National Aeronautics and Space Administration

E82-10095

Lyndon B. Johnson Space Center
Houston, Texas 77058

JSC- 17585

COMPUTER PROGRAM DOCUMENTATION

USER'S GUIDE
TO THE
UTIL-ODRC TAPE PROCESSING PROGRAM

JOB ORDER 52-309

(E82-10095) USER'S GUIDE TO THE UTIL-ODRC TAPE PROCESSING PROGRAM (Lockheed Engineering and Management) 27 p
HC A03/MF A01 CSCL 02C G3/43

N82-22538

Unclas
00095

Prepared By

Lockheed Engineering and Management Services Company

Houston, Texas

Contract NAS 9-15800

for

STRUCTURES AND MECHANICS DIVISION

AUGUST 1981

LEMSCO-17151

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LEMSCO-17151

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1. Report No.	2. Government Accession No.	3. Recipient's Catalog No.
JSC-17585		

4. Title and Subtitle	5. Report Date
User's Guide to the UTIL-ODRC Tape Processing Program	AUGUST 1981
	6. Performing Organization Code

7. Author(s)	8. Performing Organization Report No.
S. M. Juba Lockheed Engineering and Management Services Co., Inc.	LEMSCO-17151
	10. Work Unit No.

9. Performing Organization Name and Address	11. Contract or Grant No.
Lockheed Engineering and Management Services Co., Inc. 1830 NASA Road 1 Houston, Texas 77058	NAS 9-15800
	13. Type of Report and Period Covered

12. Sponsoring Agency Name and Address	14. Sponsoring Agency Code
National Aeronautics and Space Administration Lyndon B. Johnson Space Center Houston, Texas 77058 Technical Monitor: R. Brown	ES3

Computer Program Documentation

15. Supplementary Notes

16. Abstract

This document describes the UTIL-ODRC CCT-tape processing program, its I/O options and requirements, and its interface with the EXEC 8 Operating System.

17. Key Words (Suggested by Author(s))	18. Distribution Statement
ODRC, CCT, SINDA, HISTRY, PRAMPT/FLOPLT, BATCH PLOT, Measurement Identifiers, Batch, Interactive, NTRAN, I/O, Data Summary	

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

*For sale by the National Technical Information Service, Springfield, Virginia 22161

TABLES

FIGURES

DESCRIPTION OF TERMS

BATCH PLOT, FLOPLT, PRAMPT	- SINDA Temperature History Plotting Programs
CCT	- Computer Compatible Tape
I/O	- Input/Output
K	- 1024 words of storage
NTRAN	- UNIVAC/FORTRAN V Data Transfer Routine
ODRC	- Orbital Data Reduction Center
SINDA	- Systems Improved Numerical Differencing Analyzer

1. INTRODUCTION

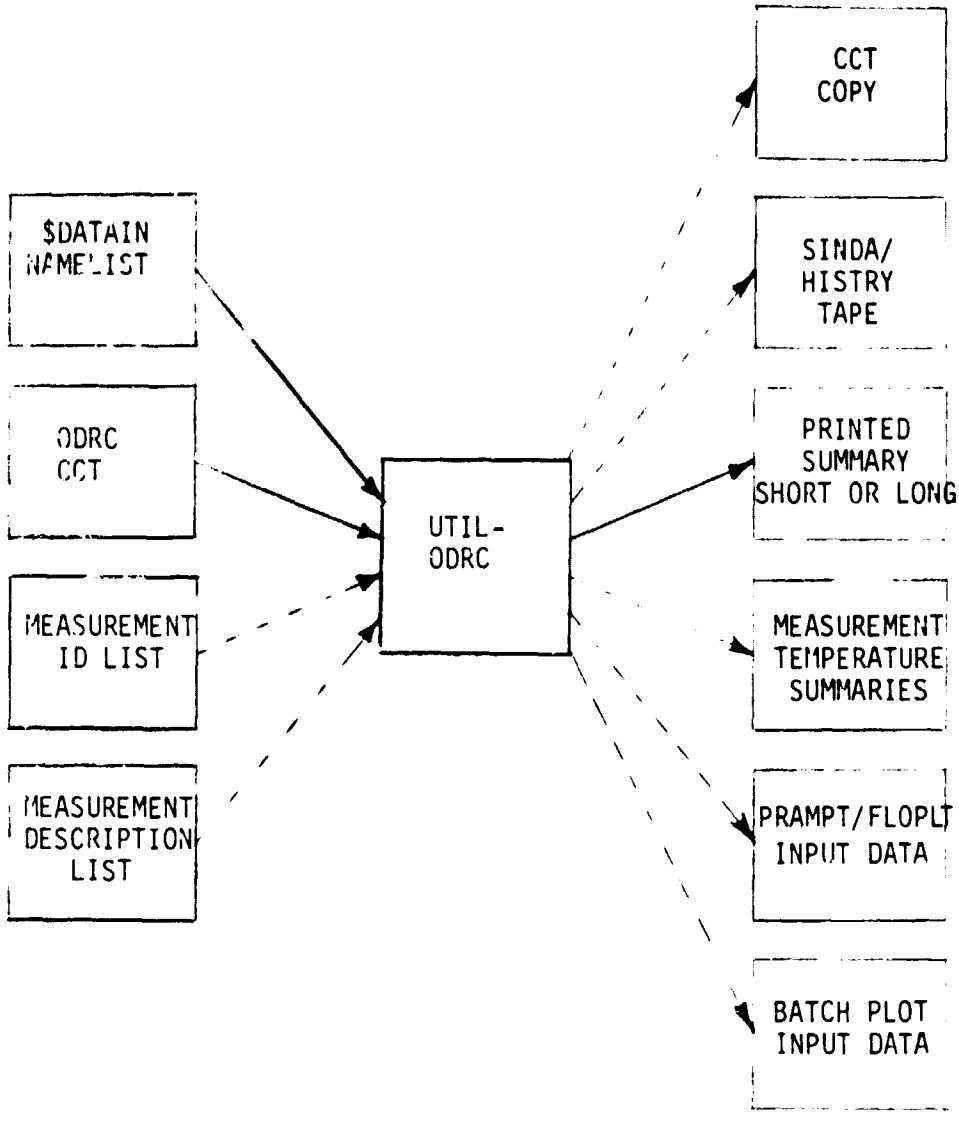
The UTIL-ODRC program has been designed as a multi-purpose ODRC tape processing utility, and provides the user with the ability to create: 1) tape copies: exact duplicate and/or SINDA/HISTRY format, 2) plot data elements for PRAMPT/FLOPLT and/or BATCH PLOT programs, and 3) a printed summary. Consequently, execution of UTIL-ODRC allows the user to view ODRC data rapidly, with the data presented in a manner most suited to the user's analytic method.

2. PROGRAM DESCRIPTION

2.1 OVERVIEW

Figure 1 shows the input required and output produced by UTIL-ODRC. The program processes one raw ODRC data CCT as specified by the user in both the $DATAIN namelist, and an optional list of measurement identifiers following the namelist in the input stream. In addition, a measurement description list will be made available to the program if the user chooses to build a PRAMPT/FLOPLT input data element.

Output may take the form of: a duplicate of the original tape, a SINDA/HISTRY format tape, a PRAMPT/FLOPLT input data element, a BATCH PLOT input data element, and/or summary information displayed on the terminal or on line printer copy.



----- OPTIONAL I/O

Figure 1 - Input and Output of UTIL-ODRC

2.2 INPUT

Up to four input entities may be required by UTIL-ODRC: a raw ODRC data CCT, the $DATAIN namelist, a list of measurement identifiers or relative measurement numbers, and a measurement description list. Only the CCT and namelist inputs are required to execute this program. Namelist variables, their possible and default values and their meaning to the program are listed in Appendix A. If detailed summary output is desired for particular measurements, a list of measurement identifiers may be appended to the namelist, and namelist variable REALM must be true. If the relative locations of the desired measurements on the CCT are known to the user, namelist array MREL can be assigned these relative values. Relative location specifications must occupy consecutive positions in the array, beginning with MREL(1), and REALM must be false.

The measurement description list is read when the user specifies PRAMPT/FLOPLT data output by setting namelist variable BLDELT to true. The list supplies a description and range of values for each measurement, to be used, respectively, to title the plot, and to insure appropriate y-axis limits.

2.3 PROCESSING

The general flow of control in UTIL-ODRC is schematically depicted in Appendix B. The program uses NTRAN I/O processing when reading or copying an ODRC CCT. Except for namelist reading and writing, all other I/O is formatted. Formatted main storage transfer (DECODE) is invoked when further examination of NTRAN input is necessary.

Program termination occurs in one of three ways: error exit with diagnostic message, error exit due to bad tape (no message), or normal termination. Table I describes the causal conditions for each type of exit.

TABLE I - CAUSAL CONDITIONS FOR ERROR EXIT

TYPE OF EXIT	CONDITIONS
ERROR WITH MESSAGE	Number of measurements on tape exceeds the capacity of the program
	Error in namelist
	Number of records per scan >5
ERROR WITHOUT MESSAGE . . . . . (values output before error abort)	Number of physical records ≤ 0
	Sequential record counter ≤ 0
	Size of data records ≤ 0
	Scans per data record = 0
	Number of scans ≤ 0
NORMAL	IYEAR = 1: End of CCT data

2.4 OUTPUT

This section pertains only to UTIL-ODRC output resulting from normal program termination. For information concerning error abort, see the preceding section on processing.

All output from UTIL-ODRC is optional excepting a short printed summary of the ODRC data records processed by the program, as in Figure 2. A long summary printout is also available, as shown in Figure 3, and is obtained by setting namelist variable PRINT to true.

Printed summary information for specific measurements can be output when REALM is true, and a list of the actual measurement identifiers follows the namelist, or when REALM is false, and array MREL contains integers identifying the relative positions, on the CCT, of the measurements of interest.

Then either variable PRNTMP or MAXMIN (or both) may be set to true, producing a printout of all temperatures, or the maximum and mininum temperature, for each specified measurement. Figures 4 and 5 show examples of output generated by these options.

```
 HEADER=  2048
TAPE ID=  CTCS1L
NUMBER OF PHYSICAL RECORDS=      8
SEQUENTIAL RECORD COUNTER =      1
SIZE OF DATA RECORDS      =    440 WORDS
SCANS PER DATA RECORD     =     -2
LOCAL DATE=05/01/81
LOCAL TIME=07:07:30
SCAN SIZE=   843 WORDS
 HEADER=  2048
TAPE ID=  CTCS1L
NUMBER OF PHYSICAL RECORDS=      8
SEQUENTIAL RECORD COUNTER =      2
SIZE OF DATA RECORDS      =    440 WORDS
SCANS PER DATA RECORD     =     -2
LOCAL DATE=05/01/81
LOCAL TIME=07:07:30
SCAN SIZE=   843 WORDS
 HEADER=  2048
TAPE ID=  CTCS1L
NUMBER OF PHYSICAL RECORDS=      8
SEQUENTIAL RECORD COUNTER =      3
SIZE OF DATA RECORDS      =    440 WORDS
SCANS PER DATA RECORD     =     -2
LOCAL DATE=05/01/81
LOCAL TIME=07:07:30
SCAN SIZE=   843 WORDS
```

Figure 2 - Short Printout Option Example

```
1 ****** MEASUREMENT NUMBER  E41T1010B
   SAMPLES PER SCAN                                    1
   WORD NO. IN SCAN OF FIRST SAMPLE                   16
   TIME DELTA FOR FIRST SAMPLE                      .040
   TIME DELTA BETWEEN CONTIGUOUS SAMPLES            .000
   PRECISION CODE  1-SP  2-DP                         2
   TIME SKEW WORD NUMBER                              4
2 ****** MEASUREMENT NUMBER  E41T1011B
   SAMPLES PER SCAN                                    1
   WORD NO. IN SCAN OF FIRST SAMPLE                   18
   TIME DELTA FOR FIRST SAMPLE                      .060
   TIME DELTA BETWEEN CONTIGUOUS SAMPLES            .000
   PRECISION CODE  1-SP  2-DP                         2
   TIME SKEW WORD NUMBER                              4
3 ****** MEASUREMENT NUMBER  E41T1012B
   SAMPLES PER SCAN                                    1
   WORD NO. IN SCAN OF FIRST SAMPLE                   20
   TIME DELTA FOR FIRST SAMPLE                      .080
   TIME DELTA BETWEEN CONTIGUOUS SAMPLES            .000
   PRECISION CODE  1-SP  2-DP                         2
   TIME SKEW WORD NUMBER                              4
4 ****** MEASUREMENT NUMBER  E41T1013B
   SAMPLES PER SCAN                                    1
   WORD NO. IN SCAN OF FIRST SAMPLE                   22
   TIME DELTA FOR FIRST SAMPLE                      .000
   TIME DELTA BETWEEN CONTIGUOUS SAMPLES            .000
   PRECISION CODE  1-SP  2-DP                         2
   TIME SKEW WORD NUMBER                              4
```

Figure 3 - Long Printout Option Example

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```
TIME FOR THIS SCAN       .905850000000+007
                                                                  STIME=   20.2500
                           E41T1010B          .00000000
                           V09T9821A          .85630054+02
                           V12T9360A          .14368934+03
                           V37T9171A          .64946630+02
                           V41T1201C         -.40477694+03
TIME FOR THIS SCAN       .905856000000+007
                                                                  STIME=   20.2666
                           E41T1010B          .00000000
                           V09T9821A          .85630054+02
                           V12T9360A          .14368934+03
                           V37T9171A          .64946630+02
                           V41T1201C         -.40477694+03
TIME FOR THIS SCAN       .905862000000+007
                                                                  STIME=   20.2833
                           E41T1010B          .00000000
                           V09T9821A          .85630054+02
                           V12T9360A          .14368934+03
                           V37T9171A          .64946630+02
                           V41T1201C         -.40477694+03
TIME FOR THIS SCAN       .905868000000+007
                                                                  STIME=   20.3000
                           E41T1010B          .00000000
                           V09T9821A          .85630054+02
                           V12T9360A          .14368934+03
                           V37T9171A          .64946630+02
                           V41T1201C         -.40477694+03
TIME FOR THIS SCAN       .905874000000+007
                                                                  STIME=   20.3167
                           E41T1010B          .00000000
                           V09T9821A          .85630054+02
                           V12T9360A          .14374630+03
                           V37T9171A          .64946630+02
                           V41T1201C         -.40477694+03
```

Figure 4 - Sample Temperature Printout

	MAXIMUM		MINIMUM	
	TIME	TEMP	TIME	TEMP
E41T1010B	18.35	.00	18.35	.00
V09T9821A	18.35	193.05	20.50	.00
V12T9360A	20.48	145.19	18.35	.00
V37T9171A	20.42	67.53	20.50	.00
V41T1201C	18.35	.00	18.48	-404.78

Figure 5 - Sample Maximum and Minimum
Temperature Printout

In addition to printed output, UTIL-ODRC will produce a copy of the ODRC CCT if variable COPY is true, and will reformat the CCT data into SINDA temperature history form if HISTRY is true.

Input data for plotting programs can be produced by UTIL-ODRC to facilitate trend analysis. PRAMPT/FLOPLT input data is created by setting variable BLDELT to true. An example of the data produced is shown in Figure 6. BATCH PLOT input data is output when BLDBAT is true, and a sample of this data is listed in Figure 7.

379161ST	V37T9161A	PBD R SKIN TEMP X 1000	-200.2000	450.0200
379166ST	V37T9166A	PBD R SKIN TEMP X 613	-200.2020	450.0200
-379171ST	V37T9171A	PBD L BLKHD LATCH MOTOR TEMP X 530	-200.2000	450.0000
379172ST	V37T9172A	PBD R BLKHD LATCH MOTOR TEMP X 130	-200.2000	450.2000
379181ST	V37T9181A	PBD L ACTR MOTOR TEMP	-202.2200	450.0000
-379182ST	V37T9182A	PBD R ACTR MOTOR TEMP	-202.2002	450.2030
-389272ST	V38T9272A	AFT FUS UPR FWD BULK AIR TEMP	-250.2002	250.2000
389275ST	V38T9275A	AFT FUS TOP REAR BULK AIR TEMP	-250.2202	250.2020
389276ST	V38T9276A	AFT FUS UPR CENTER BULK AIR TEMP	-250.2002	250.2000
-389277ST	V38T9277A	AFT FUS LWR CENTER BULK AIR TEMP	-250.2002	250.2020
389278ST	V38T9278A	AFT FUS LWR RIGHT BULK AIR TEMP	-250.2002	250.2000
-389282ST	V38T9282A	AFT FUS LH VENT DOOR MOTOR	-202.2000	450.2020
389421ST	V38T9421A	RH OMS/RCS POD VENT AND PURGE TEMP	.0002	450.2020
389422ST	V38T9422A	LH OMS/RCS POD VENT AND PURGE TEMP	.2000	450.0020
-411101ST	V41T1101C	MPS-ENG NO 1 LH2 INLET TEMP	-430.2002	-425.2020
-411131ST	V41T1131C	MPS-ENG NO 1 LOX INLET TEMP	-305.2000	-255.0000
-411151ST	V41T1151A	MPS E-1 AFT FUSLG HE SUPPLY TEMP	-325.2002	320.0200
411152ST	V41T1152A	MPS E-1 MID FUSLG HE SUPPLY TEMP	-325.2002	320.0200
-411161ST	V41T1161A	MPS-ENG NO 1 GH2 PRESS OUTLET TEMP	-325.2002	520.0000
-411171ST	V41T1171A	MPS-ENG NO 1 GOX PRESS OUTLET TEMP	-150.2000	650.0000
-411201ST	V41T1201C	MPS-ENG NO 2 LH2 INLET TEMP	-430.2020	-425.0000
-411231ST	V41T1231C	MPS-ENG NO 2 LOX INLET TEMP	-305.2020	255.0000
-411251ST	V41T1251A	MPS E-2 AFT FUSLG HE SUPPLY TEMP	-325.2000	300.0000
411252ST	V41T1252A	MPS E-2 MID FUSLG HE SUPPLY TEMP	-325.2000	300.0000
-411261ST	V41T1261A	MPS-ENG NO 2 GH2 PRESS OUTLET TEMP	-325.2020	500.0000
-411271ST	V41T1271A	MPS-ENG NO 2 GOX PRESS OUTLET TEMP	-150.2020	650.0000
411301ST	V41T1301C	MPS-ENG NO 3 LH2 INLET TEMP	-430.2000	-405.0000

Figure 6 - PRAMPT/FLOPLT Input Data Example

E41T1010B
E41T1011B
E41T1012B
E41T1013B
E41T1019B
E41T1020B
E41T1150A
E41T2010B
E41T2011B
E41T2012B
E41T2013B
E41T2019B
E41T2020B
E41T2150A
E41T3012B
E41T3011B
E41T3012B
E41T3013B
E41T3019B
E41T3020B
E41T3150A
[illegible]T1510A
[illegible]T1514A
[illegible]T1516A
[illegible]T1524A
[illegible]T1530A
[illegible]T1582A
A5T1584A
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
[illegible]
A9T3200A

Figure 7 - BATCH PLOT Input Data Example

3. SYSTEM INTERFACE

3.1 LOGICAL UNIT REQUIREMENTS

One logical unit must be assigned to the job before executing UTIL-ODRC, and corresponds to the raw ODRC CCT. Any necessity for other temporary file assignments is determined by $DATAIN namelist input. Table II lists the namelist specifications that affect logical unit assignments. If a variable in the left column has been set to true, the corresponding logical unit variable in the center column must be assigned an integer unit number (1-29 except 5, 6 and 8), and that temporary logical unit file must be assigned to the job before attempting execution. To use the default unit specifications, simply assign the corresponding temporary file to the run before execution. The program will then perform I/O on the appropriate units as listed in the rightmost column of Table II.

TABLE II - NAMELIST EFFECTS ON LOGICAL UNIT REQUIREMENTS

OUTPUT OPTION FLAG	CORRESPONDING LOGICAL UNIT VARIABLE	DEFAULT UNIT
COPY	IOUT	2
HISTRY	IBIN	3
BLDELT	IELT	4
BLDBAT	IBAT	7

Note that units 5, 6, and 8 are not available for user assignment. Units 5 and 6 are the standard system default input and output files, respectively, and should never be assigned by the user. Unit 8 contains the measurement description list which is used when building a PRAMPT/FLOPLT data element (BLDELT true), but may be assigned by the user for other purposes if BLDELT is false.

3.2 PROGRAM COLLECTION

UTIL-ODRC consists of three routines: the main routine, a routine that searches and extracts data from a measurement description list (FINDID), and a time conversion routine (DPSECW). FINDID is called only when building a PRAMPT/FLOPLT data element (BLDELT true). A MAP processor input element is available in ES3-L74338*PLOT, with element name UTIL-ODRC/MAP. Its use is illustrated in the runstream examples in Appendix C. After collection, instruction and data banks occupy approximately 26.5K words of storage, within the required storage limits for interactive execution, and well within batch submission limits.

APPENDIX A

$DATAIN NAMELIST VARIABLE DESCRIPTION

$DATAIN NAMELIST VARIABLE DESCRIPTION

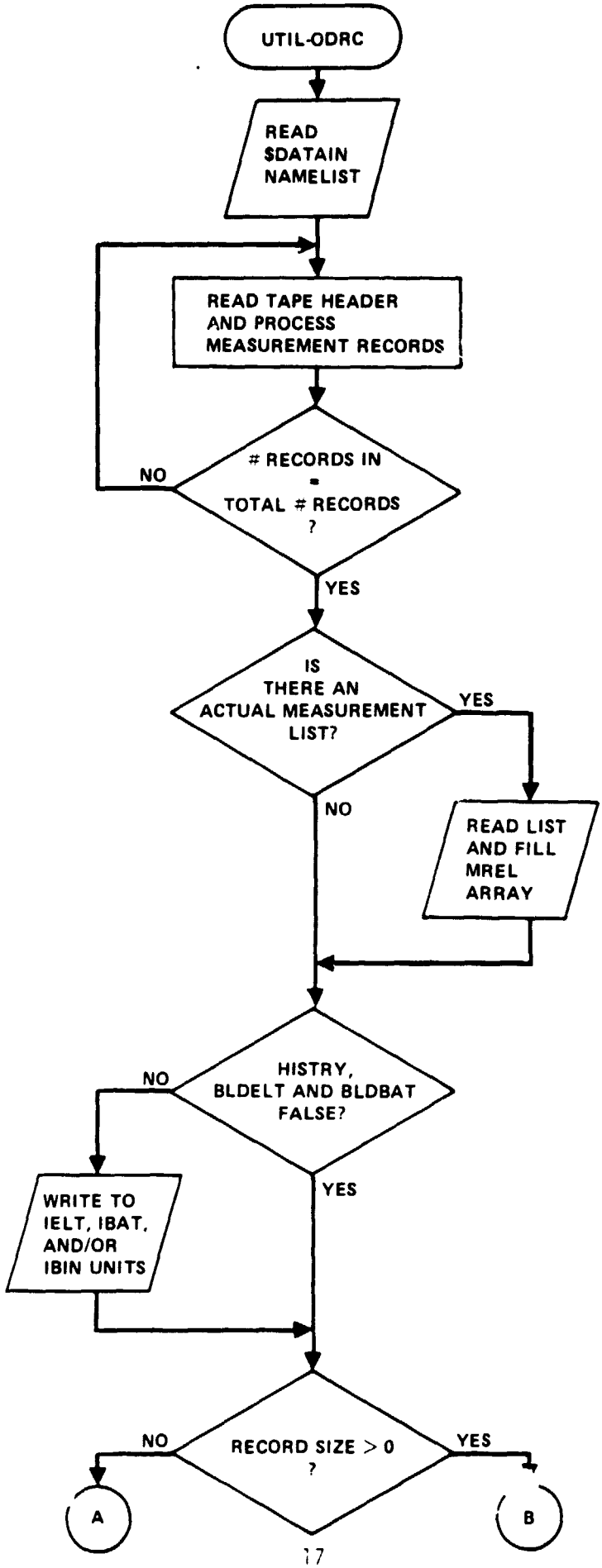
NAME	DESCRIPTION	RANGE	DEFAULT
IN	Raw CCT Input Unit	1-29, except 5,6&8	1
COPY	Copy Flag if TRUE, copy CCT on IOUT if FALSE, no copy	True or False	False
IOUT	Copy Output Unit	1-29, except 5,6&8	2
HISTRY	SINDA/HISTRY Flag if TRUE, make data look like SINDA/HISTRY output on unit IBIN if FALSE, no HISTRY output	True or False	False
IBIN	SINDA/HISTRY Output Unit	1-29, except 5,6&8	3
BLDELT	PRAMPT/FLOPLT Data Flag if TRUE, output data for use with plotting programs PRAMPT or FLOPLT on IELT if FALSE, no PRAMPT/FLOPLT output	True or False	False
IELT	PRAMPT/FLOPLT Data Output Unit	1-29, except 5,6&8	4
MCOUNT	Minus Sign Interval for PRAMPT/FLOPLT Data: Number of Measurements per Plot	2,3,4,5	5
BLDBAT	BATCH PLOT Data Flag if TRUE, output measurement list for use with BATCH PLOT on IBAT if FALSE, no BATCH PLOT output	True or False	False
IBAT	BATCH PLOT Data Output Unit	1-29, except 5,6&8	7
PRINT	Print Flag if TRUE, produce full printout if FALSE, produce short printout	True or False	False
REALM	Actual Measurement ID List Flag if TRUE, list of ID's will follow namelist if FALSE, no list	True or False	False

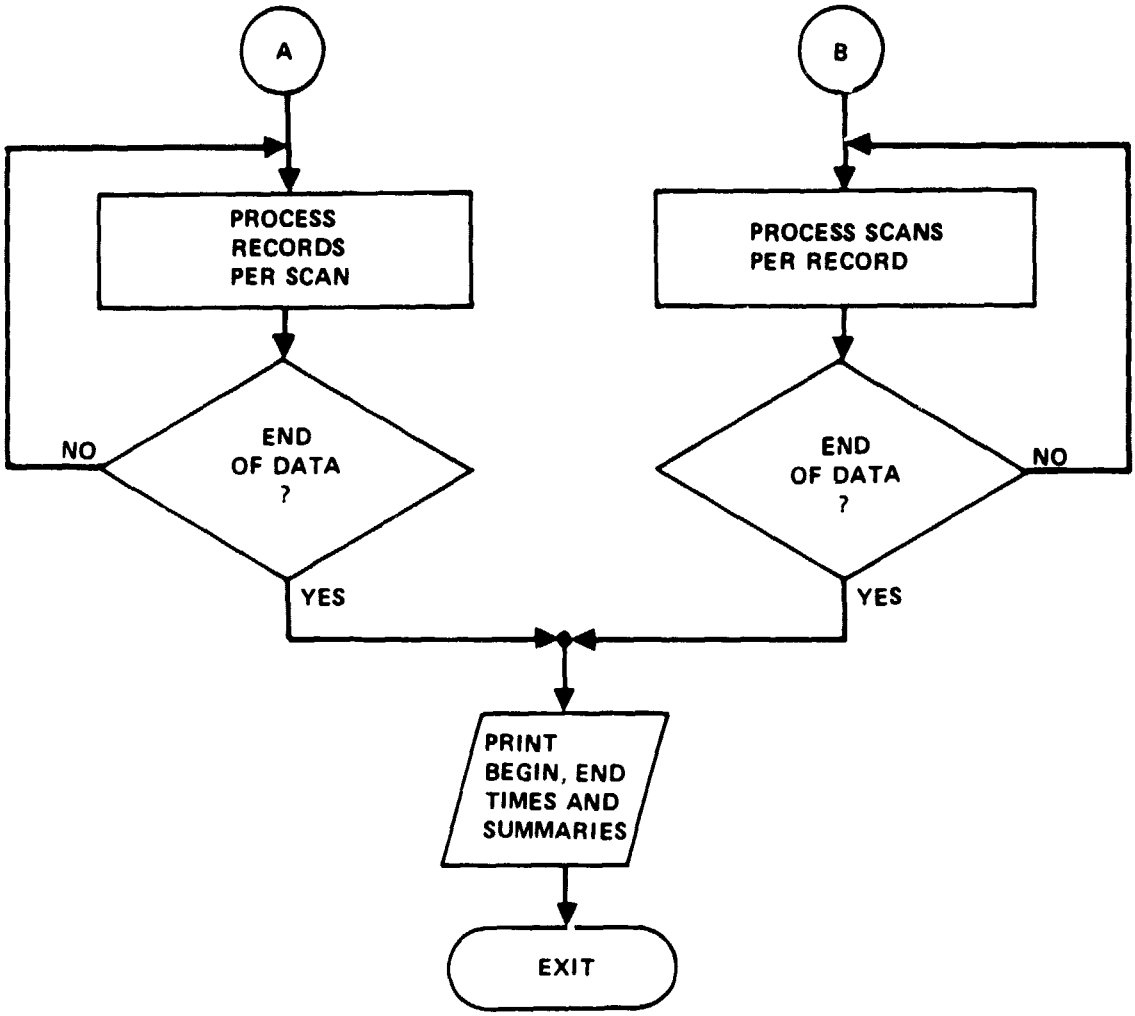
$DATAIN NAMELIST VARIABLE DESCRIPTION
(Continued)

NAME	DESCRIPTION	RANGE	DEFAULT
MREL (I) I=1,50	List of Relative Measurement Numbers for which summaries will be Output	Integers	50 * 0
PRNTMP	Temperature Printout Flag if TRUE, print temperatures for all measurements in list if FALSE, no temperature printout	True or False	False
MAXMIN	Maximum and Minimum Temperature Print Flag if TRUE, print maximum and minimum temperatures for all measurements in list if FALSE, no max and min printout	True or False	False

APPENDIX B

UTIL-ODRC FLOW OF CONTROL


UTIL-ODRC
READ $DATAIN NAMELIST
READ TAPE HEADER AND PROCESS MEASUREMENT RECORDS
RECORDS IN = TOTAL # RECORDS ?
NO
YES
IS THERE AN ACTUAL MEASUREMENT LIST?
YES
NO
READ LIST AND FILL MREL ARRAY
HISTRY, BLDELT AND BLDBAT FALSE?
NO
YES
WRITE TO IELT, IBAT, AND/OR IBIN UNITS
RECORD SIZE > 0 ?
NO
YES
A
B


A
B
PROCESS
RECORDS
PER SCAN
PROCESS SCANS
PER RECORD
END
OF DATA
?
NO
YES
END
OF DATA
?
NO
YES
PRINT
BEGIN, END
TIMES AND
SUMMARIES
EXIT

APPENDIX C

RUNSTREAMS

```
 1:@RUN,S/R URUNID,ES3/PROJ,ES3-NBADGE,TPLIMIT PGLIMIT
 2:@USE P,ES3-L74338*PLOT
 3:@USE URFILE,ES3-NBADGE*FILENM . RETYPE YOUR BADGE NO. & FILENAME
 4:@ASG,T 1,U9U,X$$$$$ . X-BIN NO. FOR ODRC TAPE
 5:@JSC*CALLUP.TAPELABEL . GET NEW TAPE FOR HISTRY OUTPUT
 6:@ASG,T 3,U9U,,99 . ODRC-HISTRY FOR X$$$$$
 7:@JSC*CALLUP.TAPELABEL . GET NEW TAPE FOR DOT COPY
 8:@ASG,TJ 2,U9U,,99 . TAPE COPY OF X$$$$$
 9:@RELIND 1. . REWIND PHL ODRC DOT
10:@ASG,T 4,F40 . ASSIGN PROMPT.FLIPLT DATA UNIT
11:@ASG,T 7,F40 . ASSIGN BATCH PLOT DATA UNIT
12:@ASG,T 8,F40 . ASSIGN MEASUREMENT DESCRIPTION LIST UNIT
13:@ED P.MEASURELIST/TCS.P. . COPY DESCRIPTION LIST INTO FILE UNIT
14:EXIT
15:@MAP P.UTIL-ODRC/MAP.UTILABS . COLLECT ROUTINES AND CREATE ABSOLUTE
16:@XQT UTILABS
17: $DATAIN
18:  COPY=T,
19:  NCOUNT=3,
20:  BLDBHT=T,
21:  HISTRY=T,
22:  REALM=T,
23:  BLDELT=T,
24:  PRINT=T,
25: $END
26:E41T:010B
27:U09T9821A
28:U13T9360A
29:U27T9171A
30:U41T:201C
31:@COPY,I 3.,URFILE.MULTI-FIL-ODRC . BATCH PLOT INPUT ELEMENT
32:@COPY,I 4.,URFILE.PLOTAN-FIL-ODRC . PROMPT FLIPLT INPUT ELEMENT
33:@FIN
```

Figure C-1

Batch Runstream with Namelist and Measurement List

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OF POOR QUALITY

```
@FREE 1.
@FREE 2.
@FREE 3.
@FREE 4.            . FREE ANY ASSIGNED UNITS
@FREE 7.
@FREE 8.
@DELETE,C 1.
@DELETE,C 2.
@DELETE,C 3.
@DELETE,C 4.        . DELETE ANY CATALOGUED FILES
@DELETE,C 7.
@DELETE,C 8.
@DELETE,C PFLO.
@USE P,ESD-U*BIDIF.
@USE URFILE,ESD-M-ODE*FILENM . RETYPE YOUR EHIGE N . FILENAME
@ASG,C PFLO. . ASSIGN PRINT FILE
@BRKPT PRINT$/PFLO . START WRITING TO PRINT FILE
@ASG,T 1,U9V,X$$$$$ . $$$$$ = X-BIN NO. FOR CDRC TAPE
@JSC*CALLUP.TAPELABEL . GET NEW TAPE FOR HISTRY OUTPUT
@ASG,TJ 3,U9V,,99 . CDRC-HISTRY FOR X$$$$$
@JSC*CALLUP.TAPELABEL . GET NEW TAPE FOR OCT COPY
@ASG,TJ 2.,U9V,,99 . TAPE COPY OF X$$$$$
@REWIND 1. . REWIND RAW CDRC OUT
@ASG,T 4,F40 . ASSIGN FRAMPT FLOPLT DATA UNIT
@ASG,T 7,F40 . ASSIGN BATCH PLOT DATA UNIT
@ASG,T 3,F40 . ASSIGN MEASUREMENT DESCRIPTION LIST UNIT
@ED P.MEASURELIST TCS,3. . COPY DESCRIPTION LIST INTO FILE UNIT
EXIT
@MAP P.UTIL-CDRC THE.UTILABS . COLLECT ROUTINES AND CREATE ABSOLUTE
@XQT UTILABS
 $DATAIN
  COPY=T,
  MCOUNT=3,
  BLDBAT=T,
  HISTRY=T,
  REALT=T,
  BLDELT=T,
  PRINT=T,
 $END
E41T1010E
J03T5382A
M12T538A0A
U37T917IA
J41T1201C
@COPY,I 7.,URFILE.MLIST UTIL-CDRC . BATCH PLOT INPUT ELEMENT
@COPY,I 4.,URFILE.FLODATA UTIL-CDRC . FRAMPT FLOPLT INPUT ELEMENT
@BRKPT PRINT$ . STOP WRITING TO PRINT FILE
@FREE PFLO. . FREE THE PRINT FILE FOR SYMBING
@SYM,U PFLO. . SEND PRINT FILE TO SYSTEM PRINTER
```

Figure C-2

Demand Runstream with Namelist and Measurement List

```
 1:@RUN,S/R URUNID,ES3/PR0J,ES3-NBADGE,TMLIMIT,PGLIMIT
 2:@USE P,ES3-L74338*PLOT
 3:@USE URFILE,ES3-NBADGE*FILENM . RETYPE YOUR BADGE NO. & FILENAME
 4:@ASG,T 1,U9V,X$$$$$ . X-BIN NO. FOR ODRC TAPE
 5:@JSC*CALLUP.TAPELABEL . GET NEW TAPE FOR HISTRY OUTPUT
 6:@ASG,T 3,U9V,,99 . ODRC-HISTRY FOR X$$$$$
 7:@JSC*CALLUP.TAPELABEL . GET NEW TAPE FOR CCT COPY
 8:@ASG,TJ 2,U9V,,99 . TAPE COPY OF X$$$$$
 9:@REWIND 1. . REWIND PAL ODRC CCT
10:@ASG,T 4,F40 . ASSIGN PRAMPT/PLOPLT DATA UNIT
11:@ASG,T 7,F40 . ASSIGN BATCH PLOT DATA UNIT
12:@ASG,T 8,F40 . ASSIGN MEASUREMENT DESCRIPTION LIST UNIT
13:@ED P.MEASURELIST/TCS,8. . COPY DESCRIPTION LIST INTO FILE UNIT
14:EXIT
15:@MAP P.UTIL-ODRC/MAP,LTILABS . COLLECT ROUTINES AND CREATE ABSOLUTE
16:@XQT UTILABS
17: $DATAIN
18:  COPY=T,
19:  MCOUNT=3,
20:  BLDBAT=T,
21:  HISTRY=T,
22:  REALM=T,
23:  BLDELT=T,
24:  PRINT=T,
25: $END
26:E41T1010B
27:V09T9821A
28:U12T9360A
29:V37T9171A
30:U41T1201C
31:@COPY,I 7.,URFILE.MLIST UTIL-ODRC . BATCH PLOT INPUT ELEMENT
32:@COPY,I 4.,URFILE.PLODATA UTIL-ODRC . PRAMPT/PLOPLT INPUT ELEMENT
33:@FIN
```

Figure C-1

Batch Runstream with Namelist and Measurement List

```
 1:@FREE 1.
 2:@FREE 2.
 3:@FREE 3.
 4:@FREE 4.          . FREE ANY ASSIGNED UNITS
 5:@FREE 7.
 6:@FREE 8.
 7:@DELETE,C 1.
 8:@DELETE,C 2.
 9:@DELETE,C 3.
10:@DELETE,C 4.      . DELETE ANY CATALOGUED FILES
11:@DELETE,C 7.
12:@DELETE,C 8.
13:@DELETE,C PFLO.
14:@USE P,ESB-L74333*PLOT
15:@USE URFILE,ESB-*BADGE#*FILENM . RETYPE YOUR BADGE NO. & FILENAME
16:@ASG,C PFLO. . ASSIGN PRINT FILE
17:@BRKPT PRINT$/PFLO . START WRITING TO PRINT FILE
18:@ASG,T 1,U9V,X$$$$$ . 2$$$$ = X-BIN NO. FOR ODRC TAPE
19:@JSC#CALLUP.TAPELABEL . GET NEW TAPE FOR HISTRY OUTPUT
20:@ASG,TJ 3,U9V,,99 . ODRC-HISTRY FOR X$$$$$
21:@JSC#CALLUP.TAPELABEL . GET NEW TAPE FOR OCT COPY
22:@ASG,TJ 2.,U9V,,99 . TAPE COPY OF X$$$$$
23:@REWIND 1. . REWIND RAW ODRC OCT
24:@ASG,T 4,F40 . ASSIGN PRMPT FLOPLT DATA UNIT
25:@ASG,T 7,F40 . ASSIGN BATCH PLOT DATA UNIT
26:@ASG,T 8,F40 . ASSIGN MEASUREMENT DESCRIPTION LIST UNIT
27:@ED P.MEASURELIST/TCS,8. . COPY DESCRIPTION LIST INTO FILE UNIT
28:EXIT
29:@MAP P.UTIL-ODRC-MAP.UTILABS . COLLECT ROUTINES AND CREATE ABSOLUTE
30:@XQT UTILABS
31: $DATAIN
32:   COPY=T,
33:   MCOUNT=3,
34:   BLDBAT=T,
35:   HISTRY=T,
36:   REALM=T,
37:   BLDELT=T,
38:   PRINT=T,
39: $END
40:E4;T1010B
41:J03T9821A
42:J12T9360A
43:J37T9171A
44:J4;T1201C
45:@COPY,I 7.,LPFILE.MLIST/UTIL-ODRC . BATCH PLOT INPUT ELEMENT
46:@COPY,I 4.,URFILE.FLOPATH/UTIL-ODRC . PRMPT/FLOPLT INPUT ELEMENT
47:@BRKPT PRINT$ . STOP WRITING TO PRINT FILE
48:@FREE PFLO. . FREE THE PRINT FILE FOR SYMBING
49:@SYM,U PFLO. . SEND PRINT FILE TO SYSTEM PRINTER
```

Figure C-2

Demand Runstream with Namelist and Measurement List