

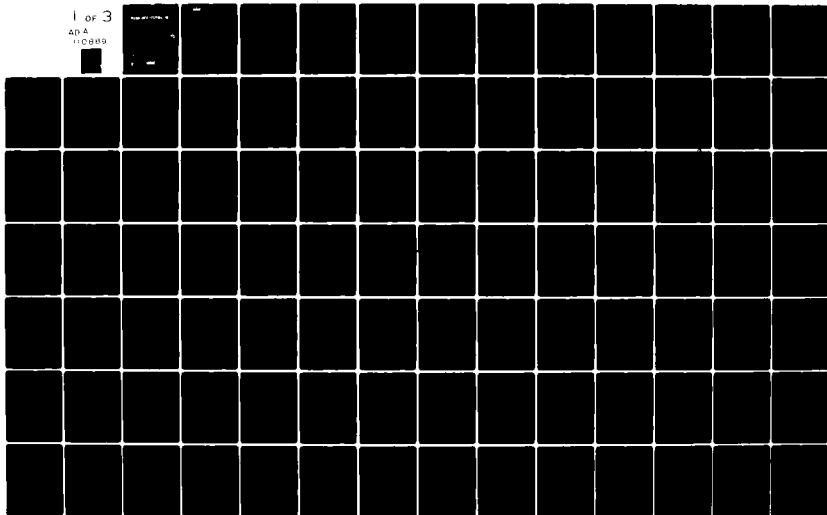
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①

to the
NORDA BENCH MARK PACKAGE DOCUMENT

Technical Task Report

April 30, 1980

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Prepared Under
Contract N00014-80-C-0409

Prepared By:
R. Holt
OCEAN DATA SYSTEMS, INC.
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FOREWORD

This document is a task report prepared under Contract No. N00014-80-C-0409 for the Office of Naval Research, Washington, D.C. in support of the Naval Ocean Research and Development Activity (NORDA) Code 300, NSTL Station, Mississippi. The report presents user level instructions for executing each of five NORDA computer programs at a bench mark site using card decks and magnetic tapes that accompany this document.

Ocean Data Systems is indebted to Mr. J. Roberts, NORDA Code 301, for providing recommendations in selecting the programs to be included in this bench mark package and for his general assistance in this effort.

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ABSTRACT

A suite of five NORDA computer programs has been selected to comprise the NORDA Bench Mark Package. The programs are coded entirely in CDC FORTRAN IV (except for one small assembly language function contained in the program AUTO-OCEAN). This document provides the user with information and instructions for executing each program at a bench mark site. Included with the Bench Mark Package are card decks and magnetic tapes, the contents of which are described herein. Sample inputs and outputs contained in this report were derived from these decks and tapes.

It is virtually impossible to foresee every problem that may be encountered in transferring a program between computers. This document places special emphasis on the FORTRAN/Operating System interfaces that are most likely to be site dependent and thus create problems. Information presented in the main text of this report should be sufficient to implement minor job stream and/or FORTRAN coding changes to the computer programs included in the Bench Mark Package in order to adapt them to the on-site operating system. Should more substantial changes become necessary, additional documentation and information are provided in the appendices.

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I. INTRODUCTION

This manual, with accompanying magnetic tapes and card decks, comprises the Bench Mark Package of the Naval Ocean Research and Development Activity (NORDA). The purpose of this package is to assist the user in executing each program on the bench mark computer. All programs were developed and currently execute on the CDC 6600/6700 system at the David Taylor Naval Ship Research and Development Center (DTNSRDC), Carderock, MD, under the following software:

Operating System:	NOS/BE 1.2
UPDATE:	Level 1.2-460
Compiler:	FTN 4.6 + 460 with optimization level 2 and ROUND = */
Loader:	Cyber loader 1.3-460.

The package consists of five programs, four of which execute in batch mode, and one which executes interactively. Four programs reside on tape; one is a FORTRAN punched card deck. Some of the programs are composed of several modules, each of which must be loaded and executed sequentially. Some of the modules are created by loading more than one binary file. Additionally some programs require data bases which must be transferred from tapes (provided with this package) to mass storage files prior to execution. Table I summarizes the programs and data bases. All tapes included in this package are unlabeled, 7-track, 800 bpi, Scope Internal tapes. Program tapes are in Program Library* (PL) random format, i.e., they were created as the NEWPL output from UPDATE, and thus can be attached as the OLDPL input to UPDATE on the bench mark computer. Each program library constitutes a binary record on tape. Data base tapes are written in various formats as appropriate. Table II summarizes the contents of all tapes included in the bench mark package.

Included for each batch mode program is an execution deck that has been run successfully on the CDC 6600/6700 system at DTNSRDC. For the interactive mode program, a card deck is provided to create and catalog the absolute (executable) object code. Each deck contains all the necessary commands to either execute or catalog a program, i.e., mount and access program and data tapes, create necessary data files on mass storage, call UPDATE, compile, load, execute or catalog the program, and purge data files that may have been cataloged. Additionally, all needed data cards are included. These decks will probably require modifications to the job streams before running at the bench mark site. Chapters II through VI present details of the decks and expected execution results.

To be consistent, each vendor should execute the four batch mode programs in the order in which they appear in Chapters II through V of this document, i.e., (1st) MPP, (2nd) AUTO-OCEAN, (3rd) NEWPE, and (4th) SYNACC. The interactive mode program, INTERACT, may be executed at any time.

*Non-CDC vendors can be supplied with programs on cards and/or EBCDIC tapes.

TABLE I: SUMMARY OF PROGRAMS AND DATA BASES

Program Name	Execution Mode	Executable Module Name(s)	PL or Program Names	PL or Program Location	Data Base Name(s)	Data Base Location
MPP	Batch	MPP1	CFIELD	Tape CK0713, Binary Record 1.	None.	
			MPP1	Tape CK0713, Binary Record 2.		
		MPP2	MPP2	Tape CK0713, Binary Record 3.		
			MPP3	Tape CK0713, Binary Record 4.		
		MPP4	MPP4	Tape CK0713, Binary Record 5.		
			MPP5	Tape CK0713, Binary Record 6.		
AUTO-OCEAN	Batch	BSCRAM	BSCRAM	On cards in execution deck.	BATHY	Tape CK0654, Binary File 1.
		PSCRAM	PSCRAM	On cards in execution deck.	PROFILES	Tape CK0654, Binary File 2.
		AUTOOC	AUTOOC	Tape CK0713, Binary Record 7.		

TABLE I: SUMMARY OF PROGRAMS AND DATA BASES (continued)

Program Name	Execution Mode	Executable Module Name(s)	PL or Program Names	PL or Program Location	Data Base Name(s)	Data Base Location
NEWPE	Batch	INFACE	INFACE	Tape CK0713, Binary Record 8.	None.	
			AUTO CF	Tape CK0713, Binary Record 9.		
		NEWPE	NEWPE	Tape CK0713, Binary Record 10.		
SYNACC	Batch	SYNACC	SYNACC	On cards in execution deck.	FINALGRID 1111	Tape CK0456, Coded File 1.
					FINALGRID 1112	Tape CK0456, Coded File 2.
					FINALGRID 1121	Tape CK0456, Coded File 3.
					FINALGRID 1122	Tape CK0456, Coded File 4.
					FINALGRID 1131	Tape CK0456, Coded File 5.
					FINALGRID 1132	Tape CK0456, Coded File 6.
INTERACT	Interactive	BMINTERACT	INRACT	Tape CK0713, Binary Record 12	FINALGRID 1141	Tape CK0456, Coded File 7.
					None	

TABLE II: TAPE CONTENTS (continued)

Tape No.	Type	Used in Program(s)	Format	File or Record No.	Description
CK0713 (Duplicate backup is CK0720).	Program	MPP AUTO-OCEAN NEWPE INTERACT	Binary Records	1	Program Library CFIELD.
				2	Program Library MPP1.
				3	Program Library MPP2.
				4	Program Library MPP3.
				5	Program Library MPP4.
				6	Program Library MPP5.
				7	Program Library AUTOOC.
				8	Program Library INFACE.
				9	Program Library AUTOOCF.
				10	Program Library NEWPE.
				11	Not used in bench mark package.
				12	Program Library INRACT.
CK0654 (Duplicate backup is CK0932).	Data	AUTO-OCEAN	Binary Files	1	The AUTO-OCEAN data base file BATHY.
				2	The AUTO-OCEAN data base file PROFILES.

TABLE II: TAPE CONTENTS (continued)

Tape No.	Type	Used in Program(s)	Format	File or Record No.	Description
CK0456 (Duplicate backup is CK0152).	Data	SYNACC	Coded Files	1	The SYNACC data base file FINALGRID 1111.
				2	The SYNACC data base file FINALGRID 1112.
				3	The SYNACC data base file FINALGRID 1121.
				4	The SYNACC data base file FINALGRID 1122.
				5	The SYNACC data base file FINALGRID 1131.
				6	The SYNACC data base file FINALGRID 1132.
				7	The SYNACC data base file FINALGRID 1141.

Each program contains certain subroutine calls that may be site dependent and thus will require special attention at the bench mark site. These calls involve mostly the handling of random access and direct access mass storage files, and FORTRAN/Operating System interface(s) for attaching cataloged files and connecting a terminal to a file. Table III lists possible site dependent subroutine calls, the program from which the calls are made, and the purpose of the call. More detailed documentation is contained in Chapters II through VI.

Chapters II through VI present detailed information for executing each of the five programs. Appendix A contains data regarding computer facility requirements that may be needed for the JOB cards at the bench mark site. Appendix B discusses a COMPASS coded function that exists in the PL for program AUTO-OCEAN. User level documentation for potential site dependent software is presented in Appendix C. Appendices D through H contain FORTRAN compilation listings of all program elements in each of the five programs that reference potentially site dependent routines.

TABLE III: POSSIBLE SITE DEPENDENT SUBROUTINE REFERENCES

Possible Site Dependent Subroutine	Location of Subroutine at DTNSRDC	Name of PL(s) or Program(s) Generating Call	Purpose of Call
CLOSEM	SL-SYSIO*	MPP2 MPP3	Close a direct access mass storage file.
CONNEC	SL-FORTRAN**	INRACT	Connect a file to a terminal.
DATE	SL-FORTRAN**	MPP5 NEWPE	Retrieve current date.
FILEDA	SL-SYSIO*	MPP2 MPP3 BSCRAM AUTOOC	Declare a file as a direct access mass storage file.
GET	SL-SYSIO*	MPP2 MPP3 AUTOOC	Read a record from a direct access mass storage file into core memory.
OPENM	SL-SYSIO*	MPP2 MPP3 BSCRAM AUTOOC	Open a direct access mass storage file.
OPENMS	SL-FORTRAN**	PSCRAM AUTOOC	Open a random access (word addressable) mass storage file.
PUT	SL-SYSIO*	MPP2 PSCRAM	Write a record from core memory onto a direct access mass storage file.

TABLE III: POSSIBLE SITE DEPENDENT SUBROUTINE REFERENCES (continued)

Possible Site Dependent Subroutine	Location of Subroutine at DTNSRDC	Name of PL(s) or Program(s) Generating Call	Purpose of Call
READMS	SL-FORTRAN**	AUTOOC	Read data from a random access (word addressable) mass storage file into core memory.
UNLOAD	NSRDC***	SYNACC	Unload a FORTRAN file.
WRITMS	SL-FORTRAN**	PSCRAM	Write data from core memory onto a random access (word addressable) mass storage file.
ZPFUNC	NSRDC***	SYNACC	Attach a cataloged data file from within a FORTRAN program.

* SL-SYSIO is a system library containing various I/O routines. It is included automatically by the loader at DTNSRDC.

** SL-FORTRAN is the standard FORTRAN system library. It is included automatically by the loader at DTNSRDC.

*** NSRDC is a library of miscellaneous utility routines at DTNSRDC. It must be explicitly included when loading.

II. MPP

II.1 General Information

MPP is a batch mode program composed of five separate modules (subprograms) which must be executed sequentially. Communication between modules is achieved using scratch mass storage files which are automatically allocated by the operating system. The execution deck references the modules (in order of execution) as MPP1, MPP2, MPP3, MPP4, and MPP5. The program is coded entirely in FORTRAN IV.

II.2 Location of Program

The components of MPP comprise PL numbers 1 through 6 (binary records 1 through 6), inclusive, on program tape CK0713 and backup program tape CK0720. The five executable modules require six PL's because MPP1 is created from PL's 1 and 2 (see Table I).

II.3 Job Stream

The job stream included in the MPP execution deck and listed in Section II.5 with comments performs the following basic functions: mounts program tape CK0713, updates from PL's on tape, compiles, loads, and executes each module. Job stream commands shown are those used on the DTNSRDC CDC 6600/6700 system. They may require modification at the bench mark site.

II.4 Input

MPP uses no external data bases. It is driven entirely by data cards. Each of the five executable modules has its own card input. MPP2 through MPP5 also read a scratch file written by the preceding modules. All necessary data cards are contained in the MPP execution deck and are listed in Section II.5.

II.5 Execution Deck

A listing of the MPP execution deck is presented in Figure 1 followed by comments. Numbers opposite card images in the figure coincide with the appropriate comment number. Job stream commands and data are identical to those which produced the output in Section II.6 on the CDC 6600/6700 system at DTNSRDC.

Comment
Number:

Card
Image:

```

1 - VSN.OLDPL=CK0713.
2 - REQUEST.OLDPL.HY.NORING. /CK0713/NORING/
3 - UPDATE.F.R.C=COMPILE.
4 - REWIND.COMPILE.
5 - FTN.I=COMPILE.L=0.OPT=2.R=CFIELD.
6 - RETURN.COMPILE.
7 - UPDATE.F.W.C=COMPILE.
4 - REWIND.COMPILE.
8 - FTN.I=COMPILE.L=0.OPT=2.B=MPP1.
6 - RETURN.COMPILE.
9 - LOAD.CFIELD.
10 - MPP1.
6 - RETURN.MPP1.CFIELD.
11 - UPDATE.F.R.C=COMPILE.
4 - REWIND.COMPILE.
12 - FTN.I=COMPILE.L=0.OPT=2.B=MPP2.
6 - RETURN.COMPILE.
13 - MPP2.
6 - RETURN.MPP2.
14 - UPDATE.F.W.C=COMPILE.
4 - REWIND.COMPILE.
15 - FTN.I=COMPILE.L=0.OPT=2.B=MPP3.
6 - RETURN.COMPILE.
16 - MPP3.
6 - RETURN.MPP3.
17 - UPDATE.F.R.C=COMPILE.
4 - REWIND.COMPILE.
18 - FTN.I=COMPILE.L=0.OPT=2.B=MPP4.
6 - RETURN.COMPILE.
19 - MPP4.
6 - RETURN.MPP4.
20 - UPDATE.F.R.C=COMPILE.
21 - UNLOAD.OLDPL.
4 - REWIND.COMPILE.
22 - FTN.I=COMPILE.L=0.OPT=2.B=MPP5.
6 - RETURN.COMPILE.
23 - MPP5.
6 - RETURN.MPP5.
* 24 - 7/8/9 END OF RECORD CARD
* 25 - 7/8/9 END OF RECORD CARD
* 26 - 7/8/9 END OF RECORD CARD
27 - 0
27 - 0.0 3
27 - 0.0 1500. 100. 1497. 2000. 1515.
27 - 0
27 - 500. 4
27 - 0.0 1501. 20. 1501.8 100. 1498.9 1500. 1510.
27 - 0
27 - 1000. 0
27 - END OF PROFILES.
27 - 2 1 1
27 - 0.0 12000.0 500.0 9000.
27 - 0.0
27 - 35.0 0.0 100.0 200.0
* 28 - 7/8/9 END OF RECORD CARD

```

FIGURE 1: MPP EXECUTION DECK

Comment
Number:

Card
Image:

```
*29 - 7/8/9 END OF RECORD CARD
30 - 0 0 2 -21
30 - 10.0 -10.
30 - 0.0 60.0 100.
30 - 300. 1000.
*31 - 7/8/9 END OF RECORD CARD
*32 - 7/8/9 END OF RECORD CARD
33 - 0
33 - 0 0
*34 - 7/8/9 END OF RECORD CARD
*35 - 7/8/9 END OF RECORD CARD
36 - 1 1
*37 - 7/8/9 END OF RECORD CARD
*38 - 7/8/9 END OF RECORD CARD
39 - MPP NORDA BENCHMARK RUN.
39 - 100 1.0 1.0
39 - 1 0
39 - 1 1
39 - 1
39 - 50.
39 - 2
39 - 35.0 100.0
**40 - 6/7/8/9 END OF JOB CARD
```

- * This image represents a card with a 7/8/9 multi-punch in Col. 1.
- ** This image represents a card with a 6/7/8/9 multi-punch in Col. 1.

FIGURE 1: MPP EXECUTION DECK (continued)

The following comments refer to card images in the MPP execution deck listed in Figure 1.

Comment
Number:

Comment:

- 1 Specify program tape to be used.
- 2 Mount unlabeled program tape with local file name OLDPL. Density = 800 BPI (HY). No write ring.
- 3 Create compile file from 1st PL on tape.
- 4 This card is needed because UPDATE R option inhibits automatic rewind.
- 5 Create the binary file CFIELD.

Comment
Number:

Comment:

- 6 This is done to minimize mass storage usage.
- 7 Create compile file from 2nd PL on tape.
- 8 Create the binary file MPP1.
- 9 Include CFIELD in the executable module MPP1.
- 10 Load and execute MPP1. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.
- 11 Create compile file from 3rd PL on tape.
- 12 Create the binary file MPP2.
- 13 Load and execute MPP2. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.
- 14 Create compile file from 4th PL on tape.
- 15 Create the binary file MPP3.
- 16 Load and execute MPP3. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.
- 17 Create compile file from 5th PL on tape.
- 18 Create the binary file MPP4.
- 19 Load and execute MPP4. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.
- 20 Create compile file from 6th PL on tape.
- 21 Program tape no longer needed.
- 22 Create the binary file MPP5.
- 23 Load and execute MPP5. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.
- 24 Updates to CFIELD, if any, follow this card. Updates may be necessary to modify site dependent coding.

Comment Number:	Comment:
25	Updates to MPP1, if any, follow this card. Updates may be necessary to modify site dependent coding.
26	Data for MPP1 follow this card.
27	MPP1 data cards.
28	Updates to MPP2, if any, follow this card. Updates may be necessary to modify site dependent coding.
29	Data for MPP2 follow this card.
30	MPP2 data cards.
31	Updates to MPP3, if any, follow this card. Updates may be necessary to modify site dependent coding.
32	Data for MPP3 follow this card.
33	MPP3 data cards.
34	Updates to MPP4, if any, follow this card. Updates may be necessary to modify site dependent coding.
35	Data for MPP4 follow this card.
36	MPP4 data card.
37	Updates to MPP5, if any, follow this card. Updates may be necessary to modify site dependent coding.
38	Data for MPP5 follow this card.
39	MPP5 data cards.
40	End of deck.

II.6 Output

The expected output from running the MPP execution deck is listed in Figure 2.

-----MPP-PART1 ENTERED-----

FIGURE 2: EXPECTED MPP OUTPUT

-----CFIELD ENTERED-----

```

.....
                PROFILE 1
                RANGE= 0.00 NM.
                SPHERICAL EARTH PROFILE

INPUT PROFILE
DEPTH(M)  SPEED(M/S)  DEPTH(FT)  SPEED(FT/S)  GRAU(1/SEC)
( 1)  0.000  1500.000  0.000  4921.260  -.298E-01
( 2) 100.000  1497.000  328.087  4911.494  .971E-02
( 3) 200.000  1515.000  6562.710  4972.033  .972E-02
( 4)

```

THERE IS ARE 0 SPECIFIED CONNECTION(S).

```

.....
                PROFILE 2
                RANGE= 500.00 NM.
                SPHERICAL EARTH PROFILE

INPUT PROFILE
DEPTH(M)  SPEED(M/S)  DEPTH(FT)  SPEED(FT/S)  GRAU(1/SEC)
( 1)  0.000  1501.000  0.000  4924.541  .402E-01
( 2) 20.000  1501.800  65.617  4927.181  -.360E-01
( 3) 100.000  1498.900  328.087  4917.728  .816E-02
( 4) 1500.000  1510.000  4921.439  4955.235  .817E-02
( 5)

```

THERE IS ARE 0 SPECIFIED CONNECTION(S).

```

.....
                PROFILE 3
                RANGE=1000.00 NM.
                SPHERICAL EARTH PROFILE

SINCE NO POINTS WERE INPUTTED,WE WILL USE THE PREVIOUS PROFILE.

```

-----CFIELD FINISHED-----

FIGURE 2: EXPECTED MPP OUTPUT (continued)

BOTTOM INFORMATION
 NO. OF BATHYMETRY POINTS = 2
 NO. OF BOTTOM LOSS DOMAINS = 1
 BOTTOM LOSS DOMAIN TYPES = 1
 BOTTOM PROFILE
 RANGE (NM) DEPTH (FT)
 0.00 12000.00
 500.00 1000.00
 BOTTOM LOSS FUNCTION 1
 RANGE = 0.00 NM
 TWTAC = 35.000
 N40 = 0.000
 N4C = 100.000
 N490 = 200.000

-----MPP-PART1 TERMINATED NORMALLY.-----

FIGURE 2: EXPECTED MPP OUTPUT (continued)

KPHNT = 0
 JPHNT = 0
 NHPTS = 2
 NANGLE = -21
 INTAPE = 0
 NOELET = 0

ANGINT = 10.000
 ANGEND = -10.000
 REGINX (MM) = 0.000
 REGINY (FT) = 60.000
 FNA (MM) = 100.000
 OH150 (DB) = 150.000
 W0 (M2) = 25.000
 YDEP (THE SOURCE DEPTHS) = 300.00
 1000.00

FIGURE 2: EXPECTED MPP OUTPUT (continued)

THIS IS AN INITIAL RUN
21 WAYS TO BE TRACED (DEGREES)

10.0000
9.0000
8.0000
7.0000
6.0000
5.0000
4.0000
3.0000
2.0000
1.0000
0.0000
-1.0000
-2.0000
-3.0000
-4.0000
-5.0000
-6.0000
-7.0000
-8.0000
-9.0000
-10.0000

PROCESSING RAY 1
PROCESSING RAY 2
PROCESSING RAY 3
PROCESSING RAY 4
PROCESSING RAY 5
PROCESSING RAY 6
PROCESSING RAY 7
PROCESSING RAY 8
PROCESSING RAY 9
PROCESSING RAY 10
PROCESSING RAY 11
PROCESSING RAY 12
PROCESSING RAY 13
PROCESSING RAY 14
PROCESSING RAY 15
PROCESSING RAY 16
PROCESSING RAY 17
PROCESSING RAY 18
PROCESSING RAY 19
PROCESSING RAY 20
PROCESSING RAY 21

FIGURE 2: EXPECTED MPP OUTPUT (continued)

MIAMI = 0
NOPIPI = 0 0

FIGURE 2: EXPECTED MPP OUTPUT (continued)

[illegible]

FIGURE 2: EXPECTED MPP OUTPUT (continued)

13	ICOUNT	NSM= 6 INIT ANG 3.000 2.000	NSM= 0 ARR ANG 4.000 3.515	NSM= 0 ARRIV 8 9	NSM= 0 ARRIV 12 12	NSM= 6 K(I,ARRIV) 95.856 90.778	T(I,ARRIV) 118.645 112.220	TL(I,ARRIV) 101.462 94.332	NC(I,ARRIV) 5 6
13	ICOUNT	NSM= 7 INIT ANG 3.000 2.000	NSM= 0 ARR ANG -4.000 -3.515	NSM= 0 ARRIV 8 9	NSM= 0 ARRIV 13 13	NSM= 6 K(I,ARRIV) 97.881 93.525	T(I,ARRIV) 120.743 115.616	TL(I,ARRIV) 101.266 97.730	NC(I,ARRIV) 5 6
14	ICOUNT	NSM= 0 INIT ANG 1.000 0.000 -1.000 -2.000 -3.000 -4.000 -5.000 -6.000 -7.000 -8.000 -9.000 -10.000	NSM= 1 ARR ANG -1.246 -3.000 -3.246 -3.679 -4.104 -5.052 -5.875 -6.745 -7.648 -8.572 -9.511 -10.461	NSM= 0 ARRIV 10 11 12 13 14 15 16 17 18 19 20 21	NSM= 0 ARRIV 1 1 1 1 1 1 1 1 1 1 1 1	NSM= 0 K(I,ARRIV) 2.015 1.465 1.066 .796 .619 .499 .415 .354 .307 .271 .242 .219	T(I,ARRIV) 2.491 1.812 1.318 .986 .766 .619 .515 .440 .383 .339 .304 .275	TL(I,ARRIV) 72.218 69.449 66.083 64.154 61.973 60.113 58.523 57.150 55.947 54.882 53.928 53.066	NC(I,ARRIV) 0 0 0 0 0 0 0 0 0 0 0 0
15	ICOUNT	NSM= 0 INIT ANG 1.000 0.000 -1.000 -2.000 -3.000 -4.000 -5.000 -6.000 -7.000 -8.000 -9.000 -10.000	NSM= 1 ARR ANG 3.091 2.931 3.083 3.510 4.131 4.875 5.696 6.565 7.465 8.188 9.326 10.276	NSM= 0 ARRIV 10 11 12 13 14 15 16 17 18 19 20 21	NSM= 0 ARRIV 2 2 2 2 2 2 2 2 2 2 2 2	NSM= 1 R(I,ARRIV) 12.343 11.328 11.309 12.187 13.726 15.701 17.959 20.403 22.976 25.643 28.380 31.172	T(I,ARRIV) 15.261 14.807 13.984 15.069 16.468 19.403 22.183 25.189 28.347 31.615 36.959 41.363	TL(I,ARRIV) 83.668 78.499 78.215 83.614 86.194 88.271 89.972 91.428 92.684 93.808 94.798 95.733	NC(I,ARRIV) 1 1 0 0 0 0 0 0 0 0 0 0
16	ICOUNT	NSM= 0 INIT ANG 1.000 0.000 -1.000	NSM= 2 ARR ANG -3.091 -2.931 -3.083	NSM= 0 ARRIV 10 11 12	NSM= 0 ARRIV 3 3 3	NSM= 1 K(I,ARRIV) 15.277 16.109 16.215	T(I,ARRIV) 18.888 17.446 17.601	TL(I,ARRIV) 85.375 79.489 81.306	NC(I,ARRIV) 2 2 1
17	ICOUNT	NSM= 0 INIT ANG 1.000 0.000 -1.000	NSM= 2 ARR ANG 3.091 2.931 3.083	NSM= 0 ARRIV 10 11 12	NSM= 0 ARRIV 4 4 4	NSM= 2 K(I,ARRIV) 26.718 25.054 25.669	T(I,ARRIV) 33.058 30.979 31.739	TL(I,ARRIV) 89.733 82.103 87.477	NC(I,ARRIV) 3 3 2
18	ICOUNT	NSM= 0 INIT ANG 1.000 0.000 -1.000	NSM= 3 ARR ANG -3.091 -2.931 -3.083	NSM= 0 ARRIV 10 11 12	NSM= 0 ARRIV 5 5 5	NSM= 2 K(I,ARRIV) 29.671 27.816 28.595	T(I,ARRIV) 36.645 34.618 35.346	TL(I,ARRIV) 90.622 82.595 88.015	NC(I,ARRIV) 4 4 3
19	ICOUNT	NSM= 0 INIT ANG 1.000 0.000 -1.000	NSM= 0 ARR ANG 0.000 0.000 0.000	NSM= 0 ARRIV 0 0 0	NSM= 0 ARRIV 0 0 0	NSM= 0 K(I,ARRIV) 0.000 0.000 0.000	T(I,ARRIV) 0.000 0.000 0.000	TL(I,ARRIV) 0.000 0.000 0.000	NC(I,ARRIV) 0 0 0

FIGURE 2: EXPECTED MPP OUTPUT (continued)

20	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	3.091	10	6	41.131	50.856	93.260	5
	2	0.000	2.931	11	6	38.782	47.452	84.152	5
	3	-1.000	3.083	12	6	40.030	49.493	91.790	4
		ISIG= 0000000000300002000							
		NSM= 0	NSM= 4		NHM= 0	NHM= 3			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	-3.091	10	7	44.066	56.482	93.861	6
	2	0.000	-2.931	11	7	41.563	51.390	84.486	6
	3	-1.000	-3.083	12	7	42.956	51.110	92.495	5
		ISIG= 0000000000400002000							
		NSM= 0	NSM= 4		NHM= 0	NHM= 4			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	3.091	10	8	55.529	68.653	95.758	7
	2	0.000	2.930	11	8	52.509	64.925	85.614	7
	3	-1.000	3.083	12	8	54.391	67.269	94.652	6
		ISIG= 0000000000400002400							
		NSM= 0	NSM= 5		NHM= 0	NHM= 4			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	-3.091	10	9	58.462	72.280	96.214	8
	2	0.000	-2.930	11	9	55.291	68.363	85.871	8
	3	-1.000	-3.083	12	9	57.317	70.866	95.163	7
		ISIG= 0000000000500002400							
		NSM= 0	NSM= 5		NHM= 0	NHM= 5			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	3.091	10	10	69.925	86.451	97.696	9
	2	0.000	2.930	11	10	66.238	81.898	86.764	9
	3	-1.000	3.082	12	10	68.754	85.004	96.798	8
		ISIG= 0000000000500003000							
		NSM= 0	NSM= 6		NHM= 0	NHM= 5			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	-3.091	10	11	72.859	90.018	98.062	10
	2	0.000	-2.930	11	11	69.020	85.336	86.974	10
	3	-1.000	-3.082	12	11	71.680	88.621	97.200	9
		ISIG= 0000000000600003000							
		NSM= 0	NSM= 6		NHM= 0	NHM= 6			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	3.091	10	12	86.323	104.250	99.279	11
	2	0.000	2.930	11	12	79.968	98.872	87.719	11
	3	-1.000	3.082	12	12	83.117	102.761	98.518	10
		ISIG= 0000000000600003400							
		NSM= 0	NSM= 7		NHM= 0	NHM= 6			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	-3.091	10	13	87.257	107.877	99.586	12
	2	0.000	-2.930	11	13	82.750	102.310	87.898	12
	3	-1.000	-3.082	12	13	86.043	106.378	98.848	11
		ISIG= 0000000000700003400							
		NSM= 0	NSM= 7		NHM= 0	NHM= 7			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	3.091	10	14	98.723	122.051	100.618	13
	2	0.000	2.930	11	14	93.700	115.848	88.568	13
	3	-1.000	3.082	12	14	97.483	120.519	99.952	12
		ISIG= 0000000000700004000							
		NSM= 0	NSM= 8		NHM= 0	NHM= 7			
	ICOUNT	INIT ANG	AMR ANG	I	AMRIV	R(I,AMRIV)	T(I,AMRIV)	TL(I,AMRIV)	NC(I,AMRIV)
	1	1.000	-3.091	11	15	96.481	119.286	88.697	14
	2	0.000	-2.930	12	15	90.000	110.000	80.000	14
	3	-1.000	-3.082	12	15	94.000	100.000	70.000	14

FIGURE 2: EXPECTED MPP OUTPUT (continued)

13	ICOUNT	NSH= 0 INIT ANG 1 3.000 2 2.000	NSH= 0 ARR ANG 1 2.440 2 2.440	NSH= 0 ARRV 1 12 2 12	NSH= 6 M(I,ARRV) 1 96.086 2 98.646	T(I,ARRV) 116.292 109.580	TL(I,ARRV) 100.525 91.694	NC(I,ARRV) 5 6
		ISIG= 000000000000000000000000						
14	ICOUNT	NSH= 7 INIT ANG 1 3.000 2 2.000	NSH= 0 ARR ANG 1 3.214 2 -2.440	NSH= 0 ARRV 1 13 2 13	NSH= 6 M(I,ARRV) 1 99.452 2 95.657	T(I,ARRV) 122.936 118.255	TL(I,ARRV) 100.143 96.724	NC(I,ARRV) 5 6
		ISIG= 000000000000000000000000						
15	ICOUNT	NSH= 0 INIT ANG 1 1.000 2 0.000 3 -1.000 4 -2.000 5 -3.000 6 -4.000 7 -5.000 8 -6.000 9 -7.000 10 -8.000 11 -9.000 12 -10.000	NSH= 1 ARR ANG 1 -1.413 2 -1.493 3 -1.769 4 -2.466 5 -3.323 6 -4.245 7 -5.147 8 -6.144 9 -7.140 10 -8.122 11 -9.108 12 -10.097	NSH= 0 ARRV 1 10 2 11 3 12 4 13 5 14 6 15 7 16 8 17 9 18 10 19 11 20 12 21	NSH= 0 M(I,ARRV) 1 4.498 2 4.197 3 3.577 4 2.873 5 2.308 6 1.894 7 1.590 8 1.363 9 1.189 10 1.052 11 .942 12 -.852	T(I,ARRV) 5.564 5.192 4.426 3.557 2.860 2.349 1.975 1.694 1.483 1.315 1.180 1.070	TL(I,ARRV) 68.558 70.647 72.743 72.741 71.831 70.659 69.469 68.342 67.300 66.346 65.471 64.667	NC(I,ARRV) 0 0 0 0 0 0 0 0 0 0 0 0
		ISIG= 000000000000000000000000						
16	ICOUNT	NSH= 0 INIT ANG 1 1.000 2 0.000 3 -1.000	NSH= 2 ARR ANG 1 -1.828 2 -1.542 3 -1.914	NSH= 0 ARRV 1 10 2 11 3 12	NSH= 1 M(I,ARRV) 1 9.774 2 8.512 3 7.725 4 10.051 5 11.989 6 14.270 7 16.755 8 19.371 9 22.076 10 24.848 11 27.668 12 30.529	T(I,ARRV) 12.082 10.523 10.786 12.423 14.816 17.628 20.689 23.905 27.226 30.621 34.068 37.555	TL(I,ARRV) 81.394 74.405 77.424 82.368 85.407 87.705 89.558 91.110 92.446 93.619 94.647 95.609	NC(I,ARRV) 1 1 0 0 0 0 0 0 0 0 0 0
		ISIG= 000000000000000000000000						
17	ICOUNT	NSH= 0 INIT ANG 1 1.000 2 0.000 3 -1.000	NSH= 2 ARR ANG 1 -1.828 2 -1.542 3 -1.914	NSH= 0 ARRV 1 10 2 11 3 12	NSH= 1 M(I,ARRV) 1 17.845 2 16.916 3 16.814	T(I,ARRV) 22.067 20.919 20.793	TL(I,ARRV) 82.650 77.424 76.409	NC(I,ARRV) 2 2 1
		ISIG= 000000000000000000000000						
18	ICOUNT	NSH= 0 INIT ANG 1 1.000 2 0.000 3 -1.000	NSH= 2 ARR ANG 1 -1.828 2 -1.542 3 -1.914	NSH= 0 ARRV 1 10 2 11 3 12	NSH= 2 M(I,ARRV) 1 24.169 2 22.247 3 23.049	T(I,ARRV) 29.879 27.506 28.546	TL(I,ARRV) 87.607 78.861 85.625	NC(I,ARRV) 3 3 2
		ISIG= 000000000000000000000000						
19	ICOUNT	NSH= 0 INIT ANG 1 1.000 2 0.000 3 -1.000	NSH= 3 ARR ANG 1 -1.829 2 -1.542 3 -1.915	NSH= 0 ARRV 1 10 2 11 3 12	NSH= 2 M(I,ARRV) 1 32.240 2 30.642 3 31.174	T(I,ARRV) 39.964 37.891 38.548	TL(I,ARRV) 88.089 80.162 85.724	NC(I,ARRV) 4 4 3
		ISIG= 000000000000000000000000						

FIGURE 2: EXPECTED MPP OUTPUT (continued)

20	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	6	38.564	47.677	91.114	5
	2	0.000		1.542	11	6	75.975	46.479	81.098	5
	3	-1.000		1.815	12	6	17.450	46.301	89.748	4
			ISIG= 0000000000300002000							
			NSH= 4	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	7	46.635	57.661	91.406	6
	2	0.000		1.542	11	7	44.370	54.863	81.923	6
	3	-1.000		1.815	12	7	45.535	56.302	89.881	5
21	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	8	52.960	65.475	93.592	7
	2	0.000		1.542	11	8	49.703	61.452	82.646	7
	3	-1.000		1.815	12	8	51.812	64.057	92.533	6
			ISIG= 0000000000400002000							
			NSH= 4	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	8	52.960	65.475	93.592	7
	2	0.000		1.542	11	8	49.703	61.452	82.646	7
	3	-1.000		1.815	12	8	51.812	64.057	92.533	6
22	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	9	61.031	75.458	93.800	8
	2	0.000		1.542	11	9	58.097	71.835	83.241	8
	3	-1.000		1.815	12	9	59.897	74.057	92.653	7
			ISIG= 0000000000500002000							
			NSH= 5	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	10	67.357	82.273	95.514	9
	2	0.000		1.542	11	10	63.432	78.425	83.846	9
	3	-1.000		1.815	12	10	66.174	81.813	94.639	8
23	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	11	75.428	91.256	95.675	10
	2	0.000		1.542	11	11	71.826	88.809	84.305	10
	3	-1.000		1.815	12	11	74.259	91.813	94.744	9
			ISIG= 0000000000500003000							
			NSH= 6	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	12	81.755	101.072	97.884	11
	2	0.000		1.542	11	12	77.162	95.399	84.832	11
	3	-1.000		1.815	12	12	80.538	99.569	96.332	10
24	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	13	89.826	111.055	97.215	12
	2	0.000		1.542	11	13	85.554	105.783	85.203	12
	3	-1.000		1.815	12	13	88.623	109.569	96.424	11
			ISIG= 0000000000600003000							
			NSH= 7	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	14	96.154	119.872	98.413	13
	2	0.000		1.542	11	14	90.893	112.375	85.675	13
	3	-1.000		1.815	12	14	94.903	117.327	97.748	12
25	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	15	107.000	127.158	107.000	14
	2	0.000		1.542	11	15	100.000	100.000	100.000	14
	3	-1.000		1.815	12	15	100.000	100.000	100.000	14
			ISIG= 0000000000700003000							
			NSH= 8	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	16	117.000	137.000	117.000	15
	2	0.000		1.542	11	16	110.000	110.000	110.000	15
	3	-1.000		1.815	12	16	110.000	110.000	110.000	15
26	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	17	127.000	147.000	127.000	16
	2	0.000		1.542	11	17	120.000	120.000	120.000	16
	3	-1.000		1.815	12	17	120.000	120.000	120.000	16
			ISIG= 0000000000800003000							
			NSH= 9	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	18	137.000	157.000	137.000	17
	2	0.000		1.542	11	18	130.000	130.000	130.000	17
	3	-1.000		1.815	12	18	130.000	130.000	130.000	17
27	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	19	147.000	167.000	147.000	18
	2	0.000		1.542	11	19	140.000	140.000	140.000	18
	3	-1.000		1.815	12	19	140.000	140.000	140.000	18
			ISIG= 0000000000900003000							
			NSH= 10	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	20	157.000	177.000	157.000	19
	2	0.000		1.542	11	20	150.000	150.000	150.000	19
	3	-1.000		1.815	12	20	150.000	150.000	150.000	19
28	ICOUNT	INIT ANG	NSH= 0	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	21	167.000	187.000	167.000	20
	2	0.000		1.542	11	21	160.000	160.000	160.000	20
	3	-1.000		1.815	12	21	160.000	160.000	160.000	20
			ISIG= 0000000001000003000							
			NSH= 11	AMR ANG	1	AMRIV	M(I,ARRIV)	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	1.000		1.829	10	22	177.000	197.000	177.000	21
	2	0.000		1.542	11	22	170.000	170.000	170.000	21
	3	-1.000		1.815	12	22	170.000	170.000	170.000	21

FIGURE 2: EXPECTED MPP OUTPUT (continued)

35	ICOUNT	NSR# 3	NSH# 1	ARR ANG	1	ARRIV	NH# 4	T(I,ARRIV)	TL(I,ARRIV)	NC(I,ARRIV)
	1	-2.000	ARR ANG	1	ARRIV	NH# 4	70.151	80.711	4	
	2	-3.000	ARR ANG	1	ARRIV	NH# 4	74.876	96.977	3	
	3	-4.000	ARR ANG	1	ARRIV	NH# 4	64.248	99.935	3	
	4	-5.000	ARR ANG	1	ARRIV	NH# 4	95.758	101.982	3	
	5	-6.000	ARR ANG	1	ARRIV	NH# 4	104.631	103.031	3	
	6	-7.000	ARR ANG	1	ARRIV	NH# 4	119.069	104.526	3	
	ISIG= 00									

HE NUMBER OF ARRIVALS REFERENCED THIS RUN--
 ---RECORD GETS= 298

FIGURE 2: EXPECTED MPP OUTPUT (continued)

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JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 12 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= -.1745E-01 HK(1,2)= .3434E-01 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = -.1000E+01 THS1 = 0. THS2 = 0. THSC = .3081E+01
H1 = .1234E+02 H2 = .1111E+02 T1 = .1520E+02 T2 = .1697E+02 TC = .1398E+02
H17 = .3646E-07 AA = 0. ALPHA = .2102E-01 TAU1 = .1235E+01 TAU2 = -.1233E-03

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= 0. HK(1,2)= .1345E-01 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = .2931E+01
H1 = .2674E+02 H2 = .2505E+02 T1 = .3708E+02 T2 = .3174E+02 TC = .3098E+02
H17 = .3655E-07 AA = 0. ALPHA = .2412E-02 TAU1 = .1235E+01 TAU2 = -.1257E-04

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= 0. HK(1,2)= .1288E-01 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = -.2931E+01
H1 = .2967E+02 H2 = .2784E+02 T1 = .3664E+02 T2 = .3534E+02 TC = .3442E+02
H17 = .3417E-07 AA = 0. ALPHA = .1984E-02 TAU1 = .1235E+01 TAU2 = -.9374E-05

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= 0. HK(1,2)= .1138E-01 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = .2931E+01
H1 = .4113E+02 H2 = .4003E+02 T1 = .3878E+02 T2 = .4949E+02 TC = .4795E+02
H17 = .2870E-07 AA = 0. ALPHA = .1189E-02 TAU1 = .1235E+01 TAU2 = -.4352E-05

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= 0. HK(1,2)= .1103E-01 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = -.2931E+01
H1 = .4407E+02 H2 = .4296E+02 T1 = .4156E+02 T2 = .5311E+02 TC = .5139E+02
H17 = .2754E-07 AA = 0. ALPHA = .1046E-02 TAU1 = .1235E+01 TAU2 = -.3591E-05

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= 0. HK(1,2)= .1004E-01 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = .2930E+01
H1 = .5553E+02 H2 = .5439E+02 T1 = .5251E+02 T2 = .6725E+02 TC = .6492E+02
H17 = .2446E-07 AA = 0. ALPHA = .7030E-03 TAU1 = .1235E+01 TAU2 = -.1978E-05

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= 0. HK(1,2)= .9800E-02 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = -.2930E+01
H1 = .5846E+02 H2 = .5732E+02 T1 = .5529E+02 T2 = .7087E+02 TC = .6836E+02
H17 = .2374E-07 AA = 0. ALPHA = .6777E-03 TAU1 = .1235E+01 TAU2 = -.1688E-05

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= 0. HK(1,2)= .9089E-02 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = .2930E+01
H1 = .6993E+02 H2 = .6875E+02 T1 = .6624E+02 T2 = .8500E+02 TC = .8190E+02
H17 = .2169E-07 AA = 0. ALPHA = .4247E-03 TAU1 = .1235E+01 TAU2 = -.9287E-06

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLG(MIN OR MAX CAUSTIC)=0
HK(1,1)= 0. HK(1,2)= .8907E-02 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = -.2930E+01
H1 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = -.2930E+01
H17 = 0. THM2 = 0. THS1 = 0. THS2 = 0. THSC = -.2930E+01

```

FIGURE 2: EXPECTED MPP OUTPUT (continued)

```

X17 = .2119E-07 AA = 0. ALPHA = .3752E-03 TAU1 = .1235E+01 TAU2 = -.7711E-06

JFAM=2 IFAMIFAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLGMIN UM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= .4161E-02 HK(2,2)= -.4835E-02 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THM3 = 0. THM4 = 0. THM5 = 0. THM6 = 0. THM7 = 0. THM8 = 0. THM9 = 0. THM10 = 0.
W1 = .6632E+02 R2 = .8312E+02 MC = .7997E+02 T1 = .1043E+03 I2 = .1024E+03 IC = .2930E+01
X17 = .1376E-07 AA = 0. ALPHA = .2244E-03 TAU1 = .1235E+01 TAU2 = -.1643E-06

JFAM=2 IFAMIFAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLGMIN UM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= .8220E-02 HK(2,2)= -.9616E-02 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THM3 = 0. THM4 = 0. THM5 = 0. THM6 = 0. THM7 = 0. THM8 = 0. THM9 = 0. THM10 = 0.
W1 = .8726E+02 R2 = .8604E+02 MC = .8275E+02 T1 = .1079E+03 I2 = .1064E+03 IC = -.2930E+01
X17 = .1932E-07 AA = 0. ALPHA = .1897E-03 TAU1 = .1235E+01 TAU2 = -.2771E-06

JFAM=2 IFAMIFAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NDB= 0 ISURF=0 MNXFLGMIN UM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= .7787E-02 HK(2,2)= -.8974E-02 HK(1,3)= 0. HK(2,3)= 0.
THM1 = 0. THM2 = 0. THM3 = 0. THM4 = 0. THM5 = 0. THM6 = 0. THM7 = 0. THM8 = 0. THM9 = 0. THM10 = 0.
W1 = .9872E+02 R2 = .9749E+02 MC = .9370E+02 T1 = .1221E+03 I2 = .1205E+03 IC = .2930E+01
X17 = .1817E-07 AA = 0. ALPHA = .4633E-04 TAU1 = .1235E+01 TAU2 = -.3345E-07

```

FIGURE 2: EXPECTED MPP OUTPUT (continued)

CAUSTIC PARAMETERS FOR SOURCE DEPTH= 1000.00 FT

```

JFAM=2 IFAM(FAMILY TYPE)=1 KINO. OF POINTS IN FAMILY)= 4 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0.5274E-01 HK(2,1)= 0.5274E-01 HK(1,2)= 0.5274E-01 HK(1,3)= 0.5274E-01
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.1778E+02 M2= 0.3249E+02 M3= 0.1766E+02 M4= 0.2199E+02 M5= 0.2199E+02 M6= 0.2199E+02
X17= 0.3517E-07 AA= 0. ALPHA= 0.6555E-01 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01
JFAM=2 IFAM(FAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 12 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= 0.1554E-01 HK(2,2)= 0.1701E-01 HK(1,3)= 0.1554E-01
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.9774E+01 M2= 0.3053E+02 M3= 0.8512E+01 M4= 0.1208E+02 M5= 0.1208E+02 M6= 0.1208E+02
X17= 0.4471E-07 AA= 0. ALPHA= 0.1167E-01 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01
JFAM=2 IFAM(FAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= 0.1259E-01 HK(2,2)= 0.1437E-01 HK(1,3)= 0.1259E-01
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.2417E+02 M2= 0.2309E+02 M3= 0.2225E+02 M4= 0.2949E+02 M5= 0.2949E+02 M6= 0.2949E+02
X17= 0.5418E-07 AA= 0. ALPHA= 0.1766E-02 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01
JFAM=2 IFAM(FAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= 0.1085E-01 HK(2,2)= 0.1437E-01 HK(1,3)= 0.1085E-01
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.3856E+02 M2= 0.3745E+02 M3= 0.3597E+02 M4= 0.4769E+02 M5= 0.4769E+02 M6= 0.4769E+02
X17= 0.4827E-07 AA= 0. ALPHA= 0.9625E-03 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01
JFAM=2 IFAM(FAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= 0.1160E-01 HK(2,2)= 0.1437E-01 HK(1,3)= 0.1160E-01
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.4663E+02 M2= 0.4554E+02 M3= 0.4437E+02 M4= 0.5766E+02 M5= 0.5766E+02 M6= 0.5766E+02
X17= 0.5274E-07 AA= 0. ALPHA= 0.1302E-02 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01
JFAM=2 IFAM(FAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= 0.9670E-02 HK(2,2)= 0.1202E-01 HK(1,3)= 0.9670E-02
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.5296E+02 M2= 0.5181E+02 M3= 0.4970E+02 M4= 0.6567E+02 M5= 0.6567E+02 M6= 0.6567E+02
X17= 0.4185E-07 AA= 0. ALPHA= 0.5813E-03 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01
JFAM=2 IFAM(FAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= 0.1019E-01 HK(2,2)= 0.1301E-01 HK(1,3)= 0.1019E-01
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.6103E+02 M2= 0.5990E+02 M3= 0.5810E+02 M4= 0.7544E+02 M5= 0.7544E+02 M6= 0.7544E+02
X17= 0.4463E-07 AA= 0. ALPHA= 0.7594E-03 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01
JFAM=2 IFAM(FAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= 0.8809E-02 HK(2,2)= 0.1054E-01 HK(1,3)= 0.8809E-02
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.6776E+02 M2= 0.6617E+02 M3= 0.6343E+02 M4= 0.8327E+02 M5= 0.8327E+02 M6= 0.8327E+02
X17= 0.3747E-07 AA= 0. ALPHA= 0.3434E-03 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01
JFAM=2 IFAM(FAMILY TYPE)=2 KINO. OF POINTS IN FAMILY)= 3 NHR= 0 ISURF=0 MNXFLG(MIN OM MAX CAUSTIC)=0
HK(1,1)= 0. HK(2,1)= 0. HK(1,2)= 0.9396E-02 HK(2,2)= 0.1119E-01 HK(1,3)= 0.9396E-02
THR1= 0. THR2= 0. THR3= 0. THR4= 0. THR5= 0. THR6= 0. THR7= 0. THR8= 0. THR9= 0. THR10= 0.
M1= 0.6776E+02 M2= 0.6617E+02 M3= 0.6343E+02 M4= 0.8327E+02 M5= 0.8327E+02 M6= 0.8327E+02
X17= 0.3747E-07 AA= 0. ALPHA= 0.3434E-03 TAU1= 0.1235E+01 TAU2= 0.1235E+01 TAU3= 0.1235E+01

```

FIGURE 2: EXPECTED MPP OUTPUT (continued)

```

X17 = .3941E-07 AA = 0. ALPHA = .9404E-03 TAU1 = .1235E+01 TAU2 = -.1049E-05

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)=3 NDB=0 MNIPLUGMIN OR MAX CAUSTIC)=0
HK(1,1)=0. HK(2,1)=0. HK(1,2)=.8143E-02 HK(2,2)=.9449E-02 HK(1,3)=0. HK(2,3)=0.
THW1 = 0. THWC = 0. THS1 = 0. THS2 = 0. THSC = .1542E+01
P1 = .8175E+02 W2 = .8054E+01. MC = .7716E+02 T1 = .1011E+03 I2 = .9957E+02 IC = .9540E+02
X17 = .3423E-07 AA = 0. ALPHA = .1634E-03 TAU1 = .1235E+01 TAU2 = -.2216E-06

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)=3 NDB=0 MNIPLUGMIN OR MAX CAUSTIC)=0
HK(1,1)=0. HK(2,1)=0. HK(1,2)=.8446E-02 HK(2,2)=.9967E-02 HK(1,3)=0. HK(2,3)=0.
THW1 = 0. THWC = 0. THS1 = 0. THS2 = 0. THSC = -.1543E+01
P1 = .8983E+02 W2 = .8862E+02 MC = .8556E+02 T1 = .1111E+03 I2 = .1096E+03 IC = .1059E+03
X17 = .3569E-07 AA = 0. ALPHA = .2564E-03 TAU1 = .1235E+01 TAU2 = -.4357E-06

JFAM=2 IFAMIFAMILY TYPE)=2 K(IND. OF POINTS IN FAMILY)=3 NDB=0 MNIPLUGMIN OR MAX CAUSTIC)=0
HK(1,1)=0. HK(2,1)=0. HK(1,2)=.7609E-02 HK(2,2)=.8716E-02 HK(1,3)=0. HK(2,3)=0.
THW1 = 0. THWC = 0. THS1 = 0. THS2 = 0. THSC = .1542E+01
P1 = .9615E+02 W2 = .9490E+02 MC = .9089E+02 T1 = .1149E+03 I2 = .1173E+03 IC = .1124E+03
X17 = .3171E-07 AA = 0. ALPHA = .6736E-04 TAU1 = .1235E+01 TAU2 = .5866E-07

```

FIGURE 2: EXPECTED MPP OUTPUT (continued)

MPP NORDA BENCHMARK RUN.

TRANSMISSION LOSS VERSUS RANGE

RECEIVER DEPTH = 40.00 FT SOURCE DEPTH = 300.00 FT AT FREQUENCY OF 50.0 HZ UNDEFN OPTIONS - IPC = 1 IF CUM = 1 ISII = 0

RANGE (MM)	63.9	71.5	82.0	83.1	83.4	84.4	84.7	84.7	84.5	84.0
1.00	63.9	71.5	82.0	83.1	83.4	84.4	84.7	84.7	84.5	84.0
11.00	83.3	82.7	79.7	82.2	78.8	80.0	81.4	82.0	82.7	83.1
21.00	83.6	83.9	84.2	84.5	84.8	85.5	85.9	86.7	86.9	87.8
31.00	84.0	84.8	85.7	86.1	86.8	87.1	87.5	87.8	87.4	88.2
41.00	84.8	84.1	84.7	84.1	83.6	83.7	83.2	83.9	85.9	85.7
51.00	84.1	84.5	84.8	84.0	83.4	83.6	83.9	84.3	84.0	84.3
61.00	87.5	87.9	84.2	82.2	83.8	84.9	84.2	84.5	84.8	84.7
71.00	91.5	91.9	92.1	92.3	84.5	86.7	89.8	89.0	92.5	93.7
81.00	90.7	90.9	90.1	91.4	91.6	91.8	92.1	92.4	92.5	94.0
91.00	89.9	90.7	90.6	90.5	91.3	93.7	84.7	92.0	94.9	

FIGURE 2: EXPECTED MPP OUTPUT (continued)

MPP NURDA HENCKMAWK MIN.

TRANSMISSION LOSS VERSUS RANGE

RECEIVER DEPTH = 60.00 FT SOURCE DEPTH = 1000.00 FT AT FREQUENCY OF 35.0 HZ UNDER OPTIONS - LPC = 1 IFCON = 1 ISII = 1

RANGE (NM)	62.7	67.7	70.0	70.7	80.5	80.9	81.7	81.4	81.6	83.6
1.00	75.8	80.0	82.4	84.0	84.3	83.9	76.6	82.4	82.3	82.7
11.00	83.6	86.4	85.6	87.0	87.6	80.2	74.1	83.5	85.8	86.1
21.00	74.3	85.0	89.5	89.3	88.6	86.8	86.6	86.7	86.6	86.4
31.00	86.4	78.4	71.9	81.8	80.7	88.5	90.4	91.5	92.2	92.7
41.00	94.9	93.6	93.8	91.2	92.5	91.3	76.4	74.2	82.4	85.7
51.00	87.4	87.9	89.8	90.3	90.7	91.0	91.6	92.0	92.3	92.6
61.00	93.4	94.3	84.4	85.7	88.3	90.5	91.9	92.5	92.8	92.9
71.00	93.1	93.1	93.0	92.8	92.7	92.5	92.5	85.3	84.1	86.1
81.00	91.1	89.3	90.5	91.9	95.4	95.6	101.1	100.0	86.0	150.0
91.00	87.9									

FIGURE 2: EXPECTED MPP OUTPUT (continued)

TRANSMISSION LOSS VERSUS WAVELENGTH

UNION OPTIO NS - I PC = 1 JFCOM = 1 ISII = 1

WAVELENGTH (nm)	TRANSMISSION LOSS (1/m WE 1 mm)									
1.00	62.8	67.9	70.2	70.9	81.9	82.0	81.8	81.4	81.0	83.5
11.30	77.1	78.2	81.6	83.9	84.9	83.0	76.3	82.1	82.7	84.2
21.00	85.3	85.5	85.6	86.4	85.1	80.8	79.1	81.8	83.9	85.6
31.00	19.1	84.1	86.8	86.1	85.1	84.8	85.3	86.5	87.3	87.9
41.00	80.4	72.8	78.6	83.5	85.9	87.4	88.2	88.6	88.7	88.4
51.00	87.9	80.0	80.3	88.3	88.2	87.9	78.3	79.5	82.7	85.7
61.00	87.9	89.1	88.2	90.8	91.3	91.8	92.5	93.0	93.0	92.7
71.00	92.4	92.1	85.5	85.5	86.9	88.0	88.5	88.7	89.5	90.3
81.00	91.2	92.1	92.8	93.5	94.2	94.9	95.1	87.8	86.1	87.5
91.00	88.7	89.8	90.8	92.7	96.1	95.9	97.6	97.2	86.0	150.0

--- MPP-PARTS NORMALLY TERMINATED ---

FIGURE 2: EXPECTED MPP OUTPUT (continued)

II.7 Site Dependent Software

MPP contains FORTRAN code which may be site dependent. This code is in the form of subroutine calls to system routines that are not included in the PL provided in this package. Most of these calls involve the FORTRAN interface with the Record Manager at DTNSRDC and are used in defining and referencing direct access mass storage files. It is possible that these subroutines may have different names and/or argument lists at the bench mark site. Table IV lists candidate site dependent subroutines and the exact location in MPP at which each subroutine call is generated.

The user should reference Table IV and determine if any candidate subroutines are inappropriate at the bench mark site. For each site dependent subroutine found, the following course of action is recommended to modify the execution deck:

1. Determine the appropriate subroutine call and argument list to perform the desired function at the bench mark site. (Table III, page I-7, lists the purpose of each subroutine call).
2. Prepare the necessary update cards to delete the existing call statement and replace it with the proper call. Certify that names given to variables in the updates are consistent with existing names. To assist the user in this, Sections II.7.1 through II.7.6 reproduce each subroutine call exactly as it appears in the FORTRAN compilation listing. Each argument in the call list is discussed. Additionally, Appendix D contains the complete compilation listing of each program element (main program, subroutine, etc.) that references a possible site dependent subroutine, and Appendix C contains user level documentation for each possible site dependent subroutine.
3. Insert update cards in the MPP execution deck. For every PL on the program tape accessed by UPDATE there is a "7/8/9" card in the execution deck to satisfy the UPDATE command. Each of these "7/8/9" cards is annotated with the name of a PL. Insert the update cards immediately following the "7/8/9" card with the name of the PL which contains the site dependent feature being modified.

TABLE IV: LOCATION OF POSSIBLE SITE DEPENDENT
SOFTWARE IN MPP

Possible Site Dependent Subroutine	PL or Program Name	Program Element	Line No.	Line ID
CLOSEM	MPP2	SUBROUTINE CTL2	1369	15AUG78.110
			1374	15AUG78.115
	MPP3	PROGRAM MAIN	170	15AUG78.46
DATE	MPP5	SUBROUTINE CTL3	324	17JAN75.10
FILEDA	MPP2	SUBROUTINE CTL2	151	15AUG78.59
			166	15AUG78.70
	MPP3	PROGRAM MAIN	139	15AUG78.37
GET	MPP2	SUBROUTINE CTL2	269	15AUG78.79
	MPP3	SUBROUTINE GETARV	17	15AUG78.115
OPENM	MPP2	SUBROUTINE CTL2	154	15AUG78.62
			169	15AUG78.73
	MPP3	PROGRAM MAIN	142	15AUG78.40
PUT	MPP2	SUBROUTINE CTL2	1327	15AUG78.101

II.7.1 CLOSEM references

FORTTRAN Statement:

Line ID:

CALL CLOSEM (NEWFIT)

15AUG78 110

Argument List:

NEWFIT -- A 35-word typeless array used as a File Information Table defined in a prior call to FILEDA.

FORTTRAN Statement:

Line ID:

IF (INTAPE .GT. 0) CALL CLOSEM (OLDFIT)

15AUG78 115

Argument List:

OLDFIT -- A 35-word typeless array used as a File Information Table defined in a prior call to FILEDA.

FORTTRAN Statement:

Line ID:

CALL CLOSEM (ARVFIT)

15AUG78 46

Argument List:

ARVFIT -- A 35-word typeless array used as a File Information Table defined in a prior call to FILEDA. Located in COMMON ARVDA.

II.7.2 DATE references

FORTTRAN Statement:

Line ID:

CALL DATE (IDATE)

17JAN75 10

Argument List:

IDATE -- Current date returned by DATE in the form 10H/mm/dd/yy (b represents a blank character).

II.7.3 FILEDA references

FORTTRAN Statement:

Line ID:

CALL FILEDA(OLDFIT,3LLFN,6LGRPAR2,2LFO,2LDA,2LRT,1LF,3LMRL,70,
• 3LMNR,70,2LRB,500,3LHMB,100,2LKL,10,2LKT,1LI)

15AUG78 59

15AUG78 60

Argument List:

OLDFIT -- A 35-word typeless array used as a File Information Table and defined by FILEDA.

3LLFN -- Informs FILEDA that next argument defines logical file name.

6LGRPAR2 -- Logical file name is GRPAR2.

2LFO -- Next argument defines file organization.

2LDA -- File organization is direct access.

2LRT -- Next argument defines record type.

1LF -- Record type is fixed length.

3LMRL -- Next argument is maximum record length.

70 -- Maximum record length is 70 characters.

3LMNR -- Next argument is minimum record length.

70 -- Minimum record length is 70 characters.

2LRB -- Next argument is number of records per block.

500 -- Number of records per block is 500.

3LHMB -- Next argument is number of home blocks.

100 -- Number of home blocks is 100.

2LKL -- Next argument is key length.

10 -- Key length is 10 characters.

2LKT -- Next argument is key type.

1LI -- Key type is integer.

Note: According to the Record Manager documentation, key type does not apply to direct access files. Apparently it has no effect on FILEDA.

FORTTRAN Statement:

Line ID:

CALL FILEDA(NEWFIT,3LLFN,6LGRPARV,2LFO,2LDA,2LRT,1LF,3LMRL,70,
3LMNR,70,2LRB,500,3LHMB,100,2LKL,10,2LKT,1LI)

15AUG78 70
15AUG78 71

Argument List:

- NEWFIT — A 35-word typeless array used as a File Information Table and defined by FILEDA.
- 3LLFN — Informs FILEDA that next argument defines logical file name.
- 6LGRPARV — Logical file name is GRPARV.

Note: All remaining arguments are identical to those discussed above for FILEDA reference at Line ID 15 AUG 78.59.

FORTTRAN Statement:

Line ID:

```
CALL FILEDA(ARVFIT,3LLFN,6LGRPARV,2LFO,2LDA,2LRT,1LF,3LMRL,70, 15AUG78 37
*          3LMNR,70,2LRB,500,3LHMB,100,2LKL,10,2LKT,1LI) 15AUG78 38
```

Argument List:

- ARVFIT — A 35-word typeless array used as a File Information Table and defined by FILEDA. It is in COMMON ARVDA.
- 3LLFN — Informs FILEDA that next argument defines logical file name.
- 6LGRPARV — Logical file name is GRPARV.

Note: All remaining arguments are identical to those discussed above for FILEDA reference at Line ID 15AUG78.59.

II.7.4 GET references

FORTTRAN Statement:

Line ID:

```
CALL GET (OLDFIT, ARVRE2, KEYOLD, 0) 15AUG78 79
```

Argument List:

- OLDFIT — A 35-word typeless array used as a File Information
- ARVRE2 — A 7-word real array into which data is to be transferred. Output from GET.
- KEYOLD — Integer key for access to record. Input to GET.
- 0 — Character position within KEYOLD that key begins. Input to GET.

FORTTRAN Statement:

Line ID:

CALL GET(ARVFIT,ARVREC,IARVK,0)

15AUG78 115

Argument List:

- ARVFIT — A 35-word typeless array used as a File Information Table and defined in a prior call to FILEDA. It is in COMMON ARVDA.
- ARVREC — A 7-word real array into which data is to be transferred. Output from GET.
- IARVK — Integer key for access to record. Input to GET.
- 0 — Character position within IARVK that key begins. Input to GET.

II.7.5 OPENM references

FORTTRAN Statement:

Line ID:

CALL OPENM (OLDFIT, 5LINPUT)

15AUG78 62

Argument List:

- OLDFIT — A 35-word typeless array used as a File Information Table and defined in a prior call to FILEDA.
- 5LINPUT — Open file as read only file.

FORTTRAN Statement:

Line ID:

CALL OPENM (NEWFIT, 3LNEW)

15AUG78 73

Argument List:

- NEWFIT — A 35-word typeless array used as a File Information Table and defined in a prior call to FILEDA.
- 3LNEW — Open file for purpose of creation.

FORTTRAN Statement:

Line ID:

CALL OPENM (ARVFIT, 5LINPUT)

15AUG78 40

Argument List:

- ARVFIT — A 35-word typeless array used as a File Information Table and defined in a prior call to FILEDA. It is in COMMON ARVDA.
- 3LINPUT — Open the file as a read only file.

II.7.6 PUT references

FORTTRAN Statement:

Line ID:

CALL PUT (NEWFIT, ARVREC)

15AUG78 101

Argument List:

- NEWFIT — A 35-word typeless array used as a File Information Table and defined in a prior call to FILEDA.
- ARVREC — A 7-word real array from which data is to be transferred. Input to PUT.

III. AUTO-OCEAN

III.1 General Information

AUTO-OCEAN is a batch mode program consisting of a single executable module referenced as AUTOOC in the execution deck. It is preceded by two small utility programs which generate data bases needed by AUTO-OCEAN. The program is coded in FORTRAN IV except for the integer function FIELD which is a COMPASS coded routine contained in the AUTO-OCEAN PL on the program tape. If the FORTRAN compiler at the bench mark site cannot accept a COMPASS routine intermingled with FORTRAN subroutines, the following modifications should be made to the execution deck:

1. Remove FIELD from the AUTOOC PL with the UPDATE directive `"*YANKDECK FIELD."`
2. Punch function FIELD from its symbolic listing presented in Appendix B.
3. Insert the punched cards and necessary job stream instructions to assemble FIELD separately and include it when loading AUTOOC.

III.2 Location of Program

The PL for AUTO-OCEAN is the 7th PL (7th binary record) on program tape CK0713 and backup program tape CK0720. The two utility programs exist as FORTRAN punched card decks within the AUTO-OCEAN execution deck.

III.3 Job Stream

The job stream included in the AUTO-OCEAN execution deck and listed in Section III.5 with comments performs the following basic functions: mounts backup data tape CK0932, compiles and executes utility programs BSCRAM and PSCRAM from cards to create scratch mass storage data base files, mounts backup program tape CK0720, updates from the PL on the program tape, compiles, then loads and executes AUTOOC twice. The first execution is long and generates much listable output which is written to the dummy file OUT. The second execution is shorter and generates a more manageable output which is printed (see Section III.6). Job stream commands shown are those used on the DTNSRDC CDC 6600/6700 system. They may require modification at the bench mark site.

III.4 Input

AUTO-OCEAN uses two external data bases referred to as BATHY and PROFILES. Both files exist as permanent cataloged mass storage files on the CDC 6600/6700 system at DTNSRDC, but for the purpose of executing at the bench mark site they are generated from tape as temporary files on mass storage by two utility programs within the execution deck. Program BSCRAM creates the direct access file BATHY; program PSCRAM creates the random access file PROFILES. AUTO-OCEAN also requires card input which is included in the execution deck. BSCRAM and PSCRAM require no cards. All necessary data cards are contained in the AUTO-OCEAN execution deck and are listed in Section III.5.

III.5 Execution Deck

A listing of the AUTO-OCEAN execution deck is presented in Figure 3 followed by comments. Numbers opposite card images in the figure coincide with the appropriate comment number. Job stream commands and data are identical to those which produced the output in Section III.6 on the CDC 6600/6700 system at DTNSRDC.

Comment
Number:

Card
Image:

```
1 - VSN,TAPEA=CK0932,OLDPL=CK0720.
2 - REQUEST,TAPEA,HY,NORING. /CK0932/NORING/
3 - COPYBF,TAPEA,TAPE50.
4 - FTN,R=3,B=BSCRAM.
5 - BSCRAM.
6 - RETURN,BSCRAM.
7 - COPYBF,TAPEA,TAPE51.
8 - UNLOAD,TAPEA.
9 - FTN,R=3,B=PSCRAM.
10 - PSCRAM.
11 - RETURN,PSCRAM.
12 - REQUEST,OLDPL,HY,NORING. /CK0720/NORING/
13 - COPYRR,OLDPL,DUM,6.
14 - RETURN,DUM.
15 - UPDATE,F,R,C=COMPILE.
16 - UNLOAD,OLDPL.
17 - REWIND,COMPILE.
18 - FTN,I=COMPILE,L=0,OPT=2,B=AUTOOC.
19 - RETURN,COMPILE.
20 - AUTOOC,OUT.
21 - AUTOOC.
*19 - 7/8/9 END OF RECORD CARD
20 - PROGRAM BSCRAM(OUTPUT,TAPE50,TAPE51,TAPE8)
20 - DIMENSION KEY(289),DAT1(640),DAFIT(35),DAT2(541)
20 - ENVIRONMENT FILE TO RANDOM(0A) FORMAT
20 - C
20 - REWIND 50
20 - CALL FILEDA(DAFIT,3LLFN,5LBATHY,2LFO,2LDA,2LRT,1LF,3LMRL,5410,
20 - 3LMNF,5410,2LKL,10,3LMHB,20,3LMBL,27250)
20 - CALL OPENM(DAFIT,3LNEW)
20 - DO 20 I=1,48
20 - AKFY=I
20 - READ(50) DAT2
20 - CALL PUT(DAFIT,DAT2)
20 - 20 CONTINUE
20 - END
*21 - 7/8/9 END OF RECORD CARD
22 - PROGRAM PSCRAM(OUTPUT,TAPE50,TAPE51,TAPE8,TAPE6=OUTPUT)
22 - C
22 - C THIS PROGRAM CONVERTS A SEQUENTIAL AUTO-OCEAN PROFILE FILE
22 - C TO A RANDOM FILE FOR USE BY AUTO-OCEAN.
22 - C
22 - DIMENSION KEY(289),DAT1(640),DAT2(541),DAFIT(35)
22 - REWIND 51
22 - CALL OPENMS(8,KEY,289,0)
22 - DO 10 I=1,288
22 - READ(51) DAT1
22 - CALL WRITMS(8,DAT1,640,I,-1,0)
22 - 10 CONTINUE
22 - END
*23 - 7/8/9 END OF RECORD CARD
```

FIGURE 3: AUTO-OCEAN EXECUTION DECK

Comment Number:	Card Image:
* 24 - 7/8/9 END OF RECORD CARD	
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 1	
25 - 10.0 N150.0 E30. 3000.	WINTER
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 2	
25 - 50.0 N160.0 E135.0 3000.	SPRING
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 3	
25 - 10.0 N180.0 W325.0 3000.	SUMMER
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 4	
25 - 50.0 N175.0 W225.0 3000.	FALL
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 5	
25 - 10.0 N155.0 W5.0 3000.	WINTER
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 6	
25 - 50.0 N150.0 W160.0 3000.	SPRING
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 7	
25 - 30.0 N70.0 W50.0 3000.	SUMMER
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 8	
25 - 20.0 N60.0 W45.0 3000.	FALL
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 9	
25 - 10.0 N55.0 W55.0 3000.	WINTER
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 10	
25 - 40.0 N60.0 W135.0 3000.	SPRING
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 11	
25 - 60.0 N15.0 W210.0 3000.	SUMMER
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 12	
25 - 34.0 N33.0 E275. 3000.	FALL
25 - AUTO-OCEAN NORDA BENCHMARK TRACK 13	
25 - 0.0 N50.0 E20.0 3000.	WINTER
* 26 - 7/8/9 END OF RECORD CARD	
27 - AUTO-OCEAN NORDA BENCHMARK TRACK A	
27 - 10.0 N30.0 W345.0 3000.	SUMMER
** 28 - 6/7/8/9 END OF JOB CARD	

* This image represents a card with a 7/8/9 multi-punch in Col. 1.

** This image represents a card with a 6/7/8/9 multi-punch in Col. 1.

FIGURE 3: AUTO-OCEAN EXECUTION DECK (continued)

The following comments refer to card images in the AUTO-OCEAN execution deck listed in Figure 3.

Comment Number:	Comment:
1	Specify data and program tapes to be used.
2	Mount unlabeled data tape with local file name TAPEA. Density = 800 BPI (HY). No write ring.
3	Copy 1st file to scratch file TAPE50 for input to program BSCRAM.
4	Create the binary file BSCRAM from FORTRAN punched card deck.
5	Load and execute BSCRAM. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.
6	This is done to minimize mass storage usage.
7	Copy 2nd file to scratch file TAPE51 for input to program PSCRAM.
8	Data tape no longer needed.
9	Create the binary file PSCRAM from FORTRAN punched card deck.
10	Load and execute PSCRAM. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.
11	Mount unlabeled program tape with local file name OLDPL. Density = 800 BPI (HY). No write ring.
12	Position program tape before the 7th PL, i.e., the 7th binary record.
13	Create compile file from 7th PL on tape.
14	Program tape no longer needed.
15	This card is needed because UPDATE R option inhibits automatic rewind.
16	Create the binary file AUTOOC.
17	Load and execute AUTOOC. Send listable output to dummy file OUT. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.

Comment
Number:

Comment:

- | | |
|----|---|
| 18 | Load and execute AUTOOC. Print listable output. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader. |
| 19 | Program BSCRAM follows this card. |
| 20 | BSCRAM FORTRAN program cards. |
| 21 | Program PSCRAM follows this card. |
| 22 | PSCRAM FORTRAN program cards. |
| 23 | Updates to AUTOOC, if any, follow this card. Updates may be necessary to modify site dependent coding. |
| 24 | Data for AUTOOC (1st execution) follow this card. |
| 25 | AUTOOC data cards (1st execution). |
| 26 | Data for AUTOOC (2nd execution) follow this card. |
| 27 | AUTOOC data cards (2nd execution). |
| 28 | End of deck. |

III.6 Output

The expected output from running the AUTO-OCEAN execution deck is listed in Figure 4.

AUTO-OCEAN NORDA BENCHMARK TRACK A

START NEW CASE. LATITUDE IS IN THE RANGE 0.0 TO 90.0 WITH A HEMISPHERE DESIGNATION IN OR S. LONGITUDE IS IN THE RANGE 0.0 TO 180.0 WITH A HEMISPHERE DESIGNATION IE ON W. BEARING IS GIVEN IN DEGREES CLOCKWISE WITH RESPECT TO DUE NORTH. SEASON IS WINTER, SPRING, SUMMER, FALL. MAXIMUM RANGE IS GIVEN IN NAUTICAL MILES.

LATITUDE = 10.00N
 LONGITUDE = 30.00W
 BEARING = 345.00 DEGREES
 MAX RANGE = 3000.00 NAUTICAL MILES
 SEASON = SUMMER

(NO PROFILES WILL BE PUNCHED)

PROFILE IDENTIFICATION ... MSQ+MSQS = 40	1	SOURCE ... N ATL PROFILES MSQ 040-SUMMER-1
PROFILE IDENTIFICATION ... MSQ+MSQS = 40	3	SOURCE ... N ATL PROFILES MSQ 040-SUMMER-3
PROFILE IDENTIFICATION ... MSQ+MSQS = 76	1	SOURCE ... N ATL PROFILES MSQ 076-SUMMER-2
PROFILE IDENTIFICATION ... MSQ+MSQS = 76	3	SOURCE ... N ATL PROFILES MSQ 076-SUMMER-3
PROFILE IDENTIFICATION ... MSQ+MSQS = 76	4	SOURCE ... N ATL PROFILES MSQ 076-SUMMER-4
PROFILE IDENTIFICATION ... MSQ+MSQS = 112	2	SOURCE ... N ATL PROFILES MSQ 112-SUMMER-2
PROFILE IDENTIFICATION ... MSQ+MSQS = 112	4	SOURCE ... N ATL PROFILES MSQ 112-SUMMER-4
PROFILE IDENTIFICATION ... MSQ+MSQS = 113	3	SOURCE ... N ATL PROFILES MSQ 113-SUMMER-3
PROFILE IDENTIFICATION ... MSQ+MSQS = 149	1	SOURCE ... N ATL PROFILES MSQ 149-SUMMER-1
PROFILE IDENTIFICATION ... MSQ+MSQS = 149	3	SOURCE ... N ATL PROFILES MSQ 149-SUMMER-3
PROFILE IDENTIFICATION ... MSQ+MSQS = 149	4	SOURCE ... N ATL PROFILES MSQ 149-SUMMER-4
PROFILE IDENTIFICATION ... MSQ+MSQS = 185	2	SOURCE ... N ATL PROFILES MSQ 185-SUMMER-2
PROFILE IDENTIFICATION ... MSQ+MSQS = 185	4	SOURCE ... N ATL PROFILES MSQ 185-SUMMER-4
PROFILE IDENTIFICATION ... MSQ+MSQS = 186	3	SOURCE ... N ATL PROFILES MSQ 186-SUMMER-3
PROFILE IDENTIFICATION ... MSQ+MSQS = 196	3	SOURCE ... N ATL PROFILES MSQ 186-SUMMER-3

ENVIRONMENT ...

NUMBER OF PROFILES = 15

PROFILE NUMBER 1 RANGE = 0.0 NM.
 0. 1542.0 50. 1532.7 75. 1515.1 100. 1509.8 150. 1498.8 200. 1496.4 300. 1494.4 500. 1492.8
 700. 1488.8 800. 1484.1 1100. 1469.4 1500. 1433.0 2000. 1417.9 3000. 1512.0 5000. 1545.2 10000. 1638.0

IN POINTS

FIGURE 4: EXPECTED AUTO-OCEAN OUTPUT

0. 1535.5	30. 1536.1	50. 1535.8	125. 1530.7	200. 1519.4	250. 1514.9	600. 1498.4	800. 1492.8
900. 1491.3	1500. 1495.1	2000. 1498.0	3000. 1512.0	5000. 1545.2	10000. 1638.0		
PROFILE NUMBER 3	RANGE = 622.6 NM.						
0. 1538.0	30. 1538.4	75. 1530.7	125. 1527.5	200. 1521.2	400. 1513.1	600. 1506.8	800. 1499.7
900. 1497.8	1000. 1495.6	1100. 1495.2	1400. 1495.8	1750. 1497.4	2000. 1499.4	3000. 1511.9	5000. 1545.6
10000. 1638.0							
PROFILE NUMBER 4	RANGE = 934.9 NM.						
0. 1534.9	20. 1535.2	75. 1530.1	125. 1525.0	250. 1519.3	400. 1512.5	700. 1504.8	1100. 1498.6
1300. 1498.6	1750. 1499.4	2000. 1500.7	3000. 1511.9	5000. 1547.0	10000. 1638.0		
PROFILE NUMBER 5	RANGE = 1049.9 NM.						
0. 1536.9	30. 1538.2	50. 1536.9	100. 1528.8	200. 1522.4	400. 1515.4	600. 1509.2	900. 1499.9
1000. 1497.7	1100. 1496.7	1400. 1496.6	1750. 1497.6	2000. 1499.8	3000. 1511.8	5000. 1547.0	10000. 1638.0
PROFILE NUMBER 6	RANGE = 1248.4 NM.						
0. 1542.0	30. 1537.1	75. 1524.8	125. 1521.3	200. 1519.7	300. 1520.1	600. 1511.3	800. 1502.5
1000. 1497.4	1200. 1497.2	1500. 1496.2	2000. 1498.6	2500. 1504.6	5000. 1546.0	10000. 1638.0	
PROFILE NUMBER 7	RANGE = 1563.3 NM.						
0. 1529.3	20. 1525.5	75. 1516.6	100. 1516.1	150. 1512.6	250. 1511.3	500. 1506.0	700. 1501.5
800. 1501.1	1000. 1496.8	1200. 1494.5	1750. 1496.7	2000. 1498.7	2500. 1505.3	5000. 1546.0	10000. 1638.0
PROFILE NUMBER 8	RANGE = 1864.5 NM.						
0. 1533.6	30. 1528.1	100. 1517.3	300. 1516.1	500. 1508.0	700. 1497.4	800. 1493.6	900. 1491.3
1200. 1491.8	1400. 1492.2	1750. 1495.2	2500. 1505.7	5000. 1545.2	10000. 1638.0		
PROFILE NUMBER 9	RANGE = 1880.4 NM.						
0. 1528.4	50. 1511.0	200. 1509.5	400. 1510.8	700. 1495.4	900. 1488.7	1200. 1489.0	1400. 1490.6
2000. 1497.8	3000. 1513.0	5000. 1545.3	10000. 1638.0				
PROFILE NUMBER 10	RANGE = 2200.4 NM.						
0. 1501.3	50. 1482.8	125. 1477.8	150. 1473.5	250. 1473.5	500. 1478.6	700. 1479.8	800. 1479.2
1200. 1480.0	1500. 1488.6	2000. 1497.0	3000. 1512.9	5000. 1545.3	10000. 1638.0		
PROFILE NUMBER 11	RANGE = 2468.6 NM.						
0. 1487.3	30. 1485.9	50. 1463.1	125. 1468.4	300. 1471.4	600. 1474.7	1000. 1481.3	1500. 1489.4
2000. 1497.0	3000. 1513.0	5000. 1545.3	10000. 1638.0				
PROFILE NUMBER 12	RANGE = 2524.6 NM.						
0. 1489.3	50. 1471.9	100. 1468.2	200. 1468.2	600. 1473.9	1100. 1482.7	5000. 1546.0	10000. 1638.0
PROFILE NUMBER 13	RANGE = 2855.4 NM.						
0. 1480.6	100. 1471.9	300. 1472.3	1200. 1484.4	5000. 1546.0	10000. 1638.0		
PROFILE NUMBER 14	RANGE = 2897.3 NM.						
0. 1483.7	50. 1467.4	75. 1466.3	125. 1466.2	2000. 1497.8	5000. 1546.0	10000. 1638.0	
PROFILE NUMBER 15	RANGE = 3039.4 NM.						
0. 1483.7	50. 1467.4	75. 1466.3	125. 1466.2	2000. 1497.8	5000. 1546.0	10000. 1638.0	

NOTE - 1. THE INTEGER VALUES FOR LATITUDE AND LONGITUDE, BELOW, ARE SOUTHEAST CORNERS OF 1-DEGREE SQUARES.
 2. THE FLOATING POINT VALUES FOR LATITUDE AND LONGITUDE, BELOW, ARE INTERSECTIONS OF THE GREAT CIRCLE PATH WITH 1-DEGREE SQUARE BOUNDARIES, EXCEPT THE FIRST POINT WHICH BEGINS THE GREAT CIRCLE.

POINT	LAT	LONG	MSD	LAT	LONG	RANGE (NM)	0-5	0-9	WAVE-HT (FT)	DEPTH (M)
1	10	330	40	1	10.00	330.00	0.00	1	6	5500.0
2	11	330	40	1	11.00	329.73	62.17	3	5	5600.0
3	12	330	40	1	12.00	329.45	124.35	3	5	5750.0

FIGURE 4: EXPECTED AUTO-OCEAN OUTPUT (continued)

5	13	329	40	1	13.63	329.00	275.61	3	6	3.5	6000.0
6	14	329	40	1	14.00	329.00	275.61	3	6	3.5	6100.0
7	15	329	40	3	15.00	329.00	275.61	3	6	4.5	6000.0
8	16	329	40	3	16.00	329.00	275.61	3	6	4.5	5000.0
9	17	329	40	3	17.00	329.00	275.61	3	5	4.5	4900.0
10	18	329	40	3	18.00	329.00	275.61	3	5	4.5	4900.0
11	19	329	40	3	19.00	329.00	275.61	3	5	4.5	4900.0
12	20	329	40	3	20.00	329.00	275.61	3	5	4.5	5100.0
13	21	329	40	3	21.00	329.00	275.61	3	5	4.5	5300.0
14	22	329	40	3	22.00	329.00	275.61	3	6	4.0	5600.0
15	23	329	40	3	23.00	329.00	275.61	3	7	4.0	5650.0
16	24	329	40	3	24.00	329.00	275.61	3	7	4.0	5800.0
17	25	329	40	3	25.00	329.00	275.61	3	7	4.0	6000.0
18	26	329	40	3	26.00	329.00	275.61	3	7	4.0	6100.0
19	27	329	40	3	27.00	329.00	275.61	3	7	4.0	6300.0
20	28	329	40	3	28.00	329.00	275.61	3	7	3.5	6100.0
21	29	329	40	3	29.00	329.00	275.61	3	7	3.5	5700.0
22	30	329	40	3	30.00	329.00	275.61	3	7	4.5	5400.0
23	31	329	40	3	31.00	329.00	275.61	3	7	4.5	5400.0
24	32	329	40	3	32.00	329.00	275.61	3	7	4.5	5000.0
25	33	329	40	3	33.00	329.00	275.61	3	7	4.5	4500.0
26	34	329	40	3	34.00	329.00	275.61	3	7	4.5	4300.0
27	35	329	40	3	35.00	329.00	275.61	3	7	2.5	3900.0
28	36	329	40	3	36.00	329.00	275.61	3	7	2.5	3400.0
29	37	329	40	3	37.00	329.00	275.61	3	7	2.5	3300.0
30	38	329	40	3	38.00	329.00	275.61	3	6	2.5	914.0
31	39	329	40	3	39.00	329.00	275.61	3	6	2.5	2800.0
32	40	329	40	3	40.00	329.00	275.61	3	6	3.0	1042.0
33	41	329	40	3	41.00	329.00	275.61	3	6	3.0	3700.0
34	42	329	40	3	42.00	329.00	275.61	3	6	3.0	3800.0
35	43	329	40	3	43.00	329.00	275.61	3	6	3.0	4000.0
36	44	329	40	3	44.00	329.00	275.61	3	6	3.0	4300.0
37	45	329	40	3	45.00	329.00	275.61	3	5	3.0	4400.0
38	46	329	40	3	46.00	329.00	275.61	3	5	3.0	4800.0
39	47	329	40	3	47.00	329.00	275.61	3	5	3.5	4900.0
40	48	329	40	3	48.00	329.00	275.61	3	5	4.0	4900.0
41	49	329	40	3	49.00	329.00	275.61	3	5	4.0	5100.0
42	50	329	40	3	50.00	329.00	275.61	3	3	4.0	4700.0
43	51	329	40	3	51.00	329.00	275.61	3	3	4.0	4700.0
44	52	329	40	3	52.00	329.00	275.61	3	3	4.0	4600.0
45	53	329	40	3	53.00	329.00	275.61	3	3	4.0	2600.0
46	54	329	40	3	54.00	329.00	275.61	3	3	4.0	286.0
47	55	329	40	3	55.00	329.00	275.61	3	4	4.0	51.0
48	56	329	40	3	56.00	329.00	275.61	3	4	4.0	289.0
49	57	329	40	3	57.00	329.00	275.61	3	5	4.0	3300.0
50	58	329	40	3	58.00	329.00	275.61	3	4	4.0	3000.0
51	59	329	40	3	59.00	329.00	275.61	3	4	5.5	3250.0
52	60	329	40	3	60.00	329.00	275.61	3	8	5.5	2700.0
53	61	329	40	3	61.00	329.00	275.61	3	4	5.5	3200.0
54	62	329	40	3	62.00	329.00	275.61	3	4	5.5	3000.0
55	63	329	40	3	63.00	329.00	275.61	3	3	5.5	3500.0
56	64	329	40	3	64.00	329.00	275.61	3	3	5.5	3550.0
57	65	329	40	3	65.00	329.00	275.61	3	3	5.5	3400.0
58	66	329	40	3	66.00	329.00	275.61	3	3	5.5	3300.0
59	67	329	40	3	67.00	329.00	275.61	3	4	5.5	3100.0
60	68	329	40	3	68.00	329.00	275.61	3	4	6.0	3300.0
61	69	329	40	3	69.00	329.00	275.61	3	3	4.5	3300.0
62	70	329	40	3	70.00	329.00	275.61	3	3	4.5	3600.0
63	71	329	40	3	71.00	329.00	275.61	3	3	4.5	3400.0
64	72	329	40	3	72.00	329.00	275.61	3	3	4.5	3650.0
65	73	329	40	3	73.00	329.00	275.61	3	3	4.5	3500.0
66	74	329	40	3	74.00	329.00	275.61	3	3	4.5	3500.0
67	75	329	40	3	75.00	329.00	275.61	3	3	4.5	3400.0
68	76	329	40	3	76.00	329.00	275.61	3	3	4.5	3400.0
69	77	329	40	3	77.00	329.00	275.61	3	3	4.5	3650.0
70	78	329	40	3	78.00	329.00	275.61	3	3	4.5	3500.0

FIGURE 4: EXPECTED AUTO-OCEAN OUTPUT (continued)

III.7 Site Dependent Software

AUTO-OCEAN and its two utility programs contain FORTRAN code which may be site dependent. This code is in the form of subroutine calls to system routines that are not included in the PL provided in this package. These calls involve the FORTRAN interface with the Record Manager at DTNSRDC and are used in defining and referencing direct access and random access (word addressable) mass storage files. It is possible that these subroutines may have different names and/or argument lists at the bench mark site. Table V lists candidate site dependent subroutines and the exact location in AUTO-OCEAN at which each subroutine call is generated.

The user should reference Table V and determine if any candidate subroutines are inappropriate at the bench mark site. For each site dependent subroutine found, the following course of action is recommended to modify the execution deck:

1. Determine the appropriate subroutine call and argument list to perform the desired function at the bench mark site. (Table III, page I-7, lists the purpose of each subroutine call).
2. Prepare the necessary update cards to delete the existing call statements and replace it with the proper call. Certify that names given to variables in the update are consistent with existing names. To assist the user in this, Sections III.7.1 through III.7.6 reproduce each subroutine call exactly as it appears in the FORTRAN compilation listing. Each argument in the call list is discussed. Additionally, Appendix E contains the complete compilation listing of each program element (main program, subroutine, etc.) that references a possible site dependent subroutine, and Appendix C contains user level documentation for each possible site dependent subroutine.
3. Insert update cards in the AUTO-OCEAN execution deck. For every PL on the program tape accessed by UPDATE there is a "7/8/9" card in the execution deck to satisfy the UPDATE command. Each of these "7/8/9" cards is annotated with the name of a PL. Insert the update cards immediately following the "7/8/9" card with the name of the PL which contains the site dependent feature being modified. For changes to BSCRAM and PSCRAM, simply replace the existing FORTRAN cards in the execution deck with the appropriate new cards.

TABLE V: LOCATION OF POSSIBLE SITE DEPENDENT
SOFTWARE IN AUTO-OCEAN

Possible Site Dependent Subroutine	PL or Program Name	Program Element	Line No.	Line ID
FILEDA	BSCRAM	PROGRAM BSCRAM	5	NA*
	AUTOOC	SUBROUTINE LOOKUP	18	AUTOOC.324
GET	AUTOOC	SUBROUTINE LOOKUP	28	AUTOOC.334
			39	AUTOOC.345
OPENM	BSCRAM	PROGRAM BSCRAM	7	NA*
	AUTOOC	SUBROUTINE LOOKUP	20	AUTOOC.326
OPENMS	PSCRAM	PROGRAM PSCRAM	8	NA*
	AUTOOC	SUBROUTINE RETREV	10	AUTOOC.400
PUT	BSCRAM	PROGRAM BSCRAM	11	NA*
READMS	AUTOOC	SUBROUTINE RETREV	29	AUTOOC.419
WRITMS	PSCRAM	PROGRAM PSCRAM	11	NA*

* Not applicable. Line ID's are generated by UPDATE. Since these lines of code exist on cards only, they have no Line ID.

III.7.1 FILEDA references

FORTTRAN Statement: (from PROGRAM BSCRAM, Line Nos. 5 & 6)

```
CALL FILEDA(DAFIT,3LLFN,5LBATHY,2LFO,2LDA,2LRT,1LF,3LMRL,5410,  
*3LMNR,5410,2LKL,10,3LHMB,20,3LMBL,27250)
```

Argument List:

DAFIT	--	A 35-word typeless array used as a File Information Table and defined by FILEDA.
3LLFN	--	Informs FILEDA that next argument defines logical file name.
5LBATHY	--	Logical file name is BATHY.
2LFO	--	Next argument defines file organization.
2LDA	--	File organization is direct access.
2LRT	--	Next argument defines record type.
1LF	--	Record type is fixed length.
3LMRL	--	Next argument is maximum record length.
5410	--	Maximum record length is 5410 characters.
3LMNR	--	Next argument is minimum record length.
5410	--	Minimum record length is 5410 characters.
2LKL	--	Next argument is key length.
10	--	Key length is 10 characters.
3LHMB	--	Next argument is number of home blocks.
20	--	Number of home blocks is 20.
3LMBL	--	Next argument is home block length.
27250	--	Home block length is 27250 characters.

FORTTRAN Statement:

Line ID:

```
CALL FILEDA(DAFIT,3LLFN,5LBATHY,2LFO,2LDA,2LRT,1LF,3LMRL,5410, AUTOC 324  
X 3LMNR,5410,2LKL,10,3LHMB,20,3LMBL,27250) AUTOC 325
```

Argument List:

Note: All arguments are identical to those discussed above for FILEDA reference at lines 5 and 6 of PROGRAM BSCRAM.

III.7.2 GET references

FORTRAN Statement:

Line ID:

CALL GET (DAFIT, D1, EKEY, 0)

AUTOC 334

Argument List:

DAFIT -- A 35-word typeless array used as a File Information Table and defined in a prior call to FILEDA.

D1 -- A 541-word real array into which data is to be transferred. Output from GET.

EKEY -- Real key for access to record. Input to GET.

0 -- Character position within EKEY that key begins. Input to GET.

FORTRAN Statement:

Line ID:

CALL GET (DAFIT, D2, WKEY, 0)

AUTOC 345

Argument List:

DAFIT -- A 35-word typeless array used as a File Information Table and defined in a prior call to FILEDA.

D2 -- A 541-word real array into which data is to be transferred. Output from GET.

WKEY -- Real key for access to record. Input to GET.

0 -- Character position within WKEY that key begins. Input to GET.

III.7.3 OPENM references

FORTRAN Statement: (from PROGRAM BSCRAM, Line No. 7)

CALL OPENM (DAFIT, 3LNEW)

Argument list:

- DAFIT -- A 35-word typeless array used as a File Information
 Table and defined in a prior call to FILEDA.
- 3LNEW -- Open file for purpose of creation.
-

FORTTRAN Statement:

Line ID:

CALL OPENM (DAFIT, 5LINPUT)

AUTOC 326

Argument List:

- DAFIT -- A 35-word typeless array used as a File Information
 Table and defined in a prior call to FILEDA.
- 5LINPUT -- Open file as read only file.

III.7.4 OPENMS references

FORTTRAN Statement: (from PROGRAM PSCRAM, Line No. 8)

CALL OPENMS (8, KEY, 289, 0)

Argument List:

- 8 -- File unit designator. Input to OPENMS.
- KEY -- A 289-word integer array to contain master index. Input to
 OPENMS.
- 289 -- Length of master index is 289 words. Input to OPENMS.
- 0 -- File is to have number type master index. Input to OPENMS.
-

FORTTRAN Statement:

Line ID:

IF (.NOT.OPEN) CALL OPENMS (NUNIT, KEY, 289, 0)

AUTOC 400

Argument List:

- NUNIT -- Integer file unit designator. Input to OPENMS.
- KEY -- A 289-word integer array to contain master index. Input to
 OPENMS.

- 289 — Length of master index is 289 words. Input to OPENMS.
- 0 — File is to have number type master index. Input to OPENMS.

III.7.5 PUT references

FORTTRAN Statement: (from PROGRAM BSCRAM, Line No. 11)

CALL PUT (DAFIT, DAT2)

Argument List:

- DAFIT — A 35-word typeless array used as a File Information Table and defined in a prior call to FILEDA.
- DAT2 — A 541-word real array from which data is to be transferred. Input to PUT.

III.7.6 READMS references

FORTTRAN Statement:

Line ID:

IF(IBM.NE.IBIN) CALL READMS (NUNIT, DATA, 640, IBM) AUTOC 419

Argument List:

- NUNIT — Integer file unit designator. Input to READMS.
- DATA — A 640-word real array into which data is to be transferred. Output from READMS.
- 640 — Number of words to be transferred. Input to READMS.
- IBM — Integer number key for access to record. Input to READMS.

III.7.7 WRITMS references

FORTTRAN Statement: (from PROGRAM PSCRAM, Line No. 11)

CALL WRITMS (8, DAT1, 640, 1, -1,0)

Argument List:

- 8 — File unit designator. Input to WRITMS.
- DAT1 — A 640-word real array from which data is to be transferred. Input to WRITMS.
- 640 — Number of words to be transferred. Input to WRITMS.

- I -- Integer number key for access to record. Input to WRITMS.
- 1 -- Rewrite in place if new record length does not exceed old
 record length, otherwise write at end of information. Input
 to WRITMS.
- 0 -- No sub-index marker flag. Input to WRITMS.

IV. NEWPE

IV.1 General Information

NEWPE is a batch mode program consisting of a single executable module referenced as NEWPE in the execution deck. It must be preceded by the executable module INFACE. Communication between INFACE and NEWPE is achieved using a scratch mass storage file which is allocated automatically by the operating system. Both programs are coded entirely in FORTRAN IV.

IV.2 Location of Program

The components of INFACE are PL numbers 8 and 9 (binary records 8 and 9) on program tape CK0713 and backup program tape CK0720. NEWPE is the 10th PL (10th binary record) on the program tape and the backup program tape.

IV.3 Job Stream

The job stream included in the NEWPE execution deck and listed in Section IV.5 with comments performs the following basic functions: mounts program tape CK0713, updates from PL's on program tape, compiles, loads and executes INFACE first, then NEWPE. Job stream commands shown are those used on the DTNSRDC CDC 6600/6700 system. They may require modification at the bench mark site.

IV.4 Input

NEWPE requires no external data bases in the bench mark package. It is driven by data cards, as is INFACE which is executed immediately before NEWPE. NEWPE also reads a scratch mass storage file created by INFACE. All necessary data cards are contained in the NEWPE execution deck and are listed in Section IV.5.

IV.5 Execution Deck

A listing of the NEWPE execution deck is presented in Figure 5 followed by comments. Numbers opposite card images in the figure coincide with the appropriate comment number. Job stream commands and data are identical to those which produced the output in Section IV.6 on the CDC 6600/6700 system at DTNSRDC.

Comment
Number:

Card
Image

```

1 - VSN.OLDPL=CK0713.
2 - REQUEST.OLDPL,MY,NORING. /CK0713/NORING/
3 - COPYRR.OLDPL,DUM,7.
4 - RETURN,DUM.
5 - UPDATE,F,F,C=COMPILE.
6 - REWIND,COMPILE.
7 - FTN,I=COMPILE,L=0,OPT=2,B=INFACE.
4 - RETURN,COMPILE.
8 - UPDATE,F,H,C=COMPILE.
6 - REWIND,COMPILE.
9 - FTN,I=COMPILE,L=0,OPT=2,B=AUTOCF.
4 - RETURN,COMPILE.
10 - LOAD,AUTOCF.
11 - INFACE.
4 - RETURN,AUTOCF,INFACE.
12 - UPDATE,F,H,C=COMPILE.
13 - UNLOAD,OLDPL.
6 - REWIND,COMPILE.
14 - FTN,I=COMPILE,L=0,OPT=2,B=NEWPE.
4 - RETURN,COMPILE.
15 - NEWPE.
* 16 - 7/8/9 END OF RECORD CARD
* 17 - 7/8/9 END OF RECORD CARD
* 18 - 7/8/9 END OF RECORD CARD
19 - 0 0 0 1
19 - 0.0 14 1 0 0.0
19 - 0000. 1540.9 0075. 1541.8 0125. 1539.6 0200. 1528.0
19 - 0400. 1497.5 0600. 1486.9 0800. 1484.5 1000. 1483.9
19 - 1200. 1484.5 1500. 1486.5 2000. 1491.5 3000. 1506.5
19 - 5000. 1541.5 9999. 1635. . . . .
19 - 0
19 - 27.0 14 0 0 0.0
19 - 0000. 1540.9 0075. 1541.8 0125. 1539.6 0200. 1528.0
19 - 0400. 1497.5 0600. 1486.9 0800. 1484.5 1000. 1483.9
19 - 1200. 1484.5 1500. 1486.5 2000. 1491.5 3000. 1506.5
19 - 5000. 1541.5 9999. 1635. . . . .
19 - 0
19 - 204.0 15 15 0 0.0
19 - 0000. 1542.1 0050. 1543.0 0100. 1537.7 0200. 1516.7
19 - 0300. 1497.7 0400. 1491.7 0500. 1487.8 0700. 1485.5
19 - 0900. 1484.8 1100. 1484.7 1500. 1487.1 2000. 1491.8
19 - 3000. 1506.5 5000. 1541.5 9999. 1635.0 . . .
19 - 0
19 - 504.0 14 2 0 0.0
19 - 0000. 1543.6 0050. 1543.0 0125. 1517.4 0200. 1500.0
19 - 0300. 1491.9 0400. 1488.6 0700. 1485.7 1000. 1484.1
19 - 1200. 1484.5 1500. 1486.6 2000. 1491.5 3000. 1507.1
19 - 5000. 1541.8 9999. 1635.0 . . . .
19 - 0
19 - 654.0 16 0 0.0
19 - 0000. 1544.1 0050. 1544.2 0100. 1542.4 0150. 1532.9
19 - 0200. 1517.0 0300. 1501.8 0400. 1492.2 0500. 1488.3
19 - 0800. 1486.0 1000. 1484.7 1200. 1485.5 1500. 1487.3
19 - 2000. 1492.3 3000. 1507.1 5000. 1541.8 9999. 1635.0
19 - END OF PROFS
19 - 5
19 - 0.0 10800. 4. 10200. 48. 10400. 54. 9800.
19 - 500. 8000.
19 - 1
19 - 0.0 2
* 20 - 7/8/9 END OF RECORD CARD

```

FIGURE 5: NEWPE EXECUTION DECK

Comment Number:	Card Image:
* 21 - 7/8/9 END OF RECORD CARD	
22 - NEW PE NORDA BENCHMARK	
22 - 3 0 1 1 120 1 3	
22 - 0.0 500. 140.	
22 - 12903.5 70. 0.0 13000. 70. 10.	
22 - 20. 60. 300.	
22 - 0.0 11. 194.46 19. 209.25 11.	
**23 - 6/7/8/9 END OF JOB CARD	

- * This image represents a card with a 7/8/9 multi-punch in Col. 1.
- ** This image represents a card with a 6/7/8/9 multi-punch in Col. 1.

FIGURE 5: NEWPE EXECUTION DECK (continued)

The following comments refer to card images in the NEWPE execution deck listed in Figure 5.

Comment Number:	Comment:
1	Declare the program tape to be used.
2	Mount unlabeled program tape with local file name OLDPL. Density = 800 BPI (HY). No write ring.
3	Position program tape before the 8th PL, i.e., the 8th binary record.
4	This is done to minimize mass storage usage.
5	Create compile file from 8th PL on tape.
6	This card is needed because UPDATE R option inhibits automatic rewind.
7	Create the binary file INFACE.
8	Create compile file from 9th PL on tape.
9	Create the binary file AUTO CF.
10	Include AUTO CF in the executable module INFACE.

Comment
Number:

Comment:

- | | |
|----|--|
| 11 | Load and execute INFACE. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader. |
| 12 | Create compile file from 10th PL on tape. |
| 13 | Program tape no longer needed. |
| 14 | Create the binary file NEWPE. |
| 15 | Load and execute NEWPE. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader. |
| 16 | Updates to INFACE, if any, follow this card. Updates may be necessary to modify site dependent coding. |
| 17 | Updates to AUTOCHF, if any, follow this card. Updates may be necessary to modify site dependent coding. |
| 18 | Data for INFACE follow this card. |
| 19 | INFACE data cards. |
| 20 | Updates to NEWPE, if any, follow this card. Updates may be necessary to modify site dependent coding. |
| 21 | Data for NEWPE follow this card. |
| 22 | NEWPE data cards. |
| 23 | End of deck. |

IV.6 Output

The expected output from running the NEWPE execution deck is listed in Figure 6.

----- AUTO-UCLAN INTERFACE ENTERED -----

FIGURE 6: EXPECTED NEWPE OUTPUT

-----CFIELD ENTITLE-----

```

.....
PROFILE 1
WAVELENGTH 0.00 NM
SPHERICAL EARTH PROFILE

INPUT PROFILE
DEPTH(M)    SPEED(M/S)    DEPTH(FT)    SPEED(FT/S)    GRAV(1/SEC)
( 1)  0.000    1540.000        0.000        5055.446        -122E-01
( 2)  75.000    1541.000       246.064        5054.458        -4.14E-01
( 3)  125.000    1539.600       410.104        5051.780        -1.54E+00
( 4)  200.000    1528.000       656.178        5013.281        -1.52E+00
( 5)  400.000    1497.500      1312.377        4913.366        -5.24E-01
( 6)  600.000    1486.900      2024.837        4871.018        -1.14E-01
( 7)  800.000    1483.900      2811.097        4864.914        -2.77E-02
( 8)  1000.000    1486.500      3937.374        4878.117        -4.90E-02
( 9)  1200.000    1484.500      5662.710        4894.909        -1.02E-01
(10)  1500.000    1481.500      9844.817        4961.187        -1.77E-01
(11)  2000.000    1505.500     16410.636        5372.605        -1.90E-01
(12)  3000.000    1541.500     32430.860        5372.605        -1.90E-01
(13)  5000.000    1635.000     32434.047        5372.605        -1.90E-01
(14)  9999.000    1635.000     32434.047        5372.605        -1.90E-01
(15)

1 INTERPOLATED PROFILES REQUESTED.

```

THESE IS(ARE) 0 SPECIFIED CONNECTION(S).

```

.....
PROFILE 2
WAVELENGTH 27.00 NM
SPHERICAL EARTH PROFILE

INPUT PROFILE
DEPTH(M)    SPEED(M/S)    DEPTH(FT)    SPEED(FT/S)    GRAV(1/SEC)
( 1)  0.000    1540.000        0.000        5055.446        -122E-01
( 2)  75.000    1541.000       246.064        5054.458        -4.14E-01
( 3)  125.000    1539.600       410.104        5051.780        -1.54E+00
( 4)  200.000    1528.000       656.178        5013.281        -1.52E+00
( 5)  400.000    1497.500      1312.377        4913.366        -5.24E-01
( 6)  600.000    1486.900      2024.837        4871.018        -1.14E-01
( 7)  800.000    1483.900      2811.097        4864.914        -2.77E-02
( 8)  1000.000    1486.500      3937.374        4878.117        -4.90E-02
( 9)  1200.000    1484.500      5662.710        4894.909        -1.02E-01
(10)  1500.000    1481.500      9844.817        4961.187        -1.77E-01
(11)  2000.000    1505.500     16410.636        5372.605        -1.90E-01
(12)  3000.000    1541.500     32430.860        5372.605        -1.90E-01
(13)  5000.000    1635.000     32434.047        5372.605        -1.90E-01
(14)  9999.000    1635.000     32434.047        5372.605        -1.90E-01
(15)

```

THESE IS(ARE) 0 SPECIFIED CONNECTION(S).

```

.....
PROFILE 3
WAVELENGTH 204.00 NM
SPHERICAL EARTH PROFILE

INPUT PROFILE
DEPTH(M)    SPEED(M/S)    DEPTH(FT)    SPEED(FT/S)    GRAV(1/SEC)
( 1)  0.000    1542.100        0.000        5059.383        -1.62E-01
( 2)  75.000    1543.100       246.064        5058.395        -4.14E-01
( 3)  125.000    1541.600       410.104        5055.880        -1.54E+00
( 4)  200.000    1529.000       656.178        5012.781        -1.52E+00
( 5)  400.000    1497.500      1312.377        4913.366        -5.24E-01
( 6)  600.000    1486.900      2024.837        4871.018        -1.14E-01
( 7)  800.000    1483.900      2811.097        4864.914        -2.77E-02
( 8)  1000.000    1486.500      3937.374        4878.117        -4.90E-02
( 9)  1200.000    1484.500      5662.710        4894.909        -1.02E-01
(10)  1500.000    1481.500      9844.817        4961.187        -1.77E-01
(11)  2000.000    1505.500     16410.636        5372.605        -1.90E-01
(12)  3000.000    1541.500     32430.860        5372.605        -1.90E-01
(13)  5000.000    1635.000     32434.047        5372.605        -1.90E-01
(14)  9999.000    1635.000     32434.047        5372.605        -1.90E-01
(15)

```

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

```

( 1) 10.000 1517.700 128.087 5045.027 -.210E+00
( 2) 20.000 1516.700 670.178 4976.200 -.190E+00
( 3) 30.000 1497.700 984.275 4913.945 -.598E-01
( 4) 40.000 1491.700 1312.777 4894.336 -.188E-01
( 5) 50.000 1487.800 1640.444 4881.617 -.118E-01
( 6) 60.000 1485.500 1952.964 4877.904 -.271E-02
( 7) 70.000 1484.800 2296.714 4877.904 62.3E-02
( 8) 80.000 1484.800 2689.275 4881.086 46.3E-02
( 9) 90.000 1484.800 3092.275 4895.894 14.9E-01
(10) 100.000 1487.100 3492.183 4944.837 177E-01
(11) 1500.000 1491.800 4562.710 4944.837 177E-01
(12) 3000.000 1526.500 6444.837 5061.787 190E-01
(13) 5000.000 1541.500 8444.837 5172.605 190E-01
(14) 9999.000 1635.000 32834.047 5372.665
(15)

```

15 INTERPOLATED PROFILES REQUESTED.

THEME IS (ARE) 0 SPECIFIED CONNECTION(S).

PROFILE 4
RANGE = 504.00 NMIL.

SPHERICAL EARTH PROFILE

INPUT PROFILE

```

DEPTH(M) SPEED(M/S) DEPTH(F) SPEED(F/S) GRAD(1/SEC)
( 1) 0.000 1543.600 0.000 5064.304 -.118E-01
( 2) 50.000 1543.000 164.043 5062.376 -.341E+00
( 3) 175.000 1517.400 410.109 4978.444 -.232E+00
( 4) 260.000 1500.000 656.178 4921.414 -.808E-01
( 5) 300.000 1491.900 984.275 4894.916 -.328E-01
( 6) 400.000 1488.600 1312.777 4884.165 -.943E-02
( 7) 700.000 1485.700 2296.714 4877.979 -.510E-02
( 8) 1000.000 1484.100 3281.097 4867.859 -.223E-02
( 9) 1200.000 1484.500 3937.379 4871.324 72.3E-02
(10) 1500.000 1486.600 4921.839 4878.445 100E-01
(11) 2000.000 1491.500 6562.710 4894.909 158E-01
(12) 3000.000 1507.100 9844.837 4946.883 176E-01
(13) 5000.000 1541.800 16410.636 5062.372 188E-01
(14) 9999.000 1635.000 32834.047 5372.605 189E-01
(15)

```

2 INTERPOLATED PROFILES REQUESTED.

THEME IS (ARE) 0 SPECIFIED CONNECTION(S).

PROFILE 5
RANGE = 654.00 NMIL.

SPHERICAL EARTH PROFILE

INPUT PROFILE

```

DEPTH(M) SPEED(M/S) DEPTH(F) SPEED(F/S) GRAD(1/SEC)
( 1) 0.000 1544.106 0.000 5065.965 224E-02
( 2) 50.000 1544.200 164.043 5066.313 -.358E-01
( 3) 100.000 1542.400 328.087 5060.447 -.190E+00
( 4) 150.000 1532.900 492.132 5024.318 -.318E+00
( 5) 200.000 1517.000 656.178 4977.190 -.152E+00
( 6) 300.000 1501.800 984.275 4927.347 -.658E-01
( 7) 400.000 1492.200 1312.777 4895.977 -.188E-01
( 8) 500.000 1488.300 1640.444 4881.657 -.271E-02
( 9) 600.000 1484.800 1952.964 4877.904 62.3E-02
(10) 700.000 1484.800 2296.714 4877.904 14.9E-01
(11) 800.000 1484.800 2689.275 4881.086 46.3E-02
(12) 900.000 1487.100 3092.275 4895.894 177E-01
(13) 1500.000 1491.800 4562.710 4944.837 177E-01
(14) 3000.000 1526.500 6444.837 5061.787 190E-01
(15) 5000.000 1541.500 8444.837 5172.605 190E-01

```

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

189E-01

5370.605
5370.665

32430.880
32434.047

1635.000

9999.000
(16)
(17)

-----CF IFLD FINISH-----

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

BATHYMETRY CARD INPUT IS-
 RANGE (NM) DEPTH

 0.00 10000.00
 4.00 10000.00
 4.00 10000.00
 4.00 10000.00
 500.00 9000.00
 500.00 8000.00

THE RESULT OF MERGING THE BATHYMETRY DATA WITH THE BOTTOM CLASS DATA IS-
 (THIS WILL BE THE BATHYMETRY FOR MPP AND PE)

	RANGE (NM)	DEPTH (F)	0-5 CLASS	0-9 CLASS
(1)	0.00	10000.000	2	0
(2)	4.00	10000.000	2	0
(3)	40.00	10000.000	2	0
(4)	50.00	9000.000	2	0
(5)	500.00	8000.000	2	0

THE FINAL BATHYMETRY/BOTTOM CLASS DATA FOR ASTRA AND FACTEX IS -

	RANGE (NM)	DEPTH (F)	0-5 CLASS	0-9 CLASS
(1)	0.00	10000.000	2	0
(2)	4.00	10000.000	2	0
(3)	13.50	10243.192	2	0
(4)	27.00	10306.545	2	0
(5)	40.00	10400.000	2	0
(6)	50.00	9800.000	2	0
(7)	204.00	9194.619	2	0
(8)	222.75	9118.946	2	0
(9)	241.50	9043.276	2	0
(10)	260.25	8967.601	2	0
(11)	279.00	8891.928	2	0
(12)	297.75	8816.256	2	0
(13)	316.50	8740.583	2	0
(14)	335.25	8664.910	2	0
(15)	354.00	8589.238	2	0
(16)	372.75	8513.565	2	0
(17)	391.50	8437.892	2	0
(18)	410.25	8362.220	2	0
(19)	429.00	8286.547	2	0
(20)	447.75	8210.874	2	0
(21)	466.50	8135.202	2	0
(22)	485.25	8059.529	2	0
(23)	504.00	7983.856	2	0
(24)	522.75	7908.183	2	0
(25)	541.50	7832.510	2	0
(26)	560.25	7756.837	2	0
(27)	579.00	7681.164	2	0

--- THESE ARE WIDE AREA 20 SOUND SPEED PROFILES
 (NOTS. THROUGH) IN ASTRA PROCESSING.

---- AUTO-DETECT INTERFACE TERMINATED NORMALLY ----

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

--- PROGRAM NEW PE ENTERED ---

NEW PE NORAD BENCHMARK

NO. OF OUTPUT DEPTHS = 3
 NO. OF RANGE PAIRS FOR A & P = 0
 FLAT BOTTOM FLAG = 1
 PRINT FLAG = 1
 NO. OF FIELD PLOT DEPTHS = 120
 NUMBER OF PLOTS/MILE = 1
 NO. OF BOTTOM LOSS REGIONS = 3
 LINK PLOT FLAG = 0
 NEW RANGE STEP = 0.000000 NM
 MIN RANGE FOR NEW RANGE STEP = 0.00 NM
 MAX RANGE FOR NEW RANGE STEP = 0.00 NM

IF/AT HAS BEEN RESET TO 5
 THE BOTTOM IS RANGE DEPENDENT.

INPUT RANGE = 0.00 NM
 INPUT DEPTH = 500.00 FT
 FREQUENCY = 140.00 MZ
 BEAM WIDTH = 0.00 DEG
 VOL. ATEN. FACTOR = 0.00
 NO. OF AVG DEPTHS = 0
 WINDOW LENGTH = 0.00 NM

SOUND VELOCITY PROFILES MODIFIED TO CORRECT PARABOLIC PHASE VELOCITIES.

BEAM WIDTH HAS BEEN RESET TO 20.00 DEG

MAXIMUM DEPTH = 12903.50 FT
 TERMINATE RUN AT RANGE = 70.00 NM
 MINIMUM FIELD PLOT DEPTH = 0.00 FT
 MAXIMUM FIELD PLOT DEPTH = 13000.00 FT
 MINIMUM FIELD PLOT LOSS = 70.00 DB
 FIELD PLOT LOSS INCREMENT = 10.00 DB

VARIABLE RANGE STEP SIZE RUN.

OUTPUT DEPTHS

1 20.00 FT
 2 60.00 FT
 3 300.00 FT

POINT	RANGE (NM)	DEP
1	0.00	10000.0
2	4.00	10200.0
3	48.00	10400.0
4	54.00	9800.0
5	500.00	8000.0

BOTTOM SPECIFICATIONS

WAVE CRITICAL ANGLE
 0.0 NM 11.0 DEGREES
 194.5 NM 12.0 DEGREES
 209.3 NM 11.0 DEGREES

THE MAXIMUM DEPTH HAS BEEN RESET TO 12903.50 FT

PROGRAM TERMINATING CODE = 1000

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

[illegible]

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

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51. 1 *****
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96. 1 *****
97. 1 *****
98. 1 *****
99. 1 *****
100. 1 *****

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RUN TERMINATED AT MANUE STEP 1129.

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

NEW PE NUNDA BENCHMARK

TRANSMISSION LOSS --
 INPUT DEPTH = 500.0 FT
 FREQUENCY = 140.0 HZ

DEPTH =	20	40	60	80	100
RANGE					
.04	49.5	75.9	58.7		
.07	76.8	68.9	55.2		
.11	72.9	65.0	49.9		
.15	69.2	61.3	48.0		
.19	64.5	57.1	50.6		
.22	59.7	53.3	53.6		
.26	55.4	51.1	51.5		
.30	54.0	52.2	55.7		
.33	54.5	57.4	56.7		
.37	57.8	56.3	57.9		
.41	58.0	55.7	54.5		
.45	58.3	55.8	57.4		
.48	60.2	55.1	60.2		
.52	61.4	55.7	56.6		
.56	62.1	56.2	56.8		
.60	63.2	56.8	58.6		
.63	64.6	57.3	64.5		
.67	65.4	58.1	67.6		
.71	66.0	58.9	66.9		
.74	67.6	59.3	62.3		
.78	68.1	60.3	60.7		
.82	69.0	60.9	60.0		
.86	69.8	61.6	60.3		
.90	70.7	62.3	60.9		
.93	71.4	63.0	61.8		
.97	72.1	63.7	63.2		
1.00	73.0	64.3	64.9		
1.04	73.7	65.0	66.4		
1.08	74.4	65.7	69.2		
1.12	75.0	66.3	72.1		
1.15	75.9	66.9	74.8		
1.19	76.4	67.6	76.6		
1.23	77.1	68.2	77.2		
1.27	77.7	68.8	76.7		
1.30	78.4	69.4	75.2		
1.33	79.0	69.9	73.7		
1.36	79.3	70.3	72.8		
1.39	79.8	70.7	72.0		
1.41	80.3	71.1	71.4		
1.44	80.6	71.5	71.0		
1.47	81.0	71.9	70.6		
1.50	81.3	72.2	70.2		
1.52	81.8	72.6	70.9		
1.55	82.2	72.9	69.8		
1.58	82.4	73.3	69.7		
1.61	82.7	73.6	69.6		
1.64	83.1	73.9	69.6		
1.66	83.5	74.2	69.6		
1.69	83.8	74.5	69.6		
1.72	83.9	74.8	69.6		
1.75	84.1	75.1	69.7		
1.77	84.5	75.4	69.4		
1.80	84.9	75.6	69.9		
1.83	85.1	75.7	70.0		

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

1.09	85.6	76.4	70.2
1.91	85.8	76.7	70.6
1.94	86.1	77.0	70.5
1.97	86.5	77.3	70.8
2.00	86.8	77.6	71.0
2.02	87.1	77.9	71.2
2.05	87.4	78.2	71.5
2.08	87.7	78.5	71.3
2.11	87.9	78.8	71.5
2.14	88.2	79.0	71.7
2.16	88.5	79.3	71.9
2.19	88.8	79.7	72.0
2.22	89.1	80.0	72.2
2.25	89.5	80.3	72.4
2.27	90.0	80.7	72.6
2.30	90.3	81.0	72.7
2.33	90.6	81.3	72.9
2.36	90.8	81.6	73.1
2.39	91.1	81.9	73.3
2.41	91.4	82.2	73.5
2.44	91.8	82.5	73.7
2.47	92.1	82.7	73.9
2.50	92.3	83.0	74.1
2.52	92.5	83.3	74.3
2.55	92.8	83.6	74.5
2.58	93.1	83.9	74.7
2.61	93.5	84.2	74.9
2.64	93.9	84.5	75.1
2.66	94.2	84.8	75.3
2.69	94.5	85.1	75.6
2.72	94.7	85.4	75.8
2.75	95.0	85.6	76.0
2.77	95.2	85.9	76.2
2.80	95.4	86.2	76.4
2.83	95.7	86.4	76.7
2.86	96.0	86.7	76.9
2.89	96.2	86.9	77.1
2.91	96.5	87.1	77.3
2.94	96.7	87.4	77.5
2.97	96.9	87.6	77.8
3.00	97.2	87.8	78.0
3.03	97.4	88.0	78.2
3.05	97.6	88.3	78.4
3.08	97.7	88.5	78.7
3.11	97.9	88.7	78.9
3.14	98.2	88.9	79.1
3.16	98.5	89.2	79.4
3.19	98.8	89.4	79.6
3.22	99.0	89.6	79.8
3.25	99.2	89.9	80.0
3.28	99.4	90.1	80.3
3.30	99.6	90.3	80.5
3.33	99.9	90.5	80.7
3.36	100.1	90.7	80.9
3.39	100.3	90.9	81.1
3.41	100.4	91.1	81.3
3.44	100.6	91.3	81.6
3.47	100.7	91.4	81.8
3.50	101.0	91.6	82.0
3.53	101.2	91.8	82.2
3.55	101.3	92.0	82.4
3.58	101.5	92.2	82.6
3.61	101.6	92.4	82.8
3.64	101.8	92.5	83.1
3.66	102.0	92.7	83.3

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

1.72	102.4	91.1	81.7
1.75	102.6	91.3	81.9
1.78	102.7	91.4	82.1
1.80	102.9	91.6	82.3
1.83	103.1	91.8	82.6
1.86	103.3	92.0	82.8
1.89	103.5	92.1	83.0
1.91	103.6	92.3	83.2
1.94	103.7	92.5	83.4
1.97	103.9	92.6	83.6
2.00	104.1	92.8	83.8
2.03	104.3	93.0	84.0
2.05	104.5	93.2	84.2
2.08	104.6	93.4	84.4
2.11	104.7	93.6	84.6
2.14	104.9	93.8	84.9
2.16	105.1	94.0	85.1
2.19	105.3	94.2	85.3
2.22	105.5	94.4	85.5
2.25	105.6	94.6	85.7
2.28	105.8	94.8	85.9
2.30	106.0	95.0	86.1
2.33	106.2	95.2	86.3
2.36	106.4	95.4	86.5
2.39	106.5	95.6	86.7
2.41	106.7	95.8	86.9
2.44	106.9	96.0	87.1
2.47	107.1	96.2	87.3
2.50	107.3	96.4	87.5
2.53	107.5	96.6	87.7
2.55	107.7	96.8	87.9
2.58	107.8	97.0	88.1
2.61	108.0	97.2	88.3
2.64	108.2	97.4	88.5
2.66	108.5	97.6	88.8
2.69	108.7	97.8	89.0
2.72	108.8	98.0	89.2
2.75	109.0	98.2	89.4
2.78	109.2	98.4	89.6
2.80	109.4	98.6	89.8
2.83	109.6	98.8	90.0
2.86	109.8	99.0	90.2
2.89	109.9	99.2	90.4
2.91	110.1	99.4	90.6
2.94	110.3	99.6	90.8
2.97	110.6	99.9	91.1
3.00	110.8	100.1	91.3
3.03	110.9	100.3	91.5
3.05	111.1	100.5	91.7
3.08	111.2	100.7	91.9
3.11	111.4	101.0	92.1
3.14	111.6	101.2	92.3
3.16	111.8	101.4	92.5
3.19	112.0	101.6	92.7
3.22	112.2	101.8	92.9
3.25	112.3	102.0	93.1
3.28	112.5	102.2	93.3
3.30	112.7	102.4	93.5
3.33	112.9	102.6	93.7
3.36	113.1	102.8	93.9
3.39	113.3	103.0	94.1
3.41	113.5	103.2	94.3
3.44	113.6	103.4	94.5
3.47	113.8	103.6	94.7
3.50	113.9	103.7	94.8

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

6.55	114.3	105.1	96.1
6.58	114.5	105.2	96.3
6.61	114.7	105.4	96.6
6.64	114.9	105.6	96.8
6.66	115.1	105.8	97.0
6.69	115.3	106.0	97.2
6.72	115.5	106.2	97.4
6.75	115.7	106.4	97.6
6.78	115.9	106.6	97.8
6.81	116.1	106.8	98.0
6.84	116.3	107.0	98.2
6.87	116.5	107.2	98.4
6.90	116.7	107.4	98.6
6.93	116.9	107.6	98.8
6.96	117.1	107.8	99.0
6.99	117.3	108.0	99.2
7.02	117.5	108.2	99.4
7.05	117.7	108.4	99.6
7.08	117.9	108.6	99.8
7.11	118.1	108.8	100.0
7.14	118.3	109.0	100.2
7.17	118.5	109.2	100.4
7.20	118.7	109.4	100.6
7.23	118.9	109.6	100.8
7.26	119.1	109.8	101.0
7.29	119.3	110.0	101.2
7.32	119.5	110.2	101.4
7.35	119.7	110.4	101.6
7.38	119.9	110.6	101.8
7.41	120.1	110.8	102.0
7.44	120.3	111.0	102.2
7.47	120.5	111.2	102.4
7.50	120.7	111.4	102.6
7.53	120.9	111.6	102.8
7.56	121.1	111.8	103.0
7.59	121.3	112.0	103.2
7.62	121.5	112.2	103.4
7.65	121.7	112.4	103.6
7.68	121.9	112.6	103.8
7.71	122.1	112.8	104.0
7.74	122.3	113.0	104.2
7.77	122.5	113.2	104.4
7.80	122.7	113.4	104.6
7.83	122.9	113.6	104.8
7.86	123.1	113.8	105.0
7.89	123.3	114.0	105.2
7.92	123.5	114.2	105.4
7.95	123.7	114.4	105.6
7.98	123.9	114.6	105.8
8.01	124.1	114.8	106.0
8.04	124.3	115.0	106.2
8.07	124.5	115.2	106.4
8.10	124.7	115.4	106.6
8.13	124.9	115.6	106.8
8.16	125.1	115.8	107.0
8.19	125.3	116.0	107.2
8.22	125.5	116.2	107.4
8.25	125.7	116.4	107.6
8.28	125.9	116.6	107.8
8.31	126.1	116.8	108.0
8.34	126.3	117.0	108.2
8.37	126.5	117.2	108.4
8.40	126.7	117.4	108.6
8.43	126.9	117.6	108.8
8.46	127.1	117.8	109.0
8.49	127.3	118.0	109.2
8.52	127.5	118.2	109.4
8.55	127.7	118.4	109.6
8.58	127.9	118.6	109.8
8.61	128.1	118.8	110.0
8.64	128.3	119.0	110.2
8.67	128.5	119.2	110.4
8.70	128.7	119.4	110.6
8.73	128.9	119.6	110.8
8.76	129.1	119.8	111.0
8.79	129.3	120.0	111.2
8.82	129.5	120.2	111.4
8.85	129.7	120.4	111.6
8.88	129.9	120.6	111.8
8.91	130.1	120.8	112.0
8.94	130.3	121.0	112.2
8.97	130.5	121.2	112.4
9.00	130.7	121.4	112.6
9.03	130.9	121.6	112.8
9.06	131.1	121.8	113.0
9.09	131.3	122.0	113.2
9.12	131.5	122.2	113.4
9.15	131.7	122.4	113.6
9.18	131.9	122.6	113.8
9.21	132.1	122.8	114.0
9.24	132.3	123.0	114.2
9.27	132.5	123.2	114.4
9.30	132.7	123.4	114.6
9.33	132.9	123.6	114.8
9.36	133.1	123.8	115.0
9.39	133.3	124.0	115.2
9.42	133.5	124.2	115.4
9.45	133.7	124.4	115.6
9.48	133.9	124.6	115.8
9.51	134.1	124.8	116.0
9.54	134.3	125.0	116.2
9.57	134.5	125.2	116.4
9.60	134.7	125.4	116.6
9.63	134.9	125.6	116.8
9.66	135.1	125.8	117.0
9.69	135.3	126.0	117.2
9.72	135.5	126.2	117.4
9.75	135.7	126.4	117.6
9.78	135.9	126.6	117.8
9.81	136.1	126.8	118.0
9.84	136.3	127.0	118.2
9.87	136.5	127.2	118.4
9.90	136.7	127.4	118.6
9.93	136.9	127.6	118.8
9.96	137.1	127.8	119.0
9.99	137.3	128.0	119.2
10.02	137.5	128.2	119.4
10.05	137.7	128.4	119.6
10.08	137.9	128.6	119.8
10.11	138.1	128.8	120.0
10.14	138.3	129.0	120.2
10.17	138.5	129.2	120.4
10.20	138.7	129.4	120.6
10.23	138.9	129.6	120.8
10.26	139.1	129.8	121.0
10.29	139.3	130.0	121.2
10.32	139.5	130.2	121.4
10.35	139.7	130.4	121.6
10.38	139.9	130.6	121.8
10.41	140.1	130.8	122.0
10.44	140.3	131.0	122.2
10.47	140.5	131.2	122.4
10.50	140.7	131.4	122.6
10.53	140.9	131.6	122.8
10.56	141.1	131.8	123.0
10.59	141.3	132.0	123.2
10.62	141.5	132.2	123.4
10.65	141.7	132.4	123.6
10.68	141.9	132.6	123.8
10.71	142.1	132.8	124.0
10.74	142.3	133.0	124.2
10.77	142.5	133.2	124.4
10.80	142.7	133.4	124.6
10.83	142.9	133.6	124.8
10.86	143.1	133.8	125.0
10.89	143.3	134.0	125.2
10.92	143.5	134.2	125.4
10.95	143.7	134.4	125.6
10.98	143.9	134.6	125.8
11.01	144.1	134.8	126.0
11.04	144.3	135.0	126.2
11.07	144.5	135.2	126.4
11.10	144.7	135.4	126.6
11.13	144.9	135.6	126.8
11.16	145.1	135.8	127.0
11.19	145.3	136.0	127.2
11.22	145.5	136.2	127.4
11.25	145.7	136.4	127.6
11.28	145.9	136.6	127.8
11.31	146.1	136.8	128.0
11.34	146.3	137.0	128.2
11.37	146.5	137.2	128.4
11.40	146.7	137.4	128.6
11.43	146.9	137.6	128.8
11.46	147.1	137.8	129.0
11.49	147.3	138.0	129.2
11.52	147.5	138.2	129.4
11.55	147.7	138.4	129.6
11.58	147.9	138.6	129.8
11.61	148.1	138.8	130.0
11.64	148.3	139.0	130.2
11.67	148.5	139.2	130.4
11.70	148.7	139.4	130.6
11.73	148.9	139.6	130.8
11.76	149.1	139.8	131.0
11.79	149.3	140.0	131.2
11.82	149.5	140.2	131.4
11.85	149.7	140.4	131.6
11.88	149.9	140.6	131.8
11.91	150.1	140.8	132.0
11.94	150.3	141.0	132.2
11.97	150.5	141.2	132.4
12.00	150.7	141.4	132.6
12.03	150.9	141.6	132.8
12.06	151.1	141.8	133.0
12.09	151.3	142.0	133.2
12.12	151.5	142.2	133.4
12.15	151.7	142.4	133.6
12.18	151.9	142.6	133.8
12.21	152.1	142.8	134.0
12.24	152.3	143.0	134.2
12.27	152.5	143.2	134.4
12.30	152.7	143.4	134.6
12.33	152.9	143.6	134.8
12.36	153.1	143.8	135.0
12.39	153.3	144.0	135.2
12.42	153.5	144.2	135.4
12.45	153.7	144.4	135.6
12.48	153.9	144.6	135.8
12.51	154.1	144.8	136.0
12.54	154.3	145.0	136.2
12.57	154.5	145.2	136.4
12.60	154.7	145.4	136.6
12.63	154.9	145.6	136.8
12.66	155.1	145.8	137.0
12.69	155.3	146.0	137.2
12.72	155.5	146.2	137.4
12.75	155.7	146.4	137.6
12.78	155.9	146.6	137.8
12.81	156.1	146.8	138.0
12.84	156.3	147.0	138.2
12.87	156.5	147.2	138.4
12.90	156.7	147.4	138.6
12.93	156.9	147.6	138.8
12.96	157.1	147.8	139.0
12.99	157.3	148.0	139.2
13.02	157.5	148.2	139.4
13.05	157.7	148.4	139.6
13.08	157.9	148.6	139.8
13.11	158.1	148.8	140.0
13.14	158.3	149.0	140.2
13.17	158.5	149.2	140.4
13.20	158.7	149.4	140.6
13.23	158.9	149.6	140.8
13.26	159.1	149.8	141.0
13.29	159.3	150.0	141.2
13.32	159.5	150.2	141.4
13.35	159.7	150.4	141.6
13.38	159.9	150.6	141.8
13.41	160.1	150.8	142.0
13.44	160.3	151.0	142.2
13.47	160.5	151.2	142.4
13.50	160.7	151.4	142.6
13.53	160.9	151.6	142.8
13.56	161.1	151.8	143.0
13.59	161.3	152.0	143.2
13.62	161.5	152.2	143.4
13.65	161.7	152.4	143.6
13.68	161.9	152.6	143.8
13.71	162.1	152.8	144.0
13.74	162.3	153.0	144.2
13.77	162.5	153.2	144.4
13.80	162.7	153.4	144.6
13.83	162.9	153.6	144.8
13.86	163.1	153.8	145.0
13.89	163.3	154.0	145.2
13.92	163.5	154.2	145.4
13.95	163.7	154.4	145.6
13.98	163.9	154.6	145.8
14.01	164.1	154.8	146.0
14.04	164.3	155.0	146.2
14.07	164.5	155.2	146.4
14.10	164.7	155.4	146.6
14.13	164.9	155.6	146.8
14.16	165.1	155.8	147.0
14.19	165.3	156.0	147.2
14.22	165.5	156.2	147.4
14.25	165.7	156.4	147.6
14.28	165.9	156.6	147.8
14.31	166.1	156.8	148.0
14.34	166.3	157.0	148.2
14.37	166.5	157.2	148.4
14.40	166.7	157.4	148.6
14.43	166.9	157.6	148.8
14.46	167.1	157.8	149.0
14.49	167.3	158.0	149.2
14.52	167.5	158.2	149.4
14.55	167.7	158.4	149.6
14.58	167.9	158.6	149.8
14.61	168.1	158.8	150.0
14.64	168.3	159.0	150.2
14.67	168.5	159.2	150.4
14.70	168.7	159.4	150.6
14.73	168.9	159.6	150.8
14.76	169.1	159.8	151.0
14.79	169.3	160.0	151.2
14.82	169.5	160.2	151.4
14.85	169.7		

8.56	132.3	123.3	115.0
8.64	135.5	124.5	115.6
8.72	131.6	124.7	115.4
8.80	140.7	125.9	116.9
8.88	139.5	125.4	116.4
8.96	166.1	127.4	118.5
9.04	128.9	125.8	116.6
9.12	134.1	124.9	120.7
9.20	127.1	125.6	116.3
9.28	130.9	124.2	121.8
9.36	125.2	124.7	116.4
9.44	126.2	125.4	124.8
9.52	124.3	124.5	117.6
9.60	124.0	125.0	121.5
9.68	125.5	126.4	119.4
9.76	124.5	124.9	122.1
9.84	129.9	129.3	121.0
9.92	136.2	124.4	121.5
10.00	140.7	124.6	123.4
10.08	136.1	136.7	119.6
10.16	129.6	127.6	129.3
10.24	125.2	125.5	121.9
10.32	126.2	130.6	126.6
10.40	125.2	126.6	123.1
10.48	126.5	127.0	123.8
10.56	128.7	131.5	122.4
10.64	126.7	127.1	124.0
10.72	127.3	130.0	122.6
10.80	126.0	125.4	123.3
10.88	124.9	122.7	130.9
10.96	126.2	124.0	122.5
11.04	127.9	125.2	121.9
11.12	127.9	123.4	123.9
11.20	127.1	122.0	124.3
11.28	125.9	121.4	124.2
11.36	124.9	121.3	124.3
11.44	123.9	120.1	124.6
11.52	123.0	118.9	127.0
11.60	123.4	119.7	123.9
11.68	124.6	119.9	121.6
11.75	127.4	122.0	121.4
11.83	131.5	123.9	119.5
11.91	130.3	124.0	117.3
11.99	128.7	121.5	116.8
12.07	123.6	118.5	115.6
12.15	122.4	116.8	116.3
12.23	122.1	115.5	118.6
12.31	118.7	114.3	116.5
12.39	119.0	113.9	115.6
12.47	121.3	114.0	116.4
12.55	118.4	113.3	115.1
12.63	118.1	112.9	116.0
12.71	119.8	113.8	117.2
12.79	122.8	115.9	118.6
12.87	127.2	118.0	121.2
12.95	125.0	117.9	117.7
13.03	124.7	118.3	113.2
13.11	132.6	121.3	111.1
13.19	128.3	118.8	110.7
13.27	120.1	113.2	110.6
13.35	116.7	108.9	110.2
13.43	115.1	108.1	110.0
13.51	114.7	107.5	109.2
13.59	115.3	107.8	107.1
13.67	116.8	108.7	104.7

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

13.03	119.4	119.3	112.0
13.49	118.3	109.2	101.7
13.95	116.5	107.8	101.9
14.01	116.4	106.5	102.3
14.07	113.7	105.3	102.7
14.13	112.4	104.5	103.1
14.19	112.2	103.9	103.4
14.25	111.2	103.6	103.4
14.31	111.9	103.4	103.7
14.37	111.9	103.5	104.0
14.43	112.3	103.7	104.5
14.49	112.7	104.1	105.1
14.55	113.4	104.8	106.0
14.61	114.0	105.2	107.0
14.67	114.9	105.8	107.9
14.72	115.7	106.5	108.6
14.78	116.5	107.1	109.0
14.84	116.4	107.4	108.8
14.90	116.9	107.5	108.4
14.96	116.8	107.4	108.0
15.02	116.3	107.1	107.9
15.12	115.7	106.5	108.2
15.21	115.0	106.0	108.4
15.30	114.2	105.4	105.9
15.40	113.6	104.9	103.0
15.49	113.0	104.4	101.0
15.66	113.1	103.4	99.1
15.83	111.3	103.7	97.6
16.03	114.8	104.1	95.2
16.17	114.9	105.8	93.5
16.34	120.9	108.1	92.8
16.65	121.4	113.3	93.0
16.97	126.1	118.2	98.3
17.29	119.7	112.0	111.0
17.60	114.6	109.5	108.3
17.92	118.8	110.6	103.1
17.98	115.2	108.4	103.6
18.03	113.2	106.5	101.4
18.09	113.4	107.1	101.1
18.15	119.6	109.0	101.1
18.20	120.7	112.2	101.7
18.26	126.4	114.9	102.6
18.32	126.8	115.2	103.4
18.37	118.9	110.4	102.4
18.43	115.2	108.7	102.6
18.49	116.9	107.9	103.3
18.54	115.8	108.5	104.0
18.60	117.5	110.0	104.9
18.66	123.2	113.9	106.9
18.71	132.5	116.4	107.6
18.77	120.7	113.0	108.0
18.83	119.0	110.8	107.8
18.88	118.4	110.1	107.1
18.94	118.1	110.1	106.5
19.00	118.9	111.0	106.4
19.05	121.6	113.6	106.8
19.11	126.9	116.1	106.9
19.17	130.3	118.2	106.6
19.22	127.3	117.1	106.0
19.28	124.7	115.4	105.0
19.34	122.4	114.1	104.0
19.39	122.0	113.4	103.3
19.45	122.3	113.5	103.1
19.51	123.0	113.9	103.2
19.57	123.9	114.6	103.3

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

19.68	125.2	115.4	103.7
19.74	124.7	115.1	103.6
19.79	124.6	115.0	104.0
19.85	123.8	114.8	104.1
19.91	124.0	115.0	104.5
19.96	124.9	115.4	104.4
20.02	124.4	115.4	105.4
20.08	126.0	116.2	106.1
20.13	125.6	116.1	106.7
20.19	124.3	116.0	107.1
20.25	126.3	116.3	108.4
20.30	125.6	116.4	108.9
20.36	124.6	116.7	104.8
20.42	124.6	117.6	111.4
20.47	126.9	117.4	111.8
20.53	124.5	117.1	112.4
20.59	128.0	117.8	114.2
20.64	127.9	117.7	114.1
20.70	124.1	117.3	113.1
20.76	127.2	118.5	113.4
20.81	133.6	119.4	113.4
20.87	124.5	117.9	111.4
20.93	125.2	118.0	111.5
20.98	133.4	119.3	111.5
21.04	126.3	118.7	110.2
21.10	125.8	118.5	110.1
21.15	131.8	119.9	110.2
21.21	129.8	120.3	109.5
21.27	128.0	118.5	109.6
21.32	128.5	118.5	109.6
21.38	129.3	120.2	109.2
21.44	130.9	120.4	109.5
21.50	128.3	120.9	109.8
21.55	127.9	120.4	109.9
21.61	132.4	122.1	110.3
21.67	133.6	122.4	110.8
21.72	130.3	122.3	112.1
21.78	131.3	122.4	113.3
21.84	132.7	123.4	113.1
21.89	137.1	124.3	113.7
21.95	137.9	125.2	115.6
22.01	128.8	121.6	117.8
22.06	126.7	120.1	120.1
22.12	128.5	120.7	120.3
22.18	132.6	123.1	119.9
22.23	138.0	125.9	121.1
22.29	135.2	123.5	123.2
22.35	126.7	119.4	124.4
22.40	123.3	117.2	125.4
22.46	123.3	116.6	126.5
22.52	124.2	117.5	126.0
22.57	125.6	119.8	126.5
22.63	128.6	125.0	124.4
22.69	130.7	132.6	120.5
22.74	127.8	123.1	118.6
22.80	124.2	119.2	117.5
22.86	123.8	117.6	116.7
22.91	123.4	117.4	116.8
22.97	124.6	118.5	118.3
23.03	126.9	121.1	118.5
23.08	131.0	124.3	118.8
23.14	135.1	128.4	119.5
23.20	131.6	127.4	119.2
23.26	128.3	123.0	119.1
23.31	126.7	121.2	120.0

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

21.46	127.9	122.8	133.1
21.53	130.3	125.9	141.6
21.60	132.7	128.7	148.1
21.67	135.1	131.5	154.6
21.74	137.5	134.3	161.1
21.81	139.9	137.1	167.6
21.88	142.3	139.9	174.1
21.95	144.7	142.7	180.6
22.02	147.1	145.5	187.1
22.09	149.5	148.3	193.6
22.16	151.9	151.1	200.1
22.23	154.3	153.9	206.6
22.30	156.7	156.7	213.1
22.37	159.1	159.5	219.6
22.44	161.5	162.3	226.1
22.51	163.9	165.1	232.6
22.58	166.3	167.9	239.1
22.65	168.7	170.7	245.6
22.72	171.1	173.5	252.1
22.79	173.5	176.3	258.6
22.86	175.9	179.1	265.1
22.93	178.3	181.9	271.6
23.00	180.7	184.7	278.1
23.07	183.1	187.5	284.6
23.14	185.5	190.3	291.1
23.21	187.9	193.1	297.6
23.28	190.3	195.9	304.1
23.35	192.7	198.7	310.6
23.42	195.1	201.5	317.1
23.49	197.5	204.3	323.6
23.56	199.9	207.1	330.1
23.63	202.3	209.9	336.6
23.70	204.7	212.7	343.1
23.77	207.1	215.5	349.6
23.84	209.5	218.3	356.1
23.91	211.9	221.1	362.6
23.98	214.3	223.9	369.1
24.05	216.7	226.7	375.6
24.12	219.1	229.5	382.1
24.19	221.5	232.3	388.6
24.26	223.9	235.1	395.1
24.33	226.3	237.9	401.6
24.40	228.7	240.7	408.1
24.47	231.1	243.5	414.6
24.54	233.5	246.3	421.1
24.61	235.9	249.1	427.6
24.68	238.3	251.9	434.1
24.75	240.7	254.7	440.6
24.82	243.1	257.5	447.1
24.89	245.5	260.3	453.6
24.96	247.9	263.1	460.1
25.03	250.3	265.9	466.6
25.10	252.7	268.7	473.1
25.17	255.1	271.5	479.6
25.24	257.5	274.3	486.1
25.31	259.9	277.1	492.6
25.38	262.3	279.9	499.1
25.45	264.7	282.7	505.6
25.52	267.1	285.5	512.1
25.59	269.5	288.3	518.6
25.66	271.9	291.1	525.1
25.73	274.3	293.9	531.6
25.80	276.7	296.7	538.1
25.87	279.1	299.5	544.6
25.94	281.5	302.3	551.1
26.01	283.9	305.1	557.6
26.08	286.3	307.9	564.1
26.15	288.7	310.7	570.6
26.22	291.1	313.5	577.1
26.29	293.5	316.3	583.6
26.36	295.9	319.1	590.1
26.43	298.3	321.9	596.6
26.50	300.7	324.7	603.1
26.57	303.1	327.5	609.6
26.64	305.5	330.3	616.1
26.71	307.9	333.1	622.6
26.78	310.3	335.9	629.1
26.85	312.7	338.7	635.6
26.92	315.1	341.5	642.1
26.99	317.5	344.3	648.6
27.06	319.9	347.1	655.1
27.13	322.3	349.9	661.6
27.20	324.7	352.7	668.1
27.27	327.1	355.5	674.6
27.34	329.5	358.3	681.1
27.41	331.9	361.1	687.6
27.48	334.3	363.9	694.1
27.55	336.7	366.7	700.6
27.62	339.1	369.5	707.1
27.69	341.5	372.3	713.6
27.76	343.9	375.1	720.1
27.83	346.3	377.9	726.6
27.90	348.7	380.7	733.1
27.97	351.1	383.5	739.6
28.04	353.5	386.3	746.1
28.11	355.9	389.1	752.6
28.18	358.3	391.9	759.1
28.25	360.7	394.7	765.6
28.32	363.1	397.5	772.1
28.39	365.5	400.3	778.6
28.46	367.9	403.1	785.1
28.53	370.3	405.9	791.6
28.60	372.7	408.7	798.1
28.67	375.1	411.5	804.6
28.74	377.5	414.3	811.1
28.81	379.9	417.1	817.6
28.88	382.3	419.9	824.1
28.95	384.7	422.7	830.6
29.02	387.1	425.5	837.1
29.09	389.5	428.3	843.6
29.16	391.9	431.1	850.1
29.23	394.3	433.9	856.6
29.30	396.7	436.7	863.1
29.37	399.1	439.5	869.6
29.44	401.5	442.3	876.1
29.51	403.9	445.1	882.6
29.58	406.3	447.9	889.1
29.65	408.7	450.7	895.6
29.72	411.1	453.5	902.1
29.79	413.5	456.3	908.6
29.86	415.9	459.1	915.1
29.93	418.3	461.9	921.6
30.00	420.7	464.7	928.1
30.07	423.1	467.5	934.6
30.14	425.5	470.3	941.1
30.21	427.9	473.1	947.6
30.28	430.3	475.9	954.1
30.35	432.7	478.7	960.6
30.42	435.1	481.5	967.1
30.49	437.5	484.3	973.6
30.56	439.9	487.1	980.1
30.63	442.3	489.9	986.6
30.70	444.7	492.7	993.1
30.77	447.1	495.5	999.6
30.84	449.5	498.3	1006.1
30.91	451.9	501.1	1012.6
30.98	454.3	503.9	1019.1
31.05	456.7	506.7	1025.6
31.12	459.1	509.5	1032.1
31.19	461.5	512.3	1038.6
31.26	463.9	515.1	1045.1
31.33	466.3	517.9	1051.6
31.40	468.7	520.7	1058.1
31.47	471.1	523.5	1064.6
31.54	473.5	526.3	1071.1
31.61	475.9	529.1	1077.6
31.68	478.3	531.9	1084.1
31.75	480.7	534.7	1090.6
31.82	483.1	537.5	1097.1
31.89	485.5	540.3	1103.6
31.96	487.9	543.1	1110.1
32.03	490.3	545.9	1116.6
32.10	492.7	548.7	1123.1
32.17	495.1	551.5	1129.6
32.24	497.5	554.3	1136.1
32.31	499.9	557.1	1142.6
32.38	502.3	559.9	1149.1
32.45	504.7	562.7	1155.6
32.52	507.1	565.5	1162.1
32.59	509.5	568.3	1168.6
32.66	511.9	571.1	1175.1
32.73	514.3	573.9	1181.6
32.80	516.7	576.7	1188.1
32.87	519.1	579.5	1194.6
32.94	521.5	582.3	1201.1
33.01	523.9	585.1	1207.6
33.08	526.3	587.9	1214.1
33.15	528.7	590.7	1220.6
33.22	531.1	593.5	1227.1
33.29	533.5	596.3	1233.6
33.36	535.9	599.1	1240.1
33.43	538.3	601.9	1246.6
33.50	540.7	604.7	1253.1
33.57	543.1	607.5	1259.6
33.64	545.5	610.3	1266.1
33.71	547.9	613.1	1272.6
33.78	550.3	615.9	1279.1
33.85	552.7	618.7	1285.6
33.92	555.1	621.5	1292.1
33.99	557.5	624.3	1298.6
34.06	559.9	627.1	1305.1
34.13	562.3	629.9	1311.6
34.20	564.7	632.7	1318.1
34.27	567.1	635.5	1324.6
34.34	569.5	638.3	1331.1
34.41	571.9	641.1	1337.6
34.48	574.3	643.9	1344.1
34.55	576.7	646.7	1350.6
34.62	579.1	649.5	1357.1
34.69	581.5	652.3	1363.6
34.76	583.9	655.1	1370.1
34.83	586.3	657.9	1376.6
34.90	588.7	660.7	1383.1
34.97	591.1	663.5	1389.6
35.04	593.5	666.3	1396.1
35.11	595.9	669.1	1402.6
35.18	598.3	671.9	1409.1
35.25	600.7	674.7	1415.6
35.32	603.1	677.5	1422.1
35.39	605.5	680.3	1428.6
35.46	607.9	683.1	1435.1
35.53	610.3	685.9	1441.6
35.60	612.7	688.7	1448.1
35.67	615.1	691.5	1454.6
35.74	617.5	694.3	1461.1
35.81	619.9	697.1	1467.6
35.88	622.3	699.9	1474.1
35.95	624.7	702.7	1480.6
36.02	627.1	705.5	1487.1
36.09	629.5	708.3	1493.6
36.16	631.9	711.1	1500.1
36.23	634.3	713.9	1506.6
36.30	636.7	716.7	1513.1
36.37	639.1	719.5	1519.6
36.44	641.5	722.3	1526.1
36.51	643.9	725.1	1532.6
36.58	646.3	727.9	1539.1
36.65	648.7	730.7	1545.6
36.72	651.1	733.5	1552.1
36.79	653.5	736.3	1558.6
36.86	655.9	739.1	1565.1
36.93	658.3	741.9	1571.6
37.00	660.7	744.7	1578.1
37.07	663.1	747.5	1584.6
37.14	665.5	750.3	1591.1
37.21	667.9	753.1	1597.6
37.28	670.3	755.9	1604.1
37.35	672.7	758.7	1610.6
37.42	675.1	761.5	1617.1
37.49	677.5	764.3	1623.6
37.56	679.9	767.1	1630.1
37.63	682.3	769.9	1636.6
37.70	684.7	772.7	1643.1
37.77	687.1	775.5	1649.6
37.84	689.5	778.3	1656.1
37.91	691.9	781.1	1662.6
37.98	694.3	783.9	1669.1
38.05	696.7	786.7	1675.6
38.12	699.1	789.5	1682.1
38.19	701.5	792.3	1688.6
38.26	703.9	795.1	1695.1
38.33	706.3	797.9	1701.6
38.40	708.7	800.7	1708.1
38.47	711.1	803.5	1714.6
38.54	713.5	806.3	1721.1
38.61	715.9	809.1	1727.6
38.68	718.3	811.9	1734.1
38.75	720.7	814.7	1740.6
38.82	723.1	817.5	1747.1
38.89	725.5	820.3	1753.6
38.96	727.9	823.1	1760.1
39.03	730.3	825.9	1766.6
39.10	732.7	828.7	1773.1
39.17	735.1	831.5	1779.6
39.24	737.5	834.3	1786.1
39.31	739.9	837.1	1792.6
39.38	742.3	839.9	1799.1
39.45	744.7	842.7	1805.6
39.52	747.1	845.5	1812.1
39.59	749.5	848.3	1818.6
39.66	751.9	851.1	1825.1
39.73	754.3	853.9	1831.6
39.80	756.7	856.7	1838.1
39.87	759.1	859.5	1844.6
39.94	761.5	862.3	1851.1
40.01	763.9	865.1	1857.6
40.08	766.3	867.9	1864.1
40.15	768.7	870.7	1870.6
40.22	771.1	873.5	1877.1
40.29	773.5	876.3	1883.6
40.36	775.9	879.1	1890.1
40.43	77		

28.18	142.5	135.7	127.6
28.42	135.1	133.6	125.0
28.67	132.5	130.4	127.6
28.92	133.6	131.5	126.2
29.16	133.5	130.5	123.1
29.40	130.0	131.4	124.5
29.64	124.3	130.1	121.1
29.88	124.0	127.0	125.2
30.12	126.4	126.0	121.2
30.36	126.3	126.1	117.1
30.60	123.1	123.9	117.1
30.84	121.4	121.9	117.1
31.08	119.3	121.1	114.7
31.32	117.8	120.5	112.4
31.56	116.5	118.4	111.4
31.80	115.0	117.5	109.7
32.04	112.6	116.7	108.4
32.28	112.3	115.4	108.2
32.52	110.4	113.5	107.1
32.76	109.1	111.9	106.2
33.00	107.9	111.4	106.2
33.24	107.0	111.5	106.5
33.48	106.5	111.2	106.7
33.72	105.9	110.5	107.4
33.96	105.4	110.2	107.4
34.20	105.4	110.0	107.2
34.44	105.9	109.9	106.9
34.68	106.8	110.6	106.8
34.92	107.7	111.7	106.3
35.16	108.6	112.7	106.1
35.40	109.6	113.1	106.9
35.64	110.4	113.8	107.4
35.88	112.3	114.7	107.9
36.12	113.8	115.8	108.9
36.36	115.2	116.7	111.5
36.60	116.6	116.4	113.3
36.84	118.0	117.1	112.1
37.08	120.1	118.5	113.0
37.32	123.0	127.6	117.4
37.56	125.5	129.0	119.2
37.80	124.4	123.7	115.6
38.04	122.3	119.3	114.9
38.28	121.4	117.3	116.9
38.52	121.8	117.0	121.0
38.76	123.1	117.7	124.3
39.00	125.0	119.1	122.5
39.24	126.8	121.7	119.0
39.48	124.2	124.5	118.3
39.72	129.4	126.5	119.2
39.96	130.6	126.6	119.5
40.20	132.5	126.0	118.1
40.44	133.9	126.0	117.4
40.68	133.7	126.7	116.9
40.92	135.7	128.6	116.0
41.16	131.9	130.7	115.4
41.40	135.4	126.1	116.4
41.64	129.2	122.1	116.7
41.88	126.6	119.3	119.5
42.12	125.1	117.4	118.4
42.36	123.4	115.1	116.7
42.60	122.7	115.1	112.0
42.84	121.4	114.5	110.4
43.08	121.5	114.2	109.4
43.32	121.5	114.2	108.7

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

31.65	122.3	114.9	107.4
31.80	122.9	115.4	108.6
31.87	123.0	116.0	105.4
31.64	124.0	116.8	104.1
31.77	125.9	117.8	103.2
31.77	127.9	119.0	102.8
31.84	128.8	120.7	102.5
31.95	133.5	124.6	111.9
32.05	136.6	126.4	110.8
32.16	131.5	124.5	99.8
32.27	127.3	119.6	99.4
32.37	126.9	114.2	99.4
32.55	127.4	117.2	100.6
32.72	123.9	119.5	102.5
32.90	131.0	119.2	104.0
33.07	123.7	119.0	105.7
33.25	126.7	119.1	107.0
33.33	125.9	119.2	106.9
33.41	125.0	119.6	105.4
33.50	132.3	121.6	106.1
33.58	125.1	120.8	104.8
33.66	130.7	122.2	105.4
33.72	122.0	118.8	104.4
33.78	123.1	118.7	104.9
33.83	128.9	122.0	105.3
33.89	125.2	121.2	105.4
33.94	123.2	119.9	106.4
34.06	127.4	122.2	106.9
34.06	135.7	127.8	106.4
34.11	131.0	126.9	107.4
34.17	129.0	124.8	109.1
34.22	133.5	125.8	109.2
34.27	143.0	129.0	110.2
34.31	137.4	130.3	111.8
34.35	137.0	130.8	112.8
34.39	138.5	133.0	112.7
34.43	141.9	137.7	113.1
34.47	145.5	142.0	113.8
34.52	142.2	134.3	114.2
34.56	141.1	134.4	114.3
34.60	141.9	132.4	114.2
34.64	140.1	130.9	114.0
34.68	137.4	129.5	113.5
34.73	136.3	128.7	112.7
34.77	136.7	128.5	112.1
34.81	138.2	128.8	111.8
34.85	139.0	129.1	111.6
34.89	134.1	129.3	111.4
34.94	138.2	129.7	111.3
34.98	140.4	130.4	111.3
35.02	142.1	131.0	111.2
35.06	140.5	130.9	111.1
35.10	139.5	130.5	111.0
35.15	139.4	130.5	110.9
35.19	140.4	130.7	110.8
35.23	140.5	131.0	110.4
35.27	140.6	131.3	110.4
35.31	149.8	131.7	110.9
35.36	141.4	132.4	111.1
35.40	143.3	133.4	111.2
35.44	145.0	134.1	111.4
35.48	143.6	134.5	111.6
35.52	143.0	135.2	111.4
35.57	145.9	136.3	112.1
35.61	150.0	137.6	112.4

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

35.69	145.3	139.1	112.9
35.73	147.7	141.7	113.4
35.78	156.3	145.2	113.7
35.82	159.3	148.0	114.1
35.86	151.7	147.9	114.5
35.90	150.4	149.0	114.9
35.94	150.6	150.0	115.2
35.98	151.7	149.4	115.7
36.03	155.2	143.7	116.2
36.07	166.1	151.8	116.5
36.11	157.1	149.6	116.7
36.15	151.9	145.2	117.0
36.19	150.3	143.2	117.3
36.24	150.7	142.8	117.7
36.28	152.4	141.6	117.9
36.32	155.3	145.3	117.9
36.36	159.7	147.0	118.0
36.40	159.2	146.5	118.1
36.45	153.7	144.5	118.1
36.49	151.1	143.0	118.1
36.53	150.6	142.6	118.0
36.57	151.4	143.1	118.0
36.61	153.1	144.5	118.1
36.66	155.1	146.7	118.2
36.70	156.8	150.9	118.3
36.74	159.0	160.4	118.4
36.78	156.7	153.5	118.3
36.82	154.2	149.1	118.1
36.87	155.9	146.7	117.9
36.91	156.4	145.0	117.8
36.95	150.7	143.8	117.6
36.99	148.6	144.1	117.6
37.03	150.0	145.6	117.9
37.08	154.7	148.3	118.1
37.12	158.3	149.0	118.2
37.16	151.3	144.5	118.7
37.20	146.0	140.9	119.2
37.24	146.2	138.7	119.1
37.29	145.5	137.2	119.0
37.33	146.6	135.8	119.2
37.37	142.0	134.2	119.1
37.41	139.3	133.4	118.5
37.45	139.7	133.5	118.3
37.50	143.4	134.4	118.4
37.54	147.6	135.2	118.2
37.58	142.4	134.8	117.5
37.62	138.6	134.6	117.3
37.66	139.5	135.3	117.4
37.70	142.1	136.8	117.3
37.75	150.1	138.5	116.9
37.79	150.0	137.7	116.8
37.83	140.8	134.9	117.1
37.87	137.6	133.0	117.4
37.91	137.5	132.2	117.4
37.96	140.8	132.3	117.7
38.00	146.1	132.5	118.6
38.04	139.7	131.1	119.4
38.08	136.3	129.8	119.9
38.12	136.3	129.3	120.7
38.17	138.7	129.5	122.3
38.21	140.6	129.9	124.0
38.25	138.5	129.5	125.1
38.29	136.9	129.9	126.5
38.33	136.9	129.7	129.0
38.38	137.8	128.8	132.1

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

34.46	134.4	124.2	136.6
34.50	134.1	124.2	136.9
34.54	133.9	129.2	138.4
34.59	134.2	129.4	136.1
34.63	139.0	129.7	134.7
34.67	139.3	129.8	133.7
34.71	138.8	129.8	132.1
34.75	138.6	129.8	130.5
34.80	139.2	129.9	129.5
34.84	139.4	129.9	128.6
34.88	138.6	129.8	127.3
34.92	138.4	129.8	126.1
34.96	139.3	129.9	125.6
34.99	139.7	130.0	125.1
39.05	138.7	129.9	124.4
39.16	138.3	130.0	123.7
39.21	140.7	130.9	123.1
39.26	134.9	130.9	123.0
39.32	140.5	131.5	123.5
39.37	142.9	132.2	123.7
39.43	140.4	132.2	123.7
39.48	140.9	132.9	124.5
39.54	145.9	134.3	125.2
39.59	143.9	134.5	125.4
39.64	142.0	134.3	126.1
39.70	145.4	135.1	127.0
39.75	146.3	135.4	127.1
39.81	142.3	134.5	127.2
39.86	142.8	134.6	127.6
39.94	146.6	135.6	127.5
40.01	143.4	135.2	127.0
40.09	144.9	134.0	127.0
40.16	147.8	137.3	126.5
40.24	145.7	137.4	126.3
40.34	149.2	138.8	126.2
40.43	147.6	138.9	126.1
40.53	149.3	139.3	126.4
40.63	149.2	139.5	127.0
40.73	149.4	139.7	127.9
40.82	150.4	140.3	129.0
40.92	150.1	140.5	130.5
41.02	151.2	141.1	132.1
41.12	152.7	141.5	134.3
41.21	151.8	142.2	136.9
41.31	150.7	142.7	139.2
41.41	152.3	143.2	140.1
41.50	151.1	143.7	138.1
41.60	149.9	143.6	135.7
41.70	155.6	144.9	134.6
41.77	151.2	144.7	132.9
41.84	161.0	145.2	132.7
41.90	151.2	146.0	131.9
41.97	156.9	145.9	132.1
42.04	158.1	146.6	131.4
42.11	153.8	148.0	132.2
42.19	157.3	147.3	132.2
42.26	154.4	148.6	132.6
42.31	164.4	152.0	133.1
42.38	159.2	149.9	133.8
42.45	157.0	151.9	134.3
42.51	156.6	151.5	134.8
42.59	155.1	149.6	135.5
42.65	166.0	151.9	134.4
42.72	156.7	151.3	134.9

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

42.85	164.8	151.6	133.4
42.92	158.7	151.3	132.3
42.99	157.2	150.2	131.6
43.06	159.4	149.0	130.9
43.11	159.2	153.6	130.3
43.16	161.7	150.9	130.0
43.21	160.1	150.5	129.6
43.26	159.2	151.2	129.3
43.31	155.6	150.0	129.1
43.36	156.1	149.5	128.8
43.41	156.8	148.5	128.4
43.46	159.1	150.2	128.3
43.51	163.6	150.2	128.3
43.56	156.7	150.6	128.2
43.61	159.2	151.5	128.1
43.66	167.5	155.9	128.1
43.71	165.2	154.9	128.2
43.76	158.3	152.6	128.3
43.81	158.9	153.0	128.3
43.85	156.0	156.7	128.1
43.90	166.5	157.3	128.3
43.95	159.7	153.1	128.7
44.00	157.3	151.8	128.8
44.05	157.4	154.6	128.8
44.10	160.9	158.8	128.6
44.15	160.3	161.0	128.6
44.20	162.4	156.1	128.9
44.25	166.5	156.9	128.6
44.30	158.4	156.9	128.7
44.35	158.0	159.4	128.9
44.40	163.5	156.7	128.8
44.45	160.8	152.2	129.2
44.50	152.5	150.6	128.9
44.55	152.4	150.2	128.2
44.60	163.9	149.1	128.2
44.65	152.6	148.5	127.5
44.70	150.4	150.3	127.2
44.75	155.6	149.7	127.6
44.80	157.3	152.3	127.3
44.85	152.9	153.1	127.9
44.90	150.6	153.1	128.4
44.95	152.9	148	127.5
45.00	158.4	144	128.5
45.05	145.1	141	128.4
45.10	142.9	141	126.2
45.15	147	126.6	
45.20	147	126.8	
45.25	140.0	138.3	125.0
45.30	139.8	138.0	124.6
45.33	142.1	139.1	124.8
45.37	146.7	141.5	124.3
45.41	153.6	144.8	123.8
45.44	149.4	144.0	123.8
45.48	144.9	141.0	123.9
45.52	142.6	138.8	123.5
45.55	141.9	137.5	122.9
45.59	142.9	137.6	123.0
45.63	145.5	137.3	123.7
45.66	148.2	138.0	124.4
45.70	148.4	138.4	124.5
45.74	147.8	137.3	124.5
45.77	144.9	135.5	124.7
45.81	141.3	134.1	125.1
45.85	139.9	133.5	125.4
45.88	140.8	133.1	127.1

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

66.96 142.1 133.3 129.9
 66.99 140.7 133.2 130.8
 66.03 142.5 134.5 131.0
 66.16 144.8 134.8 134.4
 66.10 144.3 134.6 139.4
 66.14 140.7 134.7 140.7
 66.17 142.4 134.4 140.9
 66.21 144.7 133.7 139.7
 66.25 141.6 132.6 135.4
 66.28 137.4 132.1 137.0
 66.32 137.7 131.4 139.2
 66.36 142.4 131.6 139.1
 66.39 143.5 131.2 137.9
 66.43 136.2 130.5 141.0
 66.47 135.0 130.8 138.5
 66.56 136.3 131.4 133.6
 66.54 145.3 132.7 132.4
 66.54 145.9 133.3 135.8
 66.61 137.9 133.1 139.4
 66.65 136.7 133.8 134.4
 66.69 139.2 135.1 131.5
 66.72 145.1 137.1 131.2
 66.76 142.0 137.0 132.1
 66.80 138.5 135.2 133.4
 66.83 138.6 134.1 132.8
 66.87 142.5 134.6 131.6
 66.91 157.3 136.4 130.5
 66.94 145.3 134.9 128.8
 66.98 139.6 132.4 126.9
 67.01 137.3 130.6 125.1
 67.05 136.7 129.8 124.0
 67.19 137.2 129.9 123.4
 67.12 139.2 130.7 122.5
 67.16 142.3 131.7 121.0
 67.20 143.7 132.2 119.4
 67.23 141.5 131.7 118.1
 67.27 139.3 130.7 117.1
 67.31 138.1 129.9 116.3
 67.34 137.6 128.7 115.6
 67.38 138.0 130.1 114.8
 67.42 139.4 131.1 114.1
 67.45 141.9 132.7 113.3
 67.49 145.5 134.9 112.5
 67.54 151.2 137.1 111.6
 67.54 147.5 135.8 110.8
 67.63 142.2 133.5 109.9
 67.68 140.5 132.2 109.2
 67.72 140.7 131.9 108.5
 67.77 141.3 132.8 108.0
 67.82 143.5 134.9 107.6
 67.86 152.5 138.6 107.3
 67.91 156.5 138.4 107.1
 67.96 144.2 134.4 106.7
 68.02 149.9 131.6 106.3
 68.09 137.6 129.4 105.8
 68.16 137.1 129.4 105.4
 68.23 140.4 131.0 105.2
 68.29 142.3 134.1 105.1
 68.34 151.0 144.4 105.0
 68.49 145.9 135.4 104.4
 68.54 143.3 131.6 104.7
 68.68 145.4 131.4 104.7
 68.78 143.7 132.1 104.7
 68.82 144.1 137.4 104.6
 68.87 146.4 137.5 104.2

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

49.36	139.9	123.7	105.0
49.51	135.3	111.1	105.4
49.60	132.4	110.2	105.9
49.69	135.0	111.7	106.7
49.78	132.6	111.8	106.6
49.87	142.0	115.5	107.3
49.96	135.0	119.1	108.6
50.02	138.4	140.7	108.2
50.04	140.0	116.4	108.9
50.14	136.3	113.6	109.2
50.20	135.9	112.1	109.1
50.26	147.4	139.0	109.6
50.32	140.4	134.0	109.6
50.38	137.3	136.6	110.2
50.43	147.9	139.7	110.2
50.49	143.7	137.4	110.2
50.55	139.0	135.6	110.3
50.59	145.9	131.4	110.4
50.64	142.2	134.4	110.3
50.68	142.3	134.3	110.1
50.72	144.7	134.6	110.1
50.76	143.3	135.7	110.3
50.80	143.8	137.4	110.4
50.84	147.9	140.3	110.5
50.89	153.3	146.5	110.5
50.93	154.5	152.4	110.4
50.97	151.7	145.0	110.5
51.01	147.8	140.7	110.5
51.05	145.8	138.7	110.5
51.09	146.4	137.9	110.5
51.14	148.1	137.8	110.7
51.18	147.9	137.5	110.8
51.22	145.7	137.5	111.0
51.26	146.7	138.1	111.2
51.30	152.4	139.1	111.3
51.34	150.5	139.1	111.5
51.39	146.6	138.0	111.6
51.43	146.1	137.6	111.6
51.47	148.4	138.0	111.7
51.51	150.6	138.2	111.8
51.55	147.0	137.3	111.9
51.59	144.7	136.6	112.1
51.64	145.1	136.7	112.2
51.68	147.8	137.6	112.4
51.72	150.3	138.6	112.5
51.76	149.0	138.5	112.6
51.80	147.1	137.8	112.9
51.84	146.0	137.6	113.1
51.89	146.3	138.2	113.3
51.93	148.4	139.9	113.5
51.97	154.4	142.4	113.7
52.01	157.6	144.2	113.9
52.05	153.9	143.6	114.1
52.09	151.4	142.4	114.3
52.14	150.4	141.9	114.4
52.18	150.2	142.3	114.9
52.22	151.8	143.9	115.1
52.26	155.2	147.1	115.4
52.30	161.4	151.1	115.7
52.34	167.7	160.0	115.9
52.39	161.4	152.7	116.1
52.43	157.3	148.1	116.2
52.47	153.9	145.8	116.3
52.51	152.5	145.0	116.4
52.55	153.4	145.1	116.6

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

52.64 156.4 149.9 117.0
52.64 159.1 154.3 117.4
52.72 161.4 161.1 117.7
52.76 157.5 150.5 118.0
52.80 153.6 145.2 118.3
52.84 150.4 142.0 118.6
52.89 148.1 139.3 118.7
52.91 146.6 138.4 118.8
52.97 145.7 137.4 118.8
53.01 145.3 136.4 118.8
53.05 145.1 136.0 118.7
53.09 144.8 136.0 118.6
53.14 144.6 136.9 118.5
53.18 145.3 137.5 118.4
53.22 146.5 138.3 118.2
53.26 146.8 139.1 118.1
53.30 146.6 139.6 118.0
53.34 146.8 139.7 117.9
53.39 146.8 139.1 117.9
53.43 145.6 138.1 118.0
53.47 144.3 137.2 118.2
53.51 144.5 136.5 118.5
53.55 145.1 135.6 118.9
53.59 143.6 134.7 119.3
53.64 141.8 133.8 119.9
53.68 141.6 133.1 120.5
53.72 141.6 132.5 121.5
53.76 140.7 132.2 122.4
53.80 140.3 132.1 123.3
53.84 141.4 132.1 124.5
53.89 141.4 132.1 125.8
53.93 140.4 131.9 126.6
53.97 140.3 131.9 127.5
54.01 141.8 131.9 129.1
54.05 141.3 131.6 130.2
54.09 139.2 131.2 130.6
54.14 138.8 131.3 131.5
54.18 140.7 131.7 133.1
54.22 142.7 132.4 133.9
54.26 141.8 132.7 134.4
54.30 141.1 132.8 135.7
54.34 142.0 133.2 137.1
54.39 143.5 133.9 136.4
54.43 144.3 136.4 138.4
54.47 144.2 136.5 133.9
54.51 143.8 136.3 133.2
54.55 143.0 133.8 132.4
54.59 142.2 133.3 131.6
54.64 141.5 132.8 131.2
54.68 140.9 132.4 131.4
54.72 140.5 132.2 132.0
54.76 143.4 132.2 133.2
54.80 140.8 132.6 134.8
54.84 141.5 133.3 136.8
54.89 142.8 136.4 139.1
54.93 144.7 136.3 141.1
54.97 147.6 137.9 140.4
55.01 151.0 139.8 138.2
55.05 151.4 140.0 136.0
55.09 150.1 140.1 134.0
55.14 148.7 133.4 132.0
55.18 148.2 138.4 130.3
55.22 147.4 138.2 128.7
55.26 147.0 137.7 127.2
55.30 146.5 137.2 126.0

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

AD-A110 889

OCEAN DATA SYSTEMS INC ROCKVILLE MD
NORDA BENCH MARK PACKAGE DOCUMENT.(U)
APR 80 R HOLT

F/6 9/2

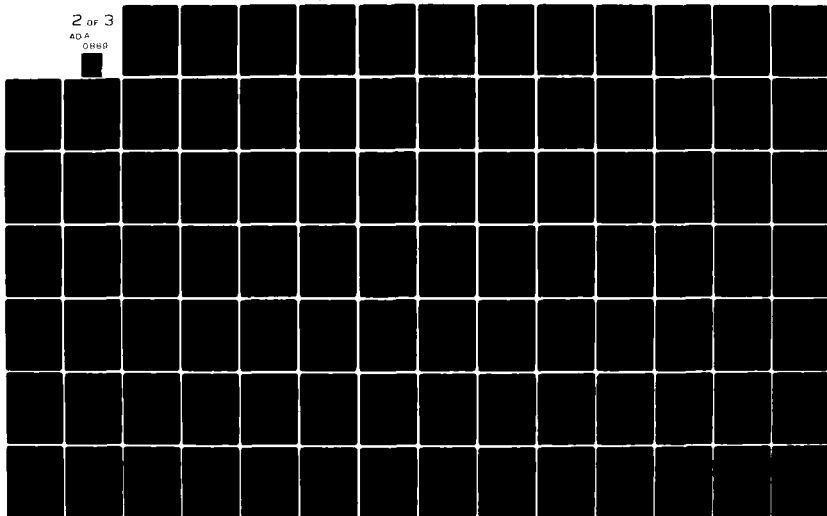
N00014-80-C-0409

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55.40	145.3	135.9	124.7
55.45	143.7	135.0	123.6
55.51	143.3	134.6	123.1
55.56	143.7	134.7	123.1
55.61	144.2	135.1	123.9
55.67	145.1	135.6	122.9
55.72	145.8	135.8	123.0
55.77	144.9	135.4	123.1
55.83	143.8	135.0	123.2
55.88	143.6	134.9	123.5
55.95	144.8	135.6	123.9
56.02	146.1	136.7	124.7
56.09	147.5	137.6	125.6
56.16	147.9	137.8	126.5
56.23	146.2	137.1	127.3
56.33	145.8	136.6	128.9
56.42	145.0	136.6	131.1
56.52	147.3	138.1	133.7
56.61	149.1	139.2	136.7
56.70	147.4	136.7	139.3
56.85	148.3	139.6	137.7
57.01	149.1	140.5	135.1
57.16	148.9	139.3	132.6
57.31	149.0	139.1	132.4
57.46	151.0	140.3	132.9
57.68	147.5	138.0	133.1
57.90	152.3	139.8	133.3
58.11	147.2	138.8	133.6
58.33	149.2	141.7	137.7
58.55	154.6	145.7	138.1
58.76	155.3	149.8	135.4
58.98	149.3	143.8	135.4
59.20	149.3	142.2	137.1
59.41	156.6	145.3	151.1
59.63	156.6	145.5	142.9
59.85	147.5	140.0	147.5
60.06	151.9	147.1	146.7
60.28	149.3	148.5	140.1
60.50	146.9	143.5	146.6
60.72	140.0	138.8	133.5
60.93	133.7	135.9	141.2
61.15	146.8	134.8	129.1
61.37	127.6	128.0	125.9
61.58	123.3	126.3	120.3
61.80	120.8	125.6	121.3
62.02	121.2	122.5	122.2
62.23	124.4	120.5	119.2
62.45	120.2	118.1	116.2
62.67	119.0	116.4	118.3
62.88	145.6	118.4	112.6
63.10	116.6	110.3	104.9
63.32	127.0	115.6	104.0
63.54	114.3	111.0	108.9
63.75	114.4	108.2	108.7
63.97	122.9	115.1	106.6
64.26	128.8	118.7	117.3
64.56	119.6	114.7	115.6
64.85	119.6	115.2	114.4
65.14	123.5	116.4	119.4
65.43	126.3	123.2	114.0
65.73	121.1	114.9	112.4
66.02	131.4	124.7	115.0
66.31	136.4	127.4	114.4
66.61	135.8	129.3	120.8
66.90	135.9	125.4	118.7

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

67.23 133.7 125.4 120.2
 67.40 136.0 133.4 121.5
 67.57 138.6 127.6 120.1
 67.73 137.5 130.7 126.4
 67.90 142.2 136.6 130.6
 68.06 145.1 135.1 125.6
 68.23 140.1 137.3 126.4
 68.40 136.0 131.6 124.5
 68.56 130.6 135.7 126.6
 68.73 141.5 134.3 136.4
 68.90 145.2 141.7 129.4
 69.06 138.2 135.1 129.7
 69.23 146.3 146.1 131.1
 69.40 144.4 150.4 132.8
 69.56 141.3 137.7 130.4
 69.73 141.1 135.6 136.2
 69.90 140.3 136.4 136.9
 70.06 130.2 131.4 133.3

--- PROGRAM NEW PE ILLUMINATED NORMALLY ---

FIGURE 6: EXPECTED NEWPE OUTPUT (continued)

IV.7 Site Dependent Software

NEWPE contains FORTRAN code which may be site dependent. This code is in the form of a call to system subroutine DATE which is not included in the PL provided in this package. This call involves the FORTRAN interface with the Operating System at DTNSRDC and is made to retrieve the current month, day, and year. It is possible that this subroutine may have a different name and/or argument list at the bench mark site. Table VI lists the exact location in NEWPE at which DATE is called.

If the call to DATE is inappropriate at the bench mark site, the following course of action is recommended to modify the execution deck:

1. Determine the appropriate subroutine call and argument list to retrieve the current date.
2. Prepare the necessary update cards to delete the existing call statement and replace it with the proper call. Certify that names given to variables in the update are consistent with existing names. To assist the user in this, Section IV.7.1 reproduces the call statement exactly as it appears in the FORTRAN compilation listing, and describes the call list. Additionally, Appendix F contains the complete compilation listing of the subroutine that calls DATE, and Appendix C contains user level documentation for DATE.
3. Insert update cards in the NEWPE execution deck. For every PL on the program tape accessed by UPDATE there is a "7/8/9" card in the execution deck to satisfy the UPDATE command. Each of these "7/8/9" cards is annotated with the name of a PL. Insert the update cards immediately following the "7/8/9" card with the annotation "NEWPE updates follow this card."

TABLE VI: LOCATION OF POSSIBLE SITE DEPENDENT
SOFTWARE IN NEWPE

Possible Site Dependent Subroutine	PL or Program Name	Program Element	Line No.	Line ID
DATE	NEWPE	SUBROUTINE PETL	235	AESD.42

IV.7.1 DATE references

FORTTRAN Statement:

Line ID:

CALL DATE (WHEN)

AESD 42

Argument List:

WHEN — Integer in which the date is returned in the format
10H~~mm~~mm/dd/yy~~b~~ (b represents a blank character).

V. SYNACC

V.1 General Information

SYNACC is a batch mode program consisting of a single executable module referenced as SYNACC in the execution deck. SYNACC contains calls to CalComp subroutines PLOTS, PLOT, AXIS, NUMBER, and SYMBOL; however, in the bench mark run the "plot flag" is off and these calls are not executed. (They may be listed as unsatisfied external references when the program is loaded.) SYNACC is coded entirely in FORTRAN IV.

V.2 Location of Program

Program SYNACC is provided as a FORTRAN punched card deck within the execution deck. The program tape is not needed for SYNACC.

V.3 Job Stream

The job stream included in the SYNACC execution deck and listed in Section V.5 with comments performs the following basic functions: mounts data tape CK0456, copies seven data files from tape to mass storage and catalogs each file, compiles SYNACC from cards, then loads and executes it, and finally purges the seven data files. Job stream commands shown are those used on the DTNSRDC CDC 6600/6700 system. Note that the library file NSRDC is attached and included in the load. This file contains subroutines UNLOAD and ZPFUNC (see Section V.7) which are referenced within SYNACC. This file reference will certainly need to be changed at the bench mark site.

V.4 Input

SYNACC requires input from cataloged data files. The specific files and number of files varies from run to run depending on the card input which is also required. For each execution, SYNACC determines which data files are needed, then attaches and reads them one at a time from within the FORTRAN code. The necessary data files must be cataloged with the expected names. The SYNACC data tape, CK0456, and the backup tape, CK0152, contain seven data files which satisfy the program for the bench mark execution. All necessary data cards are contained in the SYNACC execution deck and are listed in Section V.5.

V.5 Execution Deck

A listing of the SYNACC execution deck is presented in Figure 7 followed by comments. The entire SYNACC program which is included in the execution deck has been omitted from the listing. Numbers opposite card images in the figure coincide with the appropriate comment number. Job stream commands and data are identical to those which produced the output in Section V.6 on the CDC 6600/6700 system at DTNSRDC.

Comment
Number:

Card
Image

```
1 - VSN,SYNDAT=CK0456.  
2 - REQUEST,SYNDAT,MY,NORING.      /CK0456/NORING/  
3 - REQUEST,GRID,*PF.  
4 - COPYCF,SYNDAT,GRID.  
5 - CATALOG,GRID,FINALGRID1111,ID=PVRV.  
6 - RETURN,GRID.  
3 - REQUEST,GRID,*PF.  
7 - COPYCF,SYNDAT,GRID.  
5 - CATALOG,GRID,FINALGRID1112,ID=PVRV.  
6 - RETURN,GRID.  
3 - REQUEST,GRID,*PF.  
8 - COPYCF,SYNDAT,GRID.  
5 - CATALOG,GRID,FINALGRID1121,ID=PVRV.  
6 - RETURN,GRID.  
3 - REQUEST,GRID,*PF.  
9 - COPYCF,SYNDAT,GRID.  
5 - CATALOG,GRID,FINALGRID1122,ID=PVRV.  
6 - RETURN,GRID.  
3 - REQUEST,GRID,*PF.  
10 - COPYCF,SYNDAT,GRID.  
5 - CATALOG,GRID,FINALGRID1131,ID=PVRV.  
6 - RETURN,GRID.  
3 - REQUEST,GRID,*PF.  
11 - COPYCF,SYNDAT,GRID.  
5 - CATALOG,GRID,FINALGRID1132,ID=PVRV.  
6 - RETURN,GRID.  
3 - REQUEST,GRID,*PF.  
12 - COPYCF,SYNDAT,GRID.  
5 - CATALOG,GRID,FINALGRID1141,ID=PVRV.  
6 - RETURN,GRID.  
13 - UNLOAD,SYNDAT.  
14 - FTN,L=0,OPT=2,B=SYNACC.  
15 - ATTACH,NSRDC.  
16 - LIBRARY,NSRDC.  
17 - LDSET,PRESETA=NGINF.  
18 - SYNACC.  
19 - EXIT,U.  
20 - UNLOAD,TAPE1.  
21 - ATTACH,TEMP,FINALGRID1111,ID=PVRV.  
22 - PURGE,TEMP.  
22 - RETURN,TEMP.  
21 - ATTACH,TEMP,FINALGRID1112,ID=PVRV.  
22 - PURGE,TEMP.  
22 - RETURN,TEMP.  
21 - ATTACH,TEMP,FINALGRID1121,ID=PVRV.  
22 - PURGE,TEMP.  
22 - RETURN,TEMP.  
21 - ATTACH,TEMP,FINALGRID1122,ID=PVRV.  
22 - PURGE,TEMP.  
22 - RETURN,TEMP.  
21 - ATTACH,TEMP,FINALGRID1131,ID=PVRV.  
22 - PURGE,TEMP.  
22 - RETURN,TEMP.  
21 - ATTACH,TEMP,FINALGRID1132,ID=PVRV.  
22 - PURGE,TEMP.  
22 - RETURN,TEMP.  
21 - ATTACH,TEMP,FINALGRID1141,ID=PVRV.  
22 - PURGE,TEMP.  
22 - RETURN,TEMP.  
*23 - 7/8/9 END OF RECORD CARD
```

FIGURE 7: SYNACC EXECUTION DECK

Comment Number:	Card Image
24 -	PROGRAM ACCESS (INPUT, OUTPUT, TAPE5=INPUT, TAPE6=OUTPUT, TAPE1, ACCESS 2
25 -	} SYNACC FORTRAN PUNCHED CARD DECK
25 -	
25 -	
25 -	
26 -	END SYNPL279
* 27 -	7/8/9 END OF RECORD CARD
28 -	2 BEARINGS T
28 -	NORDA BENCH MARK TRACK 1 30 N 50 W 80. 1500.
28 -	NORDA BENCH MARK TRACK 2 32 N 23 W 275. 1000.
28 -	99999999
28 -	50. 250. METERS 24. NO PLOT
** 29 -	6/7/8/9 END OF JOB CARD

* This image represents a card with a 7/8/9 multi-punch in Col. 1.

** This image represents a card with a 6/7/8/9 multi-punch in Col. 1.

FIGURE 7: SYNACC EXECUTION DECK (continued)

The following comments refer to card images in the SYNACC execution deck listed in Figure 7.

Comment Number:	Comment:
1	Specify data and program tapes to be used.
2	Mount unlabeled data tape with local file name SYNDAT. Density = 800 BPI (HY). No write ring.
3	Request permanent file space for purpose of cataloging.
4	Copy 1st coded file from tape to permanent file space.
5	Catalog the file with name and ID shown.
6	Release the cataloged file. SYNACC attaches files internally when they are needed.
7	Copy 2nd coded file from tape to permanent file space.
8	Copy 3rd coded file from tape to permanent file space.
9	Copy 4th coded file from tape to permanent file space.
10	Copy 5th coded file from tape to permanent file space.

Comment Number:	Comment:
11	Copy 6th coded file from tape to permanent file space.
12	Copy 7th coded file from tape to permanent file space.
13	Data tape no longer needed.
14	Create the binary file SYNACC from cards.
15	This is a DTNSRDC binary library containing subroutines UNLOAD and ZPFUNC (see Section V.7).
16	Include NSRDC when loading.
17	Preset values in core to negative infinity with the address of the word set in the low order bits.
18	Load and execute SYNACC. All system routines needed to complete the executable module (except UNLOAD and ZPFUNC) are in system libraries that are automatically included by the loader.
19	Control reaches this card unconditionally.
20	Release the cataloged data file last attached in the SYNACC execution.
21	Attach the file name shown for the purpose of purging.
22	Purge the file just attached.
23	Program SYNACC follows this card.
24	First card of program SYNACC.
25	SYNACC FORTRAN program cards. (Actual card images are not listed).
26	Last card of program SYNACC.
27	Data for SYNACC follow this card.
28	SYNACC data cards.
29	End of deck.

V.6 Output

The expected output from running the SYNACC execution deck is listed in Figure 8.

NONDA ENVIRONMENTAL INFORMATION SYSTEM
A SYNTHETIC BATHYMETRIC PROFILE ALONG A GREAT CIRCLE PATH
FOR REQUEST "NUNDA BENCH MARK TRACK 1"

RANGE AND 5-DEGREE SQUARE TABLE

LATITUDE	LONGITUDE	BEARING	RANGE (N.M.) MSQLOC	
30. 0. N	50. 0. W	80.000	0.	1141
30. 0. N	49.59. W	80.009	1.	1132
30.40. N	45. 1. W	82.517	261.	1132
30.40. N	45. 0. W	82.527	262.	1131
31. 8. N	40. 1. W	85.046	520.	1131
31. 8. N	40. 0. W	85.046	521.	1122
31.24. N	35. 1. W	87.683	777.	1122
31.24. N	35. 0. W	87.693	778.	1121
31.28. N	30. 1. W	90.292	1033.	1121
31.28. N	30. 0. W	90.302	1034.	1112
31.21. N	25. 1. W	92.894	1289.	1112
31.21. N	25. 0. W	92.904	1290.	1111
31. 7. N	20.55. W	95.027	1500.	1111

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH:TAP1.FINALGRID1141.ID=PVV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MS05=1141 ICOL=63 IKOW= 74
THERE ARE 1 POINTS DEFINING A 0.0 NAUTICAL MILE TRACK TRAVERSING MSQLOC=1141. THIS PROFILE NOW HAS 1 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH:TAP1.FINALGRID1132.ID=PVV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MS05=1132 ICOL=63 IKOW= 74
THERE ARE 261 POINTS DEFINING A 260.0 NAUTICAL MILE TRACK TRAVERSING MSQLOC=1132. THIS PROFILE NOW HAS 262 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH:TAP1.FINALGRID1131.ID=PVV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MS05=1131 ICOL=63 IKOW= 74
THERE ARE 259 POINTS DEFINING A 258.0 NAUTICAL MILE TRACK TRAVERSING MSQLOC=1131. THIS PROFILE NOW HAS 521 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH:TAP1.FINALGRID1122.ID=PVV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MS05=1122 ICOL=63 IKOW= 74
THERE ARE 257 POINTS DEFINING A 256.0 NAUTICAL MILE TRACK TRAVERSING MSQLOC=1122. THIS PROFILE NOW HAS 778 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH:TAP1.FINALGRID1121.ID=PVV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MS05=1121 ICOL=63 IKOW= 74
THERE ARE 256 POINTS DEFINING A 255.0 NAUTICAL MILE TRACK TRAVERSING MSQLOC=1121. THIS PROFILE NOW HAS 1034 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH:TAP1.FINALGRID1112.ID=PVV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MS05=1112 ICOL=63 IKOW= 74
THERE ARE 256 POINTS DEFINING A 255.0 NAUTICAL MILE TRACK TRAVERSING MSQLOC=1112. THIS PROFILE NOW HAS 1290 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-

FIGURE 8: EXPECTED SYNACC OUTPUT

THE ATTACHED SYNOPSIS FILE HAS HEADER DATA- MSUS=1111 JCOL=6J INOW= 74
THERE ARE 211 POINTS DEFINING A 210.0 NAUTICAL MILE TRACK TRAVERSING MSULUC=1111. THIS PROFILE NOW HAS 1501 POINTS.
THIS COMPLETES PROFILE NUMBER 1 (REQUEST "NOMIA HENCH MAP TRACK 1")

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

NONDA ENVIRONMENTAL INFORMATION SYSTEM
A SYNTHETIC BATHYMETRIC PROFILE ALONG A GREAT CIRCLE PATH
FOR REQUEST "NORDA BENCH MARK TRACK 2"

RANGE AND 5-DEGREE SQUARE TABLE

LATITUDE	LONGITUDE	BEARING	RANGE (N.M.)	MSULOC
32. 0. N	23. 0. W	275.000	U.	1111
32. 8. N	25. 0. W	273.938	102.	1111
32. 8. N	25. 1. W	273.928	103.	1112
32.14. N	30. 0. W	271.271	356.	1112
32.20. N	30. 1. W	271.260	357.	1121
32.14. N	34.59. W	268.601	609.	1121
32.19. N	35. 1. W	268.591	610.	1122
32. 7. N	39.59. W	265.935	863.	1122
32. 7. N	40. 0. W	265.924	864.	1131
31.56. N	42.40. W	264.512	1000.	1131

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH,TAPE1,FINALGRID1111,10=PVRV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MSQS=1111 ICOL=63 IMOW= 74
THERE ARE 103 POINTS DEFINING A 102.0 NAUTICAL MILE TRACK TRAVERSING MSULOC=1111. THIS PROFILE NOW HAS 103 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH,TAPE1,FINALGRID1112,10=PVRV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MSQS=1112 ICOL=63 IMOW= 74
THERE ARE 254 POINTS DEFINING A 253.0 NAUTICAL MILE TRACK TRAVERSING MSULOC=1112. THIS PROFILE NOW HAS 357 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH,TAPE1,FINALGRID1121,10=PVRV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MSQS=1121 ICOL=63 IMOW= 74
THERE ARE 253 POINTS DEFINING A 252.0 NAUTICAL MILE TRACK TRAVERSING MSULOC=1121. THIS PROFILE NOW HAS 610 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH,TAPE1,FINALGRID1122,10=PVRV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MSQS=1122 ICOL=63 IMOW= 74
THERE ARE 254 POINTS DEFINING A 253.0 NAUTICAL MILE TRACK TRAVERSING MSULOC=1122. THIS PROFILE NOW HAS 864 POINTS.

THE FOLLOWING ATTACH HAS BEEN PERFORMED-
ATTACH,TAPE1,FINALGRID1131,10=PVRV,CY=3.
THE ATTACHED SYNAPS FILE HAS HEADER DATA- MSQS=1131 ICOL=63 IMOW= 74
THERE ARE 137 POINTS DEFINING A 136.0 NAUTICAL MILE TRACK TRAVERSING MSULOC=1131. THIS PROFILE NOW HAS 1001 POINTS.

"1

THIS COMPLETES PROFILE NUMBER 2 THEQUEST "NORDA BENCH MARK TRACK 2"

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

PROFILE NUMBER	1: BATHYMETRY IS IN METERS FOR "MONDIA HENCH MARK TRACK 1"	2: OUT TO 1500 NAUTICAL MILES.	3:	4:
1.	5285.	5287.	5281.	5271.
2.	5286.	5288.	5282.	5272.
3.	5287.	5289.	5283.	5273.
4.	5288.	5290.	5284.	5274.
5.	5289.	5291.	5285.	5275.
6.	5290.	5292.	5286.	5276.
7.	5291.	5293.	5287.	5277.
8.	5292.	5294.	5288.	5278.
9.	5293.	5295.	5289.	5279.
10.	5294.	5296.	5290.	5280.
11.	5295.	5297.	5291.	5281.
12.	5296.	5298.	5292.	5282.
13.	5297.	5299.	5293.	5283.
14.	5298.	5300.	5294.	5284.
15.	5299.	5301.	5295.	5285.
16.	5300.	5302.	5296.	5286.
17.	5301.	5303.	5297.	5287.
18.	5302.	5304.	5298.	5288.
19.	5303.	5305.	5299.	5289.
20.	5304.	5306.	5300.	5290.
21.	5305.	5307.	5301.	5291.
22.	5306.	5308.	5302.	5292.
23.	5307.	5309.	5303.	5293.
24.	5308.	5310.	5304.	5294.
25.	5309.	5311.	5305.	5295.
26.	5310.	5312.	5306.	5296.
27.	5311.	5313.	5307.	5297.
28.	5312.	5314.	5308.	5298.
29.	5313.	5315.	5309.	5299.
30.	5314.	5316.	5310.	5300.
31.	5315.	5317.	5311.	5301.
32.	5316.	5318.	5312.	5302.
33.	5317.	5319.	5313.	5303.
34.	5318.	5320.	5314.	5304.
35.	5319.	5321.	5315.	5305.
36.	5320.	5322.	5316.	5306.
37.	5321.	5323.	5317.	5307.
38.	5322.	5324.	5318.	5308.
39.	5323.	5325.	5319.	5309.
40.	5324.	5326.	5320.	5310.
41.	5325.	5327.	5321.	5311.
42.	5326.	5328.	5322.	5312.
43.	5327.	5329.	5323.	5313.
44.	5328.	5330.	5324.	5314.
45.	5329.	5331.	5325.	5315.
46.	5330.	5332.	5326.	5316.
47.	5331.	5333.	5327.	5317.
48.	5332.	5334.	5328.	5318.
49.	5333.	5335.	5329.	5319.
50.	5334.	5336.	5330.	5320.
51.	5335.	5337.	5331.	5321.
52.	5336.	5338.	5332.	5322.
53.	5337.	5339.	5333.	5323.
54.	5338.	5340.	5334.	5324.
55.	5339.	5341.	5335.	5325.
56.	5340.	5342.	5336.	5326.
57.	5341.	5343.	5337.	5327.
58.	5342.	5344.	5338.	5328.
59.	5343.	5345.	5339.	5329.
60.	5344.	5346.	5340.	5330.
61.	5345.	5347.	5341.	5331.
62.	5346.	5348.	5342.	5332.
63.	5347.	5349.	5343.	5333.
64.	5348.	5350.	5344.	5334.
65.	5349.	5351.	5345.	5335.
66.	5350.	5352.	5346.	5336.
67.	5351.	5353.	5347.	5337.
68.	5352.	5354.	5348.	5338.
69.	5353.	5355.	5349.	5339.
70.	5354.	5356.	5350.	5340.
71.	5355.	5357.	5351.	5341.
72.	5356.	5358.	5352.	5342.
73.	5357.	5359.	5353.	5343.
74.	5358.	5360.	5354.	5344.
75.	5359.	5361.	5355.	5345.
76.	5360.	5362.	5356.	5346.
77.	5361.	5363.	5357.	5347.
78.	5362.	5364.	5358.	5348.
79.	5363.	5365.	5359.	5349.
80.	5364.	5366.	5360.	5350.
81.	5365.	5367.	5361.	5351.
82.	5366.	5368.	5362.	5352.
83.	5367.	5369.	5363.	5353.
84.	5368.	5370.	5364.	5354.
85.	5369.	5371.	5365.	5355.
86.	5370.	5372.	5366.	5356.
87.	5371.	5373.	5367.	5357.
88.	5372.	5374.	5368.	5358.
89.	5373.	5375.	5369.	5359.
90.	5374.	5376.	5370.	5360.
91.	5375.	5377.	5371.	5361.
92.	5376.	5378.	5372.	5362.
93.	5377.	5379.	5373.	5363.
94.	5378.	5380.	5374.	5364.
95.	5379.	5381.	5375.	5365.
96.	5380.	5382.	5376.	5366.
97.	5381.	5383.	5377.	5367.
98.	5382.	5384.	5378.	5368.
99.	5383.	5385.	5379.	5369.
100.	5384.	5386.	5380.	5370.
101.	5385.	5387.	5381.	5371.
102.	5386.	5388.	5382.	5372.
103.	5387.	5389.	5383.	5373.
104.	5388.	5390.	5384.	5374.
105.	5389.	5391.	5385.	5375.
106.	5390.	5392.	5386.	5376.
107.	5391.	5393.	5387.	5377.
108.	5392.	5394.	5388.	5378.
109.	5393.	5395.	5389.	5379.
110.	5394.	5396.	5390.	5380.
111.	5395.	5397.	5391.	5381.
112.	5396.	5398.	5392.	5382.
113.	5397.	5399.	5393.	5383.
114.	5398.	5400.	5394.	5384.
115.	5399.	5401.	5395.	5385.
116.	5400.	5402.	5396.	5386.
117.	5401.	5403.	5397.	5387.
118.	5402.	5404.	5398.	5388.
119.	5403.	5405.	5399.	5389.
120.	5404.	5406.	5400.	5390.
121.	5405.	5407.	5401.	5391.
122.	5406.	5408.	5402.	5392.
123.	5407.	5409.	5403.	5393.
124.	5408.	5410.	5404.	5394.
125.	5409.	5411.	5405.	5395.
126.	5410.	5412.	5406.	5396.
127.	5411.	5413.	5407.	5397.
128.	5412.	5414.	5408.	5398.
129.	5413.	5415.	5409.	5399.
130.	5414.	5416.	5410.	5400.
131.	5415.	5417.	5411.	5401.
132.	5416.	5418.	5412.	5402.
133.	5417.	5419.	5413.	5403.
134.	5418.	5420.	5414.	5404.
135.	5419.	5421.	5415.	5405.
136.	5420.	5422.	5416.	5406.
137.	5421.	5423.	5417.	5407.
138.	5422.	5424.	5418.	5408.
139.	5423.	5425.	5419.	5409.
140.	5424.	5426.	5420.	5410.
141.	5425.	5427.	5421.	5411.
142.	5426.	5428.	5422.	5412.
143.	5427.	5429.	5423.	5413.
144.	5428.	5430.	5424.	5414.
145.	5429.	5431.	5425.	5415.
146.	5430.	5432.	5426.	5416.
147.	5431.	5433.	5427.	5417.
148.	5432.	5434.	5428.	5418.
149.	5433.	5435.	5429.	5419.
150.	5434.	5436.	5430.	5420.
151.	5435.	5437.	5431.	5421.
152.	5436.	5438.	5432.	5422.
153.	5437.	5439.	5433.	5423.
154.	5438.	5440.	5434.	5424.
155.	5439.	5441.	5435.	5425.
156.	5440.	5442.	5436.	5426.
157.	5441.	5443.	5437.	5427.
158.	5442.	5444.	5438.	5428.
159.	5443.	5445.	5439.	5429.
160.	5444.	5446.	5440.	5430.
161.	5445.	5447.	5441.	5431.
162.	5446.	5448.	5442.	5432.
163.	5447.	5449.	5443.	5433.
164.	5448.	5450.	5444.	5434.
165.	5449.	5451.	5445.	5435.
166.	5450.	5452.	5446.	5436.
167.	5451.	5453.	5447.	5437.
168.	5452.	5454.	5448.	5438.
169.	5453.	5455.	5449.	5439.
170.	5454.	5456.	5450.	5440.
171.	5455.	5457.	5451.	5441.
172.	5456.	5458.	5452.	5442.
173.	5457.	5459.	5453.	5443.
174.	5458.	5460.	5454.	5444.
175.	5459.	5461.	5455.	5445.
176.	5460.	5462.	5456.	5446.
177.	5461.	5463.	5457.	5447.
178.	5462.	5464.	5458.	5448.
179.	5463.	5465.	5459.	5449.
180.	5464.	5466.	5460.	5450.
181.	5465.	5467.	5461.	5451.
182.	5466.	5468.	5462.	5452.
183.	5467.	5469.	5463.	5453.
184.	5468.	5470.	5464.	5454.
185.	5469.	5471.	5465.	5455.
186.	5470.	5472.	5466.	5456.
187.	5471.	5473.	5467.	5457.
188.	5472.	5474.	5468.	5458.
189.	5473.	5475.	5469.	5459.
190.	5474.	5476.	5470.	5460.
191.	5475.	5477.	5471.	5461.
192.	5476.	5478.	5472.	5462.
193.	5477.	5479.	5473.	5463.
194.	5478.	5480.	5474.	5464.
195.	5479.	5481.	5475.	5465.
196.	5480.	5482.	5476.	5466.
197.	5481.	5483.	5477.	5467.
198.	5482.	5484.	5478.	5468.
199.	5483.	5485.	5479.	5469.
200.	5484.	5486.	5480.	5470.
201.	5485.	5487.	5481.	5471.
202.	5486.	5488.	5482.	5472.
203.	5487.	5489.	5483.	5473.
204.	5488.	5490.	5484.	5474.
205.	5489.	5491.	5485.	5475.
206.	5490.	5492.	5486.	5476.
207.	5491.	5493.	5487.	5477.
208.	5492.	5494.	5488.	5478.
209.	5493.	5495.	5489.	5479.
210.	5494.	5496.	5490.	5480.
211.	5495.	5497.	5491.	5481.
212.	5496.	5498.	5492.	5482.
213.	5497.	5499.	5493.	5483.
214.	5498.	5500.	5494.	5484.
215.	5499.	5501.	5495.	5485.
216.	5500.	5502.	5496.	5486.
217.	5501.	5503.	5497.	5487.
218.	5502.	5504.	5498.	5488.
219.	5503.	5505.	5499.	5489.
220.	5504.	5506.	5500.	5490.
221.	5505.	5507.	5501.	5491.
222.	5506.	5508.	5502.	5492.
223.	5507.	5509.	5503.	5493.
224.	5508.	5510.	5504.	5494.
225.	5509.	5511.	5505.	5495.
226.	5510.	5512.	5506.	5496.
227.	5511.	5513.	5507.	5497.
228.	5512.	5514.	5508.	5498.
229.	5513.	5515.	5509.	5499.
230.	5514.	5516.	5510.	5500.
231.	5515.	5517.	5511.	5501.
232.	5516.	5518.	5512.	5502.
233.	5517.	5519.	5513.	5503.
234.	5518.	5520.	5514.	5504.
235.	5519.	5521.	5515.	5505.
236.	5520.	5522.	5516.	5506.
237.	5521.	5523.	5517.	5507.
238.	5522.	5524.	5518.	5508.
239.	5523.	5525.	5519.	5509.
240.	5524.	5526.	5520.	5510.
241.	5525.	5527.	5521.	5511.
242.	5526.	5528.	5522.	5512.
243.	5527.	5529.	5523.	5513.
244.	5528.	5530.	5524.	5514.
245.	5529.	5531.	5525.	5515.
246.	5530.	5532.	5526.	5516.
247.	5531.	5533.	5527.	5517.
248.	5532.	5534.	5528.	5

4240.	4264.	241.	4256.	246.	4261.	243.	4277.
4241.	4265.	242.	4257.	247.	4262.	244.	4278.
4242.	4266.	243.	4258.	248.	4263.	245.	4279.
4243.	4267.	244.	4259.	249.	4264.	246.	4280.
4244.	4268.	245.	4260.	250.	4265.	247.	4281.
4245.	4269.	246.	4261.	251.	4266.	248.	4282.
4246.	4270.	247.	4262.	252.	4267.	249.	4283.
4247.	4271.	248.	4263.	253.	4268.	250.	4284.
4248.	4272.	249.	4264.	254.	4269.	251.	4285.
4249.	4273.	250.	4265.	255.	4270.	252.	4286.
4250.	4274.	251.	4266.	256.	4271.	253.	4287.
4251.	4275.	252.	4267.	257.	4272.	254.	4288.
4252.	4276.	253.	4268.	258.	4273.	255.	4289.
4253.	4277.	254.	4269.	259.	4274.	256.	4290.
4254.	4278.	255.	4270.	260.	4275.	257.	4291.
4255.	4279.	256.	4271.	261.	4276.	258.	4292.
4256.	4280.	257.	4272.	262.	4277.	259.	4293.
4257.	4281.	258.	4273.	263.	4278.	260.	4294.
4258.	4282.	259.	4274.	264.	4279.	261.	4295.
4259.	4283.	260.	4275.	265.	4280.	262.	4296.
4260.	4284.	261.	4276.	266.	4281.	263.	4297.
4261.	4285.	262.	4277.	267.	4282.	264.	4298.
4262.	4286.	263.	4278.	268.	4283.	265.	4299.
4263.	4287.	264.	4279.	269.	4284.	266.	4300.
4264.	4288.	265.	4280.	270.	4285.	267.	4301.
4265.	4289.	266.	4281.	271.	4286.	268.	4302.
4266.	4290.	267.	4282.	272.	4287.	269.	4303.
4267.	4291.	268.	4283.	273.	4288.	270.	4304.
4268.	4292.	269.	4284.	274.	4289.	271.	4305.
4269.	4293.	270.	4285.	275.	4290.	272.	4306.
4270.	4294.	271.	4286.	276.	4291.	273.	4307.
4271.	4295.	272.	4287.	277.	4292.	274.	4308.
4272.	4296.	273.	4288.	278.	4293.	275.	4309.
4273.	4297.	274.	4289.	279.	4294.	276.	4310.
4274.	4298.	275.	4290.	280.	4295.	277.	4311.
4275.	4299.	276.	4291.	281.	4296.	278.	4312.
4276.	4300.	277.	4292.	282.	4297.	279.	4313.
4277.	4301.	278.	4293.	283.	4298.	280.	4314.
4278.	4302.	279.	4294.	284.	4299.	281.	4315.
4279.	4303.	280.	4295.	285.	4300.	282.	4316.
4280.	4304.	281.	4296.	286.	4301.	283.	4317.
4281.	4305.	282.	4297.	287.	4302.	284.	4318.
4282.	4306.	283.	4298.	288.	4303.	285.	4319.
4283.	4307.	284.	4299.	289.	4304.	286.	4320.
4284.	4308.	285.	4300.	290.	4305.	287.	4321.
4285.	4309.	286.	4301.	291.	4306.	288.	4322.
4286.	4310.	287.	4302.	292.	4307.	289.	4323.
4287.	4311.	288.	4303.	293.	4308.	290.	4324.
4288.	4312.	289.	4304.	294.	4309.	291.	4325.
4289.	4313.	290.	4305.	295.	4310.	292.	4326.
4290.	4314.	291.	4306.	296.	4311.	293.	4327.
4291.	4315.	292.	4307.	297.	4312.	294.	4328.
4292.	4316.	293.	4308.	298.	4313.	295.	4329.
4293.	4317.	294.	4309.	299.	4314.	296.	4330.
4294.	4318.	295.	4310.	300.	4315.	297.	4331.
4295.	4319.	296.	4311.	301.	4316.	298.	4332.
4296.	4320.	297.	4312.	302.	4317.	299.	4333.
4297.	4321.	298.	4313.	303.	4318.	300.	4334.
4298.	4322.	299.	4314.	304.	4319.	301.	4335.
4299.	4323.	300.	4315.	305.	4320.	302.	4336.
4300.	4324.	301.	4316.	306.	4321.	303.	4337.
4301.	4325.	302.	4317.	307.	4322.	304.	4338.
4302.	4326.	303.	4318.	308.	4323.	305.	4339.
4303.	4327.	304.	4319.	309.	4324.	306.	4340.
4304.	4328.	305.	4320.	310.	4325.	307.	4341.
4305.	4329.	306.	4321.	311.	4326.	308.	4342.
4306.	4330.	307.	4322.	312.	4327.	309.	4343.
4307.	4331.	308.	4323.	313.	4328.	310.	4344.
4308.	4332.	309.	4324.	314.	4329.	311.	4345.
4309.	4333.	310.	4325.	315.	4330.	312.	4346.
4310.	4334.	311.	4326.	316.	4331.	313.	4347.
4311.	4335.	312.	4327.	317.	4332.	314.	4348.
4312.	4336.	313.	4328.	318.	4333.	315.	4349.
4313.	4337.	314.	4329.	319.	4334.	316.	4350.
4314.	4338.	315.	4330.	320.	4335.	317.	4351.
4315.	4339.	316.	4331.	321.	4336.	318.	4352.
4316.	4340.	317.	4332.	322.	4337.	319.	4353.
4317.	4341.	318.	4333.	323.	4338.	320.	4354.
4318.	4342.	319.	4334.	324.	4339.	321.	4355.
4319.	4343.	320.	4335.	325.	4340.	322.	4356.
4320.	4344.	321.	4336.	326.	4341.	323.	4357.
4321.	4345.	322.	4337.	327.	4342.	324.	4358.
4322.	4346.	323.	4338.	328.	4343.	325.	4359.
4323.	4347.	324.	4339.	329.	4344.	326.	4360.
4324.	4348.	325.	4340.	330.	4345.	327.	4361.
4325.	4349.	326.	4341.	331.	4346.	328.	4362.
4326.	4350.	327.	4342.	332.	4347.	329.	4363.
4327.	4351.	328.	4343.	333.	4348.	330.	4364.
4328.	4352.	329.	4344.	334.	4349.	331.	4365.
4329.	4353.	330.	4345.	335.	4350.	332.	4366.
4330.	4354.	331.	4346.	336.	4351.	333.	4367.
4331.	4355.	332.	4347.	337.	4352.	334.	4368.
4332.	4356.	333.	4348.	338.	4353.	335.	4369.
4333.	4357.	334.	4349.	339.	4354.	336.	4370.
4334.	4358.	335.	4350.	340.	4355.	337.	4371.
4335.	4359.	336.	4351.	341.	4356.	338.	4372.
4336.	4360.	337.	4352.	342.	4357.	339.	4373.
4337.	4361.	338.	4353.	343.	4358.	340.	4374.
4338.	4362.	339.	4354.	344.	4359.	341.	4375.
4339.	4363.	340.	4355.	345.	4360.	342.	4376.
4340.	4364.	341.	4356.	346.	4361.	343.	4377.
4341.	4365.	342.	4357.	347.	4362.	344.	4378.
4342.	4366.	343.	4358.	348.	4363.	345.	4379.
4343.	4367.	344.	4359.	349.	4364.	346.	4380.
4344.	4368.	345.	4360.	350.	4365.	347.	4381.
4345.	4369.	346.	4361.	351.	4366.	348.	4382.
4346.	4370.	347.	4362.	352.	4367.	349.	4383.
4347.	4371.	348.	4363.	353.	4368.	350.	4384.
4348.	4372.	349.	4364.	354.	4369.	351.	4385.
4349.	4373.	350.	4365.	355.	4370.	352.	4386.
4350.	4374.	351.	4366.	356.	4371.	353.	4387.
4351.	4375.	352.	4367.	357.	4372.	354.	4388.
4352.	4376.	353.	4368.	358.	4373.	355.	4389.
4353.	4377.	354.	4369.	359.	4374.	356.	4390.
4354.	4378.	355.	4370.	360.	4375.	357.	4391.
4355.	4379.	356.	4371.	361.	4376.	358.	4392.
4356.	4380.	357.	4372.	362.	4377.	359.	4393.
4357.	4381.	358.	4373.	363.	4378.	360.	4394.
4358.	4382.	359.	4374.	364.	4379.	361.	4395.
4359.	4383.	360.	4375.	365.	4380.	362.	4396.
4360.	4384.	361.	4376.	366.	4381.	363.	4397.
4361.	4385.	362.	4377.	367.	4382.	364.	4398.
4362.	4386.	363.	4378.	368.	4383.	365.	4399.
4363.	4387.	364.	4379.	369.	4384.	366.	4400.
4364.	4388.	365.	4380.	370.	4385.	367.	4401.
4365.	4389.	366.	4381.	371.	4386.	368.	4402.
4366.	4390.	367.	4382.	372.	4387.	369.	4403.
4367.	4391.	368.	4383.	373.	4388.	370.	4404.
4368.	4392.	369.	4384.	374.	4389.	371.	4405.
4369.	4393.	370.	4385.	375.	4390.	372.	4406.
4370.	4394.	371.	4386.	376.	4391.	373.	4407.
4371.	4395.	372.	4387.	377.	4392.	374.	4408.
4372.	4396.	373.	4388.	378.	4393.	375.	4409.
4373.	4397.	374.	4389.	379.	4394.	376.	4410.
4374.	4398.	375.	4390.	380.	4395.	377.	4411.
4375.	4399.	376.	4391.	381.	4396.	378.	4412.
4376.	4400.	377.	4392.	382.	4397.	379.	4413.
4377.	4401.	378.	4393.	383.	4398.	380.	4414.
4378.	4402.	379.	4394.	384.	4399.	381.	4415.
4379.	4403.	380.	4395.	385.	4400.	382.	4416.
4380.	4404.	381.	4396.	386.	4401.	383.	4417.
4381.	4405.	382.	4397.	387.	4402.	384.	4418.
4382.	4406.	383.	4398.	388.	4403.	385.	4419.
4383.	4407.	384.	4399.	389.	4404.	386.	4420.
4384.	4408.	385.	4400.	390.	4405.	387.	4421.
4385.	4409.	386.	4401.	391.	4406.	388.	4422.
4386.	4410.	387.	4402.	392.	4407.	389.	4423.
4387.	4411.	388.	4403.	393.	4408.	390.	4424.
4388.	4412.	389.	4404.	394.	4409.	391.	4425.
4389.	4413.	390.	4405.	395.	4410.	392.	4426.
4390.	4414.	391.	4406.	396.	4411.	393.	4427.
4391.	4415.	392.	4407.	397.	4412.	394.	4428.
4392.	4416.	393.	4408.	398.	4413.	395.	4429.
4393.	4417.	394.	4409.	399.	4414.	396.	4430.
4394.	4418.	395.	4410.	400.	4415.	397.	4431.
4395.	4419.	396.	4411.	401.	4416.	398.	4432.
4396.	4420.	397.	4412.	402.	4417.	399.	4433.
4397.	4421.	398.	4413.	403.	4418.	400.	4434.
4398.	4422.	399.	4414.	404.	4419.	401.	4435.
4399.	4423.	400.	4415.	405.	4420.	402.	4436.
4400.	4424.	401.	4416.	406.	4421.	403.	4437.
4401.	4425.	402.	4417.	407.	4422.	404.	4438.
4402.	4426.	403.	4418.	408.	4423.	405.	4439.
4403.	4427.	404.	4419.	409.	4424.	406.	4440.
4404.	4428.	405.	4420.	410.	4425.	407.	4441.
4405.	4429.	406.	4421.	411.	4426.	408.	4442.
4406.	4430.	407.	4422.	412.	4427.	409.	4443.

504.	3356.	505.	3420.	506.	3468.	507.	3497.
508.	3504.	509.	3489.	510.	3463.	511.	3441.
512.	3436.	513.	3460.	514.	3507.	515.	3559.
516.	3494.	517.	3612.	518.	3592.	519.	3545.
520.	3480.	521.	3408.	522.	3330.	523.	3768.
524.	3212.	525.	3189.	526.	3201.	527.	3238.
528.	3285.	529.	3327.	530.	3351.	531.	3356.
532.	3345.	533.	3332.	534.	3324.	535.	3325.
536.	3333.	537.	3344.	538.	3356.	539.	3364.
540.	3350.	541.	3324.	542.	3263.	543.	335.
544.	3022.	545.	2496.	546.	2807.	547.	2786.
548.	2835.	549.	2418.	550.	3001.	551.	3045.
552.	3031.	553.	2481.	554.	2420.	555.	2877.
556.	2875.	557.	2406.	558.	2955.	559.	3004.
560.	3017.	561.	3049.	562.	3040.	563.	3012.
564.	2967.	565.	2410.	566.	2858.	567.	2825.
568.	2828.	569.	2875.	570.	2947.	571.	3020.
572.	3069.	573.	3072.	574.	3034.	575.	2974.
576.	2911.	577.	2462.	578.	2836.	579.	2828.
580.	2834.	581.	2848.	582.	2865.	583.	2876.
584.	2875.	585.	2451.	586.	2802.	587.	2755.
588.	2744.	589.	2805.	590.	2470.	591.	3220.
592.	3498.	593.	3744.	594.	3901.	595.	3948.
596.	3921.	597.	3861.	598.	3809.	599.	3795.
600.	3814.	601.	3852.	602.	3894.	603.	3928.
604.	3950.	605.	3460.	606.	3960.	607.	3950.
608.	3931.	609.	3402.	610.	3863.	611.	3816.
612.	3764.	613.	3718.	614.	3691.	615.	3694.
616.	3735.	617.	3800.	618.	3867.	619.	3914.
620.	3921.	621.	3891.	622.	3842.	623.	3794.
624.	3763.	625.	3754.	626.	3769.	627.	3786.
628.	3798.	629.	3799.	630.	3792.	631.	3783.
632.	3777.	633.	3779.	634.	3789.	635.	3799.
636.	3808.	637.	3809.	638.	3803.	639.	3794.
640.	3789.	641.	3790.	642.	3801.	643.	3816.
644.	3828.	645.	3832.	646.	3824.	647.	3807.
648.	3790.	649.	3780.	650.	3783.	651.	3800.
652.	3825.	653.	3853.	654.	3879.	655.	3900.
656.	3415.	657.	3924.	658.	3925.	659.	3919.
660.	3911.	661.	3924.	662.	3909.	663.	3923.
664.	3942.	665.	3955.	666.	3953.	667.	3925.
668.	3873.	669.	3809.	670.	3747.	671.	3700.
672.	3876.	673.	3668.	674.	3672.	675.	3682.
676.	3692.	677.	3706.	678.	3725.	679.	3753.
680.	3792.	681.	3840.	682.	3890.	683.	3935.
684.	3967.	685.	3986.	686.	3997.	687.	4004.
688.	4014.	689.	4029.	690.	4044.	691.	4051.
692.	4045.	693.	4021.	694.	3991.	695.	3970.
696.	3975.	697.	4023.	698.	4099.	699.	4169.
700.	4145.	701.	4041.	702.	3997.	703.	3802.
704.	3601.	705.	3437.	706.	3344.	707.	3313.
708.	3324.	709.	3358.	710.	3397.	711.	3634.
712.	3472.	713.	3311.	714.	3552.	715.	3598.
716.	3646.	717.	3698.	718.	3752.	719.	3810.
720.	3849.	721.	3428.	722.	3988.	723.	4044.
724.	4085.	725.	4091.	726.	4046.	727.	3934.
728.	3777.	729.	3627.	730.	3521.	731.	3521.
732.	3636.	733.	3612.	734.	3993.	735.	4121.
736.	4155.	737.	4119.	738.	4050.	739.	3985.
740.	3957.	741.	3465.	742.	3991.	743.	4014.
744.	4017.	745.	3944.	746.	3957.	747.	3919.
748.	3892.	749.	3881.	750.	3889.	751.	3906.
752.	3429.	753.	3444.	754.	3978.	755.	4003.
756.	4016.	757.	4025.	758.	4029.	759.	4037.
760.	4036.	761.	4052.	762.	4075.	763.	4100.

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

768.	4112.	769.	4101.	770.	4095.	771.	4094.
772.	4096.	773.	4094.	774.	4096.	775.	4091.
776.	4084.	777.	4075.	778.	4068.	779.	4067.
780.	4066.	781.	4066.	782.	4065.	783.	4057.
784.	4062.	785.	4060.	786.	4059.	787.	4058.
788.	4054.	789.	4054.	790.	4054.	791.	4056.
792.	4053.	793.	4051.	794.	4052.	795.	4054.
796.	4048.	797.	4076.	798.	4077.	799.	4064.
800.	4033.	801.	3996.	802.	3971.	803.	3974.
804.	4022.	805.	4107.	806.	4202.	807.	4240.
808.	4116.	809.	4101.	810.	4252.	811.	4184.
812.	4132.	813.	4096.	814.	4041.	815.	4042.
816.	4095.	817.	4116.	818.	4143.	819.	4173.
820.	4204.	821.	4235.	822.	4258.	823.	4265.
824.	4247.	825.	4195.	826.	4111.	827.	4017.
828.	3976.	829.	3893.	830.	3903.	831.	3947.
832.	3999.	833.	4031.	834.	4014.	835.	3970.
836.	3907.	837.	3850.	838.	3823.	839.	3831.
840.	3863.	841.	3805.	842.	3848.	843.	3980.
844.	4003.	845.	4015.	846.	4017.	847.	4010.
848.	3993.	849.	3969.	850.	3938.	851.	3901.
852.	3862.	853.	3825.	854.	3798.	855.	3743.
856.	3782.	857.	3791.	858.	3805.	859.	3819.
860.	3872.	861.	3853.	862.	3893.	863.	3960.
864.	4044.	865.	4187.	866.	4308.	867.	4402.
868.	4447.	869.	4447.	870.	4403.	871.	4339.
872.	4267.	873.	4199.	874.	4144.	875.	4114.
876.	4118.	877.	4160.	878.	4216.	879.	4259.
880.	4262.	881.	4202.	882.	4097.	883.	3983.
884.	3892.	885.	3859.	886.	3887.	887.	3951.
888.	4028.	889.	4092.	890.	4131.	891.	4156.
892.	4178.	893.	4211.	894.	4261.	895.	4322.
896.	4380.	897.	4424.	898.	4443.	899.	4440.
900.	4424.	901.	4405.	902.	4393.	903.	4390.
904.	4394.	905.	4400.	906.	4405.	907.	4406.
908.	4398.	909.	4378.	910.	4342.	911.	4290.
912.	4234.	913.	4191.	914.	4176.	915.	4206.
916.	4271.	917.	4251.	918.	4422.	919.	4464.
920.	4471.	921.	4456.	922.	4436.	923.	4424.
924.	4431.	925.	4451.	926.	4476.	927.	4498.
928.	4510.	929.	4515.	930.	4521.	931.	4535.
932.	4562.	933.	4598.	934.	4633.	935.	4655.
936.	4652.	937.	4621.	938.	4570.	939.	4510.
940.	4450.	941.	4398.	942.	4353.	943.	4314.
944.	4282.	945.	4253.	946.	4232.	947.	4220.
948.	4222.	949.	4239.	950.	4210.	951.	4307.
952.	4340.	953.	4363.	954.	4373.	955.	4372.
956.	4368.	957.	4365.	958.	4367.	959.	4372.
960.	4376.	961.	4377.	962.	4371.	963.	4362.
964.	4358.	965.	4367.	966.	4396.	967.	4440.
968.	4478.	969.	4492.	970.	4461.	971.	4374.
972.	4271.	973.	4166.	974.	4090.	975.	4066.
976.	4084.	977.	4125.	978.	4170.	979.	4201.
980.	4216.	981.	4223.	982.	4271.	983.	4237.
984.	4253.	985.	4271.	986.	4285.	987.	4292.
988.	4287.	989.	4279.	990.	4273.	991.	4274.
992.	4294.	993.	4272.	994.	4336.	995.	4323.
996.	4268.	997.	4181.	998.	4046.	999.	4006.
1000.	3966.	1001.	3974.	1002.	4008.	1003.	4047.
1004.	4063.	1005.	4060.	1006.	4028.	1007.	3988.
1008.	3953.	1009.	3936.	1010.	3935.	1011.	3944.
1012.	3954.	1013.	3970.	1014.	3974.	1015.	3943.
1016.	3966.	1017.	3988.	1018.	3992.	1019.	4001.
1020.	4014.	1021.	4050.	1022.	4094.	1023.	4146.
1024.	4194.	1025.	4224.	1026.	4244.	1027.	4239.

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

1032.	4194.	1033.	4194.	1034.	4199.	1035.	4200.
1036.	4201.	1037.	4202.	1038.	4202.	1039.	4201.
1040.	4201.	1041.	4200.	1042.	4199.	1043.	4197.
1044.	4200.	1045.	4201.	1046.	4202.	1047.	4203.
1049.	4204.	1049.	4205.	1050.	4206.	1051.	4207.
1052.	4209.	1053.	4209.	1054.	4207.	1055.	4202.
1056.	4192.	1057.	4178.	1058.	4161.	1059.	4184.
1060.	4127.	1061.	4112.	1062.	4098.	1063.	4085.
1064.	4074.	1065.	4065.	1066.	4055.	1067.	4045.
1068.	4032.	1069.	4016.	1070.	3992.	1071.	3959.
1072.	3912.	1073.	3850.	1074.	3776.	1075.	3699.
1076.	3625.	1077.	3560.	1078.	3502.	1079.	3435.
1080.	3346.	1081.	3221.	1082.	3048.	1083.	2820.
1084.	2531.	1085.	2174.	1086.	1754.	1087.	1316.
1088.	916.	1089.	611.	1090.	451.	1091.	441.
1092.	569.	1093.	406.	1094.	1138.	1095.	1529.
1096.	1924.	1097.	2268.	1098.	2507.	1099.	2613.
1100.	2622.	1101.	2577.	1102.	2522.	1103.	2493.
1104.	2488.	1105.	2493.	1106.	2493.	1107.	2476.
1108.	2437.	1109.	2374.	1110.	2289.	1111.	2181.
1112.	2058.	1113.	1936.	1114.	1830.	1115.	1751.
1116.	1724.	1117.	1708.	1118.	1681.	1119.	1619.
1120.	1503.	1121.	1485.	1122.	1439.	1123.	1441.
1124.	1760.	1125.	2251.	1126.	2777.	1127.	3198.
1128.	3378.	1129.	3276.	1130.	3011.	1131.	2714.
1132.	2519.	1133.	2519.	1134.	2675.	1135.	2919.
1136.	3184.	1137.	3407.	1138.	3572.	1139.	3686.
1140.	3755.	1141.	3785.	1142.	3785.	1143.	3770.
1144.	3753.	1145.	3748.	1146.	3761.	1147.	3790.
1148.	3829.	1149.	3873.	1150.	3918.	1151.	3960.
1152.	3998.	1153.	4029.	1154.	4050.	1155.	4064.
1156.	4073.	1157.	4081.	1158.	4089.	1159.	4100.
1160.	4113.	1161.	4128.	1162.	4143.	1163.	4159.
1164.	4175.	1165.	4189.	1166.	4200.	1167.	4209.
1168.	4215.	1169.	4222.	1170.	4229.	1171.	4240.
1172.	4253.	1173.	4268.	1174.	4283.	1175.	4298.
1176.	4312.	1177.	4324.	1178.	4336.	1179.	4348.
1180.	4359.	1181.	4371.	1182.	4383.	1183.	4396.
1184.	4409.	1185.	4423.	1186.	4438.	1187.	4452.
1188.	4467.	1189.	4481.	1190.	4496.	1191.	4509.
1192.	4522.	1193.	4534.	1194.	4546.	1195.	4559.
1196.	4573.	1197.	4589.	1198.	4608.	1199.	4627.
1200.	4647.	1201.	4667.	1202.	4687.	1203.	4707.
1204.	4727.	1205.	4747.	1206.	4767.	1207.	4788.
1208.	4809.	1209.	4831.	1210.	4855.	1211.	4878.
1212.	4901.	1213.	4923.	1214.	4943.	1215.	4962.
1216.	4980.	1217.	4998.	1218.	5016.	1219.	5034.
1220.	5054.	1221.	5073.	1222.	5094.	1223.	5114.
1224.	5133.	1225.	5150.	1226.	5162.	1227.	5170.
1228.	5175.	1229.	5179.	1230.	5184.	1231.	5193.
1232.	5204.	1233.	5215.	1234.	5226.	1235.	5233.
1236.	5238.	1237.	5241.	1238.	5243.	1239.	5244.
1240.	5247.	1241.	5249.	1242.	5252.	1243.	5255.
1244.	5259.	1245.	5262.	1246.	5265.	1247.	5267.
1248.	5268.	1249.	5268.	1250.	5267.	1251.	5265.
1252.	5262.	1253.	5259.	1254.	5256.	1255.	5254.
1256.	5254.	1257.	5257.	1258.	5262.	1259.	5266.
1260.	5270.	1261.	5273.	1262.	5274.	1263.	5275.
1264.	5276.	1265.	5278.	1266.	5280.	1267.	5282.
1268.	5285.	1269.	5287.	1270.	5289.	1271.	5291.
1272.	5293.	1273.	5295.	1274.	5297.	1275.	5299.
1276.	5302.	1277.	5304.	1278.	5307.	1279.	5309.
1280.	5312.	1281.	5313.	1282.	5317.	1283.	5317.
1284.	5311.	1285.	5309.	1286.	5304.	1287.	5304.
1288.	5310.	1289.	5311.	1290.	5312.	1291.	5315.

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

1296.	5303.	1297.	5295.	1298.	5294.	1299.	5293.
1300.	5282.	1301.	5281.	1302.	5280.	1303.	5279.
1304.	5274.	1305.	5273.	1306.	5272.	1307.	5271.
1308.	5274.	1309.	5273.	1310.	5272.	1311.	5271.
1312.	5274.	1313.	5273.	1314.	5272.	1315.	5271.
1316.	5274.	1317.	5273.	1318.	5272.	1319.	5271.
1320.	5274.	1321.	5273.	1322.	5272.	1323.	5271.
1324.	5274.	1325.	5273.	1326.	5272.	1327.	5271.
1328.	5274.	1329.	5273.	1330.	5272.	1331.	5271.
1332.	5274.	1333.	5273.	1334.	5272.	1335.	5271.
1336.	5274.	1337.	5273.	1338.	5272.	1339.	5271.
1340.	5274.	1341.	5273.	1342.	5272.	1343.	5271.
1344.	5274.	1345.	5273.	1346.	5272.	1347.	5271.
1348.	5274.	1349.	5273.	1350.	5272.	1351.	5271.
1352.	5274.	1353.	5273.	1354.	5272.	1355.	5271.
1356.	5274.	1357.	5273.	1358.	5272.	1359.	5271.
1360.	5274.	1361.	5273.	1362.	5272.	1363.	5271.
1364.	5274.	1365.	5273.	1366.	5272.	1367.	5271.
1368.	5274.	1369.	5273.	1370.	5272.	1371.	5271.
1372.	5274.	1373.	5273.	1374.	5272.	1375.	5271.
1376.	5274.	1377.	5273.	1378.	5272.	1379.	5271.
1380.	5274.	1381.	5273.	1382.	5272.	1383.	5271.
1384.	5274.	1385.	5273.	1386.	5272.	1387.	5271.
1388.	5274.	1389.	5273.	1390.	5272.	1391.	5271.
1392.	5274.	1393.	5273.	1394.	5272.	1395.	5271.
1396.	5274.	1397.	5273.	1398.	5272.	1399.	5271.
1400.	5274.	1401.	5273.	1402.	5272.	1403.	5271.
1404.	5274.	1405.	5273.	1406.	5272.	1407.	5271.
1408.	5274.	1409.	5273.	1410.	5272.	1411.	5271.
1412.	5274.	1413.	5273.	1414.	5272.	1415.	5271.
1416.	5274.	1417.	5273.	1418.	5272.	1419.	5271.
1420.	5274.	1421.	5273.	1422.	5272.	1423.	5271.
1424.	5274.	1425.	5273.	1426.	5272.	1427.	5271.
1428.	5274.	1429.	5273.	1430.	5272.	1431.	5271.
1432.	5274.	1433.	5273.	1434.	5272.	1435.	5271.
1436.	5274.	1437.	5273.	1438.	5272.	1439.	5271.
1440.	5274.	1441.	5273.	1442.	5272.	1443.	5271.
1444.	5274.	1445.	5273.	1446.	5272.	1447.	5271.
1448.	5274.	1449.	5273.	1450.	5272.	1451.	5271.
1452.	5274.	1453.	5273.	1454.	5272.	1455.	5271.
1456.	5274.	1457.	5273.	1458.	5272.	1459.	5271.
1460.	5274.	1461.	5273.	1462.	5272.	1463.	5271.
1464.	5274.	1465.	5273.	1466.	5272.	1467.	5271.
1468.	5274.	1469.	5273.	1470.	5272.	1471.	5271.
1472.	5274.	1473.	5273.	1474.	5272.	1475.	5271.
1476.	5274.	1477.	5273.	1478.	5272.	1479.	5271.
1480.	5274.	1481.	5273.	1482.	5272.	1483.	5271.
1484.	5274.	1485.	5273.	1486.	5272.	1487.	5271.
1488.	5274.	1489.	5273.	1490.	5272.	1491.	5271.
1492.	5274.	1493.	5273.	1494.	5272.	1495.	5271.
1496.	5274.	1497.	5273.	1498.	5272.	1499.	5271.
1500.	5274.						

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

PROFILE NUMBER	21	DATA	IS IN METERS FOR "NUOVA MENCH MARK TRACK 2"	1001	POINTS OF PROFILE	POINTS (MANUAL DEPTH) OUT TO 1000 NAUTICAL MILES.
9.	5206.	1.	5206.	6.	5207.	5207.
10.	5207.	2.	5207.	7.	5208.	5208.
11.	5208.	3.	5208.	8.	5209.	5209.
12.	5209.	4.	5209.	9.	5210.	5210.
13.	5210.	5.	5210.	10.	5211.	5211.
14.	5211.	6.	5211.	11.	5212.	5212.
15.	5212.	7.	5212.	12.	5213.	5213.
16.	5213.	8.	5213.	13.	5214.	5214.
17.	5214.	9.	5214.	14.	5215.	5215.
18.	5215.	10.	5215.	15.	5216.	5216.
19.	5216.	11.	5216.	16.	5217.	5217.
20.	5217.	12.	5217.	17.	5218.	5218.
21.	5218.	13.	5218.	18.	5219.	5219.
22.	5219.	14.	5219.	19.	5220.	5220.
23.	5220.	15.	5220.	20.	5221.	5221.
24.	5221.	16.	5221.	21.	5222.	5222.
25.	5222.	17.	5222.	22.	5223.	5223.
26.	5223.	18.	5223.	23.	5224.	5224.
27.	5224.	19.	5224.	24.	5225.	5225.
28.	5225.	20.	5225.	25.	5226.	5226.
29.	5226.	21.	5226.	26.	5227.	5227.
30.	5227.	22.	5227.	27.	5228.	5228.
31.	5228.	23.	5228.	28.	5229.	5229.
32.	5229.	24.	5229.	29.	5230.	5230.
33.	5230.	25.	5230.	30.	5231.	5231.
34.	5231.	26.	5231.	31.	5232.	5232.
35.	5232.	27.	5232.	32.	5233.	5233.
36.	5233.	28.	5233.	33.	5234.	5234.
37.	5234.	29.	5234.	34.	5235.	5235.
38.	5235.	30.	5235.	35.	5236.	5236.
39.	5236.	31.	5236.	36.	5237.	5237.
40.	5237.	32.	5237.	37.	5238.	5238.
41.	5238.	33.	5238.	38.	5239.	5239.
42.	5239.	34.	5239.	39.	5240.	5240.
43.	5240.	35.	5240.	40.	5241.	5241.
44.	5241.	36.	5241.	41.	5242.	5242.
45.	5242.	37.	5242.	42.	5243.	5243.
46.	5243.	38.	5243.	43.	5244.	5244.
47.	5244.	39.	5244.	44.	5245.	5245.
48.	5245.	40.	5245.	45.	5246.	5246.
49.	5246.	41.	5246.	46.	5247.	5247.
50.	5247.	42.	5247.	47.	5248.	5248.
51.	5248.	43.	5248.	48.	5249.	5249.
52.	5249.	44.	5249.	49.	5250.	5250.
53.	5250.	45.	5250.	50.	5251.	5251.
54.	5251.	46.	5251.	51.	5252.	5252.
55.	5252.	47.	5252.	52.	5253.	5253.
56.	5253.	48.	5253.	53.	5254.	5254.
57.	5254.	49.	5254.	54.	5255.	5255.
58.	5255.	50.	5255.	55.	5256.	5256.
59.	5256.	51.	5256.	56.	5257.	5257.
60.	5257.	52.	5257.	57.	5258.	5258.
61.	5258.	53.	5258.	58.	5259.	5259.
62.	5259.	54.	5259.	59.	5260.	5260.
63.	5260.	55.	5260.	60.	5261.	5261.
64.	5261.	56.	5261.	61.	5262.	5262.
65.	5262.	57.	5262.	62.	5263.	5263.
66.	5263.	58.	5263.	63.	5264.	5264.
67.	5264.	59.	5264.	64.	5265.	5265.
68.	5265.	60.	5265.	65.	5266.	5266.
69.	5266.	61.	5266.	66.	5267.	5267.
70.	5267.	62.	5267.	67.	5268.	5268.
71.	5268.	63.	5268.	68.	5269.	5269.
72.	5269.	64.	5269.	69.	5270.	5270.
73.	5270.	65.	5270.	70.	5271.	5271.
74.	5271.	66.	5271.	71.	5272.	5272.
75.	5272.	67.	5272.	72.	5273.	5273.
76.	5273.	68.	5273.	73.	5274.	5274.
77.	5274.	69.	5274.	74.	5275.	5275.
78.	5275.	70.	5275.	75.	5276.	5276.
79.	5276.	71.	5276.	76.	5277.	5277.
80.	5277.	72.	5277.	77.	5278.	5278.
81.	5278.	73.	5278.	78.	5279.	5279.
82.	5279.	74.	5279.	79.	5280.	5280.
83.	5280.	75.	5280.	80.	5281.	5281.
84.	5281.	76.	5281.	81.	5282.	5282.
85.	5282.	77.	5282.	82.	5283.	5283.
86.	5283.	78.	5283.	83.	5284.	5284.
87.	5284.	79.	5284.	84.	5285.	5285.
88.	5285.	80.	5285.	85.	5286.	5286.
89.	5286.	81.	5286.	86.	5287.	5287.
90.	5287.	82.	5287.	87.	5288.	5288.
91.	5288.	83.	5288.	88.	5289.	5289.
92.	5289.	84.	5289.	89.	5290.	5290.
93.	5290.	85.	5290.	90.	5291.	5291.
94.	5291.	86.	5291.	91.	5292.	5292.
95.	5292.	87.	5292.	92.	5293.	5293.
96.	5293.	88.	5293.	93.	5294.	5294.
97.	5294.	89.	5294.	94.	5295.	5295.
98.	5295.	90.	5295.	95.	5296.	5296.
99.	5296.	91.	5296.	96.	5297.	5297.
100.	5297.	92.	5297.	97.	5298.	5298.
101.	5298.	93.	5298.	98.	5299.	5299.
102.	5299.	94.	5299.	99.	5300.	5300.
103.	5300.	95.	5300.	100.	5301.	5301.
104.	5301.	96.	5301.	101.	5302.	5302.
105.	5302.	97.	5302.	102.	5303.	5303.
106.	5303.	98.	5303.	103.	5304.	5304.
107.	5304.	99.	5304.	104.	5305.	5305.
108.	5305.	100.	5305.	105.	5306.	5306.
109.	5306.	101.	5306.	106.	5307.	5307.
110.	5307.	102.	5307.	107.	5308.	5308.
111.	5308.	103.	5308.	108.	5309.	5309.
112.	5309.	104.	5309.	109.	5310.	5310.
113.	5310.	105.	5310.	110.	5311.	5311.
114.	5311.	106.	5311.	111.	5312.	5312.
115.	5312.	107.	5312.	112.	5313.	5313.
116.	5313.	108.	5313.	113.	5314.	5314.
117.	5314.	109.	5314.	114.	5315.	5315.
118.	5315.	110.	5315.	115.	5316.	5316.
119.	5316.	111.	5316.	116.	5317.	5317.
120.	5317.	112.	5317.	117.	5318.	5318.
121.	5318.	113.	5318.	118.	5319.	5319.
122.	5319.	114.	5319.	119.	5320.	5320.
123.	5320.	115.	5320.	120.	5321.	5321.
124.	5321.	116.	5321.	121.	5322.	5322.
125.	5322.	117.	5322.	122.	5323.	5323.
126.	5323.	118.	5323.	123.	5324.	5324.
127.	5324.	119.	5324.	124.	5325.	5325.
128.	5325.	120.	5325.	125.	5326.	5326.
129.	5326.	121.	5326.	126.	5327.	5327.
130.	5327.	122.	5327.	127.	5328.	5328.
131.	5328.	123.	5328.	128.	5329.	5329.
132.	5329.	124.	5329.	129.	5330.	5330.
133.	5330.	125.	5330.	130.	5331.	5331.
134.	5331.	126.	5331.	131.	5332.	5332.
135.	5332.	127.	5332.	132.	5333.	5333.
136.	5333.	128.	5333.	133.	5334.	5334.
137.	5334.	129.	5334.	134.	5335.	5335.
138.	5335.	130.	5335.	135.	5336.	5336.
139.	5336.	131.	5336.	136.	5337.	5337.
140.	5337.	132.	5337.	137.	5338.	5338.
141.	5338.	133.	5338.	138.	5339.	5339.
142.	5339.	134.	5339.	139.	5340.	5340.
143.	5340.	135.	5340.	140.	5341.	5341.
144.	5341.	136.	5341.	141.	5342.	5342.
145.	5342.	137.	5342.	142.	5343.	5343.
146.	5343.	138.	5343.	143.	5344.	5344.
147.	5344.	139.	5344.	144.	5345.	5345.
148.	5345.	140.	5345.	145.	5346.	5346.
149.	5346.	141.	5346.	146.	5347.	5347.
150.	5347.	142.	5347.	147.	5348.	5348.
151.	5348.	143.	5348.	148.	5349.	5349.
152.	5349.	144.	5349.	149.	5350.	5350.
153.	5350.	145.	5350.	150.	5351.	5351.
154.	5351.	146.	5351.	151.	5352.	5352.
155.	5352.	147.	5352.	152.	5353.	5353.
156.	5353.	148.	5353.	153.	5354.	5354.
157.	5354.	149.	5354.	154.	5355.	5355.
158.	5355.	150.	5355.	155.	5356.	5356.
159.	5356.	151.	5356.	156.	5357.	5357.
160.	5357.	152.	5357.	157.	5358.	5358.
161.	5358.	153.	5358.	158.	5359.	5359.
162.	5359.	154.	5359.	159.	5360.	5360.
163.	5360.	155.	5360.	160.	5361.	5361.
164.	5361.	156.	5361.	161.	5362.	5362.
165.	5362.	157.	5362.	162.	5363.	5363.
166.	5363.	158.	5363.	163.	5364.	5364.
167.	5364.	159.	5364.	164.	5365.	5365.
168.	5365.	160.	5365.	165.	5366.	5366.
169.	5366.	161.	5366.	166.	5367.	5367.
170.	5367.	162.	5367.	167.	5368.	5368.
171.	5368.	163.	5368.	168.	5369.	5369.
172.	5369.	164.	5369.	169.	5370.	5370.
173.	5370.	165.	5370.	170.	5371.	5371.
174.	5371.	166.	5371.	171.	5372.	5372.
175.	5372.	167.	5372.	172.	5373.	5373.
176.	5373.	168.	5373.	173.	5374.	5374.
177.	5374.	169.	5374.	174.	5375.	5375.
178.	5375.	170.	5375.	175.	5376.	5376.
179.	5376.	171.	5376.	176.	5377.	5377.
180.	5377.	172.	5377.	177.	5378.	5378.
181.	5378.	173.	5378.	178.	5379.	5379.
182.	5379.	174.	5379.	179.	5380.	5380.
183.	5380.	175.	5380.	180.	5381.	5381.
184.	5381.	176.	5381.	181.	5382.	5382.
185.	5382.	177.	5382.	182.	5383.	5383.
186.	5383.	178.	5383.	183.	5384.	5384.
187.	5384.	179.	5384.	184.	5385.	5385.
188.	5385.	180.	5385.	185.	5386.	5386.
189.	5386.	181.	5386.	186.	5387.	5387.
190.	5387.	182.	5387.	187.	5388.	5388.
191.	5388.	183.	5388.	188.	5389.	5389.
192.	5389.	184.	5389.	189.	5390.	5390.
193.	5390.	185.	5390.	190.	5391.	5391.
194.	5391.	186.	5391.	191.	5392.	5392.
195.	5392.	187.	5392.	192.	5393.	5393.
196.	5393.	188.	5393.	193.	5394.	5394.
197.	5394.	189.	5394.	194.	5395.	5395.
198.	5395.	190.	5395.	195.	5396.	5396.
199.	5396.	191.</				

240.	2020.	241.	242.	1993.	243.	1960.
244.	1918.	245.	246.	1910.	247.	1749.
248.	1644.	249.	250.	1511.	251.	1441.
252.	1353.	253.	254.	1213.	255.	1162.
256.	1176.	257.	258.	1019.	259.	1221.
260.	1221.	261.	262.	1216.	263.	1218.
264.	1229.	265.	266.	1267.	267.	1284.
268.	1295.	269.	270.	1314.	271.	1310.
272.	1355.	273.	274.	1406.	275.	1406.
276.	1374.	277.	278.	1272.	279.	1275.
280.	1364.	281.	282.	1416.	283.	2115.
284.	1364.	285.	286.	2909.	287.	3096.
288.	2414.	289.	290.	3402.	291.	3440.
292.	3239.	293.	294.	3513.	295.	3534.
296.	3465.	297.	298.	3595.	299.	3604.
300.	3563.	301.	302.	3617.	303.	3621.
304.	3610.	305.	306.	3676.	307.	3642.
308.	3626.	309.	310.	3645.	311.	3641.
312.	3646.	313.	314.	3653.	315.	3673.
316.	3634.	317.	318.	3701.	319.	3676.
320.	3693.	321.	322.	3705.	323.	3539.
324.	3638.	325.	326.	3596.	327.	3566.
328.	3532.	329.	330.	3544.	331.	3566.
332.	3580.	333.	334.	3632.	335.	3745.
336.	3681.	337.	338.	3726.	339.	3796.
340.	3761.	341.	342.	3777.	343.	3813.
344.	3801.	345.	346.	3808.	347.	3853.
348.	3822.	349.	350.	3843.	351.	3860.
352.	3859.	353.	354.	3860.	355.	3876.
356.	3861.	357.	358.	3870.	359.	3904.
360.	3884.	361.	362.	3904.	363.	3859.
364.	3906.	365.	366.	3878.	367.	3829.
368.	3842.	369.	370.	3828.	371.	3832.
372.	3831.	373.	374.	3833.	375.	3827.
376.	3870.	377.	378.	3827.	379.	3823.
380.	3827.	381.	382.	3825.	383.	3822.
384.	3822.	385.	386.	3821.	387.	3806.
388.	3823.	389.	390.	3816.	391.	3857.
392.	3787.	393.	394.	3713.	395.	3505.
396.	3597.	397.	398.	3512.	399.	3309.
400.	397.	401.	402.	3428.	403.	2844.
404.	3504.	405.	406.	2876.	407.	3234.
408.	3150.	409.	410.	3124.	411.	3415.
412.	2898.	413.	414.	3380.	415.	3620.
416.	3304.	417.	418.	3573.	419.	3678.
420.	3652.	421.	422.	3678.	423.	3672.
424.	3675.	425.	426.	3669.	427.	3744.
428.	3682.	429.	430.	3722.	431.	3790.
432.	3763.	433.	434.	3785.	435.	3787.
436.	3792.	437.	438.	3790.	439.	3775.
440.	3784.	441.	442.	3777.	443.	3776.
444.	3773.	445.	446.	3775.	447.	3762.
448.	3775.	449.	450.	3767.	451.	3802.
452.	3762.	453.	454.	3784.	455.	3764.
456.	3815.	457.	458.	3794.	459.	3837.
460.	3740.	461.	462.	3772.	463.	4031.
464.	3915.	465.	466.	4025.	467.	3964.
468.	4014.	469.	470.	3964.	471.	3985.
472.	3969.	473.	474.	3985.	475.	3984.
476.	3980.	477.	478.	3975.	479.	4053.
480.	4002.	481.	482.	4041.	483.	4081.
484.	4059.	485.	486.	4068.	487.	4178.
488.	4103.	489.	490.	4156.	491.	4194.
492.	4191.	493.	494.	4194.	495.	4208.
496.	4200.	497.	498.	4204.	499.	4214.
	4212.	500.	501.	4216.		

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

4114.	4115.	4116.	4117.	4118.	4119.	4120.	4121.	4122.	4123.	4124.	4125.	4126.	4127.	4128.	4129.	4130.	4131.	4132.	4133.	4134.	4135.	4136.	4137.	4138.	4139.	4140.	4141.	4142.	4143.	4144.	4145.	4146.	4147.	4148.	4149.	4150.	4151.	4152.	4153.	4154.	4155.	4156.	4157.	4158.	4159.	4160.	4161.	4162.	4163.	4164.	4165.	4166.	4167.	4168.	4169.	4170.	4171.	4172.	4173.	4174.	4175.	4176.	4177.	4178.	4179.	4180.	4181.	4182.	4183.	4184.	4185.	4186.	4187.	4188.	4189.	4190.	4191.	4192.	4193.	4194.	4195.	4196.	4197.	4198.	4199.	4200.																																																																																																																																																																																																																		
504.	505.	506.	507.	508.	509.	510.	511.	512.	513.	514.	515.	516.	517.	518.	519.	520.	521.	522.	523.	524.	525.	526.	527.	528.	529.	530.	531.	532.	533.	534.	535.	536.	537.	538.	539.	540.	541.	542.	543.	544.	545.	546.	547.	548.	549.	550.	551.	552.	553.	554.	555.	556.	557.	558.	559.	560.	561.	562.	563.	564.	565.	566.	567.	568.	569.	570.	571.	572.	573.	574.	575.	576.	577.	578.	579.	580.	581.	582.	583.	584.	585.	586.	587.	588.	589.	590.	591.	592.	593.	594.	595.	596.	597.	598.	599.	600.	601.	602.	603.	604.	605.	606.	607.	608.	609.	610.	611.	612.	613.	614.	615.	616.	617.	618.	619.	620.	621.	622.	623.	624.	625.	626.	627.	628.	629.	630.	631.	632.	633.	634.	635.	636.	637.	638.	639.	640.	641.	642.	643.	644.	645.	646.	647.	648.	649.	650.	651.	652.	653.	654.	655.	656.	657.	658.	659.	660.	661.	662.	663.	664.	665.	666.	667.	668.	669.	670.	671.	672.	673.	674.	675.	676.	677.	678.	679.	680.	681.	682.	683.	684.	685.	686.	687.	688.	689.	690.	691.	692.	693.	694.	695.	696.	697.	698.	699.	700.	701.	702.	703.	704.	705.	706.	707.	708.	709.	710.	711.	712.	713.	714.	715.	716.	717.	718.	719.	720.	721.	722.	723.	724.	725.	726.	727.	728.	729.	730.	731.	732.	733.	734.	735.	736.	737.	738.	739.	740.	741.	742.	743.	744.	745.	746.	747.	748.	749.	750.	751.	752.	753.	754.	755.	756.	757.	758.	759.	760.	761.	762.	763.	764.	765.	766.	767.	768.	769.	770.	771.	772.	773.	774.	775.	776.	777.	778.	779.	780.	781.	782.	783.	784.	785.	786.	787.	788.	789.	790.	791.	792.	793.	794.	795.	796.	797.	798.	799.	800.

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

768	3115	769	3030	3007	771	3040
772	3238	773	3036	3606	775	3175
776	3776	777	3707	3643	783	3591
780	3569	781	3570	3594	783	3594
784	3593	785	3581	3568	787	3556
788	3553	789	3550	3534	791	3504
792	3436	793	3334	3270	795	3148
796	3115	797	3156	3219	799	3110
800	3196	801	3450	3478	803	3483
804	3472	805	3449	3413	807	3356
808	3276	809	3151	3011	811	2874
812	2773	813	2737	2777	815	2860
816	2952	817	3015	3073	819	2984
820	2912	821	2838	2765	823	2710
824	2682	825	2691	2743	827	2830
828	2426	829	3005	3034	831	3023
832	2986	833	2959	2475	835	3052
836	3261	837	3266	3329	839	3314
840	3245	841	3131	3004	843	2888
844	2786	845	2688	2580	847	2450
848	2305	849	2179	2106	851	2122
852	2246	853	2439	2662	855	2872
856	3032	857	3147	3216	859	3267
860	3305	861	3379	3374	863	3406
864	3432	865	3454	3466	867	3456
868	3427	869	3379	3376	871	3445
872	3276	873	3304	3363	875	3430
876	3483	877	3502	3490	879	3462
880	3433	881	3414	3470	883	3419
884	3398	885	3337	3279	887	3098
888	2969	889	2472	2826	891	2814
892	2806	893	2773	2886	895	2558
896	2426	897	2321	2786	899	2327
900	2412	901	2508	2582	903	2610
904	2586	905	2512	2386	907	2214
908	2019	909	1436	1692	911	1624
912	1636	913	1711	1839	915	2005
916	2192	917	2381	2550	919	2681
920	2760	921	2802	2824	923	2842
924	2876	925	2919	2977	927	3042
928	3112	929	3186	3253	931	3315
932	3367	933	3432	3455	935	3514
936	3599	937	3713	3939	939	3953
940	4076	941	4053	4050	943	4013
944	3973	945	3948	3942	947	3944
948	3946	949	3933	3905	951	3866
952	3821	953	3774	3710	955	3698
956	3682	957	3691	3728	959	3786
960	3852	961	3912	3953	963	3974
964	3982	965	3986	3987	967	3992
968	3990	969	3988	3917	971	3831
972	3722	973	3604	3492	975	3397
976	3317	977	3240	3153	979	2986
980	2936	981	2848	2821	983	2807
984	3047	985	3463	3488	987	3676
988	3784	989	3851	3866	991	3860
992	3850	993	3841	3835	995	3831
996	3847	997	3836	3839	999	3844
1000	3847					

END OF COMPUTER RUN.
2 MATHEMATIC PROFILES PROCESSED.
PROCESSED PROFILES HAVE BEEN WRITTEN TO OUTPUT FILE "TAPE4.J" AND PLOTTED IF PLOTTING HAS NOT BEEN SUPPRESSED.

FIGURE 8: EXPECTED SYNACC OUTPUT (continued)

V.7 Site Dependent Software

SYNACC contains FORTRAN code which may be site dependent. This code is in the form of subroutine calls to system routines that are not included in the PL provided in this package. These calls involve the FORTRAN interface with the operating system at DTNSRDC and are used in attaching and unloading cataloged mass storage files. It is possible that these subroutines have different names and/or argument lists at the bench mark site. Table VII lists candidate site dependent subroutines and the exact location in SYNACC at which each subroutine call is generated.

The user should reference Table VII and determine if either subroutine call is inappropriate at the bench mark site. For each site dependent subroutine found, the following course of action is recommended to modify the execution deck:

1. Determine the appropriate subroutine call and argument list to perform the desired function at the bench mark site. (Table III, page I-7, lists the purpose of each subroutine call).
2. Prepare the necessary FORTRAN cards to replace the existing call statement with the proper call. Certify that names given to variables in the new cards are consistent with existing names. To assist the user in this, Section V.7.1 and V.7.2 reproduce each call statement exactly as it appears in the FORTRAN compilation listing. Each argument in the call list is discussed. Additionally, Appendix G contains the complete compilation listing of the subroutine that generates the calls, and Appendix C contains user level documentation for each possible site dependent subroutine.
3. Replace the existing FORTRAN call statements in the execution deck with the appropriate new cards. The subroutine (GRDBLK) generating the calls has been punched on yellow-topped cards.

TABLE VII: LOCATION OF POSSIBLE SITE DEPENDENT
SOFTWARE IN SYNACC

Possible Site Dependent Subroutine	PL or Program Name	Program Element	Line No.	Card ID*
UNLOAD	SYNACC	SUBROUTINE GRDBLK	29	GRDBLK30
ZPFUNC	SYNACC	SUBROUTINE GRDBLK	80	GRDBLK81

* SYNACC program cards have ID's in columns 73-80 because they were punched from an existing UPDATE Program Library.

V.7.1 UNLOAD references

FORTTRAN Statement:

Card ID:

CALL UNLOAD (ITAPE1)

GRDBLK30

Argument List:

ITAPE1 — Integer variable defining unit number used by SYNACC for the data files. Set to 1 in a DATA statement. Input to UNLOAD.

V.7.2 ZPFUNC references

FORTTRAN Statement:

Card ID:

CALL ZPFUNC (IRC, IPRMS, NW)

GRDBLK81

Argument List:

IRC — Integer variable defining type of function desired. Set to 1 on input to ZPFUNC to request attach function. Used for error flag on output from ZPFUNC.

IPRMS — A 22-word typeless array containing the following parameters needed to attach a file:

IPRMS (1) — Local file name for file being attached. Contains the 5 Hollerith characters TAPE1 left justified with 0 fill.

IPRMS (2-5) — Permanent file name. The first nine characters are always "FINALGRID" followed by from two to four alphanumeric digits. SUBROUTINE GRDBLK determines the necessary digits and constructs the complete permanent file name, then assigns it into IPRMS (2) and IPRMS (3). IPRMS (4) and IPRMS (5), as well as unused bytes in IPRMS (3) are 0 filled.

IPRMS (6) — File ID. Contains the 4 Hollerith characters PVRV left justified with 0 fill.

IPRMS (12) — File MR option for attach. Set to integer value 1.

IPRMS (14) — File cycle number. Set to integer value -1 to request latest cycle and to return cycle number in this word.

All other words of IPRMS are set to binary zero.

NW — Integer variable defining the last word filled in IPRMS. Set to 14.

Subroutine ZPFUNC is potentially the most troublesome of all the possible site dependent subroutines because data files must be cataloged in the job stream exactly as SUBROUTINE GRDBLK expects to find them. If there exist some site dependent constraints on cataloged file names or ID's, or, if system "set names" or other device specifications must be indicated, the user must update GRDBLK accordingly.

VI. INTERACT

VI.1 General Information

INTERACT is an interactive program consisting of a single executable module that is cataloged with the name BMINTERACT, ID=PUJA, in the INTERACT creation deck for later execution in interactive mode. The program generates calls to system utility subroutines REQUEST, UNLOAD and ZPFUNC which reside in a user library at DTNSRDC; however, in the bench mark run, these calls are not executed and therefore need not be satisfied. (They may be listed as unsatisfied external references when the program is loaded.) INTERACT is coded entirely in FORTRAN IV.

VI.2 Location of Program

The PL for INTERACT is the 12th PL (12th binary record) on the program tape CK0713, and the backup program tape, CK0720.

VI.3 Job Stream

The job stream included in the INTERACT creation deck and listed in Section VI.4 with comments performs the following basic functions: mounts program tape CK0713, updates from the INTERACT PL on tape, compiles, loads, and catalogs the absolute element. Job stream commands presented are those used on the DTNSRDC CDC 6600/6700 system. They may require modification at the bench mark site.

VI.4 Creation Deck

The deck supplied for INTERACT is not an execution deck but a creation deck which compiles the program and catalogs the absolute (executable) object code for later interactive execution. A listing of the INTERACT creation deck is presented in Figure 9 followed by comments. Numbers opposite card images in the figure coincide with the appropriate comment number.

Comment Number:	Card Image:
1 -	VSN,OLDPL=CK0713.
2 -	REQUEST,OLDPL,MY,NORING. /CK0713/NORING/
3 -	COPYPR,OLDPL,DUM,11.
4 -	RETURN,DUM.
5 -	UPDATE,F,R,C=COMPILE.
6 -	REWIND,COMPILE.
7 -	FTN,I=COMPILE,L=0,OPT=2,B=INRACT.
4 -	RETURN,COMPILE.
8 -	REQUEST,ABS,*PF.
9 -	LOAD,INRACT.
10 -	NOSO,ABS.
11 -	CATALOG,ABS,BMINTERACT,ID=PUJA.
* 12 -	7/8/9 END OF RECORD CARD
** 13 -	6/7/8/9 END OF JOB CARD

* This image represents a card with a 7/8/9 multi-punch in Col. 1.
** This image represents a card with a 6/7/8/9 multi-punch in Col. 1.

FIGURE 9: INTERACT CREATION DECK

The following comments refer to card images in the INTERACT creation deck listed in Figure 9.

Comment Number:	Comment:
1	Specify the program tape to be used.
2	Moun* unlabeled program tape with local file name OLDPL. Density = 800 BPI (HY). No write ring.
3	Position program tape before the 12th PL, i.e., the 12th binary record.
4	This is done to minimize mass storage usage.
5	Create compile file from 12th PL on tape.
6	This card is needed because UPDATE R option inhibits automatic rewind.
7	Create the binary file INRACT.
8	Request permanent file space for purpose of cataloging the absolute element ABS.
9	Include the binary file INRACT in the load.
10	Complete loading but inhibit execution. All system routines needed to complete the executable module are in system libraries that are automatically included by the loader.
11	Catalog absolute element with name and ID shown for later execution in interactive mode.
12	Updates to Interact, if any, follow this card. Updates may be necessary to modify site dependent coding.
13	End of deck.

VI.5 Interactive Dialog

Figure 10 presents an interactive dialog between program INTERACT and the user. The dialog exercises many paths through INTERACT and should be duplicatable at the bench mark site. Events are numbered 1 through 255 for reference purposes where each event is either a prompt from INTERACT or an input from the user. Most user responses are very short and the entire dialog can be executed in 10 to 15 minutes with reasonably rapid response time. Note that Events 215 and 251 ask the user if he wants to catalog a file. The user must answer "N" (no) because the software needed for cataloging does not exist in the absolute object code. Before attempting to execute the dialog, the user must run the INTERACT creation deck to catalog the absolute program (see Section VI.4). Then, to initiate the program from an interactive terminal, the user must log in and enter the following commands:

```
ATTACH, INTER, BMINTERACT, ID=PUJA  
INTER
```

Obviously, the permanent file name (in this case BMINTERACT) and the ID (in this case PUJA), as well as any additional information, must be those used to catalog the file at the bench mark site.

Following the above commands, the program will commence execution and respond with the prompt shown as Event 1 in Figure 10.

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
1	WELCOME TO INTERACT. WITH THIS SYSTEM YOU CAN 1) CREATE AN INPUT DATA SET FOR INTERFACE 2) MODIFY AN INPUT DATA SET FOR INTERFACE 3) CREATE AN INPUT DATA SET FOR CFIELD PLOT 4) MODIFY AN INPUT DATA SET FOR CFIELD PLOT ENTER THE INDEX OF THE FUNCTION TO PERFORM	
2		1
3	WILL THERE BE AUTO-OCEAN INPUT DATA (Y OR N)	
4		N
5	ANSWER THE FOLLOWING QUESTIONS Y OR N DELIMITED BY COMMAS 1) DO YOU WANT SPHERICAL EARTH CORRECTION 2) DO YOU WANT THE CALCULATED CONNECTIONS PRINTED 3) DO YOU WANT THE CALCULATED QUANTITIES FOR EACH TRIANGULAR SECTOR PRINTED	
6		Y, N, N
7	SPECIFY THE SURFACE LAYER DUCT IN ONE OF 3 WAYS -- 1) ENTER 0 FOR NO SURFACE LAYER 2) ENTER -1 FOR LAYER DEPTH TO BE DETERMINED BY MODEL 3) ENTER INDEX OF SURFACE LAYER DEPTH ON FIRST PROFILE	
8		1
9	DATA ENTRY COMPLETE FOR EARTH CORRECTION, PRINT FLAGS, AND SURFACE LAYER DUCT DO YOU WISH TO REVIEW (Y OR N)	
10		Y
11	1) SPHERICAL EARTH CORRECTION APPLIED YES 2) CALCULATED CONNECTIONS PRINTED NO 3) CALCULATED QUANTITIES PRINTED NO IF YOU WANT TO CHANGE ANY OF THE ABOVE PARAMETERS ENTER THE INDEX NUMBER WHEN DONE ENTER AN INDEX GREATER THAN THREE	

FIGURE 10: INTERACT DIALOG

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
12		5
13	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)	
14		N
15	SURFACE LAYER SPECIFICATION IS 1 DO YOU WANT TO CHANGE IT (Y OR N)	
16		N
17	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)	
18		N
19	ENTER THE FOLLOWING VALUES DELIMITED BY COMMAS 1) RANGE (NM) OF THE FOLLOWING PROFILE 2) NUMBER OF POINTS IN THE FOLLOWING PROFILE 3) NUMBER OF INTERPOLATED PROFILES DESIRED 4) WAVE HEIGHT (FT)	
20		0, 3, 2, 5
21	IS 3 THE NUMBER OF PROFILE POINTS (Y OR N)	
22		Y
23	ENTER 3 (DEPTH, SPEED) PAIRS A PAIR AT A TIME 1-	
24		0, 1500
25	2-	
26		30, 1505
27	3-	
28		2000, 1490
29	DO YOU WISH TO REVIEW (Y OR N)	
30		Y

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE															
31	1) RANGE (NM) OF FOLLOWING PROFILE IS 0.00 2) NO. OF POINTS IN FOLLOWING PROFILE IS 3 3) NO. OF INTERPOLATED PROFILES IS 2 4) WAVE HEIGHT (FT) IS 5.00 ENTER THE INDEX NUMBER AND THE NEW VALUE WHEN DONE, OR IF NO CHANGE ENTER AN INDEX VALUE GREATER THAN 5																
32		2, 4															
33	NEXT --																
34		6															
35	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																
36		Y															
37	1) RANGE (NM) OF FOLLOWING PROFILE IS 0.00 2) NO. OF POINTS IN FOLLOWING PROFILE IS 4 3) NO. OF INTERPOLATED PROFILES IS 2 4) WAVE HEIGHT (FT) IS 5.00 ENTER THE INDEX NUMBER AND THE NEW VALUE WHEN DONE, OR IF NO CHANGE ENTER AN INDEX VALUE GREATER THAN 5																
38		6															
39	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																
40		N															
41	THERE ARE 4 (DEPTH, SPEED) PAIRS <table> <tr> <td>INDEX</td><td>DEPTH</td><td>SPEED</td></tr> <tr> <td>1</td><td>0.00</td><td>1500.00</td></tr> <tr> <td>2</td><td>30.00</td><td>1505.00</td></tr> <tr> <td>3</td><td>2000.00</td><td>1490.00</td></tr> <tr> <td>4</td><td>0.00</td><td>0.00</td></tr> </table> ENTER THE INDEX AND A NEW (DEPTH, SPEED) PAIR WHEN DONE ENTER AN INDEX GREATER THAN 100 ENTER INDEX	INDEX	DEPTH	SPEED	1	0.00	1500.00	2	30.00	1505.00	3	2000.00	1490.00	4	0.00	0.00	
INDEX	DEPTH	SPEED															
1	0.00	1500.00															
2	30.00	1505.00															
3	2000.00	1490.00															
4	0.00	0.00															
42		1															
43	ENTER PAIR																

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
44		0, 1501
45	NEXT -- ENTER INDEX	
45.1		4
46	ENTER PAIR	
46.1		5000, 1540
47	NEXT -- ENTER INDEX	
48		200
49	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)	
50		N
51	ARE THERE MORE PROFILES TO ENTER (Y OR N)	
52		Y
53	ENTER THE NUMBER OF SPECIFIED CONNECTIONS BETWEEN THIS PROFILE AND THE NEXT	
54		3
55	ENTER 3 (UPRANGE, DOWNRANGE) PAIRS A PAIR AT A TIME 1-	
56		1, 2
57	2-	
58		2, 3
59	3-	
60		4, 4
61	DO YOU WISH TO REVIEW (Y OR N)	
62		N

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
63	ENTER THE FOLLOWING VALUES DELIMITED BY COMMAS 1) RANGE (NM) OF THE FOLLOWING PROFILE 2) NUMBER OF POINTS IN THE FOLLOWING PROFILE 3) NUMBER OF INTERPOLATED PROFILES DESIRED 4) WAVE HEIGHT (FT)	
64		100, 5, 2, 5
65	IS 5 THE NUMBER OF PROFILE POINTS (Y OR N)	
66		Y
67	ENTER 5 (DEPTH, SPEED) PAIRS A PAIR AT A TIME 1-	
68		0, 1502
69	2-	
70		20, 1502
71	3-	
72		500, 1480
73	4-	
74		3000, 1530.4
75	5-	
76		3500.0, 1535
77	DO YOU WITH TO REVIEW (Y OR N)	
78		Y
79	1) RANGE (NM) OF FOLLOWING PROFILE IS 100.00 2) NO. OF POINTS IN FOLLOWING PROFILE IS 5 3) NO. OF INTERPOLATED PROFILES IS 2 4) WAVE HEIGHT (FT) IS 5.00 ENTER THE INDEX NUMBER AND THE NEW VALUE WHEN DONE, OR IF NO CHANGE ENTER AN INDEX VALUE GREATER THAN 5	
80		6

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE																		
81	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																			
82		N																		
83	THERE ARE 5 (DEPTH, SPEED) PAIRS <table> <tr> <td>INDEX</td><td>DEPTH</td><td>SPEED</td></tr> <tr> <td>1</td><td>0.00</td><td>1502.00</td></tr> <tr> <td>2</td><td>20.00</td><td>1502.00</td></tr> <tr> <td>3</td><td>500.00</td><td>1480.00</td></tr> <tr> <td>4</td><td>3000.00</td><td>1530.40</td></tr> <tr> <td>5</td><td>3500.00</td><td>1535.00</td></tr> </table> ENTER THE INDEX AND A NEW (DEPTH, SPEED) PAIR WHEN DONE ENTER AN INDEX GREATER THAN 100 ENTER INDEX	INDEX	DEPTH	SPEED	1	0.00	1502.00	2	20.00	1502.00	3	500.00	1480.00	4	3000.00	1530.40	5	3500.00	1535.00	
INDEX	DEPTH	SPEED																		
1	0.00	1502.00																		
2	20.00	1502.00																		
3	500.00	1480.00																		
4	3000.00	1530.40																		
5	3500.00	1535.00																		
84		200																		
85	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																			
86		N																		
87	ARE THERE MORE PROFILES TO ENTER (Y OR N)																			
88		Y																		
89	ENTER THE NUMBER OF SPECIFIED CONNECTIONS BETWEEN THIS PROFILE AND THE NEXT																			
90		0																		
91	DO YOU WISH TO REVIEW (Y OR N)																			
92		N																		
93	ENTER THE FOLLOWING VALUES DELIMITED BY COMMAS 1) RANGE (NM) OF THE FOLLOWING PROFILE 2) NUMBER OF POINTS IN THE FOLLOWING PROFILE 3) NUMBER OF INTERPOLATED PROFILES DESIRED 4) WAVE HEIGHT (FT)																			
94		500, 3, 2, 5																		
95	IS 3 THE NUMBER OF PROFILE POINTS (Y OR N)																			
96		Y																		

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
97	ENTER 3 (DEPTH, SPEED) PAIRS A PAIR AT A TIME 1-	
98		0, 1503
99	2-	
100		1000, 1475
101	3-	
102		5000, 1550
103	DO YOU WISH TO REVIEW (Y OR N)	
104		N
105	ARE THERE MORE PROFILES TO ENTER (Y OR N)	
106		N
107	ENTER THE NUMBER OF BATHYMETRY POINTS	
108		5
109	ENTER M OR F FOR METERS OR FEET	
110		M
111	ENTER 5 BATHYMETRY (RANGE, DEPTH) PAIRS A PAIR AT A TIME 1-	
112		0, 3000
113	2-	
114		10, 3200
115	3-	
116		100, 6000
117	4-	
118		400, 7000
119	5-	

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
120		500, 6500
121	DO YOU WISH TO REVIEW (Y OR N)	
122		N
123	ENTER THE NUMBER OF RANGES AT WHICH BOTTOM CLASS VALUES WILL BE ASSIGNED	
124		4
125	ENTER 4 (RANGE, 1-5 CLASS, 1-9 CLASS) TRIPLES A TRIPLE AT A TIME 1-	
126		0, 1, 3
127	2-	
128		100, 2, 7
129	3-	
130		200, 4, 9
131	4-	
132		300, 3, 7
133	DO YOU WISH TO REVIEW (Y OR N)	
134		Y
135	THERE ARE 4 BOTTOM CLASS POINTS SPECIFIED DO YOU WANT TO CHANGE THE NUMBER (Y OR N)	
136		Y
137	NEW NUMBER IS --	
138		6

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE																												
139	<table><tr><th>INDEX</th><th>RANGE (NM)</th><th>1-5 CLASS</th><th>1-9 CLASS</th></tr><tr><td>1</td><td>0.00</td><td>1</td><td>3</td></tr><tr><td>2</td><td>100.00</td><td>2</td><td>7</td></tr><tr><td>3</td><td>200.00</td><td>4</td><td>9</td></tr><tr><td>4</td><td>300.00</td><td>3</td><td>7</td></tr><tr><td>5</td><td>0.00</td><td>0</td><td>0</td></tr><tr><td>6</td><td>0.00</td><td>0</td><td>0</td></tr></table> ENTER AN INDEX AND A NEW BOTTOM CLASS TRIPLE WHEN DONE ENTER AN INDEX GREATER THAN 150 ENTER INDEX	INDEX	RANGE (NM)	1-5 CLASS	1-9 CLASS	1	0.00	1	3	2	100.00	2	7	3	200.00	4	9	4	300.00	3	7	5	0.00	0	0	6	0.00	0	0	
INDEX	RANGE (NM)	1-5 CLASS	1-9 CLASS																											
1	0.00	1	3																											
2	100.00	2	7																											
3	200.00	4	9																											
4	300.00	3	7																											
5	0.00	0	0																											
6	0.00	0	0																											
140		5																												
141	ENTER TRIPLE																													
142		323, 2, 5																												
143	NEXT — ENTER INDEX																													
144		6																												
145	ENTER TRIPLE																													
146		400, 4, 4																												
147	NEXT — ENTER INDEX																													
148		200																												
149	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																													
150		Y																												
151	<table><tr><th>INDEX</th><th>RANGE (NM)</th><th>1-5 CLASS</th><th>1-9 CLASS</th></tr><tr><td>1</td><td>0.00</td><td>1</td><td>3</td></tr><tr><td>2</td><td>100.00</td><td>2</td><td>7</td></tr><tr><td>3</td><td>200.00</td><td>4</td><td>9</td></tr><tr><td>4</td><td>300.00</td><td>3</td><td>7</td></tr><tr><td>5</td><td>323.00</td><td>2</td><td>5</td></tr><tr><td>6</td><td>400.00</td><td>4</td><td>4</td></tr></table> ENTER AN INDEX AND A NEW BOTTOM CLASS TRIPLE WHEN DONE ENTER AN INDEX GREATER THAN 150 ENTER INDEX	INDEX	RANGE (NM)	1-5 CLASS	1-9 CLASS	1	0.00	1	3	2	100.00	2	7	3	200.00	4	9	4	300.00	3	7	5	323.00	2	5	6	400.00	4	4	
INDEX	RANGE (NM)	1-5 CLASS	1-9 CLASS																											
1	0.00	1	3																											
2	100.00	2	7																											
3	200.00	4	9																											
4	300.00	3	7																											
5	323.00	2	5																											
6	400.00	4	4																											

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
152		200
153	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)	
154		N
155	DATA SET COMPLETE DO YOU WISH TO REVIEW (Y OR N)	
156		Y
157	ENTER THE NUMBER CORRESPONDING TO THE DATA YOU WISH TO REVIEW 1) ALL 2) EARTH CORRECTION, PRINT FLAGS, AND DUCT 3) PROFILE DATA AND (DEPTH, SPEED) PAIRS 4) CONNECTION DATA 5) BATHYMETRY DATA 6) BOTTOM CLASS DATA	
158		1
159	1) SPHERICAL EARTH CORRECTION APPLIED YES 2) CALCULATED CONNECTIONS PRINTED NO 3) CALCULATED QUANTITIES PRINTED NO IF YOU WANT TO CHANGE ANY OF THE ABOVE PARAMETERS ENTER THE INDEX NUMBER WHEN DONE ENTER AN INDEX GREATER THAN THREE	
160		5
161	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)	
162		N
163	SURFACE LAYER SPECIFICATION IS 1 DO YOU WANT TO CHANGE IT (Y OR N)	
164		N
165	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)	
166		N
167	1) RANGE (NM) OF FOLLOWING PROFILE IS 0.00 2) NO. OF POINTS IN FOLLOWING PROFILE IS 4 3) NO. OF INTERPOLATED PROFILES IS 2 4) WAVE HEIGHT (FT) IS 5.00 ENTER THE INDEX NUMBER AND THE NEW VALUE WHEN DONE, OR IF NO CHANGE ENTER AN INDEX VALUE GREATER THAN 5	

FIGURE 10: INTERACT DIALOG (continued)
VI-13

EVENT NO.	PROGRAM PROMPT	USER RESPONSE															
168		10															
169	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																
170		N															
171	THERE ARE 4 (DEPTH, SPEED) PAIRS <table> <tr> <td>INDEX</td><td>DEPTH</td><td>SPEED</td></tr> <tr> <td>1</td><td>0.00</td><td>1501.00</td></tr> <tr> <td>2</td><td>30.00</td><td>1505.00</td></tr> <tr> <td>3</td><td>2000.00</td><td>1490.00</td></tr> <tr> <td>4</td><td>5000.00</td><td>1540.00</td></tr> </table> ENTER THE INDEX AND A NEW (DEPTH, SPEED) PAIR WHEN DONE ENTER AN INDEX GREATER THAN 100 ENTER INDEX	INDEX	DEPTH	SPEED	1	0.00	1501.00	2	30.00	1505.00	3	2000.00	1490.00	4	5000.00	1540.00	
INDEX	DEPTH	SPEED															
1	0.00	1501.00															
2	30.00	1505.00															
3	2000.00	1490.00															
4	5000.00	1540.00															
172		200															
173	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																
174		N															
175	THERE ARE 3 CONNECTIONS SPECIFIED BETWEEN THIS PROFILE AND THE NEXT. DO YOU WANT TO CHANGE THE NUMBER (Y OR N)																
176		N															
177	CONNECTION POINTS <table> <tr> <td>INDEX</td><td>LEFT</td><td>RIGHT</td></tr> <tr> <td>1</td><td>1</td><td>2</td></tr> <tr> <td>2</td><td>2</td><td>3</td></tr> <tr> <td>3</td><td>4</td><td>4</td></tr> </table> ENTER AN INDEX AND NEW CONNECTION PAIR WHEN DONE ENTER AN INDEX GREATER THAN 100 ENTER INDEX	INDEX	LEFT	RIGHT	1	1	2	2	2	3	3	4	4				
INDEX	LEFT	RIGHT															
1	1	2															
2	2	3															
3	4	4															
178		200															
179	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																
180		N															

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE																		
181	1) RANGE (NM) OF FOLLOWING PROFILE IS 100.00 2) NO. OF POINTS IN FOLLOWING PROFILE IS 5 3) NO. OF INTERPOLATED PROFILES IS 2 4) WAVE HEIGHT (FT) IS 5.00 ENTER THE INDEX NUMBER AND THE NEW VALUE WHEN DONE, OR IF NO CHANGE ENTER AN INDEX VALUE GREATER THAN 5																			
182		10																		
183	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																			
184		N																		
185	THERE ARE 5 (DEPTH, SPEED) PAIRS <table> <tr> <td>INDEX</td><td>DEPTH</td><td>SPEED</td></tr> <tr> <td>1</td><td>0.00</td><td>1502.00</td></tr> <tr> <td>2</td><td>20.00</td><td>1502.00</td></tr> <tr> <td>3</td><td>500.00</td><td>1480.00</td></tr> <tr> <td>4</td><td>3000.00</td><td>1530.40</td></tr> <tr> <td>5</td><td>3500.00</td><td>1535.00</td></tr> </table> ENTER THE INDEX AND A NEW (DEPTH, SPEED) PAIR WHEN DONE ENTER AN INDEX GREATER THAN 100 ENTER INDEX	INDEX	DEPTH	SPEED	1	0.00	1502.00	2	20.00	1502.00	3	500.00	1480.00	4	3000.00	1530.40	5	3500.00	1535.00	
INDEX	DEPTH	SPEED																		
1	0.00	1502.00																		
2	20.00	1502.00																		
3	500.00	1480.00																		
4	3000.00	1530.40																		
5	3500.00	1535.00																		
186		200																		
187	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																			
188		N																		
189	THERE ARE 0 CONNECTIONS SPECIFIED BETWEEN THIS PROFILE AND THE NEXT. DO YOU WANT TO CHANGE THE NUMBER (Y OR N)																			
190		N																		
191	1) RANGE (NM) OF FOLLOWING PROFILE IS 500.00 2) NO. OF POINTS IN FOLLOWING PROFILE IS 3 3) NO. OF INTERPOLATED PROFILES IS 2 4) WAVE HEIGHT (FT) IS 5.00 ENTER THE INDEX NUMBER AND THE NEW VALUE WHEN DONE, OR IF NO CHANGE ENTER AN INDEX VALUE GREATER THAN 5																			
192		10																		

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE																		
193	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																			
194		N																		
195	THERE ARE 3 (DEPTH, SPEED) PAIRS <table> <tr> <td>INDEX</td><td>DEPTH</td><td>SPEED</td></tr> <tr> <td>1</td><td>0.00</td><td>1503.00</td></tr> <tr> <td>2</td><td>1000.00</td><td>1475.00</td></tr> <tr> <td>3</td><td>5000.00</td><td>1550.00</td></tr> </table> ENTER THE INDEX AND A NEW (DEPTH, SPEED) PAIR WHEN DONE ENTER AN INDEX GREATER THAN 100 ENTER INDEX	INDEX	DEPTH	SPEED	1	0.00	1503.00	2	1000.00	1475.00	3	5000.00	1550.00							
INDEX	DEPTH	SPEED																		
1	0.00	1503.00																		
2	1000.00	1475.00																		
3	5000.00	1550.00																		
196		200																		
197	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																			
198		N																		
199	END OF PROFILE DATA THERE ARE 5 BATHYMETRY POINTS SPECIFIED DO YOU WANT TO CHANGE THE NUMBER (Y OR N)																			
200		N																		
201	BATHYMETRY IN METERS, DO YOU WANT FEET? (Y OR N)																			
202		N																		
203	<table> <tr> <td>INDEX</td><td>RANGE (NM)</td><td>DEPTH</td></tr> <tr> <td>1</td><td>1.00</td><td>3000.00</td></tr> <tr> <td>2</td><td>10.00</td><td>3200.00</td></tr> <tr> <td>3</td><td>100.00</td><td>6000.00</td></tr> <tr> <td>4</td><td>400.00</td><td>7000.00</td></tr> <tr> <td>5</td><td>500.00</td><td>6500.00</td></tr> </table> ENTER AN INDEX AND NEW BATHYMETRY PAIR WHEN DONE ENTER AN INDEX GREATER THAN 300 ENTER INDEX	INDEX	RANGE (NM)	DEPTH	1	1.00	3000.00	2	10.00	3200.00	3	100.00	6000.00	4	400.00	7000.00	5	500.00	6500.00	
INDEX	RANGE (NM)	DEPTH																		
1	1.00	3000.00																		
2	10.00	3200.00																		
3	100.00	6000.00																		
4	400.00	7000.00																		
5	500.00	6500.00																		
204		400																		
205	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																			

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE																												
206		N																												
207	THERE ARE 6 BOTTOM CLASS POINTS SPECIFIED DO YOU WANT TO CHANGE THE NUMBER (Y OR N)																													
208		N																												
209	<table><thead><tr><th>INDEX</th><th>RANGE (NM)</th><th>1-5 CLASS</th><th>1-9 CLASS</th></tr></thead><tbody><tr><td>1</td><td>0.00</td><td>1</td><td>3</td></tr><tr><td>2</td><td>100.00</td><td>2</td><td>7</td></tr><tr><td>3</td><td>200.00</td><td>4</td><td>9</td></tr><tr><td>4</td><td>300.00</td><td>3</td><td>7</td></tr><tr><td>5</td><td>323.00</td><td>2</td><td>5</td></tr><tr><td>6</td><td>400.00</td><td>4</td><td>4</td></tr></tbody></table> ENTER AN INDEX AND A NEW BOTTOM CLASS TRIPLE WHEN DONE ENTER AN INDEX GREATER THAN 150 ENTER INDEX	INDEX	RANGE (NM)	1-5 CLASS	1-9 CLASS	1	0.00	1	3	2	100.00	2	7	3	200.00	4	9	4	300.00	3	7	5	323.00	2	5	6	400.00	4	4	
INDEX	RANGE (NM)	1-5 CLASS	1-9 CLASS																											
1	0.00	1	3																											
2	100.00	2	7																											
3	200.00	4	9																											
4	300.00	3	7																											
5	323.00	2	5																											
6	400.00	4	4																											
210		200																												
211	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																													
212		N																												
213	DO YOU WISH TO REVIEW MORE DATA (Y OR N)																													
214		N																												
215	DO YOU WANT TO CATALOG THE FILE (Y OR N)																													
216		N																												
217	ARE YOU DONE FOR THIS SESSION (Y OR N)																													
218		N																												
219	WELCOME TO INTERACT. WITH THIS SYSTEM YOU CAN 1) CREATE AN INPUT DATA SET FOR INTERFACE 2) MODIFY AN INPUT DATA SET FOR INTERFACE 3) CREATE AN INPUT DATA SET FOR CFIELD PLOT 4) MODIFY AN INPUT DATA SET FOR CFIELD PLOT ENTER THE INDEX OF THE FUNCTION TO PERFORM																													
220		2																												
221	FILE TO BE MODIFIED IS ATTACHED TO TAPE10 IS THIS OK (Y OR N)																													

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE															
222		Y															
223	WILL THERE BE AUTO-OCEAN INPUT DATA (Y OR N)																
224		N															
225	ENTER THE NUMBER CORRESPONDING TO THE DATA YOU WISH TO REVIEW 1) ALL 2) EARTH CORRECTION, PRINT FLAGS, AND DUCT 3) PROFILE DATA AND (DEPTH, SPEED) PAIRS 4) CONNECTION DATA 5) BATHYMETRY DATA 6) BOTTOM CLASS DATA																
226		3															
227	SPECIFY THE RANGE OF THE PROFILE TO REVIEW A NEGATIVE RANGE SPECIFIES ALL																
228		0															
229	1) RANGE (NM) OF FOLLOWING PROFILE IS 0.00 2) NO. OF POINTS IN FOLLOWING PROFILE IS 4 3) NO. OF INTERPOLATED PROFILES IS 2 4) WAVE HEIGHT (FT) IS 5.00 ENTER THE INDEX NUMBER AND THE NEW VALUE WHEN DONE, OR IF NO CHANGE ENTER AN INDEX VALUE GREATER THAN 5																
230		6															
231	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)																
232		N															
233	THERE ARE 4 (DEPTH, SPEED) PAIRS <table> <thead> <tr> <th>INDEX</th><th>DEPTH</th><th>SPEED</th></tr> </thead> <tbody> <tr> <td>1</td><td>0.00</td><td>1501.00</td></tr> <tr> <td>2</td><td>30.00</td><td>1505.00</td></tr> <tr> <td>3</td><td>2000.00</td><td>1490.00</td></tr> <tr> <td>4</td><td>5000.00</td><td>1540.00</td></tr> </tbody> </table> ENTER THE INDEX AND A NEW (DEPTH, SPEED) PAIR WHEN DONE ENTER AN INDEX GREATER THAN 100 ENTER INDEX	INDEX	DEPTH	SPEED	1	0.00	1501.00	2	30.00	1505.00	3	2000.00	1490.00	4	5000.00	1540.00	
INDEX	DEPTH	SPEED															
1	0.00	1501.00															
2	30.00	1505.00															
3	2000.00	1490.00															
4	5000.00	1540.00															

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
234		2
235	ENTER PAIR	
236		35, 1510
237	NEXT – ENTER INDEX	
238		200
239	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)	
240		Y
241	INDEX DEPTH SPEED 1 0.00 1501.00 2 35.00 1510.00 3 2000.00 1490.00 4 5000.00 1540.00 ENTER THE INDEX AND A NEW (DEPTH, SPEED) PAIR WHEN DONE ENTER AN INDEX GREATER THAN 100 ENTER INDEX	
242		200
243	DO YOU WISH TO REVIEW THE CHANGE (Y OR N)	
244		N
245	DO YOU WANT TO REVIEW THE SPECIFIED CONNECTIONS (Y OR N)	
246		N
247	DO YOU WISH TO REVIEW MORE DATA (Y OR N)	
248		N
249	DO YOU WISH TO REVIEW MORE DATA (Y OR N)	
250		N
251	DO YOU WANT TO CATALOG THE FILE (Y OR N)	
252		N

FIGURE 10: INTERACT DIALOG (continued)

EVENT NO.	PROGRAM PROMPT	USER RESPONSE
253	ARE YOU DONE FOR THIS SESSION (Y OR N)	
254		Y
255	STOP	

FIGURE 10: INTERACT DIALOG (continued)

VI.6 Site Dependent Software

INTERACT contains FORTRAN code which may be site dependent. This code is in the form of calls to system subroutine CONNEC which is not included in the PL provided in this package. CONNEC is the FORTRAN/Terminal interface subroutine called to connect a file unit designator to the interactive terminal. All connected files must be declared on the "PROGRAM" card (i.e., the first card in the FORTRAN program). It is possible that this subroutine may have a different name and/or argument list at the bench mark site. Table VIII lists the exact locations in INTERACT at which CONNEC is called.

If the call to CONNEC is inappropriate at the bench mark site, the following course of action is recommended to modify the creation deck:

1. Determine the appropriate subroutine call and argument list to connect a file unit designator to an interactive terminal.
2. Prepare the necessary update cards to delete the existing call statements and replace them with the proper calls. Certify that any variable names in the updates are consistent with existing names. To assist the user in this, Section VI.6.1 reproduces each call statement exactly as it appears in the FORTRAN compilation listing, and describes the call list. Additionally, Appendix H contains the complete compilation listing of the main program which calls CONNEC, and Appendix C contains user level documentation for CONNEC.
3. Insert update cards in the INTERACT creation deck immediately after the "7/8/9" card with the annotation "INRACT updates follow this card."

TABLE VIII: LOCATION OF POSSIBLE SITE DEPENDENT
SOFTWARE IN INTERACT

Possible Site Dependent Subroutine	PL or Program Name	Program Element	Line No.	Line ID
CONNEC	INRACT	PROGRAM INRACT	18	INRACT.19
			19	INRACT.20

VI.6.1 CONNEC references

FORTTRAN Statement:

Line ID:

CALL CONNEC(1)

INRACT 19

Argument List:

- 1 — Integer file unit number input to CONNEC. All input from the terminal is achieved by reading from unit 1. TAPE1 is declared on the program card.
-

FORTTRAN Statement:

Line ID:

CALL CONNEC (2)

INRACT 20

Argument List:

- 2 -- Integer file unit number input to CONNEC. All output to the terminal is achieved by writing to unit 2. TAPE2 is declared on the program card.

APPENDIX A

JOB CARD INFORMATION

Appendix A presents information regarding program time and size to assist the user in preparing the JOB card for each execution deck. Values shown should be more than sufficient to load and execute each program. Sample JOB and CHARGE cards are not included in this document because they are obviously site dependent.

Program Execution Deck	Suggested Memory Size Request (Octal)	Suggested CPU Time Request (Decimal Seconds)	Suggested I/O Time Request (Decimal Seconds)	Maximum Number of 7-Track Tapes
MPP	140000	140	200	1
AUTO-OCEAN	110000	50	100	1
NEWPE	210000	300	100	1
SYNACC	100000	60	50	1
INTERACT*	70000	25	50	1

* Suggested requests for INTERACT creation deck. The interactive dialog (Section VI.5) should require less than 10. seconds of CPU time.

APPENDIX B

INTEGER FUNCTION "FIELD"

Integer function "FIELD" is a COMPASS coded function existing in the AUTO-OCEAN PL on the program tape. It has three arguments: NBITS, NSTART, and NWORD. Its purpose is to extract a bit string NBITS long from word NWORD starting at bit position NSTART (bits numbered 0 through 59, left to right) and place the string in FIELD, right justified, binary-zero filled. The assembler listing of FIELD is presented on the following pages to assist the user in the event the FORTRAN compiler at the bench mark site cannot accept a COMPASS routine intermingled with FORTRAN routines.

FIELD
STORAGE ALLOCATION.

ADDRESS	LENGTH
0	11
11	

HINARY CONTROL CARDS.

IDENT FIELD
END

ENTRY POINTS.

FIELD 1.

07314

COMPASS 3.4-460.

PAGE

2

0	06110514045555000003	FIELD	INSTR FIELD
1	00000000000000000000	FIELD	FIELD(NBITS,NSTART,NWORD)
2	64500	FIELD	FIELD
	54010		
	43001		
3	53150	DATA 0	STORE A0 IN R5
	621177776	SAS A0	HAS ADDRESS
	23010	SAS A1	MASK HIT IN X0
4	5050000001	MX0 1	GET ...
	53250	SAS A0	FIRST ARGUMENT IN X1
5	6222000001	SAS A1	H1=NBITS-1
	22020	AX0 X1,X0	MASK OF LENGTH NBITS
6	5050000002	SAS A0,X1	GET ...
	53350	SAS X5	SECOND ARGUMENT
7	614277702	SAP X2,X1	SFT B2=NSTART+1
	11603	LX0 X0,X2	SHIFT MASK TO NSTART
	67414	SAS A0,X2	GET ...
8	53350	SAS X5	THIRD ARGUMENT
9	614277702	HX6 X0,X3	EXTRACT DESIRED FIELD
	11603	SAP X2,X1	
10	56050	SAS X5	H4=(59-NSTART)+NBITS
	67414	SAP X2,X1	HIGHT=JUSTIFY RESULTS
11	0400000001	SAS X5	RESTORE A0
	0400000001	W0,X1	FIELD
			END

STORAGE USED	25 STATEMENTS	1 SYMBOLS
MODEL 74 ASSEMBLY	0.257 SECONDS	3 REFERENCES

FIELD
SYMBOLIC REFERENCE TABLE.

FIELD 1 PROGRAM*

2/03 F 2/05 L 2/24

COMPASS 3.4-460.

11/08/79 16.45.52.

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APPENDIX C

DOCUMENTATION OF POSSIBLE SITE DEPENDENT SOFTWARE

Appendix C presents user level documentation for subroutines that may be site dependent and thus require special attention at the bench mark site. This documentation has been extracted from various CDC manuals and cataloged information files.

Subroutine Name:	Page:
CLOSEM	C-13, C-10 thru C-12
CONNEC	C-3 thru C-5
DATE	C-2
FILEDA	C-13, C-10 thru C-12, C-15 thru C-18
GET	C-13, C-10 thru C-12
OPENM	C-13, C-10 thru C-12
OPENMS	C-6
PUT	C-13, C-10 thru C-12
READMS	C-8
UNLOAD	C-19
WRITMS	C-7
ZPFUNC	C-20 thru C-23

CALL RANSET(n)

Initializes seed of RANF. n is a one-word bit pattern. Bit 0 will be set to 1 (forced odd), and bits 59 through 48 will be set to 1717 octal.

CALL RANGET(n)

Obtains current seed of RANF between 0 and 1. n is a symbolic name to receive the seed. It is not necessarily normalized. The value returned may be passed to RANSET at a later time to regenerate the same sequence of random numbers.

OPERATING SYSTEM INTERFACE ROUTINES

DATE(a) or CALL DATE(a)[†]

The current date is returned as the value of argument a or of the function in the form 10Hbmm dd yy (under NOS BE 1) or 10Hbmm dd yy (under NOS 1, SCOPE 2), where b denotes a blank, mm is the number of the month, dd is the number of the day within the month, and yy is the year. The value returned is Hollerith data and can be output using an A format specification.

The default type of the function DATE is real, thus if J and K are integer variables as in

```
J = DATE(K)
```

J will not be useful because the value returned will have been converted from real to integer.

JDATE(a) or CALL JDATE(a)[†] ‡

The current date is returned as the value of argument a or of the function in the form 5Ryyddd, where yy is the year and ddd is the number of the day within the year. The value returned is Hollerith data and can be output using an R format specification. The type of the function JDATE is integer.

SECOND(t) or CALL SECOND(t)[†]

The central processor time is returned from start-of-job in seconds as a real number, usually accurate to two decimal places. t is a real variable.

Example

```
DPTIM = SECOND (CP)
```

[†] These routines can be used as functions or subroutines. The value is returned via the argument and the normal function return.

[‡] Not available under SCOPE 2.

CALL WRITEC(a,b,n)

Transfers data from central memory to extended core storage or LCM.

No type conversion is done.

Example

LEVEL 3.8

CALL READEC(A,B,10)

CALL WRITEC(A,B,10)

TERMINAL INTERFACE SUBPROGRAMS*

CALL CONNEC (u,cs)

u unit designator.

cs optional character set designator (applicable to NOS BE 1 only): cs is an integer with a value from 0 to 2, in accordance with the character set to be used for the data entered or displayed at the terminal:

- 0 display code (default)
- 1 ASCII-95
- 2 ASCII-256 code

cs should not be specified if the installation character set is a 63-character set.

If a FORTRAN program to be run under INTERCOM for NOS BE 1, under the NOS 1 Time-Sharing System, or under HELLO7 for SCOPE 2, calls for input/output operations through the user's remote terminal, all files to be accessed through the terminal must be formally associated with the terminal at the time of execution.

In particular, the file INPUT must be connected to the terminal if data is to be entered there and an alternate logical unit is not designated in the READ statement. The file OUTPUT must be connected to the terminal if execution diagnostics are to be displayed or printed at the terminal, or if data is to be displayed or printed there and an alternate unit is not designated in the WRITE or PRINT statement. These files are automatically connected to the terminal when the program is executed under NOS 1 or under the RUN command of the EDITOR utility of INTERCOM.

Under HELLO7, any file can be connected by providing a FILE control statement specifying CNF = YES.

Under INTERCOM, any file can be connected to the terminal by the CONNECT command.

Under all three operating systems, the user can connect any file from within the program by using the CALL CONNEC statement.

* More information about INTERCOM is in the INTERCOM reference manual and the INTERCOM Interactive Guide for Users of FORTRAN Extended. More information about NOS 1 is in the NOS 1 Time-Sharing User's reference manual. More information about HELLO7 is in the SCOPE 2 reference manual.

Under NOS 1, if CONNEC specifies an existing local file, the buffers for the file are flushed (if it is an output file) and the file is returned. A subsequent DISCON for the file causes the connected file to be returned, but the pre-existing file is not reassociated with the file name.

If cs is not specified, it is set to 0. If display code is selected, input/output operations must be formatted, list-directed, NAMELIST, or buffered.

If either of the ASCII codes is selected, input/output operations must be either formatted or buffered. When buffer input/output is used, either a FILE control statement (section 16) specifying RT=S must be provided, or blanks cannot terminate a line.

When a CALL CONNEC specifies a file already connected with the character set specified, the call is ignored. If the file specified is already connected with a character set other than that specified, cs is reset accordingly.

Data input or output through a terminal under INTERCOM is represented ordinarily in a CDC 64-character or ASCII 64-character set, depending on installation option. For these sets, ten characters in 6-bit display code are stored in each central memory word. As described above, a terminal user can specify from within a FORTRAN program that data represented in an ASCII 95-character set (providing the capability for recognizing lowercase letters) or an ASCII 256-character set (providing the capability for recognizing lower-case letters, control codes, and parity) be input or output through the terminal. For the ASCII 95-character and 256-character sets, characters are stored in five 12-bit bytes in each central memory word. Characters in the ASCII 95-character set are represented in 7-bit ASCII code right justified in each byte with binary zero fill; characters in the ASCII 256-character set are represented in 8-bit ASCII code right justified in each byte with binary zero fill. When data represented in either ASCII character set code is transferred with a formatted input/output statement, the maximum record length should be specified in the PROGRAM statement as twice the number of characters to be transferred (see section 7). Allowance should also be made in input/output operations for the fact that internal characters require twice as much space as external characters.

When the ASCII 95-character or 256-character set has been specified for terminal input/output under INTERCOM, blanks following the end of data on each line are not translated into ASCII code but are retained in display code (as 55g). Unless the user eliminates them, these blanks will appear on output as lowercase m characters (two blanks in display code translates to one m in ASCII code). For formatted input, the user can identify the end of data on a line by scanning data entered in nR2 format until the Holierth constant 2Rbb (b = blank) is found. For buffered input, the end can be determined by reading the data into an array, manipulating it with a DECODE statement, and then scanning as with formatted input.

For a FORTRAN program run under NOS 1, any file can be connected to the terminal by the ASSIGN command. In addition, the user can connect any file from within the program by using the statement:

CALL CONNEC (u)

Data input or output through a terminal under NOS 1 is represented ordinarily in a standard 61-character set. However, the user can elect to have data represented in an ASCII 128-character set (which provides the capability for recognizing control codes and lowercase, as well as uppercase, letters) by entering the ASCII command. Characters contained in the standard set are stored internally in 6-bit display code, whether or not the ASCII command has been entered. The additional characters which complete the ASCII 128-character set are stored internally in 12-bit display code if the ASCII command has been entered; otherwise, they are mapped into the standard 61-character set and stored internally in 6-bit display code.

Under any system, if a file specified in a CALL CONNEC exists as a local file but is not connected at the time of the call, the file's buffer is flushed before the file is connected to the terminal.

CALL DISCON (u)

This subroutine disconnects a file from within a FORTRAN program.

This request is ignored if the specified file is not connected. After execution of this statement, the specified file remains local to the terminal. In addition, if the file existed prior to connection, the file name is re-associated with the information contained on the device where the file resided prior to connection. Data written to a connected file is not contained in the file after it is disconnected.

All files to be connected or disconnected during program execution must be declared in the PROGRAM statement. An attempt to connect or disconnect an undeclared file results in a fatal diagnostic.

Calls to CONNEC and DISCON are recognized and ignored when programs are not executed under INTERCOM or interactively under NOS 1.

Examples:

```
CALL CONNEC (6)
```

```
K = 4LAGE$
```

```
CALL CONNEC (K)
```

```
CALL CONNEC (6,2)
```

```
CALL CONNEC (4LDATA,1)
```

```
CALL DISCON (6)
```

MASS STORAGE INPUT/OUTPUT

Mass storage input/output (MSIO) subroutines allow the user to create, access, and modify files on a random basis without regard for their physical positioning. Each record in the file can be read or written at random without logically affecting the remaining file contents. The length and content of each record are determined by the user. A random file can reside on any mass storage device. Record Manager word addressable file organization is used to implement MSIO files. The Record Manager reference manual contains details of word addressable implementation.

A file processed by mass storage subroutines should not be processed by any other form of input/output.

RANDOM FILE ACCESS

Random file manipulations differ from conventional sequential file manipulations. In a sequential file, records are stored in the order in which they are written, and can normally be read back only in the same order. This can be slow and inconvenient in applications where the order of writing and of retrieving records differ and, in addition, it requires a continuous awareness of the current file position and the position of the required record. To remove these limitations, a randomly accessible file capability is provided by the mass storage input/output subroutines.

In a random file, any record may be read, written or rewritten directly, without concern for the position or structure of the file. This is possible because the file resides on a random-access mass storage device that can be positioned to any portion of a file. Thus, the entire concept of file position does not apply to a random file. The notion of rewinding a random file is, for instance, without meaning.

To permit random accessing, each record in a random file is uniquely and permanently identified by a record key. A key is an 18- or 60-bit quantity, selected by the user and included as a parameter on the call to read or write a record. When a record is first written, the key in the call becomes the permanent identifier for that record. The record can be retrieved later by a read call that includes the same key, and it can be updated by a write call with the same key.

When a random file is in active use, the record key information is kept in an array in the user's field length. The user is responsible for allocating the array space by a DIMENSION, type, or similar array declaration statement, but must not attempt to manipulate the array contents. The array becomes the directory or index to the file contents. In addition to the key data, it contains the word address and length of each record in the file. The index is the logical link that enables the mass storage subroutines to associate a user call key with the hardware address of the required record.

The index is maintained automatically by the mass storage subroutines. The user must not alter the contents of the array containing the index in any manner: to do so may result in destruction of the file contents. (In the case of a sub-index, the user must clear the array before using it as a sub-index, and read the sub-index into the array if an existing file is being reopened and manipulated. However, individual index entries should not be altered.)

Under NOS BE 1 and SCOPE 2, when a permanent file that was created by mass storage input-output routines is to be modified, the EXTEND control statement should be used to ensure that the new index is made permanent.

In response to a call to open the file, the mass storage subroutine automatically clear the assigned index array. If an existing file is being reopened, the mass storage subroutines locate the master index in mass storage and read it into this array. Subsequent file manipulations make new index entries or update current entries. When the file is closed, the master index is written from the array to the mass storage device. When the file is reopened, by the same job or another job, the index is again read into the index array space provided, so that file manipulation may continue.

MASS STORAGE SUBROUTINES

Object time input/output subroutines control the transfer of records between central memory and mass storage

OPENING A FILE

OPENMS opens the mass storage file and informs the system that it is a random (word addressable) file.

CALL OPENMS (u,ix,lngth,t)

u Unit designator.

ix Name of the array containing the master index.

lngth Length of master index

for a number index: $\text{lngth} \geq (\text{number of entries in master index}) + 1$

for a name index: $\text{lngth} \geq 2 * (\text{number of entries in master index}) + 1$

t Type of index.

t = 0 file has a number master index

t = 1 file has a name master index

The array (ix) specified in the call is automatically cleared to zeros. If an existing file is being reopened, the master index is read from mass storage into the index array.

Example:

```
DIMENSION I(11)
CALL OPENMS (5,1,11,0)
```

These statements prepare for random input/output on the file TAPE5 using an 11-word master index of the number type. If the file already exists, the master index is read into memory starting at address 1.

WRITING RECORDS

WRITMS transmits data from central memory to the file.

CALL WRITMS (u,fwa,n,k,r,s)

u Unit designator

fwa Name of the array in central memory (address of first word)

n Number of 60-bit words to be transferred.

k Record key.

for number index: $1 \leq k \leq \text{length} - 1$

for name index k = any 60-bit quantity except ± 0

r Rewrite.

r = 1 Rewrite in place. Unconditional request; fatal error occurs if new record length exceeds old record length.

r = -1 Rewrite in place if new record length does not exceed old record length, otherwise write at end of information.

r = 0 No rewrite; write at end of information (default value).

s Sub-index flag.

s = 1 Write sub-index marker flag in index control word for this record.

s = 0 Do not write sub-index marker flag in index control word (default value)

Except under SCOPE 2, Record Manager operates more efficiently if n is always a multiple of 64. The r parameter can be omitted if the s parameter is also omitted. The s parameter is for future file editing routines. Current routines do not test the flag, but the user should include this parameter in new programs (when appropriate) to facilitate transition to a future edit capability.

Example.

```
CALL WRITMS (3,DATA,25,6,1)
```

This statement unconditionally rewrites in place of file TAPE3, starting at the address of the array named DATA, a 25-word record with an index number key of 6. The default value is taken for the s parameter.

READING RECORDS

READMS transmits data from the file to central memory.

```
CALL READMS (u,fwa,n,k)
```

u Unit designator

fwa Name of the array in central memory (address of first word)

n Number of 60-bit words to be transferred. If n is less than the record length, n words are transferred without diagnostic.

k Record key

for number index: $k = 1 \leq k \leq \text{length} - 1$

for name index $k = \text{any 60-bit quantity except } \pm 0$

Except under SCOPE 2, Record Manager operates more efficiently if n is always a multiple of 64.

Example

```
CALL READMS (3,DATAMOR,25,2)
```

This statement reads the first 25 words of record 2 from unit 3 (TAPE3) into central memory starting at the address of the array DATAMOR.

CLOSING A FILE

CLOSMS writes the master index from central memory to the file and closes the file. CLOSMS is provided to close a file so that it can be returned to the operating system before the end of a FORTRAN run, to preserve a file created by an experimental job that might subsequently abort, or for other special purposes. In an overlay program, a mass storage file must be closed explicitly by CLOSMS.

```
CALL CLOSMS (u)
```

u Unit designator

Example:

```
CALL CLOSMS (2)
```

This statement closes the file TAPE2.

SPECIFYING A DIFFERENT INDEX

STINDEX selects a different array to be used as the current index to the file. The call permits a file to be manipulated with more than one index. For example, when the user wishes to use a sub-index instead of the master index, STINDEX is called to select the sub-index as the current index. The STINDEX call does not cause the sub-index to be read or written; that task must be carried out by explicit READMS or WRITMS calls. It merely updates the internal description of the current index to the file.

```
CALL STINDEX (u,ix,lngth,t)
```

u Unit designator.

ix Name of the array in central memory containing the sub-index (first word address).

lngth Length of sub-index

 for a number index: $\text{lngth} \geq (\text{number of entries in sub-index}) + 1$

 for a name index: $\text{lngth} \geq 2 * (\text{number of entries in sub-index}) + 1$

t Type of index. If omitted, t is the same as the current index.

t = 0 File has a number sub-index

t = 1 File has a name sub-index

Example 1:

```
DIMENSION SUBIX (10)
CALL STINDEX (3,SUBIX,10,0)
```

These statements select a new index, SUBIX, for file TAPE3 with an index length of 10. The records referenced via this sub-index use number keys.

Example 2:

```
DIMENSION MASTER (5)
CALL STINDEX (2,MASTER,5)
```

These statements select a new index, MASTER, from file TAPE2 with an index length of 5 and index type unchanged from the last index used.

COMPATIBILITY WITH PREVIOUS MASS STORAGE ROUTINES

FORTRAN Extended mass storage routines and the files they create are not compatible with mass storage routines and files created under versions of FORTRAN Extended before version 4. Major internal differences in the file structure were necessitated by adding the Record Manager interface. However, source programs are fully compatible. Any source program that compiled and executed successfully under earlier versions will do so under this version, provided that all file manipulated by mass storage routines are manipulated only by these routines.

FORTRAN-CYBER RECORD MANAGER INTERFACE

The CYBER Record Manager interface subroutines correspond closely to the CYBER Record Manager COMPASS macros. The names are different in some cases, and the parameters are not necessarily specified in the same order, but the processing performed by each subroutine is for the most part the same as the corresponding COMPASS macro.

Only a summary of the format, parameters, and purpose of each subroutine is given here. The differences in usage of these routines among the five file organizations are not discussed. In order to use these routines, it is necessary to refer to the CYBER Record Manager Guide for Users of FORTRAN Extended.

The user can either allocate buffers within a program block or allow CYBER Record Manager to allocate them dynamically when the file is opened.

To allocate a buffer within the program block, an array must be dimensioned and the length and position of the array specified by the BFS and FWB fields of the file information table. If either of these fields is zero when the file is opened, CYBER Record Manager allocates a buffer in central memory following the executable code and blank common (if declared). In an overlay program, dynamically allocated buffers are assigned to memory beyond the last word address of the longest overlay chain.

These routines are available under NOS BE 1 and NOS 1, but not under SCOPE 2.

PARAMETERS

The first parameter in the call to every subroutine is the name of the array containing the file information table being processed. This array should be dimensioned 35 words long: 20 words for the file information table itself and 15 for the file environment table. Any other parameters can be omitted; default values are supplied by CYBER Record Manager. With the exception of FILExx, parameters are identified strictly by position; thus, parameters can be omitted only from the right.

When a program is compiled with OPT=2, wsa must be specified on all calls to GET, GETP, and GETN. Also, ka must be specified on calls to GETN and PUT for indexed sequential, direct access, and actual key files.

Most of the parameters establish values for file information table fields. CYBER Record Manager always uses the most recent value established for a field; if a parameter is omitted, the previous contents of the field are used instead.

If the same subroutine is called twice in the same program unit with a different number of parameters, an informative diagnostic is issued by the compiler.

Values for parameters can be:

Array or variable names, identifying areas used for communication between the user program and CYBER Record Manager

Subprogram names for user owncode exits (must be specified in an EXTERNAL statement)

Integer values

L format Hollerith constants, used to express symbolic options and to identify file information table fields

The following mnemonics are used in the subroutine formats below. The precise meaning of any parameter depends on the file organization of the file being processed, as well as the subroutine being called. Not all parameters are applicable to all file organizations.

fit	Name of array containing file information table. Linked to the actual file by means of the LFN field.
wsa	Working storage area. A variable, array, or array element name indicating the starting location from which data is to be read or into which data is to be written.
pd	Processing direction established when file is opened: 5LINPUT Read only 6LOUTPUT Write only 3U-O Read and write 3LNEW File creation (indexed sequential, direct access, actual key only)
of	File positioning at open time: 1LR Rewind 1LN No file positioning 1LE Extend; file is positioned immediately before end of information
cf	File positioning after close: 1LR Rewind 1LN No positioning 1LU Unload

type Type of close (not a file information table field):

 4LFILE File close

 6LVOLUME Volume close

ka Location of key for access to record in a direct access, indexed sequential, or actual key file. For GETN, key is returned to this location.

wa Location of word address for read or write of record in a word addressable file

kp Character position (0 through 9) within word designated by ka in which key begins (direct access, indexed sequential only)

mkf Major key length (indexed sequential only).

rl Record length in characters for record to be read or written.

ex Name of user owncode error exit subroutine.

dx Name of user owncode data exit subroutine

pos For duplicate key processing

 1LP Write record preceding current record

 1LN Write record as next record

 1LC Delete or replace current record

 0 Delete or replace first record in duplicate key chain

count Number of records to be skipped; positive count indicates forward skip, negative count indicates backward skip, zero count should not be used.

ptl Number of characters to be used for a partial read or write.

skip Positioning before execution of GETP:

 0 Continue reading at current position

 4LSKIP Skip to beginning of next record before reading

lev Level number for end of section; 0 to 17.

SUBROUTINES

In the subroutine formats below, braces are used to indicate that more than one parameter occupies the same position. In all cases, these parameters are applicable to mutually exclusive file organizations.

CALL FILExx (fit, keyword₁, value₁, ..., keyword_n, value_n)

xx is SQ (for sequential files), IS (for indexed sequential files), DA (for direct access files), AK (for actual key files) or WA (for word addressable files)

All parameters, with the exception of fit, are paired. The first parameter in each pair is the name of a file information table field, in L format. The second parameter of each pair is the value to be set in that field. CALL FILExx must be executed before the file is opened.

CALL STOREF (fit, keyword, value)

STOREF specifies a value for a single file information table field. It can be called before or after the file is opened. The keyword is the name of a file information table field, in L format, and value is the value to be placed in that field.

IFETCH(fit,field)

IFETCH is an integer function that returns the current value of a single file information table field. A one-bit field is returned in the sign bit; if the bit is 1, the value of the function is negative; if the bit is 0, the value of the function is positive.

CALL OPENM(fit,pd,of)

OPENM opens a file and prepares it for further processing. Only FILExx, STOREF, and IFETCH can precede execution of CALL OPENM.

CALL CLOSEM (fit,cf,type)

CLOSEM closes the file after all processing has been completed. Only STOREF and IFETCH can follow execution of CLOSEM.

**CALL GET(fit,wsa, {
ka
wa }, kp,mkl,rl, {
ex
dx })**

GET reads a record and returns it to the working storage area (wsa). The last parameter specifies dx for sequential files, ex for all other files.

**CALL PUT(fit,wsa,rl, {
ka
wa }, kp,pos,ex)**

PUT writes a record to the file from the working-storage area (wsa).

CALL GETP(fit,wsa,ptl,skip,dx)

GETP reads a partial record. The number of characters to be read is indicated by ptl.

CALL PUTP(fit,wsa,ptl,rl,ex)

PUTP writes a partial record. The number of characters to be written by this write is indicated by ptl, the total number of characters to be written is given by rl (required only for record types U, W, and R).

CALL GETN(fit,wsa,ka,ex)

GETN reads the next record in sequential order from an indexed sequential, direct access, or actual key file. The key of the record read is placed in ka after the read.

CALL DLTE(fit,ka,kp,pos,ex)

DLTE deletes a record from an indexed sequential, direct access, or actual key file. The key of the record to be deleted is in the location specified by ka.

CALL REPLC(fit,wsa,rl,ka,kp,pos,ex)

REPLC replaces a record on an indexed sequential, direct access, or actual key file. The key of the record to be replaced is in the location specified by ka; the new record is in the working storage area indicated by wsa.

CALL CHECK(fit)

CHECK determines whether input/output operations on a file are complete and upon completion returns control.

CALL WEOR(fit,lev)

WEOR terminates a section or partition, or S type record.

CALL WTMK(fit)

Writes a tape-mark (equivalent to end of partition).

CALL ENDFILE(fit)

Writes an end of partition.

CALL REWND(fit)

REWND positions a tape file to the beginning of the current volume. It positions a mass storage file to the beginning of information.

ERROR CHECKING

CYBER Record Manager interface routines perform limited error checking to determine whether the call can be interpreted, but actual parameter values are not checked.

FILE INFORMATION TABLE PARAMETERS

E

Table E-1 shows the format of the file information table. A complete explanation of the meaning of all fields appears in the Record Manager Reference Manual.

Remaining tables describe most FIT fields pertinent to application programs for the various file organizations. Other parameters may be applicable under special circumstances, particularly for systems programmer uses.

Table E-1 File Information Table

59 53 47 41 35 29 23 17 11 5 0

LFN Logical File Name														Reserved				0
RL Current Record Length				P M	FC	M N	B T	B C	RT	D K	PC	FDT File Description Table				1		
												FET FET Address						
PTL Partial Transfer Length				OF	VF	CF	LT	ULP	FP			LX Address of Label Routine				2		
HL Header Length of T Record MLR Minimum Length of R Record				BFS Buffer Size in Words								DX Address of End-of-Data Routine				3		
TL Trailer Length of T Record				SES		IRS						EX Address of Error Routine				4		
				ES Error Status														
VNC	ECT Error Count		ERL Error Limit		F P B	S V O R	S D O C	F O C M N R	H B	LVL		FWB FWA of User Buffer				5		
FL Length of F Z Record MLL Maximum Record Length										C M E C	WSA/WSAL FWA of Working Storage Area				6			
KP	KL Key Length		MKL Major Key Length		RKP		RKW		PNA/PNAL Addr. of Partition Name		KA Key Address				7			
				IP				DP										
Multi File Name								Multi File Position Number										
MNS Minimum Block Length				RMK Record Mark Character		PC		KT		LA FWA of Label Area				9				
LE BCP of E Record Length Field				RB No. of Records in K Block				PAR Parameter List Address										
CF BCP of T Record Trailer Count Field																		
Reserved		Q B	CL	M P N	LOP		RL Record Count											
LBL Length of Label Area				MLL		BN Current Block Number								EC Error Code (Label)				
						TRC		DL										
MBL Maximum Block Length				NL		FLM		Reserved for Record Manager										
IBL Index Block Length				WA Current Word Address														
Reserved for Installation																		
HMB Number of Home Blocks						HRL Address of Key Hashing Routine												
CDT						DCT												
Reserved for 6RM																		

Table E-4. Direct Access Files

File Field Mnemonic	Meaning	Allowable Values ¹	Released Default If Any	Change After Creation	Notes	FILE Card	FILE Statement
BCK	Block checksums?	YES, NO	NO		Can suppress read sum but not write Fetch return: NO=0 YES=1	X	X
BFS	Buffer length, words						
CL	RT=T trailer count field length	1-6	RM	yes		X	X
CP	RT=T trailer count field start	0-10(2 ¹⁷ -1)	0	no		X	X
ECT	Non-fatal error count		0	no	Read only	X	X
ERL	Non-fatal error limit	0-511	0(int)	yes	0 suppresses messages also	X	X
EX	Error exit	routine name	0	yes			X
FET	FET location	program location	RM	yes			X
FL	RT=F,Z record length	1-2 ¹⁷ -1		no		X	X
FLM	Maximum file records	0-2 ²⁸ -1	0(int)		Store directly	X	
FO	File organization	DA	required	no	Fetch return DA: 5	X	X
FP	File position				Read only; Fetch return: BOI=1 EOI=100		
FPB	User bit	0,1			User sets and reads		
FWI	Flush buffer immediately?	YES, NO	NO	yes	Fetch return: NO=0, YES=1	X	X
FWB	BFS buffer location	program location	RM	yes		X	X
HL	RT=T fixed header length	1-10(2 ¹⁷ -1)	0	no		X	X
HMB	Number of home blocks	1-2 ²⁸ -1	required	no		X	X
HRL	User hashing routine	routine name	0	no			X
IRS	Invalid request code				Fetch returns octal code: read only		
KA	Key program location	program location		yes	For delete, GETN, seek only		X
KL	Key length	1-MRL	0	no		X	X
KP	Key start in KA	0-9	0	yes		X	X
LFN	Logical file name	1-7 letters or digits; letter start	required	yes		X	X
LL	RT=D length field length	1-6	0	no		X	X
LP	RT=D length field start	0-MRL	0	no		X	X
MBL	Home block length	1-10(2 ¹⁷ -1)	5110	no	RM may calculate	X	X
MNR	Minimum record length	1-MRL	required	no		X	X
MRL	Maximum record length	1-10(2 ¹⁷ -1)	required	no		X	X
OVR	Overflow record residence	OVR, OVR, OVH	OVR	no		X	X

Table E-4. Direct Access Files (continued)

FIT Field Mnemonic	Meaning	Allowable Values†	Released Default If Any	Change After Creation	Notes	FILE Card	FILE Statement
PD	Processing direction	INPUT, OUTPUT I O, NEW	INPUT		New required to create. Fetch return: INPUT=0, OUTPUT=2, I O=3		X
PM	Processing mode	R, S	R	yes	Set with Store. Fetch return: R=0, S=1	X	
RB	Number records per block	1 ≤ 2 ¹² - 1	2			X	X
RKP	Relative key position in RKW	0 ≤ 9	0	no	MBL overrides RB	X	X
RKW	Relative key position in record	0 ≤ MRL	0	no		X	X
RL	Current record length	1 ≤ MRL	0				
RMK	RT=R record mark character	any character	62 octal	no	Specify octal	X	X
RT	Record type	W, F, R, Z, D, T, U, S	W	no		X	X
SDS	Statistics on dayfile?	YES, NO	NO	yes	ZZZZZEF if NO	X	X
TL	RT=T trailer length	1 ≤ 10(2 ¹⁷ - 1)				X	X
TRC	Number of trace transaction	0 (none), 1 ≤ 31, 31 (all)	0	yes			X
WSA	Working storage area	program location	required	yes			X

†RM Record Manager provides by default

SUBROUTINE 'UNLOAD'

PURPOSE

UNLOAD A FORTRAN FILE

FUNCTIONAL CATEGORY: 04

USAGE

CALL UNLOAD (IUNIT)

DESCRIPTION OF PARAMETER

IUNIT - FORTRAN LOGICAL UNIT NUMBER

REMARKS

THE FILE TO BE UNLOADED MUST BE LISTED IN THE FORTRAN
PROGRAM STATEMENT. FOR NON-STANDARD FILES, SEE 'CLUNLU'.

FORTAN SEQUENTIAL FILES SHOULD HAVE THEIR BUFFERS FLUSHED
BY ISSUING A REWIND BEFORE CALLING THIS ROUTINE.

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED

PART OF LANGUAGE

NONE

OTHERS

CLUXXX - UNLOAD A FILE

LANGUAGE: FORTRAN IV EXTENDED

CM REQUIRED: 214

AUTHOR

DAVID V SOMMER - DYNRDC CODE 1492.2

DATE WRITTEN: 03/07/75

DATE(S) REVISED

LOCATION OF DECKS

SOURCE

UPDATE LIBRARY: NSRUCPL.10=CSYS

OBJECT

EDITLIB USER LIBRARY: NSRDC

SUBROUTINE 'ZPFUNC'

PURPOSE

CALLABLE PERMANENT FILE FUNCTIONS

USAGE

CALL ZPFUNC (IRC, IPRMS, NW)

DESCRIPTION OF PARAMETERS

IRC - INPUT: PERMANENT FILE FUNCTION DESIRED

- 1 - ATTACH
- 2 - CATALOG
- 3 - EXTEND
- 4 - PURGE
- 5 - RENAME
- 6 - PERM

OUTPUT: ERROR RETURN CODE

(EITHER ZPFUNC- OR SCOPE-GENERATED)

ZPFUNC-GENERATED

IRC MEANING

- 1 IRC HAD ILLEGAL INPUT VALUE
- 2 LAST CHARACTER OF AC IS NOT DISPLAY CODE
NUMERIC

SCOPE-GENERATED

DEC	OCT	COMMD	MEANING
0	000	ALL	FUNCTION SUCCESSFUL
1	001		ID ERROR
2	002	A,P	LFN ALREADY IN USE
3	003	CEPR	UNKNOWN LFN
4	004	C	TOO MANY CYCLES (5 MAX)
5	005	C,E	PF CATALOG FULL
6	006		NO LFN OR PFN
8	010	C,E	LATEST INDEX NOT WRITTEN
9	011	C	FILE NOT ON A PF DEVICE
10	012	A	FILE NOT IN SYSTEM
11	013	A	ARCHIVE RETRIEVAL ABORTED
12	014	C,R	INVALID CYCLE NUMBER
13	015	C	CY LIMIT REACHED (999 MAX)
14	016	C	PF DIRECTORY FULL
15	017	CEPR	FUNCTION ATTEMPTED ON A NON-PERMANENT FILE
16	020		FCN ATTEMPTED ON NON-LOCAL FILE
18	022	C	FILE NEVER ASSIGNED TO A DEVICE
19	023	A	CYCLE INCOMPLETE OR DUMPED
20	024	A	FILE ALREADY ATTACHED
21	025	A	FILE UNAVAILABLE
23	027		ILLEGAL LFN
24	030	A	FILE DUMPED
27	033		ALTER NEEDS EXCLUSIVE ACCESS
29	035	C	FILE ALREADY IN SYSTEM
56	070		PFM STOPPED BY SYSTEM
57	071		SECURITY VIOLATION
58	072		FILE DEFINITION BLOCK ADDRESS

IPRMS - PARAMETERS FOR PF FUNCTION
IPRMS CONTINIS EUNCTIONS
1 LFN

2-5	PFN	A.C.P.R	1-7 CHAR, LEFT
6	ID	A.C.P.R	(IF 0, 1ST 7 CHAR OF PFN ARE USED (A.C.P.)
7	TK	***	1-40 CHAR, LEFT
A	RD	***	1-9 CHAR, LEFT
9	EX	***	1-9 CHAR, LEFT
10	WU	***	1-9 CHAR, LEFT
11	CN	***	1-9 CHAR, LEFT
12	MR	A.C	0 OR NOT
13	AC	C.R***	10 CHAR (LAST IS NUMERIC
14	CY	A.C.P.q	INTEGER (1-999)
15	RP	C.R	NEGATIVE 10 RETURN VALUE
16	AR	C.R ***	INTEGER 10-999)
17	LC	A.P	1-9 CHAR, LEFT
18	RW	A.C	0 OR NOT
19	SN	A.P	0 OR NOT
20	VS		1-7 CHAR, LEFT
21	FD	C	VOLUME SERIAL NUMBER
22	ST		(RESERVED FOR FUTURE)
			2-CHAR, LEFT
			(DA, IS, AK)
			STATION ID (MULTI-FRAME)
			(RESERVED FOR FUTURE)

A=ATTACH; C=CATALOG; P=PURGE; H=RENAME;
* LEFT=LEFT-JUSTIFIED, BLANK OR ZERO PADDED
** FOR A.P. INTERPRETED AS SUBMITTED PASSWORD
FOR C. USED AS BOTH DEFINITION AND SUBMITTED PW
*** FOR H. WHEN SET TO 1, THE PASSWORD IS CLEARED
**** FOR C. WHEN OMITTED, AC IS TAKEN FROM CHARGE CARD
OR LOGIN

NW - NUMBER OF LAST FILLED ELEMENT IN IPRMS (OPTIONAL)

REMARKS
NONE

SUBROUTINE AND FUNCTION SUBPROGRAMS REQUIRED
PART OF LANGUAGE
AND SHIFT

OTHERS
12PFH1Z
12RT12M
NIMVAR
ZPFMAC
ZPFPSM

CM REQUIRED: 445R

AUTHOR
C M CHENNICK - NSRDC CODE 1A32

DATE WRITTEN: 01/75

DATE(S) REVISED
05/75 01/02/76

LANGUAGE: FORTRAN IV EXTENDED

FUNCTIONAL CATEGORY: Q3

LOCATION OF DECKS
SOURCE

CODE 1A32

OBJECT
EDITLIB USER LIBRARY: NSRDC

C-22

08/22/77

244 UNC - 3 OF 4

EXAMPLE

```

PROGRAM TEST (INPUT, OUTPUT, TAPE5=INPUT, TAPE6=OUTPUT)
DIMENSION IPRMS(22)
DATA LFN / ALMYFILE/
DATA IU / 4LCXXX/
DATA IPFN1, IPFN2/ 1UMPERMANENTF, 3LILE/ (SEE NOTE BELOW)
DATA IAC / 10H9876543210/
DATA IPW / ALPASSW0RD/

```

...

```

DO 10 I=1,22
10 IPRMS(I) = 0
IPRMS( 1) = LFN
IPRMS( 2) = IPFN1
IPRMS( 3) = IPFN2
IPRMS( 6) = IU
IPRMS( 7) = IPW
IPRMS(13) = IAC
IRC = 2
NW = 13
CALL ZPFUNC (IRC, IPRMS, NW)
IF (IRC .NE. 0) WRITE (6, 20) IRC, IRC
20 FORMAT ('DEHRROR - IRC=* I7, * (02 * 03, *R*)')

```

(SEE NOTE BELOW)

...

```

STOP
END

```

THIS PROGRAM IS EQUIVALENT IN EFFECT TO THE FOLLOWING
CONTROL CARDS:

```

CATALOG(MYFILE,PERMANENTFILE,ID=CXXX,AC=9876543210,
PW=PASSW0RD)

```

FOR A NEW CYCLE OF AN EXISTING FILE:

```

CATALOG(MYFILE,PERMANENTFILE,ID=CXXX,AC=9876543210,
TK=PASSW0RD)

```

FOR THE CREATION OF A NEW FILE.

NOTE1 IF THESE TWO LINES ARE OMITTED (THAT IS, AC IS
ZERO), AC WILL BE TAKEN FROM THE HATCH CHARGE CARD
OR THE INTERCOM LOGIN.

APPENDIX D

MPP CALLS TO SITE DEPENDENT SOFTWARE

Appendix D presents full FORTRAN compilation listings of all program elements that reference possible site dependent software from program MPP. These listings are included to assist the user in the event major modifications are needed when adapting to the appropriate subroutine calls at the bench mark site.

03/22/79 09.50.52

FIN 4.6.433

73/74 OPT=2 ROUND=0/ TRACE

SUBROUTINE CTL2

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230 C 185 READIOLDRJIOLOP,OLDN,OLDANG
      WRITE(TRAJCT)OLDR,OLDN,OLDANG
      IF(OLDR.GF.0.0) GO TO 185
      NTRAJ=NTRAJ+1
      GO TO 200

235 C
      C
      C THIS IS THE TRAJECTORY FROM AN INITIAL ANGLE THAT WAS
      C DELETED.
      C
      C 190 READIOLDRJIOLOP
      IF(OLDR.GF.0.0) GO TO 190
      NTRAJ=NTRAJ+1
      GO TO 180

240 C
      C RECALL-- NEGATIVE TRAJECTORY SIGNALS THE END OF A RAY.
      C
      C *****
      C ACCESS PREVIOUSLY CREATED DIRECT ACCESS FILE HERE.
      C *****
      C 200 CONTINUE
      C
      C
      C INDEXR = INDEX OF RAY AMONG ORIGINAL SET OF RAYS ON DISK.
      C KLR2(KK,INDEXR) = THE NUMBER OF ARRIVALS OF RAY INDEXR AT
      C THE KK-TH SOURCE DEPTH.
      C
      C INDEXR=IANG(I)
      C
      C NO 220 KK=1,NDEPS
      NARRIV=KLR2(KK,INDEXR)
      NARRIV(KK)=NARRIV
      ITEMP = INDEXR * 1000 + KK * 1000
      C
      C NO 210 NA=1,NARRIV
      KEYOLD = ITEMP + NA
      CALL GETIOLDFIT,ARVR2,KEYOLD,0)
      NGETS = NGETS + 1
      RTRK(NA) = ARVR2(12)
      XT(KK,NA) = ARVR2(13)
      ANGLE(KK,NA) = ARVR2(14)
      ISIG(KK,NA) = IARVR2(15)
      TTRK(NA) = ARVR2(16)
      MCSKK(NA) = IARVR2(17)
      C
      C 210 CONTINUE
      C 220 CONTINUE
      C
      C NOW GET THE PROPER SEQUENTIAL SIGNATURE DATA.
      C
      C 240 READIOLDRJIOLOP(ISEQ(KK),KK=1,IWORDS)
      NOLDIS=NOLDIS+1

```



```

C
460 CALL GETQAN(JBEGIN)
    CALL GEIPRO(JBEGIN)
    JBEGIN = IABS(JBEGIN)
    TANTH7 = TAN(THETA0)
    IF(IIREGMP.GT.0).AND.(JBEGINP.GT.0)) GO TO 390
    LINFLG(1) = JBEGIN
C 350 IF (TANTH7+AR(JBEGIN,JBEGIN)) 360,390,370
350 IF (TANTH7+AR(JBEGIN,JBEGIN)) 360,390,370
360 IF(IIREGMP.GT.0) GO TO 390
C IF (VDRY(JBEGIN,JBEGIN+1) .NE. REGIN) GO TO 390
    IF (VDRY(JBEGIN,JBEGIN+1) .NE. REGIN) GO TO 390
    JBEGIN = JBEGIN+1
    LINFLG(1) = JBEGIN
    GO TO 350
370 JBEGIN = JBEGIN-1
    GO TO 390
380 IF(JBEGIN.EQ.1) GO TO 390
    GUP=AC(IIREGIN,JBEGIN-1)*SINTH7+AC(IIREGIN,JBEGIN-1)*COSTH7
    GUP=AC(IIREGIN,JBEGIN-1)*SINTH7+BC(IIREGIN-1)*COSTH7
C GON=AC(IIREGIN,JBEGIN)*SINTH7+AC(IIREGIN,JBEGIN)*COSTH7
    GON=AC(IIREGIN,JBEGIN)*SINTH7+BC(IIREGIN)*COSTH7
    SUP = SIGN(1.,GUP)
    SON = SIGN(1.,GON)
    IF(SUP-SON)386,382,384
382 IF (SUP) 390,390,370
384 IF (SINTH7) 390,370,370
386 WRITE(6,387)
387 FORMAT (1H0,//////.23H AXIAL RAY - NOT TRACED)
    GO TO 390
390 IF(THETA0)393,391,395
C 391 IF (AC(IIREGIN,JBEGIN)) 394,392,396
391 IF (AC(IIREGIN,JBEGIN)) 394,392,396
392 THRS7 = 0.
    GO TO 399
C
C      INSERT EXTRA HORIZONTALS
C      1. IF DOWN-GOING RAY IN NEGATIVE GRADIENT ADD SH
C      TO BE CONSISTENT THROUGH ZERO DEGREES
C      2. IF UPGOING IN POSITIVE GRADIENT ADD RH
C 393 IF (AC(IIREGIN,JBEGIN) .GT. 0.0) GO TO 398
393 IF (AC(IIREGIN,JBEGIN) .GT. 0.0) GO TO 398
394 K = 1
    NSH = 1
    CALL JPUTR (ISFO(1),6*K-5,6,0)
    GO TO 399
C 395 IF (AC(IIREGIN,JBEGIN) .LT. 0.0) GO TO 399
395 IF (AC(IIREGIN,JBEGIN) .LT. 0.0) GO TO 399
396 K = 1
    LASTEV = 1
    NRH = 1
C
C      SET UP OF SEQUENTIAL SIGNATURE
C      THE SEQUENTIAL SIGNATURE STORES EVENTS SEQUENTIALLY
C      FROM RIGHT TO LEFT WITHIN A WORD,THE WORDS THEMSELVES GOING
C      FROM LEFT TO RIGHT STARTING AT ISEG(1,1). IN THE 1TH

```



```

575 CALL JPUTR (ISFQ(1),6*K-5,6,2)
576 IFRST = 1.
577 IFX(1) = 1.
578 CONTINUE
579 IZARV = 0
580 NROOTS = 0
581 NADRY = 3
582 IFLAG1 = 0
583 SINTH7 = SIN(THETA0)
584 SIN72 = 2.* (SIN(THETA0 / 2.))**2
585 COSTH7 = COS(THETA0)
586
587 NBDRY = 2 IF VERTICAL BOUNDARY OF A TRIANGULAR SECTOR
588 IS AT MINIMUM IN RANGE
589 3 IF WE ARE IN A HORIZONTAL SECTOR OR A TRIANGULAR
590 SECTOR WITH THE VERTICAL BOUNDARY AT MAXIMUM IN RANGE.
591
592 IF ( (RTYPE(IREG) .EQ. 1) .OR. (JSEC .GT. (NSEC(IREG)-NMORZ(IREG)
593 1)) .OR. (YADRY(IREG,JSEC) .EQ. YBDRY(IREG,JSEC+1) ) ) GO TO 405
594 IF (
595 1. .OR. (YADRY(JSEC) .EQ. YADRY(JSEC+1) ) ) GO TO 405
596 NBDRY = 2
597
598 405 CURV = 0.
599 PHIO=THETA0-ALPHR(IREG,JSEC)
600 PHIO=THETA0-ALPHR( JSEC)
601 COSPO = COS(PHIO)
602 SINPO = SIN(PHIO)
603 CURV=SIGN((GRAD(IREG,JSEC)*COSPO/CO),SINTH7*AC(IREG,JSEC)+
604 1 CURV=SIGN((GRAD( JSEC)*COSPO/CO), (SINTH7*AC( JSEC)+
605 1 COSTH7*RC( JSEC)))
606 IF IARS(CURV).LE.(1.0E-9)) CURV = 0.
607 SINAL=SINALPHR(IREG,JSEC)
608 SINAL=SINALPHR( JSEC)
609 COSAL=COSIALPHR(IREG,JSEC)
610 COSAL=COSIALPHR( JSEC)
611 IF IFLAG.EQ.0) GO TO 409
612 TDERV = TDERV + DFAC3*(OFAC1+CURV)
613
614 409 CONTINUE
615 IF IJPRINT.EQ.1)
616 1 WRITE(6,4090) IFLAG,TDERV,OVERT,NMORZ,NBDRY,OFAC1,OFAC3,CURV,DO
617 4090 FORMAT(4X,'IFLAG=',I1,' TDERV=',F10.3,' OVERT=',F10.3,'
618 NMORZ=',F10.3,/,
619 2 44X,'NBDRY =',I1,3X,
620 4 40FAC1=',F10.3,' OFAC3=',F10.3,' CURV =',F10.3,
621 4 40FAC1=',F10.3,' OFAC3=',F10.3,
622 4 40FAC1=',F10.3,
623 IF (CURV.EQ.0.) GO TO 410
624 RAD = 1./CURV
625 GO TO 411
626 410 AL = -SINTH7 / COSTH7
627 RL = Y0 - AL * X0
628 RAD = 0.
629
630 1.2.4 COMPUTE INTERSECTIONS WITH SECTOR BOUNDARIES
631 LOOP ON NUMBER OF ELIGIBLE BOUNDARIES (2 OR 3)

```


03/22/79 08.50.52

FTN 4.544.33

SURROUTINE CTL2 73/74 OPT=2 ROUND=*/ TRACE

```

DVR = DYRSV
I80 = 1
IF(JLINE.EQ.3) JLINE = 0
IF(JLINE.NE.0) JLINE = JSEC + JLINE - 1
IF((Y1.EQ.0.0).AND.(TIMEA0.NE.0.0)) GO TO 470
GO TO 480

C
C      1.2.6 RAY HAS HORIZONTAL INSIDE SECTOR
C
460 X1 = X0 - RAD*SINTHZ
Y1 = Y0 + RAD*SINTHZ
T1 = 0.
IF(X1.LT.X0) GO TO 800
DXR = -SINTHZ
DVR = SINTZ
C1 = VELOC(IREG,JSEC,X1,Y1)
DT = TSUBC(IREG,JSEC,DXR,DVR)
470 IHORZ = 1
XTN=X1/6076.1
TTN=T1*57.29577951
C *****
C      JP=3 FOR DERUG.
C *****
C      JP = 3
C      IF(JPRINT.EQ.2)
C      1 WRITE(6,1005)JP,XTN,Y1,TTN,IREG,JSEC,(INDIC(II),II=1,6)

C      1.2.7 CHECK FOR BOTTOM REFLECTION
C      ROUTINE MPHITR COMPUTES INTERSECTION WITH BOTTOM
C      CALLING I80T = BOTTOM FACET OF RAY IF LAST POINT ON
C      RETURNING I80T =
C      0 NO REFLECTION
C      1 REFLECTION BEFORE XT,YT
C      2 REFLECTION AT XT,YT
C      IFACET = REFLECTION FACET
C      THE POSITION VARIABLES ARE SENT AND RETURNED IN /ROTREF/
C      INCLUDING THE GRAZING ANGLE PSI AND THE TIME INCREMENT DT
C
480 CONTINUE
I80T = LINFGL(3)
XTN0=X0/6076.1
XTN1=X1/6076.1
IF(I KPRMT .GT. 1) WRITE(6,485)IREG,JSEC,I80T,XTN0,Y0,XTN1,Y1,
1
485 FORMAT(15X,'AT FORMAT 485,IREG,JSEC,I80T,XTN0,Y0,XTN1,Y1,DXR,DVR=
1=',3I3,AF9,3,2F11.4)
CALL MPHITR(IREG,JSEC,I80T,IFACET,DXR,DVR)
IF(I80T.EQ.0) GO TO 490
C *****
C      FOR DERUG,JP=8 (BOTTOM BOUNCE TEST.)
C *****

```



```

C *****
      JP = 4
      IF(JPRINT.EQ.2)
        1 WRITE(6,1000) JP,XIN,YI,TTN,IFLAG2
        C1 = VELOC(IREG,JSEC,XI,YI)
        DT = TSURC(IREG,JSEC,DXR,DYR)
        GO TO 540
      510 CALL LTM(LIN10,AL,RL,0.0,YDEP(LDEPTH),IFLAG2,XI,YI)
        XTN=XI/6076.1
        TTN=TI*57.29577951
C *****
      JP=5 FOR DERUG.
C *****
      JP = 5
      IF(JPRINT.EQ.2)
        1 WRITE(6,1000) JP,XIN,YI,TTN,IFLAG2
        C1 = VELOC(IREG,JSEC,XI,YI)
        DT = TSURC(IREG,JSEC)
      540 IARV = 1
        Y1 = YDEP(LDEPTH)
        XTN=XI/6076.1
        TTN=TI*57.29577951
C *****
      JP=6 FOR DERUG.
C *****
      550 JP = 6
      IF(JPRINT.EQ.2)
        1 WRITE(6,1005) JP,XIN,YI,TTN,IREG,JSEC,IINDIC(II),II=1,6)
        1.2.9 VALID POINT ON TRACE HAS BEEN FOUND
        XNM = XI/6076.1
        TOG = TI*57.29577951
        TIME = TIME + DT
C *****
      WRITE(TRAJCT) XNM,YI,TI
      1.2.10 COMPUTE SPREADING FACTORS AT THIS POINT
      DD = INCREMENT TO SPREADING BETWEEN XO AND XI
      DSIGN = SIGN OF QVET
      IF QVET CHANGES SIGN CAUSTIC HAS OCCURRED.
      OTHERWISE GO TO 559
      IF(CURV.EQ.0.) GO TO 555
      DXSI = RAD * (DXR * COSAL - DYR * SINAI)

```

FIXFOR 49
 CTL2 750
 CTL2 751
 FIXFOR 50
 CTL2 753
 CTL2 754
 CTL2 755
 CTL2 756
 FIXFOR 51
 FIXFOR 52
 FIXFOR 53
 FIXFOR 54
 FIXFOR 55
 FIXFOR 56
 FIXFOR 57
 CTL2 757
 CTL2 758
 FIXFOR 58
 CTL2 760
 CTL2 761
 CTL2 762
 CTL2 763
 FIXFOR 59
 FIXFOR 60
 FIXFOR 61
 FIXFOR 62
 FIXFOR 63
 FIXFOR 64
 FIXFOR 65
 CTL2 764
 CTL2 765
 FIXFOR 66
 CTL2 767
 CTL2 768
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 CTL2 789
 CTL2 790
 CTL2 791

03/22/79 06.50.52

FTN 4.6.4.11

73/74 DPT=2 ROUND=0/ TRACH

SUBROUTINE CIL2

```

915      DD = ARS (DXST / COSP0)
          GO TO 560
955      DD = ARS(1.5*(C1+C0)/C0*(K1-K0)/COSTH7)
          560 CONTINUE
          QVERT = QVFT
          QVFT = QVFT + TQERV * DD
          IF (QSIGN*QVERT.GT.0.) GO TO 559
          1.2.11 GAUSTIC PROCESSING
          CAUSTIC WILL BE LOCATED IF KPRINT .GR. 0
925      OSGN = -OSIGN
          NC = NC + 1
          IF (QVERT .EQ. 0.00 .OR. KPRINT .EQ. 0) GO TO 559
          IF (CURV .EQ. 0.00) GO TO 556
          *****
930      *****
          LOCATING CAUSTIC FOR CURVED RAYS
          *****
          WRITE(6,1020)
          1020 FORMAT(1X,'CAUSTIC LOCATION OF CURVED RAY IS NEXT-')
          DXIC = ARS (QVERTP * COSP0 / TQERV)
          *****
          IF (DXST .LT. 0.00) DXIC = -DXIC
          NSPC = ARS (DXIC / RAD)
          SPC1 = SINP0 + NSPC
          SPC2 = SINP0 - NSPC
          PHITMP=11-ALPHA(IREG,JSEC)
          PHITMP=11-ALPHA1 JSEC)
          SPTP = SIGN (PHITMP, 0.00)
          SPC = SPC1
          IF (1SPC2.GT.AMIN1(SPTP,SINP0)).AND.(SPC2.LT.AMAX1(SPTP,SINP0))
          1 SPC = SPC2
          PHIC = ASIN (SPC)
          IF ((PHIC.GF.AMIN1(PHI0,PHITMP)).AND.(PHIC.LE.AMAX1(PHI0,PHITMP)))
          1 GO TO 552
          IF (PHIC .LT. 0.00) GO TO 551
          PHIC = 3.141592675 - PHIC
          GO TO 552
          551 PHIC = -3.141592675 - PHIC
          552 GCST = ARS (COS (PHIC) * DD / COSP0)
          DETAC=(GCST-C0)/GRADI(JSEC)
          DETAC=(GCST-C0)/GRADI JSEC)
          DXC = DXIC * COSAL - DETAC * SINAI
          NYC = DETAC * COSAL + DXIC * SINAI
          XIC = X0 + DXC
          XNMC = XIC / 6074.10
          YCAS = Y0 + NYC
          DXC = DXC / RAD

```



```

559 CONTINUE
  QHORZ = X1 * SFCIM7
  YDERV = YDERV * C1 / C0
  IOFLAG = 0
  IF (IROT.EQ.0) GO TO 562
  561 QFAC1 = CURV
  IOFLAG = 1
  QFAC3 = QVERT * COS(PST) / SIN(PST)
  GO TO 564
  562 IF (ISURF.EQ.0) GO TO 564
  IF (ISURF.EQ.0) GO TO 563
  PST = -PI
  GO TO 561
  563 QFAC1 = -CURV
  IOFLAG = 2
  IF (JLINE.EQ.0) GO TO 564
  BETAR = PI * ATAN(IAR(IREG, JLINE))
  BETAB = PI * ATAN(IAB(
  JLINE))
  GO TO 566
  564 BETAR = PI - 1.5707963
  566 QFAC3 = QVERT * COS(BETAB) / SIN(BETAB)
  C
  C
  C 1.2.13 UPDATE TRANSMISSION LOSS
  1050 C
  568 CONTINUE
  TSLOSS = ARS (QVERT * QHORZ) / 9.00
  SLOSS = 10.00 * ALOG10 (AMAX1 (1.00, TSLOSS))
  TLOSS
  TLOSS = SLOSS + RLOSS
  IF (TLOSS .GE. DBL50) GO TO 401
  IF (IARV.EQ.0) GO TO 580
  C
  C 1.2.14 STORE ARRIVAL INFORMATION
  C
  C IF RAY HAS A HORIZONTAL ARRIVAL STORE AS
  C ARRIVAL - HORIZONTAL - ARRIVAL
  C
  C 580 STORE HORIZONTAL IN SIGNATURE
  C 585 BOTTOM HORIZONTAL PRECEDED BY 8R NOT COUNTED
  C 587 TURN OFF HORIZONTAL FLAG
  C
  570 CONTINUE
  NARV(LDEPTH) = NARV(LDEPTH) + 1
  INARV
  ISIG(LDEPTH, INARV) = NSR * IO1 + NSH * IO2 +
  1 LASTEV = 0
  NCS(LDEPTH, INARV) = NC
  X(LDEPTH, INARV) = 1.00 / TSLOSS
  ANGLE(LDEPTH, INARV) = TNG
  P(LDEPTH, INARV) = PMH
  T(LDEPTH, INARV) = TIME
  IF (INARV.EQ. INTCUT) GO TO 402
  IF (KPOINT.EQ.1)
  1 WRITE(6,107) XMH, Y1, TDC, TIME, TLOSS, NARH, NSH, NSR, NC, (NARV(I)),
  2 IF=1, NDEPSI
  580 IF (IMORZ.EQ.0) GO TO 590
  C

```

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```

1005      C      STORE HORIZONTAL IN SIGNATURE
      C
      IF (TIME TAB.LY.0.) GO TO 505
      NSH = NSH + 1
      LASTEV = 0
      IR = 0
      GO TO 506
1010      505 IF (LASTEV.EQ.2) GO TO 507
      LASTEV = 1
      NRM = NRM + 1
      IR = 2
      K = K + 1
      CALL JPUTB (ISEQ(1),6*K-5.6,IR)
      CONTINUE
      IF (KPRNT.GT.0)
1015      1WRITE(6,107)XNM,Y1,TGC,TIME,TLOSS,NRM,NBR,NSH,NSR,NC,(NARV(1)),
      2      II=1,NDEPS)
      IF (IARV.EQ.0) GO TO 610
      IM7ARV = 1
      IOFLAG = 0
      IMOR2 = 0
      GO TO 570
1020      590 IF (ISURF.EQ.0) GO TO 600
      C
      C      1.2.15 STORE SURFACE REFLECTION
      C
      LASTEV = 0
      IR = 1
      MSR = MSR + 1
      K = K + 1
      CALL JPUTB (ISEQ(1),6*K-5.6,IR)
      Y1 = -Y1
      TGC = Y1*57.29577951
      IF (KPRNT.GT.0)
1025      1WRITE(6,107)XNM,Y1,TGC,TIME,TLOSS,NRM,NBR,NSH,NSR,NC,(NARV(1)),
      2      II=1,NDEPS)
      GO TO 610
      600 IF (IROT.EQ.0) GO TO 610
      C
      C      1.2.16 STORE BOTTOM REFLECTION
      C
      TOLD = Y1
      IF (KPRNT.GE.1)
1030      1WRITE(6,107)XNM,Y1,TGC,TIME,TLOSS,NRM,NBR,NSH,NSR,NC,(NARV(1)),
      2      II=1,NDEPS)
      NBR = NBR + 1
      C
      C
      C      SAVE XNM AND PSI TO BE USED IN PARTS (PROF) TO
      C      CALCULATE THE BOTTOM LOSS.
      C
      WRITE(1180)XNM,PSI
      RLOSS=RLOSS+FLOSS(XNM,PSI,W0)
      TLOSS = TLOSS + RLOSS
      IR = IFACFT + 2
1035
1040

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03/22/79 08.50.52

FTN 4.6+433

TRACE

73/74

SUBROUTINE CTL2

```

1145      IF(LASTEVE.NE.1) GO TO 605
      C
      C      IF LAST EVENT WAS BOTTOM HORIZONTAL REMOVE FOR SIGNATURE
      C
      NBM = NRM - 1
      K = K-1
      IF (K.EQ. 1) IFXHI(1) = 0
      605 LASTEV = 2 = K + 1
      K
      CALL JPUTR (ISEQ(1),6,K-5,6,IR)
      Y1 = 2. + PSI + YOLD
      YDG = Y1*57.29577951
      IF (KPRNT.GT. 0)
      1WRITE(6,107)XNM,Y1,YDG,TIME,YLOSS,NBM,NBR,NSH,NSR,NC,(NARV(11),
      2      II=1,NDEPS)
      C
      C      WRITE(TRAJCT) XNM,Y1,Y1
      C
      C      WRITE(REFLECTED ANGLE TO TRAJECTORY FILE.
      C
      C      IF (Y1.GT. ANGMX) GO TO A03
      610 IF(IRD.EQ.0) GO TO 770
      C
      C      1.2.17 UPDATE IREG AND JSEC
      C
      C      IF ((JLINE.EQ. 0) .OR. (X1.EQ. XDRY(IREG+1))) GO TO 640
      C      IF ((SINIT1)/COS(11)+AR(IREG,JLINE)) 620,770,630
      C      READ(1)XNM,Y1,Y1
      C      RACKSPACE PROFILE
      C      IF ((JLINE.EQ. 0) .OR. (X1.EQ. XDRY(2))) GO TO 640
      C      IF ((SINIT1)/COS(11)+AB( JLINE)) 620,770,630
      620 JSEC = JLINE
      C      GO TO 770
      630 JSEC = MAX(11,JLINE-1)
      C      GO TO 770
      640 IREG = IREG+1
      C      IF(IREG.GT.NREGS) GO TO A04
      C      CALL GETPRO(IREG)
      C      NJ=NSECS(IREG)
      C      CALL GETOAM(IREG)
      C      NJ=NUMSEC
      C      DO 650 JSEC = 1,NJ
      C      IF (Y1-YDRY(IREG,JSEC)) 660,670,650
      C      IF (Y1-YDRY( JSEC)) 660,670,650
      650 CONTINUE
      C      JSEC = NJ
      C      GO TO 770
      660 JSEC = JSEC - 1
      C      GO TO 770
      670 JSEC = JSEC
      C      DO 680 JSEC = 1,JSEC,NJ
      C      IF (Y1.NE. YDRY(IREG,JSEC)) GO TO 660
      C      IF (Y1.NE. YDRY( JSEC)) GO TO 660
      C      IF ((SINIT1)/COS(11)+AR(IREG,JSEC)) 680,690,770
      C      IF ((SINIT1)/COS(11)+AR( JSEC)) 680,690,770
      680 CONTINUE

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03/22/79 08.50.52

FTN 4.64433

73/74 OPT=2 BOUND=0/ TRACE

SUPROUTINE CTL2

```

1200      JSEC = NJ
      GO TO 770
C 690 GUP=AC(IREFG,JSEC-1)*SIN(T1)*RC(IREFG,JSEC-1)*COS(T1)
690   GUP=AC( JSEC-1)*SIN(T1)*RC( JSEC-1)*COS(T1)
C 690 GON=AC(IREFG,JSEC-1)*SIN(T1)*RC(IREFG,JSEC-1)*COS(T1)
      GON=AC( JSEC-1)*SIN(T1)*RC( JSEC-1)*COS(T1)
      SUP = SIGN(1.,GUP)
      SDN = SIGN(1.,GON)
      IF(SUP-SDN) 740,700,710
700   IF(SUP) 770,770,660
710   IF(T1) 770,720,660
720   IF(TMETAB) 660,730,770
730   IF(TMETLS) 770,770,660
740   CONTINUE
C
C      PRINT MESSAGE THAT RAY BECAME AXIAL AND WAS CUT
C
C      WRITE(6,745)
745   FORMAT(1H0,////35MRAY BECAME AXIAL - TRACE TERMINATED )
      GO TO 900
C
C      1.2.18 CHECK IF RAY SHOULD BE CUT
C
C 770 CONTINUE
      IF (X1 .GE. ENDX) GO TO 804
      IF (ARSIT1) .GE. ANCHXT) GO TO 803
      IF (NRR .GE. NBRMAX) GO TO 805
      IF (X1 .GE. KCUT .OR. MAX(NRR,NBM,NSR,NSH) .GE. NSHRR) GO TO 806
      XTN=X1/6076.1
      YTN=Y1/57.29577951
      *****
C *****
C      JP=7 FOR DERUG.
C *****
C
C      JP = 7
      IF (JPRINT .GE. 1)
1      WRITE(6,1005) JP,XTN,Y1,TTN,IREFG,JSEC,(INDIC(1)),II=1,6)
C
C      1.2.19 RAY NOT CUT - UPDATE ALL FLAGS AND VARIABLES. GO TO
      NEXT STEP AT 400
C
C 1240 LIMFLG(1)=0
      LIMFLG(2) = 0
      LIMFLG(3) = 0
      IF (IARC .EQ. 1) LIMFLG(3) = IFACEY
      IF (IARV .EQ. 1) LIMFLG(2) = LDEPTH
      IF (IRD .NE. 0) LIMFLG(1) = JLINE
      IF (IT1 .NE. 0) TMETLS = T1
      Y0 = Y1
      X0 = X1
      TMETAB = T1
      C0 = C1
      IF ((KPRINT.EQ.2) .OR. (KPRINT.EQ.1 .AND. QVERT.EQ.0.80))
1      WRITE(6,1107)XNM,Y0,TMC,TINF,TLOSS,NRR,NSH,NSP,NC,(NARV(1)),
2      II=1,NDEPS)
      GO TO 400

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03/22/79 0A.50.52

FTN 4.6+633

73/74 OPT=2 POUND=1/ TRACE

SUBROUTINE CTL2

```

1255 C
1256 C 1.2.20 RAYS CUT - PRINT APPROPRIATE MESSAGES IF KPRINT .GT. 0
1257 C AND GO TO 900 WHEN ARRIVAL INFORMATION STORED
1258 C
1259 C
1260 C 800 CONTINUE
1261 C WRITE (6,801)
1262 C 801 FORMAT (1H0,20X,33H*** RAY CUT - RAY TURNED BACK ***)
1263 C GO TO 900
1264 C
1265 C 801 CONTINUE
1266 C WRITE (6,802) DR150
1267 C 802 FORMAT (1H0,20X,40H*** RAY CUT - TRANSMISSION LOSS EXCEEDED.
1268 C 1
1269 C 1
1270 C GO TO 900
1271 C
1272 C 802 CONTINUE
1273 C WRITE (6,803)
1274 C 803 FORMAT (1H0,20X,39H*** RAY CUT - MAX ARRIVALS EXCEEDED ***)
1275 C GO TO 900
1276 C
1277 C 803 CONTINUE
1278 C WRITE (6,804)
1279 C 804 FORMAT (1H0,20X,37H*** RAY CUT - RAY ANGLE TOO STEEP ***)
1280 C GO TO 900
1281 C
1282 C 804 CONTINUE
1283 C IF (KPRINT .LE. 0) GO TO 840
1284 C WRITE (6,805)
1285 C 805 FORMAT (1H0,20X,29H*** RAY CUT - MAX TURNING EVNTS EXCEEDED ***)
1286 C GO TO 900
1287 C
1288 C 805 CONTINUE
1289 C WRITE (6,806)
1290 C 806 FORMAT (1H0,20X,25H*** RAY CUT - MAX ANGLE ***)
1291 C 24HREFLECTIONS EXCEEDED ***)
1292 C GO TO 900
1293 C
1294 C 806 CONTINUE
1295 C WRITE (6,807)
1296 C 807 FORMAT (1H0,20X,45H*** RAY CUT - MAX TURNING EVNTS EXCEEDED ***)
1297 C GO TO 900
1298 C
1299 C 900 CONTINUE
1300 C XTN=X1/6076.1
1301 C WRITE (6,808) XTN
1302 C 808 FORMAT (34X, 12H(RANGE(NH)) = , F8.2)
1303 C
1304 C 1.3 PROCESSING ARRIVAL INFORMATION FOR EACH RAY
1305 C
1306 C WHETHER RAY WAS TRACED OR READ FROM INTAPE IMF ARRIVAL
1307 C INFORMATION IS WRITTEN ONTO SCRATCH DISK - ONE PER SOURCE
1308 C DEPTH
1309 C
1310 C 840 CONTINUE
1311 C
1312 C NO 930 KK = 1,NOFPS
1313 C KKL(KK,1) = NARV(KK)

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      IARC = KLKL(KK,II)
      DO 920 II=1,IARC
        ARVREC(2) = RI(KK,II)
        ARVREC(3) = RI(KK,II)
        ARVREC(4) = ANGLE(KK,II)
        IARVRC(5) = ISIG(KK,II)
        ARVREC(6) = TI(KK,II)
        IARVRC(7) = MCS(KK,II)
      C
      C
      C      WRITE THE DIRECT ACCESS COMBINED ARRIVAL DATA ARRAY RECORD.
      C      (RECORD 1 CONTAINS THE ACCESS KEY -- WHERE I = RAY INDEX,
      C      KK = NO. SOURCE DEPTHS, II = NO. ARRIVALS)
      C
      C      KEYMEN = I * 10000 + KK * 1000 + II
      C      CALL PUTNEWFIT(ARVREC)
      C      NPUTS = NPUTS + 1
      C
      C      CONTINUE
      C      WRITE (IOWTSC) (ISEQ(K123),K123=1,IWORDS)
      C
      C      IF THIS IS A RAY FROM A PREVIOUS RUN, THE END OF TRAJECTORY
      C      MARK HAS ALREADY BEEN WRITTEN AND THE BOTTOM ROUNCF DATA COPIED
      C
      C      IF(IANG(II).NE.0) GO TO 940
      C      NBR1 = NBR + 1
      C      IF(NBR1.GT.25) GO TO 937
      C      DO 932 LOOP=NBR1,25
      C
      C      PNEG=-1.0 IN A DATA STATEMENT ABOVE. NEGATIVE RANGE IS
      C      IMPOSSIBLE SO THIS WILL TELL PARTS (WHICH CALCULATES THE
      C      BOTTOM LOSS) THAT THIS IS JUST A FILLER.
      C      WRITE(IIBOT) PNEG,RNEG
      C
      C      CONTINUE
      C
      C      CONTINUE
      C
      C      WRITE A RECORD OF
      C      -1.0,-1.0,-1.0
      C      TO THE FILE TRAJCT TO DENOTE THE END OF A TRAJECTORY.
      C
      C      WRITE(TRAJCT) RNEG,RNEG,RNEG
      C
      C      CONTINUE
      C      REMIND IIR0Y
      C
      C      *****
      C      CLOSE NEW AND/OR OLD ARRIVALS FILES)
      C      *****
      C
      C      CLOSE THE NEW DIRECT ACCESS ARRIVAL FILE.
      C
      CTL2      1175
      15AUG7A    AA
      CTL2      1176
      15AUG7A    A9
      15AUG7A    98
      15AUG7A    91
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      15AUG7A    107
      CTL2      1107
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      24JAN75    8
      15AUG7A    1204
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      15AUG7A    1638
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      15AUG7A    1639
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      15AUG7A    1640
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      15AUG7A    1641
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      15AUG7A    1642
      CTL2      1642
      15AUG7A    1643
      CTL2      
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CALL CLOSEM(NEWFIT)

IF THE OLD DIRECT ACCESS ARRIVAL FILE WAS OPENED, CLOSE IT.

IF(INTAPE .GT. 0) CALL CLOSEM(OLDFIT)

CALL OPWOLF USED TO RE HERE.

FORMAT(IX,F9.4,3X,F10.4,3X,F8.3,3X,F9.4,3X,F7.2,3X,4I4,15,3X,

5I8)

FORMAT(JP=*,I1,3X,F9.4,3X,F10.4,3X,F8.3,* IFLAG2=*,I11

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IFACEI=,I3)

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SECTION NO.=*,I3,

IARV=*,I1,* IMOR2=*,I1,* ISURF=*,I1,* IROT=*,I1,

IAD=*,I1,* JLINE=*,I3)

RETURN

END

15AUG78 110
15AUG78 111
15AUG78 112
15AUG78 113
15AUG78 114
15AUG78 115
CTL2 1229
CTL2 1230
CTL2 1231
CTL2 1232
CTL2 1233
FIXFOR 95
FIXFOR 96
FIXFOR 97
FIXFOR 98
01MAR79 24
01MAR79 25
FIXFOR 99
FIXFOR 100
FIXFOR 101
FIXFOR 102
FIXFOR 103
FIXFOR 104
CTL2 1234
CTL2 1235

D-26

CARD NR. SEVERITY DETAILS DIAGNOSIS OF PROBLEM

262 I CONTROL VARIABLE IN COMMON OR EQUIVALENCED, OPTIMIZATION MAY BE INITIATED.
291 I CONTROL VARIABLE IN COMMON OR EQUIVALENCED, OPTIMIZATION MAY BE INITIATED.
299 I CONTROL VARIABLE IN COMMON OR EQUIVALENCED, OPTIMIZATION MAY BE INITIATED.
1318 I CONTROL VARIABLE IN COMMON OR EQUIVALENCED, OPTIMIZATION MAY BE INITIATED.

SYMBOLIC REFERENCE MAP (R=3)

ENTRY POINTS DEF LINE REFERENCES
1 CTL2 1 1392

VARIABLES	SM	TYPE	RELOCATION	REFS	679	720	DEFTNFD	635	635	635	651	1172	1196
3734 A	REAL			REFS	679	720	DEFTNFD	635	635	635	651	1172	1196
8 AB	REAL	ARRAY	QUANTS	REFS	34	465							
174 ABOT	REAL	ARRAY	QUANTS	REFS	52								
1458 AC	REAL	ARRAY	QUANTS	REFS	34	476	47A	47A	47A	47A	1201	1203	620
14 AL	REAL	ARRAY	QUANTS	REFS	51	621	720	720	720	720	1201	1203	620
1762 ALPHR	REAL	ARRAY	QUANTS	REFS	34	595	604	604	604	604	1201	1203	620
1 ANGRK	REAL	ARRAY	QUANTS	REFS	45								
5435 ANGLE	REAL	ARRAY	QUANTS	REFS	11	1317	DEFTNFD	DEFTNFD	DEFTNFD	DEFTNFD	1075	1075	
8 ANGMX	REAL	ARRAY	QUANTS	REFS	47								
1 ANGMN	REAL	ARRAY	QUANTS	REFS	47								
3625 ANGMXT	REAL	ARRAY	QUANTS	REFS	1162	1223	DEFTNFD	DEFTNFD	DEFTNFD	DEFTNFD	128	128	

VARIABLES SN TYPE RELOCATION

VARIABLES	SN	TYPE	RELOCATION
4031 ARVREC	REAL		
4040 ARVRE2	REAL		
3735 0	REAL		
312 00	REAL		
272 000T	REAL		
1136 0C	REAL		
2113 BEGINX	REAL		
0 BEGINY	REAL		
4007 METAB	REAL		
15 BL	REAL		
3712 BLOSS	REAL		
624 CC	REAL		
3767 CCOST	REAL		
2 CONFIL	INTEGER		
3731 COSAL	REAL		
3727 COSPO	REAL		
3676 COSTM2	REAL		
4001 CTC	REAL		
3725 CURV	REAL		
4 C0	REAL		
6 C1	REAL		
742 00150	REAL		
0 DEP	REAL		
3770 DETAC	REAL		
3715 D0	REAL		
4003 D00	REAL		
1 DRPLT	REAL		
3760 DSPC	REAL		
10 DT	REAL		
3637 DUM	REAL		
3771 DXC	REAL		
3757 DXIC	REAL		
3744 DXR	REAL		
3747 DXRSV	REAL		
3755 DXSI	REAL		
3772 NYC	REAL		
3745 DYR	REAL		
3750 DYRSV	REAL		
1523 ENDX	REAL		
763 FREQR	REAL		
0 FSAVE	REAL		
3677 GON	REAL		
2274 GRAD	REAL		
3674 GUP	REAL		
3640 I	INTEGER		
REFS	1317		
REFS	19		
REFS	275		
REFS	679		
REFS	34		
REFS	52		
REFS	34		
REFS	1201		
REFS	600		
REFS	405		
REFS	406		
REFS	49		
REFS	2*1047		
REFS	51		
REFS	1009		
REFS	34		
REFS	962		
REFS	43		
REFS	912		
REFS	600		
REFS	476		
REFS	501		
REFS	901		
REFS	602		
REFS	112		
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REFS	51		
REFS	543		
REFS	51		
REFS	704		
REFS	1005		
REFS	2		
REFS	52		
REFS	963		
REFS	610		
REFS	996		
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REFS	758		
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REFS			

VARIABLES SM TYPE RELOCATION

4017	IARC	INTEGER			426	536	573	1147	1311	1312	1326	1330
1524	IARC	INTEGER			DEFINED	198	DEFINED	1312				
4023	IARV	INTEGER		/	REFS	1314	20A	224	260	1330	876	
4031	IARVRC	INTEGER			REFS	9	1056	1101	1244	DEFINED		
4040	IARV2	INTEGER			REFS	20	22	OFFINFD	131A	1320		
4027	I80	INTEGER		*UNOFF	REFS	19	22	274	276			
					REFS	9	1036	1163	1245	DEFINED	743	808
					A45							
3671	I8EGIN	INTEGER		/	REFS	458	459	530	543	DEFINED	452	
2120	I8EGMP	INTEGER		/	REFS	2	452	462	466			
4024	I807	INTEGER			REFS	9	707	791	792	A06	A08	A09
					REFS		1243	DEFINFD	704	A09	803	
3623	IOISC	INTEGER			1031	1121	170 REFS	1331				
3753	IFACET	INTEGER			DEFINED	125	A06	1140	1243			
3723	IFLAG1	INTEGER			REFS	791	679	720	DEFINFD	570	650	
3737	IFLAG2	INTEGER			REFS	676	679	684	685	694	696	720
					730	732	A4A	A5A	A63	872		
					OFFINFD	655	656	A47				
0	IFMIC	INTEGER		PLTINF	REFS	48	DEFINED	426	536	573	1167	
241	IFKM	INTEGER		REFS	REFS	46						
1764	IFXMP	INTEGER		ARRAY	REFS	2						
4024	I80Z	INTEGER		ARRAY	REFS	9	812	1002	DEFINFD	759	810	842
					1104							
3720	IMZARV	INTEGER			DEFINED	575	1102					
3651	II	INTEGER			REFS	308	421	431	760	A06	1015	1079
					1090	1117	1126	1153	1234	1251	1315	1316
					1317	1318	1319	1320	1376	DEFINED	308	420
					431	760	A06	1015	1079	1090	1117	1126
					1153	1234	1251	1314				
40	I1807	INTEGER		FINPUT	REFS	54	DEFINED	126	170 REFS	301	1137	1347
					1361							
4016	IJSEC	INTEGER			REFS	1192	DEFINED	1191				
4012	INARV	INTEGER			REFS	1070	1073	1074	1075	1076	1077	1078
					DEFINED	1069						
3717	IND	INTEGER			REFS	559	DEFINED	550				
3644	INDEXR	INTEGER			REFS	263	265	286	DEFINFD	260		
4023	INDIC	INTEGER		ARRAY	REFS	8	609	760	A06	1234		
					DEFINED	559						
756	INDISC	INTEGER		/	REFS	2						
741	INFILE	INTEGER		/	REFS	2						
2115	INTAPE	INTEGER		/	REFS	2	56	143	179	1374		
3626	INTCUT	INTEGER			REFS	1070	DEFINED	129				
1441	IOPT	INTEGER		ARRAY	REFS	2						
1	IOPTN	INTEGER		DEFINFD	REFS	49						
2455	IO1	INTEGER			REFS	1070	DEFINED	67				
2456	IO2	INTEGER			REFS	1070	DEFINED	67				
2457	IO3	INTEGER			REFS	1070	DEFINED	67				
2460	IO4	INTEGER			REFS	1070	DEFINED	67				
43	IPTR	INTEGER		FINPUT	REFS	54						
3711	IQFLAG	INTEGER			REFS	607	610	DEFINFD	547	1030	1033	1041
					1103							
4013	IR	INTEGER			REFS	1096	1114	1150	DEFINFD	1009	1004	1111
					1140							
3703	I8EG	INTEGER			REFS	539	540	704	711	712	757	750
					760	707	791	A60	A61	A76	A75	A86
					976	978	990	999	1177	1178	1179	1181

SURROUTINE CTL2

RELOCATION

VARIABLES SM TYPE

11747	ISEQ	INTEGER	ARRAY	1234 RFFS	12 OFFNED	510 502 DEFINED	1177 534 204 OFFNED	566	571	1896	1114
7013	ISIG	INTEGER	ARRAY	1150 RFFS	11 RFFS	1331 RFFS	1070 RFFS	274 DEFINED	813	864	
4025	ISURF	INTEGER		268 RFFS	56 RFFS	20177 RFFS	177 RFFS				
3646	ITEMP	INTEGER		284 RFFS	2 RFFS	1331 RFFS	DEFINED	68			
2115	ITON	INTEGER	/	463 RFFS	2 RFFS	465 RFFS	468 RFFS	469	470	472	474
3636	IU	INTEGER	/	2*478 RFFS	2 RFFS	489 RFFS	499 RFFS	505	541	543	
2461	IMORDS	INTEGER		460 RFFS	2 RFFS	460 RFFS	472 RFFS				
3672	JBEGIN	INTEGER		2 RFFS	2 RFFS	460 RFFS	462 RFFS				
2117	JBEGNP	INTEGER	ARRAY	635 RFFS	2 RFFS	637 RFFS	656 RFFS	719	DEFINED	633	
2184	JOISC	INTEGER		744 RFFS	9 RFFS	744 RFFS	2*745 RFFS	812	1042	1044	1171
3733	JJ	INTEGER		1172 RFFS	1173 RFFS	1175 RFFS	1245 RFFS	DEFINED	705	744	745
4030	JLINE	INTEGER		416 RFFS	416 RFFS	694 RFFS	730 RFFS	768	806	858	872
3655	JP	INTEGER		806 RFFS	806 RFFS	1234 RFFS	415 RFFS	693	729	767	880
2111	JPRNT	INTEGER	/	857 RFFS	871 RFFS	885 RFFS	1233 RFFS	694	730	768	883
3784	JSEC	INTEGER		806 RFFS	858 RFFS	872 RFFS	886 RFFS	1234	604	606	633
3666	K	INTEGER		704 RFFS	711 RFFS	3*590 RFFS	595 RFFS	757	758	768	787
				791 RFFS	860 RFFS	861 RFFS	876 RFFS	875	886	943	962
				976 RFFS	976 RFFS	990 RFFS	999 RFFS	1105	1109	1191	1194
				1196 RFFS	2*1201 RFFS	2*1203 RFFS	1234 RFFS	DEFINED	541	1173	1175
				1183 RFFS	1187 RFFS	1189 RFFS	1192 RFFS	1198			
				1113 RFFS	502 RFFS	534 RFFS	561 RFFS	566	571	1095	1096
				1146 RFFS	1114 RFFS	1146 RFFS	1147 RFFS	1149	1150	1225	
				1146 RFFS	430 RFFS	500 RFFS	506 RFFS	564	568	1095	1113
41	KBOT	INTEGER	FINPUT	1146 RFFS	1149 RFFS	1149 RFFS	1149 RFFS				
3630	KCUT	INTEGER		1225 RFFS	1225 RFFS	1225 RFFS	131 RFFS				
3754	KO	INTEGER		23 RFFS	23 RFFS	23 RFFS	1326 RFFS				
4031	KEYNEW	INTEGER		23 RFFS	23 RFFS	269 RFFS	DEFINED	268	271	272	273
4040	KEYOLD	INTEGER	/	274 RFFS	275 RFFS	263 RFFS	264 RFFS	265	271	272	
620	KK	INTEGER	/	1317 RFFS	1318 RFFS	276 RFFS	204 RFFS	2*1311	1312	1315	1316
				291 RFFS	299 RFFS	1319 RFFS	1320 RFFS	1326	DEFINED	262	284
621	KL	INTEGER	ARRAY	2 RFFS	2 RFFS	1310 RFFS	DEFINED	1311			
8	KLKL	INTEGER	ARRAY	2 RFFS	2 RFFS	1312 RFFS	DEFINED				
8	KLK2	INTEGER	ARRAY	30 RFFS	30 RFFS	263 RFFS	431 RFFS	676	707	824	927
2112	KPRNT	INTEGER	/	1079 RFFS	1098 RFFS	1117 RFFS	1126 RFFS	1153	2*1251	1282	
44	KPTR	INTEGER	FINPUT	54 RFFS	54 RFFS	1117 RFFS	1126 RFFS				
4020	K123	INTEGER		1331 RFFS	1331 RFFS	DEFINED	1331 RFFS	429	507	569	1072
3665	LASTEV	INTEGER		1091 RFFS	1092 RFFS	1141 RFFS	DEFINED				
				1008 RFFS	1092 RFFS	1110 RFFS	1144 RFFS	834	837	838	841
3667	LDEPTH	INTEGER		2*449 RFFS	2*449 RFFS	829 RFFS	830 RFFS	1069	1070	1073	1074
				840 RFFS	863 RFFS	877 RFFS	2*1068 RFFS	1069	1070	1073	1074
				1075 RFFS	1076 RFFS	1077 RFFS	1244 RFFS	DEFINED	448	828	832
				836 RFFS	836 RFFS	1077 RFFS	1244 RFFS				
4047	LINFLG	INTEGER	ARRAY	7 RFFS	7 RFFS	656 RFFS	719 RFFS	784	824	829	837
				1241 RFFS	1242 RFFS	1241 RFFS	1244 RFFS	449	463	470	1240

SUBROUTINE CTL2				73/74	NPT=2 POUND=0/ TRACE		FTN 4.64433	03/22/79	00.50.52	PAGE	10	
VARIABLES	SN	TYPE	RELOCATION				224	233	242	DEFINED	134	227
3632 NTRAJ		INTEGER		REFS	233	221						
				REFS	242	242						
5 NUMCON		INTEGER	CFILL	REFS	43							
4 NUMPRO		INTEGER	CFILL	REFS	43							
6 NUMQAM		INTEGER	CFILL	REFS	43							
8 NUMSEC		INTEGER	FORCOT	REFS	42							
2 MX		INTEGER	PLTIN	REFS	47		590	1102				
3 MY		INTEGER	PLTIN	REFS	47							
3643 OLDANG		REAL		REFS	231		DEFINED	230				
3642 OLD0		REAL		REFS	231		DEFINED	230				
14741 OLD011		INTEGER		REFS	19		25	151	154	269	1374	
2465 OLD0101		INTEGER		REFS	65		DEFINED	A1	I/O REFS	204		
2466 OLD0110		INTEGER		REFS	64		DEFINED	A2	I/O REFS	292	100	
3641 OLD0R		REAL		REFS	231		232	241	DEFINED	223	230	240
2463 OLDTRJ		INTEGER		REFS	63		182	DEFINED	79	I/O REFS	180	101
				180	223		230	240				
755 OUTAPE		INTEGER	/ /	REFS	2		61					
3766 PHIC		REAL		REFS	2*951		953	955	958	960		
				DEFINED	950		955	958				
3763 PHITMP		REAL		REFS	944		2*951	DEFINED	943			
3726 PHIO		REAL		REFS	596		597	2*951	DEFINED	595		
8 PROFILE		INTEGER	CFILL	REFS	43		44	I/O REFS	647	648	1169	1170
11 PSI		REAL	ROTREF	REFS	51		301	2*1034	1137	1138	1151	
				DEFINED	300		1034					
3 QAMFILE		INTEGER	CFILL	REFS	43		44					
3713 QFAC1		REAL		REFS	608		610	DEFINED	549	1032	1040	
3714 QFAC3		REAL		REFS	608		610	DEFINED	550	1034	1047	
3710 QHORZ		REAL		REFS	610		1052	DEFINED	546	1028		
3716 QSIGN		REAL		REFS	919		925	DEFINED	552	925		
3707 QVERT		REAL		REFS	610		917	918	919	927	991	1034
				1047	1052		1251	DEFINED	545	918		
3756 QVERTP		REAL		REFS	936		2*991	DEFINED	917			
13 RAD		REAL	ROTREF	REFS	51		679	751	752	848	912	939
				969	970		DEFINED	618	622			
3624 RADIAN		REAL		REFS	120		DEFINED	127				
76 RANGE		REAL	ARRAY	REFS	52		177					
4057 RI		REAL	ARRAY	REFS	11		1315	DEFINED	271	1076		
2462 RNEG		REAL		REFS	2*1347		3*1357	DEFINED	69			
3 RPLOT		REAL	PLTINF	REFS	48							
5 RTCAL		REAL	ARRAY	REFS	53							
3701 SDN		REAL		REFS	401		1206	DEFINED	480	1205		
3653 SECTHZ		REAL		REFS	1028		DEFINED	404				
3730 SINL		REAL		REFS	912		963	964	DEFINED	604	597	
12 SINP0		REAL		REFS	51		940	941	2*947	DEFINED		
4000 SINP1		REAL	ROTREF	REFS	974		DEFINED	977	980			
3675 SINTHZ		REAL		REFS	476		478	483	600	620	751	755
				DEFINED	579							
3724 SINTZ2		REAL		REFS	752		756	DEFINED	580			
4011 SLOSS		REAL		REFS	1054		1139	DEFINED	1053			
3765 SPC		REAL		REFS	950		977	DEFINED	945	947		
3777 SPCC		REAL		REFS	980		DEFINED	974				
1 SPCFILE		INTEGER	CFILL	REFS	43		44					
3761 SPC1		REAL		REFS	945		DEFINED	948				
3762 SPC2		REAL		REFS	3*947		DEFINED	941				
3764 SPTP		REAL		REFS	2*947		DEFINED	944				
3700 SUP		REAL		REFS	481		482	1206	1207	DEFINED	479	1204
3673 TANTHZ		REAL		REFS	465		DEFINED	461				

SUBROUTINE GTL2				73/74 OPT=2 ROUND=0/ TRACE		FTN 4.6+4.33		03/22/79 08.50.52		PAGE 31	
VARIABLES	SM	TYPE	#FLOCATION								
3706 TDERV	REAL				REFS	60A	610	91A	1029		
					DEFINED	544	60A	1029			
3692 YDG	REAL				REFS	416	633	1075	1079	109A	1117
					DEFINED	1153	1251	OFFINFD	892	1116	1152
3776 THCAS	REAL				REFS	1015	DEFINED	972			
1 THEO	REAL		ARRAY	RAVS	REFS	46	30A	402	461	487	579
5 TMETAD	REAL			ROTREF	REFS	51	404	412	451	746	868
					REFS	581	595	679	721		
					2*972	1086	1209	DEFINFD	1249		
3670 THETLS	REAL				REFS	1210	DEFINFD	451	572		
3702 THFRST	REAL				REFS	560	DEFINFD	490	1077		
10371 TI	REAL		ARRAY		REFS	11	1319	DEFINFD	1077	1079	109A
3656 TIME	REAL				REFS	431	A93	97A	1077	A93	
					1117	1126	1153	1251	419		
					REFS	50					
3 TLMAX	REAL		SCALEF		REFS	50					
2 TLMIN	REAL		SCALEF		REFS	1015	DEFINFD	1009			
4006 TLOSC	REAL				REFS	431	1055	1074	1117	1126	1153
3663 TLOSS	REAL				REFS	1251	427	1054	109A		
					DEFINFD	1015	DEFINFD	97A	999		
4002 THCAS	REAL				REFS	1151	DEFINFD	1125			
4014 TOLD	REAL				REFS	62	DEFINFD	80			
2464 TRAJCI	INTEGER				REFS	1160	1157		177	231	412
					900	1053	1074	DEFINFD			
4010 TSLOSS	REAL				REFS	679	687	70A	DEFINFD	684	721
3743 TT	REAL				REFS	694	730	75A	85A	A72	886
3746 TTM	REAL				DEFINFD	1234	687	723	802	851	865
					REFS	1227	746	761	848	851	865
7 T1	REAL		ROTREF		REFS	51	900	943	1044	1046	1115
					879	1116	1152	1160	2*1172	2*1196	2*1201
					2*1203	1208	1223	1227	1249		
					DEFINFD	708	753	1115			
					REFS	2	113A				
2114 W0	REAL		/ /		REFS	39					
0 XDRY	REAL		XRANGE		REFS	649	653	1171	647	1169	
3736 XDRY2	REAL				REFS	12	1316	DEFINFD	272	1074	
13363 XT	REAL				REFS	301	431	900	1076	109A	1117
3650 XMM	REAL				REFS	1137	113A	1153	1251		
					DEFINFD	292	300	41A	891		
					REFS	1015	DEFINFD	96A	1000		
3774 XMMC	REAL				REFS	679	686	697	706	720	722
3741 XT	REAL				REFS	733	DEFINFD	685			
					REFS	1003	DEFINFD	992			
4004 XTC	REAL				REFS	676	694	730	886	85A	872
3748 XTM	REAL				REFS	1234	1300	DEFINFD	686	722	760
					REFS	866	864	87A	1299		
					REFS	801	864				
					REFS	787	DEFINFD	785			
3751 XTM0	REAL				REFS	51	411	41A	621	675	679
3752 XTM1	REAL		ROTREF		REFS	733	751	754	84A	915	965
0 X0	REAL				REFS	685	405	124A			
					2*996	412	416	DEFINFD	411	757	760
					REFS	51	649	697	734	864	874
					REFS	786	84A	850	860	1000	102A
3654 X0MM	REAL				REFS	878	915	992	99A	1000	102A
2 X1	REAL				REFS	1171	1226	124A	DEFINFD	133	706

VARIABLES SN TYPE RELOCATION

VARIABLES	SN	TYPE	RELOCATION
3773 X1C	REAL		
2686 YBDRY	REAL		
3775 VCAS	REAL		
0 YDEP	REAL		
3742 VT	REAL		
4005 YTC	REAL		
1 YD	REAL		
3 Y1	REAL		

FILE NAMES MODE TAPE6

WRITFS
694
886
1215
1294
1300

VARIABLES USED AS FILE NAMES, SEE ABOVE

EXTERNALS TYPE ARGS REFERENCES

EXTERNALS	TYPE	ARGS	REFERENCES
ALOG10	REAL	1	LIBRARY 1053
ASIN	REAL	1	LIBRARY 950
ATAN	REAL	1	LIBRARY 972
CLOSEM	REAL	1	LIBRARY 1369
COS	REAL	1	LIBRARY 404
EOF	REAL	1	LIBRARY 1196
FILEDA	REAL	19	182
FLOSS	REAL	3	151
GET	REAL	4	113A
GETPRO	REAL	1	269
GETQAN	REAL	1	659
JPUTB	REAL	1	540
LINCIR	REAL	4	582
LNMLN	REAL	13	534
MPHITB	REAL	9	679
OPENH	REAL	6	720
PUT	REAL	2	791
SIN	REAL	2	154
TAN	REAL	2	1327
TSURC	REAL	1	LIBRARY 579
TSURL	REAL	1	LIBRARY 1201
VELOC	REAL	4	1203

INLINE FUNCTIONS TYPE ARGS OFF LINE REFERENCES

INLINE FUNCTIONS	TYPE	ARGS	OFF LINE REFERENCES
ABS	REAL	1	INTRIN 687
AMAK1	REAL	0	INTRIN 947
AMIN1	REAL	0	INTRIN 951
IABS	INTEGER	1	INTRIN 652
MAX0	INTEGER	0	INTRIN 1175

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73/74 OPT=2 SOUND=V/ TRACE

SURROUTINE CTL?

STATEMENT LABELS

STATEMENT LABELS	DEF LINE	REFERENCES
2034 002	1271	107A
2037 003	1276	1162 1223
2042 004	12A1	117A 1222
2046 005	12A7	1224
2051 006	12A3	1225
2057 008	130A	303 1262
3366 001	1262	1261
3400 002	1267	1266
3413 003	1273	1272
3424 004	127A	1277
3435 005	1284	1283
3445 006	1289	128A
3460 007	1295	1294
3473 005	1301	1300
2053 008	129A	1217
0 920	1329	1314
0 930	1330	1310
0 932	1341	
0 935	134A	1341
2134 937	1350	1340
2136 940	1360	19A
3523 1000	13A2	694
3532 1002	13A3	416
3537 1004	13A4	806
3547 1005	13A6	76A
3043 1010	805	803
3141 1020	935	934
3152 1050	990	989
2712 4090	612	610

INACTIVE

STATEMENT LABELS	DEF LINE	REFERENCES
1263	1269	1274 1279 1285 1291 1296
133A	730	A72
806	1234	

COMMON BLOCKS

INDEX

LENGTH

PROPERTIES

EXT REFS

NOT INNER

NOT INNER

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73/74 OPT=2 ROUND=0/ TRACE

MEMBERS - RIAS NAME(LENGTH)

COMMON BLOCKS LENGTH

1103 JREGNP (1)

1102 NRVP (1)

1101 INTAPF (1)

1104 TREGNP (1)

0 KKK2 (400)

0 AR (202)

606 AC (202)

1212 GRAD (202)

0 XDRY (1)

0 MHOR7 (1)

0 NP (1)

0 NUMSEC (1)

0 PROFILE (1)

3 GANFILE (1)

6 MUMDAN (1)

0 NRRK (1)

0 NANGLE (1)

0 ANGMX (1)

3 NY (1)

0 IFMIC (1)

3 RPLOT (31)

0 REGINY (1)

0 NTLPLT (1)

3 TLMAX (1)

0 X0 (1)

3 V1 (1)

6 C1 (1)

9 PSI (1)

12 AL (1)

0 DEP (62)

186 BRNT (62)

0 YDEP (5)

0 FSAVE (30)

32 IIROT (1)

35 IPTR (1)

OLDARV 400

QUANTS 1617

XRRAGE 1

HORIZO 1

EXTRAM 1

FORGOT 1

CFILL 7

ABREAK 81

RAYS 321

PLTIN 5

PLTINF 34

DEPTHS 2

SCALEF 6

BOTREF 14

BOTTON 249

BRB 25

FINPUT 37

EQUIV CLASSES LENGTH

IARV 6

ARVREC 7

ARVRE2 7

KLKL INTAPE 1

STATISTICS

PROGRAM LENGTH

151378 6751

CM LABELED COMMON LENGTH

53628 2802

CM BLANK COMMON LENGTH

21218 1105

404 CC (202)

1010 ALPHR (202)

1414 YBDBV (203)

2 CONFILE (1)

5 NUMCON (1)

161 IFXW (168)

2 MX (1)

2 NPL0T (1)

2 TLMW (1)

5 M0BY (1)

2 X1 (1)

5 TMEYAO (1)

8 0Y (1)

11 RAD (1)

124 ABOY (62)

31 NF (1)

34 MKBOT (1)

2 ISUPF (1)

5 JLINE (1)

01/21/79 16.4A.19

F14 4.66433

SUMMARY OF CTLS 7/2/74 NPT=2 ONIND=0/ TAPCF

VC(11,TPC)
 INTEGER MISTAP
 INTEGER MISTAP
 LOGICAL NPTC
 DATA COMPTAP/27/
 DATA NPTC/-1.0/

CTLS 57
 CTLS 58
 CTLS 59
 15.0077
 CTLS 1A
 CTLS 61
 CTLS 62
 CTLS 63
 CTLS 64
 CTLS 65
 CTLS 66
 CTLS 67
 CTLS 68
 CTLS 69
 CTLS 70
 CTLS 71
 CTLS 72
 CTLS 73
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 CTLS 102
 CTLS 103
 CTLS 104
 CTLS 105
 CTLS 106
 CTLS 107
 CTLS 108
 CTLS 109
 CTLS 110
 CTLS 111
 CTLS 112

DEFIN(43) NPTC(1),NPTC(2),NPTC(3),NPTC(4)

TAPCF IS USED TO COMPUTE THE BOTTOM LOSS.

DEFIN(40) NPTC(1),NPTC(2),NPTC(3),NPTC(4)

TAPCF IS THE FILE WHERE THE BOTTOM LOSS WILL BE WRITTEN.
 IBOT=44

TAPCF IS THE FILE WHERE THE NECESSARY INFO. FROM PART 2 IS.

IBOT=1A
 NPTC=19
 NPTC=1001
 IPR=0
 KPR=0

MISTAP IS THE DISK UNIT FOR INTENSITY AND THETA VS. RANGE
 PLNCS.

MISTAP=24

DEFIN IN TITLE.

DEFIN(5,3) TITLE
 FORMAT(2A10)
 WRITE(6,4) TITLE
 FC(40) (1), (2), (3)

DEFIN NPTC(1),NPTC(2).

NPTC = NO. OF RANGES FOR COMPUTATION OF TRANSMISSION LOSS.

D-40

D-41

[illegible]

```

1      DEP-RANGE-NRP
200      NOW WRITE A RECORD OF DEPTH DEPENDENT VARIABLES.
205      WRITE(CONTAP) NF,SURFEP,IPC,IFCONH,ISIT
      DO 1290 L=1,NF
      PRQ=PRQPRIL(KK)
      IF (NOTFAM .EQ. 0) GO TO 200
      THIS FILE HAS BEEN READ WITHIN THIS LOOP. BACKSPACE
      NOTFAM=1 RECDNS(1) FOR THE EOF.
      NOTFAM=NOTFAM+1
      DO 100 KJ=1,NOTFAM
      BACKSPACE IFAMD
      CONTINUE
      NOTFAM=0
      CONTINUE
      CALL CTL34(NOTFAM)
      WRITE A COMMON FILE MTCPO RECORD
      WRITE A RECORD OF PRQO. DEPENDENT VARIABLES TO CONTAP.
      WRITE(CONTAP) PRQO,NRP
      FILE 23 IS CREATED FOR J. HANNA'S SPECIAL PLOT PROGRAM.
      INF=1
      CALL DATE(INDATE)
      WRITE(23) TITLE,INDATE,REGTNY,SURFEP,NPTL,INF,FREQ
      PRN=PTL1
      DO 1100 M=1,NPTL
      WRITE(23)PRN,NRP(M)
      PRN=PRN+NET1
      1100 CONTINUE
      END FILE 23
      WRITE A FLAG RECORD ON THE MTCPO FILE TO
      SIGNAL A CHANGE OF FREQUENCY, DEPTH, OR OPTION.
      IDIM = 999999
      NPTS=1

```


VAR	NAME	SN	TYPE	747-40	ORIGIN	COMPARISON	TEST	174 0.19433	03/21/70	14.0A.19	PAGE	9
0	KIKI		INTEGER	ARRAY	/ /		DEFS	56				
2112	KDOBT		INTEGER	ARRAY	/ /		DEFS	13				
44	KDTZ		INTEGER	ARRAY	/ /		DEFS	31				
616	L		INTEGER		FINPUT		DEFS	153	162	296		
1417	LTAFLT		INTEGER		/ /		DEFINEN	153	295			
0	LOSCAC		INTEGER	ARRAY	/ /		DEFS	54	242	273		
632	M		INTEGER		LOSCA		DEFINEN	127				
0	MICAP		INTEGER		PLTAP		DEFS	245	95	170 DEFS	343	
0	MANGLE		INTEGER		DAYS		DEFS	54				
0	MNOTE		INTEGER		TRDATA		DEFS	45				
370	NBP		INTEGER		ROTOM		DEFS	53				
0	NBRK		INTEGER		ABOFAR		DEFS	54				
1443	NDEFS		INTEGER		/ /		DEFS	129	145	238		
620	NF		INTEGER				DEFINEN	70				
36	NFEN		INTEGER		FINPUT		DEFS	193	295	DEFINEN	187	265
6	NGX		INTEGER		SCALFF		DEFS	31	DEFINEN	181		
5	NGY		INTEGER		SCALFF		DEFS	43				
6	NI		INTEGER		PLTIN		DEFS	49				
42	NKROT		INTEGER		FINPUT		DEFS	51				
625	NOTEAM		INTEGER				DEFS	31	85			
743	NORRNT		INTEGER	ARRAY	/ /		DEFS	297	305	DEFINEN	262	304
750	NOROTS		INTEGER	ARRAY	/ /		DEFS	304				
1	NOTUSE		INTEGER	ARRAY	LOSCA		DEFS	13				
2	NPLDT		INTEGER		PLTIN		DEFS	16				
0	NPLOTS		INTEGER		SCALFF		DEFS	49				
636	NPTS		INTEGER				DEFS	343				
777	NPTSIF		INTEGER	ARRAY	TRDATA		DEFS	42				
2116	NRAVP		INTEGER		/ /		DEFS	14				
1	NRTCAL		INTEGER		PLTIN		DEFS	23	325	327		
0	NRTL		INTEGER		LOSCA		DEFS	13				
0	NTPMTC		INTEGER				DEFINEN	114				
615	NTH		INTEGER		FWH345		DEFS	17	70	DEFINEN	152	
5	NUMCOM		INTEGER		CFILL		DEFS	153	DEFINEN			
635	NUMCPC		INTEGER	ARRAY	CFILL		DEFS	23				
6	NUMCPO		INTEGER		CFILL		DEFS	37				
2	NX		INTEGER		CFILL		DEFS	29				
3	NY		INTEGER		CFILL		DEFS	23				
755	OUTAPF		DEAL		CFILL		DEFS	51				
0	PROFLF		DEAL		/ /		DEFS	10	53			
623	PST		DEAL		CFILL		DEFS	23	DEFINEN	208		
3	QANFLF		DEAL		CFILL		DEFS	223				
631	QAN		DEAL		CFILL		DEFS	23				
76	QANGE		DEAL	ARRAY	ROTOM		DEFS	29	326	329		
0	QAYSC		DEAL	ARRAY	DAYS		DEFS	50	285			
1	PROTE		DEAL	ARRAY	TRDATA		DEFS	52	242			
336	QNGC		DEAL				DEFS	42				
3	QPLDT		DEAL	ARRAY	PLTIN		DEFS	217	63			
5	QTCAL		DEAL	ARRAY	ROT		DEFS	23				
1	QTL1		DEAL	ARRAY	LOSCA		DEFS	27	285	DEFINEN	118	
1	SPECFLF		DEAL		CFILL		DEFS	14				
0	SHMDEP		DEAL		LOSCA		DEFS	16	325	76		
0	TNDATC		DEAL	ARRAY	TRDATA		DEFS	41				

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FILE 6.60.11

76/76 NOT=2 DOWNS=1 PAGE

SUBROUTINE CTE

VARIABLES SN TYPE
1 INFO
11 INFO
0 INFO
2114 NO
622 XNM
0 VC
0 VDFP

ARRAY
ARRAY
ARRAY
ARRAY
ARRAY
ARRAY

OFFSETS
OFFSETS
OFFSETS
OFFSETS
OFFSETS
OFFSETS

22
42
25
13
212
52
27

10368
105
171
221
56
56

103
171

FILE NAMES

TAP23
TAP40
TAP42
TAP43
TAP45
TAP46

WRITES
WRITES
WRITES
WRITES
WRITES
WRITES

325
76
242
70
103
105

124
273
114
120

331
166
164

EXTERNALS TYPE APCS DIFFERENCES

CT136
DATE
END
FLOSS

1
1
1
3

310
324
200
223

STATEMENT LABELS

357 3
355 4
376 5
407 7
451 10
450 20
471 10
477 40
0 60
127 40
0 90
0 95
145 97
0 100
251 200
426 225
437 325
153 380
0 400
203 423
0 450
0 490
0 500
0 520
214 551
313 1040
0 1100
0 1243

OFF LINE DIFFERENCES

103
106
105
114
120
121
146
148
153
156
158
159
157
145
170
170
173
305
307
329
331
332
201
203
217
234
221
224
226
229
238
322
235

150

INACTIVE

INACTIVE

243

LONGS 1000
11
67
67 90

FORM-10
129 179
133 181
145 186

PROPERTIES

EXT DATES
EXT DATES
EXT DATES

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76774 00727 COUNTEVA TRACE

SUBROUTINE CTL3

MEMBERS - PTAS NAME(LENGTH)

0 BLANKC (1205)
0 LOSSAC (11)
0 APPFAC (41)
0 VC (2)
0 SAVSC (121)
0 DEPTH (2)
0 RARC (25)
0 ETHPIC (17)
0 TQATC (521)
0 DDTTDC (269)

FOUR CLASSES LENGTH
KLC LKLC 110F
SUNNEP 11
NPPK 41
TPC 2
NANGLE 321
REGTAY 2
YDFP 25
FSAVF 17
NRNTE 521
NEP 249

STATISTICS

PROGRAM LENGTH 7508 644
CM LARFED COMMON LENGTH 101418 4123
CM BLANK COMMON LENGTH 21718 1145

SUBROUTINE GETARV

THIS ROUTINE GETS THE NEXT RANDOM ARRIVAL RECORD IF IT IS NOT ALREADY IN THE BUFFER FROM THE PREVIOUS GET.

COMMON /ARVDA/ ARVFIT(35), ARVREC(7), ARVKEY(7), NGFT, KEYSAV

INTEGER ARVFT. ADVKEY

EQUIVALENCE (IARVX, ARVREC(1))

```

IARVK = ARVKEY(1) * 1000 + ARVKEY(2) * 100 + ARVKEY(3)
IF(IARVK.EQ. KEYSAV) RETURN

```

```
KEYSAV = IARVX
CALL GET(ARVFTT,ADVREC,IARVX,0)
NGET = NGET + 1
RETURN
END
```

SYMBOLIC DIFFERENCE MAP (R=3)

ENTROPY POINTS	DEF LINE	REFERENCES
1 GFTARV	1	14
		19

VARIABLE	SN	TYPE	RELOCATION
0 ARVFT	7	INTEGER	APVNA
1 ARVKF	9	INTEGER	REFS
2 ARVREC	7	REAL	APVNA
3 IARVK	11	INTEGER	APVNA
6 KEYSAY	7	INTEGER	REFS
8 NGFT	7	INTEGER	APVNA
9	9		
10	9		
11	11		
12	14		
13	16		
14	UNDEFINED		
15	UNDEFINED		

EXTERNALS	TYPE	ARGS	REFERENCES
GET		4	17

COMMON BLOCKS	LENGTH	MEMBERS - R1A5 NAME(LENGTH)
ARVDA	67	0 ARVFTT (35)
		45 NGFT (11)

ENTITY CLASSES	LENGTH	MEMBERS - RIAS NAME(LENGTH)
RVF17 ARVFC	7	0 TADVK (1)

STATISTICS	27R	1A
PROGRAM LENGTH	57R	67
CM LABELLED COMMON LENGTH		

99	15AUG78
100	15AUG78
101	15AUG78
102	15AUG78
103	15AUG78
104	15AUG78
105	15AUG78
106	15AUG78
107	15AUG78
108	15AUG78
109	15AUG78
110	15AUG78
111	15AUG78
112	15AUG78
113	15AUG78
114	15AUG78
115	15AUG78
116	15AUG78
117	15AUG78
118	15AUG78

17	DEFINED	17
16		
18		

62 ADVKFY (3)

SUBROUTINE GETARV

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2

STATISTICS

600000 CM USED

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PROGRAM MAIN

```

C      DIMENSIONS FOR EQUIVALENCES MPRE.
DIMENSION BLANKC(105), LOSSAC(11), ARREAC(9), RAYSC(32),
1  PLTINC(5), PLTFC(34), DEPTH(2),
2  SCALEC(6), ARRC(25), FINPUC(37)
EQUIVALENC (INTAPE,100)
EQUIVALENC (BLANKC(1),KLKL(1,1)), (LOSSAC(1),SIRDFP),
2 (ARREAC(1),NRRK), (RAYSC(1),NANGLE), (PLTINC(1),ANGMARI),
3 (PLTFC(1),IFMIC), (DEPTH(1),RFGTNY), (SCALEC(1),NPLT),
4 (ARRC(1),YDFP(1)),
5 (FINPUC(1),FSAVF(1))
COMMON/V/IDISC
COMMON/CCC/JTFT
INTEGER OUTAPE

C      THE FOLLOWING SPECIFICATION STATEMENTS APPLY TO THE ELEMENTS
C      REQUIRED FOR THE ARRIVALS DIRECT ACCESS FILE FROM MPART2.
C      *****
COMMON /ARVDA/ ARVFI(15), ARVREC(7), ARVKEY(3), NRET, KEYSAV
INTEGER ARVFI, ARVKEY
C      *****
C      DATA QANFILE/R/POOFILF/9/CONFILF/10/SPCFILF/11/.
1  NUMRDC/0/.NUMRAN/0/.NUMPRO/0/.NUMCON/0/

C      REWIND 41
C      READ(41) BLANKC,RAYSC,PLTINC,PLTFC,DEPTH,SCALEC,ARRC,
1  FINPUC,LOSSAC

C      NTPMIC = SCRATCH DISK FOR RAW SEQUENTIAL SIGNATURE GROUPS.
C      IT MAY BE SPECIFIED BY USER,SEE BELOW.
C      IDISC = FILE OF ARRIVALS CREATED BY PART2(RAY TRACE).

C      NTPMIC=12
C      IDISC=13

C      *****
C      READ NRRK,ANGRRK.
C      *****
C      *****
C      NRRK =NUMBER OF ANGLES WHERE SEQUENTIAL-SIGNATURE GROUPS

```

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PROGRAM MAIN

```

105 C      ARE TO BE BROKEN.
106 C      ANGRK(I),I=1,NRANK = BRFAK ANGLES.
107 C      SEQUENTIAL SIGNATURE GROUPS WILL BE ARTIFICIALLY
108 C      BROKEN AT THESE ANGLES.

20  READ(5,20) NRANK
21  FORMAT(15)
22  WRITE(6,25)NRANK
23  FORMAT(1H,*,NRANK =*,12)
24  IF (NRANK .LE. 0) GO TO 100
25  READ(5,35)(ANGR(K),I=1,NRANK)
26  FORMAT(10F10.2)
27  CALL AKSORT(NRANK,ANGR(K))
28  WRITE(6,50)(ANGR(K),I=1,NRANK)
29  FORMAT(1//,*,ANGR(K)=*,(1H,10F10.3))
30 100 CONTINUE
31 *****
32 C      READ NOPRNT
33 C      *****
34 C      NOPRNT = 0 SEQUENTIAL SIGNATURE GROUPS P/O
35 C      1 NO SEQUENTIAL SIG. GROUPS P/O.

110 READ (5,150) (NOPRNT(KK),KK=1,NDEPS)
111 FORMAT(16I5)
112 WRITE(6,200) (NOPRNT(KK),KK=1,NDEPS)
113 FORMAT(*,NOPRNT =*,16I5,/, (12X,16I5))

115 C      *****
116 C      OPEN THE ARRIVALS DIRECT ACCESS FILE FROM PART2.
117 C      *****
118 C      CALL FILEDA(ARVFTT,3LLFN,6LGRP,2LFO,2LDA,2LPT,1LF,7LMRL,70,
119 C      31MNR,70,2LPR,500,3LHMR,100,2LKL,10,2LKT,1L1)
120 C      CALL OPFNM(ARVFTT,5LINPIT)
121 C      *****
122 C      1.5 PROCESSING ARRIVAL INFO. FOR EACH SOURCE DEPTH.
123 C      *****
124 C      1000 LOOP COVERS ALL PROCESSING FOR Y DEPTH (KK)
125 C      *****
126 C      THE FOLLOWING REMIND USED TO BE IN INTCOM, BUT SINCE MP WAS
127 C      *****

```


PROGRAM MAIN

VARIABLES	SN	TYPE	RELOCATION
0 DEPTH	REAL	ARRAY	DEPTH
1 DRPLT	REAL	ARRAY	SCALFF
7 DR7L	REAL	ARRAY	LOSSA
1423 ENDX	REAL	ARRAY	FINPUT
0 FINPUC	REAL	ARRAY	LOSSA
1 FREQ	REAL	ARRAY	FINPUT
743 FREQ	REAL	ARRAY	FINPUT
0 FSAVE	REAL	ARRAY	FINPUT
5100 I	INTEGER	ARRAY	FINPUT
1524 TANG	INTEGER	ARRAY	FINPUT
2120 TRFGMP	INTEGER	ARRAY	FINPUT
40 TROT	INTEGER	ARRAY	FINPUT
0 TDISC	INTEGER	ARRAY	FINPUT
4 IFAMD	INTEGER	ARRAY	FINPUT
3 IFCOM	INTEGER	ARRAY	FINPUT
10 IFM	INTEGER	ARRAY	FINPUT
0 IFMIC	INTEGER	ARRAY	FINPUT
241 IFXH	INTEGER	ARRAY	FINPUT
1744 IFXMP	INTEGER	ARRAY	FINPUT
756 INDISC	INTEGER	ARRAY	FINPUT
741 INFLE	INTEGER	ARRAY	FINPUT
2115 INTAPE	INTEGER	ARRAY	FINPUT
1441 TOPT	INTEGER	ARRAY	FINPUT
1 TPTN	INTEGER	ARRAY	FINPUT
43 IPTR	INTEGER	ARRAY	FINPUT
2 TSII	INTEGER	ARRAY	FINPUT
2115 ITON	INTEGER	ARRAY	FINPUT
2117 JREGMP	INTEGER	ARRAY	FINPUT
2104 JDISC	INTEGER	ARRAY	FINPUT
2111 JPRNT	INTEGER	ARRAY	FINPUT
0 JTEST	INTEGER	ARRAY	FINPUT
41 KROT	INTEGER	ARRAY	FINPUT
56 KEYSV	INTEGER	ARRAY	FINPUT
620 KK	INTEGER	ARRAY	FINPUT
621 KL	INTEGER	ARRAY	FINPUT
0 KML	INTEGER	ARRAY	FINPUT
2112 KPTR	INTEGER	ARRAY	FINPUT
44 KPTR	INTEGER	ARRAY	FINPUT
1477 LTMFLT	INTEGER	ARRAY	FINPUT
0 LOSSAC	INTEGER	ARRAY	FINPUT
12 MICTAP	INTEGER	ARRAY	FINPUT
0 NANGLF	INTEGER	ARRAY	FINPUT
0 NBRK	INTEGER	ARRAY	FINPUT
5 NDAY	INTEGER	ARRAY	FINPUT
1440 NDEPS	INTEGER	ARRAY	FINPUT
27 NF	INTEGER	ARRAY	FINPUT
26 NFREQ	INTEGER	ARRAY	FINPUT
55 NGFT	INTEGER	ARRAY	FINPUT
4 NT	INTEGER	ARRAY	FINPUT
62 NKROT	INTEGER	ARRAY	FINPUT

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STATEMENT LABELS	FROM-TO	INDEX	LENGTH	PROPERTY	EXT REFS
5005 20 FMT	108		107		
5013 25 FMT	110		109		
5024 35 FMT	113		112		
5032 50 FMT	116		115		
4454 100 FMT	117		111		
5046 150 FMT	130		129		
5054 200 FMT	132		131		
0 1040	163		160		
4461	129 129	KK	78		
4676	131 131	KK	79		
4715 1040	160 163	KK	48		
COMMON BLOCKS	MEMBERS - BIAS NAME (LENGTH)	LENGTH			
CFILL	0 KLV (400)	7			
LOSSA	441 INFILE (1)	11			
ABREAK	448 NODTS (5)				
PLTIN	499 FREOR (100)				
PLTIN	401 INFILE (1)				
PLTIN	402 DR150 (1)				
PLTIN	403 OUTAPE (1)				
PLTIN	404 INDISC (5)				
PLTIN	405 NDEPS (1)				
PLTIN	406 IANG (160)				
PLTIN	407 JPRNT (1)				
PLTIN	408 W0 (1)				
PLTIN	409 JREGNP (1)				
PLTIN	410 CONFIL (1)				
PLTIN	411 NUMCON (1)				
PLTIN	412 ISII (1)				
PLTIN	413 RTLI (1)				
PLTIN	414 IFM (1)				
PLTIN	415 IFXH (160)				
PLTIN	416 NX (1)				
PLTIN	417 NPLOT (1)				
PLTIN	418 TLMN (1)				
PLTIN	419 NDRY (1)				
PLTIN	420 NF (1)				
PLTIN	421 NKROT (1)				
PLTIN	422 ARVKEY (3)				
PLTIN	423 ARVREC (7)				
PLTIN	424 KEYSAV (1)				
PLTIN	425 NGET (1)				
PLTIN	426 KPTR (1)				
PLTIN	427 FREQ (1)				
PLTIN	428 KROT (1)				
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PLTIN	597 KROT (1)				
PLTIN	598 KROT (1)				
PLTIN	599 KROT (1)				
PLTIN	600 KROT (1)				

1A/08/74 10.51.11

FTN 4.6452

1101 TTON (1)

1101 INTAPE (1)

74/74 OPT=2

MEMBERS - RIAS NAME(LENGTH)

0 BLANK (1105)
0 LOSSAC (11)
0 ARDFAC (11)
0 RAYSC (121)
0 PLTINC (15)
0 PLTIFC (14)
0 DEPTH (2)
0 RARC (25)
0 SCALFC (4)
0 FLIPHC (17)

323R 211
4612R 2442
1112R 586
2121R 1105

PROGRAM MAIN

CLASSES LENGTH
KLKL 1105
SURDEP 11
NARK 11
NARK 321
NARK 5
ANGMAX 34
IFMIC 2
REGINY 25
YDEP 6
NTIPLT 37
FSAVE

STATISTICS

PROGRAM LENGTH
BUFFED LENGTH
CM LARELED COMMON LENGTH
CM BLANK COMMON LENGTH
40000R CM USED

APPENDIX E

AUTO-OCEAN CALLS TO SITE DEPENDENT SOFTWARE

Appendix E presents full FORTRAN compilation listings of all program elements that reference possible site dependent software from program AUTO-OCEAN. These listings are included to assist the user in the event major modifications are needed when adapting to the appropriate subroutine calls at the bench mark site.

POPOGARAN KSCNMM 76/74 (v) = 2 (0.111) = 0.2

```

1  PROGRAM RSCRAM(OUTPUT,TAPE50,TAPE51,TAPEH)
2
3  DIMENSION KEY(289),DATA(640),DATA1(35),DATA2(541)
4
5  FNV=NONMENT FILE TO MANIPULATE FORMAT
6
7  REWIND 50
8
9  CALL FLEDA(DATA1,31,FN,51,HATHY,21,F0,21,DA,21,DT,11,F,31,MH,541,0)
10
11  * 3LMNR,5410,21KL,10,31MM,20,31MH,27,50)
12
13  CALL OPENM(DATA11,31,MFW)
14
15  DO 20 I=1,4M
16
17  AKFY=I
18
19  HEAD(50) DATA2
20  CALL PUT(DATA1,DATA2)
21
22  CONTINUE
23
24  END

```

SYMBOLIC REFERENCE MAP (R=3)

[illegible]

FILE NAMES	MODE
0 OUTPUT	
1054 TAPF50	U4FMT
	DEAUS
	LO
	MOTION
	4

EXTERNALS	TYPE	AGES	DIFFERENCES
FILEDA		11	5
OPENW		2	7
OUT		2	11

STATEMENT LABELS	DEF LINE	DEF. VALUES
9 20	12	4

LOOPS	LAHEL	INDEX	FROM-TO	LENGTH	NUMBERS	VALUES
4276	20	*	4 12	104		

STATISTICS	
WORKING LENGTH	1961M
DIFF LENGTH	9250M
WORKING	60000
DIFF	60000
	1961M
	9250M

SUBROUTINE LOOKUP 74/74 OPT=2 ROUNDED=*

INLINE FUNCTIONS TYPE ARGV DEF LINE REFERENCES
 TABS INTEGER 1 INTRIN 51
 MOD INTEGER 2 INTRIN 43 50

STATEMENT LABELS
 13 10
 24 20
 56 30

EQUIV CLASSES LENGTH
 D1 541
 D2 541

MEMBERS - RIAS NAME(LENGTH)
 1 IRYBL (540)
 1 WAVES (540)

STATISTICS
 PROGRAM LENGTH 60000R CM USED 24408 1312

02/14/80 13.36.12

FIN 4.6x460

7474 (M122-UNP)237

PROGRAM PSCRAM

PROGRAM PSCRAM(OUTPUT,TAPE50,TAPE51,TAPE52,TAPE53,TAPE54=OUTPUT)

THIS PROGRAM CONVERTS A SEQUENTIAL AUTO-OCEAN PROFILE FILE
TO A RANDOM FILE FOR USE BY AUTO-OCEAN.

DIMENSION KEY(200),DATA1(640),DATA2(541),DATA3(35)

WRITE(51)

CALL OPENMS(MAKEY,200,6)

DO 10 I=1,200

READ(51) DATA1

CALL WHITMS(R,DATA1,640,1,-1,0)

CONTINUE

END

SYMBOLIC REFERENCE MAP (R=3)

REFERENCES

DEF LINE

ENTRY POINTS

4247 PSCRAM

VARIABLES

7233 DATA1

4776 DATA2

4776 DATA3

4776 DATA4

4776 DATA5

4776 DATA6

4776 DATA7

4776 DATA8

4776 DATA9

4776 DATA10

4776 DATA11

4776 DATA12

4776 DATA13

4776 DATA14

4776 DATA15

4776 DATA16

4776 DATA17

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4776 DATA24

4776 DATA25

4776 DATA26

4776 DATA27

4776 DATA28

4776 DATA29

4776 DATA30

4776 DATA31

4776 DATA32

4776 DATA33

4776 DATA34

4776 DATA35

4776 DATA36

4776 DATA37

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74/74 OPT=2 SOUND=*/
SUBROUTINE RETRAV

	SUBROUTINE RETREV(IMSQ,IMSQ5,SS,DEEP,NP,AUX,ISEAS)	AUTOC
	DIMENSION SS(70),DEEP(30),AUX(4),KEY(289),DATA(640)	AUTOC
	COMMON /FILKFY/ NUNIT,OPEN,KEY,DATA,IBIN	AUTOC
	INTEGER FIELD	AUTOC
	LOGICAL OPEN	AUTOC
	DATA NUNIT/R,/OPEN/,FALSE,/,IBIN/O/	AUTOC
5	C	AUTOC
	C OPEN THE UNIT ... ONCE ONLY ...	AUTOC
	C	AUTOC
10	C IF(.NOT.OPEN) CALL OPENMS(NUNIT,KEY,289,O)	AUTOC
	OPEN=TRUE.	AUTOC
	C	AUTOC
	C CONVERT COORDINATES TO INTERNAL UNITS	AUTOC
	C	AUTOC
15	MSQ=IMSQ	AUTOC
	MSQ5=IMSQ5	AUTOC
	IOFF=O	AUTOC
	IF(IMSQ.GE.300) IOFF=144	AUTOC
	IF(IMSQ.GE.300) MSQ=IMSQ-299	AUTOC
	IBD1=MOD(MSQ,36)	AUTOC
20	IF(IBD1.EQ.O) IBD1=36	AUTOC
	IBD=IBD1 + 36*(ISEAS-1) + IOFF	AUTOC
	IVG=(MSQ+35)/36	AUTOC
	IW1=AO*(IVG-1) + 1 + 20*(MSQ5-1)	AUTOC
25	IW2=IW1+16	AUTOC
	C	AUTOC
	C READ DATA BLOCK	AUTOC
	C	AUTOC
	C	AUTOC
30	IF(IWD.NE.IRIN) CALL READMS(NUNIT,DATA,640,IBD)	AUTOC
	IBIN=IBD	AUTOC
	C	AUTOC
	C SET UP INDEX WORD FOR DESIRED PROFILE	AUTOC
	C	AUTOC
35	NSTART=59	AUTOC
	NP=DATA(IW2-1)	AUTOC
	C	AUTOC
	C RETRIEVE THE PROFILE	AUTOC
	C	AUTOC
	C	AUTOC
40	DO 20 I=1,NP	AUTOC
	C	AUTOC
	C SOUND SPEED IS RAISED BEFORE STORAGE	AUTOC
	C	AUTOC
	C	AUTOC
45	ISS=FIELD(15,NSTART,DATA(IW1))	AUTOC
	IDP=FIELD(15,NSTART-15,DATA(IW1))	AUTOC
	SS(1)=1400.0 + 0.10*I ^{SS}	AUTOC
	DEEP(1)=IDP	AUTOC
	NSTART=NSTART-30	AUTOC
	IF(NSTART.GT.O) GO TO 10	AUTOC
50	NSTART=59	AUTOC
	IW1=IW1+1	AUTOC
	20 CONTINUE	AUTOC
	C	AUTOC
	C RECOVER AUXILIARY WORDS	AUTOC
	C	AUTOC
55	DO 10 I=1,4	AUTOC
	AUX(1)=DATA(IW2)	AUTOC
	10 IW2=IW2+1	AUTOC

11/08/79 16.46.41

FTN 4.6.460

(289)

2 KEY

1 OPEN (1)
931 IRIN (1)

74/74 OPT=2 ROUND=*

MEMBERS - RIAS NAME(LENGTH)
0 NUNIT (1)
291 DATA (140)

SUBROUTINE RETREV

COMMON BLOCKS LENGTH 932
FILKEY

STATISTICS

PROGRAM LENGTH 1628 114
CM LABELED COMMON LENGTH 16448 932
600008 CM USED

APPENDIX F

NEWPE CALLS TO SITE DEPENDENT SOFTWARE

Appendix F presents full FORTRAN compilation listings of all program elements that reference possible site dependent software from program NEWPE. These listings are included to assist the user in the event major modifications are needed when adapting to the appropriate subroutine calls at the bench mark site.


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01/25/80 16.50.07

FIN 4.0+450

74/74 DPI=2 ROUND=*

SUBROUTINE PETL

```

C
70  WRITE(LP,910)RMH
910  FORMAT(26H0***WARNING - AT RANGE = ,F7.2,4H NM,1)
C
C  COMPUTED RANGE STEP IS SMALL.
C
920  WRITE(LP,920)FLAG
920  FORMAT(15X,31MRATIO OF COMPUTED RANGE STEP TO,
1      22H ACOUSTIC WAVELENGTH =,F10.3)
C
C  NWARN=NWARN+1
C
C  IF (NWARN.GE.5) GO TO 100
C
930  WRITE(LP,930)
930  FORMAT(15X,33HPROCEEDING AT CURRENT RANGE STEP,1)
C
C  GO TO 90
C  TRANSFORM ALIASING TEST FAILED.
C
C  WRITE(LP,940)RMH
940  WRITE(LP,940)FLAG
940  FORMAT(15X,25HTRANSFORM ALIASING TEST =,F6.1,4H DR,1)
C
C  NWARN=NWARN+1
C
C  TERMINATE THE RUN IF ALIASING IS SEVERE.
C
C  IF (FLAG.GT.CUT) NWARN=NWARN+4
C
C  IF (NWARN.GE.5) GO TO 100
C
C  END RANGE LOOP.
C
90   IF (R.LT.RMAX) GO TO LOOP,(20,30)
C
100  RETURN
END

```

PETL 249
 PETL 250
 PETL 251
 PETL 252
 PETL 253
 PETL 254
 PETL 255
 PETL 256
 PETL 257
 PETL 258
 PETL 259
 PETL 260
 PETL 261
 PETL 262
 PETL 263
 PETL 264
 PETL 265
 PETL 266
 PETL 267
 PETL 268
 PETL 269
 PETL 270
 PETL 271
 PETL 272
 PETL 273
 PETL 274
 PETL 275
 PETL 276
 PETL 277
 PETL 278
 PETL 279
 PETL 280
 PETL 281
 PETL 282
 PETL 283
 PETL 284
 PETL 285
 PETL 286

CARD NR. SEVERITY DETAILS DIAGNOSIS OF PROBLEM

CONSTANT TOO LONG. HIGH ORDER DIGITS RETAINED, BUT SOME PRECISION LOST.

SYMBOLIC REFERENCE MAP (R=3)

ENTRY POINTS	DEF LINE	REFERENCES
3 PETL	1	379

74/74 OPT=2 POUND=*

FIN 4.6460 01/25/80 16.58.07 PAGE 4

SUBROUTINE PEYL

VARIABLES	SM	TYPE	LOCATION	REFS	DEFIN	139	240	133	166	169	144	146	251	274	326	337
2 AD	REAL	TL2	REFS	85	139	240										
26 ADM	REAL	TL2	REFS	85	DEFIN											
31 ALPHA	REAL	COSTP	REFS	101	DEFIN											
30 ATTN	REAL	COSTR	REFS	101	DEFIN					169						
0 BEAM	REAL	F.P.	REFS	189	DEFIN											
3 BR	REAL	BATHY	REFS	91	DEFIN											
316 BSR	REAL	BATHY	REFS	91	DEFIN											
0 BUFO	REAL	OUTRUF	REFS	83	DEFIN											
150 BZ	REAL	BATHY	REFS	91	DEFIN											
145 C	REAL	PHASE	REFS	89	DEFIN											
17 CD	REAL	PLT	REFS	90	DEFIN											
14 CD1	REAL	PLT	REFS	90	DEFIN											
15 CD2	REAL	PLT	REFS	90	DEFIN											
12 CLMIN	REAL	PLT	REFS	90	DEFIN											
756 CONV	REAL	PLT	REFS	90	DEFIN											
514 CUT	REAL	HERTZ	REFS	166	DEFIN											
0 C0	REAL	F.P.	REFS	371	DEFIN											
0 0	REAL	DEFIN	REFS	87	DEFIN											
16 DCD	REAL	PLT	REFS	156	DEFIN											
13 DCL	REAL	PLT	REFS	83	DEFIN											
312 DM	REAL	PHASE	REFS	1	DEFIN											
0 DMAX	REAL	F.P.	REFS	90	DEFIN											
1 DR	REAL	MESH	REFS	89	DEFIN											
4 DZ	REAL	MESH	REFS	101	DEFIN											
761 OZMAX	REAL	MESH	REFS	100	DEFIN											
3 F	REAL	HERTZ	REFS	100	DEFIN											
5 FACTOR	REAL	HERTZ	REFS	102	DEFIN											
4 FK	REAL	HERTZ	REFS	87	DEFIN											
757 FM2	REAL	HERTZ	REFS	87	DEFIN											
760 FM72	REAL	HERTZ	REFS	164	DEFIN											
770 FLAG	REAL	F.P.	REFS	166	DEFIN											
512 FMM	REAL	MESH	REFS	282	DEFIN											
511 FT	REAL	MESH	REFS	162	DEFIN											
1 H	REAL	HERTZ	REFS	158	DEFIN											
17 HALF	REAL	HERTZ	REFS	87	DEFIN											
2 HK	REAL	HERTZ	REFS	100	DEFIN											
753 I	INTEGER	HERTZ	REFS	87	DEFIN											
6 IB	INTEGER	MESH	REFS	2*326	DEFIN											
762 IFIRST	INTEGER	F.P.	REFS	315	DEFIN											
516 IFLAT	INTEGER	GROFLG	REFS	100	DEFIN											
765 IFORMT	INTEGER	BATHY	REFS	319	DEFIN											
0 IGRFLG	INTEGER	MESH	REFS	311	DEFIN											
755 J	INTEGER	UNITS	REFS	269	DEFIN											
1 KB	INTEGER	PLT	REFS	238	DEFIN											
3 KR	INTEGER	UNITS	REFS	88	DEFIN											
0 LC	INTEGER	UNITS	REFS	2*139	DEFIN											
11 LCR	INTEGER	UNITS	REFS	91	DEFIN											
754 LOOP	INTEGER	UNITS	REFS	100	DEFIN											
1 LP	INTEGER	UNITS	REFS	84	DEFIN											
0 LPL	INTEGER	COSTR	REFS	178	DEFIN											

VARIABLES	SN	TYPE	RELOCATION	REFS	44	I/O REFS	23A	315	127	154	126
2 LT	INTEGER	UNITS	REFS	44	I/O REFS	23A	240	315	127	154	126
3 LZ	INTEGER	UNITS	REFS	44	I/O REFS	23A	240	315	127	154	126
311 MC	INTEGER	PHASE	REFS	44	I/O REFS	23A	240	315	127	154	126
7 N	INTEGER	MESH	REFS	100	194	199	199	212	192	230	311
14 NA	INTEGER	MESH	REFS	100	230	DEFINED	212	239	240	311	311
0 NAVG	INTEGER	TL2	REFS	45	134	137	137	239	240	311	311
766 NAVGA	INTEGER	TL2	REFS	2*240	DEFINED	239	239	239	240	311	311
2 NB	INTEGER	BATHY	REFS	91	182	279	279	239	240	311	311
315 NBS	INTEGER	BATHY	REFS	91	182	279	279	239	240	311	311
0 NC	INTEGER	PHASE	REFS	49	232	335	335	239	240	311	311
0 ND	INTEGER	F.P.	REFS	131	216	234	234	239	240	311	311
13 NL4	INTEGER	MESH	REFS	337	DEFINED	1	211	239	240	311	311
752 MMAX	INTEGER	MESH	REFS	100	212	DEFINED	211	239	240	311	311
0 NOUT	INTEGER	OUTRUF	REFS	203	DEFINED	111	211	239	240	311	311
10 MPLT	INTEGER	PLT	REFS	46	315	DEFINED	211	239	240	311	311
1 MPPRM	INTEGER	COSTR	REFS	90	2*115	143	211	239	240	311	311
10 NPTS	INTEGER	MESH	REFS	101	203	209	211	239	240	311	311
2 NR	INTEGER	MESH	REFS	100	203	209	211	239	240	311	311
26 MRB	INTEGER	COSTR	REFS	276	DEFINED	199	211	239	240	311	311
15 NW	INTEGER	MESH	REFS	100	23A	240	245	278	278	278	278
0 MWARN	INTEGER	F.P.	REFS	222	27A	27A	325	325	325	325	325
11 N2	INTEGER	MESH	REFS	101	2*245	323	325	325	325	325	325
12 N4	INTEGER	MESH	REFS	101	276	276	371	371	371	371	371
764 PROGRAM	REAL	MESH	REFS	100	355	367	367	371	371	371	371
0 R	REAL	MESH	REFS	353	226	226	353	367	371	371	371
515 RAD	REAL	MESH	REFS	1	DEFINED	210	210	210	210	210	210
2 R81	REAL	MESH	REFS	100	210	210	210	210	210	210	210
14 R82	REAL	MESH	REFS	100	210	210	210	210	210	210	210
0 RE	REAL	MESH	REFS	23A	240	244	244	244	244	244	244
771 RM	REAL	MESH	REFS	100	290	299	299	300	301	302	377
0 RMAX	REAL	MESH	REFS	220	299	299	299	300	301	302	377
763 RNEXT	REAL	MESH	REFS	100	DEFINED	105	105	302	302	302	377
1 RNM	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
772 RR	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
0 RS	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
345 RSR	LOGICAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
773 RTEST	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
344 T8	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
331 THETA	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
0 TITLE	INTEGER	MESH	REFS	101	DEFINED	326	326	326	326	326	377
1 TL	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
513 TMOPT	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
27 VABSF	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
751 WHEN	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
6 WL	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
1 WINDOW	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
1 Z	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
5 ZMAX	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377
0 ZS	REAL	MESH	REFS	101	DEFINED	326	326	326	326	326	377

VARIABLES SM TYPE
767 ZSM REAL
16 ZM REAL

MELOCATION
MESH

REFS
REFS

2*251
180

252
2*274

OFFINFD
OFFINFD

251
273

274

FILE NAMES
TAPE2 UNFPT
TAPE3 UNFMT
VARIABLES USED AS FILE NAMES. SEE ABOVE

READS
WRITES

129
244

156
245

231
MOTION

119

EXTERNALS TYPE APGS REFERENCES

ALOG REAL 1 LIBRARY 2*192
ALPHA 326
DATE 1 235
FILTER 3 234
FLO 2 319
INDEX 0 334
SET 0 261
SIN REAL 1 LIBRARY 180
SOURCE 1 252
SPEED REAL 1 251
SORT REAL 1 LIBRARY 274
STEP 1 274
SWP 4 335
TLOSS REAL 2 307
TLOSS2 2 311
ZB REAL 1 273

INLINE FUNCTIONS TYPE ARGS DEF LINE REFERENCES

AIMT REAL 1 INTRIN 115
FLOAT REAL 1 INTRIN 115
IABS INTEGER 1 INTRIN 137
INT INTEGER 1 INTRIN 192
MAX0 INTEGER 0 INTRIN 192
MIN0 INTEGER 0 INTRIN 275

STATEMENT LABELS

DEF LINE REFERENCES
132 131
146 145
154 121
158 143
199 147
209 201
232 233
265 25A
273 271
278 265
292 291
298 289
307 306
324 325
329 323
335 336
340 333
344 340
363 363
377 340
379 296
140 119

FMT

377

INACTIVE

359

355

373

01/25/80 16:58.07

FTN 4.6+460

74774 OPT=2 ROUND=7/

SUBROUTINE PETL

STATEMENT LABELS

OFF LINE REFERENCES

43 130
 66 888
 75 889
 533 986 FMT
 543 985 FMT
 655 910 FMT
 667 920 FMT
 762 930 FMT
 720 940 FMT

141 136
 168 165
 170 167
 195 194
 206 205
 345 344
 350 349
 354 357
 365 364

363

LOOPS LABEL INDEX

30 1
 35 120
 45 2
 235 48
 334 48
 363 45

FROM-TO
 131 132
 138 140
 145 146
 245 245
 306 307
 325 328

LENGTH
 2R
 3R
 2R
 10R
 7R
 13R

PROPERTIES
 INSTACK
 INSTACK
 INSTACK
 EXT REFS
 EXT REFS
 EXT REFS

COMMON BLOCKS LENGTH

4
 42
 22
 7
 1
 222
 135
 230
 16
 26

MEMBERS - BIAS NAME(LENGTH)
 0 LC (1)
 3 LZ (1)
 0 NAVG (1)
 22 ADM (20)
 0 NOUT (1)
 0 C0 (1)
 3 F (1)
 6 ML (1)
 0 IGRFLG (1)
 0 NC (1)
 201 MC (1)
 0 TITLE (1)
 10 CLMIN (1)
 13 CD2 (1)
 0 RE (1)
 3 BR (101)
 206 BSR (1)
 229 RSR (1)
 0 R (1)
 3 KR (1)
 6 IB (1)
 9 N2 (1)
 12 NA (1)
 15 MALF (1)
 0 LPL (1)
 12 RB2 (10)
 24 ATTN (1)

MEMBERS - BIAS NAME(LENGTH)
 0 LC (1)
 3 LZ (1)
 0 NAVG (1)
 22 ADM (20)
 0 NOUT (1)
 0 C0 (1)
 3 F (1)
 6 ML (1)
 0 IGRFLG (1)
 0 NC (1)
 201 MC (1)
 0 TITLE (1)
 10 CLMIN (1)
 13 CD2 (1)
 0 RE (1)
 3 BR (101)
 206 BSR (1)
 229 RSR (1)
 0 R (1)
 3 KR (1)
 6 IB (1)
 9 N2 (1)
 12 NA (1)
 15 MALF (1)
 0 LPL (1)
 12 RB2 (10)
 24 ATTN (1)

EQUIV CLASSES LENGTH

21
 21

MEMBERS - BIAS NAME(LENGTH)
 0 LC (1)
 3 LZ (1)
 0 NAVG (1)
 22 ADM (20)
 0 NOUT (1)
 0 C0 (1)
 3 F (1)
 6 ML (1)
 0 IGRFLG (1)
 0 NC (1)
 201 MC (1)
 0 TITLE (1)
 10 CLMIN (1)
 13 CD2 (1)
 0 RE (1)
 3 BR (101)
 206 BSR (1)
 229 RSR (1)
 0 R (1)
 3 KR (1)
 6 IB (1)
 9 N2 (1)
 12 NA (1)
 15 MALF (1)
 0 LPL (1)
 12 RB2 (10)
 24 ATTN (1)

F-12

1 LP (1)
 1 WINDOW (1)
 1 RNH (1)
 1 H (1)
 4 FK (1)
 1 Z (100)
 202 DM (20)
 0 NPLT (1)
 11 DCL (1)
 14 DCD (1)
 1 KB (1)
 134 BZ (101)
 217 THETA (11)
 1 OR (1)
 4 OZ (1)
 7 N (1)
 10 NA (1)
 13 NH (1)
 1 NPPRM (1)
 22 NR8 (1)
 25 ALPHA (1)
 1 TL (26)

2 LT (1)
 2 AD (20)
 2 TL (20)
 2 HK (1)
 5 FACTOR (1)
 101 C (100)
 9 LCR (1)
 12 CO1 (1)
 15 CO (120)
 2 NB (1)
 205 N9S (1)
 228 TB (1)
 2 NR (1)
 5 ZMAX (1)
 8 NPTS (1)
 11 NL4 (1)
 14 7M (1)
 2 RB1 (10)
 23 VABSF (1)

EQUIV CLASSES LENGTH

21
 21

MEMBERS - BIAS NAME(LENGTH)
 0 LC (1)
 3 LZ (1)
 0 NAVG (1)
 22 ADM (20)
 0 NOUT (1)
 0 C0 (1)
 3 F (1)
 6 ML (1)
 0 IGRFLG (1)
 0 NC (1)
 201 MC (1)
 0 TITLE (1)
 10 CLMIN (1)
 13 CD2 (1)
 0 RE (1)
 3 BR (101)
 206 BSR (1)
 229 RSR (1)
 0 R (1)
 3 KR (1)
 6 IB (1)
 9 N2 (1)
 12 NA (1)
 15 MALF (1)
 0 LPL (1)
 12 RB2 (10)
 24 ATTN (1)

STATISTICS

1035R 517
 1101H 705

PROGRAM LENGTH
 CP LABELED COMMON LENGTH
 125000E CM USED

APPENDIX G

SYNACC CALLS TO SITE DEPENDENT SOFTWARE

Appendix G presents full FORTRAN compilation listings of all program elements that reference possible site dependent software from program SYNACC. These listings are included to assist the user in the event major modifications are needed when adapting to the appropriate subroutine calls at the bench mark site.

04/07/79 13.11.CC

FTN 4.6+460

73/74 OPT=2 ROUND=9/

SUBROUTINE GRDLK

```

1      SUBROUTINE GRDLK(ILPRINT,MSLOC,I7,ICOL,IROW,IOMIT)
2      C
3      C
4      C
5      C
6      C
7      C
8      C
9      C
10     C
11     C
12     C
13     C
14     C
15     C
16     C
17     C
18     C
19     C
20     C
21     C
22     C
23     C
24     C
25     C
26     C
27     C
28     C
29     C
30     C
31     C
32     C
33     C
34     C
35     C
36     C
37     C
38     C
39     C
40     C
41     C
42     C
43     C
44     C
45     C
46     C
47     C
48     C
49     C
50     C
51     C
52     C
53     C
54     C
55     C
56     C
57     C
58     C

```

THIS SUBROUTINE ATTACHES A SYNAPS FILE BY PERFORMING
 ATTACH.TAPE1.FINALGRIDNNN.ID=PPPV
 WHERE NNN IS FROM 2 TO 4 DECIMAL DIGITS INDICATING A MARSDEN SQUARE AND QUADRANT. E.G., FINALGRID104 IS THE DATA FOR 10 DEGREE MARSDEN SQUARE 10, QUADRANT 4.
 AFTER PERFORMING THE ATTACH, THE DATA IS READ INTO THE ARRAY IZ.
 IF THE FILE IS NOT IN THE SYSTM, A MESSAGE IS PRINTED, A FLAG SET, AND THE SUBROUTINE RETURNS. ANY OTHER ERROR THAT OCCURS WHEN TRYING TO PERFORM THE ATTACH WILL CAUSE A MESSAGE TO BE PRINTED AND THE JOB ABORTED.
 IF, AFTER ATTACHING A FILE, THE MARSDEN SQUARE NUMBER IN THE HEADER RECORD OF THE FILE DOES NOT MATCH THE FILE NAME. (E.G., MS05=124 WITH FILE NAME FINALGRID051), THEN RETRIEVAL IS TERMINATED, A MESSAGE PRINTED, A FLAG SET, AND THE ROUTINE RETURNS.
 DIMENSION ICHAR(4),IPRMS(22),NUMS(10),I7(63,204)
 LOGICAL IOMIT,LPRINT
 DATA IN/4LPVRV/, IPRM1/9LFINALGRID/, NOTHEP/10/
 DATA ITAPE1/1/
 DATA LFN/5LITAPE1/
 DATA NUMS/1R1, 1R2, 1P3, 1R4, 1R5, 1R6, 1R7, 1R8, 1R9, 1R0/
 CALL UNLDA0(ITAPE1)
 IOMIT = .FALSE.
 DETERMINE HOW MANY DECIMAL DIGITS IN MSLOC (MUST BE 2,3 OR 4)
 NDIGIT=2
 IF1 (MSLOC .GT. 99) .AND. (MSLOC .LT. 1000) 1 NDIGIT=3
 IF1 MSLOC .GT. 999) NDIGIT=4
 CONVERT THE DIGITS IN MSLOC TO INDIVIDUAL RCD CHARACTERS AND STORE THEM IN THE ARRAY ICHAR WITH THE RIGHTMOST DIGIT IN MSLOC BEING STORED IN ICHAR(1), ETC.
 MS0=MSLOC
 DO 200 I=1,NDIGIT
 ICHG=MOD(MS0,10)
 IF1 ICHG .EC. 0) ICHG=10
 ICHAR(I)=NUMS(ICHG)
 MS0=MS0/10
 200 CONTINUE
 DO 300 I=1,22
 IPRMS(I)=0
 300 CONTINUE
 SET IRC TO INDICATE THAT AN ATTACH IS TO BE PERFORMED.
 ALSO, SET UP THE ARRAY IPRMS.
 IRC=1

```

59 GR08LK
60 GR08LK
61 GR08LK
62 GR08LK
63 GR08LK
64 GR08LK
65 GR08LK
66 GR08LK
67 GR08LK
68 GR08LK
69 GR08LK
70 GR08LK
71 GR08LK
72 GR08LK
73 GR08LK
74 GR08LK
75 GR08LK
76 GR08LK
77 GR08LK
78 GR08LK
79 GR08LK
80 GR08LK
81 GR08LK
82 GR08LK
83 GR08LK
84 GR08LK
85 GR08LK
86 GR08LK
87 GR08LK
88 GR08LK
89 GR08LK
90 GR08LK
91 GR08LK
92 GR08LK
93 GR08LK
94 GR08LK
95 GR08LK
96 GR08LK
97 GR08LK
98 GR08LK
99 GR08LK
100 GR08LK
101 GR08LK
102 GR08LK
103 GR08LK
104 GR08LK
105 GR08LK
106 GR08LK
107 GR08LK
108 GR08LK
109 GR08LK
110 GR08LK
111 GR08LK
112 GR08LK
113 GR08LK
114 GR08LK
115 GR08LK

IPRMS(1)=LEN
IPRMS(2)=IPFMI .OR. ICHAR(NDIGIT)
NCHAR=NDIGIT-1
DO 400 I=1,NCHAR
  ICHAR(NDIGIT-I)=SHIFT( ICHAR(NDIGIT-I), 60-6+I )
IPRMS(3)=IPRMS(3) .OR. ICHAR(NDIGIT-I)
CONTINUE
400 IPRMS(6)=10
C
C   SET IPRMS(12), THE NR PARAMETER, TO 1.
C
IPRMS(12)=1
C
C   SET IPRMS(14) TO -1 TO INDICATE THAT THE CYCLE NUMBER OF THE
C   ATTACHED FILE IS TO BE RETURNED IN IPRMS(14).
C
IPRMS(14)=-1
C
C   SET NM TO THE LAST NON-ZERO WORD IN IPRMS.
C
NM=14
C
CALL ZPFUNC(IRC, IPRMS, NM)
C
C   RECALL-NOTHER IS THE ERROR CODE FOR THE FILE NOT IN SYSTEM.
C
IF( IRC .EQ. NOTHER ) GO TO 2000
IF( IRC .NE. 0 ) GO TO 5000
C
C   THE FILE HAS BEEN SUCCESSFULLY ATTACHED.
C
IF(1PRINT) PRINT 700, (IPRMS(I), I=1,3), IPRMS(6), IPRMS(14)
FORMAT(//,4X) IN THE FOLLOWING ATTACH HAS BEEN PERFORMED- //
1 10X,0M ATTACH. A5.1M, A10.A3,4M, ID=A4,4M, CV=,11.1M.)
C
READ(1TAPE1,000) MS05,ICOL,IRON
FORMAT(314)
C
IF(1PRINT) PRINT A25, MS05,ICOL,IRON
C
FORMAT(50M) THE ATTACHED SYNOPSIS FILE HAS HEADER DATA- MS05=.14.
1 8M ICOL=.17,8M IRON=.13)
C
IF( MS0LOC .NE. MS05 ) GO TO 1000
DO 900 K=1,ICOL
  READ (1TAPE1,050) (I2(K,L),L=1,IRON)
  FORMAT(1615)
900 CONTINUE
  GO TO 3500
C .....
C
C   NON-FATAL ERROR PROCESSING
C .....
1000 CONTINUE
PRINT 1100, IPRMS(2),IPRMS(13),MS05
1100 FORMAT(//,30M) THE HEADER ON ATTACHED FILE ,A10.A3,30M) CONTAINS
1 A MARSDEN SOURCE NUMBER OF ,I4/
2 69M THIS IS INCONSISTENT WITH THE FILE NAME - TAKE CARE OF
3 THIS PROBLEM.1
GO TO 3000

```

```

115 C 2000 CONTINUE
      PRINT 2100, IPRMS(2), IPRMS(3), IPRMS(6)
      FORMAT(//,5M FILE ,A10,A3,5M, IN=,A4,2M, IS NOT IN THE SYSTEM.)
120 C 3000 CONTINUE
      IOMIT = .TRUE.
125 C 3500 CONTINUE
      RETURN
130 C *****
      FATAL ERROR PROCESSING
      *****
135 C 5000 CONTINUE
      PRINT 5100, IPRMS(2), IPRMS(3), IPRMS(6), IPRMS(11)
      FORMAT(//,42M ERROR IN TRYING TO ATTACH PERMANENT FILE ,A10,A3,
15M, ID=,A4,10M, ON LOGICAL UNIT ,A5)
      PRINT 5200, IRC, IRC
      FORMAT(16M ERROR CODE = ,I3,5M (= ,O3,7M OCTAL))
      PRINT 5300
      FORMAT(//,42M --- FOR ABORTED IN SUBROUTINE GRORLK, ---)
      CALL ABORT
140 C
      END

```

GRORLK 116
GRORLK 117
GRORLK 118
GRORLK 119
GRORLK 120
GRORLK 121
GRORLK 122
GRORLK 123
GRORLK 124
GRORLK 125
GRORLK 126
GRORLK 127
GRORLK 128
GRORLK 129
GRORLK 130
GRORLK 131
GRORLK 132
GRORLK 133
GRORLK 134
GRORLK 135
GRORLK 136
GRORLK 137
GRORLK 138
GRORLK 139
GRORLK 140
GRORLK 141
GRORLK 142

SYMBOLIC REFERENCE MAP (R=3)

ENTRY POINTS	DEF LINE	REFERENCES	RELOCATION
3 GRORLK	1	124 141	
VARIABLES	SM	TYPE	
360 I		INTEGER	
370 ICHAR		INTEGER	ARRAY
0 ICOL		INTEGER	F.P.
154 IO		INTEGER	
361 IOIG		INTEGER	
0 IOMIT		LOGICAL	F.P.
155 IPFM1		INTEGER	
374 IPRMS		INTEGER	ARRAY
362 IRC		INTEGER	
0 IROM		INTEGER	
157 ITAPE1		INTEGER	F.P.
0 IZ		INTEGER	
366 K		INTEGER	ARRAY
367 L		INTEGER	F.P.
160 LFN		INTEGER	
0 LPRINT		LOGICAL	
357 MSC		INTEGER	F.P.

REFS	46	51	3062	63	89
DEFINED	43	50	61	85	
REFS	22	59	62	63	DEFINED
REFS	94	94	DEFINED	1	92
REFS	65	DEFINED	24	44	45
REFS	45	65	DEFINED	30	121
REFS	23	DEFINED	1		
REFS	59	DEFINED	24		
REFS	27	63	80		
DEFINED	51	54	55	3089	20109
REFS	80	84	85	63	65
REFS	94	94	DEFINED	20125	DEFINED
REFS	29	DEFINED	25	1	92
REFS	27	DEFINED	1	100 REFS	92
REFS	99	DEFINED	94	94	
REFS	94	DEFINED	94		
REFS	54	DEFINED	26		
REFS	23	83	94	DEFINED	1
REFS	44	47	DEFINED	42	47

6-117
6-112
76

VARIABLES SM TYPE
 8 MSGLOC INTEGER
 365 MSOS INTEGER
 363 MCHAR INTEGER
 356 MDIGIT INTEGER
 156 MOTHER INTEGER
 422 MUMS INTEGER
 364 NW INTEGER

RELOCATION
 F.P.

2*35
 94
 61
 43
 34
 04
 22
 00

36
 97
 109
 60
 60
 16
 24
 46
 78

97
 97
 2*42
 27

1

FILE NAMES MODE
 OUTPUT FMT
 VARIABLES USED AS FILE NAMES. SEE ABOVE

EXTERNALS TYPE ARGS REFERENCES
 ABORT 0 139
 UNLOAD 1 24
 ZPFUNC 3 00

INLINE FUNCTIONS TYPE ARGS DEF LINE REFERENCES
 MOD INTEGER 2 INTRIN 44
 SHIFT NO TYPE 2 INTRIN 62

STATEMENT LABELS DEF LINE REFERENCES

0 200 43
 0 300 50
 0 400 61
 167 700 90
 211 800 92
 221 825 94
 242 850 99
 0 900 98
 125 1000 97
 252 1100 109
 130 2000 84
 302 2100 117
 132 3000 114
 133 3500 102
 134 5000 85
 320 5100 132
 337 5200 135
 350 5300 137

LCOPS LABEL INDEX FROM-TO LENGTH PROPERTIES
 30 200 I 43 48 128 OPT
 43 300 I 50 52 28 INSTACK
 54 400 I 61 64 38 INSTACK
 104 900 * K 98 101 218
 111 * L 99 99 108

STATISTICS
 PROGRAM LENGTH 600008 CM USED 44.8 288

EXT REFS NOT INNER
 FXT REFS

APPENDIX H

INTERACT CALLS TO SITE DEPENDENT SOFTWARE

Appendix H presents full FORTRAN compilation listings of all program elements that reference possible site dependent software from program INTERACT. These listings are included to assist the user in the event major modifications are needed when adapting to the appropriate subroutine calls at the bench mark site.

```

1  PROGRAM INPACT(INPUT,OUTPUT,TAPES=INPUT,TAPE6=OUTPUT,
2  TAPE1=/40, TAPE2=/40,
3  TAPE10, TAPE20, TAPE30 )
4  LOGICAL YES,CREATE,INTRFC,PLOT
5  INTEGER DATIN,DATOUT
6
7  COMMON/ CNTRL / MORE,CREATE,ORANGE
8  COMMON/ PATH / NBCL,RIEMP(201),ITEMP(201),INTRFC,PLOT
9  COMMON/ UNITS / DATIN,DATOUT
10
11  DATIN = 10
12  DATOUT = 20
13  CALL CONNEC(1)
14  CALL CONNEC(2)
15
16  INITIALIZE FILES
17
18  DATIN = 10
19  DATOUT = 20
20  CALL CONNEC(1)
21  CALL CONNEC(2)
22
23  50 CONTINUE
24
25  CREATE = .FALSE.
26  INTRFC = .FALSE.
27  PLOT = .FALSE.
28  WRITE(2,100)
29
30  100 FORMAT( 47H WELCOME TO INTERACT. WITH THIS SYSTEM YOU CAN
31  44H 1) CREATE AN INPUT DATA SET FOR INTERFACE
32  44H 2) MODIFY AN INPUT DATA SET FOR INTERFACE
33  44H 3) CREATE AN INPUT DATA SET FOR CFIELD PLOT
34  44H 4) MODIFY AN INPUT DATA SET FOR CFIELD PLOT
35  43H ENTER THE INDEX OF THE FUNCTION TO PERFORM
36
37  READ(1,*) NDEX
38  CALL ISTNEX(NDEX,1,4)
39  IF (NDEX.EQ.1 .OR. NDEX.EQ.3) GO TO 500
40
41  MAKE SURE THERE IS A FILE TO REVIEW
42  CALL RWWAIT
43  CONTINUE
44
45  500 CONTINUE
46
47  GO TO 1100,2000,3000,4000, NDEX
48
49  1000 CONTINUE
50
51  2000 CONTINUE
52
53  3000 CONTINUE
54
55  4000 CONTINUE
56
57  CREATE=.TRUE.
58  INTRFC=.TRUE.
59  PLOT=.TRUE.
60  WRITE(2,1100)

```

02/29/80 12.22.24

FIN 4.6*460

OPT=2 ROUND=*

74/74

PROGRAM INRACT

```

1100 FORMAT( 46H WILL THERE BE AUTO-OCEAN INPUT DATA (Y OR N) )
      IF (.NOT. YES(0)) GO TO 1900
      AUTO-OCEAN DATA PRESENT
      CALL INOVRD
      GO TO 4000
1900 CONTINUE
      NO AUTO-OCEAN ALL DATA MUST BE INPUT
      CALL INCFLD
      GO TO 90000
2000 CONTINUE
      MODIFY AN INPUT DATA SET FOR INTERFACE
      WRITE (2,1100)
      IF (.NOT. YES(0)) GO TO 2900
      CALL ADHVVW(10)
      GO TO 90000
2900 CONTINUE
      CALL CRRVW(10)
      GO TO 90000
3000 CONTINUE
      CREATE AN INPUT DATA SET FOR CFIELD PLOT
      CREATE = .TRUE.
      PLOT = .TRUE.
      CALL INPLOT
      GO TO 90000
4000 CONTINUE
      MODIFY AN INPUT DATA SET FOR CFIELD PLOT
      CALL PLTRVW
90000 CONTINUE
      WRITE (2,90110)
90110 FORMAT (//)
      WHILE(2*90100)
90100 FORMAT( 40H ARE YOU DONE FOR THIS SESSION (Y OR N) )
      WRITE (2,90110)
      IF (.NOT. YES(0)) GO TO 50
      STOP
      END

```

INRACT 59
 INRACT 60
 INRACT 61
 INRACT 62
 INRACT 63
 INRACT 64
 INRACT 65
 INRACT 66
 INRACT 67
 INRACT 68
 INRACT 69
 INRACT 70
 20SEP79 1
 INRACT 72
 INRACT 73
 INRACT 74
 INRACT 75
 INRACT 76
 INRACT 77
 INRACT 78
 INRACT 79
 INRACT 80
 INRACT 81
 INRACT 82
 INRACT 83
 INRACT 84
 INRACT 85
 INRACT 86
 INRACT 87
 INRACT 88
 INRACT 89
 INRACT 90
 INRACT 91
 INRACT 92
 INRACT 93
 INRACT 94
 INRACT 95
 INRACT 96
 INRACT 97
 INRACT 98
 INRACT 99
 INRACT 100
 INRACT 101
 INRACT 102
 INRACT 103
 INRACT 104
 INRACT 105
 INRACT 106
 INRACT 107
 INRACT 108
 INRACT 109
 INRACT 110
 INRACT 111
 INRACT 112

02/29/80 12.22.24

FIN 4.0.460

1 CREAT (1)
 1 MEMP (201)
 404 PLOT (1)
 1 DATOUT (1)

MEMBERS - HIAS NAME (LENGTH)
 0 MOVE (1)
 0 NBGP (1)
 403 INTFC (1)
 0 DATTN (1)

74/74 OPT=2 ROUND=*

PROGRAM INPACT

COMMON BLOCKS LENGTH
 J
 405
 IBATH
 UNITS 2

STATISTICS

PROGRAM LENGTH
 BUFFER LENGTH
 CM LABELED COMMON LENGTH
 60000h CM USED

241R 161
 7514h 3916
 632h 410

END

DATE
FILMED

03-82

DTIC