735
10- 15	745	1.7	747	738
15- 20	737	4.0	743	727
20- 25	755	12.0	770	725
25- 30	743	4.2	747	731
30- 35	735	16.6	758	696
35- 40	742	13.9	761	708
40- 45	717	9.3	730	700
45- 50	754	9.7	765	724
50- 55	754	1.1	755	751
55- 60	733	16.3	750	688
60- 65	732	15.7	749	697
65- 70	739	11.0	750	708
70- 75	720	11.6	739	695
75- 80	745	6.8	758	732
80- 85	743	3.7	749	732
85- 90	738	7.8	748	716
90- 95	739	7.3	753	720
95-100	746	9.3	755	717
100-105	740	4.1	745	727
105-110	745	5.6	752	727
110-115	746	2.9	750	741
115-120	739	4.1	744	730
120-125	743	2.8	746	737
125-130	737	3.3	741	728
130-135	739	3.7	742	727
135-140	741	1.1	743	738
140-145	731	8.3	741	712
145-150	735	4.0	740	726
150-155	736	6.5	744	723
155-160	740	2.0	743	735
160-165	738	4.7	743	728
165-170	735	2.6	738	728
170-175	737	1.8	739	732
175-180	731	4.1	738	720
180-185	731	15.7	750	682
185-190	716	6.4	729	700
190-195	710	12.3	726	687
195-200	754	10.8	764	726
200-205	748	8.6	763	732
205-210	726	13.0	744	699
210-215	734	7.1	745	721
215-220	732	5.0	740	721
220-225	749	9.1	764	727
225-230	748	6.3	755	729
230-235	743	1.7	745	739
235-240	733	8.4	742	709
240-242	734	4.7	741	726
FOR THIS RUN:	738	12.5	770	682

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1108	25.4	1159	1055
5- 10	1117	14.0	1147	1089
10- 15	1108	11.2	1134	1090
15- 20	1106	22.8	1154	1066
20- 25	1073	33.2	1194	1009
25- 30	1044	18.3	1111	1023
30- 35	1041	56.8	1193	944
35- 40	1066	26.3	1166	1033
40- 45	1079	38.7	1175	1027
45- 50	1058	18.9	1139	1039
50- 55	1033	12.6	1050	1007
55- 60	1028	44.7	1204	996
60- 65	1024	54.4	1166	956
65- 70	1040	49.9	1182	963
70- 75	1067	62.7	1203	964
75- 80	1067	45.0	1156	981
80- 85	1071	21.9	1133	1037
85- 90	1071	34.1	1159	1030
90- 95	1056	34.5	1149	1004
95-100	1036	38.3	1195	991
100-105	1041	32.7	1153	1004
105-110	1017	19.4	1080	974
110-115	997	14.9	1026	975
115-120	992	25.5	1082	969
120-125	975	7.4	987	964
125-130	970	11.3	1006	956
130-135	970	20.0	1055	954
135-140	960	5.1	977	952
140-145	968	22.3	1051	943
145-150	987	22.6	1052	959
150-155	992	13.1	1023	975
155-160	982	7.4	1005	973
160-165	981	14.7	1039	966
165-170	984	13.7	1033	970
170-175	1001	11.6	1029	981
175-180	1027	24.4	1102	996
180-185	1064	50.8	1214	970
185-190	1099	27.9	1171	1053
190-195	1136	37.5	1241	1078
195-200	1123	19.4	1159	1090
200-205	1108	16.4	1144	1082
205-210	1110	53.1	1200	996
210-215	1106	19.3	1141	1058
215-220	1111	28.9	1198	1062
220-225	1118	44.5	1203	1021
225-230	1101	42.3	1261	1039
230-235	1089	9.7	1101	1068
235-240	1078	29.0	1157	1032
240-242	1073	32.9	1142	1037
FOR THIS RUN:	1050	59.1	1261	943

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	819	19.5	860	772
5- 10	826	9.4	844	806
10- 15	825	7.7	840	809
15- 20	815	16.3	846	790
20- 25	811	24.6	865	749
25- 30	776	13.5	818	756
30- 35	765	35.1	849	677
35- 40	791	22.8	867	757
40- 45	774	28.5	840	732
45- 50	797	18.7	858	761
50- 55	779	10.4	792	759
55- 60	753	24.8	828	693
60- 65	750	37.6	824	691
65- 70	768	32.7	836	709
70- 75	768	39.7	864	700
75- 80	795	32.0	854	726
80- 85	796	14.9	833	763
85- 90	790	22.2	832	752
90- 95	780	22.1	831	738
95-100	772	24.2	857	727
100-105	770	23.2	853	739
105-110	758	14.9	802	718
110-115	744	13.2	769	725
115-120	732	17.1	790	717
120-125	724	7.0	735	712
125-130	715	7.8	734	700
130-135	717	12.8	767	704
135-140	711	3.4	721	705
140-145	708	14.8	757	678
145-150	726	15.1	770	704
150-155	730	11.4	753	707
155-160	727	4.6	738	721
160-165	724	10.3	757	709
165-170	724	8.7	751	713
170-175	738	8.2	754	724
175-180	750	15.2	794	729
180-185	778	36.6	828	680
185-190	787	19.6	829	756
190-195	807	24.0	858	767
195-200	847	19.2	880	801
200-205	829	16.4	857	804
205-210	806	38.0	867	719
210-215	812	15.2	843	783
215-220	813	20.8	875	775
220-225	837	29.9	894	759
225-230	823	30.2	920	763
230-235	809	8.2	820	790
235-240	790	20.5	838	745
240-242	788	21.2	835	765
FOR THIS RUN:	775	43.4	920	677

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	89.0	4.7	97.5	79.9
5- 10	86.2	2.8	91.2	78.9
10- 15	87.5	1.7	89.7	84.2
15- 20	85.9	3.5	91.5	75.8
20- 25	89.0	5.8	97.5	71.6
25- 30	85.6	2.9	87.7	73.1
30- 35	85.3	9.5	99.0	63.2
35- 40	84.4	5.2	94.0	70.3
40- 45	84.9	5.4	96.0	73.8
45- 50	89.3	4.0	95.5	74.8
50- 55	86.8	0.9	88.4	85.2
55- 60	80.6	7.2	85.9	53.9
60- 65	85.4	8.4	96.5	66.3
65- 70	85.7	7.5	93.5	64.5
70- 75	83.9	9.7	100.3	59.2
75- 80	87.6	8.2	101.8	70.6
80- 85	86.0	3.7	90.0	72.1
85- 90	85.5	7.2	92.0	64.8
90- 95	85.8	5.8	93.7	69.8
95-100	85.8	6.9	92.5	59.0
100-105	85.4	5.5	90.5	65.5
105-110	86.4	3.4	89.5	73.8
110-115	85.3	0.9	87.2	83.9
115-120	84.4	3.9	88.2	69.5
120-125	84.3	1.2	86.7	81.6
125-130	83.9	1.8	86.4	78.6
130-135	83.7	3.1	86.7	71.8
135-140	84.2	0.9	85.9	82.1
140-145	82.7	4.0	88.2	66.3
145-150	83.6	4.0	88.2	72.6
150-155	84.4	2.8	88.4	74.8
155-160	84.9	1.1	86.4	82.4
160-165	83.5	2.6	86.4	73.1
165-170	84.0	1.9	86.4	77.9
170-175	84.3	1.9	86.9	79.9
175-180	82.4	3.4	86.2	73.8
180-185	85.0	7.7	95.5	61.0
185-190	82.4	4.5	94.0	72.1
190-195	85.4	7.6	99.8	65.3
195-200	91.1	4.2	100.3	80.9
200-205	86.3	3.2	89.7	75.3
205-210	85.2	9.0	99.3	63.2
210-215	87.4	4.1	96.0	79.1
215-220	88.4	4.8	96.0	76.1
220-225	89.0	6.6	100.5	71.6
225-230	86.8	6.8	94.0	59.2
230-235	86.6	1.2	89.0	82.6
235-240	84.8	4.0	88.7	71.1
240-242	85.5	4.7	90.2	75.8
FOR THIS RUN:	85.5	5.5	101.8	53.9

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	9.5	21.4	30.2	-74.5
5- 10	12.5	9.9	16.8	-26.8
10- 15	7.9	28.1	17.6	-106.3
15- 20	9.5	17.1	16.8	-45.1
20- 25	10.6	19.5	17.5	-70.5
25- 30	-5.2	39.4	16.4	-106.3
30- 35	5.9	25.6	16.9	-75.3
35- 40	14.4	5.2	17.4	-6.6
40- 45	13.2	8.8	16.5	-27.8
45- 50	13.6	9.2	17.3	-29.7
50- 55	12.4	11.9	17.6	-41.2
55- 60	8.9	24.1	16.9	-106.3
60- 65	10.7	23.9	16.9	-106.3
65- 70	15.2	2.1	16.7	6.6
70- 75	14.1	6.0	16.6	-14.9
75- 80	6.0	31.0	16.7	-106.3
80- 85	14.9	3.4	16.9	0.4
85- 90	7.3	25.9	16.5	-102.2
90- 95	9.7	18.3	16.6	-62.6
95-100	11.5	12.6	17.0	-41.5
100-105	7.2	29.1	16.7	-106.3
105-110	9.6	24.1	16.7	-105.3
110-115	8.7	25.4	16.4	-106.3
115-120	13.8	5.7	16.2	-13.0
120-125	13.3	7.3	16.3	-18.4
125-130	12.8	10.5	16.7	-38.2
130-135	11.0	16.9	16.1	-69.0
135-140	9.9	23.0	17.1	-100.4
140-145	9.2	23.6	16.0	-104.3
145-150	10.0	20.2	16.2	-84.7
150-155	6.2	31.6	17.2	-106.3
155-160	14.7	2.5	17.0	6.1
160-165	9.2	22.5	16.7	-89.2
165-170	9.8	14.4	16.2	-40.3
170-175	11.8	14.6	17.0	-58.7
175-180	12.1	16.2	16.1	-67.4
180-185	8.1	25.2	16.6	-97.8
185-190	4.7	25.2	16.3	-74.0
190-195	11.3	10.1	16.1	-20.8
195-200	10.6	17.1	17.5	-58.2
200-205	11.9	11.0	17.2	-29.0
205-210	4.8	31.6	16.5	-106.3
210-215	5.2	29.8	16.8	-106.3
215-220	8.5	26.1	16.9	-106.3
220-225	8.7	26.3	17.7	-106.3
225-230	9.3	19.6	17.2	-63.9
230-235	8.4	23.1	16.5	-78.0
235-240	9.8	24.0	16.4	-106.3
240-242	12.3	11.4	17.5	-21.8
FOR THIS RUN:	9.9	21.0	30.2	-106.3

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.8	1.9	2.9	-6.8
5- 10	1.1	0.8	1.5	-2.3
10- 15	0.7	2.5	1.5	-9.5
15- 20	0.8	1.5	1.5	-3.9
20- 25	0.9	1.9	1.7	-6.9
25- 30	-0.5	3.4	1.4	-9.3
30- 35	0.4	2.3	1.6	-6.8
35- 40	1.2	0.5	1.6	-0.6
40- 45	1.1	0.8	1.5	-2.4
45- 50	1.2	0.9	1.5	-2.8
50- 55	1.1	1.0	1.5	-3.6
55- 60	0.7	2.0	1.4	-9.0
60- 65	1.0	1.7	1.5	-7.5
65- 70	1.3	0.2	1.5	0.5
70- 75	1.2	0.5	1.5	-1.3
75- 80	0.5	2.8	1.7	-9.9
80- 85	1.3	0.3	1.5	0.0
85- 90	0.6	2.3	1.5	-9.4
90- 95	0.9	1.4	1.5	-4.5
95-100	1.0	1.1	1.5	-3.8
100-105	0.6	2.5	1.4	-8.9
105-110	0.8	2.1	1.4	-9.3
110-115	0.7	2.2	1.4	-9.2
115-120	1.2	0.5	1.4	-1.1
120-125	1.1	0.6	1.4	-1.5
125-130	1.1	0.9	1.4	-3.3
130-135	1.0	1.3	1.4	-5.0
135-140	0.8	1.9	1.4	-8.4
140-145	0.7	2.0	1.4	-9.0
145-150	0.8	1.7	1.4	-7.3
150-155	0.5	2.7	1.5	-9.2
155-160	1.2	0.2	1.4	0.5
160-165	0.8	1.9	1.4	-7.6
165-170	0.8	1.2	1.4	-3.5
170-175	1.0	1.2	1.4	-4.7
175-180	1.0	1.4	1.4	-5.7
180-185	0.6	2.3	1.5	-9.1
185-190	0.4	2.1	1.4	-6.3
190-195	1.0	0.9	1.5	-2.0
195-200	1.0	1.6	1.7	-5.2
200-205	1.0	1.0	1.5	-2.6
205-210	0.4	2.7	1.6	-8.9
210-215	0.4	2.7	1.6	-9.8
215-220	0.7	2.4	1.5	-9.7
220-225	0.7	2.5	1.6	-10.2
225-230	0.8	1.8	1.5	-5.8
230-235	0.7	2.0	1.4	-6.7
235-240	0.8	2.1	1.4	-9.2
240-242	1.1	0.9	1.6	-1.7
FOR THIS RUN:	0.8	1.8	2.9	-10.2

TABLE 12 (Continued)

RUN NUMBER 3430

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 11.4 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	889.6	5.8	897.4	880.4
5- 10	888.6	5.1	896.4	880.4
10- 15	888.9	5.5	897.4	881.4
15- 20	889.7	5.0	896.4	879.4
20- 25	889.6	5.5	901.4	879.4
25- 30	890.6	5.5	898.4	881.4
30- 35	891.3	6.9	905.4	878.4
35- 40	888.6	6.6	899.4	878.4
40- 45	889.0	5.4	896.4	878.4
45- 50	889.2	5.8	898.4	880.4
50- 55	889.0	4.8	896.4	882.4
55- 60	890.8	5.4	897.4	878.4
60- 65	890.8	5.1	899.4	882.4
65- 70	888.9	7.2	901.4	878.4
70- 75	889.5	7.0	904.4	878.4
75- 80	889.2	6.5	898.4	878.4
80- 85	888.7	5.2	898.4	880.4
85- 90	890.6	4.7	897.4	882.4
90- 95	890.5	5.2	897.4	879.4
95-100	890.4	5.7	898.4	879.4
100-105	890.1	5.0	897.4	882.4
105-110	888.8	5.0	899.4	882.4
110-115	889.1	4.8	897.4	882.4
115-120	890.6	4.6	897.4	883.4
120-125	891.1	4.9	897.4	881.4
125-130	890.5	5.5	897.4	882.4
130-135	890.3	5.4	896.4	879.4
135-140	889.0	4.6	896.4	882.4
140-145	889.0	4.7	897.4	880.4
145-150	890.7	4.5	896.4	879.4
150-155	890.9	4.4	897.4	883.4
155-160	890.0	5.5	897.4	882.4
160-165	890.0	5.7	898.4	881.4
165-170	889.0	5.3	898.4	880.4
170-175	888.6	4.6	896.4	881.4
175-180	891.0	4.8	898.4	883.4
180-185	890.0	5.5	901.4	882.4
185-190	889.6	5.5	898.4	881.4
190-195	889.8	6.3	898.4	879.4
195-200	888.7	5.7	898.4	880.4
200-205	889.0	4.9	897.4	882.4
205-210	889.7	7.3	905.4	878.4
210-215	887.6	4.1	895.4	881.4
215-220	890.2	5.0	896.4	879.4
220-225	890.4	5.8	902.4	880.4
225-230	889.7	5.4	898.4	880.4
230-235	890.3	5.5	896.4	881.4
235-240	889.1	6.1	901.4	877.4
240-242	890.1	3.7	896.4	886.4
FOR THIS RUN:	889.7	5.5	905.4	877.4

TABLE 13 - MACHINERY PARAMETERS, RUN 3500

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	53741	825.7	54827	51809
5- 10	53419	1232.1	55330	51306
10- 15	52996	1054.0	54324	50803
15- 20	51990	1189.3	54324	49797
20- 25	51427	1226.2	53318	49294
25- 30	51346	1005.2	52815	49797
30- 35	52352	1044.7	54324	50803
35- 40	50944	1001.2	52312	48791
40- 45	50441	883.0	52312	49294
45- 50	49173	978.3	51306	47785
50- 55	49475	1271.5	51306	47785
55- 60	48912	925.1	50300	47282
60- 65	48047	1075.2	49797	46276
65- 70	48047	1112.3	49797	46276
70- 75	47845	1038.9	49294	46276
75- 80	47805	1133.5	49797	46276
80- 85	48389	1006.0	49797	46779
85- 90	48167	1086.1	49797	46276
90- 95	47564	996.7	49294	45773
95-100	47383	1092.8	48791	45773
100-105	47041	1056.3	48791	45773
105-110	47705	951.0	49294	46276
110-115	48167	1008.8	49797	46276
115-120	48690	1215.6	51306	46779
120-125	48006	976.2	50300	46276
125-130	47805	1069.2	49294	45773
130-135	47906	1217.9	49797	46276
135-140	49455	1595.2	52312	46779
140-145	50421	1028.7	52312	48791
145-150	50038	1103.1	52815	48288
150-155	49556	1208.2	51809	47282
155-160	48831	910.1	51306	47785
160-165	50763	1570.9	54324	46276
165-170	33862	5964.7	44767	25653
170-175	27504	1503.8	30683	25150
175-178	30616	1084.5	32192	28671
FOR THIS RUN:	48134	5479.5	55330	25150

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	72872	1119.6	74345	70253
5- 10	72436	1670.7	75027	69571
10- 15	71863	1429.2	73663	68889
15- 20	70499	1612.7	73663	67525
20- 25	69735	1662.7	72299	66843
25- 30	69626	1363.0	71617	67525
30- 35	70990	1416.6	73663	68889
35- 40	69080	1357.6	70935	66161
40- 45	68398	1197.3	70935	66843
45- 50	66679	1326.5	69571	64796
50- 55	67088	1724.2	69571	64796
55- 60	66324	1254.4	68207	64114
60- 65	65151	1458.0	67525	62750
65- 70	65151	1508.2	67525	62750
70- 75	64878	1408.7	66843	62750
75- 80	64824	1537.1	67525	62750
80- 85	65615	1364.1	67525	63432
85- 90	65315	1472.8	67525	62750
90- 95	64496	1351.5	66843	62068
95-100	64251	1481.8	66161	62068
100-105	63787	1432.3	66161	62068
105-110	64687	1289.5	66843	62750
110-115	65315	1368.0	67525	62750
115-120	66024	1648.3	69571	63432
120-125	65097	1323.7	68207	62750
125-130	64824	1449.8	66843	62068
130-135	64960	1651.4	67525	62750
135-140	67061	2163.1	70935	63432
140-145	68370	1394.9	70935	66161
145-150	67852	1495.8	71617	65479
150-155	67197	1638.3	70253	64114
155-160	66215	1234.1	69571	64796
160-165	68834	2130.1	73663	62750
165-170	45917	8088.1	60704	34785
170-175	37295	2039.1	41606	34103
175-178	41515	1470.6	43652	38878
FOR THIS RUN:	65270	7430.2	75027	34103

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	38525	5304.2	48635	26202
5- 10	45979	5462.0	54019	33680
10- 15	43227	7706.5	64787	25604
15- 20	45991	6250.5	63591	28595
20- 25	45345	8177.0	71068	30988
25- 30	43814	9492.0	71966	19622
30- 35	42880	9580.9	64189	20220
35- 40	46960	6646.4	60899	35774
40- 45	48133	5601.4	57908	33082
45- 50	46577	6737.5	56711	22314
50- 55	46841	6696.3	57609	33381
55- 60	47630	5271.7	58506	34278
60- 65	49437	6045.7	64488	34278
65- 70	47594	4774.6	57609	39064
70- 75	49652	6644.2	60001	35774
75- 80	45943	4568.4	54617	34278
80- 85	50310	6575.5	65984	37568
85- 90	47618	4946.8	62992	40559
90- 95	48898	5698.6	60300	39363
95-100	46781	4481.4	55814	40260
100-105	46877	4453.6	55515	39961
105-110	52272	5468.1	67479	41457
110-115	46314	8899.7	66283	22015
115-120	44041	14293.9	63890	1975
120-125	49365	5493.2	61198	39662
125-130	48516	5973.2	59702	35175
130-135	47511	6229.1	57908	31885
135-140	39351	16713.8	76452	8256
140-145	43383	10761.2	64488	12144
145-150	47140	9135.7	60899	16631
150-155	49796	14091.3	85425	29792
155-160	47929	7132.5	58805	26501
160-165	29086	19047.5	58506	-418
165-170	11833	7791.3	23211	180
170-175	26896	6808.5	36372	778
175-178	20958	8007.9	35774	3171
FOR THIS RUN:	44130	11693.6	85425	-418

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (N)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	171361	23593.3	216330	116547
5- 10	204516	24295.0	240277	149808
10- 15	192276	34278.5	288173	113887
15- 20	204569	27802.3	282851	127191
20- 25	201695	36371.1	316112	137834
25- 30	194883	42220.3	320103	87278
30- 35	190732	42615.8	285512	89939
35- 40	208879	29563.1	270877	159121
40- 45	214095	24914.9	257573	147147
45- 50	207176	29968.2	252251	99252
50- 55	208347	29785.0	256243	148478
55- 60	211859	23448.4	260234	152469
60- 65	219895	26891.1	286843	152469
65- 70	211700	21237.3	256243	173756
70- 75	220853	29553.5	266886	159121
75- 80	204356	20320.3	242938	152469
80- 85	223780	29247.7	293495	167104
85- 90	211806	22003.2	280190	180408
90- 95	217501	25347.6	268216	175086
95-100	208081	19933.4	248260	179078
100-105	208507	19809.8	246930	177747
105-110	232508	24322.3	300147	184399
110-115	206006	39585.7	294825	97921
115-120	195894	63579.4	284182	8783
120-125	219576	24433.8	272208	176417
125-130	215798	26568.7	265556	156460
130-135	211327	27706.9	257573	141826
135-140	175033	74342.8	340060	36722
140-145	192967	47866.0	286843	54017
145-150	209678	40635.4	270877	73974
150-155	221492	62678.2	379973	132513
155-160	213190	31725.4	261564	117878
160-165	129373	84723.1	260234	-1861
165-170	52634	34655.6	103243	800
170-175	119634	30284.1	161782	3461
175-178	93221	35619.3	159121	14104
FOR THIS RUN:	196290	52012.9	379973	-1861

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2574	51.2	2695	2484
5- 10	2739	74.1	2842	2552
10- 15	2711	60.9	2800	2585
15- 20	2690	52.0	2776	2571
20- 25	2693	63.4	2791	2578
25- 30	2635	55.1	2722	2529
30- 35	2668	63.6	2789	2561
35- 40	2704	50.3	2791	2617
40- 45	2680	48.9	2791	2569
45- 50	2645	55.9	2731	2526
50- 55	2657	66.3	2776	2554
55- 60	2669	51.8	2765	2572
60- 65	2631	59.8	2747	2522
65- 70	2647	61.9	2752	2532
70- 75	2644	55.2	2733	2566
75- 80	2615	71.5	2737	2509
80- 85	2647	65.8	2752	2522
85- 90	2654	66.1	2771	2531
90- 95	2642	59.5	2752	2520
95-100	2632	59.2	2719	2551
100-105	2619	58.0	2724	2542
105-110	2632	55.6	2714	2531
110-115	2603	63.5	2709	2478
115-120	2622	78.9	2737	2429
120-125	2652	51.0	2751	2561
125-130	2662	62.2	2771	2557
130-135	2615	66.8	2719	2486
135-140	2545	93.4	2686	2326
140-145	2628	72.3	2766	2496
145-150	2712	64.4	2848	2594
150-155	2626	78.4	2773	2480
155-160	2634	47.0	2723	2544
160-165	2200	506.4	2723	1300
165-170	1018	84.9	1198	913
170-175	1155	62.0	1285	1008
175-178	1153	62.0	1249	1076
FOR THIS RUN:	2522	420.9	2848	913

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1919	38.2	2010	1852
5- 10	2042	55.3	2119	1903
10- 15	2022	45.4	2088	1927
15- 20	2006	38.8	2070	1917
20- 25	2008	47.3	2081	1923
25- 30	1965	41.1	2030	1886
30- 35	1989	47.4	2079	1910
35- 40	2017	37.5	2081	1951
40- 45	1998	36.4	2081	1916
45- 50	1973	41.7	2037	1883
50- 55	1981	49.4	2070	1904
55- 60	1991	38.6	2062	1918
60- 65	1962	44.6	2048	1881
65- 70	1973	46.1	2052	1888
70- 75	1971	41.1	2038	1913
75- 80	1950	53.3	2041	1871
80- 85	1974	49.0	2052	1881
85- 90	1979	49.3	2066	1887
90- 95	1970	44.3	2052	1879
95-100	1962	44.1	2028	1902
100-105	1953	43.3	2031	1896
105-110	1963	41.5	2024	1887
110-115	1941	47.3	2020	1848
115-120	1955	58.9	2041	1811
120-125	1978	38.0	2051	1910
125-130	1985	46.4	2066	1907
130-135	1950	49.8	2028	1854
135-140	1898	69.6	2003	1735
140-145	1959	53.9	2063	1861
145-150	2023	48.1	2124	1934
150-155	1958	58.4	2068	1849
155-160	1964	35.1	2031	1897
160-165	1640	377.6	2030	969
165-170	759	63.3	893	681
170-175	862	46.2	958	752
175-178	860	46.2	931	803
FOR THIS RUN:	1881	313.9	2124	681

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	251.5	3.5	258.2	246.0
5- 10	269.3	3.8	273.2	258.7
10- 15	268.7	2.1	272.7	262.2
15- 20	271.8	4.3	280.2	263.2
20- 25	275.0	3.2	281.7	268.2
25- 30	269.5	3.4	275.2	263.7
30- 35	267.6	3.1	274.7	262.2
35- 40	278.8	2.8	282.7	273.2
40- 45	279.0	2.1	281.7	273.7
45- 50	282.6	3.3	285.7	274.7
50- 55	282.1	2.1	286.2	278.2
55- 60	286.6	1.5	289.7	283.7
60- 65	287.6	2.9	291.2	281.2
65- 70	289.3	3.2	291.7	280.7
70- 75	290.2	0.8	291.7	288.7
75- 80	287.3	2.1	291.2	283.2
80- 85	287.4	4.7	292.2	276.2
85- 90	289.3	1.6	293.2	287.2
90- 95	291.8	1.1	293.7	289.2
95-100	291.7	1.2	293.2	288.7
100-105	292.4	0.7	293.7	291.2
105-110	289.8	1.8	292.2	285.7
110-115	283.8	2.1	285.7	278.7
115-120	283.0	9.2	291.2	261.2
120-125	290.2	3.0	295.2	283.2
125-130	292.5	2.2	295.7	285.7
130-135	286.7	2.1	289.7	282.2
135-140	270.5	13.4	286.2	248.5
140-145	273.7	4.8	283.7	266.7
145-150	284.7	3.4	289.2	277.2
150-155	278.4	7.6	286.7	264.2
155-160	283.4	5.7	290.7	270.7
160-165	227.5	52.1	280.7	147.5
165-170	161.8	25.7	207.5	132.0
170-175	220.7	5.2	227.0	208.0
175-178	197.8	7.7	209.0	187.5
FOR THIS RUN:	273.5	28.9	295.7	132.0

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	878	13.7	901	849
5- 10	930	8.1	934	905
10- 15	921	6.9	934	905
15- 20	924	8.6	934	904
20- 25	921	7.2	932	906
25- 30	915	7.7	929	901
30- 35	913	9.2	930	896
35- 40	930	5.4	934	914
40- 45	923	9.0	934	902
45- 50	924	7.8	934	905
50- 55	926	5.0	934	916
55- 60	931	2.4	934	924
60- 65	928	3.5	934	921
65- 70	927	6.3	934	908
70- 75	932	2.0	934	926
75- 80	922	4.4	929	907
80- 85	923	8.0	931	895
85- 90	933	1.4	934	929
90- 95	932	2.0	934	925
95-100	933	1.1	934	930
100-105	933	0.9	934	930
105-110	927	4.7	934	915
110-115	924	4.9	934	911
115-120	919	22.4	934	850
120-125	927	9.2	934	907
125-130	932	5.5	934	909
130-135	918	6.2	932	905
135-140	891	31.8	933	827
140-145	917	14.1	934	890
145-150	932	4.2	934	918
150-155	911	23.3	934	860
155-160	922	14.6	934	895
160-165	762	170.5	934	523
165-170	598	94.8	764	481
170-175	815	20.7	837	764
175-178	731	28.0	771	697
FOR THIS RUN:	903	74.6	934	481

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2368	66.3	2497	2254
5- 10	2329	46.1	2410	2261
10- 15	2319	52.8	2470	2238
15- 20	2296	38.0	2400	2235
20- 25	2318	69.8	2487	2222
25- 30	2326	59.9	2507	2231
30- 35	2315	89.1	2507	2207
35- 40	2298	49.9	2425	2221
40- 45	2292	60.3	2430	2217
45- 50	2280	59.6	2504	2218
50- 55	2279	52.1	2450	2221
55- 60	2264	20.7	2302	2225
60- 65	2267	38.0	2403	2212
65- 70	2266	67.5	2588	2210
70- 75	2264	24.1	2338	2227
75- 80	2280	53.5	2431	2220
80- 85	2268	42.4	2411	2187
85- 90	2270	39.2	2381	2212
90- 95	2257	21.8	2328	2230
95-100	2258	22.5	2337	2202
100-105	2259	19.5	2335	2231
105-110	2262	34.2	2348	2222
110-115	2275	45.4	2367	2204
115-120	2280	128.1	2670	2107
120-125	2262	20.3	2338	2241
125-130	2265	42.3	2445	2228
130-135	2268	49.9	2463	2220
135-140	2325	142.2	2669	2146
140-145	2326	85.1	2511	2164
145-150	2286	52.3	2407	2211
150-155	2310	121.3	2639	2161
155-160	2281	44.8	2373	2201
160-165	1912	574.1	2923	933
165-170	1166	66.6	1316	1056
170-175	1232	44.5	1362	1172
175-178	1224	53.9	1354	1146
FOR THIS RUN:	2198	308.7	2923	933

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2079	66.3	2210	1947
5- 10	2166	50.1	2245	2082
10- 15	2136	39.7	2234	2067
15- 20	2121	36.9	2212	2040
20- 25	2135	54.0	2270	2031
25- 30	2129	47.4	2271	2039
30- 35	2114	69.5	2269	2015
35- 40	2138	40.9	2234	2063
40- 45	2115	51.3	2214	2040
45- 50	2107	52.3	2285	2039
50- 55	2111	44.5	2262	2037
55- 60	2108	17.3	2140	2073
60- 65	2103	32.5	2216	2060
65- 70	2101	56.1	2351	2017
70- 75	2111	20.0	2165	2077
75- 80	2102	43.6	2235	2043
80- 85	2093	35.7	2197	1993
85- 90	2117	34.3	2216	2066
90- 95	2104	17.8	2153	2077
95-100	2106	21.0	2179	2050
100-105	2109	17.7	2174	2076
105-110	2098	31.6	2178	2049
110-115	2102	38.4	2179	2037
115-120	2094	109.4	2390	1848
120-125	2097	28.7	2158	2032
125-130	2111	37.1	2251	2036
130-135	2082	42.7	2251	2025
135-140	2071	121.5	2316	1876
140-145	2132	70.3	2287	1997
145-150	2130	45.7	2224	2042
150-155	2104	99.4	2386	1891
155-160	2103	55.2	2196	1969
160-165	1547	708.9	2385	504
165-170	696	113.1	920	553
170-175	1004	38.1	1083	920
175-178	895	57.2	994	806
FOR THIS RUN:	2003	361.1	2390	504

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	107.7	4.1	110.9	92.3
5- 10	105.7	3.9	109.9	94.6
10- 15	103.1	7.0	109.7	85.0
15- 20	99.5	7.9	107.9	81.5
20- 25	98.1	10.0	108.4	77.2
25- 30	104.0	8.1	111.2	81.2
30- 35	97.0	9.5	111.7	77.2
35- 40	98.5	9.5	108.2	77.9
40- 45	94.1	10.6	109.4	78.7
45- 50	92.6	10.2	108.7	78.9
50- 55	95.0	9.8	108.4	78.9
55- 60	91.6	7.2	106.9	79.7
60- 65	91.7	8.8	107.2	78.9
65- 70	88.5	7.6	107.7	78.9
70- 75	91.2	6.6	106.2	80.2
75- 80	92.3	9.3	107.4	79.4
80- 85	90.6	10.4	109.7	77.9
85- 90	90.7	8.2	108.2	81.7
90- 95	89.3	6.3	105.6	79.7
95-100	88.8	6.6	105.1	77.9
100-105	90.3	5.3	104.9	81.7
105-110	90.7	8.8	107.4	78.7
110-115	93.9	10.5	109.4	78.2
115-120	91.0	11.9	109.9	70.4
120-125	89.2	6.7	105.1	77.7
125-130	90.8	7.6	104.9	81.7
130-135	90.2	9.0	109.2	78.7
135-140	93.6	12.2	112.5	74.9
140-145	100.7	9.7	111.4	75.9
145-150	95.6	9.8	108.7	77.2
150-155	92.0	11.3	108.7	75.7
155-160	94.8	9.9	112.5	74.4
160-165	111.6	9.5	125.6	85.5
165-170	116.4	6.5	124.0	102.6
170-175	126.0	1.0	127.3	123.3
175-178	125.5	0.9	126.8	122.8
FOR THIS RUN:	97.0	12.5	127.3	70.4

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	44.5	0.5	45.2	43.4
5- 10	44.1	0.6	45.1	42.8
10- 15	43.5	0.4	44.4	42.8
15- 20	42.1	0.7	43.9	40.9
20- 25	40.9	1.0	43.0	39.0
25- 30	42.6	1.2	44.6	40.7
30- 35	42.3	1.0	45.0	40.8
35- 40	41.1	0.4	42.0	40.2
40- 45	39.8	0.9	41.2	38.3
45- 50	38.9	0.9	41.6	37.8
50- 55	39.6	0.6	40.9	38.4
55- 60	38.3	0.6	39.3	37.3
60- 65	37.8	0.7	39.8	36.9
65- 70	37.1	0.6	39.1	36.3
70- 75	37.5	0.4	38.6	36.9
75- 80	37.7	0.6	38.8	36.7
80- 85	37.5	1.1	40.5	36.2
85- 90	37.8	0.6	39.1	36.7
90- 95	37.0	0.4	38.0	36.5
95-100	36.8	0.4	38.0	36.2
100-105	36.7	0.3	37.4	36.4
105-110	37.3	0.7	38.9	36.3
110-115	38.7	0.7	40.1	37.5
115-120	38.5	1.2	41.4	36.2
120-125	37.1	0.8	38.1	35.3
125-130	37.4	0.5	38.2	36.7
130-135	37.4	0.7	38.7	36.2
135-140	39.4	1.4	42.8	37.5
140-145	41.0	1.1	43.1	38.6
145-150	39.2	1.0	41.4	37.8
150-155	38.8	0.8	40.3	37.3
155-160	38.9	1.7	42.9	36.6
160-165	44.3	2.6	49.3	40.0
165-170	47.5	1.1	49.5	45.5
170-175	51.5	0.8	52.2	49.4
175-178	51.9	0.4	52.2	51.2
FOR THIS RUN:	40.2	3.7	52.2	35.3

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	4.8	0.2	5.0	4.1
5- 10	4.7	0.2	4.9	4.1
10- 15	4.5	0.3	4.9	3.7
15- 20	4.2	0.4	4.7	3.5
20- 25	4.0	0.5	4.6	3.0
25- 30	4.4	0.4	5.0	3.3
30- 35	4.1	0.5	5.0	3.3
35- 40	4.0	0.4	4.5	3.2
40- 45	3.8	0.5	4.5	3.1
45- 50	3.6	0.5	4.5	3.0
50- 55	3.8	0.4	4.4	3.1
55- 60	3.5	0.3	4.2	3.1
60- 65	3.5	0.4	4.3	3.0
65- 70	3.3	0.3	4.1	2.9
70- 75	3.4	0.3	4.1	3.0
75- 80	3.5	0.4	4.2	3.0
80- 85	3.4	0.5	4.4	2.9
85- 90	3.4	0.3	4.2	3.1
90- 95	3.3	0.2	4.0	3.0
95-100	3.3	0.3	3.9	2.9
100-105	3.3	0.2	3.9	3.0
105-110	3.4	0.4	4.1	2.9
110-115	3.6	0.4	4.3	3.0
115-120	3.5	0.5	4.5	2.5
120-125	3.3	0.3	4.0	2.8
125-130	3.4	0.3	4.0	3.1
130-135	3.4	0.4	4.2	2.9
135-140	3.7	0.6	4.7	2.8
140-145	4.1	0.4	4.7	3.1
145-150	3.8	0.4	4.5	3.1
150-155	3.6	0.5	4.4	2.8
155-160	3.7	0.5	4.8	2.8
160-165	5.0	0.7	6.1	3.4
165-170	5.5	0.4	6.1	4.7
170-175	6.5	0.1	6.6	6.1
175-178	6.5	0.1	6.6	6.3
FOR THIS RUN:	3.9	0.9	6.6	2.5

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	38	0.4	40	38
5- 10	38	0.1	38	38
10- 15	38	0.1	38	38
15- 20	38	0.1	38	38
20- 25	38	0.1	38	38
25- 30	38	0.5	40	38
30- 35	38	0.1	38	38
35- 40	38	0.1	38	38
40- 45	38	0.2	39	38
45- 50	38	0.4	40	38
50- 55	38	0.1	39	38
55- 60	39	0.1	39	38
60- 65	39	0.1	39	38
65- 70	39	0.1	39	38
70- 75	39	0.1	39	39
75- 80	39	0.1	39	39
80- 85	39	0.1	39	39
85- 90	39	0.1	39	39
90- 95	39	0.2	39	38
95-100	39	0.1	39	39
100-105	39	0.1	39	39
105-110	39	0.2	39	39
110-115	39	0.1	39	39
115-120	39	0.1	39	39
120-125	39	0.2	40	39
125-130	39	0.1	40	39
130-135	40	0.4	41	39
135-140	40	0.1	40	39
140-145	40	0.1	40	40
145-150	40	0.1	40	40
150-155	40	0.1	40	40
155-160	40	0.8	44	40
160-165	39	1.8	40	32
165-170	40	0.1	40	40
170-175	40	0.1	40	40
175-178	40	0.5	42	40
FOR THIS RUN:	39	0.8	44	32

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	883	13.4	905	855
5- 10	940	8.6	947	915
10- 15	930	7.0	942	911
15- 20	933	9.3	947	913
20- 25	928	7.1	938	914
25- 30	923	6.5	933	910
30- 35	920	8.8	937	898
35- 40	941	7.0	947	923
40- 45	932	8.8	943	911
45- 50	933	7.4	944	914
50- 55	936	5.7	947	924
55- 60	940	2.4	943	934
60- 65	935	4.3	941	923
65- 70	933	7.4	942	913
70- 75	940	2.3	942	932
75- 80	931	4.5	939	917
80- 85	931	7.7	939	904
85- 90	940	2.1	944	935
90- 95	939	1.9	941	933
95-100	937	1.4	938	933
100-105	937	1.6	939	931
105-110	933	3.9	939	920
110-115	931	5.2	938	914
115-120	926	24.8	945	853
120-125	936	12.7	947	913
125-130	941	7.7	947	916
130-135	926	6.3	938	913
135-140	895	34.0	936	828
140-145	923	15.8	947	893
145-150	942	6.4	947	926
150-155	916	25.1	942	862
155-160	931	17.3	947	897
160-165	575	430.8	947	-101
165-170	-5	19.3	6	-68
170-175	4	0.1	4	3
175-178	4	0.2	4	3
FOR THIS RUN:	852	257.1	947	-101

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1171	34.1	1239	1114
5- 10	1153	23.2	1199	1119
10- 15	1148	26.9	1227	1106
15- 20	1135	19.7	1190	1102
20- 25	1148	34.9	1233	1097
25- 30	1151	30.5	1244	1098
30- 35	1146	46.4	1246	1087
35- 40	1137	26.1	1205	1099
40- 45	1135	30.4	1205	1097
45- 50	1128	29.4	1237	1094
50- 55	1127	26.3	1213	1099
55- 60	1120	10.2	1138	1100
60- 65	1121	20.1	1194	1089
65- 70	1122	34.2	1284	1092
70- 75	1120	11.9	1156	1099
75- 80	1129	27.6	1205	1094
80- 85	1123	21.2	1194	1078
85- 90	1123	20.6	1180	1094
90- 95	1117	11.9	1155	1100
95-100	1117	11.7	1160	1090
100-105	1118	10.3	1158	1104
105-110	1119	17.6	1163	1097
110-115	1127	23.1	1173	1093
115-120	1129	63.7	1324	1041
120-125	1119	10.7	1158	1107
125-130	1122	21.7	1214	1104
130-135	1122	25.4	1220	1099
135-140	1152	70.9	1322	1068
140-145	1150	42.6	1244	1065
145-150	1132	25.0	1195	1093
150-155	1144	61.7	1311	1064
155-160	1128	23.1	1174	1091
160-165	661	586.6	1447	1
165-170	1	0.3	2	1
170-175	1	0.3	2	1
175-178	1	0.4	2	1
FOR THIS RUN:	1036	318.1	1447	1

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1034	32.1	1096	970
5- 10	1083	25.2	1122	1039
10- 15	1067	21.3	1120	1032
15- 20	1059	18.6	1105	1016
20- 25	1065	27.6	1136	1013
25- 30	1062	24.2	1133	1012
30- 35	1055	36.8	1136	1006
35- 40	1070	20.8	1115	1032
40- 45	1057	26.5	1109	1016
45- 50	1052	25.4	1140	1016
50- 55	1055	22.2	1131	1018
55- 60	1053	8.9	1065	1035
60- 65	1049	17.2	1107	1016
65- 70	1047	28.9	1172	1000
70- 75	1053	10.2	1077	1033
75- 80	1051	22.9	1119	1017
80- 85	1045	18.7	1099	992
85- 90	1056	17.8	1105	1030
90- 95	1049	10.0	1077	1035
95-100	1047	11.0	1082	1017
100-105	1048	8.7	1079	1034
105-110	1045	15.5	1083	1019
110-115	1049	19.8	1088	1013
115-120	1045	55.3	1192	914
120-125	1047	15.6	1076	1019
125-130	1055	19.2	1123	1011
130-135	1039	20.9	1119	1007
135-140	1031	61.5	1154	933
140-145	1061	34.9	1136	990
145-150	1066	21.7	1110	1022
150-155	1047	50.5	1186	933
155-160	1050	28.5	1103	979
160-165	602	534.4	1187	-0
165-170	-0	0.0	0	-0
170-175	0	0.0	0	0
175-178	0	0.0	0	0
FOR THIS RUN:	963	295.7	1192	-0

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	106.1	10.4	120.9	75.4
5- 10	120.8	6.6	133.2	103.4
10- 15	116.0	8.4	136.2	98.0
15- 20	118.6	6.6	131.7	99.5
20- 25	113.8	7.2	124.7	96.5
25- 30	113.0	10.3	123.7	82.3
30- 35	114.3	13.5	129.8	79.0
35- 40	119.5	7.4	127.5	93.4
40- 45	113.9	8.3	124.2	87.8
45- 50	117.1	7.4	125.5	86.6
50- 55	117.4	6.7	125.0	95.5
55- 60	118.1	2.2	123.9	112.2
60- 65	116.3	6.2	122.7	89.6
65- 70	115.6	8.4	123.2	75.9
70- 75	117.6	2.6	123.4	112.2
75- 80	113.3	7.6	120.1	88.6
80- 85	116.4	6.6	125.0	88.4
85- 90	117.3	5.4	125.0	102.1
90- 95	117.0	2.4	122.9	112.0
95-100	116.7	3.1	124.2	106.4
100-105	116.3	1.9	120.1	113.0
105-110	116.9	4.0	123.2	104.4
110-115	115.5	5.4	123.2	101.6
115-120	113.3	17.6	126.0	38.3
120-125	120.2	4.2	125.5	110.0
125-130	116.1	7.7	126.5	84.8
130-135	115.6	5.0	125.5	101.6
135-140	105.2	19.4	127.0	53.5
140-145	120.0	11.4	137.5	89.4
145-150	119.1	6.0	126.5	99.8
150-155	109.5	15.7	125.5	65.2
155-160	122.6	6.1	131.2	108.7
160-165	15.5	113.9	125.2	-186.5
165-170	-0.8	4.1	8.8	-4.2
170-175	-3.3	0.3	-2.9	-3.9
175-178	-3.2	0.3	-2.6	-3.9
FOR THIS RUN:	104.5	40.2	137.5	-186.5

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	18.2	1.5	22.7	14.9
5- 10	17.1	13.1	21.5	-44.3
10- 15	19.7	0.5	20.3	18.4
15- 20	19.1	2.7	21.4	9.1
20- 25	19.2	2.2	21.4	9.4
25- 30	19.0	1.2	20.4	14.7
30- 35	19.3	1.2	20.3	14.0
35- 40	20.0	1.6	21.3	13.0
40- 45	19.1	1.4	20.5	13.1
45- 50	17.4	12.2	21.0	-42.2
50- 55	20.1	1.1	24.6	18.8
55- 60	19.5	1.5	20.8	14.8
60- 65	18.8	4.2	20.5	-1.3
65- 70	17.0	13.8	20.8	-50.4
70- 75	17.6	13.0	29.4	-45.4
75- 80	19.7	0.8	21.7	18.4
80- 85	17.5	7.2	20.7	-12.7
85- 90	19.4	3.7	20.8	1.5
90- 95	20.1	2.3	30.7	17.6
95-100	19.5	2.2	22.4	10.0
100-105	16.7	14.6	20.6	-54.7
105-110	19.3	1.5	20.5	12.3
110-115	19.4	1.2	20.5	14.7
115-120	19.4	1.1	20.9	17.0
120-125	19.8	1.3	21.5	15.2
125-130	20.2	0.9	22.7	18.5
130-135	16.9	9.3	20.3	-26.3
135-140	18.5	1.7	21.7	15.5
140-145	19.7	1.1	21.9	18.0
145-150	19.6	4.9	30.8	-1.3
150-155	18.8	1.3	20.7	15.2
155-160	19.9	1.3	21.9	17.6
160-165	9.7	11.1	21.0	-6.6
165-170	-1.2	1.9	2.6	-9.3
170-175	-3.2	12.0	1.9	-62.0
175-178	-0.8	0.3	-0.5	-1.3
FOR THIS RUN:	17.1	8.4	30.8	-62.0

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.9	0.3	2.5	1.3
5- 10	2.0	1.6	2.7	-5.7
10- 15	2.3	0.2	2.7	2.0
15- 20	2.3	0.3	2.6	1.1
20- 25	2.2	0.3	2.5	1.2
25- 30	2.1	0.3	2.5	1.5
30- 35	2.2	0.3	2.5	1.5
35- 40	2.4	0.2	2.7	1.6
40- 45	2.2	0.2	2.5	1.4
45- 50	2.0	1.5	2.5	-5.2
50- 55	2.4	0.2	2.7	1.9
55- 60	2.3	0.2	2.5	1.7
60- 65	2.2	0.5	2.4	-0.2
65- 70	2.0	1.6	2.4	-5.8
70- 75	2.1	1.5	3.4	-5.4
75- 80	2.2	0.2	2.5	1.8
80- 85	2.0	0.8	2.5	-1.4
85- 90	2.3	0.5	2.6	0.2
90- 95	2.4	0.3	3.7	2.0
95-100	2.3	0.3	2.7	1.2
100-105	1.9	1.7	2.5	-6.4
105-110	2.3	0.2	2.5	1.4
110-115	2.2	0.2	2.4	1.7
115-120	2.2	0.4	2.6	0.8
120-125	2.4	0.2	2.6	1.8
125-130	2.3	0.2	2.8	1.7
130-135	2.0	1.1	2.4	-3.0
135-140	1.9	0.4	2.5	0.8
140-145	2.4	0.3	2.9	1.6
145-150	2.3	0.6	3.8	-0.2
150-155	2.1	0.4	2.5	1.2
155-160	2.4	0.2	2.8	2.0
160-165	1.2	1.1	2.5	-1.3
165-170	0.0	0.0	0.0	-0.0
170-175	0.0	0.0	0.2	-0.0
175-178	0.0	0.0	0.0	0.0
FOR THIS RUN:	2.0	0.9	3.8	-6.4

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	873.6	7.8	881.4	857.4
5- 10	870.2	6.1	878.4	855.4
10- 15	875.2	5.9	882.4	862.4
15- 20	872.9	6.4	883.4	858.4
20- 25	874.7	6.5	883.4	858.4
25- 30	871.9	7.6	883.4	857.4
30- 35	874.7	5.0	881.4	863.4
35- 40	871.5	6.8	879.4	857.4
40- 45	875.0	6.0	882.4	859.4
45- 50	873.0	6.9	882.4	858.4
50- 55	873.1	6.3	880.4	859.4
55- 60	874.8	5.9	880.4	859.4
60- 65	873.4	6.2	880.4	860.4
65- 70	874.7	5.9	881.4	862.4
70- 75	871.8	6.5	879.4	858.4
75- 80	875.2	5.3	880.4	860.4
80- 85	873.0	7.5	883.4	855.4
85- 90	874.1	5.4	879.4	860.4
90- 95	873.0	6.7	880.4	859.4
95-100	874.7	5.1	879.4	861.4
100-105	873.0	6.8	879.4	859.4
105-110	873.8	5.3	880.4	861.4
110-115	873.9	6.7	882.4	859.4
115-120	873.6	8.2	888.4	856.4
120-125	873.8	7.1	885.4	855.4
125-130	872.7	6.8	881.4	860.4
130-135	875.0	6.0	882.4	862.4
135-140	873.9	9.6	891.4	851.4
140-145	871.2	7.3	879.4	848.4
145-150	873.0	7.2	881.4	858.4
150-155	875.4	7.3	883.4	853.4
155-160	870.9	7.8	882.4	855.4
160-165	883.0	21.1	955.4	859.4
165-170	885.0	6.9	895.4	868.4
170-175	881.8	5.8	888.4	867.4
175-178	880.0	6.7	887.4	867.4
FOR THIS RUN:	874.4	8.1	955.4	848.4

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	32	0.6	35	32
5- 10	32	0.5	35	32
10- 15	32	0.1	32	32
15- 20	32	0.1	33	32
20- 25	32	0.1	33	32
25- 30	33	0.1	33	32
30- 35	33	0.1	33	32
35- 40	33	0.1	33	32
40- 45	33	0.1	33	32
45- 50	33	0.1	33	33
50- 55	33	0.1	33	33
55- 60	33	0.4	34	32
60- 65	33	0.8	36	32
65- 70	33	0.2	33	32
70- 75	33	0.1	33	33
75- 80	33	0.2	34	33
80- 85	33	0.1	33	33
85- 90	33	0.1	33	33
90- 95	33	0.1	33	33
95-100	33	0.1	33	33
100-105	33	0.1	33	33
105-110	33	0.1	33	33
110-115	33	0.1	34	33
115-120	35	7.2	70	33
120-125	34	3.8	53	33
125-130	33	0.1	34	33
130-135	33	0.1	34	33
135-140	34	0.6	36	33
140-145	33	0.1	34	33
145-150	34	1.0	39	33
150-155	34	0.3	35	33
155-160	34	0.5	36	34
160-165	33	0.4	34	32
165-170	34	0.1	34	33
170-175	34	0.2	34	33
175-178	34	0.1	34	34
FOR THIS RUN:	33	1.5	70	32

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	872	13.3	894	844
5- 10	918	4.1	920	904
10- 15	917	5.7	920	900
15- 20	917	4.7	920	902
20- 25	915	5.4	920	902
25- 30	911	6.3	920	899
30- 35	909	8.3	920	887
35- 40	919	1.9	920	911
40- 45	917	5.5	920	901
45- 50	917	4.7	920	903
50- 55	919	2.0	920	913
55- 60	920	0.0	920	920
60- 65	919	1.7	920	912
65- 70	918	4.6	920	902
70- 75	920	0.0	920	920
75- 80	918	3.2	920	905
80- 85	917	6.0	920	893
85- 90	920	0.0	920	920
90- 95	920	0.0	920	920
95-100	920	0.0	920	920
100-105	920	0.0	920	920
105-110	919	2.2	920	909
110-115	918	3.8	920	903
115-120	908	20.1	920	842
120-125	916	6.3	920	902
125-130	919	3.1	920	905
130-135	915	5.4	920	902
135-140	884	33.0	920	818
140-145	908	11.7	920	882
145-150	919	1.2	920	915
150-155	901	21.8	920	851
155-160	912	11.3	920	886
160-165	754	170.0	920	516
165-170	590	94.2	755	474
170-175	805	20.8	828	755
175-178	723	27.5	762	689
FOR THIS RUN:	894	74.0	920	474

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1265	33.3	1328	1204
5- 10	1246	23.7	1291	1209
10- 15	1239	26.2	1314	1198
15- 20	1227	18.7	1279	1199
20- 25	1237	35.7	1324	1192
25- 30	1240	31.5	1336	1195
30- 35	1234	43.6	1325	1184
35- 40	1226	24.8	1289	1181
40- 45	1223	30.5	1286	1185
45- 50	1217	31.6	1330	1171
50- 55	1215	27.7	1302	1172
55- 60	1207	11.0	1231	1184
60- 65	1210	19.2	1276	1185
65- 70	1208	34.7	1371	1175
70- 75	1207	13.4	1239	1182
75- 80	1216	25.9	1292	1191
80- 85	1210	21.0	1286	1169
85- 90	1211	20.2	1271	1181
90- 95	1205	10.0	1233	1193
95-100	1207	11.2	1240	1177
100-105	1206	10.4	1242	1188
105-110	1196	19.1	1247	1160
110-115	1197	24.3	1249	1162
115-120	1197	64.0	1389	1105
120-125	1197	11.7	1235	1171
125-130	1189	23.4	1277	1153
130-135	1189	25.6	1286	1150
135-140	1210	74.5	1393	1126
140-145	1220	41.9	1303	1142
145-150	1205	29.4	1276	1139
150-155	1212	58.0	1370	1145
155-160	1203	19.8	1235	1162
160-165	1259	130.4	1472	961
165-170	1202	67.9	1360	1092
170-175	1271	44.9	1410	1220
175-178	1258	51.2	1382	1183
FOR THIS RUN:	1218	45.2	1472	961

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1103	32.4	1165	1035
5- 10	1144	23.2	1187	1112
10- 15	1136	20.1	1185	1102
15- 20	1125	17.2	1173	1092
20- 25	1132	28.2	1206	1088
25- 30	1130	24.3	1203	1090
30- 35	1122	33.7	1196	1077
35- 40	1127	22.0	1186	1086
40- 45	1121	26.2	1173	1083
45- 50	1116	27.9	1210	1074
50- 55	1117	25.0	1198	1072
55- 60	1110	10.1	1132	1089
60- 65	1112	16.8	1169	1090
65- 70	1109	28.6	1236	1063
70- 75	1110	12.3	1140	1087
75- 80	1117	22.0	1185	1093
80- 85	1109	18.3	1169	1063
85- 90	1114	18.6	1169	1086
90- 95	1108	9.2	1134	1097
95-100	1110	10.3	1141	1082
100-105	1109	9.5	1142	1093
105-110	1099	17.4	1147	1064
110-115	1098	21.5	1147	1065
115-120	1087	53.9	1235	948
120-125	1096	13.8	1133	1066
125-130	1093	21.2	1167	1060
130-135	1087	21.6	1165	1045
135-140	1068	62.8	1182	960
140-145	1108	32.8	1184	1049
145-150	1108	26.1	1167	1047
150-155	1091	46.8	1229	992
155-160	1097	24.4	1130	1029
160-165	947	214.9	1193	512
165-170	709	117.7	945	560
170-175	1024	38.9	1109	940
175-178	909	52.4	1002	822
FOR THIS RUN:	1088	91.3	1236	512

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	112.1	9.7	126.5	83.2
5- 10	125.6	6.0	138.4	110.6
10- 15	121.8	7.9	140.0	104.6
15- 20	124.7	5.9	135.9	105.8
20- 25	119.8	6.8	129.9	103.3
25- 30	118.8	9.9	129.9	87.9
30- 35	120.4	13.1	136.4	84.4
35- 40	125.3	6.7	132.4	100.5
40- 45	119.8	8.0	130.1	95.5
45- 50	123.2	7.3	132.4	92.7
50- 55	123.1	6.4	129.9	100.8
55- 60	123.9	2.3	130.1	119.4
60- 65	122.0	6.0	127.0	96.8
65- 70	121.6	8.4	128.8	81.9
70- 75	123.0	2.6	129.4	117.4
75- 80	119.5	7.2	125.0	95.3
80- 85	122.4	5.7	130.6	97.3
85- 90	122.9	5.1	129.1	109.1
90- 95	122.7	3.1	129.4	116.2
95-100	122.3	3.0	130.9	112.9
100-105	122.1	2.1	126.8	117.9
105-110	122.6	3.4	129.1	111.9
110-115	121.4	5.0	127.5	109.4
115-120	118.8	17.2	132.4	45.6
120-125	126.2	3.3	131.1	115.4
125-130	122.2	7.2	130.1	92.7
130-135	121.3	4.5	127.5	106.6
135-140	111.6	19.8	133.9	60.7
140-145	124.5	10.6	141.0	95.3
145-150	125.2	6.0	131.6	107.9
150-155	115.8	14.9	127.8	72.1
155-160	128.1	5.6	136.7	115.4
160-165	79.2	45.9	127.3	-16.4
165-170	82.7	23.6	114.2	45.9
170-175	101.6	13.3	113.9	58.0
175-178	81.2	13.9	98.0	37.8
FOR THIS RUN:	118.2	16.6	141.0	-16.4

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	19.5	1.4	21.5	14.9
5- 10	21.1	3.6	23.2	6.3
10- 15	16.4	25.1	22.8	-106.3
15- 20	17.9	10.5	23.0	-22.9
20- 25	13.1	25.9	22.2	-106.3
25- 30	18.3	12.4	22.3	-41.7
30- 35	17.9	10.9	22.2	-30.1
35- 40	10.5	31.6	23.3	-106.3
40- 45	11.1	21.3	22.4	-47.6
45- 50	18.2	13.2	22.5	-45.0
50- 55	19.4	7.5	22.6	-8.2
55- 60	16.8	18.0	22.6	-68.6
60- 65	6.1	37.4	22.6	-106.3
65- 70	12.9	23.4	22.9	-81.1
70- 75	18.3	12.5	22.7	-41.5
75- 80	6.1	36.9	22.4	-106.3
80- 85	18.3	10.0	22.3	-24 4
85- 90	9.1	34.8	22.8	-106.3
90- 95	12.5	29.7	22.6	-94.9
95-100	19.9	7.3	22.4	-15.3
100-105	7.1	34.0	23.1	-106.3
105-110	12.3	24.8	22.5	-80.7
110-115	13.7	18.9	22.9	-57.8
115-120	15.0	25.3	23.6	-106.3
120-125	19.0	10.2	23.2	-23.5
125-130	12.9	23.5	23.0	-53.0
130-135	11.6	24.9	22.6	-68.2
135-140	18.0	9.0	22.2	-25.2
140-145	20.1	5.7	23.1	-7.6
145-150	18.5	14.5	23.2	-51.9
150-155	19.4	4.9	22.6	-2.9
155-160	10.4	29.7	23.6	-106.3
160-165	15.4	8.7	22.2	-21.1
165-170	5.1	25.2	17.6	-106.1
170-175	14.1	14.5	19.8	-53.6
175-178	15.1	1.5	17.0	11.2
FOR THIS RUN:	14.8	21.4	23.6	-106.3

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.2	0.2	2.6	1.6
5- 10	2.7	0.5	3.1	0.8
10- 15	2.0	3.1	3.1	-13.2
15- 20	2.2	1.3	2.9	-3.1
20- 25	1.5	3.2	2.7	-13.4
25- 30	2.2	1.5	2.8	-4.8
30- 35	2.2	1.3	2.9	-3.4
35- 40	1.3	4.0	3.1	-13.4
40- 45	1.3	2.6	2.8	-5.6
45- 50	2.2	1.7	2.8	-5.8
50- 55	2.4	0.9	2.9	-1.0
55- 60	2.1	2.2	2.8	-8.6
60- 65	0.8	4.5	2.8	-12.1
65- 70	1.5	2.9	2.8	-10.2
70- 75	2.3	1.5	2.8	-5.1
75- 80	0.8	4.2	2.8	-13.0
80- 85	2.2	1.2	2.8	-3.0
85- 90	1.2	4.2	2.8	-12.9
90- 95	1.5	3.7	2.8	-12.3
95-100	2.4	0.9	2.9	-1.9
100-105	0.9	4.2	2.8	-12.9
105-110	1.5	3.1	2.8	-10.0
110-115	1.6	2.3	2.8	-7.2
115-120	1.7	3.2	3.1	-13.8
120-125	2.4	1.3	3.0	-3.0
125-130	1.6	2.9	2.9	-6.6
130-135	1.4	3.1	2.8	-8.5
135-140	2.1	1.0	2.9	-2.4
140-145	2.5	0.8	3.2	-0.9
145-150	2.3	1.9	3.0	-6.7
150-155	2.2	0.6	2.8	-0.4
155-160	1.4	3.7	3.2	-12.6
160-165	1.3	1.2	2.8	-2.0
165-170	0.4	2.4	1.9	-10.3
170-175	1.5	1.4	2.2	-4.8
175-178	1.2	0.2	1.5	0.6
FOR THIS RUN:	1.8	2.6	3.2	-13.8

TABLE 13 (Continued)

RUN NUMBER 3500

TRIAL CONDITIONS: 1) Brash ice without bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.1 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	887.8	5.2	895.4	877.4
5- 10	886.9	5.4	896.4	874.4
10- 15	887.2	4.6	895.4	879.4
15- 20	886.7	4.5	894.4	879.4
20- 25	887.3	6.1	899.4	878.4
25- 30	886.0	5.2	896.4	877.4
30- 35	887.5	4.7	895.4	881.4
35- 40	886.9	5.1	895.4	879.4
40- 45	887.2	5.4	895.4	877.4
45- 50	887.9	5.4	897.4	877.4
50- 55	886.3	5.9	895.4	877.4
55- 60	888.4	5.4	895.4	879.4
60- 65	886.8	5.0	894.4	877.4
65- 70	887.4	4.3	893.4	879.4
70- 75	887.8	5.2	895.4	879.4
75- 80	887.0	5.4	895.4	877.4
80- 85	887.7	5.6	895.4	876.4
85- 90	887.2	4.8	895.4	879.4
90- 95	887.9	5.3	894.4	879.4
95-100	887.3	5.2	895.4	879.4
100-105	887.6	5.0	894.4	879.4
105-110	886.5	5.1	894.4	878.4
110-115	887.5	4.5	895.4	879.4
115-120	887.4	6.2	898.4	877.4
120-125	886.0	4.9	893.4	876.4
125-130	887.0	5.9	895.4	876.4
130-135	887.4	5.5	896.4	879.4
135-140	888.8	8.4	904.4	875.4
140-145	884.4	7.6	894.4	870.4
145-150	887.8	5.0	897.4	881.4
150-155	886.3	6.1	895.4	873.4
155-160	887.2	6.8	901.4	877.4
160-165	890.6	18.2	933.4	847.4
165-170	887.9	8.8	903.4	871.4
170-175	886.4	6.4	898.4	876.4
175-178	894.3	3.9	899.4	884.4
FOR THIS RUN:	887.4	6.5	933.4	847.4

TABLE 14 - MACHINERY PARAMETERS, RUN 4420

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	5090	978.7	7042	3521
5- 10	5110	1099.1	6539	3521
10- 15	5493	995.1	7042	3521
15- 20	5292	843.1	6539	4024
20- 25	5473	1141.0	7545	4024
25- 30	5956	918.5	7545	4024
30- 35	5996	1146.3	7545	4024
35- 40	5875	1062.0	7545	4024
40- 45	6116	1117.3	7545	4024
45- 50	6277	831.0	7042	4527
50- 55	6298	889.8	7545	5030
55- 60	5835	954.4	8048	4527
60- 65	5956	992.6	8048	4527
65- 70	6539	995.9	8048	5030
70- 75	6217	1014.8	7545	4527
75- 80	6459	951.0	8048	4527
80- 85	6539	975.4	8048	5030
85- 90	6780	878.4	8551	5533
90- 95	7022	1160.0	8551	5030
95-100	6559	1000.8	8551	5030
100-105	7203	1042.8	8551	5030
105-110	6821	842.6	8551	5533
110-115	6901	927.7	9054	5533
115-120	7505	1054.3	9054	5533
120-125	7304	727.1	9054	6539
125-130	7364	1024.7	9054	5533
130-135	7364	942.4	9054	5533
135-140	7444	792.1	9054	6036
140-145	7565	1020.8	9054	5533
145-150	7505	1063.9	9054	5533
150-155	7344	932.9	9054	5533
155-160	7384	896.6	9054	6036
160-165	7384	1071.5	9054	5533
165-170	7163	1175.6	9054	5533
170-175	7404	871.5	9054	5533
175-180	7424	1038.5	9054	5533
180-185	7283	945.0	9054	6036
185-190	6780	1191.3	9054	5533
190-195	7203	929.9	9054	6036
195-200	7304	1046.6	9054	5533
200-205	7102	1029.1	9054	5533
205-210	7022	1050.1	9054	5533
210-215	7283	1297.1	9054	5533
215-220	7243	1111.2	9054	5533
220-225	7706	1144.5	9054	5533
225-230	6901	847.9	9054	5533
230-235	7404	1115.9	9054	5533
235-240	7605	869.1	9054	6036
240-242	7495	1199.8	9054	5533
FOR THIS RUN:	6773	1239.3	9054	3521

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	6903	1327.1	9549	4774
5- 10	6930	1490.3	8867	4774
10- 15	7448	1349.3	9549	4774
15- 20	7175	1143.3	8867	5457
20- 25	7421	1547.2	10231	5457
25- 30	8076	1245.5	10231	5457
30- 35	8130	1554.4	10231	5457
35- 40	7967	1440.1	10231	5457
40- 45	8294	1515.1	10231	5457
45- 50	8512	1126.9	9549	6139
50- 55	8539	1206.6	10231	6821
55- 60	7912	1294.1	10913	6139
60- 65	8076	1346.0	10913	6139
65- 70	8867	1350.4	10913	6821
70- 75	8430	1376.1	10231	6139
75- 80	8758	1289.5	10913	6139
80- 85	8867	1322.6	10913	6821
85- 90	9194	1191.1	11595	7503
90- 95	9522	1573.0	11595	6821
95-100	8894	1357.0	11595	6821
100-105	9767	1414.0	11595	6821
105-110	9249	1142.6	11595	7503
110-115	9358	1258.0	12277	7503
115-120	10176	1429.7	12277	7503
120-125	9904	986.0	12277	8867
125-130	9985	1389.5	12277	7503
130-135	9985	1277.9	12277	7503
135-140	10095	1074.1	12277	8185
140-145	10258	1384.2	12277	7503
145-150	10176	1442.6	12277	7503
150-155	9958	1265.0	12277	7503
155-160	10013	1215.8	12277	8185
160-165	10013	1452.9	12277	7503
165-170	9713	1594.1	12277	7503
170-175	10040	1181.7	12277	7503
175-180	10067	1408.2	12277	7503
180-185	9876	1281.4	12277	8185
185-190	9194	1615.5	12277	7503
190-195	9767	1260.9	12277	8185
195-200	9904	1419.2	12277	7503
200-205	9631	1395.4	12277	7503
205-210	9522	1423.9	12277	7503
210-215	9876	1758.8	12277	7503
215-220	9822	1506.7	12277	7503
220-225	10449	1552.0	12277	7503
225-230	9358	1149.8	12277	7503
230-235	10040	1513.1	12277	7503
235-240	10313	1178.5	12277	8185
240-242	10163	1627.0	12277	7503
FOR THIS RUN:	9184	1680.5	12277	4774

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	7155	2107.8	11845	3470
5- 10	6700	2143.6	10050	3171
10- 15	6976	2571.0	11247	3171
15- 20	6712	2064.8	9751	3470
20- 25	6928	2298.4	10649	3470
25- 30	7406	2260.1	12443	3769
30- 35	7538	2254.2	12443	3470
35- 40	7789	2553.6	12742	3171
40- 45	7693	2301.9	11546	4068
45- 50	7969	2306.8	11845	4068
50- 55	7825	2307.7	13041	3769
55- 60	8040	2435.1	12443	4068
60- 65	7933	2025.0	11247	4666
65- 70	8435	2338.4	11845	4666
70- 75	8639	2297.5	12742	4966
75- 80	8615	2392.9	13640	4666
80- 85	8399	2494.1	13041	4666
85- 90	9213	2096.3	14238	5265
90- 95	9117	2305.0	13939	5564
95-100	8854	2344.5	13939	5265
100-105	9201	2174.5	13640	5564
105-110	9548	2255.4	13640	5863
110-115	9799	2419.2	13939	5863
115-120	9632	2323.0	13341	5863
120-125	9380	2417.1	14836	5863
125-130	9919	2301.5	15135	6162
130-135	9859	2341.3	14836	6461
135-140	9811	2301.4	14238	6162
140-145	11091	8212.4	49832	6162
145-150	9931	2199.6	12742	5863
150-155	10242	1956.6	13041	6461
155-160	9081	2057.2	12742	6162
160-165	9069	2372.6	13939	6162
165-170	9883	2037.6	12742	6162
170-175	9775	2235.0	14238	5564
175-180	8938	2210.2	14537	5863
180-185	9105	2264.8	13341	6162
185-190	9931	1932.9	12443	5564
190-195	9991	2025.1	14238	5564
195-200	9213	2412.2	13640	5863
200-205	8914	2079.2	12742	5564
205-210	9691	1973.2	12742	5863
210-215	9739	2354.4	13939	5863
215-220	9333	2320.0	14537	5863
220-225	9596	2591.2	14836	5863
225-230	9823	2309.6	13939	6162
230-235	9691	2307.6	14238	5863
235-240	9572	2202.9	13041	6162
240-242	9691	2312.2	12443	6162
FOR THIS RUN:	8917	2740.3	49832	3171

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (N)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	31826	9375.3	52687	15435
5- 10	29803	9534.6	44704	14104
10- 15	31027	11435.6	50026	14104
15- 20	29857	9184.2	43374	15435
20- 25	30815	10223.2	47365	15435
25- 30	32943	10052.8	55348	16765
30- 35	33529	10026.9	55348	15435
35- 40	34646	11358.3	56678	14104
40- 45	34220	10238.7	51356	18096
45- 50	35444	10260.6	52687	18096
50- 55	34806	10264.7	58009	16765
55- 60	35764	10831.5	55348	18096
60- 65	35285	9007.1	50026	20757
65- 70	37520	10401.2	52687	20757
70- 75	38425	10219.4	56678	22087
75- 80	38318	10643.4	60669	20757
80- 85	37360	11093.7	58009	20757
85- 90	40979	9324.4	63330	23417
90- 95	40553	10252.6	62000	24748
95-100	39383	10428.4	62000	23417
100-105	40926	9672.4	60669	24748
105-110	42469	10032.0	60669	26078
110-115	43587	10760.4	62000	26078
115-120	42842	10332.9	59339	26078
120-125	41724	10751.2	65991	26078
125-130	44119	10237.1	67322	27409
130-135	43853	10414.0	65991	28739
135-140	43640	10236.5	63330	27409
140-145	49334	36528.7	221651	27409
145-150	44172	9783.9	56678	26078
150-155	45556	8702.9	58009	28739
155-160	40394	9150.3	56678	27409
160-165	40340	10553.4	62000	27409
165-170	43959	9063.2	56678	27409
170-175	43480	9941.2	63330	24748
175-180	39755	9830.9	64661	26078
180-185	40500	10073.9	59339	27409
185-190	44172	8597.5	55348	24748
190-195	44438	9007.7	63330	24748
195-200	40979	10729.6	60669	26078
200-205	39649	9248.2	56678	24748
205-210	43108	8776.8	56678	26078
210-215	43321	10472.3	62000	26078
215-220	41511	10319.2	64661	26078
220-225	42682	11525.7	65991	26078
225-230	43693	10273.0	62000	27409
230-235	43108	10264.2	63330	26078
235-240	42576	9798.3	58009	27409
240-242	43108	10284.8	55348	27409
FOR THIS RUN:	39662	12188.8	221651	14104

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	100	19.3	139	69
5- 10	101	21.6	129	69
10- 15	108	19.4	139	70
15- 20	105	16.6	130	79
20- 25	108	22.6	149	79
25- 30	117	18.1	149	79
30- 35	118	22.4	149	79
35- 40	116	21.0	149	79
40- 45	120	21.9	149	79
45- 50	123	16.3	139	90
50- 55	124	17.4	149	99
55- 60	115	18.8	159	89
60- 65	117	19.8	159	87
65- 70	129	19.6	159	99
70- 75	122	19.9	149	89
75- 80	127	18.7	159	89
80- 85	128	19.2	159	99
85- 90	133	17.4	169	108
90- 95	138	22.8	169	98
95-100	129	19.6	168	99
100-105	141	20.6	169	98
105-110	133	16.7	168	108
110-115	135	18.3	178	109
115-120	147	20.9	178	109
120-125	143	14.5	178	126
125-130	145	20.1	178	109
130-135	144	18.4	178	109
135-140	146	15.3	175	119
140-145	148	20.0	178	109
145-150	148	21.0	178	109
150-155	145	18.3	179	109
155-160	145	17.5	178	118
160-165	145	21.2	178	109
165-170	141	23.0	178	109
170-175	145	16.9	176	109
175-180	146	20.6	179	107
180-185	143	18.3	178	118
185-190	134	23.8	179	109
190-195	141	18.2	178	118
195-200	143	20.8	178	106
200-205	140	20.3	178	109
205-210	138	20.4	177	108
210-215	143	25.4	178	109
215-220	142	21.9	177	107
220-225	151	22.5	178	109
225-230	135	16.6	177	109
230-235	145	22.1	178	108
235-240	149	17.1	178	118
240-242	147	23.4	177	109
FOR THIS RUN:	133	24.2	179	69

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	101	19.5	140	70
5- 10	102	21.8	131	70
10- 15	110	19.6	140	71
15- 20	106	16.8	132	80
20- 25	109	22.9	151	80
25- 30	119	18.3	150	80
30- 35	119	22.6	151	80
35- 40	117	21.2	150	80
40- 45	122	22.1	150	80
45- 50	125	16.5	141	91
50- 55	125	17.6	151	100
55- 60	116	19.0	160	90
60- 65	118	20.1	160	88
65- 70	130	19.8	161	100
70- 75	124	20.1	150	90
75- 80	128	18.9	160	90
80- 85	130	19.4	160	100
85- 90	135	17.6	170	109
90- 95	139	23.1	170	99
95-100	130	19.8	170	100
100-105	143	20.9	170	99
105-110	135	16.8	170	109
110-115	137	18.5	180	110
115-120	148	21.1	180	110
120-125	144	14.6	180	127
125-130	146	20.4	180	110
130-135	146	18.6	180	110
135-140	147	15.5	177	120
140-145	150	20.2	180	110
145-150	149	21.2	180	110
150-155	146	18.5	181	110
155-160	147	17.7	180	120
160-165	147	21.4	180	110
165-170	142	23.3	180	110
170-175	147	17.1	178	110
175-180	148	20.8	181	109
180-185	145	18.5	180	119
185-190	135	24.0	181	110
190-195	143	18.4	180	119
195-200	145	21.0	180	108
200-205	141	20.5	180	110
205-210	139	20.7	179	109
210-215	144	25.6	180	110
215-220	143	22.1	179	108
220-225	153	22.7	180	110
225-230	137	16.8	179	110
230-235	147	22.4	180	109
235-240	151	17.3	180	120
240-242	149	23.6	179	110
FOR THIS RUN:	135	24.5	181	70

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	103.5	0.4	104.0	102.5
5- 10	103.5	0.5	104.0	102.5
10- 15	103.7	0.4	104.5	103.0
15- 20	103.8	0.6	104.5	102.5
20- 25	103.6	0.5	104.0	102.0
25- 30	103.5	0.4	104.0	103.0
30- 35	103.3	0.6	104.0	102.0
35- 40	103.5	0.5	104.0	102.5
40- 45	103.3	0.5	104.0	102.5
45- 50	103.2	0.5	104.0	102.0
50- 55	103.4	0.5	104.0	102.0
55- 60	103.4	0.4	104.0	102.5
60- 65	103.2	0.6	104.0	101.5
65- 70	103.3	0.5	104.0	102.0
70- 75	103.3	0.4	104.0	102.5
75- 80	103.2	0.4	104.0	102.5
80- 85	103.2	0.4	104.0	102.5
85- 90	103.1	0.5	104.0	102.0
90- 95	102.9	0.5	103.5	101.5
95-100	103.0	0.6	103.5	101.5
100-105	102.8	0.6	103.5	101.5
105-110	102.7	0.7	103.5	101.0
110-115	102.8	0.4	103.5	101.5
115-120	102.7	0.7	103.5	101.0
120-125	102.7	0.6	103.5	101.0
125-130	103.1	0.6	104.0	101.5
130-135	103.0	0.6	104.0	101.5
135-140	102.7	0.6	103.5	101.0
140-145	102.9	0.5	103.5	101.5
145-150	103.3	0.4	104.0	102.0
150-155	103.5	0.4	104.0	102.5
155-160	103.3	0.6	104.0	102.0
160-165	103.1	0.5	103.5	101.5
165-170	103.2	0.5	104.0	101.5
170-175	103.2	0.5	104.0	102.0
175-180	103.2	0.6	104.0	101.5
180-185	103.3	0.6	104.0	101.5
185-190	103.4	0.5	104.0	102.5
190-195	103.1	0.6	104.0	101.5
195-200	103.1	0.6	104.0	101.0
200-205	103.2	0.6	104.0	101.5
205-210	103.0	0.3	103.5	102.5
210-215	102.9	0.6	103.5	101.5
215-220	102.9	0.6	103.5	101.5
220-225	103.0	0.5	103.5	101.5
225-230	103.0	0.5	103.5	101.5
230-235	103.2	0.4	103.5	102.5
235-240	103.1	0.4	103.5	102.5
240-242	103.1	0.4	103.5	102.5
FOR THIS RUN:	103.2	0.6	104.5	101.0

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	299	0.4	299	298
5- 10	299	0.2	299	299
10- 15	299	0.3	300	299
15- 20	300	0.3	300	299
20- 25	299	0.2	300	299
25- 30	299	0.2	299	299
30- 35	299	0.4	300	298
35- 40	300	0.4	300	299
40- 45	299	0.5	299	298
45- 50	299	0.7	300	298
50- 55	299	0.2	300	299
55- 60	299	0.2	300	299
60- 65	299	0.1	300	299
65- 70	300	0.2	300	299
70- 75	299	0.2	299	299
75- 80	299	0.2	300	299
80- 85	299	0.2	300	299
85- 90	300	0.3	300	299
90- 95	299	0.3	300	299
95-100	299	0.2	300	299
100-105	299	0.2	299	299
105-110	299	0.2	299	299
110-115	299	0.2	299	299
115-120	300	0.5	300	299
120-125	299	0.8	300	297
125-130	301	0.2	301	300
130-135	300	0.4	301	300
135-140	300	0.1	300	299
140-145	300	0.2	301	300
145-150	301	0.2	301	301
150-155	301	0.1	302	301
155-160	301	0.2	301	301
160-165	300	0.2	301	300
165-170	300	0.2	301	300
170-175	301	0.1	301	300
175-180	301	0.2	301	301
180-185	301	0.2	301	301
185-190	301	0.3	301	300
190-195	300	0.2	301	300
195-200	300	0.3	301	300
200-205	301	0.5	301	300
205-210	300	0.1	300	300
210-215	300	0.2	300	299
215-220	300	0.2	300	299
220-225	300	0.1	300	300
225-230	300	0.2	301	300
230-235	300	0.2	301	300
235-240	300	0.3	301	300
240-242	300	0.2	301	300
FOR THIS RUN:	300	0.7	302	297

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	307	3.1	312	302
5- 10	314	2.2	318	309
10- 15	319	2.0	323	315
15- 20	322	2.1	326	319
20- 25	325	2.0	328	321
25- 30	331	2.4	336	325
30- 35	338	2.0	342	333
35- 40	342	1.5	345	339
40- 45	347	3.4	353	343
45- 50	353	2.0	356	349
50- 55	356	1.8	359	352
55- 60	360	1.7	363	356
60- 65	364	1.6	366	361
65- 70	367	1.7	369	363
70- 75	372	2.1	376	366
75- 80	377	2.1	381	373
80- 85	381	2.4	385	376
85- 90	384	1.4	386	381
90- 95	387	1.7	389	383
95-100	391	1.7	395	389
100-105	396	2.0	401	392
105-110	402	2.1	406	398
110-115	408	2.2	412	403
115-120	412	1.5	415	409
120-125	417	7.3	445	411
125-130	415	1.2	418	413
130-135	416	2.0	422	412
135-140	419	1.8	423	415
140-145	421	1.1	423	419
145-150	419	1.4	421	416
150-155	415	1.6	418	412
155-160	412	1.0	413	411
160-165	411	1.4	415	409
165-170	410	1.1	413	409
170-175	409	1.0	411	408
175-180	407	1.5	411	405
180-185	406	1.5	408	402
185-190	403	1.1	405	401
190-195	403	0.8	403	401
195-200	403	1.1	405	401
200-205	402	1.1	403	401
205-210	404	1.4	406	401
210-215	408	1.5	411	405
215-220	410	1.4	413	408
220-225	412	1.2	415	409
225-230	412	1.2	413	409
230-235	412	1.4	413	409
235-240	413	1.3	415	411
240-242	412	0.9	413	411
FOR THIS RUN:	386	33.3	445	302

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	92	0.9	93	90
5- 10	94	0.7	95	92
10- 15	95	0.6	97	94
15- 20	97	0.6	98	96
20- 25	97	0.6	98	96
25- 30	99	0.7	100	97
30- 35	101	0.6	102	100
35- 40	103	0.4	103	102
40- 45	104	0.9	105	103
45- 50	106	0.7	107	104
50- 55	107	0.5	107	105
55- 60	108	0.5	109	107
60- 65	109	0.5	110	108
65- 70	110	0.5	111	109
70- 75	111	0.6	113	110
75- 80	113	0.6	114	112
80- 85	114	0.7	115	113
85- 90	115	0.5	116	114
90- 95	116	0.5	117	115
95-100	117	0.5	118	116
100-105	119	0.6	120	117
105-110	120	0.5	121	119
110-115	122	0.7	123	121
115-120	123	0.5	125	122
120-125	125	2.2	133	123
125-130	125	0.3	126	124
130-135	125	0.5	126	124
135-140	126	0.5	127	124
140-145	126	0.3	127	126
145-150	126	0.4	127	125
150-155	125	0.5	126	124
155-160	124	0.4	124	123
160-165	124	0.4	125	123
165-170	123	0.3	124	123
170-175	123	0.3	123	123
175-180	123	0.4	123	122
180-185	122	0.4	123	121
185-190	121	0.3	122	120
190-195	121	0.2	121	120
195-200	121	0.3	122	120
200-205	121	0.3	121	120
205-210	121	0.4	122	120
210-215	122	0.4	123	121
215-220	123	0.4	124	122
220-225	124	0.4	125	123
225-230	124	0.3	124	123
230-235	124	0.4	124	123
235-240	124	0.4	125	123
240-242	124	0.3	124	123
FOR THIS RUN:	116	10.1	133	90

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	70.6	0.6	71.6	69.6
5- 10	70.5	0.6	71.6	69.6
10- 15	70.4	0.6	71.4	69.6
15- 20	70.4	0.6	71.4	69.6
20- 25	70.6	0.6	71.6	69.6
25- 30	70.5	0.6	71.6	69.6
30- 35	70.4	0.6	71.4	69.4
35- 40	70.5	0.6	71.4	69.4
40- 45	70.5	0.6	71.6	69.4
45- 50	70.5	0.6	71.6	69.6
50- 55	70.4	0.7	71.6	69.4
55- 60	70.5	0.6	71.4	69.6
60- 65	70.5	0.6	71.6	69.6
65- 70	70.5	0.6	71.6	69.6
70- 75	70.4	0.7	71.4	69.4
75- 80	70.4	0.6	71.4	69.6
80- 85	70.4	0.6	71.4	69.4
85- 90	70.4	0.6	71.6	69.6
90- 95	70.3	0.6	71.4	69.6
95-100	70.4	0.6	71.4	69.4
100-105	70.5	0.6	71.4	69.6
105-110	70.4	0.6	71.6	69.6
110-115	70.3	0.6	71.4	69.6
115-120	70.4	0.6	71.4	69.6
120-125	70.4	0.6	71.4	69.4
125-130	70.4	0.7	71.4	69.4
130-135	70.3	0.6	71.4	69.4
135-140	70.4	0.7	71.4	69.4
140-145	70.4	0.6	71.4	69.4
145-150	70.3	0.7	71.4	69.4
150-155	70.3	0.6	71.4	69.4
155-160	70.2	0.6	71.1	69.4
160-165	70.3	0.7	71.4	69.4
165-170	70.2	0.6	71.4	69.4
170-175	70.3	0.6	71.1	69.4
175-180	70.3	0.6	71.4	69.4
180-185	70.2	0.6	71.1	69.4
185-190	70.3	0.6	71.1	69.4
190-195	70.2	0.6	71.1	69.4
195-200	70.2	0.6	71.1	69.4
200-205	70.3	0.6	71.4	69.4
205-210	70.2	0.6	71.1	69.1
210-215	70.2	0.6	71.1	69.4
215-220	70.3	0.7	71.4	69.4
220-225	70.2	0.6	71.1	69.4
225-230	70.3	0.6	71.1	69.4
230-235	70.2	0.6	71.1	69.4
235-240	70.2	0.6	71.1	69.4
240-242	70.2	0.6	71.1	69.4
FOR THIS RUN:	70.4	0.6	71.6	69.1

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29.2	0.0	29.3	29.1
5- 10	29.2	0.0	29.3	29.1
10- 15	29.2	0.0	29.3	29.1
15- 20	29.2	0.0	29.3	29.1
20- 25	29.2	0.0	29.3	29.1
25- 30	29.2	0.0	29.3	29.1
30- 35	29.2	0.0	29.2	29.1
35- 40	29.2	0.0	29.3	29.1
40- 45	29.2	0.0	29.3	29.1
45- 50	29.2	0.0	29.2	29.1
50- 55	29.2	0.0	29.3	29.1
55- 60	29.2	0.0	29.3	29.1
60- 65	29.2	0.0	29.3	29.1
65- 70	29.2	0.0	29.3	29.1
70- 75	29.2	0.0	29.2	29.1
75- 80	29.2	0.0	29.2	29.1
80- 85	29.2	0.0	29.3	29.1
85- 90	29.2	0.0	29.3	29.1
90- 95	29.2	0.0	29.3	29.1
95-100	29.2	0.0	29.2	29.1
100-105	29.2	0.0	29.3	29.1
105-110	29.2	0.0	29.3	29.1
110-115	29.2	0.0	29.3	29.1
115-120	29.2	0.0	29.3	29.1
120-125	29.2	0.0	29.2	29.1
125-130	29.2	0.0	29.2	29.1
130-135	29.2	0.0	29.3	29.1
135-140	29.2	0.0	29.3	29.1
140-145	29.2	0.0	29.3	29.1
145-150	29.2	0.0	29.3	29.1
150-155	29.2	0.0	29.3	29.1
155-160	29.2	0.0	29.3	29.1
160-165	29.2	0.0	29.3	29.1
165-170	29.2	0.0	29.3	29.1
170-175	29.2	0.0	29.2	29.1
175-180	29.2	0.0	29.2	29.1
180-185	29.2	0.0	29.3	29.1
185-190	29.2	0.0	29.3	29.1
190-195	29.2	0.0	29.3	29.1
195-200	29.2	0.0	29.3	29.1
200-205	29.2	0.0	29.3	29.1
205-210	29.2	0.0	29.3	29.1
210-215	29.2	0.0	29.3	29.1
215-220	29.2	0.0	29.2	29.1
220-225	29.2	0.0	29.2	29.1
225-230	29.2	0.0	29.3	29.1
230-235	29.2	0.0	29.3	29.1
235-240	29.2	0.0	29.3	29.1
240-242	29.2	0.0	29.2	29.1
FOR THIS RUN:	29.2	0.0	29.3	29.1

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.1	0.0	2.1	2.0
5- 10	2.1	0.0	2.1	2.0
10- 15	2.1	0.0	2.1	2.0
15- 20	2.1	0.0	2.1	2.0
20- 25	2.1	0.0	2.1	2.0
25- 30	2.1	0.0	2.1	2.0
30- 35	2.1	0.0	2.1	2.0
35- 40	2.1	0.0	2.1	2.0
40- 45	2.1	0.0	2.1	2.0
45- 50	2.1	0.0	2.1	2.0
50- 55	2.1	0.0	2.1	2.0
55- 60	2.1	0.0	2.1	2.0
60- 65	2.1	0.0	2.1	2.0
65- 70	2.1	0.0	2.1	2.0
70- 75	2.1	0.0	2.1	2.0
75- 80	2.1	0.0	2.1	2.0
80- 85	2.1	0.0	2.1	2.0
85- 90	2.1	0.0	2.1	2.0
90- 95	2.1	0.0	2.1	2.0
95-100	2.1	0.0	2.1	2.0
100-105	2.1	0.0	2.1	2.0
105-110	2.1	0.0	2.1	2.0
110-115	2.1	0.0	2.1	2.0
115-120	2.1	0.0	2.1	2.0
120-125	2.1	0.0	2.1	2.0
125-130	2.1	0.0	2.1	2.0
130-135	2.1	0.0	2.1	2.0
135-140	2.1	0.0	2.1	2.0
140-145	2.1	0.0	2.1	2.0
145-150	2.1	0.0	2.1	2.0
150-155	2.1	0.0	2.1	2.0
155-160	2.1	0.0	2.1	2.0
160-165	2.1	0.0	2.1	2.0
165-170	2.1	0.0	2.1	2.0
170-175	2.1	0.0	2.1	2.0
175-180	2.1	0.0	2.1	2.0
180-185	2.1	0.0	2.1	2.0
185-190	2.1	0.0	2.1	2.0
190-195	2.0	0.0	2.1	2.0
195-200	2.0	0.0	2.1	2.0
200-205	2.1	0.0	2.1	2.0
205-210	2.1	0.0	2.1	2.0
210-215	2.0	0.0	2.1	2.0
215-220	2.1	0.0	2.1	2.0
220-225	2.0	0.0	2.1	2.0
225-230	2.1	0.0	2.1	2.0
230-235	2.1	0.0	2.1	2.0
235-240	2.0	0.0	2.1	2.0
240-242	2.0	0.0	2.1	2.0
FOR THIS RUN:	2.1	0.0	2.1	2.0

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	33	0.1	33	33
5- 10	33	0.1	33	33
10- 15	33	0.1	33	33
15- 20	33	0.1	33	33
20- 25	33	0.1	33	33
25- 30	33	0.0	33	33
30- 35	33	0.3	34	33
35- 40	33	0.2	33	32
40- 45	33	0.1	33	32
45- 50	33	2.6	46	32
50- 55	32	0.2	33	32
55- 60	32	0.1	33	32
60- 65	32	0.1	32	32
65- 70	32	0.1	32	32
70- 75	32	0.1	32	32
75- 80	32	0.3	33	31
80- 85	32	0.3	33	32
85- 90	33	6.1	63	32
90- 95	33	6.5	65	32
95-100	32	0.1	32	32
100-105	32	0.1	32	31
105-110	32	1.0	36	31
110-115	31	0.1	32	31
115-120	31	0.1	31	31
120-125	32	5.0	57	31
125-130	31	0.1	31	31
130-135	31	0.1	31	31
135-140	31	0.1	31	31
140-145	31	0.1	31	31
145-150	31	2.6	44	31
150-155	31	0.1	31	31
155-160	31	0.1	31	30
160-165	31	0.1	31	30
165-170	31	0.1	31	30
170-175	31	0.3	32	30
175-180	30	0.1	30	30
180-185	30	0.1	31	30
185-190	30	0.1	30	30
190-195	30	0.1	30	30
195-200	30	1.6	38	30
200-205	31	4.3	52	29
205-210	30	0.1	30	30
210-215	30	0.1	30	30
215-220	30	0.1	30	30
220-225	30	0.1	30	30
225-230	30	0.3	31	30
230-235	30	0.1	30	29
235-240	30	0.3	31	29
240-242	30	0.1	30	29
FOR THIS RUN:	31	2.1	65	29

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	303	0.3	304	303
5- 10	304	0.2	304	303
10- 15	304	0.2	304	304
15- 20	305	0.3	305	304
20- 25	304	0.0	304	304
25- 30	304	0.3	304	303
30- 35	303	0.5	304	303
35- 40	304	0.3	304	304
40- 45	303	0.5	304	303
45- 50	304	0.6	304	303
50- 55	304	0.2	304	304
55- 60	304	0.0	304	304
60- 65	304	0.2	304	304
65- 70	304	0.1	304	304
70- 75	304	0.2	304	304
75- 80	304	0.2	304	304
80- 85	304	0.2	304	304
85- 90	304	0.3	304	304
90- 95	304	0.2	304	304
95-100	304	0.2	304	304
100-105	304	0.2	304	304
105-110	303	0.3	304	303
110-115	304	0.2	304	303
115-120	304	0.4	304	304
120-125	304	0.8	305	302
125-130	305	0.0	305	305
130-135	304	0.4	305	304
135-140	304	0.0	304	304
140-145	305	0.3	305	304
145-150	305	0.2	306	305
150-155	305	0.1	306	305
155-160	305	0.2	305	305
160-165	305	0.0	305	305
165-170	305	0.2	305	304
170-175	305	0.0	305	305
175-180	305	0.2	305	304
180-185	305	0.3	306	305
185-190	305	0.2	305	305
190-195	305	0.2	305	304
195-200	305	0.2	305	304
200-205	305	0.4	305	304
205-210	304	0.2	304	304
210-215	304	0.1	304	304
215-220	304	0.2	304	304
220-225	304	0.1	304	304
225-230	305	0.2	305	304
230-235	305	0.2	305	304
235-240	304	0.3	305	304
240-242	305	0.2	305	304
FOR THIS RUN:	304	0.7	306	302

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	144	1.5	147	141
5- 10	147	1.4	150	145
10- 15	150	1.0	152	148
15- 20	151	1.1	154	150
20- 25	153	1.0	154	151
25- 30	156	1.6	159	152
30- 35	159	1.1	161	157
35- 40	162	0.8	163	160
40- 45	164	1.5	167	162
45- 50	167	1.2	169	164
50- 55	169	0.9	170	166
55- 60	170	0.9	172	168
60- 65	172	0.7	173	171
65- 70	174	1.0	176	171
70- 75	176	0.9	178	175
75- 80	179	1.2	181	176
80- 85	181	1.1	183	178
85- 90	183	0.9	184	181
90- 95	184	0.9	186	182
95-100	186	1.1	188	185
100-105	189	0.8	190	187
105-110	192	1.3	194	189
110-115	194	1.0	196	193
115-120	196	1.0	199	195
120-125	199	4.1	215	195
125-130	198	0.8	199	197
130-135	199	1.0	201	197
135-140	200	1.0	203	198
140-145	201	0.7	203	200
145-150	200	0.6	201	199
150-155	198	0.9	200	197
155-160	197	0.5	198	195
160-165	196	0.7	198	195
165-170	196	0.6	197	195
170-175	195	0.8	196	193
175-180	194	0.9	197	193
180-185	193	0.8	195	191
185-190	192	0.9	193	190
190-195	192	0.8	193	190
195-200	192	0.7	194	191
200-205	192	0.7	193	190
205-210	193	0.9	195	191
210-215	195	0.9	196	193
215-220	196	0.6	197	195
220-225	196	0.8	198	195
225-230	197	0.8	198	195
230-235	196	0.6	198	195
235-240	197	0.8	198	195
240-242	197	0.7	198	196
FOR THIS RUN:	183	16.7	215	141

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	44	0.4	45	43
5- 10	45	0.4	46	44
10- 15	46	0.3	46	45
15- 20	46	0.3	47	46
20- 25	47	0.3	47	46
25- 30	47	0.4	48	46
30- 35	48	0.3	49	48
35- 40	49	0.2	50	49
40- 45	50	0.4	51	49
45- 50	51	0.4	52	50
50- 55	51	0.3	52	51
55- 60	52	0.3	52	51
60- 65	52	0.2	53	52
65- 70	53	0.3	53	52
70- 75	54	0.3	54	53
75- 80	54	0.3	55	54
80- 85	55	0.3	56	54
85- 90	56	0.3	56	55
90- 95	56	0.2	57	55
95-100	57	0.3	57	56
100-105	57	0.2	58	57
105-110	58	0.3	59	57
110-115	59	0.3	60	58
115-120	60	0.3	61	59
120-125	60	1.2	65	59
125-130	60	0.2	61	60
130-135	60	0.3	61	60
135-140	61	0.3	62	60
140-145	61	0.2	62	61
145-150	61	0.2	61	61
150-155	60	0.3	61	60
155-160	60	0.2	60	60
160-165	60	0.2	60	59
165-170	60	0.2	60	59
170-175	60	0.2	60	59
175-180	59	0.3	60	59
180-185	59	0.3	59	58
185-190	59	0.3	59	58
190-195	58	0.3	59	58
195-200	59	0.2	59	58
200-205	58	0.2	59	58
205-210	59	0.2	59	58
210-215	59	0.3	60	59
215-220	60	0.2	60	59
220-225	60	0.2	60	59
225-230	60	0.2	60	59
230-235	60	0.2	60	60
235-240	60	0.2	60	60
240-242	60	0.2	60	60
FOR THIS RUN:	56	5.1	65	43

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	24.5	0.7	25.6	23.5
5- 10	24.6	0.6	25.8	23.5
10- 15	24.7	0.7	25.8	23.5
15- 20	24.6	0.7	26.1	23.5
20- 25	24.7	0.7	26.3	23.5
25- 30	24.7	0.7	26.1	23.3
30- 35	24.7	0.7	25.8	23.5
35- 40	24.7	0.7	26.3	23.5
40- 45	24.8	0.6	26.1	23.8
45- 50	25.0	0.7	26.1	24.1
50- 55	24.8	0.6	25.8	23.5
55- 60	24.9	0.6	25.8	23.8
60- 65	25.1	0.7	26.3	24.1
65- 70	25.0	0.7	26.3	24.1
70- 75	24.9	0.6	25.8	24.1
75- 80	24.9	0.7	26.1	23.8
80- 85	25.1	0.6	26.3	24.1
85- 90	25.2	0.6	26.3	24.6
90- 95	25.1	0.6	26.1	23.8
95-100	25.0	0.6	25.8	24.1
100-105	25.2	0.6	26.1	24.3
105-110	25.1	0.6	26.3	24.1
110-115	25.4	0.7	26.3	24.3
115-120	25.4	0.7	26.6	24.1
120-125	25.1	1.1	26.6	21.5
125-130	25.3	0.6	26.3	24.6
130-135	25.3	0.7	26.6	24.1
135-140	25.3	0.6	26.1	24.3
140-145	25.3	0.7	26.9	24.3
145-150	25.5	0.6	26.9	24.6
150-155	25.4	0.6	26.3	24.6
155-160	25.3	0.6	26.3	24.3
160-165	25.4	0.6	26.3	24.1
165-170	25.3	0.7	26.3	24.1
170-175	25.3	0.7	26.6	24.3
175-180	25.3	0.6	26.1	24.1
180-185	25.2	0.7	26.3	24.1
185-190	25.2	0.7	26.6	24.3
190-195	25.3	0.7	26.6	24.3
195-200	25.1	0.7	26.1	23.8
200-205	25.2	0.7	26.3	23.8
205-210	25.1	0.7	26.3	24.1
210-215	25.2	0.6	26.3	24.1
215-220	25.3	0.6	26.6	24.1
220-225	25.2	0.6	26.3	24.1
225-230	25.3	0.7	26.3	24.3
230-235	25.2	0.7	26.6	24.1
235-240	25.3	0.6	26.3	24.3
240-242	25.2	0.6	26.3	24.3
FOR THIS RUN:	25.1	0.7	26.9	21.5

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	6.1	6.1	34.1	3.2
5- 10	4.2	0.5	4.9	3.1
10- 15	3.4	12.0	33.5	-48.0
15- 20	6.1	6.0	33.0	3.3
20- 25	5.4	3.5	20.8	3.3
25- 30	6.8	8.0	35.6	3.1
30- 35	4.7	1.8	12.4	3.2
35- 40	5.9	7.9	44.4	3.3
40- 45	6.9	7.0	30.1	3.3
45- 50	6.0	5.7	29.9	3.4
50- 55	4.5	0.8	7.0	3.4
55- 60	5.0	3.2	20.8	3.2
60- 65	3.0	6.7	6.3	-29.4
65- 70	5.1	3.0	18.5	3.2
70- 75	1.5	15.3	9.8	-72.9
75- 80	4.5	0.9	8.6	3.3
80- 85	4.9	9.2	39.6	-24.5
85- 90	5.0	2.6	17.3	3.6
90- 95	5.1	2.9	18.3	3.6
95-100	4.5	0.4	5.3	3.4
100-105	4.6	0.8	7.5	3.3
105-110	5.2	2.8	17.8	3.1
110-115	6.0	7.1	40.4	3.3
115-120	7.2	12.7	69.1	3.6
120-125	3.9	2.4	6.7	-7.1
125-130	4.6	1.1	8.3	3.4
130-135	2.9	10.5	14.7	-47.2
135-140	8.2	13.4	68.1	3.5
140-145	4.4	0.5	5.2	3.4
145-150	6.4	7.4	40.4	3.4
150-155	6.3	7.2	38.5	3.4
155-160	8.5	14.6	73.8	-1.4
160-165	4.5	0.6	6.8	3.5
165-170	6.8	10.3	56.5	3.3
170-175	5.3	3.3	20.2	3.4
175-180	5.2	5.4	26.9	-7.6
180-185	4.3	0.5	4.8	3.3
185-190	2.0	12.8	11.7	-60.0
190-195	3.7	6.7	14.2	-26.8
195-200	5.2	2.8	17.8	3.4
200-205	5.3	6.6	35.0	-7.3
205-210	4.1	2.6	11.2	-6.4
210-215	4.6	0.9	7.8	3.6
215-220	4.3	0.5	5.4	3.3
220-225	4.5	1.0	8.6	3.3
225-230	4.8	2.2	12.1	-0.2
230-235	5.0	5.5	26.1	-9.5
235-240	4.8	1.0	8.5	3.7
240-242	4.8	0.7	6.1	3.7
FOR THIS RUN:	5.0	6.8	73.8	-72.9

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.1	0.2	0.9	0.1
5- 10	0.1	0.0	0.1	0.1
10- 15	0.1	0.3	0.9	-1.1
15- 20	0.2	0.2	0.9	0.1
20- 25	0.1	0.1	0.5	0.1
25- 30	0.2	0.2	0.9	0.1
30- 35	0.1	0.0	0.3	0.1
35- 40	0.1	0.2	1.1	0.1
40- 45	0.2	0.2	0.7	0.1
45- 50	0.2	0.1	0.8	0.1
50- 55	0.1	0.0	0.2	0.1
55- 60	0.1	0.1	0.5	0.1
60- 65	0.1	0.2	0.2	-0.8
65- 70	0.1	0.1	0.5	0.1
70- 75	0.0	0.4	0.2	-1.8
75- 80	0.1	0.0	0.2	0.1
80- 85	0.1	0.2	1.0	-0.6
85- 90	0.1	0.1	0.5	0.1
90- 95	0.1	0.1	0.5	0.1
95-100	0.1	0.0	0.1	0.1
100-105	0.1	0.0	0.2	0.1
105-110	0.1	0.1	0.5	0.1
110-115	0.2	0.2	1.1	0.1
115-120	0.2	0.3	1.8	0.1
120-125	0.1	0.1	0.2	-0.2
125-130	0.1	0.0	0.2	0.1
130-135	0.1	0.3	0.4	-1.2
135-140	0.2	0.3	1.7	0.1
140-145	0.1	0.0	0.1	0.1
145-150	0.2	0.2	1.1	0.1
150-155	0.2	0.2	0.9	0.1
155-160	0.2	0.4	1.9	-0.0
160-165	0.1	0.0	0.2	0.1
165-170	0.2	0.3	1.5	0.1
170-175	0.1	0.1	0.5	0.1
175-180	0.1	0.1	0.7	-0.2
180-185	0.1	0.0	0.1	0.1
185-190	0.1	0.3	0.3	-1.5
190-195	0.1	0.2	0.4	-0.7
195-200	0.1	0.1	0.5	0.1
200-205	0.1	0.2	0.9	-0.2
205-210	0.1	0.1	0.3	-0.2
210-215	0.1	0.0	0.2	0.1
215-220	0.1	0.0	0.1	0.1
220-225	0.1	0.0	0.2	0.1
225-230	0.1	0.1	0.3	-0.0
230-235	0.1	0.1	0.6	-0.2
235-240	0.1	0.0	0.2	0.1
240-242	0.1	0.0	0.2	0.1
FOR THIS RUN:	0.1	0.2	1.9	-1.8

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	880.5	5.4	886.4	866.4
5- 10	879.4	6.2	885.4	865.4
10- 15	879.9	6.2	886.4	865.4
15- 20	879.6	6.4	886.4	865.4
20- 25	880.0	5.9	885.4	865.4
25- 30	879.3	6.4	885.4	865.4
30- 35	880.2	5.5	886.4	865.4
35- 40	878.9	6.6	885.4	865.4
40- 45	880.5	5.5	886.4	865.4
45- 50	878.8	6.9	885.4	865.4
50- 55	880.0	5.6	886.4	865.4
55- 60	879.5	6.3	885.4	865.4
60- 65	879.3	6.1	885.4	866.4
65- 70	880.2	5.8	885.4	865.4
70- 75	878.6	6.7	886.4	865.4
75- 80	880.6	5.5	886.4	866.4
80- 85	878.8	6.4	885.4	865.4
85- 90	880.3	5.6	886.4	865.4
90- 95	879.1	6.3	885.4	865.4
95-100	880.0	6.0	885.4	865.4
100-105	879.2	6.4	885.4	866.4
105-110	879.8	6.0	885.4	866.4
110-115	879.3	6.3	885.4	865.4
115-120	879.8	5.3	885.4	865.4
120-125	879.6	6.5	885.4	865.4
125-130	879.5	5.9	885.4	865.4
130-135	879.9	6.4	886.4	865.4
135-140	879.2	6.2	885.4	865.4
140-145	880.1	5.5	886.4	865.4
145-150	879.1	6.2	885.4	865.4
150-155	880.0	5.8	885.4	865.4
155-160	879.2	6.3	885.4	865.4
160-165	879.8	6.0	885.4	865.4
165-170	879.2	6.3	885.4	865.4
170-175	880.0	5.6	886.4	866.4
175-180	879.0	6.6	885.4	865.4
180-185	880.1	5.5	885.4	865.4
185-190	878.8	6.8	885.4	865.4
190-195	879.8	5.6	885.4	865.4
195-200	879.2	6.4	885.4	865.4
200-205	879.1	6.2	885.4	866.4
205-210	880.1	5.9	885.4	865.4
210-215	878.6	6.7	885.4	865.4
215-220	880.6	5.7	885.4	865.4
220-225	878.8	6.4	886.4	865.4
225-230	880.1	5.5	885.4	866.4
230-235	879.1	6.2	885.4	865.4
235-240	879.9	6.1	885.4	865.4
240-242	879.5	5.9	885.4	866.4
FOR THIS RUN:	879.6	6.1	886.4	865.4

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29	0.1	30	29
5- 10	29	0.1	29	29
10- 15	29	0.7	33	29
15- 20	29	0.1	29	29
20- 25	29	0.1	29	29
25- 30	29	0.1	29	29
30- 35	29	0.1	29	29
35- 40	29	0.2	29	28
40- 45	29	0.2	29	28
45- 50	29	0.4	31	29
50- 55	29	0.4	31	29
55- 60	29	0.1	29	29
60- 65	29	0.1	29	29
65- 70	29	0.3	30	29
70- 75	29	0.1	29	28
75- 80	29	0.2	29	28
80- 85	29	0.1	29	28
85- 90	29	0.2	30	28
90- 95	28	0.1	29	28
95-100	28	0.4	30	28
100-105	28	0.1	28	28
105-110	28	0.1	28	28
110-115	28	0.1	29	28
115-120	28	0.4	30	27
120-125	28	0.1	28	28
125-130	28	0.1	28	28
130-135	28	0.2	28	27
135-140	28	0.1	28	28
140-145	28	0.1	28	27
145-150	28	0.1	28	28
150-155	28	0.2	29	27
155-160	28	0.2	28	27
160-165	28	0.2	28	27
165-170	28	0.1	28	27
170-175	27	0.1	28	27
175-180	27	0.1	28	27
180-185	28	0.8	30	26
185-190	27	0.5	30	27
190-195	27	0.2	28	27
195-200	27	0.2	28	27
200-205	27	0.1	27	27
205-210	27	0.3	29	27
210-215	27	0.2	27	26
215-220	27	0.2	28	27
220-225	27	0.1	27	27
225-230	27	0.2	28	27
230-235	27	0.1	27	27
235-240	27	0.1	27	27
240-242	27	0.1	27	27
FOR THIS RUN:	28	0.8	33	26

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	297	0.3	297	296
5- 10	297	0.2	297	297
10- 15	297	0.2	297	297
15- 20	298	0.3	298	297
20- 25	297	0.0	297	297
25- 30	297	0.3	297	297
30- 35	297	0.5	298	296
35- 40	298	0.3	298	297
40- 45	297	0.5	297	296
45- 50	297	0.7	298	296
50- 55	297	0.3	298	297
55- 60	297	0.0	298	297
60- 65	297	0.2	297	297
65- 70	298	0.2	298	297
70- 75	297	0.2	297	297
75- 80	297	0.2	297	297
80- 85	297	0.2	297	297
85- 90	298	0.3	298	297
90- 95	297	0.2	297	297
95-100	297	0.2	297	297
100-105	297	0.2	297	297
105-110	297	0.3	297	297
110-115	297	0.2	297	297
115-120	297	0.5	298	297
120-125	297	0.8	298	296
125-130	298	0.0	299	298
130-135	298	0.4	298	297
135-140	297	0.0	298	297
140-145	298	0.3	298	297
145-150	299	0.3	299	298
150-155	299	0.2	299	299
155-160	299	0.2	299	298
160-165	298	0.0	298	298
165-170	298	0.0	298	298
170-175	298	0.0	299	298
175-180	299	0.2	299	298
180-185	299	0.3	299	298
185-190	299	0.2	299	298
190-195	298	0.2	298	298
195-200	298	0.2	298	298
200-205	298	0.4	299	298
205-210	298	0.2	298	297
210-215	297	0.2	298	297
215-220	298	0.2	298	297
220-225	298	0.0	298	297
225-230	298	0.2	298	298
230-235	298	0.2	298	298
235-240	298	0.2	298	297
240-242	298	0.2	298	298
FOR THIS RUN:	298	0.7	299	296

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	157	1.4	160	154
5- 10	161	1.2	163	158
10- 15	163	1.2	165	161
15- 20	165	1.0	166	163
20- 25	166	1.3	169	164
25- 30	169	0.9	171	167
30- 35	173	1.1	175	170
35- 40	175	0.8	176	173
40- 45	177	1.8	181	175
45- 50	180	1.0	182	179
50- 55	182	1.1	184	179
55- 60	184	1.1	186	181
60- 65	186	1.0	187	184
65- 70	189	2.8	194	186
70- 75	197	1.7	201	194
75- 80	201	1.2	204	199
80- 85	204	1.4	207	201
85- 90	206	0.7	207	204
90- 95	208	1.0	209	206
95-100	210	0.6	211	209
100-105	213	1.3	215	210
105-110	215	1.0	217	214
110-115	219	1.4	222	216
115-120	221	0.7	222	219
120-125	223	3.4	236	220
125-130	222	0.7	224	222
130-135	223	1.1	226	221
135-140	225	0.9	226	223
140-145	226	0.7	227	224
145-150	225	1.0	227	223
150-155	223	0.8	224	222
155-160	221	0.6	223	221
160-165	221	0.8	224	220
165-170	221	0.8	222	219
170-175	220	0.7	222	219
175-180	219	0.9	222	218
180-185	218	0.8	220	217
185-190	217	0.8	219	215
190-195	216	0.6	217	215
195-200	216	0.8	217	214
200-205	215	0.8	217	214
205-210	213	3.5	216	207
210-215	208	1.0	210	206
215-220	210	1.7	217	208
220-225	210	0.8	212	209
225-230	210	0.7	212	209
230-235	210	1.5	216	208
235-240	210	0.7	212	209
240-242	210	0.7	212	209
FOR THIS RUN:	203	20.6	236	154

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	47	0.4	47	46
5- 10	48	0.4	48	47
10- 15	49	0.4	49	48
15- 20	49	0.3	50	49
20- 25	49	0.4	50	49
25- 30	50	0.2	51	50
30- 35	51	0.4	52	50
35- 40	52	0.2	52	52
40- 45	53	0.5	54	52
45- 50	54	0.4	54	53
50- 55	54	0.3	55	53
55- 60	55	0.3	55	54
60- 65	55	0.3	56	55
65- 70	56	0.8	58	55
70- 75	59	0.5	60	58
75- 80	60	0.4	60	59
80- 85	61	0.4	61	60
85- 90	61	0.2	62	61
90- 95	62	0.3	62	61
95-100	62	0.2	63	62
100-105	63	0.4	64	62
105-110	64	0.2	64	64
110-115	65	0.4	66	64
115-120	66	0.3	66	65
120-125	66	1.0	70	65
125-130	66	0.2	67	66
130-135	66	0.3	67	66
135-140	67	0.3	67	66
140-145	67	0.2	68	67
145-150	67	0.3	68	67
150-155	67	0.2	67	66
155-160	66	0.2	67	66
160-165	66	0.2	67	66
165-170	66	0.2	66	65
170-175	66	0.2	66	65
175-180	65	0.2	66	65
180-185	65	0.3	66	65
185-190	65	0.2	65	64
190-195	65	0.2	65	64
195-200	64	0.2	65	64
200-205	64	0.2	65	64
205-210	63	1.1	64	61
210-215	62	0.3	62	61
215-220	62	0.5	65	62
220-225	63	0.2	63	62
225-230	63	0.2	63	62
230-235	63	0.4	64	62
235-240	63	0.2	63	62
240-242	63	0.2	63	62
FOR THIS RUN:	60	6.2	70	46

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	26.5	0.7	28.0	25.4
5- 10	26.5	0.7	27.7	25.4
10- 15	26.5	0.6	27.7	25.7
15- 20	26.8	0.6	27.7	25.7
20- 25	26.6	0.6	27.5	25.4
25- 30	26.7	0.6	27.7	25.7
30- 35	26.7	0.7	28.2	25.2
35- 40	26.7	0.7	28.0	25.4
40- 45	26.7	0.7	27.7	25.2
45- 50	27.1	0.6	28.5	25.9
50- 55	26.8	0.7	27.7	25.7
55- 60	27.0	0.6	28.2	25.7
60- 65	27.0	0.6	28.0	25.9
65- 70	27.2	0.5	28.0	26.2
70- 75	26.8	0.6	27.7	25.9
75- 80	27.1	0.6	28.0	26.2
80- 85	27.2	0.6	28.2	26.2
85- 90	27.4	0.7	28.5	26.5
90- 95	27.1	0.7	28.2	25.9
95-100	27.2	0.7	28.7	26.2
100-105	27.2	0.6	28.5	26.2
105-110	27.4	0.6	28.5	26.5
110-115	27.4	0.6	28.2	26.5
115-120	27.5	0.6	28.5	26.7
120-125	27.3	1.1	28.5	23.2
125-130	27.5	0.6	28.7	26.5
130-135	27.4	0.6	28.5	26.2
135-140	27.5	0.6	28.7	26.7
140-145	27.4	0.6	28.5	26.5
145-150	27.7	0.7	29.0	26.7
150-155	27.5	0.6	28.5	26.5
155-160	27.4	0.6	28.5	26.7
160-165	27.4	0.6	28.5	26.5
165-170	27.5	0.6	28.5	26.7
170-175	27.3	0.6	28.2	26.2
175-180	27.6	0.7	28.7	26.2
180-185	27.3	0.6	28.5	26.2
185-190	27.3	0.6	28.2	25.9
190-195	27.4	0.6	28.5	26.5
195-200	27.3	0.7	28.7	26.2
200-205	27.3	0.6	28.2	26.2
205-210	27.3	0.7	28.5	25.9
210-215	27.3	0.6	28.2	26.2
215-220	27.5	0.7	28.7	26.5
220-225	27.3	0.6	28.2	26.2
225-230	27.5	0.6	28.5	26.5
230-235	27.4	0.7	29.0	26.5
235-240	27.4	0.7	28.5	26.5
240-242	27.3	0.7	28.5	26.2
FOR THIS RUN:	27.2	0.7	29.0	23.2

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	-1.1	23.0	6.1	-106.3
5- 10	2.5	14.3	6.1	-67.5
10- 15	4.7	3.2	6.7	-10.4
15- 20	5.0	1.8	6.3	-3.0
20- 25	1.5	19.0	6.2	-91.6
25- 30	-2.6	23.7	6.2	-106.3
30- 35	-3.8	22.5	6.2	-80.8
35- 40	4.5	3.1	6.3	-6.0
40- 45	4.8	2.0	6.2	-0.9
45- 50	5.1	1.5	6.2	-0.9
50- 55	3.6	9.1	6.2	-41.0
55- 60	-4.8	26.3	6.3	-106.3
60- 65	-2.3	17.6	6.5	-58.6
65- 70	2.9	8.3	6.1	-33.2
70- 75	5.5	3.5	18.6	-2.9
75- 80	2.0	14.9	6.2	-69.3
80- 85	2.2	12.9	6.7	-58.3
85- 90	2.9	8.9	6.3	-29.6
90- 95	5.5	0.7	6.3	4.1
95-100	2.8	9.5	6.4	-30.3
100-105	3.3	11.0	6.3	-50.5
105-110	2.2	16.0	6.3	-76.3
110-115	-1.5	22.9	7.0	-106.3
115-120	5.4	1.1	6.4	0.7
120-125	4.9	3.6	6.4	-12.5
125-130	-3.2	25.9	6.2	-106.3
130-135	5.2	1.6	6.3	-1.8
135-140	4.9	3.0	6.4	-6.9
140-145	-3.2	24.9	6.3	-106.3
145-150	1.6	13.3	6.3	-45.4
150-155	2.9	12.3	10.4	-56.1
155-160	-0.9	19.7	6.3	-82.7
160-165	1.8	15.0	7.1	-67.1
165-170	3.1	11.3	6.4	-52.0
170-175	4.0	6.0	6.2	-23.2
175-180	1.1	14.3	6.3	-59.7
180-185	1.3	14.7	6.5	-66.1
185-190	-4.5	25.9	6.9	-79.2
190-195	0.6	14.5	6.2	-48.5
195-200	5.2	2.3	7.1	-5.9
200-205	-2.0	24.0	17.7	-85.3
205-210	0.1	22.1	6.2	-106.3
210-215	5.2	2.1	6.2	-5.0
215-220	-4.4	23.1	6.9	-90.1
220-225	-0.8	17.7	6.2	-54.2
225-230	2.1	13.9	6.2	-65.1
230-235	1.8	16.7	6.4	-79.7
235-240	3.8	8.5	6.2	-37.6
240-242	5.6	0.5	6.4	4.7
FOR THIS RUN:	1.7	15.4	18.6	-106.3

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	-0.0	0.6	0.2	-2.8
5- 10	0.1	0.4	0.2	-1.8
10- 15	0.1	0.0	0.2	-0.3
15- 20	0.1	0.0	0.2	-0.1
20- 25	0.0	0.5	0.2	-2.5
25- 30	-0.1	0.6	0.2	-2.8
30- 35	-0.1	0.6	0.2	-2.1
35- 40	0.1	0.0	0.2	-0.2
40- 45	0.1	0.0	0.2	-0.0
45- 50	0.1	0.0	0.2	-0.0
50- 55	0.1	0.3	0.2	-1.1
55- 60	-0.1	0.7	0.2	-2.9
60- 65	-0.1	0.5	0.2	-1.6
65- 70	0.1	0.2	0.2	-0.9
70- 75	0.1	0.0	0.5	-0.1
75- 80	0.1	0.4	0.2	-1.9
80- 85	0.1	0.4	0.2	-1.6
85- 90	0.1	0.3	0.2	-0.8
90- 95	0.1	0.0	0.2	0.1
95-100	0.1	0.3	0.2	-0.8
100-105	0.1	0.3	0.2	-1.4
105-110	0.1	0.5	0.2	-2.2
110-115	-0.0	0.6	0.2	-2.9
115-120	0.1	0.0	0.2	0.0
120-125	0.1	0.1	0.2	-0.4
125-130	-0.1	0.7	0.2	-2.9
130-135	0.1	0.0	0.2	-0.0
135-140	0.1	0.0	0.2	-0.2
140-145	-0.1	0.7	0.2	-3.0
145-150	0.0	0.4	0.2	-1.3
150-155	0.1	0.3	0.3	-1.6
155-160	-0.0	0.5	0.2	-2.2
160-165	0.0	0.4	0.2	-1.9
165-170	0.1	0.3	0.2	-1.4
170-175	0.1	0.2	0.2	-0.7
175-180	0.0	0.4	0.2	-1.7
180-185	0.0	0.4	0.2	-1.8
185-190	-0.1	0.7	0.2	-2.2
190-195	0.0	0.4	0.2	-1.4
195-200	0.1	0.0	0.2	-0.2
200-205	-0.1	0.7	0.5	-2.3
205-210	0.0	0.6	0.2	-2.9
210-215	0.1	0.0	0.2	-0.1
215-220	-0.1	0.6	0.2	-2.4
220-225	-0.0	0.5	0.2	-1.5
225-230	0.1	0.4	0.2	-1.8
230-235	0.0	0.5	0.2	-2.1
235-240	0.1	0.2	0.2	-1.1
240-242	0.2	0.0	0.2	0.1
FOR THIS RUN:	0.0	0.4	0.5	-3.0

TABLE 14 (Continued)

RUN NUMBER 4420

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 2.8 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	895.5	4.5	901.4	886.4
5- 10	891.9	5.2	900.4	886.4
10- 15	895.7	4.1	900.4	886.4
15- 20	892.0	5.2	900.4	886.4
20- 25	895.7	4.0	900.4	885.4
25- 30	891.9	5.3	900.4	886.4
30- 35	895.7	4.0	900.4	886.4
35- 40	892.0	5.4	900.4	886.4
40- 45	895.7	3.9	900.4	886.4
45- 50	892.1	5.3	900.4	886.4
50- 55	895.7	3.9	901.4	886.4
55- 60	892.0	5.4	900.4	886.4
60- 65	895.7	3.8	900.4	886.4
65- 70	892.0	5.4	900.4	886.4
70- 75	895.6	3.9	900.4	886.4
75- 80	892.1	5.2	900.4	886.4
80- 85	895.8	3.7	900.4	887.4
85- 90	892.1	5.3	900.4	886.4
90- 95	895.6	3.7	900.4	887.4
95-100	892.0	5.3	900.4	886.4
100-105	895.4	3.7	900.4	887.4
105-110	892.1	5.4	900.4	886.4
110-115	895.4	3.7	900.4	887.4
115-120	892.1	5.4	900.4	886.4
120-125	895.6	3.7	901.4	888.4
125-130	892.1	5.3	900.4	886.4
130-135	895.5	3.5	900.4	888.4
135-140	892.0	5.3	900.4	886.4
140-145	895.4	3.6	900.4	888.4
145-150	892.2	5.6	900.4	886.4
150-155	895.2	3.9	900.4	888.4
155-160	892.3	5.6	900.4	885.4
160-165	895.3	3.6	900.4	888.4
165-170	892.4	5.7	900.4	886.4
170-175	895.1	3.8	900.4	887.4
175-180	892.4	5.7	900.4	886.4
180-185	895.0	3.8	900.4	887.4
185-190	892.7	5.6	900.4	885.4
190-195	894.9	3.8	900.4	886.4
195-200	892.7	5.6	900.4	885.4
200-205	894.6	3.9	900.4	886.4
205-210	893.3	5.7	900.4	886.4
210-215	894.5	4.0	900.4	886.4
215-220	893.2	5.8	900.4	885.4
220-225	894.5	4.0	900.4	886.4
225-230	893.5	5.9	900.4	886.4
230-235	894.3	4.0	900.4	886.4
235-240	893.4	5.9	900.4	885.4
240-242	896.8	3.3	900.4	891.4
FOR THIS RUN:	893.9	5.0	901.4	885.4

TABLE 15 - MACHINERY PARAMETERS, RUN 4310

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	33198	2027.0	37222	28671
5- 10	27283	1636.3	30683	24647
10- 15	24406	1257.5	27162	22132
15- 20	22474	993.0	24144	20623
20- 25	21951	942.4	23138	19617
25- 30	20905	955.2	22132	19114
30- 35	20683	1086.5	22635	19114
35- 40	20221	1006.0	21629	18611
40- 45	19758	1088.3	21629	18108
45- 50	20040	1052.0	22132	18108
50- 55	19798	852.2	21126	18108
55- 60	20442	1146.0	22132	18611
60- 65	21227	1055.1	22635	19617
65- 70	21428	1025.9	23138	19114
70- 75	20885	1165.6	22635	19114
75- 80	21005	936.0	22132	19114
80- 85	20422	943.7	22132	19114
85- 90	21770	991.0	23641	20120
90- 95	23842	1064.7	25653	22132
95-100	24506	746.3	26156	23138
100-105	23359	1182.5	25653	21126
105-110	22836	1064.7	24144	21126
110-115	22072	999.1	23641	20623
115-120	21569	821.2	23138	20120
120-125	21166	964.1	22635	19617
125-130	20442	1034.6	22635	18611
130-135	20281	982.8	21629	18611
135-140	19335	805.8	21126	18108
140-145	19577	1110.4	21126	18108
145-150	19838	1016.8	21629	17605
150-155	19697	929.4	21126	17605
155-160	19436	1082.4	21126	17605
160-165	19376	1075.2	21126	17605
165-170	18712	954.4	20623	17102
170-175	18993	978.3	20623	17605
175-180	18973	1276.6	21629	17102
FOR THIS RUN:	21442	2898.2	37222	17102

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	45016	2748.7	50473	38878
5- 10	36995	2218.8	41606	33421
10- 15	33094	1705.1	36832	30011
15- 20	30475	1346.6	32739	27965
20- 25	29765	1277.9	31375	26601
25- 30	28347	1295.3	30011	25919
30- 35	28047	1473.3	30693	25919
35- 40	27419	1364.1	29329	25237
40- 45	26792	1475.8	29329	24554
45- 50	27174	1426.5	30011	24554
50- 55	26846	1155.6	28647	24554
55- 60	27719	1553.9	30011	25237
60- 65	28783	1430.7	30693	26601
65- 70	29056	1391.2	31375	25919
70- 75	28319	1580.5	30693	25919
75- 80	28483	1269.2	30011	25919
80- 85	27692	1279.7	30011	25919
85- 90	29520	1343.8	32057	27283
90- 95	32330	1443.7	34785	30011
95-100	33230	1012.0	35468	31375
100-105	31675	1603.4	34785	28647
105-110	30966	1443.7	32739	28647
110-115	29929	1354.8	32057	27965
115-120	29247	1113.6	31375	27283
120-125	28701	1307.3	30693	26601
125-130	27719	1402.9	30693	25237
130-135	27501	1332.7	29329	25237
135-140	26219	1092.7	28647	24554
140-145	26546	1505.7	28647	24554
145-150	26901	1378.8	29329	23872
150-155	26710	1260.3	28647	23872
155-160	26355	1467.7	28647	23872
160-165	26273	1458.0	28647	23872
165-170	25373	1294.1	27965	23190
170-175	25755	1326.5	27965	23872
175-180	25728	1731.1	29329	23190
FOR THIS RUN:	29075	3929.9	50473	23190

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29480	3939.6	39662	20818
5- 10	26645	3947.4	33381	17827
10- 15	24432	3646.6	36970	19323
15- 20	21763	2652.0	29193	15733
20- 25	21082	3691.8	27698	7358
25- 30	21704	2819.2	26202	13041
30- 35	20435	2048.9	24408	16930
35- 40	21823	1936.4	25006	18725
40- 45	20663	2209.5	24707	16033
45- 50	21201	2411.5	25604	17229
50- 55	21536	2674.0	25006	14537
55- 60	21608	3036.1	26501	15434
60- 65	21728	3179.5	28595	15733
65- 70	21979	2357.2	26501	18425
70- 75	21560	2437.5	25903	17827
75- 80	23211	1975.0	25903	18725
80- 85	21022	3718.3	26800	12742
85- 90	18150	3945.4	27997	10948
90- 95	23905	8461.6	41457	2872
95-100	22816	5741.4	38765	13041
100-105	23570	3691.5	35774	17528
105-110	23618	4907.5	36073	13939
110-115	23092	3779.7	29492	13640
115-120	21297	5430.3	30390	10050
120-125	20555	2904.0	25604	10948
125-130	22374	2812.2	25903	15135
130-135	21847	2835.2	26800	15434
135-140	19670	1978.1	23809	15434
140-145	20663	3449.1	29792	13939
145-150	21524	3203.5	26800	14238
150-155	19742	2931.9	27100	15733
155-160	20651	2880.2	27997	16033
160-165	20699	2419.6	24707	15733
165-170	20950	3032.8	29193	16033
170-175	18725	3311.3	23510	6461
175-180	19957	3136.3	25604	14238
FOR THIS RUN:	21824	4094.9	41457	2872

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (N)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	131129	17523.3	176417	92600
5- 10	118517	17558.1	148478	79295
10- 15	108671	16220.0	164443	85948
15- 20	96804	11796.2	129852	69982
20- 25	93771	16421.3	123200	32730
25- 30	96538	12539.9	116547	58009
30- 35	90897	9113.4	108565	75304
35- 40	97070	8613.0	111226	83287
40- 45	91908	9828.1	109895	71313
45- 50	94303	10726.4	113887	76635
50- 55	95793	11893.8	111226	64661
55- 60	96112	13504.4	117878	68652
60- 65	96644	14142.6	127191	69982
65- 70	97762	10484.7	117878	81956
70- 75	95899	10842.0	115217	79295
75- 80	103243	8784.9	115217	83287
80- 85	93504	16539.0	119208	56678
85- 90	80732	17549.3	124530	48696
90- 95	106330	37637.2	184399	12774
95-100	101487	25537.9	172426	58009
100-105	104840	16419.9	159121	77965
105-110	105053	21828.4	160452	62000
110-115	102711	16811.9	131182	60669
115-120	94728	24153.8	135174	44704
120-125	91429	12917.2	113887	48696
125-130	99518	12508.9	115217	67322
130-135	97176	12610.8	119208	68652
135-140	87491	8798.4	105904	68652
140-145	91908	15341.5	132513	62000
145-150	95740	14249.3	119208	63330
150-155	87810	13040.9	120539	69982
155-160	91855	12811.3	124530	71313
160-165	92068	10762.5	109895	69982
165-170	93185	13489.7	129852	71313
170-175	83287	14728.8	104574	28739
175-180	88768	13950.2	113887	63330
FOR THIS RUN:	97074	18214.1	184399	12774

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1400	92.3	1566	1190
5- 10	1106	81.9	1268	974
10- 15	936	52.5	1065	851
15- 20	855	38.7	926	783
20- 25	822	36.3	875	730
25- 30	779	36.3	832	713
30- 35	772	40.6	851	708
35- 40	750	37.2	805	693
40- 45	727	39.8	801	667
45- 50	736	38.7	813	662
50- 55	725	31.3	776	667
55- 60	745	41.1	813	680
60- 65	767	40.0	827	700
65- 70	794	38.9	861	708
70- 75	768	41.8	838	704
75- 80	774	34.6	820	704
80- 85	745	35.3	809	693
85- 90	758	31.7	824	701
90- 95	848	49.9	931	759
95-100	899	32.6	939	819
100-105	881	41.5	962	796
105-110	844	41.0	903	774
110-115	815	37.1	876	754
115-120	796	29.7	850	743
120-125	785	35.3	843	726
125-130	758	37.9	838	693
130-135	748	36.2	801	687
135-140	715	29.2	776	665
140-145	716	39.5	780	657
145-150	725	34.7	785	644
150-155	728	34.7	776	649
155-160	715	39.5	780	649
160-165	713	39.2	776	644
165-170	686	35.7	760	625
170-175	696	36.2	760	645
175-180	690	44.2	770	624
FOR THIS RUN:	798	136.5	1566	624

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1044	68.8	1168	887
5- 10	825	61.1	945	726
10- 15	698	39.1	794	635
15- 20	637	28.8	691	584
20- 25	613	27.1	652	545
25- 30	581	27.1	621	532
30- 35	576	30.3	635	528
35- 40	559	27.7	600	517
40- 45	542	29.7	597	497
45- 50	549	28.9	606	494
50- 55	540	23.3	579	497
55- 60	556	30.7	606	507
60- 65	572	29.9	617	522
65- 70	592	29.0	642	528
70- 75	573	31.2	625	525
75- 80	577	25.8	611	525
80- 85	555	26.4	603	517
85- 90	565	23.6	614	523
90- 95	632	37.2	695	566
95-100	670	24.3	700	611
100-105	657	31.0	718	594
105-110	629	30.6	674	577
110-115	608	27.7	653	562
115-120	594	22.1	634	554
120-125	586	26.3	628	542
125-130	565	28.3	625	517
130-135	558	27.0	597	513
135-140	533	21.7	579	496
140-145	534	29.4	582	490
145-150	541	25.9	585	480
150-155	543	25.9	579	484
155-160	533	29.4	582	484
160-165	531	29.3	579	480
165-170	511	26.6	567	466
170-175	519	27.0	567	481
175-180	514	33.0	574	465
FOR THIS RUN:	595	101.8	1168	465

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	221.4	2.2	224.5	217.0
5- 10	212.7	3.9	217.5	206.5
10- 15	201.4	2.6	206.5	197.0
15- 20	199.8	1.1	201.5	198.0
20- 25	196.6	2.4	200.0	191.0
25- 30	195.8	1.8	198.0	191.5
30- 35	196.1	0.8	197.5	194.5
35- 40	194.8	0.8	196.0	193.0
40- 45	193.4	1.1	195.0	191.0
45- 50	192.8	0.6	194.0	191.5
50- 55	192.2	1.1	193.5	189.5
55- 60	191.4	1.3	193.5	188.5
60- 65	189.8	1.9	193.5	186.5
65- 70	194.7	0.8	196.0	192.5
70- 75	193.2	0.8	195.0	191.5
75- 80	193.6	0.6	194.5	192.5
80- 85	191.6	2.4	194.0	185.5
85- 90	183.0	2.1	185.5	178.5
90- 95	186.7	5.4	194.5	180.0
95-100	192.6	2.9	196.0	186.0
100-105	198.0	1.5	200.0	193.0
105-110	194.0	1.6	197.0	191.5
110-115	193.9	1.1	196.0	192.0
115-120	193.9	1.4	196.5	190.5
120-125	194.9	0.9	196.5	193.0
125-130	194.8	0.7	196.0	193.5
130-135	193.8	0.6	195.0	192.5
135-140	194.2	0.7	195.5	193.0
140-145	192.2	1.5	195.0	189.5
145-150	192.0	1.9	195.0	189.0
150-155	194.2	0.7	195.0	193.0
155-160	193.2	0.6	194.0	192.0
160-165	193.2	0.8	194.5	191.5
165-170	192.5	1.2	194.0	189.5
170-175	192.5	1.3	193.5	188.5
175-180	191.0	2.0	193.5	186.0
FOR THIS RUN:	194.8	6.6	224.5	178.5

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	626	7.3	635	611
5- 10	601	11.1	615	584
10- 15	573	6.9	585	558
15- 20	568	3.0	573	563
20- 25	560	6.4	567	545
25- 30	559	4.9	563	544
30- 35	559	1.4	562	558
35- 40	556	1.0	558	555
40- 45	553	2.6	556	547
45- 50	552	1.3	554	549
50- 55	551	2.4	553	544
55- 60	549	3.4	552	540
60- 65	545	6.0	557	536
65- 70	559	0.9	560	557
70- 75	554	2.0	558	551
75- 80	556	0.6	557	554
80- 85	549	7.2	555	530
85- 90	528	5.4	534	514
90- 95	542	15.0	563	517
95-100	555	8.5	564	533
100-105	569	3.6	575	560
105-110	557	4.0	563	548
110-115	557	3.0	562	551
115-120	556	3.7	562	548
120-125	559	2.5	562	554
125-130	559	1.3	561	556
130-135	556	1.2	558	553
135-140	557	0.9	558	555
140-145	552	4.9	562	541
145-150	552	6.1	562	543
150-155	557	1.8	559	552
155-160	554	0.7	556	553
160-165	554	1.8	556	550
165-170	552	2.9	554	545
170-175	552	3.9	555	540
175-180	548	5.7	553	534
FOR THIS RUN:	558	16.5	635	514

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1613	99.4	1775	1432
5- 10	1354	51.6	1439	1273
10- 15	1239	61.2	1471	1185
15- 20	1171	22.7	1231	1142
20- 25	1131	43.2	1323	1089
25- 30	1113	38.5	1265	1080
30- 35	1086	8.1	1103	1075
35- 40	1070	5.2	1080	1063
40- 45	1070	13.4	1130	1058
45- 50	1076	9.5	1106	1063
50- 55	1085	18.9	1169	1072
55- 60	1104	25.6	1205	1085
60- 65	1142	39.4	1248	1092
65- 70	1125	8.8	1139	1109
70- 75	1113	12.1	1143	1096
75- 80	1103	5.0	1110	1095
80- 85	1119	44.2	1288	1088
85- 90	1208	67.5	1326	1106
90- 95	1291	46.7	1398	1216
95-100	1274	60.9	1425	1185
100-105	1217	32.0	1306	1159
105-110	1175	32.0	1261	1136
110-115	1158	28.6	1226	1125
115-120	1136	35.4	1248	1102
120-125	1108	18.1	1169	1086
125-130	1081	17.4	1155	1065
130-135	1064	12.5	1098	1048
135-140	1046	8.0	1066	1032
140-145	1044	18.6	1116	1023
145-150	1056	29.5	1139	1022
150-155	1043	9.5	1075	1025
155-160	1027	5.1	1040	1020
160-165	1023	11.1	1058	1010
165-170	1021	26.2	1146	1006
170-175	1025	32.9	1175	1002
175-180	1040	46.3	1252	1006
FOR THIS RUN:	1132	119.1	1775	1002

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1011	70.7	1119	880
5- 10	814	44.6	883	744
10- 15	710	35.9	827	668
15- 20	665	14.0	694	647
20- 25	633	23.7	722	598
25- 30	622	20.1	689	598
30- 35	608	5.9	620	599
35- 40	595	3.5	601	590
40- 45	591	6.8	620	580
45- 50	594	5.1	608	587
50- 55	598	9.6	641	588
55- 60	606	12.7	654	590
60- 65	623	20.3	685	592
65- 70	629	5.5	637	618
70- 75	616	6.7	635	608
75- 80	613	2.4	616	608
80- 85	614	18.1	683	595
85- 90	638	31.3	691	591
90- 95	700	29.4	750	649
95-100	706	32.4	769	641
100-105	693	19.4	737	653
105-110	654	17.2	696	628
110-115	645	14.9	680	624
115-120	632	18.6	689	611
120-125	619	10.0	652	607
125-130	603	9.8	643	593
130-135	591	6.4	608	583
135-140	582	4.8	592	574
140-145	576	9.8	604	557
145-150	582	15.7	620	559
150-155	581	5.1	593	566
155-160	570	2.8	576	566
160-165	567	6.0	583	557
165-170	563	13.2	625	551
170-175	566	17.1	640	546
175-180	570	24.1	677	541
FOR THIS RUN:	633	84.5	1119	541

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	71.2	0.6	72.1	70.4
5- 10	71.2	0.6	72.4	70.4
10- 15	71.1	0.6	71.9	70.1
15- 20	71.1	0.6	72.1	70.1
20- 25	71.1	0.6	71.9	70.1
25- 30	71.0	0.6	72.1	70.1
30- 35	71.0	0.6	71.9	70.1
35- 40	71.0	0.6	71.9	70.1
40- 45	71.0	0.6	71.9	69.9
45- 50	71.0	0.6	72.1	70.1
50- 55	70.9	0.6	71.9	69.9
55- 60	70.9	0.6	71.9	70.1
60- 65	71.0	0.6	72.1	69.9
65- 70	71.1	0.6	72.1	70.1
70- 75	71.1	0.6	72.1	70.1
75- 80	70.9	0.7	72.6	70.1
80- 85	71.1	0.7	72.1	70.1
85- 90	70.9	0.6	71.9	69.9
90- 95	70.8	0.6	72.1	69.9
95-100	71.1	0.7	72.4	69.9
100-105	70.9	0.6	71.9	69.9
105-110	71.0	0.7	72.1	69.9
110-115	70.8	0.7	72.1	69.9
115-120	71.0	0.6	71.9	70.1
120-125	70.9	0.6	71.9	70.1
125-130	71.0	0.6	72.1	70.4
130-135	70.9	0.5	71.6	70.1
135-140	70.9	0.6	71.9	69.9
140-145	71.0	0.6	71.9	70.1
145-150	70.8	0.6	72.1	69.9
150-155	71.0	0.6	71.9	69.9
155-160	70.9	0.6	71.9	70.1
160-165	71.1	0.6	72.1	70.1
165-170	70.9	0.6	71.9	69.9
170-175	70.9	0.7	72.1	69.9
175-180	70.9	0.6	71.9	69.9
FOR THIS RUN:	71.0	0.6	72.6	69.9

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

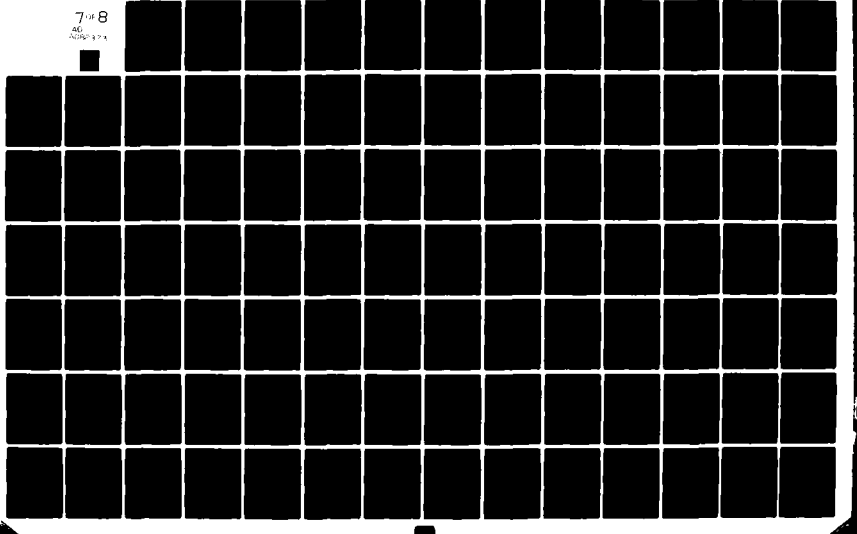
DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29.2	0.1	29.3	29.0
5- 10	29.2	0.1	29.3	29.1
10- 15	29.2	0.1	29.4	28.9
15- 20	29.2	0.0	29.3	29.1
20- 25	29.2	0.0	29.3	29.1
25- 30	29.2	0.0	29.2	29.1
30- 35	29.2	0.0	29.3	29.1
35- 40	29.2	0.0	29.3	29.1
40- 45	29.2	0.0	29.3	29.1
45- 50	29.2	0.0	29.3	29.1
50- 55	29.2	0.0	29.3	29.1
55- 60	29.2	0.0	29.3	29.1
60- 65	29.2	0.1	29.3	29.1
65- 70	29.2	0.0	29.2	29.1
70- 75	29.2	0.0	29.3	29.1
75- 80	29.2	0.0	29.2	29.1
80- 85	29.2	0.1	29.3	29.0
85- 90	29.2	0.1	29.4	29.0
90- 95	29.2	0.1	29.3	29.0
95-100	29.2	0.1	29.3	29.0
100-105	29.2	0.1	29.3	28.9
105-110	29.2	0.1	29.3	29.1
110-115	29.2	0.1	29.3	29.1
115-120	29.2	0.1	29.3	29.0
120-125	29.2	0.1	29.3	29.0
125-130	29.2	0.1	29.3	29.1
130-135	29.2	0.1	29.3	29.0
135-140	29.2	0.0	29.2	29.1
140-145	29.2	0.0	29.3	29.1
145-150	29.2	0.1	29.3	29.0
150-155	29.2	0.0	29.3	29.1
155-160	29.2	0.0	29.3	29.1
160-165	29.2	0.0	29.2	29.1
165-170	29.2	0.0	29.3	29.1
170-175	29.2	0.1	29.4	28.9
175-180	29.2	0.0	29.3	29.0
FOR THIS RUN:	29.2	0.1	29.4	28.9

AD-A082 373 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUC--ETC(U)
FEB 80 D H DRAZIN MIPR-Z51100-8-0012
UNCLASSIFIED DTNSRDC-80/024 NL

7 OF 8
AD
A082 373



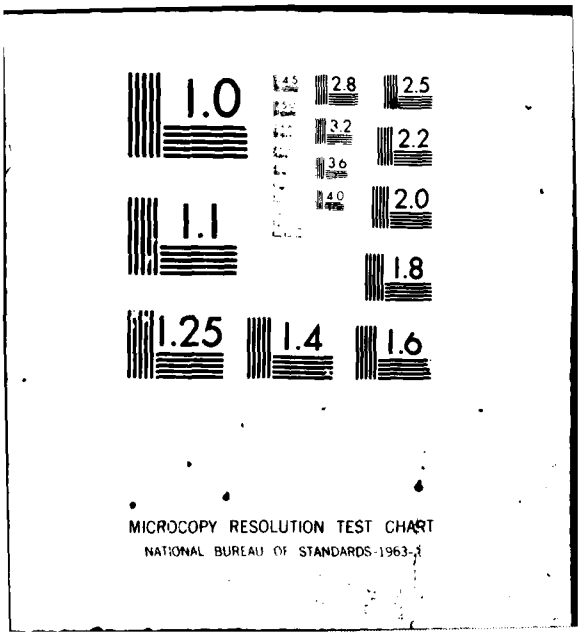

1.0
2.8
2.5
3.2
2.2
3.6
2.0
4.0
1.1
1.8
1.25
1.4
1.6
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.1	0.0	2.1	2.1
5- 10	2.1	0.0	2.1	2.1
10- 15	2.1	0.0	2.1	2.0
15- 20	2.1	0.0	2.1	2.0
20- 25	2.1	0.0	2.1	2.0
25- 30	2.1	0.0	2.1	2.0
30- 35	2.1	0.0	2.1	2.0
35- 40	2.1	0.0	2.1	2.0
40- 45	2.1	0.0	2.1	2.0
45- 50	2.1	0.0	2.1	2.0
50- 55	2.1	0.0	2.1	2.0
55- 60	2.1	0.0	2.1	2.0
60- 65	2.1	0.0	2.1	2.0
65- 70	2.1	0.0	2.1	2.0
70- 75	2.1	0.0	2.1	2.0
75- 80	2.1	0.0	2.1	2.0
80- 85	2.1	0.0	2.1	2.0
85- 90	2.1	0.0	2.1	2.0
90- 95	2.1	0.0	2.1	2.0
95-100	2.1	0.0	2.1	2.0
100-105	2.1	0.0	2.1	2.0
105-110	2.1	0.0	2.1	2.0
110-115	2.1	0.0	2.1	2.0
115-120	2.1	0.0	2.1	2.0
120-125	2.1	0.0	2.1	2.0
125-130	2.1	0.0	2.1	2.0
130-135	2.1	0.0	2.1	2.0
135-140	2.1	0.0	2.1	2.0
140-145	2.1	0.0	2.1	2.0
145-150	2.1	0.0	2.1	2.0
150-155	2.1	0.0	2.1	2.0
155-160	2.1	0.0	2.1	2.0
160-165	2.1	0.0	2.1	2.0
165-170	2.1	0.0	2.1	2.0
170-175	2.1	0.0	2.1	2.0
175-180	2.1	0.0	2.1	2.0
FOR THIS RUN:	2.1	0.0	2.1	2.0

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in. (121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	44	0.2	45	43
5- 10	44	0.2	45	44
10- 15	44	0.2	45	44
15- 20	44	0.4	46	43
20- 25	44	0.1	45	44
25- 30	44	0.1	45	44
30- 35	44	0.1	45	44
35- 40	44	0.2	45	44
40- 45	44	0.2	45	44
45- 50	44	0.1	45	44
50- 55	44	0.3	46	44
55- 60	45	1.8	53	44
60- 65	44	0.1	44	44
65- 70	44	0.2	44	43
70- 75	44	0.1	44	44
75- 80	44	0.1	44	43
80- 85	44	0.1	44	44
85- 90	44	0.1	44	44
90- 95	44	0.2	45	44
95-100	44	0.1	44	44
100-105	44	0.1	44	44
105-110	44	1.8	53	43
110-115	44	0.2	45	43
115-120	43	0.1	43	43
120-125	43	0.3	45	43
125-130	43	0.1	44	43
130-135	43	0.1	43	43
135-140	43	0.1	43	43
140-145	43	0.1	43	43
145-150	43	0.1	43	43
150-155	43	0.4	45	42
155-160	43	0.1	43	42
160-165	43	0.1	43	42
165-170	42	0.1	43	42
170-175	42	0.1	43	42
175-180	42	1.1	48	42
FOR THIS RUN:	44	0.8	53	42

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	633	7.3	642	618
5- 10	607	11.0	621	590
10- 15	579	6.9	591	564
15- 20	574	2.9	579	569
20- 25	566	6.3	573	552
25- 30	565	4.8	569	551
30- 35	565	1.4	568	564
35- 40	562	0.9	564	561
40- 45	559	2.6	562	553
45- 50	558	1.3	560	555
50- 55	557	2.4	559	550
55- 60	555	3.5	558	546
60- 65	552	6.0	562	542
65- 70	565	1.0	566	563
70- 75	560	1.9	564	557
75- 80	562	0.6	563	560
80- 85	555	7.2	561	537
85- 90	534	5.4	541	521
90- 95	548	15.3	569	523
95-100	561	8.6	570	539
100-105	576	3.6	581	566
105-110	563	4.0	570	555
110-115	563	3.0	568	557
115-120	563	3.8	568	554
120-125	565	2.4	569	561
125-130	565	1.4	567	562
130-135	562	1.2	564	560
135-140	563	0.9	564	561
140-145	558	4.3	563	547
145-150	557	5.0	564	547
150-155	563	1.7	565	559
155-160	561	0.7	562	559
160-165	560	1.6	562	557
165-170	558	3.0	561	551
170-175	558	3.9	562	546
175-180	554	5.9	560	540
FOR THIS RUN:	564	16.5	642	521

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	797	49.4	880	706
5- 10	667	26.4	711	625
10- 15	610	30.9	727	582
15- 20	575	11.4	605	560
20- 25	556	22.3	656	534
25- 30	547	19.5	623	530
30- 35	533	4.5	542	527
35- 40	525	2.6	530	521
40- 45	525	6.6	554	517
45- 50	528	5.1	544	522
50- 55	533	9.8	575	525
55- 60	542	13.1	594	532
60- 65	561	20.0	614	535
65- 70	553	4.2	560	545
70- 75	546	5.9	561	539
75- 80	541	2.5	547	537
80- 85	549	22.6	637	534
85- 90	595	34.2	654	543
90- 95	635	23.3	689	597
95-100	627	30.6	701	579
100-105	599	15.7	645	569
105-110	577	15.9	621	557
110-115	569	14.4	603	552
115-120	558	17.7	614	540
120-125	544	9.7	576	532
125-130	530	8.8	568	522
130-135	522	6.6	540	512
135-140	513	4.1	525	504
140-145	512	9.3	549	500
145-150	518	14.9	560	501
150-155	511	4.9	527	502
155-160	504	2.8	512	500
160-165	502	5.6	518	495
165-170	500	13.3	564	493
170-175	503	16.6	578	490
175-180	510	23.4	618	493
FOR THIS RUN:	556	59.6	880	490

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	504	35.4	560	439
5- 10	405	22.7	441	369
10- 15	353	18.3	413	332
15- 20	330	7.1	345	321
20- 25	314	12.3	362	297
25- 30	309	10.4	343	296
30- 35	301	3.2	307	297
35- 40	295	1.7	298	292
40- 45	293	3.4	307	287
45- 50	295	2.8	302	291
50- 55	297	5.0	319	292
55- 60	301	6.6	326	293
60- 65	310	10.4	341	294
65- 70	312	2.7	317	307
70- 75	306	3.3	316	302
75- 80	304	1.3	307	302
80- 85	305	9.6	342	295
85- 90	318	16.1	345	294
90- 95	348	14.9	375	322
95-100	352	16.6	384	317
100-105	345	9.7	368	324
105-110	325	8.7	347	311
110-115	321	7.6	339	311
115-120	314	9.4	343	303
120-125	308	5.6	325	301
125-130	300	5.0	320	295
130-135	293	3.5	303	289
135-140	289	2.4	294	284
140-145	285	4.9	300	275
145-150	289	7.8	307	277
150-155	288	2.6	295	280
155-160	283	1.5	287	281
160-165	281	3.0	289	276
165-170	279	6.8	311	273
170-175	281	8.8	319	270
175-180	283	12.0	336	268
FOR THIS RUN:	314	42.5	560	268

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	64.4	4.5	71.6	52.3
5- 10	58.6	2.6	62.4	53.3
10- 15	55.5	5.7	60.4	30.9
15- 20	55.4	1.6	58.4	51.2
20- 25	53.9	4.4	57.3	34.0
25- 30	54.0	3.0	56.3	43.9
30- 35	53.7	0.8	55.3	51.8
35- 40	53.2	0.9	55.3	51.8
40- 45	52.6	1.4	54.6	47.7
45- 50	53.2	1.2	55.1	50.2
50- 55	53.0	1.6	55.3	46.4
55- 60	52.9	2.6	55.3	41.8
60- 65	53.3	3.8	57.3	44.4
65- 70	54.5	0.8	56.3	53.0
70- 75	53.6	1.2	55.3	50.5
75- 80	53.6	0.9	55.6	52.0
80- 85	51.2	5.0	55.1	30.9
85- 90	50.9	5.1	57.9	37.0
90- 95	56.0	4.6	62.9	43.9
95-100	55.4	5.0	62.2	40.6
100-105	56.3	3.4	60.4	41.6
105-110	54.0	3.1	57.6	43.6
110-115	54.4	2.9	57.6	45.4
115-120	54.5	2.1	57.1	47.2
120-125	54.1	1.9	55.8	46.4
125-130	53.8	1.6	55.6	47.9
130-135	53.2	1.1	55.1	49.5
135-140	53.1	1.0	54.3	50.0
140-145	53.1	1.4	55.8	49.2
145-150	52.6	2.8	55.3	46.2
150-155	53.3	1.2	55.3	50.0
155-160	53.1	0.9	54.6	52.0
160-165	52.8	1.3	54.6	48.5
165-170	52.4	2.2	54.6	42.4
170-175	52.4	2.9	56.6	41.8
175-180	52.1	4.3	56.8	32.9
FOR THIS RUN:	54.0	3.7	71.6	30.9

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	10.5	1.5	11.7	4.2
5- 10	9.8	0.6	10.8	8.7
10- 15	9.9	2.9	23.7	7.7
15- 20	8.3	5.6	13.6	-18.3
20- 25	8.9	2.6	15.0	-1.4
25- 30	9.3	1.9	18.4	7.8
30- 35	7.2	8.5	9.9	-34.3
35- 40	9.4	2.2	19.7	7.9
40- 45	8.6	1.1	9.4	3.9
45- 50	8.4	1.7	10.4	0.8
50- 55	9.0	0.9	12.8	7.6
55- 60	8.8	0.7	11.0	7.1
60- 65	8.6	1.5	12.5	2.7
65- 70	10.5	8.0	49.4	5.9
70- 75	8.9	0.5	9.4	7.9
75- 80	6.8	9.0	13.2	-33.1
80- 85	8.8	0.5	9.4	7.8
85- 90	9.6	4.9	33.3	7.5
90- 95	8.8	1.3	9.9	3.4
95-100	10.3	5.2	35.7	8.0
100-105	12.4	13.9	80.3	8.5
105-110	9.2	1.1	14.2	8.0
110-115	8.8	1.5	9.6	1.7
115-120	9.4	2.6	21.7	7.9
120-125	10.0	4.8	32.8	4.6
125-130	9.9	3.0	21.7	8.0
130-135	8.9	1.5	14.3	4.3
135-140	9.2	1.2	13.3	6.7
140-145	8.2	2.6	9.3	-4.1
145-150	8.6	1.1	10.7	4.1
150-155	8.8	0.5	9.4	7.8
155-160	6.2	9.1	11.0	-30.9
160-165	10.2	6.9	43.9	5.3
165-170	8.8	0.5	9.4	7.8
170-175	8.0	4.5	13.0	-13.6
175-180	8.9	0.8	11.3	7.8
FOR THIS RUN:	9.1	4.6	80.3	-34.3

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.7	0.1	0.8	0.3
5- 10	0.6	0.1	0.7	0.5
10- 15	0.6	0.2	1.4	0.3
15- 20	0.5	0.3	0.8	-1.0
20- 25	0.5	0.2	0.9	-0.1
25- 30	0.5	0.1	1.0	0.4
30- 35	0.4	0.5	0.5	-1.9
35- 40	0.5	0.1	1.1	0.4
40- 45	0.5	0.1	0.5	0.2
45- 50	0.4	0.1	0.6	0.0
50- 55	0.5	0.1	0.7	0.4
55- 60	0.5	0.0	0.6	0.4
60- 65	0.5	0.1	0.7	0.2
65- 70	0.6	0.4	2.8	0.3
70- 75	0.5	0.0	0.5	0.4
75- 80	0.4	0.5	0.7	-1.7
80- 85	0.4	0.0	0.5	0.3
85- 90	0.5	0.2	1.6	0.3
90- 95	0.5	0.1	0.6	0.2
95-100	0.6	0.3	2.2	0.4
100-105	0.7	0.8	4.6	0.4
105-110	0.5	0.1	0.8	0.4
110-115	0.5	0.1	0.5	0.1
115-120	0.5	0.1	1.1	0.4
120-125	0.5	0.3	1.8	0.2
125-130	0.5	0.2	1.2	0.4
130-135	0.5	0.1	0.8	0.2
135-140	0.5	0.1	0.7	0.4
140-145	0.4	0.1	0.5	-0.2
145-150	0.5	0.1	0.6	0.2
150-155	0.5	0.0	0.5	0.4
155-160	0.3	0.5	0.6	-1.6
160-165	0.5	0.4	2.4	0.3
165-170	0.5	0.0	0.5	0.4
170-175	0.4	0.2	0.7	-0.7
175-180	0.5	0.1	0.6	0.3
FOR THIS RUN:	0.5	0.3	4.6	-1.9

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	881.4	5.9	888.4	867.4
5- 10	881.7	6.4	888.4	867.4
10- 15	880.8	5.4	887.4	867.4
15- 20	879.9	6.4	885.4	865.4
20- 25	879.7	5.7	885.4	864.4
25- 30	878.4	6.7	885.4	865.4
30- 35	878.0	6.4	885.4	865.4
35- 40	879.6	5.7	885.4	864.4
40- 45	878.6	6.5	885.4	865.4
45- 50	879.0	5.6	885.4	864.4
50- 55	879.0	6.3	885.4	864.4
55- 60	878.2	6.2	884.4	863.4
60- 65	878.5	5.8	885.4	864.4
65- 70	878.0	6.7	885.4	864.4
70- 75	878.6	6.0	885.4	864.4
75- 80	879.3	6.2	885.4	864.4
80- 85	878.0	6.5	884.4	864.4
85- 90	878.4	5.8	884.4	864.4
90- 95	878.2	5.5	883.4	865.4
95-100	878.0	6.3	886.4	863.4
100-105	879.0	5.9	885.4	865.4
105-110	878.4	6.7	885.4	864.4
110-115	878.7	6.2	885.4	864.4
115-120	879.5	5.7	885.4	867.4
120-125	878.4	6.3	884.4	865.4
125-130	879.5	5.7	885.4	865.4
130-135	878.7	6.9	885.4	864.4
135-140	879.4	5.5	885.4	865.4
140-145	879.6	5.6	885.4	865.4
145-150	878.0	6.8	885.4	863.4
150-155	879.2	6.0	885.4	864.4
155-160	878.6	6.6	885.4	864.4
160-165	878.9	5.7	885.4	865.4
165-170	879.0	6.6	885.4	863.4
170-175	878.0	6.7	884.4	864.4
175-180	879.2	5.8	885.4	864.4
FOR THIS RUN:	879.0	6.2	888.4	863.4

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	37	0.1	37	37
5- 10	37	0.1	37	37
10- 15	38	4.2	58	36
15- 20	37	0.1	37	37
20- 25	37	0.2	38	37
25- 30	37	0.1	37	37
30- 35	37	0.1	37	37
35- 40	37	0.1	37	37
40- 45	37	0.1	37	37
45- 50	37	0.1	37	37
50- 55	37	0.1	37	36
55- 60	37	0.5	39	37
60- 65	37	0.2	37	36
65- 70	37	0.1	37	37
70- 75	37	0.1	37	36
75- 80	37	0.3	38	36
80- 85	36	0.2	37	35
85- 90	36	0.1	37	36
90- 95	37	2.0	47	36
95-100	39	11.2	93	36
100-105	36	0.3	37	36
105-110	36	0.6	39	36
110-115	36	1.5	43	36
115-120	36	0.1	36	36
120-125	36	0.4	38	36
125-130	36	0.1	36	36
130-135	36	0.1	36	35
135-140	36	0.1	36	36
140-145	36	0.1	36	36
145-150	37	9.0	82	35
150-155	36	4.3	58	35
155-160	35	0.1	36	35
160-165	36	0.3	37	35
165-170	35	0.1	35	35
170-175	35	0.4	37	35
175-180	36	5.4	63	35
FOR THIS RUN:	36	2.9	93	35

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	624	7.2	633	610
5- 10	598	10.9	612	582
10- 15	571	6.9	583	556
15- 20	566	2.9	570	561
20- 25	558	6.2	565	543
25- 30	556	4.8	561	543
30- 35	557	1.4	559	555
35- 40	554	1.0	556	552
40- 45	550	2.5	553	545
45- 50	550	1.2	552	547
50- 55	548	2.4	551	542
55- 60	547	3.4	550	537
60- 65	543	5.9	554	534
65- 70	557	1.0	558	555
70- 75	552	1.9	556	549
75- 80	553	0.6	554	552
80- 85	547	7.1	552	529
85- 90	526	5.4	533	512
90- 95	540	15.2	561	515
95-100	553	8.6	562	531
100-105	567	3.6	573	558
105-110	555	3.9	561	547
110-115	555	3.0	560	549
115-120	554	3.8	560	546
120-125	557	2.5	560	552
125-130	557	1.4	559	554
130-135	554	1.2	556	552
135-140	554	0.9	556	552
140-145	549	4.2	555	539
145-150	549	4.9	555	539
150-155	555	1.7	557	550
155-160	552	0.7	553	551
160-165	552	1.6	553	548
165-170	550	3.0	552	543
170-175	550	3.8	553	538
175-180	546	5.8	552	532
FOR THIS RUN:	556	16.4	633	512

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	816	50.4	896	725
5- 10	687	23.2	727	654
10- 15	630	30.5	744	603
15- 20	594	11.0	623	579
20- 25	574	21.8	670	551
25- 30	564	19.5	641	549
30- 35	550	3.9	559	544
35- 40	541	3.1	547	536
40- 45	542	6.9	572	536
45- 50	544	4.8	560	537
50- 55	550	9.7	594	544
55- 60	560	12.2	609	549
60- 65	580	19.4	633	552
65- 70	570	4.6	577	561
70- 75	563	6.4	579	555
75- 80	559	2.7	563	552
80- 85	568	22.0	650	551
85- 90	613	33.4	673	564
90- 95	656	23.6	711	620
95-100	648	30.8	723	603
100-105	617	16.3	660	587
105-110	595	16.2	638	575
110-115	586	14.5	621	569
115-120	576	17.8	632	559
120-125	561	8.8	590	550
125-130	547	8.8	584	538
130-135	539	6.1	555	532
135-140	529	4.3	539	523
140-145	530	9.5	565	518
145-150	535	15.0	577	517
150-155	528	5.0	544	519
155-160	521	2.4	526	516
160-165	518	5.9	537	511
165-170	517	13.3	581	510
170-175	519	16.2	593	508
175-180	527	23.2	632	508
FOR THIS RUN:	574	60.5	896	508

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	509	35.6	562	444
5- 10	411	20.7	445	380
10- 15	359	17.9	416	339
15- 20	336	6.7	350	326
20- 25	320	11.9	365	302
25- 30	314	10.1	348	302
30- 35	306	2.9	312	302
35- 40	300	1.9	303	297
40- 45	298	3.4	313	293
45- 50	299	2.5	306	295
50- 55	302	4.8	324	296
55- 60	306	6.0	329	298
60- 65	315	10.1	346	298
65- 70	317	2.8	322	312
70- 75	311	3.5	320	307
75- 80	309	1.4	311	306
80- 85	311	8.8	344	301
85- 90	323	15.3	349	301
90- 95	354	15.2	381	330
95-100	358	16.6	389	325
100-105	350	9.9	371	329
105-110	330	8.6	351	318
110-115	325	7.5	344	314
115-120	319	9.2	348	309
120-125	312	5.0	328	305
125-130	305	4.9	324	299
130-135	298	3.2	307	295
135-140	293	2.6	298	290
140-145	291	5.1	305	281
145-150	293	7.8	311	282
150-155	293	2.7	299	286
155-160	288	1.3	290	285
160-165	286	3.1	295	281
165-170	285	6.6	315	278
170-175	286	8.4	322	276
175-180	288	11.7	339	273
FOR THIS RUN:	319	42.7	562	273

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	69.7	4.1	75.8	58.0
5- 10	63.1	3.0	68.3	56.2
10- 15	60.0	5.4	64.0	37.3
15- 20	59.6	1.5	61.7	53.7
20- 25	57.9	3.9	60.2	39.1
25- 30	58.1	3.2	60.5	47.4
30- 35	57.6	0.9	59.0	56.2
35- 40	57.4	0.7	58.7	56.4
40- 45	56.6	1.0	58.5	53.9
45- 50	57.2	1.1	59.2	54.7
50- 55	57.0	1.6	59.0	50.6
55- 60	56.7	2.2	59.2	47.6
60- 65	57.4	3.4	61.5	50.1
65- 70	58.6	1.0	60.5	56.2
70- 75	57.5	1.2	59.2	54.4
75- 80	57.9	0.7	59.2	56.4
80- 85	55.2	4.3	58.2	38.0
85- 90	55.1	4.8	61.7	42.1
90- 95	60.2	4.4	67.3	47.6
95-100	59.4	5.1	65.3	44.6
100-105	60.7	3.7	65.8	45.1
105-110	58.0	2.9	61.0	48.9
110-115	58.6	2.4	61.7	51.9
115-120	58.7	2.3	62.2	52.7
120-125	58.2	1.7	60.7	52.9
125-130	58.0	1.7	59.7	51.1
130-135	57.2	1.0	59.2	54.4
135-140	57.2	1.1	59.7	54.7
140-145	57.0	1.6	59.5	51.9
145-150	56.5	2.5	60.0	49.9
150-155	57.5	1.0	59.2	55.4
155-160	57.2	0.9	59.2	55.4
160-165	56.9	1.4	59.2	52.9
165-170	56.3	2.3	58.5	46.1
170-175	56.4	2.4	59.2	47.6
175-180	56.2	3.9	61.0	39.3
FOR THIS RUN:	58.1	3.7	75.8	37.3

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	4.4	27.2	14.4	-106.3
5- 10	3.9	26.1	12.4	-101.1
10- 15	7.6	9.4	11.7	-27.3
15- 20	10.6	0.8	11.5	8.2
20- 25	9.3	4.6	11.5	-12.2
25- 30	-0.1	29.7	11.4	-106.3
30- 35	9.6	3.2	11.1	-4.6
35- 40	9.2	3.5	11.1	-4.7
40- 45	3.7	22.5	11.4	-88.9
45- 50	10.3	0.5	11.0	9.4
50- 55	8.8	6.0	11.0	-19.7
55- 60	9.0	5.6	11.0	-18.2
60- 65	3.1	21.3	11.2	-88.9
65- 70	3.3	24.8	11.2	-106.3
70- 75	0.6	29.5	11.1	-106.3
75- 80	6.8	10.2	11.8	-33.0
80- 85	5.0	21.9	11.0	-100.8
85- 90	-3.0	33.7	10.7	-106.3
90- 95	7.7	11.0	11.5	-43.0
95-100	-0.8	28.7	11.5	-106.3
100-105	2.1	28.9	12.4	-106.3
105-110	9.5	4.6	11.4	-12.6
110-115	3.5	16.5	11.5	-60.1
115-120	6.4	20.0	11.1	-91.5
120-125	9.1	4.5	11.9	-10.5
125-130	10.2	1.3	11.2	5.5
130-135	5.3	18.8	11.7	-80.4
135-140	9.5	3.3	11.4	-6.2
140-145	8.4	6.8	10.8	-22.1
145-150	-1.8	31.7	11.2	-106.3
150-155	6.2	12.8	11.2	-47.7
155-160	8.9	5.3	11.7	-16.4
160-165	7.9	9.4	11.0	-36.9
165-170	10.2	0.6	11.0	8.7
170-175	5.0	22.9	11.0	-106.3
175-180	8.3	6.4	10.9	-19.2
FOR THIS RUN:	6.0	18.2	14.4	-106.3

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	0.3	1.8	1.1	-7.0
5- 10	0.3	1.6	0.8	-5.7
10- 15	0.5	0.5	0.7	-1.7
15- 20	0.6	0.0	0.7	0.5
20- 25	0.5	0.3	0.7	-0.7
25- 30	-0.0	1.7	0.7	-6.2
30- 35	0.6	0.2	0.7	-0.3
35- 40	0.5	0.2	0.6	-0.3
40- 45	0.2	1.3	0.6	-5.0
45- 50	0.6	0.0	0.6	0.5
50- 55	0.5	0.3	0.6	-1.2
55- 60	0.5	0.3	0.6	-1.0
60- 65	0.2	1.2	0.7	-5.3
65- 70	0.2	1.4	0.7	-6.1
70- 75	0.0	1.7	0.6	-5.9
75- 80	0.4	0.6	0.7	-1.9
80- 85	0.3	1.2	0.6	-5.6
85- 90	-0.2	1.9	0.6	-6.0
90- 95	0.4	0.7	0.7	-2.9
95-100	-0.0	1.7	0.7	-5.9
100-105	0.1	1.7	0.8	-6.6
105-110	0.5	0.3	0.7	-0.8
110-115	0.2	1.0	0.7	-3.6
115-120	0.4	1.2	0.7	-5.5
120-125	0.5	0.3	0.7	-0.6
125-130	0.6	0.1	0.6	0.3
130-135	0.3	1.1	0.7	-4.6
135-140	0.5	0.2	0.6	-0.4
140-145	0.5	0.4	0.6	-1.3
145-150	-0.1	1.8	0.6	-6.1
150-155	0.4	0.7	0.6	-2.8
155-160	0.5	0.3	0.7	-0.9
160-165	0.5	0.5	0.6	-2.1
165-170	0.6	0.0	0.6	0.5
170-175	0.3	1.3	0.6	-6.0
175-180	0.5	0.4	0.6	-1.1
FOR THIS RUN:	0.4	1.1	1.1	-7.0

TABLE 15 (Continued)

RUN NUMBER 4310

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 8.9 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	891.6	5.0	901.4	885.4
5- 10	894.7	4.3	900.4	884.4
10- 15	893.0	5.5	900.4	883.4
15- 20	891.8	4.2	899.4	885.4
20- 25	894.8	4.8	899.4	885.4
25- 30	890.6	4.7	899.4	883.4
30- 35	894.1	4.0	899.4	885.4
35- 40	891.8	5.6	899.4	884.4
40- 45	891.5	4.3	899.4	885.4
45- 50	894.5	4.9	899.4	884.4
50- 55	890.3	4.6	899.4	885.4
55- 60	894.4	4.2	899.4	884.4
60- 65	892.8	5.9	900.4	884.4
65- 70	891.4	4.2	899.4	884.4
70- 75	894.6	5.0	900.4	884.4
75- 80	890.7	4.5	899.4	885.4
80- 85	893.7	3.9	899.4	885.4
85- 90	891.9	5.8	899.4	883.4
90- 95	890.2	4.4	898.4	883.4
95-100	895.1	3.8	900.4	886.4
100-105	891.4	5.5	899.4	884.4
105-110	892.6	4.3	899.4	884.4
110-115	894.1	5.6	900.4	884.4
115-120	890.6	4.5	900.4	884.4
120-125	894.8	4.2	899.4	885.4
125-130	891.0	5.2	899.4	885.4
130-135	893.2	4.0	899.4	885.4
135-140	893.3	5.5	899.4	885.4
140-145	890.4	4.1	899.4	885.4
145-150	895.3	4.2	900.4	885.4
150-155	890.6	5.0	899.4	884.4
155-160	893.8	4.4	899.4	885.4
160-165	893.6	5.7	899.4	885.4
165-170	891.3	4.0	899.4	885.4
170-175	894.8	4.6	899.4	885.4
175-180	891.0	4.9	900.4	884.4
FOR THIS RUN:	892.7	5.0	901.4	883.4

TABLE 16 - MACHINERY PARAMETERS, RUN 4330

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	42514	1130.3	44264	40240
5- 10	40421	1189.3	42252	37222
10- 15	38791	957.8	40240	37222
15- 20	38530	1083.5	40240	36719
20- 25	37162	1209.9	39234	35210
25- 30	36357	1219.9	38228	34204
30- 35	35552	1153.4	37725	34204
35- 40	34969	966.2	36216	33198
40- 45	34526	953.1	36216	32695
45- 50	34184	1338.2	36216	32192
50- 55	34023	942.4	35210	32192
55- 60	33741	1146.3	35210	31689
60- 65	33641	1019.2	34707	31689
65- 70	33218	969.9	35210	32192
70- 75	34365	1204.9	36216	32192
75- 80	34325	1038.5	35713	32192
80- 85	33882	1014.8	35713	32192
85- 90	33178	759.2	34707	32192
90- 95	33963	912.3	35713	32695
95-100	34043	1003.2	35210	32192
100-105	34224	1059.7	35713	32192
105-110	34043	1013.2	35713	32192
110-115	33942	1046.6	35713	32695
115-120	34425	1216.2	36216	32192
120-125	34546	1062.0	36216	32695
125-130	35250	974.5	37222	33198
130-135	35069	1040.8	37222	33701
135-140	35874	1204.9	38228	34204
140-145	36136	1052.0	38228	34707
145-150	35492	1026.7	37725	33701
150-155	35230	1106.4	36719	33701
155-160	35190	1088.0	36719	33198
160-165	35270	947.1	36216	33198
165-170	34928	1065.4	36216	32695
170-175	35391	790.6	36719	33701
175-180	35130	1089.8	36719	33198
180-185	35190	969.9	36216	33198
185-190	35210	943.7	37222	33701
190-192	35160	761.2	36216	33701
FOR THIS RUN:	35312	2166.6	44264	31689

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	57648	1532.7	60022	54565
5- 10	54811	1612.7	57294	50473
10- 15	52601	1298.7	54565	50473
15- 20	52246	1469.2	54565	49791
20- 25	50391	1640.6	53201	47745
25- 30	49300	1654.2	51837	46381
30- 35	48209	1563.9	51155	46381
35- 40	47417	1310.1	49109	45016
40- 45	46817	1292.4	49109	44334
45- 50	46353	1814.7	49109	43652
50- 55	46135	1277.9	47745	43652
55- 60	45753	1554.4	47745	42970
60- 65	45617	1382.0	47063	42970
65- 70	45044	1315.2	47745	43652
70- 75	46599	1633.8	49109	43652
75- 80	46544	1408.2	48427	43652
80- 85	45944	1376.1	48427	43652
85- 90	44989	1029.5	47063	43652
90- 95	46053	1237.1	48427	44334
95-100	46162	1360.3	47745	43652
100-105	46408	1436.9	48427	43652
105-110	46162	1373.9	48427	43652
110-115	46026	1419.2	48427	44334
115-120	46681	1649.2	49109	43652
120-125	46844	1440.1	49109	44334
125-130	47799	1321.5	50473	45016
130-135	47554	1411.3	50473	45699
135-140	48645	1633.8	51837	46381
140-145	49000	1426.5	51837	47063
145-150	48127	1392.2	51155	45699
150-155	47772	1500.3	49791	45699
155-160	47717	1475.3	49791	45016
160-165	47827	1284.3	49109	45016
165-170	47363	1444.7	49109	44334
170-175	47990	1072.0	49791	45699
175-180	47636	1477.8	49791	45016
180-185	47717	1315.2	49109	45016
185-190	47745	1279.7	50473	45699
190-192	47677	1032.2	49109	45699
FOR THIS RUN:	47883	2937.9	60022	42970

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	36946	7931.7	48635	10649
5- 10	39028	3179.4	48037	33381
10- 15	38190	3955.4	47140	31287
15- 20	36611	3432.3	43251	26202
20- 25	38825	2498.2	42952	34577
25- 30	37389	3095.7	43251	30689
30- 35	34362	3114.8	40260	25903
35- 40	36324	2692.2	40858	29792
40- 45	35750	3140.4	40858	29492
45- 50	32639	3003.2	37568	23809
50- 55	33955	2652.4	38167	28595
55- 60	35056	2692.6	39363	28894
60- 65	31694	4008.4	37867	18126
65- 70	34158	6999.4	64787	27698
70- 75	31706	9127.0	50430	7059
75- 80	32591	3081.7	39662	27698
80- 85	35152	2324.5	38765	29792
85- 90	34470	2668.4	38765	30091
90- 95	30928	5820.2	39363	8555
95-100	35427	3553.9	41158	24408
100-105	33931	3513.4	39662	24108
105-110	33512	2942.9	40260	27997
110-115	36874	4954.5	57309	29492
115-120	32220	4773.2	42354	17528
120-125	31311	7747.7	50131	7957
125-130	35929	5132.9	46542	22613
130-135	31718	7579.7	42055	11247
135-140	32771	8956.6	43850	5265
140-145	35020	5089.5	49533	23510
145-150	35451	4219.8	41457	23510
150-155	34505	6866.3	42055	11845
155-160	33249	4151.5	43850	19622
160-165	35379	3569.0	45644	27698
165-170	36073	4361.6	43251	25006
170-175	34864	3517.3	43550	29492
175-180	33010	4933.2	39363	18425
180-185	36037	2902.8	43850	31885
185-190	34673	3583.0	45046	29792
190-192	34248	2375.8	37568	30091
FOR THIS RUN:	34673	5190.4	64787	5265

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (N)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	164337	35280.1	216330	47365
5- 10	173596	14141.8	213669	148478
10- 15	169871	17593.6	209678	139165
15- 20	162846	15266.9	192382	116547
20- 25	172692	11112.1	191052	153800
25- 30	166306	13769.8	192382	136504
30- 35	152842	13854.5	179078	115217
35- 40	161569	11974.9	181739	132513
40- 45	159015	13968.5	181739	131182
45- 50	145178	13358.0	167104	105904
50- 55	151032	11797.7	169765	127191
55- 60	155928	11976.8	175086	128521
60- 65	140974	17829.3	168434	80626
65- 70	151937	31133.2	288173	123200
70- 75	141027	40597.1	224312	31400
75- 80	144965	13707.3	176417	123200
80- 85	156354	10339.2	172426	132513
85- 90	153321	11869.2	172426	133843
90- 95	137568	25888.4	175086	38052
95-100	157578	15807.7	183069	108565
100-105	150926	15627.6	176417	107234
105-110	149063	13090.1	179078	124530
110-115	164017	22037.7	254912	131182
115-120	143316	21231.3	188391	77965
120-125	139271	34461.8	222982	35391
125-130	159813	22831.1	207017	100582
130-135	141081	33714.4	187060	50026
135-140	145764	39839.2	195043	23417
140-145	155769	22638.0	220321	104574
145-150	157684	18769.6	184399	104574
150-155	153480	30541.5	187060	52687
155-160	147892	18466.0	195043	87278
160-165	157365	15875.0	203025	123200
165-170	160452	19400.6	192382	111226
170-175	155077	15644.8	193712	131182
175-180	146828	21942.9	175086	81956
180-185	160292	12911.7	195043	141826
185-190	154225	15937.3	200365	132513
190-192	152336	10567.5	167104	133843
FOR THIS RUN:	154224	23086.8	288173	23417

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2018	67.0	2131	1883
5- 10	1995	62.2	2093	1837
10- 15	1902	47.6	1971	1816
15- 20	1886	52.5	1971	1816
20- 25	1845	61.5	1955	1744
25- 30	1801	60.9	1901	1685
30- 35	1745	58.3	1858	1661
35- 40	1722	48.7	1794	1635
40- 45	1694	46.4	1780	1599
45- 50	1672	61.8	1770	1573
50- 55	1672	45.9	1734	1580
55- 60	1656	58.6	1734	1555
60- 65	1642	53.0	1703	1539
65- 70	1609	44.8	1713	1535
70- 75	1641	55.9	1751	1544
75- 80	1680	56.0	1763	1569
80- 85	1666	50.2	1763	1586
85- 90	1625	36.7	1696	1573
90- 95	1632	48.0	1724	1552
95-100	1666	49.1	1731	1563
100-105	1674	51.4	1752	1583
105-110	1653	49.4	1746	1573
110-115	1648	54.9	1742	1563
115-120	1670	58.3	1770	1580
120-125	1661	54.8	1770	1556
125-130	1709	53.5	1819	1596
130-135	1692	61.8	1816	1602
135-140	1716	63.5	1868	1616
140-145	1771	52.5	1876	1679
145-150	1744	51.1	1841	1650
150-155	1718	58.5	1798	1617
155-160	1720	55.9	1798	1633
160-165	1730	45.0	1784	1629
165-170	1704	55.0	1780	1591
170-175	1714	36.1	1783	1630
175-180	1716	56.9	1805	1609
180-185	1711	44.7	1770	1623
185-190	1704	52.1	1809	1628
190-192	1727	36.9	1780	1657
FOR THIS RUN:	1722	106.8	2131	1535

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1504	50.0	1589	1404
5- 10	1487	46.4	1561	1370
10- 15	1418	35.5	1469	1354
15- 20	1406	39.2	1469	1354
20- 25	1376	45.9	1458	1301
25- 30	1343	45.4	1418	1256
30- 35	1301	43.5	1386	1238
35- 40	1284	36.3	1338	1219
40- 45	1263	34.6	1328	1192
45- 50	1247	46.1	1320	1173
50- 55	1246	34.3	1293	1178
55- 60	1235	43.7	1293	1159
60- 65	1224	39.5	1270	1147
65- 70	1199	33.4	1277	1145
70- 75	1224	41.7	1306	1151
75- 80	1253	41.7	1314	1170
80- 85	1242	37.4	1314	1182
85- 90	1211	27.4	1265	1173
90- 95	1217	35.8	1286	1157
95-100	1242	36.6	1291	1165
100-105	1248	38.4	1307	1180
105-110	1232	36.9	1302	1173
110-115	1229	40.9	1299	1165
115-120	1246	43.5	1320	1178
120-125	1238	40.8	1320	1160
125-130	1274	39.9	1357	1190
130-135	1262	46.1	1354	1195
135-140	1280	47.4	1393	1205
140-145	1321	39.2	1399	1252
145-150	1300	38.1	1372	1231
150-155	1281	43.6	1341	1206
155-160	1283	41.7	1341	1218
160-165	1290	33.5	1330	1215
165-170	1271	41.0	1328	1186
170-175	1278	26.9	1329	1215
175-180	1280	42.4	1346	1200
180-185	1276	33.3	1320	1210
185-190	1271	38.9	1349	1214
190-192	1288	27.5	1328	1235
FOR THIS RUN:	1284	79.7	1589	1145

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	249.3	8.4	261.2	234.0
5- 10	259.2	1.3	261.7	257.2
10- 15	257.5	1.6	260.2	251.5
15- 20	257.0	3.2	261.7	250.5
20- 25	260.8	1.2	262.2	257.2
25- 30	260.1	0.7	261.2	258.7
30- 35	257.8	1.4	259.7	255.0
35- 40	258.6	0.9	260.2	256.2
40- 45	257.6	1.9	259.2	252.5
45- 50	256.9	1.0	258.2	253.5
50- 55	258.0	0.5	258.7	256.7
55- 60	257.7	0.8	258.7	255.5
60- 65	256.3	1.0	257.7	255.0
65- 70	254.4	2.5	257.2	249.0
70- 75	250.9	4.5	256.7	242.0
75- 80	257.0	2.4	260.2	251.0
80- 85	258.2	0.8	259.2	256.7
85- 90	257.2	0.9	258.7	255.0
90- 95	252.4	3.2	257.2	245.5
95-100	257.0	1.5	259.2	253.0
100-105	256.8	1.2	259.2	254.5
105-110	255.0	1.2	256.7	251.5
110-115	254.9	2.0	257.7	250.5
115-120	254.9	1.9	258.2	251.5
120-125	252.5	4.8	258.2	242.5
125-130	254.6	2.6	258.2	250.0
130-135	253.4	4.4	259.7	246.0
135-140	251.3	4.4	257.7	244.0
140-145	257.4	1.6	260.2	254.0
145-150	258.1	1.7	261.2	255.0
150-155	256.0	2.2	259.2	252.0
155-160	256.8	1.7	259.2	253.5
160-165	257.6	1.2	259.7	255.5
165-170	256.2	3.4	258.7	244.5
170-175	254.3	2.6	257.2	245.5
175-180	256.6	1.7	259.2	253.5
180-185	255.4	1.2	257.2	252.5
185-190	254.2	3.1	258.7	249.0
190-192	258.0	0.7	259.2	256.7
FOR THIS RUN:	256.1	3.6	262.2	234.0

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	746	15.8	763	703
5- 10	741	5.1	754	735
10- 15	735	4.9	741	716
15- 20	738	6.6	747	720
20- 25	743	2.6	745	735
25- 30	741	1.2	743	739
30- 35	735	3.5	738	726
35- 40	737	2.3	740	730
40- 45	734	4.6	739	719
45- 50	734	2.3	737	728
50- 55	735	0.5	735	734
55- 60	734	1.1	735	732
60- 65	730	2.6	734	723
65- 70	726	6.4	731	711
70- 75	723	12.0	736	689
75- 80	733	6.9	741	708
80- 85	737	2.8	744	734
85- 90	732	2.8	734	720
90- 95	721	9.9	733	693
95-100	733	4.0	736	722
100-105	732	2.9	736	726
105-110	727	4.1	731	713
110-115	728	5.0	735	717
115-120	728	6.2	735	711
120-125	721	13.4	735	689
125-130	730	8.1	743	713
130-135	723	13.2	744	693
135-140	727	12.5	744	700
140-145	734	5.8	747	723
145-150	736	4.9	743	723
150-155	730	6.8	737	716
155-160	734	4.1	741	726
160-165	734	3.2	738	725
165-170	729	10.7	737	694
170-175	728	6.1	734	709
175-180	733	4.2	737	724
180-185	729	2.3	732	724
185-190	727	7.9	736	710
190-192	735	0.6	736	735
FOR THIS RUN:	732	8.9	763	689

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2123	92.7	2387	2008
5- 10	2070	28.1	2141	2034
10- 15	2052	44.5	2167	2000
15- 20	1997	26.1	2073	1966
20- 25	1956	29.0	2044	1914
25- 30	1896	10.7	1911	1873
30- 35	1869	35.6	2027	1835
35- 40	1839	20.8	1931	1823
40- 45	1823	38.7	2004	1785
45- 50	1802	21.3	1891	1780
50- 55	1786	7.4	1801	1775
55- 60	1764	6.7	1783	1754
60- 65	1763	33.6	1894	1741
65- 70	1779	53.8	1954	1735
70- 75	1830	119.3	2302	1694
75- 80	1810	61.3	2056	1767
80- 85	1792	14.1	1835	1775
85- 90	1781	27.1	1911	1767
90- 95	1815	67.6	1991	1728
95-100	1806	30.5	1941	1788
100-105	1789	11.2	1834	1775
105-110	1811	51.3	1958	1774
110-115	1809	32.2	1913	1775
115-120	1825	45.1	1961	1784
120-125	1855	98.9	2116	1780
125-130	1879	58.3	2071	1820
130-135	1910	94.9	2200	1811
135-140	1917	104.9	2321	1821
140-145	1917	52.7	2107	1865
145-150	1873	36.3	2007	1835
150-155	1879	66.8	2127	1825
155-160	1860	31.3	1970	1837
160-165	1845	21.2	1934	1828
165-170	1856	78.1	2131	1805
170-175	1846	56.6	2053	1780
175-180	1851	29.7	1967	1825
180-185	1860	30.6	1930	1833
185-190	1875	46.6	2056	1833
190-192	1868	5.1	1874	1857
FOR THIS RUN:	1863	97.3	2387	1694

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1583	58.5	1711	1449
5- 10	1535	24.7	1585	1508
10- 15	1509	26.5	1576	1471
15- 20	1475	23.9	1534	1415
20- 25	1453	21.8	1503	1415
25- 30	1406	9.5	1416	1384
30- 35	1373	24.5	1472	1344
35- 40	1355	13.6	1410	1342
40- 45	1338	25.0	1447	1302
45- 50	1322	14.2	1377	1305
50- 55	1312	5.0	1322	1304
55- 60	1295	6.1	1310	1287
60- 65	1288	22.0	1370	1273
65- 70	1291	34.7	1391	1243
70- 75	1322	75.3	1587	1198
75- 80	1327	42.4	1505	1277
80- 85	1321	13.2	1360	1305
85- 90	1304	15.3	1376	1294
90- 95	1309	45.4	1414	1215
95-100	1323	18.2	1402	1302
100-105	1309	10.4	1341	1295
105-110	1316	32.4	1412	1290
110-115	1316	23.4	1379	1279
115-120	1328	28.4	1408	1284
120-125	1337	60.3	1496	1257
125-130	1371	38.7	1503	1312
130-135	1380	56.5	1558	1291
135-140	1392	70.6	1647	1309
140-145	1407	36.3	1523	1360
145-150	1379	26.0	1475	1348
150-155	1371	43.9	1531	1329
155-160	1364	22.1	1441	1337
160-165	1354	14.3	1402	1339
165-170	1353	44.7	1513	1266
170-175	1343	44.1	1484	1263
175-180	1356	20.5	1437	1333
180-185	1357	20.0	1397	1337
185-190	1362	30.7	1459	1314
190-192	1374	4.7	1380	1364
FOR THIS RUN:	1364	74.6	1711	1198

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	73.1	12.0	111.2	65.3
5- 10	69.4	0.9	71.1	67.6
10- 15	70.1	0.8	72.1	68.9
15- 20	69.9	0.9	71.6	68.6
20- 25	69.9	0.7	71.1	69.1
25- 30	69.9	0.7	71.1	69.1
30- 35	70.0	0.5	70.6	69.1
35- 40	69.9	0.7	71.1	69.1
40- 45	70.0	0.6	70.9	68.9
45- 50	70.0	0.6	70.9	69.1
50- 55	69.9	0.6	70.9	68.9
55- 60	69.9	0.6	70.9	68.9
60- 65	69.9	0.7	70.9	68.9
65- 70	70.0	0.6	71.1	69.1
70- 75	70.7	3.2	85.5	68.6
75- 80	69.8	0.7	71.6	68.9
80- 85	69.8	0.6	70.6	68.9
85- 90	70.0	0.6	71.1	69.1
90- 95	69.9	0.6	71.1	68.9
95-100	69.9	0.6	70.9	69.1
100-105	69.8	0.6	70.9	68.9
105-110	70.0	0.5	71.1	69.1
110-115	69.9	0.7	71.1	68.9
115-120	69.9	0.6	70.9	68.9
120-125	69.9	0.5	70.9	69.1
125-130	69.9	0.6	70.6	68.9
130-135	70.0	0.7	71.4	68.6
135-140	71.4	5.9	98.8	67.8
140-145	69.6	0.7	71.1	68.4
145-150	70.0	0.6	71.1	69.1
150-155	69.9	0.6	70.6	68.9
155-160	69.9	0.6	70.9	68.9
160-165	69.9	0.7	70.9	68.9
165-170	69.9	0.7	71.1	69.1
170-175	69.8	0.6	71.1	68.6
175-180	69.9	0.6	71.1	69.1
180-185	69.9	0.6	70.9	69.1
185-190	69.8	0.6	70.6	68.9
190-192	70.0	0.6	70.9	69.1
FOR THIS RUN:	70.0	2.4	111.2	65.3

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	31.1	1.6	34.1	28.9
5- 10	29.0	0.2	29.2	28.8
10- 15	29.2	0.1	29.8	29.1
15- 20	29.3	0.2	29.8	29.1
20- 25	29.2	0.0	29.3	29.1
25- 30	29.2	0.0	29.3	29.1
30- 35	29.2	0.1	29.3	29.0
35- 40	29.2	0.0	29.2	29.1
40- 45	29.2	0.1	29.3	29.0
45- 50	29.2	0.0	29.3	29.1
50- 55	29.2	0.0	29.2	29.1
55- 60	29.2	0.0	29.3	29.1
60- 65	29.2	0.0	29.3	29.1
65- 70	29.2	0.1	29.3	28.9
70- 75	29.5	0.3	30.4	29.0
75- 80	29.2	0.1	29.5	28.7
80- 85	29.2	0.0	29.3	29.1
85- 90	29.2	0.0	29.3	29.1
90- 95	29.2	0.1	29.5	28.9
95-100	29.2	0.0	29.3	29.1
100-105	29.2	0.0	29.3	29.1
105-110	29.2	0.1	29.3	28.9
110-115	29.2	0.1	29.3	29.1
115-120	29.2	0.1	29.3	29.1
120-125	29.2	0.1	29.4	28.9
125-130	29.2	0.1	29.3	29.1
130-135	29.2	0.1	29.3	28.9
135-140	29.7	0.5	30.9	29.0
140-145	29.2	0.1	29.4	28.9
145-150	29.2	0.1	29.3	29.1
150-155	29.2	0.1	29.3	29.0
155-160	29.2	0.0	29.3	29.1
160-165	29.2	0.0	29.3	29.1
165-170	29.2	0.1	29.4	28.9
170-175	29.2	0.1	29.3	28.9
175-180	29.2	0.1	29.3	29.0
180-185	29.2	0.1	29.3	29.1
185-190	29.2	0.0	29.3	29.1
190-192	29.2	0.0	29.2	29.1
FOR THIS RUN:	29.3	0.4	34.1	28.7

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.3	0.5	3.8	1.9
5- 10	2.0	0.0	2.1	2.0
10- 15	2.0	0.0	2.1	2.0
15- 20	2.1	0.0	2.1	2.0
20- 25	2.0	0.0	2.1	2.0
25- 30	2.0	0.0	2.1	2.0
30- 35	2.0	0.0	2.1	2.0
35- 40	2.0	0.0	2.1	2.0
40- 45	2.0	0.0	2.1	2.0
45- 50	2.0	0.0	2.1	2.0
50- 55	2.0	0.0	2.1	2.0
55- 60	2.0	0.0	2.1	2.0
60- 65	2.0	0.0	2.1	2.0
65- 70	2.0	0.0	2.1	2.0
70- 75	2.1	0.1	2.5	2.0
75- 80	2.0	0.0	2.1	2.0
80- 85	2.0	0.0	2.1	2.0
85- 90	2.0	0.0	2.1	2.0
90- 95	2.0	0.0	2.1	2.0
95-100	2.0	0.0	2.1	2.0
100-105	2.0	0.0	2.1	2.0
105-110	2.0	0.0	2.1	2.0
110-115	2.0	0.0	2.1	2.0
115-120	2.0	0.0	2.1	2.0
120-125	2.0	0.0	2.1	2.0
125-130	2.0	0.0	2.1	2.0
130-135	2.0	0.0	2.1	2.0
135-140	2.1	0.2	2.9	2.0
140-145	2.0	0.0	2.1	2.0
145-150	2.0	0.0	2.1	2.0
150-155	2.0	0.0	2.1	2.0
155-160	2.0	0.0	2.1	2.0
160-165	2.0	0.0	2.1	2.0
165-170	2.0	0.0	2.1	2.0
170-175	2.0	0.0	2.1	2.0
175-180	2.0	0.0	2.1	2.0
180-185	2.0	0.0	2.1	2.0
185-190	2.0	0.0	2.1	2.0
190-192	2.0	0.0	2.1	2.0
FOR THIS RUN:	2.0	0.1	3.8	1.9

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	28	0.2	28	28
5- 10	28	0.1	28	28
10- 15	28	0.1	28	28
15- 20	28	0.1	29	28
20- 25	28	0.1	29	28
25- 30	29	0.1	29	28
30- 35	29	0.1	29	28
35- 40	29	0.1	29	28
40- 45	30	5.0	54	29
45- 50	29	0.3	30	29
50- 55	31	5.9	55	29
55- 60	29	0.1	29	29
60- 65	29	0.1	30	29
65- 70	29	0.1	29	29
70- 75	30	3.4	47	28
75- 80	29	0.1	29	29
80- 85	29	0.1	29	29
85- 90	29	0.1	29	29
90- 95	29	0.1	30	29
95-100	29	0.1	30	29
100-105	29	0.1	29	29
105-110	30	0.2	30	29
110-115	30	0.1	30	29
115-120	30	0.2	31	29
120-125	30	0.1	30	29
125-130	30	0.2	30	29
130-135	30	0.1	30	30
135-140	30	0.4	32	30
140-145	30	0.1	30	30
145-150	30	0.1	30	30
150-155	30	0.1	30	30
155-160	30	0.1	30	30
160-165	31	4.1	51	30
165-170	31	3.1	46	30
170-175	30	0.1	30	30
175-180	30	0.1	30	30
180-185	30	0.1	31	30
185-190	31	4.5	54	30
190-192	31	0.5	32	30
FOR THIS RUN:	30	1.9	55	28

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	750	14.5	768	712
5- 10	747	3.9	755	741
10- 15	742	5.5	748	720
15- 20	745	6.5	753	729
20- 25	750	3.0	752	741
25- 30	748	1.2	750	746
30- 35	742	3.7	745	732
35- 40	744	2.1	747	736
40- 45	741	5.4	744	725
45- 50	740	2.4	743	735
50- 55	742	0.5	743	741
55- 60	741	1.0	742	739
60- 65	737	2.7	741	730
65- 70	732	7.3	738	715
70- 75	727	13.2	743	692
75- 80	740	7.1	747	715
80- 85	743	1.8	747	740
85- 90	739	2.8	742	727
90- 95	728	10.5	740	697
95-100	740	4.1	743	729
100-105	739	2.9	743	732
105-110	734	4.3	738	720
110-115	735	5.0	742	723
115-120	735	6.2	742	718
120-125	727	14.0	743	695
125-130	736	7.1	745	720
130-135	730	12.9	747	701
135-140	733	13.3	752	706
140-145	742	5.9	754	730
145-150	743	4.9	750	730
150-155	737	6.9	744	724
155-160	740	4.2	746	730
160-165	741	3.3	745	732
165-170	736	11.0	744	699
170-175	734	6.1	741	717
175-180	738	4.6	744	729
180-185	735	3.5	740	727
185-190	733	8.6	744	716
190-192	743	0.6	743	742
FOR THIS RUN:	739	9.0	768	692

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1052	46.6	1183	990
5- 10	1027	14.8	1063	1007
10- 15	1017	21.9	1078	993
15- 20	989	12.6	1025	972
20- 25	968	14.7	1015	948
25- 30	939	5.8	948	929
30- 35	925	18.2	1007	909
35- 40	910	10.5	957	901
40- 45	902	20.1	997	886
45- 50	892	10.2	934	881
50- 55	884	4.3	892	877
55- 60	873	3.9	883	864
60- 65	873	17.4	941	862
65- 70	880	27.5	971	858
70- 75	905	57.9	1131	836
75- 80	896	30.8	1022	874
80- 85	887	7.0	910	878
85- 90	881	13.6	946	874
90- 95	898	33.9	990	854
95-100	894	15.4	962	883
100-105	886	5.8	909	879
105-110	897	26.1	971	879
110-115	895	16.3	948	876
115-120	903	22.4	973	882
120-125	918	49.8	1050	880
125-130	930	29.3	1027	901
130-135	946	47.9	1094	896
135-140	949	52.6	1151	901
140-145	949	26.4	1045	924
145-150	928	18.2	996	910
150-155	930	33.5	1055	903
155-160	921	15.7	976	912
160-165	913	10.4	958	905
165-170	919	39.5	1059	888
170-175	914	28.3	1020	882
175-180	916	15.5	978	902
180-185	921	15.5	956	906
185-190	928	23.7	1020	907
190-192	925	3.5	930	918
FOR THIS RUN:	923	48.7	1183	836

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	789	30.2	856	719
5- 10	767	11.7	791	754
10- 15	754	13.0	790	737
15- 20	737	11.2	759	708
20- 25	726	11.1	752	708
25- 30	703	5.0	708	693
30- 35	686	12.6	738	673
35- 40	677	6.7	705	670
40- 45	668	13.3	726	647
45- 50	660	7.4	686	648
50- 55	656	3.0	662	651
55- 60	647	3.3	654	640
60- 65	643	11.5	687	635
65- 70	644	18.0	697	621
70- 75	658	38.1	788	593
75- 80	663	21.1	751	635
80- 85	659	5.7	675	652
85- 90	651	7.7	688	646
90- 95	654	23.1	711	606
95-100	661	9.4	702	650
100-105	654	5.5	671	647
105-110	658	16.7	709	645
110-115	658	12.0	691	639
115-120	664	14.4	705	641
120-125	668	31.0	748	624
125-130	684	19.6	751	656
130-135	690	28.9	783	645
135-140	695	35.5	821	653
140-145	704	18.4	763	680
145-150	690	13.0	739	675
150-155	685	22.1	765	663
155-160	682	11.0	721	668
160-165	677	7.0	701	668
165-170	676	23.1	759	629
170-175	671	21.6	741	632
175-180	677	11.0	721	665
180-185	677	9.8	701	665
185-190	680	15.9	730	655
190-192	687	3.0	691	681
FOR THIS RUN:	681	37.4	856	593

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	86.2	7.1	98.5	71.6
5- 10	81.6	2.0	84.0	75.9
10- 15	80.1	3.8	83.8	67.5
15- 20	83.3	1.6	85.6	80.0
20- 25	80.8	2.5	83.8	69.8
25- 30	80.7	0.8	82.3	78.7
30- 35	78.9	3.1	81.7	66.0
35- 40	79.6	1.2	81.2	74.9
40- 45	77.7	3.9	80.2	59.4
45- 50	79.3	1.3	82.0	75.6
50- 55	78.8	0.8	80.5	76.9
55- 60	78.3	0.8	79.5	76.7
60- 65	77.5	3.1	81.0	64.7
65- 70	77.3	5.8	81.2	54.6
70- 75	77.3	8.4	84.8	43.4
75- 80	79.8	5.7	82.8	52.5
80- 85	79.0	1.2	80.7	75.4
85- 90	77.8	2.6	79.7	65.5
90- 95	77.6	5.4	82.3	58.6
95-100	79.3	2.2	82.0	71.1
100-105	78.8	1.0	82.3	77.2
105-110	76.9	4.7	80.0	60.1
110-115	79.3	2.5	82.3	72.1
115-120	79.1	3.4	82.0	65.0
120-125	76.6	6.8	83.0	56.8
125-130	80.4	4.8	84.8	65.0
130-135	76.6	7.1	84.8	55.1
135-140	81.1	8.8	88.9	47.2
140-145	79.0	5.7	84.5	57.1
145-150	80.6	3.4	83.5	65.5
150-155	78.6	5.3	82.8	58.1
155-160	80.3	2.6	82.8	69.5
160-165	79.6	1.3	81.5	75.6
165-170	76.9	6.7	81.2	51.5
170-175	79.7	4.7	83.5	60.4
175-180	79.0	3.0	82.8	68.3
180-185	78.4	3.1	81.2	70.1
185-190	79.6	4.0	83.3	64.2
190-192	79.7	0.7	80.7	79.0
FOR THIS RUN:	79.3	4.7	98.5	43.4

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	13.9	2.3	15.4	3.1
5- 10	13.1	2.6	14.7	3.1
10- 15	14.0	0.5	14.5	13.0
15- 20	13.3	2.8	14.7	0.5
20- 25	12.3	7.8	14.6	-25.7
25- 30	13.7	0.7	14.4	11.4
30- 35	13.4	0.9	14.2	9.7
35- 40	13.5	0.7	14.3	11.6
40- 45	12.5	3.5	15.4	0.6
45- 50	13.6	0.5	14.1	12.4
50- 55	12.5	4.8	15.5	-10.3
55- 60	13.1	1.1	14.1	8.8
60- 65	13.0	0.9	13.9	10.2
65- 70	11.9	7.1	14.0	-22.6
70- 75	12.8	1.4	14.3	7.7
75- 80	13.6	0.5	14.3	12.7
80- 85	9.2	9.9	14.3	-27.1
85- 90	12.1	4.0	14.0	-1.9
90- 95	16.6	16.3	96.2	10.3
95-100	12.1	6.2	14.2	-17.7
100-105	12.5	5.9	18.3	-16.0
105-110	12.6	2.8	14.0	0.1
110-115	13.4	0.6	14.4	12.1
115-120	12.9	2.8	14.1	-0.6
120-125	13.8	3.1	28.5	11.1
125-130	12.5	3.2	14.3	1.3
130-135	13.4	0.6	14.5	11.9
135-140	8.0	18.3	14.8	-68.9
140-145	13.6	0.6	14.4	12.2
145-150	11.9	8.2	14.6	-28.1
150-155	9.1	15.3	14.3	-57.7
155-160	13.5	1.0	14.4	9.1
160-165	11.8	9.0	14.4	-32.1
165-170	11.0	7.1	14.2	-15.6
170-175	13.9	3.1	27.7	8.3
175-180	13.4	0.8	14.4	10.4
180-185	10.3	10.2	14.1	-33.1
185-190	13.3	0.8	14.3	11.6
190-192	13.8	0.6	14.3	12.7
FOR THIS RUN:	12.7	6.5	96.2	-68.9

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.2	0.2	1.4	0.2
5- 10	1.1	0.2	1.2	0.2
10- 15	1.1	0.1	1.2	0.9
15- 20	1.1	0.2	1.2	0.0
20- 25	1.0	0.6	1.2	-2.1
25- 30	1.1	0.1	1.2	0.9
30- 35	1.1	0.1	1.1	0.8
35- 40	1.1	0.1	1.1	0.9
40- 45	1.0	0.3	1.2	0.0
45- 50	1.1	0.0	1.1	1.0
50- 55	1.0	0.4	1.2	-0.8
55- 60	1.0	0.1	1.1	0.7
60- 65	1.0	0.1	1.1	0.8
65- 70	0.9	0.6	1.1	-1.8
70- 75	1.0	0.2	1.2	0.5
75- 80	1.1	0.1	1.2	0.7
80- 85	0.7	0.8	1.1	-2.2
85- 90	0.9	0.3	1.1	-0.2
90- 95	1.3	1.3	7.9	0.8
95-100	1.0	0.5	1.1	-1.4
100-105	1.0	0.5	1.4	-1.2
105-110	1.0	0.2	1.1	0.0
110-115	1.1	0.1	1.1	1.0
115-120	1.0	0.2	1.1	-0.0
120-125	1.1	0.3	2.1	0.7
125-130	1.0	0.3	1.2	0.1
130-135	1.0	0.1	1.2	0.8
135-140	0.6	1.6	1.2	-5.9
140-145	1.1	0.1	1.1	0.8
145-150	1.0	0.7	1.2	-2.2
150-155	0.7	1.2	1.2	-4.4
155-160	1.1	0.1	1.1	0.7
160-165	0.9	0.7	1.1	-2.6
165-170	0.8	0.6	1.1	-1.3
170-175	1.1	0.3	2.3	0.7
175-180	1.1	0.1	1.1	0.8
180-185	0.8	0.8	1.1	-2.7
185-190	1.1	0.1	1.2	0.8
190-192	1.1	0.0	1.1	1.0
FOR THIS RUN:	1.0	0.5	7.9	-5.9

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	875.2	8.3	886.4	858.4
5- 10	877.7	5.5	884.4	863.4
10- 15	876.7	5.8	883.4	862.4
15- 20	875.5	7.0	884.4	861.4
20- 25	876.6	6.8	883.4	863.4
25- 30	877.4	5.5	883.4	864.4
30- 35	877.0	6.1	883.4	862.4
35- 40	876.4	6.2	882.4	863.4
40- 45	876.7	6.5	883.4	863.4
45- 50	876.7	5.6	883.4	862.4
50- 55	876.2	5.8	882.4	863.4
55- 60	877.0	6.2	883.4	862.4
60- 65	877.0	6.1	883.4	861.4
65- 70	875.6	6.1	882.4	862.4
70- 75	874.8	7.4	887.4	861.4
75- 80	877.0	6.0	884.4	861.4
80- 85	876.4	5.6	882.4	862.4
85- 90	875.7	6.6	883.4	862.4
90- 95	876.2	6.8	884.4	862.4
95-100	876.2	5.8	883.4	863.4
100-105	876.0	6.0	883.4	862.4
105-110	876.1	6.7	882.4	859.4
110-115	877.0	5.4	881.4	860.4
115-120	875.2	6.3	882.4	862.4
120-125	875.6	7.1	884.4	860.4
125-130	876.1	5.6	883.4	862.4
130-135	875.3	7.4	883.4	855.4
135-140	876.1	7.6	885.4	858.4
140-145	876.8	5.4	882.4	861 4
145-150	875.7	6.5	883.4	863.4
150-155	875.9	6.8	884.4	863.4
155-160	877.2	5.6	883.4	861.4
160-165	876.6	6.2	883.4	861.4
165-170	875.7	6.0	882.4	863.4
170-175	876.8	6.5	884.4	860.4
175-180	876.0	6.2	882.4	861.4
180-185	875.4	6.4	883.4	862.4
185-190	876.6	5.7	882.4	862.4
190-192	876.3	6.2	882.4	863.4
FOR THIS RUN:	876.3	6.4	887.4	855.4

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	29	12.1	88	26
5- 10	26	0.7	29	25
10- 15	26	0.1	26	26
15- 20	26	0.6	29	26
20- 25	26	0.1	26	26
25- 30	26	0.6	29	26
30- 35	26	0.2	27	26
35- 40	26	0.1	26	26
40- 45	26	0.1	27	26
45- 50	26	0.1	27	26
50- 55	27	0.6	29	26
55- 60	27	0.2	28	26
60- 65	27	0.4	28	26
65- 70	27	0.5	29	26
70- 75	27	0.2	27	26
75- 80	27	0.1	27	27
80- 85	27	0.5	29	27
85- 90	27	0.1	27	26
90- 95	27	0.1	27	27
95-100	27	0.1	27	27
100-105	29	11.1	84	27
105-110	27	0.1	27	27
110-115	27	0.6	30	27
115-120	27	0.1	27	27
120-125	27	0.2	28	26
125-130	27	0.1	27	27
130-135	27	0.2	27	26
135-140	27	0.1	27	27
140-145	27	0.1	27	27
145-150	27	0.1	27	27
150-155	27	0.1	27	27
155-160	27	0.1	27	27
160-165	27	0.4	29	27
165-170	27	0.5	30	27
170-175	27	0.1	27	27
175-180	28	0.6	30	27
180-185	27	0.1	27	27
185-190	27	0.1	28	27
190-192	27	0.1	28	27
FOR THIS RUN:	27	2.7	88	25

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	740	14.4	758	702
5- 10	737	3.9	745	731
10- 15	732	5.4	738	710
15- 20	735	6.5	743	719
20- 25	740	2.9	742	732
25- 30	739	1.2	740	737
30- 35	732	3.7	736	722
35- 40	734	2.1	737	727
40- 45	731	5.2	735	715
45- 50	730	2.4	733	725
50- 55	732	0.5	733	732
55- 60	731	1.0	732	729
60- 65	727	2.6	731	720
65- 70	723	7.2	728	706
70- 75	718	13.0	733	683
75- 80	730	7.1	737	705
80- 85	733	1.8	737	730
85- 90	730	2.9	732	717
90- 95	718	10.4	730	688
95-100	730	4.0	734	719
100-105	729	2.9	734	723
105-110	724	4.2	728	710
110-115	725	5.0	732	713
115-120	725	6.2	732	709
120-125	718	13.9	733	686
125-130	726	7.0	735	710
130-135	720	12.7	737	692
135-140	723	13.2	742	697
140-145	732	5.9	744	720
145-150	734	4.9	740	721
150-155	727	6.8	734	714
155-160	730	4.2	737	721
160-165	731	3.3	735	722
165-170	727	10.9	734	690
170-175	725	6.0	731	707
175-180	729	4.6	734	719
180-185	726	3.4	730	717
185-190	723	8.5	734	706
190-192	733	0.5	734	732
FOR THIS RUN:	729	8.9	758	683

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1074	46.6	1208	1016
5- 10	1047	13.8	1084	1030
10- 15	1038	23.2	1094	1010
15- 20	1011	14.1	1052	997
20- 25	990	14.7	1034	968
25- 30	959	5.1	967	946
30- 35	946	17.7	1023	927
35- 40	930	10.7	977	921
40- 45	922	18.9	1010	901
45- 50	912	11.2	959	899
50- 55	904	3.5	913	899
55- 60	893	3.2	900	887
60- 65	892	16.5	956	881
65- 70	900	26.6	985	878
70- 75	926	58.7	1155	859
75- 80	916	30.8	1037	893
80- 85	907	7.5	928	898
85- 90	901	13.9	968	893
90- 95	919	34.0	1011	876
95-100	914	15.5	983	906
100-105	905	5.8	927	895
105-110	916	25.6	990	898
110-115	916	16.3	968	899
115-120	924	23.1	991	902
120-125	939	49.7	1068	901
125-130	951	29.4	1047	920
130-135	966	47.8	1111	917
135-140	970	53.1	1175	920
140-145	970	26.6	1066	943
145-150	948	18.5	1014	928
150-155	951	33.9	1077	925
155-160	941	16.0	996	928
160-165	934	10.9	978	924
165-170	940	39.0	1077	917
170-175	934	29.1	1037	899
175-180	937	14.3	991	925
180-185	941	15.3	976	925
185-190	949	23.3	1039	928
190-192	945	2.2	948	941
FOR THIS RUN:	943	49.1	1208	859

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	795	29.9	863	737
5- 10	772	10.6	796	760
10- 15	760	13.6	792	740
15- 20	743	11.2	769	717
20- 25	732	11.0	756	713
25- 30	709	4.6	715	697
30- 35	692	12.2	740	675
35- 40	683	6.8	710	676
40- 45	674	12.6	726	652
45- 50	666	8.0	696	654
50- 55	662	2.3	668	659
55- 60	653	2.9	658	648
60- 65	649	10.6	689	642
65- 70	651	17.0	697	627
70- 75	665	38.1	794	602
75- 80	669	20.4	752	644
80- 85	665	6.3	679	658
85- 90	657	7.9	694	651
90- 95	660	22.9	710	613
95-100	668	9.3	707	657
100-105	660	5.2	676	652
105-110	664	16.0	711	650
110-115	664	11.8	695	645
115-120	670	14.2	710	650
120-125	673	30.1	751	631
125-130	690	19.2	756	661
130-135	695	28.2	784	652
135-140	702	34.9	827	662
140-145	710	18.5	768	686
145-150	695	13.2	743	679
150-155	692	22.0	771	671
155-160	687	11.2	726	671
160-165	683	7.4	707	673
165-170	683	21.9	762	642
170-175	677	22.2	743	637
175-180	683	9.8	721	672
180-185	683	9.4	703	670
185-190	686	15.3	734	663
190-192	693	2.0	696	689
FOR THIS RUN:	687	37.2	863	602

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	92.1	6.9	105.1	78.1
5- 10	87.4	1.7	89.7	82.6
10- 15	85.7	3.8	89.7	73.3
15- 20	89.1	1.5	91.7	84.9
20- 25	86.7	2.2	89.0	78.1
25- 30	86.2	1.1	88.2	84.2
30- 35	84.5	2.9	86.9	72.1
35- 40	85.2	1.3	87.2	80.6
40- 45	83.5	3.4	85.4	67.5
45- 50	84.7	1.3	86.4	79.9
50- 55	84.3	1.1	86.2	82.1
55- 60	83.9	1.0	85.7	81.1
60- 65	82.8	3.0	86.4	70.8
65- 70	82.7	5.1	87.9	64.0
70- 75	82.5	8.9	88.7	45.4
75- 80	85.2	5.2	88.2	60.2
80- 85	84.3	1.1	86.7	81.1
85- 90	83.3	2.8	85.4	70.6
90- 95	83.1	5.3	86.9	65.0
95-100	84.6	2.5	86.4	74.1
100-105	84.1	1.1	85.9	81.9
105-110	82.5	4.4	85.9	67.8
110-115	84.5	2.3	87.4	77.9
115-120	84.6	3.3	87.4	71.8
120-125	82.2	7.0	90.2	62.0
125-130	85.6	4.6	89.5	68.5
130-135	82.2	7.0	89.0	61.0
135-140	86.7	8.6	94.5	53.2
140-145	84.6	5.3	89.2	64.0
145-150	86.4	3.0	89.0	73.3
150-155	83.8	5.5	87.9	64.0
155-160	85.8	2.2	88.2	77.9
160-165	85.1	0.9	86.7	83.2
165-170	82.3	6.4	87.2	58.0
170-175	85.3	4.5	88.7	66.5
175-180	84.3	2.4	87.2	75.1
180-185	83.6	3.1	87.2	75.3
185-190	85.1	4.1	89.0	68.3
190-192	85.5	0.9	86.7	83.7
FOR THIS RUN:	84.8	4.6	105.1	45.4

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	12.4	11.6	17.4	-28.2
5- 10	12.4	12.6	17.1	-47.1
10- 15	9.8	23.4	16.6	-99.7
15- 20	12.1	11.8	17.5	-38.9
20- 25	8.6	24.5	16.7	-106.3
25- 30	12.0	21.3	29.9	-91.5
30- 35	6.7	27.8	16.1	-89.5
35- 40	8.3	25.5	16.2	-106.3
40- 45	7.5	19.2	16.0	-51.7
45- 50	11.0	12.1	16.1	-32.0
50- 55	10.1	15.2	16.0	-41.8
55- 60	13.1	7.3	15.8	-18.2
60- 65	11.7	10.9	16.5	-35.7
65- 70	11.5	16.5	15.9	-69.3
70- 75	8.9	21.5	16.0	-90.3
75- 80	13.5	6.8	16.4	-18.4
80- 85	13.7	4.2	16.1	0.9
85- 90	11.0	14.3	16.1	-55.2
90- 95	13.0	8.0	16.0	-25.0
95-100	8.1	18.3	16.0	-59.8
100-105	10.9	11.9	27.9	-32.7
105-110	12.3	8.3	15.9	-16.2
110-115	-4.0	39.9	16.0	-106.3
115-120	15.2	0.8	16.5	13.7
120-125	5.4	23.9	15.9	-83.2
125-130	13.4	8.7	16.2	-29.1
130-135	8.9	21.0	17.0	-63.7
135-140	14.4	2.8	17.0	5.2
140-145	15.5	0.6	16.7	14.5
145-150	14.3	5.3	16.4	-11.3
150-155	13.9	4.7	16.6	-7.1
155-160	13.0	8.0	16.3	-20.6
160-165	7.4	26.9	16.1	-98.8
165-170	12.3	9.2	16.3	-28.8
170-175	9.2	22.0	16.6	-92.9
175-180	1.6	34.3	16.3	-106.3
180-185	11.7	10.5	16.0	-32.6
185-190	13.5	5.7	16.2	-7.6
190-192	11.5	12.4	16.2	-25.6
FOR THIS RUN:	10.6	17.7	29.9	-106.3

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1.1	1.1	1.7	-2.5
5- 10	1.1	1.1	1.5	-4.1
10- 15	0.8	2.0	1.5	-8.7
15- 20	1.1	1.1	1.5	-3.5
20- 25	0.7	2.2	1.5	-9.4
25- 30	1.0	1.9	2.6	-8.1
30- 35	0.6	2.4	1.4	-7.6
35- 40	0.7	2.2	1.4	-9.1
40- 45	0.7	1.6	1.3	-4.3
45- 50	0.9	1.0	1.4	-2.8
50- 55	0.8	1.3	1.3	-3.5
55- 60	1.1	0.6	1.3	-1.5
60- 65	1.0	0.9	1.4	-3.0
65- 70	0.9	1.4	1.3	-6.1
70- 75	0.7	1.7	1.4	-7.2
75- 80	1.1	0.6	1.4	-1.6
80- 85	1.2	0.4	1.4	0.1
85- 90	0.9	1.2	1.3	-4.7
90- 95	1.1	0.7	1.4	-2.1
95-100	0.7	1.6	1.3	-5.1
100-105	0.9	1.0	2.4	-2.8
105-110	1.0	0.7	1.3	-1.4
110-115	-0.3	3.3	1.4	-9.2
115-120	1.3	0.1	1.4	1.0
120-125	0.4	2.1	1.3	-7.5
125-130	1.1	0.8	1.4	-2.5
130-135	0.7	1.8	1.5	-5.6
135-140	1.2	0.3	1.5	0.4
140-145	1.3	0.1	1.4	0.9
145-150	1.2	0.5	1.4	-1.0
150-155	1.2	0.4	1.4	-0.6
155-160	1.1	0.7	1.4	-1.8
160-165	0.6	2.3	1.4	-8.5
165-170	1.0	0.8	1.4	-2.5
170-175	0.8	1.7	1.4	-7.1
175-180	0.1	2.9	1.4	-9.1
180-185	1.0	0.9	1.4	-2.7
185-190	1.1	0.5	1.4	-0.7
190-192	1.0	1.1	1.4	-2.2
FOR THIS RUN:	0.9	1.5	2.6	-9.4

TABLE 16 (Continued)

RUN NUMBER 4330

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.2 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	890.4	5.9	901.4	877.4
5- 10	889.8	5.2	897.4	882.4
10- 15	889.3	5.4	898.4	881.4
15- 20	889.5	5.3	897.4	879.4
20- 25	889.8	4.8	896.4	882.4
25- 30	891.5	4.8	897.4	882.4
30- 35	891.2	5.5	898.4	882.4
35- 40	889.3	5.2	898.4	880.4
40- 45	889.3	5.2	897.4	879.4
45- 50	891.7	4.7	899.4	882.4
50- 55	891.8	4.7	897.4	882.4
55- 60	889.8	5.6	897.4	882.4
60- 65	889.5	5.2	898.4	881.4
65- 70	890.6	4.8	897.4	881.4
70- 75	890.6	5.6	901.4	882.4
75- 80	890.8	6.1	900.4	881.4
80- 85	890.8	5.3	897.4	882.4
85- 90	889.2	4.6	897.4	882.4
90- 95	889.6	5.6	901.4	882.4
95-100	891.7	5.2	898.4	881.4
100-105	891.8	5.5	898.4	880.4
105-110	889.2	5.6	898.4	879.4
110-115	889.6	5.8	898.4	880.4
115-120	891.0	4.8	899.4	882.4
120-125	891.6	5.5	898.4	879.4
125-130	890.1	6.2	899.4	879.4
130-135	890.1	6.0	899.4	880.4
135-140	888.9	5.5	896.4	875.4
140-145	889.1	4.6	896.4	882.4
145-150	891.6	4.3	898.4	884.4
150-155	891.2	5.6	899.4	879.4
155-160	889.8	5.5	898.4	880.4
160-165	889.3	5.3	897.4	881.4
165-170	889.9	4.5	896.4	881.4
170-175	891.0	3.6	897.4	885.4
175-180	890.8	5.3	897.4	882.4
180-185	890.6	5.8	897.4	881.4
185-190	888.8	4.9	897.4	880.4
190-192	893.5	3.4	897.4	887.4
FOR THIS RUN:	890.3	5.3	901.4	875.4

TABLE 17 - MACHINERY PARAMETERS, RUN 4300

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	48711	861.6	50300	47282
5- 10	48026	912.3	49294	46276
10- 15	47161	1038.5	48791	45773
15- 20	47161	1192.7	48791	44767
20- 25	46417	1088.3	48288	44767
25- 30	47121	1013.2	48791	45270
30- 35	46678	964.9	47785	44767
35- 40	46658	978.3	48288	45270
40- 45	47141	871.5	48288	45773
45- 50	47222	1067.7	48791	45270
50- 55	47483	853.6	49294	46276
55- 60	46859	1022.8	48791	45773
60- 65	46336	1086.5	48288	44767
65- 70	46739	995.1	48288	44767
70- 75	46900	967.9	48288	44767
75- 80	46739	828.6	48791	45270
80- 85	47282	1055.1	48791	45270
85- 90	46658	936.0	48288	44767
90- 95	47141	1069.6	48791	45270
95-100	46618	1071.5	48288	44767
100-105	46457	974.1	48288	44767
105-110	46397	936.0	48288	45270
110-115	47161	880.2	48791	45773
115-120	47121	1301.8	48791	45270
120-125	46940	1196.4	48791	45270
125-130	46578	1035.7	48288	45270
130-135	47161	1167.0	48791	45270
135-140	46699	1099.1	48288	45270
140-145	46437	1071.5	48288	44767
145-150	46920	1088.3	48791	45270
150-155	47181	1016.0	48791	45773
155-158	47852	915.9	49797	46276
FOR THIS RUN:	46988	1136.6	50300	44767

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	66051	1168.4	68207	64114
5- 10	65124	1237.1	66843	62750
10- 15	63951	1408.2	66161	62068
15- 20	63951	1617.3	66161	60704
20- 25	62941	1475.8	65479	60704
25- 30	63896	1373.9	66161	61386
30- 35	63296	1308.4	64796	60704
35- 40	63269	1326.5	65479	61386
40- 45	63923	1181.7	65479	62068
45- 50	64033	1447.8	66161	61386
50- 55	64387	1157.5	66843	62750
55- 60	63541	1386.9	66161	62068
60- 65	62832	1473.3	65479	60704
65- 70	63378	1349.3	65479	60704
70- 75	63596	1312.4	65479	60704
75- 80	63378	1123.6	66161	61386
80- 85	64114	1430.7	66161	61386
85- 90	63269	1269.2	65479	60704
90- 95	63923	1450.4	66161	61386
95-100	63214	1452.9	65479	60704
100-105	62996	1320.9	65479	60704
105-110	62914	1269.2	65479	61386
110-115	63951	1193.6	66161	62068
115-120	63896	1765.2	66161	61386
120-125	63651	1622.3	66161	61386
125-130	63159	1404.5	65479	61386
130-135	63951	1582.4	66161	61386
135-140	63323	1490.3	65479	61386
140-145	62969	1452.9	65479	60704
145-150	63623	1475.8	66161	61386
150-155	63978	1377.7	66161	62068
155-158	64887	1242.0	67525	62750
FOR THIS RUN:	63716	1541.2	68207	60704

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	46721	2538.0	52524	42055
5- 10	44998	6549.7	52225	19323
10- 15	47271	3906.4	52524	35475
15- 20	46912	3291.0	54917	39662
20- 25	47917	3415.6	53421	40559
25- 30	46147	5884.9	65684	33979
30- 35	47176	3828.9	54617	38765
35- 40	45860	4372.7	55216	36970
40- 45	44508	13432.0	93801	13341
45- 50	47702	5408.0	56412	34577
50- 55	43311	11345.0	83332	20220
55- 60	47259	3941.9	57609	39064
60- 65	49652	4173.0	65684	45046
65- 70	46135	6008.3	59403	31586
70- 75	44328	5432.2	51925	29492
75- 80	47487	5553.2	59104	28296
80- 85	46625	6225.8	62095	31885
85- 90	47068	4090.0	57908	41158
90- 95	46649	4568.3	56113	37269
95-100	46709	4110.8	53122	37568
100-105	45154	6977.3	54617	24408
105-110	43897	5524.8	54617	27100
110-115	46242	5846.6	60899	30689
115-120	44914	4805.9	51028	28894
120-125	47953	4625.7	57010	35774
125-130	47834	7048.6	72265	36970
130-135	48946	4865.4	59702	39363
135-140	45261	4476.2	57010	36671
140-145	48982	3198.8	55515	44149
145-150	46159	5755.6	54617	27997
150-155	43515	8929.4	59702	11546
155-158	45963	10011.5	60300	12144
FOR THIS RUN:	46420	6231.8	93801	11546

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER THRUST (N)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	207815	11289.1	233625	187060
5- 10	200152	29132.9	232295	85948
10- 15	210263	17375.6	233625	157791
15- 20	208666	14638.5	244269	176417
20- 25	213137	15192.6	237617	180408
25- 30	205261	26175.9	292164	151139
30- 35	209837	17030.8	242938	172426
35- 40	203983	19449.8	245599	164443
40- 45	197970	59745.6	417225	59339
45- 50	212179	24054.9	250921	153800
50- 55	192648	50462.4	370660	89939
55- 60	210210	17533.4	256243	173756
60- 65	220853	18561.3	292164	200365
65- 70	205207	26725.1	264225	140495
70- 75	197172	24162.6	230964	131182
75- 80	211221	24700.7	262895	125860
80- 85	207389	27692.2	276199	141826
85- 90	209358	18192.5	257573	183069
90- 95	207496	20319.9	249590	165773
95-100	207762	18284.9	236286	167104
100-105	200844	31035.0	242938	108565
105-110	195256	24574.2	242938	120539
110-115	205686	26005.7	270877	136504
115-120	199779	21376.8	226973	128521
120-125	213296	20574.9	253582	159121
125-130	212764	31352.4	321434	164443
130-135	217713	21641.4	265556	175086
135-140	201322	19910.3	253582	163113
140-145	217873	14228.4	246930	196373
145-150	205314	25601.1	242938	124530
150-155	193553	39717.9	265556	51356
155-158	204445	44531.2	268216	54017
FOR THIS RUN:	206476	27718.9	417225	51356

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2654	54.5	2765	2576
5- 10	2626	59.5	2714	2514
10- 15	2598	52.1	2691	2503
15- 20	2616	66.7	2705	2482
20- 25	2561	60.4	2664	2461
25- 30	2599	57.5	2691	2463
30- 35	2586	54.4	2659	2493
35- 40	2574	49.3	2673	2501
40- 45	2567	56.4	2664	2481
45- 50	2602	65.6	2715	2484
50- 55	2565	80.4	2682	2390
55- 60	2591	57.4	2715	2490
60- 65	2585	61.9	2691	2491
65- 70	2589	53.1	2677	2495
70- 75	2574	54.6	2645	2459
75- 80	2583	48.6	2677	2493
80- 85	2586	62.5	2701	2486
85- 90	2588	52.4	2668	2495
90- 95	2588	63.7	2696	2471
95-100	2596	59.9	2696	2491
100-105	2580	57.7	2700	2491
105-110	2559	60.2	2668	2458
110-115	2589	51.9	2701	2509
115-120	2594	72.0	2701	2493
120-125	2597	65.5	2701	2488
125-130	2576	65.9	2691	2450
130-135	2587	70.5	2710	2463
135-140	2595	60.6	2705	2512
140-145	2587	60.1	2687	2486
145-150	2565	58.6	2649	2463
150-155	2554	73.2	2677	2428
155-158	2614	44.4	2714	2539
FOR THIS RUN:	2588	63.6	2765	2390

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER SHAFT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1979	40.7	2062	1921
5- 10	1958	44.3	2024	1874
10- 15	1937	38.8	2007	1866
15- 20	1950	49.8	2017	1851
20- 25	1910	45.1	1986	1835
25- 30	1938	42.9	2007	1836
30- 35	1928	40.6	1982	1859
35- 40	1919	36.7	1993	1865
40- 45	1914	42.0	1986	1850
45- 50	1941	48.9	2024	1852
50- 55	1913	60.0	2000	1782
55- 60	1932	42.8	2024	1857
60- 65	1927	46.1	2007	1857
65- 70	1931	39.6	1996	1860
70- 75	1919	40.8	1972	1834
75- 80	1926	36.2	1996	1859
80- 85	1928	46.6	2014	1854
85- 90	1930	39.0	1989	1860
90- 95	1930	47.5	2010	1843
95-100	1936	44.7	2010	1857
100-105	1924	43.0	2014	1857
105-110	1908	44.9	1990	1833
110-115	1930	38.7	2014	1871
115-120	1935	53.7	2014	1859
120-125	1936	48.8	2014	1856
125-130	1921	49.1	2007	1827
130-135	1929	52.6	2021	1836
135-140	1935	45.2	2017	1873
140-145	1929	44.8	2003	1854
145-150	1912	43.7	1976	1836
150-155	1904	54.6	1996	1810
155-158	1949	33.1	2023	1894
FOR THIS RUN:	1930	47.4	2062	1782

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	286.2	2.6	289.2	280.2
5- 10	287.2	2.6	290.2	282.2
10- 15	289.3	1.6	291.7	285.7
15- 20	291.3	0.8	292.7	289.2
20- 25	289.8	2.0	292.2	285.2
25- 30	289.7	2.4	293.7	284.2
30- 35	290.9	1.7	293.7	286.7
35- 40	289.7	2.8	292.7	282.7
40- 45	286.0	3.4	290.7	281.2
45- 50	289.4	2.2	292.7	285.7
50- 55	283.7	6.0	291.7	271.2
55- 60	290.4	2.3	293.2	285.7
60- 65	292.9	0.8	293.7	291.2
65- 70	291.0	2.3	293.2	285.2
70- 75	288.2	3.3	292.2	280.2
75- 80	290.3	2.7	293.7	284.7
80- 85	287.2	2.9	291.7	282.2
85- 90	291.3	2.1	293.7	283.7
90- 95	288.3	3.1	292.7	281.2
95-100	292.5	0.8	293.7	290.7
100-105	291.6	1.5	293.7	289.2
105-110	289.6	2.8	293.2	285.2
110-115	288.3	3.0	291.7	279.2
115-120	289.2	1.9	292.2	284.7
120-125	290.6	1.0	292.7	288.7
125-130	290.4	2.1	293.2	284.2
130-135	288.1	2.8	291.7	283.2
135-140	291.9	2.1	294.2	287.7
140-145	292.6	0.6	293.7	291.7
145-150	287.1	2.3	292.2	284.2
150-155	284.3	6.0	290.2	269.7
155-158	287.0	3.5	290.7	277.7
FOR THIS RUN:	289.3	3.5	294.2	269.7

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	926	4.3	932	913
5- 10	914	8.2	925	884
10- 15	916	6.9	925	904
15- 20	922	2.2	927	919
20- 25	913	4.6	919	899
25- 30	916	6.1	923	902
30- 35	917	4.1	923	907
35- 40	915	3.7	920	901
40- 45	907	10.4	921	886
45- 50	919	9.6	931	904
50- 55	903	12.2	916	869
55- 60	923	5.5	929	909
60- 65	922	1.2	924	919
65- 70	918	6.1	922	897
70- 75	911	9.5	925	881
75- 80	924	3.4	929	917
80- 85	912	7.8	922	893
85- 90	922	6.2	929	907
90- 95	914	7.0	923	890
95-100	924	2.6	926	916
100-105	920	2.6	924	913
105-110	918	3.2	922	909
110-115	913	7.6	923	885
115-120	919	4.2	924	909
120-125	921	2.5	924	915
125-130	918	3.4	922	909
130-135	916	5.1	921	895
135-140	924	2.6	927	914
140-145	921	1.7	924	917
145-150	916	3.0	920	906
150-155	911	10.9	921	884
155-158	912	9.6	921	886
FOR THIS RUN:	917	8.1	932	869

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2262	28.9	2350	2230
5- 10	2261	47.2	2437	2234
10- 15	2253	11.4	2297	2232
15- 20	2252	9.9	2282	2227
20- 25	2260	51.5	2431	2190
25- 30	2262	53.1	2448	2201
30- 35	2259	39.1	2425	2220
35- 40	2245	18.3	2282	2197
40- 45	2282	98.7	2603	2190
45- 50	2270	69.9	2601	2212
50- 55	2260	92.7	2498	2127
55- 60	2269	65.5	2527	2207
60- 65	2246	15.3	2314	2222
65- 70	2252	22.2	2322	2208
70- 75	2267	69.8	2518	2189
75- 80	2251	38.5	2373	2184
80- 85	2269	65.3	2434	2183
85- 90	2251	22.0	2344	2232
90- 95	2265	57.4	2435	2190
95-100	2254	10.7	2290	2237
100-105	2248	19.9	2292	2212
105-110	2259	36.3	2338	2197
110-115	2259	69.0	2550	2169
115-120	2260	34.0	2364	2221
120-125	2254	17.4	2297	2227
125-130	2256	25.3	2321	2222
130-135	2260	42.3	2384	2192
135-140	2251	14.5	2302	2234
140-145	2251	10.6	2295	2237
145-150	2260	26.4	2351	2227
150-155	2271	69.9	2451	2157
155-158	2291	95.8	2594	2241
FOR THIS RUN:	2259	49.6	2603	2127

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2095	24.9	2162	2045
5- 10	2066	37.4	2194	2016
10- 15	2064	18.2	2118	2038
15- 20	2076	10.2	2099	2046
20- 25	2063	43.6	2210	1989
25- 30	2072	42.7	2211	2009
30- 35	2072	32.9	2200	2032
35- 40	2055	23.1	2091	1979
40- 45	2070	80.3	2307	1969
45- 50	2085	60.1	2353	2020
50- 55	2040	72.1	2219	1908
55- 60	2093	55.0	2297	2018
60- 65	2071	13.7	2129	2043
65- 70	2066	23.1	2103	1997
70- 75	2065	54.5	2261	1964
75- 80	2080	32.9	2180	2007
80- 85	2070	52.7	2181	1977
85- 90	2075	24.2	2145	2028
90- 95	2071	48.3	2193	1983
95-100	2083	12.6	2116	2052
100-105	2069	17.1	2105	2026
105-110	2073	29.2	2140	2012
110-115	2063	54.3	2258	1953
115-120	2078	27.6	2152	2034
120-125	2076	17.0	2109	2039
125-130	2071	20.2	2128	2038
130-135	2070	33.4	2159	1992
135-140	2080	10.0	2112	2064
140-145	2072	7.9	2105	2064
145-150	2070	23.2	2149	2035
150-155	2068	54.5	2185	1949
155-158	2089	65.5	2298	2043
FOR THIS RUN:	2072	41.0	2353	1908

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	88.7	6.9	105.6	79.4
5- 10	86.3	6.8	106.7	79.7
10- 15	87.1	4.9	103.1	81.5
15- 20	85.3	2.8	91.0	77.9
20- 25	87.0	7.6	104.9	77.2
25- 30	86.5	8.6	106.9	76.7
30- 35	86.3	5.9	106.4	78.9
35- 40	85.6	5.8	103.9	76.9
40- 45	87.7	11.3	109.4	75.2
45- 50	88.5	7.1	106.4	77.9
50- 55	86.3	11.7	113.0	72.1
55- 60	88.3	7.8	108.2	78.2
60- 65	84.4	4.4	99.9	78.9
65- 70	86.4	7.1	106.9	78.2
70- 75	86.5	8.6	109.2	77.4
75- 80	85.7	7.9	106.4	75.9
80- 85	87.8	11.0	108.4	75.9
85- 90	86.0	6.7	105.4	77.4
90- 95	86.8	9.0	107.7	75.2
95-100	87.6	3.4	96.1	80.7
100-105	85.3	6.6	104.9	77.9
105-110	88.2	10.9	107.9	76.9
110-115	85.6	9.4	108.7	73.9
115-120	87.8	7.6	107.7	78.2
120-125	87.0	4.9	100.6	77.7
125-130	87.8	8.3	106.9	78.4
130-135	87.7	8.7	109.2	76.9
135-140	84.9	5.3	106.7	79.2
140-145	86.4	4.2	102.6	80.7
145-150	90.7	7.5	105.4	79.9
150-155	89.9	11.4	110.4	73.4
155-158	89.9	10.0	108.9	76.7
FOR THIS RUN:	87.0	7.9	113.0	72.1

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	37.3	0.4	38.4	36.5
5- 10	36.2	0.6	38.0	35.5
10- 15	36.0	0.5	37.0	35.4
15- 20	35.7	0.3	36.4	35.1
20- 25	35.6	0.5	36.7	34.9
25- 30	35.9	0.6	38.0	35.2
30- 35	35.6	0.6	37.3	34.9
35- 40	35.9	0.8	38.5	35.0
40- 45	36.2	0.8	38.3	35.1
45- 50	36.2	0.5	37.2	35.3
50- 55	36.2	1.4	39.5	34.8
55- 60	36.2	0.6	38.2	35.4
60- 65	35.5	0.2	36.2	35.2
65- 70	35.6	0.6	37.5	35.1
70- 75	35.7	0.8	37.7	34.9
75- 80	36.4	0.8	38.1	35.4
80- 85	36.3	0.7	38.0	35.4
85- 90	35.9	0.4	36.8	35.2
90- 95	36.2	0.9	38.2	35.0
95-100	35.7	0.2	36.2	35.5
100-105	35.8	0.4	36.8	35.3
105-110	36.2	0.8	37.9	35.3
110-115	36.1	0.7	37.8	35.0
115-120	36.3	0.7	38.4	35.6
120-125	36.2	0.4	36.8	35.6
125-130	36.1	0.7	38.0	35.2
130-135	36.2	0.7	37.8	35.2
135-140	35.9	0.4	37.4	35.6
140-145	35.5	0.1	35.8	35.3
145-150	36.7	0.7	38.5	35.5
150-155	37.2	1.2	40.4	36.0
155-158	36.6	1.0	38.4	35.4
FOR THIS RUN:	36.1	0.8	40.4	34.8

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	3.3	0.3	4.1	3.0
5- 10	3.1	0.3	4.0	2.9
10- 15	3.1	0.2	3.8	3.0
15- 20	3.0	0.1	3.3	2.8
20- 25	3.1	0.3	3.8	2.8
25- 30	3.1	0.3	3.9	2.7
30- 35	3.1	0.2	4.0	2.8
35- 40	3.1	0.2	3.8	2.8
40- 45	3.2	0.4	4.2	2.7
45- 50	3.2	0.3	3.9	2.8
50- 55	3.1	0.5	4.5	2.6
55- 60	3.2	0.3	4.0	2.9
60- 65	3.0	0.2	3.5	2.8
65- 70	3.1	0.3	4.0	2.8
70- 75	3.1	0.3	4.1	2.8
75- 80	3.1	0.3	4.0	2.8
80- 85	3.2	0.4	4.1	2.7
85- 90	3.1	0.3	3.8	2.8
90- 95	3.2	0.4	4.1	2.7
95-100	3.1	0.1	3.5	2.9
100-105	3.1	0.2	3.8	2.8
105-110	3.2	0.4	4.0	2.8
110-115	3.1	0.4	4.1	2.6
115-120	3.2	0.3	4.0	2.9
120-125	3.1	0.2	3.6	2.8
125-130	3.2	0.3	4.0	2.8
130-135	3.2	0.3	4.1	2.8
135-140	3.1	0.2	4.0	2.9
140-145	3.1	0.2	3.7	2.9
145-150	3.3	0.3	4.1	3.0
150-155	3.4	0.5	4.4	2.7
155-158	3.3	0.5	4.2	2.8
FOR THIS RUN:	3.1	0.3	4.5	2.6

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	40	0.1	40	40
5- 10	40	0.1	40	40
10- 15	40	0.6	43	40
15- 20	40	0.1	40	40
20- 25	40	0.1	40	40
25- 30	40	0.1	40	40
30- 35	40	0.1	40	40
35- 40	40	0.1	40	40
40- 45	40	2.3	52	40
45- 50	40	0.1	40	40
50- 55	40	0.1	40	40
55- 60	40	0.1	40	40
60- 65	40	0.1	40	40
65- 70	40	0.1	40	40
70- 75	40	0.1	40	40
75- 80	40	0.2	40	39
80- 85	40	0.1	40	40
85- 90	40	0.1	40	40
90- 95	40	0.1	40	40
95-100	40	0.1	41	40
100-105	40	0.1	41	40
105-110	40	0.1	40	40
110-115	40	0.1	41	40
115-120	42	5.3	62	40
120-125	40	0.1	41	40
125-130	40	0.1	41	40
130-135	40	0.2	41	40
135-140	41	0.1	41	40
140-145	41	0.1	41	40
145-150	41	0.1	41	40
150-155	41	0.1	41	41
155-158	41	0.1	41	41
FOR THIS RUN:	40	1.1	62	39

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	929	4.1	933	915
5- 10	917	8.2	929	889
10- 15	921	5.5	927	911
15- 20	924	2.5	928	920
20- 25	917	4.4	923	905
25- 30	919	6.2	925	903
30- 35	920	3.2	925	914
35- 40	920	3.1	923	907
40- 45	910	10.4	924	887
45- 50	921	8.6	932	905
50- 55	905	12.1	918	871
55- 60	924	5.3	930	909
60- 65	923	1.1	925	921
65- 70	919	5.9	922	897
70- 75	912	9.7	926	881
75- 80	925	3.2	929	917
80- 85	914	7.4	923	893
85- 90	923	5.4	929	912
90- 95	917	6.7	923	893
95-100	925	1.9	927	919
100-105	921	2.0	924	917
105-110	920	3.0	923	911
110-115	915	7.7	923	887
115-120	921	3.9	925	909
120-125	923	1.7	925	919
125-130	920	3.5	923	910
130-135	917	5.2	922	896
135-140	925	2.6	927	914
140-145	922	1.7	925	918
145-150	917	2.6	920	909
150-155	914	11.0	923	885
155-158	915	9.4	924	890
FOR THIS RUN:	919	7.8	933	871

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1121	15.1	1162	1101
5- 10	1121	23.6	1206	1105
10- 15	1116	6.1	1136	1104
15- 20	1117	5.1	1128	1101
20- 25	1120	26.5	1207	1086
25- 30	1122	27.4	1217	1090
30- 35	1119	20.3	1206	1098
35- 40	1113	9.3	1133	1089
40- 45	1131	50.7	1295	1081
45- 50	1125	36.3	1298	1093
50- 55	1120	46.5	1239	1052
55- 60	1125	32.3	1250	1088
60- 65	1113	7.8	1146	1100
65- 70	1116	11.1	1150	1096
70- 75	1124	35.5	1252	1083
75- 80	1116	19.9	1176	1078
80- 85	1125	33.4	1212	1083
85- 90	1115	11.5	1163	1104
90- 95	1124	29.2	1206	1086
95-100	1117	6.0	1137	1109
100-105	1115	11.0	1139	1096
105-110	1119	19.0	1162	1083
110-115	1121	35.3	1270	1076
115-120	1120	17.4	1172	1101
120-125	1117	9.9	1140	1099
125-130	1118	12.5	1151	1102
130-135	1121	21.7	1180	1087
135-140	1115	7.2	1137	1104
140-145	1116	6.2	1141	1107
145-150	1120	13.1	1168	1104
150-155	1125	35.2	1215	1067
155-158	1135	48.0	1287	1112
FOR THIS RUN:	1120	25.3	1298	1052

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1041	12.8	1078	1014
5- 10	1028	19.4	1094	999
10- 15	1028	7.0	1050	1013
15- 20	1032	5.9	1039	1013
20- 25	1026	22.4	1099	989
25- 30	1031	22.7	1107	996
30- 35	1030	17.4	1102	1008
35- 40	1024	10.7	1041	987
40- 45	1030	41.0	1150	976
45- 50	1036	30.1	1174	1003
50- 55	1013	36.7	1104	938
55- 60	1039	27.1	1136	996
60- 65	1028	6.9	1055	1014
65- 70	1025	10.8	1044	992
70- 75	1025	28.0	1126	970
75- 80	1032	16.7	1081	995
80- 85	1028	27.1	1090	983
85- 90	1030	12.0	1065	1012
90- 95	1030	24.6	1094	985
95-100	1033	6.4	1051	1020
100-105	1027	9.4	1046	1006
105-110	1029	15.5	1066	995
110-115	1026	27.9	1126	969
115-120	1032	14.4	1071	1010
120-125	1031	8.6	1048	1014
125-130	1028	9.9	1056	1014
130-135	1027	17.6	1073	987
135-140	1031	5.5	1049	1021
140-145	1028	4.6	1047	1022
145-150	1027	11.5	1069	1011
150-155	1028	27.1	1088	971
155-158	1039	33.0	1146	1020
FOR THIS RUN:	1029	20.7	1174	938

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	116.2	3.0	119.4	106.4
5- 10	111.5	4.8	117.3	92.2
10- 15	114.5	2.4	118.1	110.0
15- 20	113.9	1.7	117.8	111.2
20- 25	111.1	7.9	118.9	84.3
25- 30	112.7	7.5	123.9	87.6
30- 35	113.1	6.4	120.1	85.6
35- 40	114.9	3.1	127.5	111.7
40- 45	107.9	13.2	119.4	59.9
45- 50	114.4	10.1	121.1	66.2
50- 55	110.8	9.3	122.2	77.7
55- 60	114.2	10.1	122.7	72.9
60- 65	114.7	2.0	118.3	108.7
65- 70	113.9	2.4	122.9	108.7
70- 75	111.5	9.5	123.4	72.1
75- 80	116.1	5.2	125.2	98.3
80- 85	110.8	7.6	118.9	89.1
85- 90	116.2	2.3	119.9	108.2
90- 95	111.6	6.6	121.6	88.9
95-100	115.2	1.5	118.6	112.8
100-105	114.5	2.7	120.1	108.4
105-110	113.3	4.0	124.7	104.9
110-115	112.9	8.0	121.6	79.5
115-120	114.8	2.5	118.9	106.9
120-125	115.6	2.6	120.4	110.7
125-130	113.9	2.2	117.6	107.9
130-135	113.3	4.0	122.4	101.3
135-140	115.9	1.4	118.3	112.5
140-145	114.2	1.5	117.8	110.7
145-150	113.7	3.7	122.9	103.1
150-155	112.7	7.9	124.2	94.5
155-158	111.4	14.1	123.2	73.9
FOR THIS RUN:	113.5	6.5	127.5	59.9

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	19.3	2.1	20.5	9.6
5- 10	16.5	8.9	20.2	-22.0
10- 15	18.8	2.7	24.0	7.9
15- 20	19.1	1.0	20.5	15.5
20- 25	15.5	17.1	20.1	-67.9
25- 30	18.9	1.7	20.1	11.3
30- 35	18.0	5.2	20.1	-7.0
35- 40	19.2	0.5	20.0	18.0
40- 45	19.0	1.6	26.1	17.5
45- 50	16.9	11.3	20.4	-38.1
50- 55	18.6	0.8	19.8	16.3
55- 60	19.5	0.6	20.4	18.3
60- 65	19.2	0.8	20.2	17.3
65- 70	19.1	1.5	25.1	16.4
70- 75	19.3	1.2	22.9	17.2
75- 80	14.1	12.4	20.5	-23.9
80- 85	19.1	0.6	20.0	18.0
85- 90	18.7	1.9	20.3	12.7
90- 95	19.2	1.2	23.3	17.2
95-100	19.1	3.6	26.4	3.1
100-105	17.1	8.2	20.0	-22.3
105-110	16.4	12.5	20.0	-44.6
110-115	18.8	0.8	20.0	16.1
115-120	19.2	1.0	20.2	15.0
120-125	18.4	2.9	20.2	5.8
125-130	19.9	4.8	41.9	11.9
130-135	17.8	4.0	19.9	2.4
135-140	19.3	0.7	20.4	17.3
140-145	19.2	1.0	20.1	14.9
145-150	16.8	10.2	19.9	-33.1
150-155	19.0	0.7	20.0	17.6
155-158	17.3	6.8	20.1	-7.9
FOR THIS RUN:	18.3	6.1	41.9	-67.9

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.2	0.2	2.4	1.1
5- 10	1.9	0.9	2.3	-2.0
10- 15	2.2	0.3	2.8	0.9
15- 20	2.2	0.1	2.3	1.8
20- 25	1.7	1.9	2.3	-7.6
25- 30	2.1	0.2	2.3	1.3
30- 35	2.0	0.6	2.4	-0.8
35- 40	2.2	0.1	2.5	2.1
40- 45	2.0	0.2	2.3	1.1
45- 50	1.9	1.3	2.4	-4.4
50- 55	2.1	0.2	2.3	1.4
55- 60	2.2	0.2	2.4	1.4
60- 65	2.2	0.1	2.3	1.9
65- 70	2.2	0.2	2.9	1.9
70- 75	2.2	0.3	2.7	1.3
75- 80	1.6	1.5	2.4	-2.9
80- 85	2.1	0.2	2.3	1.7
85- 90	2.2	0.2	2.3	1.5
90- 95	2.1	0.1	2.4	1.7
95-100	2.2	0.4	3.1	0.4
100-105	2.0	0.9	2.4	-2.6
105-110	1.9	1.4	2.5	-5.2
110-115	2.1	0.2	2.3	1.5
115-120	2.2	0.1	2.4	1.8
120-125	2.1	0.3	2.4	0.7
125-130	2.3	0.5	4.5	1.4
130-135	2.0	0.5	2.3	0.3
135-140	2.2	0.1	2.4	2.0
140-145	2.2	0.1	2.3	1.7
145-150	1.9	1.2	2.4	-3.7
150-155	2.1	0.2	2.4	1.7
155-158	1.9	0.8	2.4	-0.9
FOR THIS RUN:	2.1	0.7	4.5	-7.6

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	872.0	6.2	879.4	858.4
5- 10	875.6	5.8	882.4	858.4
10- 15	872.8	6.5	881.4	859.4
15- 20	875.1	5.5	880.4	859.4
20- 25	872.7	6.4	879.4	860.4
25- 30	874.6	5.2	880.4	859.4
30- 35	872.4	6.8	880.4	859.4
35- 40	874.8	5.3	879.4	859.4
40- 45	872.9	6.5	882.4	860.4
45- 50	873.8	5.6	881.4	858.4
50- 55	873.6	7.1	885.4	859.4
55- 60	873.0	5.3	880.4	859.4
60- 65	873.6	6.6	880.4	859.4
65- 70	873.8	5.9	880.4	860.4
70- 75	873.7	7.0	883.4	856.4
75- 80	872.8	5.6	879.4	858.4
80- 85	874.3	6.7	882.4	859.4
85- 90	872.7	5.9	879.4	858.4
90- 95	874.7	6.1	881.4	860.4
95-100	872.5	6.1	879.4	860.4
100-105	874.7	5.4	880.4	860.4
105-110	872.7	6.4	880.4	861.4
110-115	874.8	5.5	881.4	859.4
115-120	872.4	7.5	881.4	856.4
120-125	874.3	5.5	880.4	859.4
125-130	872.6	6.6	880.4	859.4
130-135	874.8	5.2	880.4	861.4
135-140	872.2	6.6	879.4	859.4
140-145	874.8	5.2	880.4	860.4
145-150	873.0	6.7	880.4	859.4
150-155	874.3	5.8	884.4	859.4
155-158	873.0	6.3	880.4	858.4
FOR THIS RUN.	873.6	6.2	885.4	856.4

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	34	1.8	43	34
5- 10	34	0.4	36	34
10- 15	34	0.1	34	34
15- 20	34	0.1	34	34
20- 25	34	0.1	34	34
25- 30	34	0.5	36	34
30- 35	34	0.3	34	32
35- 40	34	0.1	34	34
40- 45	34	1.4	41	34
45- 50	34	0.1	34	34
50- 55	34	0.1	34	34
55- 60	34	0.1	34	34
60- 65	34	0.5	36	34
65- 70	34	0.5	36	34
70- 75	34	0.1	34	34
75- 80	34	0.1	34	34
80- 85	34	0.1	34	34
85- 90	34	0.1	34	34
90- 95	34	0.1	34	34
95-100	34	0.1	34	34
100-105	34	0.1	34	34
105-110	34	0.2	35	33
110-115	34	0.2	35	34
115-120	34	0.1	35	34
120-125	34	0.1	34	34
125-130	34	0.2	35	34
130-135	34	0.1	34	34
135-140	34	0.1	34	34
140-145	34	0.0	34	34
145-150	34	0.1	34	34
150-155	34	0.1	34	34
155-158	34	0.2	35	34
FOR THIS RUN:	34	0.5	43	32

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	917	3.7	920	904
5- 10	906	8.1	917	878
10- 15	909	5.5	916	900
15- 20	913	2.5	917	909
20- 25	905	4.4	912	893
25- 30	908	6.1	914	892
30- 35	909	3.2	914	902
35- 40	909	3.1	912	896
40- 45	899	10.3	913	876
45- 50	910	8.6	920	894
50- 55	894	12.1	906	860
55- 60	913	5.3	919	898
60- 65	912	1.1	914	910
65- 70	908	5.8	911	886
70- 75	901	9.6	914	871
75- 80	914	3.2	918	906
80- 85	903	7.4	912	882
85- 90	912	5.3	918	901
90- 95	905	6.6	912	882
95-100	913	1.8	915	908
100-105	910	3.0	913	898
105-110	909	3.0	912	899
110-115	904	7.6	912	876
115-120	910	3.9	914	898
120-125	912	1.6	914	908
125-130	909	3.4	912	898
130-135	905	5.2	911	885
135-140	913	2.6	916	903
140-145	910	1.7	914	906
145-150	906	2.6	909	898
150-155	903	10.9	912	874
155-158	904	9.3	913	879
FOR THIS RUN:	908	7.7	920	860

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1147	14.4	1191	1132
5- 10	1146	24.5	1238	1130
10- 15	1147	9.3	1167	1132
15- 20	1139	5.3	1158	1132
20- 25	1144	25.9	1228	1113
25- 30	1143	26.1	1235	1114
30- 35	1144	19.5	1226	1124
35- 40	1136	9.3	1154	1112
40- 45	1154	49.0	1313	1109
45- 50	1147	34.3	1309	1121
50- 55	1143	47.2	1266	1077
55- 60	1149	33.6	1282	1121
60- 65	1140	7.9	1173	1127
65- 70	1145	12.3	1180	1117
70- 75	1151	34.7	1274	1112
75- 80	1142	19.2	1202	1109
80- 85	1151	33.2	1232	1103
85- 90	1143	11.7	1189	1129
90- 95	1146	29.5	1234	1107
95-100	1142	5.8	1157	1129
100-105	1136	8.5	1157	1120
105-110	1143	17.8	1182	1114
110-115	1142	34.5	1287	1096
115-120	1144	17.1	1196	1122
120-125	1140	8.3	1161	1126
125-130	1141	13.0	1173	1124
130-135	1144	21.6	1208	1108
135-140	1140	8.1	1170	1132
140-145	1139	5.3	1159	1132
145-150	1146	13.6	1192	1128
150-155	1150	35.3	1243	1093
155-158	1161	48.6	1315	1134
FOR THIS RUN:	1144	25.1	1315	1077

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	1052	11.7	1086	1030
5- 10	1038	19.1	1100	1013
10- 15	1043	10.1	1063	1025
15- 20	1040	4.4	1053	1029
20- 25	1036	22.0	1105	1001
25- 30	1038	20.8	1109	1006
30- 35	1040	16.5	1106	1020
35- 40	1032	10.8	1049	996
40- 45	1037	38.3	1150	990
45- 50	1044	28.6	1170	1012
50- 55	1021	35.4	1110	959
55- 60	1049	27.5	1151	1014
60- 65	1039	6.6	1067	1027
65- 70	1040	12.5	1059	999
70- 75	1037	27.2	1132	986
75- 80	1043	16.1	1091	1011
80- 85	1039	26.9	1094	989
85- 90	1043	11.7	1075	1018
90- 95	1038	24.6	1100	992
95-100	1043	5.9	1057	1031
100-105	1034	7.4	1048	1016
105-110	1039	13.9	1069	1010
110-115	1032	27.0	1127	976
115-120	1041	13.3	1080	1020
120-125	1040	6.8	1054	1024
125-130	1037	9.6	1064	1021
130-135	1036	17.0	1081	995
135-140	1042	5.3	1058	1034
140-145	1037	4.0	1051	1031
145-150	1038	11.8	1077	1019
150-155	1038	26.4	1094	982
155-158	1049	33.2	1156	1025
FOR THIS RUN:	1039	20.3	1170	959

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	121.8	3.2	125.2	110.6
5- 10	117.6	4.6	125.2	100.0
10- 15	120.6	1.8	124.2	117.2
15- 20	119.9	1.8	124.5	117.2
20- 25	117.4	7.4	124.5	92.0
25- 30	118.5	6.9	125.5	92.5
30- 35	119.2	5.5	127.3	97.3
35- 40	120.7	3.5	134.7	116.9
40- 45	114.4	12.8	124.5	69.0
45- 50	120.0	10.0	126.8	72.8
50- 55	117.3	9.5	126.0	84.4
55- 60	119.6	10.3	130.1	76.6
60- 65	121.0	1.8	124.2	113.9
65- 70	119.3	2.7	128.8	112.9
70- 75	117.8	9.8	130.6	76.6
75- 80	121.9	4.6	129.4	103.8
80- 85	117.1	7.3	125.5	96.8
85- 90	121.6	2.3	124.5	113.6
90- 95	118.2	6.5	126.0	97.3
95-100	120.7	1.1	122.5	116.9
100-105	120.3	2.6	126.2	114.4
105-110	119.3	4.1	128.8	109.4
110-115	118.7	7.0	126.5	88.4
115-120	120.7	2.3	126.2	114.2
120-125	121.1	2.6	125.0	114.4
125-130	120.3	2.6	123.7	112.4
130-135	118.9	4.3	128.3	105.6
135-140	122.2	1.4	124.5	118.4
140-145	119.9	1.9	124.5	114.9
145-150	119.8	3.3	127.8	109.6
150-155	118.3	7.8	129.6	100.0
155-158	118.1	14.3	128.3	79.1
FOR THIS RUN:	119.5	6.3	134.7	69.0

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	19.4	9.5	22.7	-26.9
5- 10	16.4	17.8	21.9	-68.4
10- 15	18.8	6.2	22.0	-5.9
15- 20	20.3	3.0	22.0	7.2
20- 25	17.7	10.0	21.7	-27.0
25- 30	7.8	32.3	21.9	-106.3
30- 35	19.1	6.5	22.2	-6.5
35- 40	14.6	23.5	21.9	-96.6
40- 45	14.8	23.2	31.5	-94.5
45- 50	16.3	12.4	22.6	-27.2
50- 55	15.8	13.4	21.6	-36.2
55- 60	19.1	9.6	22.3	-27.4
60- 65	14.0	21.6	22.0	-65.0
65- 70	17.6	14.5	21.8	-53.0
70- 75	16.0	15.4	22.2	-45.2
75- 80	18.7	6.2	22.2	-2.1
80- 85	20.6	1.3	22.0	15.9
85- 90	10.6	34.5	22.1	-106.3
90- 95	19.9	3.1	22.0	5.9
95-100	21.0	1.1	22.5	17.1
100-105	17.1	14.6	22.1	-52.9
105-110	12.4	27.9	21.9	-106.3
110-115	9.3	33.4	21.7	-106.3
115-120	16.0	17.3	22.9	-52.1
120-125	14.1	25.4	22.1	-106.3
125-130	20.6	3.1	29.2	11.1
130-135	19.4	4.6	22.2	3.1
135-140	18.6	8.2	22.1	-10.6
140-145	14.3	19.3	22.6	-48.4
145-150	20.4	2.6	21.9	8.2
150-155	16.8	13.8	22.8	-38.4
155-158	20.7	1.8	23.4	16.6
FOR THIS RUN:	16.8	17.2	31.5	-106.3

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	2.4	1.1	2.8	-3.0
5- 10	1.9	2.1	2.6	-8.2
10- 15	2.3	0.7	2.7	-0.7
15- 20	2.4	0.4	2.7	0.9
20- 25	2.1	1.2	2.6	-3.4
25- 30	1.0	3.5	2.7	-9.8
30- 35	2.3	0.8	2.7	-0.8
35- 40	1.8	2.8	2.7	-11.3
40- 45	1.7	2.7	3.7	-11.3
45- 50	1.9	1.5	2.7	-3.3
50- 55	1.9	1.6	2.6	-4.3
55- 60	2.3	1.2	2.7	-3.4
60- 65	1.7	2.6	2.7	-7.9
65- 70	2.1	1.7	2.6	-6.4
70- 75	2.0	1.6	2.8	-3.5
75- 80	2.3	0.8	2.8	-0.3
80- 85	2.4	0.2	2.7	1.8
85- 90	1.3	4.2	2.7	-12.8
90- 95	2.3	0.4	2.6	0.7
95-100	2.5	0.1	2.7	2.1
100-105	2.1	1.7	2.7	-6.3
105-110	1.5	3.4	2.7	-13.0
110-115	1.1	4.0	2.7	-12.8
115-120	1.9	2.1	2.7	-6.3
120-125	1.7	3.0	2.7	-12.7
125-130	2.5	0.4	3.6	1.2
130-135	2.3	0.6	2.7	0.4
135-140	2.3	1.0	2.7	-1.3
140-145	1.7	2.3	2.7	-5.8
145-150	2.4	0.3	2.7	1.0
150-155	2.0	1.7	2.7	-4.7
155-158	2.4	0.4	2.9	1.6
FOR THIS RUN:	2.0	2.0	3.7	-13.0

TABLE 17 (Continued)

RUN NUMBER 4300

TRIAL CONDITIONS: 1) Brash ice with all bubblers
2) 48 in.(121.9 cm) of ice without snow
3) Ship speed 12.7 knots

DATE: 10 February 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 5	887.6	4.4	894.4	880.4
5- 10	887.5	5.9	896.4	878.4
10- 15	887.6	4.3	893.4	880.4
15- 20	887.6	5.3	895.4	879.4
20- 25	887.9	5.6	897.4	878.4
25- 30	887.4	5.1	895.4	878.4
30- 35	886.8	5.1	894.4	879.4
35- 40	888.2	5.5	897.4	877.4
40- 45	886.6	5.3	896.4	879.4
45- 50	888.0	4.8	895.4	879.4
50- 55	887.6	8.4	905.4	873.4
55- 60	888.4	5.6	896.4	877.4
60- 65	886.6	4.9	894.4	879.4
65- 70	888.5	5.9	897.4	876.4
70- 75	887.4	5.0	895.4	878.4
75- 80	887.5	4.7	894.4	880.4
80- 85	887.8	5.7	896.4	874.4
85- 90	887.2	5.1	894.4	879.4
90- 95	887.8	4.8	895.4	879.4
95-100	887.2	4.7	895.4	879.4
100-105	888.3	5.4	895.4	879.4
105-110	886.9	4.6	894.4	879.4
110-115	888.2	6.1	897.4	876.4
115-120	887.2	5.4	896.4	876.4
120-125	887.7	5.3	895.4	879.4
125-130	887.2	5.1	895.4	879.4
130-135	888.0	5.7	896.4	875.4
135-140	887.2	5.2	894.4	879.4
140-145	887.8	4.8	894.4	879.4
145-150	887.0	5.5	896.4	879.4
150-155	888.2	5.5	895.4	877.4
155-158	884.3	5.6	893.4	877.4
FOR THIS RUN:	887.5	5.4	905.4	873.4

TABLE 18 - MACHINERY PARAMETERS, RUN 6500

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-1610	804.8	0	-2012
7- 8	-503	1349.7	1006	-2012
8- 9	604	1120.2	1509	-1006
9-10	1509	1055.1	2515	0
10-11	3823	402.4	4527	3521
11-12	5734	513.0	6539	5030
12-13	8149	1288.3	10060	6036
13-14	10764	1730.8	13581	8551
14-15	14185	922.0	15090	12575
15-16	18510	1025.9	20120	17102
16-17	22534	1327.0	23641	20120
17-18	26961	1545.4	28671	24647
18-19	32091	1754.0	34707	30180
19-20	35411	1296.1	37222	34204
20-21	39938	1701.3	42755	37725
21-22	42856	1401.2	44767	41246
22-23	46779	1147.0	48288	44767
23-24	48791	449.9	49294	48288
24-25	50602	603.6	51306	49797
25-26	51407	739.3	52312	50803
26-27	51205	1364.6	53318	49797
27-28	52010	752.8	53318	51306
28-29	50501	682.3	51809	49797
29-30	51407	804.8	51809	49797
30-31	50501	752.8	51809	49797
31-32	50099	752.8	50803	48791
32-33	49898	1164.5	51809	48288
33-34	49395	804.8	50803	48288
34-35	50099	682.3	50803	48791
35-36	49495	513.0	50300	48791
36-37	49395	739.3	50803	48791
37-38	50501	682.3	51306	49294
38-39	50401	975.4	51306	48791
39-40	49395	804.8	50300	48288
40-41	49696	865.4	51306	48791
41-42	50501	877.0	51306	48791
42-43	50602	752.8	51306	49294
43-44	52614	932.9	53821	51306
44-45	52815	841.7	53821	51809
45-46	52111	877.0	53318	50803
46-47	53620	1083.5	54827	52312
47-48	54425	1025.9	55833	52815
48-49	53419	586.6	54324	52815
49-50	54525	752.8	55330	53318
50-51	53821	954.4	55330	52815
51-52	55531	682.3	56336	54324
52-53	55129	985.7	55833	53318
53-54	54928	804.8	55833	53821
54-55	56537	752.8	57845	55833
55-56	57845	841.7	58851	56839
56-57	56336	1102.0	57845	54827
57-58	55531	1512.3	57342	53821
58-59	54726	586.6	55833	54324
59-60	55129	1035.7	56336	53821
60-61	55129	513.0	55833	54324
61-62	55028	513.0	55833	54324
62-63	55632	1083.5	56839	54324
63-64	55229	975.4	56336	53821
64-65	54827	1272.5	56336	53318
65-66	52714	975.4	54324	51809

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-2183	1091.3	0	-2728
7- 8	-682	1830.2	1364	-2728
8- 9	818	1519.0	2046	-1364
9-10	2046	1430.7	3410	0
10-11	5184	545.7	6139	4774
11-12	7776	695.6	8867	6821
12-13	11050	1746.9	13641	8185
13-14	14596	2346.9	18416	11595
14-15	19234	1250.3	20462	17052
15-16	25100	1391.2	27283	23190
16-17	30557	1799.4	32057	27283
17-18	36559	2095.6	38878	33421
18-19	43516	2378.5	47063	40924
19-20	48018	1757.6	50473	46381
20-21	54156	2307.0	57976	51155
21-22	58112	1900.0	60704	55930
22-23	63432	1555.4	65479	60704
23-24	66161	610.1	66843	65479
24-25	68616	818.5	69571	67525
25-26	69707	1002.4	70935	68889
26-27	69435	1850.4	72299	67525
27-28	70526	1020.8	72299	69571
28-29	68480	925.2	70253	67525
29-30	69707	1091.3	70253	67525
30-31	68480	1020.8	70253	67525
31-32	67934	1020.8	68889	66161
32-33	67661	1579.1	70253	65479
33-34	66979	1091.3	68889	65479
34-35	67934	925.2	68889	66161
35-36	67115	695.6	68207	66161
36-37	66979	1002.4	68889	66161
37-38	68480	925.2	69571	66843
38-39	68343	1322.6	69571	66161
39-40	66979	1091.3	68207	65479
40-41	67388	1173.5	69571	66161
41-42	68480	1189.2	69571	66161
42-43	68616	1020.8	69571	66843
43-44	71344	1265.0	72981	69571
44-45	71617	1141.3	72981	70253
45-46	70662	1189.2	72299	68889
46-47	72708	1469.2	74345	70935
47-48	73800	1391.2	75710	71617
48-49	72436	795.4	73663	71617
49-50	73936	1020.8	75027	72299
50-51	72981	1294.1	75027	71617
51-52	75300	925.2	76392	73663
52-53	74755	1336.6	75710	72299
53-54	74482	1091.3	75710	72981
54-55	76664	1020.8	78438	75710
55-56	78438	1141.3	79802	77074
56-57	76392	1494.3	78438	74345
57-58	75300	2050.7	77756	72981
58-59	74209	795.4	75710	73663
59-60	74755	1404.5	76392	72981
60-61	74755	695.6	75710	73663
61-62	74618	695.6	75710	73663
62-63	75437	1469.2	77074	73663
63-64	74891	1322.6	76392	72981
64-65	74345	1725.5	76392	72299
65-66	71481	1322.6	73663	70253

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER THRUST (lb) (English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	5471	1284.3	7567	3974
7- 8	5950	1250.3	7567	3974
8- 9	6848	1292.6	8764	4872
9-10	5950	1700.0	7866	3675
10-11	11998	789.9	12657	10561
11-12	15052	1958.7	18644	13555
12-13	23495	1507.7	24932	20740
13-14	25231	655.9	26129	24333
14-15	31578	1566.0	33315	29423
15-16	35051	991.2	36608	33614
16-17	39961	8952.6	49482	25830
17-18	40800	4416.4	46488	36907
18-19	49662	1424.6	50979	47386
19-20	51338	1142.4	52775	50081
20-21	56248	771.5	56967	54871
21-22	56607	743.1	57566	55769
22-23	57985	1161.1	59362	56368
23-24	58464	1864.9	60859	55470
24-25	58703	991.2	60260	57566
25-26	58943	2062.1	62356	56069
26-27	56128	1158.0	57865	54572
27-28	56488	2384.6	59062	52775
28-29	56548	1250.3	58464	55170
29-30	55709	1916.1	58164	52775
30-31	54631	2842.8	60260	52775
31-32	56907	2283.3	59661	53673
32-33	54572	3772.8	59062	50081
33-34	55290	4463.3	60260	48284
34-35	54572	3213.4	58464	50081
35-36	53494	3432.5	57566	47985
36-37	53374	9427.8	64152	35710
37-38	50440	1998.5	53075	47985
38-39	53374	1725.1	56368	50979
39-40	53254	2245.2	55170	49183
40-41	53494	1918.0	56667	51278
41-42	54272	1893.5	57566	52176
42-43	45829	12952.9	62356	28225
43-44	42476	15173.8	53673	12956
44-45	46727	2413.0	50081	42895
45-46	52296	8145.7	65649	42296
46-47	41039	12980.5	59661	19543
47-48	53254	2565.7	57865	50679
48-49	52236	5466.4	62655	46787
49-50	55949	3171.9	58464	49781
50-51	61757	7791.1	72535	52775
51-52	56967	5523.8	62955	48284
52-53	57865	4428.6	61458	49482
53-54	62116	1633.3	65050	60559
54-55	52655	9632.1	63254	35710
55-56	54871	7912.1	64751	40800
56-57	54991	2369.6	58164	50979
57-58	58763	2483.3	61458	55470
58-59	56188	2354.4	59062	51877
59-60	60619	1275.8	62955	59062
60-61	61577	2850.4	65649	57865
61-62	60799	2507.8	65050	58164
62-63	60380	1373.3	61757	57865
63-64	57027	3096.4	61458	53075
64-65	55051	1591.0	57566	53075
65-66	48883	3815.3	52476	41997

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	24336	5712.4	33658	17677
7- 8	26466	5561.3	33658	17677
8- 9	30462	5749.5	38984	21672
9-10	26466	7561.4	34989	16346
10-11	53367	3513.3	56297	46975
11-12	66950	8712.2	82931	60292
12-13	104504	6706.3	110896	92252
13-14	112228	2917.6	116223	108233
14-15	140460	6965.7	148184	130872
15-16	155908	4408.7	162832	149515
16-17	177747	39821.1	220096	114891
17-18	181476	19644.3	206779	164164
18-19	220895	6336.4	226754	210774
19-20	228352	5081.4	234744	222759
20-21	250192	3431.5	253388	244066
21-22	251790	3305.2	256051	248061
22-23	257916	5164.5	264042	250725
23-24	260046	8295.1	270700	246730
24-25	261112	4408.7	268037	256051
25-26	262177	9172.3	277359	249393
26-27	249659	5150.8	257383	242734
27-28	251257	10606.9	262710	234744
28-29	251524	5561.3	260046	245398
29-30	247795	8522.9	258715	234744
30-31	243001	12644.8	268037	234744
31-32	253122	10155.9	265373	238739
32-33	242734	16781.5	262710	222759
33-34	245930	19852.6	268037	214769
34-35	242734	14293.3	260046	222759
35-36	237940	15267.6	256051	213437
36-37	237408	41934.8	285349	158837
37-38	224357	8889.5	236076	213437
38-39	237408	7673.2	250725	226754
39-40	236875	9986.9	245398	218764
40-41	237940	8531.2	252056	228086
41-42	241403	8422.4	256051	232081
42-43	203849	57614.4	277359	125545
43-44	188934	67492.8	238739	57628
44-45	207844	10733.2	222759	190798
45-46	232613	36232.0	292007	188135
46-47	182542	57737.4	265373	86926
47-48	236875	11412.3	257383	225422
48-49	232347	24314.4	278690	208110
49-50	248860	14108.5	260046	221427
50-51	274695	34654.9	322636	234744
51-52	253388	24569.8	280022	214769
52-53	257383	19698.3	273363	220096
53-54	276293	7264.8	289344	269368
54-55	234212	42843.5	281354	158837
55-56	244066	35193.2	288012	181476
56-57	244599	10539.8	258715	226754
57-58	261378	11045.9	273363	246730
58-59	249926	10472.3	262710	230749
59-60	269635	5675.0	280022	262710
60-61	273896	12678.4	292007	257383
61-62	270434	11154.5	289344	258715
62-63	268569	6108.4	274695	257383
63-64	253654	13772.6	273363	236076
64-65	244865	7076.8	256051	236076
65-66	217432	16970.7	233413	186803

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.1	0	0
7- 8	0	0.1	0	-0
8- 9	6	6.4	16	-1
9-10	15	10.7	25	0
10-11	58	8.1	69	45
11-12	119	17.4	144	104
12-13	205	37.7	262	144
13-14	308	58.9	405	234
14-15	445	37.9	494	381
15-16	638	44.2	691	581
16-17	833	67.3	912	718
17-18	1051	79.0	1133	927
18-19	1381	102.1	1536	1258
19-20	1602	70.3	1713	1530
20-21	1886	73.1	1999	1785
21-22	2101	73.7	2201	2012
22-23	2327	83.7	2420	2169
23-24	2445	36.6	2480	2383
24-25	2568	29.4	2620	2537
25-26	2605	40.9	2686	2580
26-27	2627	71.3	2738	2548
27-28	2642	45.5	2718	2586
28-29	2588	34.7	2656	2562
29-30	2619	72.1	2670	2477
30-31	2598	41.6	2670	2552
31-32	2561	56.0	2628	2487
32-33	2576	59.0	2675	2493
33-34	2531	17.6	2555	2507
34-35	2599	31.0	2623	2538
35-36	2552	44.7	2605	2494
36-37	2525	51.2	2557	2423
37-38	2566	50.2	2659	2511
38-39	2622	52.0	2674	2538
39-40	2550	41.0	2617	2503
40-41	2586	43.8	2669	2543
41-42	2601	49.1	2659	2524
42-43	2497	98.1	2607	2326
43-44	2452	74.1	2541	2328
44-45	2485	30.9	2526	2445
45-46	2397	45.5	2459	2341
46-47	2345	43.5	2400	2286
47-48	2469	77.8	2562	2358
48-49	2436	31.0	2475	2393
49-50	2459	75.0	2513	2315
50-51	2499	57.8	2597	2419
51-52	2554	62.7	2633	2451
52-53	2543	91.2	2615	2365
53-54	2546	57.1	2620	2451
54-55	2399	92.7	2535	2258
55-56	2479	52.7	2516	2376
56-57	2502	46.7	2554	2427
57-58	2536	73.2	2626	2429
58-59	2515	42.9	2594	2469
59-60	2544	45.4	2612	2485
60-61	2570	41.3	2615	2493
61-62	2566	18.3	2599	2544
62-63	2561	65.7	2633	2451
63-64	2450	94.6	2580	2333
64-65	2392	69.9	2483	2289
65-66	2209	63.4	2294	2132

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.1	0	0
7- 8	0	0.1	0	-0
8- 9	6	6.5	16	-1
9-10	15	10.8	26	0
10-11	59	8.2	70	46
11-12	120	17.6	145	105
12-13	207	38.1	265	146
13-14	312	59.6	409	236
14-15	450	38.3	500	385
15-16	645	44.7	699	588
16-17	843	68.1	922	726
17-18	1063	79.9	1145	937
18-19	1396	103.3	1554	1273
19-20	1620	71.1	1732	1548
20-21	1907	73.9	2021	1805
21-22	2124	74.5	2225	2035
22-23	2353	84.6	2447	2194
23-24	2473	37.0	2507	2410
24-25	2597	29.7	2649	2565
25-26	2635	41.4	2716	2609
26-27	2656	72.1	2769	2576
27-28	2672	46.0	2748	2615
28-29	2616	35.1	2685	2591
29-30	2648	72.9	2700	2504
30-31	2627	42.0	2700	2581
31-32	2590	56.6	2658	2515
32-33	2604	59.6	2705	2521
33-34	2560	17.8	2583	2535
34-35	2628	31.3	2653	2566
35-36	2581	45.2	2634	2522
36-37	2553	51.8	2585	2450
37-38	2595	50.7	2689	2539
38-39	2651	52.6	2704	2566
39-40	2579	41.5	2646	2531
40-41	2615	44.3	2699	2571
41-42	2630	49.6	2689	2552
42-43	2524	99.2	2636	2352
43-44	2479	74.9	2570	2354
44-45	2512	31.3	2554	2473
45-46	2424	46.0	2486	2367
46-47	2371	44.0	2427	2311
47-48	2497	78.6	2591	2385
48-49	2463	31.4	2502	2420
49-50	2486	75.8	2541	2340
50-51	2527	58.4	2626	2446
51-52	2582	63.4	2663	2479
52-53	2571	92.3	2644	2392
53-54	2574	57.7	2650	2479
54-55	2425	93.7	2564	2283
55-56	2507	53.3	2544	2402
56-57	2530	47.2	2583	2454
57-58	2564	74.0	2655	2456
58-59	2544	43.4	2623	2496
59-60	2573	45.9	2641	2513
60-61	2598	41.7	2644	2521
61-62	2595	18.5	2628	2573
62-63	2590	66.4	2663	2479
63-64	2477	95.7	2609	2359
64-65	2419	70.7	2511	2315
65-66	2234	64.2	2320	2155

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-0.5	0.0	-0.5	-0.5
7- 8	-0.5	0.0	-0.5	-0.5
8- 9	22.5	20.0	55.0	4.0
9- 10	48.6	7.4	60.0	38.0
10- 11	80.0	8.6	94.0	67.5
11- 12	108.5	8.0	118.5	98.5
12- 13	131.5	6.6	140.0	122.5
13- 14	149.7	4.5	156.5	143.5
14- 15	164.4	4.3	172.0	159.0
15- 16	180.8	5.0	187.5	173.0
16- 17	194.0	5.1	202.5	187.5
17- 18	204.5	4.9	212.0	197.5
18- 19	225.7	4.5	232.5	219.0
19- 20	237.6	4.0	245.0	233.5
20- 21	248.1	1.9	251.0	245.5
21- 22	257.4	0.8	258.2	256.2
22- 23	261.2	3.7	264.2	254.5
23- 24	263.3	2.1	265.2	259.2
24- 25	266.6	3.5	268.7	259.7
25- 26	266.2	3.0	269.7	260.7
26- 27	269.4	0.4	269.7	268.7
27- 28	266.8	2.5	270.2	263.2
28- 29	269.1	0.8	270.2	267.7
29- 30	267.5	3.4	270.7	261.2
30- 31	270.2	0.5	270.7	269.2
31- 32	268.5	3.0	271.7	263.2
32- 33	271.1	0.7	271.7	269.7
33- 34	269.2	3.4	272.7	263.2
34- 35	272.5	0.7	273.2	271.2
35- 36	270.8	3.0	274.7	265.7
36- 37	268.5	6.7	275.2	258.2
37- 38	266.9	4.8	273.2	262.2
38- 39	273.2	0.5	273.7	272.2
39- 40	271.2	2.8	274.7	267.7
40- 41	273.3	0.6	274.2	272.7
41- 42	270.5	2.7	272.2	265.2
42- 43	259.2	11.8	272.2	240.5
43- 44	244.7	4.9	249.5	236.0
44- 45	247.1	1.7	250.0	245.5
45- 46	241.6	2.4	245.0	238.0
46- 47	239.8	6.0	241.0	224.5
47- 48	238.2	3.3	242.0	234.0
48- 49	239.5	2.5	243.5	237.0
49- 50	236.8	5.6	242.5	228.0
50- 51	243.9	3.3	248.0	239.5
51- 52	241.5	3.8	245.5	237.0
52- 53	242.2	4.8	246.0	233.0
53- 54	243.4	4.0	247.0	237.0
54- 55	222.9	10.3	238.5	210.5
55- 56	225.2	7.3	232.0	212.0
56- 57	233.3	2.0	236.0	230.0
57- 58	239.8	3.0	243.0	237.0
58- 59	241.4	3.7	244.0	236.5
59- 60	242.4	1.3	243.5	240.0
60- 61	244.8	2.0	246.5	241.0
61- 62	244.9	1.1	246.0	243.0
62- 63	241.8	3.0	245.5	237.0
63- 64	232.9	5.8	240.5	223.5
64- 65	229.1	2.1	231.5	225.5
65- 66	220.1	4.0	226.0	214.0

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	6	0.5	7	6
7- 8	13	4.5	21	8
8- 9	59	20.9	90	31
9-10	147	28.0	187	108
10-11	249	26.4	285	211
11-12	332	20.9	360	302
12-13	398	15.8	420	375
13-14	450	13.3	468	431
14-15	497	12.8	515	479
15-16	542	12.6	560	524
16-17	581	13.9	603	566
17-18	625	18.4	655	606
18-19	705	22.7	738	674
19-20	789	23.7	822	755
20-21	865	17.8	889	839
21-22	915	10.5	929	900
22-23	934	0.0	934	934
23-24	934	0.0	934	934
24-25	934	0.0	934	934
25-26	934	0.0	934	934
26-27	934	0.0	934	934
27-28	930	2.8	934	926
28-29	921	1.9	924	918
29-30	917	0.5	918	916
30-31	917	0.6	918	916
31-32	920	1.1	921	918
32-33	923	0.6	924	922
33-34	927	1.5	929	925
34-35	931	0.8	932	930
35-36	933	0.8	934	932
36-37	917	16.3	934	894
37-38	914	4.2	918	907
38-39	920	1.3	922	918
39-40	926	1.7	928	923
40-41	931	1.2	933	929
41-42	934	0.0	934	934
42-43	901	32.6	934	850
43-44	857	9.6	867	841
44-45	862	4.9	869	855
45-46	850	12.1	868	837
46-47	815	19.5	850	796
47-48	841	8.8	854	830
48-49	854	9.7	866	840
49-50	843	19.6	868	816
50-51	874	7.7	881	860
51-52	869	11.7	884	850
52-53	873	8.1	881	858
53-54	876	5.2	883	867
54-55	807	36.3	862	765
55-56	811	13.3	825	788
56-57	829	9.6	843	816
57-58	856	5.5	864	847
58-59	867	3.7	873	861
59-60	871	7.1	880	859
60-61	881	0.8	883	880
61-62	879	1.1	880	877
62-63	871	4.6	877	864
63-64	849	17.7	861	813
64-65	778	28.6	808	736
65-66	675	29.0	715	636

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	29	30.4	77	-11
7- 8	211	49.0	269	130
8- 9	328	27.4	369	292
9-10	441	36.7	496	393
10-11	594	44.3	658	534
11-12	753	46.4	820	687
12-13	922	49.0	993	853
13-14	1095	51.6	1168	1022
14-15	1292	59.1	1376	1211
15-16	1514	65.4	1609	1426
16-17	1796	40.3	1850	1732
17-18	2048	80.9	2192	1974
18-19	2121	24.3	2146	2080
19-20	2150	4.0	2157	2146
20-21	2163	4.0	2169	2157
21-22	2169	1.9	2173	2167
22-23	2168	3.5	2174	2164
23-24	2163	4.6	2167	2154
24-25	2159	5.7	2167	2150
25-26	2153	4.6	2157	2147
26-27	2151	4.6	2157	2144
27-28	2149	5.3	2159	2143
28-29	2150	2.9	2154	2146
29-30	2146	1.7	2149	2144
30-31	2147	1.7	2150	2146
31-32	2149	1.7	2151	2147
32-33	2151	4.5	2157	2144
33-34	2152	3.1	2156	2149
34-35	2150	3.3	2156	2147
35-36	2151	6.1	2160	2143
36-37	2248	82.7	2337	2144
37-38	2135	10.3	2149	2117
38-39	2147	2.1	2151	2146
39-40	2155	3.1	2157	2149
40-41	2154	7.5	2161	2144
41-42	2155	3.3	2157	2151
42-43	2347	150.1	2500	2159
43-44	2186	90.7	2332	2073
44-45	2235	73.8	2331	2153
45-46	2204	124.2	2511	2169
46-47	2370	182.0	2624	2144
47-48	2201	56.6	2297	2151
48-49	2335	118.7	2520	2218
49-50	2268	166.9	2601	2171
50-51	2318	108.4	2524	2230
51-52	2276	19.6	2300	2245
52-53	2337	89.0	2453	2221
53-54	2289	37.0	2361	2258
54-55	2585	117.3	2727	2397
55-56	2202	62.2	2317	2150
56-57	2255	94.4	2438	2180
57-58	2284	24.3	2328	2255
58-59	2354	46.0	2413	2291
59-60	2305	33.7	2371	2275
60-61	2315	10.4	2331	2301
61-62	2306	31.8	2367	2284
62-63	2244	22.3	2274	2212
63-64	2182	37.5	2245	2139
64-65	2083	9.8	2094	2066
65-66	1992	50.4	2063	1916

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.2	1	-0
7- 8	3	1.6	6	1
8- 9	20	8.6	33	9
9-10	66	17.9	93	43
10-11	149	26.7	188	112
11-12	251	31.1	296	207
12-13	368	34.0	417	320
13-14	493	37.7	547	440
14-15	643	45.9	709	580
15-16	822	54.6	901	748
16-17	1045	44.3	1115	980
17-18	1279	45.3	1329	1206
18-19	1495	64.4	1583	1401
19-20	1697	53.6	1773	1621
20-21	1872	41.7	1926	1809
21-22	1985	23.9	2020	1951
22-23	2024	3.2	2030	2021
23-24	2019	4.3	2024	2012
24-25	2016	5.3	2024	2008
25-26	2011	4.3	2014	2005
26-27	2009	4.3	2014	2002
27-28	1998	6.4	2006	1988
28-29	1980	6.0	1987	1970
29-30	1968	2.1	1971	1965
30-31	1969	2.1	1971	1966
31-32	1977	1.7	1979	1975
32-33	1986	4.6	1993	1980
33-34	1995	1.1	1996	1994
34-35	2001	2.6	2006	1998
35-36	2007	6.4	2017	1999
36-37	2059	55.0	2150	2002
37-38	1952	17.9	1972	1920
38-39	1975	2.1	1978	1971
39-40	1994	2.5	1998	1990
40-41	2006	7.2	2014	1994
41-42	2012	2.1	2014	2009
42-43	2110	83.9	2217	2016
43-44	1874	65.1	1961	1772
44-45	1927	55.2	2008	1869
45-46	1942	97.0	2106	1814
46-47	1930	138.0	2138	1748
47-48	1852	46.1	1934	1799
48-49	1993	81.7	2117	1907
49-50	1910	112.9	2122	1794
50-51	2026	78.4	2170	1949
51-52	1978	15.5	2002	1955
52-53	2040	72.4	2142	1939
53-54	2006	24.3	2048	1983
54-55	2085	128.9	2187	1833
55-56	1787	60.2	1900	1733
56-57	1868	69.4	1989	1799
57-58	1955	28.7	1998	1923
58-59	2042	33.8	2089	1991
59-60	2009	19.7	2037	1977
60-61	2040	9.2	2054	2029
61-62	2028	28.0	2083	2009
62-63	1955	28.6	1994	1921
63-64	1832	47.2	1866	1739
64-65	1614	50.7	1670	1534
65-66	1346	89.6	1475	1218

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	69.5	0.7	70.1	68.4
7- 8	69.4	0.7	70.6	68.9
8- 9	69.7	0.6	70.6	68.9
9- 10	69.8	0.7	70.6	68.9
10- 11	69.8	0.6	70.6	68.9
11- 12	69.6	0.5	70.4	68.9
12- 13	69.5	0.6	70.4	68.9
13- 14	69.2	0.7	70.4	68.4
14- 15	68.5	0.3	69.1	68.1
15- 16	69.1	0.6	69.6	68.1
16- 17	68.4	1.1	70.4	67.6
17- 18	81.1	8.1	96.3	72.1
18- 19	91.4	10.1	104.9	78.9
19- 20	109.3	2.3	113.0	105.9
20- 21	115.9	1.5	117.2	113.5
21- 22	116.3	0.3	116.7	116.0
22- 23	115.3	1.3	117.0	113.2
23- 24	111.6	2.3	114.0	107.9
24- 25	108.1	1.1	109.9	106.7
25- 26	103.7	1.0	104.9	102.1
26- 27	100.7	1.4	102.4	98.6
27- 28	97.7	2.1	101.6	96.1
28- 29	97.6	2.2	100.1	94.8
29- 30	95.5	1.6	98.3	93.8
30- 31	97.5	0.6	98.6	96.8
31- 32	99.4	0.9	100.9	98.3
32- 33	99.9	1.7	103.1	98.8
33- 34	102.0	1.4	103.4	99.6
34- 35	100.5	1.0	101.6	98.6
35- 36	100.4	2.4	103.4	97.8
36- 37	105.0	4.8	109.9	98.3
37- 38	90.7	4.5	96.6	82.7
38- 39	97.3	0.6	98.3	96.6
39- 40	101.3	1.4	103.4	99.6
40- 41	102.8	0.9	103.9	101.1
41- 42	102.2	1.5	104.4	99.9
42- 43	109.8	2.4	112.7	105.9
43- 44	101.5	9.8	117.2	89.8
44- 45	104.0	4.9	109.2	97.6
45- 46	110.3	1.5	112.5	107.9
46- 47	109.7	3.0	112.5	103.9
47- 48	106.8	3.9	110.4	100.6
48- 49	111.6	1.2	113.0	109.7
49- 50	111.5	1.3	113.5	109.4
50- 51	113.7	0.5	114.2	112.7
51- 52	113.5	0.8	115.0	112.7
52- 53	113.9	0.3	114.2	113.5
53- 54	112.8	0.2	113.0	112.5
54- 55	114.5	0.6	115.2	113.7
55- 56	104.1	4.3	108.2	98.6
56- 57	110.2	0.3	110.4	109.7
57- 58	112.2	0.8	113.5	111.2
58- 59	113.3	0.3	113.7	113.0
59- 60	113.9	0.5	114.5	113.2
60- 61	113.1	0.5	114.0	112.7
61- 62	113.8	0.4	114.5	113.2
62- 63	112.7	0.3	113.2	112.5
63- 64	111.1	1.9	113.2	108.2
64- 65	61.8	5.6	70.4	55.0
65- 66	53.2	0.3	53.7	53.0

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	29.2	0.0	29.2	29.1
7- 8	29.2	0.0	29.2	29.2
8- 9	29.2	0.0	29.3	29.2
9- 10	29.2	0.0	29.3	29.2
10- 11	29.3	0.0	29.4	29.2
11- 12	29.3	0.0	29.3	29.2
12- 13	29.3	0.0	29.3	29.2
13- 14	29.3	0.0	29.4	29.3
14- 15	29.3	0.0	29.3	29.3
15- 16	29.4	0.0	29.4	29.3
16- 17	29.4	0.1	29.5	29.3
17- 18	30.9	0.9	31.8	29.4
18- 19	33.2	1.2	35.1	32.0
19- 20	38.5	1.6	40.5	36.1
20- 21	43.4	1.2	45.0	41.7
21- 22	46.5	0.6	47.3	45.5
22- 23	47.9	0.2	48.1	47.7
23- 24	47.7	0.2	47.9	47.4
24- 25	46.9	0.3	47.2	46.4
25- 26	45.6	0.3	46.0	45.2
26- 27	44.3	0.5	44.8	43.6
27- 28	42.9	0.2	43.2	42.7
28- 29	42.0	0.2	42.3	41.6
29- 30	41.4	0.1	41.4	41.3
30- 31	41.4	0.0	41.4	41.3
31- 32	41.7	0.1	41.8	41.5
32- 33	42.1	0.2	42.3	41.8
33- 34	42.6	0.0	42.7	42.6
34- 35	42.7	0.1	42.8	42.6
35- 36	42.9	0.1	43.0	42.7
36- 37	42.9	0.6	43.8	42.1
37- 38	41.8	0.8	43.0	41.0
38- 39	41.0	0.1	41.2	40.9
39- 40	41.7	0.4	42.2	41.3
40- 41	42.8	0.3	43.1	42.4
41- 42	43.1	0.1	43.3	43.0
42- 43	44.5	0.6	45.4	43.6
43- 44	44.9	1.0	46.2	43.6
44- 45	44.3	0.2	44.6	44.0
45- 46	45.4	0.5	46.2	44.7
46- 47	46.1	0.3	46.4	45.6
47- 48	45.4	0.2	45.7	45.0
48- 49	46.0	0.3	46.4	45.6
49- 50	46.8	0.2	47.1	46.4
50- 51	47.3	0.1	47.4	47.0
51- 52	47.9	0.1	48.0	47.7
52- 53	47.9	0.1	48.0	47.9
53- 54	48.0	0.1	48.2	48.0
54- 55	48.1	0.2	48.4	47.9
55- 56	45.9	0.6	47.1	45.4
56- 57	46.0	0.3	46.4	45.6
57- 58	46.8	0.3	47.2	46.4
58- 59	47.5	0.1	47.7	47.3
59- 60	47.9	0.1	48.0	47.8
60- 61	48.0	0.1	48.1	47.9
61- 62	48.1	0.0	48.1	48.0
62- 63	48.0	0.1	48.1	48.0
63- 64	47.7	0.2	48.1	47.6
64- 65	39.7	2.9	44.1	35.8
65- 66	32.1	1.5	34.4	30.1

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	2.0	0.0	2.0	2.0
7- 8	2.0	0.0	2.1	2.0
8- 9	2.0	0.0	2.1	2.0
9- 10	2.0	0.0	2.1	2.0
10- 11	2.0	0.0	2.1	2.0
11- 12	2.0	0.0	2.1	2.0
12- 13	2.0	0.0	2.1	2.0
13- 14	2.0	0.0	2.1	2.0
14- 15	2.0	0.0	2.0	2.0
15- 16	2.0	0.0	2.0	2.0
16- 17	2.0	0.0	2.1	2.0
17- 18	2.5	0.3	2.9	2.1
18- 19	3.0	0.4	3.7	2.5
19- 20	4.2	0.3	4.6	3.8
20- 21	5.0	0.2	5.3	4.7
21- 22	5.4	0.1	5.5	5.3
22- 23	5.5	0.0	5.6	5.5
23- 24	5.3	0.1	5.5	5.1
24- 25	5.1	0.0	5.1	5.0
25- 26	4.7	0.1	4.8	4.6
26- 27	4.5	0.1	4.6	4.3
27- 28	4.2	0.1	4.3	4.1
28- 29	4.1	0.1	4.2	4.0
29- 30	4.0	0.1	4.1	3.9
30- 31	4.0	0.0	4.1	4.0
31- 32	4.1	0.0	4.2	4.1
32- 33	4.2	0.1	4.4	4.1
33- 34	4.3	0.1	4.4	4.2
34- 35	4.3	0.0	4.3	4.2
35- 36	4.3	0.1	4.4	4.2
36- 37	4.5	0.3	4.8	4.2
37- 38	3.8	0.1	4.0	3.6
38- 39	4.0	0.0	4.1	4.0
39- 40	4.2	0.1	4.4	4.1
40- 41	4.4	0.0	4.4	4.3
41- 42	4.4	0.1	4.5	4.3
42- 43	4.9	0.2	5.1	4.6
43- 44	4.6	0.5	5.4	3.9
44- 45	4.6	0.2	4.8	4.3
45- 46	5.0	0.1	5.1	4.9
46- 47	5.1	0.1	5.2	4.8
47- 48	4.9	0.2	5.0	4.5
48- 49	5.1	0.1	5.2	5.0
49- 50	5.2	0.1	5.3	5.1
50- 51	5.4	0.0	5.4	5.3
51- 52	5.4	0.0	5.5	5.4
52- 53	5.5	0.0	5.5	5.4
53- 54	5.4	0.0	5.4	5.4
54- 55	5.5	0.0	5.6	5.5
55- 56	4.8	0.2	5.1	4.5
56- 57	5.1	0.0	5.1	5.0
57- 58	5.3	0.1	5.4	5.2
58- 59	5.4	0.0	5.4	5.4
59- 60	5.5	0.0	5.5	5.4
60- 61	5.4	0.0	5.5	5.4
61- 62	5.5	0.0	5.5	5.4
62- 63	5.4	0.0	5.4	5.4
63- 64	5.3	0.1	5.4	5.2
64- 65	2.5	0.4	3.1	2.0
65- 66	1.7	0.1	1.8	1.6

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	22	0.1	23	22
7- 8	22	0.3	23	22
8- 9	22	0.2	23	22
9-10	22	0.1	23	22
10-11	22	0.1	23	22
11-12	23	1.4	26	22
12-13	22	0.0	22	22
13-14	22	0.1	23	22
14-15	22	0.0	22	22
15-16	22	0.0	22	22
16-17	22	0.1	23	22
17-18	22	0.1	23	22
18-19	22	0.1	23	22
19-20	22	0.0	22	22
20-21	22	0.0	22	22
21-22	22	0.0	22	22
22-23	22	0.1	22	22
23-24	22	0.1	23	22
24-25	22	0.1	23	22
25-26	22	0.0	22	22
26-27	22	0.1	23	22
27-28	24	3.6	31	22
28-29	22	0.1	23	22
29-30	22	0.1	23	22
30-31	22	0.1	23	22
31-32	22	0.1	22	22
32-33	22	0.0	22	22
33-34	22	0.1	23	22
34-35	22	0.0	22	22
35-36	22	0.1	23	22
36-37	22	0.1	23	22
37-38	22	0.1	22	22
38-39	22	0.0	22	22
39-40	28	10.7	49	22
40-41	22	0.1	22	22
41-42	22	0.1	22	22
42-43	22	0.0	22	22
43-44	22	0.1	22	22
44-45	22	0.1	22	22
45-46	22	0.3	22	22
46-47	22	0.1	22	22
47-48	22	0.1	22	22
48-49	22	0.1	22	22
49-50	22	0.1	22	22
50-51	27	9.3	46	22
51-52	22	0.0	22	22
52-53	22	0.0	22	22
53-54	22	0.1	22	22
54-55	22	0.1	23	22
55-56	22	0.1	23	22
56-57	22	0.1	23	22
57-58	22	0.0	22	22
58-59	22	0.1	23	22
59-60	22	0.1	22	22
60-61	22	0.1	23	22
61-62	22	0.1	22	22
62-63	22	0.1	23	22
63-64	22	0.1	23	22
64-65	22	0.1	23	22
65-66	22	0.1	23	22

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	5	0.7	6	4
7- 8	11	4.3	19	7
8- 9	58	21.1	90	30
9-10	147	28.1	187	108
10-11	249	26.5	286	211
11-12	332	21.0	361	302
12-13	399	15.8	421	377
13-14	451	13.3	470	432
14-15	498	12.9	516	480
15-16	544	12.5	561	526
16-17	583	13.9	605	568
17-18	627	18.5	657	608
18-19	707	22.8	740	676
19-20	792	23.9	825	757
20-21	868	17.7	892	842
21-22	918	10.6	932	902
22-23	945	3.6	947	938
23-24	947	0.0	947	947
24-25	947	0.0	947	947
25-26	947	0.0	947	947
26-27	943	3.2	947	938
27-28	932	2.9	936	928
28-29	924	1.8	926	921
29-30	919	0.7	920	918
30-31	919	0.6	920	919
31-32	922	1.3	924	920
32-33	926	0.7	927	925
33-34	929	1.4	931	927
34-35	933	0.9	935	932
35-36	936	0.9	937	935
36-37	920	16.7	937	896
37-38	917	4.1	920	910
38-39	922	1.3	924	921
39-40	928	2.0	931	925
40-41	934	1.4	936	932
41-42	938	1.0	939	936
42-43	903	33.3	938	851
43-44	860	10.0	870	843
44-45	865	5.0	871	857
45-46	853	12.2	870	839
46-47	817	20.2	854	798
47-48	843	9.3	857	831
48-49	857	9.8	869	843
49-50	845	19.5	870	818
50-51	877	8.1	885	862
51-52	872	11.7	887	853
52-53	876	7.9	883	861
53-54	880	6.1	887	871
54-55	809	36.2	864	766
55-56	814	13.6	828	790
56-57	831	9.7	845	817
57-58	859	5.3	866	851
58-59	870	3.7	875	864
59-60	874	7.5	882	861
60-61	884	0.8	885	883
61-62	882	1.3	883	880
62-63	874	4.5	880	867
63-64	842	18.2	863	814
64-65	777	25.5	810	739
65-66	677	28.4	718	637

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	12	14.4	33	-8
7- 8	101	24.3	129	61
8- 9	161	15.4	183	140
9-10	220	18.8	247	195
10-11	296	21.9	328	265
11-12	377	23.7	411	342
12-13	462	25.9	500	426
13-14	549	26.1	585	511
14-15	649	30.1	692	607
15-16	761	32.4	809	718
16-17	902	21.6	931	869
17-18	1031	41.7	1106	993
18-19	1065	11.6	1078	1047
19-20	1078	1.4	1079	1075
20-21	1082	2.4	1085	1078
21-22	1089	2.1	1092	1086
22-23	1090	2.7	1095	1087
23-24	1091	3.5	1097	1086
24-25	1093	4.2	1099	1087
25-26	1094	2.9	1097	1090
26-27	1090	1.5	1092	1087
27-28	1083	3.2	1088	1078
28-29	1080	2.9	1085	1077
29-30	1079	1.2	1081	1078
30-31	1081	2.2	1085	1078
31-32	1079	1.7	1080	1076
32-33	1083	2.6	1087	1079
33-34	1082	2.5	1085	1078
34-35	1083	2.8	1087	1080
35-36	1083	4.3	1087	1076
36-37	1130	42.8	1177	1076
37-38	1076	7.5	1085	1063
38-39	1084	2.3	1087	1081
39-40	1083	2.9	1087	1079
40-41	1081	4.0	1086	1075
41-42	1084	2.4	1086	1079
42-43	1179	74.8	1256	1085
43-44	1104	45.2	1168	1040
44-45	1135	35.9	1178	1094
45-46	1146	63.7	1261	1083
46-47	1189	92.9	1318	1076
47-48	1112	28.8	1161	1087
48-49	1174	58.5	1264	1117
49-50	1136	83.4	1301	1078
50-51	1169	54.4	1272	1121
51-52	1142	8.9	1153	1127
52-53	1179	44.7	1236	1120
53-54	1154	19.3	1191	1136
54-55	1297	61.0	1373	1199
55-56	1120	32.1	1180	1091
56-57	1137	49.7	1234	1096
57-58	1143	10.8	1163	1131
58-59	1178	24.3	1209	1144
59-60	1160	14.7	1188	1144
60-61	1169	5.6	1178	1161
61-62	1162	15.6	1192	1151
62-63	1132	11.2	1148	1116
63-64	1103	19.6	1136	1078
64-65	1051	5.5	1059	1043
65-66	1001	25.8	1038	962

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice remains without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.1	0	-0
7- 8	1	0.7	2	0
8- 9	10	4.3	16	4
9-10	33	9.0	46	21
10-11	74	13.3	94	56
11-12	126	15.7	148	103
12-13	185	17.7	211	160
13-14	248	19.1	275	221
14-15	324	21.4	357	291
15-16	414	27.2	454	377
16-17	527	23.0	564	493
17-18	646	22.6	672	610
18-19	753	32.3	798	707
19-20	853	26.5	889	814
20-21	940	20.9	966	908
21-22	999	13.3	1018	980
22-23	1030	3.0	1033	1026
23-24	1033	3.3	1039	1029
24-25	1035	4.0	1042	1030
25-26	1036	2.8	1039	1033
26-27	1027	4.0	1032	1020
27-28	1009	3.7	1015	1003
28-29	998	3.9	1004	992
29-30	992	1.4	995	991
30-31	993	2.5	998	991
31-32	995	2.2	997	991
32-33	1002	2.7	1007	1000
33-34	1006	1.5	1007	1003
34-35	1011	2.6	1014	1007
35-36	1013	3.3	1017	1008
36-37	1039	28.5	1086	1009
37-38	987	11.0	999	967
38-39	999	1.2	1001	998
39-40	1005	1.5	1007	1003
40-41	1009	3.5	1014	1005
41-42	1016	1.7	1018	1013
42-43	1063	42.7	1121	1017
43-44	948	34.4	984	889
44-45	981	26.6	1018	951
45-46	977	50.1	1061	909
46-47	971	70.6	1077	879
47-48	938	24.4	981	908
48-49	1005	40.5	1065	957
49-50	959	57.4	1064	894
50-51	1025	39.4	1097	983
51-52	996	8.5	1010	984
52-53	1032	36.7	1084	982
53-54	1015	12.8	1037	1001
54-55	1050	66.7	1101	919
55-56	912	32.0	971	882
56-57	944	35.6	1009	909
57-58	982	12.3	1002	968
58-59	1025	17.9	1050	998
59-60	1013	9.2	1023	996
60-61	1033	5.2	1042	1027
61-62	1025	13.9	1052	1015
62-63	989	14.3	1010	973
63-64	928	25.4	945	878
64-65	817	26.1	845	776
65-66	678	45.7	745	613

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0.5	0.7	1.7	-0.3
7- 8	5.7	3.0	11.3	3.0
8- 9	22.7	4.6	29.9	16.4
9- 10	39.2	3.5	44.6	34.2
10- 11	50.4	2.1	52.0	46.7
11- 12	56.2	1.2	57.6	54.3
12- 13	59.9	0.8	60.9	58.9
13- 14	64.0	2.2	67.8	61.4
14- 15	70.3	1.9	72.9	67.3
15- 16	76.6	2.3	80.5	73.9
16- 17	82.9	6.2	88.4	74.1
17- 18	93.0	11.4	105.9	77.4
18- 19	113.1	3.8	118.1	107.2
19- 20	127.2	4.4	132.7	121.1
20- 21	137.3	1.4	138.3	134.7
21- 22	140.8	1.0	142.3	139.8
22- 23	139.8	1.1	141.3	138.3
23- 24	135.9	1.8	139.0	134.2
24- 25	130.0	2.8	133.4	126.0
25- 26	122.7	1.5	124.4	119.9
26- 27	117.0	1.8	120.1	115.0
27- 28	114.9	1.5	116.8	112.2
28- 29	113.2	0.8	114.0	111.7
29- 30	115.6	0.9	117.3	114.8
30- 31	116.1	1.0	117.8	115.0
31- 32	119.0	0.5	119.9	118.3
32- 33	119.9	1.0	121.1	118.1
33- 34	121.3	0.6	122.2	120.6
34- 35	122.4	0.9	123.7	121.1
35- 36	122.5	1.3	124.4	121.1
36- 37	109.8	11.5	124.4	93.7
37- 38	117.7	1.2	118.9	115.6
38- 39	118.5	0.5	119.4	118.1
39- 40	121.5	1.2	122.9	119.6
40- 41	123.0	1.3	125.2	121.4
41- 42	123.8	0.6	124.7	122.9
42- 43	100.8	18.8	124.2	80.5
43- 44	107.1	9.5	122.7	94.5
44- 45	101.7	9.4	112.5	90.4
45- 46	107.4	16.9	132.2	79.7
46- 47	87.0	24.0	111.2	57.3
47- 48	109.0	6.0	119.6	102.6
48- 49	105.0	13.1	117.1	87.1
49- 50	109.5	18.8	125.8	72.6
50- 51	109.1	15.6	119.9	78.7
51- 52	117.4	5.6	125.7	108.2
52- 53	105.1	12.3	119.6	86.6
53- 54	115.3	4.8	119.4	105.9
54- 55	74.8	13.9	95.0	57.3
55- 56	98.4	7.5	105.6	85.1
56- 57	105.7	11.8	114.8	82.5
57- 58	114.9	3.0	118.1	109.7
58- 59	109.1	6.6	117.8	99.5
59- 60	115.1	3.7	118.3	107.9
60- 61	113.7	1.9	115.8	110.2
61- 62	110.1	2.8	114.3	106.4
62- 63	100.7	3.8	104.9	94.2
63- 64	84.4	7.7	95.7	75.6
64- 65	62.8	6.3	71.8	54.3
65- 66	45.5	3.4	50.5	41.6

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-0.2	0.3	0.3	-0.6
7- 8	0.7	1.2	3.1	-0.5
8- 9	1.5	0.7	2.5	0.4
9- 10	3.4	0.8	4.6	2.3
10- 11	15.7	20.6	56.8	4.8
11- 12	7.9	2.0	11.9	6.6
12- 13	8.0	0.6	9.1	7.1
13- 14	8.6	2.2	10.0	4.2
14- 15	11.1	1.5	14.1	9.9
15- 16	12.1	1.4	14.6	10.7
16- 17	12.1	1.2	13.8	10.3
17- 18	13.8	1.2	14.9	11.5
18- 19	15.5	1.6	17.7	12.8
19- 20	19.3	0.6	20.1	18.5
20- 21	20.6	2.2	23.0	16.8
21- 22	23.6	0.3	24.1	23.1
22- 23	23.1	2.5	24.9	18.2
23- 24	23.8	0.7	24.7	22.8
24- 25	23.3	0.7	24.4	22.2
25- 26	22.4	0.6	23.3	21.5
26- 27	21.4	0.5	21.9	20.5
27- 28	20.3	0.4	20.9	19.7
28- 29	20.7	0.3	21.0	20.1
29- 30	19.9	0.6	20.8	19.0
30- 31	20.7	0.3	20.9	20.2
31- 32	19.1	2.7	21.2	13.7
32- 33	20.8	0.6	21.4	20.0
33- 34	21.4	0.5	21.9	20.6
34- 35	21.4	0.7	22.0	20.3
35- 36	20.2	2.6	22.1	15.1
36- 37	20.2	0.9	21.2	18.6
37- 38	19.7	1.1	20.8	17.8
38- 39	20.9	0.5	21.3	20.0
39- 40	22.4	2.9	28.1	20.6
40- 41	21.6	0.3	22.0	21.2
41- 42	21.2	1.0	22.4	19.8
42- 43	21.1	1.9	22.8	17.7
43- 44	17.5	1.6	18.9	14.4
44- 45	17.9	0.6	18.6	16.8
45- 46	17.5	2.4	19.3	12.8
46- 47	16.5	0.9	18.2	15.4
47- 48	18.0	0.4	18.4	17.3
48- 49	20.0	2.8	25.5	18.2
49- 50	15.8	5.2	18.7	5.5
50- 51	19.4	0.6	20.0	18.4
51- 52	19.3	0.2	19.6	19.1
52- 53	19.7	0.6	20.3	18.7
53- 54	18.5	1.5	19.8	15.5
54- 55	15.0	5.9	19.0	3.3
55- 56	15.7	0.8	16.7	14.2
56- 57	17.9	0.4	18.5	17.3
57- 58	17.6	1.5	18.8	14.6
58- 59	19.1	1.5	20.4	16.2
59- 60	19.2	1.0	20.5	17.9
60- 61	20.3	0.5	20.7	19.5
61- 62	18.5	1.8	20.0	15.0
62- 63	15.3	4.6	19.8	8.8
63- 64	16.6	0.3	16.9	16.1
64- 65	13.3	1.6	15.5	10.9
65- 66	12.1	0.3	12.5	11.7

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0.0	0.0	0.0	-0.0
7- 8	0.0	0.0	0.0	-0.0
8- 9	0.0	0.0	0.1	0.0
9- 10	0.1	0.0	0.2	0.1
10- 11	0.8	1.0	2.8	0.2
11- 12	0.4	0.1	0.7	0.4
12- 13	0.5	0.0	0.6	0.4
13- 14	0.6	0.1	0.7	0.3
14- 15	0.8	0.1	1.0	0.7
15- 16	0.9	0.1	1.2	0.8
16- 17	1.0	0.1	1.2	0.8
17- 18	1.3	0.2	1.6	1.1
18- 19	1.8	0.2	2.1	1.4
19- 20	2.5	0.2	2.7	2.2
20- 21	2.8	0.3	3.2	2.3
21- 22	3.3	0.0	3.4	3.3
22- 23	3.2	0.4	3.5	3.5
23- 24	3.2	0.1	3.3	3.1
24- 25	3.0	0.1	3.3	2.9
25- 26	2.7	0.1	2.9	2.7
26- 27	2.5	0.1	2.6	2.4
27- 28	2.3	0.0	2.4	2.3
28- 29	2.3	0.0	2.4	2.3
29- 30	2.3	0.1	2.4	2.2
30- 31	2.4	0.0	2.4	2.4
31- 32	2.3	0.3	2.5	1.6
32- 33	2.5	0.1	2.6	2.4
33- 34	2.6	0.1	2.6	2.5
34- 35	2.6	0.1	2.7	2.5
35- 36	2.5	0.3	2.7	1.8
36- 37	2.2	0.3	2.6	1.7
37- 38	2.3	0.1	2.4	2.1
38- 39	2.5	0.1	2.5	2.4
39- 40	2.7	0.4	3.4	2.5
40- 41	2.7	0.0	2.7	2.6
41- 42	2.6	0.1	2.8	2.5
42- 43	2.1	0.5	2.8	1.6
43- 44	1.9	0.2	2.2	1.6
44- 45	1.8	0.2	2.1	1.5
45- 46	1.9	0.2	2.2	1.5
46- 47	1.5	0.5	2.0	0.9
47- 48	2.0	0.1	2.2	1.8
48- 49	2.1	0.5	3.0	1.6
49- 50	1.7	0.7	2.2	0.6
50- 51	2.1	0.3	2.3	1.6
51- 52	2.3	0.1	2.4	2.1
52- 53	2.1	0.3	2.4	1.7
53- 54	2.1	0.3	2.3	1.6
54- 55	1.1	0.4	1.6	0.3
55- 56	1.5	0.1	1.7	1.3
56- 57	1.9	0.2	2.0	1.4
57- 58	2.0	0.2	2.2	1.7
58- 59	2.1	0.3	2.4	1.6
59- 60	2.2	0.2	2.4	1.9
60- 61	2.3	0.1	2.4	2.2
61- 62	2.0	0.2	2.2	1.6
62- 63	1.5	0.5	2.1	0.9
63- 64	1.4	0.1	1.6	1.2
64- 65	0.8	0.1	1.0	0.7
65- 66	0.6	0.1	0.6	0.5

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

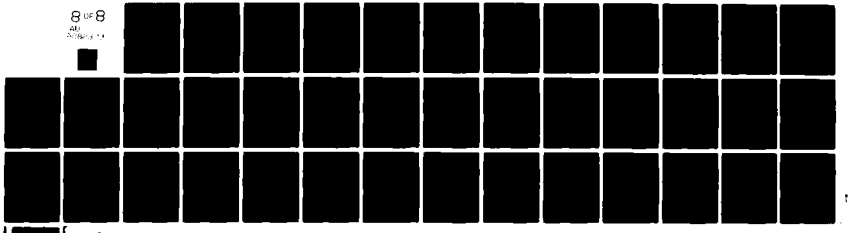
DATE: 17 March 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	859.0	1.4	860.4	856.4
7- 8	859.2	1.5	860.4	856.4
8- 9	858.0	1.9	859.4	854.4
9- 10	856.2	1.5	857.4	853.4
10- 11	855.2	1.6	857.4	853.4
11- 12	853.0	1.5	855.4	851.4
12- 13	852.0	0.8	853.4	851.4
13- 14	850.8	1.2	852.4	849.4
14- 15	847.4	1.9	850.4	844.4
15- 16	844.2	2.1	846.4	840.4
16- 17	837.0	2.4	841.4	834.4
17- 18	831.6	1.7	834.4	829.4
18- 19	830.2	1.3	832.4	828.4
19- 20	826.8	1.4	828.4	824.4
20- 21	826.2	1.6	828.4	824.4
21- 22	827.4	1.7	829.4	824.4
22- 23	831.2	1.5	833.4	829.4
23- 24	834.8	1.9	836.4	831.4
24- 25	840.2	2.5	843.4	836.4
25- 26	847.2	3.0	849.4	841.4
26- 27	854.2	1.8	856.4	852.4
27- 28	857.2	1.5	859.4	855.4
28- 29	857.2	2.0	859.4	853.4
29- 30	855.8	1.4	857.4	853.4
30- 31	854.2	1.5	855.4	852.4
31- 32	853.4	1.1	854.4	851.4
32- 33	851.8	1.7	853.4	848.4
33- 34	850.6	1.6	852.4	847.4
34- 35	850.8	1.5	852.4	849.4
35- 36	851.2	1.5	852.4	849.4
36- 37	848.8	2.9	852.4	844.4
37- 38	852.8	4.1	856.4	846.4
38- 39	854.4	1.8	856.4	851.4
39- 40	853.2	1.5	854.4	850.4
40- 41	851.4	1.3	853.4	849.4
41- 42	851.0	1.4	852.4	848.4
42- 43	846.0	4.1	850.4	839.4
43- 44	851.4	8.9	860.4	836.4
44- 45	860.4	1.8	862.4	857.4
45- 46	854.8	2.1	857.4	852.4
46- 47	851.6	2.0	854.4	849.4
47- 48	861.8	2.7	865.4	858.4
48- 49	852.0	4.0	857.4	848.4
49- 50	849.8	6.0	857.4	843.4
50- 51	851.2	4.5	857.4	844.4
51- 52	846.6	3.4	852.4	842.4
52- 53	847.8	1.0	849.4	846.4
53- 54	849.4	1.3	851.4	847.4
54- 55	844.2	2.8	849.4	841.4
55- 56	864.6	8.2	871.4	849.4
56- 57	861.2	2.5	865.4	858.4
57- 58	855.4	4.4	861.4	848.4
58- 59	847.4	1.4	849.4	845.4
59- 60	846.6	2.7	848.4	841.4
60- 61	847.8	0.8	848.4	846.4
61- 62	849.0	2.5	851.4	844.4
62- 63	854.6	1.9	858.4	851.4
63- 64	861.6	1.3	863.4	858.4
64- 65	871.8	3.7	875.4	866.4
65- 66	878.4	1.8	880.4	875.4

AD-A082 373 DAVID W TAYLOR NAVAL SHIP RESEARCH AND DEVELOPMENT CE--ETC F/G 13/10
MACHINERY AND SHIP TRACKING DATA FOR ICE-BREAKING TRIALS CONDUC--ETC(U)
FEB 80 D H DRAZIN MIPR-Z51100-8-0012
UNCLASSIFIED DTNSRDC-80/024 NL

8 OF 8



END
DATE FILMED
4-80
DTIC

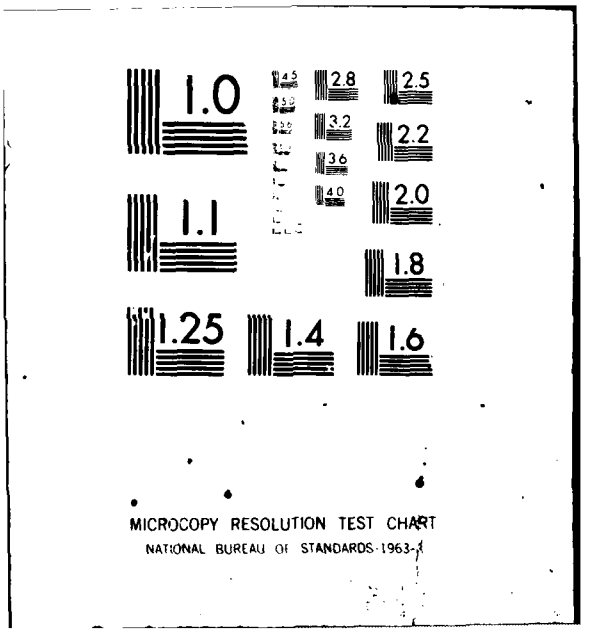

1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	25	0.1	25	24
7- 8	25	0.1	25	24
8- 9	24	0.1	24	24
9-10	24	0.1	25	24
10-11	24	0.1	24	24
11-12	24	0.1	24	24
12-13	24	0.1	24	24
13-14	24	0.1	24	24
14-15	24	0.1	24	24
15-16	24	0.3	25	24
16-17	24	0.1	24	24
17-18	24	0.1	25	24
18-19	24	0.1	24	24
19-20	24	0.1	24	24
20-21	24	0.1	24	24
21-22	24	0.1	24	24
22-23	24	0.2	24	24
23-24	24	0.1	24	24
24-25	24	0.1	24	24
25-26	24	0.1	24	24
26-27	24	0.1	24	24
27-28	24	0.1	24	24
28-29	24	0.2	25	24
29-30	24	0.1	24	24
30-31	24	0.2	24	24
31-32	24	0.1	24	24
32-33	24	0.1	24	24
33-34	24	0.1	24	24
34-35	24	0.0	24	24
35-36	24	0.0	24	24
36-37	24	0.1	24	24
37-38	24	0.2	25	24
38-39	24	0.0	24	24
39-40	24	0.1	24	24
40-41	24	0.1	24	24
41-42	24	0.1	24	24
42-43	24	0.0	24	24
43-44	24	0.1	24	24
44-45	24	0.0	24	24
45-46	24	0.0	24	24
46-47	24	0.1	24	24
47-48	24	0.1	24	24
48-49	24	0.1	24	24
49-50	24	0.1	24	24
50-51	24	0.1	24	24
51-52	24	0.1	24	24
52-53	24	0.1	24	24
53-54	24	0.1	24	24
54-55	24	0.1	24	24
55-56	24	0.1	24	24
56-57	24	0.1	24	24
57-58	24	0.1	25	24
58-59	24	0.0	24	24
59-60	24	0.0	24	24
60-61	24	0.1	24	24
61-62	24	0.1	24	24
62-63	24	0.1	25	24
63-64	24	0.0	24	24
64-65	24	0.1	25	24
65-66	24	0.1	25	24

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.5	1	-0
7- 8	6	4.4	14	2
8- 9	53	20.9	84	25
9-10	141	27.9	181	102
10-11	242	26.2	278	204
11-12	325	20.8	353	295
12-13	391	15.9	413	368
13-14	442	13.2	461	424
14-15	489	12.7	507	471
15-16	534	12.5	552	516
16-17	574	13.9	595	558
17-18	617	18.2	647	598
18-19	696	22.5	729	665
19-20	780	23.6	813	746
20-21	856	17.7	880	830
21-22	906	10.5	920	890
22-23	920	0.0	920	920
23-24	920	0.0	920	920
24-25	920	0.0	920	920
25-26	920	0.0	920	920
26-27	920	0.0	920	920
27-28	919	1.5	920	916
28-29	911	2.0	914	909
29-30	907	0.5	908	906
30-31	907	0.5	908	906
31-32	910	1.2	912	908
32-33	913	0.8	914	912
33-34	917	1.4	919	915
34-35	920	0.0	920	920
35-36	920	0.0	920	920
36-37	905	14.5	920	884
37-38	904	4.0	908	897
38-39	910	1.5	912	908
39-40	916	1.9	919	913
40-41	920	0.0	920	920
41-42	920	0.0	920	920
42-43	889	30.9	920	840
43-44	848	10.0	858	831
44-45	853	4.9	859	846
45-46	841	12.1	859	828
46-47	806	20.0	842	787
47-48	832	9.1	845	819
48-49	845	9.5	857	831
49-50	834	19.4	859	806
50-51	865	7.9	873	851
51-52	860	11.6	875	841
52-53	864	7.9	871	849
53-54	868	6.1	875	859
54-55	798	36.0	852	755
55-56	803	13.5	816	779
56-57	819	9.6	833	806
57-58	847	5.3	854	838
58-59	858	3.6	863	852
59-60	862	7.5	870	849
60-61	872	0.8	873	871
61-62	870	1.2	871	868
62-63	862	4.6	868	855
63-64	830	18.0	851	803
64-65	766	25.4	799	728
65-66	666	28.0	706	627

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	20	16.3	48	0
7- 8	116	25.4	148	75
8- 9	174	12.2	193	159
9-10	230	18.0	257	207
10-11	306	22.4	338	276
11-12	386	23.1	420	353
12-13	470	23.2	504	438
13-14	558	25.7	595	522
14-15	657	30.0	700	616
15-16	768	33.4	816	723
16-17	911	19.1	936	880
17-18	1036	39.5	1106	1000
18-19	1076	13.1	1088	1052
19-20	1092	3.8	1099	1087
20-21	1101	2.0	1104	1098
21-22	1101	1.2	1102	1099
22-23	1098	1.0	1099	1097
23-24	1092	3.7	1097	1088
24-25	1085	2.3	1088	1082
25-26	1079	2.6	1084	1076
26-27	1082	3.9	1087	1075
27-28	1086	2.7	1091	1083
28-29	1088	0.7	1090	1087
29-30	1086	1.1	1087	1085
30-31	1087	1.1	1088	1085
31-32	1090	1.9	1092	1087
32-33	1089	2.0	1092	1086
33-34	1090	1.9	1094	1088
34-35	1087	0.8	1087	1085
35-36	1088	3.3	1093	1083
36-37	1138	40.7	1182	1087
37-38	1078	3.2	1082	1072
38-39	1084	1.7	1086	1081
39-40	1091	2.3	1095	1089
40-41	1093	3.2	1097	1088
41-42	1090	1.2	1092	1088
42-43	1189	75.9	1265	1094
43-44	1102	48.3	1187	1050
44-45	1121	38.5	1175	1080
45-46	1158	61.4	1272	1105
46-47	1203	91.4	1330	1088
47-48	1109	28.3	1157	1083
48-49	1182	61.3	1278	1119
49-50	1154	85.8	1325	1100
50-51	1170	54.9	1275	1128
51-52	1156	11.1	1169	1140
52-53	1180	44.4	1238	1121
53-54	1156	18.4	1192	1142
54-55	1310	56.6	1377	1220
55-56	1103	30.9	1159	1074
56-57	1139	45.7	1226	1099
57-58	1162	14.4	1187	1145
58-59	1198	22.1	1226	1168
59-60	1167	19.4	1205	1152
60-61	1168	5.5	1175	1161
61-62	1165	16.0	1195	1154
62-63	1132	11.0	1146	1118
63-64	1099	18.1	1129	1081
64-65	1051	4.8	1055	1042
65-66	1009	25.3	1044	971

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.0	0	-0
7- 8	1	0.7	2	0
8- 9	9	4.3	16	4
9-10	33	9.0	46	21
10-11	75	13.4	94	56
11-12	126	15.5	148	104
12-13	184	16.5	208	161
13-14	247	18.8	274	221
14-15	322	23.1	355	290
15-16	411	27.4	450	373
16-17	523	21.7	557	491
17-18	638	22.6	662	602
18-19	749	32.7	793	700
19-20	852	27.9	893	815
20-21	942	20.7	970	913
21-22	997	11.2	1013	981
22-23	1010	0.9	1011	1009
23-24	1004	3.4	1009	1001
24-25	998	2.1	1001	995
25-26	993	2.4	997	990
26-27	995	3.6	999	989
27-28	998	2.0	1000	994
28-29	992	2.7	996	989
29-30	985	1.3	987	983
30-31	985	1.0	987	984
31-32	992	1.1	994	990
32-33	995	2.0	998	993
33-34	1000	2.1	1003	997
34-35	999	0.8	1000	998
35-36	1001	3.0	1005	996
36-37	1030	28.7	1076	1000
37-38	975	7.0	983	962
38-39	986	2.4	989	982
39-40	999	3.1	1002	994
40-41	1005	3.0	1009	1001
41-42	1002	1.1	1004	1001
42-43	1055	42.7	1108	1006
43-44	934	33.7	986	886
44-45	956	29.1	1002	927
45-46	974	47.0	1055	915
46-47	969	68.9	1072	876
47-48	923	22.7	963	898
48-49	998	42.0	1062	954
49-50	961	56.1	1068	909
50-51	1012	39.1	1084	976
51-52	994	6.9	1002	983
52-53	1019	35.9	1070	969
53-54	1003	12.7	1024	989
54-55	1045	63.4	1096	921
55-56	885	29.3	941	861
56-57	933	33.5	988	893
57-58	984	16.5	1008	965
58-59	1027	15.8	1050	1004
59-60	1006	11.0	1024	989
60-61	1018	5.3	1025	1013
61-62	1014	13.9	1041	1005
62-63	976	14.2	994	958
63-64	913	22.8	931	868
64-65	805	25.0	832	766
65-66	673	45.0	738	609

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0.8	0.8	2.3	0.2
7- 8	5.6	2.7	9.6	2.8
8- 9	22.3	5.7	30.2	14.6
9- 10	38.9	4.5	44.8	32.8
10- 11	50.2	1.8	53.2	47.9
11- 12	56.1	0.5	56.9	55.4
12- 13	60.0	0.9	61.2	58.7
13- 14	64.9	1.6	66.5	62.2
14- 15	70.7	1.7	73.1	68.3
15- 16	77.4	2.8	81.4	73.6
16- 17	82.5	5.3	89.0	74.6
17- 18	94.2	9.9	105.6	80.1
18- 19	110.7	3.7	116.2	105.8
19- 20	125.1	3.0	128.3	119.9
20- 21	131.8	1.7	134.7	129.6
21- 22	135.3	1.1	136.4	133.4
22- 23	134.2	0.2	134.7	133.9
23- 24	131.2	1.0	133.2	130.4
24- 25	127.6	2.1	130.6	125.5
25- 26	124.9	1.2	127.0	123.7
26- 27	121.0	1.3	123.5	119.7
27- 28	118.1	1.0	118.9	116.2
28- 29	116.2	0.2	116.4	115.9
29- 30	117.1	0.5	117.9	116.4
30- 31	119.2	0.8	120.2	118.2
31- 32	119.0	1.0	120.5	117.7
32- 33	121.6	0.8	122.5	120.2
33- 34	121.7	1.2	123.5	119.9
34- 35	123.2	0.2	123.5	123.0
35- 36	123.5	0.9	125.0	122.2
36- 37	110.5	10.0	122.2	96.0
37- 38	118.5	0.7	119.4	117.7
38- 39	121.1	1.8	123.2	118.4
39- 40	122.4	0.5	123.2	121.7
40- 41	124.1	0.7	125.0	123.5
41- 42	124.5	0.8	125.7	123.7
42- 43	101.1	19.5	124.7	80.4
43- 44	100.0	9.7	122.0	92.7
44- 45	106.0	9.8	118.2	94.0
45- 46	111.3	15.6	133.7	85.4
46- 47	87.6	23.4	118.6	59.2
47- 48	113.4	5.9	123.2	107.3
48- 49	107.5	13.5	119.9	89.0
49- 50	110.6	18.6	124.2	73.8
50- 51	111.3	14.5	122.0	82.9
51- 52	110.2	6.1	127.5	108.4
52- 53	107.1	11.5	119.9	89.0
53- 54	117.2	3.9	121.2	109.9
54- 55	77.6	12.1	94.5	62.0
55- 56	102.8	7.0	109.9	91.0
56- 57	111.9	11.3	119.7	89.5
57- 58	116.3	2.1	119.2	113.1
58- 59	110.0	6.5	117.4	101.6
59- 60	113.8	3.3	116.9	107.6
60- 61	116.0	2.1	119.9	113.9
61- 62	111.0	2.8	115.2	107.3
62- 63	103.4	3.5	107.6	97.8
63- 64	88.7	6.9	98.0	80.4
64- 65	68.9	7.5	79.6	58.2
65- 66	50.6	2.1	53.9	48.6

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-0.9	1.6	0.2	-4.1
7- 8	-2.4	5.3	0.9	-12.8
8- 9	1.6	0.6	2.3	0.7
9- 10	3.5	0.7	4.3	2.2
10- 11	3.6	4.8	6.7	-5.9
11- 12	0.7	12.5	8.6	-24.2
12- 13	8.7	1.0	9.9	7.2
13- 14	8.7	1.6	9.9	5.6
14- 15	10.2	0.9	11.8	9.3
15- 16	-11.4	47.5	12.5	-106.3
16- 17	6.1	13.8	14.4	-21.3
17- 18	13.7	0.8	14.6	12.2
18- 19	16.7	1.3	18.4	15.0
19- 20	18.5	0.4	19.1	18.0
20- 21	21.5	1.1	22.5	19.4
21- 22	16.0	12.8	22.6	-9.5
22- 23	22.1	1.9	24.0	18.5
23- 24	23.2	0.6	24.1	22.4
24- 25	-2.8	51.7	23.4	-106.3
25- 26	-3.1	51.6	23.2	-106.3
26- 27	21.8	0.9	22.9	20.7
27- 28	-3.9	51.2	22.0	-106.3
28- 29	20.8	0.6	21.5	19.8
29- 30	10.3	21.5	21.9	-32.7
30- 31	12.4	16.5	21.2	-20.6
31- 32	20.3	3.0	21.9	14.3
32- 33	15.1	12.3	22.0	-9.6
33- 34	21.9	0.6	22.5	20.9
34- 35	21.9	0.8	22.7	20.6
35- 36	20.6	2.2	22.3	16.3
36- 37	21.5	0.9	22.7	20.2
37- 38	8.7	22.2	20.6	-35.6
38- 39	21.7	0.3	22.1	21.2
39- 40	15.2	11.8	22.5	-8.3
40- 41	21.7	0.6	22.6	21.0
41- 42	-3.7	51.3	22.8	-106.3
42- 43	18.6	4.9	22.0	8.9
43- 44	18.0	1.4	19.0	15.2
44- 45	3.5	31.1	20.0	-58.6
45- 46	18.4	2.0	19.9	14.6
46- 47	14.1	7.5	18.7	-0.9
47- 48	18.3	0.4	18.8	17.8
48- 49	19.6	1.6	20.8	16.3
49- 50	16.1	4.7	18.9	6.7
50- 51	20.7	0.4	21.2	20.2
51- 52	19.2	0.5	20.1	18.6
52- 53	20.5	0.5	21.2	19.8
53- 54	15.7	6.0	20.0	4.0
54- 55	14.1	8.9	20.1	-3.5
55- 56	16.9	1.1	18.5	15.6
56- 57	7.9	21.3	19.3	-34.8
57- 58	19.4	0.9	20.7	18.5
58- 59	19.2	1.3	20.7	16.9
59- 60	20.3	0.6	20.9	19.1
60- 61	13.3	13.7	20.6	-14.0
61- 62	19.5	2.0	20.9	15.6
62- 63	16.2	5.3	19.4	5.7
63- 64	-3.5	43.7	18.8	-90.9
64- 65	14.1	1.7	15.1	10.7
65- 66	13.5	0.8	14.5	12.5

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-0.0	0.0	0.0	-0.0
7- 8	-0.0	0.0	0.0	-0.1
8- 9	0.0	0.0	0.1	0.0
9- 10	0.1	0.0	0.2	0.1
10- 11	0.2	0.2	0.3	-0.3
11- 12	0.0	0.7	0.5	-1.3
12- 13	0.5	0.1	0.6	0.4
13- 14	0.6	0.1	0.6	0.4
14- 15	0.7	0.1	0.9	0.7
15- 16	-1.0	3.8	1.0	-8.7
16- 17	0.5	1.2	1.3	-1.8
17- 18	1.3	0.2	1.5	1.1
18- 19	1.9	0.2	2.1	1.6
19- 20	2.3	0.1	2.4	2.2
20- 21	2.8	0.2	3.0	2.5
21- 22	2.2	1.7	3.0	-1.3
22- 23	3.0	0.3	3.2	2.5
23- 24	3.1	0.1	3.1	2.9
24- 25	-0.3	6.6	3.0	-13.5
25- 26	-0.4	6.5	2.9	-13.5
26- 27	2.6	0.1	2.8	2.5
27- 28	-0.5	6.1	2.6	-12.6
28- 29	2.4	0.1	2.5	2.3
29- 30	1.2	2.5	2.5	-3.9
30- 31	1.5	2.0	2.5	-2.5
31- 32	2.4	0.4	2.6	1.7
32- 33	1.8	1.5	2.6	-1.2
33- 34	2.7	0.0	2.7	2.6
34- 35	2.7	0.1	2.8	2.5
35- 36	2.6	0.3	2.7	2.0
36- 37	2.4	0.3	2.8	2.0
37- 38	1.0	2.6	2.4	-4.2
38- 39	2.6	0.0	2.7	2.6
39- 40	1.9	1.5	2.8	-1.0
40- 41	2.7	0.1	2.8	2.6
41- 42	-0.5	6.4	2.8	-13.2
42- 43	1.9	0.8	2.7	0.7
43- 44	1.9	0.2	2.3	1.7
44- 45	0.5	3.1	2.3	-5.6
45- 46	2.0	0.3	2.3	1.6
46- 47	1.3	0.8	2.0	-0.1
47- 48	2.1	0.1	2.3	2.0
48- 49	2.1	0.3	2.4	1.8
49- 50	1.8	0.6	2.2	0.8
50- 51	2.3	0.3	2.5	1.7
51- 52	2.3	0.2	2.5	2.0
52- 53	2.2	0.3	2.5	1.9
53- 54	1.8	0.7	2.4	0.5
54- 55	1.0	0.7	1.8	-0.3
55- 56	1.7	0.2	2.0	1.4
56- 57	0.8	2.5	2.3	-4.1
57- 58	2.3	0.1	2.4	2.1
58- 59	2.1	0.3	2.4	1.7
59- 60	2.3	0.1	2.4	2.1
60- 61	1.5	1.6	2.4	-1.7
61- 62	2.2	0.2	2.4	1.7
62- 63	1.7	0.5	2.1	0.6
63- 64	-0.5	4.2	1.8	-8.9
64- 65	1.0	0.1	1.1	0.9
65- 66	0.7	0.1	0.8	0.6

TABLE 18 (Continued)

RUN NUMBER 6500

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 26 in.(66.0 cm) of ice with 2 in.(5.1 cm) of snow
3) Impact speed 8.1 knots
4) Flexural strength of ice 10850 lb/sq ft(520 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	879.6	1.2	881.4	878.4
7- 8	879.0	1.4	880.4	877.4
8- 9	878.8	1.2	880.4	877.4
9- 10	876.6	1.7	879.4	874.4
10- 11	875.8	0.5	876.4	875.4
11- 12	877.0	1.0	878.4	875.4
12- 13	875.4	1.4	877.4	873.4
13- 14	876.4	1.1	877.4	874.4
14- 15	876.4	1.4	878.4	874.4
15- 16	873.6	1.2	875.4	872.4
16- 17	871.6	0.7	872.4	870.4
17- 18	868.0	2.9	871.4	863.4
18- 19	868.8	1.7	871.4	866.4
19- 20	866.2	1.5	868.4	864.4
20- 21	867.8	0.8	868.4	866.4
21- 22	868.4	1.7	870.4	866.4
22- 23	870.8	0.5	871.4	870.4
23- 24	872.6	1.8	874.4	870.4
24- 25	873.6	0.7	874.4	872.4
25- 26	873.4	1.7	875.4	871.4
26- 27	874.0	1.4	875.4	872.4
27- 28	872.8	1.9	876.4	871.4
28- 29	874.4	1.4	876.4	872.4
29- 30	872.2	0.7	873.4	871.4
30- 31	872.8	1.7	875.4	871.4
31- 32	872.4	0.6	873.4	871.4
32- 33	872.2	1.2	874.4	871.4
33- 34	872.8	1.0	874.4	871.4
34- 35	871.8	0.5	872.4	871.4
35- 36	873.0	0.8	874.4	872.4
36- 37	869.6	3.2	873.4	865.4
37- 38	877.6	2.2	879.4	873.4
38- 39	873.6	2.6	877.4	870.4
39- 40	872.4	1.1	873.4	870.4
40- 41	871.8	1.0	873.4	870.4
41- 42	872.4	1.4	874.4	870.4
42- 43	868.4	5.2	874.4	861.4
43- 44	880.0	9.5	888.4	864.4
44- 45	878.8	3.5	882.4	873.4
45- 46	868.4	1.1	870.4	867.4
46- 47	872.2	3.2	878.4	869.4
47- 48	880.4	4.1	884.4	873.4
48- 49	867.2	2.9	871.4	863.4
49- 50	871.0	7.0	879.4	862.4
50- 51	872.4	3.2	877.4	868.4
51- 52	869.8	4.0	874.4	863.4
52- 53	872.4	3.0	876.4	868.4
53- 54	871.8	0.5	872.4	871.4
54- 55	866.8	3.1	871.4	863.4
55- 56	890.0	4.7	895.4	884.4
56- 57	871.8	3.7	878.4	868.4
57- 58	867.8	1.0	869.4	866.4
58- 59	867.8	1.0	869.4	866.4
59- 60	874.2	3.0	876.4	868.4
60- 61	872.2	2.5	876.4	869.4
61- 62	872.6	2.7	875.4	869.4
62- 63	877.4	0.0	877.4	877.4
63- 64	878.0	0.8	879.4	877.4
64- 65	882.8	2.0	885.4	879.4
65- 66	884.0	0.8	885.4	883.4

TABLE 19 - MACHINERY PARAMETERS, RUN 6612

RUN NUMBER 6612

TRIAL CONDITIONS: 1. Ice running without bubblers
2. 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3. Impact speed 13.2 knots
4. Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER SHAFT TORQUE (lb ft)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	604	586.6	1509	0
7- 8	1811	932.9	3018	503
8- 9	3219	1173.2	4024	1006
9-10	3320	985.7	5030	2012
10-11	4829	932.9	6036	3521
11-12	5533	841.7	6539	4527
12-13	7444	804.8	8551	6539
13-14	10764	1730.8	13581	8551
14-15	14285	1443.9	16599	12575
15-16	18410	932.9	19617	17102
16-17	21629	711.3	22635	20623
17-18	26458	1478.5	28168	24647
18-19	29878	1215.6	31186	27665
19-20	34003	1512.3	35713	31186
20-21	39133	1471.7	41749	37725
21-22	43359	2167.0	45773	40743
22-23	46980	932.9	48791	46276
23-24	48389	1327.0	50803	46779
24-25	50501	932.9	51809	49294
25-26	51809	841.7	52815	50300
26-27	51910	739.3	53318	51306
27-28	52211	804.8	53318	51306
28-29	52312	779.2	52815	50803
29-30	51608	752.8	52312	50300
30-31	50401	667.3	51306	49294
31-32	50099	932.9	51306	48791
32-33	50099	752.8	51306	49294
33-34	49898	975.4	51306	48288
34-35	48791	1006.0	50300	47282
35-36	49093	603.6	50300	48791
36-37	48389	1207.2	50300	47282
37-38	49093	932.9	50300	47785
38-39	49193	922.0	50300	48288
39-40	48690	739.3	49797	47785
40-41	48892	586.6	49294	47785
41-42	47986	817.3	49294	46779
42-43	47986	817.3	49294	46779
43-44	47886	975.4	48791	46276
44-45	46779	551.0	47785	46276
45-46	47282	1272.5	48791	45773
46-47	46980	1129.2	48791	45773
47-48	46880	1025.9	48791	45773
48-49	47282	899.8	48791	46276
49-50	46980	513.0	47785	46276
50-51	46477	682.3	47785	45773
51-52	46578	682.3	47282	45773
52-53	47181	667.3	48288	46276
53-54	46377	1207.2	48288	45270
54-55	46779	1006.0	48288	45270
55-56	46276	1147.0	47785	44767
56-57	46980	877.0	47785	45270
57-58	45773	711.3	46779	44767
58-59	45874	739.3	46779	44767
59-60	45974	932.9	47282	44767
60-61	46377	975.4	47282	44767
61-62	45471	817.3	46779	44264
62-63	44465	402.4	44767	43761
63-64	44465	603.6	45270	43761
64-65	46377	586.6	46779	45270
65-66	46276	711.3	47282	45270
66-67	46276	1006.0	47785	44767
67-68	48288	1272.5	49797	46779
68-69	50602	682.3	51306	49797
69-70	51407	975.4	52312	49797
70-71	52714	1164.5	54324	50803
71-72	54928	1164.5	56336	52815
72-73	56336	841.7	57342	55330
73-74	56537	932.9	57845	55330
74-75	55129	513.0	55833	54324
75-76	54626	513.0	55330	53821
76-77	54425	975.4	55330	52815
77-78	54022	682.3	54827	52815
78-79	53016	932.9	54324	51809
79-80	54525	985.7	55330	53318
80-81	55431	739.3	56336	54324
81-82	55531	932.9	56839	54324
82-83	56336	779.2	56839	54827
83-84	55229	1025.9	56839	53821
84-85	55129	932.9	56336	53821
85-86	56034	1035.7	57342	54827
86-87	55833	1147.0	57342	54324
87-88	55833	841.7	56839	54827
88-89	55330	1311.7	57342	53821
89-90	55632	985.7	56839	54827
90-91	56034	682.3	56839	55330
91-92	55732	804.8	56839	54827
92-93	56235	586.6	56839	55330
93-94	55028	1296.1	56839	53821

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1: Ice running without bubblers
2: 23 in.(58.4 cm) of ice
with 2.5 in.(6.4 cm) of snow
3: Impact speed 13.2 knots
4: Flexural strength of ice
11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER SHAFT TORQUE (N-m)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	818	795.4	2046	0
7- 8	2455	1265.0	4092	682
8- 9	4365	1590.8	5457	1364
9-10	4502	1336.6	6821	2728
10-11	6548	1265.0	8185	4774
11-12	7503	1141.3	8867	6139
12-13	10095	1091.3	11595	8867
13-14	14596	2346.4	18416	11595
14-15	19371	1957.9	22508	17052
15-16	24964	1265.0	26601	23190
16-17	29329	964.6	30693	27965
17-18	35877	2004.9	38196	33421
18-19	40515	1648.3	42288	37514
19-20	46105	2050.7	48427	42288
20-21	53065	1995.6	56612	51155
21-22	58794	2938.4	62068	55248
22-23	61705	1265.0	66161	62750
23-24	65615	1799.4	68889	63432
24-25	66480	1265.0	70253	66843
25-26	70253	1141.3	71617	68207
26-27	70389	1002.4	72294	69571
27-28	70794	1091.3	72294	69571
28-29	70935	1056.7	71617	68889
29-30	69960	1020.6	70935	68207
30-31	68341	904.9	69571	66843
31-32	67914	1265.0	69571	66161
32-33	67914	1020.6	69571	66843
33-34	67661	1322.6	69571	65479
34-35	66161	1364.1	68207	64114
35-36	66570	818.5	68207	66161
36-37	65615	1637.0	68207	64114
37-38	66570	1365.0	68207	64796
38-39	66706	1250.3	68207	65479
39-40	66024	1002.4	67525	64796
40-41	66297	795.4	66843	64796
41-42	65069	1108.2	66843	63432
42-43	65069	1108.2	66843	63432
43-44	64931	1322.6	66161	62750
44-45	64931	747.2	64796	62750
45-46	64114	1725.5	66161	62068
46-47	63705	1531.1	66161	62068
47-48	63565	1391.3	66161	62068
48-49	64114	1220.1	66161	62750
49-50	63705	895.6	64796	62750
50-51	63021	925.2	64796	62068
51-52	63159	925.2	64114	62068
52-53	63973	904.9	65479	62750
53-54	63987	1637.0	65479	61386
54-55	63433	1364.1	65479	61386
55-56	63750	1555.4	64796	60704
56-57	63705	1189.2	64796	61386
57-58	63068	964.6	63432	60704
58-59	63205	1002.4	63432	60704
59-60	63341	1265.0	64114	60704
60-61	63887	1322.6	64114	60704
61-62	61659	1108.2	63432	60022
62-63	60295	545.7	60704	59340
63-64	60295	819.5	61386	59340
64-65	62887	795.4	63432	61386
65-66	63750	964.6	64114	61386
66-67	63750	1364.1	64796	60704
67-68	65479	1725.5	67525	63432
68-69	66616	925.2	69571	67525
69-70	69707	1322.6	70935	67525
70-71	71481	1579.1	72663	68889
71-72	74482	1579.1	76392	71617
72-73	76392	1141.3	77756	75027
73-74	76664	1265.0	78438	75027
74-75	74755	695.6	75710	73663
75-76	74073	695.6	75027	72981
76-77	73800	1322.6	75027	71617
77-78	73254	925.2	74345	71617
78-79	71890	1265.0	73663	70253
79-80	72936	1336.6	75027	72299
80-81	75164	1002.4	76392	73663
81-82	75300	1265.0	77074	73663
82-83	76392	1056.7	77074	74345
83-84	74891	1391.3	77074	72981
84-85	74755	1265.0	76392	72981
85-86	75982	1404.5	77756	74345
86-87	75710	1555.4	77756	73663
87-88	75710	1141.3	77074	74345
88-89	75027	1778.6	77756	72981
89-90	75437	1336.6	77074	74345
90-91	75982	925.2	77074	75027
91-92	75573	1091.3	77074	74345
92-93	76255	795.4	77074	75027
93-94	74618	1757.6	77074	72981

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 23 in. (58.4 cm) of ice
with 2.5 in. (6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice
11066 lb/sq ft (530 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER THRUST (lb)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	5771	1270.2	7567	3675
7- 8	5411	1044.0	6968	3974
8- 9	5471	1019.7	6669	3675
9-10	6908	639.3	7866	6070
10-11	9184	1782.3	11459	6968
11-12	15890	2375.6	19243	12956
12-13	19662	2607.3	24034	16249
13-14	24034	5572.2	33614	18944
14-15	27387	3836.0	32716	20740
15-16	33716	2240.5	36907	30620
16-17	37985	6467.4	44692	27017
17-18	42057	1708.4	44692	39602
18-19	49662	2354.4	53673	46787
19-20	51159	1424.6	53075	49183
20-21	55649	1264.6	57266	53374
21-22	57386	1461.8	59961	55769
22-23	59362	2476.1	63853	56368
23-24	60080	976.6	61757	59062
24-25	58224	1554.5	59961	55470
25-26	61937	6270.4	74033	55769
26-27	59601	1459.4	62056	57566
27-28	56907	1718.8	58763	54572
28-29	55470	1378.5	57865	53673
29-30	53314	1158.0	54871	51578
30-31	55350	4219.6	60559	49482
31-32	53614	2176.5	57566	50979
32-33	51278	3162.8	56667	47087
33-34	54811	2108.4	58164	52775
34-35	52236	2817.5	56667	48284
35-36	52775	2650.9	56069	48284
36-37	53254	4261.9	60559	48584
37-38	51458	3818.3	56667	46189
38-39	49542	5747.7	53374	38105
39-40	50200	4406.7	54572	42596
40-41	50679	4039.0	56069	44991
41-42	48404	4240.8	55170	44392
42-43	49422	6478.0	57865	40201
43-44	48943	4632.0	55170	41997
44-45	49003	5001.2	53673	39303
45-46	46308	7325.3	55769	33315
46-47	49003	5748.3	56069	39303
47-48	47326	4084.9	54272	42895
48-49	49961	5516.0	55470	39602
49-50	47865	5893.1	57266	39602
50-51	45350	4360.9	52775	40201
51-52	44452	3845.3	48584	37207
52-53	44692	3940.2	50679	39303
53-54	49123	3649.2	52476	44093
54-55	45410	6650.6	53769	36907
55-56	48224	6469.7	56667	40500
56-57	44752	5466.4	53374	38704
57-58	51398	5983.7	58464	41698
58-59	46907	8117.0	57266	34812
59-60	49183	1985.9	52476	47087
60-61	50021	3779.5	54871	45889
61-62	39482	3015.4	43195	35111
62-63	45410	5173.9	51278	37806
63-64	42237	5747.7	51578	34213
64-65	41758	3960.1	47686	36009
65-66	47087	4771.5	51278	38105
66-67	47925	4917.3	53075	39602
67-68	39123	13987.3	64152	24333
68-69	38285	8317.7	47087	22537
69-70	40141	7096.1	51077	30620
70-71	41099	13958.3	59362	21938
71-72	16369	8023.7	24932	5172
72-73	24034	7326.3	33913	13854
73-74	27686	6765.0	35410	19842
74-75	28944	5361.1	38105	23135
75-76	37027	11390.5	49482	20141
76-77	40000	7689.2	49781	26720
77-78	51099	4887.5	58164	45290
78-79	47005	5731.5	56967	40000
79-80	53733	2086.3	57266	51578
80-81	50260	1668.0	51077	47686
81-82	55051	5093.6	61458	48083
82-83	54572	6351.1	59961	42895
83-84	56667	1227.1	57865	55170
84-85	60308	3261.0	66248	56667
85-86	62176	4519.1	66547	53973
86-87	61458	2999.9	65350	56667
87-88	58083	3160.5	64152	55769
88-89	61817	766.8	62955	60839
89-90	60140	406.1	60859	59661
90-91	60799	1483.7	62655	59062
91-92	59961	1766.2	61757	57266
92-93	58583	1751.9	60559	56069
93-94	59482	1411.9	61458	57865

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS:
1) Ice ramming without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER THRUST (N) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	25667	5649.9	33658	16346
7- 8	24069	4643.8	30994	17677
8- 9	24336	4535.6	29663	16346
9-10	30728	2843.7	34989	26999
10-11	40849	7927.8	50970	30994
11-12	70679	10566.7	85594	57628
12-13	87458	11597.3	106901	72277
13-14	106901	24785.3	149515	84262
14-15	121816	17062.4	145520	92252
15-16	145520	9965.5	164164	136198
16-17	168958	28767.2	198788	120218
17-18	187069	7598.9	198788	176149
18-19	220895	10472.3	238739	208110
19-20	227553	6336.4	236076	218764
20-21	247529	5624.8	254720	237408
21-22	255252	6502.2	266705	248061
22-23	264043	11013.7	284017	250725
23-24	267238	4343.9	274695	262710
24-25	258981	6914.6	266705	246730
25-26	275494	27890.8	329295	248061
26-27	265107	6491.3	276027	256051
27-28	253[illegible]	7645.4	261378	242734
28-29	246730	6131.6	257383	238739
29-30	237141	5150.8	244066	229417
30-31	246197	18768.9	269368	220096
31-32	238473	9654.6	256051	226754
32-33	228086	14068.2	252056	209442
33-34	243800	9356.1	258715	234744
34-35	232347	12532.1	252056	214769
35-36	234744	11791.4	249393	214769
36-37	236875	18957.0	269368	216100
37-38	228865	16983.2	252056	205447
38-39	220362	25565.8	237408	169491
39-40	223295	19600.9	242734	189466
40-41	225422	17965.6	249393	200120
41-42	215301	18863.2	245398	197457
42-43	219829	28814.0	257383	178813
43-44	217698	20603.1	245398	186803
44-45	217965	22245.4	238739	174818
45-46	205990	32582.8	247061	148184
46-47	217965	25568.6	249393	174818
47-48	210507	18169.8	241403	190798
48-49	222226	24535.1	246730	176149
49-50	213904	26212.5	254720	176149
50-51	201718	19397.1	234744	178813
51-52	197723	17103.9	216100	165496
52-53	198788	17525.9	225422	174818
53-54	218497	16231.4	233413	196125
54-55	201984	29581.7	248061	164164
55-56	214502	28777.0	252056	180145
56-57	199055	24314.4	237408	172154
57-58	228618	26615.3	260046	185471
58-59	208643	36104.5	254720	154842
59-60	218764	8833.5	233413	209442
60-61	222493	16811.1	244066	204115
61-62	175617	13412.5	192130	156174
62-63	201984	23013.4	228086	168159
63-64	187868	25565.8	229417	152179
64-65	185738	17614.7	212105	160169
65-66	209442	21223.8	228086	169491
66-67	213171	21872.3	236076	176149
67-68	174019	62215.3	285349	108233
68-69	170290	36997.3	209442	100243
69-70	178547	31563.2	230749	136198
70-71	182808	62086.3	264042	97579
71-72	72810	35689.5	110896	23004
72-73	106901	32587.2	150847	61623
73-74	123148	30090.5	157506	88257
74-75	128741	23846.0	169491	102906
75-76	164697	50664.8	220096	89589
76-77	181476	34201.6	221427	118886
77-78	227287	21303.6	258715	201452
78-79	212638	25582.5	253388	181476
79-80	239006	9279.9	254720	229417
80-81	223558	7419.4	230749	212105
81-82	244865	22656.1	273363	217432
82-83	242734	28249.6	266705	190798
83-84	252056	5458.3	257383	245398
84-85	268569	14585.1	294671	252056
85-86	276560	20101.2	296002	240071
86-87	273363	13343.6	290676	252056
87-88	261911	14058.1	285349	248061
88-89	274962	3410.8	280022	270700
89-90	267504	1806.4	270700	265373
90-91	270434	6599.6	278698	262710
91-92	266705	7855.9	274695	254720
92-93	260579	7792.4	269368	249393
93-94	264574	6280.2	273363	257383

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in.(58.4 cm) of ice
with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice
11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER SHAFT POWER (shp)
(English units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-0	0.1	0	-0
7- 8	-0	0.1	-0	-0
8- 9	10	7.6	21	-2
9-10	29	9.3	46	21
10-11	70	20.7	95	46
11-12	108	17.5	137	86
12-13	177	27.7	215	145
13-14	288	54.7	380	222
14-15	429	52.2	517	359
15-16	611	41.7	663	549
16-17	772	43.6	825	713
17-18	1042	82.0	1148	936
18-19	1264	65.9	1323	1146
19-20	1519	90.9	1622	1351
20-21	1836	90.9	1983	1720
21-22	2098	134.8	2250	1908
22-23	2312	67.0	2436	2234
23-24	2419	68.5	2546	2340
24-25	2528	67.7	2616	2414
25-26	2593	35.5	2627	2526
26-27	2631	53.1	2718	2557
27-28	2644	63.5	2712	2542
28-29	2682	41.4	2712	2604
29-30	2624	25.8	2671	2593
30-31	2595	34.4	2635	2536
31-32	2569	47.0	2640	2517
32-33	2605	34.0	2669	2564
33-34	2580	52.0	2659	2503
34-35	2554	41.5	2602	2482
35-36	2583	31.9	2645	2557
36-37	2545	50.4	2625	2460
37-38	2614	48.5	2684	2549
38-39	2617	52.4	2684	2553
39-40	2595	46.8	2680	2550
40-41	2644	31.3	2667	2586
41-42	2591	44.4	2663	2527
42-43	2566	45.2	2630	2518
43-44	2606	53.2	2654	2513
44-45	2559	31.8	2618	2531
45-46	2562	85.3	2659	2451
46-47	2509	74.1	2640	2433
47-48	2578	59.0	2687	2512
48-49	2597	52.0	2682	2539
49-50	2580	32.0	2631	2535
50-51	2512	38.0	2539	2438
51-52	2520	64.7	2604	2455
52-53	2601	43.1	2677	2558
53-54	2569	62.2	2659	2501
54-55	2589	58.9	2677	2501
55-56	2571	63.2	2659	2491
56-57	2609	43.9	2640	2523
57-58	2530	44.1	2601	2476
58-59	2543	35.4	2597	2486
59-60	2591	50.6	2662	2525
60-61	2621	56.0	2676	2529
61-62	2565	45.9	2638	2496
62-63	2495	22.7	2516	2456
63-64	2481	29.8	2523	2447
64-65	2561	34.5	2598	2506
65-66	2486	54.4	2568	2402
66-67	2466	60.2	2581	2414
67-68	2282	109.7	2442	2167
68-69	2313	64.8	2428	2252
69-70	2311	62.2	2400	2214
70-71	2292	86.9	2436	2198
71-72	2049	66.0	2113	1926
72-73	2063	44.9	2134	1993
73-74	2066	62.7	2134	1949
74-75	2131	55.6	2186	2025
75-76	2203	52.1	2255	2121
76-77	2236	98.6	2328	2083
77-78	2367	53.7	2420	2273
78-79	2370	49.3	2441	2301
79-80	2389	37.9	2455	2340
80-81	2428	54.0	2499	2379
81-82	2461	73.5	2542	2333
82-83	2530	44.4	2576	2467
83-84	2528	44.9	2587	2470
84-85	2532	57.8	2596	2436
85-86	2580	50.5	2642	2532
86-87	2575	79.6	2664	2441
87-88	2597	59.7	2668	2513
88-89	2590	82.6	2708	2454
89-90	2614	57.1	2684	2542
90-91	2610	22.1	2646	2587
91-92	2598	33.8	2639	2552
92-93	2598	27.3	2641	2559
93-94	2554	84.4	2651	2434

TABLE 19 (Continued)

RUN NUMBER 6613

TRIAL CONDITIONS: 1. Ice running without bubblers
2. 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3. Impact speed 13.2 knots
4. Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPELLER SHAFT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-0	0.1	0	-0
7- 8	-0	0.1	-0	-0
8- 9	10	[illegible]	28	2
9-10	29	9.5	47	21
10-11	70	20.9	96	47
11-12	110	17.7	138	87
12-13	179	28.0	217	147
13-14	291	55.4	384	225
14-15	434	52.8	523	363
15-16	618	42.2	670	555
16-17	781	44.1	835	721
17-18	1053	82.9	1161	947
18-19	1278	66.6	1338	1158
19-20	1536	91.9	1640	1366
20-21	1856	91.9	2005	1740
21-22	2121	141.4	2275	1930
22-23	2338	87.7	2463	2159
23-24	2446	69.3	2574	2366
24-25	2557	68.4	2645	2441
25-26	2622	35.9	2656	2554
26-27	2660	52.7	2748	2585
27-28	2673	64.1	2742	2570
28-29	2712	41.9	2742	2633
29-30	2654	26.1	2701	2622
30-31	2624	34.3	2664	2564
31-32	2597	47.6	2669	2545
32-33	2634	33.4	2694	2593
33-34	2609	37.1	2689	2551
34-35	2583	41.6	2631	2510
35-36	2612	32.1	2675	2585
36-37	2574	61.1	2655	2487
37-38	2644	49.0	2714	2578
38-39	2646	53.0	2714	2582
39-40	2624	47.1	2710	2579
40-41	2673	31.7	2697	2615
41-42	2620	44.9	2698	2555
42-43	2594	45.1	2659	2546
43-44	2615	33.3	2684	2541
44-45	2611	32.1	2647	2559
45-46	2590	86.1	2688	2479
46-47	2577	75.0	2670	2441
47-48	2607	59.1	2717	2540
48-49	2626	53.6	2712	2568
49-50	2609	32.7	2661	2563
50-51	2540	38.4	2568	2465
51-52	2543	65.4	2633	2483
52-53	2610	41.6	2707	2587
53-54	2598	63.0	2689	2529
54-55	2618	59.5	2707	2529
55-56	2600	63.9	2688	2518
56-57	2606	44.4	2669	2551
57-58	2566	44.7	2630	2503
58-59	2570	36.3	2626	2514
59-60	2630	51.1	2692	2553
60-61	2650	58.6	2705	2557
61-62	2594	46.4	2668	2524
62-63	2523	23.0	2544	2483
63-64	2509	30.1	2551	2475
64-65	2589	34.9	2627	2534
65-66	2514	55.0	2596	2429
66-67	2494	60.9	2610	2441
67-68	2306	110.9	2469	2191
68-69	2393	65.5	2455	2277
69-70	2337	62.9	2427	2239
70-71	2311	87.8	2464	2223
71-72	2071	66.8	2137	1947
72-73	2085	45.4	2158	2016
73-74	2089	61.4	2158	1971
74-75	2155	56.2	2210	2048
75-76	2226	52.7	2280	2145
76-77	2261	99.1	2354	2106
77-78	2393	54.1	2447	2298
78-79	2397	49.6	2468	2327
79-80	2415	38.2	2482	2366
80-81	2455	54.6	2527	2406
81-82	2468	74.1	2571	2359
82-83	2556	44.9	2604	2495
83-84	2556	45.4	2615	2497
84-85	2560	58.5	2625	2463
85-86	2604	51.1	2672	2560
86-87	2604	80.5	2694	2468
87-88	2626	60.1	2698	2541
88-89	2619	81.5	2738	2482
89-90	2644	57.7	2714	2578
90-91	2640	22.4	2678	2615
91-92	2622	34.1	2668	2581
92-93	2617	27.6	2670	2580
93-94	2582	65.1	2681	2461

TABLE 19 (Continued)

RUN NUMBER [illegible]

TRIAL CONDITIONS: 1. Ice running without bubblers
2. 23 in./58.4 cm of ice
with 2.5 in./6.4 cm of snow
3. Impact speed 13.2 knots
4. Flexural strength of ice
11066 lb in $^{-1.530}$ psi

DATE: 17 March 1979

PARAMETER: PROPELLER RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6-7	0.5	0.0	-0.5	-0.5
7-8	0.5	0.0	-0.5	-0.5
8-9	17.5	4.0	28.0	3.0
9-10	46.3	5.6	54.0	37.0
10-11	74.4	4.7	88.5	62.5
11-12	103.0	5.6	110.0	94.5
12-13	124.1	5.1	132.0	116.5
13-14	139.9	4.1	147.0	135.0
14-15	157.5	4.1	163.5	150.0
15-16	174.1	3.8	178.5	168.5
16-17	187.3	4.7	194.0	181.5
17-18	206.5	5.0	214.0	199.5
18-19	222.0	4.8	226.5	217.5
19-20	234.4	4.8	238.5	227.5
20-21	246.3	4.7	249.5	239.5
21-22	253.4	4.1	258.5	246.0
22-23	258.5	3.3	262.5	253.5
23-24	262.5	0.5	263.5	261.5
24-25	262.9	1.0	265.5	257.5
25-26	262.9	2.1	265.5	258.5
26-27	266.2	2.5	268.5	259.5
27-28	265.9	2.1	269.5	260.5
28-29	269.3	0.4	269.5	268.5
29-30	267.1	2.5	270.5	263.5
30-31	270.4	0.5	271.5	269.5
31-32	269.3	2.5	273.5	265.5
32-33	273.1	0.3	273.5	272.5
33-34	271.6	2.6	274.5	266.5
34-35	274.9	1.6	276.5	271.5
35-36	276.3	0.5	277.5	275.5
36-37	276.3	3.3	279.5	271.5
37-38	279.7	0.5	280.5	278.5
38-39	279.4	0.4	280.5	277.5
39-40	279.9	4.5	283.5	271.5
40-41	284.0	0.3	284.5	283.5
41-42	283.6	0.5	283.5	283.5
42-43	280.8	2.1	283.5	276.5
43-44	285.8	0.6	286.5	285.5
44-45	287.3	0.5	287.5	287.5
45-46	284.5	3.2	286.5	278.5
46-47	280.4	2.1	284.5	278.5
47-48	288.8	0.4	289.5	288.5
48-49	288.5	0.4	289.5	288.5
49-50	288.4	0.5	289.5	287.5
50-51	283.9	4.6	288.5	277.5
51-52	284.1	4.4	289.5	275.5
52-53	289.5	1.4	291.5	287.5
53-54	291.0	1.1	292.5	289.5
54-55	290.7	0.4	291.5	290.5
55-56	291.8	0.6	292.5	290.5
56-57	291.7	1.8	293.5	288.5
57-58	290.3	2.2	295.5	287.5
58-59	291.2	2.4	294.5	287.5
59-60	296.0	0.2	296.5	295.5
60-61	296.8	0.4	297.5	296.5
61-62	296.3	0.5	296.5	296.5
62-63	294.7	0.5	295.5	294.5
63-64	293.1	0.5	293.5	292.5
64-65	290.0	2.8	292.5	284.5
65-66	282.1	2.4	285.5	278.5
66-67	279.9	3.1	283.5	276.5
67-68	248.6	16.3	271.5	228.5
68-69	240.0	4.5	248.5	235.5
69-70	236.1	4.4	241.0	229.0
70-71	228.5	10.2	240.0	213.5
71-72	195.9	3.1	201.0	191.5
72-73	192.2	3.5	195.5	187.5
73-74	191.9	4.3	197.0	185.0
74-75	203.1	6.4	207.5	190.5
75-76	211.8	3.2	216.0	207.0
76-77	215.8	8.8	225.0	199.5
77-78	230.1	3.9	235.5	226.0
78-79	234.8	2.2	237.5	231.0
79-80	230.1	3.0	233.5	226.0
80-81	230.0	3.4	234.0	224.5
81-82	232.7	4.8	237.0	223.5
82-83	235.9	4.0	238.5	228.0
83-84	240.4	1.2	242.0	239.0
84-85	241.2	2.9	244.0	235.5
85-86	241.8	2.5	244.0	237.0
86-87	242.2	3.2	244.5	236.0
87-88	244.3	2.9	246.5	238.5
88-89	245.8	3.4	248.5	239.5
89-90	246.8	1.8	248.5	243.5
90-91	244.7	3.0	247.0	239.0
91-92	244.8	1.8	246.5	241.5
92-93	242.7	3.3	246.5	236.5
93-94	243.7	3.3	246.5	237.5

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	7	0.6	8	6
7- 8	12	2.9	17	9
8- 9	50	18.1	77	26
9-10	130	26.5	168	93
10-11	229	26.5	266	191
11-12	308	16.9	331	283
12-13	370	16.4	392	346
13-14	418	12.2	437	401
14-15	469	14.0	490	449
15-16	518	12.1	534	500
16-17	559	10.8	575	544
17-18	610	16.2	633	587
18-19	681	24.8	718	648
19-20	773	25.7	809	736
20-21	856	19.2	882	827
21-22	909	10.6	922	892
22-23	932	2.4	934	928
23-24	934	0.0	934	934
24-25	934	0.0	934	934
25-26	934	0.0	934	934
26-27	934	0.0	934	934
27-28	934	0.0	934	934
28-29	929	3.2	934	925
29-30	921	1.5	924	919
30-31	918	0.5	919	917
31-32	919	0.9	920	918
32-33	922	0.8	923	921
33-34	926	1.1	928	924
34-35	930	1.4	932	928
35-36	933	0.5	934	933
36-37	934	0.0	934	934
37-38	934	0.0	934	934
38-39	934	0.0	934	934
39-40	933	1.0	934	931
40-41	932	0.5	932	931
41-42	931	0.5	932	931
42-43	930	0.2	930	930
43-44	930	1.0	931	929
44-45	931	0.7	932	930
45-46	926	6.1	931	909
46-47	920	5.1	925	914
47-48	924	0.5	925	924
48-49	926	1.6	929	925
49-50	931	0.7	932	930
50-51	927	5.6	932	916
51-52	927	2.6	930	924
52-53	930	1.1	932	929
53-54	931	0.3	931	930
54-55	933	0.5	934	932
55-56	934	0.0	934	934
56-57	934	0.0	934	934
57-58	934	0.0	934	934
58-59	933	0.9	934	931
59-60	933	0.4	934	933
60-61	932	0.2	932	932
61-62	931	0.7	932	931
62-63	930	0.3	931	930
63-64	930	0.7	930	929
64-65	927	3.5	929	920
65-66	925	0.8	925	923
66-67	920	2.4	924	915
67-68	852	40.2	908	806
68-69	934	10.0	946	818
69-70	820	5.5	827	813
70-71	804	30.1	834	752
71-72	705	9.9	722	696
72-73	687	8.5	696	675
73-74	688	7.9	700	676
74-75	721	12.9	739	697
75-76	747	7.5	755	736
76-77	768	19.4	789	736
77-78	815	11.8	832	798
78-79	839	1.9	841	836
79-80	823	11.2	837	807
80-81	827	4.5	833	820
81-82	834	11.0	849	818
82-83	847	4.1	852	842
83-84	858	4.2	863	851
84-85	865	1.2	866	863
85-86	867	1.4	868	865
86-87	866	2.9	868	861
87-88	872	2.7	876	869
88-89	879	2.2	882	876
89-90	880	1.1	882	879
90-91	875	1.4	878	874
91-92	873	1.1	874	871
92-93	870	2.2	872	866
93-94	872	0.4	873	872

TABLE 19 (Continued)

RUN NUMBER 6613

TRIAL CONDITIONS: 1: Ice running without bubblers
2: 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3: Impact speed 13.2 knots
4: Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	56	36.6	113	9
7- 8	225	48.2	280	149
8- 9	311	19.9	345	290
9-10	417	32.8	464	371
10-11	558	43.1	619	498
11-12	764	78.5	867	654
12-13	886	58.4	983	813
13-14	1088	42.8	1140	1030
14-15	1257	66.8	1345	1160
15-16	1502	81.3	1627	1394
16-17	1773	82.2	1868	1660
17-18	1997	76.5	2104	1890
18-19	2142	16.7	2169	2117
19-20	2156	7.2	2167	2146
20-21	2174	6.2	2184	2167
21-22	2197	6.6	2205	2187
22-23	2200	4.8	2207	2195
23-24	2192	6.6	2201	2186
24-25	2173	5.1	2181	2166
25-26	2164	3.8	2167	2157
26-27	2156	4.4	2163	2151
27-28	2155	5.0	2160	2147
28-29	2150	2.4	2154	2147
29-30	2150	4.0	2154	2143
30-31	2147	2.1	2149	2143
31-32	2148	2.7	2151	2144
32-33	2147	3.6	2153	2141
33-34	2150	2.7	2154	2144
34-35	2149	4.7	2157	2134
35-36	2145	5.2	2153	2139
36-37	2149	2.8	2151	2144
37-38	2140	1.8	2143	2137
38-39	2143	3.5	2149	2139
39-40	2133	3.4	2139	2127
40-41	2136	4.7	2141	2129
41-42	2136	4.2	2144	2130
42-43	2141	1.7	2144	2140
43-44	2130	4.2	2146	2121
44-45	2126	3.6	2130	2121
45-46	2198	129.4	2457	2131
46-47	2126	15.7	2137	2096
47-48	2127	3.1	2131	2123
48-49	2124	5.5	2134	2119
49-50	2129	4.8	2139	2126
50-51	2178	70.2	2304	2110
51-52	2157	47.4	2221	2101
52-53	2115	5.2	2121	2106
53-54	2127	6.9	2136	2117
54-55	2123	4.6	2131	2119
55-56	2137	3.7	2141	2131
56-57	2135	2.1	2139	2133
57-58	2132	4.8	2136	2123
58-59	2125	12.9	2144	2110
59-60	2117	3.7	2123	2111
60-61	2118	2.3	2121	2116
61-62	2114	2.3	2117	2110
62-63	2115	2.5	2119	2111
63-64	2121	3.7	2127	2117
64-65	2157	30.5	2214	2133
65-66	2147	10.0	2163	2131
66-67	2167	22.1	2204	2144
67-68	2460	109.6	2631	2312
68-69	2183	70.9	2250	2069
69-70	2304	84.2	2398	2200
70-71	2468	198.8	2719	2225
71-72	2461	186.8	2720	2230
72-73	2309	142.4	2467	2070
73-74	2263	84.8	2365	2149
74-75	2280	139.7	2534	2137
75-76	2343	141.0	2583	2231
76-77	2244	80.8	2380	2137
77-78	2247	56.0	2347	2189
78-79	2377	57.8	2431	2271
79-80	2447	100.1	2567	2282
80-81	2341	53.1	2444	2297
81-82	2269	56.9	2377	2218
82-83	2322	29.8	2360	2268
83-84	2333	18.2	2361	2312
84-85	2349	32.0	2403	2328
85-86	2350	17.2	2383	2334
86-87	2325	9.4	2340	2311
87-88	2318	18.4	2351	2300
88-89	2313	6.7	2325	2305
89-90	2328	4.3	2334	2322
90-91	2333	7.9	2341	2321
91-92	2325	13.0	2351	2317
92-93	2311	20.2	2335	2285
93-94	2316	8.7	2331	2305

TABLE 19 (Continued)

RUN NUMBER xxii

TRIAL CONDITIONS: 1: 1.x [illegible] without bubblers
2: 2.5 in.(58.4 mm) of ice
with 2.5 in. 6.4 mm) of snow
3: Inboard speed 13.2 knots
4: Flexural strength of ice
1106€ lb [illegible]530 kPa

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR INPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.0	1	0
7- 8	3	1.2	5	1
8- 9	16	5.7	26	8
9-10	55	15.[illegible]	78	34
10-11	129	24.6	165	95
11-12	227	35.4	276	185
12-13	324	36.0	386	282
13-14	455	26.5	487	409
14-15	591	40.6	658	521
15-16	774	60.[illegible]	869	697
16-17	991	54.5	1070	902
17-18	1219	44.0	1332	1109
18-19	1452	56.4	1556	1372
19-20	1667	5[illegible]	1751	1590
20-21	1861	41.4	1926	1796
21-22	1997	28.0	2032	1959
22-23	2052	4.6	2059	2046
23-24	2047	5[illegible]	2055	2041
24-25	2029	4.[illegible]	2037	2022
25-26	2021	5.6	2024	2014
26-27	2014	4.1	2020	2009
27-28	2012	4.7	2017	2005
28-29	1998	7.1	2005	1989
29-30	1980	6.[illegible]	1990	1972
30-31	1970	1.8	1973	1968
31-32	1973	2.[illegible]	1976	1969
32-33	1979	2.[illegible]	1985	1976
33-34	1991	4.[illegible]	1995	1982
34-35	1997	5.[illegible]	2003	1989
35-36	2003	5.6	2010	1995
36-37	2001	2.[illegible]	2009	2002
37-38	1999	1.8	2001	1996
38-39	2001	2.[illegible]	2006	1997
39-40	1990	5.0	1995	1981
40-41	1989	4.6	1996	1982
41-42	1990	4.9	1996	1985
42-43	1993	1.[illegible]	1995	1991
43-44	1982	7.4	1994	1976
44-45	1978	3.[illegible]	1981	1974
45-46	2035	94.4	2225	1982
46-47	1955	20.8	1972	1916
47-48	1965	1.4	1968	1962
48-49	1967	4.[illegible]	1974	1963
49-50	1982	5.[illegible]	1992	1978
50-51	2018	55.1	2110	1952
51-52	2000	34.1	2052	1950
52-53	1967	6.[illegible]	1973	1955
53-54	1980	5.[illegible]	1987	1972
54-55	1980	3.5	1987	1977
55-56	1995	3.4	2000	1990
56-57	1994	2.0	1997	1992
57-58	1991	4.5	1994	1982
58-59	1983	11.4	1999	1968
59-60	1975	3.0	1981	1972
60-61	1975	2.[illegible]	1978	1972
61-62	1968	2.6	1972	1964
62-63	1969	1.9	1971	1965
63-64	1973	2.6	1976	1970
64-65	1999	20.9	2037	1980
65-66	1985	4.4	1994	1970
66-67	1994	13.4	2019	1982
67-68	2093	68.1	2143	1958
68-69	1821	56.4	1880	1743
69-70	1884	67.[illegible]	1978	1796
70-71	1978	9[illegible]	2113	1855
71-72	1738	148.5	1964	1562
72-73	1585	93.6	1693	1431
73-74	1556	58.8	1619	1486
74-75	1645	104.0	1837	1557
75-76	1749	104.3	1912	1642
76-77	1722	48.1	1782	1655
77-78	1830	44.[illegible]	1903	1778
78-79	1993	45.9	2037	1909
79-80	2014	82.[illegible]	2111	1862
80-81	1936	36.[illegible]	2004	1903
81-82	1893	38.1	1944	1843
82-83	1963	23.[illegible]	1988	1924
83-84	2003	14.[illegible]	2037	1980
84-85	2031	25.[illegible]	2074	2008
85-86	2016	16.[illegible]	2069	2019
86-87	2014	4.4	2020	2007
87-88	2021	11.5	2043	2010
88-89	2034	3.1	2038	2029
89-90	2049	3.[illegible]	2053	2045
90-91	2042	3.[illegible]	2051	2029
91-92	2019	5.[illegible]	2047	2024
92-93	2009	15.0	2031	1988
93-94	2021	7.[illegible]	2032	2012

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR EXCITER VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	69.4	0.6	70.4	68.4
7- 8	69.8	0.7	70.6	68.9
8- 9	69.9	0.6	70.9	69.4
9-10	70.0	0.6	70.9	69.4
10-11	70.1	0.6	70.9	69.4
11-12	69.9	0.7	70.9	69.1
12-13	69.8	0.6	70.6	68.9
13-14	69.5	0.7	70.4	68.6
14-15	69.1	0.6	69.9	68.4
15-16	69.2	0.6	69.9	68.1
16-17	68.3	0.6	69.1	67.6
17-18	72.1	2.4	76.2	69.6
18-19	99.9	9.3	111.4	84.2
19-20	114.4	3.5	119.5	109.7
20-21	120.0	0.4	120.3	119.5
21-22	119.7	0.2	120.0	119.5
22-23	117.4	0.5	118.2	116.7
23-24	115.4	0.6	116.5	114.7
24-25	113.9	1.1	115.0	112.5
25-26	110.4	2.3	113.0	106.7
26-27	106.4	1.3	108.2	104.6
27-28	103.7	2.4	107.4	101.1
28-29	100.4	0.9	101.6	99.1
29-30	98.3	1.3	99.9	96.6
30-31	97.3	0.8	98.8	96.6
31-32	98.4	1.2	99.9	96.8
32-33	98.2	0.9	99.3	96.8
33-34	98.9	0.6	99.6	97.8
34-35	98.5	3.4	102.9	93.3
35-36	97.3	1.6	99.6	94.1
36-37	97.7	1.0	99.6	96.8
37-38	94.6	1.4	97.1	93.0
38-39	95.7	1.9	98.6	93.6
39-40	90.2	1.0	91.8	89.0
40-41	90.8	1.5	93.0	88.3
41-42	93.8	1.7	96.1	91.8
42-43	94.1	1.1	95.3	91.8
43-44	88.1	4.1	94.8	83.5
44-45	88.3	1.8	90.8	86.2
45-46	95.1	6.3	106.9	89.3
46-47	86.1	2.8	88.3	80.7
47-48	85.8	0.8	87.0	84.7
48-49	86.2	2.5	89.8	82.7
49-50	91.3	2.5	94.8	88.3
50-51	97.6	9.4	109.7	82.2
51-52	92.1	10.1	105.9	79.2
52-53	80.6	1.8	83.0	78.7
53-54	89.5	2.6	93.3	86.2
54-55	89.2	1.6	91.3	87.0
55-56	90.8	1.1	92.0	89.3
56-57	89.9	1.1	91.5	88.0
57-58	87.7	1.2	89.5	85.7
58-59	85.3	3.6	89.3	80.4
59-60	81.7	1.2	83.7	80.2
60-61	82.3	1.1	84.0	81.0
61-62	83.2	1.2	84.5	81.5
62-63	85.7	1.8	87.5	82.7
63-64	88.0	2.6	92.0	85.7
64-65	98.9	6.7	109.7	90.5
65-66	95.7	5.3	103.6	87.8
66-67	102.2	6.2	110.2	96.8
67-68	114.3	1.9	116.7	111.7
68-69	101.0	10.5	116.7	84.0
69-70	109.6	2.0	112.2	106.4
70-71	112.6	0.5	113.2	111.9
71-72	114.5	1.2	116.7	113.2
72-73	106.8	10.6	113.2	85.7
73-74	107.7	4.3	112.2	99.9
74-75	103.5	6.1	109.2	94.8
75-76	110.4	0.7	111.4	109.4
76-77	110.0	3.8	112.2	102.4
77-78	112.5	0.5	113.5	112.2
78-79	114.4	0.5	115.0	113.5
79-80	113.9	0.5	114.5	113.2
80-81	114.0	0.6	114.7	113.2
81-82	114.0	0.6	114.7	113.2
82-83	113.3	0.3	113.7	113.0
83-84	114.1	0.4	114.5	113.5
84-85	113.5	0.4	114.2	113.2
85-86	114.1	0.5	114.7	113.2
86-87	113.9	0.7	114.7	112.7
87-88	113.4	0.5	114.2	113.0
88-89	114.0	0.5	114.7	113.5
89-90	113.2	0.3	113.7	112.7
90-91	114.0	0.5	114.7	113.2
91-92	113.8	0.6	114.7	113.2
92-93	113.4	0.5	114.2	112.7
93-94	114.1	0.4	114.5	113.5

TABLE 19 (Continued)

RUN NUMBER: ee13

TRIAL CONDITIONS: 1: Ice running without bubblers
2: 23 in. (58.4 cm) of ice
with 2.5 in. (6.4 cm) of snow
3: Impact speed 13.2 knots
4: Flexural strength of ice
(1066 lb sq ft (530 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR EXCITER CURRENT (A)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	29.2	0.0	29.3	29.2
7- 8	29.2	0.1	29.2	29.1
8- 9	29.1	0.1	29.2	29.1
9-10	29.2	0.1	29.3	29.1
10-11	29.3	0.0	29.3	29.2
11-12	29.3	0.1	29.4	29.1
12-13	29.3	0.0	29.3	29.3
13-14	29.3	0.1	29.5	29.2
14-15	29.3	0.0	29.3	29.3
15-16	29.4	0.0	29.4	29.3
16-17	29.4	0.1	29.5	29.2
17-18	29.7	0.3	30.1	29.4
18-19	33.3	1.2	35.7	31.0
19-20	39.4	1.2	41.8	37.1
20-21	44.8	1.2	46.4	43.0
21-22	47.9	0.5	48.6	47.1
22-23	48.9	0.1	49.0	48.8
23-24	48.9	0.1	49.0	48.8
24-25	48.6	0.2	48.8	48.3
25-26	47.8	0.3	48.3	47.4
26-27	46.5	0.3	47.1	46.1
27-28	45.4	0.4	45.9	44.8
28-29	43.9	0.4	44.4	43.4
29-30	42.8	0.[illegible]	43.2	42.5
30-31	42.1	0.[illegible]	42.4	42.0
31-32	41.8	0.1	41.8	41.7
32-33	41.8	0.1	41.9	41.7
33-34	41.8	0.1	41.9	41.7
34-35	41.9	0.1	42.0	41.7
35-36	41.[illegible]	0.1	41.4	41.3
36-37	41.[illegible]	0.[illegible]	41.3	41.2
37-38	40.9	0.1	41.1	40.8
38-39	40.6	0.1	40.7	40.4
39-40	40.[illegible]	0.4	40.9	39.6
40-41	39.5	0.1	39.6	39.4
41-42	39.[illegible]	0.1	39.3	39.1
42-43	39.1	0.0	39.2	39.1
43-44	38.9	0.[illegible]	39.2	38.5
44-45	38.4	0.0	38.5	38.4
45-46	38.5	0.2	38.9	38.4
46-47	38.[illegible]	0.5	39.3	37.7
47-48	37.6	0.0	37.6	37.5
48-49	37.9	0.1	38.0	37.6
49-50	38.1	0.0	38.2	38.0
50-51	38.9	0.5	39.8	38.2
51-52	38.7	0.[illegible]	39.1	38.3
52-53	37.9	0.5	38.7	37.4
53-54	37.7	0.[illegible]	38.0	37.3
54-55	37.8	0.1	38.0	37.6
55-56	37.[illegible]	0.1	37.4	37.2
56-57	37.1	0.1	37.2	36.9
57-58	36.9	0.1	37.0	36.8
58-59	37.0	0.[illegible]	37.4	36.8
59-60	36.5	0.1	36.8	36.4
60-61	36.3	0.1	36.4	36.2
61-62	36.4	0.[illegible]	36.6	36.1
62-63	36.9	0.[illegible]	37.2	36.6
63-64	37.0	0.1	37.0	36.9
64-65	37.7	0.[illegible]	39.1	37.1
65-66	38.8	0.4	39.6	38.5
66-67	40.[illegible]	0.[illegible]	41.[illegible]	39.2
67-68	43.9	1.0	45.1	42.2
68-69	44.4	0.[illegible]	45.5	42.9
69-70	44.[illegible]	0.[illegible]	44.9	43.4
70-71	46.1	0.5	46.8	45.4
71-72	47.[illegible]	0.[illegible]	47.6	46.8
72-73	46.[illegible]	0.[illegible]	47.0	46.0
73-74	46.0	0.5	46.5	45.3
74-75	44.7	0.[illegible]	45.9	44.3
75-76	45.4	0.[illegible]	45.9	45.0
76-77	46.[illegible]	0.[illegible]	46.5	46.0
77-78	46.9	0.[illegible]	47.[illegible]	46.5
78-79	47.5	0.[illegible]	47.8	47.3
79-80	47.9	0.1	48.1	47.8
80-81	48.0	0.1	48.1	47.9
81-82	48.1	0.0	48.1	48.0
82-83	48.0	0.1	48.1	47.9
83-84	48.0	0.1	48.1	47.9
84-85	48.0	0.0	48.0	47.9
85-86	48.0	0.1	48.1	47.9
86-87	48.0	0.1	48.1	48.0
87-88	48.0	0.1	48.1	47.9
88-89	48.0	0.0	48.0	47.9
89-90	48.0	0.0	48.1	47.9
90-91	48.0	0.0	48.0	47.9
91-92	48.0	0.0	48.1	47.9
92-93	48.0	0.1	48.1	47.9
93-94	48.0	0.0	48.1	48.0

TABLE 19 (Continued)

RUN NUMBER 6812

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	2.0	0.0	2.1	2.0
7- 8	2.0	0.0	2.1	2.0
8- 9	2.0	0.0	2.1	2.0
9-10	2.0	0.0	2.1	2.0
10-11	2.1	0.0	2.1	2.0
11-12	2.0	0.0	2.1	2.0
12-13	2.0	0.0	2.1	2.0
13-14	2.0	0.0	2.1	2.0
14-15	2.0	0.0	2.0	2.0
15-16	2.0	0.0	2.0	2.0
16-17	2.0	0.0	2.0	2.0
17-18	2.1	0.1	2.3	2.0
18-19	3.3	0.4	3.8	2.6
19-20	4.5	0.3	5.0	4.2
20-21	5.4	0.1	5.5	5.1
21-22	5.7	0.1	5.8	5.6
22-23	5.7	0.0	5.8	5.7
23-24	5.6	0.0	5.7	5.6
24-25	5.5	0.1	5.6	5.4
25-26	5.3	0.1	5.4	5.1
26-27	5.0	0.0	5.0	4.9
27-28	4.7	0.1	4.9	4.5
28-29	4.4	0.0	4.5	4.3
29-30	4.2	0.1	4.3	4.1
30-31	4.1	0.0	4.2	4.1
31-32	4.1	0.1	4.2	4.0
32-33	4.1	0.0	4.2	4.0
33-34	4.1	0.0	4.2	4.1
34-35	4.1	0.2	4.3	3.9
35-36	4.0	0.1	4.1	3.9
36-37	4.0	0.0	4.1	4.0
37-38	3.9	0.1	4.0	3.8
38-39	3.9	0.1	4.0	3.8
39-40	3.8	0.1	3.9	3.6
40-41	3.8	0.1	3.9	3.5
41-42	3.7	0.1	3.8	3.6
42-43	3.7	0.0	3.7	3.6
43-44	3.4	0.2	3.7	3.2
44-45	3.4	0.1	3.5	3.3
45-46	3.7	0.3	4.2	3.4
46-47	3.3	0.1	3.4	3.2
47-48	3.3	0.0	3.3	3.2
48-49	3.3	0.1	3.4	3.1
49-50	3.5	0.1	3.6	3.4
50-51	3.8	0.4	4.4	3.2
51-52	3.6	0.4	4.1	3.1
52-53	3.1	0.1	3.2	2.9
53-54	3.4	0.1	3.5	3.2
54-55	3.4	0.1	3.5	3.3
55-56	3.4	0.0	3.4	3.3
56-57	3.3	0.0	3.4	3.3
57-58	3.3	0.0	3.3	3.2
58-59	3.2	0.1	3.3	3.0
59-60	3.0	0.0	3.0	2.9
60-61	3.0	0.0	3.0	2.9
61-62	3.0	0.1	3.1	2.9
62-63	3.2	0.1	3.3	3.0
63-64	3.3	0.1	3.4	3.2
64-65	3.7	0.3	4.3	3.4
65-66	3.7	0.2	4.1	3.4
66-67	4.1	0.3	4.6	3.8
67-68	5.0	0.2	5.3	4.7
68-69	4.5	0.5	5.3	3.7
69-70	4.9	0.2	5.0	4.6
70-71	5.2	0.1	5.3	5.1
71-72	5.4	0.1	5.5	5.4
72-73	5.0	0.5	5.4	4.0
73-74	5.0	0.2	5.2	4.6
74-75	4.6	0.3	5.0	4.2
75-76	5.0	0.1	5.1	4.9
76-77	5.1	0.2	5.2	4.7
77-78	5.3	0.1	5.4	5.2
78-79	5.4	0.0	5.5	5.4
79-80	5.5	0.0	5.5	5.4
80-81	5.5	0.0	5.5	5.4
81-82	5.5	0.0	5.5	5.4
82-83	5.4	0.0	5.5	5.4
83-84	5.5	0.0	5.5	5.4
84-85	5.4	0.0	5.5	5.4
85-86	5.5	0.0	5.5	5.4
86-87	5.5	0.0	5.5	5.4
87-88	5.4	0.0	5.5	5.4
88-89	5.5	0.0	5.5	5.4
89-90	5.4	0.0	5.5	5.4
90-91	5.5	0.0	5.5	5.4
91-92	5.5	0.0	5.5	5.4
92-93	5.4	0.0	5.5	5.4
93-94	5.5	0.0	5.5	5.5

TABLE 19 (Continued)

RUN NUMBER 6613

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in. (58.4 cm) of ice
with 2.5 in. (6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice
11066 lb sq ft (530 kPa)

DATE: 17 March 1979

PARAMETER: PROPULSION MOTOR TEMPERATURE (C)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	23	0.0	23	23
7- 8	23	0.1	23	23
8- 9	23	0.2	23	23
9-10	23	0.1	23	23
10-11	23	0.1	23	23
11-12	23	0.1	23	23
12-13	23	0.1	23	23
13-14	23	0.1	23	23
14-15	23	0.1	23	23
15-16	23	0.1	23	23
16-17	23	0.1	23	23
17-18	23	0.1	23	23
18-19	23	0.1	23	23
19-20	24	1.7	30	23
20-21	23	0.6	24	23
21-22	23	0.1	23	23
22-23	23	0.1	23	23
23-24	23	0.1	23	23
24-25	23	0.0	23	23
25-26	23	0.1	23	23
26-27	23	0.1	23	23
27-28	23	0.0	23	23
28-29	23	0.1	23	23
29-30	23	0.1	23	23
30-31	23	0.1	23	23
31-32	23	0.1	23	23
32-33	23	0.1	23	23
33-34	23	0.1	23	23
34-35	23	0.1	23	23
35-36	23	0.1	23	23
36-37	23	0.1	23	23
37-38	23	0.1	23	23
38-39	23	0.1	23	23
39-40	23	0.1	23	23
40-41	23	0.4	24	23
41-42	23	0.1	23	23
42-43	23	0.1	23	23
43-44	23	0.5	24	23
44-45	23	0.2	23	22
45-46	23	0.1	23	23
46-47	23	0.1	23	23
47-48	23	0.1	23	23
48-49	23	0.1	23	23
49-50	23	0.1	23	23
50-51	23	0.1	23	23
51-52	23	0.1	23	23
52-53	23	0.1	23	23
53-54	23	0.1	23	23
54-55	23	0.1	23	23
55-56	23	0.1	23	23
56-57	23	0.1	23	23
57-58	23	0.1	23	23
58-59	23	0.1	23	23
59-60	23	0.1	23	23
60-61	23	0.0	23	23
61-62	23	0.1	23	23
62-63	23	0.1	23	23
63-64	23	0.1	23	23
64-65	23	0.1	23	23
65-66	23	0.0	23	23
66-67	23	0.1	23	23
67-68	23	0.1	23	23
68-69	23	0.1	23	23
69-70	23	0.1	23	23
70-71	23	0.1	23	23
71-72	23	0.1	23	23
72-73	23	0.2	23	23
73-74	23	0.1	23	23
74-75	23	0.1	23	23
75-76	23	0.1	23	23
76-77	23	0.1	23	23
77-78	23	0.1	23	23
78-79	23	0.1	23	23
79-80	23	0.1	23	23
80-81	23	0.0	23	23
81-82	23	0.1	23	23
82-83	23	0.1	23	23
83-84	23	0.1	23	23
84-85	23	0.1	23	23
85-86	23	0.1	23	23
86-87	23	0.0	23	23
87-88	23	0.1	23	23
88-89	23	0.1	23	23
89-90	23	0.1	23	23
90-91	23	0.1	23	23
91-92	23	0.1	23	23
92-93	23	0.1	23	23
93-94	23	0.1	23	23

TABLE 19 (Continued)

RUN NUMBER 6613

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	5	0.5	6	5
7- 8	10	3.0	15	7
8- 9	48	18.4	76	24
9-10	129	26.7	168	92
10-11	230	26.7	267	191
11-12	309	16.4	333	284
12-13	372	16.5	394	348
13-14	420	12.4	439	403
14-15	472	14.0	492	452
15-16	521	12.4	537	503
16-17	562	10.9	578	546
17-18	613	16.5	636	590
18-19	685	24.9	722	652
19-20	777	25.9	813	740
20-21	860	19.4	887	832
21-22	913	10.6	927	897
22-23	939	4.6	945	932
23-24	947	0.5	947	946
24-25	947	0.0	947	947
25-26	947	0.0	947	947
26-27	947	0.0	947	947
27-28	943	2.1	946	940
28-29	933	3.6	938	929
29-30	925	1.5	928	923
30-31	922	0.4	923	922
31-32	922	0.7	923	922
32-33	925	1.1	927	924
33-34	930	0.9	931	929
34-35	933	1.4	935	931
35-36	937	0.5	937	936
36-37	938	0.2	939	938
37-38	939	0.2	939	939
38-39	939	0.4	939	938
39-40	937	0.5	937	936
40-41	936	0.5	937	935
41-42	936	0.4	936	935
42-43	934	0.3	935	934
43-44	934	0.7	935	933
44-45	934	0.2	935	934
45-46	930	8.4	934	919
46-47	923	3.2	926	917
47-48	927	0.6	928	927
48-49	930	1.4	932	928
49-50	934	0.7	935	933
50-51	930	6.1	935	919
51-52	930	2.4	933	927
52-53	934	0.9	935	933
53-54	934	0.6	935	934
54-55	937	0.8	938	935
55-56	938	0.0	938	938
56-57	938	0.0	938	938
57-58	938	0.4	938	937
58-59	937	0.7	937	935
59-60	937	0.4	937	936
60-61	936	0.3	936	935
61-62	934	0.4	935	934
62-63	933	0.3	934	933
63-64	933	0.2	933	933
64-65	930	3.7	932	923
65-66	928	0.8	929	926
66-67	924	4.0	927	918
67-68	855	40.3	911	808
68-69	837	10.4	850	820
69-70	823	5.7	831	815
70-71	807	30.2	837	755
71-72	707	8.7	724	699
72-73	689	8.1	697	678
73-74	691	7.7	702	678
74-75	725	14.1	742	700
75-76	749	8.2	758	736
76-77	771	19.8	792	738
77-78	818	12.1	835	801
78-79	842	1.8	844	838
79-80	825	11.5	839	809
80-81	831	4.5	838	824
81-82	837	10.8	851	821
82-83	851	4.4	856	846
83-84	863	4.3	868	856
84-85	869	1.3	871	867
85-86	870	1.0	872	869
86-87	870	3.0	873	865
87-88	876	2.6	880	873
88-89	884	2.2	887	880
89-90	885	0.9	886	883
90-91	880	1.3	882	878
91-92	877	1.1	878	875
92-93	874	2.1	876	870
93-94	876	0.5	877	876

TABLE 19 (Continued)

RUN NUMBER [illegible]

TRIAL CONDITIONS: 1: Ice condition without bubblers
2: 33 in. [illegible] of ice
with 2.5 in. [illegible] of snow
3: Impact speed 1.2 knots
4: Flexural strength of ice
11066 lb [illegible]

DATE: 17 May [illegible]

PARAMETER: GENERATOR 1 ARMATURE CURRENT (A
(1 units)

TIME (s)	ARITHMETIC MEAN	UNBIASED DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
[illegible]	24	1.7	53	0
[illegible]	105	2.14	113	70
[illegible]	154	3.0[illegible]	171	142
4-10	207	1.7[illegible]	221	192
10-11	270	2.1[illegible]	309	247
11-12	403	3.4[illegible]	434	[illegible]
12 1	444	3.0[illegible]	454	406
13-14	545	6[illegible]	573	510
14-15	631	3.[illegible]	676	583
15-16	754	40.[illegible]	813	701
16-17	841	40.[illegible]	906	833
17-18	1005	39.[illegible]	1060	951
18-19	1075	[illegible]	1087	1066
19-20	1082	[illegible]	1087	1077
20-21	1088	4.[illegible]	1095	1083
21-22	1101	[illegible]	1106	1097
22-23	1103	[illegible]	1107	1099
23-24	1103	[illegible]	1104	1101
24-25	1097	[illegible]	1101	1092
25-26	1094	1.[illegible]	1102	1087
26-27	1096	[illegible]	1102	1092
27-28	1091	[illegible]	1102	1076
28-29	1076	1.4	1078	1075
29-30	1077	[illegible]	1079	1073
30-31	1077	[illegible]	1078	1075
31-32	1080	[illegible]	1083	1077
32-33	1078	[illegible]	1081	1075
33-34	1080	1.5	1081	1077
34-35	1081	5.0	1087	1071
35-36	1078	[illegible]	1081	1075
36-37	1083	1.5	1083	1080
37-38	1076	0.4	1078	1075
38-39	1078	1.[illegible]	1080	1076
39-40	1072	2.1	1075	1070
40-41	1074	3.[illegible]	1079	1069
41-42	1074	[illegible]	1078	1071
42-43	1075	1.[illegible]	1081	1077
43-44	1071	4.0	1078	1066
44-45	1070	1.4	1072	1069
45-46	1107	69.[illegible]	1239	1073
46-47	1070	0.5	1076	1053
47-48	1071	1.[illegible]	1073	1070
48-49	1068	4.0	1075	1063
49-50	1069	2.[illegible]	1076	1067
50-51	1094	35.7	1158	1052
51-52	1086	24.1	1118	1057
52-53	1065	2.9	1069	1061
53-54	1071	3.6	1077	1066
54-55	1067	3.1	1073	1064
55-56	1074	1.4	1077	1072
56-57	1074	1.6	1077	1072
57-58	1074	2.[illegible]	1078	1068
58-59	1069	5.5	1077	1063
59-60	1065	3.4	1069	1062
60-61	1065	2.3	1068	1062
61-62	1063	1.0	1065	1062
62-63	1063	1.7	1066	1061
63-64	1067	5.8	1074	1062
64-65	1084	15.[illegible]	1112	1070
65-66	1080	5.2	1087	1071
66-67	1091	11.5	1110	1078
67-68	1236	55.6	1323	1162
68-69	1103	35.5	1142	1051
69-70	1162	45.[illegible]	1216	1105
70-71	1237	97.9	1357	1118
71-72	1237	88.[illegible]	1359	1130
72-73	1170	71.9	1246	1050
73-74	1136	45.0	1187	1073
74-75	1143	71.0	1273	1071
75-76	1174	72.2	1297	1116
76-77	1128	39.1	1190	1072
77-78	1131	27.7	1179	1098
78-79	1190	27.6	1214	1140
79-80	1228	49.5	1288	1149
80-81	1187	25.8	1237	1168
81-82	1145	30.7	1205	1119
82-83	1165	15.6	1185	1137
83-84	1169	10.0	1185	1157
84-85	1181	16.5	1206	1165
85-86	1185	9.1	1201	1175
86-87	1171	5.2	1179	1163
87-88	1166	10.6	1185	1155
88-89	1164	3.3	1169	1160
89-90	1170	2.1	1174	1168
90-91	1173	3.2	1176	1168
91-92	1172	6.5	1185	1168
92-93	1163	10.4	1176	1151
93-94	1165	3.7	1170	1158

TABLE 19 (Continued)

RUN NUMBER: ee12

TRIAL CONDITIONS: 1. Ice remains without bubblers
2. 23 in. (58.4 cm) of ice
with 2.5 in. (6.4 cm) of snow
3. Impact speed 13.2 knots
4. Flexural strength of ice
11066 lb sq ft (530 kPa)

DATE: 17 March 1974

PARAMETER: GENERATOR 1 OUTPUT POWER (kW)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.1	0	0
7- 8	1	0.6	3	0
8- 9	8	5.4	18	3
9-10	27	7.8	39	17
10-11	64	13.4	82	47
11-12	119	16.1	139	93
12-13	165	18.5	195	141
13-14	224	14.7	246	206
14-15	298	24.6	332	264
15-16	393	30.5	439	352
16-17	502	32.1	540	455
17-18	617	40.1	675	561
18-19	736	26.4	773	694
19-20	841	24.2	884	802
20-21	937	23.7	970	905
21-22	1006	14.6	1024	985
22-23	1036	2.7	1038	1031
23-24	1045	2.8	1050	1043
24-25	1039	3.0	1044	1035
25-26	1041	1.5	1044	1039
26-27	1040	1.2	1044	1035
27-28	1028	10.6	1043	1014
28-29	1005	4.3	1011	999
29-30	997	3.2	1001	992
30-31	993	1.0	994	992
31-32	996	2.0	998	993
32-33	998	1.8	999	994
33-34	1004	2.0	1006	1000
34-35	1008	3.3	1012	1002
35-36	1010	2.7	1013	1006
36-37	1015	1.9	1017	1013
37-38	1011	0.6	1012	1009
38-39	1012	1.5	1014	1010
39-40	1004	2.2	1007	1001
40-41	1006	2.9	1010	1001
41-42	1005	2.2	1008	1002
42-43	1007	1.1	1009	1006
43-44	1001	3.2	1006	996
44-45	1000	1.3	1002	998
45-46	1028	51.5	1131	1002
46-47	987	11.2	995	965
47-48	993	1.0	994	991
48-49	993	3.2	998	989
49-50	998	3.4	1005	996
50-51	1017	28.4	1064	981
51-52	1010	20.2	1036	984
52-53	995	3.1	998	989
53-54	1000	3.0	1006	996
54-55	1000	2.1	1003	997
55-56	1008	1.8	1011	1006
56-57	1008	1.5	1011	1006
57-58	1007	2.5	1011	1001
58-59	1001	5.5	1009	995
59-60	998	1.9	1001	996
60-61	997	2.4	999	994
61-62	994	1.3	996	992
62-63	992	1.4	994	991
63-64	996	4.9	1002	991
64-65	1008	10.6	1025	997
65-66	1001	4.9	1009	993
66-67	1007	7.6	1021	1000
67-68	1055	37.6	1082	982
68-69	928	29.7	963	889
69-70	957	36.4	1007	907
70-71	995	46.5	1064	936
71-72	875	70.9	984	795
72-73	807	47.1	863	730
73-74	784	30.0	817	745
74-75	828	53.2	926	784
75-76	879	54.0	964	822
76-77	869	24.8	901	834
77-78	925	22.9	959	901
78-79	1002	21.8	1021	962
79-80	1014	41.1	1062	939
80-81	987	17.8	1019	969
81-82	959	19.7	989	935
82-83	991	12.0	1003	969
83-84	1008	10.7	1028	995
84-85	1026	13.2	1046	1014
85-86	1030	7.2	1044	1024
86-87	1019	2.9	1023	1014
87-88	1022	3.0	1035	1015
88-89	1028	2.1	1031	1025
89-90	1035	1.8	1038	1033
90-91	1032	2.6	1034	1027
91-92	1027	4.4	1036	1024
92-93	1016	2.9	1028	1006
93-94	1021	2.9	1025	1016

TABLE 19 (Continued)

RUN NUMBER [illegible]

TRIAL CONDITIONS: 1. Ice covered without cables
2. 37 kts, 58.4 [illegible]
with 2.5 ins, 6.4 [illegible]
3. Ambient speed 13.2 knots
4. Flight profile [illegible]
11000 lb [illegible]

DATE: 17 March 1978

PARAMETER: GENERATOR 1 EXCITER VOLTAGE [illegible]
(SI units)

TIME s	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
0- 1	2.7	0.7	4.0	1.4
1- 2	6.1	[illegible]	10.1	[illegible]
2- 3	22.1	5.1	29.6	14.9
3-10	[illegible]	4.[illegible]	45.4	[illegible]
10-11	50.[illegible]	[illegible]	51.3	47.[illegible]
11-12	50.4	4.0	54.0	42.4
12-13	58.[illegible]	[illegible]	59.1	57.1
13-14	61.0	4.[illegible]	65.[illegible]	54.[illegible]
14-15	59.[illegible]	[illegible]	[illegible]	56.6
15-16	64.[illegible]	0.[illegible]	[illegible]	[illegible]
16-17	[illegible]0.[illegible]	[illegible]	66.6	[illegible]
17-18	92.[illegible]	4.[illegible]	98.5	[illegible]
18-19	104.[illegible]	5.[illegible]	117.1	101.1
19-20	116.[illegible]	4.[illegible]	131.[illegible]	111.6
20-21	117.[illegible]	[illegible]	119.6	115.0
[illegible]	[illegible]	[illegible]	141.[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	135.6	106.[illegible]
[illegible]	[illegible]	[illegible]	126.0	122.[illegible]
[illegible]	[illegible]	[illegible]	123.4	117.[illegible]
[illegible]	[illegible]	[illegible]	128.[illegible]	124.2
[illegible]	[illegible]	[illegible]	122.4	115.8
[illegible]	[illegible]	[illegible]	116.[illegible]	113.[illegible]
[illegible]	[illegible]	[illegible]	116.[illegible]	111.6
29-30	[illegible]	[illegible]	117.1	111.6
30-31	[illegible]	[illegible]	118.1	114.6
[illegible]	[illegible]	[illegible]	118.6	116.1
[illegible]	[illegible]	[illegible]	121.6	119.4
33-34	[illegible]	[illegible]	122.[illegible]	119.9
34-35	[illegible]	[illegible]	123.4	120.6
35-36	[illegible]	[illegible]	123.4	121.4
36-37	[illegible]	[illegible]	123.4	121.9
37-38	[illegible]	[illegible]	123.4	121.9
38-39	[illegible]	[illegible]	122.9	119.9
39-40	[illegible]	[illegible]	122.[illegible]	114.6
40-41	[illegible]	[illegible]	123.4	119.9
41-42	[illegible]	[illegible]	121.6	119.1
42-43	[illegible]	[illegible]	120.4	118.9
43-44	[illegible]	[illegible]	122.[illegible]	118.9
44-45	[illegible]	[illegible]	123.2	120.9
45-46	[illegible]	[illegible]	121.4	64.5
46-47	[illegible]	[illegible]	120.1	115.8
47-48	[illegible]	[illegible]	121.4	118.6
48-49	[illegible]	[illegible]	123.[illegible]	120.6
49-50	[illegible]	[illegible]	[illegible]	[illegible]
50-51	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1: Ice running without bubblers
2: 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3: Impact speed 13.2 knots
4: Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0.1	0.5	0.5	-0.6
7- 8	0.7	0.3	1.0	0.1
8- 9	1.6	0.8	2.6	0.2
9-10	5.9	4.7	15.2	2.7
10-11	4.5	1.0	6.1	3.1
11-12	6.5	0.8	7.3	5.1
12-13	7.7	0.9	8.8	6.3
13-14	10.8	3.3	17.3	8.5
14-15	10.4	0.4	11.0	9.8
15-16	11.2	1.0	12.2	9.7
16-17	12.3	0.4	12.8	11.5
17-18	12.9	1.7	14.3	9.6
18-19	15.3	1.4	17.5	13.5
19-20	17.3	1.9	19.2	13.7
20-21	21.6	1.0	22.6	20.0
21-22	22.4	0.7	23.6	21.7
22-23	23.4	0.6	24.0	22.4
23-24	22.4	1.5	24.2	19.7
24-25	23.0	0.6	23.7	22.2
25-26	22.0	1.1	23.1	19.9
26-27	20.1	3.3	21.7	15.7
27-28	20.6	0.6	21.3	19.6
28-29	20.2	0.6	20.8	19.0
29-30	21.5	2.9	27.2	19.7
30-31	20.4	0.2	20.6	20.1
31-32	20.5	0.6	21.0	19.3
32-33	20.5	0.4	21.0	19.7
33-34	20.7	0.6	21.5	20.0
34-35	21.2	0.5	21.8	20.3
35-36	22.8	3.7	30.1	20.2
36-37	21.4	0.6	22.0	20.6
37-38	21.3	0.6	22.0	20.4
38-39	20.4	0.9	21.9	19.2
39-40	21.5	0.7	22.6	20.6
40-41	22.5	2.1	26.7	20.9
41-42	11.0	20.0	21.7	-28.9
42-43	20.9	0.6	21.5	19.9
43-44	21.1	0.5	21.6	20.4
44-45	21.8	2.4	26.4	19.2
45-46	20.0	1.5	20.9	16.9
46-47	20.5	0.7	21.1	19.2
47-48	14.9	13.0	21.3	-9.0
48-49	19.4	1.6	20.9	16.7
49-50	21.1	0.5	21.7	20.3
50-51	21.1	0.5	21.6	20.2
51-52	20.8	0.4	21.4	20.1
52-53	21.5	1.0	23.5	20.7
53-54	21.3	0.4	21.7	20.6
54-55	21.7	1.2	23.9	20.6
55-56	20.7	1.7	21.9	17.4
56-57	21.5	0.5	22.0	20.7
57-58	21.1	0.6	21.7	20.2
58-59	21.3	0.6	22.1	20.5
59-60	17.6	6.7	21.6	4.3
60-61	20.9	0.5	21.7	20.1
61-62	12.5	16.9	21.7	-21.3
62-63	20.7	0.5	21.3	20.0
63-64	18.5	7.8	26.3	3.6
64-65	20.5	0.8	21.2	19.1
65-66	20.4	0.5	21.0	19.6
66-67	20.8	0.3	21.3	20.4
67-68	17.9	1.2	20.0	16.8
68-69	17.0	0.6	17.6	16.1
69-70	16.6	0.5	17.3	16.0
70-71	13.1	6.2	17.9	0.9
71-72	13.9	0.6	14.6	13.0
72-73	23.4	20.0	63.4	12.9
73-74	12.8	2.2	14.1	8.4
74-75	14.2	1.0	15.7	12.7
75-76	15.4	0.8	16.3	14.3
76-77	14.0	4.7	17.2	4.7
77-78	17.6	0.2	17.9	17.2
78-79	17.9	2.3	19.5	13.4
79-80	12.6	10.3	18.8	-8.0
80-81	9.0	18.4	18.6	-27.0
81-82	17.3	0.9	18.7	16.3
82-83	18.2	0.7	18.9	17.2
83-84	19.2	0.8	19.8	17.9
84-85	12.0	13.5	19.5	-15.0
85-86	19.6	0.2	20.0	19.2
86-87	18.7	0.7	19.6	17.7
87-88	19.6	0.2	19.9	19.4
88-89	19.7	0.7	20.4	18.4
89-90	19.7	1.9	22.8	16.9
90-91	19.1	1.2	20.0	16.9
91-92	18.9	0.4	19.3	18.2
92-93	19.4	0.2	19.7	19.1
93-94	19.1	0.7	19.9	18.1

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	-0.0	0.0	0.0	-0.0
7- 8	0.0	0.0	0.0	0.0
8- 9	0.0	0.0	0.1	0.0
9-10	0.2	0.1	0.5	0.1
10-11	0.2	0.1	0.3	0.2
11-12	0.3	0.0	0.4	0.3
12-13	0.4	0.1	0.5	0.4
13-14	0.7	0.2	1.0	0.5
14-15	0.7	0.0	0.8	0.7
15-16	0.8	0.1	0.9	0.7
16-17	1.0	0.0	1.0	1.0
17-18	1.2	0.2	1.4	0.9
18-19	1.7	0.2	2.0	1.4
19-20	2.2	0.3	2.5	1.6
20-21	3.0	0.2	3.2	2.7
21-22	3.1	0.1	3.3	3.1
22-23	3.2	0.1	3.3	3.1
23-24	3.0	0.2	3.2	2.6
24-25	3.0	0.1	3.1	2.9
25-26	2.8	0.1	2.9	2.5
26-27	2.4	0.2	2.6	1.9
27-28	2.4	0.0	2.4	2.3
28-29	2.3	0.0	2.4	2.2
29-30	2.5	0.2	3.2	2.3
30-31	2.4	0.0	2.4	2.3
31-32	2.4	0.1	2.5	2.3
32-33	2.5	0.0	2.5	2.4
33-34	2.5	0.1	2.6	2.4
34-35	2.6	0.1	2.7	2.5
35-36	2.8	0.5	3.7	2.4
36-37	2.6	0.1	2.7	2.5
37-38	2.6	0.1	2.7	2.5
38-39	2.5	0.1	2.6	2.3
39-40	2.6	0.1	2.7	2.5
40-41	2.7	0.3	3.3	2.6
41-42	1.3	2.4	2.6	-3.5
42-43	2.5	0.1	2.6	2.4
43-44	2.5	0.0	2.6	2.5
44-45	2.7	0.3	3.2	2.3
45-46	2.2	0.4	2.5	1.3
46-47	2.4	0.1	2.5	2.2
47-48	1.8	1.4	2.6	-1.1
48-49	2.4	0.2	2.6	2.0
49-50	2.6	0.1	2.7	2.5
50-51	2.4	0.2	2.6	1.9
51-52	2.4	0.1	2.5	2.3
52-53	2.6	0.2	2.9	2.5
53-54	2.6	0.0	2.6	2.5
54-55	2.7	0.2	3.0	2.5
55-56	2.5	0.2	2.6	2.1
56-57	2.6	0.1	2.7	2.5
57-58	2.5	0.1	2.6	2.4
58-59	2.6	0.1	2.7	2.5
59-60	2.1	0.8	2.6	0.5
60-61	2.5	0.0	2.6	2.5
61-62	1.5	2.1	2.6	-2.6
62-63	2.5	0.1	2.6	2.4
63-64	2.2	0.9	3.2	0.4
64-65	2.4	0.1	2.5	2.3
65-66	2.4	0.1	2.5	2.3
66-67	2.4	0.1	2.5	2.3
67-68	1.3	0.3	1.9	0.8
68-69	1.6	0.3	2.1	1.3
69-70	1.6	0.2	1.8	1.3
70-71	1.1	0.7	1.9	0.1
71-72	0.9	0.2	1.2	0.8
72-73	2.0	2.0	6.0	0.8
73-74	1.0	0.1	1.3	0.9
74-75	1.3	0.1	1.5	1.2
75-76	1.5	0.2	1.7	1.1
76-77	1.5	0.5	1.9	0.5
77-78	2.0	0.1	2.1	1.8
78-79	1.9	0.3	2.2	1.4
79-80	1.3	1.0	2.0	-0.6
80-81	0.9	1.9	1.9	-2.8
81-82	1.9	0.1	2.1	1.7
82-83	2.0	0.1	2.2	1.9
83-84	2.1	0.1	2.3	2.0
84-85	1.3	1.5	2.3	-1.7
85-86	2.1	0.1	2.2	2.0
86-87	2.1	0.1	2.2	2.0
87-88	2.2	0.1	2.3	2.1
88-89	2.3	0.1	2.4	2.1
89-90	2.2	0.2	2.5	1.9
90-91	2.1	0.1	2.2	1.8
91-92	2.1	0.1	2.2	1.9
92-93	2.1	0.1	2.2	2.0
93-94	2.1	0.1	2.2	2.0

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	859.2	1.5	860.4	856.4
7- 8	858.6	1.7	860.4	855.4
8- 9	858.2	1.5	859.4	855.4
9-10	857.0	1.2	858.4	855.4
10-11	855.8	2.1	858.4	852.4
11-12	853.2	2.0	855.4	849.4
12-13	853.0	1.0	854.4	851.4
13-14	850.8	0.8	851.4	849.4
14-15	848.8	2.4	851.4	844.4
15-16	845.4	1.4	847.4	843.4
16-17	839.0	2.5	842.4	836.4
17-18	835.6	1.2	837.4	834.4
18-19	832.0	1.2	833.4	830.4
19-20	830.8	0.8	831.4	829.4
20-21	828.8	0.8	829.4	827.4
21-22	828.6	1.5	830.4	826.4
22-23	830.8	1.6	832.4	828.4
23-24	833.6	1.3	835.4	831.4
24-25	836.6	1.6	839.4	834.4
25-26	842.2	2.4	846.4	840.4
26-27	851.8	2.3	854.4	848.4
27-28	862.6	1.7	864.4	859.4
28-29	862.2	1.5	863.4	859.4
29-30	858.0	2.2	861.4	855.4
30-31	854.8	1.2	856.4	853.4
31-32	852.6	1.5	854.4	850.4
32-33	851.4	1.7	853.4	848.4
33-34	851.0	1.4	852.4	848.4
34-35	850.0	1.0	851.4	848.4
35-36	850.0	1.0	851.4	848.4
36-37	850.2	1.5	851.4	847.4
37-38	850.8	1.4	852.4	848.4
38-39	851.4	1.7	853.4	848.4
39-40	851.8	1.6	854.4	849.4
40-41	851.6	1.7	853.4	848.4
41-42	852.2	1.5	853.4	849.4
42-43	851.4	1.7	853.4	848.4
43-44	851.4	1.7	853.4	848.4
44-45	852.2	1.6	854.4	849.4
45-46	851.2	2.0	853.4	847.4
46-47	851.0	2.9	853.4	847.4
47-48	852.8	1.4	854.4	850.4
48-49	851.4	1.7	853.4	848.4
49-50	851.2	1.5	852.4	848.4
50-51	849.4	1.8	852.4	847.4
51-52	851.4	1.5	852.4	848.4
52-53	852.2	1.2	854.4	851.4
53-54	851.4	0.9	852.4	850.4
54-55	851.0	1.0	852.4	849.4
55-56	851.2	1.0	852.4	849.4
56-57	851.0	1.4	852.4	848.4
57-58	851.2	1.5	852.4	848.4
58-59	851.2	1.5	852.4	848.4
59-60	851.8	1.4	853.4	849.4
60-61	851.8	1.4	853.4	849.4
61-62	851.6	1.7	853.4	848.4
62-63	851.6	1.7	853.4	848.4
63-64	851.4	1.7	853.4	848.4
64-65	851.4	1.5	852.4	848.4
65-66	851.4	1.7	853.4	848.4
66-67	850.0	1.6	852.4	848.4
67-68	843.2	3.9	848.4	838.4
68-69	860.0	6.9	866.4	849.4
69-70	858.0	3.0	862.4	853.4
70-71	853.0	6.2	859.4	842.4
71-72	852.4	8.5	864.4	843.4
72-73	869.8	1.4	871.4	867.4
73-74	866.0	2.0	867.4	862.4
74-75	859.0	2.7	862.4	854.4
75-76	849.2	1.7	851.4	846.4
76-77	847.6	3.7	852.4	842.4
77-78	847.6	2.6	851.4	843.4
78-79	839.8	3.4	843.4	834.4
79-80	837.0	2.0	839.4	833.4
80-81	849.6	2.5	852.4	845.4
81-82	852.6	2.1	855.4	849.4
82-83	851.6	1.7	854.4	849.4
83-84	848.6	1.2	849.4	846.4
84-85	847.0	1.5	848.4	844.4
85-86	848.6	1.0	850.4	847.4
86-87	850.2	1.0	851.4	848.4
87-88	850.8	1.4	852.4	848.4
88-89	850.4	1.7	852.4	847.4
89-90	850.0	1.4	851.4	847.4
90-91	850.2	1.3	852.4	848.4
91-92	851.8	1.0	853.4	850.4
92-93	852.0	0.8	852.4	850.4
93-94	852.8	1.0	854.4	851.4

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 1 TEMPERATURE (C) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	25	0.1	25	25
7- 8	25	0.0	25	25
8- 9	25	0.1	25	25
9-10	25	0.1	25	25
10-11	25	0.0	25	25
11-12	25	0.4	26	25
12-13	25	0.1	25	25
13-14	25	0.0	25	25
14-15	25	0.1	25	25
15-16	26	1.0	28	25
16-17	25	0.1	25	25
17-18	25	0.1	25	25
18-19	25	0.1	25	25
19-20	25	0.1	25	25
20-21	25	0.1	25	25
21-22	25	0.1	25	25
22-23	25	0.1	25	25
23-24	25	0.1	25	25
24-25	25	0.1	25	25
25-26	25	0.1	25	25
26-27	25	0.1	25	25
27-28	25	0.2	26	25
28-29	25	0.1	25	25
29-30	25	0.1	25	25
30-31	25	0.0	25	25
31-32	25	0.1	25	25
32-33	25	0.1	25	25
33-34	25	0.0	25	25
34-35	25	0.0	25	25
35-36	25	0.0	25	25
36-37	25	0.1	25	25
37-38	25	0.0	25	25
38-39	25	0.1	25	25
39-40	25	0.1	25	25
40-41	25	0.0	25	25
41-42	25	0.0	25	25
42-43	25	0.2	26	25
43-44	25	0.1	25	25
44-45	25	0.1	25	25
45-46	25	0.1	25	25
46-47	25	0.1	25	25
47-48	25	0.0	25	25
48-49	25	0.1	25	25
49-50	25	0.1	25	25
50-51	26	1.0	27	25
51-52	25	0.1	25	25
52-53	25	0.1	25	25
53-54	25	0.1	25	25
54-55	25	0.3	26	25
55-56	25	0.1	25	25
56-57	25	0.1	25	25
57-58	26	0.9	27	25
58-59	25	0.1	25	25
59-60	25	0.1	25	25
60-61	25	0.1	25	25
61-62	25	0.1	25	25
62-63	25	0.5	26	25
63-64	25	0.0	25	25
64-65	25	0.0	25	25
65-66	25	0.1	25	25
66-67	25	0.1	25	25
67-68	25	0.1	25	25
68-69	25	0.1	25	25
69-70	25	0.1	25	25
70-71	25	0.1	25	25
71-72	25	0.0	25	25
72-73	25	0.1	25	25
73-74	25	0.3	25	24
74-75	25	0.1	25	25
75-76	25	0.0	25	25
76-77	25	0.1	25	25
77-78	25	0.1	25	25
78-79	25	0.1	25	25
79-80	25	0.1	25	25
80-81	25	0.1	25	25
81-82	25	0.1	25	25
82-83	25	0.1	26	25
83-84	25	0.1	25	25
84-85	25	0.0	25	25
85-86	25	0.1	25	25
86-87	25	0.0	25	25
87-88	25	0.0	25	25
88-89	25	0.1	26	25
89-90	25	0.1	26	25
90-91	25	0.1	26	25
91-92	25	0.1	26	25
92-93	25	0.1	26	25
93-94	25	0.1	26	25

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 ARMATURE VOLTAGE (V) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.6	1	-0
7- 8	5	3.0	10	2
8- 9	43	18.3	70	19
9-10	123	26.4	161	86
10-11	223	26.5	260	185
11-12	302	16.8	325	276
12-13	364	16.5	386	340
13-14	411	12.1	430	395
14-15	463	14.0	483	443
15-16	512	12.4	528	493
16-17	553	10.7	568	537
17-18	603	16.2	626	580
18-19	674	24.6	711	642
19-20	766	25.6	801	729
20-21	849	19.1	874	820
21-22	901	10.7	914	884
22-23	920	0.0	920	920
23-24	920	0.0	920	920
24-25	920	0.0	920	920
25-26	920	0.0	920	920
26-27	920	0.0	920	920
27-28	920	0.0	920	920
28-29	919	1.2	920	917
29-30	913	1.6	915	911
30-31	910	0.5	910	909
31-32	910	0.5	911	910
32-33	913	1.1	915	912
33-34	917	0.8	919	916
34-35	919	0.5	920	919
35-36	920	0.0	920	920
36-37	920	0.0	920	920
37-38	920	0.0	920	920
38-39	920	0.0	920	920
39-40	920	0.0	920	920
40-41	920	0.0	920	920
41-42	920	0.0	920	920
42-43	920	0.0	920	920
43-44	920	0.0	920	920
44-45	920	0.0	920	920
45-46	916	7.7	920	901
46-47	910	3.1	914	905
47-48	915	0.5	915	914
48-49	918	1.4	920	916
49-50	920	0.0	920	920
50-51	916	5.2	920	906
51-52	918	2.2	920	914
52-53	920	0.0	920	920
53-54	920	0.0	920	920
54-55	920	0.0	920	920
55-56	920	0.0	920	920
56-57	920	0.0	920	920
57-58	920	0.0	920	920
58-59	920	0.0	920	920
59-60	920	0.0	920	920
60-61	920	0.0	920	920
61-62	920	0.0	920	920
62-63	920	0.0	920	920
63-64	920	0.0	920	920
64-65	918	3.8	920	910
65-66	915	1.0	916	914
66-67	911	3.8	915	906
67-68	843	39.9	898	797
68-69	826	10.2	838	809
69-70	812	5.6	819	804
70-71	795	30.1	825	744
71-72	697	8.6	714	689
72-73	679	8.0	687	668
73-74	680	7.7	692	668
74-75	714	14.0	732	690
75-76	738	8.1	746	726
76-77	760	19.6	781	727
77-78	806	12.0	824	790
78-79	830	1.7	832	827
79-80	814	11.2	828	798
80-81	820	4.4	826	812
81-82	826	10.7	840	810
82-83	839	4.3	844	834
83-84	851	4.2	855	844
84-85	857	1.2	859	855
85-86	858	0.9	860	857
86-87	858	2.8	860	853
87-88	864	2.6	868	861
88-89	871	2.1	874	868
89-90	873	0.9	874	871
90-91	868	1.3	870	866
91-92	865	1.3	866	862
92-93	862	2.2	864	858
93-94	864	0.6	865	864

TABLE 19 (Continued)

RUN NUMBER: 6x13

TRIAL CONDITIONS:
1) Ice remains without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb (4923.530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 ARMATURE CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	96	18.6	64	12
7- 8	133	24.8	151	84
8- 9	163	4.5	179	154
9-10	216	14.[illegible]	239	193
10-11	287	21.[illegible]	318	257
11-12	390	33.6	442	334
12-13	452	24.[illegible]	501	415
13-14	553	20.[illegible]	577	521
14-15	638	34.[illegible]	682	588
15-16	762	41.0	824	706
16-17	898	41.[illegible]	948	840
17-18	1009	38.[illegible]	1062	956
18-19	1085	4.[illegible]	1100	1069
19-20	1093	4.1	1100	1088
20-21	1104	2.6	1109	1101
21-22	1114	2.4	1117	1111
22-23	1117	1.5	1118	1114
23-24	1108	4.[illegible]	1115	1105
24-25	1095	3.[illegible]	1100	1092
25-26	1084	2.1	1087	1078
26-27	1077	1.[illegible]	1080	1074
27-28	1083	2.2	1087	1077
28-29	1093	2.[illegible]	1096	1088
29-30	1091	2.[illegible]	1094	1089
30-31	1088	0.[illegible]	1088	1087
31-32	1086	1.[illegible]	1088	1083
32-33	1087	[illegible]	1091	1084
33-34	1088	2.[illegible]	1091	1086
34-35	1086	2.1	1088	1082
35-36	1086	[illegible]	1090	1082
36-37	1086	2.1	1087	1082
37-38	1083	1.[illegible]	1084	1080
38-39	1083	1.5	1087	1078
39-40	1079	1.[illegible]	1081	1075
40-41	1080	1.4	1083	1078
41-42	1080	2.4	1085	1077
42-43	1083	1.4	1085	1080
43-44	1077	5.[illegible]	1087	1071
44-45	1074	2.0	1078	1070
45-46	1110	54.0	1238	1077
46-47	1075	4.[illegible]	1080	1068
47-48	1074	2.5	1077	1072
48-49	1074	1.9	1077	1072
49-50	1078	2.0	1081	1075
50-51	1102	34.[illegible]	1165	1071
51-52	1090	2.[illegible]	1118	1083
52-53	1068	2.1	1071	1064
53-54	1074	[illegible]	1078	1070
54-55	1074	[illegible]	1077	1072
55-56	1081	[illegible]	1088	1079
56-57	1080	[illegible]	1088	1078
57-58	1077	1.[illegible]	1080	1074
58-59	1075	[illegible]	1086	1064
59-60	1070	1.[illegible]	1071	1067
60-61	1070	1.[illegible]	1072	1069
61-62	1069	1.[illegible]	1071	1067
62-63	1070	[illegible]	1072	1067
63-64	1071	[illegible]	1076	1069
64-65	1091	16.[illegible]	1112	1076
65-66	1086	[illegible]	1097	1078
66-67	1044	11.[illegible]	1114	1033
67-68	1245	55.[illegible]	1321	1169
68-69	1093	30.1	1130	1035
69-70	1162	34.5	1205	1114
70-71	1252	101.4	1384	1127
71-72	1244	100.[illegible]	1389	1119
72-73	1153	71.0	1241	1077
73-74	1146	40.[illegible]	1197	1095
74-75	1157	69.1	1251	1085
75-76	1139	70.[illegible]	1309	1134
76-77	1135	43.0	1211	1083
77-78	1135	26.[illegible]	1197	1109
78-79	1206	30.[illegible]	1237	1150
79-80	1239	50.[illegible]	1300	1154
80-81	1174	27.[illegible]	1228	1149
81-82	1141	27.1	1193	1119
82-83	1177	15.0	1195	1149
83-84	1184	8.8	1197	1175
84-85	1188	16.0	1217	1171
85-86	1185	8.8	1202	1176
86-87	1174	3.9	1180	1168
87-88	1171	3.9	1185	1164
88-89	1170	3.6	1176	1165
89-90	1177	2.4	1180	1175
90-91	1179	6.0	1186	1170
91-92	1173	7.6	1188	1167
92-93	1167	9.8	1180	1155
93-94	1171	5.6	1181	1165

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 OUTPUT POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0	0.0	0	-0
7- 8	1	0.5	2	0
8- 9	7	3.5	13	3
9-10	27	7.7	39	17
10-11	65	12.5	82	47
11-12	118	18.0	138	92
12-13	165	18.0	193	141
13-14	228	14.0	243	206
14-15	296	24.6	329	260
15-16	390	30.4	435	348
16-17	497	32.3	535	451
17-18	609	39.5	665	555
18-19	732	30.2	772	686
19-20	837	29.9	881	797
20-21	937	23.3	969	903
21-22	1004	13.1	1021	986
22-23	1027	1.4	1028	1025
23-24	1019	3.8	1026	1016
24-25	1007	2.5	1011	1004
25-26	997	2.9	999	992
26-27	991	1.7	993	988
27-28	996	3.4	1000	991
28-29	1004	2.5	1008	1001
29-30	996	3.2	1001	993
30-31	989	0.6	990	989
31-32	988	1.0	990	987
32-33	992	2.6	996	988
33-34	998	2.2	1001	995
34-35	998	1.6	1000	995
35-36	998	3.1	1004	995
36-37	998	1.9	1000	995
37-38	995	1.1	997	993
38-39	996	3.2	1000	992
39-40	992	1.7	994	989
40-41	993	1.7	996	992
41-42	993	3.1	998	991
42-43	996	1.3	997	993
43-44	990	5.2	999	985
44-45	988	2.7	992	984
45-46	1016	49.4	1115	990
46-47	979	9.4	986	961
47-48	983	1.8	985	980
48-49	986	1.9	987	982
49-50	992	1.8	994	989
50-51	1010	27.3	1056	981
51-52	1000	19.6	1026	976
52-53	982	1.9	985	979
53-54	988	3.0	992	984
54-55	987	1.4	990	986
55-56	994	1.5	995	992
56-57	993	1.1	995	992
57-58	990	1.7	993	988
58-59	988	7.1	999	979
59-60	984	1.5	985	981
60-61	985	0.9	986	983
61-62	983	1.4	985	981
62-63	984	1.7	986	982
63-64	986	2.3	990	984
64-65	1001	11.2	1021	990
65-66	994	6.2	1004	986
66-67	997	7.2	1011	991
67-68	1048	33.9	1074	982
68-69	903	27.3	931	863
69-70	943	30.8	983	901
70-71	993	46.9	1059	930
71-72	867	78.0	987	775
72-73	786	45.8	835	710
73-74	780	27.3	811	740
74-75	826	50.3	919	783
75-76	877	51.6	958	823
76-77	862	23.4	889	838
77-78	916	26.0	952	888
78-79	1001	24.0	1025	956
79-80	1009	42.3	1058	938
80-81	962	19.1	997	943
81-82	943	18.5	966	918
82-83	988	11.6	997	966
83-84	1007	9.2	1024	996
84-85	1018	12.9	1041	1003
85-86	1017	7.1	1030	1009
86-87	1008	2.3	1011	1004
87-88	1012	5.1	1021	1006
88-89	1019	1.8	1022	1017
89-90	1027	1.2	1029	1025
90-91	1023	5.9	1030	1014
91-92	1015	5.0	1024	1010
92-93	1006	7.0	1016	996
93-94	1012	4.2	1020	1000

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1- Ice running without bubblers
2- 23 in.(58.4 cm) of ice
with 2.5 in.(6.4 cm) of snow
3- Impact speed 13.2 knots
4- Flexural strength of ice
11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 EXCITER VOLTAGE (V)
(SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	2.6	0.7	3.8	2.0
7- 8	5.8	0.9	9.6	3.3
8- 9	21.7	5.6	29.7	14.1
9-10	38.4	4.7	44.3	31.7
10-11	50.1	2.5	54.2	47.1
11-12	51.7	4.3	54.7	43.3
12-13	58.8	1.2	60.5	56.9
13-14	62.1	4.0	67.8	56.9
14-15	70.4	2.3	73.1	67.8
15-16	75.7	1.5	77.9	73.6
16-17	81.6	3.3	86.4	76.9
17-18	94.2	3.8	98.8	87.9
18-19	109.4	4.6	117.4	105.3
19-20	125.2	3.0	127.8	119.9
20-21	134.2	2.3	136.7	130.6
21-22	135.4	1.7	137.7	132.6
22-23	132.7	0.9	133.7	131.4
23-24	129.4	1.1	130.6	127.8
24-25	128.3	0.5	129.1	127.8
25-26	126.9	1.0	127.8	125.5
26-27	125.9	1.2	127.5	124.7
27-28	122.9	1.6	125.5	121.2
28-29	119.2	0.7	120.2	118.2
29-30	118.0	0.6	119.2	117.2
30-31	118.8	0.7	119.4	117.9
31-32	120.3	0.4	121.5	119.2
32-33	121.7	0.9	123.0	120.7
33-34	122.6	0.4	123.0	122.0
34-35	123.3	1.1	125.2	122.0
35-36	123.8	0.7	124.7	123.0
36-37	124.0	0.4	124.5	123.2
37-38	124.9	1.4	126.8	122.7
38-39	123.1	1.2	124.5	121.2
39-40	124.1	2.6	129.1	122.0
40-41	123.7	0.5	124.2	123.0
41-42	122.4	1.0	124.0	121.2
42-43	121.7	0.4	122.0	121.0
43-44	123.1	1.4	124.5	120.7
44-45	123.8	1.0	125.0	122.5
45-46	112.1	20.7	124.5	70.8
46-47	120.6	1.4	123.2	119.2
47-48	122.3	1.1	124.0	120.7
48-49	124.4	0.4	125.2	124.0
49-50	124.0	1.1	125.5	122.2
50-51	116.3	11.0	124.0	94.7
51-52	118.5	5.0	124.7	112.4
52-53	124.5	1.1	126.0	123.0
53-54	124.9	0.6	126.0	124.2
54-55	125.0	0.7	126.2	124.0
55-56	123.7	1.1	125.2	122.0
56-57	122.8	0.9	124.0	121.7
57-58	123.0	0.6	124.0	122.2
58-59	123.6	2.0	126.8	121.5
59-60	124.0	1.1	125.2	122.0
60-61	123.9	0.4	124.7	123.5
61-62	124.7	0.5	125.2	124.2
62-63	123.3	1.1	125.0	121.7
63-64	123.2	1.6	125.2	120.7
64-65	118.9	2.4	122.7	115.4
65-66	120.3	1.4	122.2	118.2
66-67	119.5	1.9	121.2	115.9
67-68	75.5	14.3	95.5	51.4
68-69	101.6	12.9	121.5	82.6
69-70	98.3	13.3	115.4	82.4
70-71	86.3	22.6	114.2	56.9
71-72	72.2	13.6	93.2	54.4
72-73	84.3	14.0	101.8	66.0
73-74	89.1	9.9	106.3	79.6
74-75	94.7	9.1	109.9	81.6
75-76	97.2	13.0	109.9	73.8
76-77	105.2	7.1	114.2	96.0
77-78	113.9	5.6	121.5	105.3
78-79	109.9	5.5	118.4	102.6
79-80	92.8	13.4	108.6	74.6
80-81	105.0	3.7	109.6	99.8
81-82	114.7	4.8	118.9	105.6
82-83	115.1	3.2	120.7	110.9
83-84	112.4	5.3	115.4	108.6
84-85	113.2	5.3	119.4	105.8
85-86	111.1	3.3	114.2	105.1
86-87	114.6	1.6	116.7	111.9
87-88	116.1	3.6	119.2	109.4
88-89	117.5	2.0	120.2	114.4
89-90	115.2	1.8	117.4	112.6
90-91	112.2	1.7	113.9	109.6
91-92	111.0	3.5	114.7	104.3
92-93	113.8	3.2	116.7	108.1
93-94	112.9	1.2	114.7	111.4

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice running without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 EXCITER CURRENT (A) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0.4	0.6	1.4	-0.3
7- 8	0.7	0.5	1.3	-0.0
8- 9	-5.1	13.6	2.5	-32.2
9-10	-0.6	7.0	4.0	-14.1
10-11	5.6	0.8	6.5	4.3
11-12	3.2	8.0	7.9	-12.7
12-13	5.5	5.8	8.7	-6.1
13-14	3.4	10.7	10.0	-17.8
14-15	10.4	0.4	10.8	9.8
15-16	8.5	7.0	12.3	-5.5
16-17	12.7	0.6	13.6	11.7
17-18	13.8	1.1	14.8	11.8
18-19	16.3	1.2	17.6	14.5
19-20	18.0	2.2	20.5	14.3
20-21	21.2	0.4	21.7	20.4
21-22	22.7	0.8	23.6	21.6
22-23	22.8	0.8	23.7	21.6
23-24	19.2	6.0	23.6	7.5
24-25	22.7	0.8	23.5	21.5
25-26	21.7	1.5	23.3	19.1
26-27	21.6	2.2	23.1	17.3
27-28	5.7	33.0	22.8	-60.2
28-29	16.7	10.6	22.5	-4.6
29-30	20.4	1.5	21.8	17.6
30-31	20.8	0.8	21.8	19.9
31-32	6.3	30.5	21.9	-54.6
32-33	21.7	0.8	22.9	20.5
33-34	21.3	0.6	22.1	20.5
34-35	21.9	0.6	22.5	21.2
35-36	20.3	3.6	22.6	13.2
36-37	22.1	0.9	23.7	20.9
37-38	22.0	0.6	22.7	20.8
38-39	21.9	0.7	22.5	20.6
39-40	21.7	0.6	22.5	21.0
40-41	14.5	13.1	22.6	-11.6
41-42	18.9	6.6	22.4	5.8
42-43	14.5	13.9	22.3	-13.2
43-44	21.6	0.6	22.4	20.6
44-45	20.9	1.4	22.4	18.8
45-46	21.4	0.7	22.3	20.3
46-47	20.6	0.7	21.5	19.7
47-48	19.7	4.5	22.3	10.7
48-49	20.8	1.7	22.4	17.6
49-50	21.9	0.8	23.0	20.6
50-51	16.3	12.2	23.5	-8.1
51-52	21.6	0.6	22.3	20.8
52-53	21.0	1.0	22.4	19.5
53-54	21.5	0.5	22.2	20.7
54-55	2.2	38.8	22.7	-75.3
55-56	21.6	0.8	22.6	20.4
56-57	22.1	0.7	22.8	21.1
57-58	22.0	0.6	22.7	20.9
58-59	21.7	0.7	22.6	20.7
59-60	13.9	11.9	22.6	-8.4
60-61	21.7	0.7	22.5	20.8
61-62	18.9	4.7	22.0	9.6
62-63	21.8	0.6	22.4	20.8
63-64	19.0	3.8	22.1	11.9
64-65	21.9	0.5	22.3	21.0
65-66	16.4	9.2	21.9	-2.8
66-67	21.3	0.8	22.2	20.1
67-68	13.6	10.9	20.4	-8.2
68-69	7.9	18.9	17.7	-29.9
69-70	18.2	0.4	18.6	17.5
70-71	15.7	3.5	18.4	8.9
71-72	14.6	1.2	16.2	13.1
72-73	12.3	3.9	15.2	4.7
73-74	13.8	2.0	15.1	9.9
74-75	15.7	1.0	16.8	14.4
75-76	16.0	0.5	16.5	15.0
76-77	16.2	2.2	17.7	11.8
77-78	13.8	8.9	19.4	-3.9
78-79	18.5	2.7	20.0	13.2
79-80	17.3	1.8	18.5	13.8
80-81	14.8	7.0	18.8	0.9
81-82	13.3	11.8	20.0	-10.2
82-83	18.8	0.5	19.3	18.0
83-84	20.3	0.4	20.9	19.9
84-85	3.3	26.1	20.4	-47.5
85-86	19.8	0.7	20.5	18.6
86-87	12.1	16.3	20.7	-20.4
87-88	17.1	5.4	20.2	6.3
88-89	20.9	0.4	21.5	20.3
89-90	19.2	1.1	20.7	17.8
90-91	19.8	0.8	21.0	18.7
91-92	16.5	6.8	20.5	2.9
92-93	11.0	17.3	20.1	-23.7
93-94	15.9	9.3	20.7	-2.8

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1) Ice ramming without bubblers
2) 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3) Impact speed 13.2 knots
4) Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 EXCITER POWER (kW) (SI units)

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	0.0	0.0	0.0	-0.0
7- 8	0.0	0.0	0.0	-0.0
8- 9	-0.1	0.3	0.1	-0.6
9-10	-0.0	0.3	0.2	-0.6
10-11	0.3	0.0	0.3	0.2
11-12	0.2	0.4	0.4	-0.7
12-13	0.3	0.3	0.5	-0.4
13-14	0.2	0.7	0.6	-1.2
14-15	0.7	0.0	0.8	0.7
15-16	0.6	0.5	0.9	-0.4
16-17	1.0	0.1	1.2	1.0
17-18	1.3	0.1	1.4	1.1
18-19	1.8	0.2	2.1	1.5
19-20	2.3	0.3	2.6	1.7
20-21	2.8	0.0	2.9	2.8
21-22	3.1	0.1	3.2	2.9
22-23	3.0	0.1	3.1	2.9
23-24	2.5	0.8	3.0	1.0
24-25	2.9	0.1	3.0	2.8
25-26	2.8	0.2	2.9	2.4
26-27	2.7	0.3	2.9	2.2
27-28	0.7	4.0	2.8	-7.4
28-29	2.0	1.3	2.7	-0.5
29-30	2.4	0.2	2.6	2.1
30-31	2.5	0.1	2.6	2.4
31-32	0.7	3.7	2.6	-6.6
32-33	2.6	0.1	2.8	2.5
33-34	2.6	0.1	2.7	2.5
34-35	2.7	0.0	2.7	2.6
35-36	2.5	0.4	2.8	1.6
36-37	2.7	0.1	2.9	2.6
37-38	2.7	0.1	2.8	2.6
38-39	2.7	0.1	2.8	2.6
39-40	2.7	0.1	2.8	2.6
40-41	1.8	1.6	2.8	-1.4
41-42	2.3	0.8	2.8	0.7
42-43	1.8	1.7	2.7	-1.6
43-44	2.7	0.1	2.7	2.6
44-45	2.6	0.2	2.7	2.3
45-46	2.4	0.4	2.7	1.5
46-47	2.5	0.1	2.6	2.4
47-48	2.4	0.6	2.7	1.3
48-49	2.6	0.2	2.8	2.2
49-50	2.7	0.1	2.9	2.6
50-51	1.9	1.5	2.8	-1.0
51-52	2.6	0.1	2.7	2.3
52-53	2.6	0.1	2.8	2.4
53-54	2.7	0.1	2.8	2.6
54-55	0.3	4.8	2.8	-9.4
55-56	2.7	0.1	2.8	2.5
56-57	2.7	0.1	2.8	2.6
57-58	2.7	0.1	2.8	2.6
58-59	2.7	0.0	2.8	2.6
59-60	1.7	1.5	2.8	-1.0
60-61	2.7	0.1	2.8	2.6
61-62	2.4	0.6	2.8	1.2
62-63	2.7	0.1	2.7	2.6
63-64	2.3	0.5	2.7	1.5
64-65	2.6	0.1	2.7	2.5
65-66	2.0	1.1	2.7	-0.2
66-67	2.5	0.1	2.7	2.4
67-68	1.0	0.9	1.9	-0.7
68-69	0.6	2.1	1.9	-3.6
69-70	1.8	0.3	2.1	1.5
70-71	1.4	0.5	2.1	0.8
71-72	1.0	0.1	1.2	0.9
72-73	1.0	0.3	1.4	0.5
73-74	1.2	0.1	1.4	1.0
74-75	1.5	0.2	1.7	1.3
75-76	1.6	0.2	1.8	1.2
76-77	1.7	0.3	2.0	1.1
77-78	1.6	1.0	2.3	-0.4
78-79	2.0	0.3	2.4	1.4
79-80	1.6	0.3	2.0	1.0
80-81	1.6	0.7	2.0	0.1
81-82	1.5	1.4	2.3	-1.2
82-83	2.2	0.0	2.2	2.1
83-84	2.3	0.1	2.4	2.2
84-85	0.3	3.0	2.3	-5.7
85-86	2.2	0.1	2.3	2.0
86-87	1.4	1.8	2.4	-2.3
87-88	2.0	0.6	2.4	0.7
88-89	2.5	0.1	2.6	2.4
89-90	2.2	0.1	2.4	2.0
90-91	2.2	0.1	2.4	2.1
91-92	1.8	0.8	2.3	0.3
92-93	1.3	1.9	2.3	-2.6
93-94	1.8	1.1	2.3	-0.3

TABLE 19 (Continued)

RUN NUMBER 6612

TRIAL CONDITIONS: 1/ Ice ramming without bubblers
2/ 23 in.(58.4 cm) of ice with 2.5 in.(6.4 cm) of snow
3/ Impact speed 13.2 knots
4/ Flexural strength of ice 11066 lb/sq ft(530 kPa)

DATE: 17 March 1979

PARAMETER: GENERATOR 2 RPM

TIME (s)	ARITHMETIC MEAN	STANDARD DEVIATION	MAXIMUM VALUE	MINIMUM VALUE
6- 7	877.8	1.2	879.4	876.4
7- 8	877.0	0.5	877.4	876.4
8- 9	876.2	0.7	877.4	875.4
9-10	876.8	1.9	879.4	874.4
10-11	875.4	0.6	876.4	874.4
11-12	875.2	0.7	876.4	874.4
12-13	875.8	1.6	877.4	873.4
13-14	874.2	1.8	876.4	872.4
14-15	874.0	1.2	875.4	872.4
15-16	871.4	1.1	873.4	870.4
16-17	869.0	1.4	871.4	867.4
17-18	866.8	0.5	867.4	866.4
18-19	865.2	1.0	866.4	863.4
19-20	865.6	1.2	867.4	864.4
20-21	865.4	1.4	867.4	863.4
21-22	865.8	1.6	867.4	863.4
22-23	867.6	0.4	868.4	867.4
23-24	870.6	1.3	872.4	868.4
24-25	870.8	1.0	872.4	869.4
25-26	871.6	1.3	873.4	870.4
26-27	870.6	1.2	872.4	869.4
27-28	870.6	1.2	871.4	868.4
28-29	870.6	1.2	872.4	869.4
29-30	871.4	1.4	873.4	869.4
30-31	871.0	1.6	873.4	869.4
31-32	870.4	1.4	872.4	868.4
32-33	870.4	0.9	871.4	869.4
33-34	871.0	1.4	872.4	869.4
34-35	870.6	1.2	872.4	869.4
35-36	870.4	1.7	872.4	868.4
36-37	870.6	1.6	872.4	868.4
37-38	870.4	1.7	872.4	868.4
38-39	870.6	1.2	872.4	869.4
39-40	870.6	1.8	872.4	868.4
40-41	870.6	1.2	872.4	869.4
41-42	870.8	1.2	872.4	869.4
42-43	871.0	1.0	872.4	869.4
43-44	870.4	1.8	872.4	868.4
44-45	871.0	1.0	872.4	869.4
45-46	869.4	1.1	871.4	868.4
46-47	871.0	2.3	872.4	866.4
47-48	871.6	1.2	873.4	870.4
48-49	870.0	0.8	871.4	869.4
49-50	870.0	1.6	872.4	868.4
50-51	869.4	1.8	871.4	867.4
51-52	872.0	2.5	875.4	869.4
52-53	872.4	1.4	874.4	870.4
53-54	869.6	1.2	871.4	868.4
54-55	870.4	1.4	872.4	868.4
55-56	870.2	1.5	872.4	868.4
56-57	871.2	1.2	872.4	869.4
57-58	870.0	1.2	871.4	868.4
58-59	870.4	1.4	872.4	868.4
59-60	870.2	1.2	872.4	869.4
60-61	871.0	1.0	872.4	869.4
61-62	869.8	1.5	872.4	868.4
62-63	870.4	1.1	871.4	868.4
63-64	870.2	1.2	872.4	869.4
64-65	870.0	1.2	871.4	868.4
65-66	870.6	1.0	872.4	869.4
66-67	869.8	1.5	872.4	868.4
67-68	864.4	3.2	868.4	860.4
68-69	884.6	5.0	890.4	875.4
69-70	870.0	3.9	877.4	866.4
70-71	866.0	3.0	869.4	860.4
71-72	874.2	11.0	888.4	859.4
72-73	882.8	4.5	890.4	876.4
73-74	872.8	1.6	874.4	870.4
74-75	870.0	1.9	871.4	866.4
75-76	867.8	2.4	870.4	864.4
76-77	870.6	4.3	875.4	863.4
77-78	869.8	2.7	873.4	866.4
78-79	863.4	2.4	867.4	860.4
79-80	868.2	1.3	870.4	866.4
80-81	876.4	2.8	879.4	871.4
81-82	871.4	0.8	871.4	871.4
82-83	865.8	1.4	868.4	864.4
83-84	868.4	0.8	868.4	868.4
84-85	869.2	0.7	870.4	868.4
85-86	871.6	1.2	872.4	869.4
86-87	869.4	0.8	869.4	869.4
87-88	870.4	1.4	872.4	868.4
88-89	868.2	0.7	869.4	867.4
89-90	869.6	1.2	871.4	868.4
90-91	870.0	0.5	870.4	869.4
91-92	872.0	1.5	873.4	869.4
92-93	869.4	0.6	870.4	868.4
93-94	871.2	1.2	872.4	869.4

TABLE 20 - BOLLARD PULL DATA, AHEAD AND ASTERN

Run No.	RPM	Line Pull (lb)	Line Pull (N)	Propeller Thrust (lb)	Propeller Thrust (N)	Shaft Power (shp)	Shaft Power (kW)
BOLLARD PULLS AHEAD, LINE OFF STERN							
5000	97.2	10,400	46,300	9,600	42,700	130	97
5010	154.3	23,450	104,300	23,220	103,300	580	433
5020	210.6	42,050	187,000	43,030	191,400	1,550	1,156
5030	238.4	52,550	233,700	53,850	239,500	2,300	1,716
5040	243.5	54,350	241,700	55,400	246,400	2,450	1,828
5050	245.3	55,350	246,200	55,950	248,900	2,500	1,865
5060	221.0	45,800	203,700	45,850	203,900	1,800	1,343
5070	164.6	25,550	113,600	24,950	111,000	670	500
5080	127.7	16,500	73,400	15,050	66,900	310	231
BOLLARD PULLS ASTERN, LINE OFF BOW							
5100	100.0*	6,550	29,100	**	**	150	112
5110	130.0*	10,150	45,100	**	**	310	231
5120	171.0*	16,550	73,600	**	**	710	530
5130	222.0*	27,750	123,400	**	**	1,600	1,194
5140	230.0*	28,350	126,100	**	**	1,830	1,365
5150	244.0*	32,450	144,300	**	**	2,250	1,678
5160	260.0*	35,350	157,200	**	**	2,650	1,977

*RPM accurate to ± 1 rpm.
**Propeller thrust data are invalid.

REFERENCE

1. Hunt, R. R. and L. L. Hundley, "KATMAI BAY (WTGB-101) Speed, Tactical, and Maneuvering Trials," David W. Taylor Naval Ship Research and Development Center Report DTNSRDC-79/106 (Nov 1979).

INITIAL DISTRIBUTION

Copies	
25	USCG (G-ENE-3)
25	USCGR&DC
12	DTIC

CENTER DISTRIBUTION

Copies	Code	Name
1	15	W.B. Morgan
1	1502	V.J. Monacella
1	152	
1	1524	W.C. Lin
1	1536	R.J. Stenson
1	1536	D.H. Drazin
1	154	
1	156	G.R. Hagen
1	1568	G.G. Cox
1	17	W.W. Murray
1	1730.4	A. Dinsenbacher
1	19	M. Sevik
1	1962	A. Zaloumis
10	5211.1	Reports Distribution
1	522.1	Unclass. Lib. (C)
1	522.2	Unclass. Lib. (A)

DTMB/DC ISSUES THREE TYPES OF REPORTS

1. DTMB/DC REPORTS, A FORMAL SERIES, CONTAIN INFORMATION OF PERMANENT TECHNICAL VALUE. THEY CARRY A CONSECUTIVE NUMERICAL IDENTIFICATION REGARDLESS OF [illegible] CLASSIFICATION OR THE ORIGINATING DEPARTMENT.

2. DEPARTMENTAL REPORTS, A SEMIFORMAL SERIES, CONTAIN INFORMATION OF A PRELIMINARY, TEMPORARY, OR NONSECRETARY NATURE OR OF LIMITED INTEREST OR SIGNIFICANCE. THEY CARRY A DEPARTMENTAL ALPHANUMERICAL IDENTIFICATION.

3. TECHNICAL MEMORANDA, AN INFORMAL SERIES, CONTAIN TECHNICAL DOCUMENTATION OF LIMITED USE AND INTEREST. THEY ARE PRIMARILY WORKING PAPERS INTENDED FOR INTERNAL USE. THEY CARRY AN IDENTIFYING NUMBER WHICH INDICATES THEIR TYPE AND THE NUMERICAL CODE OF THE ORIGINATING DEPARTMENT. ANY DISTRIBUTION OUTSIDE DTMB/DC MUST BE APPROVED BY THE HEAD OF THE ORIGINATING DEPARTMENT ON A CASE-BY-CASE BASIS.