AD-A112 995 ANALYSIS AND TECHNOLOGY INC NORTH STONINGTON CT F/G 6/7
FACTORS AFFECTING COAST GUARD SAR UNIT VISUAL DETECTION PERFORM--ETC(U)
AUG 81 N C EDWARDS, T J MAZOUR, G L HOVER DTCG-39-80-C-80052
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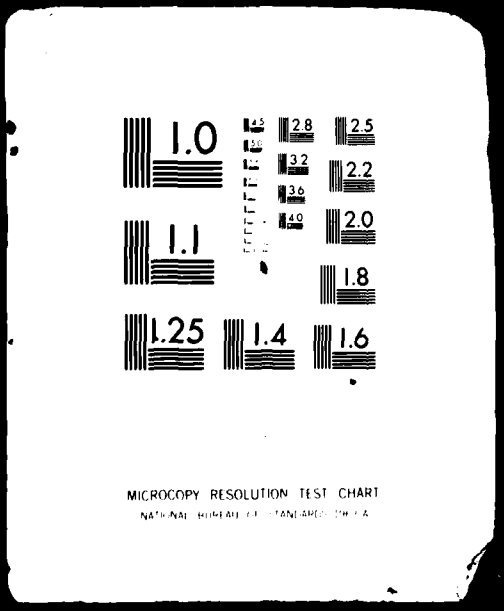

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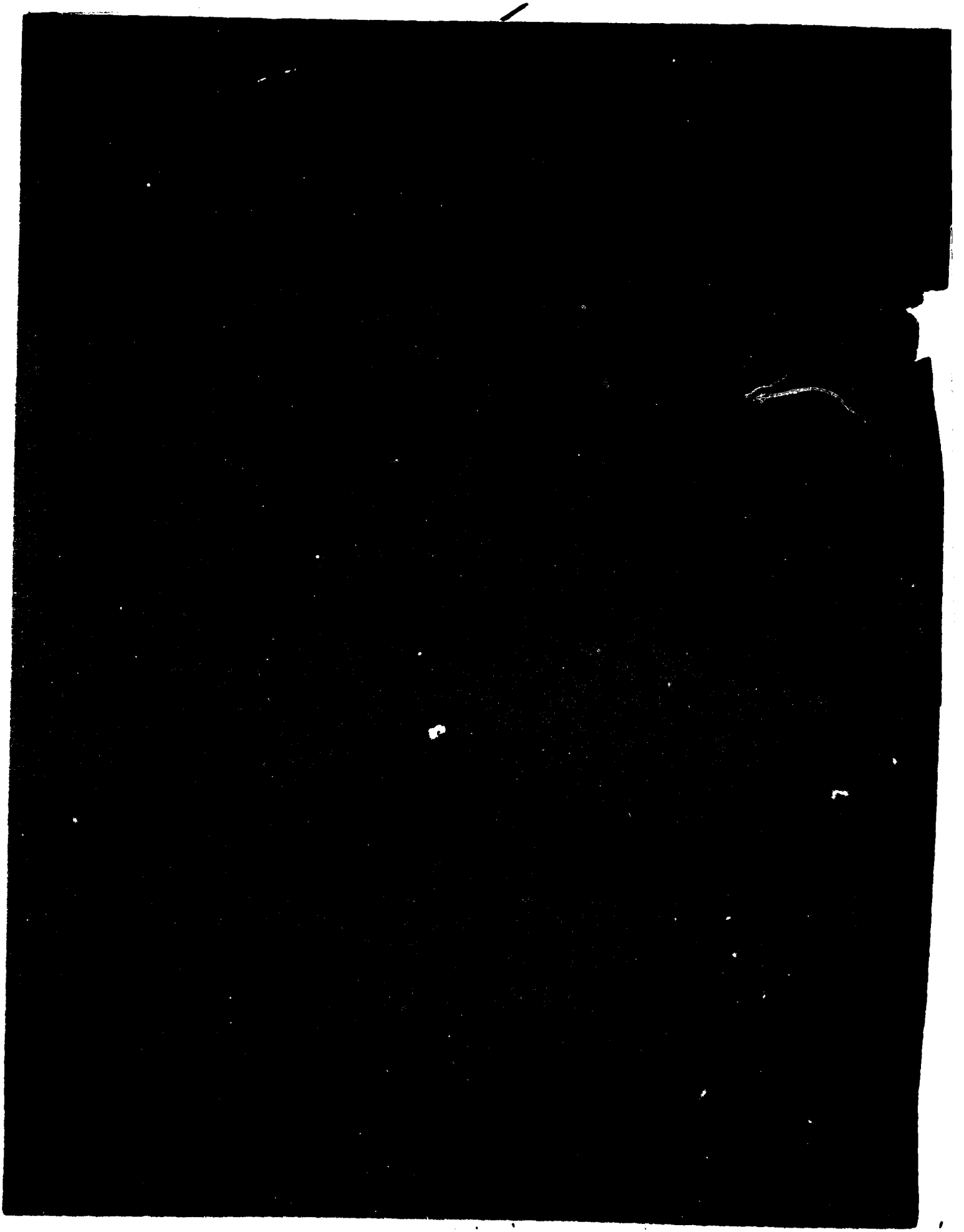

Technical Report Documentation Page

1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
CG-D-09-82	AD A113 915	

4. Title and Subtitle	5. Report Date
Factors Affecting Coast Guard SAR Unit Visual Detection Performance	August 1981
	6. Performing Organization Code
	8. Performing Organization Report No. CGR&DC 26/81
7. Author(s) N. C. Edwards, Jr., T. J. Mazour, G. L. Hover, S. R. Osmer	
9. Performing Organization Name and Address U.S.C.G. R&D Center, Avery Point, Groton, CT 06340 Analysis & Technology, Inc., P.O. Box 220, North Stonington 06359	10. Work Unit No. (TRAIS)
	11. Contract or Grant No. DTCG-39-80-C-80052
12. Sponsoring Agency Name and Address Department of Transportation U.S. Coast Guard Office of Research and Development Washington, DC 20593	13. Type of Report and Period Covered Interim Report January 1978-August 1981
	14. Sponsoring Agency Code

15. Supplementary Notes
This report is the third in a series which documents the Visual Search Effectiveness Task of the Probability of Detection in the Search and Rescue (SAR) project at the USCG R&D Center.

16. Abstract

Since September 1978, the USCG R&D Center has conducted seven visual detection experiments designed to develop visual detection models which will be incorporated into the Coast Guard's computer-assisted search planning (CASP) system and the National Search and Rescue (SAR) Manual.

These were controlled experiments involving 82/95/210-foot cutters, 41/44-foot boats, helicopters, and fixed-wing aircraft searching for 16- and 41-foot boat, life raft, and person-in-the-water (PIW) targets anchored at predetermined locations within the search area.

Through a microwave tracking system, searcher and target positions could be accurately reconstructed to determine the lateral range of targets that were detected, as well as not detected. Thus, probability of detection versus lateral range curves could be developed and, by integrating these curves, sweep width could also be determined. A total of 4,916 detection opportunities was generated. A sophisticated binary multivariate regression computer program was used to develop sweep width estimates for the environmental conditions experienced.

As shown in Chapter 3, based upon the results of these experiments, changes in the search planning guidance of the SAR Manual and revisions to CASP are recommended.

17. Key Words	18. Distribution Statement
Search and Rescue, Visual Search, Surface Target Detection, Probability of Detection.	Document is available to the U. S. public through the National Technical Information Service, Springfield, Virginia 22161

19. Security Classif. (of this report)	20. Security Classif. (of this page)	21. No. of Pages	22. Price
Unclassified	Unclassified		

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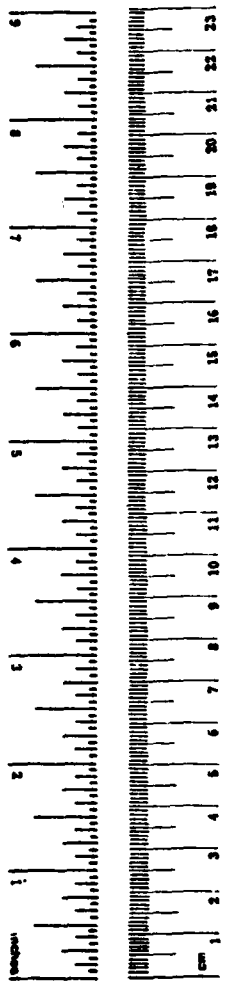
METRIC CONVERSION FACTORS

Approximate Conversions to Metric Measures

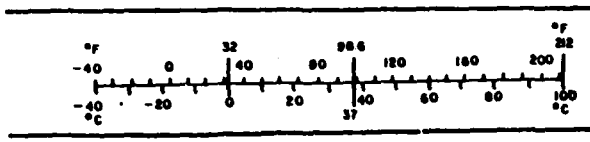
Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
in	inches	*2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
		AREA		
in^2	square inches	6.5	square centimeters	cm^2
ft^2	square feet	0.09	square meters	m^2
yd^2	square yards	0.8	square meters	m^2
mi^2	square miles	2.6	square kilometers	km^2
	acres	0.4	hectares	ha
		MASS (weight)		
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
		VOLUME		
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft^3	cubic feet	0.03	cubic meters	m^3
yd^3	cubic yards	0.76	cubic meters	m^3
		TEMPERATURE (exact)		
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 exactly. For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price $2.25, SD Catalog No. C13.10:286.



Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
		LENGTH		
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
		AREA		
cm^2	square centimeters	0.16	square inches	in^2
m^2	square meters	1.2	square yards	yd^2
km^2	square kilometers	0.4	square miles	mi^2
ha	hectares (10,000 m^2)	2.5	acres	
		MASS (weight)		
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
		VOLUME		
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m^3	cubic meters	35	cubic feet	ft^3
m^3	cubic meters	1.3	cubic yards	yd^3
		TEMPERATURE (exact)		
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



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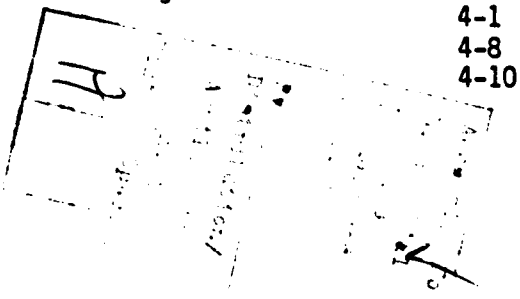

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EXECUTIVE SUMMARY

This report analyzes the cumulative results of seven 1978-1981 Coast Guard Research and Development Center visual detection experiments. These experiments provided the basis for reevaluating and revising the National Search and Rescue Manual (SAR Manual) (Reference 1) visual search sweep width tables (with the intent of improving their accuracy and determining whether additional parameters may significantly influence sweep width). Also from the data base, a visual detection model is being developed for the Coast Guard's computer-assisted search planning (CASP) system.

In the experiments 82/95/210-foot cutters, 41/44-foot boats, helicopters, and fixed-wing aircraft searched for 16- and 41-foot boats, life rafts, and persons in the water (PIWs). The influence of the following search parameters upon sweep width* and probability of detection was investigated:

1. SRU characteristics (number and height of eye of scanners, speed, and navigation capabilities)
2. Target characteristics (size, color, and shape)
3. Visibility
4. Altitude
5. Search speed
6. Time on task
7. Wind speed and swell height
8. Sun's elevation and relative bearing
9. Cloud cover.

While the results of these experiments (as presented in Chapter 3) were supportive of current search planning guidance in some areas, improvements in

*Sweep width is a single number representation of the probability of detection P(x) versus lateral range relationship currently used by search planners. Sweep width is a mathematically expressed measure of detection capability which is influenced by target characteristics, search unit characteristics, and weather conditions.

the prediction and effectiveness of Search and Rescue Unit (SRU) visual detection performance could be realized through the following:

1. SRU Characteristics

Larger surface vessels with more lookouts and better navigation capabilities had larger sweep widths and completed assigned search patterns more accurately than SAR boats. When searching for 16-foot boats and life rafts, helicopters had larger sweep widths than fixed-wing aircraft. Helicopters with LORAN-C navigation equipment completed assigned search patterns more accurately. These considerations are not included in current Coast Guard search planning guidance.

2. Target Characteristics (size, color, and shape)

Target size is the only target characteristic presently used to predict sweep width; target/background contrast, as measured by target color, and target shape should also be considered.

3. Visibility

The SAR Manual overstates the influence of visibility on sweep width for the small targets used in these experiments. This is particularly the case when visibility is more than 10 nautical miles.

4. Altitude

The SAR Manual guidance on aircraft search altitudes is in question for all targets. For small targets, the visual detection performance of aircraft was generally unchanged over the range of aircraft altitudes investigated.

5. Search Speed

For surface craft and helicopters, sweep width was not sensitive to search speed; therefore, these units should search at the maximum practical speed for existing conditions. Fixed-wing aircraft sweep width was found to decrease with higher speeds; however, the sweep rate (sweep width times search speed) was relatively constant for all fixed-wing aircraft speeds.

6. Time on Task

Sweep widths for all SRU types decreased as time on task (cumulative search time) increased. This effect is not considered in present search planning guidance.

7. Wind Speed and Swell Height

These two parameters varied together during the experiments and collectively had the greatest influence on sweep width. A continual decrease in sweep width as wind speed and swell height increased was found. This is in contrast to the SAR Manual where an increase in sweep width is predicted as wind speed increases to 10 or 15 knots followed by a continual decrease in sweep width for wind speeds above 15 knots.

8. Sun's Elevation and Relative Bearing

The influence of the sun's elevation and relative bearing on sweep width appears to be overstated in the SAR Manual. No difference in sweep width was found for the hours between sunrise and sunset. The sun's relative bearing with respect to the target did not have a strong influence on the range at which targets were detected.

9. Cloud Cover

Cloud cover was found to influence sweep width during these experiments, but not to the extent predicted by the SAR Manual.

Details concerning the influence of these parameters on sweep width are presented in Chapter 3.

In addition to the above parameters, the distribution of targets within the search area, the navigation characteristics of the SRU, and the shape of the P(x) versus lateral range function also affect the probability that a target is detected during a search. The present SAR Manual search planning method does not have the capability to deal with these factors; however, the CASP system does. Therefore, the results from these experiments should be used as input to the CASP visual detection and track generation models as recommended in Chapter 4. As an interim measure until CASP is revised, the results from these experiments should be used to revise the SAR Manual visual sweep width tables and related search planning guidance, as recommended in Chapter 4.

CHAPTER 1
INTRODUCTION

1.0 SCOPE

This report describes the conduct and analysis of seven Coast Guard Research and Development (R&D) Center visual detection experiments conducted from 1978 to 1981. These are the first in a series of experiments designed to quantify search and rescue unit (SRU) performance to develop an accurate visual detection model for the Coast Guard's computer-assisted search planning (CASP) system, and to improve upon the search planning guidance provided by the National Search and Rescue Manual (SAR Manual) (Reference 1). This report includes the data from and builds upon the experimental methods and results of Edwards et al (Reference 2) which documented the results of the 1978 and 1979 R&D Center experiments involving visual detection of white or blue 16-foot boats and orange or black 4- to 7-man life rafts.

1.1 Background

A key ingredient to effective search and rescue (SAR) planning is an accurate prediction of the detection performance of various SRUs for conditions existing in the search area. Overestimating detection performance may result in premature termination of the search of a particular area, while underestimating detection performance may result in the search of a particular area being extended unnecessarily (thereby delaying search of other areas). In either case, SAR resources would not be utilized in an efficient manner.

1.2 Sweep Width

The primary performance measure currently utilized by SAR mission coordinators to plan searches is sweep width (W). Sweep width is a single

number summation of a more complex range detection probability relationship. Mathematically,

$$\text{Sweep Width } (W) = \int_{-\infty}^{\infty} P(x)dx,$$

where

x = lateral range or closest point of approach to targets of opportunity (see Figure 1-1) and
P(x) = probability of detection at lateral range x.

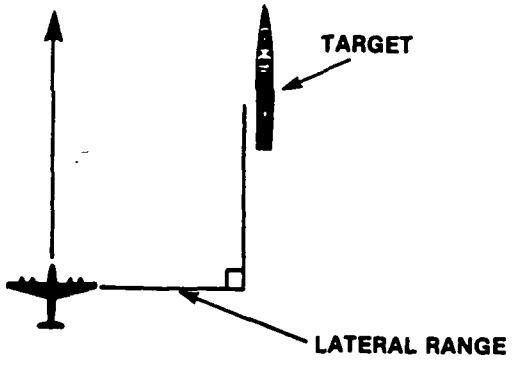

FIGURE 1-1. DEFINITION OF LATERAL RANGE

Figure 1-2 shows a typical P(x) curve as a function of lateral range. In Figure 1-2, (x) is the lateral range of detection opportunities.

Conceptually, sweep width is the numerical value obtained by reducing the maximum detection distance of any given sweep so that scattered targets which may be detected beyond the limits of W are equal in number to those which may be missed within those limits. Figure 1-3 (A and B) graphically presents this concept of sweep width. The number of targets missed inside the sweep width distance is indicated by the shaded portion near the top middle of

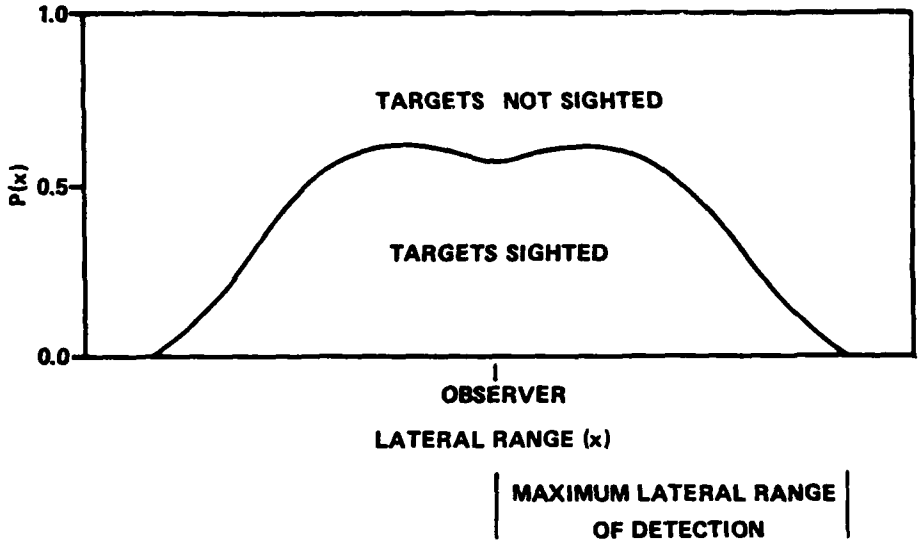

FIGURE 1-2. RELATIONSHIP OF TARGETS SIGHTED TO TARGETS NOT SIGHTED

the rectangle (area A) while the number of targets sighted beyond the sweep width distance out to maximum detection range (R_D) is indicated by the shaded portion at each end of the rectangle (area B). Referring only to the shaded areas, when the number of targets missed equals the number of targets sighted (area A = area B), sweep width is defined. A detailed mathematical development and explanation of sweep width can be found in Koopman (Reference 3).

Present SAR Manual search effectiveness estimates use sweep width (W) and track spacing (S) to define a quantity called coverage factor (C), with C = W/S. Based upon the inverse cube law of detection (Reference 3), a relationship between the cumulative probability of detection (POD) for a search and C is defined. Appendix B shows the SAR Manual POD versus coverage factor curve. It is important to appreciate the difference between P(x) and POD. P(x) being the probability density function describing the probability on one sweep of detecting a target with a lateral range x from the searcher, while POD is the cumulative probability that a randomly distributed target in a given search area will be detected at least once during a uniform search of the area.

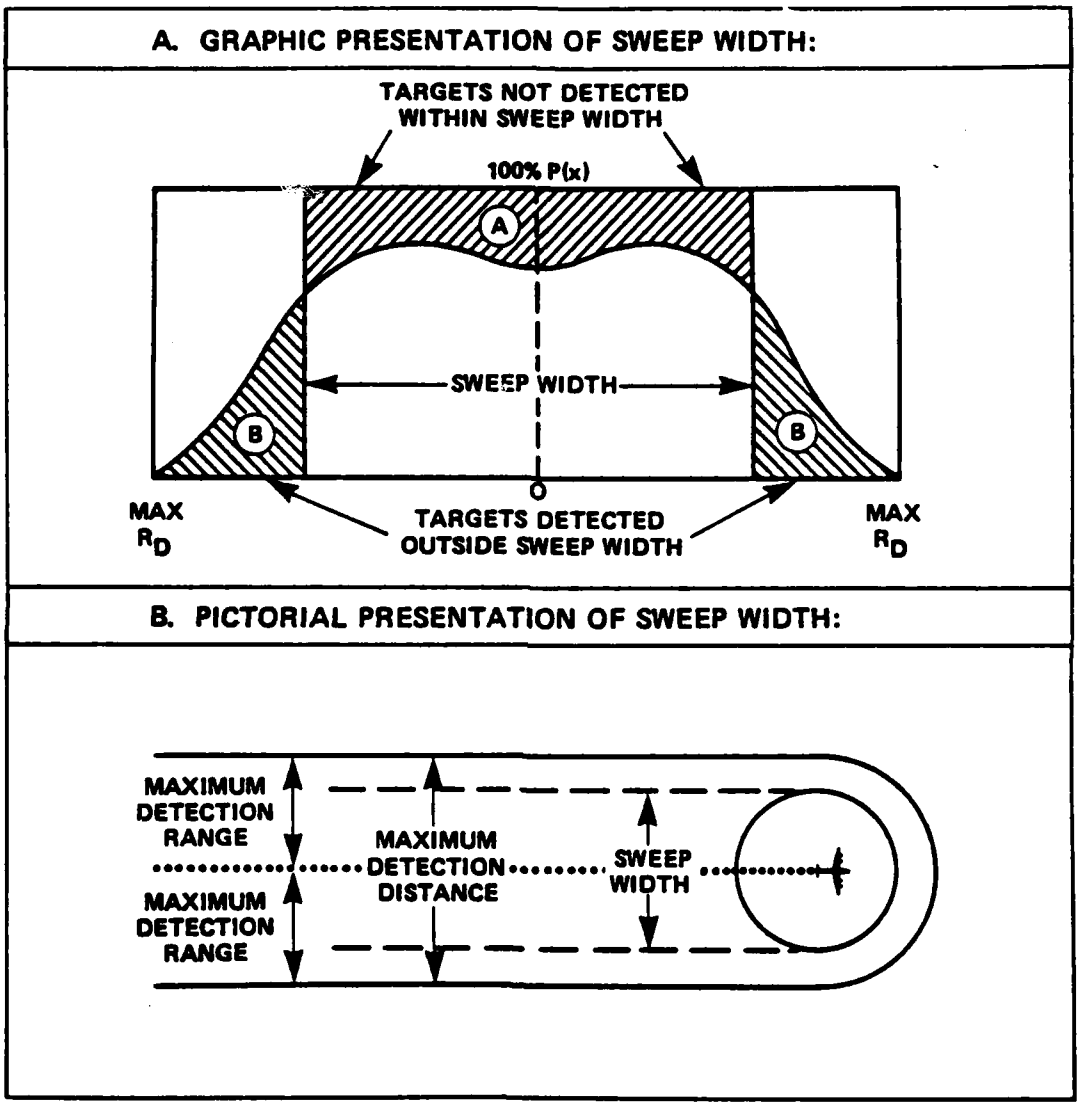

FIGURE 1-3. GRAPHIC AND PICTORIAL PRESENTATION OF SWEEP WIDTH

1.3 Parameters

From literature research, 25 parameters have been identified as having a potential influence on sweep width. These parameters can be divided into three categories:

1. Primary independent measurable parameters (11 parameters),
2. Interdependent human factors (eight parameters), and
3. Secondary parameters (six parameters).

1.3.1 Primary Variables. Primary variables are those intended to be investigated during the planned series of experiments. They are:

1. SRU type
2. Target type and size
3. Meteorological visibility*
4. Altitude
5. Search speed
6. Time on task
7. Target color
8. Wind speed
9. Sun's elevation
10. Swell height
11. Cloud cover.

1.3.2 Interdependent Human Factors. Quality lookout performance is essential for the success of a visual search mission. For the standard Coast Guard searches conducted during these experiments, the visual sensor is

*Meteorological visibility is defined as the maximum range at which a large object can be distinguished. This parameter has been used in these experiments to be consistent with the SAR Manual and to avoid using a subjective measurement, such as effective visibility. When used in this report, "visibility" refers to "meteorological visibility."

assumed to be a part of the overall detection capability of the SRU. These factors, which are dependent upon type of search unit, time on task, wind, sea state, and Coast Guard policies, are:

1. Fatigue
2. Stress (noise, glare, vibration, temperature, motion, etc.)
3. Visual acuity and perception
4. Training level
5. Experience level
6. Motivation level
7. Position of lookouts
8. Physical/psychological stress.

During special lookout/scanner eye movement and performance tests, vigilance, visual perception, experience level, and lookout positions were measured. These results are being quantitatively analyzed to determine their effects on performance. Experienced versus novice lookouts were used during the 1981 experiment in an attempt to identify distinguishable and trainable qualities of good searchers as described in Section 2.6.2. Validation of two visual perception and reading comprehension tests is being attempted to determine a lookout's detection ability. In addition, subjective data from the 1980 and 1981 experiments is being used to make a qualitative assessment of lookout performance. These human factors effects will be presented in a separate report.

1.3.3 Secondary Parameters. The eight remaining variables are either a function of the search unit type, search incident, or are continually changing during the search operation. The parameters under consideration, but not as primary independent variables, are:

1. Number of lookouts
2. Target movement and aspect
3. Relative wind direction
4. Sun's relative bearing

5. Lookout briefings
6. Visual aids.

From this set of variables, the sun's relative bearing is the only one analyzed to determine its effect on conduct of a visual search. Although not considered in this analysis of visual detection, target movement can be a critical factor in overall probability of success in a search.

1.4 Summary

Few investigators have collected visual search data, and the tests conducted have omitted potentially significant sweep width variables. Of the 25 variables listed above, only five are used at present and the magnitude of their influence is uncertain. Thus, World War II visual search techniques, which have been updated only from sighting report data collected 24 years ago (Reference 4), are utilized in SAR planning. The Reference 4 evaluation which updated the Reference 1 sweep width tables (visual detection model), did not include such essentials as search unit type, time on task, target color, and target-missed information, and no data was evaluated from surface search units. Also, the Reference 4 data was not gathered during a controlled experiment but was obtained from sighting reports from Coast Guard surface vessels and aircraft on various operational missions and exercises. Finally, the sweep width tables of Reference 1 do not include persons in the water, and all target boats 30 feet or less in length are grouped into one category.

The need for a reevaluation of the SAR Manual sweep width tables is apparent, both from the standpoint of improving their accuracy, as well as determining whether additional parameters not considered in the development of these tables may have a significant influence on sweep width. Thus, this series of experiments has determined those environmental, search unit, and target characteristics that influence the search performance of boats, cutters, helicopters, and fixed-wing aircraft in detecting persons in the water, life rafts, and various sizes of boats. Using the significant parameters, statistically sound computerized and manual visual detection models will be

developed from data collected. The experiments described in this report focused on the performance of these search units in detecting 16- to 41-foot boats, life rafts, and persons in the water (PIW).

1.5 Scope of Effort

Details concerning the level of effort and time required to plan, conduct, and analyze such experiments have been tabulated previously for the fall 1978 experiment. Readers interested in this information should refer to Sections 1.5 and 1.6 of Reference 5.

1.6 Acknowledgements

The assistance provided by the following POD/SAR Project personnel in the collection and preparation of data for analysis is greatly appreciated: M. Light, D.F. Cundy, E.L. Presher III, D.L. Good, M.L. Everson, and R.W. Fortin.

The cooperation and assistance provided by all the participating Coast Guard units, stations, and commands, without which these experiments could not have been conducted, is greatly appreciated.

The exercise conduct, reconstruction, and data analysis support provided by the following Analysis and Technology personnel is also gratefully acknowledged: R.A. Bemont, R.C. Angell, M.S. Murphy, D.B. Bouthilette, J.R. Gaynor, G.A. Armstrong, A.C. Christian, C.L. Collis, and M. Seibel.

CHAPTER 2
THE EXPERIMENTS

2.0 GENERAL DESCRIPTION

2.1 Visual Detection Experiments

2.1.1 SRU Resources. Numerous surface vessels and aircraft participated in the visual detection experiments conducted in Block Island Sound and off Panama City, Florida. A brief description of the characteristics of each type SRU and a list of the individual participants are given in Tables 2-1, 2-2, and 2-3. The SRU types shown in Table 2-1 were selected based upon the Coast Guard's historical use of resources for SAR searches. Based upon 1980 SAR statistics, the SRU types shown in Table 2-1 represent greater than 99 percent of the resources used for Coast Guard SAR searches.

The search area was controlled; depending upon environmental conditions, it was varied from a minimum of 82 square kilometers (24 square nautical miles) to a maximum of 3457 square kilometers (1008 square nautical miles). The center of the search area, the direction of its major axis, and the area size are shown in Figures 2-1 and 2-2 along with locations of microwave tracking system (MTS) stations used during the experiments.

A total of seven experiments are represented in the data base. Table 2-4 provides the salient characteristics of each experiment. The vast majority of the data was acquired during the five experiments in Block Island Sound. The Winter 1981 Detection Experiment was conducted off Panama City, Florida, to run a check on the visual data collected in Block Island Sound. The data collected during experiment No. 2 was an "add-on" to a leeway drift experiment, with drifting rafts providing visual targets of opportunity for an HC-130 aircraft.

To make maximum use of resources (aircraft required a much lower target density than surface craft because of higher search speeds), surface craft and aircraft were scheduled on different days. On surface craft

TABLE 2-1. SEARCH UNIT CHARACTERISTICS

SRU TYPE	CREW SIZE	MAX SPEED (knots)	NAVIGATION EQUIPMENT	HEIGHT OF EYE (ft)
SAR boats				
41 ft	3	20	LORAN C, Radar, Fathometer, DF*‡	10
44 ft	3	10	Radar, Fathometer, DF*‡	10
Cutters				
82 ft	8	18	LORAN A or C, Radar, Fathometer, DF*‡	25
95 ft	12	15	LORAN A or C, Radar, Fathometer, DF*‡	20
210 ft	70	18	LORAN C, Radar, Fathometer, DF*‡	46
Helicopters				
HH-52A	3	90	TACAN, LORAN C	--
HH-3F	4	115	TACAN, LORAN C, Radar, Doppler Computer	--
Fixed-wing aircraft				
HU-16E	5	145	TACAN, LORAN A or C, Radar	--
HC-130	9	300	TACAN, LORAN A, Radar, INS†	--
HC-131	7	180	TACAN, LORAN C, Radar,	--

*DF -- Direction Finder.
†INS -- Inertial Navigation System.
‡Not used in experiments.

TABLE 2-2. PARTICIPATING UNITS/FACILITIES IN BLOCK ISLAND SOUND EXERCISES

CG Light Station Montauk, NY
CG Light Station Race Rock, New London, CT
CG Light Station Watch Hill, RI
Naval Underwater Systems Center (NUSC) Lab Annex, Fishers Island, NY

CG Air Station Brooklyn, NY: CG 1442, CG 1368, CG 1424, CG 1391, CG 1402, CG 1398, CG 1455, CG 1359, CG 1410, CG 1388, CG 1384 (HH-52A)
CG Air Station Cape Cod, Otis AFB, MA: CG 1473, CG 1479, CG 1484, CG 1476, CG 1494 (HH-3F); CG 7254, CG 7250, CG 1293, CG 7213, CG 7214, CG 1016 (HU-16E)
CG Air Station Clearwater, FL: CG 1351, CG 1340 (HC-130B)
CG Air Station Elizabeth City, NC: CG 1340, CG 1347, CG 1344, CG 1342, CG 1339, CG 1346, CG 1341 (HC-130B); CG 1504 (HC-130H)

CGC Cape Fairweather (WPB 95314), New London, CT
CGC Cape George (WPB 95306), Falmouth, MA
CGC Cape Horn (WPB 95322), Woods Hole, MA
CGC Point Bonita (WPB 82347), Falmouth, MA
CGC Point Jackson (WPB 82378), Woods Hole, MA
CGC Point Knoll (WPB 82367), New London, CT
CGC Point Turner (WPB 82365), Newport, RI
CGC Point Wells (WPB 82343), Montauk, NY

CG Station Block Island, RI: CG 41441, CG 44349
CG Station Montauk, NY: CG 41342, CG 44348
CG Station New London, CT: CG 41413, CG 41337, CG 41350
CG Station Point Judith, Narragansett, RI: CG 41385, CG 44352, CG 44321 CG 44349
CG Station New York, Governors Island, NY: CG 41411
CG Station Sandy Hook, Fort Hancock, NJ: CG 41383
CG Station Short Beach, Freeport, NY: CG 41349
CG Station Eatons Neck, Northport, NY: CG 41422

TABLE 2-3. PARTICIPATING UNITS/FACILITIES IN PANAMA CITY EXERCISES

Naval Coastal Systems Center (NCSC), Panama City, FL
Tyndall Air Force Base, FL
U.S. Army Aeromedical Research Laboratory (USAARL), Fort Rucker, AL
CG Aviation Training Center, Mobile, AL: CG 1450, (HH-52A); CG 5786, CG 5788 (HC-131)
CG Air Station Clearwater, FL: CG 1481, CG 1467 (HH-3F); CG 1351 (HC-130).
CG Air Station New Orleans, LA: CG 1488 (HH-3F)
CGC Dependable (WMEC 626), Panama City, FL
CGC Point Lobos (WPB 82366), Panama City, FL
CGC Point Verde (WPB 82311), Pensacola, FL
CG Station Panama City, FL: CG 41345, CG 41457

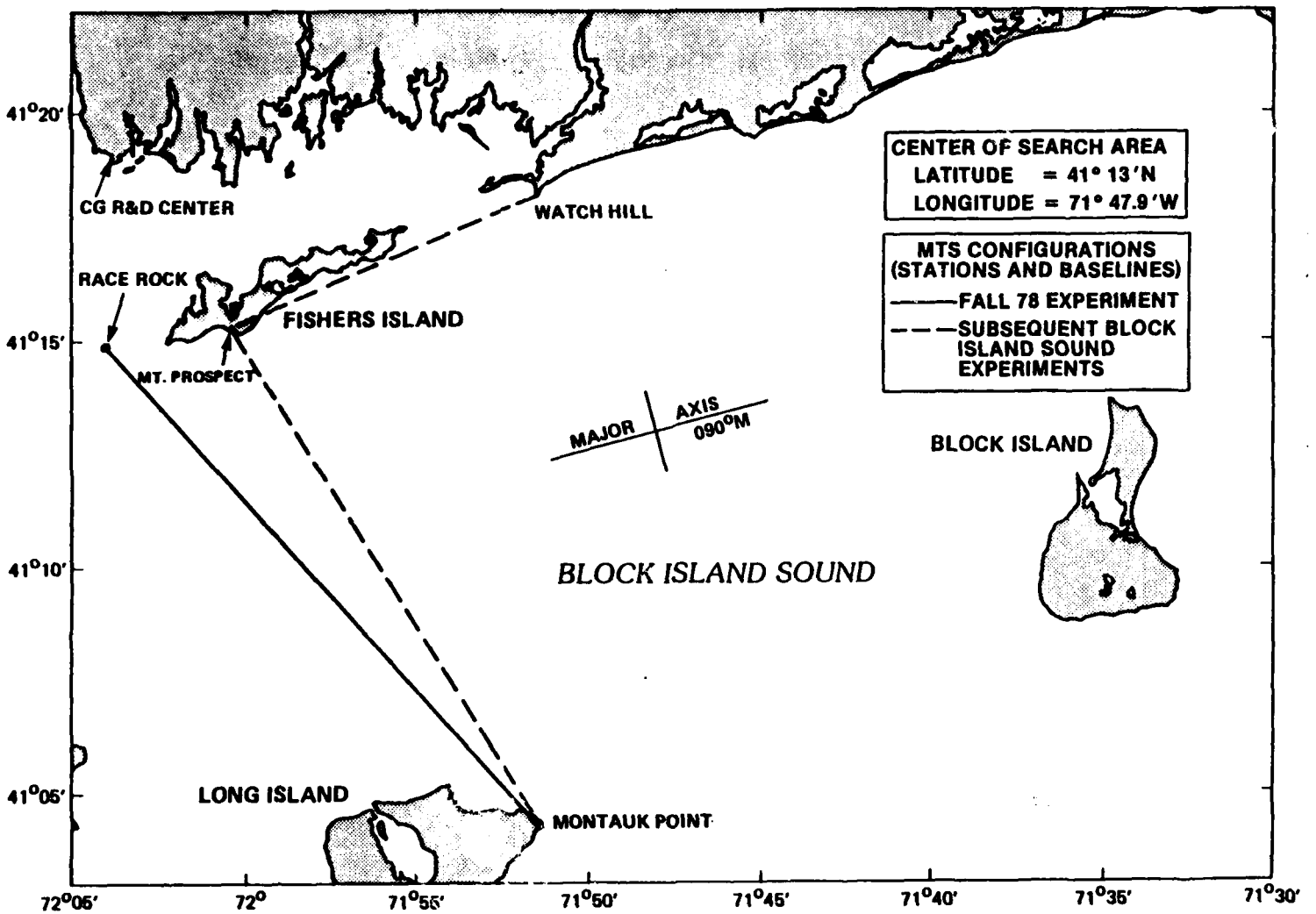

FIGURE 2-1. BLOCK ISLAND SOUND SEARCH AREA AND MTS CONFIGURATION

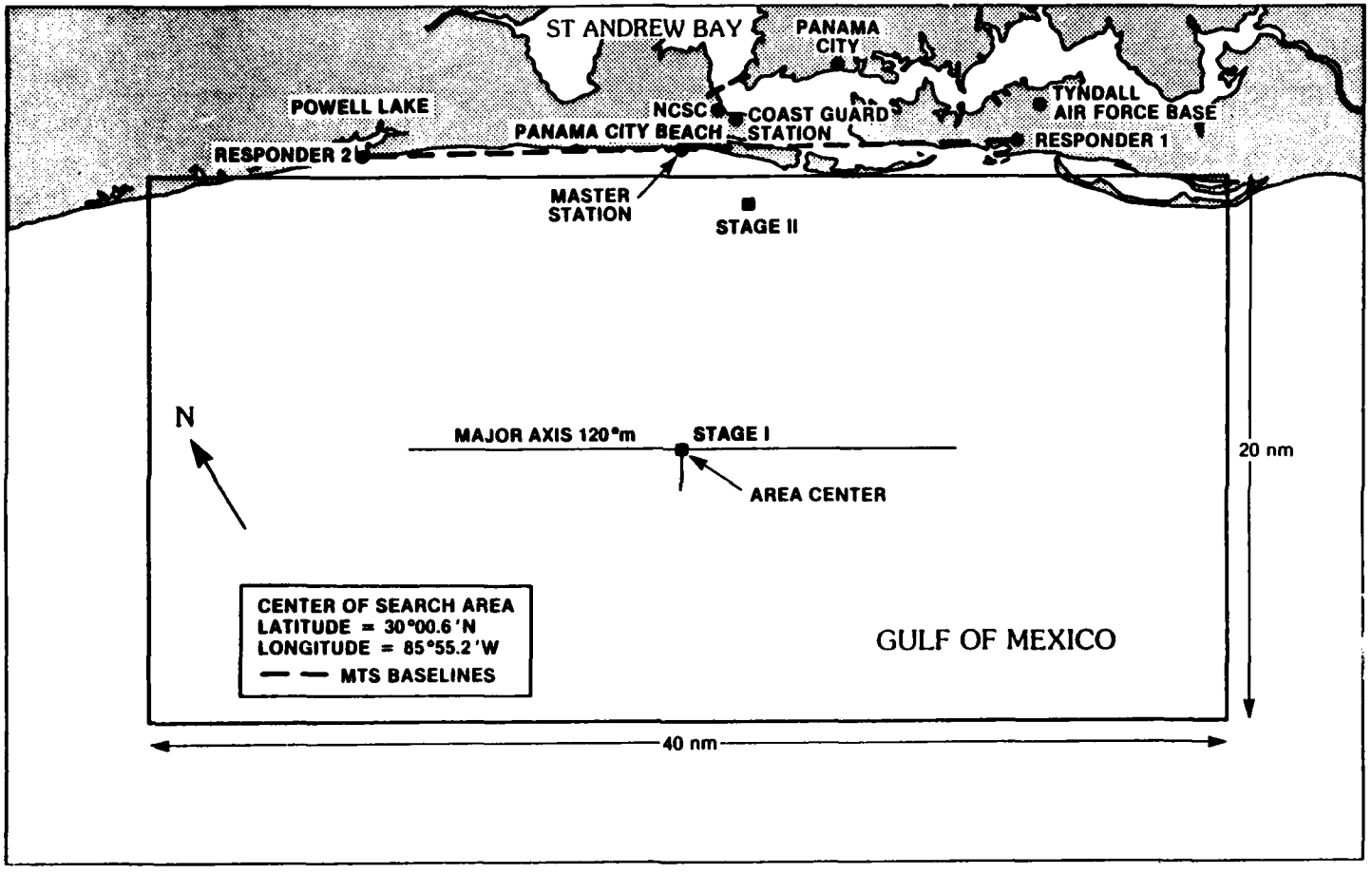

FIGURE 2-2. PANAMA CITY SEARCH AREA AND MTS CONFIGURATION

TABLE 2-4. DESCRIPTION OF INDIVIDUAL EXPERIMENTS

EXPERIMENT NO.	INCLUSIVE DATES	LOCATION	TARGET TYPES	TOTAL DETECTION OPPORTUNITIES
1	11 Sept - 6 Oct 1978	Block Island Sound	White 16-foot boats	695
2	26 - 31 Jan 1979	Atlantic Ocean off Florida Coast	Life rafts	12
3	16 April - 22 May 1979	Block Island Sound	16-foot boats; life rafts	960
4	17 Sept - 25 Oct 1979	Block Island Sound	16-foot boats; life rafts	566
5	14 April - 22 May 1980	Block Island Sound	16-foot boats; life rafts; persons in water	862
6	29 Sept - 6 Nov 1980	Block Island Sound	41-foot boats; life rafts; persons in water	1029
7	22 Jan - 27 Feb 1981	Panama City, Florida	41-foot boats; 16-foot boats; life rafts; persons in water	792

days, two cutters and two boats conducted searches; on aircraft days, a maximum of two helicopters (HH-3F and HH-52A) and two-fixed wing aircraft (HC-130 and HU-16E or HC-131A) conducted searches.

Appropriate time separation between surface units and altitude separation between helicopters and fixed-wing aircraft were provided. Because of equipment failure, actual SAR missions and other commitments, not all of the search units were available on some days during the experiment.

2.1.2 Target Selection. Targets used for these experiments included:

- o White 16-foot boats,*
- o Blue 16-foot boats,*
- o White 41-foot boats,†
- o Orange and black 4- to 6-man life rafts with canopies,
- o Orange 7-man life rafts without canopies,
- o Black 7-man life rafts without canopies, and
- o Persons in the water (PIWs).

These targets were selected for the following reasons:

1. They represent the objects of a large percentage of SAR searches. Life rafts and boats less than 40 feet long are the objects of greater than 80 percent of SAR searches, and, when boats less than 65 feet long are added, the total increases to greater than 90 percent.

2. These targets are the most difficult daylight visual targets to locate and generally require aid faster than larger targets. Therefore, improving detection performance for these targets is most important.

3. While historically PIWs have been the subjects of only 2 percent of fixed-wing aircraft and cutter searches and less than 10 percent of helicopter and SAR boat searches, little, if any, quantitative guidance on searching for PIWs is presently available. Also, a very limited amount of time is available to locate and render aid to a PIW; therefore, a search conducted must be the most timely and effective possible.

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*"16-foot boats" were actually open pleasure boats between 13 and 19 feet long.

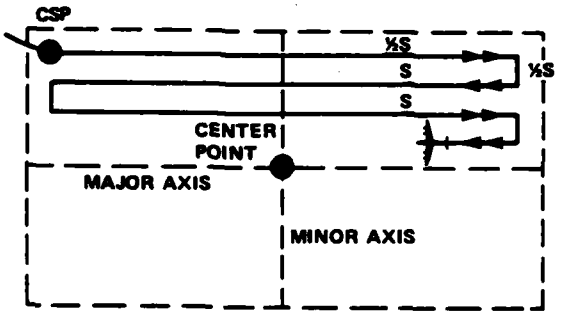
†"41-foot" boats were Coast Guard UTBs used as targets of opportunity.

4. The life rafts utilized were selected because they represent survival rafts commonly used by pleasure and commercial craft. They are also the same type of rafts that are the basis for the life raft sweep width tables in the SAR Manual.

2.2 Search Tracks and Target Placement

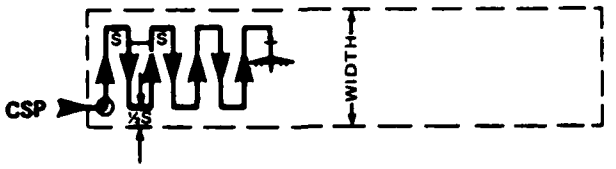
Search unit tracks were laid out in the same manner as they would be for actual SAR missions. Two basic search patterns (see sketches 1 and 2) were used: parallel and creeping line (Reference 1). In order to make best use of onboard navigational equipment (see sketches 3 and 4), some units slightly altered the basic patterns.

2.2.1 Parallel Search. Search legs were parallel to the direction of the major axis of the search area and were separated by a specified track spacing. Commence search points (CSP) and outer search legs were one-half the track spacing (S) inside the perimeter of the search area.



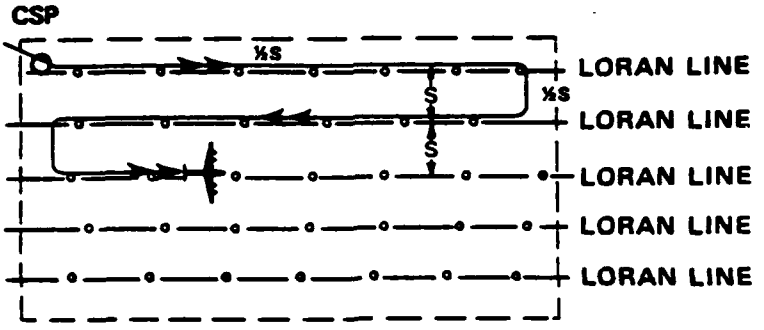
SKETCH 1. PARALLEL SEARCH PATTERN

2.2.2 Creeping Line Search. Search legs were perpendicular to the direction of the major axis of the search area and were separated by a specified track spacing. Start points and outer search legs were one-half the track spacing inside the perimeter of the search area.



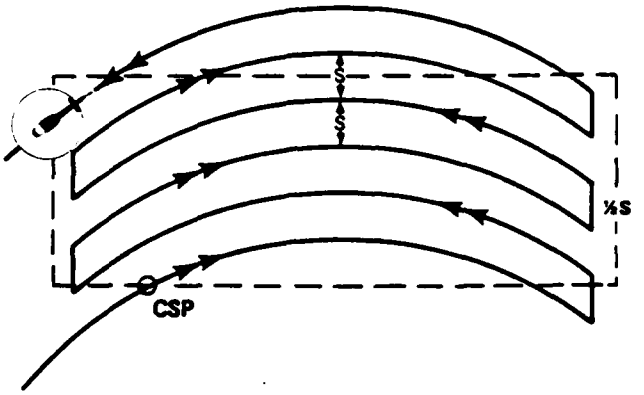
SKETCH 2. CREEPING LINE SEARCH PATTERN

2.2.3 Cutters with LORAN C (HU-16E with LORAN A or C; HH-52A and HH-3F with LORAN C). The two basic search patterns were skewed with respect to the major axis so that the cutters could follow LORAN C lines, and the HU-16E aircraft could follow LORAN A or C lines.



SKETCH 3. LORAN SEARCH PATTERN

2.2.4 HH-52A Helicopters with TACAN. The two basic search patterns were skewed so that the HH-52A could navigate along arcs of constant range from the Norwich TACAN station (modified parallel search) and from the Hampton TACAN station (modified creeping line search). TACAN is a distance-measuring navigation net and was the only means of navigation available for an HH-52A search in the 1978 and 1979 Block Island Sound experiments.



SKETCH 4. TACAN SEARCH PATTERN

2.2.5 Track Spacing and Target Placement. In all cases, prior to the exercise, track spacing had been estimated for "good" environmental conditions (unlimited visibility, low wind speed, low cloud cover) and "poor" environmental conditions (low visibility, high wind speed, high cloud cover). When appropriate, changes in track spacing were made by the On-Scene Commander (OSC). Under good conditions, track spacings used were 8 miles for 41-foot boats, 4 miles for 16-foot boats and life rafts, and 0.5 mile for PIWs. With poor conditions, track spacings of 2 miles were used for 16-foot boats and life rafts and 0.5 mile for PIWs. Targets were positioned at predetermined locations by the monitoring vessel. Each day, a microwave tracking system (MTS) was used to accurately determine the initial location of anchored targets. In addition, at the end of each search day, target locations were again checked to ensure that the targets had remained stationary. On some occasions the end-of-day checks indicated that targets had drifted from their initial positions. These targets were then eliminated from the data base since their positions during the search could not be determined to an accuracy of less than 0.1 nautical mile. During the Fall 1980 and Winter 1981 Experiments, some 41-foot boat and life raft targets were allowed to drift during periods of good weather and low surface current velocities.

The number and positions of the targets relative to planned search tracks were designed to provide about six detection opportunities per

hour. This number was a compromise between the desire to obtain as much data as possible in a given time interval and the need to not bias the results of the experiment by overloading the lookouts.

2.2.6 Search Conduct. When possible, searches were conducted in the same manner as actual SAR missions. Twenty-four hours prior to each search, the Coast Guard R&D Center released a SAR exercise (SAREX) message to each SRU, providing it with the detailed information necessary to prepare for and conduct the desired visual searches. Each morning, targets were towed to the search area and positioned by the monitoring vessel (which also served as a command post for the OSC). After the targets were positioned, the searchers proceeded to designated start positions and initiated search procedures as described in the SAREX message. Each SRU had at least one observer onboard. It was the observer's task to record sighting information, ensure that the search plan was being adhered to (e.g., see that searchers did not deviate from the search track to classify a sighting or did not go through the search area before or between search runs), note any artificial influences which might bias the test results, gather human factors information, and record any suggestions for improving the experiment.

Meteorological visibility, wave height, wind speed, and cloud cover were collected at several different times each day by the OSC and SRUs.

For each target sighting, the following data was recorded by the observer onboard each search unit:

1. Time target was sighted,
2. Approximate range and relative bearing to target,
3. Relative bearing of sun,
4. Searcher course, speed, and altitude,
5. Target color, and
6. Position of lookout making sighting.

2.3 Reconstruction

Throughout each experiment, the microwave tracking system (MTS) was used to locate the position of SRUs and targets. A master transmitter unit was used in conjunction with up to two secondary units to obtain fixes on the position of each SRU as it searched. The OSC's monitoring vessel was also tracked so that when targets were set their positions could be marked. Each search unit was equipped with a mobile transponder to re-transmit signals received from the master transmitter.

Location of the master and secondary units varied from the 1978 experiment to the 1979 experiments, with each subsequent configuration providing better tracking capability for the system over a larger area. In the fall 1978 experiment, the master unit was located at Race Rock light station with a single secondary unit at Montauk Point light station, forming one "baseline". The system was upgraded for the spring 1979 experiment by the addition of another secondary unit at Watch Hill light station and moving the master unit to Mt. Prospect on Fishers Island. During the fall 1979 and spring and fall 1980 experiments, the MTS configuration was the same as during the spring 1979 experiment, but higher gain antennas were used to increase the area coverage. A desktop calculator (HP 9845) was interfaced with the MTS in 1980 to control the tracking operation and automatically reconstruct search tracks. At Panama City, the automated system worked well using baselines between the master unit at Panama City Beach and secondary units at Tyndall Air Force Base and Powell Lake. Real-time monitoring of the search operations was provided using the cathode ray tube (CRT) display as illustrated in Figure 2-3. By recording the SRU track and target position data on cassette tapes, reconstruction time was reduced 67 percent.

Figures 2-1 and 2-2 show the MTS geometries used during each of the three experiments.

Figure 2-4 illustrates the MTS operation as described below:

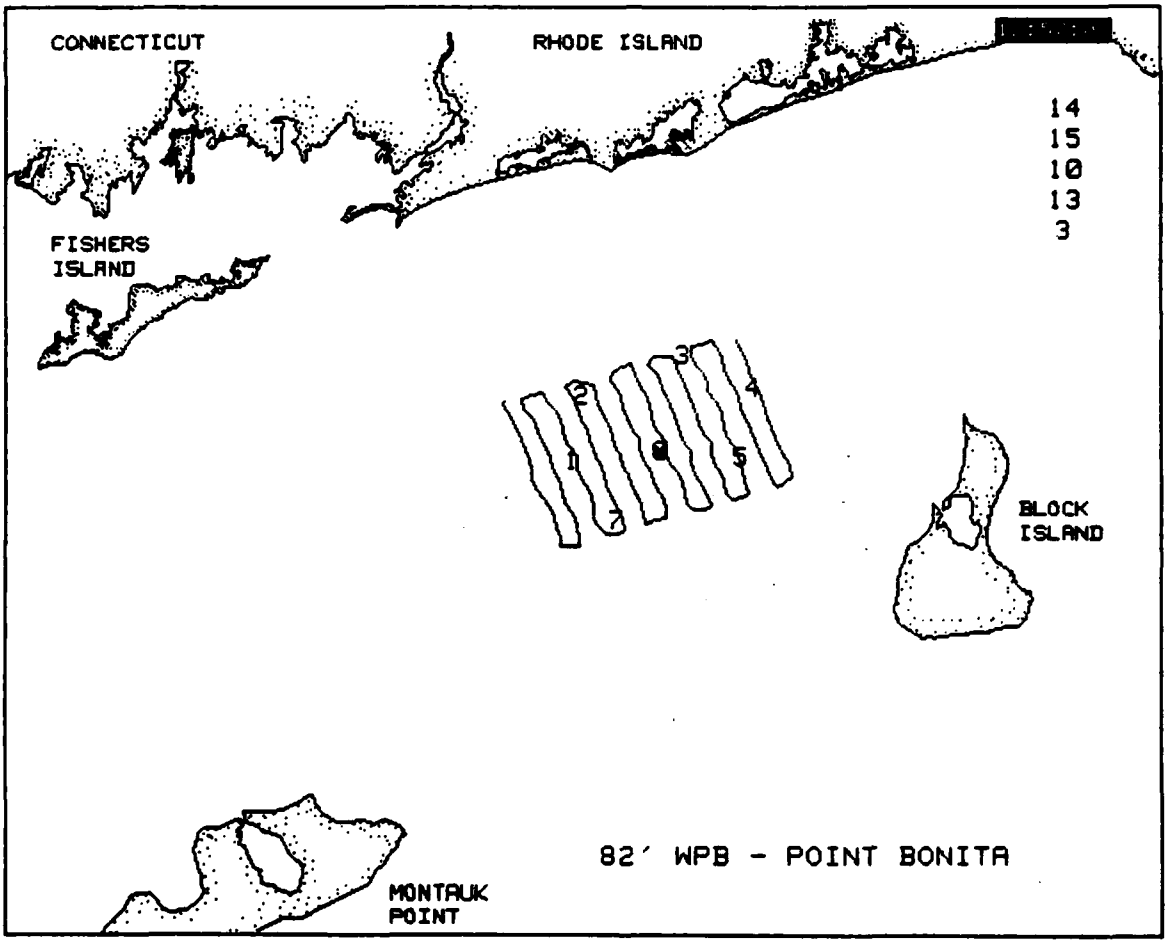


FIGURE 2-3. REAL-TIME SEARCH DISPLAY

1. The master unit transmitted a pulse which triggered the transponder on a particular mobile unit.

2. The transponder in turn transmitted a pulse which triggered a secondary unit and was also received at the master unit.

3. The secondary unit transmitted a pulse which was received back at the master unit.

The master unit measured two time delays: one corresponding to twice the distance from its location to the transponder (L_1), and one corresponding to the loop range ($L_1+L_2+L_3$). The output of the master unit was a hard copy of time, distance from the master unit to the SRU, and half loop range. With ideal geometries, the manufacturer advertises range accuracies with the MTS within ±3 meters. With the addition of a second baseline for the

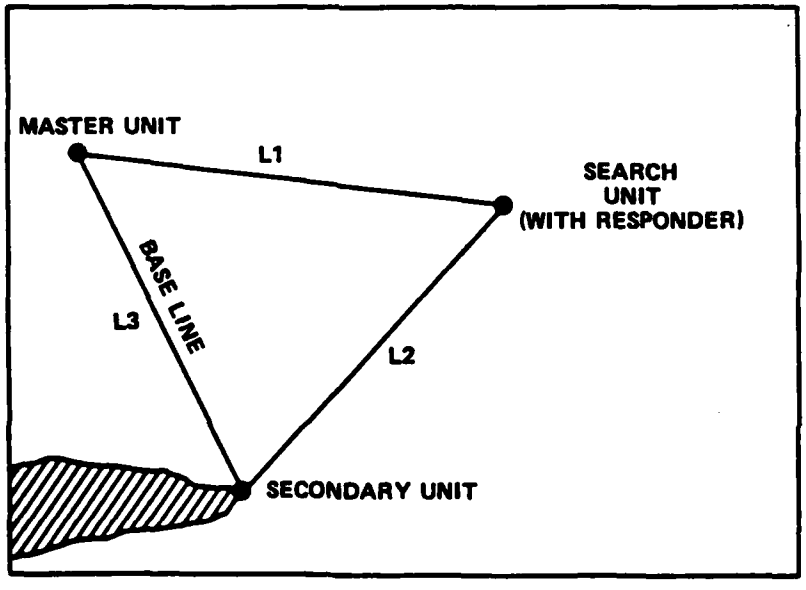


FIGURE 2-4. MICROWAVE TRACKING SYSTEM OPERATION PRINCIPLE

1979, 1980, and 1981 experiments, MTS positions could be checked against both baselines and ambiguous solutions could be resolved, thus the potential for errors and inaccuracies was reduced. With the interfacing of the HP 9845B, the MTS output was further refined to include time, actual ranges, and latitude and longitude, as well as a real-time display on the CRT and data storage on cassette tapes.

The monitor boat, which positioned targets, was fitted with a transponder so that the MTS could record the position of targets at the beginning and end of each experiment day. SRUs (except HC-130 in 1978, 1979, and spring 1980 experiments) were fitted with transponders so that their positions could be monitored by the tracking system. The position of surface SRUs was recorded every three to five minutes and the position of aircraft SRUs was recorded every minute in order to provide track information for reconstruction. Conservatively, the upper bound of errors in lateral range using this system was ±0.1 nautical mile.

LORAN A and C were also used for reconstruction of SRU tracks when microwave tracking information was unavailable or incomplete. The Inertial Navigation System (INS) was used as an aid in reconstructing the HC-130 tracks. On side-looking airborne radar (SLAR) equipped HC-130 aircraft, the INS and SLAR information was used in conjunction to reconstruct search tracks.

On occasion, microwave tracking information was not available due to equipment failure or weather. On these occasions, the analyst used manual reconstruction when good navigation information was available. Manual reconstruction relied upon LORAN A, LORAN C, visual and radar fixes, SLAR recordings, INS positions, and dead reckoning. In some instances, the microwave tracking system provided time and direct range from the master unit to the SRU but did not provide half-loop range. In these situations, the SRU could be located at successive times on arcs of circles centered at the master unit. Knowing the speed and desired track of the SRU, its track across these arcs could be reconstructed. Thus, for manual reconstruction, it is felt that representative accuracies in lateral range were also ±0.1 nautical mile. Since two baselines and larger antennae were used with the MTS after the spring 1979 experiment, manual reconstruction was only necessary for HC-130

aircraft that did not have transponders onboard. While in some cases, lateral range inaccuracies may have exceeded 0.1 nautical mile, there is no reason to believe that any bias in lateral range determination existed. Thus, these inaccuracies would not cause a change in the best estimate of performance, but only contribute to a larger variance.

2.4 Navigation Inaccuracies

As shown in Figure 2-3, the MTS provided accurate information concerning actual SRU conduct of search patterns. Also, the intended SRU search patterns were known and stored by the MTS. Therefore, with this information, it was possible to determine the accuracy with which SRUs completed the search patterns as intended. The accuracy of an SRU's execution of a search plan will not affect P(x) [the probability of detecting a target with a lateral range (x) from a searcher]; however, it will affect POD (the cumulative probability of detecting a randomly distributed target in the search area upon completion of a search of the area).

The most extreme example of this effect on POD would be where the SRU, because of navigation inaccuracies, did not conduct a search in the assigned area. As shown in Chapter 3, there were few examples of such extreme navigation inaccuracies during the experiments. However, smaller navigation inaccuracies can also reduce POD by leaving "holes" in the coverage of some areas, while providing redundant coverage of other areas. To quantify the navigation inaccuracies of SRUs, the following statistics were developed from the aggregate of MTS reconstructed searches for all experiments for each SRU/navigation method combination:

1. Percentage of searches that were conducted as assigned (i.e., the SRU commenced the search at the correct start point and completed the correct pattern within the search area).

2. For those searches that were conducted as assigned, the following additional statistics were developed:

- Accuracy of SRU in reaching search start point in along-track (y) and cross-track (x) directions,
- Deviation of SRU headings from intended track, and
- Deviations in track spacing from desired track spacing for near (adjacent) and far (non-adjacent) tracks.

For each SRU/navigation method combination, the influence of poor weather and small track spacings (<1 nautical mile) on navigation inaccuracies were also investigated. The results of this analysis are presented in Section 3.9.

2.5 Data Collection Techniques and Data Accuracy

Each SRU had at least one observer onboard at all times during the experiment. The major responsibility of the observer was to record all pertinent data for each target sighting; the time of day, estimated target range, and estimated relative bearing of the target were of critical importance. (Sighting time, relative bearing, and range estimates of targets were the prime parameters used to decide whether a sighting was a valid detection.)

Accordingly, all SRUs synchronized watches with the OSC at commencement of the first search. This was especially critical for high-speed search aircraft.

A daily record of all environmental data was maintained by the OSC and the observer on each SRU. Wind speed and direction were recorded using a hand-held anemometer onboard the OSC vessel and an installed anemometer or an estimate onboard the SRU. Wave height (swell), cloud cover, and visibility were estimated by the OSC and by the crew on each SRU. During the Winter 1981 Experiment at Panama City Florida, an instrumentation package was made available by Naval Coastal Systems Center (NCSC) to provide reference values for wind speed, wind direction, swell height, and visibility. These measurements were made at Stages I and II located in the vicinity of the search area. Through this reference data, it was possible to quantify the uncertainty in

SRU measurements of these environmental parameters. This data, along with its contributions to uncertainties in sweep width estimates, are presented in Section 3.8.

2.6 Experiment Design Considerations

On each day of the experiment, up to four SRUs searched simultaneously and provided a number of replications for each set of environmental conditions encountered. Boats and cutters searched simultaneously on each surface craft search day, and both helicopters and fixed-wing aircraft searched simultaneously on each aircraft search day. This procedure provided data for a direct comparison of different type search units under the same environmental conditions. All units were provided with the same information and similar search instructions so as not to bias exercise results in favor of any particular type SRU. Controllable factors such as search speed and search pattern (parallel search or creeping line search) were randomized to minimize bias due to unknown or unmeasurable factors. For example, to minimize the chance that any changes in performance attributed to a change in search speed would be caused by a change in some unknown factor, each SRU was assigned a high speed for one search and a low speed for the other. The order in which these speeds were assigned was alternated between successive units. In addition, search patterns were almost always changed between consecutive searches. Thus, a variety of search speeds for each pattern was obtained. Helicopter and boat crews were generally changed on successive days while fixed-wing aircraft crews and cutters changed weekly so that performance would be indicative of SRU type rather than a specific crew.

2.6.1 Aircraft Altitude Investigation. Because a wide range of altitudes could be used in searching for SAR targets and the significance of altitude was not determined during the 1978 and 1979 experiments, special altitude tests were conducted in spring and fall 1980. The goal was to determine optimum search altitudes for life rafts, PIWs, and 16-foot boats. To accomplish this, helicopters and fixed-wing aircraft were instructed to conduct trackline searches for several targets of similar description anchored

along an assigned flight path. These searches differed from the other visual searches in that lookouts were instructed to expect targets to appear in the sector directly ahead of the aircraft. This was done to minimize the variability in detection ranges due to factors not related to altitude (i.e., scanning pattern differences, etc.).

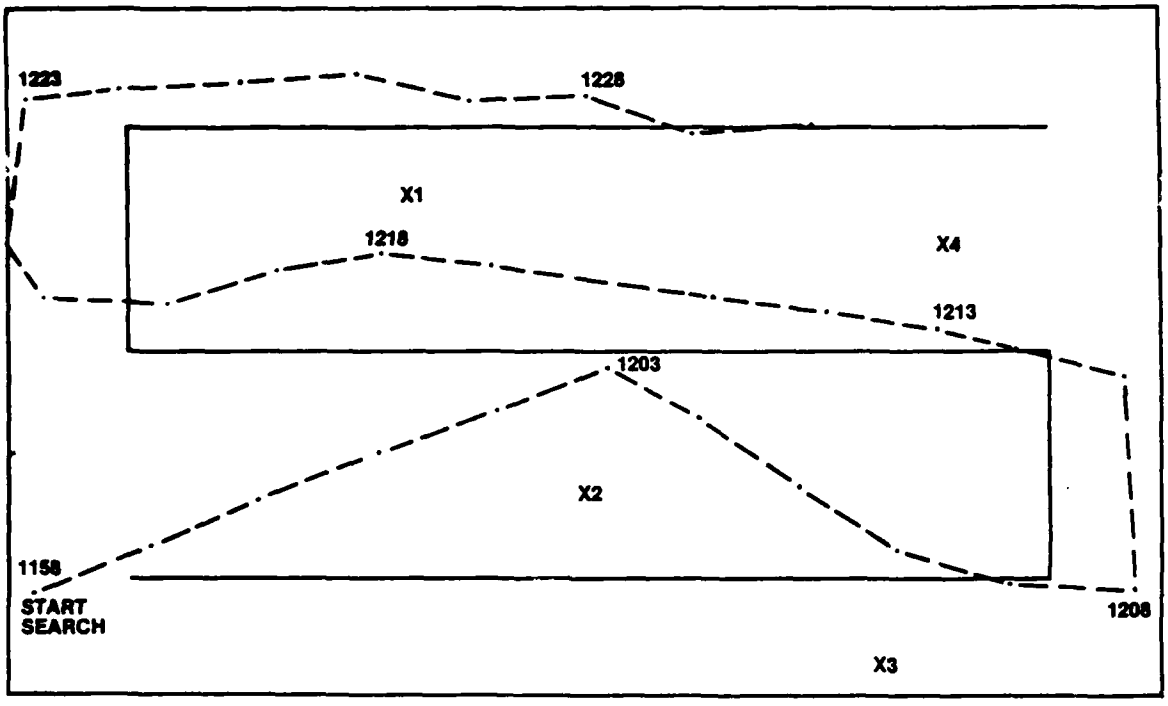
Search altitudes assigned the aircraft ranged from 500 to 6000 feet when searching for boats and life rafts and 200 to 1100 feet when searching for PIWs. The altitudes were increased in increments from the lowest altitude until target sightings no longer occurred. Lookouts were instructed to report the initial sighting of each subject target on each repetition of the trackline search. Therefore, the altitude that provided a maximum first-sighting range for each target type could be determined. Due to the nature of this special data collection effort, these tests were conducted in good weather during midday hours.

2.6.2 Lookout Performance Tests. To determine the qualities of a good lookout, a joint study is being conducted with the U.S. Army Aeromedical Research Laboratory (USAARL), Fort Rucker, Alabama. USAARL has successfully conducted investigations of the visual workload of aviators during terrain flight, which requires maximum time observing outside the cockpit as does search, as described in Sanders et al (Reference 6). Since a very limited amount of search scanning guidance is available in the National SAR Manual (Reference 1) and the Shipboard Lookout Manual (Reference 7) that concentrates on scan patterns of aircraft and surface vessel lookouts, respectively, these tests were conducted to determine the effect of eye movements in lookout/scanner performance. A NAC Eye Movement Recorder used in conjunction with a 16-millimeter, high-speed motion picture camera recorded the scan patterns of both experienced and novice lookouts during the Winter 1981 Detection Experiment. A battery of aptitude tests was administered to selected cutter lookouts and helicopter scanners. The NAC Eye-Movement Recorder was worn by these lookouts and scanners to determine where their eyes were fixated with respect to the scene being viewed. The target detection-versus-opportunity ratio was used as a performance measure for each subject and correlated with his aptitude, experience, vigilance, and scanning patterns to determine good search qualities.

Search units used for the eye-movement study were HH-3F helicopters and 82- and 210-foot cutters. A team of three USAARL aviation psychologists/behavior science technicians were onboard each search unit conducting the tests. The equipment was rotated among cutter crewmen every 30 minutes and among helicopter personnel approximately every 15 minutes during a search. One aircraft and one surface vessel were tested simultaneously on eight days. A separate report will be prepared on the scanning procedures of Coast Guard lookouts with recommendations for improving their performance.

2.6.3 1 POD Determination. From the 1978 and 1979 Block Island Sound experiments, a comparison of the demonstrated POD of cutters, boats, helicopters, and fixed-wing aircraft to the National SAR Manual POD predictions was made to evaluate the need for alternative predictive models. The POD curves (Reference 1) are based upon work done during World War II and are currently used by Coast Guard search planners. Among the assumptions associated with this theoretical model are uniform coverage of the search area using precise navigation which, as Section 3.9 illustrates, is seldom attained. Secondly, the model assumes uniform distribution of the targets in the search area, yet the search plan is drawn around a position of highest probable location called datum. Thirdly, the instantaneous probability of detection is assumed inversely proportional to the cube of the sighting range.

During 322 searches conducted by cutters, boats, helicopters, and fixed-wing aircraft, 966 life raft and 16-foot boat targets of opportunity were provided (see Reference 8). From each search, an actual POD, the ratio of targets detected to total targets in the search area, and coverage factor (C) were determined. Figure 2-5 shows a search conducted with an actual POD of 50 percent. The coverage factor (C) is equivalent to the sweep width (W), which is a function of the SRU type, target type, and environmental conditions, divided by the assigned track spacing (S) for the search. These estimates of sweep width were generated based upon the methods used in Reference 5. The raw POD-versus-C data for each SRU type/target type combination was plotted using a computer binning routine which sorts data with the assumption that the dependent variable (POD) is a monotonic function of the independent variable (C). Curves were fit to the binned, empirical data using



NOTES:

1. **HU-16E SEARCHED FOR 16-ft BOAT TARGETS (1, 2, 3, 4) AT 1000-ft ALTITUDE AND 120-knot SEARCH SPEED USING 4-nm TRACK SPACING.**
2. **ENVIRONMENTAL CONDITIONS: VISIBILITY 4 nm, WIND SPEED 6 knots, CLOUD COVER 100%, SWELL HEIGHT 0 ft.**
3. **ACTUAL POD OF SEARCH WAS 50%: TARGETS 1 AND 4 WERE SIGHTED, 2 AND 3 WERE MISSED.**

FIGURE 2-5. ACTUAL AND INTENDED LORAN A SEARCH TRACKS FOR HU-16E (FIXED-WING AIRCRAFT)

a weighted least squares regression computer routine. Fitting functions $POD=1-e^{-KC}$ and POD=Tanh(KC) (where K represents an arbitrary fitting constant), as well as the inverse cube law and random search curves, were selected for the regression for they exhibit characteristics that search theory predicts for the POD-versus-C relationship. As seen in Reference 8, these comparisons showed that the actual POD-versus-C data was best fit by the $POD=1-e^{-KC}$ and POD=Tanh(KC) curves that fell below the inverse cube law curve and above the random search curve. Further, it was shown that the distribution of targets within the search area had a significant effect on POD, with a distribution with a higher density around datum providing a higher POD (for the same C) than for a uniform target distribution within the search area. (It is noted, as explained in Reference 8, that this does not imply that P(x) should be influenced by target distribution within the search area.) For a detailed description of the results above, see Edwards et al (Reference 8). Further discussion of these results can be found in Section 4.2

2.6.4 Evaluation of Effects of Geographic Location of the Search Area and Target Location within the Search Area on P(x). Although it was not expected that the geographic location of the search area would influence P(x), the conduct of experiments in different locations provided an opportunity to confirm this expectation. This evaluation was conducted by including the location of the search (0 for Block Island Sound and 1 for Panama City) as an independent variable in the LOGODDS model for 16-foot boats and life rafts.

The location of the target within the search area has an influence on the number and nature of glimpse opportunities at the target that a scanner/lookout has. For a target in the central portion of the search area, the SRU's detection envelope (as defined by a combination of range and relative bearing around the SRU that contained greater than 90 percent of all target detections) passes through the target while the SRU is on a straight leg, and therefore a complete opportunity (all the glimpses at the target that theory assumes) is provided. For targets near the search area borders, the SRU may not be on a single leg as the SRU's detection envelope passes through the target but may be on as many as three different legs [for a creeping-line search (CS) or parallel search (PS) search pattern]. Therefore the number and distribution of glimpse opportunities for these targets is reduced from the

number of complete opportunities. Opportunities in border areas were therefore designated "incomplete opportunities". An evaluation of the influence of target location on P(x) was conducted by including target location within the search area (0 for complete opportunities and 1 for incomplete opportunities) as an independent variable in the LOGODDS model for 16-foot boats, life rafts, and PIWs.

2.7 Description of Experiment Conditions

2.7.1 Summary of Detection Opportunities. Table 2-5 provides a summary of the total SRU resources dedicated to this experiment in terms of search and mission hours. Search time is defined as the cumulative number of hours each SRU type spent searching only during the experiments. The total SRU mission time includes hours spent at and transitting to and from the test area except when engaged in other operational missions. Even though the total resource search hours spent on three years of experiments may seem extreme, they represent only 3 percent of the total hours (35,000) that Coast Guard units spends searching annually. The total number of detection opportunities is also given for each type of search unit.

2.7.2 Range of Environmental Parameters. An effort was made to conduct these experiments under conditions representative of those experienced during actual SAR missions. Table 2-6 shows the range of environmental conditions that existed during these experiments and the percentage of FY 1980 SAR missions that are represented by these conditions. In general, the environmental conditions not represented in these experiments are the poorer conditions (visibility <5 nautical miles, wind speeds >20 knots, and swell height >4 feet). These conditions are not represented in the data base for two reasons:

1. Conditions in the search area at these times of year infrequently reach these extremes, and

2. Degradation of conditions much beyond the values above would cause cancellation of the experiment for safety reasons and/or to prevent loss of or damage to the targets.

TABLE 2-5. SUMMARY OF SRU RESOURCES

SRU TYPE	TARGET TYPE	TOTAL SEARCH TIME (hr)	TOTAL MISSION TIME (hr)	TOTAL NUMBER OF DETECTION OPPORTUNITIES
Boats	16-foot boats	104.9	189.9	275
	41-foot boats	17.6	37.1	40
	Life rafts	74.4	133.5	260
	PIWs	75.7	131.5	341
Cutters	16-foot boats	176.8	418.1	432
	41-foot boats	24.9	54.1	45
	Life rafts	133.7	308.8	509
	PIWs	71.6	140.1	518
Helicopters	16-foot boats	55.0	227.5	415
	41-foot boats	11.7	78.2	34
	Life rafts	44.0	220.4	279
	PIWs	31.3	173.0	414
Fixed-wing aircraft	16-foot boats	37.0	173.2	405
	41-foot boats	9.2	30.4	44
	Life rafts	39.8	285.9	253
	PIWs	40.2	191.6	652

TABLE 2-6. RANGE OF EXPERIMENT ENVIRONMENTAL CONDITIONS

SRU TYPE	TARGET TYPE	RANGE OF ENVIRONMENTAL CONDITIONS*		
		VISIBILITY (nm)	WIND SPEED (knots)	SWELL HEIGHT (ft)
Surface craft	16-foot boats	3-20(85)	0-25(97)	0-5(92)
	Life rafts	1-18(93)	0-19(87)	0-3(78)
	PIWs	2-20(90)	0-21(94)	0-5(92)
	41-foot boats	10-15	4-17	1-3
Aircraft	16-foot boats	3-20(91)	0-20(90)	0-3(66)
	Life rafts	4-15(86)	0-30(97)	0-4(76)
	PIWs	4-15(86)	0-22(90)	0-3(66)
	41-foot boats	12-15	10-18	2-3

*Numbers in parentheses indicate the percentage of FY 1980 searches that are represented by the range of environmental conditions experienced during the experiments. The 41-foot boat data base was too small to indicate percentages.

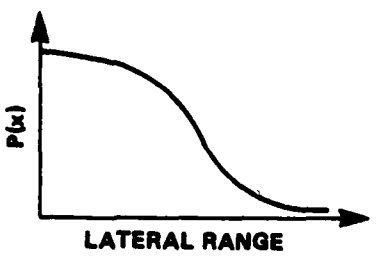
2.7.3 Time on Task. Time on task, which was previously called duration of search (Reference 5), is defined as the cumulative time that an SRU has been searching for the targets on a particular day. In cases where the search is terminated for a time and then re-commenced, the time-on-task clock is stopped upon completion of the initial search and re-started upon initiation of subsequent searches. Table 2-7 shows the time on task distribution for these experiments and compares these times to the FY 1980 SAR case search time distribution. For cutters, boats, and helicopters, the time on task distribution for these experiments includes greater than 98 percent of all FY 1980 SAR searches. Since fixed-wing aircraft (HU-16, HC-131, and HC-130) would normally search larger areas than those in which they were tested, the time on task could be longer than that accumulated on an experiment day.

TABLE 2-7. SRU TIME ON TASK

SUR TYPE	DISTRIBUTION OF TIME ON TASK	
	HOURS	PERCENT OF FY 1980 SEARCHES REPRESENTED
Cutters	0 to 7	98
Boats	0 to 6	99
HH-3	0 to 3	99
HH-52	0 to 3	100
HU-16	0 to 3	88
HC-130	0 to 4	90
HC-131	0 to 3	88

2.8 Analysis Approach

2.8.1 General. The primary objective of this analysis was to determine the significance of the independent variables and to develop sweep width estimates for each class of SRU (cutters, boats, helicopters, and fixed-wing aircraft). Searches were conducted for 16-foot boats, 41-foot boats, PIWs, and life rafts at various search speeds under a variety of environmental conditions. Since sweep width is a single number representation of a more complex lateral range/probability of detection relationship, the key task of the analysis was to develop P(x) versus lateral range curves that accurately represent the characteristics of the experiment data. Experience has indicated that data of this type generally exhibits the classic stimulus-response (S-R) curve shown below.



The linear logistic (LOGODDS) model was selected as an appropriate candidate for fitting S-R data where the dependent variable is binary. The LOGODDS model is a binary, multivariate regression technique useful to quantify the relationship between independent variables (x_i) and a probability of interest, R (in this case the probability of detecting a target). The independent variables (x_i) can be continuous (e.g., range*, search speed, wind speed) or binary (e.g., day/night, black/orange, cutter/boat).

The equation that the model uses for target detection probability is:

$$R = \frac{1}{1 + e^{-\lambda}}$$

where

$$\lambda = a_0 + a_1x_1 + a_2x_2 + a_3x_3 \cdots$$

a_i = constants (determined by computer program) and

x_i = independent variable values.

The LOGODDS model has the following advantages over other candidate models/techniques:

1. The model implicitly contains the assumption that $0 \leq R \leq 1.0$. A linear model does not, unless the assumption is added to the model (and then computation can become exceedingly difficult).

*In developing the P(x)-versus-lateral range curve, range is determined by the closest point of approach (CPA) that an SRU comes to a target of opportunity and is called lateral range. Since the distance between SRU and target is not affected by the 11 primary parameters being investigated, it is considered independent.

2. The model is analogous to normal-theory linear models. Thus, analysis of variance and regression implications can be drawn from the model.

3. The model can be used to observe the effects of several independent or interactive parameters be they continuous or discrete.

4. A regression technique is better than non-parametric hypothesis testing which does not yield quantitative relationship between the probability in question and values of the independent variables.

The primary disadvantages of the LOGODDS model are:

1. For the basic models, the dependent variable (R) must be a monotonic function of the independent variables.

2. The computational effort is substantial, requiring use of computer techniques.

The following sections describe raw data development, analysis conducted to ensure that the experiment data met the criteria for application of the LOGODDS model, and evaluations conducted to determine the goodness of fit of the experiment data to the LOGODDS model. Appendix A of Reference 5 provides a more detailed description of the LOGODDS model.

2.8.2 Development of Raw Data. Valid sightings of SAR targets were determined by comparison of sighting reports (maintained by observers onboard SRUs) to the reconstruction. Reconstruction provided searcher tracks annotated with time and target positions. For each sighting recorded, the time of the sighting, the estimated range and relative bearing were compared to actual target positions. If a sighting was determined to be a valid detection, the lateral range and values of other explanatory variables were recorded. The maximum lateral range of detection for each particular SRU type

on the day in question was determined. The value was multiplied by 1.5, and became the criterion for evaluating targets of opportunity (maximum lateral range for that SRU type on the day tested). A multiplier of 1.5 was selected to provide sufficient data to identify the maximum detection range (MDR) without adding a large number of meaningless (long range) misses. Any target, whose lateral range was less than or equal to 1.5 times the maximum lateral range of a valid detection and was not recorded as a sighting, was determined to be a "miss". The lateral range and other explanatory variables for all targets of opportunity (detection or miss) were recorded in the same manner. Thus, a separate raw data file was developed for each search unit on a particular day that included all valid target sightings, and all misses that met the criterion above. Raw data for all experiments is included as Appendix A.

2.8.3 Aggregation of Data. The target detection data described in the previous section was aggregated separately for each SRU on each day. The performance data for all SRUs of a specific type (e.g., cutters) was then examined closely to determine whether it could be aggregated. For example, for each cutter on each day, the mean opportunity (lateral) range and average probability of detection were plotted. Lateral range curves were also developed using the raw data. This allowed the analyst to determine if, after correcting for different environmental or kinematic conditions, any cutter performed better or worse than other cutters. No significant differences between SRU units of the same type were noted for cutters, SAR boats, helicopters, or fixed-wing aircraft.

The aggregated data for each type SRU was then used to develop empirical lateral range curves by binning the ratio of detections to opportunities for selected values of other explanatory parameters on lateral range. Figure 2-6 shows representative P(x) versus lateral range plots for cutters while searching for 16-foot boats for two environmental conditions. Note that the data for both cases demonstrate the classic S-R curve characteristic previously discussed.

A comparison between types of SRUs was made to determine whether the performance of different SRU or target types was affected similarly by the same changes in explanatory variables. (For example, did a

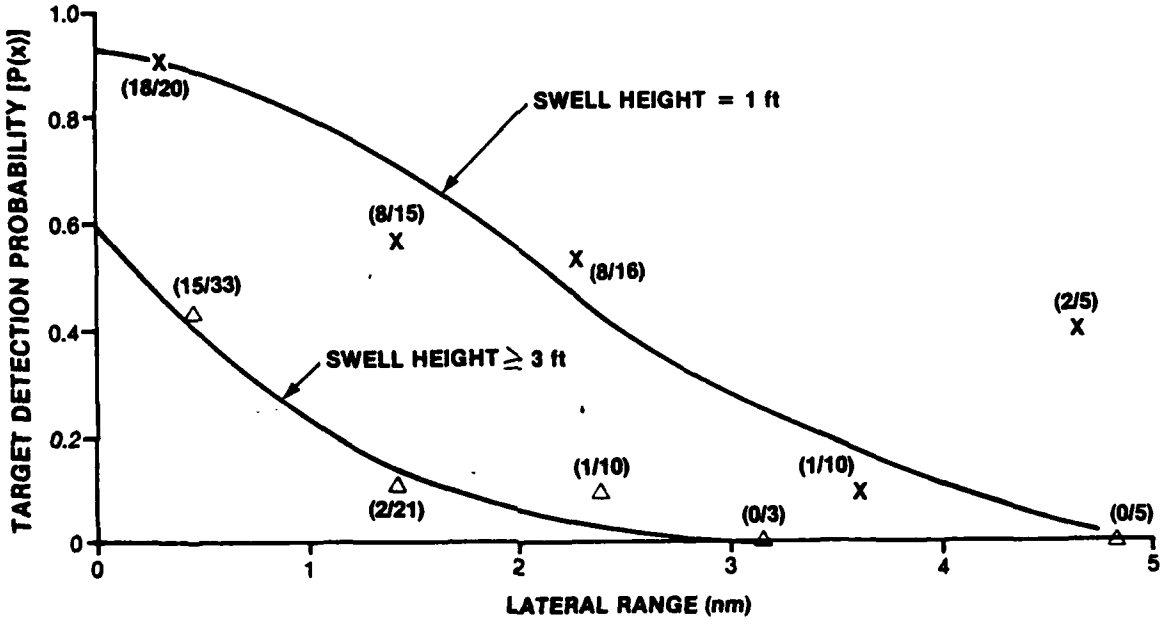


FIGURE 2-6. EMPIRICAL DATA FOR CUTTERS SEARCHING FOR 16-FOOT BOATS

10-knot increase in wind speed result in similar reductions in detection performance for cutters and boats?) This comparison indicated that aggregation of cutter and boat data, and aggregation of helicopter and fixed-wing aircraft data was appropriate.

The performance of SRUs in detecting 16-foot boats and life rafts was initially evaluated separately (see Reference 2); however, subsequent review of empirical results (lateral range curves and sweep widths), review of the literature (Reference 3), and 16-foot boat and life raft physical characteristics, confirmed that aggregation of 16-foot boat and life raft targets was appropriate. The average area of boat targets was 30 square feet, while the average area of life rafts was 26 square feet. The average freeboard of life rafts without canopies and 16-foot boats was approximately 2 feet. Appendix E of Reference 3 points out that two basic factors determine the detectability of a target:

1. Effective contrast of the target and

2. Effective angular size of the target.

Effective contrast is related to the effective luminance of the target with respect to the luminance of the background (which is related to the color of the target, among other things). Sixteen-foot boats were white or blue, while canopied life rafts were orange and life rafts without canopies were black or orange. Effective angular size is related to the actual size of the target, the distance from target to observer, and the shape of the target. The effective angular size of a life raft target was at least 90 percent of the effective angular size of a 16-foot boat target.

2.8.4 LOGODDS Model, "Goodness of Fit". Once the computer runs had been conducted to develop the LOGODDS model for each unit type, a "goodness of fit" test was performed to evaluate the model. Empirical data was binned by lateral range and environmental parameters to compare, in a qualitative sense, the goodness of fit of the model to experimental data. In all cases these results were satisfactory. Also, a LOGODDS subroutine performed a

Chi-squared test of the goodness of fit of the LOGODDS models to empirical data. The results of these tests indicated that, as a group, the models with significant explanatory variables explained observed variation in P(x) at the 0.01 level of significance.

In addition, Chi-squared tests were conducted to determine whether the LOGODDS models with only those variables determined to be significant could be improved upon by the addition of other explanatory variables. In no cases did Chi-squared tests at a 0.10 level of significance indicate that a significantly better model fit would result by the addition of other explanatory variables.

The goodness of fit of the model to the empirical data was also checked through an analysis of residuals [residuals are defined as the difference between the model prediction of P(x) and the outcome for each observation]. Three different analyses of residuals were conducted:

1. The overall distribution of the residuals was checked for a near zero mean and normality.

2. Residuals were plotted with respect to each significant independent variable to check for systematic deviations from the model predictions.

3. Residuals were plotted with respect to predicted probabilities and aggregated to allow for analysis of variance.

CHAPTER 3
ANALYSIS RESULTS

3.0 INTRODUCTION

Surface craft and aircraft detection performance for 16-foot boat and life raft targets are described in Sections 3.1 and 3.2, respectively. Surface craft and aircraft detection performance for PIW targets are described in Sections 3.3 and 3.4, respectively. Section 3.5 describes preliminary results for surface craft and aircraft detection of 41-foot boats. Section 3.6 compares surface craft and aircraft detection performance, while Section 3.7 compares the sweep width estimates derived from this experimental data with the sweep width tables of the National Search and Rescue Manual (Reference 1).

3.1 Surface Craft Detection of 16-Foot Boats and Life Rafts

The experiments provided a total of 941 opportunities for cutters to detect 16-foot boats and life rafts and 535 detection opportunities for 41/44-foot boats. The variability in P(x) was explained at a 0.01 level of significance by a combination of the following variables:

1. Lateral range
2. Swell height
3. Time on task
4. Wind speed
5. Visibility
6. Search unit type (cutter or boat)
7. Cloud cover
8. Target characteristics (color, size and shape).

Those variables found to not have a significant influence on P(x) were search speed, elevation of the sun, geographic location of the search area, and target location within the search area.

Lateral range was the single most important parameter in explaining variability in target detection probability. As Figure 3-1 shows, for lateral ranges greater than 3 nautical miles, about one target in 10 was detected with no targets detected outside 5.3 nautical miles. In contrast, when aggregated over all environmental conditions, P(x) increased to 0.7 for lateral ranges less than 1 nautical mile.

Figure 3-2 shows a predicted probability of detection versus lateral range curve for the following baseline case:

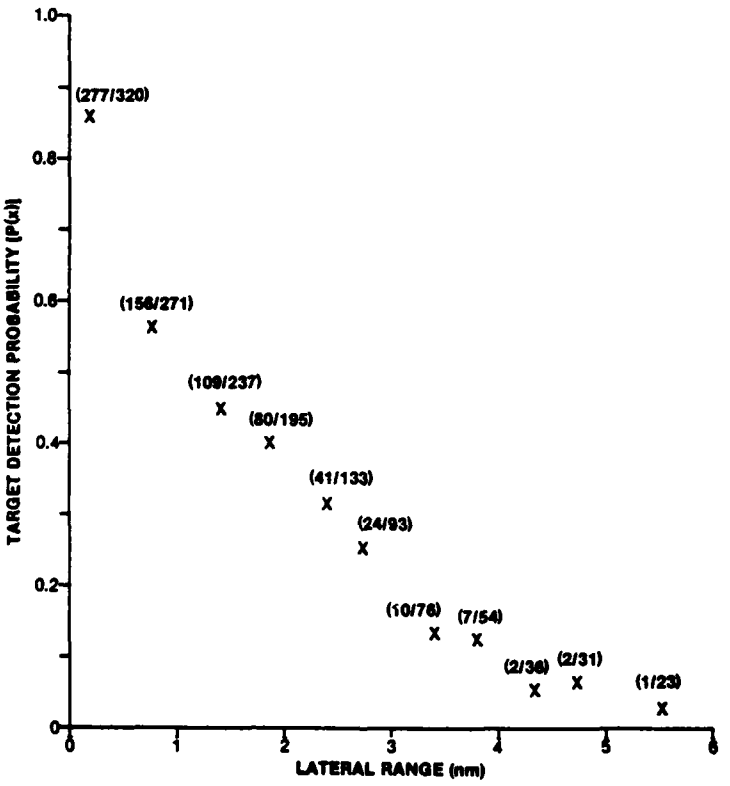


FIGURE 3-1. ACTUAL P(x) VERSUS LATERAL RANGE FOR SURFACE CRAFT SEARCHING FOR 16-FOOT BOATS AND LIFE RAFTS (AGGREGATE OF ALL CONDITIONS)

SRU type: Cutter
Target type: 16-foot white boat or orange canopied life raft
Swell height: 0 feet
Visibility: 10 nautical miles
Wind speed: 5 knots
Cloud cover: 0 percent
Time on task: 0 hours.

For this case, a P(x) of 0.95 is predicted (from the LOGODDS model) for a lateral range of 1.0 nautical mile. Also shown on this figure are the

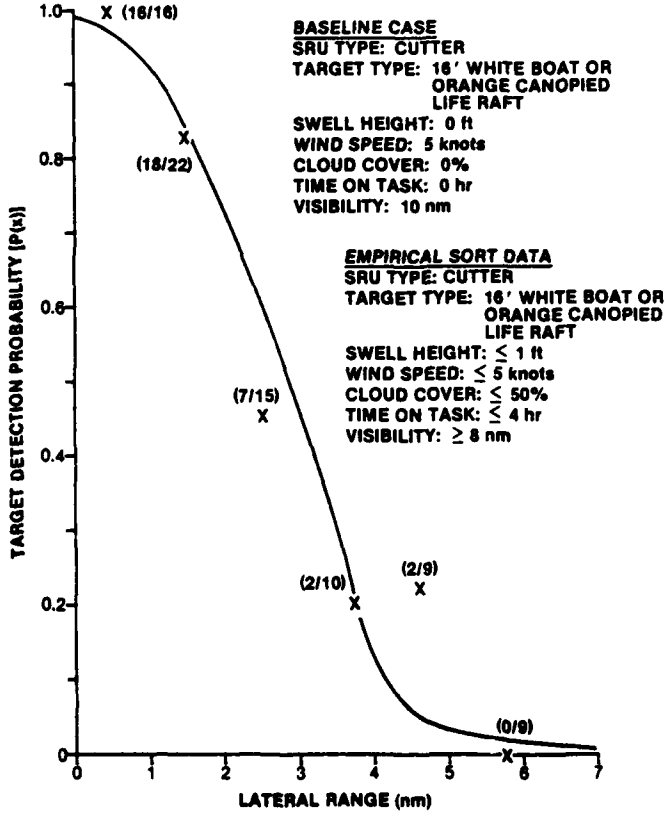


FIGURE 3-2. COMPUTED AND ACTUAL P(x) VERSUS LATERAL RANGE FOR BASELINE CASE -- CUTTERS SEARCHING FOR WHITE 16-FOOT BOATS AND ORANGE CANOPIED LIFE RAFTS

experimental results sorted on lateral range for similar conditions as the baseline case (the ratios in parentheses indicate detections/opportunities). Table 3-1 shows the extent to which this P(x) is predicted to be changed by the indicated change in significant parameters (all other things remaining constant).

As Figure 3-3 shows, there was generally a linear relationship between wind speed and swell height over the range tested (0 to 25 knots), with each 1-foot increase in swell height being associated with a 5-knot increase in wind speed. Thus, the collective influence of changes in wind speed and swell height is shown in Table 3-1. These parameters together had the greatest influence on P(x), which seems reasonable since these targets are small with a low freeboard. When swell height is about 3 feet or greater, the

TABLE 3-1. INFLUENCE ON P(x) OF CHANGES IN SIGNIFICANT PARAMETERS -- SURFACE CRAFT SEARCHING FOR 16-FOOT BOATS AND LIFE RAFTS

SIGNIFICANT PARAMETERS			PROBABILITY OF DETECTION*	
PARAMETER(S)	BASELINE VALUES	MODIFIED VALUES	BASELINE CASE	MODIFIED CASE
Wind speed and swell height	5 knots and 0 ft	20 knots and 3 ft	0.95	0.41
Visibility	10 nm	3 nm	0.95	0.77
Time on task	0 hr	6 hr	0.95	0.81
SRU type	Cutter	Boat	0.95	0.90
Target characteristics	White 16-foot boat or orange canopied life raft	Black life raft without canopy	0.95	0.91
Cloud cover	0 percent	100 percent	0.95	0.93

*Predicted P(x) at a lateral range of 1 nm.

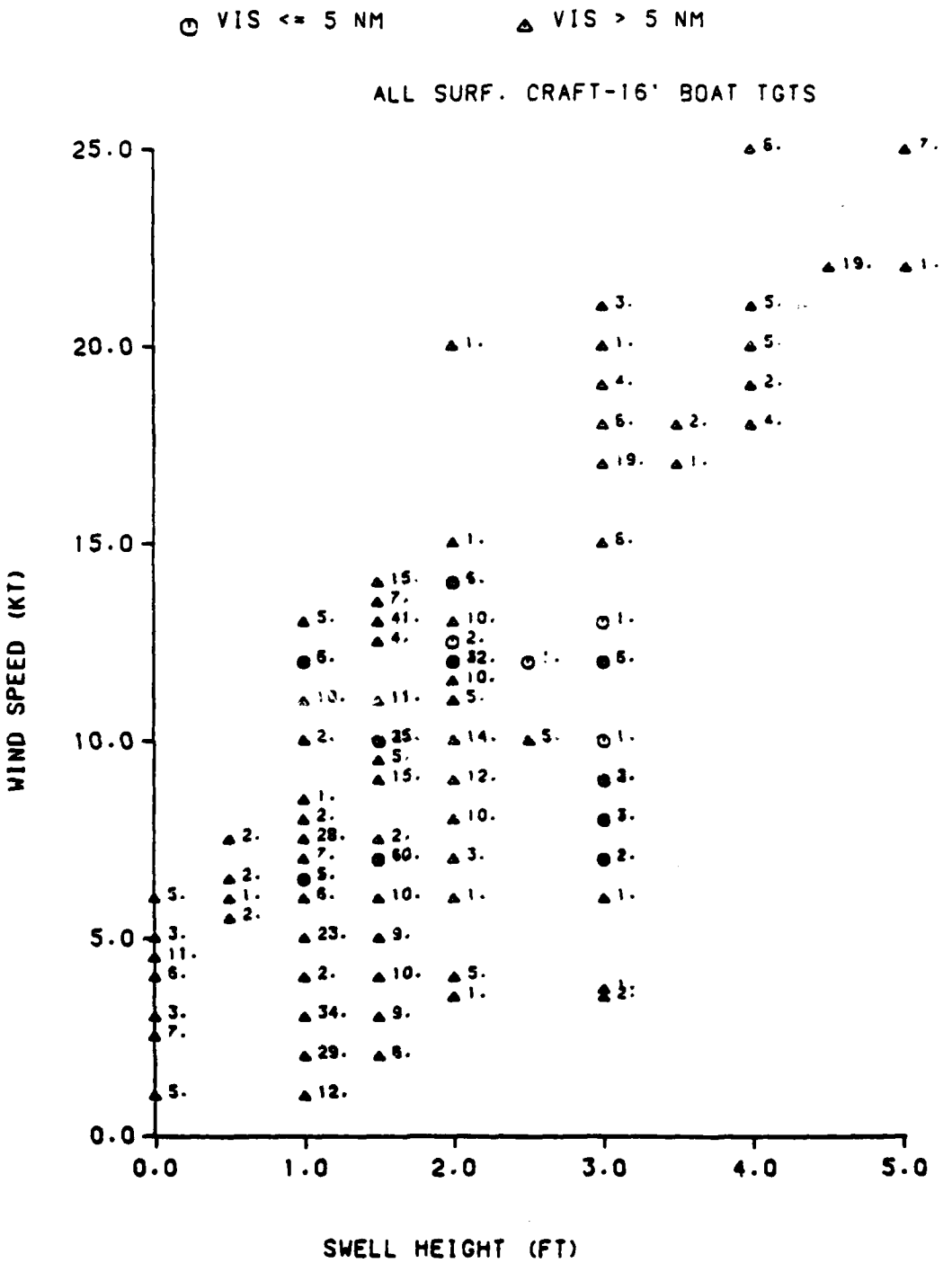


FIGURE 3-3. DISTRIBUTION OF WIND SPEED AND SWELL HEIGHT FOR SURFACE CRAFT (16-FOOT BOAT TARGETS)

target may be completely masked when in wave troughs. Further, as wind speed increases, white caps* appear; these can easily be mistaken for small boats or rafts, the false contact rate increases, and the lookout's scan pattern is disrupted.

The next most influential parameter on P(x) was found to be visibility. A decrease in visibility from 10 to 3 nautical miles was predicted to cause a reduction in P(x) from 0.95 to 0.77. Reference 3 points out that changes in visibility affect both atmospheric absorption and scattering and provides the following approximate formula for quantifying the effects of visibility (V) on the contrast (C) of the target at a given range (R):

$$C = C_0 \exp(-3.912\ R/V),$$

where C_0 is the intrinsic contrast at the target. For this comparison, the contrast at 1 nautical mile from the target changes by a factor of 2.5 as visibility changes from 10 to 3 nautical miles.

The next most influential parameter was found to be time on task. An increase in time on task from 0 to 6 hours was predicted to cause a reduction in P(x) from 0.95 to 0.81. It is interesting to note that the effect of time on task was found to be the same for both cutters and boats. There are several human factors (fatigue, motivation, stress) that potentially contribute to these results. Human factors effects on lookout performance are being investigated in parallel with the effort described here and will be the subject of a separate report.

The relative magnitude of the effects of visibility and time on task are consistent with Table E-5 and formula (2) of Appendix E of Reference 3 since the contrast factor for visibility is 2.5 and for vigilance is 1.2.

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*White caps are considered a function of wind in this study; in the SAR Manual, a white cap correction factor is applied based on wind speed only.

SRU type (82/95/210-foot cutters or 41/44-foot boats) was the next most influential parameter, with cutters having consistently better detection performance than boats.

This is not surprising because of the physical and operational differences between the units, such as:

1. 82/95/210-foot cutters are larger, more stable search platforms, providing a higher height of eye, and are subject to less disruption by rough weather.

2. Cutters had more lookouts searching at any one time (four versus two for the boats) and, in addition, due to their larger crew size, lookouts could be rotated routinely, which was not the case for 41/44-foot boats.

3. Because of a more stable platform, cutter lookouts could make better use of visual aids (binoculars).

The next most influential parameter on P(x) was determined to be target characteristics. It was found that the detection performance of cutters and boats was <u>not</u> significantly different in detecting white 16-foot boats and orange canopied life rafts or in detecting blue 16-foot boats or orange life rafts without canopies. Black life rafts without canopies were significantly less detectable at a given lateral range than any of the four other types of 16-foot boats and life rafts. As shown in Table 3-1, the predicted probability of detecting a white 16-foot boat or orange canopied life raft for the baseline conditions was 0.95, while the predicted P(x) for a black life raft without a canopy was 0.91. The predicted probability of detecting a blue 16-foot boat or a orange life raft without a canopy was 0.92 for the same conditions.

Based upon contrast and area differences between targets (as described in Section 2.8.3), these results were expected. The only result that was not consistent with past laboratory results or detection theory (as

described in Appendix E of Reference 3) was that an orange canopied life raft was more detectable than an orange life raft without a canopy since both target types had similar areas and contrasts. The shapes of the two targets are somewhat different; however, Reference 9 results show that, for asymmetrical targets with a ratio of length:width of less than 50:1, threshold contrasts are very close to those for circular targets of the same area. It is postulated that orange canopied life rafts, because of their greater height above the water than non-canopied life rafts (3.7 feet versus 2 feet), remained in the view of scanners a greater fraction of the time during swells than life rafts without canopies and were therefore more detectable.

Cloud cover was the significant parameter that had the least influence on P(x). P(x) was predicted to be reduced from 0.95 in the baseline case to 0.93 as cloud cover increased from 0 to 100 percent. This is consistent with laboratory data reported in Appendix E of Reference 3 where it was reported that, "It is clear from a comparison of these data that contrast thresholds are essentially the same for background luminances ranging from very bright, sunlit sand and water down to the brightness of an overcast day or sunset."

Based upon the above results, it is also a reasonable result that elevation of the sun did not have a significant influence on P(x). For the experimental data, elevation of the sun varied from 5 to 65 degrees.

The fact that search speed did not influence results seems reasonable since the relatively low range of speeds possible for these surface craft (less than 25 knots) should provide lookouts with ample opportunity to effectively search out the assigned area even at maximum speed.

Search planners do not currently rely directly upon probability of detection versus lateral range curves for predicting search unit detection performance. Rather, as described in Chapter 1, sweep width, which is a single number representation of the lateral range curve, is used. Thus, quantitative measures of surface SRUs' abilities to detect 16-foot boats and life rafts, for environmental conditions experienced, will be presented in terms

of sweep width. Table 3-2 presents predictions of sweep widths for 82/95/210-foot cutters and 41/44-foot boats searching for white, 16-foot boat or orange-canopied life raft targets for environmental conditions represented in the data base. Tables 3-3 and 3-4 provide sweep width estimates for boats and cutters searching for blue 16-foot boats or orange life rafts without canopies (Table 3-3) and black life rafts without canopies (Table 3-4).

3.2 Aircraft Detection of 16-Foot Boats and Life Rafts

The experiments provided a total of 694 16-foot boat and life raft detection opportunities for helicopters and 658 detection opportunities for fixed-wing aircraft. The variability in probability of detection was explained at a 0.01 level of significance by a combination of the following variables:

1. Lateral range
2. Wind speed
3. Swell height
4. Visibility
5. Cloud cover
6. Target characteristics (size, shape, and color)
7. SRU type
8. Time on task
9. Search speed (fixed-wing aircraft only).

Those variables found not to have a significant influence on P(x) were elevation of the sun, aircraft altitude, geographic location of the search area, and target location within the search area.

Figure 3-4 shows a predicted P(x) versus lateral range curve and empirical data for the following baseline case:

SRU type: Helicopter
Target type: 16-foot white boat or orange canopied life raft

TABLE 3-2. SWEEP WIDTHS FOR CUTTERS/BOATS SEARCHING FOR WHITE 16-FOOT BOATS OR ORANGE CANOPIED LIFE RAFTS

VISIBILITY (nm)	CLOUD COVER (tenths)	WIND SPEED/SWELL HEIGHT								
		≤ 10 knots/≤ 1 ft			15 knots/2-3 ft			20-25 knots/4-5 ft		
		Time on Task (hr)			Time on Task (hr)			Time on Task (hr)		
		0-2	2-4	>4	0-2	2-4	>4	0-2	2-4	>4
1	1.0	1.4 / 1.4	1.2 / 1.2	0.9 / 0.9	0.6* / 0.6*	0.4* / 0.4*	0.3* / 0.3*	0.2* / 0.2*	0.2* / 0.2*	0.1* / 0.1*
3	1.0	2.9 / 2.7	2.4 / 2.2	1.8 / 1.8	1.3* / 1.3*	0.9* / 0.9*	0.7* / 0.7*	0.6* / 0.6*	0.4* / 0.4*	0.2* / 0.2*
5	0.0	4.0 / 3.3	3.4 / 2.8	2.8 / 2.3	1.8 / 1.7	1.3 / 1.3	1.0 / 1.0	0.9 / 0.9	0.6 / 0.6	0.4 / 0.4
	0.5	3.8 / 3.1	3.2 / 2.6	2.6 / 2.1	1.6 / 1.6	1.2 / 1.2	0.9 / 0.9	0.8 / 0.8	0.5 / 0.5	0.3 / 0.3
	1.0	3.6 / 3.0	3.0 / 2.5	2.4 / 2.0	1.5 / 1.5	1.2 / 1.1	0.8 / 0.8	0.7 / 0.7	0.5 / 0.5	0.3 / 0.3
≥10	0.0	5.2 / 3.8	4.6 / 3.3	4.0 / 2.8	2.7 / 2.1	2.2 / 1.7	1.7 / 1.3	1.3 / 1.2	0.9 / 0.8	0.6 / 0.6
	0.5	5.0 / 3.6	4.3 / 3.1	3.7 / 2.6	2.5 / 2.0	2.0 / 1.6	1.5 / 1.2	1.1 / 1.1	0.9 / 0.8	0.5 / 0.5
	1.0	4.7 / 3.4	4.1 / 3.0	3.5 / 2.5	2.3 / 1.9	1.8 / 1.5	1.3 / 1.1	1.0 / 1.0	0.7 / 0.7	0.5 / 0.5

*This combination of conditions did not exist in the data base. Sweep width is extrapolated from the LOGODDS model.

TABLE 3-3. SWEEP WIDTHS FOR CUTTERS/BOATS SEARCHING FOR BLUE 16-FOOT BOATS OR ORANGE LIFE RAFTS WITHOUT CANOPIES

VISIBILITY (nm)	CLOUD COVER (tenths)	WIND SPEED/SWELL HEIGHT								
		≤ 10 knots/≤ 1 ft			15 knots/2-3 ft			20-25 knots/4-5 ft		
		Time on Task (hr)			Time on Task (hr)			Time on Task (hr)		
		0-2	2-4	>4	0-2	2-4	>4	0-2	2-4	>4
1	1.0	1.2 / 1.2	1.0 / 1.0	0.7 / 0.7	0.4* / 0.4*	0.3* / 0.3*	0.2* / 0.2*	0.2* / 0.2*	0.1* / 0.1*	0.1* / 0.1*
3	1.0	2.3 / 2.2	1.8 / 1.7	1.4 / 1.3	0.9* / 0.9*	0.6* / 0.6*	0.4* / 0.4*	0.4* / 0.4*	0.3* / 0.3*	0.2* / 0.2*
5	0.0	3.4 / 2.7	2.8 / 2.3	2.2 / 1.8	1.3 / 1.3	1.0 / 1.0	0.7 / 0.7	0.6 / 0.6	0.4 / 0.4	0.3 / 0.3
	0.5	3.2 / 2.6	2.6 / 2.2	2.1 / 1.7	1.2 / 1.2	0.9 / 0.9	0.6 / 0.6	0.5 / 0.5	0.3 / 0.3	0.2 / 0.2
	1.0	3.0 / 2.5	2.4 / 2.0	1.9 / 1.6	1.1 / 1.1	0.8 / 0.8	0.5 / 0.5	0.5 / 0.5	0.3 / 0.3	0.2 / 0.2
≥10	0.0	4.5 / 3.2	4.0 / 2.7	3.3 / 2.3	2.2 / 1.7	1.7 / 1.3	1.2 / 1.0	0.9 / 0.8	0.6 / 0.6	0.4 / 0.4
	0.5	4.3 / 3.1	3.7 / 2.6	3.1 / 2.1	2.0 / 1.6	1.5 / 1.2	1.1 / 0.9	0.8 / 0.7	0.5 / 0.5	0.4 / 0.4
	1.0	4.1 / 2.9	3.5 / 2.4	2.9 / 2.0	1.8 / 1.5	1.3 / 1.1	1.0 / 0.8	0.7 / 0.7	0.5 / 0.5	0.3 / 0.3

*This combination of conditions did not exist in the data base. Sweep width is extrapolated from the LOGODDS model.

TABLE 3-4. SWEEP WIDTHS FOR CUTTERS/BOATS SEARCHING FOR BLACK LIFE RAFTS WITHOUT CANOPIES

VISIBILITY (nm)	CLOUD COVER (tenths)	WIND SPEED/SWELL HEIGHT								
		≤ 10 knots/≤ 1 ft			15 knots/2-3 ft			20-25 knots/4-5 ft		
		Time on Task (hr)			Time on Task (hr)			Time on Task (hr)		
		0-2	2-4	>4	0-2	2-4	>4	0-2	2-4	>4
1	1.0	1.1 / 1.1	0.9 / 0.9	0.7 / 0.7	0.4* / 0.4*	0.3* / 0.3*	0.2* / 0.2*	0.1* / 0.1*	0.1* / 0.1*	0.1* / 0.1*
3	1.0	2.2 / 2.0	1.7 / 1.6	1.2 / 1.2	0.8* / 0.8*	0.6* / 0.6*	0.4* / 0.4*	0.3* / 0.3*	0.2* / 0.2*	0.1* / 0.1*
5	0.0	3.2 / 2.6	2.6 / 2.1	2.1 / 1.7	1.2 / 1.2	0.9 / 0.9	0.6 / 0.6	0.5 / 0.5	0.3 / 0.3	0.2 / 0.2
	0.5	3.0 / 2.4	2.4 / 2.0	2.0 / 1.6	1.1 / 1.1	0.8 / 0.8	0.5 / 0.5	0.4 / 0.4	0.3 / 0.3	0.2 / 0.2
	1.0	2.8 / 2.3	2.2 / 1.8	1.7 / 1.4	1.0 / 1.0	0.7 / 0.7	0.5 / 0.5	0.4 / 0.4	0.3 / 0.3	0.2 / 0.2
≥10	0.0	4.3 / 3.1	3.7 / 2.6	3.1 / 2.1	2.0 / 1.6	1.5 / 1.2	1.1 / 0.9	0.8 / 0.7	0.6 / 0.5	0.4 / 0.3
	0.5	4.1 / 2.9	3.5 / 2.4	2.9 / 2.0	1.8 / 1.4	1.4 / 1.1	1.0 / 0.8	0.7 / 0.6	0.5 / 0.4	0.3 / 0.3
	1.0	3.9 / 2.8	3.3 / 2.3	2.7 / 1.8	1.6 / 1.3	1.2 / 1.0	0.8 / 0.7	0.6 / 0.6	0.4 / 0.4	0.3 / 0.3

*This combination of conditions did not exist in the data base. Sweep width is extrapolated from the LOGODDS model.

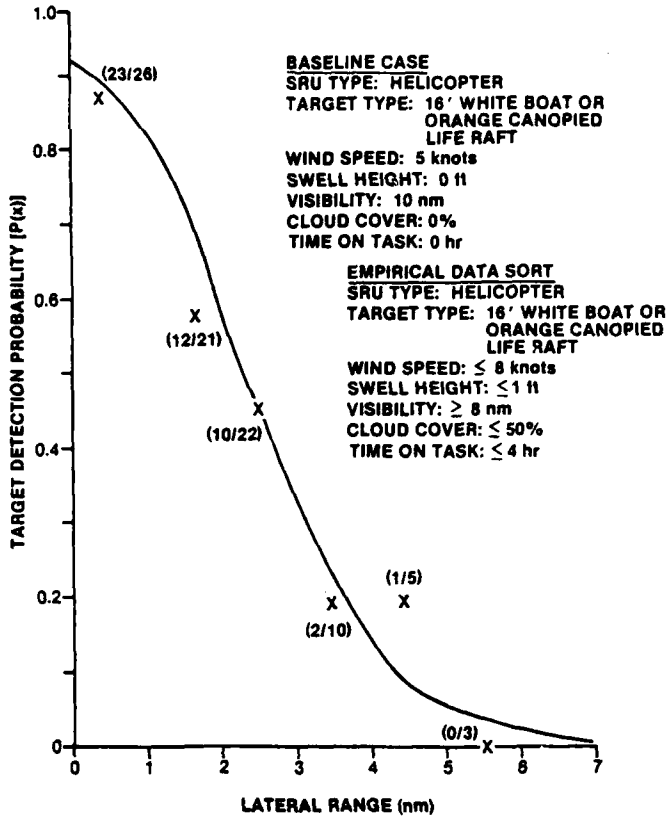


FIGURE 3-4. COMPUTED AND ACTUAL P(x) VERSUS LATERAL RANGE FOR BASELINE CASE (HELICOPTERS SEARCHING FOR WHITE 16-FOOT BOATS OR ORANGE CANOPIED LIFE RAFTS)

Wind speed: 5 knots
Swell height: 0 feet
Visibility: ≥10 nautical miles
Cloud cover: 0 percent
Time on task: 0 hours

It is of interest to compare Figure 3-4 to Figure 3-2. The comparison shows that P(x) was higher for surface craft at close ranges, while both unit types achieved similar P(x) at longer ranges. This result is consistent

with physical differences in the platforms. Because of their higher speeds and limited field of view at close ranges ahead of the aircraft, misses of close- range targets are more likely for aircraft.

For this case, a P(x) of 0.82 is predicted for a lateral range of 1.0 nautical mile. Table 3-5 shows the extent to which this P(x) would be changed by the indicated change in significant parameters (all other things remaining constant).

TABLE 3-5. INFLUENCE ON P(x) OF CHANGES IN SIGNIFICANT PARAMETERS -- AIRCRAFT SEARCHING FOR 16-FOOT BOATS AND LIFE RAFTS

SIGNIFICANT PARAMETERS*			PROBABILITY OF DETECTION**	
PARAMETER(S)	BASELINE VALUES	MODIFIED VALUES	BASELINE CASE	MODIFIED CASE
Wind speed and swell height	5 knots and 0 ft	15 knots and 3 ft	0.82	0.49
Target characteristics	White 16-foot boat or orange canopied life raft	Black life raft without canopy	0.82	0.65
SRU type	Helicopter	Fixed-wing aircraft	0.82	0.69
Visibility	10 nm	3 nm	0.82	0.73
Time on task	0 hr	2.5 hr	0.82	0.75
Cloud cover	0 percent	100 percent	0.82	0.76

*Search speed was found to be a significant parameter for fixed-wing aircraft only. Therefore, the influence of search speed on detection performance is discussed separately.
**Predicted P(x) at a lateral range of 1 nm.

Of the environmental conditions shown in Table 3-5, changes in wind speed and swell height collectively had the most influence on P(x), followed by changes in visibility and then cloud cover. These results are, in general, consistent with surface craft results presented in Section 3.1.

The difference in target characteristics produced effects on P(x) for aircraft similar to those reported in Section 3.1 for surface craft. As for surface craft, white 16-foot boats and orange canopied life rafts were the most detectable targets. Aircraft detection of orange canopied life rafts and white 16-foot boats was not significantly different at a 90-percent or greater confidence level. Similarly, while aircraft detection performance of blue 16-foot boats and orange life rafts without canopies was not significantly different at a 90-percent or greater confidence level, aircraft results indicate that these targets were significantly less detectable than orange canopied life rafts and white 16-foot boats. Black life rafts without canopies were less detectable than any of the four other target types.

Helicopters achieved somewhat better detection performance than fixed- wing aircraft. This is postulated to be the case because of the slower search speeds possible with helicopters than fixed-wing aircraft, allowing a more thorough search of a given area. Time on task reduced P(x) for aircraft at a rate about the same as for surface craft; however, because aircraft searches were shorter than surface craft searches, the reduction in P(x) predicted for a given search area due to time on task is predicted to be less for aircraft than for surface craft.

Search speed influenced the performance of fixed-wing aircraft but not helicopters. Helicopters searched at speeds from 60 to 120 knots, while fixed-wing aircraft searched at speeds from 120 to 200 knots. Based upon these results, it is postulated that about 120 knots is the threshold at which sufficient time is available to conduct a relatively thorough search of the assigned area, while for speeds above 120 knots, the thoroughness of the search is significantly reduced. Figure 3-5 shows the predicted reduction in

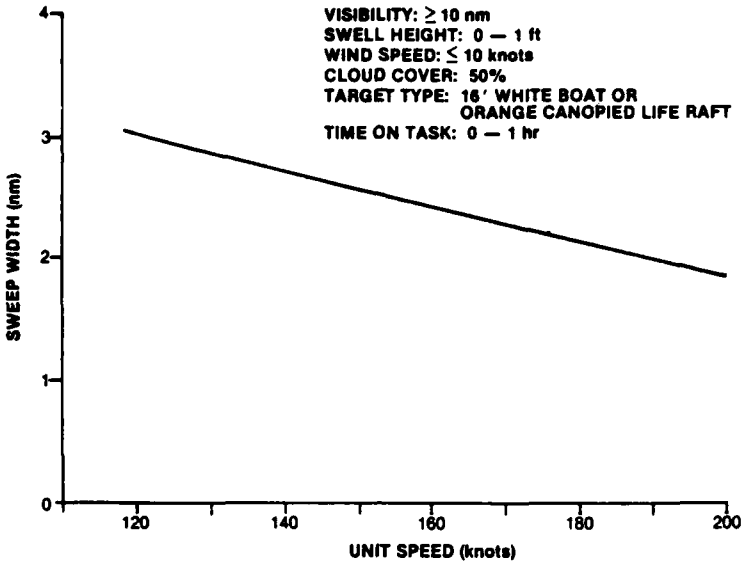


FIGURE 3-5. INFLUENCE OF SEARCH SPEED ON FIXED-WING AIRCRAFT SWEEP WIDTH (16-FOOT BOAT TARGET)

fixed-wing aircraft sweep width as search speed is increased. It is of interest that the reduction in fixed-wing aircraft performance at higher speeds primarily manifested itself at longer lateral ranges, with no apparent difference noted for lateral ranges less than 1 nautical mile (see Table 3-6).

As for surface craft, elevation of the sun, geographic location of the search area, and target location within the search area did not have a significant influence on P(x). While changes in altitude did not have a significant influence on P(x), altitude was only varied during searches between 500 and 1000 feet. In addition to these searches, a special altitude investigation was conducted as described in Section 2.6.1. The results of these performance tests were used to develop cumulative detection probability (CDP) curves for altitudes between 500 and 6000 feet. Figure 3-6 shows CDP versus range curves for orange life rafts for five altitude intervals between 500 and 6000 feet. Several characteristics of these CDP curves are of interest:

TABLE 3-6. EMPIRICAL RESULTS SORTED ON SEARCH SPEED FOR FIXED-WING AIRCRAFT (16-FOOT BOAT TARGETS)

SEARCH SPEED (knots)	LATERAL RANGE (nm)				
	0-1	1-2	2-3	3-4	>4
<130	(12/18) 0.67	(11/19) 0.58	(3/12) 0.25	(2/13) 0.15	(0/4) 0.0
130-160	(43/66) 0.65	(21/53) 0.40	(10/49) 0.20	(4/28) 0.14	(1/12) 0.08
>160	(33/50) 0.66	(14/35) 0.40	(3/35) 0.09	(0/9) 0.0	(0/2) 0.0

NOTE: The number in parentheses is the ratio of detections/opportunities; the number below is the ratio as a decimal.

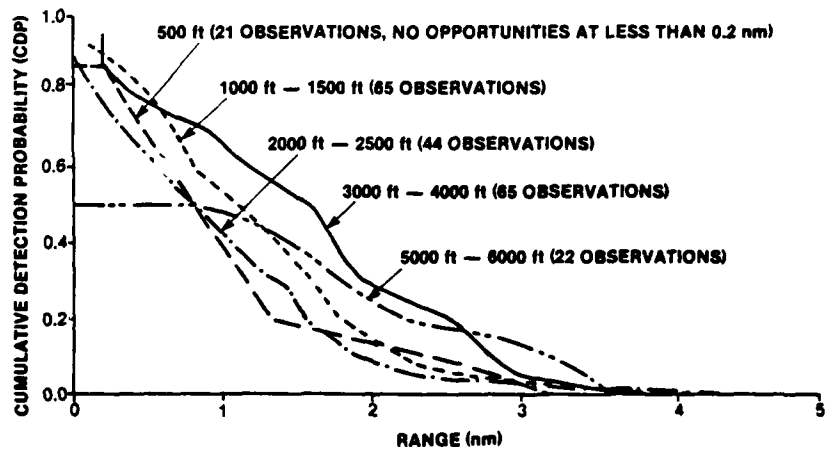


FIGURE 3-6. CUMULATIVE DETECTION PROABABILITY (CDP) VERSUS RANGE FOR ORANGE LIFE RAFTS

1. There is no obvious degradation in aircraft detection performance except for altitudes greater than 4000 feet at ranges less than 1 nautical mile.

2. For higher altitudes, the CDP is higher at longer ranges and levels off at closer ranges, while for lower altitudes the opposite is the case.

These CDP curves, along with the results from searches, indicate that aircraft detection of 16-foot boats and life rafts is not sensitive to altitude for altitudes between 500 and 4000 feet, given good visibility and a ceiling above the aircraft search altitude. These results are consistent with Reference 9, where Lamar investigated altitudes from 500 to 3000 feet.

Table 3-7 presents estimates of sweep widths for helicopters and fixed-wing aircraft searching for white 16-foot boats and orange canopied life rafts for environmental conditions represented in the data base. Tables 3-8 and 3-9, respectively, provide sweep width estimates for helicopters and fixed-wing aircraft searching for blue 16-foot boats or orange life rafts without canopies, and black life rafts without canopies.

3.3 Surface Craft Detection of PIWs

The experiments provided a total of 518 PIW detection opportunities for cutters and 341 detection opportunities for 41/44-foot boats. The variability in P(x) was explained at a 0.01 level of significance by a combination of the following variables:

1. Lateral range
2. Swell height
3. Wind speed
4. Search unit type (cutter or boat)
5. Time on task
6. Cloud cover.

TABLE 3-7. SWEEP WIDTHS FOR HELICOPTERS/FIXED-WING AIRCRAFT SEARCHING FOR WHITE 16-FOOT BOATS OR ORANGE CANOPIED LIFE RAFTS

VISIBILITY (nm)	CLOUD COVER (tenths)	WIND SPEED/SWELL HEIGHT								
		≤ 10 knots/≤ 1 ft			15 knots/2-3 ft			20-25 knots/4-5 ft		
		Time on Task (hr)			Time on Task (hr)			Time on Task (hr)		
		0-1	1-2	>2	0-1	1-2	>2	0-1	1-2	>2
1	1.0	1.4* / 1.1*	1.3* / 0.9*	1.2* / 0.8*	0.8* / 0.4*	0.7* / 0.3*	0.6* / 0.3*	0.4* / 0.2*	0.3* / 0.1*	0.3* / 0.1*
3	1.0	2.8 / 2.1*	2.7 / 1.9*	2.5 / 1.6*	1.4 / 0.8*	1.3 / 0.7*	1.1 / 0.6*	0.7 / 0.3*	0.6 / 0.3*	0.5 / 0.2*
5	0.0	3.9 / 3.3	3.6 / 3.0	3.4 / 2.7	2.1 / 1.6	1.9 / 1.4	1.7 / 1.2	1.1* / 0.7*	1.0* / 0.6*	0.9* / 0.5*
	0.5	3.6 / 2.9	3.4 / 2.6	3.1 / 2.4	1.9 / 1.3	1.7 / 1.1	1.5 / 1.0	1.0* / 0.6*	0.9* / 0.5*	0.8* / 0.4*
	1.0	3.3 / 2.5	3.1 / 2.3	2.9 / 2.0	1.7 / 1.1	1.5 / 0.9	1.3 / 0.8	0.8* / 0.5*	0.7* / 0.4*	0.7* / 0.3*
≥10	0.0	4.4 / 4.1	4.2 / 3.8	3.9 / 3.5	2.5 / 2.2	2.3 / 1.9	2.1 / 1.7	1.4 / 1.1	1.3 / 1.0	1.1 / 0.8
	0.5	4.1 / 3.7	3.9 / 3.4	3.6 / 3.1	2.3 / 1.9	2.1 / 1.6	1.9 / 1.4	1.2 / 0.9	1.1 / 0.8	1.0 / 0.6
	1.0	3.9 / 3.3	3.6 / 3.0	3.4 / 2.7	2.0 / 1.5	1.8 / 1.4	1.7 / 1.2	1.1 / 0.7	1.0 / 0.6	0.9 / 0.5

*This combination of conditions did not exist in the data base. Sweep width is extrapolated from the LOGODDS model.

TABLE 3-8. SWEEP WIDTHS FOR HELICOPTERS/FIXED-WING AIRCRAFT SEARCHING FOR BLUE 16-FOOT BOATS OR ORANGE LIFE RAFTS WITHOUT CANOPIES

VISIBILITY (nm)	CLOUD COVER (tenths)	WIND SPEED/SWELL HEIGHT								
		≤ 10 knots/≤ 1 ft			15 knots/2-3 ft			20-25 knots/4-5 ft		
		Time on Task (hr)			Time on Task (hr)			Time on Task (hr)		
		0-1	1-2	>2	0-1	1-2	>2	0-1	1-2	>2
1	1.0	1.1* / 0.7*	1.0* / 0.6*	0.9* / 0.6*	0.5* / 0.3*	0.4* / 0.2*	0.4* / 0.2*	0.2* / 0.1*	0.2* / 0.1*	0.2* / 0.1*
3	1.0	2.1 / 1.5*	1.9 / 1.3*	1.8 / 1.1*	0.9 / 0.5*	0.8 / 0.4*	0.7 / 0.3*	0.4 / 0.2*	0.4 / 0.2*	0.3 / 0.1*
5	0.0	2.9 / 2.5	2.7 / 2.2	2.5 / 2.0	1.4 / 1.0	1.2 / 0.9	1.1 / 0.7	0.7* / 0.4*	0.6* / 0.4*	0.5* / 0.3*
	0.5	2.7 / 2.1	2.5 / 1.9	2.3 / 1.7	1.2 / 0.8	1.1 / 0.7	1.0 / 0.6	0.6* / 0.3*	0.5* / 0.3*	0.4* / 0.2*
	1.0	2.4 / 1.8	2.2 / 1.6	2.0 / 1.4	1.1 / 0.7	0.9 / 0.5	0.8 / 0.5	0.5* / 0.3*	0.4* / 0.2*	0.4* / 0.2*
≥10	0.0	3.4 / 3.2	3.2 / 2.9	3.0 / 2.6	1.7 / 1.5	1.5 / 1.3	1.4 / 1.1	0.9 / 0.7	0.8 / 0.6	0.7 / 0.5
	0.5	3.1 / 2.8	2.9 / 2.6	2.7 / 2.3	1.5 / 1.3	1.4 / 1.1	1.2 / 0.9	0.8 / 0.5	0.7 / 0.5	0.6 / 0.4
	1.0	2.9 / 2.5	2.7 / 2.2	2.5 / 2.0	1.3 / 1.0	1.2 / 0.8	1.1 / 0.7	0.7 / 0.4	0.6 / 0.3	0.5 / 0.3

*This combination of conditions did not exist in the data base. Sweep width is extrapolated from the LOGODDS model.

TABLE 3-9. SWEEP WIDTHS FOR HELICOPTERS/FIXED-WING AIRCRAFT SEARCHING FOR BLACK LIFE RAFTS WITHOUT CANOPIES

VISIBILITY (nm)	CLOUD COVER (tenths)	WIND SPEED/SWELL HEIGHT								
		≤ 10 knots/≤ 1 ft			15 knots/2-3 ft			20-25 knots/4-5 ft		
		Time on Task (hr)			Time on Task (hr)			Time on Task (hr)		
		0-1	1-2	>2	0-1	1-2	>2	0-1	1-2	>2
	1.0	0.9* / 0.6*	0.9* / 0.6*	0.8* / 0.5*	0.4* / 0.2*	0.4* / 0.2*	0.3* / 0.1*	0.2* / 0.1*	0.2* / 0.1*	0.1* / 0.1*
3	1.0	1.8 / 1.3*	1.7 / 1.1*	1.5 / 0.9*	0.7 / 0.4*	0.7 / 0.3*	0.6 / 0.3*	0.3* / 0.2*	0.3* / 0.1*	0.2* / 0.1*
5	0.0	2.6 / 2.2	2.4 / 2.0	2.2 / 1.7	1.2 / 0.9	1.0 / 0.7	0.9 / 0.6	0.6* / 0.3*	0.5* / 0.3*	0.4* / 0.2*
	0.5	2.4 / 1.9	2.2 / 1.7	2.0 / 1.4	1.0 / 0.7	0.9 / 0.6	0.8 / 0.5	0.5* / 0.3*	0.4* / 0.2*	0.4* / 0.2*
	1.0	2.2 / 1.6	2.0 / 1.4	1.8 / 1.2	0.9 / 0.5	0.8 / 0.5	0.7 / 0.4	0.4* / 0.2*	0.3* / 0.2*	0.3* / 0.1*
≥10	0.0	3.1 / 2.9	2.8 / 2.6	2.6 / 2.4	1.5 / 1.3	1.3 / 1.1	1.2 / 0.9	0.7 / 0.6	0.6 / 0.5	0.6 / 0.4
	0.5	2.8 / 2.5	2.6 / 2.3	2.4 / 2.0	1.3 / 1.1	1.2 / 0.9	1.0 / 0.8	0.6 / 0.5	0.6 / 0.4	0.5 / 0.3
	1.0	2.6 / 2.2	2.4 / 2.0	2.2 / 1.7	1.1 / 0.9	1.0 / 0.7	0.9 / 0.6	0.5 / 0.4	0.5 / 0.3	0.4 / 0.2

*This combination of conditions did not exist in the data base. Sweep width is extrapolated from the LOGODDS model.

Lateral range was the single most important parameter in explaining variability in P(x). Figure 3-7 shows a sort of empirical data for cutters under the best environmental conditions; 9 of 10 (90 percent) of PIW targets with lateral ranges less than or equal to 0.1 nautical miles were detected, while no PIWs were detected at lateral ranges greater than 0.6 nautical miles.

Figure 3-7 also shows a predicted P(x) versus lateral range curve for the following baseline case:

SRU type: Cutter
Wind speed: 5 knots
Swell height: 0 feet
Time on task: 0 hours
Cloud cover: 0 percent

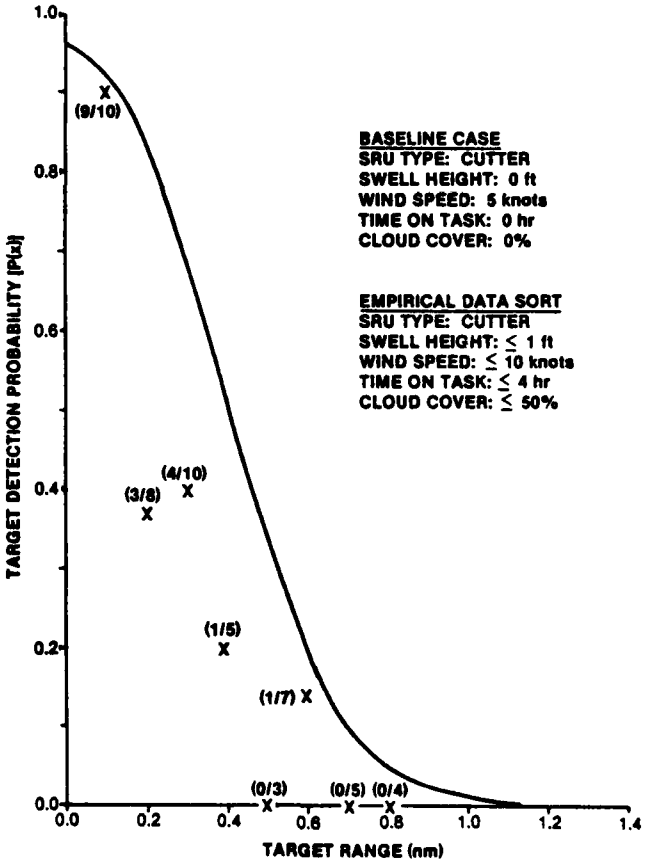


FIGURE 3-7. PREDICTED AND ACTUAL P(x) VERSUS LATERAL RANGE FOR BASELINE CASE (CUTTERS SEARCHING FOR PIWs)

For this case, a P(x) of 0.83 is predicted for a lateral range of 0.2 nautical miles. Table 3-10 shows the extent to which this P(x) is predicted to be changed by the indicated change in significant parameters (all others remaining constant).

TABLE 3-10. INFLUENCE ON P(x) OF CHANGES IN SIGNIFICANT PARAMETERS -- SURFACE CRAFT SEARCHING FOR PIWs

SIGNIFICANT PARAMETERS			PROBABILITY OF DETECTION*	
PARAMETER(S)	BASELINE VALUES	MODIFIED VALUES	BASELINE CASE	MODIFIED CASE
Wind speed and Swell height	5 knots and 0 ft	20 knots and 4 ft	0.83	0.51
SRU type	Cutter	Boat	0.83	0.57
Time on task	0 hr	5 hr	0.83	0.58
Cloud Cover	0 percent	100 percent	0.83	0.74
*Predicted P(x) at a lateral range of 0.2 nm.				

As was the case for other data bases, wind speed and swell height were linearly related. Thus, the collective influence of wind speed and swell height are shown in Table 3-10.

For the case shown, time on task and SRU type had a similar influence on P(x); i.e., a cutter, after searching for 5 hours, is predicted to have about the same detection performance as a 41/44-foot boat just starting a search. As was the case for other data bases of the significant variables, cloud cover had the least influence on P(x).

The following variables were <u>not</u> found to have a significant influence on P(x) for PIWs (at a 90-percent or greater confidence level): visibility, search speed, elevation of the sun, and target location within the search area. These results are consistent with those for 16-foot boats and life rafts except for visibility not having a significant influence on P(x). This

is explained by the relatively short detection ranges for PIWs (the mean lateral range of detection was between 0.3 and 0.4 nautical miles, while the maximum sighting range was 0.9 nautical miles). Visibility during PIW searches varied from about 2 to 15 nautical miles.

Table 3-11 presents predictions of sweep widths for cutters and 41/44-foot boats for the environmental conditions shown.

3.4 Aircraft Detection of PIWs

The experiments provided a total of 652 PIW detection opportunities for fixed-wing aircraft and 414 detection opportunities for helicopters. The variability in P(x) was explained at a 0.01 level of significance by a combination of the following variables:

1. Lateral range
2. Swell height
3. Wind speed
4. Time on task.

While lateral range was the single most important parameter in explaining variability in P(x) for PIWs, the influence of lateral range was less for aircraft than previously shown in Section 3.3 for surface craft detecting PIWs. (Compare Figure 3-8 with Figure 3-7.) This difference between aircraft and surface craft is similar to that seen for 16-foot boat and life raft targets (see Sections 3.1 and 3.2). Figure 3-8 shows a sort of empirical data for aircraft under the best environmental conditions; 16 of 33 PIWs (48 percent) were detected at lateral ranges $\leq$0.2 nautical mile, while no maximum lateral range for detection was determined (no detection opportunities occurred at $\leq$1 nautical mile lateral range) for these conditions.

Figure 3-8 also shows a predicted P(x) versus lateral range curve for the following baseline conditions:

Swell height: 0.5 feet
Wind speed: 5 knots
Time on task: 0.5 hours

TABLE 3-11. SWEEP WIDTHS FOR CUTTERS/BOATS SEARCHING FOR PIWs

CLOUD COVER (tenths)	WIND SPEED/SWELL HEIGHT								
	≤ 10 knots/≤ 1 ft			15 knots/2-3 ft			20-25 knots/4-5 ft		
	Time on Task (hr)			Time on Task (hr)			Time on Task (hr)		
	0-2	2-4	>4	0-2	2-4	>4	0-2	2-4	>4
0.0	0.7 / 0.4	0.6 / 0.3	0.5 / 0.3	0.5 / 0.3	0.4 / 0.2	0.3 / 0.2	0.4 / 0.3	0.3 / 0.2	0.2 / 0.1
0.5	0.6 / 0.4	0.5 / 0.3	0.4 / 0.2	0.5 / 0.3	0.4 / 0.2	0.3 / 0.1	0.3 / 0.2	0.3 / 0.2	0.2 / 0.1
1.0	0.6 / 0.3	0.5 / 0.3	0.4 / 0.2	0.4 / 0.2	0.3 / 0.2	0.2 / 0.1	0.3 / 0.2	0.2 / 0.1	0.2 / 0.1

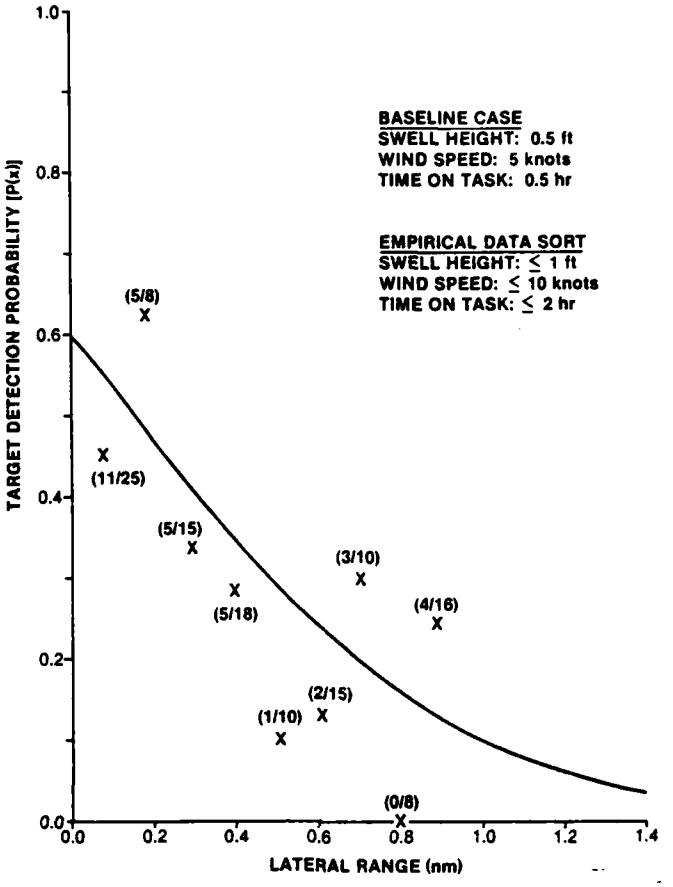


FIGURE 3-8. PREDICTED AND ACTUAL P(x) VERSUS LATERAL RANGE FOR BASELINE CASE (AIRCRAFT SEARCHING FOR PIWs)

For this case, a P(x) of 0.47 is predicted for a lateral range of 0.2 nautical miles. Table 3-12 shows the extent to which this P(x) is predicted to be changed by the indicated change in significant parameters (all others remaining constant).

Swell height and wind speed collectively had the greatest influence on P(x). Time on task had a greater influence on P(x) for PIWs than was seen for 16-foot boat and life raft targets. From these results, it is postulated that greater vigilance may be required for aircraft scanners to detect PIWs than larger boats and life rafts.

TABLE 3-12. INFLUENCE ON P(x) OF CHANGES IN SIGNFICANT PARAMETERS -- AIRCRAFT SEARCHING FOR PIWs

SIGNIFICANT PARAMETERS			PROBABILITY OF DETECTION*	
PARAMETER(S)	BASELINE VALUES	MODIFIED VALUES	BASELINE CASE	MODIFIED CASE
Wind speed and swell height	5 knots and 0.5 ft	15 knots and 3 ft	0.47	0.19
Time on task	0.5 hr	2 hr	0.47	0.26
*Predicted P(x) at a lateral range of 0.2 nm.				

The following variables were not found to have a significant influence on P(x) at a 90-percent or greater confidence level: SRU type (fixed-wing aircraft or helicopters), visibility, cloud cover, aircraft altitude, elevation of the sun, geographical location, and target location within the search area.* These results all appear reasonable based upon the results presented for other target and SRU types.

Another reason why these parameters may not have had a significant influence on P(x) is because, for all but the best combination of conditions, predicted P(x) is <0.2 for most lateral ranges. Even a 0.0 actual P(x) is not statistically different than a 0.2 predicted P(x) for sample sizes less than about 10 in a given range interval.

Aircraft altitudes investigated during PIW searches were 200, 500, and 800 feet. In addition, altitude performance tests were conducted (as described in Section 2.6.1) for a range of altitudes between 200 and 1100 feet. Figure 3-9 shows CDP versus range curves for six different altitudes. Several characteristics of these CDP curves are of interest:

*Search speed for fixed-wing aircraft was maintained at a minimum (150 knots) because, based upon results for 16-foot boats and life rafts, it was determined that a reduction in detection performance would be expected for higher search speeds.

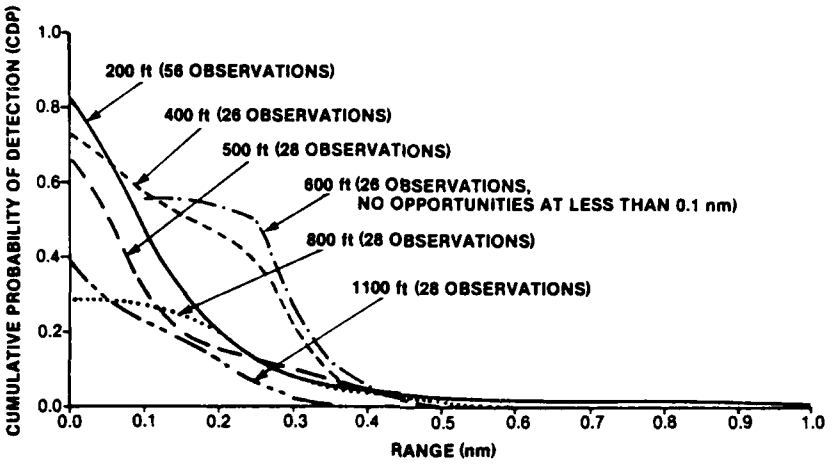


FIGURE 3-9. CDP VERSUS RANGE CURVES FOR PIWs

1. CDP is less than 0.1 beyond 0.4 nautical mile for all altitudes.

2. At higher altitudes (800 and 1100 feet) and ranges inside 0.1 nautical mile, CDP is significantly lower than for other altitudes.

3. None of the CDP curves reach 1.0 at zero range (the mean CDP at zero range is approximately 0.6).

Table 3-13 presents predictions of aircraft sweep widths for the environmental conditions shown.

3.5 Surface Craft and Aircraft Detection of 41-Foot Boats

The experiments provided a total of eighty-five (85) 41-foot boat detection opportunities for surface craft and 78 detection opportunities for aircraft. As shown in Table 2-6, this data was collected over a relatively small range of environmental conditions (high visibility and moderate wind and swell conditions). For this reason and also because of the small size of

TABLE 3-13. SWEEP WIDTHS FOR AIRCRAFT SEARCHING FOR PIWs

SWEEP WIDTH (nm)	WIND SPEED (knots)	SWELL HEIGHT (ft)	TIME ON TASK (hr)
0.7	≤10	0-1	0-1
0.5	≤10	0-1	1-2
0.3	≤10	0-1	>2
0.3	15	2-3	0-1
0.2	15	2-3	1-2
0.1	15	2-3	>2
0.1	20	4-5	0-1
0.1	20	4-5	1-2
0.1	20	4-5	>2

the data bases, a comprehensive investigation of the environmental and controllable parameters that might influence P(x) for 41-foot boat targets was not possible. The analysis that was conducted was to develop a single P(x) versus lateral range curve for the experiment environmental conditions for both surface craft and aircraft. These curves and the empirical data are shown in Figure 3-10. Aircraft P(x) is consistently above surface craft P(x) for 41-foot boat targets even though the average swell height and wind speed were 1 foot and 4 knots higher, respectively, for aircraft than for surface craft. The sweep widths that are associated with the predicted P(x) versus lateral range curves are 9.6 nautical miles for aircraft and 5.5 nautical miles for surface craft.

3.6 Comparison of Surface Craft and Aircraft Detection Performance

Table 3-14 compares surface craft and aircraft sweep width estimates for each target type.

There are more similarities than differences between surface craft and aircraft sweep widths. In general, aircraft detection performance relative to surface craft performance improved as the size of the target increased. This is to be expected because larger targets allow aircraft to

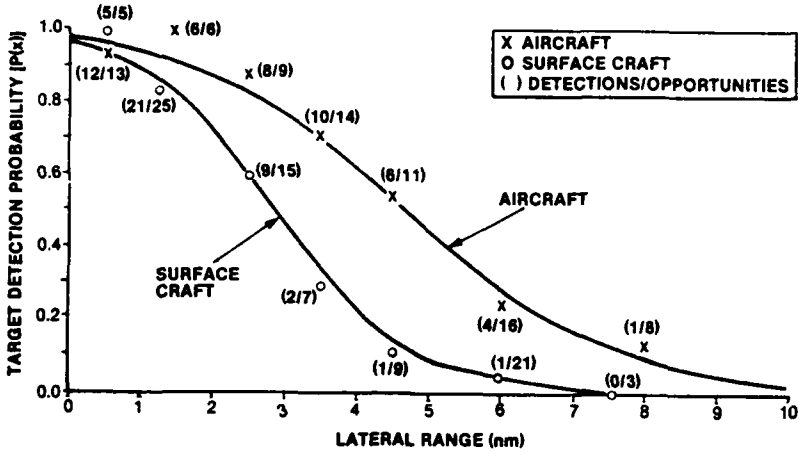


FIGURE 3-10. PREDICTED AND ACTUAL P(x) VERSUS LATERAL RANGE CURVES FOR 41-FOOT BOAT TARGETS

TABLE 3-14. SWEEP WIDTH COMPARISON FOR SURFACE CRAFT AND AIRCRAFT

SRU TYPE	TARGET	SWEEP WIDTH (nm)	ENVIRONMENTAL CONDITIONS			
			VISIBILITY (nm)	WIND SPEED (knots)	SWELL HEIGHT (ft)	CLOUD COVER (percent)
82'/95'/210' cutters	White 16-foot boat or orange canopied life raft	4.5	≥10	≥10	0-1	0
41'/44' boats		3.2				
Helicopters		4.4				
Fixed-wing aircraft		4.1				
82'/95'/210' cutters	PIWs	0.7				
41'/44' boats		0.4				
Helicopters		0.7				
Fixed-wing aircraft		0.7				
Surface craft	41-foot boats	5.5				
Aircraft		9.6				
82'/95'/210' cutters	White 16-foot boat or orange canopied life raft	0.9	≥10	20-25	4-5	0
41'/44' boats		0.8				
Helicopters		1.4				
Fixed-wing aircraft		1.1				
82'/95'/210' cutters	PIWs	0.4				
41'/44' boats		0.3				
Helicopters		0.1				
Fixed-wing aircraft		0.1				

Notes: 1. Time on task: surface craft, 0 to 2 hours; aircraft, 0 to 1 hour. Fixed-wing aircraft search speed: 150 knots.
2. For 41-foot boat targets, the sweep width values were included in the category that was closest to the limited set of environmental conditions experienced for this data base.

make better use of their advantageous height of eye, while for smaller targets (particularly PIWs) aircraft altitude significantly increases the range to the target, and higher search speeds do not permit scanners to fixate on the target at the close ranges at which a small target must be sighted.

3.7 Comparison of Experiment Results with SAR Manual Sweep Width Tables

This section provides a comparison of experiment sweep width estimates for 16-foot boats and life rafts, 41-foot boats, and PIWs with the guidance currently available in the SAR Manual.* The experiment results for 16-foot boats were compared to the SAR Manual sweep width tables for boats smaller than 30 feet; life raft results were compared to SAR Manual sweep width tables for life raft targets; 41-foot boat sweep widths were compared to sweep width tables for 30- to 60-foot boats, while sweep widths for PIWs were compared to the guidance of Section 850 (pages 8 through 14) of the SAR manual.

3.7.1 Comparison of Experimental Results for 16-Foot Boats with SAR Manual Sweep Width Tables. Table 3-15 compares the SAR Manual sweep width table for boats less than 30 feet (see Appendix B) with sweep widths for white 16-foot boats from Tables 3-2 and 3-7. The following points of comparison between these data are of interest:

1. When visibility is less than or equal to 5 nautical miles, larger sweep widths are predicted from the empirical data than are provided in the SAR Manual sweep width tables. The difference is particularly marked when visibility is 1 nautical mile.

2. For visibilities of 15 nautical miles or greater, SAR Manual sweep widths for aircraft are as much as 78 percent greater than experimental predictions. This

*Sweep width tables of the SAR manual are included as Appendix B.

TABLE 3-15. COMPARISON OF SAR MANUAL SWEEP WIDTHS FOR BOATS LESS THAN 30 FEET WITH EXPERIMENTAL SWEEP WIDTH PREDICTIONS FOR WHITE 16-FOOT BOATS (CUTTERS AND HELICOPTERS)*†

METEOROLOGICAL VISIBILITY (nm)	ALTITUDE (ft)				
	0‡	500	1000	2000	3000
1	0.5 / 1.4	0.5 / 1.4**	0.5 / 1.4**	--- / ---	--- / ---
3	2.5 / 2.9	2.4 / 2.8	2.3 / 2.8	1.8 / 2.8**	0.4 / 2.8**
5	2.7 / 3.8	2.7 / 3.6	2.7 / 3.6	3.2 / 3.6**	3.3 / 3.6**
10	3.9 / 5.0	4.0 / 4.1	4.2 / 4.1	4.5 / 4.1**	5.8 / 4.1**
15	5.2 / 5.0	5.3 / 4.1	5.5 / 4.1	6.7 / 4.1**	7.0 / 4.1**
20	5.3 / 5.0	5.6 / 4.1	6.2 / 4.1	6.8 / 4.1**	7.1 / 4.1**
30	5.5 / 5.0	6.2 / 4.1	7.0 / 4.1	7.0 / 4.1**	7.1 / 4.1**
40	5.6 / 5.0	6.3 / 4.1	7.1 / 4.1	7.1 / 4.1**	7.2 / 4.1**
50	5.7 / 5.0	6.4 / 4.1	7.2 / 4.1	7.2 / 4.1**	7.3 / 4.1**

*SAR Manual sweep widths/experimental data predictions.

†Time on task: cutters, 0 to 2 hours; helicopters, 0 to 1 hour. Cloud cover: 50 percent. Wind speed: 10 knots. Swell height: 0 to 1 foot.

‡Surface craft.

**This combination of parameters did not exist in the data base. Sweep width is extrapolated from the LOGODDS model.

is primarily because the SAR Manual sweep widths show substantial and continued increases with higher altitudes and visibilities beyond 10 nautical miles. Neither of these characteristics is consistent with experimental results presented in Section 3.2. Further, equation (2) of Appendix E of Koopman (Reference 3) shows that, at the ranges at which 16-foot boats are expected to be sighted (mean about 2 nautical miles), contrast decreases by a factor of about 10 when visibility decreases from 10 to 3 nautical miles and by a factor of about 1000 as visibility decreases from 10 to 1 nautical mile. However, for the same targets, contrast increases by less than a factor of 2 when visibility increases from 10 to 50 nautical miles. Reference 9 also suggests the SAR Manual overstates the improvement in sweep width. Based upon field data, Lamar concluded that ". . . the effect of atmospheric haze can be neglected for the Mark II raft provided meteorological visibility exceeds 4.5 nm."

3. At longer visibilities, the SAR Manual predicts larger sweep widths for aircraft than for surface craft, while these experimental results indicate the opposite to be the case.

4. The lighting correction factor for cloud cover and the whitecap correction factor (for wind speed) of the SAR Manual sweep width tables are both multiplicative factors, so that the percentage reduction in sweep width is constant for a given change in wind speed or cloud cover across all environmental conditions. This is not consistent with these experimental results where, for larger sweep widths, an increase in cloud cover would cause a decrease in sweep width of a greater magnitude than for smaller sweep widths, but the <u>percentage</u> decrease in sweep width would be less than that for smaller sweep widths.

Also, the magnitude of the SAR Manual multiplicative factors is not consistent with these experimental results. For example, an increase in cloud cover from 50 to 100 percent is predicted to reduce a given sweep width to 70 percent of the reference value, while no reduction in sweep width is predicted for an increase in wind speed from 10 to 20 knots, which is inconsistent with findings in Sections 3.1 and 3.2. For example, for a base case of a surface craft, with 10-knot wind speed, 15-nautical mile visibility, and 50-percent cloud cover, both the SAR Manual and these experimental results predict a sweep width of 5.2 nautical miles for a white 16-foot boat. If wind speed is increased to 20 knots (all other things remaining constant), a sweep width of 5.2 nautical miles is still predicted by the SAR Manual, while, if cloud cover is increased to 100 percent (all other things remaining constant), sweep width is predicted by the SAR Manual to be reduced to 3.6 nautical miles (5.2 nautical miles x 0.7). From Table 3-2, predictions from the experimental data are that an increase in cloud cover from 50 to 100 percent will only reduce sweep width from 5.2 to 5.0 nautical miles, while an increase in wind speed from 10 to 20 knots will reduce the sweep width from 5.2 to 1.3 nautical miles.

3.7.2 Comparison of Experimental Results for Life Rafts with SAR Manual Sweep Width Tables. Table 3-16 compares the SAR Manual sweep width table for life rafts (see Appendix B) with sweep widths for orange life rafts without canopies from Tables 3-3 and 3-8. The following points of comparison are of interest:

1. For surface craft, sweep width predictions are consistently higher than SAR Manual sweep widths for all visibilities.

TABLE 3-16. COMPARISON OF SAR MANUAL SWEEP WIDTHS FOR LIFE RAFTS WITH EXPERIMENTAL DATA SWEEP WIDTH PREDICTIONS FOR ORANGE LIFE RAFTS WITHOUT CANOPY (CUTTERS AND HELICOPTERS)*†

METEOROLOGICAL VISIBILITY (nm)	ALTITUDE (ft)			
	0‡	500	1000	2000
1	0.5 / 1.2	0.5 / 1.1**	0.5 / 1.1**	--- / ---
3	1.0 / 2.3	1.2 / 2.1	1.2 / 2.1	1.0 / 2.1**
5	1.4 / 3.2	1.6 / 2.7	1.6 / 2.7	2.7 / 2.7**
10	1.8 / 4.3	1.8 / 3.1	2.1 / 3.1	3.6 / 3.1**
15	1.9 / 4.3	1.9 / 3.1	2.6 / 3.1	3.6 / 3.1**
20	2.0 / 4.3	2.1 / 3.1	2.8 / 3.1	3.6 / 3.1**
30	2.2 / 4.3	2.3 / 3.1	2.9 / 3.1	3.6 / 3.1**
40	2.2 / 4.3	2.4 / 3.1	2.9 / 3.1	3.6 / 3.1**
50	2.2 / 4.3	2.4 / 3.1	3.0 / 3.1	3.6 / 3.1**

*SAR Manual sweep widths/experimental data predictions.

†Time on task: cutters, 0 to 2 hours; helicopters, 0 to 1 hour. Cloud cover: 50 percent. Wind speed: 10 knots. Swell height: 0 to 1 foot.

‡Surface craft.

**This combination of parameters did not exist in the data base. Sweep width was extrapolated from the LOGODDS model.

2. For aircraft, predicted sweep widths are greater than SAR Manual values for visibilities of 10 nautical miles or less. For visibilities beyond 10 nautical miles, there is good agreement between these predictions and SAR Manual values at altitudes of 1000 feet.

3. Item 4 of Section 3.7.1 concerning multiplicative factors for cloud cover and wind speed also applies for life rafts. For example, for a base case of a helicopter at 1000 feet, with wind speed of 10 knots, cloud cover of 50 percent, and visibility of 15 nautical miles, the SAR Manual predicts a sweep width of 2.6 nautical miles, while a sweep width of 3.1 nautical miles is predicted from the experimental data. If wind speed is increased to 20 knots or cloud cover is increased to 100 percent (all other things remaining constant), a sweep width of 1.8 nautical miles is predicted from the SAR Manual. This is compared to a predicted sweep width from the experiments of 2.9 nautical miles if cloud cover increases to 100 percent and 0.8 nautical miles if the wind speed increases to 20 knots (see Table 3-16).

3.7.3 Comparison of Experimental Results for 41-Foot Boats with SAR Manual Sweep Width Tables. As indicated in Section 3.5, only a limited amount of detection data for a narrow range of environmental conditions was collected for 41-foot boat targets. Therefore, a comprehensive comparison of the experimental data with the SAR Manual sweep width tables for 30- to 60-foot boats is not possible for these 41-foot boat targets. Table 3-17 presents the only sweep width comparisons that can be made. For aircraft, Table 3-17 shows general agreement between the SAR Manual and the experimental data, but, for surface craft, the sweep width from the experimental data is only 65 percent of the SAR Manual sweep width. The sweep width predicted for surface craft searching for 41-foot boats was lower than expected based upon results for 16-foot boats, as shown in Table 3-2. For similar environmental conditions, the predicted sweep width for a surface craft searching for

TABLE 3-17. COMPARISON OF SAR MANUAL SWEEP WIDTHS FOR 30- TO 60-FOOT BOATS WITH EXPERIMENTAL SWEEP WIDTH PREDICTIONS

SAR MANUAL SWEEP WIDTH (30'-60' BOATS)	PREDICTED SWEEP WIDTH FOR 41' BOATS	SRU TYPE	MEAN EXPERIMENT CONDITIONS			
			VISIBILITY (nm)	ALTITUDE (ft)	WIND SPEED (knots)	CLOUD COVER (percent)
8.5	5.5	Boats and cutters	13.6	-	11.5	50
10.2	9.6	Helicopters and fixed-wing aircraft	14.6	1150	15.3	20

a white 16-foot boat (only 0.38 the size of a 41-foot boat) is 4.3 nautical miles (mean of sweep widths for cutters [5.0 nautical miles] and SAR boats [3.6 nautical miles]). There is no clear explanation for the minimal increase in sweep width for the larger white boats, but it is noted that the maximum horizontal sighting range (distance limited by horizon only) increases only 22 percent for the 41-foot boat.

3.7.4 Comparison of Experimental Results for PIWs with SAR Manual Guidance. The SAR Manual currently provides no sweep width tables for PIWs. The only SAR Manual guidance on PIW sweep widths is in Section 850 on pages 8 through 64 and is that SAR Coordinators have established an assumption that ". . . the sweep width for a person in the water will be one-tenth of the sweep width for a raft under similar visibility, wind, cloud cover, and search altitude conditions." Table 3-18 shows a comparison between PIW sweep widths based upon the above assumption and the experimental results.

This comparison shows that, for favorable environmental conditions and with a "fresh crew," the SAR Manual guidance underestimates SRU detection performance by factors of from 3 to 6. As conditions deteriorate and/or the search progresses, the experimental data predicts that these PIW sweep widths will decrease to the SAR Manual predictions (see Tables 3-11 and 3-13).

TABLE 3-18. COMPARISON OF SAR MANUAL GUIDANCE WITH EXPERIMENTAL DATA PREDICTIONS FOR PIWs*†

METEOROLOGICAL VISIBILITY (nm)	ALTITUDE (ft)		
	0‡	500	1000
1	0.05 / ---	0.05 / ---	0.05 / ---
3	0.1 / 0.6	0.1 / ---	0.1 / ---
5	0.1 / 0.6	0.2 / 0.7	0.2 / ---
10	0.2 / 0.6	0.2 / 0.7	0.2 / ---
15	0.2 / 0.6	0.2 / 0.7	0.3 / ---
20	0.2 / 0.6	0.2 / 0.7	0.3 / ---
30	0.2 / 0.6	0.2 / 0.7	0.3 / ---
40	0.2 / 0.6	0.2 / 0.7	0.3 / ---
50	0.2 / 0.6	0.3 / 0.7	0.3 / ---

*SAR Manual guidance/experimental data predictions.

†Surface craft sweep widths for cutters. Time on task: 0 to 2 hours for surface craft: 0 to 1 hour for aircraft. Cloud cover: 50 percent. Wind speed: 10 knots.

‡Surface craft.

3.8 Contribution of Inaccuracies in Environmental Measurements to Uncertainties in Sweep Width Estimates.

As discussed in Section 2.5, during the Winter 1981 Experiment, an instrumentation package was provided to measure wind direction and speed, swell height, and visibility. Therefore, an opportunity was provided to quantify the accuracy with which these environmental parameters can be estimated by SRUs and, further, knowing the sensitivity of sweep width to changes in these parameters, to estimate the uncertainty in sweep width because of inaccuracies in SRU environmental estimates.

Table 3-19 shows the accuracy of SRU swell height, wind direction, wind speed, and visibility measurements. It is of note that the statistics (mean, median, standard deviation, and 50-percent confidence bounds) include not only the accuracy with which SRUs can estimate environmental parameters, but also, to a limited extent, variability in these parameters over the search area (at a given time) and changes in the environmental parameters over time. This is the case because reference data was averaged over a 30-minute interval, while the SRU measurement was a single-point estimate at any time during that 30-minute interval. Also, SRUs were generally from 0.5 to 3.0 nautical miles from the reference towers when the environmental measurements were made. Therefore, the statistics shown in Table 3-19 represent an upper bound on the uncertainties with which SRUs can estimate environmental conditions. However, variability in environmental conditions within the search area at a given time and variability in the same area over time are realities during actual searches. Therefore, the accuracies of SRU estimates shown in Table 3-19 are expected to be representative of the capabilities of SRUs to predict and estimate conditions over the entire search area during an actual search.

As shown in Table 3-19, over 50 percent of SRU swell height estimates differed from the reference value by less than 1 foot. Wind direction estimates were within 15 degrees of the reference value for more than 50 percent of SRU estimates. More than 50 percent of SRU wind speed estimates were within 4 knots of the reference value. The results shown in Table 3-19

TABLE 3-19. ACCURACY OF SRU ENVIRONMENTAL MEASUREMENTS

STATISTICS	ENVIRONMENTAL PARAMETERS																	
	SWELL HEIGHT (ft)						WIND DIRECTION (deg)			WIND SPEED (knots)						VISIBILITY (nm)		
	0 to 1.9			2 to 4						0 to 9			10 to 25			2 to 20		
	OSC*	SURFACE CRAFT†	AIR-CRAFT†	OSC	SURFACE CRAFT	AIR-CRAFT	OSC	SURFACE CRAFT	AIR-CRAFT	OSC	SURFACE CRAFT	AIR-CRAFT	OSC	SURFACE CRAFT	AIR-CRAFT	OSC	SURFACE CRAFT	AIR-CRAFT
Mean (SRU measurement minus reference value)	-0.7	+0.1	+0.3	-0.5	-1.5	-0.1	0.0	-5	-12	+0.5	+2.0	-0.8	-1.7	-2.0	-2.2	-1.1	+4	-3
Median (SRU measurement minus reference value)	-0.7	-0.2	+0.2	-0.5	-1.7	-0.7	-10	-5	-12	+0.5	+2.0	-1.0	-1.8	-3.0	-2.6	-1.3	+4	-1.5
Standard deviation	0.8	0.8	1.3	0.6	0.8	1.3	23.5	28.3	50.7	2.5	4.1	4.3	1.6	4.4	2.8	3.5	1.5	5.1
Upper and lower boundaries of middle 50 percent of data	-0.3 to -0.9	+0.6 to -0.3	-0.2 to -0.3	-0.3 to -0.8	-0.9 to -1.9	+0.1 to -0.9	+14 to -18	+12 to -13	+7 to -32	+1.7 to -0.7	+3.8 to 0.0	+0.8 to -2.1	-1.0 to -2.8	0.0 to -5.0	-1.2 to -3.8	+1.5 to -2.5	+3.5 to +5.2	-0.5 to -5.5

*The On-Scene Commander (OSC) vessel recorded weather conditions every hour.

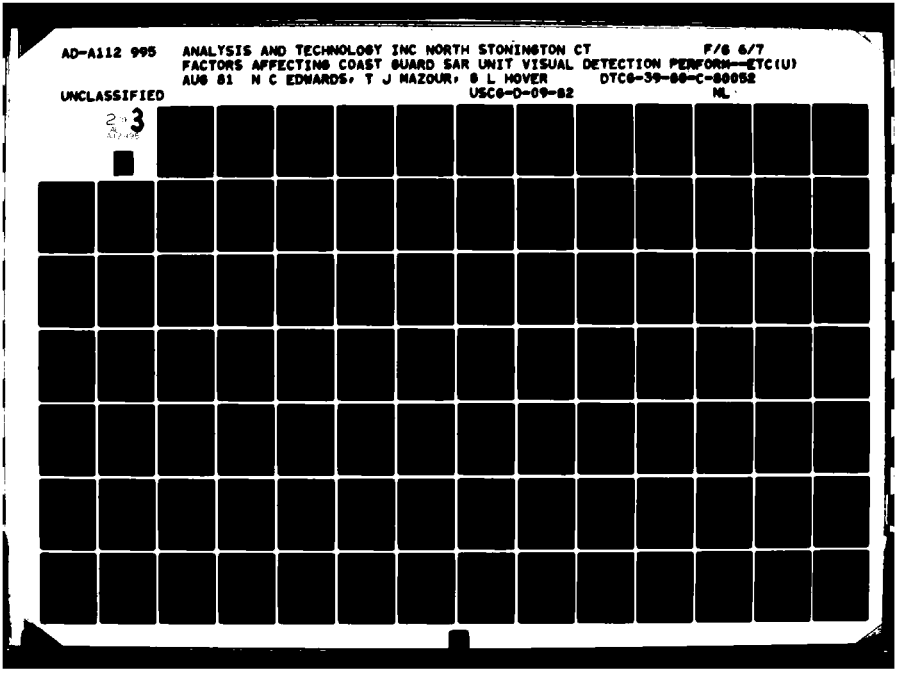
†Search units recorded weather when in the vicinity of the weather stations (Platforms I and II) and when changes in weather occurred.

point out that overall the OSC was most accurate in estimating environmental conditions. These results support the experimental design decision to utilize OSC environmental measurements as the experiment standards rather than those of individual SRUs. Surface wind measurements or estimates were made at various heights between the anemometer located at 90 feet and the sea surface (OSC at 10 feet, surface vessels at 10 to 60 feet, and from airborne observation of surface roughness). One explanation for the fact that SRU wind speed estimates were consistently lower than the NCSC reference data at higher (10 to 25 knots) wind speeds is the wind velocity shear due to surface friction (References 10 and 11).

Cloud cover is the environmental parameter found to influence sweep width that is not presented in Table 3-19 because no instrumentation to measure cloud cover was available. However, to obtain an estimate of the consistency of SRU cloud cover estimates, OSC cloud cover estimates were compared to SRU cloud cover estimates made within an hour of one another. Since there is no reason to suspect that there should be an overall bias (either high or low) in SRU or OSC cloud cover estimates, these comparisons provide a good estimate of the variability in SRU cloud cover estimates.

For both aircraft and surface craft, the mean and median difference between OSC and SRU cloud cover estimates was 0.1 or less. Seventy-five percent of the estimates differed by no more than 0.2 for both aircraft and surface craft.

On the basis of the previous discussions in this section concerning SRU environmental measurement accuracy, it is possible to quantify the uncertainties in sweep width resulting from these inaccuracies. For a baseline case of a cutter searching for a white 16-foot boat or an orange canopied life raft with a wind speed of 15 knots, swell height of 2.5 feet, time on task of 1 hour, visibility of 10 nautical miles, and cloud cover of 50 percent, a sweep width of 2.5 nautical miles is predicted (see Table 3-2). Table 3-20 shows the 50-percent confidence interval for surface craft predictions of wind speed, swell height, cloud cover, and visibility, and the associated 50-percent confidence interval on sweep width predictions.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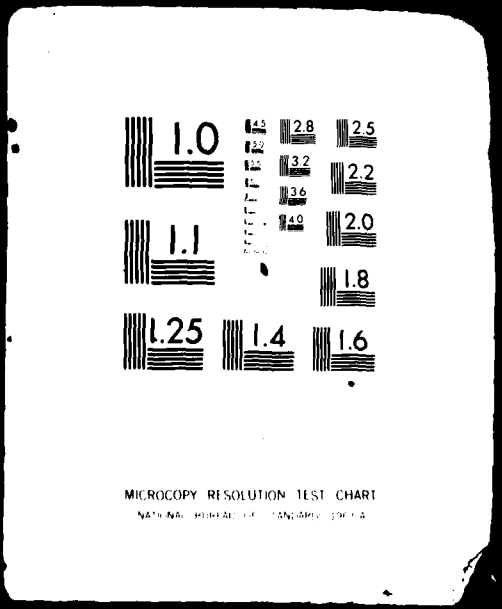

TABLE 3-20. FIFTY-PERCENT CONFIDENCE INTERVAL ON SWEEP WIDTH UNCERTAINTY DUE TO SRU ENVIRONMENTAL MEASUREMENT INACCURACIES

ENVIRONMENTAL PARAMETERS	50-PERCENT CONFIDENCE INTERVAL ON PARAMETER ESTIMATES (WITH RESPECT TO THE MEAN)	50-PERCENT CONFIDENCE INTERVAL ON SWEEP WIDTH ESTIMATE (nm)
Wind speed (knots)	0 to -5	2.5 to 3.2
Swell height (ft)	-0.9 to -1.9	2.9 to 3.2
Cloud cover (percent)	+20 to -20	2.45 to 2.6
Visibility (nm)	+3.5 to +5.2	2.5*

*No change in sweep width is predicted for increases in visibility beyond three times the expected detection range (≈3 nm for these targets).

It is noted that surface craft consistently underestimated swell heights for swell heights of 2 to 4 feet. This results in a consistent overestimation of sweep widths (in this case by from 0.5 to 0.8 nautical miles).

3.9 Navigation Inaccuracies of SRUs

As described in Section 2.4, use of the MTS made it possible to quantify the navigation characteristics of SRUs during searches by comparing the intended search pattern (PS or CS) with the actual SRU track. Track data was stored on digital tape only during the 1980 and 1981 experiments; therefore, the analysis of navigation characteristics was limited to these experiments (a total of 196 searches). The initial analysis involved an overall examination of these searches to determine whether they were conducted as assigned. A search was determined to have been conducted as assigned if the search start point was within the search area and at the appropriate corner, and if the pattern was completed in the general manner intended. The percentage of searches for each SRU/navigation method combination that met the above criteria are as follows:

SRU Type	Navigation Method	Percentage of Searches Conducted as Assigned*
82'/95'/210' Cutters	LORAN-C	100 (59/59)
	DR/RADAR	100 (6/6)
41'/44' Boats	LORAN-C	100 (3/3)
	DR/RADAR	81 (39/48)
Helicopters	LORAN-C	95 (52/55)
	TACAN	0 (0/4)
Fixed-wing aircraft	INS	73 (62/85)
	LORAN-C/TACAN	72 (13/18)

*The numbers in parentheses are number of searches conducted as assigned/total searches conducted.

For those searches that were conducted as assigned,† statistics concerning the navigation characteristics of the search were developed. These included:

1. The circular error probable (CEP) around the search start point (i.e., the circular area around the start point inside which 50 percent of the start points were included),‡

2. The mean deviation of the actual track spacing over the entire search compared to the intended track spacing for both adjacent and non-adjacent tracks,

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†Some searches that were completed as assigned are not included in the statistics of Table 3-21 because the available digitized track data for these searches was insufficient to provide meaningful statistics.

‡This statistic was originally developed as two components; a cross-track and an along-track uncertainty. However, it was found that the magnitude of the uncertainty was similar in both directions. Therefore, CEP was found to be a suitable statistic.

TABLE 3-21. NAVIGATION CHARACTERISTICS OF SRUs

SRU TYPE	NAVIGATION METHOD	DESIRED TRACK SPACING (nm)	WEATHER CONDITIONS*	NUMBER OF SEARCHES	CIRCULAR ERROR PROBABLE (CEP) AROUND SEARCH START POINT (nm)	MEAN DEVIATION OF TRACK SPACING FROM INTENDED (nm)		STANDARD DEVIATION OF TRACK SPACING FROM INTENDED (nm)		DEVIATION OF ACTUAL HEADINGS FROM INTENDED TRACK (deg)	
						ADJACENT LEGS	NON-ADJACENT LEGS	ADJACENT LEGS	NON-ADJACENT LEGS	MEAN	STANDARD DEVIATION
82'/95'/210' Cutters	LORAN-C	>1	Poor	7	0.1	<0.1	<0.1	0.1	0.1	-1.3	6.6
		>1	Good	15	0.3	<0.1	<0.1	0.1	0.2	2.8	11.1
		≤1	Poor	2	0.5	<0.1	<0.1	0.1	0.1	5.2	14.3
		≤1	Good	11	0.5	<0.1	<0.1	0.1	0.1	1.5	8.1
	DR/RADAR	≤1	Good	9	0.4	<0.1	<0.1	0.2	0.2	1.6	11.6
		≤1	Poor	1	0.3	<0.1	<0.1	0.1	0.1	3.5	19.2
41'/44' Boats	LORAN-C	>1	Poor	1	0.1	0.1	0.3	0.1	0.2	1.0	16.4
		≤1	Good	2	0.2	<0.1	0.6	0.3	0.2	0.5	5.9
	DR/RADAR		Poor	2	0.6	0.1	0.1	0.4	0.4	2.3	14.2
			Good	23	0.6	0.1	0.1	0.3	0.4	0.6	14.1
Helicopters	LORAN-C	>1	NA	28	0.4	<0.1	0.1	0.2	0.2	1.9	7.6
		≤1	NA	11	0.6	<0.1	<0.1	0.1	0.1	1.6	7.6
Fixed-wing aircraft	LORAN-C and TACAN	>1	NA	9	0.7	<0.1	<0.1	1.0	1.1	0.1	10.9
	INS	>1	NA	24	1.0	<0.1	0.1	0.1	0.2	0.9	9.0

*Good weather was categorized as swell height <3 feet, while poor weather was categorized by a swell height ≥3 feet.

3. The standard deviation of the actual track spacing over the entire search compared to the intended track spacing for both adjacent and non-adjacent tracks, and

4. The mean and standard deviation of the actual course made good during the entire search compared to the intended course.

Table 3-21 shows these statistics for the combinations of SRU and navigation methods available during the experiments. The data in Table 3-21 is further divided by desired track spacing ≤1 nautical mile and track spacings >1 nautical mile. For surface craft, the data is also divided into good (swell height <3 feet) and poor (swell height ≥3 feet) weather conditions.

As seen from Table 3-21, the CEP around the intended search start point was ≤0.5 nautical miles for surface craft and was somewhat higher for aircraft, with a maximum CEP of 1.0 nautical mile for HC-130 aircraft with the INS. This larger CEP for the INS is further evidence of the system's tendency to drift that was qualitatively reported by observers during the conduct of the experiments. While the INS drift did cause the HC-130 aircraft to be less accurate in reaching the search start point than were other SRU types, the INS permitted the HC-130 to fly a search with little deviation from the intended track spacing or heading as shown in Table 3-21.

Overall, cutters using LORAN-C completed the intended search patterns most accurately, with fixed-wing aircraft using LORAN-C/TACAN (HC-131) being the least accurate. The effects of track spacing and poorer weather conditions on SRU navigation characteristics were minimal.

3.10 SRU Detection Envelopes

The SRU detection envelope is the moving area around an SRU (defined in terms of range and relative bearing) within which targets have the potential to be detected. The size and shape of the detection envelope is a function of many factors, including environmental conditions, number and location of scanners, height of eye, field of view of scanners, scanner training and

instructions, and target characteristics. It is felt that a knowledge of the SRU detection envelope will be of value in the conduct of searches to ensure that scanning efforts are appropriately allocated. Section 3.10.1 provides detection envelopes for each SRU/target combination evaluated during the subject experiments. Section 3.10.2 discusses the effect of the sun's relative bearing and elevation on this detection envelope.

3.10.1 Range and Relative Bearing Distribution of SRU Detection Envelopes. Table 3-22 shows the cumulative percentage of targets detected for 2-nautical mile intervals of sighting range (0.2 nautical mile intervals for PIWs) for each SRU/target type combination. For 16-foot boats and life rafts, overall, greater than 50 percent of the targets were detected at ranges less than 2 nautical miles, greater than 90 percent at ranges less than 4 nautical miles, and greater than 99 percent at less than 6 nautical miles. All detections were at ranges less than 8 nautical miles. For 41-foot boat targets, overall, the 50-percent and 90-percent ranges were about 2 nautical miles greater than those for 16-foot boats and life rafts. For 16-foot boats and life rafts, no targets were detected at ranges beyond 8 nautical miles (The sample size for 41-foot boats was about one-tenth of the sample size for 16-foot boats and life rafts; therefore, there is more uncertainty in the statistics presented for 41-foot boats). No PIWs were detected at ranges beyond 1.0 nautical mile; more than 50 percent of the PIWs were detected at ranges less than or equal to 0.2 nautical mile.

In general, targets were detected at or forward of the SRU beam. Figure 3-11 shows a representative detection envelope (obtained from the relative frequency of detections for cutters searching for 16-foot boats). The numbers in each sector refer to the number of targets that were within that range and relative bearing sector when they were first detected. Of the 146 detections shown, only 5 occurred between relative bearings 105 and 255 degrees (3.5-percent) and only 1 between relative bearings 135 and 225 degrees. These results were similar for other SRU target combinations with the overall average being less than 5 percent of targets detected between relative bearings 105 and 255 degrees, and less than 1 percent between relative bearings 135 and 225 degrees. Figure 3-11 shows that only two 16-foot

TABLE 3-22. SRU SIGHTING RANGE DISTRIBUTION

SIGHTING RANGE INTERVAL (nm)	SRU TYPE				CUMULATIVE PERCENTAGE OF TARGETS DETECTED			
					TARGET TYPE			
	CUTTERS	41'/44' BOATS	HELICOPTERS	FIXED-WING AIRCRAFT	LIFE RAFTS	16' BOATS	41' BOATS	PIWs
0-2 (0-0.2 for PIWs)	X				50	65	4	56
		X			80	79	13	63
			X		76	49	24	55
				X	75	49	18	65
0-4 (0-0.4 for PIWs)	X				94	95	60	78
		X			94	94	86	86
			X		97	92	53	88
				X	98	88	59	84
0-6 (0-0.6 for PIWs)	X				99	99	88	90
		X			100	98	100	93
			X		100	99	65	91
				X	100	99	86	89
0-8 (0-0.8 for PIWs)	X				100	100	100	97
		X			100	100	100	100
			X		100	100	100	100
				X	100	100	100	97
0-10 (0-1.0 for PIWs)	X				100	100	100	100
		X			100	100	100	100
			X		100	100	100	100
				X	100	100	100	100

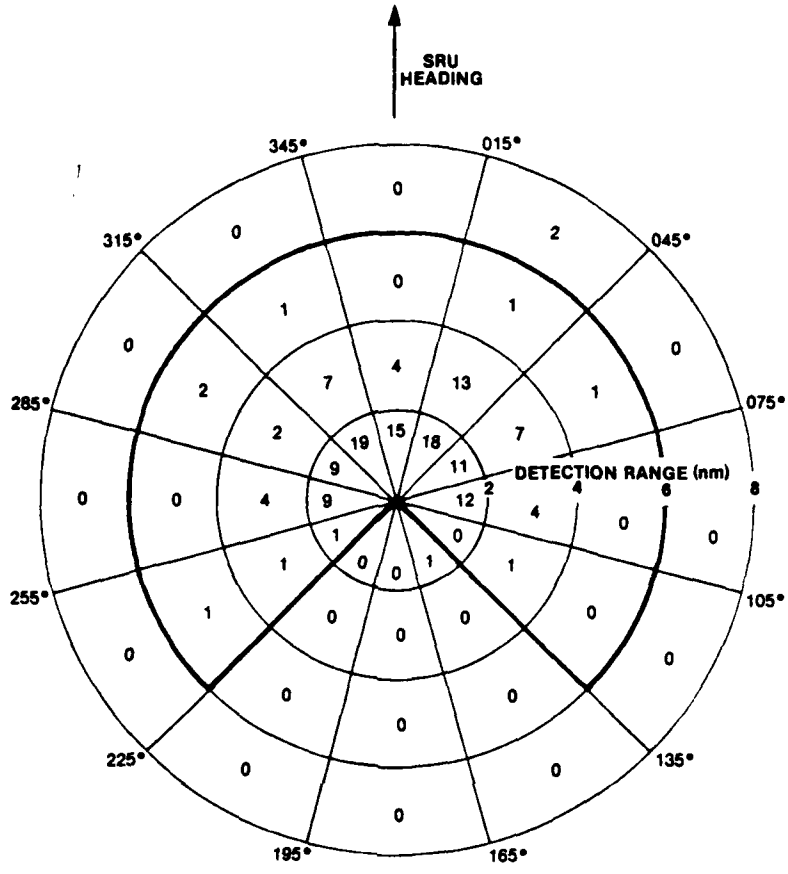


FIGURE 3-11. REPRESENTATIVE DETECTION ENVELOPE FOR CUTTERS SEARCHING FOR 16-FOOT BOATS

boats were detected at ranges beyond 6 nautical miles (1.4 percent), and only eight targets beyond 4 nautical miles (5.5 percent). Figure 3-12 shows the distribution of 16-foot boat and life raft detections as a function of relative bearing of the target at the time of detection. For surface craft, the sectors with the highest detection density were from 15 to 45 degrees and from 315 to 345 degrees relative. Overall, 40 percent of all targets were detected in these 30-degree sectors. Life rafts and 16-foot boats were more than twice as likely to be detected in this sector as in the next two sectors toward the

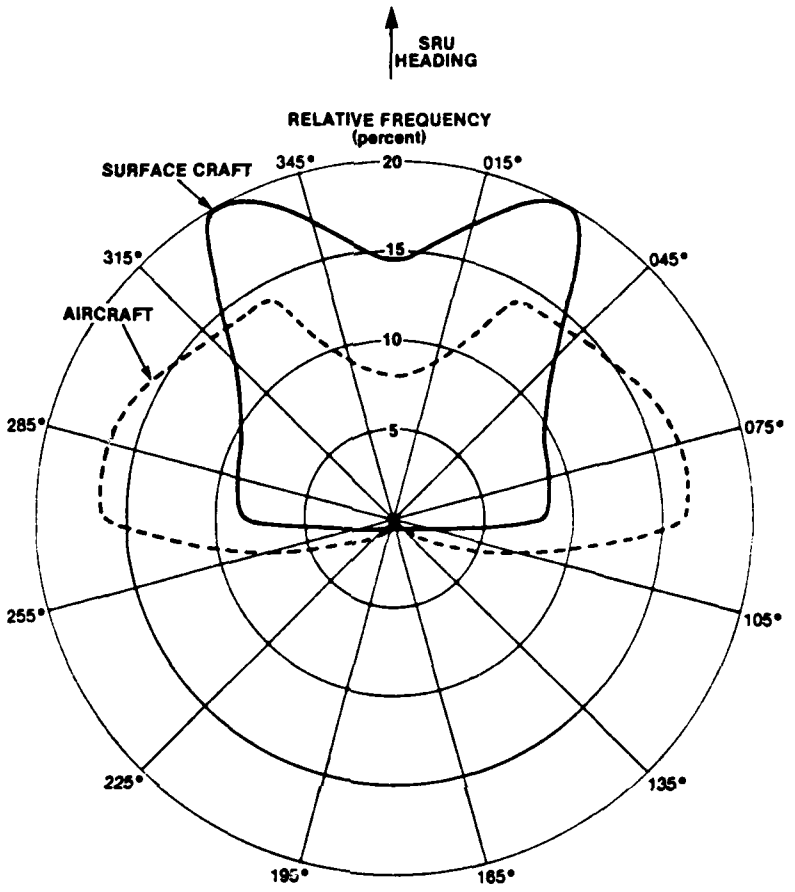


FIGURE 3-12. RELATIVE FREQUENCY OF DETECTIONS VERSUS RELATIVE BEARING OF TARGET (16-FOOT BOATS AND LIFE RAFTS)

beam. For aircraft, the distribution was skewed more toward the beam. Of the sector forward of 105 and 255 degrees relative, the 30-degree sector centered directly ahead had the lowest frequency of target detections. (On average, for aircraft, 8 percent of the targets were detected in this sector versus 14.5 percent for surface craft.) The distribution of detections in the other sectors forward of 105 and 255 degrees relative was nearly uniform, with the beam sector having a slightly higher density.

3.10.2 Effects of the Sun's Relative Bearing and Elevation on the SRU Detection Envelope. The life raft/16-foot boat data base was the only one large enough to permit binning of the detection data on relative bearing and elevation of the sun. Table 3-23 shows the mean sighting range for 30-degree sectors of relative bearing between the sun and the target (0 degrees corresponds to the sun and the target at the same relative bearing at the time of detection). The data is further sorted into two bins based on elevation of the sun (0 to 30 degrees and greater than 30 degrees) consistent with the experience gained in Reference 9. As Table 3-23 shows, there was no strong dependency of detection range on the sun's relative bearing with respect to the target or on elevation of the sun. Overall, the mean detection range for targets where the elevation of the sun was 0 to 30 degrees was 0.2 nautical mile less than when the elevation of the sun was greater than 30 degrees. For aircraft, for those targets where the difference between the relative bearing of the sun and the target at the time of detection was less than 15 degrees and the elevation of the sun was 0 to 30 degrees, the mean detection range was higher than the overall mean, while, for surface craft, the means were lower (in both cases the small sample sizes make conclusions unreliable). For both surface craft and aircraft, the mean sighting ranges tended to be higher for the sectors where the difference between the relative bearing of the sun and the target was greater than 90 degrees. These results are in general agreement with Reference 9 except for two important areas:

1. Reference 9 data indicated a greater reduction in detection range for elevations of the sun ≤30 degrees, and

2. For elevations of the sun ≤30 degrees, Reference 9 data indicated a reduction in detection ranges to less than 1 nautical mile for differences in relative bearing of the sun and the target of less than 60 degrees.

The data on which the results in Reference 9 are based is not available, and therefore a detailed comparison of the results of these experiments with Reference 9 is not possible; however, one reason postulated

TABLE 3-23. INFLUENCE OF SUN'S RELATIVE BEARING AND ELEVATION ON SIGHTING RANGE -- 16-FOOT BOAT AND LIFE RAFT TARGETS

RELATIVE BEARING TO SUN (deg)	MEAN SIGHTING RANGE (nm)*											
	AIRCRAFT						SURFACE CRAFT					
	16' BOATS			LIFE RAFTS			16' BOATS			LIFE RAFTS		
	ELEVATION OF SUN (deg)		OVERALL MEAN	ELEVATION OF SUN (deg)		OVERALL MEAN	ELEVATION OF SUN (deg)		OVERALL MEAN	ELEVATION OF SUN (deg)		OVERALL MEAN
	0-30	>30		0-30	>30		0-30	>30		0-30	>30	
0-15	3.8 (4)	2.4 (23)	2.6	--- (0)	1.3 (14)	1.3	0.3 (1)	1.9 (23)	1.9	1.8 (5)	2.4 (13)	2.2
15-45	--- (0)	2.3 (36)	2.3	1.3 (5)	1.3 (19)	1.3	1.7 (2)	1.6 (27)	1.6	1.4 (5)	1.9 (21)	1.8
45-75	1.7 (4)	2.1 (29)	2.0	0.9 (5)	1.6 (11)	1.4	1.1 (1)	2.5 (23)	2.4	1.2 (12)	1.9 (30)	1.7
75-105	2.7 (3)	2.1 (42)	2.1	1.2 (7)	1.0 (13)	1.4	1.5 (2)	1.9 (39)	1.8	1.6 (2)	2.0 (25)	1.9
105-135	--- (0)	2.5 (33)	2.5	1.7 (7)	1.7 (18)	1.7	1.1 (5)	1.6 (37)	1.5	2.0 (7)	2.1 (35)	2.0
135-165	2.2 (3)	2.5 (35)	2.5	1.7 (6)	1.4 (23)	1.4	1.2 (3)	1.7 (38)	1.7	2.7 (5)	2.8 (34)	2.8
165-195	1.8 (1)	2.4 (20)	2.4	1.6 (3)	2.1 (12)	2.0	1.5 (2)	1.4 (16)	1.4	2.6 (3)	2.3 (13)	2.3
TOTALS	2.1 (15)	2.3 (218)	2.3	1.4 (33)	1.5 (110)	1.5	1.2 (16)	1.8 (203)	1.7	1.9 (39)	2.2 (171)	2.1

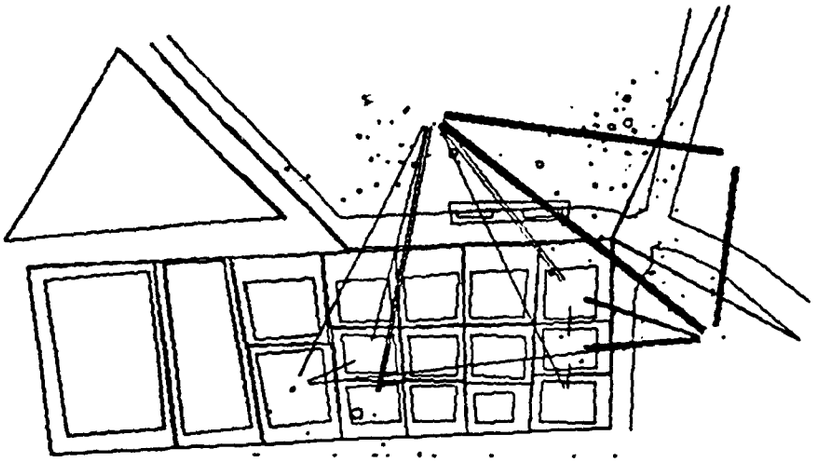
*Numbers in parentheses following the mean sighting ranges are the sample sizes corresponding to that mean.

for the difference between the results is that Reference 9 is based upon an alerted scanner who was told where to expect the targets, while these experiments were conducted as actual searches, where factors such as vigilance and scanning patterns and experience can also contribute to variability in detection ranges. Also, the distribution of elevation of the sun is not known for the Reference 9 data. For these experiments, the mean elevation of the sun for elevations between 0 and 30 degrees was between 15 and 20 degrees, with a small fraction of the data at or near zero degrees. If the Reference 9 data had a greater fraction of the data at or near zero elevation of the sun, the mean sighting range would be expected to be reduced.

3.11 Lookout Scanning Patterns

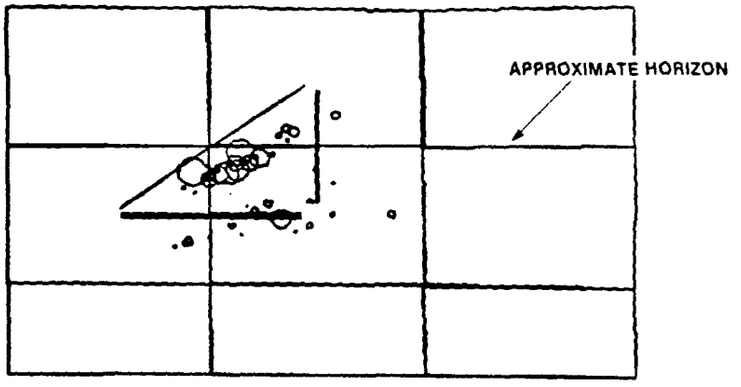
The lookout scanning pattern is the total sequence of eye fixations and movements that a lookout/scanner makes while searching a vision field (References 1 and 7). Effective coverage is dependent upon the individual lookout and it is hypothesized that this is a function of his vigilance, experience, and aptitude. Since the eye must fixate on a target for detection to occur, it is recommended in Coast Guard lookout procedures (References 1 and 7) that a series of fixations be used throughout the probable target area. As discussed in Sanders et al (Reference 6), the lookout must spend time covering the highest probable target areas to be successful. Figures 3-13 and 3-14 show the sequence of visual events recorded during 1-minute segments of a helicopter pilot's and a cutter lookout's search. From review of the NAC eye movement recorder films, these are typical scan patterns of the 16 helicopter and 25 cutter personnel tested.

Preliminary data analysis illustrates that scan patterns are dependent upon lookout/scanner duty assignments and experience level. Helicopter pilots continuously scan in a systematic fashion such as the triangular pattern shown in Figure 3-13, going from the search field (outside aircraft) to the flight instruments (inside aircraft). On the other hand, cutter lookouts tend to fix their eyes on one area within the vision field rather than scan the entire field as illustrated by the large fixation times in Figure 3-14. It was also observed from the scan recording films that cutter



NOTE:
1. DOTS AND CIRCLES REPRESENT POINTS OF FIXATION WITH LARGER AREAS REPRESENTING MORE TIME SPENT FIXATING.
2. LINES REPRESENT GENERAL PATH OF EYE MOVEMENT WITH THICKER LINES REPRESENTING HIGHER FREQUENCY OF TRAVEL.
3. PATTERN IS REDUCED FROM AN APPROXIMATELY 1-MINUTE SCAN SEGMENT.

FIGURE 3-13. SCAN PATTERN OF HH-3F HELICOPTER PILOT DURING SEARCH



NOTE:
1. DOTS AND CIRCLES REPRESENT POINTS OF FIXATION WITH LARGER AREAS REPRESENTING MORE TIME SPENT FIXATING.
2. LINES REPRESENT GENERAL PATH OF EYE MOVEMENT WITH THICKER LINES REPRESENTING HIGHER FREQUENCY OF TRAVEL.
3. PATTERN IS REDUCED FROM AN APPROXIMATELY 1-MINUTE SCAN SEGMENT.

FIGURE 3-14. SCAN PATTERN OF 82-FOOT CUTTER LOOKOUT DURING SEARCH

lookouts spend a larger percentage of time searching close to the ship and astern which are low probable areas for boat and life raft target detection as shown by the detection envelope, Figure 3-11. The lookouts spent the majority of time fixating or scanning horizontally half way to the horizon which means that they were focusing the search effort at approximately 1 nautical mile. Table 3-22 shows that, for boats and life rafts, detections are made out to 6 nautical miles. USAARL is scheduled to deliver a report based upon complete analysis of the data in 1982.

The number of target detections versus number of opportunities that any lookout had during the Winter 1981 Experiment was recorded and is the performance factor used to distinguish between successful (good) and unsuccessful (poor) lookouts. This data is being correlated with the scan patterns, vigilance, experience, and visual perception aptitude to determine the qualities of a good lookout. A separate report on lookout scanning will address these factors to provide recommendations on improving lookout/scanner effectiveness.

CHAPTER 4
CONCLUSIONS AND RECOMMENDATIONS

4.0 CONCLUSIONS

4.1 Conclusions Regarding the Lateral Range Curve and Sweep Width

4.1.1 Conclusions Concerning Primary Independent Variables. Based upon the results presented in Chapter 3, the following conclusions were drawn concerning the primary independent variables identified in Section 1.3.1.

1. SRU Characteristics

The type of search unit was found to be a significant parameter in determining sweep width. Helicopters outperformed fixed-wing aircraft (except in detecting PIWs where all aircraft had similar performance), and cutters consistently outperformed SAR boats. The sweep width tables of the SAR Manual (see Appendix B) give only one sweep width for surface vessel search and a sweep width for each of three different altitudes of aircraft search under any set of environmental conditions. Performance differences among search unit types are indicative of unit characteristics and such distinction should be addressed in a visual detection model.

2. Target Characteristics

Targets of similar size (such as 4- to 7-man life rafts and 16-foot boats) can be grouped together in a detection model since their detectability is affected similarly by changes in environmental or SRU-controllable parameters; however, factors such as color

(which affects the target/background contrast) and shape should also be included in the visual detection model. Against the background at sea, light and/or bright-colored targets were more detectable than were dark-colored targets. A target shape that provides a higher freeboard, i.e., a canopied life raft, was found to be more detectable than a similar size target with lower freeboard (i.e., life raft without canopy).

3. Visibility

The SAR Manual sweep width tables predict a continuing and substantial increase in sweep width as visibility increases from 5 to 50 nautical miles for life rafts and boats less than 30 feet (Appendix B). The sweep width for a surface craft searching for a boat less than 30 feet is predicted to increase from 3.9 to 5.3 nautical miles as visibility increases from 10 to 20 nautical miles. The experimental results, as well as others (Reference 9), have not shown a measureable increase in SRU detection when meteorological visibility was more than 2.5 to 3.0 times the predicted (50-percent) detection range. Therefore, it would be appropriate that sweep widths not show an increase for visibilities that are beyond 2.5 to 3.0 times the predicted detection ranges for the target of interest. This hypothesis should be tested for targets larger than 30 feet.

For visibilities of 1 nautical mile the SAR Manual sweep width tables show a sweep width of one-half the meteorological visibility for boats and life rafts and equal to the meteorological visibility for ships. These experimental results have shown these values to be pessimistic for life rafts and boats. For ships, these

values are in conflict with the definition of meteorological visibility which is the distance at which a large object can first be detected. If an SRU is a definite range law detector out to 1 nautical mile, then the sweep width should be 2 nautical miles, not 1 nautical mile. Therefore, when visibility is 1 nautical mile, the sweep width for ships should approach (but not be greater than) 2.0 nautical miles.

4. Aircraft Altitude

The variation in SAR Manual sweep widths for boats and life rafts with aircraft altitude are in conflict with the experimental results and also with data reported by Lamar in Reference 9. In both experiments, no variability in aircraft sweep widths for altitudes between 500 and 3000 feet was found.* Further, the SAR Manual sweep width tables are in conflict with the SAR Manual text on pages 8-66 and 8-67 where it is stated that ". . . for targets under 30 feet in length, search altitudes below 500 feet are more efficient."

An additional anomaly with respect to aircraft search altitude exists in the SAR Manual sweep width tables for boats longer than 30 feet and ships. A reduction in sweep width with aircraft altitude is shown. Based upon these experimental results, if any change in sweep width should exist for larger targets as altitude increases from 500 to 3000 feet, it should be

*It is noted that these tests were conducted primarily under favorable environmental conditions. There may be a degradation in aircraft detection performance at higher altitudes for higher wind speed and swell conditions; however, these conditions were not evaluated.

an increase not a decrease. The SAR Manual text justifies this reduction in sweep width with increasing altitude for large targets because ". . . as the search altitude is decreased the slant range tends to become more equivalent to the ground range." However, at the ranges at which these larger targets are expected to be detected ($\geq$5 nautical miles), even at an aircraft altitude of 3000 feet, the slant range only exceeds the ground range by 0.5 percent. Therefore, it is concuded that, for boats longer than 30 feet and ships, the SAR Manual sweep widths should not decrease with increasing altitude but should either be constant or increase with increasing altitude. For larger targets, altitudes above 3000 feet may be appropriate.

One other important note concerning the correlation of aircraft visual sweep widths with altitude is that this relationship should allow selection of an altitude that may optimize electronic sensors (such as SLAR or FLIR) that are likely to be used with visual sensors during SAR searches in the future. For example, in Reference 12 it was demonstrated that SLAR detection performance is sensitive to search altitude, with the optimum range of altitudes being from 2000 to 3000 feet.

5. Search Speed

As search speed was increased the search performance of cutters, SAR boats, and helicopters was not degraded. Therefore, cutters and SAR boats should search at the maximum speed which environmental conditions will permit (good platform stability and good search visibility maintained). Also, helicopters should search at the maximum speed permissible for existing conditions. This will minimize the time required to search a particular area with a given probability of

detection. In contrast, for fixed-wing aircraft, an increase in search speed was found to reduce sweep width for 16-foot boat and life raft targets (all other things remaining the same). So for fixed-wing aircraft, while a higher search speed will reduce the time required to search a given area (for a fixed track spacing), the probability of detection of a 16-foot boat or a life raft in that area will also be reduced. Based upon Figure 3-5, the aircraft effort allocation (sweep width times trackline miles) is relatively insensitive to changes in aircraft speed. Therefore, the choice of fixed-wing aircraft search speed should be made on other considerations, such as endurance, comfort, and controllability.

6. Time on Task

The degradation of surface craft and aircraft performance over the course of a search was significant. For surface craft, after 5 hours of search under poor conditions, sweep width was reduced nearly 50 percent (see Table 3-2). For similar conditions, aircraft exhibited a 25 percent reduction in performance over a 3-hour search (see Table 3-7). This dramatic reduction in sweep width as a search progresses underscores the necessity for understanding the human factors that contribute to this reduction. If a simplified visual detection model is desired, then the mean or lowest sweep width value from the tables in Chapter 3 could be utilized, depending on the application.

7. Wind Speed and Swell Height

The SAR Manual (Reference 1) predicts an increase in visual sweep width for life raft targets as wind speed increases from 0 to 10 knots, followed by a continued decrease in sweep width as wind speed increases

above 10 knots (see Appendix B). For boats less than 30 feet long, sweep width is predicted to increase continually as wind speed increases from 0 to 15 knots and then decrease continually for wind speeds above 15 knots. The SAR Manual explains these results by stating that ". . . with small targets on glassy seas .... difficulty will be experienced in detection due to the reflections of sun, sky, and clouds on the sea surface." Empirical data from these experiments supports a continual reduction in sweep width as wind speed increases (see Table 4-1). These results seem reasonable because white caps and swell are the primary wind-related factors that reduce visual detection performance. Both white caps and swell increase with increasing wind speed, with the onset of white caps generally occurring between 8 and 10 knots. Thus, if the SAR

TABLE 4-1. INFLUENCE OF WIND SPEED ON P(x) FOR SURFACE CRAFT (BOAT TARGETS)

WIND SPEED (knots)	LATERAL RANGE (nm)				
	0-1	1-2	2-3	3-4	> 4
0-5	(26/28) 0.93	(17/24) 0.71	(6/19) 0.32	(4/21) 0.18	(2/26) 0.08
5-10	(35/41) 0.85	(23/41) 0.56	(9/25) 0.36	(1/16) 0.06	(1/14) 0.07
10-15	(34/42) 0.81	(14/34) 0.41	(8/25) 0.32	(1/16) 0.06	(1/8) 0.12
15-20	(7/14) 0.50	(1/8) 0.12	(0/6) 0.0	(0/1) 0.0	(0/1) 0.0

NOTE: The number in parentheses is the ratio of detections/opportunities; the number below is the ratio as a decimal.

Manual visual sweep width tables are revised, a correction factor that results in a continual decrease in sweep width with increasing wind speed is recommended. While there was a strong correlation during these experiments between wind speed and swell height, a significantly better model fit was obtained by considering both wind speed and swell height, so it is felt that the SAR Manual sweep width tables could be improved by considering swell height in addition to wind speed for predictions.

8. Position of the Sun

Neither the elevation nor relative bearing of the sun were found to have the influence on mean detection range, P(x), or sweep width suggested by the SAR Manual. Elevation of the sun was not found to have a significant influence on P(x) between sunrise and sunset. The relative bearing of the sun with respect to the relative bearing of the target did not have a marked effect on visual detection performance, as measured by the mean detection range. Even if there were a narrow relative bearing sector (10 to 20 degrees) where the sun made detection of small targets more difficult, it is not felt that this would markedly reduce P(x) or sweep width. This is the case because those targets that pass through the SRU's detection envelope, assuming a complete interaction (see Section 2.6.4), will change in relative bearing by about 100 to 130 degrees as they do so. If the sun reduces the SRU's detection capability over 10 to 20 percent of this sector, there is still ample opportunity for detection.

Based upon these experimental results, Figure 8-70 of the SAR Manual and the associated text on page 8-69 seems inappropriate.

9. Cloud Cover

Based upon the experimental results, the influence of cloud cover on sweep width seems to be overstated in the SAR Manual sweep width tables. These tables predict sweep width to be reduced by 30 percent as cloud cover increases from 0 to 100 percent. Reductions in sweep width of 10 to 20 percent as cloud cover increased from 0 to 100 percent were more representative of the experimental data.

4.1.2 Factors That Could Improve the Lateral Range Curve and Sweep Width. The procedures used by the lookouts/scanners bear directly upon how well an area is searched and the resultant sweep width attained. Section 3.10.1 shows the detection ranges for all search unit/target type combinations tested. Based upon the cumulative percentage of targets detected, Table 3-22, detections are made out to 6 nautical miles for boats and life rafts and 0.9 nautical miles for PIWs. Also, Figure 3-12 shows that detections are made basically between 225 and 135 degrees relative. From the eye scan recordings of typical cutter lookouts and search instructions given to cutter and aircraft search crews, it was found that lookouts/scanners generally search out too far from the SRU and spend valuable time scanning areas of low probable detection. Therefore, it is postulated that more complete coverage of a search area by lookouts would occur and that higher sweep widths would be attained if the search effort were concentrated in the sector of 225 to 135 degrees relative out to the maximum detection range or the distance where 99 percent of the targets are detected. This envelope around the SRU should be systematically scanned so that the "eyes of the search craft" have an opportunity to fixate on the target. A more quantified and detailed report of these findings is forthcoming.

4.2 General Conclusions

Factors, (other than those discussed in Section 4.1) that affect sweep width can also effect POD. These factors include:

1. The shape of the P(x) versus lateral range curve,

2. The extent to which the search as it is carried out provides uniform coverage of the search area, and

3. The probability density distribution of target location within the search area.

The discussion of these factors is the subject of the following sections.

4.2.1 Lateral Range Curve Shape. To translate a sweep width value into POD (probability of detection for one search), the shape of the P(x) versus lateral range curve must be known or estimated. In the SAR Manual, the curve shape that is assumed is based upon the inverse cube law of detection (Reference 3). Based upon the experimental results presented in Reference 9, the inverse cube law assumption overstates POD, particularly at higher coverage factors. As indicated in Reference 13, a flatter P(x) versus lateral range curve, along with the present CASP detection function, will result in a POD approaching a random search prediction. Therefore, to accurately predict POD, it is important that the P(x) versus lateral range curve shape as well as sweep width be known (and be reflected in the appropriate POD versus coverage factor curve).

4.2.2 Navigation Accuracy Effects on POD. The P(x) versus lateral range curves discussed in Section 4.2.1 and developed in this report are based upon an SRU's passing at a given lateral range (x) from a target. The distribution of x for a search is a function of several factors, among them being the intended search plan and the extent to which the SRU implements the intended search plan. As shown in Section 1.2.3 of Reference 8, the inverse cube law of detection model used in the SAR Manual assumes that the search area is covered by the SRU by equally spaced parallel search tracks. For actual searches, navigation inaccuracies cause this assumption to be violated. As shown in Reference 14, the effect of navigation inaccuracies convoluted with the P(x) versus lateral range curve results in an "effective P(x) versus lateral range curve" that is lower and flatter than the P(x) versus

lateral range curve for perfect navigation (i.e., equally spaced parallel sweeps). As discussed in Section 4.2.1, the effect of a lower, flatter P(x) versus lateral range curve is to reduce the predicted POD from the inverse cube law of detection assumption toward the random search assumption. The SAR Manual POD versus coverage factor curve (Figure 8-65) does not consider navigation inaccuracies in developing a predicted POD.

4.2.3 Target Location. For searches laid out per SAR Manual guidance, the search is initiated at a distance of S/2 from the search area border (see Section 2.2.1). Thus, the borders of the search area are covered only once by the detection envelope resulting in a lower POD than those for the central portions of the area (i.e., a target that is located near the search area border is less likely to be detected than a target near the center of the area). Therefore, a target density distribution where targets are more likely to be near the borders would be expected to result in a lower POD than a distribution where targets are more likely to be near the center of the area. As shown in Section 4.3 of Reference 8, this was the case for these experiments. For some experiments, a uniform distribution of targets within the search area was provided, and, for others, a distribution with a higher density of targets in the central areas was used. As shown in Figure 4-4 of Reference 8, the experiments with the uniform target distribution had a lower POD than did experiments with a higher density of targets in the central parts of the search area. The SAR Manual POD versus coverage factor model only deals with a uniform distribution of targets. The Computer-Aided Search Planning (CASP) system target distribution functions are almost always non-uniform.

4.3 Recommendations

4.3.1 Long-Term Recommendations

1. The CASP method for search planning should be revised on the basis of the data presented in this report. CASP should be used as the Coast Guard's primary search planning tool because it provides the ability to improve

the accuracy and reliability of POS (probability of success) predictions through the following capabilities not available with the search planning procedures of the SAR Manual:

a. Consideration of the navigation capabilities of SRUs in predicting POD,

b. Direct utilization of lateral range curves so that consideration of the influence of the shape of the lateral range curve on POD can be considered, and

c. Development of Probability of Success (POS) based upon other than a uniform target density distribution in the search area.

2. The data presented in this report (SRU visual detection performance, SRU/target interactions, SRU navigation characteristics, and SRU environmental parameter measurement uncertainties) should be used to develop lateral range curves compatible with the CASP detection model.

3. A manual search planning method that is consistent with CASP predictions and suitable for search unit use should be developed from the CASP model. This method should replace the present SAR Manual search planning method and POD predictions.

4. A physical visual detection model should be developed that is consistent with the results presented in this report and that allows estimation of P(x) and POD for combinations of SRUs, targets, and environmental conditions not tested during those experiments. A limited set of experiments should be conducted to confirm this physical model for other targets.

4.3.2 Near-Term Recommendations. Until such time as the CASP model is revised and a manual method is developed consistent with the CASP revision, the following revisions to the visual detection guidance of Section 845 of the SAR Manual are recommended:

1. The visual search sweep width tables for life rafts and boats less than 30 feet be replaced by the sweep width tables provided in Sections 3.1 and 3.2 of this report.

2. The current SAR Manual guidance for PIW sweep widths be replaced by the visual search sweep width tables for PIWs presented in Sections 3.3 and 3.4 of this report.

3. The tables in the SAR Manual that indicate a continual increase in sweep widths for all targets as visibility increases beyond about three times the predicted detection ranges be revised based upon results presented in Chapter 3 of this report.

4. The sweep widths shown for visibility of 1 nautical mile be revised to be consistent with Section 4.1 of this report.

5. The changes in SAR Manual sweep width with aircraft altitude and the associated SAR Manual text be revised on the basis of the discussions in Section 4.1 of this report.

6. A section be added to discuss the reduction in sweep width with increases in time on task.

7. The discussion of effects of position of the sun on sweep width be revised on the basis of the results presented in Section 3.10.2 of this report. The SAR Manual

discussion concerning reduction of sweep width to one-half the predicted value for early morning/late afternoon searches should be deleted.

8. A revised version of the POD versus coverage factor curves, based upon actual lateral range curve shapes and SRU navigation characteristics, be developed to replace Figure 8-65 of the SAR Manual (see Section 4.2).

9. The SAR Manual should discuss the importance of accurate navigation in and complete coverage of the intended search area for efficient search conduct.

10. The SAR Manual should include a description of the visual detection envelopes presented in Section 3.10.1 and the associated scanning guidance of Section 4.1.2.

CHAPTER 5
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APPENDIX A
RAW DATA

A.0 INTRODUCTION

This appendix contains raw data files for individual units on a daily basis. These files were used to form the aggregate files used in the LOGODDs computer runs. The following is a key to the format of the raw data files:

Column 1: Detection (1 = Yes, 0 = No)
Column 2: Lateral Range (Nautical Miles)
Column 3: Time on Task (Hours)
Column 4: Meteorological Visibility (Nautical Miles)
Column 5: Wind Velocity (Knots)
Column 6: Cloud Cover (1/10ths)
Column 7: Swell Height (Feet)
Column 8: Unit Speed (Knots)
Column 9: (Aircraft Files only): Altitude (Feet)
Column 10: Elevation of Sun (Degrees)
Column 11: Target Type:

For 16-foot boat data
1 indicates blue color
-1 indicates white color

For life raft data
0 indicates black raft without canopy
1 indicates orange raft without canopy
2 indicates orange raft with canopy

For PIW data

Not used

For 41'/42' UTB data

Not used

Column 12: Detection Opportunity Classifier (0 = Non-Normal, 1 = Normal)

Normal detection opportunities are targets that pass straight through a range/relative bearing envelope containing approximately 90 percent of all detection events for the applicable search unit/target type combination when a template representing that envelope is "driven" along the search unit's actual trackline plot. Not used with 41'/42' UTB targets.

Column 13: Predominant Sun/Target Relative Bearing During SRU/Target Interaction (0 = Up Sun, 1 = Down Sun, 2 = Cross-Sun).

NOTE: Each raw data file may contain as many as 13 items per line. The actual number of items per line will depend upon the particular SRU type/target type combination represented in the data file and will range from 10 to 13. When one or more of the above data items are not present in a file, the remainder are listed in the same order presented here.

41485 13 SEPT 78 16'BOATS

1	.50	1.10	20.00	15.00	.20	3.00	10.50	49.00	-1.00	1.00	2.00
1	.20	1.50	20.00	15.00	.20	3.00	10.50	55.00	-1.00	.00	2.00
0	1.00	3.20	20.00	12.00	.20	3.00	10.50	52.00	-1.00	1.00	2.00
0	.80	3.50	20.00	8.00	.10	2.00	10.50	34.00	-1.00	1.00	2.00
0	.80	3.70	20.00	8.00	.10	2.00	10.50	32.00	-1.00	1.00	2.00

PT KNOLL 13 SEPT 78 16'BOATS

0	.97	.10	20.00	18.00	.30	3.00	15.00	44.00	-1.00	.00	.00
1	.25	1.80	20.00	15.00	.20	3.00	15.00	55.00	-1.00	1.00	2.00
1	1.00	2.20	20.00	15.00	.20	3.00	15.00	53.00	-1.00	1.00	2.00
1	1.10	3.10	20.00	12.00	.20	3.00	8.00	50.00	-1.00	.00	2.00
1	1.30	3.60	20.00	20.00	.10	2.00	8.00	47.00	-1.00	1.00	2.00
0	1.40	4.00	20.00	10.00	.10	2.00	8.00	43.00	-1.00	.00	2.00
0	1.70	4.60	20.00	8.00	.10	2.00	8.00	39.00	-1.00	1.00	2.00
1	.00	3.70	20.00	8.00	.10	2.00	8.00	27.00	-1.00	1.00	2.00
0	5.00	2.20	20.00	15.00	.20	3.00	15.00	53.00	-1.00	.00	2.00
0	5.20	.10	20.00	18.00	.30	3.00	15.00	44.00	-1.00	.00	.00

PT TURNER 13 SEPT 78 16'BOATS

0	2.20	.50	20.00	18.00	.30	3.00	15.00	43.00	-1.00	1.00	2.00
0	1.40	1.30	20.00	15.00	.30	3.00	15.00	48.00	-1.00	.00	2.00
0	.50	1.60	20.00	15.00	.30	3.00	15.00	50.00	-1.00	1.00	2.00
0	1.30	2.20	20.00	12.00	.20	3.00	15.00	52.00	-1.00	1.00	2.00
1	.30	2.70	20.00	12.00	.20	3.00	15.00	50.00	-1.00	.00	2.00
1	.25	4.70	20.00	12.00	.20	2.00	17.00	43.00	-1.00	.00	2.00
1	1.60	5.00	20.00	8.00	.10	2.00	17.00	41.00	-1.00	1.00	2.00
1	.75	6.00	20.00	8.00	.10	2.00	17.00	31.00	-1.00	.00	2.00
1	2.40	1.30	20.00	12.00	.20	3.00	15.00	52.00	-1.00	1.00	2.00
0	2.40	2.80	20.00	15.00	.20	3.00	15.00	53.00	-1.00	1.00	2.00
0	2.60	5.60	20.00	8.00	.10	2.00	17.00	35.00	-1.00	1.00	2.00
0	5.05	.80	20.00	18.00	.30	3.00	15.00	45.00	-1.00	1.00	2.00
0	4.00	5.40	20.00	8.00	.10	2.00	17.00	37.00	-1.00	1.00	2.00

HH-3 14 SEPT 78 16'BOATS

0	3.50	.13	25.00	15.00	.20	2.00	80.00	500.00	42.00	-1.00	1.00	2.00
1	3.80	.45	25.00	15.00	.20	2.00	80.00	500.00	44.00	-1.00	1.00	2.00
1	1.00	.72	25.00	15.00	.20	2.00	80.00	500.00	46.00	-1.00	1.00	2.00
0	2.10	1.73	25.00	15.00	.20	2.00	80.00	1000.00	51.00	-1.00	1.00	2.00
1	1.50	1.75	25.00	15.00	.20	2.00	80.00	1000.00	51.00	-1.00	.00	2.00
0	2.80	1.85	25.00	15.00	.20	2.00	80.00	1000.00	52.00	-1.00	1.00	2.00
0	2.50	2.03	25.00	15.00	.20	2.00	80.00	1000.00	52.00	-1.00	1.00	2.00
0	3.30	1.95	25.00	15.00	.20	2.00	80.00	1000.00	52.00	-1.00	.00	2.00
0	2.20	2.10	25.00	15.00	.20	2.00	80.00	500.00	48.00	-1.00	1.00	2.00
1	2.00	2.20	25.00	15.00	.20	2.00	80.00	500.00	48.00	-1.00	1.00	2.00
0	5.00	2.30	25.00	15.00	.20	2.00	80.00	500.00	47.00	-1.00	.00	2.00
1	8.00	2.40	25.00	15.00	.20	2.00	80.00	500.00	46.00	-1.00	.00	2.00
0	5.50	2.50	25.00	15.00	.20	2.00	80.00	500.00	46.00	-1.00	.00	2.00
1	2.40	2.50	25.00	15.00	.20	2.00	80.00	1000.00	45.00	-1.00	1.00	2.00
1	.90	2.70	25.00	15.00	.20	2.00	80.00	1000.00	44.00	-1.00	.00	2.00
0	5.00	2.80	25.00	15.00	.20	2.00	80.00	1000.00	44.00	-1.00	.00	2.00

HH-52 14 SEPT 78 16'BOATS

0	4.20	.17	25.00	15.00	.20	2.00	85.00	500.00	51.00	-1.00	.00	2.00
0	6.50	.30	25.00	15.00	.20	2.00	85.00	500.00	52.00	-1.00	1.00	2.00
0	5.40	.42	25.00	15.00	.20	2.00	85.00	500.00	52.00	-1.00	1.00	2.00
1	.75	.50	25.00	15.00	.20	2.00	85.00	500.00	52.00	-1.00	1.00	2.00
0	.80	.67	25.00	15.00	.20	2.00	85.00	500.00	52.00	-1.00	.00	2.00
0	6.70	1.50	25.00	15.00	.20	2.00	55.00	1000.00	50.00	-1.00	.00	.00
1	.75	1.87	25.00	15.00	.20	2.00	55.00	1000.00	49.00	-1.00	1.00	2.00
0	2.00	1.93	25.00	15.00	.20	2.00	55.00	1000.00	49.00	-1.00	1.00	2.00
1	.50	1.98	25.00	15.00	.20	2.00	55.00	1000.00	48.00	-1.00	.00	2.00
0	4.20	2.05	25.00	15.00	.20	2.00	55.00	1000.00	48.00	-1.00	.00	2.00

41441 18 SEPT 78 16'BOATS

1	.80	.00	4.50	10.00	1.00	1.50	15.00	47.00	-1.00	.00	2.00
0	1.40	.15	4.50	10.00	1.00	1.50	15.00	48.00	-1.00	.00	2.00
0	1.20	.25	4.50	10.00	1.00	1.50	15.00	48.00	-1.00	.00	2.00
1	.50	3.30	6.00	10.00	1.00	2.50	8.00	37.00	-1.00	.00	2.00
1	.50	4.15	6.00	10.00	1.00	2.50	8.00	33.00	-1.00	.00	2.00
1	.00	4.33	6.00	10.00	1.00	2.50	8.00	32.00	-1.00	.00	2.00
0	1.10	4.23	6.00	10.00	1.00	2.50	8.00	33.00	-1.00	.00	2.00
0	2.20	4.00	6.00	10.00	1.00	2.50	8.00	41.00	-1.00	.00	2.00

44348 18 SEPT 78 16'BOATS

1	.85	.65	5.00	12.50	1.00	2.00	10.00	36.00	-1.00	1.00	2.00
0	3.90	.45	5.00	12.50	1.00	2.00	10.00	34.00	-1.00	1.00	2.00

PT JACKSON 18 SEPT 78 16'BOATS

1	5.00	.13	5.00	7.00	1.00	1.50	15.00	48.00	-1.00	.00	2.00
0	5.80	.47	5.00	7.00	1.00	1.50	15.00	50.00	-1.00	.00	2.00
0	7.20	.40	5.00	7.00	1.00	1.50	15.00	49.00	-1.00	.00	2.00
1	.85	1.00	5.00	7.00	1.00	1.50	15.00	50.00	-1.00	.00	2.00
0	1.70	1.07	5.00	7.00	1.00	1.50	15.00	50.00	-1.00	1.00	2.00
1	1.50	1.05	5.00	7.00	1.00	1.50	15.00	50.00	-1.00	1.00	2.00
0	.75	2.65	10.00	9.00	1.00	2.00	8.00	45.00	-1.00	.00	2.00
1	.75	2.83	10.00	9.00	1.00	2.00	8.00	44.00	-1.00	.00	2.00
0	1.00	2.93	10.00	9.00	1.00	2.00	8.00	43.00	-1.00	1.00	2.00
0	4.50	3.31	10.00	9.00	1.00	2.00	8.00	40.00	-1.00	.00	2.00
0	1.25	3.40	10.00	9.00	1.00	2.00	8.00	40.00	-1.00	.00	2.00
0	2.25	3.70	10.00	9.00	1.00	2.00	8.00	37.00	-1.00	.00	2.00

PT WELLS 18 SEPT 78 16'BOATS

1	.20	.30	2.00	12.00	1.00	1.00	12.00	50.00	-1.00	1.00	2.00
0	3.80	.43	2.00	12.00	1.00	1.00	12.00	50.00	-1.00	.00	2.00
0	2.80	.56	2.00	12.00	1.00	1.00	12.00	50.00	-1.00	1.00	2.00
0	1.40	.93	2.00	12.00	1.00	1.00	12.00	50.00	-1.00	1.00	2.00
1	1.00	1.01	2.00	12.00	1.00	1.00	12.00	50.00	-1.00	.00	2.00
1	.25	1.13	8.00	12.00	1.00	1.00	12.00	49.00	-1.00	1.00	2.00
1	2.20	1.15	8.00	12.00	1.00	1.00	12.00	49.00	-1.00	1.00	2.00
0	2.50	2.41	10.00	12.00	1.00	2.00	12.00	43.00	-1.00	.00	2.00
1	.20	2.53	10.00	12.00	1.00	2.00	12.00	42.00	-1.00	.00	2.00
0	2.50	2.70	10.00	12.00	1.00	2.00	12.00	40.00	-1.00	.00	2.00
1	.00	2.80	10.00	12.00	1.00	2.00	12.00	40.00	-1.00	1.00	2.00
0	2.45	3.13	5.00	12.00	1.00	2.00	12.00	37.00	-1.00	1.00	2.00
0	1.40	3.48	5.00	12.00	1.00	2.00	12.00	34.00	-1.00	1.00	2.00
0	4.10	3.51	5.00	12.00	1.00	2.00	12.00	34.00	-1.00	.00	1.00

HC-130 20 SEPT 78 16'BOATS

0	5.60	.30	15.00	5.00	.00	2.00	150.00	1000.00	38.00	1.00	.00	.00
0	5.60	.60	15.00	5.00	.00	2.00	150.00	1000.00	38.00	-1.00	.00	2.00
1	.40	.60	15.00	5.00	.00	2.00	150.00	1000.00	38.00	-1.00	1.00	2.00
1	1.10	.60	15.00	5.00	.00	2.00	150.00	1000.00	39.00	-1.00	.00	2.00
0	5.60	.70	15.00	5.00	.00	2.00	150.00	1000.00	39.00	-1.00	.00	2.00
0	4.10	.70	15.00	5.00	.00	2.00	150.00	1000.00	39.00	-1.00	.00	2.00
0	1.10	.12	15.00	2.00	.00	1.50	200.00	1000.00	42.00	-1.00	1.00	2.00
0	2.70	.13	15.00	2.00	.00	1.50	200.00	1000.00	42.00	-1.00	.00	.00
0	2.70	.15	15.00	2.00	.00	1.50	200.00	1000.00	42.00	-1.00	1.00	2.00
1	.50	.17	15.00	2.00	.00	1.50	200.00	1000.00	42.00	-1.00	1.00	2.00
1	1.20	.25	15.00	2.00	.00	1.50	200.00	1000.00	43.00	-1.00	1.00	2.00
0	.90	5.60	15.00	5.00	.00	1.00	150.00	1000.00	44.00	-1.00	1.00	1.00
0	5.00	5.60	15.00	5.00	.00	1.00	150.00	1000.00	44.00	-1.00	1.00	2.00
1	5.00	5.60	15.00	5.00	.00	1.00	150.00	1000.00	44.00	-1.00	1.00	2.00
0	2.65	5.60	15.00	5.00	.00	1.00	150.00	1000.00	44.00	-1.00	.00	2.00
0	1.50	5.70	15.00	5.00	.00	1.00	150.00	1000.00	44.00	-1.00	1.00	2.00
0	5.20	5.60	15.00	5.00	.00	1.00	150.00	1000.00	45.00	-1.00	.00	2.00
1	2.20	5.80	15.00	5.00	.00	1.00	150.00	1000.00	43.00	-1.00	1.00	2.00
0	1.50	5.80	15.00	5.00	.00	1.00	150.00	1000.00	43.00	-1.00	1.00	2.00
1	1.40	4.10	15.00	5.00	.00	1.00	200.00	1000.00	41.00	-1.00	.00	2.00
1	.90	4.10	15.00	5.00	.00	1.00	200.00	1000.00	41.00	-1.00	1.00	2.00
0	2.20	4.10	15.00	5.00	.00	1.00	200.00	1000.00	41.00	-1.00	.00	2.00
0	5.00	4.20	15.00	5.00	.00	1.00	200.00	1000.00	40.00	-1.00	1.00	2.00
0	5.50	4.10	15.00	5.00	.00	1.00	200.00	1000.00	40.00	-1.00	.00	2.00

HH-3 20 SEPT 78 16'BOATS

1	1.25	.10	15.00	2.00	.00	2.00	90.00	500.00	41.00	-1.00	1.00	2.00
0	4.40	.10	15.00	2.00	.00	2.00	90.00	500.00	40.00	-1.00	.00	.00
1	2.70	.20	15.00	2.00	.00	2.00	90.00	500.00	42.00	-1.00	1.00	2.00
1	.60	.30	15.00	2.00	.00	2.00	90.00	500.00	42.00	-1.00	.00	.00
0	5.20	.30	15.00	2.00	.00	2.00	90.00	500.00	43.00	-1.00	.00	.00
1	1.00	.30	15.00	2.00	.00	2.00	90.00	500.00	43.00	-1.00	1.00	.00
0	4.50	.40	15.00	2.00	.00	2.00	90.00	500.00	44.00	-1.00	.00	2.00
1	2.10	.30	15.00	2.00	.00	2.00	90.00	500.00	44.00	-1.00	1.00	2.00
1	.80	.60	15.00	5.00	.00	2.00	90.00	500.00	46.00	-1.00	1.00	2.00
0	5.20	.70	15.00	5.00	.00	1.50	60.00	500.00	47.00	-1.00	.00	2.00
1	2.60	.80	15.00	5.00	.00	1.50	60.00	500.00	47.00	-1.00	1.00	2.00
1	.10	.90	15.00	5.00	.00	1.50	60.00	500.00	47.00	-1.00	.00	2.00
1	.75	1.10	15.00	5.00	.00	1.50	90.00	500.00	45.00	-1.00	1.00	1.00
0	5.90	1.30	15.00	5.00	.00	1.50	90.00	500.00	44.00	-1.00	1.00	2.00
1	.80	1.30	15.00	5.00	.00	1.50	90.00	500.00	44.00	-1.00	1.00	1.00
0	1.60	1.80	15.00	5.00	.00	1.50	90.00	500.00	40.00	-1.00	.00	2.00
1	2.00	1.30	15.00	5.00	.00	1.50	90.00	500.00	42.00	-1.00	1.00	2.00
0	1.70	1.60	15.00	5.00	.00	1.50	90.00	500.00	42.00	-1.00	1.00	2.00
0	1.40	1.60	15.00	7.00	.00	1.50	60.00	500.00	40.00	-1.00	1.00	1.00
1	1.00	1.90	15.00	7.00	.00	1.50	60.00	500.00	40.00	-1.00	.00	2.00
1	1.50	1.90	15.00	7.00	.00	1.50	60.00	500.00	39.00	-1.00	1.00	2.00
0	5.75	1.90	15.00	7.00	.00	1.50	60.00	500.00	39.00	-1.00	1.00	.00
0	1.40	2.00	10.00	7.00	.00	1.50	60.00	500.00	38.00	-1.00	1.00	2.00
0	1.50	1.60	15.00	7.00	.00	1.50	60.00	500.00	40.00	-1.00	.00	.00
1	1.50	1.90	15.00	7.00	.00	1.50	60.00	500.00	39.00	-1.00	.00	.00

HH-52 20 SEPT 78 16'BOATS

1	1.70	.22	15.00	5.00	.00	1.50	85.00	750.00	50.00	-1.00	.00	2.00
1	.20	.32	15.00	5.00	.00	1.50	85.00	750.00	50.00	-1.00	1.00	1.00
0	4.50	.45	15.00	5.00	.00	1.50	85.00	750.00	50.00	-1.00	1.00	.00
0	1.50	.45	15.00	5.00	.00	1.50	85.00	750.00	50.00	-1.00	1.00	2.00
1	2.25	.53	15.00	5.00	.00	1.50	85.00	750.00	49.00	-1.00	1.00	2.00
1	1.60	.60	15.00	5.00	.00	1.50	85.00	750.00	49.00	-1.00	1.00	2.00
0	2.00	.60	15.00	5.00	.00	1.50	85.00	750.00	48.00	-1.00	.00	1.00
1	.00	1.00	15.00	5.00	.00	1.50	85.00	750.00	47.00	-1.00	.00	2.00
1	2.00	.90	15.00	5.00	.00	1.50	85.00	750.00	48.00	-1.00	1.00	2.00
1	.50	1.50	10.00	7.00	.00	1.50	85.00	750.00	34.00	-1.00	.00	2.00
0	.00	1.40	10.00	10.00	.00	1.50	85.00	750.00	33.00	-1.00	1.00	2.00
0	2.50	1.50	10.00	10.00	.00	1.50	85.00	750.00	32.00	-1.00	.00	2.00
0	4.00	1.50	10.00	10.00	.00	1.50	85.00	750.00	31.00	-1.00	1.00	2.00
0	1.70	1.50	10.00	10.00	.00	1.50	85.00	750.00	31.00	-1.00	.00	2.00
0	3.20	1.60	10.00	10.00	.00	1.50	85.00	750.00	31.00	-1.00	1.00	2.00
0	5.20	1.05	10.00	10.00	.00	1.50	85.00	750.00	48.00	-1.00	.00	1.00

HH-16 20 SEPT 78 16'BOATS

1	.10	.21	15.00	5.00	.00	1.50	150.00	1250.00	50.00	-1.00	1.00	2.00
0	3.50	.17	15.00	5.00	.00	1.50	150.00	1250.00	50.00	-1.00	.00	2.00
0	2.75	.27	15.00	5.00	.00	1.50	150.00	1250.00	50.00	-1.00	1.00	2.00
1	.55	.32	15.00	5.00	.00	1.50	150.00	1250.00	50.00	-1.00	1.00	2.00
0	5.00	.40	15.00	5.00	.00	1.50	150.00	1250.00	50.00	-1.00	1.00	2.00
1	1.58	1.00	10.00	7.00	.00	1.00	120.00	1250.00	37.00	-1.00	1.00	2.00
1	1.45	.80	10.00	7.00	.00	1.00	120.00	1250.00	39.00	-1.00	1.00	2.00
1	.00	.90	10.00	7.00	.00	1.00	120.00	1250.00	38.00	-1.00	1.00	2.00
0	5.20	.90	10.00	7.00	.00	1.00	120.00	1250.00	38.00	-1.00	.00	2.00
1	5.50	.57	15.00	5.00	.00	1.00	120.00	1250.00	50.00	-1.00	.00	2.00
1	1.00	.63	15.00	5.00	.00	1.00	120.00	1250.00	49.00	-1.00	1.00	2.00
1	1.75	.70	15.00	5.00	.00	1.00	120.00	1250.00	49.00	-1.00	1.00	2.00
0	4.70	.71	15.00	5.00	.00	1.00	120.00	1250.00	49.00	-1.00	.00	2.00
1	1.10	.65	15.00	5.00	.00	1.00	120.00	1250.00	49.00	-1.00	.00	1.00
1	1.75	1.00	10.00	10.00	.00	1.00	120.00	1250.00	35.00	-1.00	1.00	2.00
0	2.75	1.10	10.00	10.00	.00	1.00	120.00	1250.00	34.00	-1.00	.00	2.00
1	.55	1.10	10.00	10.00	.00	1.00	120.00	1250.00	34.00	-1.00	1.00	2.00

HC-130 21 SEPT 78 16'BOATS

0	2.60	.60	8.00	10.00	.00	1.50	150.00	1000.00	45.00	-1.00	1.00	1.00
0	1.00	.70	8.00	10.00	.00	1.50	150.00	1000.00	45.00	-1.00	1.00	1.00
0	.90	.70	8.00	10.00	.00	1.50	150.00	1000.00	45.00	-1.00	.00	1.00
0	1.10	.70	8.00	10.00	.00	1.50	150.00	1000.00	45.00	-1.00	.00	1.00
0	2.80	.70	8.00	10.00	.00	1.50	150.00	1000.00	46.00	-1.00	.00	2.00
1	1.00	.70	8.00	10.00	.00	1.50	150.00	1000.00	46.00	-1.00	1.00	2.00
1	.90	.80	8.00	10.00	.00	1.50	150.00	1000.00	46.00	-1.00	1.00	1.00
0	1.10	.80	8.00	10.00	.00	1.50	150.00	1000.00	46.00	-1.00	1.00	2.00
0	2.00	.90	8.00	10.00	.00	1.50	150.00	1000.00	46.00	-1.00	1.00	2.00
1	.80	.90	8.00	10.00	.00	1.50	150.00	1000.00	46.00	-1.00	1.00	2.00
0	3.40	5.80	8.00	12.00	.00	5.00	150.00	1000.00	42.00	-1.00	.00	2.00
1	.55	5.80	8.00	12.00	.00	5.00	150.00	1000.00	41.00	-1.00	1.00	2.00
0	3.50	5.90	8.00	12.00	.00	5.00	150.00	1000.00	41.00	-1.00	1.00	2.00
0	1.40	5.90	8.00	12.00	.00	5.00	150.00	1000.00	41.00	-1.00	1.00	2.00
0	.50	6.00	8.00	12.00	.00	5.00	150.00	1000.00	40.00	-1.00	1.00	2.00
0	1.40	6.00	8.00	12.00	.00	5.00	150.00	1000.00	40.00	-1.00	1.00	2.00
0	3.70	5.90	8.00	12.00	.00	5.00	150.00	1000.00	41.00	-1.00	.00	2.00
0	2.50	6.00	8.00	12.00	.00	5.00	150.00	1000.00	40.00	-1.00	1.00	2.00
1	.50	6.00	8.00	12.00	.00	5.00	150.00	1000.00	40.00	-1.00	1.00	2.00
0	2.20	6.10	8.00	12.00	.00	5.00	150.00	1000.00	40.00	-1.00	1.00	2.00
0	2.00	.08	8.00	10.00	.00	1.50	150.00	1000.00	42.00	-1.00	1.00	2.00
0	.10	.12	8.00	10.00	.00	1.50	150.00	1000.00	43.00	-1.00	1.00	2.00
1	1.20	.15	8.00	10.00	.00	1.50	150.00	1000.00	43.00	-1.00	.00	2.00
0	2.20	.20	8.00	10.00	.00	1.50	150.00	1000.00	43.00	-1.00	.00	2.00
0	.50	.22	8.00	10.00	.00	1.50	150.00	1000.00	43.00	-1.00	1.00	2.00
1	.20	.25	8.00	10.00	.00	1.50	150.00	1000.00	43.00	-1.00	1.00	2.00
0	2.10	.16	8.00	10.00	.00	1.50	150.00	1000.00	43.00	-1.00	.00	2.00
0	1.80	5.40	8.00	12.00	.00	3.00	150.00	1000.00	45.00	-1.00	.00	2.00
0	.00	5.40	8.00	12.00	.00	3.00	150.00	1000.00	45.00	-1.00	1.00	.00
0	3.55	5.40	8.00	12.00	.00	3.00	150.00	1000.00	44.00	-1.00	.00	2.00
0	2.50	5.30	8.00	12.00	.00	5.00	150.00	1000.00	44.00	-1.00	.00	2.00
1	1.10	5.30	8.00	12.00	.00	3.00	150.00	1000.00	44.00	-1.00	.00	2.00
0	.75	5.30	8.00	12.00	.00	5.00	150.00	1000.00	43.00	-1.00	1.00	2.00
0	2.65	5.50	8.00	12.00	.00	5.00	150.00	1000.00	43.00	-1.00	1.00	2.00
0	2.40	5.50	8.00	12.00	.00	5.00	150.00	1000.00	43.00	-1.00	.00	2.00
1	.50	5.60	8.00	12.00	.00	5.00	150.00	1000.00	43.00	-1.00	.00	2.00

HH-3	21 SEPT 78		16'BOATS									
1	.40	1.00	8.00	12.00	.00	3.00	80.00	500.00	39.00	-1.00	1.00	2.00
0	.40	1.10	8.00	12.00	.00	3.00	80.00	500.00	38.00	-1.00	1.00	2.00
0	1.50	1.30	8.00	12.00	.00	3.00	80.00	500.00	37.00	-1.00	1.00	2.00
1	.20	1.30	8.00	12.00	.00	3.00	80.00	500.00	36.00	-1.00	1.00	2.00
0	3.75	1.40	8.00	12.00	.00	3.00	80.00	500.00	36.00	-1.00	1.00	2.00
0	1.10	1.40	8.00	12.00	.00	3.00	80.00	500.00	35.00	-1.00	1.00	2.00
0	3.70	1.50	8.00	12.00	.00	3.00	80.00	500.00	35.00	-1.00	1.00	2.00
0	.40	.27	8.00	10.00	.00	1.50	120.00	500.00	42.00	-1.00	.00	2.00
0	5.00	.32	8.00	10.00	.00	1.50	120.00	500.00	43.00	-1.00	.00	2.00
1	3.00	.35	8.00	10.00	.00	1.50	120.00	500.00	43.00	-1.00	1.00	2.00
1	.75	.38	8.00	10.00	.00	1.50	120.00	500.00	43.00	-1.00	1.00	2.00
1	1.40	.60	8.00	10.00	.00	1.50	120.00	500.00	44.00	-1.00	1.00	2.00
HH-52	21 SEPT 78		16'BOATS									
0	2.75	.88	8.00	10.00	.00	2.00	60.00	500.00	49.00	-1.00	1.00	2.00
0	2.10	1.13	8.00	10.00	.00	2.00	60.00	500.00	48.00	-1.00	1.00	2.00
0	.30	1.23	8.00	10.00	.00	2.00	60.00	500.00	48.00	-1.00	1.00	2.00
0	2.00	1.35	8.00	10.00	.00	2.00	60.00	500.00	48.00	-1.00	.00	2.00
0	2.10	1.38	8.00	10.00	.00	2.00	60.00	500.00	48.00	-1.00	.00	2.00
1	.40	1.38	8.00	10.00	.00	2.00	60.00	500.00	48.00	-1.00	1.00	2.00
0	3.00	1.60	8.00	10.00	.00	2.00	60.00	500.00	47.00	-1.00	1.00	2.00
1	.50	1.68	8.00	10.00	.00	2.00	60.00	500.00	46.00	-1.00	1.00	.00
0	3.40	.23	8.00	10.00	.00	1.50	85.00	500.00	49.00	-1.00	.00	2.00
1	1.80	.22	8.00	10.00	.00	1.50	85.00	500.00	49.00	-1.00	1.00	2.00
0	2.00	.28	8.00	10.00	.00	1.50	85.00	500.00	49.00	-1.00	.00	2.00
1	.10	.33	8.00	10.00	.00	1.50	85.00	500.00	49.00	-1.00	.00	2.00
0	2.50	.47	8.00	10.00	.00	1.50	85.00	500.00	49.00	-1.00	1.00	2.00
PT TURNER	22 SEPT 78		16'BOATS									
0	1.10	1.78	10.00	22.00	1.00	4.50	13.00	48.00	-1.00	.00	.00	
1	.50	2.01	10.00	22.00	1.00	4.50	13.00	47.00	-1.00	.00	.00	
0	.60	2.18	10.00	22.00	1.00	4.50	13.00	47.00	-1.00	.00	2.00	
1	.40	2.66	10.00	22.00	1.00	4.50	13.00	44.00	-1.00	1.00	.00	
0	1.20	2.73	10.00	22.00	1.00	4.50	13.00	44.00	-1.00	.00	.00	
0	3.20	3.11	10.00	22.00	1.00	4.50	13.00	42.00	-1.00	.00	2.00	
0	.50	3.13	10.00	22.00	1.00	4.50	13.00	42.00	-1.00	.00	2.00	
0	.50	3.43	10.00	22.00	1.00	4.50	13.00	39.00	-1.00	.00	2.00	
0	1.50	3.61	10.00	22.00	1.00	4.50	13.00	38.00	-1.00	1.00	2.00	
0	.60	3.81	10.00	22.00	1.00	4.50	13.00	36.00	-1.00	.00	2.00	
0	.10	3.81	10.00	22.00	1.00	4.50	13.00	36.00	-1.00	.00	1.00	
0	1.50	3.95	10.00	22.00	1.00	4.50	13.00	34.00	-1.00	.00	2.00	
0	1.10	4.04	10.00	22.00	1.00	4.50	13.00	33.00	-1.00	1.00	2.00	
0	.30	4.21	10.00	22.00	1.00	4.50	13.00	32.00	-1.00	.00	2.00	
0	2.90	4.28	10.00	22.00	1.00	4.50	13.00	31.00	-1.00	1.00	2.00	
0	3.10	4.35	10.00	22.00	1.00	4.50	13.00	30.00	-1.00	1.00	2.00	
0	1.90	4.68	10.00	22.00	1.00	4.50	13.00	28.00	-1.00	1.00	2.00	
0	1.50	1.95	10.00	22.00	1.00	4.50	13.00	47.00	-1.00	.00	.00	
0	1.50	5.70	10.00	22.00	1.00	4.50	13.00	37.00	-1.00	.00	2.00	

FT WELLS 22 SEPT 78 16'BOATS

0	1.40	.05	10.00	25.00	1.00	4.00	12.00	49.00	-1.00	.00	2.00
0	.65	.27	10.00	25.00	1.00	4.00	12.00	48.00	-1.00	1.00	1.00
0	1.50	.40	10.00	25.00	1.00	4.00	12.00	47.00	-1.00	.00	2.00
0	1.50	.65	10.00	25.00	1.00	4.00	12.00	47.00	-1.00	.00	2.00
0	.50	.88	10.00	25.00	1.00	4.00	12.00	46.00	-1.00	1.00	2.00
0	.40	.40	10.00	25.00	1.00	4.00	12.00	46.00	-1.00	1.00	2.00
0	.40	1.02	10.00	25.00	1.00	4.00	12.00	45.00	-1.00	.00	2.00
0	1.00	1.14	10.00	25.00	1.00	5.00	12.00	44.00	-1.00	.00	.00
0	.50	1.26	10.00	22.00	1.00	5.00	12.00	44.00	-1.00	.00	2.00
0	2.40	1.48	10.00	25.00	1.00	5.00	12.00	42.00	-1.00	.00	2.00
0	1.70	1.93	10.00	25.00	1.00	5.00	12.00	39.00	-1.00	1.00	2.00
0	1.00	2.43	10.00	25.00	1.00	5.00	12.00	36.00	-1.00	.00	2.00
1	.65	2.63	10.00	25.00	1.00	5.00	12.00	35.00	-1.00	1.00	1.00
1	.50	2.96	10.00	21.00	1.00	4.00	12.00	30.00	-1.00	.00	2.00
1	.50	3.09	10.00	21.00	1.00	4.00	12.00	29.00	-1.00	1.00	2.00
0	.70	3.22	10.00	21.00	1.00	4.00	12.00	28.00	-1.00	1.00	2.00
0	2.10	2.85	10.00	21.00	1.00	4.00	12.00	33.00	-1.00	1.00	2.00
0	2.20	2.55	10.00	21.00	1.00	4.00	12.00	34.00	-1.00	1.00	2.00

41342 25 SEPT 78 16'BOATS

0	1.40	.05	10.00	25.00	1.00	4.00	12.00	49.00	-1.00	.00	2.00
0	.65	.27	10.00	25.00	1.00	4.00	12.00	48.00	-1.00	1.00	1.00
0	1.40	.40	10.00	25.00	1.00	4.00	12.00	47.00	-1.00	.00	2.00
0	1.50	.65	10.00	25.00	1.00	4.00	12.00	47.00	-1.00	.00	2.00
0	.50	.88	10.00	25.00	1.00	4.00	12.00	46.00	-1.00	1.00	2.00
0	.40	.90	10.00	25.00	1.00	4.00	12.00	46.00	-1.00	1.00	2.00
0	.40	1.02	10.00	25.00	1.00	4.00	12.00	45.00	-1.00	.00	2.00
0	1.00	1.14	10.00	25.00	1.00	5.00	12.00	44.00	-1.00	.00	.00
0	.50	1.26	10.00	22.00	1.00	5.00	12.00	44.00	-1.00	.00	2.00
0	2.80	1.48	10.00	25.00	1.00	5.00	12.00	42.00	-1.00	.00	2.00
0	1.70	1.93	10.00	25.00	1.00	5.00	12.00	39.00	-1.00	1.00	2.00
0	1.00	2.43	10.00	25.00	1.00	5.00	12.00	36.00	-1.00	.00	2.00
1	.65	2.63	10.00	25.00	1.00	5.00	12.00	33.00	-1.00	1.00	1.00
1	.50	2.96	10.00	21.00	1.00	4.00	12.00	30.00	-1.00	.00	2.00
1	.50	3.09	10.00	21.00	1.00	4.00	12.00	29.00	-1.00	1.00	2.00
0	.70	3.22	10.00	21.00	1.00	4.00	12.00	28.00	-1.00	1.00	2.00
0	2.10	2.65	10.00	21.00	1.00	4.00	12.00	35.00	-1.00	1.00	2.00
0	2.20	2.55	10.00	21.00	1.00	4.00	12.00	34.00	-1.00	1.00	2.00

41365 25 SEPT 78 16'BOATS

1	.00	.00	10.00	10.00	.00	1.50	15.00	39.00	-1.00	.00	2.00
1	1.50	.13	10.00	10.00	.00	1.50	15.00	40.00	-1.00	.00	2.00
0	1.10	.36	10.00	10.00	.00	1.50	15.00	41.00	-1.00	1.00	2.00
0	2.60	.62	10.00	10.00	.00	1.50	15.00	42.00	-1.00	.00	2.00
0	4.00	.77	10.00	10.00	.00	1.50	15.00	44.00	-1.00	.00	2.00
1	2.80	.97	10.00	10.00	.00	1.50	15.00	44.00	-1.00	1.00	2.00
1	.20	1.17	10.00	10.00	.00	1.50	8.00	45.00	-1.00	.00	2.00
1	1.75	1.37	10.00	15.00	.00	1.50	8.00	46.00	-1.00	.00	2.00
1	.75	1.45	10.00	15.00	.00	1.50	8.00	47.00	-1.00	.00	2.00
0	4.00	1.62	10.00	15.00	.00	1.50	8.00	47.00	-1.00	.00	2.00
1	.30	1.87	10.00	15.00	.00	1.50	8.00	48.00	-1.00	.00	2.00
0	2.50	.13	10.00	15.00	.00	1.50	8.00	40.00	-1.00	.00	2.00
0	2.60	2.82	10.00	15.00	.00	1.50	8.00	46.00	-1.00	.00	2.00
1	1.25	2.95	10.00	15.00	.00	1.50	8.00	45.00	-1.00	.00	2.00
1	.50	3.62	10.00	15.00	.00	1.50	8.00	42.00	-1.00	.00	1.00
0	1.70	3.72	10.00	15.00	.00	1.50	8.00	41.00	-1.00	.00	1.00
0	3.10	3.72	10.00	15.00	.00	1.50	8.00	41.00	-1.00	.00	2.00
1	3.40	4.04	10.00	15.00	.00	1.50	8.00	38.00	-1.00	.00	.00
0	1.00	4.17	10.00	15.00	.00	1.50	8.00	38.00	-1.00	.00	.00
0	1.10	4.27	10.00	15.00	.00	1.50	8.00	37.00	-1.00	.00	2.00
1	.75	4.37	10.00	15.00	.00	1.50	8.00	36.00	-1.00	.00	1.00
0	3.50	4.57	15.00	10.00	.00	1.50	8.00	35.00	-1.00	1.00	1.00
0	1.75	4.79	15.00	10.00	.00	1.50	8.00	32.00	-1.00	1.00	1.00
0	.20	5.07	15.00	10.00	.00	1.50	8.00	30.00	-1.00	.00	2.00
0	2.00	4.05	15.00	10.00	.00	1.50	8.00	38.00	-1.00	.00	2.00

CAPE GEORGE 25 SEPT 78 16'BOATS

1	1.70	.00	10.00	9.50	.00	1.50	15.00	42.00	-1.00	.00	2.00
0	1.	.20	10.00	9.50	.00	1.50	15.00	43.00	-1.00	1.00	2.00
1	1.20	.30	10.00	9.50	.00	1.50	15.00	43.00	-1.00	.00	2.00
1	1.00	.40	10.00	9.50	.00	1.50	15.00	44.00	-1.00	1.00	2.00
1	1.10	.60	10.00	9.50	.00	1.50	15.00	45.00	-1.00	1.00	2.00
0	1.50	.60	10.00	14.00	.00	1.50	15.00	45.00	-1.00	.00	2.00
1	1.90	.70	10.00	14.00	.00	1.50	15.00	46.00	-1.00	.00	2.00
0	1.70	.80	10.00	14.00	.00	1.50	15.00	46.00	-1.00	.00	2.00
1	.00	1.10	10.00	14.00	.00	1.50	15.00	47.00	-1.00	1.00	2.00
0	1.10	1.20	10.00	14.00	.00	1.50	15.00	47.00	-1.00	.00	2.00
0	1.70	1.20	10.00	14.00	.00	1.50	15.00	47.00	-1.00	1.00	2.00
0	2.75	1.40	10.00	13.50	.00	1.50	15.00	47.00	-1.00	1.00	2.00
1	1.80	1.20	10.00	13.50	.00	1.50	15.00	47.00	-1.00	.00	2.00
0	2.10	1.50	10.00	13.50	.00	1.50	8.00	47.00	-1.00	.00	2.00
0	.80	1.70	10.00	13.50	.00	1.50	8.00	47.00	-1.00	.00	2.00
1	.50	2.20	10.00	13.50	.00	1.50	8.00	46.00	-1.00	.00	2.00
1	.00	2.40	10.00	13.50	.00	1.50	8.00	45.00	-1.00	.00	2.00
1	1.40	2.40	10.00	13.50	.00	1.50	8.00	45.00	-1.00	.00	1.00
1	2.00	2.60	10.00	12.50	.00	1.50	8.00	44.00	-1.00	.00	2.00
0	1.80	2.70	10.00	12.50	.00	1.50	8.00	44.00	-1.00	1.00	2.00
0	1.90	3.00	10.00	12.50	.00	1.50	8.00	43.00	-1.00	.00	2.00
1	1.75	3.00	10.00	12.50	.00	1.50	8.00	43.00	-1.00	.00	2.00
1	1.85	3.40	15.00	10.00	.00	1.50	8.00	39.00	-1.00	.00	.00
1	2.70	3.60	15.00	10.00	.00	1.50	8.00	38.00	-1.00	.00	2.00
0	1.20	1.65	10.00	13.00	.00	1.50	8.00	47.00	-1.00	1.00	2.00
0	1.70	2.00	10.00	13.00	.00	1.50	8.00	47.00	-1.00	.00	2.00
0	1.50	2.18	10.00	13.00	.00	1.50	8.00	46.00	-1.00	1.00	2.00
0	2.20	2.70	10.00	13.00	.00	1.50	8.00	44.00	-1.00	.00	2.00

PT KNOLL 25 SEPT 78 16'BOATS

1	.00	.13	10.00	10.00	.00	1.50	8.00	39.00	-1.00	1.00	2.00
0	2.50	.23	10.00	10.00	.00	1.50	8.00	40.00	-1.00	.00	2.00
0	1.90	.65	10.00	10.00	.00	1.50	8.00	42.00	-1.00	1.00	2.00
0	4.00	.75	10.00	10.00	.00	1.50	8.00	43.00	-1.00	1.00	2.00
0	1.85	1.07	10.00	10.00	.00	1.50	8.00	44.00	-1.00	.00	2.00
0	.85	1.42	10.00	10.00	.00	1.50	8.00	46.00	-1.00	.00	2.00
1	2.10	1.52	10.00	14.00	.00	1.50	8.00	47.00	-1.00	.00	1.00
1	.00	1.62	10.00	14.00	.00	1.50	8.00	47.00	-1.00	1.00	1.00
1	.85	1.87	10.00	14.00	.00	1.50	8.00	47.00	-1.00	1.00	1.00
1	1.00	1.87	10.00	14.00	.00	1.50	8.00	47.00	-1.00	1.00	2.00
0	3.90	1.85	10.00	14.00	.00	1.50	8.00	47.00	-1.00	.00	2.00
1	2.40	2.35	10.00	14.00	.00	1.50	15.00	46.00	-1.00	.00	2.00
1	.25	2.70	10.00	14.00	.00	1.50	15.00	44.00	-1.00	.00	2.00
1	1.20	2.93	10.00	14.00	.00	1.50	15.00	43.00	-1.00	.00	2.00
0	4.50	2.77	10.00	14.00	.00	1.50	15.00	44.00	-1.00	.00	2.00
0	1.90	3.11	10.00	11.00	.00	1.50	15.00	42.00	-1.00	.00	2.00
1	.50	3.01	10.00	11.00	.00	1.50	15.00	42.00	-1.00	1.00	2.00
1	.35	3.14	10.00	11.00	.00	1.50	15.00	42.00	-1.00	.00	2.00
0	2.90	3.27	10.00	11.00	.00	1.50	15.00	40.00	-1.00	.00	2.00
1	.15	3.35	10.00	11.00	.00	1.50	15.00	39.00	-1.00	1.00	2.00
0	.80	3.45	10.00	11.00	.00	1.50	15.00	39.00	-1.00	.00	2.00
0	3.60	3.78	10.00	11.00	.00	1.50	15.00	38.00	-1.00	.00	2.00
0	1.85	4.15	10.00	11.00	.00	1.50	15.00	34.00	-1.00	1.00	2.00
0	2.00	2.70	10.00	11.00	.00	1.50	15.00	44.00	-1.00	1.00	2.00
0	3.50	2.95	10.00	11.00	.00	1.50	15.00	43.00	-1.00	.00	2.00

HH-52 26 SEPT 78 16'BOATS

1	1.50	1.23	15.00	3.00	.00	1.00	85.00	1000.00	46.00	-1.00	1.00	1.00
1	3.90	1.31	15.00	3.00	.00	1.00	85.00	1000.00	45.00	-1.00	1.00	2.00
1	2.00	1.33	15.00	3.00	.00	1.00	85.00	1000.00	44.00	-1.00	1.00	2.00
0	5.25	1.28	15.00	3.00	.00	1.00	85.00	1000.00	45.00	-1.00	.00	2.00
1	1.75	1.66	15.00	3.00	.00	1.00	85.00	1000.00	44.00	-1.00	1.00	2.00
0	5.00	1.80	15.00	3.00	.00	1.00	85.00	1000.00	43.00	-1.00	.00	2.00
1	2.75	1.82	15.00	3.00	.00	1.00	85.00	1000.00	43.00	-1.00	1.00	2.00
1	2.00	1.92	15.00	3.00	.00	1.00	85.00	1000.00	43.00	-1.00	.00	2.00
1	.75	2.02	15.00	3.00	.00	1.00	85.00	1000.00	42.00	-1.00	1.00	2.00
0	5.75	1.95	15.00	3.00	.00	1.00	85.00	1000.00	43.00	-1.00	.00	2.00
1	2.80	2.10	15.00	3.00	.00	1.00	85.00	1000.00	42.00	-1.00	.00	2.00
1	.70	2.20	15.00	3.00	.00	1.00	85.00	1000.00	41.00	-1.00	1.00	2.00
0	5.50	2.23	15.00	3.00	.00	1.00	85.00	1000.00	41.00	-1.00	.00	2.00
0	4.50	2.18	15.00	3.00	.00	1.00	85.00	1000.00	41.00	-1.00	.00	2.00
1	1.10	1.48	15.00	3.00	.00	1.00	85.00	1000.00	45.00	-1.00	.00	2.00
1	3.20	1.53	15.00	3.00	.00	1.00	85.00	1000.00	44.00	-1.00	1.00	2.00
0	4.70	1.65	15.00	3.00	.00	1.00	85.00	1000.00	44.00	-1.00	.00	2.00

HD-16 26 SEPT 78 16'BOATS

1	1.35	.13	15.00	3.00	.00	1.00	145.00	1000.00	41.00	-1.00	1.00	2.00
0	5.80	.17	15.00	3.00	.00	1.00	145.00	1000.00	41.00	-1.00	.00	2.00
1	1.80	.25	15.00	3.00	.00	1.00	145.00	1000.00	42.00	-1.00	1.00	2.00
0	2.80	.25	15.00	3.00	.00	1.00	145.00	1000.00	42.00	-1.00	1.00	2.00
0	5.40	.30	15.00	3.00	.00	1.00	145.00	1000.00	42.00	-1.00	.00	2.00
1	.75	.33	15.00	3.00	.00	1.00	145.00	1000.00	42.00	-1.00	1.00	2.00
0	4.20	.73	15.00	3.00	.00	1.00	120.00	500.00	44.00	-1.00	1.00	1.00
1	1.05	.78	15.00	3.00	.00	1.00	120.00	500.00	44.00	-1.00	1.00	2.00
1	1.80	.82	15.00	3.00	.00	1.00	120.00	500.00	45.00	-1.00	.00	1.00
1	2.70	.88	15.00	3.00	.00	1.00	120.00	500.00	45.00	-1.00	1.00	2.00
1	3.20	.77	15.00	3.00	.00	1.00	120.00	500.00	44.00	-1.00	.00	2.00
0	4.70	.70	15.00	3.00	.00	1.00	120.00	500.00	44.00	-1.00	.00	2.00
0	4.00	.83	15.00	3.00	.00	1.00	120.00	500.00	45.00	-1.00	.00	2.00
1	.70	.85	15.00	3.00	.00	1.00	120.00	500.00	45.00	-1.00	.00	2.00
1	1.65	.90	15.00	1.00	.00	1.00	143.00	500.00	45.00	-1.00	.00	2.00
0	5.50	.90	15.00	1.00	.00	1.00	143.00	500.00	45.00	-1.00	1.00	2.00
1	2.55	.90	15.00	1.00	.00	1.00	143.00	500.00	45.00	-1.00	.00	2.00
1	1.25	.90	15.00	1.00	.00	1.00	143.00	500.00	45.00	-1.00	1.00	2.00
1	1.00	1.00	15.00	1.00	.00	1.00	143.00	500.00	45.00	-1.00	.00	2.00
0	1.90	1.00	15.00	3.00	.00	1.00	143.00	500.00	44.00	-1.00	.00	2.00
1	2.10	1.10	15.00	1.00	.00	1.00	143.00	500.00	44.00	-1.00	1.00	2.00
0	5.70	1.10	15.00	1.00	.00	1.00	143.00	500.00	43.00	-1.00	.00	.00
1	1.60	1.10	15.00	1.00	.00	1.00	143.00	500.00	43.00	-1.00	.00	2.00
1	4.40	1.20	15.00	1.00	.00	1.00	143.00	500.00	43.00	-1.00	1.00	2.00
0	2.65	1.25	15.00	1.00	.00	1.00	143.00	500.00	43.00	-1.00	1.00	2.00
1	5.60	1.35	15.00	1.00	.00	1.00	145.00	500.00	43.00	-1.00	1.00	.00
1	1.10	1.37	15.00	1.00	.00	1.00	145.00	500.00	42.00	-1.00	.00	2.00
1	5.90	1.30	15.00	1.00	.00	1.00	145.00	500.00	42.00	-1.00	1.00	2.00
1	.10	1.25	15.00	1.00	.00	1.00	145.00	500.00	43.00	-1.00	.00	2.00
0	4.00	1.32	15.00	1.00	.00	1.00	145.00	500.00	43.00	-1.00	1.00	2.00
0	5.60	1.33	15.00	1.00	.00	1.00	145.00	500.00	42.00	-1.00	.00	2.00
0	5.00	1.43	15.00	1.00	.00	1.00	145.00	500.00	42.00	-1.00	.00	2.00
1	.10	1.45	15.00	1.00	.00	1.00	145.00	500.00	41.00	-1.00	1.00	2.00

41413 27 SEPT 78 16'BOATS

1	1.10	.12	15.00	2.00	.10	1.00	20.00	41.00	-1.00	1.00	2.00
0	4.50	.15	15.00	2.00	.10	1.00	20.00	41.00	-1.00	.00	2.00
1	1.25	.30	15.00	2.00	.10	1.00	20.00	42.00	-1.00	1.00	2.00
0	2.00	.30	15.00	2.00	.10	1.00	20.00	42.00	-1.00	1.00	2.00
0	3.25	.42	15.00	2.00	.10	1.00	20.00	42.00	-1.00	1.00	2.00
1	.40	.47	15.00	2.00	.10	1.00	20.00	43.00	-1.00	.00	2.00
0	4.00	.34	15.00	2.00	.10	1.00	20.00	43.00	-1.00	.00	2.00
1	1.50	.57	15.00	2.00	.10	1.00	20.00	43.00	-1.00	.00	2.00
1	2.00	.75	15.00	2.00	.10	1.00	20.00	44.00	-1.00	.00	2.00
0	4.00	.90	15.00	2.00	.10	1.00	20.00	45.00	-1.00	1.00	2.00
0	.80	1.10	15.00	2.00	.10	1.00	20.00	45.00	-1.00	1.00	2.00
0	4.50	1.10	15.00	2.00	.10	1.00	20.00	45.00	-1.00	.00	2.00

41441 27 SEPT 78 16'BOATS

0	3.80	.02	15.00	2.00	.70	1.00	10.00	41.00	-1.00	.00	2.00
1	1.00	.12	15.00	1.00	.60	1.00	10.00	42.00	-1.00	1.00	2.00
0	2.90	.30	15.00	1.00	.50	1.00	10.00	43.00	-1.00	1.00	2.00
1	.40	.62	15.00	2.00	.50	1.00	10.00	44.00	-1.00	1.00	2.00
0	3.40	.72	15.00	3.00	.40	1.00	10.00	45.00	-1.00	.00	2.00
1	2.70	.85	15.00	4.00	.30	1.00	10.00	44.00	-1.00	.00	2.00
0	2.70	1.42	15.00	7.50	.20	1.00	10.00	47.00	-1.00	1.00	2.00
1	1.25	1.53	15.00	7.50	.20	1.00	10.00	47.00	-1.00	1.00	2.00
0	1.60	1.93	15.00	7.50	.30	1.00	10.00	47.00	-1.00	1.00	2.00
1	1.30	2.07	15.00	7.00	.40	1.00	10.00	46.00	-1.00	.00	2.00
1	1.00	3.02	15.00	7.00	.50	1.00	20.00	42.00	-1.00	1.00	2.00
0	2.90	3.12	15.00	7.00	.60	1.00	20.00	42.00	-1.00	1.00	2.00
1	1.60	3.23	15.00	7.00	.80	1.00	20.00	41.00	-1.00	1.00	2.00
0	2.40	3.37	15.00	6.00	.90	1.00	20.00	40.00	-1.00	.00	2.00
1	1.60	3.48	15.00	6.00	1.00	1.00	20.00	39.00	-1.00	.00	2.00
1	.25	1.38	15.00	7.50	.20	1.00	10.00	38.00	-1.00	.00	2.00
1	.25	3.08	15.00	6.00	1.00	1.00	20.00	47.00	-1.00	.00	2.00
0	2.00	2.35	15.00	7.00	.50	1.00	20.00	45.00	-1.00	1.00	2.00
0	4.10	2.47	15.00	7.00	.50	1.00	20.00	44.00	-1.00	.00	2.00

PT TURNER 27 SEPT 78 16'BOATS

0	1.50	.03	15.00	2.00	.10	1.00	15.00	37.00	-1.00	.00	2.00
1	1.80	.06	15.00	2.00	.10	1.00	15.00	37.00	-1.00	.00	2.00
1	1.85	.26	15.00	2.00	.10	1.00	15.00	39.00	-1.00	1.00	2.00
1	1.50	.26	15.00	2.00	.10	1.00	15.00	39.00	-1.00	1.00	2.00
1	.10	.35	15.00	2.00	.10	1.00	17.00	40.00	-1.00	1.00	2.00
0	1.80	.55	15.00	2.00	.10	1.00	17.00	41.00	-1.00	.00	2.00
1	.10	.55	15.00	2.00	.10	1.00	17.00	41.00	-1.00	1.00	2.00
0	1.80	.78	15.00	2.00	.10	1.00	17.00	42.00	-1.00	.00	2.00
1	2.50	.95	15.00	2.00	.10	1.00	17.00	43.00	-1.00	1.00	2.00
1	.80	1.02	15.00	2.00	.05	1.00	17.00	44.00	-1.00	.00	2.00
0	4.50	1.14	15.00	2.00	.05	1.00	17.00	44.00	-1.00	.00	2.00
0	5.00	1.36	15.00	2.00	.05	1.00	17.00	45.00	-1.00	1.00	2.00
1	.70	1.54	15.00	2.00	.05	1.00	17.00	45.00	-1.00	1.00	1.00
1	2.10	.15	15.00	7.50	.05	1.00	10.00	47.00	-1.00	.00	2.00
1	.10	.27	15.00	7.50	.02	1.00	10.00	47.00	-1.00	1.00	2.00
0	3.00	.35	15.00	7.50	.02	1.00	10.00	47.00	-1.00	1.00	2.00
1	2.70	.40	15.00	7.50	.02	1.00	10.00	47.00	-1.00	.00	2.00
1	1.50	.65	15.00	7.50	.02	1.00	10.00	47.00	-1.00	1.00	2.00
1	.20	.85	15.00	7.50	.02	1.00	10.00	46.00	-1.00	.00	2.00
0	5.75	.68	15.00	7.50	.02	1.00	10.00	47.00	-1.00	1.00	2.00
1	1.50	.90	15.00	7.50	.02	1.00	10.00	46.00	-1.00	.00	1.00
1	2.20	.92	15.00	7.50	.02	1.00	10.00	46.00	-1.00	.00	2.00
1	4.50	1.02	15.00	7.50	.02	1.00	10.00	46.00	-1.00	.00	2.00
1	5.00	1.22	15.00	7.50	.02	1.00	10.00	45.00	-1.00	1.00	2.00
0	2.40	1.22	15.00	7.50	.02	1.00	10.00	45.00	-1.00	1.00	.00
1	1.80	1.49	15.00	7.50	.02	1.00	10.00	43.00	-1.00	1.00	2.00
0	5.50	1.51	15.00	7.50	.02	1.00	10.00	43.00	-1.00	.00	2.00
1	.85	1.91	15.00	7.50	.02	1.00	10.00	41.00	-1.00	1.00	2.00
0	2.50	2.13	15.00	7.50	.02	1.00	10.00	40.00	-1.00	.00	2.00

PT TURNER 29 SEPT 78 16'BOATS

1	.00	2.62	15.00	3.00	.05	1.00	10.00	46.00	-1.00	.00	.00
1	1.00	2.65	15.00	3.00	.05	1.00	10.00	45.00	-1.00	.00	2.00
1	4.00	2.83	15.00	3.00	.05	1.00	10.00	45.00	-1.00	1.00	2.00
0	5.80	3.31	15.00	3.00	5.00	1.00	10.00	42.00	-1.00	1.00	2.00
0	5.00	3.63	15.00	3.00	.05	1.00	10.00	41.00	-1.00	1.00	2.00
1	.80	3.85	15.00	3.00	.05	1.00	10.00	39.00	-1.00	.00	1.00
1	2.20	4.03	15.00	3.00	.05	1.00	10.00	38.00	-1.00	1.00	2.00
0	5.10	4.05	15.00	3.00	.05	1.00	10.00	38.00	-1.00	1.00	2.00
1	5.00	4.28	15.00	3.00	.05	1.00	10.00	37.00	-1.00	1.00	2.00
0	5.40	4.35	15.00	3.00	.05	1.00	10.00	35.00	-1.00	.00	2.00
1	1.20	4.67	15.00	3.00	.05	1.00	10.00	33.00	-1.00	.00	.00
0	1.80	4.60	15.00	3.00	.05	1.00	10.00	34.00	-1.00	.00	2.00
0	4.10	.13	15.00	3.00	.00	1.00	15.00	39.00	-1.00	.00	2.00
0	5.50	.81	15.00	3.00	.00	1.00	15.00	42.00	-1.00	.00	2.00
0	4.00	.66	15.00	3.00	.00	1.00	15.00	42.00	-1.00	.00	2.00
1	.40	.83	15.00	3.00	.00	1.00	15.00	42.00	-1.00	1.00	.00
0	1.50	1.13	15.00	3.00	.00	1.00	15.00	44.00	-1.00	1.00	2.00
0	1.20	1.00	15.00	3.00	.00	1.00	15.00	46.00	-1.00	1.00	2.00
0	4.40	1.96	15.00	3.00	.00	1.00	15.00	46.00	-1.00	.00	2.00
1	1.00	1.90	15.00	3.00	.00	1.00	15.00	46.00	-1.00	.00	2.00
0	2.50	2.05	15.00	3.00	.00	1.00	15.00	46.00	-1.00	.00	2.00
0	5.20	.63	15.00	3.00	.00	1.00	15.00	42.00	-1.00	.00	2.00
0	5.00	1.70	15.00	3.00	.00	1.00	15.00	45.00	-1.00	.00	2.00
0	3.90	3.15	15.00	3.00	.00	1.00	10.00	43.00	-1.00	1.00	2.00
0	5.50	4.45	15.00	3.00	.00	1.00	10.00	35.00	-1.00	.00	2.00
0	5.00	1.05	15.00	3.00	.00	1.00	15.00	43.00	-1.00	.00	2.00
0	5.00	1.35	15.00	3.00	.00	1.00	10.00	46.00	-1.00	.00	2.00

41413 29 SEPT 78 16'BOATS

0	5.90	.17	15.00	3.00	.00	1.50	20.00	41.00	-1.00	.00	2.00
1	.20	.17	15.00	2.00	.00	1.50	20.00	41.00	-1.00	1.00	2.00
0	4.35	.63	15.00	2.00	.00	1.50	20.00	43.00	-1.00	.00	2.00
1	1.20	.57	15.00	2.00	.00	1.50	20.00	43.00	-1.00	1.00	2.00
1	1.65	.70	15.00	2.00	.00	1.50	20.00	43.00	-1.00	1.00	2.00
1	.10	.92	15.00	1.00	.00	1.00	20.00	45.00	-1.00	.00	2.00
0	2.50	.98	15.00	1.00	.00	1.00	20.00	45.00	-1.00	1.00	2.00
0	5.90	.87	15.00	1.00	.00	1.00	20.00	44.00	-1.00	.00	2.00
0	4.10	1.20	15.00	2.00	.05	1.00	20.00	45.00	-1.00	.00	2.00
1	.90	2.08	15.00	3.00	.10	1.50	20.00	46.00	-1.00	.00	2.00
1	5.00	2.46	15.00	3.00	.07	1.50	10.00	45.00	-1.00	.00	2.00
0	2.30	2.70	15.00	3.00	.06	1.50	10.00	45.00	-1.00	.00	2.00
0	.40	2.98	15.00	3.00	.05	1.00	10.00	43.00	-1.00	1.00	2.00
1	.20	3.45	15.00	4.00	.05	1.50	10.00	41.00	-1.00	1.00	2.00
0	2.25	3.53	15.00	4.00	.05	1.50	10.00	40.00	-1.00	1.00	1.00
0	4.70	3.37	15.00	6.00	.05	1.50	10.00	41.00	-1.00	.00	2.00
0	5.20	4.35	15.00	6.00	.05	1.50	10.00	32.00	-1.00	.00	2.00
0	5.40	4.92	15.00	7.50	.05	1.50	10.00	29.00	-1.00	.00	2.00
1	1.00	5.02	15.00	7.50	.05	1.50	10.00	27.00	-1.00	1.00	.00
0	4.20	2.00	15.00	3.00	.10	1.50	10.00	47.00	-1.00	.00	1.00
0	4.00	3.10	15.00	4.00	.05	1.50	10.00	42.00	-1.00	.00	2.00

44349 29 SEPT 78 16'BOATS

0	5.80	.15	15.00	5.00	.00	1.50	10.00	41.00	-1.00	1.00	2.00
0	5.80	.15	15.00	5.00	.00	1.50	10.00	41.00	-1.00	1.00	2.00
1	.50	.40	15.00	2.00	.00	1.00	10.00	44.00	-1.00	.00	2.00
1	.15	1.12	15.00	1.00	.00	1.00	10.00	46.00	-1.00	.00	.00
1	.60	1.75	15.00	2.00	.05	1.50	10.00	47.00	-1.00	1.00	2.00
1	1.70	2.18	15.00	3.00	.10	1.50	10.00	46.00	-1.00	.00	2.00
1	.75	2.50	15.00	3.00	.10	1.50	10.00	46.00	-1.00	.00	2.00
0	5.80	2.63	15.00	3.00	.05	1.00	10.00	45.00	-1.00	.00	2.00
0	6.75	1.45	15.00	2.00	.05	1.50	10.00	46.00	-1.00	.00	2.00
0	1.95	2.87	15.00	3.00	.05	1.00	10.00	44.00	-1.00	1.00	2.00
0	5.90	2.93	15.00	3.00	.05	1.00	10.00	44.00	-1.00	.00	2.00
1	1.10	3.47	15.00	4.00	.05	1.50	10.00	41.00	-1.00	1.00	2.00
0	3.50	3.52	15.00	5.00	.05	1.50	10.00	40.00	-1.00	.00	2.00

41385 2 OCT 78 16'BOATS

1	1.70	.00	12.00	11.50	.10	2.00	20.00	58.00	-1.00	.00	2.00
1	.05	.28	12.00	11.50	.10	2.00	20.00	39.00	-1.00	.00	2.00
0	4.00	.27	12.00	11.50	.10	2.00	20.00	39.00	-1.00	.00	1.00
0	1.60	.65	12.00	11.00	.10	2.00	20.00	41.00	-1.00	.00	1.00
1	.40	.82	12.00	10.00	.10	2.00	20.00	42.00	-1.00	.00	2.00
0	3.50	.70	12.00	10.00	.10	2.00	20.00	42.00	-1.00	1.00	2.00
0	2.10	1.02	12.00	10.00	.10	2.00	20.00	43.00	-1.00	1.00	2.00
1	.30	1.45	12.00	9.00	.10	2.00	10.00	44.00	-1.00	.00	2.00
1	.10	1.90	12.00	9.00	.10	2.00	10.00	45.00	-1.00	1.00	2.00
0	4.00	1.68	12.00	8.00	.10	2.00	10.00	45.00	-1.00	.00	2.00
1	.55	2.58	10.00	7.00	.10	2.00	10.00	44.00	-1.00	.00	2.00
1	1.70	2.90	10.00	7.00	.15	2.00	10.00	43.00	-1.00	1.00	2.00
0	3.50	3.03	10.00	6.00	.20	2.00	10.00	43.00	-1.00	1.00	2.00
0	3.50	2.63	10.00	7.00	.10	2.00	10.00	44.00	-1.00	1.00	2.00
0	2.10	.39	12.00	11.50	.10	2.00	20.00	40.00	-1.00	.00	2.00

44348 2 OCT 78 16'BOATS

1	1.40	.40	10.00	7.00	.10	1.50	10.00	44.00	-1.00	1.00	2.00
1	1.50	.72	10.00	6.00	.10	1.50	10.00	43.00	-1.00	.00	2.00
0	3.60	.75	10.00	6.00	.10	1.50	10.00	43.00	-1.00	1.00	2.00
1	.50	1.05	10.00	6.00	.20	1.50	10.00	41.00	-1.00	.00	2.00
1	.75	1.45	10.00	5.00	.40	1.50	10.00	38.00	-1.00	.00	.00
0	3.50	1.50	10.00	5.00	.40	1.50	10.00	37.00	-1.00	1.00	.00
0	3.25	2.33	11.00	3.50	.70	2.00	10.00	31.00	-1.00	1.00	.00
1	1.60	3.27	10.00	4.00	.60	1.50	10.00	22.00	-1.00	1.00	2.00
0	2.20	3.37	10.00	4.00	.60	1.50	10.00	21.00	-1.00	.00	2.00
0	1.25	.20	10.00	7.00	.10	1.50	10.00	44.00	-1.00	.00	1.00

PT TURNER 2 OCT 78 16'BOATS

1	.50	2.10	11.00	3.50	.70	3.00	12.00	32.00	-1.00	.00	2.00
0	4.40	2.20	11.00	3.50	.70	3.00	12.00	30.00	-1.00	.00	2.00
1	1.10	2.53	10.50	3.70	.65	3.00	12.00	28.00	-1.00	1.00	2.00
0	1.75	3.02	10.00	4.00	.60	1.50	12.00	23.00	-1.00	.00	2.00
0	2.50	3.10	10.00	4.00	.60	1.50	12.00	22.00	-1.00	.00	2.00
1	2.10	3.20	10.00	4.00	.60	1.50	12.00	21.00	-1.00	1.00	2.00
1	2.00	.00	10.00	7.00	.10	1.50	12.00	45.00	-1.00	.00	2.00
1	1.10	.02	10.00	7.00	.10	1.50	12.00	45.00	-1.00	.00	2.00
1	.50	.22	10.00	7.00	.15	1.50	12.00	44.00	-1.00	1.00	2.00
0	3.50	.83	10.00	6.00	.25	1.50	12.00	41.00	-1.00	.00	2.00
1	1.50	.90	10.00	6.00	.30	1.50	12.00	40.00	-1.00	1.00	2.00
1	1.50	1.03	10.00	5.00	.35	1.50	12.00	39.00	-1.00	1.00	1.00
0	5.20	1.25	10.00	5.00	.40	1.50	12.00	38.00	-1.00	.00	1.00
0	3.40	.14	10.00	7.00	.15	1.50	12.00	44.00	-1.00	.00	2.00

PT WELLS 2 OCT 78 16'BOATS

0	2.00	.08	12.00	11.50	.10	2.00	10.00	38.00	-1.00	.00	2.00
1	1.20	.22	12.00	11.50	.10	2.00	10.00	39.00	-1.00	1.00	2.00
1	.75	.00	12.00	11.50	.10	2.00	10.00	41.00	-1.00	.00	2.00
1	.90	.72	12.00	11.50	.10	2.00	10.00	42.00	-1.00	.00	2.00
0	4.60	.72	12.00	11.50	.10	2.00	10.00	42.00	-1.00	.00	2.00
1	2.40	1.02	12.00	10.00	.10	2.00	10.00	43.00	-1.00	.00	2.00
0	2.75	1.18	12.00	10.00	.10	2.00	10.00	43.00	-1.00	1.00	2.00
0	1.50	1.28	12.00	10.00	.10	2.00	10.00	44.00	-1.00	1.00	2.00
1	1.50	1.50	12.00	10.00	.10	2.00	10.00	45.00	-1.00	.00	1.00
1	.00	1.62	12.00	9.00	.10	2.00	10.00	45.00	-1.00	.00	2.00
0	4.10	1.70	12.00	9.00	.10	2.00	10.00	45.00	-1.00	.00	2.00
0	5.00	2.08	11.00	9.00	.10	2.00	10.00	46.00	-1.00	.00	2.00
1	1.90	2.03	11.00	8.00	.10	2.00	10.00	46.00	-1.00	.00	1.00
0	5.40	2.58	11.00	7.00	.10	1.50	15.00	46.00	-1.00	.00	2.00
1	.90	2.58	11.00	7.00	.10	1.50	15.00	46.00	-1.00	.00	1.00
1	.90	2.76	11.00	7.00	.10	1.50	15.00	45.00	-1.00	1.00	2.00
0	4.60	2.88	11.00	7.00	.10	1.50	15.00	45.00	-1.00	.00	2.00
1	1.10	3.38	11.00	6.00	.10	1.50	15.00	42.00	-1.00	.00	2.00
1	.20	3.63	11.00	6.00	.10	1.50	15.00	41.00	-1.00	1.00	2.00
0	2.50	4.03	11.00	5.00	.40	1.50	15.00	38.00	-1.00	.00	2.00
0	2.75	4.28	11.00	5.00	.40	1.50	15.00	37.00	-1.00	.00	2.00
1	2.80	5.28	11.00	5.00	.40	1.50	15.00	42.00	-1.00	.00	2.00
0	4.25	5.58	11.00	5.00	.40	1.50	15.00	41.00	-1.00	.00	2.00

HH-52 5 OCT 78 16*HUATS

0	5.30	.12	15.00	12.00	.30	2.00	60.00	500.00	41.00	-1.00	.00	2.00
1	.00	.35	15.00	12.00	.30	2.00	60.00	500.00	42.00	-1.00	1.00	1.00
1	2.10	.57	15.00	12.00	.30	2.00	60.00	500.00	42.00	-1.00	1.00	2.00
1	1.80	.80	15.00	12.00	.30	2.00	60.00	500.00	43.00	-1.00	1.00	2.00
0	5.10	.87	15.00	12.00	.30	2.00	60.00	500.00	43.00	-1.00	.00	2.00
1	2.20	.84	15.00	12.00	.30	2.00	90.00	500.00	44.00	-1.00	.00	2.00
0	5.80	.94	15.00	12.00	.30	2.00	90.00	500.00	44.00	-1.00	.00	2.00
0	5.50	1.06	15.00	12.00	.30	2.00	90.00	500.00	45.00	-1.00	.00	2.00
1	2.10	1.14	15.00	12.00	.30	2.00	90.00	500.00	45.00	-1.00	1.00	2.00
0	5.25	1.30	11.00	9.00	.50	2.00	60.00	500.00	44.00	-1.00	.00	2.00
1	2.80	1.30	11.00	9.00	.50	2.00	60.00	500.00	44.00	-1.00	.00	2.00
0	2.90	1.50	11.00	9.00	.60	2.00	60.00	500.00	44.00	-1.00	1.00	2.00
0	1.30	1.60	11.00	9.00	.60	2.00	60.00	500.00	43.00	-1.00	.00	1.00
0	1.50	1.70	11.00	11.00	.70	2.00	60.00	500.00	43.00	-1.00	1.00	2.00
1	1.05	1.80	11.00	11.00	.70	2.00	60.00	500.00	42.00	-1.00	1.00	2.00
0	5.00	2.10	11.00	13.00	.80	2.00	85.00	500.00	40.00	-1.00	.00	2.00
0	1.20	2.20	11.00	13.00	.80	2.00	85.00	500.00	39.00	-1.00	1.00	1.00
0	5.10	2.30	11.00	13.00	.80	2.00	85.00	500.00	38.00	-1.00	.00	2.00
1	1.50	2.30	11.00	13.00	.80	2.00	85.00	500.00	38.00	-1.00	.00	2.00
0	2.75	2.50	11.00	13.00	.80	2.00	85.00	500.00	37.00	-1.00	1.00	2.00

41413 4 OCT 78 16'BOATS

1	.10	.23	10.00	17.00	.90	3.00	10.00	39.00	-1.00	.00	2.00
0	1.10	.37	10.00	17.00	.90	3.00	10.00	40.00	-1.00	.00	.00
1	.00	.55	10.00	17.00	.90	3.00	10.00	41.00	-1.00	.00	.00
1	.05	.60	10.00	17.00	.90	3.00	10.00	41.00	-1.00	.00	2.00
0	2.40	.05	10.00	17.00	.90	3.00	10.00	41.00	-1.00	.00	2.00
0	1.50	.72	10.00	17.00	.90	3.00	10.00	42.00	-1.00	.00	2.00
0	1.20	.94	10.00	17.00	.90	3.00	10.00	43.00	-1.00	.00	2.00
0	1.10	1.09	10.00	20.00	.90	4.00	10.00	43.00	-1.00	.00	2.00
0	.90	1.32	10.00	20.00	.95	4.00	10.00	44.00	-1.00	.00	2.00

44352 4 OCT 78 16'BOATS

0	.50	.02	11.00	18.00	.90	4.00	10.00	44.00	-1.00	.00	2.00
0	.40	.09	11.00	18.00	.90	4.00	10.00	44.00	-1.00	.00	.00
0	.90	.19	11.00	18.00	.90	4.00	10.00	44.00	-1.00	.00	2.00
0	.50	.36	12.00	20.00	.95	4.00	10.00	45.00	-1.00	.00	2.00
0	.70	.94	12.00	20.00	.95	4.00	10.00	45.00	-1.00	.00	2.00
0	4.00	1.10	12.00	20.00	.95	4.00	10.00	44.00	-1.00	1.00	.00

PT TURNER 4 OCT 78 16'BOATS

0	1.45	.20	10.00	17.00	.90	3.00	15.00	38.00	-1.00	.00	1.00
0	1.50	.38	10.00	17.00	.90	3.00	15.00	40.00	-1.00	.00	2.00
1	.70	.40	10.00	17.00	.90	3.00	15.00	40.00	-1.00	.00	2.00
1	.20	.52	10.00	17.00	.90	3.00	15.00	40.00	-1.00	.00	2.00
0	2.10	.62	10.00	17.00	.90	3.00	15.00	41.00	-1.00	.00	1.00
0	2.05	.65	10.00	17.00	.90	3.00	15.00	41.00	-1.00	1.00	1.00
1	.10	.92	10.00	17.00	.90	3.00	15.00	42.00	-1.00	.00	2.00
1	.10	.97	10.00	17.00	.90	3.00	15.00	42.00	-1.00	.00	2.00
0	1.75	1.02	11.00	18.00	.90	3.00	15.00	43.00	-1.00	.00	2.00
0	2.20	1.02	11.00	19.00	.90	3.00	15.00	43.00	-1.00	.00	2.00
0	1.40	2.17	12.00	25.00	.95	4.00	10.00	45.00	-1.00	.00	2.00
0	.60	2.33	12.00	25.00	.95	5.00	10.00	45.00	-1.00	.00	2.00
0	.30	2.38	12.00	25.00	.90	5.00	10.00	45.00	-1.00	.00	2.00

MC-130 5 OCT 78 16'BOATS

1	.40	.10	5.00	5.00	.80	1.00	200.00	800.00	45.00	-1.00	1.00	.00
0	1.70	.20	5.00	5.00	.80	1.00	200.00	800.00	45.00	-1.00	1.00	.00
0	2.00	.20	5.00	5.00	.80	1.00	200.00	800.00	45.00	-1.00	1.00	2.00
0	.15	.25	5.00	5.00	.80	1.00	200.00	800.00	45.00	-1.00	1.00	.00
0	1.80	.32	5.00	5.00	.80	1.00	200.00	800.00	45.00	-1.00	1.00	2.00
0	2.35	.38	5.00	5.00	.80	1.00	150.00	800.00	44.00	-1.00	1.00	2.00
0	1.80	.36	5.00	5.00	.80	1.00	150.00	800.00	45.00	-1.00	1.00	2.00
0	.55	.66	5.00	5.00	.80	1.00	150.00	800.00	45.00	-1.00	.00	2.00
0	.70	.60	5.00	5.00	.80	1.00	150.00	800.00	45.00	-1.00	.00	2.00
1	1.10	.62	5.00	5.00	.80	1.00	150.00	800.00	45.00	-1.00	1.00	2.00
0	2.15	.58	5.00	5.00	.80	1.00	150.00	800.00	45.00	-1.00	.00	2.00
0	.75	1.50	8.00	7.00	.70	1.50	150.00	1000.00	24.00	-1.00	1.00	2.00
1	.10	1.60	8.00	7.00	.70	1.50	150.00	1000.00	22.00	-1.00	1.00	.00
0	.50	1.70	8.00	7.00	.70	1.50	150.00	1000.00	22.00	-1.00	.00	2.00
0	.80	1.80	8.00	7.00	.70	1.50	150.00	1000.00	21.00	-1.00	1.00	2.00
1	1.80	1.10	8.00	7.00	.70	1.50	200.00	1000.00	28.00	-1.00	1.00	1.00
0	.70	1.10	8.00	7.00	.70	1.50	200.00	1000.00	28.00	-1.00	.00	2.00
0	.00	1.10	8.00	7.00	.70	1.50	200.00	1000.00	27.00	-1.00	1.00	.00
1	.30	1.10	8.00	7.00	.70	1.50	200.00	1000.00	27.00	-1.00	1.00	2.00

HH-52 5 OCT 78 16'BOATS

0	4.55	.10	5.00	5.00	.80	1.00	60.00	400.00	40.00	-1.00	.00	2.00
1	2.48	.27	5.00	5.00	.80	1.00	60.00	400.00	41.00	-1.00	1.00	2.00
1	.20	.50	5.00	5.00	.80	1.00	60.00	400.00	42.00	-1.00	1.00	2.00
1	2.30	.63	5.00	5.00	.80	1.00	60.00	400.00	43.00	-1.00	1.00	2.00
0	4.90	2.50	8.00	7.00	.70	1.00	85.00	400.00	33.00	-1.00	.00	1.00
1	1.10	2.70	8.00	7.00	.70	1.00	85.00	400.00	31.00	-1.00	.00	2.00
1	.50	2.80	8.00	7.00	.70	1.00	85.00	400.00	30.00	-1.00	1.00	2.00
1	1.85	3.00	8.00	7.00	.70	1.00	85.00	400.00	29.00	-1.00	1.00	2.00
0	5.40	2.90	8.00	7.00	.70	1.00	85.00	400.00	29.00	-1.00	.00	2.00
0	5.75	1.15	5.00	5.00	.80	1.00	85.00	400.00	44.00	-1.00	.00	2.00
0	5.00	1.22	5.00	5.00	.80	1.00	85.00	400.00	44.00	-1.00	.00	2.00
1	.80	1.42	5.00	5.00	.80	1.00	85.00	400.00	45.00	-1.00	1.00	2.00
1	2.20	1.48	5.00	5.00	.80	1.00	85.00	400.00	45.00	-1.00	.00	2.00
0	.60	1.80	6.00	5.00	.80	1.00	85.00	400.00	45.00	-1.00	.00	2.00
0	5.20	1.95	6.00	5.00	.80	1.00	85.00	400.00	44.00	-1.00	.00	2.00
0	2.90	1.85	6.00	5.00	.80	1.00	85.00	400.00	44.00	-1.00	.00	.00

HC-130	26 JAN 79		RAFTS							
0	.50	.30	10.00	20.00	.50	3.00	200.00	1000.00	22.50	2.00
0	.40	.30	10.00	20.00	.50	3.00	200.00	1000.00	22.50	.00
0	.60	.30	10.00	20.00	.50	3.00	200.00	1000.00	22.50	1.00
0	1.50	.30	10.00	20.00	.50	3.00	200.00	1000.00	22.50	2.00
0	1.60	.30	10.00	20.00	.50	3.00	200.00	1000.00	22.50	.00
0	1.40	.30	10.00	20.00	.50	3.00	200.00	1000.00	22.50	1.00

HC-130	31 JAN 79		RAFTS							
0	2.00	.20	10.00	30.00	.60	5.00	160.00	500.00	45.00	2.00
0	.20	.50	10.00	30.00	.60	5.00	160.00	500.00	45.00	2.00
0	.80	.30	10.00	30.00	.60	5.00	160.00	500.00	45.00	.00
1	1.00	.30	10.00	30.00	.60	5.00	160.00	500.00	45.00	1.00
0	1.20	.40	10.00	30.00	.60	5.00	160.00	500.00	45.00	.00
0	.80	.40	10.00	30.00	.60	5.00	160.00	500.00	45.00	1.00

41585	16 APRIL 79		RAFIS								
1	.50	.60	14.00	2.00	1.00	1.00	15.00	58.00	.00	.00	2.00
0	2.80	.60	14.00	2.00	1.00	1.00	15.00	59.00	.00	.00	2.00
1	1.10	.80	14.00	2.00	1.00	1.00	15.00	59.00	.00	.00	2.00
0	2.00	1.10	14.00	2.00	1.00	1.00	15.00	59.00	.00	.00	2.00
1	.80	1.30	14.00	2.00	1.00	1.00	15.00	59.00	.00	.00	2.00
1	.50	1.40	14.00	2.00	1.00	1.00	15.00	59.00	2.00	.00	2.00
0	2.50	1.60	14.00	2.00	1.00	1.00	15.00	59.00	.00	.00	2.00
0	2.50	1.70	14.00	2.00	1.00	1.00	15.00	58.00	2.00	.00	2.00
0	3.90	1.70	15.00	1.50	1.00	.50	24.00	54.00	1.00	1.00	2.00
0	1.80	2.00	15.00	1.50	1.00	.50	24.00	54.00	.00	.00	2.00
0	2.90	2.10	15.00	1.50	1.00	.50	24.00	53.00	.00	1.00	2.00
1	1.30	2.30	15.00	1.50	1.00	.50	24.00	52.00	.00	.00	2.00
1	.40	2.40	15.00	1.50	1.00	.50	24.00	51.00	.00	1.00	2.00
1	.50	2.60	15.00	1.50	1.00	.50	24.00	46.00	.00	.00	2.00
0	1.40	2.70	15.00	1.50	1.00	.50	24.00	48.00	2.00	.00	2.00
1	.40	2.70	15.00	1.50	1.00	.50	24.00	48.00	1.00	.00	2.00
0	1.40	2.80	15.00	1.50	1.00	.50	24.00	48.00	.00	.00	2.00
1	.10	2.80	15.00	1.50	1.00	.50	24.00	48.00	.00	1.00	2.00
44348	16 APRIL 79		RAFIS								
1	1.00	.10	15.00	1.50	1.00	.50	10.20	54.00	2.00	.00	2.00
1	1.40	.20	15.00	1.50	1.00	.50	10.20	53.00	2.00	.00	2.00
1	1.40	.20	15.00	1.50	1.00	.50	10.20	53.00	1.00	.00	2.00
1	.10	.40	15.00	1.50	1.00	.50	10.20	51.00	.00	1.00	2.00
1	.50	.70	15.00	1.50	1.00	.50	10.20	48.00	.00	1.00	2.00
0	1.70	1.60	15.00	1.50	1.00	.50	10.20	40.00	.00	.00	2.00
1	.40	1.70	15.00	1.50	1.00	.50	10.20	39.00	1.00	1.00	2.00
1	.00	2.10	15.00	1.50	1.00	.50	10.20	37.00	2.00	.00	.00
1	1.70	2.10	15.00	1.50	1.00	.50	10.20	37.00	.00	1.00	2.00
1	1.50	2.80	15.00	1.50	1.00	.50	10.20	29.00	1.00	.00	2.00
PT TURNER	16 APRIL 79		RAFIS								
0	2.10	.10	14.00	2.00	1.00	1.00	17.00	56.00	.00	.00	2.00
1	1.00	.20	14.00	2.00	1.00	1.00	17.00	56.00	1.00	1.00	2.00
0	3.10	.20	14.00	2.00	1.00	1.00	17.00	56.00	.00	1.00	2.00
1	.50	.20	14.00	2.00	1.00	1.00	17.00	56.00	.00	1.00	2.00
1	1.20	.40	14.00	2.00	1.00	1.00	17.00	54.00	2.00	.00	2.00
0	2.00	.50	14.00	2.00	1.00	1.00	17.00	54.00	1.00	.00	2.00
1	1.40	.60	14.00	2.00	1.00	1.00	17.00	54.00	2.00	.00	2.00
1	2.30	.60	14.00	2.00	1.00	1.00	17.00	54.00	.00	.00	2.00
1	.10	.80	15.00	1.50	1.00	.50	17.00	53.00	.00	1.00	2.00
1	1.20	.80	15.00	1.50	1.00	.50	17.00	53.00	.00	.00	2.00
0	4.40	1.20	15.00	1.50	1.00	.50	17.00	50.00	.00	1.00	2.00
1	1.80	1.30	15.00	1.50	1.00	.50	17.00	49.00	.00	.00	2.00
1	.80	1.40	15.00	1.50	1.00	.50	17.00	46.00	.00	1.00	2.00
1	.40	1.50	15.00	1.50	1.00	.50	17.00	46.00	2.00	.00	2.00
0	2.50	1.50	15.00	1.50	1.00	.50	17.00	46.00	1.00	1.00	2.00
1	2.50	1.60	15.00	1.50	1.00	.50	17.00	46.00	2.00	.00	2.00
1	.70	1.80	15.00	1.00	1.00	.50	17.00	43.00	2.00	.00	2.00

1	.90	1.90	15.00	1.00	1.00	.50	17.00	42.00	.00	.00	2.00
0	3.40	1.80	15.00	1.00	1.00	.50	17.00	42.00	.00	1.00	2.00
0	2.40	1.90	15.00	1.00	1.00	.50	17.00	41.00	1.00	1.00	1.00
1	.90	2.00	15.00	1.00	1.00	.50	17.00	41.00	1.00	.00	2.00
0	2.80	2.20	15.00	1.00	1.00	.50	17.00	40.00	2.00	.00	2.00
1	1.60	2.20	15.00	1.00	1.00	.50	17.00	40.00	.00	.00	2.00
0	4.00	2.30	15.00	1.00	1.00	.50	17.00	38.00	.00	1.00	2.00
0	3.30	2.40	15.00	1.00	1.00	.50	17.00	37.00	2.00	1.00	.00
1	3.20	2.40	15.00	1.00	1.00	.50	17.00	37.00	1.00	.00	2.00
1	1.00	2.40	15.00	1.00	1.00	.50	17.00	37.00	.00	.00	2.00
1	1.80	2.40	15.00	1.00	1.00	.50	17.00	37.00	.00	.00	2.00
1	1.30	2.60	15.00	1.00	1.00	.50	17.00	35.00	1.00	.00	2.00
1	3.40	2.90	15.00	1.00	1.00	.50	17.00	32.00	1.00	.00	2.00
1	.00	2.90	15.00	1.00	1.00	.50	17.00	31.00	.00	.00	2.00
0	2.50	3.00	15.00	1.00	1.00	.50	17.00	30.00	.00	.00	2.00
1	2.00	3.10	15.00	1.00	1.00	.50	17.00	29.00	.00	.00	2.00
0	4.20	3.20	15.00	1.00	1.00	.50	17.00	28.00	.00	1.00	.00
0	5.00	3.40	15.00	1.00	1.00	.50	17.00	26.00	1.00	.00	2.00
1	2.10	2.60	15.00	1.00	1.00	.50	17.00	35.00	.00	.00	2.00
1	1.70	3.20	15.00	1.00	1.00	.50	17.00	28.00	.00	.00	2.00

PT WELLS 16 APRIL 79 RAFTS

0	3.80	.05	14.00	2.00	1.00	1.00	15.00	58.00	.00	.00	2.00
1	.80	.10	14.00	2.00	1.00	1.00	15.00	58.00	2.00	.00	2.00
0	2.80	.20	14.00	2.00	1.00	1.00	15.00	57.00	1.00	1.00	2.00
1	.90	.40	14.00	2.00	1.00	1.00	15.00	57.00	1.00	.00	2.00
0	2.90	.50	14.00	2.00	1.00	1.00	15.00	56.00	2.00	.00	2.00
0	1.80	.60	14.00	2.00	1.00	1.00	15.00	55.00	.00	.00	2.00
0	3.00	.70	14.00	2.00	1.00	1.00	15.00	55.00	2.00	.00	2.00
0	2.40	.70	14.00	2.00	1.00	1.00	15.00	55.00	1.00	.00	2.00
1	.20	.70	14.00	2.00	1.00	1.00	15.00	55.00	.00	.00	2.00
1	2.20	.90	14.00	2.00	1.00	1.00	15.00	54.00	.00	.00	2.00
1	1.10	.90	14.00	2.00	1.00	1.00	15.00	54.00	1.00	.00	2.00
1	.40	1.20	15.00	1.50	1.00	.50	15.00	52.00	.00	.00	2.00
0	4.00	1.20	15.00	1.50	1.00	.50	15.00	51.00	1.00	.00	2.00
0	2.10	1.40	15.00	1.50	1.00	.50	15.00	50.00	.00	.00	2.00
1	1.90	1.50	15.00	1.50	1.00	.50	15.00	50.00	.00	.00	2.00
0	4.20	1.60	15.00	1.50	1.00	.50	15.00	48.00	.00	1.00	.00
1	1.70	1.60	15.00	1.50	1.00	.50	15.00	48.00	.00	.00	2.00
1	2.10	1.90	15.00	1.00	1.00	.50	15.00	44.00	.00	.00	2.00
1	.90	2.10	15.00	1.00	1.00	.50	15.00	42.00	1.00	1.00	2.00
0	2.90	2.10	15.00	1.00	1.00	.50	15.00	42.00	.00	1.00	2.00
1	.50	2.20	15.00	1.00	1.00	.50	15.00	41.00	.00	1.00	.00
1	1.80	2.40	15.00	1.00	1.00	.50	15.00	40.00	2.00	.00	2.00
1	2.40	2.50	15.00	1.00	1.00	.50	15.00	39.00	1.00	.00	1.00
1	2.50	2.60	15.00	1.00	1.00	.50	15.00	38.00	.00	.00	2.00
1	1.10	2.60	15.00	1.00	1.00	.50	15.00	38.00	1.00	.00	2.00
1	1.00	2.80	15.00	1.00	1.00	.50	15.00	36.00	.00	.00	2.00
1	.10	2.80	15.00	1.00	1.00	.50	15.00	36.00	.00	1.00	1.00
1	1.70	3.30	15.00	1.00	1.00	.50	15.00	30.00	.00	.00	2.00
1	.00	3.40	15.00	1.00	1.00	.50	15.00	29.00	.00	1.00	.00
0	2.90	3.60	15.00	1.00	1.00	.50	15.00	27.00	1.00	1.00	2.00
0	4.20	3.70	15.00	1.00	1.00	.50	15.00	26.00	.00	1.00	2.00

MC-130	17 APRIL 79		16'BOATS									
0	2.10	.00	10.00	10.00	.50	1.00	150.00	1000.00	57.00	-1.00	.00	2.00
1	.40	.10	10.00	10.00	.50	1.00	150.00	1000.00	58.00	1.00	1.00	2.00
0	2.40	.20	10.00	10.00	.50	1.00	150.00	1000.00	56.00	1.00	1.00	2.00
1	.00	.20	10.00	10.00	.50	1.00	150.00	1000.00	58.00	-1.00	1.00	2.00
1	1.40	.30	10.00	10.00	.50	1.00	150.00	1000.00	59.00	-1.00	.00	2.00
0	2.80	.40	10.00	10.00	.50	1.00	150.00	1000.00	59.00	-1.00	1.00	2.00
0	.40	.40	10.00	10.00	.50	1.00	150.00	1000.00	59.00	-1.00	.00	2.00
1	1.00	.50	10.00	10.00	.50	1.00	150.00	1000.00	59.00	-1.00	1.00	2.00
1	1.20	.60	11.00	10.00	.40	1.00	150.00	1000.00	59.00	-1.00	1.00	2.00
0	1.40	.60	11.00	10.00	.40	1.00	180.00	1000.00	60.00	-1.00	.00	2.00
1	.40	.70	11.00	10.00	.40	1.00	180.00	1000.00	60.00	-1.00	1.00	2.00
0	2.40	.80	11.00	10.00	.40	1.00	180.00	1000.00	60.00	-1.00	1.00	2.00
1	.40	.80	12.00	10.00	.50	1.00	180.00	1000.00	60.00	-1.00	1.00	2.00
0	2.40	.90	12.00	11.00	.50	1.00	180.00	1000.00	60.00	-1.00	.00	2.00
0	2.20	.90	12.00	11.00	.50	1.00	180.00	1000.00	60.00	-1.00	.00	2.00
1	.40	1.00	12.00	11.00	.50	1.00	180.00	1000.00	60.00	-1.00	.00	2.00
0	2.40	1.00	13.00	11.00	.60	1.00	180.00	1000.00	60.00	1.00	1.00	2.00
1	.90	1.10	13.00	11.00	.60	1.00	180.00	1000.00	60.00	1.00	.00	2.00
0	1.50	1.10	13.00	11.00	.60	1.00	180.00	1000.00	60.00	-1.00	1.00	2.00
0	.20	1.30	15.00	4.00	.90	1.00	150.00	1000.00	43.00	-1.00	.00	2.00
1	.30	1.30	15.00	4.00	.90	1.00	180.00	1000.00	42.00	-1.00	.00	1.00
1	.30	1.60	15.00	4.00	.90	1.00	180.00	1000.00	41.00	-1.00	1.00	2.00
0	.40	1.70	15.00	4.00	.90	1.00	180.00	1000.00	40.00	-1.00	1.00	2.00
0	.40	.40	10.00	10.00	.30	1.00	150.00	1000.00	59.00	-1.00	1.00	2.00
HH-3F	17 APRIL 79		15'BOATS									
0	.70	1.00	15.00	6.00	.90	1.50	120.00	1000.00	54.00	-1.00	.00	2.00
0	0.50	1.20	15.00	5.00	.90	1.50	120.00	1000.00	53.00	-1.00	.00	2.00
1	1.10	1.20	15.00	5.00	.90	1.50	120.00	1000.00	52.00	-1.00	.00	2.00
0	.50	1.40	15.00	4.00	.90	1.00	120.00	1000.00	51.00	-1.00	.00	2.00
0	2.70	.10	10.00	10.00	.50	1.00	90.00	500.00	55.00	-1.00	.00	2.00
1	.20	.10	10.00	10.00	.50	1.00	90.00	500.00	56.00	1.00	1.00	2.00
0	3.10	.20	10.00	10.00	.50	1.00	90.00	500.00	57.00	-1.00	.00	2.00
0	1.00	.20	10.00	10.00	.50	1.00	90.00	500.00	57.00	1.00	1.00	2.00
1	1.40	.30	10.00	10.00	.50	1.00	90.00	500.00	57.00	-1.00	1.00	2.00
0	1.20	.50	10.00	10.00	.50	1.00	90.00	500.00	58.00	-1.00	1.00	2.00
1	.00	.50	10.00	10.00	.50	1.00	90.00	500.00	58.00	-1.00	1.00	2.00
1	.20	.60	11.00	10.00	.30	1.00	120.00	500.00	59.00	-1.00	.00	2.00
0	2.90	.60	11.00	10.00	.40	1.00	120.00	500.00	59.00	1.00	.00	2.00
1	.50	.70	11.00	10.00	.40	1.00	120.00	500.00	59.00	1.00	.00	2.00
0	4.00	.70	11.00	11.00	.40	1.00	120.00	500.00	59.00	-1.00	1.00	2.00
0	.90	.80	11.00	11.00	.50	1.00	120.00	500.00	60.00	-1.00	1.00	2.00
0	2.90	.80	11.00	11.00	.60	1.00	120.00	500.00	60.00	-1.00	1.00	2.00
1	1.10	.90	12.00	11.00	.60	1.00	120.00	500.00	60.00	-1.00	.00	2.00
0	.60	1.40	15.00	4.00	.90	1.00	90.00	500.00	48.00	-1.00	.00	2.00
0	.70	1.60	15.00	4.00	.90	1.00	90.00	500.00	46.00	-1.00	.00	2.00
1	.90	1.70	15.00	4.00	.90	1.00	90.00	500.00	46.00	-1.00	1.00	2.00
0	1.00	1.80	15.00	4.00	.90	1.00	90.00	500.00	45.00	-1.00	1.00	1.00
0	1.10	1.90	15.00	4.00	.90	1.00	90.00	500.00	44.00	-1.00	1.00	1.00

HH-52	17 APRIL 79		16'BOATS									
0	2.60	.00	13.00	11.00	.60	1.00	60.00	500.00	59.00	-1.00	.00	2.00
1	2.40	.10	13.00	11.00	.60	1.00	60.00	500.00	59.00	1.00	1.00	2.00
0	2.70	.30	13.00	11.00	.60	1.00	60.00	500.00	59.00	-1.00	.00	2.00
1	2.30	.30	13.00	11.00	.60	1.00	60.00	500.00	59.00	-1.00	1.00	2.00
1	2.50	.30	13.00	11.00	.60	1.00	60.00	500.00	58.00	-1.00	.00	2.00
0	2.60	.70	13.00	11.00	.60	1.00	60.00	500.00	57.00	-1.00	1.00	2.00
1	1.70	.60	13.00	11.00	.60	1.00	60.00	500.00	57.00	-1.00	.00	2.00
1	1.30	.80	15.00	8.00	1.00	2.00	90.00	500.00	56.00	-1.00	1.00	2.00
0	2.50	.90	15.00	8.00	1.00	2.00	90.00	500.00	55.00	1.00	.00	2.00
1	.70	1.00	15.00	8.00	1.00	2.00	90.00	500.00	54.00	1.00	.00	2.00
0	2.30	1.10	15.00	8.00	1.00	2.00	90.00	500.00	54.00	-1.00	.00	2.00
0	.40	1.10	15.00	8.00	1.00	2.00	90.00	500.00	54.00	-1.00	.00	2.00
0	2.50	1.20	15.00	8.00	1.00	2.00	90.00	500.00	53.00	-1.00	.00	2.00
0	2.00	1.30	15.00	8.00	1.00	2.00	90.00	500.00	52.00	-1.00	.00	2.00
0	2.30	1.40	15.00	8.00	1.00	2.00	90.00	500.00	52.00	-1.00	1.00	2.00

HC-130	18 APRIL 79		16'BOATS									
1	1.00	.10	15.00	9.00	.10	1.00	180.00	1000.00	60.00	-1.00	.00	2.00
0	2.20	.10	15.00	9.00	.10	1.00	180.00	1000.00	60.00	-1.00	1.00	2.00
1	.70	.10	15.00	9.00	.15	1.00	180.00	1000.00	60.00	-1.00	.00	2.00
0	2.80	.10	15.00	9.00	.15	1.00	180.00	1000.00	60.00	-1.00	1.00	2.00
1	.30	.20	15.00	9.00	.15	1.00	180.00	1000.00	60.00	1.00	1.00	2.00
1	.20	.30	15.00	9.50	.20	1.00	180.00	1000.00	60.00	-1.00	1.00	2.00
0	3.60	.30	15.00	9.50	.20	1.00	180.00	1000.00	60.00	-1.00	1.00	2.00
0	3.00	.40	15.00	9.50	.25	1.00	150.00	1000.00	59.00	1.00	1.00	2.00
1	.00	.40	15.00	9.50	.25	1.00	150.00	1000.00	59.00	1.00	.00	2.00
0	2.20	.50	15.00	9.50	.25	1.00	150.00	1000.00	59.00	-1.00	1.00	2.00
1	1.00	.50	15.00	9.50	.25	1.00	150.00	1000.00	59.00	-1.00	1.00	2.00
0	1.50	.60	15.00	9.50	.30	1.00	150.00	1000.00	58.00	-1.00	1.00	2.00
1	1.10	.70	15.00	7.50	.60	1.00	180.00	1000.00	40.00	-1.00	1.00	2.00
1	.70	.80	15.00	7.50	.60	1.00	180.00	1000.00	40.00	1.00	1.00	1.00
0	2.20	.90	15.00	7.50	.60	1.00	180.00	1000.00	39.00	1.00	.00	2.00
1	.10	.90	15.00	7.50	.60	1.00	180.00	1000.00	39.00	-1.00	1.00	.00
1	.00	1.00	15.00	7.50	.60	1.00	150.00	1000.00	38.00	-1.00	.00	1.00
0	2.20	1.00	15.00	7.50	.60	1.00	150.00	1000.00	38.00	1.00	1.00	1.00
0	1.50	1.10	15.00	7.50	.60	1.00	150.00	1000.00	37.00	1.00	.00	2.00
1	.80	1.10	15.00	7.50	.60	1.00	150.00	1000.00	37.00	1.00	.00	2.00
0	1.90	1.10	15.00	7.50	.60	1.00	150.00	1000.00	37.00	-1.00	1.00	2.00
0	2.90	1.20	15.00	7.50	.60	1.00	150.00	1000.00	36.00	-1.00	.00	2.00
0	.90	1.20	15.00	7.50	.60	1.00	150.00	1000.00	36.00	-1.00	.00	2.00
1	1.10	1.30	15.00	7.50	.60	1.00	150.00	1000.00	35.00	-1.00	1.00	2.00
0	3.70	1.30	15.00	7.50	.60	1.00	150.00	1000.00	35.00	1.00	1.00	2.00
1	.80	.40	15.00	9.50	.20	1.00	150.00	1000.00	59.00	-1.00	1.00	2.00

HU-16	16 APRIL 79		16 BOATS									
1	1.20	.10	15.00	9.00	.10	1.00	150.00	1000.00	55.00	-1.00	1.00	2.00
0	3.30	.10	15.00	9.00	.10	1.00	150.00	1000.00	55.00	-1.00	1.00	2.00
1	3.50	.20	15.00	9.00	.10	1.00	150.00	1000.00	55.00	-1.00	1.00	2.00
1	2.50	.20	15.00	9.00	.10	1.00	150.00	1000.00	56.00	-1.00	1.00	2.00
0	3.50	.20	15.00	9.00	.10	1.00	150.00	1000.00	56.00	-1.00	1.00	2.00
0	2.50	.30	15.00	9.00	.10	1.00	150.00	1000.00	56.00	1.00	1.00	2.00
1	.20	.30	15.00	9.00	.10	1.00	150.00	1000.00	57.00	1.00	.00	2.00
1	1.40	.40	15.00	9.00	.10	1.00	150.00	1000.00	57.00	-1.00	1.00	2.00
1	2.60	.40	15.00	9.00	.10	1.00	150.00	1000.00	57.00	-1.00	.00	2.00
0	4.00	.50	15.00	9.00	.15	1.00	120.00	1000.00	58.00	-1.00	1.00	2.00
1	.50	.50	15.00	9.00	.15	1.00	120.00	1000.00	58.00	-1.00	1.00	2.00
1	.40	.50	15.00	9.00	.15	1.00	120.00	1000.00	59.00	1.00	1.00	2.00
0	2.60	.60	15.00	9.00	.15	1.00	120.00	1000.00	59.00	1.00	1.00	2.00
1	2.10	.70	15.00	9.00	.15	1.00	120.00	1000.00	59.00	-1.00	1.00	2.00
1	.20	.80	15.00	9.00	.15	1.00	120.00	1000.00	59.00	-1.00	1.00	2.00
1	.40	.90	15.00	9.00	.15	1.00	120.00	1000.00	59.00	-1.00	1.00	2.00
1	.10	1.00	15.00	10.00	.50	1.00	150.00	1000.00	53.00	-1.00	1.00	2.00
0	1.50	1.00	15.00	10.00	.50	1.00	150.00	1000.00	51.00	-1.00	1.00	2.00
0	3.00	1.10	15.00	10.00	.60	1.00	150.00	1000.00	50.00	-1.00	1.00	2.00
0	2.10	1.20	15.00	10.00	.60	1.00	150.00	1000.00	50.00	-1.00	1.00	2.00
0	3.10	1.20	15.00	10.00	.60	1.00	150.00	1000.00	49.00	1.00	1.00	2.00
1	.90	1.30	15.00	9.50	.60	1.00	150.00	1000.00	49.00	1.00	.00	2.00
0	3.20	1.30	15.00	9.50	.60	1.00	150.00	1000.00	48.00	-1.00	1.00	2.00
1	2.70	1.40	15.00	9.50	.70	1.00	150.00	1000.00	48.00	-1.00	1.00	2.00
0	.90	1.40	15.00	9.00	.80	1.00	120.00	1000.00	47.00	-1.00	1.00	2.00
0	3.90	1.50	15.00	9.00	.80	1.00	120.00	1000.00	46.00	-1.00	1.00	2.00
0	.90	1.50	15.00	9.00	.80	1.00	120.00	1000.00	46.00	1.00	1.00	2.00
0	3.10	1.60	15.00	9.00	.80	1.00	120.00	1000.00	45.00	1.00	1.00	2.00
0	2.10	1.60	15.00	9.00	.80	1.00	120.00	1000.00	45.00	-1.00	1.00	2.00
0	3.00	1.70	15.00	9.00	.80	1.00	120.00	1000.00	44.00	-1.00	1.00	2.00
1	2.30	1.80	15.00	9.00	.80	1.00	120.00	1000.00	43.00	-1.00	1.00	2.00
0	.20	1.90	15.00	9.00	.80	1.00	120.00	1000.00	43.00	-1.00	1.00	2.00

HH-52	16 APRIL 79		16'BOATS									
1	.90	.10	15.00	9.00	.10	1.00	90.00	500.00	57.00	-1.00	.00	2.00
0	1.10	.10	15.00	9.00	.10	1.00	90.00	500.00	58.00	-1.00	.00	2.00
0	2.90	.20	15.00	9.00	.10	1.00	90.00	500.00	58.00	-1.00	1.00	2.00
0	5.40	.20	15.00	9.00	.10	1.00	90.00	500.00	58.00	-1.00	1.00	2.00
1	1.20	.20	15.00	9.00	.10	1.00	90.00	500.00	59.00	1.00	.00	2.00
1	.80	.30	15.00	9.00	.10	1.00	90.00	500.00	60.00	-1.00	1.00	2.00
1	2.90	.30	15.00	9.00	.10	1.00	90.00	500.00	60.00	-1.00	.00	2.00
0	1.90	.40	15.00	9.00	.10	1.00	90.00	500.00	60.00	-1.00	1.00	2.00
1	.40	.50	15.00	9.00	.10	1.00	60.00	500.00	60.00	1.00	.00	2.00
0	2.00	.60	15.00	9.00	.10	1.00	60.00	500.00	60.00	1.00	.00	2.00
0	5.70	.60	15.00	9.00	.10	1.00	60.00	500.00	60.00	-1.00	1.00	2.00
1	1.40	.70	15.00	9.50	.10	1.00	60.00	500.00	59.00	-1.00	.00	2.00
0	1.90	.80	15.00	9.50	.25	1.00	60.00	500.00	59.00	-1.00	1.00	2.00
0	2.30	.90	15.00	9.50	.25	1.00	60.00	500.00	58.00	-1.00	.00	2.00
0	.90	1.00	15.00	9.50	.25	1.00	60.00	500.00	58.00	-1.00	1.00	2.00
0	5.70	1.10	15.00	9.50	.25	1.00	60.00	500.00	58.00	-1.00	.00	2.00
1	1.80	1.30	15.00	10.00	.50	1.00	90.00	500.00	57.00	-1.00	1.00	2.00
0	2.70	1.50	15.00	10.00	.50	1.00	90.00	500.00	56.00	1.00	.00	2.00
0	5.10	1.50	15.00	10.00	.50	1.00	90.00	500.00	56.00	-1.00	.00	2.00
1	.70	1.60	15.00	10.00	.50	1.00	90.00	500.00	56.00	-1.00	.00	2.00
0	5.00	1.70	15.00	10.00	.50	1.00	90.00	500.00	55.00	-1.00	1.00	2.00
0	2.80	1.70	15.00	10.00	.50	1.00	90.00	500.00	55.00	-1.00	1.00	2.00
0	4.80	1.80	15.00	10.00	.50	1.00	90.00	500.00	55.00	1.00	.00	2.00
1	1.00	1.80	15.00	10.00	.50	1.00	90.00	500.00	54.00	-1.00	.00	2.00
1	1.70	1.90	15.00	10.00	.50	1.00	90.00	500.00	54.00	-1.00	1.00	2.00

41413	19 APRIL 79		RAFTS								
1	2.70	.00	15.00	4.00	.30	.50	26.00	57.00	.00	1.00	2.00
0	1.00	.00	15.00	4.00	.30	.50	26.00	57.00	2.00	.00	2.00
1	.40	.30	15.00	4.00	.30	.50	26.00	59.00	2.00	1.00	2.00
1	.30	.50	15.00	4.00	.30	.50	26.00	60.00	.00	.00	1.00
0	1.80	.90	15.00	5.00	.25	.50	26.00	60.00	.00	1.00	2.00
1	1.70	.90	15.00	5.00	.25	.50	26.00	60.00	2.00	1.00	2.00
0	1.20	.70	15.00	5.00	.25	.50	26.00	60.00	2.00	.00	2.00
1	.90	1.40	15.00	5.00	.25	.50	26.00	60.00	2.00	.00	2.00
0	3.00	1.50	15.00	5.00	.25	.50	26.00	59.00	2.00	.00	1.00
1	.50	1.60	15.00	5.00	.25	.50	26.00	59.00	.00	.00	1.00
0	2.10	1.80	15.00	6.50	.30	.50	26.00	59.00	2.00	1.00	2.00
0	2.50	1.80	15.00	6.50	.30	.50	26.00	59.00	.00	.00	2.00
0	3.80	1.90	15.00	6.50	.30	.50	26.00	59.00	.00	1.00	2.00
41441	19 APRIL 79		RAFTS								
1	2.50	.10	15.00	5.00	.25	.50	20.00	59.00	2.00	.00	1.00
0	2.80	.20	15.00	5.00	.25	.50	20.00	60.00	.00	.00	2.00
0	3.40	.10	15.00	5.00	.25	.50	20.00	59.00	.00	1.00	2.00
1	.70	.30	15.00	5.00	.25	.50	20.00	60.00	.00	.00	2.00
1	2.10	.60	15.00	5.00	.25	.50	20.00	59.00	2.00	.00	2.00
0	2.70	.60	15.00	5.00	.25	.50	20.00	59.00	2.00	.00	2.00
1	3.00	.90	15.00	5.00	.25	.50	20.00	59.00	2.00	.00	1.00
0	3.50	.90	15.00	5.00	.25	.50	20.00	59.00	.00	1.00	2.00
1	.20	1.10	15.00	6.50	.30	.50	20.00	58.00	.00	.00	2.00
0	2.40	1.40	15.00	6.50	.30	.50	20.00	57.00	.00	.00	2.00
1	.90	1.50	15.00	6.50	.30	.50	20.00	56.00	2.00	.00	2.00
1	.20	1.90	15.00	6.50	.30	.50	20.00	54.00	2.00	1.00	2.00
0	3.40	1.40	15.00	6.50	.30	.50	20.00	57.00	2.00	.00	2.00
0	3.60	1.60	15.00	6.50	.30	.50	20.00	54.00	.00	1.00	2.00
PT BONITA	19 APRIL 79		RAFTS								
1	1.70	.00	15.00	4.00	.30	.50	16.00	59.00	2.00	.00	2.00
1	1.80	.20	15.00	5.00	.25	.50	16.00	59.00	.00	1.00	2.00
1	1.50	.30	15.00	5.00	.25	.50	16.00	60.00	2.00	1.00	2.00
0	4.20	.60	15.00	5.00	.25	.50	16.00	60.00	.00	.00	2.00
1	1.40	.70	15.00	5.00	.25	.50	16.00	60.00	2.00	.00	2.00
0	2.10	1.00	15.00	6.50	.30	.50	16.00	59.00	.00	1.00	2.00
1	1.50	1.10	15.00	6.50	.30	.50	16.00	59.00	2.00	1.00	2.00
0	3.70	1.30	15.00	6.50	.30	.50	16.00	58.00	.00	1.00	2.00
1	2.40	1.40	15.00	6.50	.30	.50	16.00	57.00	2.00	.00	2.00
0	2.50	1.40	15.00	6.50	.30	.50	16.00	57.00	.00	.00	2.00
1	1.70	1.50	15.00	6.50	.30	.50	16.00	57.00	.00	.00	2.00
1	2.80	1.70	15.00	6.50	.40	.50	16.00	56.00	2.00	.00	2.00
1	.90	1.80	15.00	6.50	.50	.50	16.00	56.00	.00	.00	2.00
1	2.20	1.90	15.00	5.00	.50	.50	16.00	55.00	2.00	.00	2.00
0	4.50	2.30	15.00	5.00	.70	.50	16.00	53.00	.00	.00	2.00
1	1.50	2.20	15.00	5.00	.70	.50	16.00	53.00	2.00	.00	2.00
1	3.10	1.80	15.00	6.50	.50	.50	16.00	56.00	2.00	.00	2.00

PT KNOLL		19 APRIL 79		RAFTS							
1	1.40	.00	15.00	4.00	.30	.50	15.00	53.00	2.00	.00	2.00
0	4.70	.10	15.00	4.00	.30	.50	15.00	53.00	.00	.00	2.00
1	5.10	.40	15.00	4.00	.30	.50	15.00	56.00	2.00	.00	2.00
1	.20	.60	15.00	4.00	.30	.50	15.00	57.00	.00	.00	2.00
1	2.50	.90	15.00	5.00	.25	.50	15.00	58.00	2.00	.00	2.00
0	3.90	1.00	15.00	5.00	.25	.50	15.00	59.00	.00	.00	2.00
0	5.50	1.10	15.00	5.00	.25	.50	15.00	59.00	.00	1.00	2.00
1	1.50	1.20	15.00	5.00	.25	.50	15.00	59.00	2.00	.00	2.00
1	1.50	1.20	15.00	5.00	.25	.50	16.00	59.00	2.00	.00	2.00
0	5.10	1.30	15.00	5.00	.25	.50	16.00	59.00	2.00	.00	2.00
1	1.50	1.40	15.00	5.00	.25	.50	16.00	59.00	2.00	.00	2.00
0	2.00	1.40	15.00	5.00	.25	.50	16.00	59.00	.00	1.00	2.00
0	1.80	1.80	15.00	6.50	.30	.50	16.00	59.00	2.00	.00	2.00
1	1.00	1.80	15.00	6.50	.30	.50	16.00	59.00	2.00	.00	1.00
0	5.70	2.00	15.00	6.50	.30	.50	16.00	58.00	.00	1.00	2.00
0	4.90	2.10	15.00	6.50	.30	.50	16.00	58.00	2.00	.00	.00
1	1.50	2.20	15.00	6.50	.30	.50	16.00	57.00	.00	1.00	2.00
1	2.00	2.50	15.00	6.50	.40	.50	16.00	56.00	2.00	.00	2.00
1	5.00	2.50	15.00	6.50	.40	.50	16.00	56.00	.00	.00	2.00
0	4.70	2.60	15.00	6.50	.40	.50	16.00	56.00	2.00	.00	2.00
1	5.70	1.30	15.00	6.00	.25	.50	16.00	59.00	2.00	.00	2.00
41585		23 APRIL 79		RAFTS							
1	1.90	.30	9.50	4.00	.20	1.00	12.00	59.00	.00	1.00	2.00
0	1.70	.70	9.50	4.00	.20	1.00	12.00	60.00	.00	.00	2.00
0	1.80	1.10	9.50	4.00	.20	1.00	12.00	61.00	.00	.00	2.00
0	2.30	1.40	9.50	4.00	.10	1.00	12.00	62.00	1.00	.00	1.00
1	.50	2.50	13.00	9.00	.10	2.00	16.00	57.00	.00	1.00	2.00
0	1.80	3.10	13.00	9.00	.10	2.00	16.00	54.00	1.00	.00	2.00
44548		23 APRIL 79		RAFTS							
0	2.10	1.20	11.50	7.50	.10	2.00	10.00	59.00	.00	.00	.00
0	1.00	2.00	13.00	9.00	.10	2.00	10.00	54.00	.00	.00	.00
0	.90	2.10	13.00	9.00	.10	2.00	10.00	53.00	.00	.00	2.00
CAPE GEORGE		23 APRIL 79		RAFTS							
1	1.90	.00	9.50	4.00	.20	1.00	14.20	60.00	1.00	.00	2.00
1	.90	1.20	11.50	7.50	.10	2.00	14.20	62.00	.00	1.00	2.00
1	1.20	1.60	11.50	7.50	.10	2.00	14.20	60.00	1.00	.00	2.00
PT KNOLL		23 APRIL 79		RAFTS							
0	4.00	.50	9.50	4.00	.10	1.00	16.20	59.00	.00	.00	2.00
1	1.10	.80	9.50	4.00	.10	1.00	16.20	60.00	1.00	.00	1.00
1	.50	1.50	10.00	7.00	.10	1.00	16.20	61.00	.00	.00	2.00
1	1.20	2.70	13.00	9.00	.10	2.00	16.20	56.00	1.00	1.00	2.00

HC-130	24 APRIL 79		16'BOATS									
1	1.20	.10	15.00	4.00	.10	.50	100.00	1000.00	59.00	1.00	1.00	2.00
1	1.40	.20	15.00	4.00	.10	.50	100.00	1000.00	58.00	-1.00	1.00	2.00
0	6.50	.30	15.00	6.50	.20	.50	100.00	1000.00	57.00	1.00	.00	2.00
1	.50	.40	15.00	6.50	.20	.50	100.00	1000.00	57.00	-1.00	1.00	2.00
1	2.20	.50	15.00	6.50	.20	.50	100.00	1000.00	56.00	-1.00	.00	2.00
0	1.50	.50	15.00	6.50	.20	.50	100.00	1000.00	55.00	1.00	1.00	2.00
0	.00	.50	15.00	6.50	.20	.50	100.00	1000.00	55.00	1.00	.00	2.00
HH-3	24 APRIL 79		16'BOATS									
1	1.00	.10	15.00	3.50	.10	.00	120.00	500.00	57.00	1.00	.00	2.00
1	2.00	.30	15.00	3.50	.10	.00	120.00	500.00	57.00	-1.00	.00	2.00
0	3.00	.50	15.00	3.50	.10	.00	120.00	500.00	59.00	1.00	.00	2.00
1	1.00	.60	15.00	4.50	.05	.00	90.00	500.00	60.00	1.00	.00	1.00
1	2.00	.90	15.00	4.50	.05	.00	90.00	500.00	61.00	-1.00	.00	2.00
0	1.00	1.10	15.00	10.00	.20	.50	120.00	500.00	47.00	-1.00	1.00	2.00
0	4.10	1.10	15.00	10.00	.20	.50	120.00	500.00	47.00	-1.00	.00	2.00
1	.00	1.10	15.00	11.00	.20	.50	120.00	500.00	46.00	-1.00	.00	2.00
1	.00	1.20	15.00	11.50	.20	.50	120.00	500.00	45.00	1.00	.00	2.00
0	6.20	1.40	15.00	6.00	.20	.50	90.00	500.00	59.00	-1.00	1.00	2.00
1	.30	1.50	15.00	6.00	.20	.50	90.00	500.00	59.00	-1.00	.00	2.00
1	2.40	1.70	15.00	6.00	.20	.50	90.00	500.00	37.00	-1.00	1.00	2.00
0	5.00	1.80	15.00	6.00	.20	.50	90.00	500.00	37.00	1.00	.00	2.00
0	2.10	1.00	15.00	6.00	.20	.50	90.00	500.00	35.00	1.00	1.00	2.00
HH-52	24 APRIL 79		16'BOATS									
1	2.20	.10	15.00	4.00	.10	.50	60.00	500.00	60.00	1.00	.00	2.00
1	1.10	.30	15.00	4.00	.10	.50	60.00	500.00	59.00	-1.00	.00	2.00
1	.40	.60	15.00	6.50	.20	.50	60.00	500.00	58.00	1.00	1.00	2.00
0	5.20	.70	15.00	6.50	.20	.50	60.00	500.00	57.00	1.00	.00	2.00
1	4.10	.80	15.00	6.50	.20	.50	60.00	500.00	57.00	-1.00	1.00	2.00
1	.70	1.10	15.00	6.00	.20	.50	60.00	500.00	54.00	-1.00	.00	2.00
1	.40	1.30	15.00	6.00	.20	.50	60.00	500.00	52.00	1.00	1.00	2.00
0	2.40	1.40	15.00	6.00	.20	.50	60.00	500.00	51.00	1.00	.00	2.00
0	5.00	1.50	15.00	6.00	.20	.50	60.00	500.00	30.00	-1.00	1.00	2.00
0	.70	1.90	15.00	8.00	.10	.50	60.00	500.00	25.00	1.00	1.00	2.00
0	4.10	2.00	15.00	8.00	.10	.50	60.00	500.00	25.00	1.00	.00	2.00
0	1.20	2.00	15.00	8.00	.10	.50	60.00	500.00	24.00	-1.00	.00	2.00
0	1.40	2.10	15.00	8.00	.10	.50	60.00	500.00	23.00	1.00	1.00	2.00
1	1.00	2.30	15.00	8.00	.10	.50	60.00	500.00	21.00	-1.00	1.00	2.00

HC-130	25 APRIL 79		16 HOURS									
1	1.00	.00	4.50	4.00	.95	.00	180.00	1000.00	54.00	1.00	.00	2.00
0	2.40	.10	4.50	4.00	.95	.00	180.00	1000.00	55.00	-1.00	1.00	2.00
0	1.50	.10	4.50	4.00	.95	.00	180.00	1000.00	55.00	-1.00	1.00	2.00
0	2.80	.20	4.50	4.00	.95	.00	180.00	1000.00	55.00	1.00	1.00	2.00
0	2.40	.20	4.50	4.00	.95	.00	180.00	1000.00	55.00	1.00	1.00	2.00
1	2.70	.20	4.50	4.00	.95	.00	180.00	1000.00	56.00	-1.00	.00	2.00
1	1.20	.30	4.50	4.00	.95	.00	180.00	1000.00	56.00	1.00	1.00	2.00
0	1.80	.40	4.50	4.00	.95	.00	150.00	1000.00	57.00	1.00	1.00	2.00
1	.40	.40	4.50	4.00	.95	.00	150.00	1000.00	57.00	-1.00	1.00	2.00
0	3.70	.50	4.50	4.00	.95	.00	150.00	1000.00	57.00	1.00	.00	2.00
0	3.60	.50	4.50	4.00	.95	.00	150.00	1000.00	57.00	-1.00	.00	2.00
0	2.20	.50	4.50	4.00	.95	.00	150.00	1000.00	58.00	1.00	1.00	2.00
0	1.40	.50	4.50	4.00	.95	.00	150.00	1000.00	58.00	-1.00	1.00	2.00
0	2.00	.60	4.50	4.00	.95	.00	150.00	1000.00	58.00	-1.00	1.00	2.00
0	.40	.70	4.50	4.00	.95	.00	150.00	1000.00	59.00	1.00	1.00	2.00
1	.30	.70	4.00	4.00	1.00	.00	180.00	1000.00	58.00	1.00	.00	2.00
0	2.10	.80	4.00	4.00	1.00	.00	180.00	1000.00	58.00	-1.00	1.00	.00
1	.50	.90	4.00	4.00	1.00	.00	180.00	1000.00	57.00	-1.00	.00	2.00
0	1.50	.90	4.00	4.00	1.00	.00	180.00	1000.00	56.00	1.00	1.00	2.00
0	1.80	.90	4.00	4.00	1.00	.00	180.00	1000.00	56.00	-1.00	.00	2.00
1	.50	.90	4.00	4.00	1.00	.00	180.00	1000.00	56.00	-1.00	.00	2.00
0	2.50	1.00	4.00	4.00	1.00	.00	180.00	1000.00	55.00	1.00	1.00	2.00
0	1.40	1.00	4.00	4.00	1.00	.00	180.00	1000.00	55.00	-1.00	1.00	2.00
0	3.00	1.10	4.00	4.00	1.00	.00	180.00	1000.00	54.00	-1.00	1.00	2.00
1	.50	1.10	4.00	4.00	1.00	.00	180.00	1000.00	54.00	1.00	1.00	2.00
0	2.10	1.10	4.00	4.00	1.00	.00	180.00	1000.00	54.00	-1.00	.00	1.00
0	1.50	1.20	4.00	4.00	1.00	.00	180.00	1000.00	53.00	1.00	1.00	2.00
0	1.50	1.30	4.00	4.00	1.00	.00	150.00	1000.00	52.00	1.00	1.00	2.00
0	2.00	1.30	4.00	4.00	1.00	.00	150.00	1000.00	52.00	-1.00	.00	2.00
1	.50	1.40	4.00	4.00	1.00	.00	150.00	1000.00	51.00	1.00	1.00	2.00
0	2.60	1.50	4.00	4.00	1.00	.00	150.00	1000.00	50.00	1.00	1.00	2.00
0	4.10	1.50	4.00	4.00	1.00	.00	150.00	1000.00	50.00	1.00	1.00	2.00
0	.60	1.60	4.00	4.00	1.00	.00	150.00	1000.00	49.00	-1.00	.00	2.00
0	2.10	1.60	4.00	4.00	1.00	.00	150.00	1000.00	49.00	1.00	.00	2.00
1	.20	1.60	4.00	4.00	1.00	.00	150.00	1000.00	47.00	1.00	1.00	2.00

MO-16	25 APRIL 79		16 BOATS								
1	1.20	.00	3.50	6.00	1.00	.00	150.00	1000.00	61.00	1.00	.00	2.00
0	4.10	.10	3.50	6.00	1.00	.00	150.00	1000.00	61.00	1.00	.00	2.00
1	.90	.10	3.50	6.00	1.00	.00	150.00	1000.00	61.00	-1.00	1.00	2.00
1	.10	.20	3.50	6.00	1.00	.00	150.00	1000.00	62.00	-1.00	1.00	2.00
1	3.10	.30	3.50	6.00	1.00	.00	150.00	1000.00	62.00	1.00	1.00	2.00
1	1.20	.30	3.50	6.00	1.00	.00	150.00	1000.00	62.00	1.00	1.00	2.00
0	1.30	.40	3.50	6.00	1.00	.00	150.00	1000.00	62.00	-1.00	.00	2.00
0	1.70	.40	3.50	6.00	1.00	.00	150.00	1000.00	62.00	1.00	1.00	2.00
0	4.00	.60	3.50	6.00	1.00	.00	120.00	1000.00	62.00	-1.00	.00	2.00
0	1.90	.70	3.50	6.00	1.00	.00	120.00	1000.00	62.00	1.00	1.00	2.00
0	4.30	.70	3.50	6.00	1.00	.00	120.00	1000.00	62.00	1.00	.00	2.00
0	1.90	.70	3.50	6.00	1.00	.00	120.00	1000.00	62.00	-1.00	1.00	2.00
1	1.50	.80	4.00	4.00	1.00	.00	120.00	1000.00	61.00	1.00	1.00	2.00
0	5.50	.90	4.00	4.00	.00	.00	120.00	1000.00	61.00	1.00	1.00	2.00
1	1.10	.90	4.00	4.00	1.00	.00	120.00	1000.00	61.00	-1.00	1.00	2.00
0	4.30	1.10	3.00	3.50	1.00	.00	150.00	1000.00	45.00	-1.00	.00	2.00
1	.50	1.10	3.00	3.50	1.00	.00	150.00	1000.00	45.00	1.00	.00	2.00
1	.30	1.30	3.00	3.50	1.00	.00	150.00	1000.00	44.00	1.00	.00	2.00
0	2.10	1.40	3.00	3.50	1.00	.00	150.00	1000.00	42.00	-1.00	.00	2.00
0	3.00	1.50	3.00	3.50	1.00	.00	150.00	1000.00	41.00	1.00	1.00	2.00
0	1.90	1.50	3.00	3.50	1.00	.00	150.00	1000.00	41.00	-1.00	1.00	.00
1	.30	1.60	3.00	3.50	1.00	.00	150.00	1000.00	40.00	-1.00	.00	2.00
0	.90	1.60	3.00	3.50	1.00	.00	150.00	1000.00	40.00	1.00	1.00	2.00
1	.10	1.60	3.00	3.50	1.00	.00	150.00	1000.00	39.00	-1.00	1.00	1.00
0	2.80	1.70	3.00	3.50	1.00	.00	150.00	1000.00	39.00	-1.00	.00	2.00
0	1.10	1.80	3.00	3.50	1.00	.00	150.00	1000.00	38.00	1.00	1.00	2.00
0	2.20	1.80	3.00	3.50	1.00	.00	150.00	1000.00	38.00	-1.00	1.00	2.00
0	2.10	1.80	3.00	3.50	1.00	.00	120.00	1000.00	37.00	-1.00	1.00	2.00
1	.10	1.90	3.00	3.50	1.00	.00	120.00	1000.00	36.00	1.00	1.00	1.00
0	3.10	1.90	3.00	2.50	1.00	.00	120.00	1000.00	36.00	-1.00	1.00	2.00
0	3.00	2.00	3.00	2.50	1.00	.00	120.00	1000.00	35.00	-1.00	.00	2.00
0	.60	2.00	3.00	2.50	1.00	.00	120.00	1000.00	35.00	-1.00	.00	2.00
0	.90	2.10	3.00	2.50	1.00	.00	120.00	1000.00	34.00	1.00	1.00	2.00
1	.20	2.10	3.00	2.50	1.00	.00	120.00	1000.00	34.00	-1.00	1.00	.00
0	1.80	2.20	3.00	2.50	1.00	.00	120.00	1000.00	33.00	-1.00	.00	2.00
0	2.70	2.20	3.00	2.50	1.00	.00	120.00	1000.00	32.00	1.00	1.00	2.00
0	3.90	2.20	3.00	2.50	1.00	.00	120.00	1000.00	32.00	1.00	1.00	2.00
0	1.00	2.30	3.00	2.50	1.00	.00	120.00	1000.00	31.00	-1.00	1.00	2.00
0	2.00	2.40	3.00	2.50	1.00	.00	120.00	1000.00	31.00	1.00	1.00	2.00
0	4.90	2.50	3.00	2.50	1.00	.00	120.00	1000.00	30.00	-1.00	1.00	2.00
1	.50	2.60	3.00	2.50	1.00	.00	120.00	1000.00	28.00	1.00	1.00	1.00
1	2.00	1.00	4.00	4.00	1.00	.00	120.00	1000.00	60.00	-1.00	1.00	2.00
0	2.10	1.00	4.00	4.00	1.00	.00	120.00	1000.00	60.00	1.00	.00	2.00
0	4.00	1.30	3.00	3.50	1.00	.00	150.00	1000.00	44.00	-1.00	1.00	2.00
0	2.90	1.50	3.00	3.50	1.00	.00	150.00	1000.00	41.00	1.00	1.00	2.00
0	3.30	2.30	3.00	2.50	1.00	.00	120.00	1000.00	31.00	-1.00	.00	2.00

DH-52	25 APRIL 79		16 BOATS									
0	.50	.00	5.50	6.00	1.00	.00	90.00	500.00	62.00	1.00	.00	2.00
0	1.50	.10	5.50	6.00	1.00	.00	90.00	500.00	62.00	-1.00	1.00	.00
0	1.00	.10	5.50	6.00	1.00	.00	90.00	500.00	62.00	-1.00	1.00	2.00
0	5.50	.20	5.50	6.00	1.00	.00	90.00	500.00	62.00	-1.00	.00	2.00
1	.40	.20	5.50	6.00	1.00	.00	90.00	500.00	62.00	1.00	1.00	2.00
1	.40	.30	5.50	6.00	1.00	.00	90.00	500.00	62.00	-1.00	1.00	2.00
0	4.10	.40	5.50	6.00	1.00	.00	90.00	500.00	62.00	1.00	.00	2.00
0	5.00	.10	5.50	6.00	1.00	.00	90.00	500.00	62.00	1.00	.00	2.00
0	2.50	.60	5.50	6.00	1.00	.00	60.00	500.00	62.00	1.00	1.00	2.00
0	1.20	.00	5.50	6.00	1.00	.00	60.00	500.00	61.00	-1.00	.00	2.00
1	.20	.70	5.50	6.00	1.00	.00	60.00	500.00	61.00	1.00	1.00	2.00
0	2.00	.90	4.00	4.00	1.00	.00	60.00	500.00	60.00	-1.00	.00	2.00
0	2.00	1.00	4.00	4.00	1.00	.00	60.00	500.00	60.00	1.00	1.00	2.00
1	1.80	1.00	4.00	4.00	1.00	.00	60.00	500.00	60.00	1.00	.00	2.00
0	5.70	1.10	4.00	4.00	1.00	.00	60.00	500.00	59.00	1.00	.00	2.00
1	.00	1.10	4.00	4.00	1.00	.00	60.00	500.00	59.00	-1.00	1.00	2.00
0	5.10	1.30	4.00	4.00	1.00	.00	60.00	500.00	58.00	-1.00	.00	2.00
0	4.30	.80	4.00	4.00	1.00	.00	60.00	500.00	61.00	-1.00	.00	2.00
0	1.00	1.50	5.00	3.50	1.00	.00	60.00	500.00	43.00	-1.00	1.00	2.00
0	4.20	1.70	5.00	3.50	1.00	.00	60.00	500.00	41.00	-1.00	1.00	2.00
1	2.20	1.70	5.00	3.50	1.00	.00	60.00	500.00	40.00	1.00	.00	2.00
1	.30	1.80	5.00	3.50	1.00	.00	60.00	500.00	39.00	1.00	1.00	2.00
0	5.00	1.90	5.00	3.50	1.00	.00	60.00	500.00	38.00	1.00	.00	2.00
0	1.80	2.00	5.00	3.50	1.00	.00	60.00	500.00	38.00	1.00	.00	2.00
0	2.50	2.10	5.00	3.50	1.00	.00	60.00	500.00	36.00	-1.00	1.00	2.00
0	5.00	2.00	5.00	3.50	1.00	.00	60.00	500.00	38.00	-1.00	.00	2.00
0	3.10	1.70	5.00	3.50	1.00	.00	60.00	500.00	41.00	1.00	1.00	2.00
0	2.50	2.30	5.00	2.50	1.00	.00	90.00	500.00	34.00	1.00	1.00	2.00
0	4.80	2.40	5.00	2.50	1.00	.00	90.00	500.00	33.00	1.00	.00	.00
0	2.50	2.40	5.00	2.50	1.00	.00	90.00	500.00	33.00	-1.00	.00	2.00
1	4.00	2.50	5.00	2.50	1.00	.00	90.00	500.00	32.00	1.00	1.00	2.00
0	2.00	2.50	5.00	2.50	1.00	.00	90.00	500.00	32.00	1.00	1.00	2.00
1	.00	2.70	5.00	2.50	1.00	.00	90.00	500.00	30.00	1.00	1.00	2.00
0	4.10	2.10	5.00	3.50	1.00	.00	60.00	500.00	36.00	1.00	1.00	2.00
0	5.00	1.50	5.00	3.50	1.00	.00	60.00	500.00	43.00	1.00	.00	2.00

CAPE FAIRWEATHER 26 APRIL 79 RAFTS

1	.40	.20	2.00	6.00	1.00	.50	12.00	57.00	1.00	1.00	2.00
0	1.20	1.20	3.00	7.00	1.00	.50	12.00	61.00	2.00	1.00	2.00
0	1.20	1.30	3.00	7.00	1.00	.50	12.00	62.00	2.00	.00	2.00
0	1.40	1.00	3.00	7.00	1.00	.50	12.00	62.00	2.00	.00	2.00
0	1.50	1.90	3.00	7.00	1.00	.50	12.00	62.00	.00	1.00	2.00
0	1.20	3.20	3.00	10.00	1.00	.50	12.00	55.00	2.00	1.00	2.00
0	1.70	4.00	3.00	10.00	1.00	.50	12.00	47.00	2.00	1.00	2.00
0	1.00	4.10	3.00	10.00	1.00	.50	12.00	46.00	.00	1.00	2.00
0	1.50	3.30	3.00	10.00	1.00	.50	12.00	33.00	1.00	.00	2.00

PT JACKSON 26 APRIL 79 RAFTS

0	1.50	.50	2.00	6.00	1.00	.50	12.00	60.00	2.00	.00	2.00
0	1.10	1.00	3.00	7.00	1.00	.50	12.00	61.00	1.00	.00	2.00
0	1.90	1.50	3.00	7.00	1.00	.50	12.00	62.00	2.00	1.00	2.00
0	2.50	1.60	3.00	7.00	1.00	.50	12.00	62.00	.00	1.00	2.00
0	2.20	1.90	3.00	10.00	1.00	.50	12.00	53.00	2.00	1.00	2.00
0	1.20	2.60	3.00	10.00	1.00	.50	12.00	45.00	2.00	.00	2.00
0	1.40	2.80	3.00	10.00	1.00	.50	12.00	44.00	.00	1.00	2.00
0	1.20	3.40	3.00	10.00	1.00	.50	12.00	37.00	.00	.00	2.00
0	1.20	3.60	3.00	10.00	1.00	.50	12.00	35.00	2.00	1.00	2.00

41342 30 APRIL 79 RAFTS

0	1.20	.00	11.00	3.00	.20	1.00	21.00	60.00	.00	.00	2.00
1	1.70	.00	11.00	3.00	.20	1.00	21.00	60.00	2.00	.00	2.00
1	.20	.20	11.00	3.00	.20	1.00	21.00	61.00	1.00	.00	1.00
1	.30	.40	11.00	3.00	.20	1.00	21.00	62.00	1.00	1.00	2.00
1	.50	.60	11.00	3.00	.20	1.00	21.00	63.00	2.00	.00	2.00
1	.40	1.00	11.00	3.00	.20	1.00	21.00	63.00	.00	.00	2.00
1	.50	1.20	10.00	5.00	.05	1.50	21.00	62.00	.00	.00	2.00
1	.00	1.40	10.00	7.00	.05	1.50	21.00	60.00	1.00	1.00	2.00
0	1.20	1.50	10.00	11.00	.05	1.50	21.00	60.00	1.00	.00	2.00
1	.10	1.70	10.00	11.00	.05	1.50	21.00	59.00	.00	.00	2.00
1	.30	1.90	10.00	11.00	.05	1.50	21.00	58.00	2.00	.00	2.00

44552	30 APRIL 79		RAFTS								
1	.10	.00	12.00	5.00	.50	1.00	10.00	51.00	.00	.00	2.00
0	2.00	.50	12.00	5.00	.50	1.00	10.00	54.00	2.00	1.00	2.00
0	1.20	.50	12.00	5.00	.50	1.00	10.00	54.00	1.00	1.00	2.00
0	1.60	.60	12.00	5.00	.50	1.00	10.00	58.00	2.00	.00	2.00
0	1.70	.90	12.00	5.00	.50	1.00	10.00	58.00	1.00	.00	2.00
1	1.80	1.50	12.00	5.00	.20	1.00	10.00	61.00	2.00	.00	2.00
1	.90	2.10	10.00	5.00	.10	1.50	11.00	63.00	.00	.00	2.00
0	1.70	2.40	10.00	5.00	.05	1.50	11.00	63.00	1.00	.00	2.00
1	.40	2.60	10.00	5.00	.05	1.50	11.00	62.00	2.00	.00	2.00
1	.50	3.20	10.00	11.00	.00	1.50	11.00	59.00	.00	.00	2.00

CAPE FAIRWEATHER		30 APRIL 79		RAFTS							
1	.50	.00	12.00	5.00	.50	1.00	13.50	55.00	1.00	.00	2.00
1	.20	.20	12.00	5.00	.50	1.00	13.50	55.00	1.00	1.00	2.00
1	.80	.70	12.00	5.00	.30	1.00	13.50	59.00	.00	1.00	2.00
1	.80	1.50	10.00	5.00	.10	1.00	13.50	62.00	2.00	1.00	2.00
1	.90	1.60	10.00	5.00	.10	1.00	13.50	63.00	.00	1.00	2.00
1	.30	1.70	10.00	5.00	.10	1.00	13.50	64.00	2.00	.00	2.00
1	.70	1.80	10.00	5.00	.05	1.00	13.50	64.00	.00	.00	2.00
0	2.10	1.80	10.00	5.00	.05	1.00	13.50	63.00	2.00	.00	2.00
1	.50	1.90	10.00	5.00	.05	1.00	13.50	63.00	1.00	.00	2.00
1	.20	2.20	10.00	5.00	.05	1.50	13.50	63.00	1.00	.00	2.00
1	.10	2.50	10.00	5.00	.05	1.50	13.50	61.00	2.00	.00	2.00
1	.00	3.20	10.00	11.00	.00	1.50	13.50	57.00	.00	.00	2.00

CAPE HORN		30 APRIL 79		RAFTS							
0	3.10	.10	12.00	5.00	.50	1.00	13.00	50.00	2.00	.00	2.00
1	.40	.20	12.00	5.00	.50	1.00	13.00	51.00	.00	.00	1.00
0	3.10	.60	12.00	5.00	.50	1.00	13.00	54.00	2.00	1.00	2.00
1	.10	.50	12.00	5.00	.30	1.00	13.00	54.00	1.00	.00	2.00
1	.60	.70	12.00	5.00	.30	1.00	13.00	56.00	2.00	.00	2.00
0	2.70	.80	12.00	5.00	.50	1.00	13.00	57.00	.00	1.00	2.00
1	.80	1.10	12.00	4.00	.30	1.00	13.00	59.00	.00	.00	2.00
1	1.60	1.10	12.00	4.00	.20	1.00	13.00	59.00	2.00	.00	2.00
1	.40	1.20	12.00	4.00	.20	1.00	13.00	61.00	1.00	.00	1.00
1	.20	1.60	10.00	5.00	.20	1.00	13.50	62.00	1.00	.00	1.00
1	.10	1.70	10.00	5.00	.10	1.00	13.50	62.00	1.00	1.00	2.00
1	.60	2.10	10.00	5.00	.10	1.00	13.50	64.00	.00	.00	2.00
1	1.00	2.60	10.00	5.00	.10	.50	13.50	64.00	2.00	.00	2.00
1	.00	2.90	10.00	5.00	.10	.50	13.50	63.00	.00	1.00	2.00
1	1.70	3.00	10.00	5.00	.10	.50	13.50	62.00	2.00	.00	2.00

MC-130	1	FAT 79		16'BOATS								
	1	.50	.00	14.00	11.00	.20	.50	180.00	1000.00	61.00	1.00	.00	2.00
	1	.40	.10	14.00	11.00	.20	.50	180.00	1000.00	61.00	-1.00	1.00	2.00
	1	1.10	.10	14.00	11.00	.10	.50	180.00	1000.00	61.00	-1.00	.00	2.00
	0	2.50	.20	14.00	11.00	.10	.50	180.00	1000.00	61.00	-1.00	1.00	2.00
	0	2.50	.20	15.00	11.00	.10	1.00	180.00	1000.00	61.00	1.00	1.00	2.00
	0	.80	.30	15.00	11.00	.00	1.00	180.00	1000.00	61.00	-1.00	1.00	2.00
	1	.50	.30	15.00	11.00	.00	1.00	180.00	1000.00	62.00	1.00	.00	2.00
	1	1.50	.40	15.00	11.00	.00	1.00	180.00	1000.00	62.00	-1.00	1.00	2.00
	1	1.50	.50	15.00	11.00	.00	1.00	180.00	1000.00	62.00	1.00	1.00	2.00
	0	1.50	.50	15.00	11.00	.00	1.00	180.00	1000.00	62.00	1.00	.00	2.00
	1	1.20	.70	15.00	12.00	.00	1.00	150.00	1000.00	64.00	-1.00	1.00	2.00
	0	.90	.70	15.00	12.00	.00	1.00	150.00	1000.00	64.00	1.00	1.00	2.00
	1	.70	.80	15.00	12.00	.05	1.50	150.00	1000.00	64.00	-1.00	1.00	2.00
	0	2.10	.90	15.00	13.00	.05	1.50	150.00	1000.00	64.00	1.00	.00	2.00
	1	1.00	1.00	15.00	13.00	.05	1.50	150.00	1000.00	64.00	-1.00	1.00	2.00
	1	.70	1.10	15.00	11.00	.00	2.00	180.00	1000.00	42.00	1.00	.00	2.00
	1	.50	1.10	15.00	11.00	.00	2.00	180.00	1000.00	42.00	-1.00	1.00	2.00
	0	1.40	1.20	15.00	11.00	.00	2.00	180.00	1000.00	42.00	-1.00	.00	1.00
	0	2.40	1.20	15.00	11.00	.00	2.00	180.00	1000.00	42.00	1.00	1.00	2.00
	1	.60	1.30	15.00	11.00	.00	2.00	180.00	1000.00	41.00	1.00	1.00	2.00
	0	1.40	1.40	15.00	11.00	.00	2.00	180.00	1000.00	40.00	1.00	1.00	1.00
	0	2.50	1.50	15.00	11.00	.00	2.00	180.00	1000.00	40.00	-1.00	1.00	2.00
	0	.50	1.50	15.00	11.00	.00	2.00	180.00	1000.00	40.00	-1.00	1.00	.00
HH-3	1	FAT 79		16'BOATS								
	1	.80	.10	9.00	10.00	.30	.50	120.00	500.00	53.00	-1.00	.00	2.00
	1	2.00	.10	9.00	10.00	.30	.50	120.00	500.00	53.00	1.00	.00	2.00
	1	.50	.20	9.00	10.00	.30	.50	120.00	500.00	54.00	-1.00	1.00	2.00
	0	.10	.00	9.00	10.00	.30	.50	120.00	500.00	54.00	1.00	.00	2.00
	0	3.50	.30	10.00	10.00	.30	.50	120.00	500.00	55.00	-1.00	.00	2.00
	0	1.80	.30	10.00	10.00	.30	.50	120.00	500.00	55.00	1.00	1.00	2.00
	0	4.50	.00	9.00	10.00	.30	.50	120.00	500.00	53.00	-1.00	.00	2.00
	0	1.50	.30	11.00	10.00	.20	1.00	90.00	500.00	56.00	1.00	.00	2.00
	1	1.40	.40	11.00	10.00	.20	1.00	90.00	500.00	57.00	-1.00	.00	2.00
	1	4.20	.50	12.00	10.00	.20	1.00	90.00	500.00	57.00	-1.00	.00	2.00
	0	4.70	.40	12.00	10.00	.20	1.00	90.00	500.00	57.00	1.00	.00	.00
	0	5.40	.50	12.00	10.00	.10	1.00	90.00	500.00	58.00	1.00	1.00	2.00
	1	.70	.50	12.00	10.00	.10	1.00	90.00	500.00	58.00	-1.00	.00	2.00
	1	2.20	.60	12.00	10.00	.10	1.00	90.00	500.00	59.00	1.00	1.00	2.00
	0	5.50	.70	13.00	10.00	.10	1.00	90.00	500.00	59.00	-1.00	1.00	2.00
	0	6.20	.10	9.00	10.00	.50	.50	120.00	500.00	53.00	1.00	.00	2.00
	0	4.20	.70	15.00	13.00	.00	2.00	120.00	500.00	62.00	-1.00	1.00	2.00
	0	.70	.70	15.00	13.00	.00	2.00	120.00	500.00	62.00	1.00	.00	2.00
	1	.40	.70	15.00	13.00	.00	2.00	120.00	500.00	62.00	-1.00	1.00	2.00
	0	1.40	.80	15.00	13.00	.00	2.00	120.00	500.00	61.00	-1.00	.00	2.00
	0	2.50	.80	15.00	13.00	.00	2.00	120.00	500.00	61.00	-1.00	1.00	2.00
	0	.80	.90	15.00	13.00	.00	2.00	120.00	500.00	61.00	-1.00	.00	2.00
	0	3.10	1.00	15.00	13.00	.00	2.00	120.00	500.00	60.00	-1.00	1.00	2.00
	0	3.20	1.00	15.00	13.00	.00	2.00	120.00	500.00	60.00	-1.00	.00	2.00
	1	1.10	1.00	15.00	13.00	.00	2.00	120.00	500.00	60.00	1.00	1.00	2.00

1	1.10	1.10	15.00	15.00	.00	2.00	120.00	500.00	60.00	-1.00	1.00	2.00
0	1.70	1.20	15.00	15.00	.00	2.00	120.00	500.00	59.00	-1.00	1.00	2.00
0	1.40	1.20	15.00	15.00	.00	2.00	120.00	500.00	59.00	1.00	1.00	2.00
0	2.60	.80	15.00	15.00	.00	2.00	120.00	500.00	61.00	1.00	1.00	2.00
1	1.60	1.30	15.00	14.00	.00	2.00	90.00	500.00	58.00	-1.00	.00	1.00
0	1.70	1.30	15.00	14.00	.00	2.00	90.00	500.00	58.00	1.00	.00	2.00
0	1.30	1.40	15.00	14.00	.00	2.00	90.00	500.00	57.00	1.00	1.00	2.00
0	.80	1.30	15.00	14.00	.00	2.00	90.00	500.00	57.00	1.00	1.00	2.00
0	4.00	1.50	15.00	14.00	.00	2.00	90.00	500.00	57.00	-1.00	1.00	2.00
0	1.30	1.30	15.00	15.00	.00	2.00	90.00	500.00	56.00	-1.00	1.00	2.00
0	1.90	1.50	15.00	15.00	.00	2.00	90.00	500.00	56.00	1.00	.00	.00
0	1.60	1.60	15.00	15.00	.00	2.00	90.00	500.00	56.00	-1.00	1.00	2.00
0	1.40	1.60	15.00	15.00	.00	2.00	90.00	500.00	56.00	1.00	1.00	2.00
0	1.20	1.60	15.00	15.00	.00	2.00	90.00	500.00	55.00	-1.00	.00	2.00
0	4.10	1.70	15.00	15.00	.00	2.00	90.00	500.00	55.00	1.00	1.00	2.00
0	.80	1.70	15.00	15.00	.00	2.00	90.00	500.00	55.00	-1.00	.00	2.00
0	1.50	1.70	15.00	15.00	.00	2.00	90.00	500.00	55.00	1.00	.00	1.00
0	1.20	1.80	15.00	15.00	.00	2.00	90.00	500.00	54.00	-1.00	1.00	2.00
0	1.40	1.90	15.00	15.00	.00	2.00	90.00	500.00	53.00	-1.00	.00	2.00
0	1.50	.90	15.00	15.00	.00	2.00	120.00	500.00	61.00	1.00	.00	2.00
0	1.00	1.10	15.00	15.00	.00	2.00	120.00	500.00	60.00	1.00	.00	2.00
0	1.00	1.00	15.00	15.00	.00	2.00	90.00	500.00	56.00	-1.00	.00	2.00

HH-52	1 MAY 79		16 BOATS									
1	1.50	.10	15.00	11.00	.00	1.00	90.00	500.00	61.00	-1.00	1.00	2.00
1	1.50	.20	15.00	11.00	.00	1.00	90.00	500.00	61.00	1.00	1.00	2.00
0	1.00	.40	15.00	11.00	.00	1.00	90.00	500.00	63.00	1.00	.00	2.00
1	.50	.80	15.00	12.00	.05	1.50	60.00	500.00	64.00	-1.00	.00	2.00
0	1.00	1.00	15.00	12.00	.05	1.50	60.00	500.00	64.00	-1.00	1.00	2.00
1	1.00	1.20	15.00	13.00	.05	1.50	60.00	500.00	64.00	-1.00	.00	2.00
1	.70	1.30	15.00	13.00	.05	1.50	60.00	500.00	63.00	1.00	.00	2.00
0	2.00	.70	15.00	12.00	.05	1.50	60.00	500.00	64.00	1.00	.00	1.00
0	1.00	1.70	15.00	11.00	.00	2.00	90.00	500.00	50.00	1.00	1.00	2.00
1	1.50	1.70	15.00	11.00	.00	2.00	90.00	500.00	49.00	-1.00	1.00	2.00
1	.60	1.80	15.00	11.00	.00	2.00	90.00	500.00	48.00	1.00	1.00	2.00
1	1.70	1.90	15.00	11.00	.00	2.00	90.00	500.00	47.00	1.00	1.00	2.00
1	.60	2.30	15.00	11.00	.00	2.00	60.00	500.00	42.00	1.00	.00	2.00
0	2.50	2.50	15.00	11.00	.00	2.00	60.00	500.00	40.00	1.00	.00	2.00
1	1.10	2.60	15.00	11.00	.00	2.00	60.00	500.00	39.00	-1.00	1.00	2.00
0	1.50	2.70	15.00	11.00	.00	2.00	60.00	500.00	38.00	-1.00	.00	2.00
1	.90	2.80	15.00	11.00	.00	2.00	60.00	500.00	37.00	1.00	1.00	2.00
0	1.30	2.90	15.00	11.00	.00	2.00	60.00	500.00	35.00	-1.00	.00	2.00

NC-150	2 MAY 79		16'BOATS									
0	1.20	.00	15.00	4.00	.00	.50	180.00	1000.00	49.00	-1.00	.00	2.00
0	2.30	.10	15.00	4.00	.00	.50	180.00	1000.00	50.00	1.00	1.00	2.00
0	2.70	.20	15.00	4.00	.00	.50	180.00	1000.00	51.00	-1.00	1.00	2.00
0	1.50	.30	15.00	4.00	.00	.50	180.00	1000.00	51.00	1.00	1.00	2.00
0	1.30	.30	15.00	6.00	.00	.50	150.00	1000.00	54.00	1.00	1.00	2.00
1	2.50	.40	15.00	6.00	.00	.50	150.00	1000.00	54.00	-1.00	.00	1.00
0	2.60	.40	15.00	6.00	.00	.50	150.00	1000.00	55.00	1.00	1.00	2.00
0	1.40	.50	15.00	7.00	.00	.50	150.00	1000.00	56.00	-1.00	1.00	2.00
0	2.90	.80	15.00	14.00	.00	1.00	180.00	1000.00	62.00	-1.00	1.00	2.00
0	2.90	.80	15.00	14.00	.00	1.00	180.00	1000.00	62.00	1.00	1.00	2.00
1	.90	.90	15.00	14.00	.00	1.00	180.00	1000.00	61.00	1.00	.00	2.00
1	.80	.90	15.00	14.00	.00	1.00	180.00	1000.00	61.00	-1.00	1.00	2.00
1	1.10	1.00	15.00	14.00	.00	1.00	180.00	1000.00	61.00	-1.00	1.00	2.00
0	2.40	1.30	15.00	15.00	.00	1.00	150.00	1000.00	59.00	-1.00	1.00	2.00
0	2.50	1.30	15.00	15.00	.00	1.00	150.00	1000.00	58.00	1.00	1.00	2.00
0	.50	1.50	15.00	15.00	.00	1.00	150.00	1000.00	58.00	-1.00	1.00	2.00
0	1.70	1.50	15.00	15.00	.00	1.00	150.00	1000.00	57.00	-1.00	1.00	2.00
0	1.50	1.50	15.00	15.00	.00	1.00	150.00	1000.00	57.00	-1.00	.00	2.00

NC-15	2 MAY 79		16'BOATS									
0	1.50	.20	15.00	10.00	.00	.50	150.00	1000.00	58.00	1.00	1.00	2.00
0	1.70	.30	15.00	10.00	.00	.50	150.00	1000.00	59.00	-1.00	1.00	2.00
1	1.40	.40	15.00	10.00	.00	.50	150.00	1000.00	60.00	1.00	1.00	2.00
0	1.50	.50	15.00	10.00	.00	.50	120.00	1000.00	61.00	1.00	1.00	2.00
1	.40	.60	15.00	10.00	.00	.50	120.00	1000.00	62.00	-1.00	.00	2.00
0	2.20	.70	15.00	10.00	.00	.50	120.00	1000.00	62.00	1.00	1.00	2.00
1	.40	1.00	15.00	12.00	.00	1.00	150.00	1000.00	54.00	1.00	.00	2.00
0	1.10	1.20	15.00	11.00	.00	1.00	150.00	1000.00	52.00	1.00	1.00	2.00
0	1.70	1.50	15.00	10.00	.00	1.00	150.00	1000.00	49.00	-1.00	1.00	2.00
1	.20	1.60	15.00	10.00	.00	1.00	150.00	1000.00	48.00	-1.00	1.00	2.00
1	.70	1.60	15.00	11.00	.00	1.00	120.00	1000.00	45.00	-1.00	1.00	2.00
0	1.50	1.90	15.00	11.00	.00	1.00	120.00	1000.00	44.00	-1.00	.00	2.00
0	1.10	2.30	15.00	13.00	.00	2.00	120.00	1000.00	40.00	1.00	1.00	2.00
0	.70	2.40	15.00	13.00	.00	2.00	120.00	1000.00	38.00	1.00	1.00	2.00

NC-52	2 MAY 79		16'BOATS									
0	1.50	.00	15.00	10.00	.00	.50	90.00	500.00	59.00	-1.00	.00	.00
1	.40	.30	15.00	10.00	.00	.50	90.00	500.00	64.00	1.00	.00	2.00
1	.60	.30	15.00	12.00	.00	1.00	60.00	500.00	65.00	1.00	1.00	2.00
0	1.90	1.10	15.00	15.00	.00	1.00	60.00	500.00	66.00	-1.00	1.00	2.00
0	1.10	1.40	15.00	17.00	.00	1.00	90.00	500.00	58.00	-1.00	.00	2.00
0	1.70	2.30	15.00	10.00	.00	1.50	60.00	500.00	47.00	1.00	1.00	2.00
0	1.70	2.60	15.00	10.00	.00	1.50	60.00	500.00	47.00	1.00	.00	2.00
0	1.50	2.60	15.00	10.00	.00	1.50	60.00	500.00	46.00	1.00	.00	2.00
0	.90	2.70	15.00	12.00	.00	1.50	60.00	500.00	45.00	-1.00	.00	2.00

41537	5 MAY 79		RAFTS							
0	2.40	.10	15.00	5.00	.30	.50	20.00	49.00	1.00	.00	2.00
1	.50	.50	15.00	5.00	.30	.50	20.00	52.00	2.00	.00	2.00
1	.50	.60	15.00	5.00	.30	.50	20.00	55.00	.00	.00	.00
1	1.00	1.20	10.00	4.00	.80	.50	20.00	63.00	.00	.00	2.00
0	1.70	1.50	10.00	4.00	.80	.50	20.00	64.00	1.00	.00	2.00
0	2.20	1.90	9.00	4.00	.90	1.00	20.00	64.00	.00	1.00	2.00
41441	5 MAY 79		RAFTS							
1	.00	.10	15.00	5.00	.30	.50	20.00	58.00	2.00	1.00	2.00
0	1.80	.60	15.00	5.00	.40	.50	20.00	61.00	1.00	.00	2.00
1	1.40	.90	12.00	5.00	.70	.50	20.00	62.00	.00	1.00	2.00
1	1.10	1.40	10.00	4.00	.80	.50	20.00	64.00	2.00	.00	2.00
0	1.80	1.60	9.00	4.00	.80	.50	20.00	64.00	.00	.00	2.00
0	1.90	1.80	9.00	5.00	.90	1.00	20.00	64.00	1.00	.00	2.00
PT JACKSON	5 MAY 79		RAFTS							
1	1.00	.00	15.00	5.00	.30	.50	16.00	51.00	.00	.00	2.00
1	.70	.30	15.00	5.00	.30	.50	16.00	53.00	2.00	1.00	2.00
0	5.50	.40	15.00	5.00	.30	.50	16.00	55.00	.00	1.00	1.00
1	2.20	.60	15.00	5.00	.30	.50	16.00	56.00	.00	1.00	2.00
1	1.00	1.00	15.00	5.00	.30	.50	16.00	59.00	1.00	.00	2.00
1	.50	1.10	15.00	5.00	.30	.50	16.00	60.00	1.00	.00	2.00
1	.50	1.40	10.00	4.00	.80	.50	16.00	62.00	2.00	.00	2.00
0	5.50	1.60	10.00	4.00	.80	.50	16.00	63.00	.00	1.00	2.00
0	1.50	2.00	10.00	4.00	.80	.50	16.00	65.00	1.00	1.00	2.00
1	1.20	2.00	10.00	4.00	.80	.50	16.00	62.00	.00	.00	2.00
PT ARGUELL	5 MAY 79		RAFTS							
1	.20	.10	15.00	5.00	.30	.50	16.00	52.00	2.00	1.00	2.00
1	2.20	.60	15.00	5.00	.30	.50	16.00	55.00	.00	.00	2.00
1	.50	.60	15.00	5.00	.30	.50	16.00	57.00	.00	.00	2.00
1	1.20	1.50	14.00	5.00	.50	.50	16.00	58.00	1.00	.00	2.00
1	.20	1.40	13.00	4.00	.60	.50	16.00	61.00	1.00	.00	.00
1	.00	1.80	10.00	4.00	.80	.50	16.00	63.00	2.00	1.00	2.00
1	.50	2.20	10.00	4.00	.80	.50	16.00	64.00	.00	.00	2.00
0	3.50	2.00	8.00	5.00	1.00	1.00	16.00	65.00	1.00	.00	.00
1	1.00	2.50	8.00	5.00	1.00	1.00	16.00	63.00	2.00	1.00	2.00
41542	7 MAY 79		16'BOATS							
1	1.20	.00	15.00	4.00	.60	.00	23.00	59.00	1.00	.00	2.00
1	.70	.10	15.00	4.00	.50	.00	23.00	60.00	-1.00	1.00	2.00
1	.10	.40	15.00	4.00	.40	.00	23.00	62.00	1.00	.00	2.00
1	.40	.70	15.00	4.50	.20	.00	24.00	64.00	-1.00	1.00	2.00
1	.00	1.00	15.00	5.00	.20	.00	23.00	65.00	1.00	.00	.00
0	1.50	1.20	15.00	5.00	.20	.00	23.00	66.00	-1.00	1.00	2.00
1	.00	1.00	15.00	5.00	.20	.00	23.00	66.00	1.00	.00	2.00

44552	7 MAY 79		16'BOATS								
1	.40	.10	15.00	1.00	.50	.00	9.00	49.00	1.00	.00	2.00
1	1.10	.70	15.00	3.00	.60	.00	9.00	56.00	-1.00	.00	2.00
1	1.10	1.40	15.00	4.00	.40	.00	9.00	61.00	-1.00	.00	2.00
1	.70	2.10	15.00	4.50	.20	.00	9.00	65.00	1.00	.00	2.00
0	.60	2.80	15.00	6.00	.00	.00	9.00	65.00	-1.00	1.00	2.00
1	.50	3.40	15.00	6.00	.00	.50	9.00	65.00	1.00	.00	2.00
1	1.20	4.50	15.00	7.50	.00	.50	9.00	57.00	-1.00	1.00	2.00

PT MEDLE	7 MAY 79		16'BOATS								
1	3.70	.10	15.00	2.50	.70	.00	16.00	56.00	1.00	.00	2.00
1	.80	.10	15.00	2.50	.70	.00	16.00	56.00	-1.00	.00	2.00
0	5.50	.50	15.00	2.50	.50	.00	16.00	57.00	-1.00	.00	2.00
1	1.80	.50	15.00	2.50	.50	.00	16.00	58.00	1.00	1.00	2.00
1	1.50	.90	15.00	4.50	.20	.00	16.00	63.00	-1.00	1.00	2.00
0	4.50	1.50	15.00	4.50	.20	.00	16.00	64.00	-1.00	.00	2.00
1	.00	1.40	15.00	4.50	.20	.00	16.00	64.00	1.00	.00	2.00
1	2.00	1.60	15.00	4.50	.10	.00	16.00	66.00	-1.00	.00	2.00
0	5.50	1.90	15.00	4.50	.10	.00	16.00	66.00	-1.00	.00	2.00
1	5.50	2.00	15.00	4.50	.10	.00	16.00	66.00	1.00	1.00	2.00
1	1.70	2.00	15.00	4.50	.10	.00	16.00	66.00	-1.00	.00	2.00
0	5.50	2.20	15.00	6.00	.00	.00	16.00	66.00	1.00	.00	.00
1	1.30	2.20	15.00	6.00	.00	.00	16.00	66.00	-1.00	.00	2.00
0	2.10	2.40	15.00	6.00	.00	.00	16.00	65.00	1.00	1.00	2.00
1	.70	2.50	15.00	6.00	.00	.00	16.00	64.00	1.00	.00	2.00

PT TURKEY	7 MAY 79		16'BOATS								
0	2.20	.00	15.00	1.00	.50	.00	17.00	45.00	1.00	.00	2.00
0	1.40	.50	15.00	1.00	.50	.00	17.00	48.00	-1.00	1.00	2.00
0	4.50	.40	15.00	1.00	.50	.00	17.00	48.00	-1.00	.00	2.00
1	.90	.40	15.00	1.00	.60	.00	17.00	49.00	1.00	1.00	2.00
1	.50	.90	15.00	2.50	.70	.00	17.00	53.00	-1.00	1.00	2.00
1	5.50	.90	15.00	2.50	.70	.00	17.00	54.00	1.00	.00	2.00
1	1.70	1.00	15.00	2.50	.70	.00	17.00	54.00	-1.00	.00	2.00
1	1.40	1.70	15.00	3.00	.40	.00	17.00	61.00	-1.00	.00	2.00
0	3.50	1.90	15.00	3.00	.40	.00	17.00	62.00	1.00	.00	2.00
0	4.50	1.90	15.00	4.00	.30	.00	17.00	62.00	1.00	.00	2.00
1	1.50	1.90	15.00	4.00	.30	.00	17.00	62.00	-1.00	1.00	2.00
0	5.10	2.10	15.00	4.50	.20	.00	17.00	63.00	-1.00	.00	2.00
1	1.10	2.50	15.00	4.50	.20	.00	17.00	63.00	1.00	1.00	.00

HL-130 8 MAY 79 RAFTS

1	1.50	.00	15.00	5.50	.00	.50	180.00	1000.00	56.00	2.00	.00	2.00
1	.50	.10	15.00	5.50	.00	.50	180.00	1000.00	57.00	1.00	.00	2.00
1	1.30	.20	15.00	5.50	.00	.50	180.00	1000.00	57.00	.00	1.00	2.00
1	1.00	.40	15.00	8.50	.00	.50	180.00	500.00	61.00	.00	.00	2.00
1	.20	.50	15.00	7.00	.00	.50	180.00	500.00	62.00	1.00	1.00	2.00
1	1.20	.50	15.00	6.00	.00	.50	180.00	500.00	63.00	2.00	1.00	2.00
1	.90	.60	15.00	4.50	.00	.50	180.00	1000.00	59.00	.00	.00	2.00
1	1.10	.70	15.00	6.00	.00	.50	180.00	1000.00	58.00	1.00	1.00	2.00
1	.20	.90	15.00	8.00	.00	.50	180.00	1000.00	58.00	2.00	1.00	2.00
1	.90	1.00	15.00	11.00	.00	1.00	180.00	500.00	54.00	2.00	1.00	2.00
0	2.20	1.10	15.00	11.00	.00	1.00	180.00	500.00	53.00	.00	.00	2.00
1	1.00	1.20	15.00	11.00	.00	1.00	180.00	500.00	53.00	1.00	1.00	2.00

HH-3 8 MAY 79 RAFTS

1	1.10	.00	15.00	5.00	.00	.50	90.00	1000.00	51.00	2.00	.00	2.00
0	2.30	.20	15.00	5.00	.00	.50	90.00	1000.00	52.00	1.00	.00	2.00
1	1.20	.20	15.00	5.00	.00	.50	90.00	1000.00	53.00	1.00	.00	2.00
1	.60	.30	15.00	5.00	.00	.50	90.00	1000.00	54.00	.00	.00	2.00
1	.00	.90	15.00	5.00	.00	.50	90.00	1000.00	65.00	2.00	.00	2.00
1	.10	1.00	15.00	5.00	.00	.50	90.00	1000.00	64.00	1.00	.00	2.00
0	1.20	1.00	15.00	5.00	.00	.50	90.00	1000.00	64.00	1.00	.00	2.00
0	2.40	1.10	15.00	5.00	.00	.50	90.00	1000.00	64.00	.00	.00	2.00
0	1.40	1.20	15.00	5.00	.00	.50	90.00	1000.00	63.00	2.00	1.00	2.00
0	1.90	.50	15.00	5.50	.00	.50	90.00	500.00	56.00	1.00	1.00	2.00
0	1.70	.60	15.00	6.00	.00	.50	90.00	500.00	57.00	1.00	.00	2.00
1	.40	.80	15.00	6.00	.00	.50	90.00	500.00	59.00	2.00	.00	2.00
1	.30	.80	15.00	6.00	.00	.50	90.00	500.00	59.00	.00	1.00	.00
1	1.30	1.30	15.00	4.50	.00	.50	90.00	500.00	62.00	1.00	.00	2.00
0	1.80	1.40	15.00	6.00	.00	.50	90.00	500.00	62.00	1.00	.00	2.00
1	1.50	1.50	15.00	7.00	.00	.50	90.00	500.00	62.00	2.00	.00	2.00
1	.90	1.70	15.00	9.00	.00	.50	90.00	500.00	61.00	.00	.00	2.00

HH-52	[illegible]	RAFTS										
1	1.00	.10	15.00	8.50	.00	.50	90.00	1000.00	62.00	2.00	.00	2.00
0	2.10	.10	15.00	8.50	.00	.50	90.00	1000.00	62.00	1.00	1.00	2.00
0	2.20	.20	15.00	8.50	.00	.50	90.00	1000.00	63.00	1.00	.00	2.00
0	2.30	.20	15.00	8.50	.00	.50	90.00	1000.00	63.00	1.00	.00	2.00
1	.30	.30	15.00	8.50	.00	.50	90.00	1000.00	64.00	.00	.00	2.00
0	2.70	1.00	15.00	11.00	.00	1.00	90.00	1000.00	55.00	.00	.00	2.00
0	2.80	1.30	15.00	11.00	.00	1.00	90.00	1000.00	52.00	2.00	1.00	2.00
1	2.20	1.30	15.00	11.00	.00	1.00	90.00	1000.00	50.00	2.00	1.00	2.00
1	.70	.60	15.00	5.50	.00	.50	90.00	500.00	65.00	1.00	1.00	2.00
1	.10	.90	15.00	5.50	.00	.50	90.00	500.00	66.00	.00	.00	2.00
1	.30	1.00	15.00	5.50	.00	.50	90.00	500.00	66.00	2.00	1.00	2.00
0	2.60	1.60	15.00	9.00	.00	1.00	90.00	500.00	48.00	.00	.00	2.00
0	2.20	1.70	15.00	9.00	.00	1.00	90.00	500.00	47.00	1.00	.00	2.00
1	1.00	1.70	15.00	9.00	.00	1.00	90.00	500.00	47.00	1.00	.00	2.00
0	1.90	1.90	15.00	9.00	.00	1.00	90.00	500.00	45.00	2.00	.00	1.00

HH-16	[illegible]	RAFTS										
1	.90	.10	7.00	7.50	.00	1.00	150.00	1000.00	62.00	.00	.00	2.00
1	1.10	.20	7.00	7.50	.00	1.00	150.00	1000.00	62.00	1.00	1.00	2.00
1	.50	.70	6.00	7.00	.10	1.00	150.00	500.00	66.00	2.00	1.00	2.00
1	.20	.80	6.00	7.00	.10	1.00	150.00	500.00	66.00	1.00	.00	2.00
1	1.20	.90	6.00	7.00	.10	1.00	150.00	500.00	66.00	.00	1.00	2.00

HH-52	[illegible]	RAFTS										
1	.70	.50	6.00	7.00	.10	1.00	90.00	1000.00	66.00	2.00	1.00	2.00
1	.40	1.60	8.00	15.50	.20	2.00	90.00	1000.00	52.00	1.00	.00	.00
1	.80	1.50	8.00	15.50	.20	2.00	90.00	1000.00	51.00	.00	.00	2.00
1	.10	1.50	8.00	15.50	.20	2.00	90.00	1000.00	50.00	2.00	1.00	1.00
0	1.00	1.50	8.00	15.50	.20	2.00	90.00	1000.00	50.00	2.00	.00	2.00
0	1.00	.70	6.00	10.00	.10	1.00	90.00	500.00	65.00	1.00	1.00	2.00
1	.20	.80	6.00	10.00	.10	1.00	90.00	500.00	65.00	2.00	1.00	2.00
1	.20	.90	6.00	10.00	.10	1.00	90.00	500.00	64.00	.00	.00	2.00
1	.20	1.90	7.00	18.00	.20	2.00	90.00	500.00	43.00	2.00	.00	2.00
0	.70	1.80	7.00	18.00	.20	2.00	90.00	500.00	44.00	.00	.00	1.00
1	.50	2.00	8.00	19.00	.20	3.00	90.00	500.00	42.00	1.00	.00	2.00

01437	10 MAY 79		16'BOATS							
1	.40	1.50	6.00	7.50	.30	.50	20.00	63.00	1.00	.00	.00
0	.70	.00	6.00	5.50	.30	.50	20.00	51.00	-1.00	.00	2.00
0	1.20	.30	6.00	5.50	.30	.50	20.00	54.00	-1.00	1.00	2.00
0	1.20	.30	6.00	6.50	.30	.50	20.00	59.00	-1.00	.00	1.00
0	1.10	.90	6.00	6.50	.30	.50	20.00	60.00	1.00	.00	2.00
0	1.40	3.00	6.00	5.00	.60	1.00	20.00	65.00	-1.00	.00	2.00
1	.10	3.10	6.00	5.00	.60	1.00	20.00	65.00	1.00	.00	2.00
1	1.00	3.00	6.00	6.00	.50	1.00	20.00	60.00	-1.00	1.00	2.00
0	1.20	3.20	6.00	5.00	.60	1.00	20.00	64.00	-1.00	1.00	1.00
0	.90	3.30	6.00	5.00	.60	1.00	20.00	62.00	-1.00	.00	2.00
0	1.60	3.30	6.00	5.00	.60	1.00	20.00	63.00	1.00	.00	2.00
01441	10 MAY 79		16'BOATS							
1	.20	1.20	6.00	7.50	.50	1.00	20.00	65.00	-1.00	.00	2.00
1	.50	1.50	6.00	7.50	.50	1.00	20.00	66.00	1.00	.00	2.00
1	.70	1.70	6.00	6.50	.50	1.00	23.00	67.00	-1.00	.00	2.00
1	.90	2.30	6.00	5.00	.60	1.00	23.00	62.00	1.00	1.00	2.00
1	.10	2.80	6.00	5.00	.60	1.00	23.00	61.00	-1.00	.00	2.00
0	1.20	2.80	6.00	5.00	.60	1.00	23.00	62.00	-1.00	1.00	2.00
CAPE FAIRWEATHER		10 MAY 79		16'BOATS							
1	.50	1.20	6.00	7.50	.50	1.00	11.00	63.00	1.00	.00	2.00
1	.50	2.10	6.00	6.50	.50	1.00	11.00	67.00	-1.00	1.00	2.00
0	1.80	3.70	6.00	6.00	.60	1.00	11.00	61.00	1.00	.00	2.00
1	.10	3.70	6.00	6.00	.60	1.00	11.00	61.00	-1.00	1.00	2.00
1	.50	4.40	7.00	8.50	.50	1.00	11.00	50.00	-1.00	.00	2.00
0	1.00	4.60	7.00	13.00	.50	1.00	11.00	53.00	1.00	1.00	2.00
1	1.20	5.10	7.00	8.00	.50	1.00	11.00	48.00	1.00	1.00	2.00
0	1.00	4.10	7.00	13.00	.50	1.00	11.00	58.00	1.00	.00	2.00
0	1.40	4.50	7.00	13.00	.50	1.00	11.00	56.00	-1.00	.00	2.00
0	.70	4.80	7.00	10.00	.50	1.00	11.00	52.00	-1.00	1.00	2.00
0	1.10	5.00	7.00	7.50	.50	1.00	11.00	42.00	-1.00	.00	2.00
PT TURNER	10 MAY 79		16'BOATS							
1	.20	.90	6.00	7.50	.50	1.00	16.00	59.00	-1.00	1.00	1.00
1	1.50	1.20	6.00	7.50	.50	1.00	16.00	62.00	-1.00	.00	2.00
0	1.20	1.50	6.00	7.50	.50	1.00	16.00	64.00	1.00	1.00	2.00
0	2.00	.80	6.00	7.50	.50	1.00	16.00	58.00	1.00	.00	2.00
1	.90	1.90	6.00	6.50	.50	1.00	16.00	66.00	1.00	.00	2.00
0	1.30	2.20	6.00	6.50	.50	1.00	16.00	67.00	-1.00	.00	2.00
1	.00	2.30	6.00	6.50	.50	1.00	15.00	68.00	-1.00	.00	2.00
0	1.50	2.00	6.00	6.50	.50	1.00	15.00	68.00	-1.00	1.00	2.00
1	1.00	3.20	6.00	5.00	.60	1.00	15.00	66.00	1.00	1.00	2.00
1	.70	3.70	6.00	5.00	.60	1.00	15.00	65.00	1.00	.00	.00
1	.50	3.00	6.00	5.00	.60	1.00	15.00	62.00	-1.00	.00	2.00
1	1.50	3.20	6.00	5.00	.60	1.00	15.00	66.00	-1.00	.00	2.00

HL-130	16 MAY 79		RAFTS									
0	1.70	.10	5.00	6.00	.70	4.00	180.00	1000.00	67.00	2.00	1.00	2.00
1	.20	.10	5.00	6.00	.70	3.00	180.00	1000.00	67.00	2.00	1.00	2.00
0	1.90	.20	5.00	6.00	.70	3.00	180.00	1000.00	67.00	.00	1.00	2.00
0	.00	.30	6.00	6.00	.70	2.50	180.00	1000.00	66.00	.00	1.00	2.00
0	2.10	.30	6.00	6.00	.70	2.50	180.00	1000.00	66.00	2.00	1.00	2.00
1	.20	.30	6.00	6.00	.70	2.50	180.00	1000.00	66.00	1.00	.00	.00
0	2.00	.40	6.00	6.00	.70	2.50	180.00	1000.00	65.00	.00	1.00	2.00
0	2.10	.50	7.50	6.00	.60	2.00	180.00	1000.00	64.00	1.00	.00	2.00
0	2.20	.50	8.00	5.50	.60	1.50	180.00	500.00	64.00	1.00	.00	2.00
0	2.00	.70	8.00	5.50	.60	1.50	180.00	500.00	63.00	.00	1.00	2.00
1	.10	.70	8.00	5.50	.60	1.50	180.00	500.00	63.00	1.00	.00	2.00
0	.20	.70	9.00	5.50	.60	1.50	180.00	500.00	63.00	1.00	.00	2.00
1	.20	.70	9.00	5.50	.60	1.50	180.00	500.00	62.00	.00	1.00	2.00
0	1.30	.60	10.00	5.50	.50	1.00	180.00	500.00	61.00	2.00	1.00	2.00
0	1.70	.90	10.00	5.50	.50	1.00	180.00	500.00	61.00	.00	1.00	2.00
1	.10	1.00	10.00	5.50	.50	1.00	180.00	500.00	61.00	2.00	1.00	2.00

HH-52	16 MAY 79		RAFTS									
1	.10	.10	1.00	5.00	.80	3.00	85.00	1000.00	65.00	2.00	.00	2.00
0	2.00	.40	1.00	5.00	.80	3.00	85.00	1000.00	66.00	.00	1.00	2.00
0	2.00	.20	1.00	5.00	.80	3.00	85.00	1000.00	65.00	2.00	.00	2.00
1	.20	1.30	10.00	5.50	.50	1.00	85.00	1000.00	61.00	2.00	.00	2.00
0	2.30	1.40	10.00	5.50	.50	1.00	85.00	1000.00	61.00	.00	1.00	2.00
1	.30	1.50	10.00	5.50	.50	1.00	85.00	1000.00	60.00	.00	.00	2.00
0	2.50	1.50	10.00	5.50	.50	1.00	85.00	1000.00	60.00	2.00	1.00	1.00
0	2.40	1.70	10.00	5.50	.50	1.00	85.00	1000.00	59.00	.00	1.00	2.00
1	2.50	1.80	10.00	5.50	.50	1.00	85.00	1000.00	59.00	1.00	.00	2.00
0	3.40	.90	3.00	5.00	.80	3.00	85.00	500.00	68.00	.00	.00	2.00
0	1.10	1.00	3.00	5.00	.80	3.00	85.00	500.00	68.00	.00	1.00	2.00
0	2.10	1.00	3.00	5.00	.80	3.00	85.00	500.00	68.00	.00	.00	2.00
1	1.10	1.00	3.00	5.00	.80	3.00	85.00	500.00	68.00	2.00	.00	2.00
0	1.50	1.10	4.00	5.00	.80	3.00	85.00	500.00	68.00	.00	.00	2.00
1	1.70	1.20	4.00	5.00	.80	3.00	85.00	500.00	67.00	2.00	1.00	2.00
0	3.20	1.20	4.00	5.00	.80	3.00	85.00	500.00	67.00	.00	1.00	2.00
0	2.30	2.20	14.00	6.00	.50	1.00	85.00	500.00	53.00	2.00	.00	2.00
1	.10	2.20	14.00	6.00	.50	1.00	85.00	500.00	53.00	2.00	.00	2.00
1	1.00	2.30	14.00	6.00	.50	1.00	85.00	500.00	52.00	.00	.00	2.00
0	3.60	2.40	14.00	6.00	.50	1.00	85.00	500.00	51.00	.00	1.00	2.00
0	3.70	2.40	14.00	6.00	.50	1.00	85.00	500.00	51.00	1.00	1.00	2.00
0	3.10	2.30	14.00	6.00	.50	1.00	85.00	500.00	52.00	2.00	.00	2.00

41413	17 MAY 79		16'BOATS							
0	.90	.90	15.00	15.00	.80	2.00	20.00	55.00	1.00	.00	2.00
0	.80	1.10	15.00	12.00	.80	2.00	20.00	52.00	-1.00	.00	2.00
0	1.00	1.30	15.00	11.00	.70	2.00	20.00	50.00	1.00	1.00	2.00
0	1.70	1.80	15.00	10.00	.60	1.50	20.00	44.00	1.00	.00	2.00
0	1.50	2.10	15.00	10.00	.60	1.50	20.00	41.00	1.00	.00	2.00
0	2.20	2.20	15.00	9.00	.50	1.50	20.00	39.00	1.00	.00	2.00
0	2.20	2.30	15.00	9.00	.50	1.50	20.00	39.00	1.00	.00	2.00
1	.20	2.50	15.00	9.00	.50	1.50	20.00	37.00	-1.00	.00	1.00
0	1.90	2.70	15.00	9.00	.50	1.50	20.00	35.00	1.00	.00	2.00

41441	17 MAY 79		16'BOATS							
0	1.00	.10	15.00	11.50	.95	2.00	18.00	59.00	1.00	.00	2.00
0	1.00	.90	15.00	12.00	.90	2.00	18.00	56.00	-1.00	.00	2.00
0	2.00	.90	15.00	12.00	.90	2.00	18.00	56.00	1.00	.00	2.00
0	1.50	.80	15.00	13.00	.85	2.00	18.00	55.00	1.00	.00	2.00
0	2.20	.70	15.00	11.00	.80	2.00	18.00	52.00	1.00	.00	2.00
0	.70	1.10	15.00	10.00	.70	2.00	18.00	50.00	1.00	.00	2.00
0	1.50	1.00	15.00	10.00	.60	2.00	20.00	42.00	1.00	.00	2.00
0	.90	1.90	15.00	9.00	.50	1.50	20.00	39.00	-1.00	1.00	1.00
0	2.20	1.90	15.00	9.00	.50	1.50	20.00	39.00	1.00	1.00	2.00
0	1.20	2.10	15.00	9.00	.50	1.50	20.00	37.00	1.00	.00	2.00
1	1.50	2.20	15.00	9.00	.50	1.50	20.00	36.00	-1.00	.00	2.00
0	1.70	2.30	15.00	9.00	.50	1.50	20.00	35.00	1.00	.00	2.00
0	1.10	2.50	15.00	9.00	.50	1.50	20.00	32.00	1.00	1.00	2.00

CAPE FAIRWEATHER	17 MAY 79		16'BOATS							
0	1.50	.20	15.00	15.00	.80	2.00	11.00	56.00	1.00	.00	2.00
1	1.10	.50	15.00	15.00	.80	2.00	11.00	55.00	-1.00	.00	2.00
0	1.30	.50	15.00	15.00	.80	2.00	11.00	55.00	1.00	.00	2.00
0	2.10	.70	15.00	15.00	.80	2.00	11.00	51.00	1.00	.00	.00
0	2.00	.80	15.00	15.00	.80	2.00	11.00	49.00	1.00	.00	1.00
1	1.50	1.00	15.00	9.00	.50	1.50	11.00	40.00	1.00	.00	2.00
1	.50	1.30	15.00	9.00	.50	1.50	11.00	39.00	1.00	.00	1.00

PT JACKSON	17 MAY 79		16'BOATS								
1	.70	.00	15.00	12.00	.95	2.00	17.00	61.00	-1.00	.00	2.00
1	2.30	.10	15.00	12.00	.95	2.00	17.00	60.00	1.00	.00	2.00
1	.90	.20	15.00	12.00	.90	2.00	17.00	59.00	1.00	.00	.00
0	3.10	.90	15.00	13.00	.85	2.00	17.00	55.00	1.00	.00	2.00
0	1.70	1.20	15.00	12.00	.80	2.00	17.00	50.00	1.00	1.00	2.00
0	1.10	1.50	15.00	11.00	.75	2.00	17.00	49.00	-1.00	1.00	2.00
1	2.00	1.40	15.00	11.00	.65	2.00	16.00	48.00	1.00	.00	2.00
1	1.30	1.60	15.00	10.00	.60	2.00	16.00	44.00	-1.00	.00	2.00
0	2.20	1.80	15.00	10.00	.55	2.00	16.00	42.00	1.00	.00	2.00
0	2.00	1.90	15.00	9.00	.50	1.50	16.00	41.00	1.00	.00	1.00
1	1.20	2.20	15.00	9.00	.50	1.50	16.00	39.00	1.00	.00	2.00
0	3.20	2.30	15.00	9.00	.50	1.50	16.00	38.00	1.00	1.00	2.00

41585	18 MAY 79		16'BOATS								
1	.20	.30	5.00	12.00	1.00	5.00	20.00	59.00	-1.00	.00	2.00
0	.30	.70	5.00	12.00	1.00	5.00	20.00	61.00	1.00	.00	2.00
0	.90	2.40	5.00	14.00	1.00	2.00	19.00	66.00	-1.00	.00	2.00
0	1.00	2.60	5.00	14.00	1.00	2.00	19.00	68.00	1.00	.00	2.00
1	.50	3.10	5.00	14.00	1.00	2.00	19.00	66.00	1.00	.00	2.00

CAPE FEARWEATHER	18 MAY 79		16'BOATS								
1	.00	1.00	5.00	12.00	1.00	5.00	11.00	62.00	1.00	1.00	2.00
1	.40	1.60	5.00	13.00	1.00	5.00	11.00	67.00	-1.00	1.00	2.00
0	.60	2.30	5.00	14.00	1.00	2.00	11.00	68.00	-1.00	.00	2.00
1	.40	5.00	5.00	14.00	1.00	2.00	11.00	68.00	-1.00	.00	2.00
0	.50	5.70	8.00	15.00	.90	2.00	11.00	62.00	1.00	.00	2.00

PT JACKSON	18 MAY 79		16'BOATS								
1	.70	.60	2.00	12.00	1.00	5.00	14.00	57.00	1.00	.00	2.00
0	1.30	.90	5.00	12.00	1.00	5.00	14.00	59.00	1.00	.00	2.00
0	1.50	1.00	5.00	12.00	1.00	5.00	14.00	60.00	-1.00	.00	2.00
0	.60	1.40	5.00	12.00	1.00	2.50	14.00	63.00	-1.00	.00	2.00
1	.10	2.90	5.00	14.00	1.00	2.00	14.00	69.00	-1.00	1.00	2.00
1	.50	5.60	8.00	15.00	.95	2.00	14.00	65.00	1.00	.00	2.00

HH-5	22 MAY 79		RAFTS								
1	1.20	.10	15.00	8.00	1.00	.50	96.00	1000.00	64.00	1.00	1.00	.00
1	.10	.30	15.00	8.00	1.00	.50	96.00	1000.00	63.00	2.00	.00	2.00
0	.10	.40	15.00	8.00	1.00	.50	96.00	1000.00	62.00	.00	1.00	.00
0	1.00	.40	15.00	8.00	1.00	.50	90.00	500.00	62.00	.00	.00	.00
1	.00	.70	15.00	8.00	1.00	.50	90.00	500.00	59.00	1.00	1.00	2.00
1	.10	.00	15.00	8.00	1.00	.50	90.00	500.00	58.00	2.00	.00	1.00

HH-52	22 MAY 79		RAFTS								
0	2.00	.10	15.00	4.00	.50	.00	85.00	1000.00	65.00	1.00	1.00	.00
1	1.50	.40	15.00	6.00	.90	.00	85.00	1000.00	67.00	.00	1.00	.00
1	1.00	.40	15.00	6.00	.90	.00	85.00	500.00	68.00	.00	.00	2.00
0	1.40	.70	15.00	6.00	.90	.00	85.00	500.00	69.00	1.00	1.00	2.00
1	1.20	.70	15.00	6.00	.90	.00	85.00	500.00	69.00	1.00	.00	.00

HL-150	22 & 23 MAY 79		RAFTS								
1	.20	.10	6.00	4.00	1.00	.50	180.00	1000.00	55.00	2.00	.00	2.00
0	.10	.00	15.00	5.00	.50	.00	180.00	1000.00	57.00	2.00	.00	2.00
1	.20	.20	15.00	5.00	.50	.00	180.00	1000.00	59.00	1.00	1.00	2.00
1	1.20	.30	15.00	5.00	.50	.00	180.00	1000.00	60.00	.00	1.00	2.00
1	1.30	.30	15.00	5.00	.90	.00	180.00	500.00	61.00	.00	1.00	2.00
1	.30	.40	15.00	5.00	.50	.00	180.00	500.00	62.00	1.00	1.00	2.00
1	.50	.60	15.00	4.00	.60	.00	180.00	500.00	63.00	2.00	1.00	2.00
1	.60	.60	15.00	7.00	1.00	.50	150.00	1000.00	66.00	2.00	.00	2.00
1	1.20	.90	15.00	7.00	1.00	.50	180.00	1000.00	65.00	.00	1.00	2.00
1	1.30	.90	15.00	8.00	1.00	.50	180.00	500.00	64.00	.00	.00	2.00
1	.60	1.00	15.00	8.00	1.00	.50	150.00	500.00	64.00	2.00	1.00	2.00
0	1.20	1.10	15.00	8.00	1.00	.50	180.00	500.00	63.00	1.00	1.00	2.00
0	1.00	1.20	15.00	8.00	1.00	.50	180.00	500.00	62.00	1.00	1.00	2.00

41342	17 SEPT 79		RAFTS								
1	1.40	1.70	18.00	10.00	.00	1.00	21.00	49.00	2.00	.00	2.00
1	.10	2.60	17.00	11.00	.00	1.00	21.00	48.00	2.00	.00	2.00
0	1.10	.90	16.00	8.00	.00	1.00	21.00	47.00	.00	.00	2.00
0	.50	2.90	17.00	11.00	.00	1.00	21.00	47.00	.00	1.00	2.00
1	.40	4.20	15.00	9.00	.00	1.00	21.00	38.00	.00	.00	2.00
1	.30	4.50	15.00	9.00	.00	1.00	21.00	36.00	.00	1.00	.00
1	1.00	3.20	15.00	9.00	.00	1.00	21.00	29.00	2.00	1.00	1.00
0	1.20	4.80	15.00	9.00	.00	1.00	21.00	34.00	.00	.00	2.00
0	1.00	3.90	15.00	10.00	.00	1.00	21.00	41.00	.00	1.00	2.00
0	.60	4.90	15.00	9.00	.00	1.00	21.00	34.00	.00	.00	2.00
44421	17 SEPT 79		RAFTS								
1	.20	1.40	17.00	9.00	.00	1.00	9.50	47.00	.00	.00	2.00
1	1.10	2.20	18.00	10.00	.00	1.00	9.50	49.00	2.00	.00	2.00
1	.20	4.40	15.00	9.00	.00	1.00	9.50	39.00	.00	1.00	.00
1	.20	4.60	15.00	9.00	.00	1.00	9.50	16.00	.00	1.00	.00
0	1.00	3.80	15.00	9.00	.00	1.00	9.50	26.00	2.00	.00	2.00
CAPE GEORGE	17 SEPT 79		RAFTS								
1	3.90	1.70	13.00	5.00	.00	1.00	15.00	46.00	2.00	.00	2.00
1	.40	2.20	17.00	9.00	.00	1.00	15.00	48.00	.00	1.00	1.00
1	1.50	3.20	17.00	9.00	.00	1.00	15.00	49.00	2.00	.00	2.00
1	.20	4.00	18.00	11.00	.00	1.00	15.00	47.00	.00	1.00	2.00
1	.30	4.20	18.00	11.00	.00	1.00	15.00	46.00	2.00	1.00	2.00
0	4.20	.40	11.00	5.00	.00	1.00	15.00	35.00	.00	.00	2.00
0	1.10	2.00	17.00	9.00	.00	1.00	15.00	47.00	.00	1.00	2.00
0	3.70	2.30	17.00	9.00	.00	1.00	15.00	48.00	.00	.00	2.00
0	2.70	2.70	17.00	9.00	.00	1.00	15.00	49.00	2.00	.00	2.00
0	1.90	3.00	17.00	9.00	.00	1.00	15.00	49.00	.00	1.00	2.00
0	3.20	3.00	17.00	9.00	.00	1.00	15.00	49.00	.00	1.00	2.00
0	3.80	2.70	17.00	9.00	.00	1.00	15.00	49.00	.00	.00	2.00
0	3.60	2.40	17.00	9.00	.00	1.00	15.00	48.00	2.00	.00	2.00
0	4.90	4.00	18.00	11.00	.00	1.00	15.00	47.00	.00	.00	2.00
1	3.50	3.70	15.00	9.00	.00	1.00	15.00	35.00	2.00	.00	2.00
1	.60	3.90	15.00	9.00	.00	1.00	15.00	33.00	.00	.00	2.00
1	.90	7.20	15.00	9.00	.00	1.00	15.00	19.00	2.00	1.00	2.00
0	3.50	3.30	15.00	9.00	.00	1.00	15.00	33.00	2.00	.00	2.00
0	2.10	4.90	15.00	10.00	.00	1.00	15.00	40.00	.00	1.00	2.00
0	1.80	3.20	15.00	10.00	.00	1.00	15.00	39.00	.00	.00	2.00
0	1.60	3.40	15.00	10.00	.00	1.00	15.00	37.00	.00	.00	2.00
0	2.20	3.30	15.00	10.00	.00	1.00	15.00	36.00	.00	1.00	2.00
0	4.50	3.90	15.00	9.00	.00	1.00	15.00	32.00	.00	.00	2.00
0	2.00	6.40	15.00	9.00	.00	1.00	15.00	27.00	.00	1.00	2.00
0	4.60	6.20	15.00	9.00	.00	1.00	15.00	30.00	2.00	.00	2.00

FT WELLS	17 SEPT 79	KAFIS								
1	.50	.10	13.00	5.00	.00	1.00	15.00	46.00	2.00	.00	2.00
1	1.50	1.10	17.00	9.00	.00	1.00	15.00	49.00	2.00	1.00	2.00
1	2.50	1.50	17.00	9.00	.00	1.00	15.00	49.00	.00	1.00	2.00
1	.50	1.70	17.00	9.00	.00	1.00	15.00	49.00	.00	.00	2.00
1	.50	2.00	18.00	11.00	.00	1.00	15.00	48.00	.00	1.00	2.00
1	2.50	3.10	15.00	10.00	.00	1.00	15.00	43.00	2.00	1.00	2.00
0	3.50	2.20	18.00	11.00	.00	1.00	15.00	47.00	.00	1.00	2.00
0	3.20	2.40	18.00	11.00	.00	1.00	15.00	44.00	.00	1.00	2.00
0	2.70	3.20	15.00	10.00	.00	1.00	15.00	42.00	.00	.00	2.00
0	2.10	3.30	15.00	10.00	.00	1.00	15.00	37.00	.00	1.00	2.00
0	4.50	1.70	17.00	9.00	.00	1.00	15.00	49.00	.00	.00	2.00
0	.50	2.70	18.00	11.00	.00	1.00	15.00	45.00	.00	.00	2.00
0	1.70	4.10	15.00	10.00	.00	1.00	15.00	35.00	.00	.00	2.00
1	.50	6.60	12.00	16.00	.00	1.50	15.00	9.00	.00	1.00	2.00
1	.10	6.10	12.00	16.00	.00	1.50	15.00	16.00	2.00	1.00	2.00
0	3.10	4.50	15.00	9.00	.00	1.00	15.00	32.00	.00	1.00	2.00
0	2.20	5.10	15.00	9.00	.00	1.00	15.00	26.00	2.00	.00	2.00
0	.50	5.50	15.00	9.00	.00	1.00	15.00	21.00	.00	1.00	2.00
0	4.01	5.50	15.00	9.00	.00	1.00	15.00	21.00	.00	.00	2.00
0	2.20	5.50	15.00	9.00	.00	1.00	15.00	19.00	.00	1.00	2.00
0	4.50	6.50	12.00	16.00	.00	1.50	15.00	9.00	.00	.00	2.00
0	1.50	7.00	12.00	16.00	.00	1.50	15.00	6.00	2.00	.00	2.00

HC-130	14 SEPT 79		RAFTS									
1	1.90	.00	10.00	13.00	.00	1.00	180.00	1000.00	58.00	2.00	.00	2.00
1	1.50	.10	10.00	13.00	.00	1.00	180.00	1000.00	59.00	2.00	.00	2.00
0	1.50	.20	10.00	13.00	.00	1.00	180.00	1000.00	59.00	.00	1.00	2.00
0	1.20	.20	10.00	13.00	.00	1.00	180.00	1000.00	59.00	.00	1.00	2.00
1	1.10	.90	10.00	9.00	.00	1.00	180.00	500.00	45.00	.00	1.00	2.00
1	1.40	.50	10.00	9.00	.00	1.00	180.00	500.00	45.00	2.00	1.00	1.00
0	2.00	.90	10.00	9.00	.00	1.00	180.00	500.00	45.00	.00	1.00	2.00
0	2.20	.60	10.00	9.00	.00	1.00	180.00	500.00	46.00	2.00	1.00	2.00
1	.50	.60	10.00	15.00	.90	1.00	180.00	1000.00	48.00	2.00	1.00	2.00
0	1.50	.60	10.00	5.00	.50	1.00	180.00	1000.00	48.00	2.00	.00	2.00
0	2.10	.70	10.00	5.00	.90	1.00	180.00	1000.00	48.00	.00	.00	2.00
0	.90	.90	10.00	15.00	.90	1.00	180.00	1000.00	47.00	.00	1.00	2.00
0	2.10	1.10	10.00	15.00	.90	1.00	180.00	500.00	46.00	.00	1.00	2.00
1	.50	1.00	10.00	15.00	.90	1.00	180.00	500.00	46.00	2.00	1.00	2.00
0	2.70	1.20	10.00	15.00	.90	1.00	180.00	500.00	45.00	2.00	.00	2.00
0	.90	.90	10.00	15.00	.90	1.00	180.00	500.00	46.00	.00	.00	2.00
0	1.50	.10	10.00	13.00	.00	1.00	180.00	1000.00	59.00	2.00	1.00	2.00

HH-52	14 SEPT 79		RAFTS									
1	.10	.00	10.00	9.00	.00	1.00	90.00	1000.00	46.00	2.00	.00	.00
1	1.00	.20	10.00	9.00	.00	1.00	90.00	1000.00	47.00	2.00	.00	2.00
0	.70	.40	10.00	9.00	.00	1.00	90.00	1000.00	47.00	.00	.00	2.00
1	.70	.80	10.00	5.00	.50	1.00	90.00	700.00	49.00	2.00	1.00	2.00
0	.70	.90	10.00	5.00	.50	1.00	90.00	700.00	49.00	.00	1.00	2.00
1	.10	1.50	10.00	11.00	.90	1.00	90.00	1000.00	44.00	2.00	.00	2.00
1	.20	1.20	10.00	5.00	.50	1.00	90.00	500.00	49.00	.00	1.00	2.00
0	1.50	1.00	10.00	5.00	.50	1.00	90.00	500.00	49.00	.00	1.00	2.00
1	.90	2.00	9.00	11.00	.90	1.00	90.00	1000.00	40.00	2.00	.00	2.00
1	2.40	2.20	9.00	11.00	.90	1.00	90.00	600.00	39.00	2.00	1.00	2.00
0	1.00	2.20	9.00	11.00	.90	1.00	90.00	600.00	39.00	.00	1.00	2.00
0	.20	2.30	9.00	11.00	.90	1.00	90.00	600.00	38.00	.00	1.00	2.00
0	1.70	1.40	9.00	11.00	.90	1.00	90.00	1000.00	44.00	2.00	1.00	2.00
0	2.40	.30	10.00	9.00	.50	1.00	90.00	1000.00	47.00	.00	1.00	2.00
0	1.20	.50	10.00	9.00	.50	1.00	90.00	1000.00	47.00	.00	.00	2.00
0	1.40	.60	10.00	5.00	.50	1.00	90.00	1000.00	48.00	.00	1.00	2.00
0	2.30	1.00	10.00	5.00	.50	1.00	90.00	500.00	49.00	.00	1.00	2.00
0	1.70	1.40	9.00	11.00	.90	1.00	90.00	1000.00	44.00	.00	.00	2.00
0	1.70	1.70	9.00	11.00	.90	1.00	90.00	1000.00	43.00	.00	1.00	2.00

HC-150	19 SEPT 79		16*BOATS								
1	.40	.10	15.00	18.00	.10	2.00	185.00	1000.00	46.00	-1.00	1.00	2.00
1	2.20	.20	15.00	18.00	.10	2.00	185.00	1000.00	47.00	1.00	.00	2.00
0	.20	.20	15.00	18.00	.10	2.00	185.00	1000.00	47.00	1.00	1.00	2.00
0	2.50	.20	15.00	18.00	.10	2.00	185.00	1000.00	47.00	-1.00	1.00	2.00
0	3.20	1.30	15.00	22.00	.00	2.00	200.00	1000.00	39.00	-1.00	1.00	2.00
1	2.30	1.10	15.00	17.00	.20	3.00	150.00	1000.00	49.00	-1.00	1.00	2.00
1	.30	1.30	15.00	17.00	.20	3.00	150.00	1000.00	49.00	-1.00	1.00	2.00
0	2.20	1.00	15.00	17.00	.20	3.00	150.00	1000.00	49.00	1.00	.00	2.00
[illegible]	.30	1.20	15.00	17.00	.20	3.00	150.00	1000.00	49.00	1.00	1.00	2.00
0	1.70	1.30	15.00	17.00	.20	3.00	150.00	1000.00	49.00	1.00	.00	2.00
0	.70	1.30	15.00	22.00	.00	2.00	200.00	1000.00	39.00	1.00	.00	2.00
1	.70	1.30	15.00	22.00	.00	2.00	200.00	1000.00	40.00	-1.00	1.00	2.00
1	1.30	1.30	15.00	22.00	.00	2.00	200.00	1000.00	40.00	-1.00	1.00	2.00
0	.00	1.30	15.00	22.00	.00	2.00	200.00	1000.00	40.00	1.00	1.00	2.00
1	1.80	2.40	15.00	21.00	.00	4.00	150.00	1000.00	50.00	-1.00	1.00	2.00
1	.30	2.30	15.00	21.00	.00	4.00	150.00	1000.00	29.00	-1.00	.00	2.00
0	2.30	1.70	15.00	22.00	.00	2.00	200.00	1000.00	38.00	1.00	1.00	2.00

HC-52	[illegible]		16*BOATS								
1	2.70	.20	15.00	17.00	.20	3.00	60.00	500.00	48.00	-1.00	1.00	2.00
0	1.30	.40	15.00	17.00	.20	3.00	60.00	500.00	49.00	1.00	.00	2.00
1	1.90	1.30	15.00	14.00	.10	3.00	90.00	500.00	48.00	-1.00	.00	2.00
0	2.00	.90	15.00	14.00	.10	3.00	90.00	500.00	49.00	1.00	1.00	2.00
1	1.20	1.30	15.00	22.00	.00	2.00	60.00	500.00	39.00	-1.00	.00	2.00
0	1.30	1.90	15.00	21.00	.00	4.00	60.00	500.00	38.00	1.00	.00	2.00
0	.70	2.30	15.00	21.00	.00	4.00	90.00	500.00	30.00	-1.00	.00	2.00

41413	20 SEPT 79		16'BOATS								
1	.50	.70	15.00	1.00	.00	1.00	21.00	47.00	-1.00	.00	2.00
1	.00	1.30	15.00	5.00	.00	1.00	21.00	49.00	-1.00	.00	2.00
1	.90	.00	15.00	1.00	.00	1.00	21.00	43.00	1.00	.00	2.00
0	1.00	.40	15.00	1.00	.00	1.00	21.00	46.00	1.00	.00	2.00
0	1.50	1.70	15.00	5.00	.00	1.00	21.00	49.00	-1.00	.00	2.00
0	1.20	1.10	15.00	5.00	.00	1.00	21.00	48.00	1.00	.00	2.00
1	.00	5.50	15.00	11.00	.00	1.00	21.00	43.00	-1.00	.00	2.00
1	.20	5.60	15.00	11.00	.00	1.00	21.00	40.00	-1.00	.00	2.00
1	.20	4.00	15.00	12.00	.00	1.00	21.00	38.00	1.00	1.00	2.00
0	1.00	2.40	15.00	7.00	.00	1.00	21.00	45.00	-1.00	.00	2.00
0	1.50	2.20	15.00	5.00	.00	1.00	21.00	49.00	1.00	.00	2.00

41441	20 SEPT 79		16'BOATS								
1	.20	.30	15.00	1.00	.00	1.00	21.00	46.00	1.00	1.00	2.00
1	.20	.40	15.00	1.00	.00	1.00	21.00	47.00	-1.00	.00	2.00
0	.30	2.40	15.00	5.00	.00	1.00	21.00	49.00	1.00	.00	.00
1	.70	1.30	15.00	5.00	.00	1.00	21.00	49.00	1.00	.00	2.00
0	1.30	1.30	15.00	5.00	.00	1.00	21.00	46.00	-1.00	.00	2.00
1	.50	2.70	15.00	5.00	.00	1.00	21.00	47.00	1.00	1.00	2.00
1	.30	5.70	15.00	11.00	.00	1.00	21.00	41.00	1.00	.00	2.00
1	.00	4.10	15.00	11.00	.00	1.00	21.00	38.00	-1.00	1.00	2.00
1	.70	4.40	15.00	11.00	.00	1.00	21.00	36.00	-1.00	.00	2.00
0	.30	2.30	15.00	5.00	.00	1.00	21.00	48.00	1.00	.00	.00

CAPE GEORGE	20 SEPT 79		16'BOATS								
1	.20	1.80	15.00	5.00	.00	1.00	15.00	48.00	-1.00	.00	2.00
1	2.30	2.10	15.00	5.00	.00	1.00	15.00	48.00	1.00	1.00	2.00
1	.40	2.90	15.00	5.00	.00	1.00	15.00	48.00	1.00	1.00	2.00
1	1.40	3.50	15.00	5.00	.00	1.00	15.00	46.00	1.00	1.00	2.00
1	.10	4.50	15.00	11.00	.00	1.00	15.00	40.00	-1.00	1.00	2.00
1	1.00	5.10	15.00	12.00	.00	1.00	15.00	35.00	1.00	1.00	2.00
1	.20	5.60	15.00	12.00	.00	1.00	15.00	31.00	-1.00	1.00	2.00
0	2.00	4.20	15.00	10.00	.00	1.00	15.00	42.00	1.00	.00	2.00
0	2.10	4.00	15.00	11.00	.00	1.00	15.00	44.00	-1.00	.00	2.00

PT WELLS	20 SEPT 79		16'BOATS								
1	.00	.00	15.00	1.00	.00	1.00	15.00	39.00	1.00	.00	2.00
1	.70	1.10	15.00	11.00	.00	1.00	15.00	41.00	-1.00	.00	2.00
1	1.50	0.70	15.00	11.00	.00	1.00	15.00	37.00	1.00	.00	2.00
1	.50	3.40	15.00	12.00	.00	1.00	15.00	31.00	-1.00	1.00	2.00
1	.00	5.00	15.00	13.00	.00	1.00	15.00	26.00	-1.00	1.00	2.00
1	.50	6.30	15.00	14.00	.00	2.00	15.00	19.00	1.00	.00	2.00
0	1.10	7.10	15.00	15.00	.00	2.00	15.00	13.00	1.00	1.00	2.00
0	2.10	4.30	15.00	11.00	.00	1.00	15.00	38.00	1.00	1.00	2.00
0	3.10	3.00	15.00	13.00	.00	1.00	15.00	24.00	1.00	.00	2.00

[illegible]	[illegible] SEPT 79		16'BOATS								
0	.50	3.10	15.00	19.00	.20	4.00	17.00	31.00	1.00	1.00	2.00
0	.50	3.20	15.00	18.00	.20	4.00	17.00	30.00	1.00	.00	2.00
0	.50	4.20	15.00	17.00	.20	3.00	17.00	19.00	-1.00	.00	2.00
0	1.10	1.40	15.00	17.00	.20	3.00	17.00	17.00	-1.00	.00	2.00

[illegible]	29 SEPT 79		16'BOATS								
0	.90	1.60	13.00	18.00	.10	5.00	11.00	35.00	-1.00	1.00	.00

PT JACKSON	28 SEPT 79		16'BOATS								
1	.10	.10	13.00	18.00	.10	3.00	16.00	28.00	-1.00	.00	2.00
1	.90	3.20	15.00	21.00	.10	3.00	16.00	45.00	-1.00	.00	2.00
0	.50	3.20	15.00	21.00	.10	5.00	16.00	45.00	-1.00	.00	2.00
0	.50	7.00	15.00	17.00	.20	3.00	16.00	28.00	-1.00	1.00	.00
0	1.20	8.30	15.00	18.00	.20	3.50	16.00	46.00	-1.00	.00	2.00
0	.20	8.70	15.00	19.00	.20	4.00	16.00	34.00	1.00	1.00	.00

PT KNOLL	28 SEPT 79		16'BOATS								
1	.50	1.40	13.00	19.00	.00	3.00	12.00	21.00	-1.00	1.00	2.00
1	.20	2.60	13.00	18.00	.10	5.00	16.00	29.00	-1.00	1.00	2.00
0	.20	5.60	15.00	19.00	.10	3.00	16.00	42.00	1.00	.00	2.00
0	.50	4.20	15.00	20.00	.10	5.00	16.00	45.00	-1.00	.00	2.00
0	.90	4.10	15.00	19.00	.10	5.00	16.00	44.00	-1.00	1.00	2.00
0	.90	4.30	15.00	21.00	.20	5.00	16.00	45.00	-1.00	.00	2.00
1	.20	6.80	15.00	18.00	.20	3.50	12.00	43.00	1.00	.00	.00
1	.80	6.90	15.00	17.00	.20	3.50	12.00	26.00	-1.00	.00	2.00
0	.90	4.70	15.00	17.00	.20	5.00	12.00	28.00	-1.00	1.00	2.00

HL-130	25 SEPT 79		16'BOATS									
0	.70	.10	15.00	8.00	1.00	2.00	200.00	1000.00	43.00	-1.00	.00	2.00
1	.00	.20	15.00	8.00	1.00	2.00	200.00	1000.00	43.00	1.00	.00	2.00
1	1.10	.30	15.00	6.00	1.00	1.50	200.00	1000.00	42.00	-1.00	1.00	2.00
0	2.20	.20	15.00	8.00	1.00	2.00	200.00	1000.00	43.00	1.00	1.00	2.00
0	1.70	.40	15.00	5.00	1.00	1.50	200.00	1000.00	42.00	1.00	.00	2.00
1	2.00	.60	15.00	4.00	1.00	1.00	150.00	1000.00	39.00	1.00	.00	2.00
1	.00	.80	15.00	5.00	1.00	1.00	150.00	1000.00	37.00	1.00	1.00	.00
1	.60	1.00	15.00	8.00	.90	1.50	150.00	1000.00	36.00	-1.00	1.00	1.00
1	2.60	1.00	15.00	8.00	.90	1.50	150.00	1000.00	36.00	-1.00	1.00	2.00
0	1.50	.60	15.00	6.00	1.00	1.00	150.00	1000.00	37.00	-1.00	.00	2.00
0	1.20	.70	15.00	5.00	1.00	1.00	150.00	1000.00	37.00	-1.00	1.00	2.00
0	1.90	1.10	15.00	9.00	.90	1.50	150.00	1000.00	35.00	1.00	.00	2.00
0	1.90	.60	15.00	4.00	1.00	1.00	150.00	1000.00	39.00	1.00	1.00	2.00
0	1.20	.50	15.00	5.00	1.00	1.50	200.00	1000.00	42.00	-1.00	1.00	2.00
0	2.40	.10	15.00	9.00	1.00	2.00	200.00	1000.00	43.00	-1.00	1.00	2.00
0	1.50	.40	15.00	4.00	1.00	1.00	200.00	1000.00	42.00	1.00	.00	2.00
0	1.20	1.10	15.00	7.00	.80	1.00	200.00	1000.00	20.00	1.00	.00	2.00
0	.20	1.30	15.00	7.00	.80	1.00	200.00	1000.00	20.00	-1.00	1.00	2.00
0	.80	1.30	15.00	7.00	.80	1.00	200.00	1000.00	17.00	1.00	.00	2.00
0	1.80	1.30	15.00	7.00	.80	1.00	200.00	1000.00	17.00	1.00	1.00	2.00
0	1.00	1.40	15.00	7.00	.80	1.00	200.00	1000.00	16.00	-1.00	1.00	2.00
0	2.90	1.20	15.00	7.00	.80	1.00	200.00	1000.00	18.00	-1.00	1.00	2.00
0	1.20	1.40	15.00	7.00	.80	1.00	200.00	1000.00	15.00	-1.00	1.00	2.00
0	2.10	1.30	15.00	7.00	.80	1.00	200.00	1000.00	15.00	-1.00	1.00	2.00
0	.40	1.30	15.00	7.00	.80	1.00	200.00	1000.00	15.00	-1.00	1.00	2.00
0	.00	1.60	15.00	9.00	.70	2.00	200.00	1000.00	12.00	-1.00	1.00	2.00
1	1.00	1.40	15.00	9.00	.70	2.00	200.00	1000.00	8.00	1.00	1.00	2.00
0	1.70	1.70	15.00	9.00	.70	2.00	200.00	1000.00	11.00	-1.00	1.00	1.00
0	1.90	1.80	15.00	9.00	.70	2.00	200.00	1000.00	10.00	-1.00	1.00	2.00
0	1.40	1.80	15.00	9.00	.70	2.00	200.00	1000.00	11.00	-1.00	1.00	2.00
0	1.50	1.80	15.00	9.00	.70	2.00	200.00	1000.00	10.00	-1.00	1.00	.00
0	.70	2.00	15.00	9.00	.70	2.00	200.00	1000.00	7.00	1.00	.00	2.00
0	1.20	1.40	15.00	9.00	.70	2.00	200.00	1000.00	10.00	1.00	1.00	2.00
0	2.60	.90	15.00	5.00	1.00	1.00	150.00	1000.00	37.00	1.00	1.00	2.00

HH=52	25 SEPT 79		16'BOATS								
1	.50	.10	15.00	12.00	.90	2.00	88.00	500.00	45.00	-1.00	1.00	2.00
1	1.10	.30	15.00	12.00	.90	2.00	88.00	500.00	44.00	1.00	.00	2.00
0	2.30	.20	15.00	12.00	.90	2.00	88.00	500.00	45.00	-1.00	.00	.00
0	2.00	1.00	15.00	7.00	.80	1.00	90.00	500.00	18.00	-1.00	.00	2.00
1	.90	.80	15.00	4.00	1.00	1.00	60.00	500.00	42.00	1.00	.00	2.00
1	.10	1.20	15.00	4.00	1.00	1.00	60.00	500.00	38.00	-1.00	.00	2.00
1	2.00	1.30	15.00	7.00	1.00	1.00	60.00	500.00	35.00	-1.00	.00	2.00
0	2.40	.90	15.00	4.00	1.00	1.00	60.00	500.00	40.00	1.00	1.00	2.00
1	.40	1.60	15.00	7.00	.80	1.00	90.00	500.00	18.00	-1.00	1.00	2.00
1	1.50	1.50	15.00	7.00	.80	1.00	90.00	500.00	19.00	1.00	1.00	2.00
1	1.20	1.70	15.00	7.00	.80	1.00	90.00	500.00	17.00	1.00	.00	2.00
1	1.00	1.90	15.00	8.00	.80	1.00	90.00	500.00	14.00	-1.00	1.00	2.00
0	1.50	1.80	15.00	8.00	.80	1.00	90.00	500.00	16.00	-1.00	1.00	2.00
0	1.40	2.40	15.00	9.00	.70	2.00	60.00	500.00	9.00	-1.00	1.00	2.00
1	1.00	2.10	15.00	9.00	.70	2.00	60.00	500.00	12.00	1.00	.00	2.00
1	1.20	2.70	15.00	9.00	.70	2.00	60.00	500.00	6.00	-1.00	.00	2.00
0	1.00	2.20	15.00	9.00	.70	2.00	60.00	500.00	10.00	1.00	.00	2.00
0	2.60	.30	15.00	12.00	.90	2.00	88.00	500.00	44.00	1.00	.00	.00

HH=16	26 SEPT 79		KAFIS								
1	.50	.10	8.00	9.00	.70	1.00	145.00	1000.00	25.00	.00	1.00	2.00
1	.00	.60	9.00	8.00	.60	1.00	145.00	1000.00	29.00	2.00	1.00	2.00
0	2.50	.50	8.00	9.00	.70	1.00	145.00	1000.00	28.00	2.00	.00	2.00
1	1.10	1.20	9.00	10.00	.60	1.00	145.00	500.00	35.00	.00	1.00	2.00
0	2.50	.50	9.00	8.00	.60	1.00	145.00	500.00	33.00	2.00	1.00	2.00
0	1.20	1.00	9.00	9.00	.60	1.00	145.00	500.00	34.00	.00	.00	2.00
0	2.00	1.20	10.00	11.00	.50	1.00	145.00	500.00	35.00	.00	1.00	2.00
1	.50	1.70	10.00	10.00	.50	1.00	145.00	1000.00	47.00	2.00	1.00	2.00
0	1.20	1.60	10.00	10.00	.50	1.00	145.00	1000.00	47.00	.00	1.00	2.00
0	2.10	1.50	10.00	10.00	.50	1.00	145.00	1000.00	47.00	.00	.00	2.00
0	2.00	1.90	10.00	10.00	.50	1.00	145.00	1000.00	48.00	2.00	1.00	2.00
1	1.70	2.00	10.00	9.00	.50	1.00	145.00	500.00	46.00	2.00	1.00	2.00
1	.50	2.10	10.00	9.00	.50	1.00	145.00	500.00	48.00	2.00	1.00	2.00
0	.70	2.30	10.00	9.00	.50	1.00	145.00	500.00	47.00	.00	.00	2.00
0	2.20	1.30	9.00	8.00	.50	1.00	145.00	500.00	46.00	.00	1.00	2.00

HH=52	26 SEPT 79		KAFIS								
0	1.70	.30	8.00	11.00	.50	1.00	90.00	1000.00	14.00	2.00	.00	2.00
1	.70	.60	8.00	11.00	.60	1.00	90.00	500.00	17.00	2.00	.00	2.00
0	2.50	.90	8.00	9.00	.60	1.00	90.00	500.00	21.00	.00	.00	2.00
1	.70	1.50	10.00	12.00	.50	1.00	90.00	1000.00	43.00	.00	1.00	2.00
1	.70	1.30	10.00	8.00	.50	1.00	90.00	1000.00	45.00	2.00	1.00	2.00
0	1.00	1.40	10.00	8.00	.50	1.00	90.00	1000.00	45.00	.00	.00	2.00
0	2.20	2.00	10.00	9.00	.50	1.00	90.00	500.00	47.00	2.00	1.00	2.00
0	1.00	2.30	10.00	9.00	.50	1.00	90.00	500.00	47.00	2.00	1.00	2.00
0	2.00	2.40	10.00	9.00	.50	1.00	90.00	500.00	47.00	2.00	.00	2.00

44342	27 SEPT 79		RAFTS								
1	.50	.10	15.00	7.50	.10	.00	10.00	26.00	.00	.00	2.00
1	.10	1.10	15.00	5.50	.20	.00	10.00	16.00	.00	1.00	.00
0	2.10	2.10	15.00	5.00	.10	.00	10.00	4.00	.00	.00	2.00
0	2.30	2.90	15.00	7.00	.10	.00	10.00	-4.00	.00	.00	2.00

FT JACKSON	27 SEPT 79		RAFTS								
1	.50	.50	15.00	7.50	.10	.00	15.00	23.00	.00	1.00	2.00
1	.50	1.00	15.00	6.50	.20	.00	15.00	17.00	2.00	1.00	2.00
1	.50	1.50	15.00	5.50	.20	.00	15.00	13.00	2.00	.00	.00
1	2.20	1.00	15.00	5.00	.20	.00	15.00	9.00	2.00	1.00	2.00
1	3.10	1.00	15.00	5.00	.20	.00	15.00	9.00	2.00	1.00	2.00
1	.50	2.50	15.00	5.00	.10	.00	15.00	2.00	.00	.00	.00
1	.50	2.70	15.00	6.00	.10	.00	12.00	-1.00	2.00	1.00	2.00
0	5.40	.50	15.00	7.50	.10	.00	15.00	25.00	2.00	1.00	2.00
0	4.50	1.50	15.00	5.50	.20	.00	15.00	14.00	2.00	.00	2.00
0	4.50	1.40	15.00	5.50	.20	.00	15.00	13.00	2.00	1.00	2.00
0	5.20	3.10	15.00	7.00	.10	.00	12.00	-5.00	2.00	1.00	2.00
0	5.00	2.20	15.00	5.00	.10	.00	15.00	3.00	.00	.00	2.00

PC-130	2 OCT 79		RAFTS									
0	2.60	.00	15.00	1.00	1.00	1.00	180.00	1000.00	41.00	.00	1.00	2.00
0	1.50	.10	15.00	1.00	1.00	1.00	180.00	1000.00	42.00	2.00	1.00	2.00
1	1.60	.10	15.00	1.00	1.00	1.00	180.00	1000.00	42.00	2.00	1.00	2.00
1	.30	.20	15.00	1.00	1.00	1.00	180.00	1000.00	42.00	.00	1.00	2.00
1	.70	.20	15.00	1.00	1.00	1.00	180.00	1000.00	43.00	2.00	.00	2.00
0	3.20	.30	15.00	1.00	1.00	1.00	180.00	1000.00	43.00	.00	1.00	2.00
0	2.90	.60	15.00	2.00	1.00	1.00	180.00	500.00	44.00	.00	1.00	2.00
1	2.20	.60	15.00	2.00	1.00	1.00	180.00	500.00	44.00	2.00	.00	2.00
1	.20	.60	15.00	3.00	1.00	1.00	180.00	500.00	44.00	.00	1.00	2.00
1	1.20	.70	15.00	3.00	1.00	1.00	180.00	500.00	44.00	2.00	1.00	2.00
1	1.60	.70	15.00	3.00	1.00	1.00	180.00	500.00	44.00	2.00	1.00	2.00
0	3.00	.70	15.00	3.00	1.00	1.00	180.00	500.00	44.00	.00	1.00	2.00
0	.00	4.00	15.00	11.00	.10	2.00	180.00	1000.00	21.00	2.00	.00	1.00
0	3.00	3.90	15.00	11.00	.10	2.00	180.00	1000.00	22.00	2.00	.00	2.00
1	.20	4.10	15.00	11.00	.10	2.00	180.00	1000.00	20.00	2.00	1.00	1.00
0	2.50	4.10	15.00	11.00	.10	2.00	180.00	1000.00	20.00	2.00	1.00	2.00
0	3.00	4.00	15.00	11.00	.10	2.00	180.00	1000.00	21.00	2.00	1.00	2.00
1	1.00	4.50	15.00	11.00	.10	2.00	180.00	500.00	15.00	2.00	1.00	2.00
0	1.20	4.40	15.00	11.00	.10	2.00	180.00	500.00	16.00	2.00	1.00	2.00
0	1.70	4.30	15.00	11.00	.10	2.00	180.00	500.00	17.00	2.00	1.00	2.00

48349	4 OCT 79		15'BOATS								
1	1.40	1.40	5.00	7.00	.00	3.00	10.00	25.00	-1.00	.00	2.00
1	.20	2.00	6.00	9.00	.00	3.00	10.00	31.00	-1.00	1.00	2.00
0	1.60	3.30	6.00	8.00	.00	3.00	10.00	41.00	-1.00	1.00	2.00
0	.70	2.90	6.00	8.00	.00	3.00	10.00	39.00	-1.00	1.00	2.00
0	.50	3.00	6.00	8.00	.00	3.00	10.00	43.00	1.00	.00	2.00
0	1.40	3.30	6.00	4.00	.00	2.00	10.00	43.00	1.00	.00	2.00
1	1.30	3.70	6.00	9.00	.00	2.00	10.00	35.00	-1.00	1.00	2.00
0	.40	6.20	6.00	8.00	.00	1.00	10.00	38.00	1.00	.00	2.00

CAPE HORN	4 OCT 79		16'BOATS								
1	.90	.10	3.00	10.00	.00	3.00	14.00	12.00	-1.00	.00	2.00
1	1.50	2.50	6.00	9.00	.00	3.00	14.00	35.00	-1.00	1.00	2.00
1	.10	3.40	6.00	8.00	.00	3.00	14.00	41.00	1.00	.00	2.00
1	1.20	3.00	6.00	7.00	.00	3.00	14.00	43.00	-1.00	1.00	2.00
0	1.30	.00	3.00	9.00	.00	3.00	14.00	18.00	1.00	1.00	2.00
0	.40	.10	4.00	9.00	.00	3.00	14.00	20.00	1.00	.00	2.00
0	1.10	1.10	4.00	8.00	.00	3.00	14.00	21.00	1.00	.00	2.00
0	1.60	1.00	5.00	7.00	.00	3.00	14.00	26.00	-1.00	1.00	2.00
0	1.40	2.30	6.00	9.00	.00	3.00	14.00	35.00	-1.00	1.00	2.00
1	.50	4.90	6.00	4.00	.00	2.00	14.00	44.00	-1.00	.00	2.00
1	1.20	3.70	6.00	4.00	.00	2.00	14.00	42.00	-1.00	.00	2.00
1	.50	6.20	6.00	10.00	.00	2.00	14.00	25.00	1.00	1.00	2.00
0	1.50	3.00	6.00	4.00	.00	2.00	14.00	43.00	-1.00	1.00	2.00
0	.40	6.30	6.00	4.00	.00	1.00	14.00	40.00	-1.00	1.00	2.00
0	2.40	5.30	6.00	4.00	.00	2.00	14.00	44.00	-1.00	1.00	2.00
0	.40	7.50	6.00	10.00	.00	2.00	14.00	31.00	1.00	.00	2.00

41941	11 OCT 79		RAFTS								
1	.50	3.20	15.00	2.00	1.00	1.00	20.00	38.00	2.00	.00	2.00
1	.30	3.90	15.00	2.00	.90	1.00	20.00	41.00	.00	1.00	2.00
1	1.10	4.40	15.00	1.00	.70	1.00	20.00	41.00	.00	.00	2.00
1	1.20	4.60	15.00	1.00	.70	1.00	20.00	41.00	2.00	1.00	2.00
1	.60	3.50	15.00	2.00	.60	1.00	20.00	35.00	2.00	.00	2.00
1	1.20	3.70	15.00	2.00	.80	1.00	20.00	33.00	.00	1.00	2.00
0	1.40	3.40	15.00	2.00	1.00	1.00	20.00	39.00	.00	1.00	2.00
0	2.40	3.00	15.00	2.00	.90	1.00	20.00	40.00	2.00	.00	1.00
0	.90	3.00	15.00	2.00	.80	1.00	20.00	41.00	.00	1.00	2.00
0	1.90	3.20	15.00	2.00	.80	1.00	20.00	40.00	2.00	1.00	2.00
0	1.70	3.40	15.00	2.00	.80	1.00	20.00	40.00	2.00	.00	2.00
1	.70	2.70	15.00	3.50	1.00	1.00	20.00	32.00	2.00	.00	2.00
1	.20	3.10	15.00	3.00	1.00	1.00	20.00	36.00	2.00	1.00	2.00
1	.50	.00	15.00	3.50	.50	1.00	20.00	13.00	2.00	.00	2.00
0	1.50	4.20	15.00	1.00	.70	1.00	20.00	41.00	2.00	1.00	2.00
0	1.00	2.00	15.00	3.50	1.00	1.00	20.00	32.00	2.00	.00	1.00

PT	TURKER	11 OCT 79	RATES								
	1	1.00	.40	15.00	3.50	.50	1.00	17.00	12.00	2.00	1.00	2.00
	1	1.10	1.10	15.00	3.00	.70	1.00	17.00	19.00	2.00	.00	2.00
	1	2.60	1.40	15.00	2.00	.80	1.00	17.00	21.00	.00	1.00	2.00
	1	1.50	1.40	15.00	2.00	.80	1.00	17.00	22.00	.00	1.00	2.00
	1	.80	2.00	15.00	2.00	.80	1.00	17.00	27.00	.00	.00	2.00
	1	1.20	2.50	15.00	3.50	1.00	1.00	17.00	31.00	.00	1.00	2.00
	1	1.90	2.80	15.00	3.50	1.00	1.00	17.00	33.00	2.00	1.00	2.00
	0	2.50	1.10	15.00	3.00	.70	1.00	17.00	18.00	2.00	.00	.00
	1	1.50	2.30	15.00	2.50	.90	1.00	17.00	29.00	2.00	.00	2.00
	0	2.40	.20	15.00	3.50	.50	1.00	17.00	9.00	.00	1.00	2.00
	0	.50	.90	15.00	3.00	.50	1.00	17.00	16.00	.00	1.00	2.00
	0	3.20	2.00	15.00	2.00	.80	1.00	17.00	27.00	.00	1.00	2.00
	0	2.80	1.70	15.00	2.00	.80	1.00	17.00	24.00	2.00	1.00	2.00
	1	.20	3.30	15.00	2.50	1.00	1.00	17.00	37.00	2.00	1.00	1.00
	1	1.80	3.30	15.00	2.00	1.00	1.00	17.00	38.00	.00	1.00	2.00
	1	2.60	3.50	15.00	2.00	1.00	1.00	17.00	36.00	2.00	1.00	2.00
	1	1.80	4.00	15.00	2.00	1.00	1.00	17.00	40.00	.00	1.00	2.00
	1	2.40	4.10	15.00	2.00	1.00	1.00	17.00	41.00	2.00	.00	2.00
	1	2.10	4.40	15.00	1.00	.80	1.00	17.00	41.00	.00	1.00	2.00
	1	1.40	4.60	15.00	1.00	.70	1.00	17.00	41.00	2.00	.00	2.00
	1	2.00	5.00	15.00	1.00	.70	1.00	17.00	41.00	.00	1.00	2.00
	0	.80	5.30	15.00	2.00	.80	1.00	17.00	41.00	2.00	.00	2.00
	0	5.30	4.40	15.00	1.00	.80	1.00	17.00	41.00	2.00	1.00	2.00
	0	4.20	5.10	15.00	1.00	.70	1.00	17.00	41.00	2.00	.00	2.00
	0	4.70	5.40	15.00	2.00	1.00	1.00	17.00	37.00	.00	1.00	2.00
	0	2.70	2.90	15.00	3.00	1.00	1.00	17.00	35.00	.00	.00	2.00

41585	12 OCT 79		RATES								
1	1.90	.20	12.00	11.00	1.00	1.00	21.00	4.00	.00	.00	2.00
1	1.70	1.30	15.00	9.00	1.00	1.00	21.00	17.00	2.00	.00	2.00
1	.90	1.70	15.00	10.00	1.00	1.00	21.00	20.00	2.00	1.00	2.00
1	.90	2.20	15.00	11.00	1.00	1.00	21.00	22.00	2.00	1.00	2.00
0	1.10	.90	14.00	10.00	1.00	1.00	21.00	15.00	.00	1.00	2.00
0	2.50	2.30	15.00	11.00	1.00	1.00	21.00	26.00	2.00	.00	2.00
1	.00	3.10	15.00	12.50	1.00	1.00	20.00	33.00	2.00	1.00	2.00
0	2.50	4.00	15.00	16.00	1.00	2.00	20.00	41.00	2.00	1.00	2.00
0	1.00	4.90	15.00	17.00	1.00	2.00	20.00	41.00	2.00	.00	2.00
0	1.90	5.70	15.00	20.00	1.00	2.00	20.00	41.00	2.00	1.00	2.00
0	1.10	5.20	15.00	17.00	1.00	2.00	20.00	41.00	.00	1.00	2.00
0	1.50	5.50	15.00	13.50	1.00	1.00	20.00	37.00	2.00	1.00	2.00
0	.50	4.50	15.00	15.00	1.00	2.00	20.00	40.00	.00	.00	2.00
0	2.40	4.00	15.00	15.00	1.00	2.00	20.00	39.00	2.00	1.00	2.00

PT TUNNEL		12 OCT 79		RATES							
1	.40	.50	12.00	11.00	1.00	1.00	17.00	5.00	.00	.00	2.00
1	1.90	.00	12.00	11.00	1.00	1.00	17.00	8.00	2.00	1.00	2.00
1	.10	2.10	15.00	11.00	1.00	1.00	17.00	24.00	2.00	.00	2.00
0	3.90	1.50	15.00	9.00	1.00	1.00	17.00	13.00	2.00	.00	2.00
0	2.50	.40	12.00	11.00	1.00	1.00	17.00	5.00	.00	1.00	2.00
0	1.50	1.30	15.00	9.00	1.00	1.00	17.00	16.00	.00	1.00	2.00
0	3.50	1.80	15.00	9.00	1.00	1.00	17.00	18.00	.00	.00	2.00
0	3.70	1.50	15.00	9.00	1.00	1.00	17.00	14.00	2.00	1.00	2.00
1	2.70	3.40	15.00	12.50	1.00	1.00	17.00	33.00	2.00	.00	2.00
1	.50	3.90	15.00	13.00	1.00	1.00	17.00	36.00	2.00	.00	2.00
0	1.50	3.90	15.00	12.50	1.00	1.00	17.00	35.00	2.00	.00	2.00
0	2.20	3.20	15.00	16.00	1.00	2.00	17.00	41.00	2.00	1.00	2.00
0	.50	4.30	15.00	15.00	1.00	2.00	17.00	39.00	2.00	1.00	2.00
0	.70	4.00	15.00	15.00	1.00	2.00	17.00	40.00	2.00	.00	2.00
0	3.00	3.80	15.00	17.00	1.00	2.00	17.00	41.00	2.00	1.00	2.00
0	2.90	3.10	15.00	16.00	1.00	2.00	17.00	40.00	.00	1.00	2.00
0	.50	3.00	15.00	17.00	1.00	2.00	17.00	41.00	.00	.00	2.00
0	1.50	3.50	15.00	20.00	1.00	3.00	17.00	40.00	.00	1.00	2.00
0	1.70	2.00	15.00	10.00	1.00	1.00	17.00	20.00	2.00	1.00	2.00
0	2.20	3.20	15.00	12.00	1.00	1.00	17.00	31.00	2.00	1.00	2.00
0	2.40	2.30	15.00	11.00	1.00	1.00	17.00	25.00	2.00	.00	1.00
0	2.40	4.00	15.00	15.00	1.00	1.00	17.00	39.00	2.00	.00	2.00

HC-130	16 OCT 79		RAFTS									
1	.90	2.80	15.00	10.00	.05	1.00	180.00	1000.00	28.00	.00	.00	2.00
1	.50	2.90	15.00	10.00	.05	1.00	180.00	1000.00	27.00	2.00	1.00	.00
0	3.30	3.00	15.00	10.00	.05	1.00	180.00	1000.00	26.00	2.00	1.00	2.00
1	.60	3.10	15.00	10.00	.05	1.00	180.00	1000.00	25.00	.00	1.00	.00
0	2.30	3.10	15.00	10.00	.05	1.00	180.00	1000.00	25.00	.00	.00	2.00
0	3.50	2.80	15.00	10.00	.05	1.00	180.00	1000.00	23.00	.00	.00	2.00
1	3.30	3.40	15.00	10.00	.05	1.00	180.00	1000.00	18.00	2.00	1.00	2.00
1	.30	3.30	15.00	10.00	.05	1.00	180.00	1000.00	17.00	2.00	1.00	.00
0	1.00	3.30	15.00	10.00	.05	1.00	180.00	1000.00	16.00	.00	1.00	.00
1	1.00	3.60	15.00	10.00	.05	1.00	180.00	1000.00	15.00	.00	.00	2.00
0	2.70	3.70	15.00	10.00	.05	1.00	180.00	1000.00	14.00	2.00	1.00	2.00

HH-52	16 OCT 79		RAFTS									
1	.30	.10	15.00	9.00	.05	1.00	90.00	1000.00	33.00	.00	1.00	2.00
1	.80	.30	15.00	9.00	.05	1.00	90.00	1000.00	32.00	2.00	1.00	2.00
1	1.10	.50	15.00	9.00	.05	1.00	90.00	1000.00	29.00	.00	1.00	2.00
1	.20	.80	15.00	9.00	.05	1.00	90.00	500.00	28.00	2.00	.00	2.00
1	.30	1.30	15.00	10.00	.05	1.00	90.00	500.00	24.00	.00	.00	2.00
1	.10	1.60	15.00	7.50	.05	1.00	90.00	1000.00	7.00	.00	.00	2.00
1	.40	2.00	15.00	7.50	.05	1.00	90.00	1000.00	3.00	2.00	1.00	2.00
0	1.40	2.20	15.00	7.50	.05	1.00	90.00	1000.00	2.00	2.00	1.00	2.00
0	1.10	2.70	15.00	10.50	.10	1.00	90.00	500.00	-3.00	2.00	1.00	2.00
1	.60	2.50	15.00	10.50	.10	1.00	90.00	500.00	-1.00	2.00	1.00	2.00
1	.70	2.70	15.00	10.50	.10	1.00	90.00	500.00	-3.00	2.00	1.00	2.00
0	1.20	2.40	15.00	10.50	.10	1.00	90.00	500.00	.00	2.00	.00	2.00
0	2.60	1.60	15.00	10.00	.05	1.00	90.00	500.00	22.00	.00	.00	2.00
0	2.00	1.10	15.00	10.50	.10	1.00	90.00	500.00	-3.00	2.00	.00	2.00
0	2.30	.90	15.00	10.50	.10	1.00	90.00	500.00	-1.00	2.00	.00	2.00

MU-16	17 OCT 79		RAFTS									
1	.00	.10	12.00	15.00	.00	2.00	145.00	1000.00	9.00	2.00	.00	2.00
1	.30	.20	12.00	15.00	.00	2.00	145.00	1000.00	11.00	2.00	1.00	2.00
1	.50	.00	13.00	14.00	.00	2.00	145.00	1000.00	16.00	2.00	1.00	2.00
0	1.10	.60	13.00	14.00	.00	2.00	145.00	1000.00	15.00	2.00	1.00	2.00
1	1.10	1.00	13.00	14.00	.00	2.00	145.00	500.00	20.00	2.00	1.00	.00
1	1.10	1.50	13.00	15.00	.00	2.00	145.00	500.00	24.00	2.00	1.00	1.00
1	.50	1.60	13.00	15.00	.00	2.00	145.00	500.00	36.00	2.00	1.00	2.00
1	.20	2.50	14.00	13.00	.50	3.00	145.00	1200.00	37.00	2.00	1.00	2.00
0	1.20	1.70	14.00	14.00	.40	3.00	145.00	1000.00	39.00	2.00	.00	.00
0	1.20	1.90	14.00	15.00	.60	3.00	145.00	1000.00	39.00	2.00	1.00	2.00
0	.20	1.90	14.00	15.00	.60	3.00	145.00	1000.00	39.00	2.00	.00	2.00
0	1.10	2.10	14.00	15.00	.60	3.00	145.00	1000.00	38.50	2.00	1.00	2.00
1	.00	2.60	14.00	15.00	.50	3.00	145.00	500.00	36.00	2.00	.00	2.00
1	.60	3.00	14.00	15.00	.20	3.00	145.00	500.00	35.00	2.00	1.00	2.00
0	1.10	3.10	14.00	15.00	.20	3.00	145.00	500.00	34.00	2.00	.00	2.00

MC-150	17 OCT 79		RAFTS									
0	.40	.00	15.00	14.00	.00	2.00	180.00	1000.00	20.00	2.00	1.00	2.00
0	1.50	.10	15.00	14.00	.00	2.00	180.00	1000.00	21.00	2.00	1.00	2.00
0	.70	.50	15.00	15.00	.00	2.00	180.00	1000.00	24.00	2.00	1.00	2.00
0	1.50	.60	15.00	15.00	.00	2.00	180.00	1000.00	25.00	2.00	1.00	2.00
0	1.40	.70	15.00	15.00	.10	2.00	180.00	1000.00	26.00	2.00	1.00	1.00
1	.50	.80	15.00	15.00	.10	3.00	180.00	500.00	27.00	2.00	1.00	2.00
0	1.70	1.20	15.00	15.00	.20	3.00	180.00	500.00	30.00	2.00	1.00	1.00
1	.50	1.30	15.00	15.00	.20	3.00	180.00	500.00	31.00	2.00	1.00	.00
1	.10	1.30	14.00	14.00	.40	3.00	180.00	500.00	39.00	2.00	1.00	2.00
0	1.90	1.50	14.00	14.00	.40	3.00	180.00	500.00	39.00	2.00	1.00	2.00
1	.50	1.50	14.00	14.00	.40	3.00	180.00	500.00	39.00	2.00	1.00	2.00
0	1.50	1.60	14.00	14.00	.40	3.00	180.00	500.00	39.00	2.00	.00	2.00
1	.40	1.70	14.00	13.00	.50	3.00	180.00	500.00	39.00	2.00	.00	2.00
0	1.50	1.80	14.00	13.00	.60	3.00	180.00	500.00	39.00	2.00	1.00	2.00
1	.70	2.50	14.00	13.00	.40	3.00	180.00	1000.00	37.00	2.00	1.00	2.00
0	.90	2.50	14.00	13.00	.50	3.00	180.00	1000.00	36.00	2.00	1.00	2.00
0	1.00	2.60	14.00	13.00	.50	3.00	180.00	1000.00	36.00	2.00	1.00	2.00

44349	16 OCT 79		RAFTS								
1	1.50	1.20	8.00	5.00	.70	.00	10.00	7.00	.00	1.00	.00
0	1.50	2.20	8.00	5.00	.70	.00	10.00	-5.00	2.00	.00	2.00
0	1.70	1.90	8.00	5.00	.70	.00	10.00	.00	2.00	1.00	2.00
0	1.20	2.10	8.00	5.00	.70	.00	10.00	-2.00	2.00	.00	2.00
0	2.20	2.70	8.00	5.00	.70	.00	10.00	-6.00	2.00	.00	2.00

PT BOLETA	16 OCT 79		RAFTS								
1	1.50	.00	8.00	5.00	.90	.00	16.00	17.00	.00	1.00	2.00
1	1.50	1.70	8.00	5.00	.70	.00	16.00	6.00	2.00	1.00	2.00
1	.70	2.20	8.00	5.00	.70	.00	16.00	2.00	2.00	.00	2.00
0	1.90	2.10	8.00	5.00	.70	.00	16.00	-1.00	2.00	1.00	.00

01585	22 OCT 79		RAFTS								
1	.70	.50	2.00	4.00	.00	1.00	20.00	56.00	.00	1.00	2.00
1	.50	1.90	5.00	4.00	.00	1.00	20.00	35.00	.00	.00	2.00
0	1.70	.50	2.00	4.00	.00	1.00	20.00	56.00	.00	.00	2.00
0	1.00	.70	5.00	4.00	.00	1.00	20.00	36.00	.00	.00	2.00
1	.10	4.60	5.50	12.00	.00	1.00	20.00	7.00	.00	.00	2.00
0	1.00	4.20	6.00	11.00	.00	1.00	20.00	12.00	.00	1.00	2.00
0	1.10	5.70	6.00	9.00	.00	1.00	20.00	17.00	2.00	.00	2.00

CAPE FAIRWEATHER	22 OCT 79		RAFTS								
1	.10	2.00	5.50	4.00	.00	1.00	12.00	32.00	.00	1.00	2.00
1	.20	4.10	6.00	10.00	.00	1.00	12.00	14.00	2.00	1.00	2.00
0	1.90	.50	2.00	4.50	.00	1.00	12.00	36.00	.00	1.00	2.00
0	1.20	5.10	5.50	7.00	.00	1.00	12.00	24.00	.00	1.00	2.00
0	.00	5.00	6.00	9.00	.00	1.00	12.00	18.00	.00	.00	.00

CAPE GEORGE	22 OCT 79		RAFTS								
1	.50	.90	5.00	4.00	.00	1.00	14.00	36.00	.00	.00	2.00
1	.00	2.60	5.00	5.00	.00	1.00	14.00	30.00	.00	1.00	2.00
0	1.50	5.10	5.50	6.00	.00	1.00	14.00	27.00	.00	.00	2.00
0	1.50	1.60	6.00	4.00	.00	1.00	14.00	54.00	.00	1.00	2.00
1	.10	5.70	6.00	11.00	.00	1.00	15.00	2.00	.00	1.00	2.00
0	1.70	4.70	6.00	11.00	.00	1.00	15.00	12.00	.00	1.00	2.00

HL-150	25 OCT 79		RATES								
1	1.90	.50	7.00	8.00	.50	1.00	180.00	1000.00	54.00	2.00	1.00	.00
1	.50	.50	7.00	8.00	.50	1.00	180.00	1000.00	53.00	.00	1.00	2.00
0	1.50	.40	7.00	8.00	.50	1.00	180.00	1000.00	53.00	.00	1.00	2.00
0	.70	.50	7.00	8.00	.50	1.00	180.00	1000.00	55.00	2.00	1.00	2.00
0	.50	.40	6.00	8.00	.50	1.00	180.00	500.00	30.00	.00	1.00	2.00
0	1.10	.80	6.00	8.00	.50	1.00	180.00	500.00	29.00	.00	1.00	.00
0	1.10	.90	6.00	8.00	.50	1.00	180.00	500.00	28.00	2.00	1.00	2.00
0	.90	.90	6.00	8.00	.50	1.00	180.00	500.00	28.00	2.00	1.00	2.00
1	1.10	1.50	5.00	4.00	.80	1.00	180.00	1000.00	8.00	.00	.00	2.00
1	.50	1.40	5.00	4.00	.80	1.00	180.00	1000.00	7.00	2.00	.00	2.00
0	1.00	1.50	5.00	4.00	.80	1.00	180.00	1000.00	9.00	.00	1.00	.00
1	1.00	1.50	5.00	5.00	.80	1.00	180.00	1000.00	6.00	2.00	1.00	1.00
0	.90	1.50	5.00	5.00	.80	1.00	180.00	1000.00	6.00	2.00	1.00	.00
0	1.50	1.60	5.00	5.00	.60	1.00	180.00	1000.00	5.00	2.00	1.00	2.00
1	.10	2.50	6.00	8.00	.50	1.00	180.00	500.00	-2.00	2.00	1.00	1.00
0	1.70	2.40	6.00	8.00	.50	1.00	180.00	500.00	-2.00	2.00	.00	2.00
0	1.50	2.50	6.00	8.00	.50	1.00	180.00	500.00	-2.00	.00	1.00	.00
1	.70	2.50	6.50	9.00	.50	1.00	180.00	500.00	-2.00	.00	.00	2.00

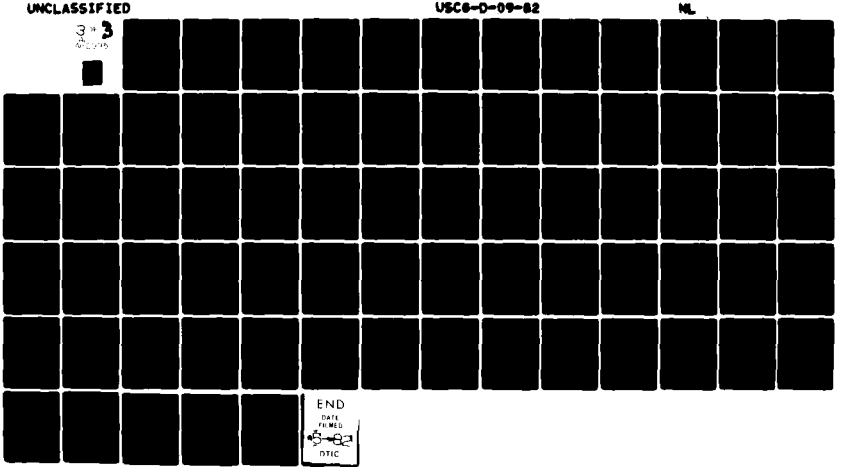
HH-5	25 OCT 79		RATES								
1	.50	1.20	7.50	8.00	.25	1.00	110.00	500.00	52.00	.00	1.00	2.00
1	.30	1.30	6.50	7.50	.50	1.00	110.00	1000.00	49.00	.00	1.00	2.00
1	1.00	2.00	6.00	7.50	.50	1.00	110.00	1000.00	28.00	2.00	1.00	2.00
1	.40	2.10	6.00	7.50	.50	1.00	110.00	1000.00	27.00	2.00	1.00	2.00
0	1.70	1.70	6.50	7.50	.50	1.00	110.00	1000.00	30.00	.00	.00	2.00
1	2.50	2.20	6.00	7.00	.50	1.00	110.00	1000.00	26.00	2.00	1.00	2.00
1	.50	2.30	6.00	6.50	.50	1.00	110.00	1000.00	2.00	.00	.00	2.00
1	.50	2.30	6.00	7.50	.50	1.00	110.00	1000.00	.00	2.00	.00	2.00
0	5.00	1.50	7.00	7.50	.50	1.00	110.00	1000.00	50.00	.00	1.00	2.00
1	.70	1.00	7.00	8.00	.20	1.00	110.00	500.00	55.00	2.00	1.00	.00
0	1.50	1.00	7.00	8.00	.20	1.00	110.00	500.00	55.00	2.00	.00	2.00
1	1.50	1.00	7.00	8.00	.20	1.00	110.00	500.00	53.00	2.00	.00	2.00
0	1.20	1.10	7.00	8.00	.20	1.00	110.00	500.00	55.00	.00	1.00	2.00
0	2.70	2.00	6.00	7.50	.40	1.00	110.00	1000.00	-1.00	.00	.00	2.00
0	5.50	2.20	6.00	6.00	.60	1.00	110.00	1000.00	2.00	2.00	1.00	2.00
0	2.20	2.40	6.00	7.00	.50	1.00	110.00	1000.00	.00	2.00	1.00	2.00
0	1.80	2.70	6.00	8.00	.40	1.00	110.00	1000.00	-2.00	2.00	1.00	2.00
0	5.40	2.80	6.50	6.00	.40	1.00	110.00	1000.00	-2.00	2.00	1.00	2.00
0	2.10	1.90	6.50	7.50	.40	1.00	110.00	1000.00	28.00	.00	.00	2.00
0	5.00	1.90	6.50	7.50	.50	1.00	110.00	1000.00	28.00	2.00	1.00	2.00
0	5.50	.20	6.00	10.00	.00	1.00	110.00	500.00	56.00	2.00	1.00	2.00
0	5.40	1.50	7.50	8.00	.25	1.00	110.00	500.00	55.00	2.00	1.00	2.00
0	2.70	1.40	7.00	8.00	.25	1.00	110.00	500.00	51.00	.00	1.00	2.00
0	2.90	.40	7.00	8.50	.20	1.00	110.00	500.00	55.00	.00	1.00	2.00

HH-52	[illegible]		RATES									
1	.50	.20	7.50	8.00	.25	1.00	90.00	750.00	55.00	2.00	.00	1.00
1	.20	.40	7.00	8.00	.25	1.00	90.00	750.00	52.00	.00	1.00	2.00
0	.50	.20	7.50	8.00	.25	1.00	90.00	750.00	55.00	2.00	.00	1.00
0	.70	.20	7.50	8.00	.25	1.00	90.00	750.00	53.00	2.00	.00	2.00
1	.00	1.40	5.50	7.00	.50	1.00	90.00	750.00	25.00	2.00	1.00	2.00
0	.10	1.00	6.00	7.50	.50	1.00	90.00	750.00	28.00	.00	.00	2.00
1	.10	1.00	5.50	6.00	.50	1.00	90.00	1000.00	5.00	2.00	1.00	.00
0	.70	1.70	5.50	6.00	.50	1.00	90.00	1000.00	8.00	2.00	.00	2.00
1	.00	2.40	6.00	8.00	.40	1.00	90.00	750.00	-2.00	2.00	.00	2.00
0	1.20	1.50	6.00	7.00	.50	1.00	90.00	750.00	25.00	.00	1.00	2.00
HH-150	[illegible]		RATES									
1	.10	.50	15.00	15.00	.70	2.00	180.00	500.00	52.00	.00	1.00	2.00
1	.20	.50	15.00	16.00	.50	2.00	186.00	500.00	51.00	2.00	.00	1.00
0	1.00	.70	15.00	17.00	.50	2.00	180.00	500.00	50.00	2.00	1.00	.00
0	1.50	.20	15.00	15.00	.70	2.00	180.00	500.00	53.00	.00	.00	2.00
1	.50	1.10	15.00	16.00	.50	5.00	180.00	1000.00	25.00	.00	.00	2.00
0	1.00	1.20	15.00	14.00	.20	5.00	180.00	1000.00	25.00	.00	1.00	2.00
0	.10	.90	15.00	18.00	.50	5.00	180.00	1000.00	28.00	2.00	1.00	2.00
0	1.70	.70	15.00	16.00	.90	5.00	180.00	1000.00	29.00	2.00	1.00	2.00
0	1.00	1.50	15.00	20.00	.10	5.00	180.00	500.00	5.00	.00	.00	2.00
0	.50	1.50	15.00	20.00	.10	5.00	180.00	500.00	3.00	.00	.00	2.00
0	.00	1.00	15.00	20.00	.10	5.00	180.00	500.00	2.00	.00	1.00	2.00
HH-15	[illegible]		RATES									
1	.10	.70	15.00	17.00	.80	2.00	145.00	500.00	50.00	2.00	.00	1.00
0	1.50	.20	15.00	19.00	.90	2.00	145.00	500.00	56.00	.00	.00	2.00
0	1.50	.50	15.00	18.00	.80	2.00	145.00	500.00	55.00	.00	1.00	2.00
1	.50	1.10	15.00	15.00	.70	2.00	145.00	1000.00	52.00	2.00	1.00	2.00
0	1.50	1.00	15.00	17.00	.40	5.00	145.00	1000.00	20.00	.00	1.00	.00
0	1.50	.40	15.00	16.00	.80	2.00	145.00	1000.00	53.00	2.00	.00	2.00
0	.10	1.00	15.00	16.00	.80	5.00	145.00	1000.00	51.00	.00	.00	2.00
1	.10	2.10	15.00	22.00	.10	4.00	145.00	500.00	12.00	.00	1.00	2.00
0	1.20	1.70	15.00	22.00	.10	4.00	145.00	500.00	10.00	.00	.00	2.00
0	.10	2.20	15.00	21.00	.10	4.00	145.00	500.00	10.00	.00	1.00	2.00
0	1.90	2.00	15.00	22.00	.10	4.00	145.00	500.00	12.00	.00	.00	2.00
0	.10	3.20	15.00	20.00	.10	5.00	145.00	1000.00	.00	.00	.00	1.00
0	1.50	3.20	15.00	20.00	.10	5.00	145.00	1000.00	.00	.00	1.00	2.00
HH-52	[illegible]		RATES									
1	.20	1.00	15.00	20.00	.90	2.00	90.00	1000.00	56.00	.00	.00	2.00
1	1.20	1.10	15.00	16.00	.80	2.00	90.00	1000.00	55.00	2.00	.00	2.00
1	.90	1.90	15.00	14.00	.20	5.00	90.00	500.00	25.00	.00	.00	2.00
1	.50	2.50	15.00	20.00	.15	4.00	90.00	500.00	20.00	2.00	.00	.00
1	.90	.20	15.00	17.00	.90	1.50	90.00	500.00	56.00	.00	1.00	2.00
0	1.00	1.00	15.00	18.00	.25	5.00	90.00	500.00	26.00	.00	.00	2.00
0	1.10	2.00	15.00	22.00	.10	4.00	90.00	1000.00	16.00	.00	.00	2.00
0	1.50	3.50	15.00	21.00	.10	4.00	90.00	1000.00	10.00	.00	.00	2.00
0	1.20	2.90	15.00	20.00	.20	5.00	90.00	500.00	21.00	2.00	1.00	2.00
0	1.20	2.50	15.00	20.00	.20	5.00	90.00	500.00	22.00	.00	1.00	2.00
0	1.20	1.90	15.00	19.00	.20	5.00	90.00	500.00	25.00	.00	.00	2.00

41585	14 APRIL 80		RAFTS							
1	.50	.10	12.00	16.50	1.00	1.00	15.00	55.00	1.00	.00	2.00
1	1.50	.90	12.00	16.50	1.00	1.00	15.00	56.00	2.00	.00	.00
1	.10	.80	12.00	16.50	1.00	1.00	15.00	58.00	.00	.00	2.00
1	.50	1.10	12.00	16.50	1.00	1.00	15.00	58.00	2.00	1.00	2.00
1	.60	1.40	12.00	16.50	1.00	1.00	15.00	59.00	.00	.00	2.00
1	.90	1.60	12.00	17.50	1.00	1.50	15.00	58.00	.00	.00	2.00
1	.70	2.00	12.00	17.50	1.00	1.50	15.00	56.00	.00	.00	.00
1	.50	2.50	12.00	17.50	1.00	1.50	15.00	55.00	1.00	.00	2.00
1	1.00	2.70	12.00	17.50	1.00	1.50	15.00	52.00	2.00	.00	2.00
1	.20	3.10	12.00	17.50	1.00	1.50	15.00	50.00	2.00	.00	2.00
0	1.10	2.90	12.00	17.50	1.00	1.50	15.00	50.00	2.00	.00	2.00
0	1.50	2.60	12.00	17.50	1.00	1.50	15.00	55.00	2.00	.00	2.00
0	2.20	2.60	12.00	17.50	1.00	1.50	15.00	55.00	.00	.00	2.00
0	1.20	2.20	12.00	17.50	1.00	1.50	15.00	56.00	.00	.00	2.00
0	2.40	.10	12.00	16.50	1.00	1.00	15.00	55.00	.00	.00	2.00
0	1.50	.60	12.00	16.50	1.00	1.00	15.00	58.00	.00	1.00	2.00
0	1.50	.60	12.00	16.50	1.00	1.00	15.00	58.00	1.00	.00	2.00

00348	14 APRIL 80		RAFTS							
1	.50	.50	12.00	16.50	1.00	1.00	8.00	58.00	2.00	.00	2.00
1	.90	.90	12.00	16.50	1.00	1.00	8.00	59.00	2.00	.00	2.00
1	.50	1.80	12.00	17.50	1.00	1.50	8.00	56.00	.00	.00	1.00
0	.90	3.60	12.00	16.50	1.00	2.00	8.00	40.00	.00	.00	2.00
0	1.50	4.00	12.00	16.50	1.00	2.00	8.00	36.00	2.00	.00	2.00

AD-A112 995 ANALYSIS AND TECHNOLOGY INC NORTH STONINGTON CT F/G 6/7
FACTORS AFFECTING COAST GUARD SAR UNIT VISUAL DETECTION PERFORM--ETC(U)
AUG 81 N C EDWARDS, T J MAZOUR, G L HOVER DTCG-39-80-C-80052
UNCLASSIFIED USCG-D-09-82 NL



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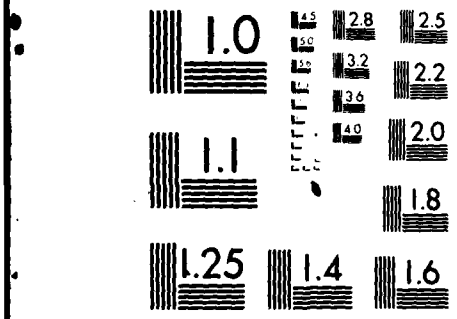

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS 1963-A

PT	TURKEY	TO APRIL 30	RATES								
1	.50	.00	12.00	16.50	1.00	1.00	15.00	55.00	.00	.00	2.00
1	1.50	.20	12.00	16.50	1.00	1.00	15.00	56.00	1.00	.00	2.00
1	.70	.40	12.00	16.50	1.00	1.00	15.00	57.00	.00	.00	.00
1	1.40	.50	12.00	16.50	1.00	1.00	15.00	58.00	2.00	.00	2.00
1	1.00	.90	12.00	16.50	1.00	1.00	15.00	58.00	2.00	.00	2.00
1	.80	1.10	12.00	16.50	1.00	1.00	15.00	59.00	2.00	.00	2.00
1	1.40	.70	12.00	16.50	1.00	1.00	15.00	58.00	2.00	.00	2.00
1	.60	1.60	12.00	17.50	1.00	1.50	15.00	57.00	2.00	.00	2.00
1	.60	1.90	12.00	17.50	1.00	1.50	15.00	56.00	.00	1.00	2.00
1	.50	2.10	12.00	17.50	1.00	1.50	15.00	56.00	2.00	1.00	2.00
1	1.00	2.30	12.00	17.50	1.00	1.50	15.00	55.00	2.00	.00	2.00
1	1.70	2.60	12.00	17.50	1.00	1.50	15.00	52.00	1.00	.00	2.00
1	.00	2.80	12.00	17.50	1.00	1.50	15.00	50.00	2.00	1.00	2.00
1	2.40	2.40	12.00	17.50	1.00	1.50	15.00	50.00	2.00	1.00	2.00
0	2.60	.20	12.00	16.50	1.00	1.00	15.00	56.00	.00	.00	.00
0	1.70	.50	12.00	16.50	1.00	1.00	15.00	58.00	.00	.00	2.00
0	2.70	.90	12.00	16.50	1.00	1.00	15.00	58.00	.00	.00	2.00
0	3.00	.50	12.00	16.50	1.00	1.00	15.00	58.00	1.00	.00	1.00
0	.80	.70	12.00	16.50	1.00	1.00	15.00	58.00	1.00	.00	1.00
0	3.00	.40	12.00	16.50	1.00	1.00	15.00	57.00	2.00	.00	2.00
0	1.90	1.50	12.00	17.50	1.00	1.50	15.00	58.00	2.00	.00	2.00
0	2.90	.70	12.00	16.50	1.00	1.00	15.00	58.00	2.00	.00	2.00
0	1.90	1.60	12.00	17.50	1.00	1.50	15.00	58.00	2.00	.00	2.00
0	1.90	2.60	12.00	17.50	1.00	1.50	15.00	52.00	.00	.00	2.00
0	3.20	3.30	12.00	16.50	1.00	2.00	15.00	46.00	.00	.00	2.00
0	1.40	2.40	12.00	17.50	1.00	1.50	15.00	54.00	2.00	.00	2.00
0	3.00	3.10	12.00	17.50	1.00	1.50	15.00	49.00	2.00	.00	2.00
0	.80	3.20	12.00	17.50	1.00	1.50	15.00	48.00	1.00	.00	2.00
0	1.10	2.30	12.00	17.50	1.00	1.50	15.00	53.00	1.00	.00	2.00
0	2.20	2.10	12.00	17.50	1.00	1.50	15.00	56.00	1.00	.00	2.00
0	2.90	1.80	12.00	17.50	1.00	1.50	15.00	57.00	1.00	1.00	2.00
0	.90	1.30	12.00	16.50	1.00	1.00	15.00	59.00	2.00	.00	2.00

PI WELLS	14 APRIL 80		RAFTS							
1	.50	.00	12.00	16.50	1.00	1.00	15.00	59.00	2.00	.00	2.00
1	.10	.20	12.00	16.50	1.00	1.00	15.00	59.00	1.00	1.00	2.00
1	.90	.50	12.00	17.50	1.00	1.50	15.00	58.00	1.00	.00	2.00
1	1.60	.60	12.00	17.50	1.00	1.50	15.00	57.00	2.00	1.00	2.00
1	.40	1.20	12.00	17.50	1.00	1.50	15.00	56.00	.00	.00	2.00
1	.80	1.40	12.00	17.50	1.00	1.50	15.00	54.00	2.00	1.00	2.00
1	1.00	1.80	12.00	17.50	1.00	1.50	15.00	52.00	2.00	.00	2.00
1	.00	1.70	12.00	17.50	1.00	1.50	15.00	52.00	2.00	.00	2.00
1	.10	1.90	12.00	17.50	1.00	1.50	15.00	50.00	2.00	.00	2.00
1	1.20	2.20	12.00	17.50	1.00	1.50	15.00	48.00	2.00	.00	.00
1	.10	2.50	12.00	16.50	1.00	2.00	15.00	45.00	1.00	.00	2.00
1	.90	2.80	12.00	16.50	1.00	2.00	15.00	42.00	.00	.00	2.00
1	.90	2.40	12.00	16.50	1.00	2.00	15.00	41.00	1.00	.00	2.00
0	.80	.80	12.00	17.50	1.00	1.50	15.00	57.00	2.00	.00	2.00
0	2.00	1.10	12.00	17.50	1.00	1.50	15.00	56.00	1.00	.00	2.00
0	1.80	.40	12.00	17.50	1.00	1.50	15.00	58.00	1.00	.00	2.00
0	1.50	.00	12.00	17.50	1.00	1.50	15.00	58.00	.00	.00	2.00
0	.40	1.10	12.00	17.50	1.00	1.50	15.00	56.00	.00	1.00	2.00
0	1.50	2.60	12.00	16.50	1.00	2.00	15.00	44.00	.00	.00	2.00
0	2.20	1.90	12.00	17.50	1.00	1.50	15.00	50.00	1.00	.00	2.00
0	1.10	2.40	12.00	16.50	1.00	2.00	15.00	46.00	1.00	.00	2.00
0	2.30	2.60	12.00	16.50	1.00	2.00	15.00	44.00	2.00	.00	2.00
0	2.20	2.40	12.00	16.50	1.00	2.00	15.00	46.00	2.00	.00	2.00

01337	17 APRIL 80		RAFTS							
1	.00	.50	15.00	9.00	.00	2.00	14.40	56.00	2.00	1.00	2.00
1	.00	.90	15.00	9.00	.00	2.00	14.40	51.00	1.00	1.00	2.00
1	.40	3.30	15.00	18.00	.00	2.00	14.40	24.00	1.00	1.00	2.00
0	1.40	.10	15.00	9.00	.00	2.00	14.40	57.00	1.00	.00	2.00
0	2.00	.70	15.00	9.00	.00	2.00	14.40	52.00	2.00	.00	2.00
0	1.90	4.50	15.00	11.00	.00	1.00	14.40	9.00	2.00	.00	2.00

44549	17 APRIL 80		RAFTS							
1	1.50	.70	15.00	11.00	.00	2.00	10.00	58.00	2.00	1.00	2.00
1	.50	3.00	15.00	9.00	.00	2.00	10.00	49.00	1.00	.00	2.00
0	1.50	2.90	15.00	9.00	.00	2.00	10.00	50.00	1.00	.00	2.00
0	1.00	2.50	15.00	9.00	.00	2.00	10.00	53.00	1.00	1.00	2.00
0	.10	7.00	15.00	11.00	.00	1.00	10.00	7.00	1.00	.00	2.00
0	.20	7.50	15.00	7.00	.00	1.00	10.00	.00	2.00	1.00	2.00

PI BOSTIA 17 APRIL 80 RAFTS

1	1.50	.40	15.00	12.00	.00	2.00	15.00	56.00	2.00	1.00	2.00
1	.20	2.10	15.00	9.00	.00	2.00	15.00	57.00	1.00	.00	2.00
1	.00	3.10	15.00	18.00	.00	2.00	15.00	27.00	2.00	.00	2.00
0	.50	1.40	15.00	19.00	.00	2.00	15.00	35.00	1.00	.00	2.00
0	1.00	3.40	15.00	11.00	.00	2.00	15.00	23.00	1.00	1.00	2.00
0	1.70	1.00	15.00	9.00	.00	2.00	15.00	58.00	1.00	1.00	2.00

41505 PI APRIL 80 PIRS

1	.10	.50	15.00	9.00	.00	1.00	15.00	61.00	1.00	2.00
1	.00	1.00	15.00	9.00	.00	1.00	15.00	59.00	1.00	2.00
1	.20	1.40	15.00	9.00	.00	1.00	15.00	58.00	.00	2.00
1	.00	2.00	15.00	12.00	.00	1.00	15.00	54.00	1.00	2.00
1	.10	4.20	15.00	13.00	.00	1.00	15.00	50.00	1.00	2.00
0	.40	.20	15.00	9.00	.00	1.00	15.00	61.00	1.00	2.00
0	.50	.70	15.00	9.00	.00	1.00	15.00	60.00	.00	2.00
0	.20	1.70	15.00	9.00	.00	1.00	15.00	56.00	1.00	2.00
0	.30	1.30	15.00	9.00	.00	1.00	15.00	55.00	1.00	2.00
0	.50	2.40	15.00	12.00	.00	1.00	15.00	51.00	1.00	2.00
0	.40	3.30	15.00	13.00	.00	1.00	15.00	40.00	1.00	2.00
0	.20	3.70	15.00	13.00	.00	1.00	15.00	36.00	1.00	2.00
0	.00	4.00	15.00	13.00	.00	1.00	15.00	32.00	1.00	2.00
0	.40	3.00	15.00	13.00	.00	1.00	15.00	20.00	1.00	2.00
0	.10	3.20	15.00	13.00	.00	1.00	15.00	19.00	1.00	2.00
0	.10	3.50	15.00	15.00	.00	1.00	15.00	15.00	1.00	2.00

44505 APRIL 80 PIRS

1	.20	1.50	15.00	12.00	.00	1.00	8.50	54.00	1.00	2.00
1	.0	2.10	15.00	12.00	.00	1.00	8.50	49.00	.00	2.00
0	.10	.90	15.00	12.00	.00	1.00	8.50	51.00	1.00	2.00
0	.90	1.70	15.00	12.00	.00	1.00	8.50	52.00	1.00	2.00
0	.20	.40	15.00	9.00	.00	1.00	8.50	60.00	1.00	2.00
0	.50	2.40	15.00	12.00	.00	1.00	8.50	46.00	1.00	2.00
0	.20	3.00	15.00	13.00	.00	1.00	8.50	40.00	.00	2.00
0	.20	3.60	15.00	13.00	.00	1.00	8.50	32.00	1.00	2.00
0	.30	3.90	15.00	13.00	.00	1.00	8.50	29.00	1.00	2.00
0	.20	4.00	15.00	13.00	.00	1.00	8.50	20.00	1.00	2.00

PT TURNER 21 APRIL 80 PINS

1	.10	.30	15.00	9.00	.00	1.00	15.00	60.00	1.00	2.00
1	.10	1.50	15.00	9.00	.00	1.00	15.00	59.00	1.00	2.00
1	.00	2.30	15.00	9.00	.00	1.00	15.00	54.00	.00	2.00
1	.10	2.50	15.00	12.00	.00	1.00	15.00	53.00	1.00	1.00
1	.40	3.00	15.00	12.00	.00	1.00	15.00	50.00	1.00	2.00
1	.00	3.90	15.00	13.00	.00	1.00	15.00	40.00	1.00	1.00
1	.10	4.90	15.00	13.00	.00	1.00	15.00	28.00	1.00	.00
1	.10	5.30	15.00	13.00	.00	1.00	15.00	24.00	1.00	.00
1	.50	5.40	15.00	13.00	.00	1.00	15.00	23.00	1.00	2.00
1	.40	5.50	15.00	13.00	.00	1.00	15.00	22.00	1.00	2.00
1	.10	5.80	15.00	13.00	.00	1.00	15.00	18.00	1.00	1.00
0	.50	.10	15.00	9.00	.00	1.00	15.00	60.00	1.00	2.00
0	.50	.60	15.00	9.00	.00	1.00	15.00	61.00	1.00	2.00
0	.20	1.10	15.00	9.00	.00	1.00	15.00	60.00	.00	2.00
0	.30	1.30	15.00	9.00	.00	1.00	15.00	60.00	1.00	2.00
0	.30	1.30	15.00	9.00	.00	1.00	15.00	60.00	.00	2.00
0	.30	1.40	15.00	9.00	.00	1.00	15.00	59.00	1.00	2.00
0	.70	1.80	15.00	9.00	.00	1.00	15.00	58.00	.00	2.00
0	.60	1.90	15.00	9.00	.00	1.00	15.00	58.00	.00	2.00
0	.50	2.20	15.00	9.00	.00	1.00	15.00	56.00	1.00	2.00
0	.40	2.70	15.00	12.00	.00	1.00	15.00	52.00	1.00	2.00
0	.70	2.50	15.00	12.00	.00	1.00	15.00	54.00	1.00	2.00
0	.20	2.80	15.00	12.00	.00	1.00	15.00	51.00	1.00	1.00
0	.60	3.30	15.00	12.00	.00	1.00	15.00	46.00	.00	2.00
0	.20	3.60	15.00	12.00	.00	1.00	15.00	43.00	1.00	1.00
0	.30	4.10	15.00	13.00	.00	1.00	15.00	38.00	1.00	2.00
0	.60	3.70	15.00	12.00	.00	1.00	15.00	42.00	.00	2.00
0	.30	4.50	15.00	13.00	.00	1.00	15.00	32.00	1.00	2.0
0	.30	4.60	15.00	13.00	.00	1.00	15.00	31.00	.00	1.00
0	.60	5.30	15.00	13.00	.00	1.00	15.00	24.00	1.00	2.00
0	.40	4.20	15.00	13.00	.00	1.00	15.00	36.00	.00	2.00
0	.50	5.00	15.00	13.00	.00	1.00	15.00	28.00	.00	2.00
0	.70	5.10	15.00	13.00	.00	1.00	15.00	26.00	.00	2.00
0	.40	6.30	15.00	15.00	.00	1.00	15.00	13.00	1.00	2.00
0	.10	5.90	15.00	15.00	.00	1.00	15.00	16.00	1.00	2.00
0	.30	6.20	15.00	15.00	.00	1.00	15.00	14.00	1.00	2.00

PT WELLS										
1	.10	.10	15.00	9.00	.00	1.00	15.00	60.00	1.00	2.00
1	.20	.20	15.00	9.00	.00	1.00	15.00	60.00	1.00	2.00
1	.30	.30	15.00	9.00	.00	1.00	15.00	60.00	1.00	2.00
1	.50	.70	15.00	9.00	.00	1.00	15.00	61.00	.00	2.00
1	.10	1.10	15.00	9.00	.00	1.00	15.00	60.00	.00	2.00
0	.40	1.40	15.00	9.00	.00	1.00	15.00	59.00	1.00	.00
0	.20	1.10	15.00	9.00	.00	1.00	15.00	60.00	.00	2.00
0	.50	1.50	15.00	9.00	.00	1.00	15.00	59.00	.00	2.00
0	.20	2.10	15.00	9.00	.00	1.00	15.00	56.00	1.00	2.00
0	.20	2.00	15.00	9.00	.00	1.00	15.00	57.00	1.00	2.00
0	.50	2.40	15.00	12.00	.00	1.00	15.00	54.00	1.00	2.00
1	.50	3.00	15.00	12.00	.00	1.00	15.00	49.00	1.00	2.00
1	.50	3.20	15.00	12.00	.00	1.00	15.00	47.00	1.00	2.00
1	.10	3.00	15.00	12.00	.00	1.00	15.00	43.00	.00	1.00
1	.40	4.10	15.00	15.00	.00	1.00	15.00	36.00	.00	.00
1	.00	4.50	15.00	15.00	.00	1.00	15.00	34.00	1.00	.00
1	.20	4.50	15.00	15.00	.00	1.00	15.00	31.00	1.00	1.00
0	.10	3.30	15.00	12.00	.00	1.00	15.00	46.00	1.00	.00
0	.40	3.50	15.00	12.00	.00	1.00	15.00	45.00	1.00	2.00
0	.30	4.40	15.00	15.00	.00	1.00	15.00	33.00	1.00	2.00
0	.50	3.00	15.00	15.00	.00	1.00	15.00	28.00	1.00	2.00
0	.20	3.20	15.00	15.00	.00	1.00	15.00	25.00	1.00	1.00
0	.60	.00	15.00	9.00	.00	1.00	15.00	61.00	1.00	2.00
0	.50	.70	15.00	9.00	.00	1.00	15.00	61.00	1.00	1.00
0	.50	1.00	15.00	9.00	.00	1.00	15.00	61.00	1.00	1.00

DL-130	22 APRIL 83		PIWS								
1	.00	.30	15.00	6.50	.10	1.00	150.00	200.00	59.00	1.00	2.00
1	.50	.30	15.00	6.50	.10	1.00	150.00	200.00	58.00	1.00	2.00
1	.20	.50	15.00	6.50	.10	1.00	150.00	200.00	58.00	.00	2.00
0	.30	.40	15.00	6.50	.10	1.00	150.00	200.00	58.00	1.00	2.00
0	.90	.10	15.00	6.50	.10	1.00	150.00	200.00	60.00	1.00	2.00
1	.70	.20	15.00	6.50	.10	1.00	150.00	200.00	59.00	1.00	2.00
0	.90	.40	15.00	6.50	.10	1.00	150.00	200.00	58.00	.00	2.00
0	.60	.50	15.00	6.50	.10	1.00	150.00	200.00	58.00	.00	2.00
0	.90	.30	15.00	6.50	.10	1.00	150.00	200.00	58.00	1.00	2.00
0	.50	.70	15.00	6.50	.90	2.00	150.00	500.00	56.00	1.00	2.00
0	.70	.60	15.00	6.50	.90	2.00	150.00	500.00	57.00	1.00	2.00
0	.80	.60	15.00	6.50	.90	2.00	150.00	500.00	57.00	1.00	2.00
0	.30	.60	15.00	6.50	.90	2.00	150.00	500.00	57.00	.00	2.00
0	.30	.50	15.00	6.50	.90	2.00	150.00	500.00	58.00	1.00	2.00
0	.80	.50	15.00	6.50	.90	2.00	150.00	500.00	58.00	.00	2.00
1	.30	1.00	15.00	11.00	.90	2.00	150.00	800.00	54.00	1.00	2.00
0	.60	.80	15.00	11.00	.90	2.00	150.00	800.00	54.00	1.00	2.00
0	.40	.90	15.00	11.00	.90	2.00	150.00	800.00	54.00	1.00	2.00
0	.60	.90	15.00	11.00	.90	2.00	150.00	800.00	54.00	1.00	2.00
0	1.00	.90	15.00	11.00	.90	2.00	150.00	800.00	54.00	1.00	2.00
1	.10	1.00	15.00	11.00	.90	2.00	150.00	800.00	54.00	.00	2.00
0	.20	1.00	15.00	11.00	.90	2.00	150.00	800.00	54.00	1.00	2.00
0	.80	1.00	15.00	11.00	.90	2.00	150.00	800.00	54.00	1.00	2.00
0	.80	1.00	15.00	11.00	.90	2.00	150.00	800.00	54.00	1.00	2.00
0	.40	1.30	15.00	11.00	.90	2.00	150.00	500.00	49.00	1.00	2.00
0	.60	1.40	15.00	11.00	.90	2.00	150.00	500.00	49.00	1.00	2.00
0	.20	1.20	15.00	11.00	.90	2.00	150.00	500.00	50.00	.00	2.00
0	.70	1.20	15.00	11.00	.90	2.00	150.00	500.00	50.00	1.00	2.00
0	.20	1.20	15.00	11.00	.90	2.00	150.00	500.00	50.00	1.00	2.00
0	.20	1.20	15.00	11.00	.90	2.00	150.00	500.00	50.00	1.00	2.00
0	.70	1.30	15.00	11.00	.90	2.00	150.00	500.00	50.00	1.00	2.00
0	.40	.10	15.00	6.50	.10	1.00	150.00	200.00	60.00	.00	2.00
0	.80	1.10	15.00	11.00	.90	2.00	150.00	800.00	53.00	1.00	2.00

DH-3	22 APRIL 80		PIAS								
1	.10	.50	15.00	9.00	.20	1.00	90.00	200.00	58.00	1.00	2.00
1	.10	.70	15.00	9.00	.20	1.00	90.00	500.00	60.00	.00	2.00
1	.00	.90	15.00	9.00	.20	1.00	90.00	500.00	60.00	1.00	1.00
1	.40	2.00	15.00	9.00	1.00	.50	90.00	500.00	25.00	.00	2.00
1	.30	2.50	15.00	3.00	.90	.50	90.00	800.00	18.00	1.00	2.00
0	.20	.20	15.00	10.00	.10	2.00	90.00	200.00	57.00	1.00	2.00
0	.70	.00	15.00	10.00	.10	2.00	90.00	200.00	55.00	1.00	2.00
0	.70	.10	15.00	10.00	.10	2.00	90.00	200.00	56.00	1.00	2.00
0	.60	.20	15.00	10.00	.10	2.00	90.00	200.00	56.00	1.00	2.00
0	.50	.30	15.00	9.00	.20	1.00	90.00	200.00	57.00	1.00	2.00
0	.40	.30	15.00	9.00	.20	1.00	90.00	200.00	57.00	1.00	2.00
0	.40	.60	15.00	9.00	.20	1.00	90.00	500.00	60.00	.00	2.00
0	.10	.50	15.00	9.00	.20	1.00	90.00	500.00	60.00	.00	.00
0	.70	1.00	15.00	9.00	.20	1.00	90.00	800.00	60.00	.00	2.00
0	.70	1.10	15.00	9.00	.20	1.00	90.00	800.00	61.00	.00	2.00
0	.10	1.20	15.00	9.00	.20	1.00	90.00	800.00	61.00	1.00	2.00
0	.70	1.10	15.00	9.00	.20	1.00	90.00	800.00	61.00	1.00	2.00
0	.50	1.30	15.00	6.50	.10	1.00	90.00	800.00	61.00	1.00	2.00
0	.90	1.30	15.00	9.00	.20	1.00	90.00	800.00	61.00	.00	2.00
0	.10	1.50	15.00	6.50	.10	1.00	90.00	800.00	62.00	1.00	2.00
1	.30	1.50	15.00	6.00	1.00	.50	90.00	200.00	31.00	1.00	2.00
0	.40	1.60	15.00	6.00	1.00	.50	90.00	200.00	32.00	1.00	2.00
0	.50	1.70	15.00	6.00	1.00	.50	90.00	200.00	29.00	1.00	2.00
0	.50	1.70	15.00	6.00	1.00	.50	90.00	200.00	29.00	1.00	2.00
0	.70	1.90	15.00	6.00	1.00	.50	90.00	200.00	27.00	1.00	2.00
1	.00	2.10	15.00	3.00	1.00	.50	90.00	500.00	24.00	.00	2.00
0	.00	2.20	15.00	3.00	.90	.50	90.00	500.00	24.00	.00	2.00
0	.40	2.10	15.00	3.00	.90	.50	90.00	500.00	24.00	.00	2.00
0	.60	2.20	15.00	3.00	.90	.50	90.00	500.00	23.00	1.00	2.00
0	.50	2.30	15.00	3.00	.90	.50	90.00	500.00	22.00	1.00	2.00
0	.20	2.50	15.00	3.00	.90	.50	90.00	500.00	20.00	1.00	2.00
0	.00	2.50	15.00	3.00	.90	.50	90.00	800.00	19.00	1.00	2.00
0	.40	2.70	15.00	3.00	.90	.50	90.00	800.00	16.00	.00	.00
0	.70	2.70	15.00	3.00	.90	.50	90.00	800.00	16.00	1.00	2.00
0	.90	2.80	15.00	3.00	.90	.50	90.00	800.00	15.00	1.00	1.00
0	.70	2.90	15.00	3.00	.90	.50	90.00	800.00	14.00	1.00	.00
0	.20	2.90	15.00	3.00	.90	.50	90.00	800.00	14.00	.00	2.00
0	.90	.70	15.00	9.00	.20	1.00	90.00	500.00	60.00	.00	2.00
0	.90	.90	15.00	9.00	.20	1.00	90.00	500.00	60.00	.00	2.00
0	.40	.90	15.00	9.00	.20	1.00	90.00	500.00	60.00	.00	2.00
0	.50	1.30	15.00	6.50	.10	1.00	90.00	800.00	61.00	.00	2.00
1	.00	1.90	15.00	6.00	1.00	.50	90.00	200.00	27.00	.00	2.00
0	.00	2.10	15.00	6.00	1.00	.50	90.00	500.00	24.00	.00	2.00

BIL-52	% APPLE 80		PIWS								
1	.70	1.00	15.00	4.00	1.00	1.00	90.00	500.00	58.00	1.00	2.00
0	.30	.20	15.00	4.00	.20	1.00	90.00	200.00	60.00	1.00	2.00
0	.10	.00	15.00	4.00	.20	1.00	90.00	200.00	60.00	1.00	2.00
0	.50	.10	15.00	4.00	.20	1.00	90.00	200.00	60.00	.00	2.00
0	1.00	.30	15.00	4.00	.20	1.00	90.00	200.00	60.00	.00	2.00
0	1.10	.40	15.00	4.00	.20	1.00	90.00	200.00	60.00	.00	2.00
0	.20	.20	15.00	4.00	.20	1.00	90.00	200.00	60.00	.00	2.00
0	.40	.40	15.00	4.00	.20	1.00	90.00	200.00	61.00	1.00	2.00
0	.60	.70	15.00	6.50	.10	1.00	90.00	500.00	61.00	1.00	2.00
0	.50	.60	15.00	6.50	.10	1.00	90.00	500.00	61.00	.00	2.00
0	.50	.60	15.00	6.50	.10	1.00	90.00	500.00	61.00	1.00	2.00
0	.70	.70	15.00	6.50	.10	1.00	90.00	500.00	61.00	1.00	2.00
0	.00	.70	15.00	6.50	.10	1.00	90.00	500.00	61.00	.00	2.00
0	.40	.70	15.00	6.50	.10	1.00	90.00	500.00	61.00	.00	1.00
0	.40	.90	15.00	6.50	.10	1.00	90.00	500.00	60.00	1.00	2.00
0	.70	1.10	15.00	6.50	.90	2.00	90.00	800.00	47.00	1.00	2.00
0	.10	1.10	15.00	4.00	1.00	1.00	90.00	800.00	47.00	1.00	2.00
0	.30	1.20	15.00	4.00	1.00	1.00	90.00	800.00	46.00	1.00	2.00
0	.40	1.20	15.00	4.00	1.00	1.00	90.00	800.00	46.00	1.00	2.00
0	.20	1.00	15.00	4.00	1.00	1.00	90.00	800.00	42.00	1.00	2.00
0	.00	1.70	15.00	4.00	1.00	1.00	90.00	500.00	59.00	.00	2.00
0	.30	1.00	15.00	4.00	1.00	1.00	90.00	500.00	40.00	1.00	2.00
0	.50	1.90	15.00	4.00	1.00	1.00	90.00	500.00	59.00	1.00	2.00
0	.50	1.90	15.00	4.00	1.00	1.00	90.00	500.00	59.00	1.00	2.00
0	.10	2.00	15.00	4.00	1.00	1.00	90.00	500.00	58.00	.00	2.00
0	.70	2.10	15.00	4.00	1.00	1.00	90.00	500.00	56.00	.00	2.00

BIL-150	% APPLE 80		PIWS								
1	.00	1.40	14.00	22.00	1.00	2.00	150.00	500.00	61.00	1.00	2.00
0	.50	.00	14.00	12.50	1.00	1.00	150.00	200.00	55.00	.00	2.00
0	.50	.10	14.00	12.50	1.00	1.00	150.00	200.00	56.00	1.00	2.00
0	.50	.20	14.00	12.50	1.00	1.00	150.00	200.00	57.00	1.00	2.00
0	.20	.30	14.00	12.50	1.00	1.00	150.00	200.00	57.00	1.00	2.00
0	.20	.40	14.00	12.50	1.00	1.00	150.00	200.00	58.00	1.00	2.00
0	.50	.50	14.00	12.50	1.00	1.00	150.00	200.00	58.00	1.00	2.00
0	.10	.70	14.00	19.00	1.00	2.00	150.00	500.00	60.00	1.00	2.00
0	.70	.70	14.00	19.00	1.00	2.00	150.00	500.00	60.00	.00	2.00
0	.10	.70	14.00	19.00	1.00	2.00	150.00	500.00	60.00	1.00	2.00
0	1.00	.90	14.00	19.00	1.00	2.00	150.00	500.00	50.00	.00	2.00
0	.20	.00	14.00	19.00	1.00	2.00	150.00	800.00	60.00	1.00	2.00
0	.70	.90	14.00	19.00	1.00	2.00	150.00	800.00	61.00	.00	2.00
0	.20	.90	14.00	19.00	1.00	2.00	150.00	800.00	61.00	1.00	2.00
0	.70	1.00	14.00	19.00	1.00	2.00	150.00	800.00	61.00	.00	2.00
0	1.00	1.00	14.00	19.00	1.00	2.00	150.00	800.00	61.00	.00	2.00
0	.90	.40	14.00	19.00	1.00	2.00	150.00	800.00	61.00	.00	2.00
0	.20	1.00	14.00	19.00	1.00	2.00	150.00	800.00	61.00	1.00	2.00
0	1.00	1.10	14.00	19.00	1.00	2.00	150.00	800.00	61.00	.00	2.00

	0	.40	5.00	14.00	11.00	1.00	2.00	150.00	500.00	29.00	1.00	.00
	0	.50	5.10	14.00	11.00	1.00	2.00	150.00	500.00	27.00	1.00	1.00
	0	.40	5.20	14.00	11.00	1.00	2.00	150.00	500.00	27.00	1.00	2.00
	0	.70	5.20	15.00	10.50	.90	1.00	150.00	500.00	27.00	1.00	2.00
	0	.20	5.40	15.00	10.50	.90	1.00	150.00	500.00	24.00	1.00	2.00
	0	.60	5.50	15.00	10.50	.90	1.00	150.00	500.00	24.00	.00	2.00
	0	.10	5.40	15.00	10.50	.90	1.00	150.00	500.00	24.00	1.00	1.00
	0	.00	5.50	15.00	10.50	.90	1.00	150.00	500.00	25.00	.00	2.00
	0	1.00	5.50	15.00	10.50	.90	1.00	150.00	500.00	25.00	.00	2.00
	0	.10	5.20	15.00	10.50	.90	1.00	150.00	500.00	25.00	1.00	1.00
	0	.50	5.20	15.00	10.50	.90	1.00	150.00	500.00	26.00	.00	2.00
	0	.50	.50	14.00	12.50	1.00	1.00	150.00	200.00	57.00	1.00	2.00
HH-52		25 APRIL 80		PIMS								
	0	.20	.70	14.00	20.00	1.00	2.00	90.00	500.00	40.00	1.00	2.00
	0	.50	.80	14.00	20.00	1.00	2.00	90.00	500.00	40.00	1.00	2.00
	0	.50	1.00	14.00	11.00	1.00	2.00	90.00	500.00	57.00	.00	2.00
	0	.20	1.10	14.00	11.00	1.00	2.00	90.00	500.00	56.00	.00	2.00
	0	.10	1.50	14.00	11.00	1.00	2.00	90.00	500.00	54.00	.00	2.00
	0	.20	1.50	14.00	11.00	1.00	2.00	90.00	500.00	54.00	1.00	2.00
	0	.20	1.40	14.00	11.00	1.00	2.00	90.00	500.00	53.00	1.00	2.00
	0	.20	.10	14.00	22.00	1.00	2.00	90.00	200.00	59.00	1.00	2.00
41337		24 APRIL 80		PIMS								
	1	.00	1.50	15.00	11.50	.10	1.00	15.00	59.00	1.00	1.00	
	1	.20	1.90	15.00	11.50	.10	1.00	15.00	57.00	1.00	2.00	
	0	.60	.20	15.00	17.00	.20	1.00	15.00	60.00	1.00	2.00	
	0	.30	.30	15.00	17.00	.20	1.00	15.00	60.00	1.00	2.00	
	0	.30	.40	15.00	17.00	.20	1.00	15.00	60.00	.00	2.00	
	0	.60	.70	15.00	17.00	.20	1.00	15.00	61.00	.00	2.00	
	0	.50	1.10	15.00	11.50	.10	1.00	15.00	60.00	.00	1.00	
	0	.40	.80	15.00	17.00	.20	1.00	15.00	59.00	1.00	2.00	
	0	.20	1.00	15.00	17.00	.20	1.00	15.00	59.00	1.00	.00	
	1	.00	4.10	15.00	9.00	.30	.50	15.00	31.00	1.00	2.00	
	1	.10	4.30	15.00	9.00	.30	.50	15.00	24.00	1.00	.00	
	1	.00	4.90	15.00	7.00	.20	.50	15.00	25.00	1.00	1.00	
	1	.10	6.00	13.00	2.50	.30	.50	15.00	10.00	1.00	1.00	
	0	.50	5.60	13.00	2.50	.30	.50	15.00	13.00	.00	2.00	
	0	.40	5.30	15.00	7.00	.20	.50	15.00	17.00	.00	2.00	
	0	.10	5.40	15.00	7.00	.20	.50	15.00	40.00	1.00	2.00	
	0	.10	5.70	15.00	9.00	.30	.50	15.00	36.00	1.00	2.00	
	0	.30	5.30	15.00	7.00	.20	.50	15.00	18.00	1.00	.00	

41441	29 APRIL 80		PIMS							
1	.00	.00	15.00	12.50	.20	1.00	15.00	58.00	1.00	2.00
1	.40	.50	15.00	12.50	.20	1.00	15.00	60.00	1.00	2.00
1	.10	1.00	15.00	17.00	.20	1.00	15.00	61.00	1.00	2.00
1	.10	1.60	15.00	11.50	.10	1.00	15.00	60.00	1.00	2.00
0	.50	.70	15.00	17.00	.20	1.00	15.00	60.00	1.00	2.00
0	.50	.40	15.00	17.00	.20	1.00	15.00	60.00	.00	2.00
0	.50	.50	15.00	17.00	.20	1.00	15.00	60.00	1.00	2.00
0	.50	2.10	15.00	11.50	.10	1.00	15.00	58.00	1.00	2.00
0	.10	2.50	15.00	11.50	.10	1.00	15.00	56.00	1.00	2.00
0	.50	2.20	15.00	11.50	.10	1.00	15.00	58.00	1.00	2.00
1	.10	5.00	15.00	7.00	.20	.50	15.00	20.00	1.00	2.00
0	.50	2.90	15.00	6.00	.00	.50	15.00	50.00	.00	2.00
0	.50	3.40	15.00	7.00	.20	.50	15.00	46.00	.00	2.00
0	.50	3.50	15.00	7.00	.20	.50	15.00	44.00	1.00	2.00
0	.20	3.00	15.00	7.00	.20	.50	15.00	40.00	1.00	2.00
0	.20	4.20	15.00	9.00	.30	.50	15.00	3 .00	1.00	2.00
0	.20	4.40	15.00	9.00	.30	.50	15.00	33.00	1.00	2.00
0	.40	5.00	15.00	9.00	.30	.50	15.00	27.00	1.00	2.00
0	.50	5.40	15.00	7.00	.20	.50	15.00	22.00	1.00	2.00

PI TORNEY 24 APRIL 80 PIWS

1	.40	.40	15.00	12.50	.20	1.00	15.00	58.00	1.00	2.00
1	.50	.70	15.00	17.00	.20	1.00	15.00	60.00	1.00	1.00
1	.10	.80	15.00	17.00	.20	1.00	15.00	60.00	1.00	.00
1	.70	1.10	15.00	17.00	.20	1.00	15.00	60.00	.00	2.00
1	.10	1.60	15.00	17.00	.20	1.00	15.00	61.00	1.00	1.00
1	.10	2.50	15.00	11.50	.10	1.00	15.00	58.00	1.00	.00
1	.20	2.70	15.00	11.50	.10	1.00	15.00	57.00	1.00	2.00
1	.10	2.90	15.00	6.00	.00	.50	15.00	56.00	1.00	2.00
0	.90	.30	15.00	12.50	.20	1.00	15.00	57.00	.00	2.00
0	.80	.00	15.00	12.50	.20	1.00	15.00	55.00	.00	2.00
0	.60	1.00	15.00	17.00	.20	1.00	15.00	60.00	1.00	2.00
0	.50	1.40	15.00	17.00	.20	1.00	15.00	62.00	.00	2.00
0	.50	2.00	15.00	11.50	.10	1.00	15.00	60.00	1.00	2.00
0	1.00	2.10	15.00	11.50	.10	1.00	15.00	60.00	.00	2.00
0	.70	2.10	15.00	11.50	.10	1.00	15.00	60.00	.00	2.00
0	.70	3.00	15.00	6.00	.00	.50	15.00	55.00	.00	2.00
0	.80	2.40	15.00	11.50	.10	1.00	15.00	58.00	1.00	2.00
0	.80	1.20	15.00	17.00	.20	1.00	15.00	60.00	.00	2.00
0	.20	1.30	15.00	17.00	.20	1.00	15.00	61.00	.00	2.00
1	.20	3.10	15.00	6.00	.00	.50	15.00	54.00	1.00	2.00
1	.10	3.90	15.00	7.00	.20	.50	15.00	48.00	1.00	2.00
1	.00	4.50	15.00	7.00	.20	.50	15.00	42.00	.00	2.00
0	.20	3.30	15.00	6.00	.00	.50	15.00	53.00	1.00	2.00
0	.70	3.90	15.00	6.00	.00	.50	15.00	52.00	.00	2.00
0	.50	3.30	15.00	6.00	.00	.50	15.00	52.00	1.00	2.00
0	.50	3.70	15.00	6.00	.00	.50	15.00	50.00	1.00	2.00
0	.30	3.80	15.00	7.00	.20	.50	15.00	48.00	.00	2.00
0	.90	3.20	15.00	6.00	.00	.50	15.00	54.00	.00	2.00
0	.90	3.80	15.00	6.00	.00	.50	15.00	50.00	1.00	2.00
0	.50	4.30	15.00	7.00	.20	.50	15.00	53.00	1.00	2.00
0	1.00	4.70	15.00	7.00	.20	.50	15.00	39.00	.00	2.00
0	.50	4.10	15.00	7.00	.20	.50	15.00	46.00	.00	2.00
0	.50	3.20	15.00	9.00	.30	.50	15.00	33.00	.00	2.00
0	.70	4.20	15.00	7.00	.20	.50	15.00	45.00	.00	2.00
0	.50	4.60	15.00	7.00	.20	.50	15.00	39.00	1.00	2.00
0	.50	5.00	15.00	9.00	.30	.50	15.00	37.00	1.00	2.00
0	.20	5.80	15.00	9.00	.30	.50	15.00	27.00	1.00	2.00
0	.40	6.10	15.00	7.00	.20	.50	15.00	25.00	1.00	2.00
0	.50	1.80	15.00	11.50	.10	1.00	15.00	61.00	1.00	2.00
0	.70	1.50	15.00	11.50	.10	1.00	15.00	61.00	.00	2.00
0	.60	3.30	15.00	9.00	.30	.50	15.00	30.00	.00	2.00
0	.50	3.00	15.00	9.00	.30	.50	15.00	35.00	1.00	2.00
0	.00	3.40	15.00	9.00	.30	.50	15.00	31.00	1.00	2.00

1	.20	.00	4.00	6.00	1.00	2.00	150.00	200.00	63.00	1.00	2.00
0	.10	.10	4.00	6.00	1.00	2.00	150.00	200.00	63.00	1.00	2.00
0	.30	.20	4.00	6.00	1.00	2.00	150.00	200.00	63.00	1.00	.00
0	.30	.20	4.00	6.00	1.00	2.00	150.00	200.00	64.00	1.00	2.00
0	.40	.30	4.00	6.00	1.00	2.00	150.00	200.00	64.00	1.00	2.00
0	.40	.30	4.00	6.00	1.00	2.00	150.00	200.00	64.00	1.00	2.00
1	.50	.50	4.00	6.00	1.00	2.00	150.00	200.00	62.00	1.00	2.00
0	.40	.40	4.00	6.00	1.00	2.00	150.00	200.00	63.00	1.00	1.00
0	.50	.50	4.00	6.00	1.00	2.00	150.00	200.00	64.00	.00	.00
0	.40	.40	4.00	6.00	1.00	2.00	150.00	200.00	63.00	1.00	.00
0	.60	.50	4.00	6.00	1.00	2.00	150.00	200.00	63.00	1.00	2.00
0	.50	.50	4.00	6.00	1.00	2.00	150.00	200.00	63.00	1.00	.00
1	.80	.80	4.00	7.00	.80	1.00	150.00	200.00	60.00	1.00	2.00
0	.10	.60	4.00	6.00	1.00	2.00	150.00	200.00	61.00	1.00	2.00
0	.10	.70	4.00	7.00	.80	1.00	150.00	200.00	61.00	1.00	2.00
0	.90	.70	4.00	7.00	.80	1.00	150.00	200.00	61.00	.00	2.00
1	.90	1.10	4.00	7.00	.80	1.00	150.00	500.00	59.00	1.00	2.00
0	.90	.90	4.00	7.00	.80	1.00	150.00	500.00	60.00	1.00	2.00
0	.90	1.10	4.00	7.00	.80	1.00	150.00	500.00	59.00	1.00	1.00
0	.20	1.00	4.00	7.00	.80	1.00	150.00	500.00	58.00	1.00	2.00
0	1.00	1.00	4.00	7.00	.80	1.00	150.00	500.00	59.00	.00	2.00
1	.10	1.30	4.00	7.00	.80	1.00	150.00	500.00	56.00	1.00	.00
0	.10	1.30	4.00	7.00	.80	1.00	150.00	500.00	56.00	1.00	.00
0	.70	1.40	4.00	7.00	.80	1.00	150.00	500.00	55.00	.00	1.00
0	1.00	1.40	4.00	7.00	.80	1.00	150.00	500.00	55.00	1.00	2.00
0	.40	1.50	4.00	8.00	.50	2.00	150.00	500.00	54.00	1.00	2.00
0	.70	1.50	4.00	8.00	.50	2.00	150.00	500.00	52.00	1.00	2.00
0	.40	1.50	4.00	8.00	.50	2.00	150.00	500.00	53.00	1.00	2.00
0	.10	1.60	4.00	8.00	.50	2.00	150.00	500.00	52.00	1.00	2.00
0	.90	1.80	4.00	8.00	.50	2.00	150.00	800.00	50.00	.00	2.00
0	.70	1.70	4.00	8.00	.50	2.00	150.00	800.00	50.00	1.00	2.00
0	.00	1.80	4.00	8.00	.50	2.00	150.00	800.00	49.00	1.00	2.00
0	.20	1.90	4.00	8.00	.50	2.00	150.00	800.00	48.00	1.00	2.00
0	.20	2.20	4.00	8.00	.50	2.00	150.00	800.00	43.00	1.00	2.00
0	.00	2.20	4.00	8.00	.50	2.00	150.00	800.00	44.00	1.00	2.00
0	.50	2.30	4.00	8.00	.50	2.00	150.00	800.00	42.00	1.00	2.00
0	.50	2.40	4.00	8.00	.50	2.00	150.00	800.00	41.00	1.00	2.00
0	1.00	2.40	4.00	8.00	.50	2.00	150.00	800.00	41.00	.00	2.00
0	.70	2.50	4.00	8.00	.50	2.00	150.00	800.00	41.00	1.00	2.00
0	.20	2.60	6.50	10.50	.70	2.00	150.00	200.00	16.00	1.00	2.00
0	.20	2.70	6.50	10.50	.70	2.00	150.00	200.00	16.00	1.00	1.00
0	.50	2.70	6.50	10.50	.70	2.00	150.00	200.00	15.00	1.00	.00
0	1.00	2.70	6.50	10.50	.70	2.00	150.00	200.00	15.00	.00	2.00
0	.10	2.80	6.50	10.50	.70	2.00	150.00	200.00	14.00	.00	2.00
0	.10	5.00	5.00	10.00	.90	2.00	150.00	200.00	10.00	1.00	2.00
0	1.00	5.10	5.00	10.00	.90	2.00	150.00	200.00	10.00	.00	1.00
0	.00	5.10	5.00	10.00	.90	2.00	150.00	200.00	9.00	1.00	1.00
0	.10	5.00	5.00	10.00	.90	2.00	150.00	200.00	11.00	1.00	1.00
0	.20	5.30	5.00	10.00	.90	2.00	150.00	200.00	5.00	1.00	2.00
0	.00	5.30	5.00	10.00	.90	2.00	150.00	200.00	8.00	1.00	2.00
0	.20	5.40	5.00	10.00	.90	2.00	150.00	200.00	8.00	1.00	2.00

41337	1 MAY 80		PIMS							
1	.00	1.40	8.00	12.00	1.00	2.00	15.00	63.00	1.00	2.00
0	.20	.50	9.00	10.00	1.00	2.00	15.00	55.00	.00	2.00
0	.30	.40	9.00	10.00	1.00	2.00	15.00	56.00	1.00	1.00
0	.30	.70	9.00	10.00	1.00	2.00	15.00	58.00	1.00	2.00
0	.80	.60	8.00	12.00	1.00	2.00	15.00	58.00	.00	.00
0	.40	.90	8.00	12.00	1.00	2.00	15.00	59.00	1.00	2.00
0	.90	1.20	8.00	12.00	1.00	2.00	15.00	62.00	.00	2.00
0	.40	1.30	8.00	12.00	1.00	2.00	15.00	62.00	.00	.00
0	1.00	1.10	8.00	12.00	1.00	2.00	15.00	60.00	.00	2.00
0	1.00	.10	9.00	10.00	1.00	2.00	15.00	54.00	.00	2.00
1	.20	2.70	10.00	13.00	.90	1.00	15.00	58.00	1.00	2.00
0	.30	2.30	10.00	13.00	.90	1.00	15.00	61.00	.00	2.00
0	.40	2.50	10.00	13.00	.90	1.00	15.00	59.00	1.00	2.00
0	.50	2.00	10.00	13.00	.90	1.00	15.00	57.00	1.00	2.00
0	.20	3.30	10.00	13.00	.90	1.00	15.00	54.00	1.00	2.00
0	.40	4.30	10.00	13.00	.90	1.00	15.00	44.00	.00	2.00
0	.30	3.30	10.00	13.00	.90	1.00	15.00	51.00	1.00	2.00
0	.40	4.10	10.00	13.00	.90	1.00	15.00	56.00	1.00	2.00
0	.50	4.40	10.00	13.00	.90	1.00	15.00	42.00	1.00	1.00

CAPE HURD	1 MAY 80		PIMS							
1	.10	1.30	8.00	12.00	1.00	2.00	13.50	63.00	.00	1.00
1	.20	1.40	8.00	12.00	1.00	2.00	13.50	63.00	1.00	1.00
0	.50	.20	9.00	10.00	1.00	2.00	13.50	57.00	1.00	1.00
0	.70	.30	9.00	10.00	1.00	2.00	13.50	57.00	.00	1.00
0	.80	.40	9.00	10.00	1.00	2.00	13.50	58.00	1.00	1.00
0	.20	.60	8.00	12.00	1.00	2.00	13.50	60.00	1.00	1.00
0	.40	.60	8.00	12.00	1.00	2.00	13.50	60.00	.00	1.00
0	.40	.80	8.00	12.00	1.00	2.00	13.50	61.00	1.00	1.00
0	.50	1.00	8.00	12.00	1.00	2.00	13.50	62.00	1.00	1.00
1	.20	2.40	8.00	13.00	1.00	2.00	13.50	62.00	.00	1.00
1	.10	2.50	8.00	13.00	1.00	2.00	13.50	61.00	1.00	1.00
1	.10	3.90	10.00	13.00	.90	1.00	13.50	51.00	1.00	1.00
1	.10	4.10	10.00	13.00	.90	1.00	13.50	48.00	.00	1.00
1	.20	4.40	10.00	13.00	.90	1.00	13.50	45.00	1.00	1.00
0	.40	2.60	10.00	13.00	.90	1.00	13.50	60.00	1.00	1.00
0	.50	3.40	10.00	13.00	.90	1.00	13.50	56.00	1.00	1.00
0	.70	.60	8.00	12.00	1.00	2.00	13.50	59.00	1.00	1.00
0	1.00	1.50	8.00	13.00	1.00	2.00	13.50	64.00	.00	1.00
0	.90	1.60	8.00	13.00	1.00	2.00	13.50	64.00	.00	1.00
0	.80	1.50	8.00	13.00	1.00	2.00	13.50	63.00	.00	1.00

41495	1 MAY 80		PIMS							
1	.10	.90	15.00	4.00	.00	.50	15.00	62.00	1.00	2.00
1	.20	1.00	15.00	4.00	.00	.50	15.00	63.00	1.00	.00
0	.30	1.50	15.00	4.00	.00	.50	15.00	64.00	1.00	2.00
0	.50	3.70	15.00	7.50	.00	.50	15.00	54.00	1.00	2.00
0	.50	3.90	15.00	7.50	.00	.50	15.00	52.00	1.00	2.00
0	.50	4.20	15.00	7.50	.00	.50	15.00	49.00	.00	2.00
0	.50	4.50	15.00	7.50	.00	.50	15.00	48.00	.00	2.00
0	.40	4.40	15.00	7.50	.00	.50	15.00	46.00	.00	2.00

44508	5 MAY 80		PIWS							
1	.00	.00	15.00	4.00	.00	.50	10.00	56.00	1.00	.00
1	.30	1.40	15.00	4.00	.00	.50	10.00	62.00	.00	2.00
1	.10	2.10	15.00	5.00	.00	.50	10.00	64.00	1.00	1.00
0	1.00	.50	15.00	4.00	.00	.50	10.00	55.00	.00	2.00
0	.00	.20	15.00	4.00	.00	.50	10.00	52.00	.00	2.00
0	.70	1.20	15.00	4.00	.00	.50	10.00	60.00	.00	2.00
0	.80	1.30	15.00	4.00	.00	.50	10.00	61.00	.00	2.00
0	.50	2.30	15.00	5.00	.00	.50	10.00	65.00	1.00	2.00
0	.70	2.20	15.00	5.00	.00	.50	10.00	65.00	.00	2.00

PT TURNER	5 MAY 80		PIWS							
1	.10	.10	15.00	4.00	.00	.50	15.00	53.00	1.00	1.00
1	.30	.40	15.00	4.00	.00	.50	15.00	56.00	1.00	.00
1	1.00	.60	15.00	4.00	.00	.50	15.00	58.00	.00	2.00
1	.40	.80	15.00	4.00	.00	.50	15.00	59.00	1.00	2.00
1	.10	1.20	15.00	4.00	.00	.50	15.00	62.00	1.00	2.00
1	.60	1.30	15.00	4.00	.00	.50	15.00	63.00	1.00	2.00
1	.30	1.80	15.00	4.00	.00	.50	15.00	64.00	.00	2.00
1	.20	2.10	15.00	5.00	.00	.50	15.00	65.00	1.00	1.00
0	.80	.70	15.00	4.00	.00	.50	15.00	58.00	.00	2.00
0	1.00	1.70	15.00	4.00	.00	.50	15.00	64.00	.00	2.00
0	1.20	1.40	15.00	4.00	.00	.50	15.00	64.00	.00	2.00
0	.70	1.60	15.00	4.00	.00	.50	15.00	64.00	.00	2.00
0	.40	1.40	15.00	5.00	.00	.50	15.00	65.00	1.00	.00
0	.70	2.30	15.00	5.00	.00	.50	15.00	66.00	.00	2.00

41557	5 MAY 80		RAPIS							
1	.70	.30	.80	7.00	1.00	.50	15.00	64.00	2.00	1.00	2.00
1	.20	.30	.80	7.00	1.00	.50	15.00	64.00	2.00	.00	2.00
1	.00	.40	.80	7.00	1.00	.50	15.00	65.00	1.00	.00	2.00
1	.20	1.50	.70	2.00	1.00	.50	15.00	64.00	.00	.00	2.00
1	.30	1.70	.70	2.00	1.00	.50	15.00	56.00	2.00	.00	2.00
1	.20	1.90	.90	2.00	1.00	.50	15.00	57.00	1.00	.00	2.00
1	.70	2.20	.90	2.00	1.00	.50	15.00	54.00	1.00	.00	2.00
1	.30	2.30	.90	2.00	1.00	.50	15.00	53.00	.00	.00	1.00
1	.10	2.00	1.00	2.00	1.00	.50	15.00	49.00	2.00	.00	2.00
1	.00	2.40	1.00	2.00	1.00	.50	15.00	48.00	.00	.00	2.00
0	1.00	.70	.80	7.00	1.00	.50	15.00	65.00	1.00	.00	2.00
0	.00	.00	.80	7.00	1.00	.50	15.00	65.00	2.00	.00	2.00
0	.30	1.10	.80	7.00	1.00	.50	15.00	66.00	2.00	.00	2.00
0	.70	1.50	.70	2.00	1.00	.50	15.00	64.00	1.00	.00	2.00
0	.70	1.50	.70	2.00	1.00	.50	15.00	63.00	2.00	1.00	2.00
0	1.00	2.50	1.00	2.00	1.00	.50	15.00	51.00	2.00	.00	2.00

[illegible]	[illegible]	[illegible]	RATES							
1	.50	.00	.80	7.00	1.00	.50	15.00	64.00	.00	.00	2.00
1	.10	.20	.80	7.00	1.00	.50	15.00	64.00	2.00	1.00	2.00
1	.20	.30	.80	7.00	1.00	.50	15.00	65.00	1.00	.00	2.00
1	.70	.00	.80	7.00	1.00	.50	15.00	66.00	2.00	.00	2.00
1	.20	1.10	.70	2.00	1.00	.50	15.00	64.00	2.00	1.00	2.00
1	1.60	1.40	.70	2.00	1.00	.50	15.00	63.00	1.00	.00	2.00
0	.50	.60	.80	7.00	1.00	.50	15.00	65.00	.00	1.00	2.00
0	1.50	.00	.80	7.00	1.00	.50	15.00	66.00	.00	1.00	2.00
0	1.90	.50	.80	7.00	1.00	.50	15.00	65.00	2.00	1.00	2.00
0	1.40	1.00	.70	2.00	1.00	.50	15.00	64.00	2.00	1.00	.00
0	1.50	.20	.80	7.00	1.00	.50	15.00	64.00	1.00	.00	2.00
0	1.90	.50	.80	7.00	1.00	.50	15.00	64.00	2.00	.00	2.00
0	1.10	.40	.80	7.00	1.00	.50	15.00	65.00	2.00	.00	1.00
0	1.40	.70	.80	7.00	1.00	.50	15.00	66.00	2.00	1.00	2.00
0	.50	1.50	.70	2.00	1.00	.50	15.00	62.00	2.00	1.00	2.00
1	.20	1.50	.70	2.00	1.00	.50	15.00	62.00	2.00	.00	.00
1	.10	1.60	.70	2.00	1.00	.50	15.00	60.00	.00	.00	2.00
1	.00	2.40	.90	2.00	1.00	.50	15.00	56.00	1.00	.00	2.00
1	.20	2.70	.90	2.00	1.00	.50	15.00	53.00	2.00	.00	.00
1	.20	2.90	.90	2.00	1.00	.50	15.00	52.00	2.00	.00	2.00
0	.70	2.00	.70	2.00	1.00	.50	15.00	60.00	2.00	.00	2.00
0	1.70	2.10	.70	2.00	1.00	.50	15.00	56.00	2.00	.00	2.00
0	1.10	1.70	.70	2.00	1.00	.50	15.00	61.00	.00	.00	2.00
0	.90	2.20	.90	2.00	1.00	.50	15.00	58.00	.00	.00	2.00
0	1.90	2.30	.90	2.00	1.00	.50	15.00	56.00	.00	.00	1.00
0	1.10	2.60	.90	2.00	1.00	.50	15.00	54.00	1.00	.00	2.00
0	2.90	2.90	.90	2.00	1.00	.50	15.00	52.00	1.00	.00	2.00
0	2.00	1.90	.70	2.00	1.00	.50	15.00	60.00	1.00	.00	2.00
0	.90	2.10	.70	2.00	1.00	.50	15.00	58.00	1.00	.00	2.00
0	1.80	2.40	.90	2.00	1.00	.50	15.00	56.00	2.00	.00	2.00
0	.70	2.50	.90	2.00	1.00	.50	15.00	54.00	2.00	.00	2.00
0	2.10	2.80	.90	2.00	1.00	.50	15.00	53.00	2.00	.00	2.00
0	1.00	2.50	.90	2.00	1.00	.50	15.00	57.00	2.00	.00	.00

[illegible]	[illegible] MAY 80		RATES							
1	.40	.50	.80	7.00	1.00	.50	15.00	66.00	2.00	.00	2.00
1	.20	.90	.70	2.00	1.00	.50	15.00	62.00	1.00	.00	2.00
1	.30	1.10	.70	2.00	1.00	.50	15.00	62.00	2.00	.00	2.00
1	.10	1.40	.70	2.00	1.00	.50	15.00	60.00	2.00	.00	2.00
0	.70	.60	.80	7.00	1.00	.50	15.00	65.00	2.00	.00	2.00
0	.60	.50	.80	7.00	1.00	.50	15.00	66.00	2.00	.00	.00
0	.20	.50	.80	7.00	1.00	.50	15.00	64.00	.00	.00	2.00
0	.20	.50	.70	2.00	1.00	.50	15.00	64.00	.00	.00	2.00
1	.20	1.60	.90	2.00	1.00	.50	15.00	55.00	2.00	.00	2.00
1	.10	2.00	.90	2.00	1.00	.50	15.00	52.00	.00	.00	.00
1	.80	2.40	1.00	2.00	1.00	.50	15.00	47.00	2.00	.00	2.00
1	.00	2.60	1.00	2.00	1.00	.50	15.00	45.00	1.00	.00	1.00
1	1.00	2.90	1.00	2.00	1.00	.50	15.00	42.00	1.00	.00	2.00
1	.80	3.10	1.00	2.00	1.00	.50	15.00	40.00	2.00	.00	2.00
0	.80	1.90	.90	2.00	1.00	.50	15.00	52.00	.00	.00	1.00
0	.60	2.00	.90	2.00	1.00	.50	15.00	52.00	.00	.00	2.00
0	.40	2.20	1.00	2.00	1.00	.50	15.00	49.00	2.00	.00	2.00
0	1.00	2.40	1.00	2.00	1.00	.50	15.00	42.00	2.00	.00	2.00
0	.80	2.10	.90	2.00	1.00	.50	15.00	50.00	1.00	.00	2.00
0	1.30	2.30	1.00	2.00	1.00	.50	15.00	49.00	2.00	.00	2.00
0	1.50	.70	.70	2.00	1.00	.50	15.00	63.00	2.00	.00	2.00
0	.20	.90	.70	2.00	1.00	.50	15.00	64.00	.00	.00	2.00
0	1.20	.80	.70	2.00	1.00	.50	15.00	64.00	1.00	.00	2.00
0	1.20	1.00	.70	2.00	1.00	.50	15.00	62.00	1.00	.00	2.00
0	.80	1.20	.70	2.00	1.00	.50	15.00	61.00	1.00	.00	2.00
0	1.00	1.20	.70	2.00	1.00	.50	15.00	60.00	2.00	.00	2.00
0	.90	1.40	.70	2.00	1.00	.50	15.00	60.00	2.00	.00	2.00
0	1.10	.00	.80	7.00	1.00	.50	15.00	65.00	.00	.00	2.00

[illegible] WEEKS	[illegible] MAY 80		RATES							
1	.10	.50	.80	7.00	1.00	.50	12.00	64.00	2.00	.00	2.00
1	.00	.70	.80	7.00	1.00	.50	12.00	65.00	1.00	.00	2.00
1	.50	1.20	.80	7.00	1.00	.50	12.00	64.00	.00	.00	2.00
1	.60	1.30	.70	2.00	1.00	.50	12.00	63.00	2.00	.00	2.00
1	.30	2.10	.70	2.00	1.00	.50	12.00	60.00	2.00	1.00	2.00
1	.50	2.30	.70	2.00	1.00	.50	12.00	56.00	1.00	.00	1.00
1	.00	2.50	.90	2.00	1.00	.50	12.00	56.00	.00	1.00	2.00
1	.90	2.90	.90	2.00	1.00	.50	12.00	53.00	1.00	.00	2.00
1	.20	3.00	.90	2.00	1.00	.50	12.00	52.00	2.00	1.00	2.00
0	.50	1.90	.70	2.00	1.00	.50	12.00	61.00	.00	.00	2.00
0	.60	2.00	.90	2.00	1.00	.50	12.00	55.00	2.00	.00	2.00
0	.90	3.30	1.00	2.00	1.00	.50	12.00	47.00	2.00	1.00	2.00
0	.80	.40	.80	7.00	1.00	.50	12.00	64.00	2.00	.00	2.00
0	.60	1.50	.70	2.00	1.00	.50	12.00	64.00	2.00	.00	1.00

HH-1R	TO DAY 40		PIPS							
0	.10	.40	5.00	12.50	.50	2.00	120.00	500.00	55.00	1.00	2.00
0	.70	.60	5.00	12.50	.50	2.00	120.00	500.00	55.00	1.00	2.00
1	.00	1.50	5.00	12.50	.50	2.00	120.00	200.00	62.00	1.00	2.00
0	.50	1.00	5.00	12.50	.50	2.00	120.00	200.00	60.00	.00	2.00
0	.10	1.10	5.00	12.50	.50	2.00	120.00	200.00	60.00	1.00	2.00
0	.10	1.10	5.00	12.50	.50	2.00	120.00	200.00	60.00	.00	2.00
0	.70	1.50	10.00	15.00	.50	1.00	120.00	200.00	63.00	.00	2.00
0	.50	1.50	10.00	15.00	.50	1.00	120.00	200.00	64.00	1.00	2.00
0	.50	1.50	10.00	15.00	.50	1.00	120.00	200.00	64.00	1.00	2.00
0	.60	1.70	10.00	15.00	.50	1.00	120.00	200.00	65.00	1.00	2.00
0	.40	1.70	10.00	15.00	.50	1.00	120.00	200.00	65.00	1.00	2.00
0	.50	1.50	10.00	15.00	.50	1.00	120.00	200.00	65.00	.00	2.00
1	.20	1.30	11.00	17.00	.20	1.00	120.00	500.00	65.00	1.00	.00
1	.10	2.00	11.00	17.00	.20	1.00	120.00	500.00	64.00	1.00	.00
1	.10	2.10	11.00	17.00	.20	1.00	120.00	500.00	64.00	1.00	1.00
0	.70	1.80	11.00	17.00	.20	1.00	120.00	500.00	65.00	1.00	2.00
0	.50	1.90	11.00	17.00	.20	1.00	120.00	500.00	65.00	1.00	2.00
0	.50	1.90	11.00	17.00	.20	1.00	120.00	500.00	65.00	1.00	2.00
0	.50	1.90	11.00	17.00	.20	1.00	120.00	500.00	65.00	1.00	2.00
0	.70	2.10	11.00	17.00	.20	1.00	120.00	500.00	64.00	1.00	2.00
0	.60	2.10	11.00	17.00	.20	1.00	120.00	500.00	64.00	1.00	2.00
0	.50	2.20	11.00	17.00	.20	1.00	120.00	500.00	63.00	.00	2.00
0	.50	1.90	11.00	17.00	.20	1.00	120.00	500.00	65.00	.00	2.00
0	.50	2.50	11.00	17.00	.20	1.00	120.00	500.00	63.00	.00	2.00
0	.60	2.40	9.00	10.00	.50	1.00	120.00	500.00	62.00	1.00	2.00
0	.10	2.40	9.00	10.00	.50	1.00	120.00	500.00	62.00	1.00	2.00
0	.40	2.30	9.00	10.00	.50	1.00	120.00	500.00	61.00	.00	2.00
0	.20	2.60	9.00	10.00	.50	1.00	120.00	500.00	60.00	1.00	2.00
0	.10	2.70	9.00	10.00	.50	1.00	120.00	500.00	60.00	1.00	2.00
0	.50	2.70	9.00	10.00	.50	1.00	120.00	200.00	58.00	.00	1.00
0	.50	2.70	9.00	10.00	.50	1.00	120.00	200.00	58.00	1.00	2.00
0	.20	2.80	9.00	10.00	.50	1.00	120.00	200.00	58.00	1.00	.00
0	.70	2.80	9.00	10.00	.50	1.00	120.00	200.00	58.00	1.00	2.00
0	.50	3.00	9.00	10.00	.50	1.00	120.00	200.00	56.00	1.00	2.00
0	.70	3.00	9.00	10.00	.50	1.00	120.00	200.00	56.00	1.00	2.00
1	.10	3.60	10.00	11.00	.60	1.00	120.00	200.00	50.00	1.00	2.00
0	1.00	3.50	10.00	11.00	.60	1.00	120.00	200.00	55.00	.00	2.00
0	.20	3.40	10.00	11.00	.60	1.00	120.00	200.00	52.00	1.00	2.00
0	.00	3.30	10.00	11.00	.60	1.00	120.00	200.00	51.00	.00	2.00
0	.10	3.50	10.00	11.00	.60	1.00	120.00	200.00	51.00	1.00	2.00
0	.50	3.60	10.00	11.00	.60	1.00	120.00	200.00	50.00	1.00	2.00
0	.70	.80	6.00	12.50	.50	2.00	120.00	500.00	58.00	1.00	.00

HH-3Z	TO DAY 40		PIPS							
0	.00	.30	6.00	12.50	.30	2.00	90.00	500.00	62.00	1.00	1.00
0	.30	.40	6.00	12.50	.30	2.00	90.00	500.00	62.00	.00	.00
0	.10	.40	10.00	15.00	.30	1.00	90.00	500.00	63.00	1.00	2.00
0	.50	.70	10.00	15.00	.30	1.00	90.00	500.00	66.00	1.00	2.00
0	.20	.90	10.00	15.00	.30	1.00	90.00	500.00	66.00	1.00	1.00
0	.20	1.10	10.00	15.00	.30	1.00	90.00	500.00	66.00	1.00	2.00
0	.50	.50	6.00	12.50	.30	2.00	90.00	500.00	62.00	1.00	2.00

41385	14 MAY 80		RAFTS								
1	.50	1.50	.80	5.00	1.00	3.00	12.00	68.00	1.00	.00	2.00
0	.50	.00	.80	5.00	1.00	3.00	12.00	65.00	2.00	.00	2.00
1	.20	1.00	.80	5.50	1.00	3.00	12.00	68.00	1.00	.00	1.00
1	.20	2.30	.10	2.50	1.00	2.00	12.00	64.00	.00	.00	2.00
0	.40	1.40	.80	5.50	1.00	3.00	12.00	66.00	2.00	.00	.00
0	.10	2.00	.10	2.50	1.00	2.00	12.00	66.00	2.00	.00	2.00

44348	14 MAY 80		RAFTS								
1	.20	1.20	.20	5.50	1.00	3.00	9.00	68.00	2.00	.00	2.00
1	.20	1.30	.20	5.50	1.00	3.00	9.00	68.00	1.00	.00	2.00
1	.50	3.70	.40	9.00	.50	2.00	9.00	50.00	.00	.00	2.00
1	.00	4.30	.40	9.00	.50	2.00	9.00	44.00	2.00	.00	2.00
0	.70	.20	.20	5.00	1.00	3.00	9.00	65.00	.00	.00	2.00
0	.40	.50	.20	5.00	1.00	3.00	9.00	67.00	.00	.00	2.00
0	.70	.50	.20	5.00	1.00	3.00	9.00	66.00	2.00	.00	2.00
0	.20	2.10	.20	2.50	1.00	2.00	9.00	66.00	2.00	.00	2.00
0	.70	4.20	.40	9.00	.50	2.00	9.00	45.00	2.00	.00	2.00
0	.70	4.70	.40	9.00	.50	2.00	9.00	40.00	1.00	.00	2.00

PT KNOLL	14 MAY 80		RAFTS								
1	.20	.60	1.00	5.00	1.00	3.00	12.00	64.00	2.00	.00	2.00
1	.20	.80	1.00	5.00	1.00	3.00	12.00	66.00	2.00	.00	2.00
1	.20	1.00	2.00	5.50	1.00	3.00	12.00	68.00	1.00	.00	2.00
0	.50	.10	1.00	5.00	1.00	3.00	12.00	61.00	2.00	.00	2.00
0	1.20	1.50	2.00	5.00	1.00	3.00	12.00	68.00	2.00	.00	2.00
0	.70	.50	1.00	5.00	1.00	3.00	12.00	62.00	2.00	1.00	2.00
0	1.10	1.50	2.00	5.50	1.00	3.00	12.00	68.00	2.00	.00	2.00
0	.50	.90	1.00	5.00	1.00	3.00	12.00	66.00	.00	1.00	2.00
0	1.10	1.00	1.00	5.00	1.00	3.00	12.00	67.00	.00	.00	2.00
0	.60	1.20	2.00	5.00	1.00	3.00	12.00	67.00	.00	.00	2.00
0	1.50	2.00	2.00	5.50	1.00	3.00	12.00	68.00	.00	1.00	2.00
0	.90	1.40	2.00	5.00	1.00	3.00	12.00	68.00	1.00	.00	2.00

MC-130	20 MAY 80		PINS								
1	.50	.00	8.00	6.00	.50	1.00	150.00	500.00	68.00	.00	2.00
1	.20	.00	8.00	6.00	.50	1.00	150.00	800.00	68.00	1.00	2.00
1	.00	2.20	8.00	7.00	.70	1.00	150.00	800.00	50.00	1.00	2.00
0	.00	.00	10.00	6.00	.40	1.00	150.00	500.00	64.00	1.00	2.00
0	.40	.10	10.00	6.00	.40	1.00	150.00	500.00	64.00	1.00	2.00
0	.20	.10	10.00	6.00	.40	1.00	150.00	500.00	64.00	.00	2.00
0	.00	.10	10.00	6.00	.40	1.00	150.00	500.00	64.00	.00	2.00
0	.00	.10	10.00	6.00	.40	1.00	150.00	500.00	64.00	1.00	2.00
0	1.10	.20	10.00	6.00	.40	1.00	150.00	500.00	65.00	.00	2.00
0	.00	.20	10.00	6.00	.40	1.00	150.00	500.00	65.00	1.00	2.00
0	1.00	.50	8.00	6.00	.50	1.00	150.00	500.00	67.00	.00	2.00
0	1.50	.50	8.00	6.00	.50	1.00	150.00	500.00	68.00	.00	2.00
0	.40	.40	8.00	6.00	.50	1.00	150.00	500.00	68.00	.00	2.00
0	.40	.40	8.00	6.00	.50	1.00	150.00	500.00	68.00	1.00	2.00
0	1.10	.50	8.00	6.00	.50	1.00	150.00	500.00	68.00	.00	2.00
0	1.50	.60	8.00	6.00	.50	1.00	150.00	500.00	68.00	.00	2.00
0	.50	.60	8.00	6.00	.50	1.00	150.00	500.00	68.00	.00	2.00
0	1.50	.70	8.00	6.00	.50	1.00	150.00	500.00	69.00	.00	2.00
0	1.40	.70	8.00	6.00	.50	1.00	150.00	800.00	69.00	.00	2.00
0	.00	.60	8.00	6.00	.50	1.00	150.00	800.00	68.00	1.00	2.00
0	.70	.60	10.00	7.00	.40	2.00	150.00	800.00	68.00	1.00	1.00
0	.50	.60	10.00	7.00	.40	2.00	150.00	800.00	68.00	1.00	2.00
0	1.50	.90	10.00	7.00	.40	2.00	150.00	800.00	68.00	.00	2.00
0	1.40	1.00	10.00	7.00	.40	2.00	150.00	800.00	67.00	.00	2.00
0	.10	1.00	10.00	7.00	.40	2.00	150.00	800.00	66.00	1.00	2.00
0	1.40	1.10	10.00	7.00	.40	2.00	150.00	800.00	66.00	.00	2.00
0	.10	1.10	10.00	7.00	.40	2.00	150.00	800.00	66.00	.00	2.00
0	.70	1.10	10.00	7.00	.40	2.00	150.00	800.00	66.00	1.00	2.00
0	1.40	1.20	10.00	7.00	.40	2.00	150.00	800.00	66.00	.00	2.00
0	.50	1.20	10.00	7.00	.40	2.00	150.00	800.00	65.00	1.00	2.00
0	1.10	1.20	10.00	7.00	.40	2.00	150.00	800.00	65.00	.00	1.00
0	.80	1.20	10.00	7.00	.40	2.00	150.00	800.00	65.00	1.00	2.00
0	.50	1.30	10.00	7.00	.40	2.00	150.00	800.00	65.00	1.00	2.00
0	.60	1.30	10.00	7.00	.40	2.00	150.00	200.00	64.00	1.00	2.00
0	.20	1.40	10.00	7.00	.40	2.00	150.00	200.00	63.00	1.00	2.00
0	1.20	1.50	10.00	7.00	.40	2.00	150.00	200.00	62.00	.00	2.00
0	.40	1.50	10.00	7.00	.40	2.00	150.00	200.00	62.00	1.00	2.00
0	1.40	1.60	10.00	7.00	.40	2.00	150.00	200.00	62.00	.00	2.00
0	1.10	1.60	10.00	7.00	.40	2.00	150.00	200.00	60.00	.00	2.00
0	1.10	1.60	10.00	7.00	.40	2.00	150.00	200.00	60.00	.00	2.00
0	.40	1.60	10.00	7.00	.40	2.00	150.00	200.00	60.00	1.00	2.00
0	.70	1.70	10.00	7.00	.40	2.00	150.00	200.00	60.00	1.00	2.00
0	.40	1.80	10.00	7.00	.40	2.00	150.00	200.00	59.00	.00	2.00
0	.80	1.80	10.00	7.00	.40	2.00	150.00	200.00	57.00	1.00	2.00
0	.50	1.90	8.00	7.00	.70	1.00	150.00	200.00	57.00	1.00	2.00
0	.60	1.90	8.00	7.00	.70	1.00	150.00	200.00	56.00	1.00	2.00
0	1.40	1.90	8.00	7.00	.70	1.00	150.00	800.00	55.00	.00	2.00
0	1.00	2.00	8.00	7.00	.70	1.00	150.00	800.00	54.00	.00	2.00
0	.50	2.00	8.00	7.00	.70	1.00	150.00	800.00	54.00	1.00	2.00

0	.80	2.00	8.00	7.00	.70	1.00	150.00	800.00	54.00	.00	2.00
0	.50	2.00	8.00	7.00	.70	1.00	150.00	800.00	54.00	1.00	.00
0	.20	2.10	8.00	7.00	.70	1.00	150.00	800.00	52.00	1.00	1.00
0	.50	2.20	8.00	7.00	.70	1.00	150.00	800.00	51.00	1.00	2.00
0	1.20	2.30	8.00	7.00	.70	1.00	150.00	800.00	50.00	.00	2.00
0	.00	2.30	8.00	7.00	.70	1.00	150.00	800.00	48.00	1.00	2.00
0	1.20	2.40	8.00	7.00	.70	1.00	150.00	800.00	48.00	.00	2.00
0	.50	2.40	8.00	7.00	.70	1.00	150.00	800.00	48.00	1.00	2.00

HH-S	24 HAY AD	PIWS								
1	.20	.00	8.00	6.00	.50	1.00	90.00	200.00	68.00	.00	2.00
0	.30	.50	10.00	7.00	.40	2.00	90.00	200.00	68.00	1.00	2.00
0	.50	.20	8.00	6.00	.50	1.00	90.00	200.00	69.00	1.00	.00
0	.20	.40	10.00	7.00	.40	2.00	90.00	200.00	68.00	1.00	2.00
0	.60	.50	10.00	7.00	.40	2.00	90.00	200.00	67.00	1.00	2.00
0	.40	.70	10.00	7.00	.40	2.00	90.00	200.00	66.00	1.00	2.00
0	.50	.80	10.00	7.00	.40	2.00	90.00	200.00	66.00	1.00	2.00
0	.20	.90	10.00	7.00	.40	2.00	90.00	200.00	65.00	1.00	2.00
0	.50	1.10	10.00	7.00	.40	2.00	90.00	500.00	63.00	1.00	2.00
0	.20	1.50	10.00	7.00	.40	2.00	90.00	500.00	60.00	1.00	2.00
0	.50	1.60	10.00	7.00	.40	2.00	90.00	500.00	59.00	1.00	.00
0	.10	1.90	8.00	7.00	.70	1.00	90.00	500.00	56.00	1.00	2.00
0	.50	2.00	8.00	7.00	.70	1.00	90.00	500.00	55.00	1.00	1.00
0	.50	2.10	8.00	7.00	.70	1.00	90.00	500.00	54.00	1.00	2.00
0	.20	2.30	8.00	7.00	.70	1.00	90.00	500.00	52.00	1.00	.00

41441	22 MAY 80		PINS							
1	.70	1.10	7.00	11.00	.00	1.00	15.00	62.00	.00	2.00
1	.80	1.30	7.00	11.00	.00	1.00	15.00	66.00	.00	2.00
1	.10	4.40	12.00	12.00	.00	1.00	15.00	55.00	1.00	2.00
1	.10	5.50	12.00	12.00	.00	1.00	15.00	46.00	1.00	1.00
0	.50	.20	7.00	9.00	.00	2.00	15.00	55.00	1.00	2.00
0	.70	.00	7.00	9.00	.00	2.00	15.00	60.00	.00	2.00
0	1.10	.50	7.00	9.00	.00	2.00	15.00	59.00	.00	2.00
0	.20	1.30	7.00	11.00	.00	1.00	15.00	64.00	1.00	2.00
0	.40	1.90	7.00	11.00	.00	1.00	15.00	68.00	1.00	2.00
0	.40	.10	7.00	9.00	.00	2.00	15.00	54.00	1.00	2.00
0	.10	.70	7.00	9.00	.00	2.00	15.00	60.00	1.00	2.00
0	.40	.90	7.00	9.00	.00	2.00	15.00	62.00	1.00	2.00
0	.50	1.60	7.00	11.00	.00	1.00	15.00	66.00	.00	.00
0	.60	1.60	7.00	11.00	.00	1.00	15.00	67.00	.00	2.00
0	.40	2.50	7.00	12.50	.00	1.00	15.00	68.00	.00	2.00
0	1.10	2.50	7.00	12.50	.00	1.00	15.00	68.00	.00	2.00
0	.50	3.10	7.00	12.50	.00	1.00	15.00	66.00	1.00	2.00
0	.70	3.30	8.00	11.50	.00	1.00	15.00	65.00	1.00	2.00
0	.40	4.20	8.00	11.50	.00	1.00	15.00	57.00	1.00	2.00
0	.60	4.60	12.00	12.00	.00	1.00	15.00	53.00	.00	2.00
0	.40	4.50	8.00	11.50	.00	1.00	15.00	56.00	1.00	2.00
0	.40	4.80	12.00	12.00	.00	1.00	15.00	51.00	1.00	2.00
0	.40	4.40	12.00	12.00	.00	1.00	15.00	56.00	.00	2.00
0	.20	4.60	12.00	12.00	.00	1.00	15.00	52.00	.00	2.00
0	.70	5.10	12.00	12.00	.00	1.00	15.00	48.00	.00	2.00
0	.80	5.60	12.00	11.00	.00	1.00	15.00	42.00	.00	2.00

PT KNOLL	22 MAY 80		PINS							
1	.20	.20	7.00	9.00	.00	2.00	15.00	62.00	1.00	2.00
1	.10	1.20	7.00	12.50	.00	1.00	15.00	68.00	1.00	2.00
1	.00	2.50	7.00	12.50	.00	1.00	15.00	67.00	1.00	2.00
1	.20	2.40	8.00	11.50	.00	1.00	15.00	66.00	1.00	2.00
1	.20	4.20	12.00	12.00	.00	1.00	18.00	50.00	1.00	2.00
1	.20	5.10	12.00	11.00	.00	1.00	18.00	40.00	.00	2.00
1	.20	5.50	12.00	11.00	.00	1.00	18.00	36.00	1.00	2.00
0	.40	.00	7.00	11.00	.00	1.00	15.00	65.00	1.00	2.00
0	.50	.50	7.00	11.00	.00	1.00	15.00	64.00	1.00	2.00
0	.50	1.70	7.00	12.50	.00	1.00	15.00	68.00	1.00	2.00
0	.50	1.90	7.00	12.50	.00	1.00	15.00	69.00	1.00	2.00
0	.50	2.10	7.00	12.50	.00	1.00	15.00	66.00	1.00	2.00
0	.30	2.90	8.00	11.50	.00	1.00	15.00	63.00	1.00	2.00
0	.50	4.40	12.00	12.00	.00	1.00	18.00	47.00	1.00	2.00
0	.10	5.20	12.00	11.00	.00	1.00	18.00	38.00	1.00	2.00
0	.50	5.30	12.00	11.00	.00	1.00	18.00	38.00	.00	1.00
0	.20	5.70	12.00	10.00	.00	1.00	18.00	34.00	1.00	2.00
0	.20	5.80	12.00	10.00	.00	1.00	18.00	32.00	1.00	2.00
0	.40	5.90	12.00	10.00	.00	1.00	18.00	31.00	.00	2.00
0	.20	6.30	12.00	10.00	.00	1.00	18.00	27.00	1.00	2.00

41411	7 OCT 80		41/42°07B						
1	.30	1.50	10.00	2.00	1.00	1.00	17.00	41.00	2.00
1	2.30	5.60	14.00	6.50	.80	1.00	15.00	24.00	2.00
1	1.00	4.30	14.00	6.50	.80	1.00	15.00	20.00	2.00
0	2.90	.10	14.00	2.00	1.00	.50	17.00	39.00	1.00
0	2.80	5.00	14.00	5.00	1.00	1.00	15.00	33.00	2.00
0	1.00	1.40	10.00	4.00	1.00	1.00	17.00	42.00	2.00
0	5.40	2.70	14.00	5.00	1.00	1.00	15.00	33.00	2.00
0	1.20	.30	14.00	2.00	1.00	.50	17.00	34.00	2.00
0	5.50	1.10	14.00	4.00	1.00	.50	17.00	42.00	2.00
0	5.40	5.00	14.00	5.00	1.00	1.00	15.00	38.00	2.00
CAPE HORN	7 OCT 80		41/42°07B						
1	2.00	5.30	10.00	2.00	1.00	1.00	13.00	40.00	2.00
1	1.10	4.60	14.00	5.00	1.00	1.00	13.50	31.00	2.00
0	2.50	4.20	14.00	5.00	1.00	1.00	13.50	35.00	2.00
1	2.60	5.30	14.00	6.50	.80	1.00	13.50	25.00	2.00
1	2.40	.50	14.00	2.00	1.00	.50	13.00	35.00	2.00
1	1.90	1.90	14.00	4.00	1.00	.50	13.00	41.00	2.00
PT WELLS	7 OCT 80		41/42°07B						
1	1.40	.40	14.00	2.00	1.00	.50	13.80	35.00	2.00
1	1.90	1.90	10.00	4.00	1.00	1.00	14.00	42.00	2.00
1	3.30	4.10	14.00	5.00	1.00	1.00	13.80	32.00	2.00
1	1.20	5.00	14.00	6.50	.80	1.00	13.80	24.00	2.00
1	2.70	5.60	14.00	5.00	1.00	1.00	13.80	35.00	2.00
0	2.80	4.70	14.00	6.50	.80	1.00	13.80	27.00	2.00
0	2.50	1.00	14.00	4.00	1.00	.50	13.80	41.00	2.00
0	5.90	1.10	14.00	2.00	1.00	.50	13.80	39.00	.00
0	2.80	.10	14.00	2.00	1.00	.50	13.80	33.00	2.00
1	1.10	2.90	10.00	4.00	1.00	1.00	13.80	42.00	2.00
MC-130	8 OCT 80		41/42°07B						
1	4.40	.20	13.00	14.00	.30	2.00	150.00	500.00	41.00	2.00
1	2.70	.20	13.00	14.00	.30	2.00	150.00	500.00	41.00	2.00
1	1.20	.30	13.00	14.00	.30	2.00	150.00	500.00	42.00	2.00
0	6.70	.10	13.00	14.00	.30	2.00	150.00	500.00	40.00	2.00
1	4.40	.30	13.00	14.00	.30	2.00	150.00	1000.00	42.00	2.00
1	2.20	.30	13.00	14.00	.30	2.00	150.00	1000.00	42.00	2.00
1	4.30	.00	13.00	14.00	.30	2.00	150.00	1000.00	42.00	2.00
1	3.40	.70	13.00	14.00	.30	2.00	150.00	1000.00	42.00	2.00
1	.00	.00	12.00	19.00	.10	2.00	150.00	1000.00	41.00	2.00
1	2.00	1.10	12.00	19.00	.10	2.00	150.00	1000.00	40.00	2.00
0	4.50	.90	12.00	19.00	.10	2.00	150.00	1000.00	41.00	2.00
0	5.10	.00	12.00	19.00	.10	2.00	150.00	1000.00	41.00	2.00
0	2.10	.90	12.00	19.00	.10	2.00	150.00	1000.00	41.00	2.00
1	2.10	1.10	12.00	18.00	.10	3.00	150.00	500.00	38.00	2.00
1	1.00	1.50	12.00	18.00	.10	3.00	150.00	500.00	37.00	2.00
1	.70	1.40	12.00	18.00	.10	3.00	150.00	500.00	36.00	2.00
0	5.00	1.40	12.00	18.00	.10	3.00	150.00	500.00	36.00	2.00
0	4.40	1.50	12.00	18.00	.10	3.00	150.00	500.00	37.00	2.00
0	.50	1.50	12.00	18.00	.10	3.00	150.00	1000.00	31.00	2.00
0	4.40	1.70	11.00	17.00	.30	3.00	150.00	1000.00	30.00	2.00

41411 9 OCT 80 PIWS

1	.00	.80	13.00	12.50	.20	2.00	15.00	36.00	.00	2.00
1	.10	1.40	15.00	12.00	.00	1.00	15.00	39.00	1.00	2.00
1	.00	1.60	15.00	12.00	.00	1.00	15.00	40.00	1.00	2.00
0	.60	1.20	15.00	12.00	.00	1.00	15.00	28.00	1.00	2.00
0	.50	2.00	15.00	12.00	.00	1.00	15.00	41.00	1.00	2.00
0	1.00	2.30	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	.90	1.90	15.00	10.00	.00	1.00	15.00	41.00	.00	2.00
0	.20	2.40	15.00	11.00	.00	1.00	15.00	42.00	1.00	2.00
0	.40	2.60	15.00	11.00	.00	1.00	15.00	42.00	1.00	2.00
0	1.00	3.20	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	1.00	2.80	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	.20	3.20	15.00	11.00	.00	1.00	15.00	42.00	1.00	2.00
0	.40	2.50	15.00	11.00	.00	1.00	15.00	42.00	1.00	2.00
1	.10	2.70	15.00	11.00	.00	1.00	15.00	42.00	1.00	2.00
0	.90	3.30	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	.30	1.00	15.00	12.00	.00	1.00	15.00	38.00	1.00	2.00
0	1.10	1.60	15.00	10.00	.00	1.00	15.00	41.00	.00	2.00
0	.50	1.80	15.00	10.00	.00	1.00	15.00	41.00	1.00	2.00
0	1.20	2.50	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	1.10	2.70	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
1	.10	1.00	17.00	8.00	.00	1.00	15.00	32.00	1.00	2.00
1	.10	5.00	17.00	11.00	.00	1.00	15.00	27.00	1.00	2.00
0	.10	3.70	15.00	9.00	.00	1.00	15.00	37.00	.00	2.00
0	.90	3.70	15.00	9.00	.00	1.00	15.00	37.00	.00	2.00
0	.30	4.10	15.00	9.00	.00	1.00	15.00	34.00	.00	2.00
0	.70	3.80	15.00	9.00	.00	1.00	15.00	36.00	.00	2.00
0	1.20	3.90	15.00	9.00	.00	1.00	15.00	35.00	.00	2.00
0	.60	4.00	15.00	9.00	.00	1.00	15.00	33.00	1.00	2.00
0	.30	4.30	17.00	8.00	.00	1.00	15.00	35.00	1.00	2.00
0	.90	4.40	17.00	8.00	.00	1.00	15.00	32.00	.00	2.00
0	1.30	4.10	15.00	9.00	.00	1.00	15.00	34.00	.00	2.00
0	.70	4.20	15.00	9.00	.00	1.00	15.00	34.00	.00	2.00
0	.10	4.50	17.00	8.00	.00	1.00	15.00	32.00	1.00	2.00
0	1.00	4.70	17.00	8.00	.00	1.00	15.00	30.00	.00	2.00
0	.30	4.60	17.00	8.00	.00	1.00	15.00	30.00	.00	2.00
0	.90	5.10	17.00	11.00	.00	1.00	15.00	26.00	.00	2.00
0	1.00	4.70	17.00	11.00	.00	1.00	15.00	30.00	.00	2.00
0	.90	5.30	17.00	11.00	.00	1.00	15.00	25.00	.00	2.00

41441	9 OLT AU	PINS							
1	.20	1.50	15.00	11.00	.00	1.00	15.00	42.00	1.00	2.00
0	1.00	.10	15.00	12.00	.00	1.00	15.00	40.00	.00	2.00
0	1.00	.20	15.00	10.00	.00	1.00	15.00	41.00	.00	1.00
0	.50	.50	15.00	10.00	.00	1.00	15.00	42.00	.00	1.00
0	.50	.50	15.00	10.00	.00	1.00	15.00	41.00	.00	2.00
0	1.00	.10	15.00	12.00	.00	1.00	15.00	40.00	.00	2.00
0	.30	.40	15.00	10.00	.00	1.00	15.00	41.00	1.00	2.00
0	.20	.70	15.00	10.00	.00	1.00	15.00	42.00	1.00	1.00
0	.80	.90	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	1.50	1.50	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	1.10	.50	15.00	10.00	.00	1.00	15.00	42.00	.00	2.00
0	.60	.60	15.00	10.00	.00	1.00	15.00	42.00	.00	2.00
0	.40	1.10	15.00	11.00	.00	1.00	15.00	42.00	1.00	2.00
0	.90	1.60	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	1.20	1.70	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	1.40	1.90	15.00	11.00	.00	1.00	15.00	41.00	.00	2.00
0	1.50	.70	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	.70	.90	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	.20	1.20	15.00	11.00	.00	1.00	15.00	42.00	1.00	2.00
0	1.10	1.40	15.00	11.00	.00	1.00	15.00	42.00	.00	2.00
0	.40	1.80	15.00	11.00	.00	1.00	15.00	41.00	1.00	2.00
0	.80	2.00	15.00	11.00	.00	1.00	15.00	40.00	.00	2.00
0	.90	2.30	15.00	9.00	.00	1.00	15.00	39.00	.00	2.00
0	1.10	2.50	15.00	9.00	.00	1.00	15.00	39.00	.00	2.00
0	.30	1.90	15.00	11.00	.00	1.00	15.00	41.00	.00	2.00
1	.00	3.60	17.00	8.00	.00	1.00	15.00	30.00	1.00	1.00
1	.20	3.30	17.00	12.00	.00	1.50	15.00	14.00	1.00	1.00
0	1.10	3.10	17.00	12.00	.00	1.50	15.00	16.00	.00	2.00
0	.60	2.80	15.00	9.00	.00	1.00	15.00	35.00	1.00	2.00
0	.50	3.50	17.00	8.00	.00	1.00	15.00	33.00	1.00	2.00
0	.10	4.50	17.00	11.00	.00	1.00	15.00	24.00	1.00	.00
0	.50	4.30	17.00	11.00	.00	1.00	15.00	23.00	1.00	1.00
0	.10	3.80	17.00	11.00	.00	1.50	15.00	8.00	1.00	.00
0	1.00	3.60	17.00	11.00	.00	1.00	15.00	30.00	.00	2.00
0	1.00	4.20	17.00	11.00	.00	1.00	15.00	25.00	.00	2.00
0	.70	4.40	17.00	1..00	.00	1.00	15.00	23.00	.00	2.00
0	.80	3.00	17.00	12.00	.00	1.50	15.00	16.00	1.00	2.00
0	.20	3.10	17.00	12.00	.00	1.50	15.00	15.00	1.00	2.00
0	1.40	3.00	15.00	9.00	.00	1.00	15.00	34.00	.00	1.00
0	.90	3.20	17.00	8.00	.00	1.00	15.00	33.00	.00	2.00
0	.80	3.80	17.00	11.00	.00	1.00	15.00	28.00	.00	1.00
0	.50	4.00	17.00	11.00	.00	1.00	15.00	25.00	1.00	2.00
0	.40	3.70	17.00	11.00	.00	1.50	15.00	10.00	1.00	.00
0	.10	4.80	17.00	12.00	.00	1.50	15.00	18.00	1.00	2.00
0	.40	4.30	17.00	11.00	.00	1.00	15.00	21.00	1.00	1.00

CAPE HORN	9 OCT 80		PIWS							
1	.50	2.50	15.00	11.00	.00	1.00	13.50	42.00	1.00	2.00
1	.00	.60	13.00	12.50	.20	2.00	13.50	36.00	1.00	2.00
1	.10	2.20	15.00	11.00	.00	1.00	13.50	42.00	1.00	2.00
1	.20	2.90	15.00	11.00	.00	1.00	13.50	42.00	1.00	2.00
1	.10	3.50	15.00	11.00	.00	1.00	13.50	40.00	1.00	2.00
0	.50	.50	13.00	12.50	.20	2.00	13.50	37.00	1.00	2.00
1	.10	.50	13.00	12.50	.20	2.00	13.50	35.00	1.00	2.00
0	.40	1.50	15.00	12.00	.00	1.00	13.50	39.00	1.00	2.00
0	1.50	2.50	15.00	11.00	.00	1.00	13.50	42.00	.00	2.00
0	1.20	.50	13.00	12.50	.20	2.00	13.50	35.00	.00	2.00
0	.40	1.60	15.00	10.00	.00	1.00	13.50	40.00	1.00	2.00
0	.90	1.20	15.00	12.00	.00	1.00	13.50	39.00	.00	2.00
0	.60	2.50	15.00	11.00	.00	1.00	13.50	42.00	1.00	2.00
0	.90	3.20	15.00	11.00	.00	1.00	13.50	41.00	.00	2.00
0	.80	2.60	15.00	11.00	.00	1.00	13.50	42.00	.00	2.00
0	.60	3.10	15.00	11.00	.00	1.00	13.50	41.00	1.00	2.00
0	1.20	1.10	15.00	12.00	.00	1.00	13.50	38.00	.00	2.00
0	.80	1.70	15.00	10.00	.00	1.00	13.50	41.00	.00	2.00
0	.20	2.10	15.00	11.00	.00	1.00	13.50	42.00	1.00	2.00
0	.50	2.60	15.00	11.00	.00	1.00	13.50	42.00	1.00	2.00
0	.70	3.00	15.00	11.00	.00	1.00	13.50	42.00	.00	2.00
0	1.10	3.50	15.00	11.00	.00	1.00	13.50	39.00	.00	2.00
1	.00	4.20	15.00	9.00	.00	1.00	13.50	36.00	1.00	2.00
1	.10	6.10	17.00	11.00	.00	1.00	13.50	23.00	1.00	2.00
1	.10	6.50	17.00	12.00	.00	1.50	13.50	22.00	.00	2.00
0	.50	3.80	15.00	9.00	.00	1.00	13.50	39.00	1.00	2.00
0	.10	4.00	15.00	9.00	.00	1.00	13.50	38.00	.00	2.00
0	.40	5.10	17.00	8.00	.00	1.00	13.50	30.00	1.00	2.00
0	1.00	4.80	17.00	8.00	.00	1.00	13.50	32.00	.00	2.00
0	1.40	4.90	17.00	8.00	.00	1.00	13.50	32.00	.00	2.00
0	.90	5.50	17.00	11.00	.00	1.00	13.50	27.00	.00	2.00
0	.40	5.30	17.00	11.00	.00	1.00	13.50	26.00	.00	2.00
0	.60	6.10	17.00	11.00	.00	1.50	13.50	21.00	.00	2.00
0	1.10	6.70	17.00	12.00	.00	1.50	13.50	15.00	.00	2.00
0	.60	5.20	17.00	11.00	.00	1.00	13.50	29.00	1.00	2.00
0	.50	4.50	15.00	9.00	.00	1.00	13.50	35.00	1.00	2.00
0	1.00	4.80	17.00	8.00	.00	1.00	13.50	32.00	.00	2.00
0	1.40	5.00	17.00	8.00	.00	1.00	13.50	31.00	.00	2.00
0	.60	4.00	15.00	9.00	.00	1.00	13.50	38.00	.00	2.00
0	.40	4.30	15.00	9.00	.00	1.00	13.50	34.00	.00	2.00
0	1.00	4.60	17.00	9.00	.00	1.00	13.50	34.00	.00	2.00
0	1.50	5.10	17.00	11.00	.00	1.00	13.50	31.00	.00	2.00
0	1.40	4.50	17.00	9.00	.00	1.00	13.50	34.00	.00	2.00
0	.80	4.70	17.00	8.00	.00	1.00	13.50	34.00	.00	2.00
0	.10	5.50	17.00	11.00	.00	1.00	13.50	29.00	.00	2.00
0	.70	5.70	17.00	11.00	.00	1.00	13.50	25.00	1.00	2.00
0	1.20	5.90	17.00	11.00	.00	1.00	13.50	23.00	.00	2.00
0	.60	5.00	17.00	8.00	.00	1.00	13.50	30.00	1.00	2.00
1	.00	5.40	17.00	11.00	.00	1.00	13.50	26.00	1.00	2.00
0	.40	5.50	17.00	11.00	.00	1.00	13.50	26.00	1.00	2.00

0	1.00	5.90	17.00	11.00	.00	1.00	13.50	25.00	.00	2.00
0	1.00	5.60	17.00	11.00	.00	1.00	13.50	25.00	.00	2.00
0	.50	6.00	17.00	11.00	.00	1.00	13.50	22.00	1.00	2.00
1	.00	6.30	17.00	12.00	.00	1.50	13.50	20.00	1.00	2.00
0	.50	6.60	17.00	12.00	.00	1.50	13.50	16.00	1.00	2.00
0	1.00	6.90	17.00	12.00	.00	1.50	13.50	13.00	.00	2.00
0	1.00	5.90	17.00	11.00	.00	1.00	13.50	23.00	.00	2.00
0	.50	6.40	17.00	12.00	.00	1.50	13.50	18.00	1.00	2.00
0	.60	7.00	17.00	12.00	.00	1.50	13.50	12.00	1.00	2.00
0	.60	.10	13.00	12.50	.20	2.00	13.50	33.00	1.00	2.00
0	.40	1.10	15.00	12.00	.00	1.00	13.50	38.00	1.00	2.00
0	.00	1.70	15.00	10.00	.00	1.00	13.50	41.00	.00	2.00
0	1.50	2.10	15.00	11.00	.00	1.00	13.50	42.00	.00	2.00
0	.10	.00	13.00	12.50	.20	2.00	13.50	32.00	1.00	2.00
0	.40	.00	15.00	12.00	.00	1.00	13.50	37.00	1.00	2.00
0	.00	1.00	15.00	12.00	.00	1.00	13.50	38.00	.00	2.00
0	1.20	1.90	15.00	10.00	.00	1.00	13.50	42.00	.00	2.00
0	.00	2.00	15.00	10.00	.00	1.00	13.50	42.00	.00	2.00
0	.30	2.00	15.00	11.00	.00	1.00	13.50	42.00	1.00	2.00
0	.20	2.90	15.00	11.00	.00	1.00	13.50	42.00	1.00	2.00
0	.70	3.70	15.00	9.00	.00	1.00	13.50	39.00	.00	2.00
0	1.10	7.10	17.00	11.00	.00	1.50	13.50	11.00	.00	2.00
0	.00	.40	13.00	12.50	.20	2.00	13.50	35.00	1.00	2.00
0	.90	1.60	15.00	12.00	.00	1.00	13.50	40.00	.00	2.00
0	.40	6.40	17.00	12.00	.00	1.50	13.50	18.00	.00	2.00
41441	14 OCT 80		PIWS							
1	.00	.10	15.00	15.00	.00	4.00	11.00	34.00	.00	2.00
1	.10	.60	15.00	16.00	.00	2.00	11.00	27.00	1.00	2.00
1	.10	1.60	15.00	16.00	.00	2.00	11.00	14.00	1.00	2.00
1	.10	1.70	15.00	16.00	.00	2.00	11.00	17.00	1.00	2.00
1	.00	2.60	15.00	16.50	.00	2.00	11.00	9.00	1.00	2.00
0	.70	1.10	15.00	16.00	.00	2.00	11.00	23.00	.00	1.00
0	1.20	1.50	15.00	16.00	.00	2.00	11.00	21.00	.00	2.00
0	1.50	2.20	15.00	16.50	.00	2.00	11.00	12.00	.00	1.00
0	.70	.50	15.00	16.00	.00	2.00	11.00	28.00	1.00	.00
0	.50	1.30	15.00	16.50	.00	2.00	11.00	16.00	.00	2.00
0	.90	2.70	15.00	16.50	.00	2.00	11.00	7.00	.00	2.00
0	.70	.30	15.00	16.00	.00	2.00	11.00	29.00	.00	2.00
0	.50	.80	15.00	16.00	.00	2.00	11.00	25.00	1.00	2.00
0	.30	2.00	15.00	16.50	.00	2.00	11.00	15.00	1.00	1.00
0	.70	2.60	15.00	16.50	.00	2.00	11.00	8.00	.00	2.00
0	.80	.20	15.00	[illegible]	.00	4.00	11.00	30.00	.00	.00
0	.40	1.00	15.00	[illegible]	.00	2.00	11.00	24.00	1.00	2.00
0	.30	1.40	15.00	[illegible]	.00	2.00	11.00	20.00	1.00	2.00
0	.50	2.10	15.00	[illegible]	.00	2.00	11.00	13.00	1.00	1.00
0	.90	2.50	15.00	[illegible]	.00	2.00	11.00	9.00	.00	2.00
0	1.10	.90	15.00	16.00	.00	2.00	11.00	24.00	.00	2.00
0	.80	1.50	15.00	16.00	.00	2.00	11.00	19.00	1.00	2.00
0	.40	2.00	15.00	[illegible]	.00	2.00	11.00	14.00	1.00	2.00
0	.90	1.10	15.00	[illegible]	.00	2.00	11.00	22.00	.00	2.00
0	.40	1.20	15.00	[illegible]	.00	2.00	11.00	22.00	.00	2.00
0	.20	2.30	15.00	16.50	.00	2.00	11.00	12.00	1.00	2.00
0	.40	2.30	15.00	16.50	.00	2.00	11.00	12.00	1.00	.00
0	.30	2.40	15.00	16.50	.00	2.00	11.00	11.00	.00	2.00

PT BONUS	TA OUT	TA HOME	PIMS							
1	.10	.30	15.00	21.00	.00	5.00	14.00	55.00	.00	2.00
1	.10	1.00	13.00	15.00	.00	3.00	14.00	36.00	1.00	2.00
1	.20	1.10	13.00	15.00	.00	3.00	14.00	37.00	1.00	2.00
1	.20	2.40	13.00	21.00	.00	3.00	14.00	40.00	.00	2.00
1	.30	3.00	13.00	17.00	.00	3.00	14.00	39.00	.00	2.00
1	.00	3.00	13.00	17.00	.00	3.00	14.00	37.00	1.00	2.00
1	.00	4.30	15.00	15.00	.00	4.00	14.00	35.00	1.00	1.00
0	.50	.30	15.00	21.00	.00	5.00	14.00	52.00	1.00	2.00
0	.50	1.20	13.00	15.00	.00	5.00	14.00	57.00	1.00	2.00
0	1.00	1.30	13.00	15.00	.00	3.00	14.00	48.00	.00	2.00
0	.40	.20	15.00	21.00	.00	5.00	14.00	31.00	.00	2.00
0	.30	.60	15.00	21.00	.00	5.00	14.00	54.00	1.00	2.00
0	.70	1.50	13.00	15.00	.00	5.00	14.00	38.00	.00	2.00
0	1.20	2.00	13.00	21.00	.00	3.00	14.00	39.00	.00	2.00
0	1.00	.10	15.00	21.00	.00	5.00	14.00	52.00	.00	2.00
0	.50	.70	15.00	21.00	.00	5.00	14.00	55.00	1.00	2.00
0	.60	1.60	13.00	15.00	.00	5.00	14.00	58.00	1.00	2.00
0	.90	1.90	13.00	21.00	.00	3.00	14.00	39.00	.00	2.00
0	.80	.90	13.00	15.00	.00	3.00	14.00	56.00	.00	2.00
0	1.30	1.70	13.00	15.00	.00	3.00	14.00	39.00	.00	2.00
0	1.20	.70	15.00	21.00	.00	3.00	14.00	35.00	.00	2.00
0	.70	1.10	13.00	15.00	.00	5.00	14.00	37.00	.00	2.00
0	.20	1.50	13.00	15.00	.00	3.00	14.00	38.00	1.00	2.00
0	.70	2.30	13.00	21.00	.00	3.00	14.00	40.00	.00	2.00
0	.30	2.70	13.00	21.00	.00	3.00	14.00	40.00	1.00	2.00
0	.80	2.80	13.00	21.00	.00	3.00	14.00	40.00	.00	2.00
0	1.30	3.10	13.00	17.00	.00	3.00	14.00	39.00	.00	2.00
1	.00	3.00	13.00	17.00	.00	3.00	14.00	39.00	1.00	1.00
0	1.20	2.60	13.00	21.00	.00	3.00	14.00	40.00	.00	2.00
0	.60	2.80	13.00	21.00	.00	3.00	14.00	40.00	1.00	2.00
0	.30	3.20	13.00	17.00	.00	3.00	14.00	36.00	1.00	2.00
0	.90	3.30	13.00	17.00	.00	3.00	14.00	37.00	.00	2.00
0	1.20	2.90	13.00	17.00	.00	3.00	14.00	40.00	1.00	2.00
0	.20	3.30	13.00	17.00	.00	3.00	14.00	36.00	1.00	2.00
0	.30	3.30	13.00	17.00	.00	3.00	14.00	38.00	.00	2.00
0	.80	3.70	13.00	17.00	.00	3.00	14.00	37.00	.00	2.00
0	1.20	3.60	13.00	17.00	.00	3.00	14.00	36.00	.00	2.00
0	.30	3.40	13.00	17.00	.00	3.00	14.00	38.00	.00	2.00
0	1.00	3.20	13.00	17.00	.00	3.00	14.00	38.00	.00	2.00
0	.40	3.30	14.00	17.00	.00	3.00	14.00	37.00	1.00	1.00
0	.50	3.90	15.00	15.00	.00	4.00	14.00	36.00	1.00	2.00
0	.90	4.00	15.00	15.00	.00	4.00	14.00	35.00	.00	2.00
0	1.10	3.90	15.00	15.00	.00	4.00	14.00	36.00	.00	2.00
0	.50	4.00	15.00	15.00	.00	4.00	14.00	35.00	1.00	2.00
0	.40	4.40	15.00	15.00	.00	4.00	14.00	33.00	.00	2.00
0	1.30	3.60	13.00	17.00	.00	3.00	14.00	36.00	.00	2.00
0	.70	4.10	15.00	15.00	.00	4.00	14.00	34.00	.00	2.00
0	.30	4.20	15.00	15.00	.00	4.00	14.00	34.00	.00	2.00
1	.20	.80	15.00	21.00	.00	3.00	14.00	36.00	1.00	2.00
0	.10	4.30	15.00	15.00	.00	4.00	14.00	32.00	1.00	2.00

NC-130	In OCT 80		PIMS								
0	.50	.40	11.00	9.50	.80	2.00	150.00	200.00	38.00	1.00	2.00
0	.10	.60	8.00	6.50	.80	2.00	150.00	500.00	40.00	.00	2.00
0	.40	1.60	8.00	6.50	.80	2.00	150.00	500.00	39.00	1.00	2.00
0	.30	.80	8.00	6.50	.80	2.00	150.00	500.00	39.00	1.00	2.00
0	.30	.90	8.00	6.50	.80	2.00	150.00	500.00	39.00	1.00	2.00
0	.30	.40	1.00	9.50	.80	2.00	150.00	200.00	37.00	.00	2.00
0	1.20	.30	11.00	9.50	.80	2.00	150.00	200.00	37.00	.00	2.00
0	1.40	.30	8.00	6.50	.80	2.00	150.00	200.00	38.00	.00	2.00
0	.50	.40	11.00	9.50	.80	2.00	150.00	200.00	37.00	1.00	2.00
0	1.50	2.50	8.00	6.50	.80	2.00	150.00	500.00	39.00	.00	2.00
0	.60	1.50	8.00	6.50	.80	2.00	150.00	500.00	39.00	1.00	2.00
0	.80	1.50	8.00	6.50	.80	2.00	150.00	500.00	39.00	1.00	2.00
0	.60	1.50	8.00	6.50	.80	2.00	150.00	500.00	39.00	1.00	2.00
0	.60	1.60	8.00	6.50	.80	2.00	150.00	500.00	38.00	1.00	2.00
0	.60	1.70	4.00	5.00	.70	2.00	150.00	200.00	37.00	1.00	.00
0	.60	1.70	4.00	5.00	.70	2.00	150.00	200.00	37.00	1.00	2.00
0	.80	1.70	4.00	5.00	.70	2.00	150.00	200.00	37.00	1.00	2.00
0	.30	1.00	8.00	6.50	.80	2.00	150.00	500.00	40.00	1.00	2.00
0	.60	1.10	8.00	6.50	.80	2.00	150.00	500.00	40.00	1.00	2.00
0	.30	1.10	8.00	6.50	.80	2.00	150.00	500.00	40.00	1.00	2.00
0	.70	.50	8.00	6.50	.80	2.00	150.00	200.00	38.00	1.00	2.00
0	.50	.60	8.00	6.50	.80	2.00	150.00	200.00	39.00	1.00	2.00
0	.40	.60	8.00	6.50	.80	2.00	150.00	200.00	39.00	1.00	2.00
0	1.00	.60	8.00	6.50	.80	2.00	150.00	200.00	39.00	.00	2.00
0	.70	.60	8.00	6.50	.80	2.00	150.00	200.00	39.00	1.00	2.00
0	.80	.00	11.00	9.50	.80	2.00	150.00	200.00	34.00	1.00	2.00
0	.90	.10	11.00	9.50	.80	2.00	150.00	200.00	34.00	.00	2.00
0	1.40	.10	11.00	9.50	.80	2.00	150.00	200.00	34.00	.00	2.00
0	.70	.10	11.00	9.50	.80	2.00	150.00	200.00	34.00	.00	2.00
0	.90	.10	11.00	9.50	.80	2.00	150.00	200.00	35.00	1.00	2.00
0	.40	.60	8.00	6.50	.80	2.00	150.00	200.00	40.00	1.00	2.00
0	.80	1.00	8.00	6.50	.80	2.00	150.00	500.00	39.00	.00	2.00
0	.90	1.10	8.00	6.50	.80	2.00	150.00	500.00	39.00	.00	2.00

HH-52	In OCT 80		PIMS								
1	.10	1.50	3.00	7.00	1.00	1.00	60.00	200.00	19.00	1.00	1.00
0	.40	1.00	3.00	7.00	1.00	1.00	60.00	200.00	24.00	.00	.00
0	.50	1.40	3.00	7.00	1.00	1.00	60.00	200.00	21.00	1.00	2.00
0	.50	.70	4.00	8.00	.80	1.00	90.00	200.00	27.00	1.00	2.00
0	.50	.50	4.00	8.00	.80	1.00	90.00	200.00	28.00	.00	.00
0	.50	.10	4.00	8.00	.80	1.00	90.00	200.00	31.00	1.00	2.00
0	.70	.20	4.00	8.00	.80	1.00	90.00	200.00	31.00	1.00	2.00

41350	21 OCT 80		PIWS							
1	.00	1.50	15.00	18.00	1.00	5.00	10.00	37.00	1.00	2.00
0	.50	.10	15.00	16.00	1.00	2.00	10.00	30.00	1.00	2.00
0	.40	1.90	15.00	18.00	1.00	5.00	10.00	37.00	1.00	2.00
0	1.00	.20	15.00	16.00	1.00	2.00	10.00	30.00	.00	2.00
0	.80	1.50	15.00	16.00	1.00	2.00	10.00	36.00	.00	2.00
0	.30	2.00	15.00	18.00	1.00	5.00	10.00	37.00	1.00	2.00
0	.80	2.90	12.00	19.00	.90	3.50	10.00	37.00	.00	2.00
0	1.10	3.20	12.00	19.00	.90	3.50	10.00	35.00	.00	2.00
0	.90	.50	15.00	16.00	1.00	2.00	10.00	31.00	.00	2.00
0	.50	1.00	15.00	16.00	1.00	2.00	10.00	35.00	1.00	2.00
0	.20	2.10	15.00	18.00	1.00	5.00	10.00	37.00	1.00	.00
0	.80	2.60	12.00	19.00	.90	3.50	10.00	37.00	.00	2.00
0	1.30	3.30	12.00	19.00	.90	3.50	10.00	35.00	.00	2.00
0	.30	2.60	12.00	19.00	.90	3.00	10.00	37.00	1.00	2.00
0	.20	3.40	12.00	19.00	.90	3.50	10.00	35.00	1.00	2.00
0	.80	2.20	15.00	18.00	1.00	3.00	10.00	37.00	.00	2.00
0	.60	3.70	12.00	18.00	.50	4.00	10.00	33.00	1.00	2.00
0	1.20	4.60	12.00	18.00	.50	4.00	10.00	26.00	.00	2.00
0	1.10	2.60	12.00	19.00	.90	3.50	10.00	37.00	.00	2.00
0	.80	3.40	12.00	19.00	.90	3.50	10.00	35.00	.00	2.00
0	.30	3.80	12.00	18.00	.50	4.00	10.00	33.00	1.00	2.00
0	.30	4.50	12.00	18.00	.50	4.00	10.00	28.00	1.00	1.00
0	.70	5.00	12.00	19.00	.50	4.00	10.00	24.00	.00	2.00
0	1.20	3.20	12.00	19.00	.90	3.50	10.00	35.00	.00	2.00
0	.70	4.10	12.00	18.00	.50	4.00	10.00	31.00	1.00	2.00
0	.20	4.40	12.00	18.00	.50	4.00	10.00	28.00	1.00	2.00
0	.20	5.30	12.00	19.00	.50	4.00	10.00	22.00	1.00	2.00
0	.20	3.10	12.00	19.00	.90	3.50	10.00	36.00	1.00	2.00
0	.20	3.10	12.00	19.00	.90	3.50	10.00	35.00	.00	2.00
0	.30	4.30	12.00	18.00	.50	4.00	10.00	30.00	.00	2.00
0	.70	4.30	12.00	18.00	.50	4.00	10.00	29.00	.00	1.00
0	1.10	5.50	12.00	19.00	.50	4.00	10.00	20.00	.00	2.00
0	.80	4.30	12.00	18.00	.50	4.00	10.00	29.00	.00	2.00
0	.20	5.50	12.00	19.00	.50	4.00	10.00	20.00	1.00	2.00

41365	21 OCT 80		PIWS							
0	1.50	1.20	15.00	16.00	1.00	2.00	12.00	34.00	.00	2.00
0	1.10	.60	15.00	16.00	1.00	2.00	12.00	32.00	.00	2.00

HL-150	22 OCT 80		PINS								
0	.00	.10	15.00	13.00	.40	2.00	150.00	800.00	37.00	1.00	2.00
0	1.40	.10	15.00	13.00	.40	2.00	150.00	800.00	37.00	.00	2.00
0	.50	.00	15.00	13.00	.40	2.00	150.00	800.00	37.00	1.00	2.00
0	1.50	.10	15.00	13.00	.40	2.00	150.00	800.00	37.00	.00	2.00
0	1.10	.00	15.00	13.00	.40	2.00	150.00	800.00	37.00	1.00	2.00
0	.50	.10	15.00	13.00	.40	2.00	150.00	800.00	37.00	1.00	2.00
0	1.10	.10	15.00	13.00	.40	2.00	150.00	800.00	37.00	.00	2.00
0	.40	.20	15.00	13.00	.40	2.00	150.00	800.00	37.00	1.00	2.00
0	.50	.30	15.00	18.00	.20	2.00	150.00	800.00	37.00	1.00	2.00
0	.50	.30	15.00	18.00	.20	2.00	150.00	800.00	37.00	1.00	2.00
0	.60	.40	15.00	18.00	.20	2.00	150.00	800.00	37.00	1.00	2.00
0	1.00	.40	15.00	18.00	.20	2.00	150.00	800.00	37.00	.00	2.00
0	.50	.40	15.00	18.00	.20	2.00	150.00	800.00	37.00	.00	2.00
0	1.00	.30	15.00	18.00	.20	2.00	150.00	800.00	37.00	.00	2.00
0	.40	.70	15.00	18.00	.20	2.00	150.00	800.00	37.00	1.00	2.00
0	1.00	.60	15.00	18.00	.20	2.00	150.00	800.00	36.00	.00	2.00
0	.10	.60	15.00	18.00	.20	2.00	150.00	800.00	36.00	1.00	2.00
0	1.50	.70	15.00	18.00	.20	2.00	150.00	800.00	37.00	.00	2.00
0	.90	.70	15.00	18.00	.20	2.00	150.00	800.00	37.00	.00	2.00
0	.10	.70	15.00	18.00	.20	2.00	150.00	800.00	37.00	1.00	2.00
0	1.50	.60	15.00	18.00	.20	2.00	150.00	800.00	37.00	.00	2.00
0	.00	.80	15.00	18.00	.20	2.00	150.00	800.00	37.00	1.00	2.00
0	.50	.90	15.00	18.00	.20	2.00	150.00	200.00	36.00	1.00	2.00
0	1.10	1.00	15.00	14.00	.30	2.00	150.00	200.00	36.00	.00	2.00
0	.20	1.00	15.00	14.00	.30	2.00	150.00	200.00	36.00	1.00	2.00
0	1.20	1.00	15.00	14.00	.30	2.00	150.00	200.00	36.00	.00	2.00
0	1.50	1.00	15.00	14.00	.30	2.00	150.00	200.00	36.00	.00	2.00
0	2.00	1.00	15.00	14.00	.30	2.00	150.00	200.00	36.00	1.00	2.00
0	.30	1.10	15.00	14.00	.30	2.00	150.00	200.00	35.00	1.00	2.00
0	.10	1.20	15.00	14.00	.30	2.00	150.00	200.00	35.00	1.00	2.00
0	.70	1.30	15.00	14.00	.30	2.00	150.00	200.00	35.00	1.00	2.00
0	.00	1.30	15.00	14.00	.30	2.00	150.00	200.00	35.00	1.00	2.00
0	.80	1.40	15.00	14.00	.30	2.00	150.00	200.00	34.00	1.00	2.00
0	.70	1.40	15.00	14.00	.30	2.00	150.00	200.00	34.00	1.00	2.00
0	.10	1.40	15.00	14.00	.30	2.00	150.00	200.00	34.00	1.00	2.00
0	.20	1.30	15.00	14.00	.30	2.00	150.00	200.00	35.00	1.00	2.00
0	1.50	1.40	15.00	14.00	.30	2.00	150.00	200.00	34.00	.00	2.00
0	.50	1.70	15.00	14.00	.30	2.00	150.00	200.00	33.00	1.00	2.00
0	1.20	1.70	15.00	14.00	.30	2.00	150.00	200.00	33.00	.00	2.00
0	.70	1.80	15.00	14.00	.30	2.00	150.00	200.00	33.00	1.00	2.00
0	.30	1.80	15.00	14.00	.30	2.00	150.00	200.00	33.00	1.00	2.00
0	1.00	1.70	15.00	14.00	.30	2.00	150.00	200.00	34.00	.00	2.00
0	.50	1.90	15.00	15.00	.10	2.00	150.00	500.00	29.00	1.00	2.00
0	.80	2.00	15.00	15.00	.10	2.00	150.00	500.00	29.00	1.00	2.00
0	.20	1.90	15.00	15.00	.10	2.00	150.00	500.00	29.00	1.00	2.00
0	1.20	1.80	15.00	15.00	.10	2.00	150.00	500.00	30.00	.00	2.00
0	1.10	1.90	15.00	15.00	.10	2.00	150.00	500.00	29.00	.00	2.00
0	.70	2.00	15.00	15.00	.10	2.00	150.00	500.00	29.00	.00	1.00
0	1.40	2.00	15.00	15.00	.10	2.00	150.00	500.00	29.00	.00	2.00
0	.50	2.20	15.00	15.00	.10	2.00	150.00	500.00	27.00	1.00	.00
0	.10	2.20	15.00	15.00	.10	2.00	150.00	500.00	27.00	1.00	2.00

0	1.40	2.30	15.00	15.00	.10	2.00	150.00	500.00	26.00	.00	2.00
0	.40	2.30	15.00	15.00	.10	2.00	150.00	500.00	26.00	1.00	2.00
0	1.10	2.20	15.00	15.00	.10	2.00	150.00	500.00	27.00	.00	2.00
0	1.10	2.30	15.00	15.00	.10	2.00	150.00	500.00	26.00	.00	2.00
0	.30	2.40	15.00	15.00	.10	2.00	150.00	500.00	26.00	1.00	.00
0	.40	2.30	15.00	15.00	.10	2.00	150.00	500.00	26.00	1.00	1.00
0	1.10	2.40	15.00	15.00	.10	2.00	150.00	500.00	26.00	.00	2.00
1	.30	2.60	15.00	14.00	.10	2.00	150.00	500.00	24.00	1.00	1.00
0	.30	2.60	15.00	14.00	.10	2.00	150.00	500.00	24.00	1.00	2.00
0	1.00	2.60	15.00	14.00	.10	2.00	150.00	500.00	24.00	.00	2.00
0	1.10	2.60	15.00	14.00	.10	2.00	150.00	500.00	24.00	.00	2.00
0	.70	2.60	15.00	14.00	.10	2.00	150.00	500.00	23.00	1.00	2.00
0	1.00	2.50	15.00	14.00	.10	2.00	150.00	500.00	24.00	.00	2.00
0	.50	2.60	15.00	14.00	.10	2.00	150.00	500.00	23.00	1.00	2.00
0	1.20	2.70	15.00	14.00	.10	2.00	150.00	200.00	22.00	.00	2.00
0	.10	2.80	15.00	14.00	.10	2.00	150.00	200.00	21.00	1.00	2.00
0	.70	2.70	15.00	14.00	.10	2.00	150.00	200.00	21.00	1.00	2.00
0	1.30	2.80	15.00	14.00	.10	2.00	150.00	200.00	21.00	.00	2.00
0	.10	2.80	15.00	14.00	.10	2.00	150.00	200.00	21.00	1.00	1.00
0	1.00	2.80	15.00	14.00	.10	2.00	150.00	200.00	21.00	.00	2.00
0	1.30	3.00	15.00	14.00	.10	2.00	150.00	200.00	19.00	.00	2.00
0	.40	3.10	15.00	14.00	.10	2.00	150.00	200.00	19.00	1.00	2.00
0	.20	3.10	15.00	14.00	.10	2.00	150.00	200.00	19.00	1.00	2.00
0	1.30	3.10	15.00	14.00	.10	2.00	150.00	200.00	19.00	.00	2.00
0	.40	3.00	15.00	14.00	.10	2.00	150.00	200.00	19.00	.00	2.00
0	.70	3.20	15.00	14.00	.10	2.00	150.00	200.00	18.00	1.00	2.00
0	1.10	3.40	15.00	14.00	.10	2.00	150.00	200.00	16.00	.00	2.00
0	.30	3.40	15.00	14.00	.10	2.00	150.00	200.00	16.00	1.00	2.00
0	.20	.20	15.00	13.00	.40	2.00	150.00	800.00	37.00	1.00	2.00
0	.30	1.00	15.00	14.00	.30	2.00	150.00	200.00	36.00	.00	2.00
0	1.10	.90	15.00	14.00	.30	2.00	150.00	200.00	36.00	.00	2.00
0	1.40	1.30	15.00	14.00	.30	2.00	150.00	200.00	34.00	.00	2.00
0	.50	1.70	15.00	14.00	.30	2.00	150.00	200.00	33.00	.00	2.00
0	.90	1.70	15.00	14.00	.30	2.00	150.00	200.00	33.00	.00	2.00
0	.30	2.00	15.00	15.00	.10	2.00	150.00	500.00	29.00	1.00	2.00
0	1.40	2.90	15.00	14.00	.10	2.00	150.00	200.00	20.00	.00	2.00
0	.10	3.10	15.00	14.00	.10	2.00	150.00	200.00	18.00	1.00	1.00

MIS-S	CP DCI RO	PIMS								
1	.20	.40	15.00	18.00	.30	2.00	90.00	200.00	31.00	1.00	2.00
1	.10	.00	15.00	18.00	.30	2.00	90.00	200.00	34.00	1.00	2.00
1	.10	1.10	15.00	15.00	.40	2.00	60.00	500.00	35.00	1.00	2.00
0	1.50	.30	15.00	18.00	.30	2.00	90.00	200.00	31.00	.00	2.00
0	.00	.30	15.00	18.00	.30	2.00	90.00	200.00	31.00	1.00	2.00
0	.30	.30	15.00	18.00	.30	2.00	90.00	200.00	32.00	1.00	2.00
0	.40	.30	15.00	18.00	.30	2.00	90.00	200.00	32.00	.00	2.00
0	.30	.30	15.00	18.00	.30	2.00	90.00	200.00	32.00	.00	2.00
0	.00	.70	15.00	18.00	.30	2.00	90.00	200.00	33.00	1.00	2.00
0	1.50	.70	15.00	18.00	.30	2.00	90.00	200.00	33.00	.00	2.00
0	1.00	.30	15.00	18.00	.30	2.00	90.00	200.00	32.00	.00	2.00
0	.00	.30	15.00	18.00	.30	2.00	90.00	200.00	32.00	1.00	2.00
0	.20	.70	15.00	18.00	.30	2.00	90.00	200.00	33.00	1.00	2.00
0	1.20	.70	15.00	18.00	.30	2.00	90.00	200.00	33.00	.00	2.00
0	.30	.70	15.00	18.00	.30	2.00	90.00	200.00	33.00	1.00	2.00
0	.70	.90	15.00	18.00	.30	2.00	90.00	200.00	34.00	1.00	2.00
0	.30	.20	15.00	18.00	.30	2.00	90.00	200.00	30.00	1.00	2.00
0	.10	.20	15.00	18.00	.30	2.00	90.00	200.00	31.00	1.00	2.00
0	.00	.30	15.00	18.00	.30	2.00	90.00	200.00	31.00	1.00	2.00
0	1.10	.50	15.00	18.00	.30	2.00	90.00	200.00	32.00	.00	2.00
0	1.50	.60	15.00	18.00	.30	2.00	90.00	200.00	33.00	.00	2.00
0	.00	.60	15.00	18.00	.30	2.00	90.00	200.00	33.00	1.00	2.00
0	.30	.80	15.00	18.00	.30	2.00	90.00	200.00	34.00	1.00	2.00
0	.50	.20	15.00	18.00	.30	2.00	90.00	200.00	30.00	.00	2.00
0	.20	.40	15.00	18.00	.30	2.00	90.00	200.00	32.00	1.00	2.00
0	.90	.60	15.00	18.00	.30	2.00	90.00	200.00	32.00	.00	2.00
0	1.20	.60	15.00	18.00	.30	2.00	90.00	200.00	33.00	.00	2.00
0	1.10	1.00	15.00	13.00	.40	2.00	60.00	500.00	37.00	.00	2.00
0	.00	1.60	15.00	13.00	.40	2.00	60.00	500.00	37.00	.00	2.00
0	.20	1.40	15.00	13.00	.40	2.00	60.00	500.00	36.00	.00	2.00
0	.00	1.40	15.00	13.00	.40	2.00	60.00	500.00	36.00	.00	2.00
0	.20	1.30	15.00	13.00	.40	2.00	60.00	500.00	36.00	1.00	2.00
0	.00	1.10	15.00	13.00	.40	2.00	60.00	500.00	36.00	1.00	2.00
0	1.30	1.10	15.00	13.00	.40	2.00	60.00	500.00	35.00	.00	2.00
0	1.30	1.40	15.00	13.00	.40	2.00	60.00	500.00	36.00	.00	2.00
0	.00	1.30	15.00	13.00	.40	2.00	60.00	500.00	37.00	1.00	2.00
0	.20	1.10	15.00	13.00	.40	2.00	60.00	500.00	36.00	1.00	2.00
0	.70	.90	15.00	13.00	.40	2.00	60.00	500.00	35.00	1.00	2.00
0	.40	1.80	15.00	13.00	.40	2.00	60.00	500.00	37.00	1.00	2.00
0	.10	1.60	15.00	13.00	.40	2.00	60.00	500.00	37.00	1.00	2.00
0	.60	1.30	15.00	13.00	.40	2.00	60.00	500.00	37.00	1.00	2.00
0	1.10	1.40	15.00	13.00	.40	2.00	60.00	500.00	37.00	.00	2.00
0	.30	1.30	15.00	13.00	.40	2.00	60.00	500.00	37.00	.00	2.00
0	1.30	1.30	15.00	13.00	.40	2.00	60.00	500.00	36.00	.00	2.00
0	.00	1.20	15.00	13.00	.40	2.00	60.00	500.00	36.00	1.00	2.00
0	.30	1.00	15.00	13.00	.40	2.00	60.00	500.00	35.00	1.00	2.00
0	.20	1.00	15.00	13.00	.40	2.00	60.00	500.00	35.00	1.00	2.00
0	1.20	.20	15.00	18.00	.30	2.00	90.00	200.00	30.00	.00	2.00

HH-SS	[illegible]	PIPS								
1	.40	.00	15.00	13.00	.40	2.00	60.00	200.00	37.00	1.00	2.00
1	.10	.40	15.00	13.00	.40	2.00	60.00	200.00	37.00	1.00	2.00
0	1.20	.00	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	.70	.80	15.00	13.00	.40	2.00	60.00	200.00	37.00	1.00	2.00
0	.20	.30	15.00	13.00	.40	2.00	60.00	200.00	37.00	1.00	2.00
0	.70	.30	15.00	13.00	.40	2.00	60.00	200.00	37.00	1.00	2.00
0	1.20	.20	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	.80	1.00	15.00	18.00	.20	2.00	60.00	200.00	37.00	1.00	2.00
0	.30	.80	15.00	13.00	.40	2.00	60.00	200.00	37.00	1.00	2.00
0	.90	.00	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	1.20	.30	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	1.10	.40	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	.80	.30	15.00	13.00	.40	2.00	60.00	200.00	37.00	1.00	2.00
0	.10	.20	15.00	13.00	.40	2.00	60.00	200.00	36.00	1.00	2.00
0	.60	.10	15.00	13.00	.40	2.00	60.00	200.00	36.00	1.00	2.00
0	1.40	.00	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	.70	.70	15.00	13.00	.40	2.00	60.00	200.00	37.00	1.00	2.00
0	.30	.90	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	.10	1.00	15.00	18.00	.20	2.00	60.00	200.00	37.00	1.00	2.00
0	1.20	.40	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	.80	.40	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	1.00	.00	15.00	13.00	.40	2.00	60.00	200.00	37.00	.00	2.00
0	.70	2.10	15.00	14.00	.10	2.00	90.00	200.00	23.00	1.00	2.00
0	1.20	2.00	15.00	14.00	.10	2.00	90.00	200.00	24.00	.00	2.00
0	.40	1.60	15.00	15.00	.10	2.00	90.00	200.00	25.00	1.00	2.00
0	.10	1.90	15.00	14.00	.10	2.00	90.00	200.00	24.00	1.00	2.00
0	.70	2.10	15.00	14.00	.10	2.00	90.00	200.00	23.00	1.00	2.00
0	1.40	1.60	15.00	14.00	.30	2.00	90.00	500.00	35.00	.00	2.00
0	.80	1.50	15.00	14.00	.30	2.00	90.00	500.00	35.00	1.00	2.00
0	.10	1.40	15.00	14.00	.30	2.00	90.00	500.00	36.00	1.00	2.00
0	.30	1.40	15.00	14.00	.30	2.00	90.00	500.00	36.00	1.00	2.00
0	.40	1.20	15.00	18.00	.20	2.00	90.00	500.00	36.00	.00	2.00
0	1.20	1.20	15.00	18.00	.20	2.00	90.00	500.00	37.00	.00	2.00
0	.80	1.10	15.00	18.00	.20	2.00	90.00	500.00	37.00	1.00	2.00
0	.10	1.20	15.00	18.00	.20	2.00	90.00	500.00	37.00	1.00	2.00
0	.20	1.20	15.00	18.00	.20	2.00	90.00	500.00	36.00	1.00	2.00
0	.70	1.40	15.00	14.00	.30	2.00	90.00	500.00	36.00	1.00	2.00
0	1.20	1.40	15.00	14.00	.30	2.00	90.00	500.00	36.00	.00	2.00
0	1.10	1.40	15.00	14.00	.30	2.00	90.00	500.00	35.00	.00	2.00
0	.80	1.50	15.00	14.00	.30	2.00	90.00	500.00	35.00	1.00	2.00
0	.10	1.60	15.00	14.00	.30	2.00	90.00	500.00	35.00	1.00	2.00
0	.40	1.70	15.00	14.00	.30	2.00	90.00	500.00	35.00	1.00	2.00
0	.10	1.10	15.00	18.00	.20	2.00	90.00	500.00	37.00	.00	2.00
0	.30	1.30	15.00	18.00	.20	2.00	90.00	500.00	36.00	.00	2.00
0	1.30	1.30	15.00	18.00	.20	2.00	90.00	500.00	35.00	.00	2.00
0	1.10	1.30	15.00	14.00	.30	2.00	90.00	500.00	35.00	.00	2.00
1	.20	2.20	15.00	14.00	.10	2.00	60.00	500.00	20.00	.00	2.00
0	1.20	2.40	15.00	14.00	.10	2.00	60.00	500.00	19.00	.00	2.00
0	.70	2.40	15.00	14.00	.10	2.00	60.00	500.00	19.00	1.00	2.00
0	.20	2.50	15.00	14.00	.10	2.00	60.00	500.00	17.00	1.00	2.00
0	.20	2.60	15.00	14.00	.10	2.00	60.00	500.00	16.00	1.00	2.00

0	.40	2.80	15.00	14.00	.10	2.00	60.00	500.00	14.00	1.00	2.00
0	.90	2.90	15.00	15.00	.20	2.00	60.00	500.00	13.00	.00	2.00
0	.70	2.10	15.00	14.00	.10	2.00	60.00	500.00	21.00	1.00	2.00
0	.20	2.30	15.00	14.00	.10	2.00	60.00	500.00	19.00	1.00	2.00
0	.30	2.40	15.00	14.00	.10	2.00	60.00	500.00	18.00	1.00	2.00
0	.90	2.30	15.00	14.00	.10	2.00	60.00	500.00	17.00	1.00	2.00
0	1.30	2.60	15.00	14.00	.10	2.00	60.00	500.00	16.00	.00	2.00
0	.90	2.70	15.00	14.00	.10	2.00	60.00	500.00	16.00	1.00	2.00
0	.60	2.00	15.00	14.00	.10	2.00	60.00	500.00	15.00	1.00	2.00
0	.00	2.90	15.00	15.00	.20	2.00	60.00	500.00	13.00	1.00	1.00
0	.30	3.00	15.00	15.00	.20	2.00	60.00	500.00	12.00	1.00	.00
0	.10	2.20	15.00	14.00	.10	2.00	60.00	500.00	20.00	1.00	1.00
0	.90	2.40	15.00	14.00	.10	2.00	60.00	500.00	18.00	1.00	2.00
0	1.30	2.30	15.00	14.00	.10	2.00	60.00	500.00	18.00	.00	2.00
0	.70	2.70	15.00	14.00	.10	2.00	60.00	500.00	15.00	.00	1.00
0	.40	2.20	15.00	14.00	.10	2.00	60.00	500.00	20.00	.00	.00

HC-130	23 OCT 80		PIWS								
0	.30	.10	15.00	11.00	.00	2.00	150.00	200.00	29.00	1.00	2.00
0	1.10	.20	15.00	11.00	.00	2.00	150.00	200.00	29.00	.00	2.00
0	.30	.20	15.00	11.00	.00	2.00	150.00	200.00	29.00	1.00	2.00
0	.60	.20	15.00	11.00	.00	2.00	150.00	200.00	30.00	1.00	2.00
0	1.20	.40	15.00	11.00	.00	2.00	150.00	200.00	31.00	.00	2.00
0	1.30	.40	15.00	11.00	.00	2.00	150.00	200.00	32.00	.00	2.00
0	.20	.30	15.00	11.00	.00	2.00	150.00	200.00	31.00	1.00	2.00
0	.40	.30	15.00	11.00	.00	2.00	150.00	200.00	31.00	.00	2.00
0	.50	.30	15.00	11.00	.00	2.00	150.00	200.00	31.00	1.00	2.00
0	.30	.30	15.00	11.00	.00	2.00	150.00	200.00	31.00	1.00	2.00
0	1.20	.20	15.00	11.00	.00	2.00	150.00	200.00	31.00	.00	2.00
0	1.20	.50	15.00	11.00	.00	2.00	150.00	200.00	33.00	.00	2.00
0	.20	.60	15.00	11.00	.00	2.00	150.00	200.00	33.00	1.00	2.00
0	.70	.50	15.00	11.00	.00	2.00	150.00	200.00	33.00	1.00	2.00
0	.70	.60	15.00	11.00	.00	2.00	150.00	200.00	33.00	1.00	2.00
0	1.00	.80	15.00	11.00	.00	2.00	150.00	500.00	35.00	.00	2.00
0	.40	.60	15.00	11.00	.00	2.00	150.00	500.00	35.00	1.00	2.00
0	.00	1.00	15.00	11.00	.00	2.00	150.00	500.00	36.00	1.00	2.00
0	.00	1.20	15.00	14.00	.00	2.00	150.00	500.00	37.00	1.00	2.00
0	1.10	1.20	15.00	14.00	.00	2.00	150.00	500.00	37.00	.00	2.00
0	1.40	1.20	15.00	14.00	.00	2.00	150.00	500.00	37.00	.00	2.00
0	.50	1.20	15.00	14.00	.00	2.00	150.00	500.00	37.00	.00	2.00
0	.50	1.30	15.00	11.00	.00	1.00	150.00	500.00	33.00	1.00	2.00
0	1.10	1.40	15.00	12.00	.00	1.00	150.00	500.00	32.00	.00	2.00
0	.90	1.40	15.00	12.00	.00	1.00	150.00	500.00	32.00	.00	2.00
0	.70	1.50	15.00	12.00	.00	1.00	150.00	500.00	32.00	1.00	2.00
0	1.40	1.60	15.00	12.00	.00	1.00	150.00	500.00	30.00	.00	2.00
0	.00	1.60	15.00	12.00	.00	1.00	150.00	500.00	30.00	.00	2.00
0	.00	1.60	15.00	12.00	.00	1.00	150.00	500.00	31.00	1.00	2.00
0	1.00	1.60	15.00	12.00	.00	1.00	150.00	500.00	30.00	.00	2.00
0	.50	1.60	15.00	12.00	.00	1.00	150.00	500.00	30.00	1.00	2.00
1	.00	1.70	15.00	12.00	.00	1.00	150.00	500.00	29.00	1.00	1.00
0	.50	1.70	15.00	12.00	.00	1.00	150.00	500.00	29.00	1.00	1.00

41342	28 OCT 80		PIWS							
0	.70	1.40	3.00	14.00	1.00	3.00	15.00	34.00	.00	2.00
0	.00	1.60	2.00	18.00	1.00	4.00	15.00	34.00	1.00	2.00
0	.80	2.20	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	.40	1.90	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	.00	2.00	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	.00	2.80	2.00	19.00	1.00	5.00	15.00	33.00	1.00	2.00
0	.70	3.50	4.00	23.00	1.00	5.00	15.00	31.00	.00	2.00
0	.90	3.40	4.00	23.00	1.00	5.00	15.00	31.00	.00	2.00
0	.80	3.20	4.00	23.00	1.00	5.00	15.00	32.00	.00	2.00
0	.40	2.50	2.00	19.00	1.00	5.00	15.00	35.00	1.00	2.00
0	.60	3.10	4.00	23.00	1.00	5.00	15.00	32.00	1.00	2.00
0	.70	1.60	3.00	14.00	1.00	3.00	15.00	34.00	.00	2.00
0	.60	2.30	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00

41345	28 OCT 80		PIWS							
0	1.00	1.50	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	.10	2.80	4.00	23.00	1.00	5.00	15.00	32.00	1.00	2.00
0	.40	2.30	4.00	23.00	1.00	5.00	15.00	33.00	1.00	2.00
0	.50	1.30	2.00	18.00	1.00	4.00	15.00	35.00	1.00	2.00
0	.00	3.00	3.00	18.00	1.00	3.00	15.00	25.00	.00	2.00
0	.20	.40	6.00	13.00	1.00	4.00	15.00	33.00	.00	2.00
0	.40	1.30	2.00	18.00	1.00	4.00	15.00	35.00	1.00	2.00
0	.00	1.00	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	1.00	2.40	2.00	19.00	1.00	5.00	15.00	33.00	.00	2.00
0	.00	.20	6.00	13.00	1.00	4.00	15.00	32.00	1.00	2.00
0	.40	.00	6.00	13.00	1.00	4.00	15.00	34.00	1.00	2.00
0	.00	1.10	3.00	14.00	1.00	3.00	15.00	35.00	.00	2.00
0	.90	1.90	2.00	19.00	1.00	5.00	15.00	35.00	.00	2.00
0	.70	.70	3.00	14.00	1.00	3.00	15.00	34.00	.00	2.00
0	.50	.90	3.00	14.00	1.00	3.00	15.00	34.00	1.00	2.00
0	.40	2.00	2.00	19.00	1.00	5.00	15.00	34.00	.00	2.00
0	.80	3.20	4.00	23.00	1.00	5.00	15.00	29.00	.00	2.00
0	.50	3.40	10.00	17.00	1.00	4.00	15.00	28.00	.00	2.00
0	.70	2.30	2.00	19.00	1.00	5.00	15.00	33.00	.00	2.00
0	1.00	1.80	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	.20	3.00	4.00	23.00	1.00	5.00	15.00	30.00	1.00	2.00
0	.20	3.60	10.00	17.00	1.00	4.00	15.00	27.00	1.00	2.00
0	1.00	3.80	10.00	17.00	1.00	4.00	15.00	25.00	.00	2.00

PT BONITA	26 OCT 80		PINS							
1	.10	.10	5.00	11.00	1.00	4.00	15.00	28.00	1.00	2.00
1	.40	.40	5.00	11.00	1.00	4.00	15.00	31.00	1.00	2.00
1	.20	.60	5.00	11.00	1.00	4.00	15.00	31.00	.00	2.00
1	.00	.60	6.00	13.00	1.00	4.00	15.00	32.00	1.00	2.00
1	.20	2.40	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
1	.10	2.60	2.00	19.00	1.00	5.00	15.00	34.00	1.00	2.00
0	.40	3.10	2.00	19.00	1.00	5.00	15.00	33.00	1.00	2.00
0	.60	2.50	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	.70	2.90	2.00	19.00	1.00	5.00	15.00	34.00	.00	2.00
0	.50	2.40	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	.40	2.30	2.00	18.00	1.00	4.00	15.00	35.00	1.00	2.00
0	.70	1.20	6.00	13.00	1.00	4.00	15.00	33.00	.00	2.00
0	.20	1.10	6.00	13.00	1.00	4.00	15.00	33.00	1.00	2.00
0	.40	.50	5.00	11.00	1.00	4.00	15.00	31.00	.00	2.00
0	.90	.70	6.00	13.00	1.00	4.00	15.00	31.00	.00	2.00
0	1.10	1.40	6.00	13.00	1.00	4.00	15.00	34.00	.00	2.00
0	.60	.90	6.00	13.00	1.00	4.00	15.00	32.00	1.00	2.00
0	.40	.50	6.00	11.00	1.00	4.00	15.00	30.00	1.00	2.00
0	.60	2.20	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
0	.40	2.00	2.00	18.00	1.00	4.00	15.00	35.00	1.00	2.00
0	.10	1.00	5.00	14.00	1.00	5.00	15.00	34.00	1.00	1.00
0	.60	1.50	5.00	13.00	1.00	4.00	15.00	33.00	.00	2.00
0	.40	2.70	2.00	19.00	1.00	5.00	15.00	34.00	.00	2.00
0	.20	2.60	2.00	19.00	1.00	5.00	15.00	34.00	.00	2.00
0	.10	2.60	2.00	19.00	1.00	5.00	15.00	35.00	1.00	2.00
0	.60	2.10	2.00	18.00	1.00	4.00	15.00	35.00	.00	2.00
1	.20	3.90	4.00	23.00	1.00	5.00	14.00	30.00	1.00	2.00
1	.10	4.60	3.00	18.00	1.00	3.00	14.00	24.00	.00	2.00
1	.20	3.20	3.00	18.00	1.00	3.00	14.00	20.00	1.00	2.00
1	.60	3.50	3.00	14.00	1.00	3.00	14.00	18.00	1.00	2.00
0	.70	6.00	3.00	14.00	1.00	3.00	14.00	13.00	.00	2.00
0	.50	5.50	3.00	18.00	1.00	3.00	14.00	19.00	1.00	1.00
0	.80	4.50	10.00	17.00	1.00	4.00	14.00	26.00	1.00	2.00
0	.50	5.70	4.00	23.00	1.00	5.00	14.00	31.00	1.00	2.00
0	.10	4.20	10.00	17.00	1.00	4.00	14.00	27.00	1.00	2.00
0	.60	4.50	10.00	17.00	1.00	4.00	14.00	26.00	.00	1.00
0	.40	4.10	10.00	17.00	1.00	4.00	14.00	28.00	1.00	2.00
0	.40	4.70	5.00	18.00	1.00	5.00	14.00	24.00	.00	2.00
0	.70	5.70	3.00	14.00	1.00	3.00	14.00	17.00	.00	1.00
0	.60	5.60	3.00	14.00	1.00	3.00	14.00	17.00	.00	2.00
0	.10	5.60	3.00	14.00	1.00	3.00	14.00	15.00	1.00	2.00
0	.50	6.50	3.00	14.00	1.00	3.00	14.00	9.00	1.00	2.00
0	.40	6.60	7.00	14.00	1.00	2.00	14.00	8.00	.00	2.00
0	.50	5.00	3.00	18.00	1.00	3.00	14.00	22.00	1.00	2.00
0	.40	5.90	5.00	14.00	1.00	3.00	14.00	14.00	1.00	2.00
0	.90	6.50	5.00	14.00	1.00	3.00	14.00	11.00	.00	2.00
0	.80	6.00	5.00	14.00	1.00	3.00	14.00	13.00	.00	2.00
0	.50	6.20	5.00	14.00	1.00	3.00	14.00	11.00	1.00	2.00
0	.10	6.90	7.00	14.00	1.00	3.00	14.00	5.00	1.00	2.00
0	.80	5.50	5.00	18.00	1.00	3.00	14.00	20.00	1.00	2.00
0	.50	4.80	5.00	18.00	1.00	3.00	14.00	23.00	.00	2.00
0	.80	1.80	3.00	14.00	1.00	3.00	15.00	34.00	.00	2.00

PI WELLS	28 OCT 80		PIWS							
1	.20	.10	5.00	11.00	1.00	4.00	13.50	29.00	1.00	2.00
0	.10	.50	5.00	11.00	1.00	4.00	13.50	30.00	1.00	2.00
1	.00	2.20	2.00	18.00	1.00	4.00	13.50	35.00	1.00	2.00
0	.70	.90	6.00	13.00	1.00	4.00	13.50	33.00	.00	2.00
0	.10	1.60	4.00	14.00	1.00	5.00	13.50	34.00	1.00	2.00
0	.50	1.80	3.00	14.00	1.00	5.00	13.50	34.00	1.00	2.00
0	.90	2.50	2.00	19.00	1.00	5.00	13.50	35.00	.00	2.00
0	.20	.70	6.00	13.00	1.00	4.00	13.50	32.00	1.00	2.00
0	.70	1.00	6.00	13.00	1.00	4.00	13.50	33.00	.00	2.00
0	.40	.60	6.00	13.00	1.00	4.00	13.50	31.00	1.00	2.00
0	.40	1.20	6.00	13.00	1.00	4.00	13.50	33.00	.00	2.00
0	.20	1.50	6.00	13.00	1.00	4.00	13.50	34.00	.00	2.00
0	.10	1.50	6.00	13.00	1.00	4.00	13.50	34.00	.00	2.00
0	.40	1.50	6.00	13.00	1.00	4.00	13.50	34.00	.00	2.00
0	.50	2.10	2.00	18.00	1.00	4.00	13.50	35.00	1.00	2.00
0	.40	3.00	2.00	19.00	1.00	5.00	13.50	33.00	1.00	2.00
0	.50	1.50	3.00	14.00	1.00	3.00	13.50	34.00	1.00	2.00
0	.10	2.00	2.00	18.00	1.00	4.00	13.50	35.00	1.00	2.00
0	.60	2.40	2.00	18.00	1.00	4.00	13.50	35.00	1.00	2.00
0	.70	2.50	2.00	19.00	1.00	5.00	13.50	35.00	.00	2.00
0	.20	2.70	2.00	19.00	1.00	5.00	13.50	34.00	1.00	2.00
0	.50	3.40	4.00	23.00	1.00	5.00	13.50	32.00	1.00	2.00
1	.10	4.40	3.00	18.00	1.00	3.00	12.00	25.00	.00	2.00
1	.20	4.60	3.00	18.00	1.00	3.00	12.00	23.00	1.00	2.00
1	.10	0.10	3.00	14.00	1.00	3.00	12.00	11.00	1.00	2.00
1	.10	0.60	7.00	14.00	1.00	2.00	12.00	6.00	1.00	2.00
0	.90	5.60	4.00	23.00	1.00	5.00	12.00	30.00	.00	2.00
0	.40	3.90	10.00	17.00	1.00	4.00	12.00	26.00	1.00	2.00
0	.10	4.20	10.00	17.00	1.00	4.00	12.00	26.00	1.00	2.00
0	.70	4.50	3.00	18.00	1.00	3.00	12.00	24.00	.00	2.00
0	.60	4.40	3.00	18.00	1.00	3.00	12.00	25.00	.00	2.00
0	.40	4.90	3.00	18.00	1.00	3.00	12.00	21.00	1.00	2.00
0	.50	5.60	3.00	14.00	1.00	3.00	12.00	15.00	.00	2.00
0	.60	0.20	3.00	14.00	1.00	3.00	12.00	10.00	.00	2.00
0	.60	0.20	7.00	14.00	1.00	2.00	12.00	9.00	1.00	2.00
0	.40	5.70	3.00	14.00	1.00	3.00	12.00	14.00	.00	2.00
0	.50	5.90	3.00	14.00	1.00	3.00	12.00	12.00	1.00	2.00
0	.40	0.30	7.00	14.00	1.00	2.00	12.00	8.00	1.00	2.00
0	.80	0.50	7.00	14.00	1.00	2.00	12.00	7.00	.00	2.00
0	.80	4.80	5.00	18.00	1.00	3.00	12.00	22.00	.00	2.00
0	.10	5.10	3.00	18.00	1.00	3.00	12.00	20.00	1.00	2.00
0	.40	5.40	3.00	14.00	1.00	3.00	12.00	17.00	1.00	2.00
0	.40	5.70	3.00	14.00	1.00	3.00	12.00	14.00	.00	2.00
0	.40	4.00	10.00	17.00	1.00	4.00	12.00	28.00	.00	2.00
0	.40	4.10	10.00	17.00	1.00	4.00	12.00	27.00	.00	2.00
0	.70	4.70	3.00	18.00	1.00	3.00	12.00	23.00	1.00	2.00
0	.70	.40	5.00	11.00	1.00	4.00	13.50	31.00	.00	2.00

MC-130	[illegible]	[illegible]	PINS								
0	1.00	.10	13.00	12.00	.20	2.00	150.00	200.00	32.00	.00	1.00
0	.50	.20	13.00	12.00	.20	2.00	150.00	200.00	32.00	1.00	1.00
0	.50	.30	13.00	12.00	.20	2.00	150.00	200.00	31.00	.00	2.00
0	.80	.10	13.00	12.00	.20	2.00	150.00	200.00	32.00	1.00	2.00
0	1.20	.20	13.00	12.00	.20	2.00	150.00	200.00	32.00	.00	2.00
0	.20	.30	13.00	12.00	.20	2.00	150.00	200.00	32.00	1.00	.00
0	.60	.20	13.00	12.00	.20	2.00	150.00	200.00	32.00	1.00	2.00
0	.00	.30	13.00	12.00	.20	2.00	150.00	200.00	32.00	.00	2.00
0	1.20	.70	15.00	14.00	.10	2.00	150.00	500.00	27.00	.00	.00
0	1.10	.70	15.00	14.00	.10	2.00	150.00	500.00	27.00	1.00	2.00
0	.50	.70	15.00	14.00	.10	2.00	150.00	500.00	27.00	.00	1.00
0	1.00	.60	13.00	14.00	.10	2.00	150.00	500.00	28.00	.00	2.00
0	.50	.70	13.00	14.00	.10	2.00	150.00	500.00	28.00	1.00	2.00
0	.50	.60	13.00	14.00	.10	2.00	150.00	500.00	27.00	.00	2.00
0	.40	.80	15.00	14.00	.10	2.00	150.00	500.00	27.00	1.00	2.00
0	1.00	.90	13.00	14.00	.10	2.00	150.00	500.00	26.00	.00	2.00
0	.50	.80	13.00	14.00	.10	2.00	150.00	500.00	27.00	1.00	2.00
0	.50	1.00	15.00	14.00	.10	2.00	150.00	500.00	26.00	1.00	1.00
0	.50	.90	13.00	14.00	.10	2.00	150.00	500.00	26.00	1.00	1.00
0	.50	.80	13.00	14.00	.10	2.00	150.00	500.00	27.00	1.00	1.00
0	1.40	.90	15.00	14.00	.10	2.00	150.00	500.00	26.00	.00	1.00
0	.50	1.10	13.00	14.00	.10	2.00	150.00	500.00	25.00	1.00	.00
0	.50	1.00	15.00	14.00	.10	2.00	150.00	500.00	25.00	.00	2.00
0	1.20	1.10	15.00	14.00	.10	2.00	150.00	500.00	25.00	.00	2.00
0	.90	1.00	13.00	14.00	.10	2.00	150.00	500.00	25.00	.00	.00
0	.10	1.50	15.00	16.00	.00	2.00	150.00	800.00	23.00	.00	1.00
0	.10	1.40	15.00	16.00	.00	2.00	150.00	800.00	22.00	.00	.00
0	1.10	1.70	15.00	16.00	.00	2.00	150.00	800.00	19.00	.00	.00
0	.20	1.50	15.00	16.00	.00	2.00	150.00	800.00	23.00	1.00	2.00
0	.50	1.50	15.00	16.00	.00	2.00	150.00	800.00	21.00	1.00	1.00
0	1.20	1.20	15.00	16.00	.00	2.00	150.00	800.00	24.00	.00	2.00
0	1.20	1.60	15.00	16.00	.00	2.00	150.00	800.00	20.00	.00	2.00
0	1.20	1.50	15.00	16.00	.00	2.00	150.00	800.00	23.00	.00	2.00
0	.90	1.40	15.00	16.00	.00	2.00	150.00	800.00	22.00	.00	.00
0	1.20	1.60	15.00	16.00	.00	2.00	150.00	800.00	21.00	.00	.00
0	.80	1.70	15.00	16.00	.00	2.00	150.00	800.00	20.00	1.00	2.00
0	1.40	1.50	15.00	16.00	.00	2.00	150.00	800.00	22.00	.00	1.00
0	.80	1.40	15.00	16.00	.00	2.00	150.00	800.00	23.00	1.00	2.00
0	.10	1.60	15.00	16.00	.00	2.00	150.00	800.00	22.00	1.00	2.00
0	1.40	1.90	15.00	16.00	.00	2.00	150.00	200.00	16.00	.00	2.00
0	.00	1.90	15.00	16.00	.00	2.00	150.00	200.00	16.00	1.00	.00
0	.90	1.90	15.00	16.00	.00	2.00	150.00	200.00	16.00	1.00	.00
0	1.50	2.00	15.00	16.00	.00	2.00	150.00	200.00	16.00	.00	2.00
0	.70	2.00	15.00	16.00	.00	2.00	150.00	200.00	15.00	1.00	.00
0	.20	2.10	15.00	16.00	.00	2.00	150.00	200.00	14.00	1.00	2.00
0	1.20	2.00	15.00	16.00	.00	2.00	150.00	200.00	15.00	.00	2.00
0	.40	2.00	15.00	16.00	.00	2.00	150.00	200.00	15.00	.00	.00
0	.10	2.40	15.00	16.00	.00	2.00	150.00	200.00	12.00	.00	2.00
0	.20	.50	14.00	14.00	.10	2.00	150.00	200.00	30.00	1.00	2.00
0	.40	.50	13.00	14.00	.10	2.00	150.00	200.00	30.00	.00	1.00
0	1.10	.50	13.00	14.00	.10	2.00	150.00	200.00	30.00	.00	2.00
0	.90	.40	13.00	12.00	.20	2.00	150.00	200.00	31.00	.00	2.00
0	.50	.40	15.00	12.00	.20	2.00	150.00	200.00	31.00	1.00	1.00
0	.70	.40	15.00	12.00	.20	2.00	150.00	200.00	31.00	1.00	.00
0	.20	.00	15.00	12.00	.20	2.00	150.00	200.00	32.00	1.00	2.00

MM-S	29 OCT 90		PIMS								
1	.00	.30	14.00	17.00	.10	2.00	90.00	200.00	31.00	1.00	2.00
1	.30	.40	14.00	17.00	.10	2.00	90.00	200.00	32.00	.00	2.00
1	.30	.70	14.00	17.00	.10	2.00	90.00	200.00	33.00	1.00	2.00
1	.10	.00	14.00	17.00	.10	2.00	90.00	200.00	33.00	1.00	2.00
0	.40	.00	14.00	17.00	.10	2.00	90.00	200.00	30.00	1.00	2.00
0	.00	.20	14.00	17.00	.10	2.00	90.00	200.00	31.00	1.00	2.00
0	.70	.20	14.00	17.00	.10	2.00	90.00	200.00	31.00	1.00	2.00
0	1.00	.40	14.00	17.00	.10	2.00	90.00	200.00	32.00	.00	2.00
0	1.00	.20	14.00	17.00	.10	2.00	90.00	200.00	31.00	.00	2.00
0	.60	.30	14.00	17.00	.10	2.00	90.00	200.00	32.00	.00	2.00
1	.30	.60	14.00	17.00	.10	2.00	90.00	200.00	33.00	.00	2.00
0	1.00	.60	14.00	17.00	.10	2.00	90.00	200.00	33.00	.00	2.00
0	1.40	.40	14.00	17.00	.10	2.00	90.00	200.00	33.00	.00	2.00
0	1.30	.40	14.00	17.00	.10	2.00	90.00	200.00	32.00	.00	2.00
0	.90	.60	14.00	17.00	.10	2.00	90.00	200.00	32.00	.00	2.00
0	1.30	.30	14.00	17.00	.10	2.00	90.00	200.00	32.00	.00	2.00
0	1.00	.30	14.00	17.00	.10	2.00	90.00	200.00	32.00	.00	2.00
0	.30	.30	14.00	17.00	.10	2.00	90.00	200.00	32.00	1.00	2.00
0	.30	.30	14.00	17.00	.10	2.00	90.00	200.00	32.00	.00	2.00
0	.70	.60	12.00	18.00	.20	2.00	90.00	200.00	33.00	1.00	2.00
1	.20	.90	12.00	18.00	.20	2.00	60.00	500.00	34.00	1.00	2.00
1	.30	1.30	12.00	18.00	.20	2.00	60.00	500.00	34.00	.00	2.00
0	.30	1.00	12.00	18.00	.20	2.00	60.00	500.00	34.00	1.00	2.00
0	.70	1.20	12.00	18.00	.20	2.00	60.00	500.00	34.00	1.00	2.00
0	1.30	1.30	12.00	18.00	.20	2.00	60.00	500.00	34.00	.00	2.00
0	.60	1.20	12.00	18.00	.20	2.00	60.00	500.00	34.00	1.00	2.00
0	.20	1.40	12.00	18.00	.20	2.00	60.00	500.00	34.00	.00	2.00
0	1.00	1.70	12.00	18.00	.20	2.00	60.00	500.00	35.00	.00	2.00
0	1.00	1.10	12.00	18.00	.20	2.00	60.00	500.00	34.00	.00	2.00
0	.10	1.00	12.00	18.00	.20	2.00	60.00	500.00	34.00	.00	2.00
0	1.20	1.50	12.00	18.00	.20	2.00	60.00	500.00	34.00	.00	2.00
0	.70	1.00	12.00	18.00	.20	2.00	60.00	500.00	35.00	1.00	2.00
0	.20	1.70	12.00	18.00	.20	2.00	60.00	500.00	35.00	1.00	2.00
0	.40	1.90	13.00	13.00	.20	2.00	60.00	500.00	35.00	1.00	2.00
1	.00	2.30	13.00	14.00	.10	2.00	90.00	200.00	26.00	.00	2.00
0	.30	2.00	13.00	14.00	.10	2.00	90.00	200.00	28.00	1.00	2.00
0	.00	2.10	13.00	14.00	.10	2.00	90.00	200.00	27.00	1.00	2.00
0	.00	2.20	13.00	14.00	.10	2.00	90.00	200.00	27.00	1.00	2.00
0	1.00	2.30	13.00	14.00	.10	2.00	90.00	200.00	26.00	.00	2.00
0	.70	2.30	13.00	14.00	.10	2.00	90.00	200.00	26.00	.00	2.00
0	.30	2.30	13.00	14.00	.10	2.00	90.00	200.00	25.00	.00	2.00
0	.20	2.60	15.00	16.00	.00	2.00	90.00	200.00	24.00	1.00	2.00
0	.40	2.50	13.00	14.00	.10	2.00	90.00	200.00	25.00	1.00	2.00
0	.90	2.40	13.00	14.00	.10	2.00	90.00	200.00	25.00	.00	2.00
0	.60	2.40	13.00	14.00	.10	2.00	90.00	200.00	25.00	.00	2.00
0	.50	2.60	15.00	16.00	.00	2.00	90.00	200.00	24.00	.00	2.00
1	.20	2.70	15.00	16.00	.00	2.00	60.00	500.00	22.00	1.00	2.00
0	.20	2.80	15.00	16.00	.00	2.00	60.00	500.00	21.00	1.00	2.00
0	.70	2.90	15.00	16.00	.00	2.00	60.00	500.00	20.00	1.00	2.00
0	.50	3.10	15.00	16.00	.00	2.00	60.00	500.00	19.00	.00	2.00
0	.00	3.10	15.00	16.00	.00	2.00	60.00	500.00	18.00	1.00	2.00
0	1.10	3.50	15.00	16.00	.00	2.00	60.00	500.00	17.00	.00	2.00

0	.20	2.90	15.00	16.00	.00	2.00	60.00	500.00	21.00	.00	2.00
0	.80	2.90	15.00	16.00	.00	2.00	60.00	500.00	21.00	.00	2.00
0	1.20	3.20	15.00	16.00	.00	2.00	60.00	500.00	18.00	.00	2.00
0	.80	3.30	15.00	16.00	.00	2.00	60.00	500.00	17.00	1.00	2.00
0	.10	3.40	15.00	16.00	.00	2.00	60.00	500.00	17.00	1.00	2.00
0	.30	3.50	15.00	16.00	.00	2.00	60.00	500.00	15.00	1.00	2.00
0	.20	.70	14.00	17.00	.10	2.00	90.00	200.00	33.00	1.00	2.00
0	1.20	.10	14.00	17.00	.10	2.00	90.00	200.00	31.00	.00	2.00
0	.80	.10	14.00	17.00	.10	2.00	90.00	200.00	31.00	1.00	2.00

HH-52	29 OCT 80		PINS								
1	.00	.40	14.00	12.00	.20	2.00	60.00	200.00	35.00	1.00	2.00
0	1.40	.10	12.00	18.00	.20	2.00	60.00	200.00	35.00	.00	2.00
0	.70	.30	13.00	12.00	.20	2.00	60.00	200.00	35.00	1.00	2.00
0	1.30	.00	13.00	12.00	.20	2.00	60.00	200.00	34.00	.00	2.00
0	1.20	.30	13.00	12.00	.20	2.00	60.00	200.00	35.00	.00	2.00
0	1.10	.70	13.00	12.00	.20	2.00	60.00	200.00	34.00	1.00	2.00
0	1.00	.00	13.00	12.00	.20	2.00	60.00	200.00	34.00	.00	2.00
0	.10	.30	13.00	12.00	.20	2.00	60.00	200.00	34.00	.00	2.00
0	.30	.00	13.00	12.00	.20	2.00	60.00	200.00	33.00	1.00	2.00
0	1.20	1.10	13.00	12.00	.20	2.00	60.00	200.00	32.00	.00	2.00
0	1.30	1.00	13.00	12.00	.20	2.00	60.00	200.00	33.00	.00	2.00
0	.00	.40	13.00	12.00	.20	2.00	60.00	200.00	33.00	1.00	2.00
0	1.10	1.20	13.00	12.00	.20	2.00	60.00	200.00	32.00	.00	2.00
0	1.40	1.10	13.00	12.00	.20	2.00	60.00	200.00	32.00	.00	2.00
0	.40	.90	13.00	12.00	.20	2.00	60.00	200.00	33.00	1.00	2.00
0	.20	1.20	13.00	12.00	.20	2.00	60.00	200.00	31.00	1.00	2.00
0	1.20	.70	13.00	12.00	.20	2.00	60.00	200.00	33.00	.00	2.00
0	1.10	1.00	13.00	12.00	.20	2.00	60.00	200.00	32.00	.00	2.00
0	.70	1.00	13.00	12.00	.20	2.00	60.00	200.00	32.00	1.00	2.00
0	.10	1.30	13.00	12.00	.20	2.00	60.00	200.00	31.00	1.00	2.00
0	.30	2.20	15.00	16.00	.00	2.00	90.00	500.00	8.00	1.00	2.00
0	.40	2.10	15.00	16.00	.00	2.00	90.00	500.00	9.00	1.00	2.00
0	.00	2.00	15.00	16.00	.00	2.00	90.00	500.00	10.00	1.00	2.00
0	1.20	1.90	15.00	16.00	.00	2.00	90.00	500.00	10.00	.00	2.00
0	1.40	2.00	15.00	16.00	.00	2.00	90.00	500.00	10.00	.00	2.00
0	.00	1.90	15.00	16.00	.00	2.00	90.00	500.00	10.00	.00	2.00
0	.20	1.80	15.00	16.00	.00	2.00	90.00	500.00	12.00	.00	.00
0	.20	1.80	15.00	16.00	.00	2.00	90.00	500.00	12.00	.00	1.00
0	1.10	1.80	15.00	16.00	.00	2.00	90.00	500.00	12.00	.00	2.00
0	.30	1.70	15.00	16.00	.00	2.00	90.00	500.00	12.00	1.00	1.00
0	.00	1.60	15.00	16.00	.00	2.00	90.00	500.00	13.00	1.00	1.00
0	.50	1.50	15.00	16.00	.00	2.00	90.00	500.00	14.00	1.00	2.00
0	1.00	1.40	15.00	16.00	.00	2.00	90.00	500.00	16.00	.00	1.00
0	.40	1.70	15.00	16.00	.00	2.00	90.00	500.00	13.00	.00	2.00

41349 4 NOV 80 41/42'0TB

1	.40	.20	10.00	17.00	.50	3.00	15.00	30.00	2.00
1	1.40	1.50	10.00	18.00	1.00	3.00	15.00	26.00	2.00
0	4.50	1.50	10.00	18.00	1.00	3.00	15.00	24.00	2.00
0	5.80	.70	10.00	17.00	.50	3.00	15.00	28.00	2.00

41383 4 NOV 80 41/42'0TB

1	2.90	.10	15.00	14.00	.50	2.00	15.00	31.00	2.00
1	2.40	.70	15.00	14.00	.50	2.00	15.00	32.00	2.00
0	5.20	.70	15.00	14.00	.50	2.00	15.00	32.00	2.00
0	1.60	1.10	15.00	14.00	.50	2.00	15.00	33.00	2.00
0	6.80	.40	15.00	14.00	.50	2.00	15.00	32.00	2.00

PT BUNITA 4 NOV 80 41/42'0TB

1	1.70	1.20	15.00	14.00	.50	2.00	15.00	33.00	2.00
1	1.50	1.20	15.00	14.00	.50	2.00	15.00	33.00	2.00
0	6.50	.20	15.00	14.00	.50	2.00	15.00	30.00	2.00
0	8.20	1.10	15.00	14.00	.50	2.00	15.00	33.00	2.00
0	4.90	.90	15.00	14.00	.50	2.00	15.00	32.00	2.00
0	2.90	.40	15.00	14.00	.50	2.00	15.00	31.00	2.00
1	1.40	1.80	15.00	17.00	.90	2.00	15.00	31.00	2.00
1	.20	3.20	10.00	18.00	1.00	3.00	15.00	24.00	2.00
0	4.90	2.20	10.00	17.00	.50	3.00	15.00	30.00	2.00
0	6.30	2.90	10.00	17.00	.50	3.00	15.00	26.00	2.00
0	7.90	2.60	10.00	17.00	.50	3.00	15.00	28.00	2.00
0	6.60	3.40	10.00	18.00	1.00	3.00	15.00	22.00	2.00

PT ANGEL 4 NOV 80 41/42'0TB

1	2.40	.00	15.00	14.00	.50	2.00	15.00	29.00	.00
1	1.40	.30	15.00	14.00	.50	2.00	15.00	30.00	2.00
1	3.20	1.20	15.00	14.00	.50	2.00	15.00	33.00	2.00
0	5.20	1.40	15.00	14.00	.50	2.00	15.00	33.00	2.00
1	.20	2.00	10.00	17.00	.50	3.00	15.00	30.00	2.00
1	1.50	2.90	10.00	17.00	.50	3.00	15.00	26.00	2.00
0	4.40	3.00	10.00	17.00	.50	3.00	15.00	25.00	2.00
0	6.70	2.30	10.00	17.00	.50	3.00	15.00	30.00	2.00

HC-140	5 NOV 80		41/42°UTH						
1	.50	.10	15.00	15.00	.50	2.00	150.00	2000.00	52.00	2.00
0	3.40	.10	15.00	15.00	.50	2.00	150.00	2000.00	52.00	2.00
0	4.50	.10	15.00	15.00	.50	2.00	150.00	2000.00	52.00	2.00
1	4.40	.50	15.00	15.00	.50	2.00	150.00	2000.00	55.00	2.00
1	4.00	.50	15.00	18.00	.50	3.00	150.00	3000.00	55.00	2.00
0	4.40	.40	15.00	18.00	.50	3.00	150.00	3000.00	55.00	2.00
1	.40	.30	15.00	17.00	.10	3.00	150.00	500.00	23.00	2.00
1	5.10	.80	15.00	17.00	.10	3.00	150.00	500.00	22.00	2.00
1	7.20	1.00	15.00	17.00	.10	3.00	150.00	500.00	21.00	2.00
1	2.40	1.20	15.00	17.00	.10	3.00	150.00	1.00	16.00	2.00
0	5.50	1.50	15.00	17.00	.10	3.00	150.00	1000.00	15.00	2.00
1	1.00	1.60	15.00	17.00	.10	3.00	150.00	3000.00	11.00	2.00
0	2.40	1.50	15.00	17.00	.10	3.00	150.00	3000.00	12.00	2.00
0	4.70	1.50	15.00	17.00	.10	3.00	150.00	3000.00	13.00	2.00
1	.50	1.70	15.00	17.00	.10	3.00	150.00	2000.00	8.00	2.00
1	5.40	1.90	15.00	17.00	.10	3.00	150.00	2000.00	6.00	2.00
0	7.20	2.00	15.00	17.00	.10	3.00	150.00	2000.00	5.00	2.00

HH-3	5 NOV 80		41/42°UTH						
1	.10	.20	15.00	15.00	.30	2.00	110.00	500.00	33.00	2.00
0	4.30	.10	15.00	15.00	.30	2.00	110.00	500.00	33.00	2.00
0	5.40	.20	15.00	18.00	.30	3.00	110.00	500.00	33.00	2.00
1	1.30	1.00	15.00	17.00	.10	3.00	110.00	1000.00	25.00	2.00
0	3.80	1.40	15.00	17.00	.10	3.00	110.00	1000.00	24.00	2.00
1	1.40	2.40	15.00	17.00	.10	3.00	110.00	500.00	15.00	2.00
1	3.90	.50	15.00	18.00	.30	3.00	110.00	1000.00	33.00	2.00
1	.00	.70	15.00	18.00	.30	3.00	110.00	1000.00	33.00	2.00
0	4.20	.90	15.00	21.00	.10	3.00	110.00	1000.00	32.00	2.00
1	5.80	1.50	15.00	17.00	.10	3.00	110.00	2000.00	23.00	2.00
1	2.70	1.70	15.00	17.00	.10	3.00	110.00	2000.00	21.00	2.00

HH-3C	5 NOV 80		41/42°UTH						
1	2.70	.00	15.00	18.00	.30	3.00	90.00	500.00	33.00	2.00
1	.50	.40	15.00	18.00	.30	3.00	90.00	500.00	33.00	2.00
0	5.40	.60	15.00	21.00	.10	3.00	90.00	500.00	32.00	2.00
1	4.50	1.00	15.00	21.00	.10	3.00	90.00	1000.00	30.00	2.00
1	3.50	1.60	15.00	17.00	.10	3.00	90.00	2000.00	16.00	2.00
1	1.40	1.90	15.00	17.00	.10	3.00	90.00	*******	14.00	2.00
1	.50	2.00	15.00	17.00	.10	3.00	90.00	1000.00	12.00	2.00
1	5.00	2.30	15.00	17.00	.10	3.00	90.00	1000.00	8.00	2.00
0	6.70	2.40	15.00	17.00	.10	3.00	90.00	1000.00	7.00	2.00

41385 6 NOV 80 41/42°UTB

1	5.50	.40	15.00	10.00	.00	1.50	15.00	33.00	2.00
1	1.70	.70	15.00	10.00	.00	1.50	15.00	33.00	2.00
0	6.60	1.50	15.00	10.00	.00	1.50	15.00	31.00	2.00
0	1.70	1.70	15.00	11.00	.20	1.00	15.00	30.00	2.00
1	1.50	2.50	15.00	10.50	.30	1.00	15.00	24.00	2.00
1	2.60	5.40	15.00	10.50	.30	1.00	15.00	15.00	2.00
0	6.50	5.90	15.00	15.00	.10	2.00	15.00	10.00	2.00
0	5.00	2.90	15.00	10.50	.30	1.00	15.00	20.00	2.00

41422 6 NOV 80 41/42°UTB

1	1.20	.20	15.00	10.00	.00	1.50	15.00	33.00	2.00
1	1.70	.90	15.00	10.00	.00	1.50	15.00	33.00	2.00
1	1.10	1.50	15.00	10.00	.00	1.50	15.00	32.00	2.00
0	5.10	1.10	15.00	10.00	.00	1.50	15.00	32.00	2.00
0	6.50	.10	15.00	10.00	.00	1.50	15.00	33.00	2.00
0	4.20	1.40	15.00	10.00	.00	1.50	15.00	31.00	2.00
0	4.40	.30	15.00	10.00	.00	1.50	15.00	33.00	2.00
1	.70	2.30	15.00	10.50	.30	1.00	15.00	22.00	2.00
0	4.10	1.80	15.00	11.00	.20	1.00	15.00	26.00	2.00
0	5.10	2.60	15.00	10.50	.30	1.00	15.00	20.00	2.00
0	5.60	2.60	15.00	10.50	.30	1.00	15.00	16.00	2.00
0	5.30	2.90	15.00	10.50	.30	1.00	15.00	15.00	2.00
0	4.80	2.60	15.00	10.50	.30	1.00	15.00	16.00	2.00

PT BUNITA 6 NOV 80 41/42°UTB

1	1.60	.10	15.00	10.00	.00	1.50	15.00	33.00	2.00
1	1.70	1.10	15.00	10.00	.00	1.50	15.00	32.00	2.00
0	6.60	.00	15.00	10.00	.00	1.50	15.00	33.00	2.00
0	5.50	1.50	15.00	10.00	.00	1.50	15.00	31.00	2.00
0	5.90	.00	15.00	10.00	.00	1.50	15.00	33.00	2.00
1	.50	1.70	15.00	11.00	.20	1.00	15.00	25.00	2.00
1	4.80	5.10	15.00	10.50	.30	1.00	15.00	16.00	2.00
1	1.30	5.10	15.00	10.50	.30	1.00	15.00	15.00	2.00
0	6.40	1.90	15.00	11.00	.20	1.00	15.00	25.00	2.00

PT	LOBOS	22 JAN 81		16'BOATS								
	0	2.60	.20	12.00	12.50	1.00	2.00	11.80	50.00	-1.00	.00	.00
	0	4.40	.70	12.00	13.50	1.00	2.00	11.80	54.00	-1.00	.00	2.00
	0	5.40	1.50	12.00	13.50	1.00	2.00	11.80	57.00	-1.00	.00	1.00
	0	2.60	1.90	12.00	13.50	1.00	2.00	11.80	39.00	-1.00	.00	2.00
	0	1.40	1.50	12.00	13.50	1.00	2.00	11.80	58.00	-1.00	1.00	2.00

PT	LOBOS	23 JAN 81		KAFTS								
	1	1.50	.01	15.00	9.00	.00	1.00	17.00	55.00	2.00	.00	2.00
	1	2.80	.00	15.00	11.50	.30	2.00	17.00	57.00	.00	.00	2.00
	1	1.20	1.00	15.00	11.50	.30	2.00	17.00	39.00	1.00	1.00	2.00
	1	.70	1.50	15.00	11.50	.50	2.00	17.00	40.00	1.00	1.00	2.00
	1	1.40	1.90	15.00	11.50	.50	2.00	17.00	40.00	2.00	1.00	2.00
	0	2.00	.60	15.00	11.50	.50	2.00	17.00	37.00	1.00	.00	2.00
	0	3.10	1.20	15.00	11.50	.30	2.00	17.00	39.00	1.00	.00	1.00
	0	2.80	1.80	15.00	11.50	.50	2.00	17.00	40.00	1.00	.00	.00
	1	2.00	.10	15.00	9.00	.00	1.00	17.00	39.00	1.00	.00	.00
	0	3.50	2.30	15.00	11.50	.50	2.00	17.00	39.00	.00	.00	.00

HH-S	25 JAN 81		MAPTS									
1	.60	.20	15.00	11.50	.30	2.00	70.00	1000.00	59.00	.00	1.00	2.00
0	1.40	.20	15.00	11.50	.30	2.00	70.00	1000.00	59.00	1.00	.00	.00
0	2.40	.20	15.00	11.50	.30	2.00	70.00	1000.00	59.00	1.00	1.00	1.00
0	2.10	.20	15.00	11.50	.30	2.00	70.00	1000.00	59.00	.00	.00	2.00
1	1.50	.30	15.00	11.50	.30	2.00	70.00	1000.00	40.00	2.00	1.00	2.00
1	1.40	.40	15.00	11.50	.30	2.00	70.00	1000.00	40.00	1.00	1.00	2.00
0	2.20	.40	15.00	11.50	.30	2.00	70.00	1000.00	40.00	.00	.00	1.00
0	.30	.40	15.00	11.50	.30	2.00	70.00	1000.00	40.00	.00	1.00	2.00
0	2.70	.30	15.00	11.50	.30	2.00	70.00	1000.00	40.00	1.00	.00	2.00
0	2.40	.50	15.00	11.50	.30	2.00	70.00	1000.00	40.00	1.00	.00	1.00
1	1.40	.50	15.00	11.50	.30	2.00	70.00	1000.00	59.00	2.00	1.00	2.00
1	.50	.60	15.00	11.50	.30	2.00	70.00	1000.00	58.00	.00	1.00	2.00
1	1.40	.70	15.00	11.50	.30	2.00	70.00	1000.00	58.00	1.00	1.00	2.00
0	2.70	.30	15.00	11.50	.30	2.00	70.00	1000.00	59.00	1.00	.00	2.00
0	1.10	.70	15.00	11.50	.30	2.00	70.00	1000.00	58.00	1.00	.00	2.00
0	2.40	.60	15.00	11.50	.30	2.00	70.00	1000.00	58.00	.00	.00	2.00
0	4.00	.10	15.00	11.50	.30	2.00	70.00	1000.00	59.00	1.00	.00	2.00

HH-S2	25 JAN 81		PIRS								
1	.10	.50	10.00	6.50	.30	1.00	60.00	200.00	42.00	1.00	2.00
1	.40	.60	10.00	6.50	.30	1.00	60.00	200.00	42.00	1.00	2.00
1	.20	.60	10.00	6.50	.30	1.00	60.00	200.00	42.00	.00	2.00
1	.20	.90	7.00	10.00	.20	1.50	60.00	200.00	42.00	1.00	2.00
1	.10	1.50	7.00	10.00	.20	1.50	60.00	200.00	41.00	1.00	2.00
0	1.00	.20	10.00	6.50	.30	1.00	60.00	200.00	41.00	.00	2.00
0	.00	.50	10.00	6.50	.30	1.00	60.00	200.00	41.00	1.00	2.00
0	.90	.70	10.00	6.50	.30	1.00	60.00	200.00	42.00	.00	1.00
0	.90	.60	10.00	6.50	.30	1.00	60.00	200.00	42.00	.00	2.00
0	.30	.70	10.00	6.50	.30	1.00	60.00	200.00	42.00	1.00	2.00
0	.70	.90	7.00	10.00	.20	1.50	60.00	200.00	41.00	1.00	2.00
0	1.10	1.10	7.00	10.00	.20	1.50	60.00	200.00	41.00	.00	2.00
0	.90	1.20	7.00	10.00	.20	1.50	60.00	200.00	41.00	.00	2.00
0	.20	1.40	7.00	10.00	.20	1.50	60.00	200.00	40.00	.00	2.00
0	.50	1.60	7.00	7.50	.10	1.00	60.00	200.00	39.00	.00	2.00
0	.90	1.60	7.00	7.50	.10	1.00	60.00	200.00	39.00	.00	2.00
0	1.00	1.70	7.00	7.50	.10	1.00	60.00	200.00	39.00	.00	2.00
0	.50	1.80	7.00	7.50	.10	1.00	60.00	200.00	38.00	1.00	2.00
0	.00	2.00	7.00	7.50	.10	1.00	60.00	200.00	38.00	1.00	2.00
0	.70	1.50	7.00	10.00	.20	1.50	60.00	200.00	40.00	1.00	2.00
0	.20	1.60	7.00	10.00	.20	1.50	60.00	200.00	40.00	1.00	.00
0	.50	1.80	7.00	7.50	.10	1.00	60.00	200.00	38.00	1.00	2.00
0	.90	1.80	7.00	7.50	.10	1.00	60.00	200.00	38.00	.00	2.00
0	.90	1.00	7.00	10.00	.20	1.50	60.00	200.00	41.00	.00	2.00
0	.90	1.00	7.00	10.00	.20	1.50	60.00	200.00	41.00	.00	2.00
0	1.10	1.50	7.00	10.00	.20	1.50	60.00	200.00	40.00	.00	2.00
0	.50	.80	10.00	6.50	.30	1.00	60.00	200.00	42.00	.00	2.00
0	.90	.50	10.00	6.50	.30	1.00	60.00	200.00	42.00	.00	2.00
0	.00	1.00	7.00	10.00	.20	1.50	60.00	200.00	41.00	.00	2.00
0	1.10	1.00	7.00	10.00	.20	1.50	60.00	200.00	41.00	.00	2.00
1	.10	2.10	7.00	8.50	.60	1.50	90.00	200.00	26.00	1.00	2.00
1	.00	2.60	7.00	8.50	.60	1.50	90.00	200.00	21.00	1.00	2.00

0	.80	2.20	7.00	8.50	.60	1.50	90.00	200.00	25.00	1.00	2.00	
0	.40	2.20	7.00	8.50	.60	1.50	90.00	200.00	25.00	1.00	2.00	
0	1.10	2.30	7.00	8.50	.60	1.50	90.00	200.00	24.00	.00	2.00	
0	.70	2.30	7.00	8.50	.60	1.50	90.00	200.00	24.00	1.00	2.00	
0	.20	2.40	7.00	8.50	.60	1.50	90.00	200.00	23.00	1.00	2.00	
0	.50	2.50	7.00	8.50	.60	1.50	90.00	200.00	22.00	1.00	2.00	
0	.90	2.70	7.00	8.50	.60	1.50	90.00	200.00	20.00	.00	2.00	
0	.50	2.50	7.00	8.50	.60	1.50	90.00	200.00	22.00	1.00	2.00	
0	.80	2.70	7.00	8.50	.60	1.50	90.00	200.00	20.00	1.00	2.00	
0	.50	2.80	7.00	7.00	.50	1.00	90.00	200.00	19.00	1.00	2.00	
0	1.10	2.80	7.00	7.00	.50	1.00	90.00	200.00	19.00	.00	2.00	
0	.10	3.00	7.00	7.00	.50	1.00	90.00	200.00	17.00	.00	2.00	
0	.50	3.00	7.00	7.00	.50	1.00	90.00	200.00	17.00	.00	2.00	
0	1.80	2.80	7.00	8.50	.60	1.50	90.00	200.00	21.00	.00	2.00	
0	.50	2.70	7.00	8.50	.60	1.50	90.00	200.00	20.00	1.00	2.00	
0	.10	2.70	7.00	7.00	.50	1.00	90.00	200.00	20.00	1.00	2.00	
0	.50	2.90	7.00	7.00	.50	1.00	90.00	200.00	18.00	1.00	2.00	
0	1.10	2.90	7.00	7.00	.50	1.00	90.00	200.00	18.00	.00	2.00	
0	1.10	2.90	7.00	7.00	.50	1.00	90.00	200.00	18.00	.00	2.00	
0	.50	3.00	7.00	7.00	.50	1.00	90.00	200.00	17.00	1.00	2.00	
0	.10	3.10	7.00	7.00	.50	1.00	90.00	200.00	16.00	1.00	2.00	
0	.40	3.20	7.00	7.00	.50	1.00	90.00	200.00	15.00	1.00	2.00	
0	.50	3.30	7.00	7.00	.50	1.00	90.00	200.00	14.00	.00	2.00	
0	1.20	3.10	7.00	7.00	.50	1.00	90.00	200.00	15.00	.00	2.00	
0	.20	3.30	7.00	7.00	.50	1.00	90.00	200.00	13.00	1.00	2.00	
0	.60	3.20	7.00	7.00	.50	1.00	90.00	200.00	15.00	1.00	2.00	
0	.40	3.30	7.00	7.00	.50	1.00	90.00	200.00	13.00	1.00	2.00	
HE-151	27 JAN 81		MAP 15									
1	1.40	.50	7.00	7.00	1.00	1.50	153.00	500.00	40.00	.00	1.00	2.00
1	3.00	.60	7.00	7.00	1.00	1.50	153.00	500.00	39.00	2.00	1.00	2.00
1	.40	.80	7.00	7.00	1.00	1.50	153.00	500.00	39.00	2.00	1.00	2.00
1	.80	1.00	10.00	8.50	1.00	2.00	153.00	500.00	38.00	1.00	1.00	2.00
1	.40	1.10	10.00	8.50	1.00	2.00	153.00	500.00	37.00	.00	1.00	2.00
1	.70	1.30	10.00	8.50	1.00	2.00	153.00	500.00	35.00	1.00	1.00	2.00
0	1.10	.10	5.00	8.00	1.00	2.00	153.00	500.00	41.00	.00	1.00	2.00
0	2.00	.10	7.00	7.00	1.00	1.50	153.00	500.00	41.00	2.00	1.00	2.00
0	.00	.50	7.00	7.00	1.00	1.50	153.00	500.00	40.00	2.00	1.00	2.00
0	.70	1.00	10.00	8.50	1.00	2.00	153.00	500.00	38.00	2.00	1.00	2.00
0	2.30	.70	7.00	7.00	1.00	1.50	153.00	500.00	39.00	.00	1.00	2.00
1	1.10	2.50	12.00	10.00	1.00	2.00	150.00	1000.00	25.00	2.00	1.00	2.00
1	1.20	2.70	15.00	8.50	1.00	2.00	150.00	1000.00	23.00	2.00	1.00	2.00
0	2.00	2.20	12.00	10.00	1.00	2.00	150.00	1000.00	27.00	2.00	1.00	2.00
0	1.40	1.60	10.00	8.50	1.00	2.00	150.00	1000.00	33.00	1.00	1.00	2.00
0	.50	1.80	12.00	10.00	1.00	2.00	150.00	1000.00	31.00	1.00	1.00	.00
0	2.10	2.20	12.00	10.00	1.00	2.00	150.00	1000.00	27.00	.00	1.00	2.00
0	1.00	1.60	10.00	8.50	1.00	2.00	150.00	1000.00	33.00	.00	1.00	1.00
0	3.70	2.00	15.00	6.50	1.00	2.00	150.00	1000.00	22.00	.00	1.00	1.00
0	3.80	.50	7.00	7.00	1.00	1.50	153.00	500.00	40.00	2.00	1.00	2.00
0	2.90	2.10	10.00	12.00	1.00	2.00	150.00	1000.00	28.00	2.00	1.00	1.00
0	3.50	2.40	10.00	12.00	1.00	2.00	150.00	1000.00	26.00	.00	1.00	2.00
0	3.40	2.50	6.50	15.00	1.00	2.00	150.00	1000.00	24.00	2.00	1.00	.00
0	3.40	1.50	8.50	10.00	1.00	2.00	150.00	1000.00	38.00	2.00	1.00	2.00
0	2.40	1.60	8.50	10.00	1.00	2.00	150.00	1000.00	31.00	.00	1.00	2.00

HH-52	27 JAN 81		KAFIS								
1	.70	.20	5.00	8.00	1.00	2.00	90.00	1000.00	42.00	2.00	1.00	2.00
1	1.20	.30	5.00	8.00	1.00	2.00	90.00	1000.00	42.00	2.00	1.00	2.00
1	1.50	1.00	7.00	7.00	1.00	1.50	90.00	1000.00	41.00	.00	1.00	.00
1	1.40	1.10	7.00	7.00	1.00	1.50	90.00	1000.00	40.00	2.00	1.00	2.00
1	1.20	1.40	7.00	7.00	1.00	1.50	90.00	1000.00	39.00	1.00	1.00	2.00
1	1.50	1.40	7.00	7.00	1.00	1.50	90.00	1000.00	39.00	.00	1.00	2.00
1	1.20	1.90	10.00	8.50	1.00	2.00	90.00	1000.00	37.00	1.00	1.00	2.00
0	2.10	.60	5.00	8.00	1.00	2.00	90.00	1000.00	42.00	2.00	1.00	1.00
0	.50	.60	5.00	8.00	1.00	2.00	90.00	1000.00	41.00	.00	1.00	2.00
1	.50	2.10	12.00	10.00	1.00	2.00	90.00	500.00	29.00	.00	1.00	.00
1	.80	2.30	12.00	10.00	1.00	2.00	90.00	500.00	27.00	2.00	1.00	.00
1	1.20	3.00	15.00	6.50	1.00	2.00	90.00	500.00	20.00	.00	1.00	.00
1	1.20	3.40	15.00	6.50	1.00	2.00	90.00	500.00	16.00	1.00	1.00	2.00
0	2.00	2.60	15.00	6.50	1.00	2.00	90.00	500.00	24.00	2.00	1.00	2.00
0	1.70	2.50	12.00	10.00	1.00	2.00	90.00	500.00	25.00	2.00	1.00	2.00
0	1.20	3.20	15.00	6.50	1.00	2.00	90.00	500.00	18.00	2.00	1.00	.00
0	1.40	3.30	15.00	6.50	1.00	2.00	90.00	500.00	15.00	.00	1.00	2.00
0	1.70	2.90	15.00	6.50	1.00	2.00	90.00	500.00	21.00	1.00	1.00	2.00
0	4.00	3.30	15.00	6.50	1.00	2.00	90.00	500.00	17.00	2.00	.00	2.00
0	3.70	2.70	15.00	6.50	1.00	2.00	90.00	500.00	18.00	.00	1.00	2.00
0	3.40	.80	5.00	8.00	1.00	2.00	90.00	1000.00	41.00	.00	1.00	2.00
0	2.60	1.90	8.50	10.00	1.00	2.00	90.00	1000.00	37.00	1.00	1.00	2.00

HH-52	28 JAN 81		16°00AFS								
1	2.20	.10	8.00	12.50	.00	2.00	90.00	500.00	28.00	-1.00	1.00	2.00
1	1.20	.70	8.00	12.50	.00	2.00	90.00	500.00	29.00	-1.00	1.00	2.00
1	2.10	1.00	8.00	11.00	.00	2.00	90.00	500.00	31.00	-1.00	1.00	2.00
1	.60	1.10	8.00	11.00	.00	2.00	90.00	500.00	32.00	-1.00	1.00	2.00
1	2.00	1.60	8.00	11.00	.00	2.00	90.00	500.00	36.00	-1.00	1.00	2.00
1	.70	2.30	15.00	9.00	.00	1.50	90.00	1000.00	42.00	-1.00	1.00	2.00
1	4.30	2.70	15.00	9.00	.00	1.50	90.00	1000.00	41.00	-1.00	.00	2.00
1	1.20	2.80	15.00	9.00	.00	1.50	90.00	1000.00	41.00	-1.00	1.00	2.00
1	2.10	3.00	15.00	6.50	.00	1.00	90.00	1000.00	38.00	-1.00	.00	2.00
0	2.50	2.30	15.00	9.00	.00	1.50	90.00	1000.00	42.00	-1.00	1.00	2.00
0	2.10	3.10	15.00	6.50	.00	1.00	90.00	1000.00	40.00	-1.00	1.00	2.00

HC-131	29 JAN 81		41/42°0TB							
1	.00	3.10	18.00	12.00	.00	3.00	150.00	1500.00	16.00	1.00
1	4.50	3.30	18.00	12.00	.00	3.00	150.00	1500.00	11.00	2.00
0	6.70	4.00	18.00	12.00	.00	3.00	150.00	1500.00	18.00	2.00
0	10.20	2.00	18.00	12.00	.00	3.00	150.00	1500.00	22.00	2.00

HH-3	29 JAN 81		41/42°0TB							
1	.10	1.00	18.00	12.00	.00	3.00	110.00	500.00	9.00	2.00
1	6.00	2.30	18.00	12.00	.00	3.00	110.00	500.00	3.00	2.00
0	12.10	1.10	18.00	12.00	.00	3.00	110.00	500.00	16.00	2.00
0	6.00	1.00	18.00	12.00	.00	3.00	110.00	500.00	10.00	2.00

HH-52	29 JAN 81		41/42°01N							
1	.40	1.10	15.00	12.50	.00	2.00	90.00	1000.00	39.00	2.00
0	5.70	.30	15.00	12.50	.00	2.00	90.00	1000.00	35.00	2.00
0	11.80	.30	15.00	12.50	.00	2.00	90.00	1000.00	34.00	2.00

HC-151	30 JAN 81		41/42°01N							
1	5.50	.10	15.00	9.50	.80	2.00	150.00	1500.00	42.00	2.00
1	5.40	.30	15.00	10.00	.80	2.00	150.00	1500.00	41.00	2.00
0	4.80	1.10	20.00	8.50	.80	2.00	150.00	1500.00	38.00	2.00

HH-3	30 JAN 81		41/42°01N							
1	5.50	.50	15.00	9.00	.40	2.00	110.00	1000.00	41.00	2.00
0	11.40	.80	15.00	9.50	.60	2.00	110.00	1000.00	42.00	2.00
1	5.50	1.40	15.00	8.50	.60	1.00	110.00	1000.00	41.00	2.00
0	11.50	1.30	15.00	8.50	.60	1.00	110.00	1000.00	41.00	2.00
0	11.10	1.40	15.00	10.00	.80	2.00	110.00	1000.00	39.00	2.00

HH-52	30 JAN 81		41/42°01N							
1	5.80	.70	15.00	9.50	.80	2.00	90.00	500.00	41.00	2.00
0	11.70	1.10	15.00	9.50	.80	2.00	90.00	500.00	41.00	2.00

41345	5 FEB 81		16'BOATS								
1	1.40	.30	10.00	5.00	.50	1.00	15.00	33.00	-1.00	1.00	.00
1	1.20	.60	10.00	7.50	.90	1.50	15.00	30.00	-1.00	.00	.00
1	.60	.80	10.00	7.50	.90	1.50	15.00	26.00	-1.00	.00	.00
1	1.10	1.10	10.00	8.50	1.00	1.50	15.00	26.00	-1.00	1.00	2.00
1	2.70	1.10	10.00	8.50	1.00	1.50	15.00	25.00	-1.00	1.00	2.00
1	1.80	2.30	10.00	.00	1.00	.00	15.00	13.00	-1.00	1.00	2.00
0	1.20	3.00	10.00	9.50	1.00	1.00	15.00	4.00	-1.00	.00	2.00
0	1.80	.80	10.00	7.50	.90	1.50	15.00	27.00	-1.00	.00	2.00
0	.90	2.20	10.00	.00	1.00	.00	15.00	14.00	-1.00	1.00	2.00
0	4.10	3.00	10.00	9.50	1.00	1.00	15.00	4.00	-1.00	1.00	2.00
0	3.00	2.30	10.00	.00	1.00	.00	15.00	13.00	-1.00	.00	2.00

PT VERDE	5 FEB 81		16'BOATS								
1	2.00	.20	10.00	16.00	.00	3.50	15.00	55.00	-1.00	.00	2.00
1	1.00	1.10	10.00	15.00	.00	3.00	15.00	38.00	-1.00	1.00	2.00
1	.20	1.60	10.00	9.50	.00	2.00	15.00	40.00	-1.00	.00	2.00
0	2.80	1.30	10.00	12.00	.00	2.00	15.00	39.00	-1.00	1.00	2.00
0	1.80	1.60	10.00	12.00	.00	2.00	15.00	40.00	-1.00	.00	2.00
0	2.90	1.10	10.00	15.00	.00	3.00	15.00	38.00	-1.00	1.00	2.00
1	1.20	2.10	10.00	5.00	.50	1.00	15.00	38.00	-1.00	1.00	2.00
1	1.70	2.30	10.00	5.00	.50	1.00	15.00	36.00	-1.00	.00	2.00
1	2.10	2.60	10.00	5.00	.50	1.00	15.00	34.00	-1.00	1.00	2.00
1	1.40	2.70	10.00	5.00	.50	1.00	15.00	34.00	-1.00	1.00	2.00
1	.70	3.30	10.00	7.50	.90	1.50	15.00	29.00	-1.00	.00	2.00
1	3.80	4.30	10.00	8.50	1.00	1.50	15.00	19.00	-1.00	1.00	2.00
0	2.60	3.70	10.00	7.50	.90	1.50	15.00	25.00	-1.00	1.00	2.00
0	3.10	2.10	10.00	5.00	.50	1.00	15.00	39.00	-1.00	1.00	2.00
0	4.00	1.60	10.00	9.50	.00	2.00	15.00	42.00	-1.00	1.00	2.00
0	3.40	2.50	10.00	5.00	.50	1.00	15.00	34.00	-1.00	1.00	2.00
0	5.00	1.80	10.00	9.50	.00	2.00	15.00	41.00	-1.00	.00	2.00
0	4.60	4.60	10.00	.00	1.00	.00	15.00	17.00	-1.00	.00	2.00

HH-S	[illegible]		IN MINUTES								
1	.80	.10	10.00	16.00	.00	5.50	60.00	1000.00	55.00	-1.00	1.00	2.00
1	.80	.40	10.00	16.00	.00	5.50	60.00	1000.00	55.00	-1.00	1.00	2.00
1	.80	.90	10.00	15.00	.00	5.00	60.00	1000.00	54.00	-1.00	1.00	2.00
1	1.30	.90	10.00	15.00	.00	5.00	60.00	1000.00	54.00	-1.00	1.00	2.00
1	2.30	1.60	10.00	9.50	.00	2.00	60.00	1000.00	42.00	-1.00	1.00	2.00
0	2.20	.10	10.00	16.00	.00	5.50	60.00	1000.00	53.00	-1.00	1.00	.00
0	2.20	.10	10.00	16.00	.00	5.50	60.00	1000.00	53.00	-1.00	1.00	2.00
0	2.40	.40	10.00	16.00	.00	5.50	60.00	1000.00	55.00	-1.00	1.00	2.00
0	2.10	.40	10.00	16.00	.00	5.50	60.00	1000.00	56.00	-1.00	1.00	2.00
0	1.40	.40	10.00	16.00	.00	5.50	60.00	1000.00	55.00	-1.00	1.00	2.00
1	2.10	1.80	10.00	5.00	.50	1.00	60.00	1000.00	35.00	-1.00	1.00	2.00
1	1.10	2.20	10.00	7.50	.90	1.50	60.00	1000.00	51.00	-1.00	1.00	1.00
1	1.80	2.50	10.00	7.50	.90	1.50	60.00	1000.00	28.00	-1.00	1.00	2.00
1	.10	2.50	10.00	7.50	.90	1.50	60.00	1000.00	28.00	-1.00	1.00	2.00
0	.50	1.80	10.00	5.00	.50	1.00	60.00	1000.00	35.00	-1.00	1.00	2.00
0	2.50	2.20	10.00	7.50	.90	1.50	60.00	1000.00	51.00	-1.00	1.00	2.00
0	3.10	2.70	10.00	7.50	.90	1.50	60.00	1000.00	27.00	-1.00	1.00	2.00
0	2.90	2.20	10.00	7.50	.90	1.50	60.00	1000.00	31.00	-1.00	1.00	2.00
0	3.20	.80	10.00	15.00	.00	3.00	60.00	1000.00	41.00	-1.00	1.00	2.00
0	3.70	2.50	10.00	7.50	.90	1.50	60.00	1000.00	28.00	-1.00	1.00	2.00

ML-130	[illegible]		PIMS								
1	.20	.50	13.00	10.50	.20	3.00	150.00	200.00	24.00	1.00	2.00
1	.20	.60	13.00	10.50	.20	3.00	150.00	200.00	21.00	1.00	2.00
0	.00	.10	13.00	10.00	.20	2.00	150.00	200.00	26.00	1.00	2.00
0	1.40	.10	13.00	10.00	.20	2.00	150.00	200.00	26.00	.00	2.00
0	.40	.20	13.00	10.50	.20	3.00	150.00	200.00	25.00	1.00	2.00
0	.00	.10	13.00	10.00	.20	2.00	150.00	200.00	26.00	1.00	2.00
0	1.20	.20	13.00	10.50	.20	3.00	150.00	200.00	25.00	.00	2.00
0	1.50	.20	13.00	10.50	.20	3.00	150.00	200.00	25.00	.00	2.00
0	.20	.40	13.00	10.50	.20	3.00	150.00	200.00	23.00	1.00	2.00
0	1.10	.40	13.00	10.50	.20	3.00	150.00	200.00	23.00	.00	2.00
0	.50	.50	13.00	10.50	.20	3.00	150.00	200.00	22.00	1.00	2.00
0	1.10	.50	13.00	10.50	.20	3.00	150.00	200.00	21.00	.00	2.00
0	.40	.70	13.00	10.50	.20	3.00	150.00	200.00	20.00	1.00	2.00
0	.50	.70	13.00	10.50	.20	3.00	150.00	200.00	20.00	1.00	2.00
0	1.00	.60	13.00	10.50	.20	3.00	150.00	200.00	18.00	.00	2.00
0	1.50	.50	13.00	10.50	.20	3.00	150.00	200.00	24.00	.00	2.00
1	1.10	1.40	13.00	8.00	.10	2.00	150.00	200.00	10.00	.00	2.00
0	1.10	1.50	13.00	8.00	.10	2.00	150.00	200.00	8.00	.00	2.00
0	.50	1.50	13.00	8.00	.10	2.00	150.00	200.00	8.00	1.00	2.00
0	.70	1.60	13.00	8.00	.10	2.00	150.00	200.00	8.00	1.00	2.00
0	.50	1.40	13.00	10.50	.20	3.00	150.00	200.00	10.00	1.00	2.00
0	.50	1.50	13.00	10.50	.20	3.00	150.00	200.00	11.00	1.00	2.00
0	.00	1.20	13.00	10.50	.20	3.00	150.00	200.00	11.00	1.00	2.00
0	.80	1.10	13.00	10.50	.20	3.00	150.00	200.00	14.00	1.00	2.00
0	.70	1.10	13.00	10.50	.20	3.00	150.00	200.00	14.00	1.00	2.00
0	.70	.90	13.00	10.50	.20	3.00	150.00	200.00	15.00	1.00	2.00
0	.20	.90	13.00	10.50	.20	3.00	150.00	200.00	16.00	1.00	2.00
0	.90	1.50	13.00	10.50	.20	3.00	150.00	200.00	11.00	.00	2.00
0	.00	1.10	13.00	10.50	.20	3.00	150.00	200.00	13.00	1.00	2.00

0	.50	1.40	15.00	8.00	.10	2.00	150.00	200.00	9.00	1.00	2.00
0	.70	1.30	15.00	10.50	.20	3.00	150.00	200.00	12.00	1.00	2.00
1	1.20	1.70	15.00	8.00	.10	2.00	150.00	200.00	5.00	.00	2.00
1	.50	1.70	15.00	8.00	.10	2.00	150.00	200.00	5.00	1.00	2.00
0	.10	1.90	15.00	8.00	.10	2.00	150.00	200.00	3.00	1.00	2.00
0	.50	2.00	15.00	8.00	.10	2.00	150.00	200.00	2.00	1.00	2.00
0	1.20	1.90	15.00	8.00	.10	2.00	150.00	200.00	3.00	.00	2.00
0	.10	2.00	15.00	8.00	.10	2.00	150.00	200.00	1.00	1.00	2.00
0	.10	1.80	15.00	8.00	.10	2.00	150.00	200.00	4.00	1.00	2.00
0	1.40	1.60	15.00	8.00	.10	2.00	150.00	200.00	6.00	.00	2.00
0	1.40	1.70	15.00	8.00	.10	2.00	150.00	200.00	5.00	.00	2.00
0	1.40	1.90	15.00	8.00	.10	2.00	150.00	200.00	7.00	.00	2.00

HC-131	9 Ft6 of		PIWS								
1	.00	.10	15.00	7.50	.20	2.00	150.00	550.00	44.00	1.00	2.00
1	.10	.30	15.00	6.00	.30	2.00	150.00	550.00	42.00	1.00	2.00
0	.10	.10	15.00	7.50	.20	2.00	150.00	550.00	44.00	1.00	2.00
1	.20	.90	15.00	6.00	.30	2.00	150.00	550.00	39.00	1.00	2.00
1	.00	1.60	15.00	8.00	.40	1.00	150.00	550.00	33.00	1.00	2.00
0	1.40	1.60	15.00	8.00	.40	1.00	150.00	550.00	33.00	.00	2.00
0	1.00	1.50	15.00	8.00	.40	1.00	150.00	550.00	34.00	.00	2.00
0	.70	1.60	15.00	8.00	.40	1.00	150.00	550.00	33.00	1.00	2.00
0	.80	1.40	15.00	8.00	.40	1.00	150.00	550.00	35.00	1.00	2.00
0	.40	1.50	15.00	6.00	.40	1.00	150.00	550.00	34.00	.00	2.00
0	.60	1.50	15.00	8.00	.40	1.00	150.00	550.00	36.00	.00	2.00
0	1.10	1.30	15.00	8.00	.40	1.00	150.00	550.00	36.00	.00	2.00
0	.40	1.20	15.00	8.00	.40	1.00	150.00	550.00	36.00	1.00	2.00
0	1.10	1.40	15.00	8.00	.40	1.00	150.00	550.00	35.00	.00	2.00
0	.60	1.20	15.00	8.00	.40	1.00	150.00	550.00	37.00	1.00	2.00
0	1.00	1.20	15.00	8.00	.40	1.00	150.00	550.00	37.00	.00	2.00
0	1.00	1.00	15.00	6.00	.30	2.00	150.00	550.00	38.00	.00	2.00
0	1.10	.00	15.00	7.50	.20	2.00	150.00	550.00	44.00	.00	2.00
0	.80	.30	15.00	7.50	.20	2.00	150.00	550.00	43.00	1.00	2.00
0	.00	.40	15.00	7.50	.20	2.00	150.00	550.00	43.00	1.00	2.00
0	.10	.70	15.00	6.00	.30	2.00	150.00	550.00	41.00	1.00	2.00
0	1.30	.50	15.00	7.50	.20	2.00	150.00	550.00	42.00	.00	2.00
0	.70	.50	15.00	7.50	.20	2.00	150.00	550.00	42.00	1.00	2.00
0	.50	.30	15.00	7.50	.20	2.00	150.00	550.00	43.00	1.00	2.00
0	1.30	.60	15.00	6.00	.30	2.00	150.00	550.00	41.00	.00	2.00
0	1.10	.30	15.00	7.50	.20	2.00	150.00	550.00	43.00	.00	2.00
0	.20	.70	15.00	6.00	.30	2.00	150.00	550.00	40.00	1.00	2.00
0	1.00	.60	15.00	6.00	.30	2.00	150.00	550.00	40.00	.00	2.00
0	.70	.90	15.00	6.00	.30	2.00	150.00	550.00	39.00	1.00	2.00
0	1.30	1.60	15.00	10.00	.40	2.00	150.00	500.00	29.00	.00	2.00
0	.50	1.80	15.00	10.00	.40	2.00	150.00	500.00	29.00	1.00	2.00
0	.60	1.90	15.00	10.00	.40	2.00	150.00	500.00	28.00	1.00	2.00
0	.90	2.10	15.00	10.00	.40	2.00	150.00	500.00	26.00	.00	2.00
0	1.30	1.90	15.00	10.00	.40	2.00	150.00	500.00	28.00	.00	2.00
0	1.40	1.90	15.00	10.00	.40	2.00	150.00	500.00	28.00	.00	2.00
0	1.00	2.00	15.00	10.00	.40	2.00	150.00	500.00	27.00	.00	2.00
0	.50	1.70	15.00	10.00	.40	2.00	150.00	500.00	29.00	1.00	2.00
0	.90	1.90	15.00	10.00	.40	2.00	150.00	500.00	27.00	.00	2.00

0	.70	2.10	13.00	10.50	.20	3.00	150.00	500.00	26.00	1.00	2.00
0	.00	2.40	15.00	10.50	.20	3.00	150.00	500.00	25.00	1.00	2.00
0	.40	2.40	13.00	10.50	.20	3.00	150.00	500.00	23.00	.00	2.00
0	.10	2.40	13.00	10.50	.20	3.00	150.00	500.00	25.00	1.00	2.00
0	1.50	2.50	13.00	10.50	.20	3.00	150.00	500.00	23.00	.00	2.00
0	1.50	2.40	15.00	10.50	.20	3.00	150.00	500.00	25.00	.00	2.00
0	1.50	2.40	13.00	10.50	.20	3.00	150.00	500.00	25.00	.00	2.00
0	.40	2.40	15.00	10.50	.20	3.00	150.00	500.00	23.00	1.00	2.00
0	.20	2.70	13.00	10.50	.20	3.00	150.00	550.00	19.00	1.00	2.00
0	.40	2.50	15.00	10.50	.20	3.00	150.00	550.00	21.00	1.00	2.00
0	.40	2.50	15.00	10.50	.20	3.00	150.00	550.00	21.00	.00	2.00
0	1.00	2.70	15.00	10.50	.20	3.00	150.00	550.00	20.00	.00	2.00
0	.70	2.70	15.00	10.50	.20	3.00	150.00	550.00	20.00	1.00	2.00
0	.40	2.60	15.00	10.50	.20	3.00	150.00	550.00	18.00	1.00	2.00
0	.70	2.60	15.00	10.50	.20	3.00	150.00	550.00	18.00	1.00	2.00
0	1.10	3.00	15.00	10.50	.20	3.00	150.00	550.00	16.00	.00	2.00
0	.30	2.60	15.00	10.50	.20	3.00	150.00	550.00	15.00	1.00	2.00
0	.90	3.00	15.00	10.50	.20	3.00	150.00	550.00	17.00	1.00	2.00
0	.50	3.10	15.00	10.50	.20	3.00	150.00	550.00	16.00	.00	2.00
0	.20	3.20	15.00	10.50	.20	3.00	150.00	550.00	14.00	1.00	2.00
0	.50	3.40	15.00	10.50	.20	3.00	150.00	550.00	15.00	1.00	2.00
0	.70	3.50	13.00	10.50	.20	3.00	150.00	500.00	12.00	1.00	2.00
0	.50	3.40	14.00	10.50	.20	3.00	150.00	500.00	10.00	1.00	2.00
0	.50	3.50	13.00	10.50	.20	3.00	150.00	500.00	12.00	1.00	2.00
0	.00	3.40	15.00	10.50	.20	3.00	150.00	500.00	10.00	.00	2.00
0	1.20	3.50	15.00	6.00	.10	2.00	150.00	500.00	8.00	.00	2.00
0	1.20	3.40	15.00	10.50	.20	3.00	150.00	500.00	11.00	.00	2.00
0	.50	3.60	13.00	8.00	.10	2.00	150.00	500.00	8.00	1.00	2.00
0	1.20	3.70	15.00	8.00	.10	2.00	150.00	500.00	7.00	.00	2.00
0	.50	3.70	15.00	8.00	.10	2.00	150.00	500.00	7.00	1.00	2.00
0	.40	3.90	15.00	8.00	.10	2.00	150.00	500.00	5.00	.00	2.00
0	.20	3.50	15.00	8.00	.10	2.00	150.00	500.00	4.00	1.00	2.00
0	.70	3.70	15.00	8.00	.10	2.00	150.00	500.00	4.00	1.00	2.00
0	1.20	3.50	15.00	8.00	.10	2.00	150.00	500.00	8.00	.00	2.00
0	1.00	3.70	15.00	8.00	.10	2.00	150.00	500.00	6.00	.00	2.00
0	1.40	3.80	15.00	8.00	.10	2.00	150.00	500.00	5.00	.00	2.00
0	.20	3.60	15.00	8.00	.10	2.00	150.00	500.00	5.00	1.00	2.00
0	1.20	3.90	15.00	8.00	.10	2.00	150.00	500.00	5.00	.00	2.00
0	1.00	.00	15.00	6.00	.30	2.00	150.00	550.00	41.00	.00	2.00
0	.30	3.00	15.00	10.50	.20	3.00	150.00	550.00	16.00	1.00	2.00
0	1.40	3.10	15.00	10.50	.20	3.00	150.00	550.00	14.00	.00	2.00

MM-52	4 FEB 81	PINS								
0	.60	.00	13.00	7.50	.20	2.00	60.00	250.00	44.00	.00	2.00
0	.10	.20	13.00	7.50	.20	2.00	60.00	250.00	43.00	.00	2.00
0	.10	.20	13.00	7.50	.20	2.00	60.00	250.00	43.00	1.00	1.00
0	.90	.10	13.00	7.50	.20	2.00	60.00	250.00	44.00	1.00	2.00
0	1.50	.20	13.00	7.50	.20	2.00	60.00	250.00	43.00	1.00	1.00
1	.50	.60	13.00	6.00	.30	2.00	90.00	250.00	40.00	.00	2.00
1	.10	.90	13.00	6.00	.30	2.00	90.00	250.00	38.00	1.00	1.00
1	.10	1.50	13.00	8.00	.40	1.00	90.00	250.00	35.00	1.00	2.00
0	.50	.40	13.00	6.00	.30	2.00	90.00	250.00	42.00	1.00	2.00
0	.70	.50	13.00	6.00	.30	2.00	90.00	250.00	41.00	1.00	2.00
0	1.00	.50	13.00	6.00	.30	2.00	90.00	250.00	41.00	.00	2.00
0	.70	.50	13.00	7.50	.20	2.00	90.00	250.00	42.00	.00	1.00
0	1.20	.50	13.00	7.50	.20	2.00	90.00	250.00	42.00	.00	2.00
0	.70	.50	13.00	6.00	.30	2.00	90.00	250.00	41.00	.00	2.00
0	.50	.60	13.00	6.00	.30	2.00	90.00	250.00	40.00	.00	2.00
0	1.20	.80	13.00	6.00	.30	2.00	90.00	250.00	39.00	.00	2.00
0	.40	.80	13.00	6.00	.30	2.00	90.00	250.00	39.00	.00	2.00
0	.10	.80	13.00	6.00	.30	2.00	90.00	250.00	39.00	1.00	2.00
0	1.00	1.00	13.00	6.00	.30	2.00	90.00	250.00	38.00	.00	2.00
0	1.10	.40	13.00	6.00	.30	2.00	90.00	250.00	38.00	.00	2.00
0	.60	1.00	13.00	6.00	.30	2.00	90.00	250.00	38.00	1.00	1.00
0	.10	1.10	13.00	8.00	.40	1.00	90.00	250.00	37.00	1.00	2.00
0	.40	1.20	13.00	8.00	.40	1.00	90.00	250.00	36.00	1.00	2.00
0	.90	1.30	13.00	8.00	.40	1.00	90.00	250.00	35.00	.00	.00
0	1.30	1.30	13.00	8.00	.40	1.00	90.00	250.00	35.00	.00	2.00
0	1.10	1.10	13.00	8.00	.40	1.00	90.00	250.00	37.00	.00	2.00
0	.60	1.00	13.00	8.00	.40	1.00	90.00	250.00	36.00	1.00	.00
0	.90	1.40	13.00	8.00	.40	1.00	90.00	250.00	35.00	1.00	2.00
0	.40	1.50	13.00	8.00	.40	1.00	90.00	250.00	34.00	.00	2.00
0	1.50	1.50	13.00	8.00	.40	1.00	90.00	250.00	33.00	.00	2.00
0	1.40	.70	13.00	6.00	.30	2.00	90.00	250.00	40.00	.00	.00
0	.90	.70	13.00	6.00	.30	2.00	90.00	250.00	39.00	.00	2.00
0	.50	.90	13.00	6.00	.30	2.00	90.00	250.00	38.00	1.00	.00
0	.10	.90	13.00	6.00	.30	2.00	90.00	250.00	38.00	1.00	1.00
0	.40	1.10	13.00	8.00	.40	1.00	90.00	250.00	37.00	.00	2.00
0	1.00	1.10	13.00	8.00	.40	1.00	90.00	250.00	37.00	.00	1.00
0	1.40	1.20	13.00	8.00	.40	1.00	90.00	250.00	36.00	.00	2.00
0	1.00	.40	13.00	6.00	.30	2.00	90.00	250.00	40.00	.00	2.00
0	.70	1.00	13.00	6.00	.30	2.00	90.00	250.00	38.00	.00	1.00

HH-S	10 PER AI		16'BOATS									
1	1.50	.10	4.50	11.50	.00	3.00	160.00	1000.00	47.00	-1.00	1.00	2.00
1	1.50	.80	4.50	11.50	.00	3.00	160.00	1000.00	43.00	-1.00	1.00	2.00
1	1.50	1.50	4.50	11.50	.00	3.00	160.00	1000.00	40.00	-1.00	1.00	2.00
0	1.50	.60	4.50	11.50	.00	3.00	160.00	1000.00	44.00	-1.00	1.00	2.00
0	1.50	1.50	4.50	11.50	.00	3.00	160.00	1000.00	39.00	-1.00	1.00	2.00
0	1.50	.80	4.50	11.50	.00	3.00	160.00	1000.00	42.00	-1.00	1.00	2.00
1	1.40	1.90	4.50	11.50	.00	3.00	60.00	1000.00	42.00	-1.00	1.00	2.00
1	1.40	2.30	4.50	11.50	.00	3.00	60.00	1000.00	27.00	-1.00	1.00	2.00
1	1.40	2.30	4.50	11.50	.00	3.00	60.00	1000.00	27.00	-1.00	1.00	2.00
1	1.40	2.50	4.50	11.50	.00	3.00	60.00	1000.00	25.00	-1.00	1.00	2.00
0	1.70	2.00	4.50	11.50	.00	3.00	60.00	1000.00	30.00	-1.00	1.00	2.00
0	1.40	2.00	4.50	11.50	.00	3.00	60.00	1000.00	30.00	-1.00	1.00	2.00
0	1.40	2.50	4.50	11.50	.00	3.00	60.00	1000.00	25.00	-1.00	1.00	2.00
0	1.50	.50	4.50	11.50	.00	3.00	160.00	1000.00	44.00	-1.00	1.00	2.00

MC-130	12 PER AI		RAFTS									
1	.50	.10	15.00	18.00	.00	4.00	150.00	2000.00	35.00	2.00	1.00	2.00
0	2.50	.30	15.00	18.00	.00	4.00	150.00	2000.00	36.00	2.00	1.00	2.00
0	2.50	.50	15.00	18.00	.00	4.00	150.00	2000.00	36.00	1.00	1.00	2.00
0	.50	.00	15.00	14.00	.00	3.00	150.00	2000.00	39.00	1.00	1.00	.00
0	1.70	.70	15.00	14.00	.00	3.00	150.00	2000.00	40.00	1.00	1.00	2.00
0	.10	.30	15.00	14.00	.00	3.00	150.00	2000.00	40.00	1.00	1.00	2.00
0	1.90	.90	15.00	14.00	.00	3.00	150.00	2000.00	41.00	1.00	1.00	2.00
0	2.20	.50	15.00	18.00	.00	4.00	150.00	2000.00	38.00	1.00	1.00	.00
0	.90	.40	15.00	18.00	.00	4.00	150.00	2000.00	37.00	.00	1.00	2.00
0	2.70	.50	15.00	18.00	.00	4.00	150.00	2000.00	38.00	.00	1.00	2.00
0	4.70	1.00	15.00	14.00	.00	3.00	150.00	2000.00	41.00	1.00	1.00	2.00
0	4.00	.50	15.00	18.00	.00	4.00	150.00	2000.00	37.00	1.00	1.00	2.00

ML-131	12 FEB 81		RAPIS								
1	.40	.00	15.00	14.00	.00	5.00	150.00	1000.00	42.00	1.00	1.00	2.00
0	.40	.10	15.00	18.00	.00	4.00	150.00	1000.00	58.00	2.00	1.00	2.00
0	2.50	.40	15.00	14.00	.00	5.00	150.00	1000.00	40.00	2.00	1.00	2.00
0	2.20	.40	15.00	14.00	.00	5.00	150.00	1000.00	40.00	1.00	1.00	2.00
0	.90	.60	15.00	14.00	.00	5.00	150.00	1000.00	43.00	1.00	1.00	2.00
0	1.10	1.10	15.00	17.00	.00	2.00	150.00	1000.00	44.00	1.00	1.00	2.00
0	2.30	1.50	15.00	17.00	.00	2.00	150.00	1000.00	45.00	1.00	1.00	.00
0	2.00	.60	15.00	14.00	.00	5.00	150.00	1000.00	41.00	1.00	1.00	.00
0	1.80	.90	15.00	14.00	.00	3.00	150.00	1000.00	43.00	1.00	1.00	2.00
0	.80	1.40	15.00	17.00	.00	2.00	150.00	1000.00	45.00	1.00	1.00	.00
0	2.20	1.60	15.00	17.00	.00	2.00	150.00	1000.00	44.00	1.00	1.00	2.00
0	1.80	.10	15.00	18.00	.00	4.00	150.00	1000.00	58.00	.00	1.00	2.00
0	.10	.40	15.00	14.00	.00	5.00	150.00	1000.00	41.00	.00	1.00	2.00
0	2.30	.60	15.00	14.00	.00	5.00	150.00	1000.00	41.00	.00	1.00	.00
0	2.40	.90	15.00	14.00	.00	3.00	150.00	1000.00	43.00	.00	1.00	.00
0	5.10	2.40	15.00	17.00	.00	5.00	150.00	1000.00	47.00	1.00	1.00	2.00
0	1.20	2.20	15.00	17.00	.00	5.00	150.00	1000.00	46.00	1.00	1.00	2.00
0	.40	1.60	15.00	17.00	.00	3.00	150.00	1000.00	46.00	1.00	1.00	1.00
0	.70	.80	15.00	17.00	.00	5.00	150.00	1000.00	45.00	1.00	1.00	2.00
0	5.50	1.80	17.00	15.00	.00	3.00	150.00	1000.00	41.00	1.00	1.00	2.00
0	4.00	2.50	17.00	15.00	.00	3.00	150.00	1000.00	41.00	.00	1.00	2.00

MM-5	12 FEB 81		RAPIS								
0	2.00	.10	15.00	18.00	.00	4.00	110.00	1500.00	35.00	2.00	1.00	2.00
0	3.10	.40	15.00	18.00	.00	4.00	110.00	1500.00	37.00	2.00	1.00	.00
0	2.50	.20	15.00	18.00	.00	4.00	110.00	1500.00	35.00	1.00	1.00	1.00
0	1.50	.30	15.00	18.00	.00	4.00	110.00	1500.00	36.00	1.00	1.00	2.00
0	.00	.80	15.00	14.00	.00	5.00	110.00	1500.00	40.00	1.00	1.00	2.00
0	2.00	.90	15.00	14.00	.00	3.00	110.00	1500.00	41.00	1.00	1.00	.00
0	1.80	.70	15.00	14.00	.00	3.00	110.00	1500.00	39.00	1.00	1.00	2.00
0	.10	1.10	15.00	14.00	.00	5.00	110.00	1500.00	41.00	1.00	1.00	.00
0	2.20	1.30	15.00	14.00	.00	3.00	110.00	1500.00	43.00	1.00	1.00	2.00
0	.40	.10	15.00	18.00	.00	4.00	110.00	1500.00	34.00	.00	1.00	1.00
0	1.10	.30	15.00	18.00	.00	4.00	110.00	1500.00	36.00	.00	1.00	2.00
0	5.10	.70	15.00	14.00	.00	5.00	110.00	1500.00	39.00	.00	1.00	2.00
1	.10	2.70	15.00	17.00	.00	5.00	110.00	1500.00	45.00	1.00	1.00	2.00
0	2.20	2.50	15.00	17.00	.00	5.00	110.00	1500.00	46.00	1.00	1.00	1.00
0	5.00	2.90	15.00	17.00	.00	5.00	110.00	1500.00	45.00	1.00	.00	1.00
0	.00	2.40	15.00	17.00	.00	5.00	110.00	1500.00	46.00	1.00	1.00	1.00
0	2.00	2.20	15.00	17.00	.00	3.00	110.00	1500.00	46.00	1.00	1.00	2.00
0	5.80	.30	15.00	18.00	.00	4.00	110.00	1500.00	37.00	1.00	1.00	.00

MM-SS	12 FEB 81		RAFIS									
1	.00	.20	15.00	18.00	.00	4.00	90.00	500.00	31.00	2.00	1.00	2.00
1	.90	1.20	15.00	14.00	.00	3.00	90.00	500.00	39.00	1.00	1.00	.00
1	1.00	1.50	15.00	14.00	.00	3.00	90.00	500.00	41.00	1.00	1.00	2.00
0	1.90	.50	15.00	16.00	.00	4.00	90.00	500.00	34.00	2.00	1.00	2.00
0	5.10	.40	15.00	18.00	.00	4.00	90.00	500.00	33.00	1.00	1.00	2.00
0	1.00	1.00	15.00	18.00	.00	4.00	90.00	500.00	58.00	1.00	1.00	2.00
0	2.80	1.70	15.00	14.00	.00	3.00	90.00	500.00	42.00	1.00	1.00	2.00
0	5.00	.80	15.00	16.00	.00	4.00	90.00	500.00	57.00	1.00	1.00	2.00
0	1.00	1.30	15.00	14.00	.00	3.00	90.00	500.00	40.00	1.00	1.00	2.00
0	2.40	2.20	15.00	17.00	.00	2.00	90.00	500.00	44.00	1.00	1.00	.00
0	2.10	.10	15.00	18.00	.00	4.00	90.00	500.00	30.00	.00	1.00	2.00
0	.00	.60	15.00	18.00	.00	4.00	90.00	500.00	34.00	.00	1.00	2.00
0	2.00	.80	15.00	18.00	.00	4.00	90.00	500.00	37.00	.00	1.00	2.00
0	2.80	2.60	15.00	17.00	.00	3.00	90.00	500.00	46.00	1.00	1.00	2.00
0	2.80	2.20	15.00	17.00	.00	2.00	90.00	500.00	45.00	1.00	1.00	2.00
0	4.00	1.30	15.00	14.00	.00	3.00	90.00	500.00	40.00	.00	1.00	2.00

41545	19 FEB 81		RAFTS								
1	.00	.50	4.00	9.50	.00	2.00	15.00	15.00	1.00	.00	1.00
1	1.50	.50	4.00	9.50	.00	2.00	15.00	14.00	2.00	1.00	1.00
1	1.50	.00	4.00	9.50	.00	2.00	15.00	14.00	.00	.00	2.00
0	1.50	.40	4.00	9.50	.00	2.00	15.00	16.00	1.00	.00	2.00
0	1.80	.50	4.00	9.50	.00	2.00	15.00	18.00	1.00	1.00	2.00
0	.60	.10	4.00	9.50	.00	2.00	15.00	21.00	.00	.00	2.00
0	4.50	.60	4.00	9.50	.00	2.00	15.00	14.00	2.00	.00	2.00
0	5.50	.10	4.00	9.50	.00	2.00	15.00	20.00	2.00	.00	2.00

EGC DEPENDABLE		19 FEB 81		RAFTS						
1	.60	.20	6.00	11.50	1.00	2.00	15.00	37.00	2.00	1.00	.00
0	2.20	.10	6.00	11.50	1.00	2.00	15.00	37.00	2.00	.00	2.00
1	.40	.70	6.00	11.50	1.00	2.00	15.00	33.00	2.00	1.00	1.00
1	1.40	1.10	6.00	11.50	1.00	2.00	15.00	29.00	.00	.00	2.00
1	.10	1.50	6.00	10.00	.00	2.00	15.00	26.00	1.00	1.00	.00
1	.40	1.80	4.00	9.50	.00	2.00	15.00	21.00	.00	1.00	1.00
0	2.50	.70	6.00	11.50	1.00	2.00	15.00	32.00	2.00	.00	2.00
0	2.00	.70	6.00	11.50	1.00	2.00	15.00	33.00	1.00	.00	2.00
0	2.10	1.70	4.00	9.50	1.00	2.00	15.00	21.00	1.00	.00	2.00
0	1.50	1.10	6.00	10.00	.00	2.00	15.00	28.00	2.00	.00	2.00
0	4.70	1.50	6.00	10.00	.00	2.00	15.00	26.00	2.00	.00	2.00
0	5.60	1.90	4.00	9.50	.00	2.00	15.00	19.00	2.00	.00	2.00
0	5.40	1.90	6.00	11.50	1.00	2.00	15.00	30.00	.00	.00	2.00
0	4.00	.20	6.00	11.50	1.00	2.00	15.00	36.00	1.00	.00	2.00

PT LOBOS	19 FEB 81		RAFTS								
1	1.40	.50	6.00	11.50	1.00	2.00	15.00	33.00	1.00	.00	2.00
1	1.40	.90	6.00	11.50	1.00	2.00	15.00	30.00	2.00	1.00	2.00
1	1.00	.90	6.00	11.50	1.00	2.00	15.00	30.00	.00	1.00	2.00
1	.50	1.20	6.00	10.00	.00	2.00	15.00	26.00	2.00	.00	2.00
1	4.00	1.00	4.00	9.50	.00	2.00	15.00	22.00	2.00	.00	2.00
1	.90	1.60	4.00	9.50	.00	2.00	15.00	21.00	2.00	1.00	2.00
0	1.40	.50	6.00	11.50	1.00	2.00	15.00	35.00	1.00	1.00	2.00
0	1.20	1.00	6.00	10.00	.00	2.00	15.00	27.00	2.00	.00	2.00
0	.50	.00	6.00	11.00	1.00	2.00	15.00	38.00	.00	.00	2.00
0	5.50	.10	6.00	11.00	1.00	2.00	15.00	37.00	2.00	.00	2.00
0	2.50	2.00	4.00	9.50	.00	2.00	15.00	17.00	2.00	.00	2.00
0	2.20	1.40	6.00	10.00	.00	2.00	15.00	24.00	1.00	1.00	2.00
0	4.20	1.40	4.00	9.50	.00	2.00	15.00	20.00	1.00	.00	2.00
0	5.50	1.10	6.00	10.00	.00	2.00	15.00	27.00	.00	.00	2.00
0	2.40	1.50	6.00	10.00	.00	2.00	15.00	24.00	2.00	.00	2.00
0	4.50	.80	6.00	11.50	1.00	2.00	15.00	31.00	2.00	.00	2.00

HH-S	19 FEB 81		NAFTS								
1	1.00	.70	4.00	9.50	.00	2.00	60.00	1000.00	22.00	1.00	1.00	2.00
1	.00	.70	4.00	9.50	.00	2.00	60.00	1000.00	22.00	2.00	1.00	2.00
1	.70	1.00	4.00	9.50	.00	2.00	60.00	1000.00	19.00	1.00	1.00	2.00
1	2.80	1.10	4.00	9.50	.00	2.00	60.00	1000.00	16.00	1.00	.00	2.00
0	.80	1.20	4.00	9.50	.00	2.00	60.00	1000.00	16.00	2.00	1.00	2.00
0	1.50	.90	4.00	9.50	.00	2.00	60.00	1000.00	14.00	2.00	1.00	2.00
0	2.10	.90	4.00	9.50	.00	2.00	60.00	1000.00	14.00	2.00	1.00	2.00
0	1.80	.10	6.00	10.00	.00	2.00	60.00	1000.00	18.00	2.00	1.00	2.00
0	.90	.10	6.00	10.00	.00	2.00	60.00	1000.00	18.00	.00	1.00	2.00
0	1.60	.70	4.00	9.50	.00	2.00	60.00	1000.00	21.00	2.00	.00	2.00
0	1.10	.10	6.00	10.00	.00	2.00	60.00	1000.00	28.00	1.00	.00	2.00
0	2.90	.70	4.00	9.50	.00	2.00	60.00	1000.00	22.00	.00	.00	2.00

CGC DEPENDABLE		20 FEB 81		16'BOATS							
	1	1.00	1.10	3.50	12.50	.00	5.00	15.00	44.00	-1.00	1.00	2.00
	1	1.60	1.10	3.50	12.50	.00	5.00	15.00	44.00	-1.00	1.00	2.00
	0	1.50	.20	3.50	12.50	.00	5.00	15.00	38.00	-1.00	1.00	2.00
	0	1.90	2.00	4.50	11.50	.00	5.00	15.00	48.00	-1.00	.00	2.00
	0	1.00	2.30	4.50	11.50	.00	3.00	15.00	48.00	-1.00	.00	.00
	0	.20	2.20	4.50	11.50	.00	5.00	15.00	47.00	-1.00	1.00	2.00
	0	1.40	2.30	4.50	11.50	.00	5.00	15.00	50.00	-1.00	.00	.00
	0	2.20	2.30	4.50	11.50	.00	5.00	15.00	50.00	-1.00	.00	.00
	1	.10	5.80	4.50	11.50	.00	3.00	15.00	41.00	-1.00	.00	1.00
	1	.90	4.80	4.50	11.50	.00	3.00	15.00	34.00	-1.00	1.00	2.00
	1	1.20	5.90	4.50	11.50	.00	5.00	15.00	25.00	-1.00	1.00	.00
	0	2.20	4.20	4.50	11.50	.00	3.00	15.00	40.00	-1.00	.00	1.00
	0	.50	6.10	4.50	11.50	.00	5.00	15.00	21.00	-1.00	.00	.00
	0	1.70	4.40	4.50	11.50	.00	3.00	15.00	34.00	-1.00	1.00	.00
	0	4.00	.10	3.50	12.50	.00	5.00	15.00	37.00	-1.00	.00	2.00
	0	4.70	1.90	4.50	11.50	.00	3.00	15.00	47.00	-1.00	.00	2.00
	0	3.50	2.30	4.50	11.50	.00	3.00	15.00	48.00	-1.00	.00	2.00
	0	5.00	3.70	4.50	11.50	.00	5.00	15.00	43.00	-1.00	.00	2.00
	0	2.80	5.30	4.50	11.50	.00	3.00	15.00	30.00	-1.00	.00	2.00
	0	4.90	5.30	4.50	11.50	.00	3.00	15.00	44.00	-1.00	.00	2.00
	0	5.80	5.70	4.50	11.50	.00	3.00	15.00	26.00	-1.00	.00	.00
	0	4.70	4.50	4.50	11.50	.00	3.00	15.00	39.00	-1.00	.00	1.00
	0	2.90	4.70	4.50	11.50	.00	3.00	15.00	35.00	-1.00	.00	.00

PT LOBOS		20 FEB 81		16'BOATS							
	1	.00	1.20	4.50	11.50	.00	5.00	15.00	48.00	-1.00	1.00	2.00
	1	1.00	2.10	4.50	11.50	.00	3.00	15.00	48.00	-1.00	1.00	2.00
	1	.50	2.70	4.50	11.50	.00	5.00	15.00	45.00	-1.00	.00	.00
	1	1.50	2.90	4.50	11.50	.00	5.00	15.00	45.00	-1.00	1.00	2.00
	0	1.90	1.20	4.50	11.50	.00	5.00	15.00	48.00	-1.00	1.00	2.00
	0	1.00	2.50	4.50	11.50	.00	5.00	15.00	48.00	-1.00	1.00	2.00
	0	2.40	.10	4.50	11.50	.00	5.00	15.00	42.00	-1.00	.00	2.00
	0	2.90	2.00	4.50	11.50	.00	5.00	15.00	48.00	-1.00	.00	2.00
	0	4.90	.20	4.50	11.50	.00	5.00	15.00	45.00	-1.00	.00	2.00
	0	4.00	3.10	4.50	11.50	.00	3.00	15.00	48.00	-1.00	.00	2.00
	0	3.50	1.10	4.50	11.50	.00	5.00	15.00	47.00	-1.00	.00	2.00

HH-3 20 FEB 81 16'BOATS

1	1.30	.10	4.50	11.50	.00	3.00	160.00	1000.00	47.00	-1.00	1.00	2.00
1	1.50	.80	4.50	11.50	.00	3.00	160.00	1000.00	43.00	-1.00	1.00	2.00
1	1.30	1.30	4.50	11.50	.00	3.00	160.00	1000.00	40.00	-1.00	1.00	2.00
0	1.50	.60	4.50	11.50	.00	3.00	160.00	1000.00	44.00	-1.00	1.00	2.00
0	1.50	1.30	4.50	11.50	.00	3.00	160.00	1000.00	39.00	-1.00	1.00	2.00
0	1.50	.80	4.50	11.50	.00	3.00	160.00	1000.00	42.00	-1.00	1.00	2.00
1	1.20	1.90	4.50	11.50	.00	3.00	60.00	1000.00	42.00	-1.00	1.00	2.00
1	1.80	2.30	4.50	11.50	.00	3.00	60.00	1000.00	27.00	-1.00	1.00	2.00
1	1.50	2.50	4.50	11.50	.00	3.00	60.00	1000.00	27.00	-1.00	1.00	2.00
1	1.40	2.50	4.50	11.50	.00	3.00	60.00	1000.00	25.00	-1.00	1.00	2.00
0	1.70	2.00	4.50	11.50	.00	3.00	60.00	1000.00	30.00	-1.00	1.00	2.00
0	1.40	2.00	4.50	11.50	.00	3.00	60.00	1000.00	30.00	-1.00	1.00	2.00
0	1.40	2.50	4.50	11.50	.00	3.00	60.00	1000.00	25.00	-1.00	1.00	2.00
0	1.50	.50	4.50	11.50	.00	3.00	160.00	1000.00	44.00	-1.00	1.00	2.00

CGC	DEPENDABLE	25 FEH HI	PINS						
1	.10	.10	15.00	17.00	.00	6.00	15.00	44.00	1.00	2.00
1	.20	.20	15.00	17.00	.00	5.00	15.00	40.00	1.00	2.00
1	.10	.80	15.00	17.00	.00	5.00	15.00	39.00	.00	2.00
1	.20	1.10	15.00	17.00	.00	5.00	15.00	36.00	1.00	2.00
1	.60	1.30	15.00	17.00	.00	5.00	15.00	33.00	1.00	2.00
0	.60	.60	15.00	17.00	.00	5.00	15.00	40.00	.00	2.00
0	1.10	1.00	15.00	17.00	.00	5.00	15.00	37.00	.00	2.00
0	.70	.20	15.00	17.00	.00	5.00	15.00	43.00	.00	2.00
0	1.10	1.90	15.00	17.00	.00	5.00	15.00	27.00	.00	2.00
0	1.10	.40	15.00	17.00	.00	5.00	15.00	42.00	.00	2.00
0	.30	1.20	15.00	17.00	.00	5.00	15.00	34.00	.00	1.00
0	.40	2.00	15.00	17.00	.00	5.00	15.00	26.00	.00	2.00
0	1.10	1.30	15.00	17.00	.00	5.00	15.00	33.00	.00	1.00
0	.70	1.90	15.00	17.00	.00	5.00	15.00	27.00	1.00	2.00
0	.10	2.10	15.00	17.00	.00	5.00	15.00	24.00	1.00	2.00
0	1.00	.60	15.00	17.00	.00	5.00	15.00	40.00	.00	2.00
0	.50	1.00	15.00	17.00	.00	5.00	15.00	37.00	1.00	2.00
0	.20	1.40	15.00	17.00	.00	5.00	15.00	32.00	1.00	2.00
0	.30	1.80	15.00	17.00	.00	5.00	15.00	28.00	1.00	2.00
0	.70	2.20	15.00	17.00	.00	5.00	15.00	23.00	.00	2.00
0	1.10	.80	15.00	17.00	.00	5.00	15.00	38.00	.00	2.00
0	.70	1.60	15.00	17.00	.00	5.00	15.00	30.00	.00	2.00
0	.20	1.60	15.00	17.00	.00	5.00	15.00	30.00	.00	2.00
0	.80	1.60	15.00	17.00	.00	5.00	15.00	30.00	.00	2.00
0	1.20	1.60	15.00	17.00	.00	5.00	15.00	30.00	.00	.00
0	1.40	1.40	15.00	17.00	.00	5.00	15.00	31.00	.00	2.00
0	.60	1.40	15.00	17.00	.00	5.00	15.00	33.00	.00	2.00
0	.70	1.20	15.00	17.00	.00	5.00	15.00	35.00	.00	2.00
0	.70	1.40	15.00	17.00	.00	5.00	15.00	25.00	.00	.00
0	.20	2.40	15.00	17.00	.00	5.00	15.00	21.00	1.00	2.00

PT LOBOS	25 FEB 81		PINS							
1	.10	.40	15.00	17.00	.00	5.00	15.00	37.00	1.00	2.00
1	.30	.80	15.00	17.00	.00	5.00	15.00	33.00	1.00	2.00
1	.20	2.10	15.00	17.00	.00	5.00	15.00	18.00	1.00	2.00
1	.10	3.10	15.00	17.00	.00	5.00	15.00	7.00	1.00	2.00
0	.20	1.90	15.00	17.00	.00	5.00	15.00	20.00	.00	2.00
0	.70	1.00	15.00	17.00	.00	5.00	15.00	31.00	.00	.00
0	1.00	1.40	15.00	17.00	.00	5.00	15.00	22.00	.00	2.00
0	1.40	1.20	15.00	17.00	.00	5.00	15.00	29.00	.00	2.00
0	.90	3.00	15.00	17.00	.00	5.00	15.00	7.00	.00	2.00
0	.70	2.20	15.00	17.00	.00	5.00	15.00	18.00	.00	2.00
0	.10	1.70	15.00	17.00	.00	5.00	15.00	23.00	1.00	2.00
0	.60	1.30	15.00	17.00	.00	5.00	15.00	28.00	1.00	2.00
0	1.20	.70	15.00	17.00	.00	5.00	15.00	34.00	.00	2.00
0	.90	1.60	15.00	17.00	.00	5.00	15.00	24.00	1.00	1.00
0	.30	.60	15.00	17.00	.00	5.00	15.00	35.00	1.00	2.00
0	.40	1.40	15.00	17.00	.00	5.00	15.00	26.00	1.00	2.00
0	.70	.60	15.00	17.00	.00	5.00	15.00	36.00	.00	2.00
0	1.20	1.30	15.00	17.00	.00	5.00	15.00	27.00	1.00	2.00
0	.60	.70	15.00	17.00	.00	5.00	15.00	34.00	1.00	2.00
0	1.50	2.10	15.00	17.00	.00	5.00	15.00	18.00	.00	2.00
0	.70	1.80	15.00	17.00	.00	5.00	15.00	22.00	.00	2.00
0	.20	1.20	15.00	17.00	.00	5.00	15.00	29.00	1.00	2.00
0	.80	.20	15.00	17.00	.00	5.00	15.00	39.00	.00	2.00
0	.30	.10	15.00	17.00	.00	5.00	15.00	40.00	.00	.00
0	.20	.90	15.00	17.00	.00	5.00	15.00	32.00	1.00	2.00
0	.80	1.00	15.00	17.00	.00	5.00	15.00	30.00	.00	1.00
0	1.20	1.90	15.00	17.00	.00	5.00	15.00	20.00	.00	2.00

41457	24 FEB81		PINS							
1	.10	.20	10.00	6.50	.00	2.00	15.00	49.00	1.00	2.00
1	.00	1.30	10.00	6.50	.00	2.00	15.00	43.00	1.00	2.00
1	.00	1.30	10.00	6.50	.00	2.00	15.00	40.00	.00	2.00
1	.50	2.30	10.00	6.50	.00	2.00	15.00	33.00	1.00	2.00
1	.00	2.30	10.00	6.50	.00	2.00	15.00	31.00	1.00	2.00
1	.30	2.90	10.00	6.50	.00	2.00	15.00	27.00	1.00	2.00
0	1.00	.60	10.00	6.50	.00	2.00	15.00	46.00	.00	2.00
0	.50	.70	10.00	6.50	.00	2.00	15.00	46.00	.00	2.00
0	.60	1.50	10.00	6.50	.00	2.00	15.00	41.00	.00	2.00
0	1.20	.60	10.00	6.50	.00	2.00	15.00	47.00	.00	.00
0	.50	1.00	10.00	6.50	.00	2.00	15.00	45.00	1.00	1.00
0	.60	1.70	10.00	6.50	.00	2.00	15.00	39.00	.00	.00
0	1.20	2.00	10.00	6.50	.00	2.00	15.00	36.00	.00	2.00
0	1.00	1.20	10.00	6.50	.00	2.00	15.00	43.00	.00	2.00
0	.30	1.60	10.00	6.50	.00	2.00	15.00	38.00	1.00	2.00
0	.20	1.90	10.00	6.50	.00	2.00	15.00	37.00	.00	2.00
0	.60	2.60	10.00	6.50	.00	2.00	15.00	30.00	.00	.00
0	1.10	1.80	10.00	6.50	.00	2.00	15.00	45.00	.00	2.00
0	.50	2.00	10.00	6.50	.00	2.00	15.00	36.00	1.00	.00
0	.50	2.70	10.00	6.50	.00	2.00	15.00	29.00	1.00	2.00
0	1.20	.90	10.00	6.50	.00	2.00	15.00	46.00	.00	1.00
0	.70	1.40	10.00	6.50	.00	2.00	15.00	42.00	.00	.00
0	.00	1.60	10.00	6.50	.00	2.00	15.00	40.00	1.00	1.00
0	.50	2.10	10.00	6.50	.00	2.00	15.00	35.00	1.00	2.00
0	1.00	2.40	10.00	6.50	.00	2.00	15.00	32.00	.00	.00
0	.40	.60	10.00	6.50	.00	2.00	15.00	47.00	1.00	2.00
0	1.10	.90	10.00	6.50	.00	2.00	15.00	45.00	.00	2.00
0	.90	2.20	10.00	6.50	.00	2.00	15.00	35.00	.00	.00
0	.70	2.70	10.00	6.50	.00	2.00	15.00	29.00	.00	.00
0	.40	2.40	10.00	6.50	.00	2.00	15.00	31.00	.00	2.00
0	.30	2.60	10.00	6.50	.00	2.00	15.00	27.00	1.00	.00
0	1.30	2.20	10.00	6.50	.00	2.00	15.00	34.00	.00	1.00
0	1.40	2.60	10.00	6.50	.00	2.00	15.00	29.00	.00	2.00

CGC DEPENDABLE	24 FEB 81		PINS							
1	.10	.20	10.00	7.50	.00	3.00	15.00	45.00	1.00	.00
1	.40	.40	10.00	7.50	.00	3.00	15.00	46.00	1.00	.00
1	.20	.30	10.00	7.50	.00	3.00	15.00	46.00	1.00	2.00
1	.70	1.50	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
1	.50	1.40	10.00	6.50	.00	2.00	15.00	50.00	1.00	2.00
1	.30	1.60	10.00	6.50	.00	2.00	15.00	50.00	1.00	1.00
1	.10	2.00	10.00	6.50	.00	2.00	15.00	51.00	1.00	2.00
1	.20	2.30	10.00	6.50	.00	2.00	15.00	50.00	1.00	1.00
1	.50	2.00	10.00	6.50	.00	2.00	15.00	49.00	1.00	1.00
1	.10	2.40	10.00	6.50	.00	2.00	15.00	48.00	1.00	2.00
1	.40	3.30	10.00	6.50	.00	2.00	15.00	45.00	.00	2.00
1	.10	3.40	10.00	6.50	.00	2.00	15.00	45.00	1.00	2.00
1	.30	4.00	10.00	6.50	.00	2.00	15.00	40.00	1.00	2.00
1	.20	4.20	10.00	6.50	.00	2.00	15.00	38.00	1.00	2.00
1	.50	4.00	10.00	6.50	.00	2.00	15.00	33.00	.00	2.00

1	.00	5.50	10.00	6.50	.00	2.00	15.00	27.00	1.00	2.00
0	.80	4.40	10.00	6.50	.00	2.00	15.00	36.00	.00	2.00
0	1.50	.70	10.00	6.50	.00	2.00	15.00	48.00	.00	2.00
0	1.00	1.10	10.00	6.50	.00	2.00	15.00	49.00	.00	2.00
0	.50	2.50	10.00	6.50	.00	2.00	15.00	49.00	1.00	2.00
0	.50	.70	10.00	6.50	.00	2.00	15.00	47.00	1.00	2.00
0	.90	1.20	10.00	6.50	.00	2.00	15.00	49.00	.00	2.00
0	1.50	.50	10.00	6.50	.00	2.00	15.00	45.00	.00	2.00
0	.70	.60	10.00	6.50	.00	2.00	15.00	47.00	.00	2.00
0	.50	1.20	10.00	6.50	.00	2.00	15.00	49.00	1.00	2.00
0	.60	2.10	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
0	1.20	2.40	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
0	1.20	2.50	10.00	6.50	.00	2.00	15.00	49.00	.00	2.00
0	.40	3.00	10.00	6.50	.00	2.00	15.00	47.00	.00	2.00
0	.80	4.30	10.00	6.50	.00	2.00	15.00	37.00	.00	2.00
0	1.10	3.20	10.00	6.50	.00	2.00	15.00	32.00	.00	2.00
0	1.20	1.70	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
0	.90	1.90	10.00	6.50	.00	2.00	15.00	51.00	.00	2.00
0	.70	3.60	10.00	6.50	.00	2.00	15.00	43.00	.00	2.00
0	1.00	3.80	10.00	6.50	.00	2.00	15.00	42.00	.00	2.00
0	1.50	3.10	10.00	6.50	.00	2.00	15.00	47.00	.00	2.00
0	.80	4.90	10.00	6.50	.00	2.00	15.00	31.00	1.00	2.00
0	1.10	3.20	10.00	6.50	.00	2.00	15.00	28.00	.00	2.00
0	1.00	1.40	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
0	1.10	1.40	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
0	.80	2.20	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
0	.50	3.10	10.00	6.50	.00	2.00	15.00	46.00	1.00	2.00
0	.80	3.30	10.00	6.50	.00	2.00	15.00	45.00	.00	2.00
0	1.50	4.20	10.00	6.50	.00	2.00	15.00	39.00	.00	2.00
0	.20	4.40	10.00	6.50	.00	2.00	15.00	41.00	1.00	2.00

PT LOBUS	[illegible] FLR 61	PIMS							
1	.00	1.00	10.00	7.50	.00	3.00	15.00	48.00	1.00	2.00
1	.40	1.40	10.00	6.50	.00	2.00	15.00	50.00	1.00	2.00
0	1.20	1.40	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
0	1.20	.20	10.00	7.50	.00	3.00	15.00	43.00	.00	2.00
0	.00	.00	10.00	7.50	.00	3.00	15.00	46.00	.00	2.00
0	1.00	1.00	10.00	6.50	.00	2.00	15.00	50.00	.00	2.00
1	.00	2.40	10.00	6.50	.00	2.00	15.00	23.00	.00	1.00
1	.10	2.90	10.00	6.50	.00	2.00	15.00	18.00	.00	.00
1	.20	3.10	10.00	6.50	.00	2.00	15.00	15.00	1.00	2.00
1	1.20	3.80	10.00	6.50	.00	2.00	15.00	6.00	.00	2.00
1	.10	3.80	10.00	6.50	.00	2.00	15.00	6.00	1.00	2.00
1	.50	4.00	10.00	6.50	.00	2.00	15.00	4.00	1.00	2.00
0	.50	1.70	10.00	6.50	.00	2.00	15.00	32.00	.00	2.00
0	1.10	3.50	10.00	6.50	.00	2.00	15.00	13.00	.00	2.00
0	.70	1.90	10.00	6.50	.00	2.00	15.00	30.00	.00	2.00
0	.20	2.20	10.00	6.50	.00	2.00	15.00	20.00	1.00	1.00
0	.50	2.70	10.00	6.50	.00	2.00	15.00	16.00	1.00	.00

0	.90	3.10	10.00	6.50	.00	2.00	15.00	10.00	.00	2.00
0	1.40	3.60	10.00	6.50	.00	2.00	15.00	27.00	.00	2.00
0	1.30	2.10	10.00	6.50	.00	2.00	15.00	22.00	.00	2.00
0	.60	2.90	10.00	6.50	.00	2.00	15.00	10.00	.00	2.00
0	.30	3.70	10.00	6.50	.00	2.00	15.00	8.00	1.00	.00
0	.80	3.70	10.00	6.50	.00	2.00	15.00	7.00	.00	2.00
0	.90	3.00	10.00	6.50	.00	2.00	15.00	18.00	.00	2.00
0	.90	3.60	10.00	6.50	.00	2.00	15.00	9.00	1.00	2.00
0	.80	2.30	10.00	6.50	.00	2.00	15.00	25.00	.00	2.00
0	.30	2.60	10.00	6.50	.00	2.00	15.00	21.00	1.00	2.00
0	.60	3.40	10.00	6.50	.00	2.00	15.00	11.00	.00	2.00
0	1.20	4.00	10.00	6.50	.00	2.00	15.00	5.00	.00	2.00
0	.90	1.90	10.00	6.50	.00	2.00	15.00	30.00	.00	2.00
0	1.20	3.20	10.00	6.50	.00	2.00	15.00	14.00	.00	2.00
0	.70	3.40	10.00	6.50	.00	2.00	15.00	12.00	.00	2.00
0	1.30	3.30	10.00	6.50	.00	2.00	15.00	11.00	.00	2.00
0	.70	3.90	10.00	6.50	.00	2.00	15.00	5.00	.00	1.00

CGC DEPENDABLE 25 FEB 81 RAFTS

1	1.50	.02	15.00	7.00	.00	1.00	15.00	42.00	2.00	.00	2.00
1	2.00	.40	15.00	6.00	.00	1.00	15.00	45.00	2.00	1.00	2.00
1	2.40	1.20	15.00	5.00	.00	1.00	15.00	49.00	2.00	1.00	2.00
1	.90	1.40	15.00	5.00	.00	1.00	15.00	49.00	1.00	1.00	2.00
1	.80	1.60	15.00	6.50	.00	1.00	15.00	50.00	.00	1.00	.00
0	1.90	.90	15.00	6.00	.00	1.00	15.00	48.00	2.00	1.00	2.00
1	2.40	2.40	15.00	6.00	.00	1.00	15.00	50.00	2.00	1.00	2.00
1	1.10	2.70	15.00	6.00	.00	1.00	15.00	48.00	2.00	1.00	2.00
1	3.40	2.60	15.00	7.00	.30	1.00	15.00	48.00	2.00	.00	2.00
1	.80	3.40	15.00	7.00	.30	1.00	15.00	45.00	.00	.00	2.00
1	2.60	3.60	15.00	9.50	.50	1.00	15.00	43.00	1.00	.00	2.00
1	.70	4.00	15.00	9.50	.50	1.00	15.00	40.00	2.00	1.00	2.00
1	5.80	3.40	15.00	7.00	.30	1.00	15.00	45.00	1.00	.00	2.00
0	4.90	1.10	15.00	5.00	.00	1.00	15.00	48.00	.00	.00	2.00
0	4.40	2.10	15.00	6.00	.00	1.00	15.00	50.00	.00	.00	2.00

PT LOBOS 25 FEB 81 RAFTS

1	1.60	1.70	15.00	6.50	.00	1.00	15.00	50.00	2.00	1.00	2.00
0	2.40	1.20	15.00	5.00	.00	1.00	15.00	49.00	2.00	.00	2.00
1	.50	.80	15.00	6.00	.00	1.00	15.00	48.00	.00	.00	.00
1	.40	2.40	15.00	6.00	.00	1.00	15.00	50.00	.00	1.00	2.00
1	1.60	2.70	15.00	6.00	.00	1.00	15.00	49.00	1.00	.00	2.00
1	.50	4.10	15.00	9.50	.50	1.00	15.00	40.00	2.00	1.00	2.00
0	3.20	3.30	15.00	7.00	.30	1.00	15.00	46.00	2.00	.00	2.00
0	3.10	3.30	15.00	7.00	.30	1.00	15.00	47.00	2.00	.00	2.00
1	1.60	.00	15.00	7.00	.00	1.00	15.00	42.00	2.00	.00	.00
1	2.30	1.10	15.00	5.00	.00	1.00	15.00	49.00	2.00	1.00	2.00
1	1.70	1.00	15.00	5.00	.00	1.00	15.00	50.00	2.00	.00	2.00
1	.30	3.90	15.00	9.50	.50	1.00	15.00	42.00	2.00	1.00	2.00
0	4.40	3.20	15.00	7.00	.30	1.00	15.00	47.00	.00	.00	2.00
0	5.00	.00	15.00	6.00	.00	1.00	15.00	47.00	1.00	.00	1.00

HH-3	25 FEB 81		RAFTS									
1	.50	.50	15.00	6.00	.00	1.00	90.00	1000.00	48.00	2.00	1.00	2.00
1	1.40	.90	15.00	6.00	.00	1.00	90.00	1000.00	49.00	2.00	1.00	2.00
0	.30	.60	15.00	6.00	.00	1.00	90.00	1000.00	48.00	1.00	.00	2.00
0	1.90	.60	15.00	6.00	.00	1.00	90.00	1000.00	48.00	.00	.00	2.00
0	1.70	.90	15.00	5.00	.00	1.00	90.00	1000.00	49.00	.00	1.00	2.00
1	.80	1.10	15.00	5.00	.00	1.00	90.00	1000.00	50.00	2.00	1.00	2.00
1	2.20	1.20	15.00	5.00	.00	1.00	90.00	1000.00	50.00	.00	1.00	2.00
1	2.30	1.20	15.00	6.50	.00	1.00	90.00	1000.00	50.00	1.00	.00	2.00
1	.60	1.30	15.00	6.50	.00	1.00	90.00	1000.00	49.00	2.00	1.00	2.00
1	2.40	1.30	15.00	6.50	.00	1.00	90.00	1000.00	49.00	2.00	1.00	2.00
0	2.20	.90	15.00	5.00	.00	1.00	90.00	1000.00	49.00	.00	.00	2.00
0	2.30	.50	15.00	6.00	.00	1.00	90.00	1000.00	48.00	2.00	.00	2.00
0	4.00	1.20	15.00	5.00	.00	1.00	90.00	1000.00	50.00	2.00	.00	2.00

CGC DEPENDABLE		26 FEB 81		RAFTS							
1	.60	.00	12.00	5.00	.00	.00	15.00	49.00	2.00	1.00	.00
1	2.30	1.00	8.00	5.00	.00	.00	15.00	50.00	.00	.00	2.00
1	2.30	1.30	8.00	5.00	.00	.00	15.00	50.00	2.00	1.00	1.00
1	2.40	1.40	8.00	8.00	.00	.00	15.00	47.00	2.00	.00	2.00
1	.80	2.50	7.00	8.00	.00	.00	15.00	44.00	.00	1.00	2.00
1	.80	3.20	7.00	8.00	.00	.00	15.00	37.00	1.00	1.00	2.00
1	2.50	3.00	5.00	9.50	.00	.00	15.00	33.00	2.00	1.00	2.00
0	3.10	1.40	8.00	8.00	.00	.00	15.00	49.00	2.00	.00	2.00
0	2.00	3.10	7.00	8.00	.00	.00	15.00	39.00	.00	.00	2.00
0	3.40	2.20	8.00	8.00	.00	.00	15.00	45.00	1.00	.00	2.00

PT LOBOS		26 FEB 81		RAFTS							
1	2.20	.20	12.00	5.00	.00	.00	15.00	49.00	.00	.00	2.00
1	3.00	.80	8.00	5.00	.00	.00	15.00	50.00	2.00	.00	2.00
1	.50	1.00	8.00	5.00	.00	.00	15.00	51.00	2.00	1.00	2.00
1	2.00	1.50	8.00	5.00	.00	.00	15.00	50.00	.00	.00	2.00
1	.20	2.10	8.00	8.00	.00	.00	15.00	47.00	2.00	.00	2.00
1	1.50	2.60	7.00	8.00	.00	.00	15.00	42.00	1.00	1.00	2.00
1	1.20	3.30	7.00	8.00	.00	.00	15.00	38.00	1.00	1.00	2.00
0	4.30	1.60	8.00	8.00	.00	.00	15.00	48.00	1.00	.00	2.00
0	3.80	2.40	7.00	8.00	.00	.00	15.00	42.00	.00	.00	2.00
0	3.40	2.30	8.00	8.00	.00	.00	15.00	46.00	2.00	.00	2.00

HH-3 26 FEB 81 RAFTS

1	.70	.00	5.00	9.50	.00	.00	90.00	1000.00	32.00	2.00	1.00	2.00
1	2.00	.00	5.00	9.50	.00	.00	90.00	1000.00	32.00	.00	1.00	2.00
1	.60	.30	5.00	9.50	.00	.00	90.00	1000.00	31.00	1.00	1.00	.00
1	1.50	.30	5.00	9.50	.00	.00	90.00	1000.00	29.00	2.00	.00	2.00
0	1.90	.30	5.00	9.50	.00	.00	90.00	1000.00	30.00	2.00	1.00	2.00
0	1.00	.20	5.00	9.50	.00	.00	90.00	1000.00	31.00	1.00	.00	2.00
1	.50	.80	5.00	10.00	.00	1.00	90.00	1000.00	22.00	2.00	1.00	2.00
0	.10	1.10	5.00	10.50	.00	1.00	90.00	1000.00	19.00	2.00	1.00	2.00
0	1.30	1.10	5.00	10.00	.00	1.00	90.00	1000.00	19.00	.00	1.00	2.00
0	.10	1.00	5.00	10.00	.00	1.00	90.00	1000.00	20.00	1.00	.00	2.00
0	2.20	.90	5.00	10.00	.00	1.00	90.00	1000.00	21.00	2.00	1.00	2.00
0	3.50	.20	5.00	9.50	.00	.00	90.00	1000.00	30.00	2.00	.00	2.00
0	3.20	.40	5.00	10.00	.00	1.00	90.00	1000.00	27.00	1.00	.00	2.00
0	2.90	.10	7.00	8.00	.00	.00	90.00	1000.00	31.00	1.00	.00	2.00
0	3.00	1.10	10.00	5.00	.00	1.00	90.00	1000.00	21.00	2.00	1.00	2.00
0	2.60	1.20	10.00	5.00	.00	1.00	90.00	1000.00	19.00	1.00	.00	2.00
0	3.10	1.00	10.00	5.00	.00	1.00	90.00	1000.00	22.00	1.00	.00	1.00

APPENDIX B

NATIONAL SAR MANUAL SWEEP WIDTH TABLES AND PROBABILITY OF DETECTION CURVES

Sweep Width (W) For Visual Search
(W Given In Nautical Miles)

Datum/Water Temperature	Altitude (1000')	LIFERAFTS 0	LIFERAFTS 5	LIFERAFTS 10	LIFERAFTS 20	BOATS (less than 20') 0	BOATS (less than 20') 5	BOATS (less than 20') 10	BOATS (less than 20') 20	BOATS (less than 20') 30	BOATS (20'-65') 0	BOATS (20'-65') 5	BOATS (20'-65') 10	BOATS (20'-65') 20	BOATS (20'-65') 30	BOATS (65'-90') 0	BOATS (65'-90') 5	BOATS (65'-90') 10	BOATS (65'-90') 20	BOATS (65'-90') 30	SMALL SHIPS (500-2000 Gross Tons) 0	SMALL SHIPS (500-2000 Gross Tons) 5	SMALL SHIPS (500-2000 Gross Tons) 10	SMALL SHIPS (500-2000 Gross Tons) 20	SMALL SHIPS (500-2000 Gross Tons) 30	MEDIUM SHIPS (2000-10,000 Gross Tons) 0	MEDIUM SHIPS (2000-10,000 Gross Tons) 5	MEDIUM SHIPS (2000-10,000 Gross Tons) 10	MEDIUM SHIPS (2000-10,000 Gross Tons) 20	MEDIUM SHIPS (2000-10,000 Gross Tons) 30	LARGE SHIPS (Over 10,000 Gross Tons) 0	LARGE SHIPS (Over 10,000 Gross Tons) 5	LARGE SHIPS (Over 10,000 Gross Tons) 10	LARGE SHIPS (Over 10,000 Gross Tons) 20	LARGE SHIPS (Over 10,000 Gross Tons) 30
Recognized Visibility - Nautical Miles	1	0.5	0.5	0.5	-	0.5	0.5	0.5	-	-	0.5	0.5	0.5	-	-	1.0	0.5	0.5	-	-	1.0	1.0	1.0	1.0	-	-	1.0	1.0	1.0	-	-	1.0	1.0	1.0	-	-
	3	1.0	1.2	1.2	1.0	2.5	2.4	2.3	1.8	0.4	3.5	3.0	2.7	1.8	0.4	3.9	3.6	3.2	1.8	0.4	4.2	3.8	3.2	1.8	0.4	4.6	4.0	3.3	1.8	0.4	4.7	4.0	3.3	1.8	0.4
	5	1.4	1.6	1.6	2.7	2.7	2.7	2.7	3.2	3.3	4.2	4.2	4.2	4.2	3.3	5.0	5.0	4.9	4.7	3.3	7.1	6.7	6.2	4.9	3.3	8.0	7.0	6.2	4.9	3.3	8.0	7.0	6.6	4.9	3.3
	10	1.8	1.8	2.1	3.6	3.9	4.0	4.2	4.5	5.8	6.5	6.2	6.2	6.2	6.5	8.0	8.0	7.9	7.7	7.2	11.0	10.0	9.8	8.6	7.2	11.0	10.6	10.2	9.0	7.2	11.0	10.6	10.2	9.1	7.2
	15	1.9	1.9	2.6	3.6	5.2	5.3	5.5	6.7	7.0	8.5	8.5	8.4	8.4	8.3	11.0	9.9	9.6	9.1	8.5	13.4	12.7	12.0	10.5	9.1	14.0	13.7	13.3	11.4	9.4	14.0	13.9	13.7	11.6	9.5
	20	2.0	2.1	2.8	3.6	5.3	5.6	6.2	6.8	7.1	8.6	8.8	9.0	9.1	8.9	12.0	11.0	10.6	10.0	9.3	15.0	14.3	13.5	11.9	10.4	15.0	15.0	15.1	13.0	10.9	15.0	15.0	15.6	13.3	11.1
	25	2.2	2.3	2.9	3.6	5.5	6.2	7.0	7.0	7.1	8.7	9.5	10.4	10.1	9.7	12.5	12.5	12.1	11.3	10.5	17.0	16.5	15.7	13.9	12.2	17.0	17.0	17.0	15.4	13.1	17.0	17.0	17.0	15.8	13.4
	40	2.2	2.4	2.9	3.6	5.6	6.3	7.1	7.1	7.2	8.9	10.0	11.0	10.8	10.3	13.0	13.0	13.2	12.2	11.3	17.0	17.0	17.2	15.3	13.5	17.0	17.0	18.0	17.1	14.7	17.0	17.0	18.0	17.5	15.0
	50	2.2	2.4	3.0	3.6	6.7	6.4	7.2	7.2	7.3	9.0	10.0	11.9	11.3	10.7	13.5	13.5	14.0	13.0	11.9	20.0	19.3	18.4	16.4	14.5	20.0	21.0	20.8	18.3	15.9	20.0	21.0	21.0	18.9	16.5

Figure 8-67a

WINDS (Kts)	0	5	15	20	25	30	40	50	60
Rafts	0.8	1.0	0.9	0.7	0.5	0.2	0.1	-	-
Boats	0.9	1.0	1.1	1.0	0.9	0.7	0.2	-	-
Ships	1.1	1.0	1.0	0.9	0.8	0.7	0.5	0.2	-
Dye Marker	0.9	1.0	1.0	0.9	0.6	0.4	0.2	-	-
Smoke	0.8	1.0	0.8	0.6	0.4	0.2	0.1	-	-

WHITECAP CORRECTION FACTOR (f_w)

Figure 8-67b

Percent Cloud Cover	0	10	20	30	40	50	60	70	80	90	100
Cloud Cover Factor	1.1	1.1	1.1	1.0	1.0	1.0	1.0	0.9	0.9	0.8	0.7

LIGHTING CORRECTION FACTOR (f_l)

Figure 8-67c

FIGURE 8-67

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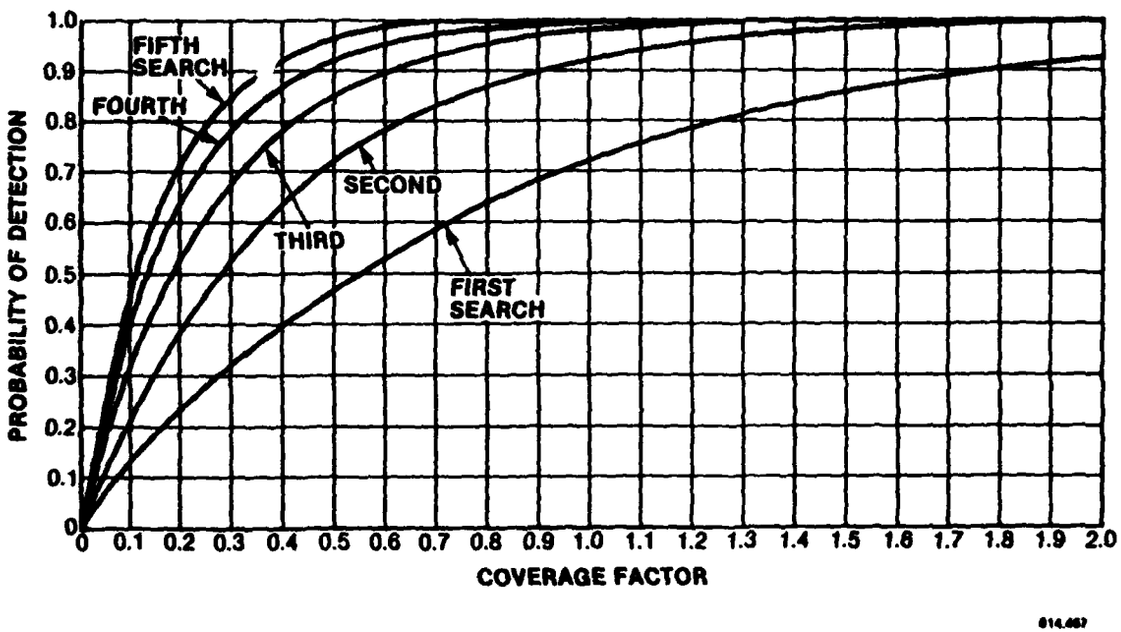


PROBABILITY OF DETECTION

APPENDIX C
METRIC CONVERSION FACTORS

1. Feet to Meters

1 foot = 0.3048 meters

Thus:

3 to 4 foot swells ≈ 1 meter swells,
a 16-foot boat ≈ a 5-meter boat, and
an altitude of 500 feet ≈ a 150 meter altitude.

2. Nautical Miles to Kilometers

1 nautical mile (nm) = 1.852 kilometers (Km)

Thus:

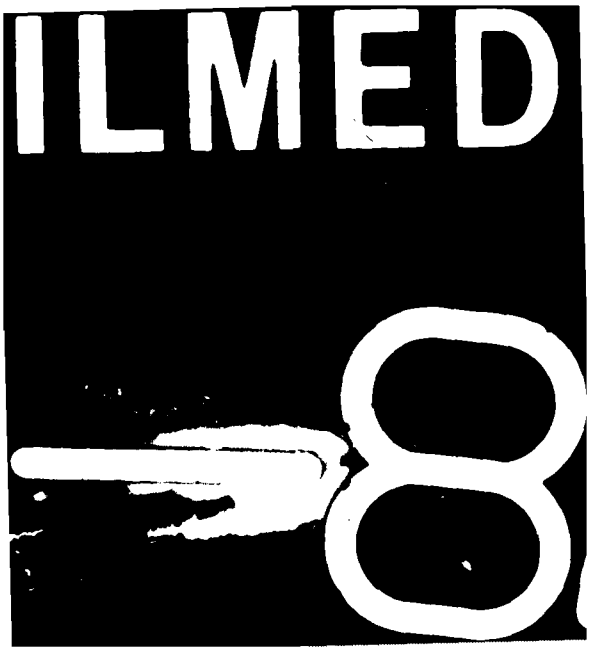
10 nm visibility ≈ 18.5 Km visibility, and
a 2 nm range ≈ 3.7 Km range.

3. Knots to Meters/Second and Kilometers per Hour

1 knot = 0.5144 meters per second
1 knot ≈ 1.852 kilometers per hour

Thus:

a 10-knot wind speed ≈ 5 meter per second wind speed,
and a 10-knot search speed ≈ 18 kilometer per hour search speed.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