CONTROL DATA
CORPORATION

CONTROL DATA®
3100/3150/3170/
3200/3300/3500
COMPUTER SYSTEMS

REAL-TIME SCOPE
INSTALLATION HANDBOOK

REVISION RECORD

60237000

REVISION	NOTES
5-23-69	Original Printing
8-18-70	Revision to add MMTC Driver.

Additional copies of this manual may be obtained from the nearest Control Data Corporation sales office.

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or use Comment Sheet in the back of this manual.

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PART I

RELEASE SUMMARY

RTS V2.0 RELEASE SUMMARY 1

1.1 PRODUCTS

Version 2.0 of the Real-Time SCOPE (RTS) Operating System is accompanied by the following product set members.

3100/3200 ADAPT Version 1.1

3100/3200/3300 BSIPP Version 2.2

3100/3200 (BCD) COBOL Version 3.0

3300 (BDP) COBOL Version 2.0

3300 COMPASS Version 2.0

3100/3200 COSY Version 2.0

3200 FORTRAN Version 3.0

MSOS/RTS Error Recovery Routines Version 1.1

3100/3200 PERT Cost Version 2.1

3100/3200 PERT Time Version 2.1

Report Generator Version 1.1

SAINT Version 2.3

SCOPE UTILITY Version 1.4

3100/3200/3300 SIPP Version 2.2

TAPE SORT/MERGE Version 3.0

1.2 MATERIALS

Package A

Two tapes (COSY tape 1 and COSY tape 2) contain the RTS routines in COSY format.

Binary release tape for use in installing RTS contains the following files.

File 1	Interim library PRELIB source
File 2	Standard PRELIB source
File 3	Batch PRELIB source
File 4	BDP COBOL PRELIB source
File 5	512 initiator binary

Package B

One tape for 16K variant of PERT Time.

Package C

One tape for 32K variant of PERT Time.

Package D

One tape for PERT Cost.

Package E

One tape for 16K variant of ADAPT.

Package F

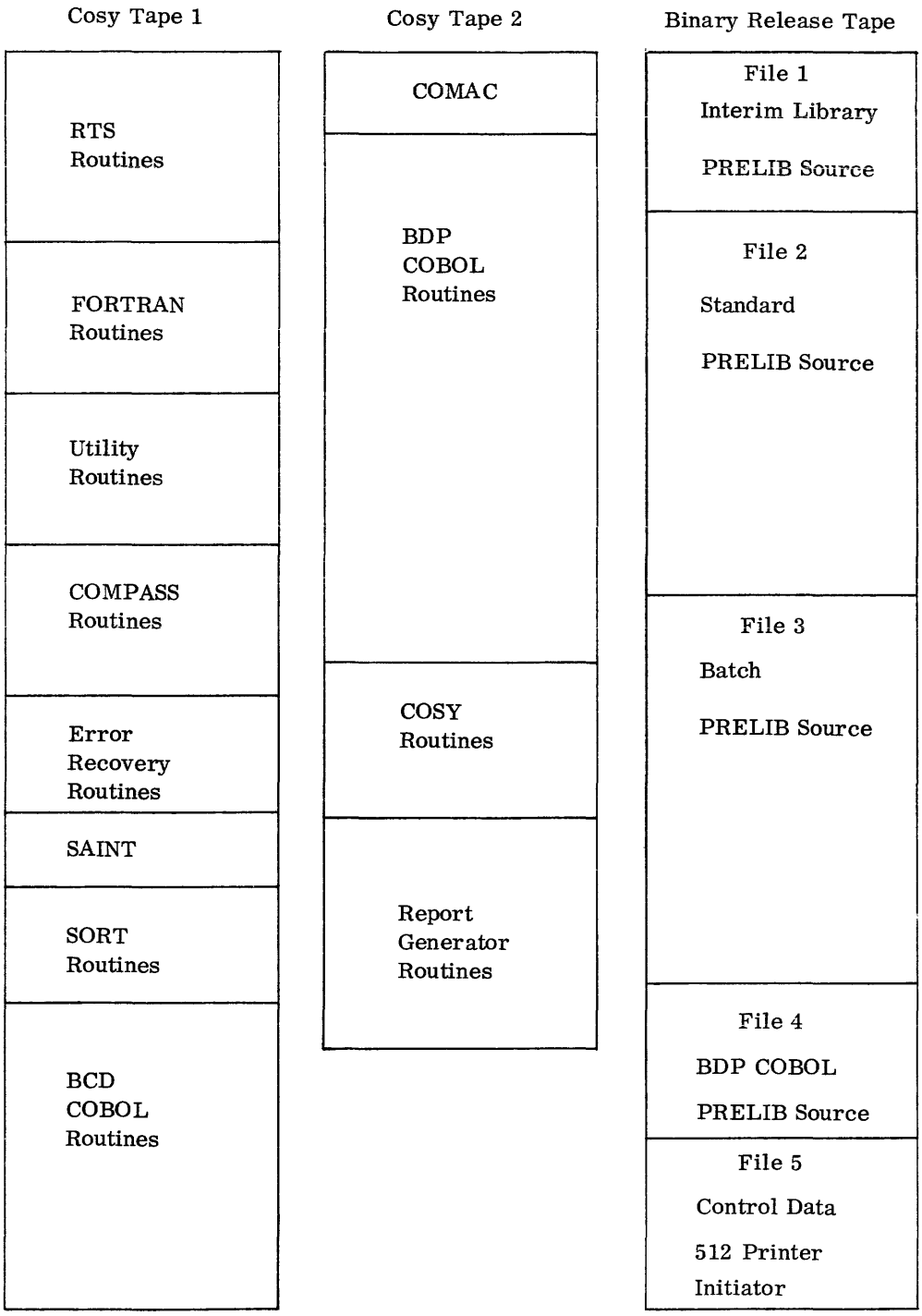
One tape for 32K variant of ADAPT.

Package G

Changes for MMTC in the following form:

COSY changes for CIO
COSY changes for xCICREC1 (x= S or B)
COSY changes for RDUMP
COSY changes for PRELOAD
COSY changes for LOADER
COSY changes for POSTLOAD
COSY changes for ERROR RECOVERY
COSY formatted deck of DRIVMMTC
COSY formatted deck of MMTCINIT
Binary deck of MMTCINIT

FILE STRUCTURE



1.3 NEW FEATURES

1.3.1 RTS

Standard error recovery improves recovery from I/O errors and types standardized error diagnostics on CTO.

RTS no longer aborts arbitrarily; it passes control to the error recovery routines.

All system messages are in the standard format established by RTS/MSOS.

Installations at the required FCO levels can incorporate channel transmission parity error recovery.

Controller†	FCO Level
3127	CA 18730
322x	CA 19640
3245	CA 18690
3248	CA 18691
3256	CA 19192
342x	CA 17773
3446	CA 18927
3447A	CA 18731
3447B	CA 18926
362xA	CA 19639
362xB	CA 19525
3637A	CA 17759
3644	CA 18689
3649	CA 18688
3659	CA 18945

A memory allocation map is printed whether loading is successful or unsuccessful.

A BATCH program may now terminate abnormally without a dump.

Standard driver for the Modular Magnetic Tape Controller [3518(1x8)/3528(2x8)] and the 657/659 Tape Transports.

† The controllers listed are registered equipment of Control Data Corporation.

When the program requests release of a nonexistent file, an informative (I) message is typed and the job continues rather than aborting, as occurred in previous versions.

RTS attempts to release a not-ready tape unit. If the unit is not released on the first attempt, control passes to the next job in the stack instead of looping in the unit release procedures.

Installation options include:

Stacking of clock interrupt requests.

A basic system accounting routine (requires clock interrupt option).

Detection of lost interrupts with the timeout routine (requires clock interrupt option).

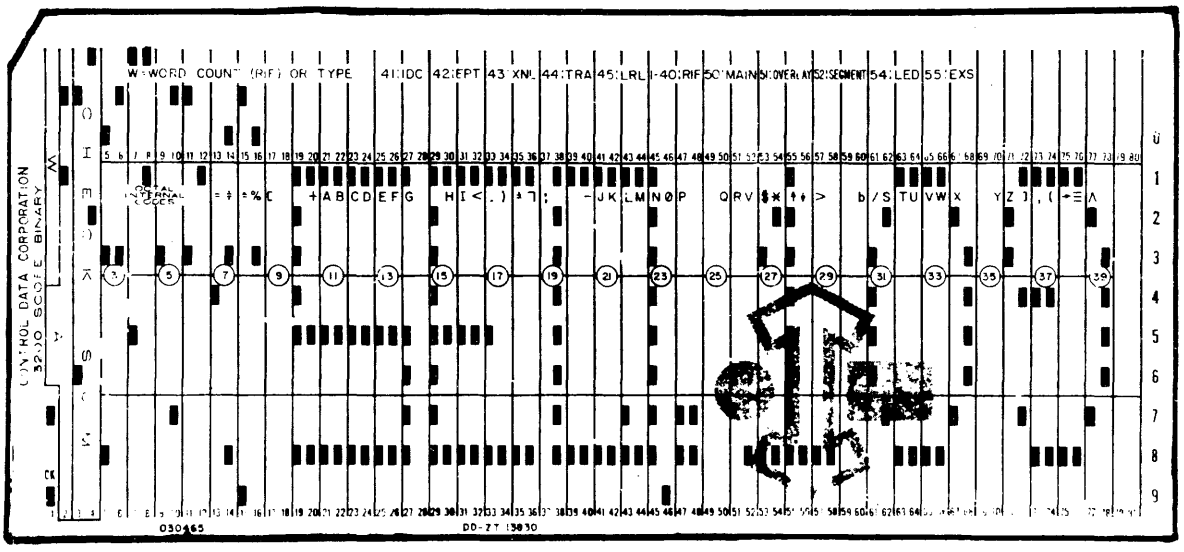
A BATCH-only system.

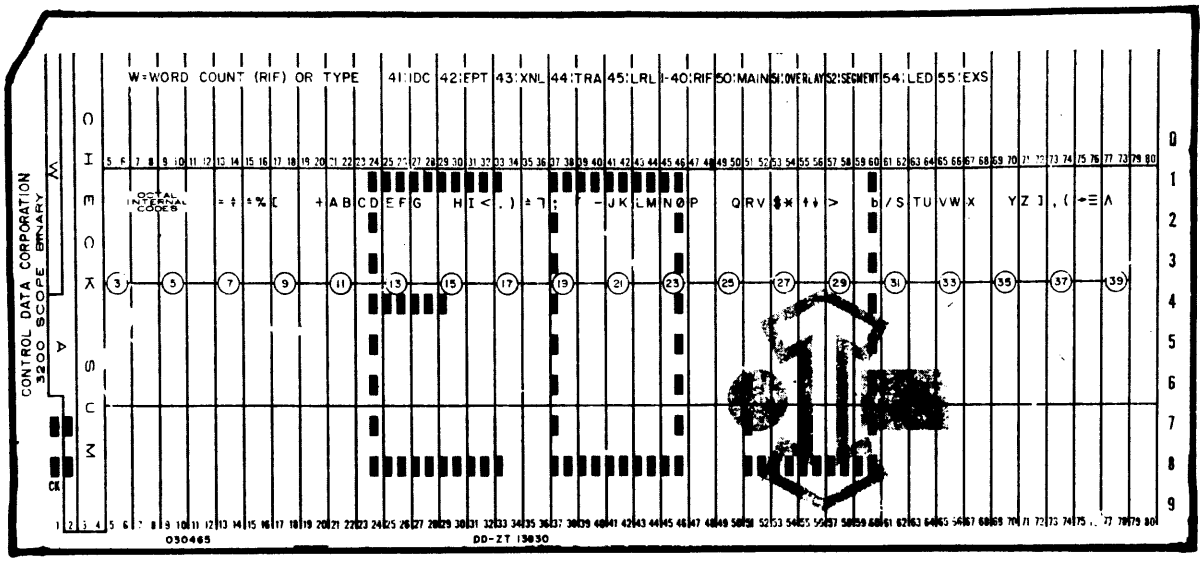
The CONTROL DATA® 512 Train Printer can be incorporated. Optionally, the programmer or operator can load the 512 Train Printer image memory with a specified buffer at inter-job time. If this option is selected, the buffers are established according to user trains at the time of installation.

The printer driver contains carriage control character R to select auto page eject and character Q to suppress auto page eject.

The identification card for DUMP is changed to RDUMP to maintain system consistency. The control card UNIT,55,DUMP in the PRELIB source tape is changed to UNIT,55,RDUMP.

JOB and EOF cards now contain distinctive multiple punches.





The user can now define $1\text{-}37_8$ different hardware types, as compared to 13_8 in previous releases.

Priority programs can use the overlay processor; overlay processor (OVPRO) uses only magnetic tape.

The CONTROL DATA® 915 Optical Character Page Reader driver can be incorporated.

The CONTROL DATA® 3691 Paper Tape Reader Punch can be incorporated.

RTS recognizes the REPEAT button on the console typewriter for all statements from the operator.

Entry points and external names are blocked 10 to 12 names per line on the output records of PRELIB.

Values for MEMORY and MEMORYE are printed on MAP.

The operator can release the standard PUNCH so that jobs can be run even if the punch is down.

The system checks parity on all absolute records on the library tape including BOOT.

The ENDSCOPE card includes three parameter choices.

$\begin{matrix}7\\9\end{matrix}$ENDSCOPE,$\begin{matrix}N\\R\end{matrix}$

N	Rewind INP, but not OUT and PUN
R	Rewind INP, OUT, and PUN, but not unload
(neither)	Rewind and unload INP, OUT, and PUN

The CTO card includes three parameter choices.

$^{7}_{9}$CTO,$^{T}_{L}$ message

T	Card logged only on CTO
L	Card logged only on standard OUT
(neither)	Card logged on both CTO and standard OUT

RTS has improved ready message handling and allows the operator to ready the unit through manual interrupt.

At autoload time, the operator can gain typewriter control by typing CFO and pressing FINISH in response to the TIME request.

The system provides improved overhead when generating overlay programs.

1.3.2 ERROR RECOVERY

The error recovery routines facilitate hardware recovery from I/O errors. These routines are incorporated into variable resident. Their use by the loader, postload, and RDUMP is optional, permitting the installation to omit them if saving core is more desirable than the error recovery routines. The operator communicates with the error recovery routines through manual interrupt procedures.

1.3.3 COMPASS

OVERLAY1 allows random placement of the following cards without interfering with the processing of LIBM and MACRO cards.

comment cards

REM

TITLE

SPACE

EJECT

COMPASS cards use the F parameter to force execution of the load-and-go output regardless of assembly errors. The F parameter has the same form as the X parameter and requires RTS control cards $^{7}_{9}$LOAD,56 and $^{7}_{9}$RUN.

Standard error recovery improves recovery from I/O errors and types standardized error diagnostics on CTO.

COMPASS attempts to continue assembly even when irrecoverable I/O errors occur. Execution is omitted even if the F parameter is specified.

1.3.4 FORTRAN

Standard error recovery improves recovery from I/O errors and types standardized error diagnostics on CTO.

The user can generate Hollerith constant strings in the following manner.

```
DATA(MESSAGE=21H THIS IS A BCD STRING)
```

The user can incorporate a single branch logical IF statement into the compiler.

The user can dimension in all TYPE statements except TYPE other.

A label can be used after a $ on a multistatement card.

The user can modify UNITSTF to test for EOT.

The DATA statement allows insertion of specific values into the COMMON/DATA area at compile time. This has been expanded to include the program variables area.

Parameters on the $\frac{7}{9}$FORTRAN card can now be equated to specific logical units (e.g., $\frac{7}{9}$FORTRAN, L=04, I=03, A=05, X=06, P=07). If the equate option is not used, parameter assignment is the same as in previous versions.

The $\frac{7}{9}$FORTRAN card can include an M parameter to select a memory map showing the relative memory location of each variable and statement within a subprogram.

In a FORTRAN data statement, a simple floating-point variable previously defined by a dimension statement may be preset to 1-8 Hollerith characters.

1.3.5 BCD AND BDP COBOL

Standard error recovery improves recovery from I/O errors and types standardized error diagnostics on CTO. The compiler attempts to complete compilation even when irrecoverable errors occur on output units, as long as an output option exists. The operator can optionally dump bad input blocks on a previously equipped unit during object time execution.

COBOL loading diagnostics are written on both OUT and CTO.

1.3.6 COSY

The D parameter on a COSY card can be used to change the names of COSY decks.

All COSY output from this version of COSY is in 3300/3500 COSY format. The output cannot be used with previously released COSY, but output from previously released COSY can be used with the COSY in this release.

The S parameter on a $\frac{7}{9}$COSY card suppresses the job when a revision card sequence error is found.

Standard error recovery improves recovery from I/O errors and types standardized error diagnostics on CTO.

1.3.7 TAPE SORT

Standard error recovery improves recovery from hardware errors and types standardized error diagnostics on CTO.

The numeric BCD sign is carried as the upper two bits of the least significant character in the field for collating sequence number 5.

Setting SORTK enables the library and the input unit to share a unit in SORT. This facilitates the use of only three tape drives to run a polyphase sort.

1.3.8 BSIPP

The block count for a labeled tape is edited into the trailer label.

The accounting for record input and output is increased from four to eight digits.

The system now types two messages. The first determines the maximum number of operations possible with the core storage available.

NO. OF OPS POSSIBLE = xx

The second determines the maximum number of operations allowed with the equipment available.

NO. OF OPS ALLOWED = xx

1.3.9 SIPP

The block count for a labeled tape is edited into the trailer label.

The accounting for record input and output is increased from four to eight digits.

The system now types two messages. The first determines the maximum number of operations possible with the core storage available.

NO. OF OPS POSSIBLE = xx

The second determines the maximum number of operations allowed with the equipment available.

NO. OF OPS ALLOWED = xx

1.4 MODIFICATIONS AND CORRECTIONS

1.4.1 RTS V2.0 OPERATING SYSTEM

PSR's incorporated:

509	1315
566	1324
570	1326
572, 857	1393
577, 1096	1415
606	1462
615, 1118	1485
645	1539
704	1540
743	1573
744	1604
747	1614
766	1658
831	1710
832	1748
835	1780
847	1841
1053	1854
1054	1856
1086	1881
1136	1988
1189	2253
1244	2283
	2348

1.4.2 FORTRAN

PSR's incorporated:

599	1580	2092
605	1600	2115
608	1607	2141
659	1608	2164
813	1626	2170
817	1646	2186
821	1685	2189
928	1686	2190
962	1692	2191
1024	1693	2203
1069	1716	2209
1070	1728	2245
1169	1768	2264
1234	1773	2289
1248	1774	2290
1253	1785	
1321	1788	
1352	1817	
1360	1830	
1433	1842	
1503	1858	
1530	1874	
1567	1887	
1578	1997	
	2030	
	2034	

1.4.3 COMPASS

PSR's incorporated:

597, 1818 (both superseded by PSR 2255)
703
753
932
948
1355
1537
1812
1813
1893
2049
2068
2136
2196
2243
2252
2255
2287
2288
2295
2491

1.4.4 COSY

PSR's incorporated:

662
830
1356
1467
1504
1575
1576
1599
1623
1727
1787
1851
1940
1972
1985
2008
2037
2091
2254
2349
2410
2422
2465

1.4.5 SAINT

PSR's incorporated:

2032
2033

1.4.6 COBOL-33 V2.0 (BDP)

PSR's incorporated:

208	725
209	729
212	814
216	848
476	849
485	854
541	1057
575	1075
612	1080
626	1122
643	1162
644	1294
673	1323
674	1482
675	1484
699	1602
707	1660
708	1746
	1690
	2262
	2299
	2285
	2273

1.4.7 COBOL V3.0 (BCD)

PSR's incorporated:

184	725
185	825
190	848
191	849
208	1057
209	1075
212	1078
216	1079
414	1159
476	1162
485	1294
541	1323
545	1482
575	1484
612	1602
626	1660
644	1690
675	1746
699	2262
707	2299
708	2285
	2273

1.4.8 TAPE SORT V3.0

PSR's incorporated:

53	868	1359	1543	1635	1799	1861	1946
56	950	1422	1544	1637	1800	1862	1965
63	954	1449	1554	1638	1801	1863	1969
469	1093	1488	1590	1661	1802	1873	2005
470	1114	1525	1595	1662	1807	1890	2013
473	1121	1526	1606	1670	1822	1891	2026
474	1148	1533	1624	1749	1832	1898	2042
748	1243	1534	1625	1796	1853	1932	2105
793	1270	1540	1631	1797	1859	1941	
808	1272	1541	1634	1798	1860	1952	

1.4.9 BSIPP V2.2

PSR's incorporated:

1308 (1317)
1374
1375
1377
2743

1.4.10 SIPP V2.2

PSR's incorporated:

1019 (1341)
1048 (1154)
1049
2743

1.5 DEFICIENCIES

The following describes the deficiencies and limitations in the system and products of this release and, when possible, the corrective code or the corrective action to employ when the difficulties occur.

1.5.1 RTS TAPE SORT

Two searches of the library are required to load the internal Sort phase of Tape Sort.

1.5.2 FORTRAN

A label after $ on a multi-statement card causes a diagnostic:

D FTNC 0514 DETECTED AT STATEMENT NO. n CANNOT IDENTIFY STATEMENT TYPE. STATEMENT NAME MISSPELLED OR MISUSED OR AN EQUAL SIGN IS MISPLACED.

1.5.3 REPORT GENERATOR

Report generator does not run under BDP COBOL because the design of report generator assumes BCD hardware or simulation.

1.5.4 BCD AND BDP COBOL

Omitting the END PROGRAM and FINIS cards in a COBOL source deck or placing a binary card between the COBOL control card and the end of the source deck causes the compiler to loop.

Extraneous diagnostics may result when several errors are diagnosed in compiling a source statement. If non-numeric literals are involved, extraneous characters may be generated and later diagnosed as invalid.

The object time package GPIO does not call error recovery for the display routine. A program using display will loop if the unit is not ready.

1.5.5 ADAPT VERSION 1.1

Detection of errors in the creation of the overlay tape may result in bypassing CLTAPE printout for the 16K variant.

1.6 LIMITATIONS

1.6.1 RTS VERSION 2.0 OPERATING SYSTEM

It is no longer possible to define several different origins within a record to be absolutized for PRELIB; a record card must be followed by only one origin card.

RTS does not recover from channel parity errors on the 3256/3659 printer controllers. This is because no external equipment reply is generated by either controller when a channel parity error occurs.

If a card reader feed-fail occurs with the 3248 controller, recovery is successful if CIO uses the TIMEOUT feature. The 3248 generates an external interrupt if feed-fail occurs; however, it does not physically interrupt the CPU. In this case, TIMEOUT provides the external interrupt which forces a check of the card reader and then forces the card reader to clear. The user that doesn't use TIMEOUT cannot recover because no external stimulus is provided.

When logical units 55 and 56 are being equipped, RTS does not check for the presence of a write ring.

The length of POSTLOAD can never be greater than the length of the loader; therefore, if POSTLOAD has error recovery, both the loader and OVPRO must have error recovery.

Character I/O will not be allowed on 659 Tape Transports. The following MMTC status bits will be edited to the existing parity bit in the UST type status:

parity errors
phase encoded errors
cyclic redundancy errors
memory flag bit errors

The standard driver for the MMTC must be installed as an add-on in card form as the current and interim systems do not have the ability to handle MMTC/65x.

1.6.2 COMPASS VERSION 2.0

COMPASS does not allow load-and-go execution if irrecoverable I/O errors occur, even if the F parameter is selected on the COMPASS card.

1.6.3 REPORT GENERATOR

The report generator package does not execute on a 3300 or 3500 Computer System equipped with BDP hardware.

1.6.4 TAPE SORT

The density of the shared tape drive must be manually set when using SORTK.

When an error occurs, the error recovery routines have control until recovery is effected or the operator replies either A or D. If the operator types in an A response, control returns to SORT and the option selected on the control card is executed.

1.6.5 SIPP

SIPP functions which use tape parity (even or odd) to determine the mode in which data is recorded (BCD or Binary) will not perform correctly with nine track tape transports (MMTC/659).

1.6.6 BSIPP

BSIPP functions which use tape parity (even or odd) to determine the mode in which data is recorded (BCD or binary) will not perform correctly with nine track tape transports (MMTC/659).

1.6.7 SCOPE UTILITY

SCOPE Utility functions which use tape parity (even or odd) to determine the mode in which data is recorded (BCD or binary) will not perform correctly with nine track tape transports (MMTC/659).

1.7 PUBLICATIONS

The following publications are relevant to the use of RTS product set.

Control Data Publications	Pub. No.
3100/3200/3300/3500 RTS Reference Manual	60172500A
3100/3200/3300/3500 RTS Operator's Guide	60170200
3100/3200/3300/3500 COMPASS Reference Manual	60236800
3100/3200/3300/3500 FORTRAN Reference Manual	60057600C
3100/3200/3300/3500 COSY Reference Manual	60207300A
3100/3200/3300 SIPP Background Operator Reference Manual	60190200
3100/3200 SIPP Reference Manual	60130400A
3100/3200/3300 COBOL Reference Manual	60132000

3100/3200/3300 COBOL V2.0 Extension and Revisions ADB	60137600
3100/3200/3300 SCOPE UTILITY Reference Manual	60130200
3100/3200/3300/3500 ADAPT Reference Manual	60173400
3100/3200/3300 PERT/TIME Reference Manual	60131100
3100/3200/3300 PERT/COST Reference Manual	60132500A
3100/3200/3300/3500 SAINT Reference Manual	60213700
3100/3200/3300/3500 Tape SORT/MERGE/MSOS Reference Manual	60059700A
3100/3200/3300/3500 RTS/MSOS Diagnostic Handbook	60236700

PART II

INSTALLATION PROCEDURES

INSTALLATION OVERVIEW 1

Capsulized installation procedures summarize the steps necessary to prepare the RTS interim and final libraries. Before attempting installation, it is essential that the user be completely familiar with the detailed installation procedures.

1.1 CAPSULIZED INSTALLATION PROCEDURES

The PRELIB deck obtained from file 1 of the binary release tape may be used as standard INP or it may be punched on an RTS or Tape SCOPE library. Execute this deck using the existing RTS or Tape SCOPE as the input library to obtain a new library containing the special PRELIB. The new library is written on logical unit 1 and contains the operating library for final library preparation.

DETAILED INSTALLATION PROCEDURES 2

The installation procedures for RTS and its product set are organized into four sections. Throughout these procedures certain parameters are site dependent and must be supplied by the user. Therefore, the user must read the procedures completely and prepare all materials before attempting installation.

Division of installation procedures:

Hardware Initialization

Deck Preparation

Final Library Generation

Post Generation Information

2.1 HARDWARE INITIALIZATION

2.1.1 AUTOLOAD ROUTINE

An autoload routine in the autoload region of core must be manually established for each installation. This routine is a basic, permanent machine entry used to initiate tape operations (part III, section 1).

2.1.2 512 INITIALIZATION

The image memory of the 512/3555 must be loaded before print operations can be executed. When loading the 512/3555 image memory, use the following instructions:

1. The one card loader

   Punch the one card loader (section 4.5) and define the appropriate channel and equipment of the card reader.

```
C       EQU     n
        n       Channel (0-7) of the card reader
EUUU    EQU     mmmm
        mmmm    12-bit connect code for the card reader
```

   For example: Assume a card reader configuration of channel 0, equipment 2, unit 0. C, EUUU would be as follows:

```
C       EQU     0
EUUU    EQU     2000₈
```

2. The image initiator program contains the individual train images and several subroutines that extract the configuration of the 512 and write the memory image.

   Place the one card loader in the card reader, followed by the library deck of the image initiator. Autoload from the card reader. The following is typed:

   512 IMAGE INITIATOR

   T(1) = 595-1 (501 COMPATIBLE) or

   T(2) = 595-2 (AN COMPATIBLE) or

   T(3) = 595-3 (HN COMPATIBLE)

   512 = CcEeUuu

   Type the appropriate channel, equipment, and unit of the 512. Upon completion, the user must define the train in response to the following typeout:

   TRAIN = T(

   Answer by typing digit 1, 2, or 3 as defined above.

   Upon completion of initialization the following message is received, and the 512 is ready for use.

   IMAGE INITIATED

2.2 PRELIB DECK MODIFICATION

The PRELIB source, whether punched or supplied, requires modification before the final RTS library generation can proceed. The modification procedures are divided into five subsections.

System installation-dependent routines

Error recovery assembly options

Product set assembly and options

Replacement card

Unit card

BCD, BDP, and FDP options

Driver selection

2.2.1 INSTALLATION-DEPENDENT ROUTINES

The following routines must be modified according to each particular hardware configuration. Several procedures apply to all systems; others apply only to standard (STD) or BATCH RTS.

STD	BATCH
CIO	BCIO
SCICREC1	BCICREC1
RDUMP	RDUMP
PRELOAD	PRELOAD
LOADER	LOADER
OVPRO	OVPRO
POSTLOAD	POSTLOAD

CIO MODIFICATIONS (STD)

If the lost interrupt timeout feature is desired, select the following option:

```
            DELETE/     3
TIMEOUT     EQU         1
```

The current value of TIMEOUT is 0. If the timeout option is selected, the clock option (SCICREC1) must also be selected.

```
CIO         DECK/       p1,p2,...
```

BCIO MODIFICATIONS (BATCH)

If the lost interrupt timeout feature is desired, select the following option:

```
            DELETE/     3
TIMEOUT     EQU         1
```

The current value of TIMEOUT is 0. If the timeout option is selected, the clock option (BCICREC1) must also be selected.

```
BCIO        DECK/       p1,p2,...
```

SCICREC1 (STD)

SCICREC1 is a resident program containing tables and various resident subroutines (manual interrupt processor, central interrupt control, etc.) for a standard RTS library. SCICREC1 contains the description of the hardware environment and must be updated to reflect the particular hardware configuration (part III, section 2). All options in this release are set to 0 unless otherwise specified.

Accounting Option: If the basic job accounting feature is desired, select the following option:

```
            DELETE/    4
ACCT        EQU        1
```

The current value of ACCT is 0.

If the accounting option is selected, the clock interrupt processor option must also be selected.

BDP Option: (3300 users with a CONTROL DATA® 3312 Business Data Processing Module)

If a library with the capability of handling BDP instructions is desired in an installation, make the following modification:

```
            DELETE/    5
BDP         EQU        1      (If BDP hardware is present)
```

This change must be made if the BDP hardware option is included in the PRELIB source deck. The current value of BDP is 0.

Clock Interrupt Processor Option: If it is desirable to have the clock interrupt processor available for programmer use in an installation, make the following modification:

```
            DELETE/    6
CLOCK       EQU        1
```

The release value of CLOCK is 0.

If the timeout feature has been selected (CIO), the clock option must also be selected.

CST and EST Modifications: The CST and EST are established by control parameters.

```
            DELETE/    7
NCHANS      EQU        n
```

In all cases, n depends on available channels indicated in the following table. The current value of n is 6.

Highest Available Channel Number	Value of n
1	2
2 or 3	4
4 or 5	6
6 or 7	8

Memory Limits: The machine capacity must be properly recorded within SCICREC1. These memory limits are used by the system loader when loading a program for execution.

On the released COSY tape, the cells are set for 32K CONTROL DATA® 3200/3300 Computer Systems. They must be changed for the CONTROL DATA® 3100 Computer System. The COSY correction is:

```
          DELETE/    8
MAXCORE   EQU        value
```

The symbol value is:

Machine Type	16K Value	32K Value
3100/3150	37637_8	77637_8
3200/3300	37737_8	77737_8

The current setting of value is 77737_8

AET Entries: At installation time, the AET must be defined to describe the equipment available to the system. This section describes only the changes to be made in standard RTS. A general description of AET is in part III, section 2.

```
          DELETE/    2033,2061
THE AET DESCRIPTION
      FOLLOWS
```

RHT Modification: The RHT defines the equipment used during a batch run and equipment assigned as system units (PUN,INP,OUT,etc.). The complete description is in part III, section 3.1. The following entry must be made for modifications.

```
          DELETE/    2126,2132
RHT                  modifications
```

BRHT Modification: The BRHT (Priority Running Hardware Table) is similar to the RHT but has only logical units 1-49, 58, and 59 available for reference by a priority program. A complete description is in part III, section 3.2. The following entry must be made for modifications.

```
                DELETE/     2140,2143
BRHT                        modifications
```

CIT Modification: The CIT must be modified in order to establish the appropriate channels available to the input/output system.

```
DELETE/     2210,2217
00          x           ch 0
00          x           ch 1
00          x           ch 2
00          x           ch 3
00          x           ch 4
00          x           ch 5
00          x           ch 6
00          x           ch 7
```

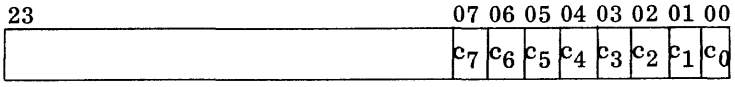
x IOIP, if channel is available as system channel defined in AET.
ABINRT, if channel is not available.

System Interrupt Mask: A mask contained in SCICREC1 reflects the channels available for system use. The COSY correction for the mask is:

```
                DELETE/     2253
SYST.IOM        OCT         h
```

Proper channel description for the system interrupt mask is represented by h; the current value of h is 17_8.

The general format of the mask word is:



c_i Bit corresponding to channel i.

If the channel is available to the system, its corresponding bit is set to 1. If the channel is not available, it is set to 0. The dedicated channels or the channels reserved for special applications are not represented. They are set to 0.

The deck card for these changes is:

```
SCICREC1    DECK/      p1,p2...
```

BCICREC1 (BATCH)

BCICREC1 is a resident program containing tables and various resident subroutines (manual interrupt processor, central interrupt control, etc.) for a BATCH RTS library. BCICREC1 contains the description of the hardware environment and must be updated to reflect the particular hardware configuration. All options in this release are set to 0, unless otherwise specified.

Accounting Option: If the basic job accounting feature is desired, select the following option:

```
            DELETE/    4
ACCT        EQU        1
```

The current value of ACCT is 0.

If the accounting option is selected, the clock interrupt processor (CIP) option must also be selected.

BDP Option: (3300 users with a CONTROL DATA® 3312 Business Data Processing Module)

If a library with the capability of handling BDP instructions is desired in an installation, make the following modification:

```
            DELETE/    5
BDP         EQU        1      (If BDP hardware is present)
```

This change must be made if the BDP hardware option is included in the PRELIB source deck. The current value of BDP is 0.

Clock Interrupt Processor (CIP) Option: If it is desirable to have the clock interrupt processor available for programmer use in an installation, make the following modification.

```
            DELETE/    6
CLOCK       EQU        1
```

The release value of CLOCK is 0.

If the timeout feature has been selected (BCIO), the clock option must also be selected.

CST and EST Modifications: The CST and EST are established by control parameters.

```
            DELETE/     7
NCHANS      EQU         n
```

In all cases, n is dependent on available channels indicated in the following table. The current value of n is 4.

Highest Available Channel Number	Value of n
1	2
2 or 3	4
4 or 5	6
6 or 7	8

Memory Limits: The machine capacity must be properly recorded within BCICREC1. These memory limits are used by the system loader when loading a program for execution.

On the released COSY tape, the cells are set for 32K 3200/3300 Computer Systems. They must be changed for all 16K and 3100 Computer Systems. The COSY correction is:

```
            DELETE/     8
MAXCORE     EQU         value
```

The symbol value is:

Machine Type	16K Value	32K Value
3100/3150	37637_8	77637_8
3200/3300	37737_8	77737_8

The current setting of value is 77737_8.

IOT Modification: The IOT (I/O Table) must be modified to establish the appropriate channels available to the input/output subsystem.

```
                DELETE/     703,710
IOT             00          x           ch 0
                00          x           ch 1
                00          x           ch 2
                00          x           ch 3
                00          x           ch 4
                00          x           ch 5
                00          x           ch 6
                00          x           ch 7
```

x IOIP, if channel is available as a system channel defined in the AET. ABINRT, if channel is not available.

AET Entries: At installation time, the AET must be defined to describe the equipment available to the system. This section describes only the change made in BATCH RTS. A general description of AET is in part III, section 2.

```
                DELETE/     1306,1326
THE AET DESCRIPTION
    FOLLOWS
```

RHT Modification: The RHT defines the equipment used during a batch run and equipment assigned as system units (PUN, INP, OUT, etc.). The complete description is in part III, section 3.1. The following entry must be made for modification.

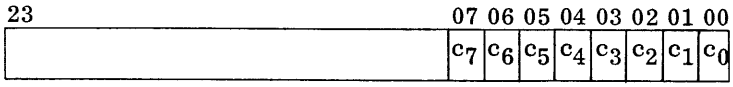
```
                DELETE/     1391,1397
RHT                         modification
```

System Interrupt Mask: A mask contained in BCICREC1 reflects the channels available for system use. The COSY correction for the mask is:

```
                DELETE/     1438
SYST.IOM        OCT         h
```

Proper channel description for the system interrupt mask is represented by h; the current value of h is 17_8.

The general format of the mask word is:



c_i Bit corresponding to channel i.

If the channel is available to the system, its corresponding bit is set to 1. If the channel is not available, the corresponding bit is set to 0.

The deck card for these changes is:

```
BCICREC1    DECK/       p1,p2,...
```

RDUMP (STD/BATCH)

Standard Error Recovery: If use of the standard error recovery on the RDUMP input/output functions is desired, select the following option:

```
            DELETE/     21
SER.OPT     EQU         1
```

The release value of SER.OPT is 0. The RDUMP deck on the PRELIB sources has SER.OPT set to 0. If SER.OPT is set to 1, the error recovery equates TAPE, CARDRDR, CARDPNCH, PRINTER, ATTMPT1, ATTMPT2, BKSPLIM2, NOATMPTS, MAXERASE, and CKSMCNST are valid (section 2.2.2).

The deck card for these changes is:

```
RDUMP       DECK/       p1,p2,...
```

PRELOAD (STD/BATCH)

BATCH Only Option: If the BATCH only variant is desired, select the following option:

```
            DELETE/     8
BF          EQU         1
```

The current value of BF is 0. The PRELOAD deck on the BATCH PRELIB source has BF set to 1.

512 Train Option: If the configuration contains a 512 Train Printer and the user desires the ability to change the trains, select the following option:

```
                DELETE/     130
TRAIN           EQU         1
```

The current value of TRAIN is 0.

Users with a 595-1 63 character 501 compatible train must set the following:

```
                DELETE/     181
TRN5951         EQU         1
```

Users without a 595-1 should leave TRN5951 set to 0. Users with a 595-2 48 character AN train must set the following:

```
                DELETE/     182
TRN5952         EQU         1
```

Users without a 595-2 should leave TRN5952 set to 0.

Users with a 595-3 48 character HN train must set the following:

```
                DELETE/     183
TRN5953         EQU         1
```

Users without a 595-3 should leave TRN5953 set to 0. Users with additional trains (up to 9), must add the following:

Example (Adds 2 special trains):

```
                INSERT/     634
                ENA         BUF 595x
                ENA         BUF 595y
BUF 595x        OCT
                            144 word buffer
BUF 595y-       OCT
                            144 word buffer
                DELETE/     2822
                ASG         n           (n = Train number + 1)
```

Current value is 4.

Accounting Option: If the basic job accounting feature is desired, select the following option:

```
            DELETE/    131
ACCT        EQU        1
```

The current value of ACCT is 0. The value of ACCT must match value of ACCT in xCICREC1.

The deck card for these changes is:

```
PRELOAD     DECK/      p1,p2,...
```

LOADER (STD/BATCH)

Error Recovery Option: If the standard error recovery package on the loader input/output functions is desired, select the following option:

```
            DELETE/    10
LERP        EQU        1
```

The current value of LERP is 0. The loader deck on the PRELIB sources has LERP set to 0. For valid error recovery equates, see section 2.2.2.

The deck card is:

```
LOADER      DECK/      p1,p2,...
```

OVPRO (STD/BATCH)

Error Recovery Option: If the standard error recovery package on the OVPRO input/output functions is desired, select the following option:

```
            DELETE/    12
LERP        EQU        1
```

The current value of LERP is 0. The OVPRO deck on the PRELIB sources has LERP set to 0. The LERP option in OVPRO must be set to the same value in LOADER.

The deck card is:

```
OVPRO       DECK/      p1,p2,...
```

POSTLOAD (STD/BATCH)

Error Recovery Option: If the standard error recovery package on postload input/output functions is desired, select the following option:

```
            DELETE/     23
LERP        EQU         1
```

The current value of LERP is 0. The postload deck on the PRELIB sources has LERP set to 0. For valid error recovery equates, see section 2.2.2.

The deck card is:

```
POSTLOAD    DECK/       p1,p2,...
```

TAPE SORT

Installations with Tape SORT may desire the optimum move assembly option to allow optimum efficiency on moves, dependent upon the library and the available hardware. The most rapid move is the BDP move; the slowest is a hardware move.

```
            DELETE/     9
BDP         EQU         0       BDP hardware absent
BDP         EQU         1       BDP hardware present
```

The release value of BDP is 0.

The deck card is:

```
SORT        DECK/       p1,p2,...
```

The BDP PRELIB replaces the hardware move with the BDP move.

2.2.2 ERROR RECOVERY ASSEMBLY OPTIONS

The modularity of error recovery routines permits easy modification to reflect hardware changes and customer needs and to implement efficient recovery from detected errors. The routines are assembled into PRELOAD and can optionally be assembled into POSTLOAD, LOADER, and RDUMP. If assembled into LOADER, error recovery must be assembled into POSTLOAD and RDUMP. Any changes made to the error recovery routines should also be made in PRELOAD and in POSTLOAD, LOADER, and RDUMP when applicable.

The library contains two groups of error recovery routines - one in the relocatable file (file 2) and the second in the absolute file (file 1). The two sets of routines are identical except that file 1 contains two additional routines. In file 1, FTN0 precedes the error recovery routines

and PROGNAME follows error recovery. FTN0 and PROGNAME establish linkage between the error recovery routines and the FORTRAN compiler and COMPASS assembler, respectively.

When the length of any error recovery routine is changed from the released value, the changed length must be assembled into the FORTRAN compiler and the COMPASS assembler (section 2.2.3). FORTRAN and COMPASS both contain BSS blocks representing the length of each error recovery routine. These lengths must correspond to the actual length of the routine in file 1. FORTRAN and COMPASS must be reassembled if error recovery is modified from the released version.

The recommended order of the error recovery routines on the library is:

RAAR

SCAR

MTWPR

MTRPR

MTLDACPR

MTDER

PRCPR

CRDER

CPDER

MTWPRR

MTRPRR

MTLDCPRR

CMNRTNS

WHATISIT

NRD

NRC

NWR

T.NOTRDY

TYPEOUT.

WHATKIND

ERROR RECOVERY ASSEMBLY OPTIONS

ROUTINE	TAPES	ASSEMBLY OPTION									
		CARDRDR	CARDPNCH	PRINTER	NOATMPTS	MAXERASE	CKSMCNST	ATTMPT1	ATTMPT2	BKSPLIM2	READB
RAAR	X										
SCAR	X	X	X	X							
WHATISIT	X										
NRC	X										
MTLDCPRR					X						
MTWPRR						X	X				
MTRPRR								X	X	X	
NRD											X

SCAR Modifications

CARDRDR: This assembly option controls references to card reader recovery within SCAR routine. If CARDRDR is equated to zero, all calls to card reader recovery are eliminated and CRDER is not called. If CARDRDR is equated to nonzero, card reader recovery is present. CARDRDR is nonzero in this release.

```
            DELETE/     90
CARDRDR     EQU         7
```

CARDPNCH: In the SCAR routine, CARDPNCH controls references to card punch recovery. If CARDPNCH is equated to zero, all calls to CPDER routine are eliminated. If CARDPNCH is equated to nonzero, card punch recovery is present. CARDPNCH is equated to nonzero in this release.

```
            DELETE/     91
CARDPNCH    EQU         7
```

PRINTER: In the SCAR routine, PRINTER controls references to printer recovery. If PRINTER is equated to zero, all calls to PRCPR are eliminated. If equated to nonzero, PRINTER recovery is present. PRINTER is equated to nonzero in this release.

```
            DELETE/     92
PRINTER     EQU         7
```

The deck card is:

```
SCAR        DECK/       p1,p2,...
```

MTLDCPRR Modification:

NOATMPTS: In MTLDCPRR routine, NOATMPTS determines attempts at recovery before asking for an operator decision. It is currently set at 4.

```
                DELETE/     42
    NOATMPTS    EQU         4
```

The deck card is:

```
    MTLDCPRR    DECK/       p1,p2,...
```

MTWPRR Modifications:

MAXERASE: In MTWPRR routine, MAXERASE determines the maximum number of erasures executed before asking for an operator decision. It is currently set at 11 (which is 10 erasures).

```
                DELETE/     58
    MAXERASE    EQU         11
```

CKSMCNST: In MTWPRR routine, CKSMCNST determines the number of backspaces executed to find correct position when checksum repositioning is valid. It is currently set at 4.

```
                DELETE/     59
    CKSMCNST    EQU         4
```

The deck card is:

```
    MTWPRR      DECK/       p1,p2,...
```

MTRPRR Modifications:

ATTMPT1: In MTRPRR routine, ATTMPT1 determines the number of tries using one backspace in a read parity recovery. It is currently set at 4.

```
                DELETE/     49
    ATTMPT1     EQU         4
```

ATTMPT2: In MTRPRR routine, ATTMPT2 determines the total number of attempts at read parity recovery before asking for an operator decision. It is currently set at 8.

```
                DELETE/     50
    ATTMPT2     EQU         8
```

BKSPLIM2: In MTRPRR routine, BKSPLIM2 determines the total number of backspaces for retry attempts when retry is recommended by the operator. It is currently set at 3.

```
            DELETE/     51
BKSPLIM2    EQU         3
```

The deck card is:

```
MTRPRR      DECK/       p1,p2,...
```

NRD Modification:

READB: In NRD routine, this option, if equated to zero, eliminates READB checks for noise records. It is currently set to nonzero.

```
            DELETE/     44
READB       EQU         77(8)
```

The deck card is:

```
NRD         DECK/       p1,p2,...
```

TAPES Modification:

TAPES: This assembly option controls references to magnetic tapes and is located in SCAR, RAAR, WHATISIT, and NRC routines. If TAPES is equated to 0 in SCAR routine, all references to magnetic tape routines are eliminated, including calls to MTDER, MTLDCPRR, MTWPRR, MTRPRR, and WHATISIT.

If TAPES is equated to nonzero, the value must reflect the maximum number of tapes used in any program for the SCAR and WHATISIT routines. TAPES is equated to 8 in this release.

```
            DELETE/     82
TAPES       EQU         7
RAAR        DECK/       p1,p2,...

            DELETE/     89
TAPES       EQU         8
SCAR        DECK/       p1,p2,...
```

```
            DELETE/     16
TAPES       EQU         8
WHATISIT    DECK/       p1,p2,...

            DELETE/     71
TAPES       EQU         7
NRC         DECK/       p1,p2,...
```

ROUTINE Macros

Local macros are provided in the RAAR and SCAR routines to facilitate generation of specially assembled decks callable by the use of EXS cards. These macros rename the routines but cannot change the necessary equates.

SCAR Routine Assemble Macro: The SCAR assemble macro provides optional variability with SCAR subroutines.

Name: ASSEMBLE (n)

(n) 0 Assemble routine with entry points for SCAR, SCARNM, SCARUST1. The IDENT card must be changed to SCAR.

1 Assemble routine with entry points for SCARSP, SCARNMSP, SPSCUST1. The IDENT card must be changed to SCARSP.

2 Assemble routine with entry points for SCARMT, SCARNMMT, MTSCUST1. The IDENT card must be changed to SCARMT.

The IDENT card must be changed to reflect a new name.

```
            DELETE/     1
            IDENT       name
            DELETE/     94
            ASSEMBLE    (n)
SCAR        DECK/       p1,p2,...
```

RAAR Routine Assemble Macro: The RAAR assemble macro provides optional variability with RAAR subroutines.

ASSEMBLE (n)

(n) 0 Subroutine RAAR assembled with recovery for magnetic tape and all visual equipment; must be equated to nonzero.

1 Subroutine RAAR assembled with no magnetic tape recovery; TAPES must be equated to 0.

2 Subroutine RAARSP assembled with no magnetic tape recovery for job modularity using EXS card; TAPES must be equated to 0; the IDENT card must be changed to RAARSP.

3 Subroutine RAARMT assembled, using EXS card, with no visual equipment recovery for job modularity; subroutine NRC must be reassembled for this option; TAPES must be equated to nonzero; the IDENT card must be changed to RAARMT. The label NRC must be equated to NRC.MT, and ASSEMBLE (n) = 3 must be followed by:

```
                    INSERT/     116
              NRC   EQU         NRC.MT
        DELETE/     1
        IDENT       name
        DELETE/     81
        ASSEMBLE    (n)
RAAR    DECK/       p1,p2,...
```

NRC Routine Assembly Macro: The NRC assemble macro provides optional variability with NRC subroutines.

ASSEMBLE (n)

(n) 0 Subroutine NRC assembled with recovery for magnetic tape and for all visual equipment; TAPES must be equated to nonzero.

1 Subroutine NRC assembled with recovery for magnetic tape only.

2 Subroutine NRCMT assembled with recovery for magnetic tape only; the IDENT card must be changed to NRC.MT; TAPES must be equated to 0.

```
        DELETE/     1
        IDENT       name
        DELETE/     70
        ASSEMBLE    (n)
NRC     DECK/       p1,p2,...
```

Error Recovery Equates

Error recovery equates vary for the variable resident routines and can be tailored to each installation.

PRELOAD: Error recovery is always present for magnetic tape, card punch, card reader, and printer, and the following error recovery equates are valid.

```
            DELETE/     5472
NOATMPTS    EQU         4

            DELETE/     5717,5718
MAXERASE    EQU         11
CKSMCNST    EQU         4

            DELETE/     5863,5865
ATTMPT1     EQU         4
ATTMPT2     EQU         8
BKSPLIM2    EQU         3

            DELETE/     6048
TAPES       EQU         8

            DELETE/     6825
READB       EQU         77
PRELOAD     DECK/       p1,p2 ,...
```

POSTLOAD: If the equate LERP is set to 1, error recovery is present for magnetic tape, card reader, card punch, and printer, and the following error recovery equates are valid:

```
            DELETE/     3303
NOATMPTS    EQU         4

            DELETE/     3508,3509
MAXERASE    EQU         11
CKSMCNST    EQU         4

            DELETE/     3655,3657
ATTMPT1     EQU         4
ATTMPT2     EQU         8
BKSPLIM2    EQU         3

            DELETE/     4400
READB       EQU         77
```

```
            DELETE/     4675
TAPES       EQU         8
POSTLOAD    DECK/       p1,p2,...
```

LOADER: If the equate LERP is set to 1, error recovery is present for magnetic tape, card reader, card punch, and printer, and the following error recovery equates are valid:

```
            DELETE/     3447
NOATMPTS    EQU         4

            DELETE/     3649,3650
MAXERASE    EQU         11
CKSMCNST    EQU         4

            DELETE/     3796,3798
ATTMPT1     EQU         4
ATTMPT2     EQU         8
BKSPLIM2    EQU         3

            DELETE/     3986
TAPES       EQU         8
LOADER      DECK/       p1,p2,...
```

RDUMP: If the equate SER.OPT is set to 1, error recovery is present for magnetic tape and printer and the following error recovery equates are valid:

```
            DELETE/     628
TAPES       EQU         8

            DELETE/     927,929
CARDRDR     EQU         0
CARDPNCH    EQU         0
PRINTER     EQU         7

            DELETE/     1562
NOATMPTS    EQU         4

            DELETE/     1605,1606
MAXERASE    EQU         11
CKSMCNST    EQU         4
```

```
            DELETE/     1846,1848
ATTMPT1     EQU         4
ATTMPT2     EQU         8
BKSPLIM2    EQU         3
RDUMP       DECK/       p1,p2,...
```

2.2.3 PRODUCT SET ASSEMBLY AND OPTIONS

Modification to standard product set members should be made at this time.

FORTRAN

If error recovery routines are modified, FORTRAN must be reassembled. Assemble all overlays of FORTRAN, including object time routines. Assemble all error recovery decks, making sure sizes of routines and BSS blocks in FORTRAN overlays are equal. Assemble the following special decks from the system COSY tape:

FTN0

PROGNAME

Use the expanded PRELIB to make a library with the decks set up as follows:

$^{7}_{9}$SEQUENCE,001

$^{7}_{9}$JOB,,,,

$^{7}_{9}$EQUIP,55=MT

$^{7}_{9}$EQUIP,01=MT

$^{7}_{9}$PRELIB,,1,S,A

$^{7}_{9}$SYMROUT

$^{7}_{9}$RECORD,START2

$^{7}_{9}$ORIGIN,START2

FTN0
RAAR
SCAR
MTWPR
MTRPR

} binary decks (must be in this order)

MTLDACPR
MTDER
PRCPR
CRDER
CPDER
MTWPRR
MTRPRR
MTLDCPRR
CMNRTNS
WHATISIT
NRD
NRC
NWR
T.NOTRDY
TYPEOUT.
WHATKIND
PROGNAME

} binary decks (must be in this order)

7/9RECORD,START2

7/9ORIGIN,START2, (octal size of error recovery routines including FTN0 and PROGNAME)

FTN1 binary deck

7/9RECORD,START2

7/9ORIGIN,START2, (octal size of error recovery plus FTN1 routines common to FTN2)

FTN2 binary deck

7/9RECORD,START2

7/9ORIGIN,START2, (octal size of error recovery plus FTN1 routines common to FTN3)

FTN3 binary deck

7/9RECORD,START2

7/9ORIGIN,START2, (octal size of error recovery plus FTN1 routines common to FTN4)

FTN4 binary deck

$\begin{smallmatrix}7\\9\end{smallmatrix}$RECORD,START2

$\begin{smallmatrix}7\\9\end{smallmatrix}$ORIGIN,START2, (octal size of error recovery plus FTN1 routines common to FTN5)

FTN5 binary deck

$\begin{smallmatrix}7\\9\end{smallmatrix}$RECORD,START2

$\begin{smallmatrix}7\\9\end{smallmatrix}$ORIGIN,START2, (octal size of error recovery plus FTN1 routines common to FTN6)

FTN6 binary deck

$\begin{smallmatrix}7\\9\end{smallmatrix}$RECORD,START2

$\begin{smallmatrix}7\\9\end{smallmatrix}$ORIGIN,START2, (octal size of error recovery plus FTN1 routines common to FTNE)

FTNE binary deck

$\begin{smallmatrix}7\\9\end{smallmatrix}$FILE

$\begin{smallmatrix}7\\9\end{smallmatrix}$REPLACE,FORTRAN,FORTRAN

FORTRAN - binary deck; includes LED card of following form

12	
0	
1	5501,5601
7	
9	

LED card must immediately follow EPT card with main entry point.

$\begin{smallmatrix}7\\9\end{smallmatrix}$REPLACE,FLOVER,Q8QERROR

FLOVER
BCDINP
BCDOUT
FORMAT
BINARY
BUFFER
UNIT
IOCHK
EOFCHK
TAPEHAND
PAUSE
CONTROL

} binary decks

DOUBLE
DFPRIME
DFP
Q1QADRI
ITOJ
ITOX
XTOI
POWRF
SINCOS
ATANF
EXPF
LOGF
SIGNF
SQRTF
ABSF
EXTREMA1
EXTREMA2
FLOATF
FIXF
MASKINGF
FAULTS
SENSLITE
SENSWTCH
Q8QERROR

} binary decks

$^{7}_{9}$FILE

$^{77}_{88}$end-of-file

COMPASS

If a user coded COMPASS subroutine executes with FORTRAN I/O time routines, Q8QBCDWT may need to be declared external and called from the subroutine. If the COMPASS subroutine does I/O on units used by FTN I/O, a call to Q8QBCDWT is required to check a specified unit for outstanding BCD WRITES before the I/O operation takes place. Q8QBCDWT is a routine in FTN I/O control that checks for outstanding BCD writes and processes status.

The calling sequence is:

```
ENQ     lu
RTJ     Q8QBCDWT
```

lu = Number of unit

If error recovery routines are modified, COMPASS must be reassembled. Assemble all subprograms of COMPASS. Assemble all error recovery decks (program sizes must be identical to the size of the BSS blocks at the beginning of each subprogram of COMPASS) and the following special decks from the system COSY tape.

FTN0

PROGNAME

Use the expanded PRELIB to make a library. Decks must be in the specified form:

```
7/9SEQUENCE,001
7/9JOB,,,,
7/9EQUIP,55=MT
7/9EQUIP,01=MT
7/9PRELIB,,1,S,A
7/9SYMROUT
7/9RECORD,START2
7/9ORIGIN,START2
        FTN0
        RAAR
        SCAR
        MTWPR
        MTRPR
        MTLDACPR
        MTDER
        PRCPR
        CRDER
        CPDER
        MTWPRR
        MTRPRR
        MTLDCPRR
```

binary decks (must be in this order)

CMNRTNS
WHATISIT
NRD
NRC
NWR
T.NOTRDY
TYPEOUT
WHATKIND
PROGNAME

} binary decks (must be in this order)

7/9RECORD,START2
7/9ORIGIN,START2, (octal size of error recovery routines including FTN0 and PROGNAME)
COMPASS binary deck
7/9RECORD,START2
7/9ORIGIN,START2, (octal size of error recovery decks plus COMPASS subprogram)
OVERLAY1 binary deck
7/9RECORD,START2
7/9ORIGIN,START2, (octal size of error recovery decks plus COMPASS subprogram)
PASSONE binary deck
7/9RECORD,START2
7/9ORIGIN,START2, (octal size of error recovery decks plus COMPASS subprogram)
PASSTWO binary deck
SYMTBLE binary deck
7/9RECORD,START2
7/9ORIGIN,START2, (octal size of error recovery plus COMPASS subprogram)
CRT binary deck
7/9FILE
7/9REPLACE,COMPASSB,COMPASSB
COMPASSB binary deck including LED card of following form:

```
12
 0
 15501
 7
 9
```

This card must occur after the EPT card with the main entry point and before the TRA card. If both 55 and 56 are to be equipped, use a LED card with the form:

```
12
 0
 15501,5601
 7
 9
7
9REPLACE,COMPASS,CRT
7
9UNIT,55,FTN0 -
7
9UNIT,55,COMPASS
7
9UNIT,55,OVERLAY1
7
9UNIT,55,PASSONE
7
9UNIT,55,PASSTWO
7
9UNIT,55,CRT
7
9FILE
77
88end-of-file
```

COBOL

If it is necessary to reassemble COBOL, place the decks in the following order:

```
COBOLIE
COBOLD1
COBOLP1
COBOLD2
COBOLP2
COBOLDP3
```

COSY

Assemble the COSY subprograms and use the following PRELIB example to replace COSY on the library.

```
7
9SEQUENCE,001
7
9JOB,,,,
7
9EQUIP,55=MT
7
9EQUIP,01=MT
7
9PRELIB,,1,S
7
9FILE
7
9REPLACE,COSY,COSYRDWT
```

COSY binary deck

COSYRDWT binary deck

7/9FILE

77/88end-of-file

BSIPP

To expand number of operations of BSIPP:

1. Equate NOPS to the number of operations; NOPS is set to 3 in this release.

```
          DELETE/    98
NOPS      EQU         3
```

2. Expand the following tables so they contain the number of entries NOPS is equated to. The example shown is for NOPS = 3.

```
          DELETE/    2956,2958
BLIST     00         BUF
          00         BUF+BSIZ2
          00         BUF+BSIZ2+BSIZ2

          DELETE/    2959,2961
B2LIST    00         B2BUF,3
          00         B2BUF+B2SIZ,3
          00         B2BUF+B2SIZ+B2SIZ,3

          DELETE/    2963,2965
RSVLIST   00         RSVBUF,3
          00         RSVBUF+RSVSIZ,3
          00         RSVBUF+RSVSIZ+RSVSIZ,3

          DELETE/    2966,2968
FALIST    00         FABUF
          00         FABUF+FASIZ
          00         FABUF+FASIZ+FASIZ
```

3. Change the buffer storage area. The example below is the same as the release (NOPS equal to 3).

```
                DELETE/     2977,2980
BUF             BSS         BSIZ2+BSIZ2+BSIZ2       (BSIZ2)(NOPS)
B2BUF           BSS         B2SIZ+B2SIZ+B2SIZ       (B2SIZ)(NOPS)
RSVBUF          BSS         RSVSIZ+RSVSIZ+RSVSIZ    (RSVSIZ)(NOPS)
FABUF           BSS         FASIZ+FASIZ+FASIZ       (FASIZ)(NOPS)
```

SIPP

To expand the number of operations of SIPP, change the equate NOPS to the number desired. NOPS is set to 3 in this release.

```
                DELETE/     120
NOPS            EQU         3
```

2.2.4 REPLACEMENT CARD

The replacement card in the PRELIB Source Deck (section 4.1) is illegal and must be replaced with the modified xCICREC1 deck.

2.2.5 BCD, BDP, AND FDP OPTIONS

RTS/STD/BATCH for 3100/3200

BCD Hardware	FDP Hardware	Action
Absent	Absent	Remove SEPOINT, BCDBOXS and SEPOINT, FDPBOXS Set BDP EQU 0 in xCICREC1†
Absent	Present	Remove SEPOINT, BCDBOXS Set BDP EQU 0 in xCICREC1†
Present	Absent	Remove SEPOINT, FDPBOXS Set BDP EQU 0 in xCICREC1†
Present	Present	Set BDP EQU 0 in xCICREC1†

In all cases only BCD COBOL may be used.

† x = S Standard
B BATCH

BCD Hardware	FDP Hardware	Action
Absent	Absent	Remove SEPOINT, BCDBOXS and SEPOINT, FDPBOXS Set BDP EQU 0 in xCICREC1†
Absent	Present	Remove SEPOINT, BCDBOXS Set BDP EQU 0 in xCICREC1†
Present	Absent	Remove SEPOINT, FDPBOXS Set BDP EQU 1 in xCICREC1†
Present	Present	Set BDP EQU 1 in xCICREC1†

Where BDP hardware exists and is defined in xCICREC1 (BDP EQU 1), BDP COBOL must be used. Otherwise BCD COBOL is required. If BDP is equated to 1, the library must always be run with the console BDP switch turned on.

UNDEFINED SEPOINTS

A SEPOINT card must be inserted directly after the loader record. When only system routines (e.g. COMPASS) are absolutized, they are illegal.

A SEPOINT card is used to prevent the loading of a subroutine or program; if the name specified on the control card is undefined, the symbol is equated to ABNORMAL, and the job terminates. This technique is particularly useful for installations with optional floating-point and BCD hardware. For example, the following cards in file 1 input would prevent loading of hardware simulation routines FDPBOXS and BCDBOXS.

```
SEPOINT,FDPBOXS
SEPOINT,BCDBOXS
```

Other undefined system entry points (CIP and PERADD) do not invalidate the PRELIB as long as no routines reference the undefined SEPOINT.

2.2.6 DRIVER SELECTION

In this release, the drivers for all equipments and controllers are included within the STD and BATCH PRELIB source decks.

† x = S Standard
B BATCH

DRIVLABT

Users with a 601, 603, or 606 driver must make the following modification.

```
            DELETE/     3
TAPE        EQU         606
```

The deck card is:

```
DRIVLABT    DECK/       p1,p2,...
```

SYSTEM DRIVERS

Remove the unnecessary drivers. The drivers are identified by unique program lengths on their IDC cards and may be removed by cross-referencing the PRELIB Source Deck Listing, part II, section 4.1, and the following chart.

Hardware	Control Data Controllers†	Control Data Equipment† (in combination)	COSY Name	Entry Point Name	Deck Length
MT	362x 342x 322x	604 607	DRIVLABT	DRIVER01	344
MT	362x 342x 322x	601 603 606	DRIVLABT	DRIVER01	330
CR	3447 3649	405	DRIV3649	DRIVER02	245
CR	3248 3142	405	DRIV3248	DRIVER02	235
PR	3256 3659 3152 3254	501 505	DRIV3659	DRIVER03	356
PR	3555	512	DRV512	DRV512	406
CP	3644 3446	415	DRIV3644	DRIVER04	222
CP	3245	425	DRIV3245	DRIVER04	345
TY	Console Typewriter	-	DRIVTYWR	DRIVER05	115
PL	3293	Plotter	DRIV3293	DRIVER11	60
OR	3195	915	DRIVER12	DRIVER16	330
TR TP	3691	Paper Tape Station	DRIV3691	DRIVER06 DRIVER07	625

† Registered trademark of Control Data Corporation.

The final PRELIB source is generated through the utility routines on an installed system (Tape SCOPE 2.4 or RTS 1.2). To punch the source decks that are not installation dependent:

Mount release tape 1 and space tape forward one file. This positions release tape 1 at the standard PRELIB source. If a BATCH source is desired, space the tape forward one additional file.

Punch the appropriate PRELIB source.

At this point, the user must decide if BDP COBOL and BDP SORT for the 3300/3500 are desired. If BDP COBOL and BDP SORT are not desired, skip next step. If a standard PRELIB source was punched, space the tape forward one file.

Punch BDP COBOL and SORT PRELIB source.

The BDP COBOL and SORT PRELIB source (section 4.1.3) can be used as standard INP or can be punched.

2.3 FINAL LIBRARY GENERATION

To generate a final RTS library, an installation must have the following materials:

An operable interim library.

The autoload program installed in core storage.

The proper PRELIB source deck (RTS/STD or RTS/BATCH) modified to fit the particular hardware configuration.

The library generation proceeds as follows:

1. Mount the interim library on physical unit 0.
2. Mount scratch tapes on physical units 1 and 2.
3. Mount tape to receive the final library on unit assigned to logical unit 1.
4. Place the PRELIB source deck in the card reader.
5. Execute the PRELIB source deck.
6. The interim PRELIB will produce the following CTO diagnostics:

   ```
   I PLIB 031 PRELIB HISTORY BEGIN
   I PLIB 042 PRELIB HISTORY END
   ```

   If any other diagnostic appears on CTO or OUT, the error must be corrected and the job repeated.

2.4 MMTC ADD-ON TO RTS 2.0 SYSTEM

After the initial release of RTS 2.0, new capabilities have been added to the system. This section provides sufficient information to add these capabilities to an existing RTS 2.0 system.

2.4.1 DRIVMMTC

DRIVMMTC is the driver for the 3518/3528 Modular Magnetic Tape Controller (MMTC) and the 657/659 Magnetic Tape Transports.

Release Materials

The release materials will be on punched cards in the following form:

COSY changes for CIO
COSY changes for xCICREC1 (x=S or B)
COSY changes for RDUMP
COSY changes for PRELOAD
COSY changes for LOADER
COSY changes for POSTLOAD
COSY changes for ERROR RECOVERY
COSY formatted deck of DRIVMMTC
COSY formatted deck of MMTCINIT
Binary deck of MMTCINIT

T657 Assembly Option

Definition: The T657 option permits those installations with 657 Tape Transports to utilize them through software modifications.

Option:

```
          DELETE/     120
T657      EQU         n
```

n = number of 659 Tape Transports

Release Value: T657 = 1

T659 Assembly Option

Definition: The T659 option permits those installations with 659 Tape Transports to utilize them through software modifications.

Option:

```
          DELETE/    122
T659      EQU        m
```

m = number of 659 Tape Transports

Release value: T659 = 1

Installation Procedures

1. Select and set assembly options according to configuration.
2. Assembly DRIVMMTC.
3. Generate changes necessary for AET (part III, section 2).
4. Assemble CIO, xCICREC1, RDUMP, PRELOAD, LOADER, POSTLOAD, where x is B = Batch or S = Standard.
5. Apply COSY changes to ERROR RECOVERY at 5 locations.
6. Edit PRELIB SOURCE by inserting the binary decks and files from the above steps.
7. Execute the edited PRELIB SOURCE.
8. Initialize MMTC (see below).
9. Autoload and verify new system.

MMTC Initialization

The image memory of the MMTC (3518 or 3528) must be loaded before tape operations can be executed. The procedure requires the following steps:

1. Separate the MMTC initializer binary program from the MMTC release materials.
2. Obtain a one-card loader (part II, section 9).

The image memory initializer program contains the CDC 64 character subset of ASCII for the image memory and several subroutines necessary to extract the configuration of the MMTC and physically write the image memory.

3. Place the one-card loader followed by the binary deck of the image initializer in the card reader.
4. Autoload from the card reader.

The computer types:

A MMTC 001 C(c)E(e)U(uu)

5. Type the appropriate channel c, equipment e, and unit numbers uu for MMTC.

The program will attempt to initialize the image memory. If successful, the following message is typed:

I MMTC 005 IMAGE MEMORY LOADING COMPLETED

NOTE

If the user has a 3528 controller this procedure will be repeated so that both image memories (one per channel) can be initialized.

If unsuccessful, one or more of the following will be typed:

Message				Significance	Action
I	MMTC	003	IMAGE MEMORY PARITY ERROR xxxx	xxxx=WRITE Parity error occurred during write of image memory xxxx=READ Parity error occurred during read	Retry If error continues, the controller should be examined for hardware malfunction.
I	MMTC	004	UNEXPECTED STATUS WORD II ssss	ssss=status in octal. Abnormal condition (other than memory parity) occurred.	Retry If error continues, the controller should be examined for hardware malfunction.
A	MMTC	006	xxx REJECTED yyyyyyyy	xxx=CON connect SEL select yyyyyyyy=rejected instruction in octal	1. Press FINISH to restart initializer, or 2. Press REPEAT to retry rejected function.
A	MMTC	007	IMAGE MEMORY zzzz REJECTED	zzzz=INPW Input word instruction rejected zzzz=OUTW Output word instruction rejected	1. Press FINISH to restart initializer, or 2. Press REPEAT to retry rejected function
A	MMTC	008	CONTROLLER BUSY AFTER 10 SECONDS		1. Press FINISH to restart initializer, or 2. Press REPEAT to continue to wait
I	MMTC	009	IMAGE MEMORY LOADED INCORRECTLY	After image memory was initialized, it was read, and the returned image differs from the image that was written.	Retry If error continues, examine controller for hardware malfunction.

A copy of the image memory initializer is provided in COSY format to allow the user to select a code set other than CDC 64 character subset of ASCII after installation is completed. If the program is utilized this way the following message will be typed if two BCD codes have the same 8-bit code equivalent:

Message				Significance	Action
I	MMTC	002	DUPLICATE CONVERSION	Two BCD codes have the same 8-bit code xx = character 1 yy = character 2	

INCORPORATING PRODUCT SET MEMBERS 3

The installation of some members of the RTS product set is generated through separate sets of procedures because:

The products involved are special applications programs or use special applications equipment that some users may or may not have or need.

The procedures depend on the existence of a fully operable RTS final library.

The procedures that follow involve installation and generation of:

SAINT

ADAPT

PERT Time

PERT Cost

3.1 SAINT

SAINT is released on COSY tape. Use the following sample procedures to add SAINT to an RTS library:

1. Mount RTS tape on physical unit 00 and scratch tape on physical unit 01.

2. Mount COSY tape on logical unit 01, scratch tape on logical unit 02.

3. Create and run a card deck of the following form:

JOB 1

Job 1 assembles according to options selected. A 16K simulator with multiply and divide example is given here. COMPASS assembles Hollerith tape 02. The example is a listing of a SAINT binary deck with options selected.

```
7/9SEQUENCE,001
7/9JOB-SAINT-COSY,
7/9EQUIP,01=MT,02=MT
7/9COSY
            DELETE/     39,41
DIVIDE      EQU         TRUE      (
MEMIZE      EQU         16000     )   Option examples
MULTIPLY    EQU         TRUE      (
SAINT       DECK/       I=01,H=02
```

ENDCOSY/

7/9COMPASS,I=02,L,R,P

77/88end-of-file

JOB 2

JOB 2 inserts a binary image of the binary deck from JOB 1 on scratch logical 01 at the beginning of file 2 as given in the example.

7/9SEQUENCE,002

7/9JOB,SAINT-LIB,,

7/9EQUIP,01=MT (new system tape)

7/9PRELIB,,01

7/9FILE

7/9INSERT

SAINT binary deck

7/9FILE

77/88end-of-file

4. Load RTS.

3.1.1 ASSEMBLY OPTIONS

The following table provides the COSY sequence number, SAINT core requirements, and the name of the assembly parameters that must be equated to TRUE to select the various options in SAINT. For a complete description of assembly options see appendix A of the 3100/3200/3300/3500 SAINT Reference Manual, Pub. No. 60213700.

Sequence Number	Name	Core Required (decimal)
30	ADDRTABL	288
31	BRANBIT	20
32	COLBIN	306
33	COMPRESS	88
39	DIVIDE	123
40	MEMSIZE	4K - 2000†
		8K - 4000†
		12K - 6000†
		16K - 8000†
41	MULTIPLY	90
43	SIM1403	-7
44	SIM1407	236
46	STERLING	1386
47	TRACEDMP	293
48	TRANSLAT	101
49	WMIO	195
50	WMBL	151

For WMBL, WMIO must be equated to TRUE. If WMIO is TRUE and WMBL is nonzero, tape word mark I/O is performed in a non-time-dependent manner. This can be equated to the minimum number of characters desired in the input/output buffer. When using word mark I/O, if WMBL is equated to the maximum number of input or output characters, no density (tape) restrictions apply. However, if WMBL is equated to FALSE, the following restrictions apply:

3200/3300	601, 603, 604 tape transports, no density restrictions. 606, 607 tape transports, restricted to 200 BPI.
3100	Restricted to 200 BPI for all tape units.

† The simulation of SAINT memory requires half the nonsimulated core size.

3.1.2 CORE REQUIREMENTS

Use the following equation to find total core size of SAINT:

$$st = 2510 + \frac{memsize}{2} + so + \frac{wmbl}{4}$$

st	Total core requirement for SAINT
so	Total of option core reqirements
wmbl	Size of word mark buffer length (variable)
memsize	Size of simulated memory

3.2 ADAPT

The ADAPT release consists of two packages, one for 16K and one for 32K.

Each package consists of:

A binary (load-and-go) tape from which to make ADAPT overlay tape.

A set of operating procedures.

Also available are:

A BCD tape of the ADAPT source decks

ADAPT Internal Maintenance Specifications

ADAPT operates from an overlay tape made from the binary tape furnished as a part of the ADAPT system release, or from decks punched from the tape.

A deck of test programs is provided to ensure successful production of the overlay tape. Sample output from these programs is included in the appendix of the ADAPT Internal Maintenance Specifications. A single run is required to create the overlay tape and test the sample part programs.

3.2.1 16K ADAPT PREPARATION

1. Mount ADAPT source tape on logical unit 01.

2. Mount scratch tapes on logical units 02 and 03.

3. Run the following job:

```
7/9SEQUENCE,001
7/9JOB,,,,
```

7/9EQUIP,01=MT,03=MT

7/9FORTRAN,I=01,P=02,L=03

7/9COMPASS,I=01,P=02,L=03

7/9FORTRAN,I=01,P=02,L=03

7/9COMPASS,I=01,P=02,L=03

7/9FORTRAN,I=01,P=02,L=03

77/88end-of-file

4. Punch binary decks from logical unit 02 and list source from logical unit 03.

5. Duplicate the following binary decks:

Deck	Sequence number	Copies
STDPACK	0110	1
STDUNPK	0111	1
PTRIT	0125	1
GENPLN	0223	1
ZVECT	0224	1
ZVALUE	0225	1
DOT	0227	1
CROSS	0226	2
LENGTH	0228	1
NORM	0229	2

Place routines STDPACK, STDUNPK in the main portions of OVERLAY1 and OVERLAY2.

Place PTRIT in segments 2 and 3 of OVERLAY2.

Place the second copies of CROSS and NORM in OVERLAY4.

6. Set up the overlay deck structure:

7/9SEQUENCE,001

7/9JOB,,,,

7/9EQUIP,05=MT,06=MT,07=MT

7/9EQUIP,49=06

```
12
 049
 7
 9
```

binary decks for MAIN OVERLAY

CDCADAPT

INITIAL

PRCNTL

LBSRCH

TAPERD

TAPEWT

```
12
 0
 349,1
 7
 9
```

binary decks for OVERLAY 1

PASS1A

ITYPE

DOMAC

PTIDENT

ERRMSG

BCDFETCH

JUGGLE

NUMSTOR

STDPACK

STDUNPK

```
12
 0
 249,1
 7
 9
```

binary decks for OVERLAY 1, SEGMENT 1

P1ASEG1

CARDBKUP

PTGEN

SERCHV

TABLCK

```
12
 0
 249,2
 7
 9
```

binary decks for OVERLAY 1, SEGMENT 2

P1ASEG2

POSMACH

MACDEF

CAWL

TERMAC

RSERV

PTRIT

```
12
 0
 249,3
 7
 9
```

binary decks for OVERLAY 1, SEGMENT 3

P1ASEG3

COMPUT

IFJUMP

PTRIT

GEOM1A

FINI

```
12
 0
 249,4
 7
 9
```

binary decks for OVERLAY 1, SEGMENT 4

P1ASEG4

TABLSET

XABLE

YABLE

```
12
 0
 349,2
 7
 9
```

```
binary decks for OVERLAY 2
PASS1B
PTID
TABLSIB
ERRMSG
STDPACK
STDUNPK
CANGET
CANPUT
DEFPRE
12
 0
 249,1
 7
 9
binary decks for OVERLAY 2, SEGMENT 1
SEND
BCDINF
FINIB
MISC
PSIS
POKE
RITAPE
MOTION
PREPRO
TABCO
QUAD
RFCTF
SSQRF
PPARAM
12
 0
 249,2
 7
 9
binary decks for OVERLAY 2, SEGMENT 2
JDSEG2
GENPLN
```

ZVECT
ZVALUE
CROSS
DOT
LENGTH
NORM
LINE01
LINE02
LINE03
LINE04
LINE05
LINE06
LINE07
LINE08
LINE09
PLAN01
PLAN02
PLAN03
ELLP01
ELLHYP
GCON01
MATX01
MATX02
MATX03
MATX04

12
0
249,3
7
9

binary decks for OVERLAY 2, SEGMENT 3

JDSEG3
GENPLN
ZVECT
ZVALUE
CROSS

DOT

LENGTH

WORM

PONT01

PONT02

PONT03

PONT04

PONT05

PONT07

CIRL01

CIRL02

CIRL03

CIRL05

CIRL08

CIRL09

CIRL10

CIRL11

CIRL12

12
 0
 349,3
 7
 9

binary decks for OVERLAY 3

CALLSEG2

SUPER

AMINDX

DDSTX

UNRMALX

AERRX

ASTOSX

CENTRX

RADARX

CPLANX

CCURVX

DELTAX

```
ARLMG
TLNORMX
CHECKX
QUADX
ATAPEX
UNORMX
STRTUPX
AJUNDDX
AREPREX
12
 0
 249,1
 7
 9
```

binary decks for OVERLAY 3, SEGMENT 1

```
CALLSEG1
SECTN2X
12
 0
 249,2
 7
 9
```

binary deck for OVERLAY 3, SEGMENT 2

```
ARLMCL
12
 0
 249,3
 7
 9
```

binary decks for OVERLAY 3, SEGMENT 3

```
CALLSEG3
UNTABC
DDTABC
12
 0
 349,4
 7
 9
```

binary decks for OVERLAY 4

```
PICKPOCK
POCKET
ATAPEY
```

ASTOSY

AERRY

WORM

CROSS

12
 0
 349,5
 7
 9

binary decks for OVERLAY 5

PASSB

CLPRNT

SEARCH

IFIXED

MULTM

TSFMPT

TSFMVC

MATMOV

TABFCT

12
 0
 349,6
 7
 9

binary decks for OVERLAY 6

SECTN4

DISPAT

12
 0
 249,m
 7
 9

binary deck for post processor; each post processor is a segment

7
9RUN
77
88end-of-file

7. Mount a tape for the overlay tape on logical unit 49.

8. Mount scratch tapes on logical units 05 and 07.

9. Place above overlay structure in card reader and load. Upon completion of run, remove the write ring from the overlay tape.

3.2.2 16K ADAPT EXECUTION

1. Mount overlay tape on logical unit 49 and scratch tapes on logical units 05 and 07.

2. Place the following job deck in the card reader and load:

   7/9SEQUENCE,001
   7/9JOB,,,
   7/9EQUIP,49=MT,05=MT,07=MT
   binary cards for MAIN OVERLAY (see preparation)
   7/9RUN
   part programs
   *** (end of batch card)
   7/8/8end-of-file

3. Printed output is on logical unit 61.

4. Duplicate the following binary decks:

Deck Name	Sequence Number	Copies
STDPACK	0110	1
STDUNPK	0111	1
PTRIT	0125	1
CROSS	0226	1
NORM	0229	1

   Place STDPACK and STDUNPK decks in main portions of OVERLAY 1 and OVERLAY 2.

   Place PTRIT deck in OVERLAY 1, SEGMENT 2 and SEGMENT 3.

   Place CROSS and NORM decks in OVERLAY 4.

5. Set up the following deck structure:

   7/9SEQUENCE,...
   7/9JOB,...
   7/9EQUIP,05=MT,07=MT
   7/9EQUIP,06=MT,49=06
   12/0/7/9 49 (main)

```
   binary decks for MAIN OVERLAY
  CDCADAPT
  INITIAL
  PRCNTL
  LBSRCH
  TAPERD
  TAPEWT
  FLOVER
12
 0
 3 49,1  (overlay 1)
 7
 9
   binary decks for OVERLAY 1
  PASS1A
  ITYPE
  DOMAC
  PTIDENT
  ERRMSG
  BCDFETCH
  JUGGLE
  TABLSET
  NUMSTOR
  STDPACK
  STDUNPK
  XABLE
  YABLE
12
 0
 2 49,1
 7
 9
   binary decks for OVERLAY 1, SEGMENT 1
  P1ASEG1
  CARDBKUP
  PTGEN
  SERCHV
  TABLCK
```

```
12
 0
 249,2
 7
 9
```

binary decks for OVERLAY 1, SEGMENT 2

P1ASEG2

POSMACH

MACDEF

CAWL

TERMAC

RSERV

PTRIT

```
12
 0
 249,3
 7
 9
```

binary decks for OVERLAY 1, SEGMENT 3

P1ASEG3

COMPUT

IFJUMP

PTRIT

GEOM1A

FINI

```
12
 0
 349,2
 7
 9
```

binary decks for OVERLAY 2

PASS1B

PTID

TBLS1B

ERRMSG

STDPACK

STDUNPK

CANGET

CANPUT

```
12
 0
 249,1
 7
 9
```

binary decks for OVERLAY 2, SEGMENT 1

SEND

BCDINF

FINIB

MISC

PSIS

POKE

RITAPE

MOTION

PREPRO

TABCO

QUAD

RFCTF

SSQRF

PPARAM

```
12
 0
 249,2
 7
 9
```

binary decks for OVERLAY 2, SEGMENT 2

DEFPRE

JDSPAT

GENPLN

ZVECT

ZVALUE

CROSS

DOT

LENGTH

NORM

PONT01

PONT02

PONT03

```
PONT04
PONT05
PONT07
LINE01
LINE02
LINE03
LINE04
LINE05
LINE06
LINE07
LINE08
LINE09
PLAN01
PLAN02
PLAN03
CIRL01
CIRL02
CIRL03
CIRL05
CIRL08
CIRL09
CIRL10
CIRL11
CIRL12
ELLP01
ELLHYP
GCON01
MATX01
MATX02
MATX03
MATX04
12
 0
 349,3
 7
 9
```

```
    binary decks for OVERLAY 3
  CALLSEG2
  SUPER
  AMINDX
  DDSTX
  UNRMALX
  AERRX
  ASTOSX
  CENTRX
  RADARX
  CPLANX
  CCURUX
  DELTAX
  ARLMG
  SNAP
  TLNORMX
  CHECKX
  QUADX
  ATAPEX
  VNORMX
  STRTUPX
  AJUNDDX
  AREPREX
12
 0
 249,1
 7
 9
    binary decks for OVERLAY 3, SEGMENT 1
  CALLSEG1
  SECTN2X
12
 0
 249,2
 7
 9
```

```
    binary decks for OVERLAY 3, SEGMENT 2
  ARLMCL
12
 0
249,3
 7
 9
    binary decks for OVERLAY 3, SEGMENT 3
  CALLSEG3
  UNTABC
  DDTABC
12
 0
349,4
 7
 9
    binary decks for OVERLAY 4
  PICKPOCK
  POCKET
  ATAPEY
  ASTOSY
  AERRY
  NORM
  CROSS
12
 0
349,5
 7
 9
    binary decks for OVERLAY 5
  PASS3
  CLPRNT
  SEARCH
  IFIXED
  MULTM
  TSFMPT
  TSFMVC
  MATMOV
  TABFCT
```

12
0
349,6
7
9

binary decks for OVERLAY 6

SECTN4

DISPAT

12
0
249,m
7
9

binary decks for post processor (each post processor added comprises a segment)

7
9RUN

test part programs

77
88end-of-file

6. Mount tape for overlay tape and scratch tapes as specified on the EQUIP cards. Load overlay deck structure into the card reader and execute the job.

7. Upon completion of the run, remove the write ring from the tape on logical unit 49. This is the overlay tape to be used for running part programs.

3.2.3 32K ADAPT PREPARATION

1. Mount ADAPT source tape on logical unit 1 and scratch tapes on logical units 2 and 3.

2. Place the following job in the card reader:

```
7
9SEQUENCE,001
7
9JOB,,,,
7
9EQUIP,01=MT,02=MT,03=MT
7
9FORTRAN,I=01,P=02,L=03
7
9COMPASS,I=01,P=02,L=03
7
9FORTRAN,I=01,P=02,L=03
7
9COMPASS,I=01,P=02,L=03
7
9FORTRAN,I=01,P=02,L=03
77
88end-of-file
```

3. Punch the binary cards from logical unit 02 and list from logical unit 03.

3.2.4 32K ADAPT EXECUTION

1. Mount overlay tape on logical unit 49.

2. Mount scratch tapes on logical units 05 and 07.

3. Place the following deck in the card reader and load:

```
7/9SEQUENCE,...
7/9JOB,...
7/9EQUIP,05=MT,07=MT
7/9EQUIP,49=MT
      binary decks for MAIN OVERLAY (see preparation)
7/9RUN
      part programs†
77/88end-of-file
```

4. Printable output is produced on logical unit 60.

3.3 PERT TIME

The release materials for PERT Time consist of two tapes and two binary main decks. One tape and deck is for use under a 16K system, the other for a 32K system. The 16K and 32K variant tapes have the same structure. A 16K variant batch library with no options requires 12.3K of core. A 32K variant requires 24.3K of core. The first file is a binary LGO file. The second is made up of images of source cards and control cards which, when mounted as standard input, punch the main program, generate listing of source, and produce an LGO file that is the same as that given in file 1.

3.3.1 CREATE OVERLAY FROM FILE ONE OF RELEASE TAPE

The following control cards create an overlay tape from the binary LGO tape. Mount the release tape on logical unit 56. The overlay tape will be created on logical unit 55.

```
7/9SEQUENCE,001
7/9JOB,,,,ND,NP
```

† When using a tabcyl as a drive surface and a second overlapping tabcyl as a check surface, execution errors may occur because of the nature of information given in this particular situation. Using an intersecting line as a check surface to pass from one tabcyl to the other provides a means of bypassing this trouble spot.

```
7/9EQUIP,55=MT,05=55
7/9EQUIP,56=MT
7/9LOAD,56
7/9RUN
77/88end-of-file
```

After the job creates an overlay tape, it loads overlay 1 and the job terminates. When the overlay tape is used to run the PERT Time run, it must be used with the library it was created on.

3.3.2 CREATE OVERLAY AND FOLLOW WITH COMPUTER RUN

The following control cards create an overlay tape followed by a computer run.

```
7/9SEQUENCE,001
7/9JOB,,,,ND,NP
7/9EQUIP,56=MT  (Mount release tape on logical unit 56)
7/9EQUIP,55=MT  (Logical unit 55 will be overlay tape)
7/9EQUIP,05=55
7/9EQUIP,1=MT,2=MT,3=MT  (PERT work tapes)
7/9LOAD,56
7/9RUN
        (PERT control cards)
   .
   .
   .
STOP
77/88end-of-file
```

The following control cards generate PERT Time reports with a previously created overlay tape.

```
7/9SEQUENCE,001
7/9JOB,,,,ND,NP
7/9EQUIP,05=MT  (Mount overlay tape, logical unit 5)
7/9EQUIP,1=MT,2=MT,3=MT  (PERT work tapes)
   .
   .
        (binary PERT Time main deck)
   .
   .
```

```
7/9RUN
        (PERT control cards)
    .
    .
    .
STOP
77/88end-of-file
```

3.4 PERT COST

The release materials consist of a two file tape and a binary card deck of PERT Cost MAIN. The first file of the tape is a binary LGO file. The second file is made up of source cards and control cards which when mounted as standard input, punch the main, generate a listing of the source, and produce an LGO file that is the same as that given in file one.

3.4.1 CREATION OF OVERLAY TAPE

The following deck structure generates a PERT Cost overlay tape on logical unit 55.

```
7/9SEQUENCE,001
7/9JOB,,,,ND,NP
7/9EQUIP,55=MT,05=55
7/9EQUIP,56=MT  (Mount release tape on logical unit 56)
7/9LOAD,56
7/9RUN
77/88end-of-file
```

After overlay tape has been created, PERT Cost is loaded and then terminates with the following message:

```
T CONTROL CARD MISSING
```

PERT Cost processing can begin.

The following job structure is set up to execute a PERT Cost run.

```
7/9SEQUENCE,001
7/9JOB,,,,ND,NP
7/9EQUIP,05=MT  (Mount OVERLAY tape on logical unit 05)
7/9EQUIP,1=MT,2=MT,3=MT  (PERT work tapes)
```

```
.
.
.
        (binary PERT Cost main deck)
.
.
.
7
9RUN
.
.
        (PERT Cost control cards)
.
.
77
88end-of-file
```

The PERT Cost run must be run under the same library that created the overlay tape.

4.1 PRELIB SOURCE DECK LISTINGS

4.1.1 PRELIB SOURCE FOR STANDARD

```
                                                    PAGE  1
C.C.  SEQUENCE,002
C.C.  JOB,,,,,
C.C.  EQUIP,55=MT,05=55
C.C.  EQUIP,1=MT
C.C.  PRELIB,,1
C.C.  REPLACE
C.C.  RECORD,0
C.C.  ORIGIN,0
IDC   ZERO        PROG.LENGTH=00000
IDC   C10         PROG.LENGTH=01002
IDC   DRIVER01    PROG.LENGTH=00344
IDC   DRIVER01    PROG.LENGTH=00350
IDC   DRIVER02    PROG.LENGTH=00245
IDC   DRIVER02    PROG.LENGTH=00235
IDC   DRIVER03    PROG.LENGTH=00356
IDC   DRV512      PROG.LENGTH=00406
IDC   DRIVER04    PROG.LENGTH=00222
IDC   DRIVER04    PROG.LENGTH=00345
IDC   DRIVER05    PROG.LENGTH=00115
IDC   DRIVER11    PROG.LENGTH=00000
IDC   DRIVER12    PROG.LENGTH=00350
IDC   DRIV3691    PROG.LENGTH=00025
C.C.     R E P L A C E M E N T  -  I N S E R T  D E C K  O F  S C I C
C.C.  RECORD,START2
C.C.  ORIGIN,START2
IDC   RDUMP       PROG.LENGTH=00304
C.C.  RECORD,START2
C.C.  ORIGIN,START2
EAS   LBUF=START2
IDC   PRELOAD     PROG.LENGTH=11113
EAS   ENDPROT=POSTLOAD
C.C.  RECORD,START2
C.C.  ORIGIN,START2
IDC   CKREC       PROG.LENGTH=00000
EAS   CIOPCALL=ABNORMAL
IDC   LOADER      PROG.LENGTH=04716
C.C.  SEPOINT,BCDBUXS
C.C.  SEPOINT,FDPBUXS
C.C.  SEPOINT,ABNORMAL
C.C.  SEPOINT,ACCOUNTS
C.C.  SEPOINT,AET
C.C.  SEPOINT,BERRADD
C.C.  SEPOINT,BREXIT
C.C.  SEPOINT,BRRUNFLG
C.C.  SEPOINT,BNJ.
C.C.  SEPOINT,BRMT
C.C.  SEPOINT,C10
C.C.  SEPOINT,CIC3.01
C.C.  SEPOINT,CIP
C.C.  SEPOINT,CIT
C.C.  SEPOINT,CIT.RTM
C.C.  SEPOINT,CST
```

```
C.C.  SEPOINT,DINT.
C.C.  SEPOINT,EINT.
C.C.  SEPOINT,EST
C.C.  SEPOINT,GOFLG
C.C.  SEPOINT,LOADER
C.C.  SEPOINT,LOCS
C.C.  SEPOINT,MEMORY
C.C.  SEPOINT,MIBKADD
C.C.  SEPOINT,MIBUF
C.C.  SEPOINT,MIFORADD
C.C.  SEPOINT,NDEXIT
C.C.  SEPOINT,PERRADD
C.C.  SEPOINT,RDCKF1
C.C.  SEPOINT,RMI
C.C.  SEPOINT,RIO
C.C.  SEPOINT,START2
C.C.  SEPOINT,USI
C.C.  RECORD,LSTLGTH
C.C.  ORIGIN,LSTLGTH
IDC   OVPRO       PROG.LENGTH=02305
C.C.  RECORD,BINBUF
C.C.  ORIGIN,BINBUF
IDC   PROTECT     PROG.LENGTH=00275
IDC   POSTLOAD    PROG.LENGTH=03014
C.C.  RECORD,START2
C.C.  ORIGIN,START2
IDC   FIND        PROG.LENGTH=00002
IDC   RAAR        PROG.LENGTH=00040
IDC   SCAR        PROG.LENGTH=00340
IDC   MIWPR       PROG.LENGTH=00010
IDC   MIRPR       PROG.LENGTH=00020
IDC   MTLDACPR    PROG.LENGTH=00010
IDC   MIDER       PROG.LENGTH=00020
IDC   PRCPR       PROG.LENGTH=00016
IDC   CRDER       PROG.LENGTH=00041
IDC   CPDER       PROG.LENGTH=00113
IDC   MTWPRR      PROG.LENGTH=00335
IDC   MTRPRR      PROG.LENGTH=00214
IDC   MTLDCPRR    PROG.LENGTH=00123
IDC   CMNRTNS     PROG.LENGTH=00270
IDC   WHATISIT    PROG.LENGTH=00333
IDC   NRD         PROG.LENGTH=00122
IDC   NRC         PROG.LENGTH=00112
IDC   NWR         PROG.LENGTH=00054
IDC   T.NOTRDY    PROG.LENGTH=00032
IDC   TYPEOUT.    PROG.LENGTH=00207
IDC   WHATKIND    PROG.LENGTH=00037
IDC   PROGNAME    PROG.LENGTH=00004
C.C.  RECORD,START2
C.C.  ORIGIN,START2,3207
IDC   COMPASS     PROG.LENGTH=10107
C.C.  RECORD,START2
C.C.  ORIGIN,START2,10107
IDC   OVERLAY1    PROG.LENGTH=13145
C.C.  RECORD,START2
```

```
C.C.  ORIGIN,START2,10107
10C   PASSONE    PROG.LENGTH=16251
C.C.  RECORD,START2
C.C.  ORIGIN,START2,10107
10C   PASSTWO    PROG.LENGTH=16436
10C   SYMBLE     PROG.LENGTH=00001
C.C.  RECORD,START2
C.C.  ORIGIN,START2,10107
10C   CRT        PROG.LENGTH=12006
C.C.  RECORD,START2
C.C.  ORIGIN,START2,3207
10C   FTN1       PROG.LENGTH=17073
C.C.  RECORD,START2
C.C.  ORIGIN,START2,11234
10C   FTN2       PROG.LENGTH=16003
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4355
10C   FTN3       PROG.LENGTH=12056
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4355
10C   FTN4       PROG.LENGTH=16041
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4437
10C   FTN5       PROG.LENGTH=13403
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4437
10C   FTN6       PROG.LENGTH=11700
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4347
10C   FTNE       PROG.LENGTH=15222
C.C.  FILE
C.C.  REPLACE
C.C.  UNIT,55,RDUMP
C.C.  UNIT,55,PRELOAD
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
C.C.  UNIT,55,PROTECT
10C   COMPASSB   PROG.LENGTH=00052
LED   5501
C.C.  UNIT,55,PROTECT
C.C.  UNIT,55,FTN0
C.C.  UNIT,55,COMPASS
C.C.  UNIT,55,OVERLAY1
C.C.  UNIT,55,PASSONE
C.C.  UNIT,55,PASSTWO
C.C.  UNIT,55,CRT
10C   FORTRAN    PROG.LENGTH=00462
LED   5501,5601
C.C.  UNIT,55,PROTECT
C.C.  UNIT,55,FTN0
C.C.  UNIT,55,FTN1
C.C.  UNIT,55,FTN2
C.C.  UNIT,55,FTN3
C.C.  UNIT,55,FTN4
C.C.  UNIT,55,FTN5
```

```
C.C.  UNIT,55,FTN6
C.C.  UNIT,55,FTNE
IDC   COBOL       PROG.LENGTH=01201
LED   5401,5501
IDC   RAAR        PROG.LENGTH=00040
IDC   SCAR        PROG.LENGTH=00340
IDC   MTWPR       PROG.LENGTH=00010
IDC   MTRPR       PROG.LENGTH=00020
IDC   MTLDACPR    PROG.LENGTH=00010
IDC   MTDER       PROG.LENGTH=00020
IDC   PRCPR       PROG.LENGTH=00016
IDC   CRDER       PROG.LENGTH=00041
IDC   CPDER       PROG.LENGTH=00113
IDC   MTWPRR      PROG.LENGTH=00335
IDC   MTRPRR      PROG.LENGTH=00214
IDC   MTLDCPRR    PROG.LENGTH=00123
IDC   CMNRTNS     PROG.LENGTH=00270
IDC   WHATISIT    PROG.LENGTH=00333
IDC   NRD         PROG.LENGTH=00122
IDC   NRC         PROG.LENGTH=00112
IDC   NWR         PROG.LENGTH=00054
IDC   T.NOTRDY    PROG.LENGTH=00032
IDC   TYPEOUT.    PROG.LENGTH=00207
IDC   WHATKIND    PROG.LENGTH=00037
C.C.  UNIT,55,PROTECT
IDC   COBOLIE     PROG.LENGTH=06017
IDC   COBOLD1     PROG.LENGTH=06051
IDC   COBOLP1     PROG.LENGTH=05627
IDC   COBOLD2     PROG.LENGTH=03643
IDC   COBOLP2     PROG.LENGTH=05706
IDC   COBOLDP3    PROG.LENGTH=05155
C.C.  MACRO,COMAC
  MACRO   READS
  MACRO   WRITES
  MACRO   READB
  MACRO   REWIND
  MACRO   UNLOAD
  MACRO   BKSP
  MACRO   SEFF
  MACRO   SEFB
  MACRO   WEOF
  MACRO   ERASE
  MACRO   STATUS
  MACRO   FORMAT
  MACRO   TRANSMIT
  MACRO   EDIT.
  MACRO   COMPARE
  MACRO   MULTIPLY
  MACRO   DIVIDE
  MACRO   FILEDESC
  MACRO   LABELING
  MACRO   VARIABLE
  MACRO   STOPOPEN
  MACRO   READ
  MACRO   WRITE
```

```
   MACRO   RESERVE
   MACRO   OPEN
   MACRO   CLOSE
   MACRO   WHATKIND
   MACRO   LOWREJ
   MACRO   SCAR
   MACRO   SCARNM
   MACRO   LOWDATA
   MACRO   NRD
       END
C.C.   UNIT,55,PROTECT
C.C.   UNIT,55,PRELOAD
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
C.C.   UNIT,55,PROTECT
IDC   EXECOVR     PROG.LENGTH=00137
IDC   FLOVER      PROG.LENGTH=00230
IDC   BCDINP      PROG.LENGTH=01001
IDC   BCDOUT      PROG.LENGTH=01531
IDC   FORMAT      PROG.LENGTH=00334
IDC   BINARY      PROG.LENGTH=01006
IDC   BUFFER      PROG.LENGTH=00431
IDC   UNIT        PROG.LENGTH=00114
IDC   IOCHK       PROG.LENGTH=00050
IDC   EOFCHK      PROG.LENGTH=00055
IDC   TAPEHAND    PROG.LENGTH=00215
IDC   PAUSE       PROG.LENGTH=00051
IDC   CONTROL     PROG.LENGTH=00672
IDC   DOUBLE      PROG.LENGTH=01342
IDC   DFPRIME     PROG.LENGTH=01234
IDC   DFP         PROG.LENGTH=01203
IDC   QIQADRI     PROG.LENGTH=00101
IDC   IFOJ        PROG.LENGTH=00107
IDC   ITOX        PROG.LENGTH=00015
IDC   XTOI        PROG.LENGTH=00227
IDC   POWRF       PROG.LENGTH=00352
IDC   SINCOS      PROG.LENGTH=00313
IDC   ATANF       PROG.LENGTH=00141
IDC   EXPF        PROG.LENGTH=00131
IDC   LOGF        PROG.LENGTH=00202
IDC   SIGNF       PROG.LENGTH=00015
IDC   SQRTF       PROG.LENGTH=00110
IDC   ABSF        PROG.LENGTH=00010
IDC   EXTREMA1    PROG.LENGTH=00102
IDC   EXTREMA2    PROG.LENGTH=00056
IDC   FLOATF      PROG.LENGTH=00027
IDC   FIXF        PROG.LENGTH=00050
IDC   MASKINGF    PROG.LENGTH=00041
IDC   FAULTS      PROG.LENGTH=00034
IDC   SENSLITE    PROG.LENGTH=00100
IDC   SENSWTCH    PROG.LENGTH=00001
IDC   Q6QERROR    PROG.LENGTH=00173
IDC   RAAR        PROG.LENGTH=00040
IDC   SCAR        PROG.LENGTH=00340
IDC   MTWPR       PROG.LENGTH=00010
```

```
IDC   MTRPR       PROG.LENGTH=00020
IDC   MTLDACPR    PROG.LENGTH=00010
IDC   MTDER       PROG.LENGTH=00020
IDC   PRCPR       PROG.LENGTH=00016
IDC   CRDER       PROG.LENGTH=00041
IDC   CPDER       PROG.LENGTH=00113
IDC   MTWPRR      PROG.LENGTH=00335
IDC   MTRPRR      PROG.LENGTH=00214
IDC   MTLDCPRR    PROG.LENGTH=00123
IDC   CMNRTNS     PROG.LENGTH=00270
IDC   WHATISIT    PROG.LENGTH=00353
IDC   NRD         PROG.LENGTH=00122
IDC   NRC         PROG.LENGTH=00112
IDC   NWR         PROG.LENGTH=00054
IDC   T.NOTRDY    PROG.LENGTH=00032
IDC   TYPEOUT.    PROG.LENGTH=00207
IDC   WHATKIND    PROG.LENGTH=00037
IDC   FDPBOXS     PROG.LENGTH=01155
IDC   OPTBOXS     PROG.LENGTH=00055
IDC   BCDBOXS     PROG.LENGTH=00442
C.C.  UNIT,55,PROTECT
IDC   RESTART     PROG.LENGTH=03300
IDC   ERRSTOP     PROG.LENGTH=00027
IDC   OPENINPT    PROG.LENGTH=00006
IDC   OPENOTPT    PROG.LENGTH=00006
IDC   READ        PROG.LENGTH=00004
IDC   WRITE       PROG.LENGTH=00004
IDC   READI       PROG.LENGTH=00004
IDC   WRITEF      PROG.LENGTH=00004
IDC   EXAMINE     PROG.LENGTH=00111
IDC   SUBSCRP     PROG.LENGTH=00043
IDC   ACCEPT      PROG.LENGTH=00131
IDC   DISPLAY     PROG.LENGTH=00222
IDC   CONVERT     PROG.LENGTH=00153
IDC   GPIOMAST    PROG.LENGTH=01661
IDC   CLOSE       PROG.LENGTH=00166
IDC   STACKING    PROG.LENGTH=00702
IDC   RERUN       PROG.LENGTH=00271
IDC   MBRDLABS    PROG.LENGTH=00152
IDC   LABLAREA    PROG.LENGTH=00024
IDC   MBWTBSTL    PROG.LENGTH=00075
IDC   MBRDBNSL    PROG.LENGTH=00023
IDC   WRTBNSL     PROG.LENGTH=00020
IDC   MBVARREC    PROG.LENGTH=00034
IDC   MBRMSRCH    PROG.LENGTH=00031
IDC   MBSAPROC    PROG.LENGTH=00032
IDC   MBMFPROC    PROG.LENGTH=00042
IDC   MBMFIN      PROG.LENGTH=00042
IDC   MBMFOUT     PROG.LENGTH=00016
IDC   JVCOM2      PROG.LENGTH=00012
IDC   JVNOALT     PROG.LENGTH=00110
IDC   MBOPTFIL    PROG.LENGTH=00025
IDC   TRANSMIT    PROG.LENGTH=00103
IDC   FIGCON      PROG.LENGTH=00033
IDC   COMPARE     PROG.LENGTH=00106
```

```
IDC   EDIT        PROG.LENGTH=00105
IDC   EDITCOBL    PROG.LENGTH=00253
IDC   MULTIPLY    PROG.LENGTH=00002
IDC   DIVIDE      PROG.LENGTH=00007
IDC   BMULTPLY    PROG.LENGTH=00055
IDC   BDIVIDE     PROG.LENGTH=00053
IDC   DPMULDIV    PROG.LENGTH=00570
IDC   STRIPPER    PROG.LENGTH=00235
IDC   BSTRIPPR    PROG.LENGTH=00311
IDC   DEEDIT      PROG.LENGTH=00120
IDC   NUMERIC     PROG.LENGTH=00030
IDC   ALPHABET    PROG.LENGTH=00031
IDC   MVFIGCON    PROG.LENGTH=00025
IDC   VARC1       PROG.LENGTH=00054
IDC   VARN        PROG.LENGTH=00051
IDC   VARAN       PROG.LENGTH=00104
IDC   ROUNDER     PROG.LENGTH=00006
IDC   CONVERT     PROG.LENGTH=00153
IDC   ZIPPER      PROG.LENGTH=00103
IDC   FDPBOXS     PROG.LENGTH=01155
IDC   OPTBOXS     PROG.LENGTH=00035
IDC   BCDBOXS     PROG.LENGTH=00442
IDC   SORT        PROG.LENGTH=00540
IDC   SDUMP       PROG.LENGTH=00135
IDC   BINANDEC    PROG.LENGTH=00070
IDC   SRTPRINT    PROG.LENGTH=00243
IDC   WAITBEEP    PROG.LENGTH=00035
IDC   RAAR        PROG.LENGTH=00040
IDC   SCAR        PROG.LENGTH=00340
IDC   MTWPR       PROG.LENGTH=00010
IDC   MTRPR       PROG.LENGTH=00020
IDC   MTLDACPR    PROG.LENGTH=00010
IDC   MTDER       PROG.LENGTH=00020
IDC   PRCPR       PROG.LENGTH=00016
IDC   CRDER       PROG.LENGTH=00041
IDC   CPDER       PROG.LENGTH=00113
IDC   MTWPRR      PROG.LENGTH=00335
IDC   MTRPRR      PROG.LENGTH=00214
IDC   MTLDCPRR    PROG.LENGTH=00123
IDC   CMNRTNS     PROG.LENGTH=00270
IDC   WHATISIT    PROG.LENGTH=00333
IDC   NRD         PROG.LENGTH=00122
IDC   NRC         PROG.LENGTH=00112
IDC   NWR         PROG.LENGTH=00034
IDC   T.NOTRDY    PROG.LENGTH=00032
IDC   TYPEOUT.    PROG.LENGTH=00207
IDC   WHATKIND    PROG.LENGTH=00037
C.C.   UNIT,55,PROTECT
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
IDC   RESTART1    PROG.LENGTH=00123
IDC   SRESTART    PROG.LENGTH=01137
IDC   SORTIOP2    PROG.LENGTH=04300
IDC   SDUMP       PROG.LENGTH=00135
IDC   BINANDEC    PROG.LENGTH=00070
```

```
IDC  SRTPRINT  PROG.LENGTH=00243
IDC  SRTEQUAL  PROG.LENGTH=00245
IDC  WAITBEEP  PROG.LENGTH=00055
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
IDC  SORTEDIT  PROG.LENGTH=07775
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
IDC  SORTDUMY  PROG.LENGTH=00076
IDC  SORTPOLY  PROG.LENGTH=00251
IDC  SORTIOP1  PROG.LENGTH=02036
IDC  SORTPHS1  PROG.LENGTH=02172
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
IDC  SRTMBALF  PROG.LENGTH=00007
IDC  SRTMBALB  PROG.LENGTH=00007
IDC  SRTMPOLF  PROG.LENGTH=00007
IDC  SRTMPOLB  PROG.LENGTH=00007
IDC  SRTRBALB  PROG.LENGTH=00003
IDC  SRTRBALF  PROG.LENGTH=00003
IDC  SRTRPOLF  PROG.LENGTH=00003
IDC  SRTRPOLB  PROG.LENGTH=00003
IDC  SORTIOP2  PROG.LENGTH=04300
IDC  SRESTART  PROG.LENGTH=01137
IDC  SRTEQUAL  PROG.LENGTH=00245
IDC  BALCFORW  PROG.LENGTH=02277
IDC  BALCBACK  PROG.LENGTH=02470
IDC  POLYFORW  PROG.LENGTH=02100
IDC  POLYBACK  PROG.LENGTH=02300
C.C.  UNIT,55,PROTECT
IDC  SIPP      PROG.LENGTH=06107
IDC  BSIPP     PROG.LENGTH=11207
IDC  SAINT     PROG.LENGTH=04003
IDC  IOPACK    PROG.LENGTH=00403
IDC  IODRAIN   PROG.LENGTH=00024
IDC  SNAPSHOT  PROG.LENGTH=01450
IDC  COSY      PROG.LENGTH=05131
IDC  COSYROWT  PROG.LENGTH=01507
MAIN  55
IDC  PRELIB    PROG.LENGTH=00623
IDC  RAAR      PROG.LENGTH=00040
IDC  SCAR      PROG.LENGTH=00340
IDC  MTWPR     PROG.LENGTH=00010
IDC  MTRPR     PROG.LENGTH=00020
IDC  MTLDACPR  PROG.LENGTH=00010
IDC  MTDER     PROG.LENGTH=00020
IDC  PRCPR     PROG.LENGTH=00016
IDC  CRDER     PROG.LENGTH=00041
IDC  CPDER     PROG.LENGTH=00113
IDC  MTWPRR    PROG.LENGTH=00335
IDC  MTRPRR    PROG.LENGTH=00214
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IDC   MILOCPRR   PROG.LENGTH=00123
IDC   CMNRTNS    PROG.LENGTH=00270
IDC   WHATISIT   PROG.LENGTH=00333
IDC   NRD        PROG.LENGTH=00122
IDC   NRC        PROG.LENGTH=00112
IDC   NWR        PROG.LENGTH=00034
IDC   T.NOTRDY   PROG.LENGTH=00032
IDC   TYPEOUT.   PROG.LENGTH=00207
IDC   WHATKIND   PROG.LENGTH=00037
IDC   PRELIB     PROG.LENGTH=00000
OV     55,1,S              OVERLAY 1
IDC   PLOVINT    PROG.LENGTH=00536
OV     55,2,S              OVERLAY 2
IDC   OV1        PROG.LENGTH=02132
SEG    55,1,S              SEGMENT 1
IDC   PHASE1     PROG.LENGTH=01401
SEG    55,2,S              SEGMENT 2
IDC   PHASE2     PROG.LENGTH=00304
OV     55,3,S              OVERLAY 3
IDC   DEBLOCK    PROG.LENGTH=00107
OV     55,4,S              OVERLAY 4
IDC   PLOV2      PROG.LENGTH=04103
MAIN  55
IDC   RGMAIN     PROG.LENGTH=00156
OV     55,1,S
IDC   RGOV1      PROG.LENGTH=03015
SEG    55,1,S
IDC   RGFILE     PROG.LENGTH=05056
SEG    55,2,S
IDC   RGREPORT   PROG.LENGTH=05344
SEG    55,3,S
IDC   RGPRO      PROG.LENGTH=05007
OV     55,2,S
IDC   RGCOMP     PROG.LENGTH=03240
SEG    55,1,S
IDC   RGPONE     PROG.LENGTH=04751
SEG    55,2,S
IDC   RGPTWO     PROG.LENGTH=05504
SEG    55,3,S
IDC   RGCRT      PROG.LENGTH=01673
IDC   RGRTS      PROG.LENGTH=00002
C.C.  UNIT,55,PROTECT
IDC   RGACCEPT   PROG.LENGTH=00171
IDC   RGO        PROG.LENGTH=12057
C.C.  UNIT,55,PROTECT
C.C.  UNIT,55,PRELOAD
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
C.C.  UNIT,55,PROTECT
IDC   FDPBOXS    PROG.LENGTH=01155
IDC   OPTBOXS    PROG.LENGTH=00055
IDC   BCDBOXS    PROG.LENGTH=00442
IDC   UTILITY    PROG.LENGTH=05206
IDC   CIO1       PROG.LENGTH=00001
C.C.  UNIT,55,PROTECT
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 IUC  COPYS      PROG.LENGTH=00465
 IUC  COPYT      PROG.LENGTH=00675
 IUC  VERIFY     PROG.LENGTH=01123
 IUC  DUMP       PROG.LENGTH=00457
 IUC  COPYWS     PROG.LENGTH=01035
 IUC  CUPYTSW    PROG.LENGTH=00734
 IUC  ERROR      PROG.LENGTH=00274
 C.C.  UNIT,55,PROTECT
 C.C.  FILE
EOF
```

4.1.2 PRELIB SOURCE FOR BATCH


```
C.C.  SEQUENCE,003
C.C.  JOB,,,,,
C.C.  EQUIP,55=MT,05=55
C.C.  EQUIP,1=MT
C.C.  PRELIB,,1
C.C.  REPLACE
C.C.  RECORD,0
C.C.  ORIGIN,0
IDC   ZERO       PROG.LENGTH=00060
IDC   BCIO       PROG.LENGTH=01540
IDC   DRIVER01   PROG.LENGTH=00344
IDC   DRIVER01   PROG.LENGTH=00330
IDC   DRIVER02   PROG.LENGTH=00245
IDC   DRIVER02   PROG.LENGTH=00235
IDC   DRIVER03   PROG.LENGTH=00356
IDC   DRV512     PROG.LENGTH=00406
IDC   DRIVER04   PROG.LENGTH=00222
IDC   DRIVER04   PROG.LENGTH=00345
IDC   DRIVER05   PROG.LENGTH=00115
IDC   DRIVER11   PROG.LENGTH=00060
IDC   DRIVER12   PROG.LENGTH=00330
IDC   DRIV3691   PROG.LENGTH=00025
C.C.       R E P L A C E M E N T  -  I N S E R T  D E C K  O F  B C I
C.C.  RECORD,START2
C.C.  ORIGIN,START2
IDC   RDUMP      PROG.LENGTH=00564
C.C.  RECORD,START2
C.C.  ORIGIN,START2
EXS   LBUF=START2
IDC   PRELOAD    PROG.LENGTH=11113
EXS   ENDPROT=POSTLOAD
C.C.  RECORD,START2
C.C.  ORIGIN,START2
IDC   CKREC      PROG.LENGTH=00000
EXS   CIOPCALL=ABNORMAL
IDC   LOADER     PROG.LENGTH=04716
C.C.  SEPOINT,BCDBOXS
C.C.  SEPOINT,FDPBOXS
C.C.  SEPOINT,ABNORMAL
C.C.  SEPOINT,ACCOUNTS
C.C.  SEPOINT,AET
C.C.  SEPOINT,BERRADD
C.C.  SEPOINT,BKEXIT
C.C.  SEPOINT,BKRUNFLG
C.C.  SEPOINT,BNJ.
C.C.  SEPOINT,BRHT
C.C.  SEPOINT,CIO
C.C.  SEPOINT,CIC3.01
C.C.  SEPOINT,CIP
C.C.  SEPOINT,CIT
C.C.  SEPOINT,CIT.RTM
C.C.  SEPOINT,CST
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C.C.  SEPOINT,DINT.
C.C.  SEPOINT,EINT.
C.C.  SEPOINT,EST
C.C.  SEPOINT,GOFLG
C.C.  SEPOINT,LOADER
C.C.  SEPOINT,LOCS
C.C.  SEPOINT,MEMORY
C.C.  SEPOINT,MIBRADD
C.C.  SEPOINT,MIBUF
C.C.  SEPOINT,MIFURADD
C.C.  SEPOINT,NDEXIT
C.C.  SEPOINT,PERRADD
C.C.  SEPOINT,RDCKF1
C.C.  SEPOINT,RHI
C.C.  SEPOINT,RIO
C.C.  SEPOINT,START2
C.C.  SEPOINT,UST
C.C.  RECORD,LSTLGTH
C.C.  ORIGIN,LSTLGTH
IDC  OVPRO      PROG.LENGTH=02305
C.C.  RECORD,BINBUF
C.C.  ORIGIN,BINBUF
IDC  PROTECT    PROG.LENGTH=00275
IDC  POSTLOAD   PROG.LENGTH=03014
C.C.  RECORD,START2
C.C.  ORIGIN,START2
IDC  FIND       PROG.LENGTH=00002
IDC  RAAR       PROG.LENGTH=00040
IDC  SCAR       PROG.LENGTH=00340
IDC  MTWPR      PROG.LENGTH=00010
IDC  MTRPR      PROG.LENGTH=00020
IDC  MTLOACPR   PROG.LENGTH=00010
IDC  MTDER      PROG.LENGTH=00020
IDC  PRCPR      PROG.LENGTH=00016
IDC  CRDER      PROG.LENGTH=00041
IDC  CPDER      PROG.LENGTH=00113
IDC  MTWPRR     PROG.LENGTH=00335
IDC  MTRPRR     PROG.LENGTH=00214
IDC  MTLOCPRR   PROG.LENGTH=00123
IDC  CMNRTNS    PROG.LENGTH=00270
IDC  WHATISIT   PROG.LENGTH=00333
IDC  NRD        PROG.LENGTH=00122
IDC  NRC        PROG.LENGTH=00112
IDC  NWR        PROG.LENGTH=00054
IDC  T.NOTRDY   PROG.LENGTH=00032
IDC  TYPEOUT.   PROG.LENGTH=00207
IDC  WHATKIND   PROG.LENGTH=00037
IDC  PROGNAME   PROG.LENGTH=00004
C.C.  RECORD,START2
C.C.  ORIGIN,START2,3207
IDC  COMPASS    PROG.LENGTH=10107
C.C.  RECORD,START2
C.C.  ORIGIN,START2,10107
IDC  OVERLAY1   PROG.LENGTH=13145
C.C.  RECORD,START2
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C.C.  ORIGIN,START2,10107
IDC   PASSONE    PROG.LENGTH=16251
C.C.  RECORD,START2
C.C.  ORIGIN,START2,10107
IDC   PASSTWO    PROG.LENGTH=16406
IDC   SYMTBLE    PROG.LENGTH=00001
C.C.  RECORD,START2
C.C.  ORIGIN,START2,10107
IDC   CRT        PROG.LENGTH=12006
C.C.  RECORD,START2
C.C.  ORIGIN,START2,3207
IDC   FTN1       PROG.LENGTH=17073
C.C.  RECORD,START2
C.C.  ORIGIN,START2,11234
IDC   FTN2       PROG.LENGTH=16003
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4355
IDC   FTN3       PROG.LENGTH=12056
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4355
IDC   FTN4       PROG.LENGTH=16041
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4437
IDC   FTN5       PROG.LENGTH=13405
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4437
IDC   FTN6       PROG.LENGTH=11700
C.C.  RECORD,START2
C.C.  ORIGIN,START2,4347
IDC   FTNE       PROG.LENGTH=15222
C.C.  FILE
C.C.  REPLACE
C.C.  UNIT,55,RDUMP
C.C.  UNIT,55,PRELOAD
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
C.C.  UNIT,55,PROTECT
IDC   COMPASSB   PROG.LENGTH=00052
LED   5501
C.C.  UNIT,55,PROTECT
C.C.  UNIT,55,FTN0
C.C.  UNIT,55,COMPASS
C.C.  UNIT,55,OVERLAY1
C.C.  UNIT,55,PASSONE
C.C.  UNIT,55,PASSTWO
C.C.  UNIT,55,CRT
IDC   FORTRAN    PROG.LENGTH=00402
LED   5501,5601
C.C.  UNIT,55,PROTECT
C.C.  UNIT,55,FTN0
C.C.  UNIT,55,FTN1
C.C.  UNIT,55,FTN2
C.C.  UNIT,55,FTN3
C.C.  UNIT,55,FTN4
C.C.  UNIT,55,FTN5
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C.C.  UNIT,55,FTN6
C.C.  UNIT,55,FTNE
IDC   COBOL       PROG.LENGTH=01201
LED    5401,5501
IDC   RAAR        PROG.LENGTH=00040
IDC   SCAR        PROG.LENGTH=00340
IDC   MTWPR       PROG.LENGTH=00010
IDC   MTRPR       PROG.LENGTH=00020
IDC   MTLDACPR    PROG.LENGTH=00010
IDC   MTDER       PROG.LENGTH=00020
IDC   PRCPR       PROG.LENGTH=00015
IDC   CRDER       PROG.LENGTH=00041
IDC   CPDER       PROG.LENGTH=00113
IDC   MTWPRR      PROG.LENGTH=00355
IDC   MTRPRR      PROG.LENGTH=00214
IDC   MTLDCPRR    PROG.LENGTH=00123
IDC   CMNRTNS     PROG.LENGTH=00270
IDC   WHATISIT    PROG.LENGTH=00333
IDC   NRD         PROG.LENGTH=00122
IDC   NRC         PROG.LENGTH=00112
IDC   NWR         PROG.LENGTH=00054
IDC   T.NOTRDY.   PROG.LENGTH=00032
IDC   TYPEOUT.    PROG.LENGTH=00207
IDC   WHATKIND    PROG.LENGTH=00037
C.C.  UNIT,55,PROTECT
IDC   COBOLIE     PROG.LENGTH=06017
IDC   COBOLD1     PROG.LENGTH=06051
IDC   COBOLP1     PROG.LENGTH=05027
IDC   COBOLD2     PROG.LENGTH=03643
IDC   COBOLP2     PROG.LENGTH=05766
IDC   COBOLDP3    PROG.LENGTH=05155
C.C.  MACRO,COMAC
  MACRO   READS
  MACRO   WRITES
  MACRO   READB
  MACRO   REWIND
  MACRO   UNLOAD
  MACRO   BKSP
  MACRO   SEFF
  MACRO   SEFB
  MACRO   WEOF
  MACRO   ERASE
  MACRO   STATUS
  MACRO   FORMAT
  MACRO   TRANSMIT
  MACRO   EDIT.
  MACRO   COMPARE
  MACRO   MULTIPLY
  MACRO   DIVIDE
  MACRO   FILEDESC
  MACRO   LABELING
  MACRO   VARIABLE
  MACRO   STOPOPEN
  MACRO   READ
  MACRO   WRITE
```

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  MACRO   RESERVE
  MACRO   OPEN
  MACRO   CLOSE
  MACRO   WHATKIND
  MACRO   LOWREJ
  MACRO   SCAR
  MACRO   SCARNM
  MACRO   LOWDATA
  MACRO   NRO
      END
C.C.  UNIT,55,PROTECT
C.C.  UNIT,55,PRELOAD
C.C.  UNIT,55,CKREC
C.C.  UNIT,55,OVPRO
C.C.  UNIT,55,PROTECT
IOC   EXECOVR    PROG.LENGTH=00137
IOC   FLOVER     PROG.LENGTH=00230
IOC   BCDINP     PROG.LENGTH=01001
IOC   BCDOUT     PROG.LENGTH=01331
IOC   FORMAT     PROG.LENGTH=00354
IOC   BINARY     PROG.LENGTH=01006
IOC   BUFFER     PROG.LENGTH=00431
IOC   UNIT       PROG.LENGTH=00114
IOC   IOCHK      PROG.LENGTH=00050
IOC   EOFCHK     PROG.LENGTH=00055
IOC   TAPEHAND   PROG.LENGTH=00215
IOC   PAUSE      PROG.LENGTH=00051
IOC   CONTROL    PROG.LENGTH=00572
IOC   DOUBLE     PROG.LENGTH=01342
IOC   DFPRIME    PROG.LENGTH=01254
IOC   DFP        PROG.LENGTH=01203
IOC   QIQADR1    PROG.LENGTH=00101
IOC   ITOJ       PROG.LENGTH=00107
IOC   ITOX       PROG.LENGTH=00015
IOC   XTOI       PROG.LENGTH=00227
IOC   POWRF      PROG.LENGTH=00352
IOC   SINCOS     PROG.LENGTH=00313
IOC   ATANF      PROG.LENGTH=00141
IOC   EXPF       PROG.LENGTH=00131
IOC   LOGF       PROG.LENGTH=00202
IOC   SIGNF      PROG.LENGTH=00015
IOC   SQRTF      PROG.LENGTH=00110
IOC   ABSF       PROG.LENGTH=00010
IOC   EXTREMA1   PROG.LENGTH=00102
IOC   EXTREMA2   PROG.LENGTH=00006
IOC   FLOATF     PROG.LENGTH=00027
IOC   FIXF       PROG.LENGTH=00050
IOC   MASKINGF   PROG.LENGTH=00041
IOC   FAULTS     PROG.LENGTH=00034
IOC   SENSLITE   PROG.LENGTH=00100
IOC   SENSWTCH   PROG.LENGTH=00051
IOC   QBQERROR   PROG.LENGTH=00173
IOC   RAAR       PROG.LENGTH=00040
IOC   SCAR       PROG.LENGTH=00340
IOC   MTWPR      PROG.LENGTH=00010
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IOC   MTRPR       PROG.LENGTH=00020
IOC   MTLOACPR    PROG.LENGTH=00010
IOC   MTOER       PROG.LENGTH=00020
IOC   PRCPR       PROG.LENGTH=00016
IOC   CROER       PROG.LENGTH=00041
IOC   CPOER       PROG.LENGTH=00113
IOC   MTWPRR      PROG.LENGTH=00335
IOC   MTRPRR      PROG.LENGTH=00214
IOC   MTLOCPRR    PROG.LENGTH=00123
IOC   CMNRTNS     PROG.LENGTH=00270
IOC   WHATISIT    PROG.LENGTH=00333
IOC   NRO         PROG.LENGTH=00122
IOC   NRC         PROG.LENGTH=00112
IOC   NWR         PROG.LENGTH=00054
IOC   T.NOTRDY    PROG.LENGTH=00032
IOC   TYPEOUT.    PROG.LENGTH=00207
IOC   WHATKIND    PROG.LENGTH=00037
IOC   FOPBOXS     PROG.LENGTH=01155
IOC   OPTBOXS     PROG.LENGTH=00055
IOC   BCDBOXS     PROG.LENGTH=00442
C.C.   UNIT,55,PROTECT
IOC   RESTART     PROG.LENGTH=03300
IOC   ERRSTOP     PROG.LENGTH=00027
IOC   OPENINPT    PROG.LENGTH=00006
IOC   OPENOUPT    PROG.LENGTH=00006
IOC   READ        PROG.LENGTH=00004
IOC   WRITE       PROG.LENGTH=00004
IOC   READI       PROG.LENGTH=00004,
IOC   WRITEF      PROG.LENGTH=00004
IOC   EXAMINE     PROG.LENGTH=00111
IOC   SUBSCRP     PROG.LENGTH=00043
IOC   ACCEPT      PROG.LENGTH=00131
IOC   DISPLAY     PROG.LENGTH=00222
IOC   CONVERT     PROG.LENGTH=00153
IOC   GPIOMAST    PROG.LENGTH=01601
IOC   CLOSE       PROG.LENGTH=00106
IOC   STACKING    PROG.LENGTH=00702
IOC   RERUN       PROG.LENGTH=00271
IOC   MBRDLABS    PROG.LENGTH=00152
IOC   LABLAREA    PROG.LENGTH=00024
IOC   MBWTBSTL    PROG.LENGTH=00075
IOC   MBRDBNSL    PROG.LENGTH=00023
IOC   WRTBNSL     PROG.LENGTH=00020
IOC   MBVARREC    PROG.LENGTH=00034
IOC   MBRMSRCH    PROG.LENGTH=00031
IOC   MBSAPROC    PROG.LENGTH=00032
IOC.  MBMFPROC    PROG.LENGTH=00042
IOC   MBMFIN      PROG.LENGTH=00042
IOC   MBMFOUT     PROG.LENGTH=00010
IOC   JVCOM2      PROG.LENGTH=00012
IOC   JVNOALT     PROG.LENGTH=00110
IOC   MBOPTFIL    PROG.LENGTH=00025
IOC   TRANSMIT    PROG.LENGTH=00103
IOC   FIGCON      PROG.LENGTH=00033
IOC   COMPARE     PROG.LENGTH=00106
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IDC   EDIT        PROG.LENGTH=00105
IDC   EDITCOBL    PROG.LENGTH=00233
IDC   MULTIPLY    PROG.LENGTH=00002
IDC   DIVIDE      PROG.LENGTH=00007
IDC   BMULTPLY    PROG.LENGTH=00035
IDC   BDIVIDE     PROG.LENGTH=00033
IDC   DPMULDIV    PROG.LENGTH=00570
IDC   STRIPPER    PROG.LENGTH=00235
IDC   BSTRIPPR    PROG.LENGTH=00311
IDC   DEEDIT      PROG.LENGTH=00120
IDC   NUMERIC     PROG.LENGTH=00030
IDC   ALPHABET    PROG.LENGTH=00031
IDC   MVFIGCON    PROG.LENGTH=00025
IDC   VARC1       PROG.LENGTH=00034
IDC   VARN        PROG.LENGTH=00031
IDC   VARAN       PROG.LENGTH=00104
IDC   ROUNDER     PROG.LENGTH=00006
IDC   CONVERT     PROG.LENGTH=00153
IDC   ZIPPER      PROG.LENGTH=00103
IDC   FDPBOXS     PROG.LENGTH=01155
IDC   OPTBOXS     PROG.LENGTH=00035
IDC   BCDBOXS     PROG.LENGTH=00442
IDC   SORT        PROG.LENGTH=00340
IDC   SDUMP       PROG.LENGTH=00135
IDC   BINANDEC    PROG.LENGTH=00070
IDC   SRTPRINT    PROG.LENGTH=00243
IDC   WAITBEEP    PROG.LENGTH=00035
IDC   RAAR        PROG.LENGTH=00040
IDC   SCAR        PROG.LENGTH=00340
IDC   MTWPR       PROG.LENGTH=00010
IDC   MTRPR       PROG.LENGTH=00020
IDC   MTLDACPR    PROG.LENGTH=00010
IDC   MTDER       PROG.LENGTH=00020
IDC   PRCPR       PROG.LENGTH=00016
IDC   CRDER       PROG.LENGTH=00041
IDC   CPDER       PROG.LENGTH=00113
IDC   MTWPRR      PROG.LENGTH=00335
IDC   MTRPRR      PROG.LENGTH=00214
IDC   MTLDCPRR    PROG.LENGTH=00123
IDC   CMNRTNS     PROG.LENGTH=00270
IDC   WHATISIT    PROG.LENGTH=00333
IDC   NRD         PROG.LENGTH=00122
IDC   NRC         PROG.LENGTH=00112
IDC   NWR         PROG.LENGTH=00054
IDC   T.NOTRDY    PROG.LENGTH=00032
IDC   TYPEOUT.    PROG.LENGTH=00207
IDC   WHATKIND    PROG.LENGTH=00037
C.C.   UNIT,55,PROTECT
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
IDC   RESTART1    PROG.LENGTH=00123
IDC   SRESTART    PROG.LENGTH=01137
IDC   SORTIOP2    PROG.LENGTH=04300
IDC   SDUMP       PROG.LENGTH=00135
IDC   BINANDEC    PROG.LENGTH=00070
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IOC   SRTPRINT  PROG.LENGTH=00243
IOC   SRTEQUAL  PROG.LENGTH=00245
IOC   WAITBEEP  PROG.LENGTH=00055
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
IOC   SORTEDIT  PROG.LENGTH=07775
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
IOC   SORTPDMY  PROG.LENGTH=00076
IOC   SORTPOLY  PROG.LENGTH=00251
IOC   SORTIOP1  PROG.LENGTH=02036
IOC   SORTPHS1  PROG.LENGTH=02172
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
IOC   SRTMBALF  PROG.LENGTH=00007
IOC   SRTMBALB  PROG.LENGTH=00007
IOC   SRTMPOLF  PROG.LENGTH=00007
IOC   SRTMPOLB  PROG.LENGTH=00007
IOC   SRTRBALB  PROG.LENGTH=00003
IOC   SRTRBALF  PROG.LENGTH=00003
IOC   SRTRPOLF  PROG.LENGTH=00003
IOC   SRTRPOLB  PROG.LENGTH=00003
IOC   SORTIOP2  PROG.LENGTH=04300
IOC   SRESTART  PROG.LENGTH=01137
IOC   SRTEQUAL  PROG.LENGTH=00245
IOC   BALCFORW  PROG.LENGTH=02277
IOC   BALCBACK  PROG.LENGTH=02470
IOC   POLYFORW  PROG.LENGTH=02100
IOC   POLYBACK  PROG.LENGTH=02300
C.C.   UNIT,55,PROTECT
IOC   SIPP      PROG.LENGTH=06167
IOC   SAINT     PROG.LENGTH=04603
IOC   IOPACK    PROG.LENGTH=00403
IOC   IODRAIN   PROG.LENGTH=00024
IOC   SNAPSHOT  PROG.LENGTH=01450
IOC   COSY      PROG.LENGTH=05131
IOC   COSYRDWT  PROG.LENGTH=01507
MAIN  55
IOC   PRELIB    PROG.LENGTH=00623
IOC   RAAR      PROG.LENGTH=00040
IOC   SCAR      PROG.LENGTH=00340
IOC   MTWPR     PROG.LENGTH=00010
IOC   MTRPR     PROG.LENGTH=00020
IOC   MTLDACPR  PROG.LENGTH=00010
IOC   MTDER     PROG.LENGTH=00020
IOC   PRCPR     PROG.LENGTH=00016
IOC   CRDER     PROG.LENGTH=00041
IOC   CPDER     PROG.LENGTH=00113
IOC   MTWPRR    PROG.LENGTH=00335
IOC   MTRPRR    PROG.LENGTH=00214
IOC   MTLDCPRR  PROG.LENGTH=00123
```

```
IDC   CMNRTNS    PROG.LENGTH=00270
IDC   WHATISIT   PROG.LENGTH=00333
IDC   NRD        PROG.LENGTH=00122
IDC   NRC        PROG.LENGTH=00112
IDC   NWR        PROG.LENGTH=00054
IDC   T.NOTRDY   PROG.LENGTH=00032
IDC   TYPEOUT.   PROG.LENGTH=00207
IDC   WHATKIND   PROG.LENGTH=00037
IDC   PRELIB     PROG.LENGTH=00000
OV     55,1,S              OVERLAY 1
IDC   PLOVINT    PROG.LENGTH=00536
OV     55,2,S              OVERLAY 2
IDC   OV1        PROG.LENGTH=02132
SEG    55,1,S              SEGMENT 1
IDC   PHASE1     PROG.LENGTH=01401
SEG    55,2,S              SEGMENT 2
IDC   PHASE2     PROG.LENGTH=00564
OV     55,3,S              OVERLAY 3
IDC   DEBLOCK    PROG.LENGTH=00107
OV     55,4,S              OVERLAY 4
IDC   PLOV2      PROG.LENGTH=04103
MAIN  55
IDC   RGMAIN     PROG.LENGTH=00156
OV     55,1,S
IDC   RGOV1      PROG.LENGTH=03015
SEG    55,1,S
IDC   RGFILE     PROG.LENGTH=05056
SEG    55,2,S
IDC   RGREPORT   PROG.LENGTH=05344
SEG    55,3,S
IDC   RGPRO      PROG.LENGTH=05007
OV     55,2,S
IDC   RGCOMP     PROG.LENGTH=03240
SEG    55,1,S
IDC   RGPONE     PROG.LENGTH=04751
SEG    55,2,S
IDC   RGPTWO     PROG.LENGTH=05564
SEG    55,3,S
IDC   RGCRT      PROG.LENGTH=01673
IDC   RGRTS      PROG.LENGTH=00002
C.C.  UNIT,55,PROTECT
IDC   RGACCEPT   PROG.LENGTH=00171
IDC   RGO        PROG.LENGTH=12057
C.C.   UNIT,55,PROTECT
C.C.   UNIT,55,PRELOAD
C.C.   UNIT,55,CKREC
C.C.   UNIT,55,OVPRO
C.C.   UNIT,55,PROTECT
IDC   FDPBOXS    PROG.LENGTH=01155
IDC   OPTBOXS    PROG.LENGTH=00035
IDC   BCDBOXS    PROG.LENGTH=00442
IDC   UTILITY    PROG.LENGTH=05206
IDC   C101       PROG.LENGTH=00001
C.C.  UNIT,55,PROTECT
IDC   COPYS      PROG.LENGTH=00405
```

```
 10C  COPYT       PROG.LENGTH=00675
 10C  VERIFY      PROG.LENGTH=01123
 10C  DUMP        PROG.LENGTH=00457
 10C  COPYWS      PROG.LENGTH=01035
 10C  COPYTSU     PROG.LENGTH=00734
 10C  ERROR       PROG.LENGTH=00274
 C.C.  UNIT,55,PROTECT
 C.C.  FILE
EOF
```

4.1.3 PRELIB SOURCE FOR BDP


```
C.C.  SEQUENCE,004
C.C.  JOB,,,,
C.C.  EQUIP,55=MT,5=55
C.C.  EQUIP,10=MT
C.C.  PRELIB,,10
C.C.  FILE
C.C.  REPLACE,COBOL,COBOL
IDC   COBOL       PROG.LENGTH=01201
LED    5401,5501
C.C.  REPLACE,COBOLIE,COBOLDP3
IDC   COBOLIE     PROG.LENGTH=06010
IDC   COBOLD1     PROG.LENGTH=06053
IDC   COBOLP1     PROG.LENGTH=05665
IDC   COBOLD2     PROG.LENGTH=03643
IDC   COBOLP2     PROG.LENGTH=06176
IDC   COBOLDP3    PROG.LENGTH=05136
C.C.  REPLACE,RESTART,OPTBOXS
IDC   RESTART     PROG.LENGTH=03300
IDC   ERRSTOP     PROG.LENGTH=00027
IDC   OPENINPT    PROG.LENGTH=00006
IDC   OPENOTPT    PROG.LENGTH=00006
IDC   READ        PROG.LENGTH=00004
IDC   WRITE       PROG.LENGTH=00004
IDC   READI       PROG.LENGTH=00004
IDC   WRITEF      PROG.LENGTH=00004
IDC   EXAMINE     PROG.LENGTH=00111
IDC   SUBSCRIP    PROG.LENGTH=00105
IDC   DPBINBCD    PROG.LENGTH=00105
IDC   DPBCDBIN    PROG.LENGTH=00120
IDC   ACCEPT      PROG.LENGTH=00126
IDC   GPIOMAST    PROG.LENGTH=01707
IDC   CLOSE       PROG.LENGTH=00170
IDC   STACKING    PROG.LENGTH=00703
IDC   RERUN       PROG.LENGTH=00271
IDC   MBRDLABS    PROG.LENGTH=00152
IDC   LABLAREA    PROG.LENGTH=00024
IDC   MBWTBSTL    PROG.LENGTH=00073
IDC   MBRDBNSL    PROG.LENGTH=00023
IDC   WRTBNSL     PROG.LENGTH=00121
IDC   MBVARREC    PROG.LENGTH=00062
IDC   MBRMSRCH    PROG.LENGTH=00024
IDC   MBSAPROC    PROG.LENGTH=00032
IDC   MBMFPROC    PROG.LENGTH=00042
IDC   MBMFIN      PROG.LENGTH=00042
IDC   MBMFOUT     PROG.LENGTH=00016
IDC   JVCOM2      PROG.LENGTH=00012
IDC   JVNOALT     PROG.LENGTH=00110
IDC   MBOPTFIL    PROG.LENGTH=00025
IDC   FIGCON      PROG.LENGTH=00044
IDC   COMPARE     PROG.LENGTH=00100
IDC   MULTIPLY    PROG.LENGTH=00146
IDC   DIVIDE      PROG.LENGTH=00111
```

```
 IDC  STRIPPER  PROG.LENGTH=00304
 IDC  DEEDIT    PROG.LENGTH=00120
 IDC  NUMERIC   PROG.LENGTH=00030
 IDC  ALPHABET  PROG.LENGTH=00031
 IDC  DISPLAY   PROG.LENGTH=00222
 IDC  MVFIGCON  PROG.LENGTH=00025
 IDC  VARÇI     PROG.LENGTH=00034
 IDC  VARÑ      PROG.LENGTH=00031
 IDC  VARAN     PROG.LENGTH=00121
 IDC  ZIPPER    PROG.LENGTH=00104
 C.C.  REPLACE,SORT,SORT
 IDC  SORT      PROG.LENGTH=00510
 C.C.  DELETE,OPTBOXS,OPTBOXS
 C.C.  FILE
EOF
```

4.2 BINARY RELEASE TAPE FILE 1

INTERIM LIBRARY PRELIB SOURCE

```
 C.C.  SEQUENCE,001
 C.C.  JOB,,,,,,INTERIM LIBRARY GENERATION.
 C.C.  ENDIP,55=MT,05=55
 C.C.  ENDIP,01=MT
 C.C.  PRELIB,,1,,
 C.C.  FILE
 C.C.  REPLACE,PRELIB,PLOV2
 MAIN  55                                          PRELIB--MAIN
 IDC   PRELIB     PROG.LENGTH=03722
 OV      55,1               PLOVINT
 IDC   PLOVINT    PROG.LENGTH=00407
 OV      55,2
 IDC   OV1        PROG.LENGTH=02132
 SEG     55,1
 IDC   PHASE1     PROG.LENGTH=01440
 SEG     55,2
 IDC   PHASE2     PROG.LENGTH=00504
 OV      55,3
 IDC   DEBLOCK    PROG.LENGTH=00107
 OV      55,4
 IDC   PLOV2      PROG.LENGTH=12325
 C.C.  FILE
EOF
```

4.3 RTS COSY TAPE CONTENTS

The composite COSY tapes of this release contain all necessary routines used in generating either an RTS/STD or an RTS/BATCH library. The following list gives the sequence of the routines found on the RTS COSY tapes.

The deck name of each routine in the following list is suffixed with a special code. The definitions of this code are:

- S Specified routine used for RTS/STD libraries
- B Specified routine used for RTS/BATCH libraries
- 0 Specified routine used for both RTS/STD and RTS/BATCH with assembly option.
- A Specified routine used for all libraries
- X BDP users
- Y BCD users
- Z Specified routine has a special assembly option

COSY TAPE NUMBER 1

DECK NAME	CODE	DECK NAME	CODE	DECK NAME	CODE	DECK NAME	CODE
ZERO	A	POSTLOAD	AZ	BINARY	A	EXTREMA1	A
CIO	SZ	PRELIB	A	BUFFER	A	EXTREMA2	A
BCIO	BZ	PLOVINT	A	UNIT	A	FLOATF	A
DRIVLABT	A	OV1	A	IOCHK	A	FIXF	A
DRIV3649	A	PHASE 1	A	EOFCHK	A	MASKINGF	A
DRIV3248	A	PHASE2	A	TAPEHAND	A	FAULTS	A
DRIV3659	A	DEBLOCK[	A	PAUSE	A	SENSLITE	A
DRV512	A	PLOV2	A	CONTROL	A	SENSWTCH	A
DRIV3644	A	EXECOVR	A	DOUBLE	A	Q8QERROR	A
DRIVTYWR	A	FTO	A	DFPRIME	A	SCOPUTIL	A
DRIV3245	A	PROGNAME	A	DFP	A	COPYS	A
DRIVER12	A	FT1	A	Q1QADRI	A	COPYT	A
OCRMACRO †	A	FT2	A	ITOJ	A	VERIFY	A
DRIV3293	A	FT3	A	ITOX	A	DUMP	A
DRIV3691	A	FT4	A	XTOI	A	COPYWS	A
SCICREC1	SZ	FT5	A	POWRF	A	COPYTSQ	A
BCICREC1	BZ	FT6	A	SINCOS	A	ERROR	A
RDUMP	AZ	FTE	A	ATANF	A	IOPACK	A
PRELOAD	OZ	FTN	A	EXPF	A	IODRAIN	A
CKREC1	A	FLOVER	A	LOGF	A	SNAPSHOT	A
LOADER	AZ	BCDINP	A	SIGNF	A	FDPBOXS	A
OVPRO	AZ	BCDOUT	A	SQRTF	A	OPTBOXS	A
PROTECT	A	FORMAT	A	ABSF	A	BCDBOXS	A

† Exists as a MACRO only

COSY TAPE NUMBER 1 (continued)

DECK NAME	CODE	DECK NAME	CODE	DECK NAME	CODE	DECK NAME	CODE
BSIPP	S	SAINT	AZ	COBOL	Y	MBRMSRCH	Y
SIPP	A	SORT	AZ	COBOLIE	Y	MBSAPROC	Y
RAAR	AZ	BINANDEC	A	COBOLD1	Y	MBMFPROC	Y
SCAR	AZ	SDUMP	A	COBOLP1	Y	MBMFIN	Y
MTWPR	A	SRTPRINT	A	COBOLD2	Y	MBMFOUT	Y
MTRPR	A	SORTPOLY	A	COBOLP2	Y	JVCOM2	Y
MTLDACPR	A	SRTMBALF	A	COBOLDP3	Y	JVNOALT	Y
MTDER	A	SRTMBALB	A	ERRSTOP	Y	MBOPTFIL	Y
PRCPR	A	SRTMPOLF	A	OPENINPT	Y	TRANSMIT	Y
CRDER	A	SRTMPOLB	A	OPENOTPT	Y	FIGCON	Y
CPDER	A	SORTPDMY	A	READ	Y	COMPARE	Y
MTWPRR	AZ	SORTEDIT	A	WRITE	Y	EDIT	Y
MTRPRR	AZ	SORTIOP1	A	READI	Y	EDITCOBL	Y
MTLDCPRR	AZ	SORTPHS1	A	WRITEF	Y	MULTIPLY	Y
CMNRTNS	A	SRTRBALF	A	EXAMINE	Y	DIVIDE	Y
WHATISIT	AZ	SRTRPOLF	A	SUBSCRP	Y	BMULTPLY	Y
NRD	AZ	SRTRBALB	A	ACCEPT	Y	BDIVIDE	Y
NRC	AZ	SRTRPOLB	A	DISPLAY	Y	DPMULDIV	Y
NWR	A	SRESTART	A	CONVERT	Y	STRIPPER	Y
T.NOTRDY	A	RESTART1	A	GPIOMAST	Y	BSTRIPPR	Y
TYPEOUT.	A	RSTRTDUM	A	CLOSE	Y	DEEDIT	Y
WHATKIND	A	SORTIOP2	A	STACKING	Y	NUMERIC	Y
COMPASSB	A	SRTEQUAL	A	RERUN	Y	ALPHABET	Y
COMPASS	A	POLYFORW	A	MBRDLABS	Y	MVFIGCON	Y
OVERLAY1	A	BALCFORW	A	LABLAREA	Y	VARC1	Y
PASSONE	A	BALCBACK	A	MBWTBSTL	Y	VARN	Y
PASSTWO	A	POLYBACK	A	MBRDBNSL	Y	VARAN	Y
SYMTBLE	A	WAITBEEP	A	WRTBNSL	Y	ROUNDER	Y
CRT	A	RESTART	Y	MBVARREC	Y	ZIPPER	Y

COSY TAPE NUMBER 2

DECK NAME	CODE	DECK NAME	CODE	DECK NAME	CODE	DECK NAME	CODE
COMAC†	A	POPENOTP	X	PCLOSE	X	PMBMFPRO	X
PRESTART	X	PREAD	X	PSTACKIN	X	PMBMFIN	X
PCOBOL	X	PWRITE	X	PRERUN	X	PMBMFOUT	X
PCOBOLIE	X	PREADI	X	PMBRDLAB	X	PJVCOM2	X
PCOBOLD1	X	PWRITEF	X	PLABLARE	X	PJVNOALT	X
PCOBOLP1	X	PEXAMINE	X	PMBWTBST	X	PMBOPTFI	X
PCOBOLD2	X	PSUBSCRI	X	PMBRDBNS	X	PFIGCON	X
PCOBOLP2	X	PBPBINBC	X	PWRTBNSL	X	PCOMPARE	X
PCOBOLDP	X	PDPBDCBI	X	PMBVARRE	X	PMULTIPL	X
PERRSTOP	X	PACCEPT	X	PMBRMSRC	X	PDIVIDE	X
POPENINP	X	PGPIOMAS	X	PMBSAPRO	X	PSTRIPPE	X

† Exists as a MACRO only

COSY TAPE NUMBER 2 (continued)

DECK NAME	CODE	DECK NAME	CODE	DECK NAME	CODE	DECK NAME	CODE
PDEEDIT	X	PVARN	X	RGOV1	Y	RGPTWO	Y
PNUMERIC	X	PVARAN	X	RGFILE	Y	RGCRT	Y
PALPHABE	X	PZIPPER	Y	RGREPORT	Y	RGRTS	Y
PDISPLAY	X	COSYRDWT	A	RGPRO	Y	RGACCEPT	Y
PMVFIGCO	X	COSY2.0	A	RGCOMP	Y	RGU	Y
PVARC1	X	RGMAIN	Y	RGPONE	Y		

4.4 ASSEMBLY REFERENCE GUIDE

4.4.1 REFERENCE GUIDE FOR ASSEMBLING INSTALLATION DEPENDENT ROUTINES

CIO

COSY NO.	1	10	20	40
3	TIMEOUT	EQU	0	

BCIO

COSY NO.	1	10	20	40
3	TIMEOUT	EQU	0	

SCICREC1

COSY NO.	1	10	20	40
4	ACCT	EQU	0	
5	BDP	EQU	0	
6	CLOCK	EQU	0	
7	NCHANS	EQU	6	
8	MAXCORE	EQU	77737_8	
2033, 2061	AET	OCT		
2126, 2132	RHT	modifications		
2140, 2143	BRHT	modifications		
2210		00	IOIP	0
2211		00	IOIP	1
2212		00	IOIP	2
2213		00	IOIP	3
2214		00	ABINRT	4
2215		00	ABINRT	5
2216		00	ABINRT	6
2217		00	ABINRT	7
2253	SYST.IOM	OCT	17_8	

BCICREC1

COSY NO.	1	10	20	40
4	ACCT	EQU	0	
5	BDP	EQU	0	
6	CLOCK	EQU	0	
7	NCHANS	EQU	4	
8	MAXCORE	EQU	37637_8	
703	IOT	00	IOIP	0
704		00	IOIP	1
705		00	IOIP	2
706		00	IOIP	3
707		00	ABINRT	4
708		00	ABINRT	5
709		00	ABINRT	6
710		00	ABINRT	7
1306,1326	AET	OCT		
1391,1397	RHT	modifications		
1438	. SYST.IOM	OCT	17_8	

RDUMP

COSY NO.	1	10	20	40
21	SER.OPT	EQU	0	

PRELOAD

COSY NO.	1	10	20	40
8	BF	EQU	0	
131	ACCT	EQU	0	
130	TRAIN	EQU	0	
181	TRN5951	EQU		
182	TRN5952	EQU		
183	TRN5953	EQU		

LOADER

COSY NO.	1	10	20	40
10	LERP	EQU	0	

POSTLOAD

COSY NO.	1	10	20	40
23	LERP	EQU	0	

OVPRO

COSY NO.	1	10	20	40
12	LERP	EQU	0	

4.4.2 COSY CORRECTION SAMPLES

The coding and control cards necessary to punch binary decks for insertion into the PRELIB source are demonstrated by the following example. It does not represent a complete update. This example assumes the following system.

1. Floating-point hardware
2. No BDP hardware
3. User desires a STD RTS library
4. User desires clock interrupt processor
5. User desires basic accounting
6. User desires lost interrupt option
7. A 32K 3300 with the following configuration:

Equipment Type	Quantity	Controller	Channel	Equipment	Unit
Console typewriter	1	none	none	none	none
607 magnetic tape drives	4	3423	2,3	4	0-3
415 card punch	1	3446	1	4	0
501 printer	1	3659	0,1	5	0
405 card reader	1		1	3	0

```
7
9SEQUENCE, 002, MODIFY SCICREC1
7
9JOB, 12345, ABC
7
9EQUIP, 01=MT, 02=MT                    LUN 01 = The RTS COSY tape
7
9COSY                                   LUN 02 = The Hollerith output tape

          DELETE/   4
ACCT      EQU       1                   Basic accounting desired

          DELETE/   5
BDP       EQU       0                   BDP hardware not available
```

```
            DELETE/     6
CLOCK       EQU         1           Clock interrupt processor desired
            DELETE/     7
NCHANS      EQU         4           Define the CST
            DELETE/     8
MAXCORE     EQU         77737₈      Set the amount of available memory
            DELETE/     2033,2061
AET         OCT         41004000    Unit 1 library
            EXT         DRIVER01    Ch-2/3, Eq-4, Un-0
            VFD         09/000,A15/DRIVER01
            OCT         45000000    Unit 2 CTO/CFO
            EXT         DRIVER05    Console typewriter
            VFD         09/000,A15/DRIVER05
            OCT         42003000    Unit 3 standard INP
            EXT         DRIVER02    Ch-1, Eq-3, Un-0
            VFD         09/100,A15/DRIVER02
            OCT         43005000    Unit 4 standard OUT
            EXT         DRIVER03    Ch-0/1, Eq-5, Un-0
            VFD         09/300,A15/DRIVER03
            OCT         44004000    Unit 5 standard PUN
            EXT         DRIVER04    Ch-1, Eq-4, Un-0
            VFD         09/100,A15/DRIVER04
            OCT         01004001    Magnetic tape
            VFD         09/060,A15/DRIVER01  Ch-2/3, Eq-4, Un-1
            OCT         01004002    Magnetic tape
            VFD         09/060,A15/DRIVER01  Ch-2/3, Eq-4, Un-2
            OCT         01004003    Magnetic tape
            VFD         09/060,A15/DRIVER01  Ch-2/3, Eq-4, Un-3
```

```
            DELETE/     2126,2132
RHT         OCT         0,0,0,0          Set up RHT to match AET
            OCT         0,0,0,0
            OCT         0,0,0,0
            OCT         0,0,0202,03040502

            DELETE/     2140,2143
BRHT        OCT         0,0,0,0          Set up BRHT to match AET
            OCT         0,0,0,0
            OCT         0,0,0,0
            OCT         0,0,0202,0
                                         CIT modification
                                         IOIP channel available
                                         ABINRT channel not available

            DELETE/     2210,2217
            00          IOIP             Channel 0, available
            00          IOIP             Channel 1, available
            00          IOIP             Channel 2, available
            00          IOIP             Channel 3, available
            00          ABINRT           Channel 4, not available
            00          ABINRT           Channel 5, not available
            00          ABINRT           Channel 6, not available
            00          ABINRT           Channel 7, not available

            DELETE/     2253
SYST.IOM    OCT         17               Set up system I/O mask to match
                                         available channels

SCICREC1    DECK/       I=01,H=02
            ENDCOSY/
7
9COMPASS, I=02, L, R, P
77
88end-of-file
```

This example assumes the following:

1. A BATCH RTS user
2. User does not desire clock interrupt processor
3. User does not desire basic accounting
4. User does not desire lost interrupt option
5. No BDP hardware
6. A 16K 3100 with the following configuration:

Equipment Type	Quantity	Controller	Channel	Equipment	Unit
Console typewriter	1	none	none	none	none
601 magnetic tapes	4	3127	0	0	0-3
405 card reader	1	3248	1	3	0
501 printer	1	3152	1	5	0
415 card punch	1	3446	1	4	0

7/9SEQUENCE,002,MODIFY BCICREC1
7/9JOB,12345,ABC
7/9EQUIP,01=MT,02=MT
7/9COSY

```
            DELETE/   4
ACCT        EQU       0          Do not include basic accounting option
            DELETE/   5
BDP         EQU       0          BDP hardware not available
            DELETE/   6
CLOCK       EQU       0          Do not include the clock option
            DELETE/   7
NCHANS      EQU       2          Define the CST and EST length
            DELETE/   8
MAXCORE     EQU       37637B     Set the amount of available memory
```

```
            DELETE/     703,710
IOT         00          IOIP            Channel 0, available
            00          IOIP            Channel 1, available
            00          ABINRT          Channel 2, not available
            00          ABINRT          Channel 3, not available
            00          ABINRT          Channel 4, not available
            00          ABINRT          Channel 5, not available
            00          ABINRT          Channel 6, not available
            00          ABINRT          Channel 7, not available

                                        Define the AET
            DELETE/     1306,1326
AET         OCT         41000000        Unit 1 library
            EXT         DRIVER01        Ch-0,Eq-0,Un-0
            VFD         09/200,A15/DRIVER01
            OCT         45000000        Unit 2 CTO/CFO
            EXT         DRIVER05        Console typewriter
            VFD         09/000,A15/DRIVER05
            OCT         42003000        Unit 3 standard INP
            EXT         DRIVER02        Ch1,Eq3,Un0
            VFD         09/100,A15/DRIVER02
            OCT         43005000        Unit 4 standard OUT
            EXT         DRIVER03        Ch1,Eq5,Un0
            VFD         09/100,A15/DRIVER03
            OCT         44004000        Unit 5 standard PUN
            EXT         DRIVER04
            VFD         09/100,A15/DRIVER04
            OCT         01000003        Magnetic tape
            VFD         09/060,A15/DRIVER01
            OCT         01000002        Magnetic tape
            VFD         09/200,A15/DRIVER01
            OCT         01000001        Magnetic tape
            VFD         09/200,A15/DRIVER01
```

```
            DELETE/     1391,1397
RHT         OCT         0,0,0,0          Set up RHT to match AET
            OCT         0,0,0,0
            OCT         0,0,0,0
            OCT         0,0,0202,03040501

            DELETE/     1438
SYST.IOM    OCT         3                Set up system I/O mask to match
                                         available channels
BCICREC1    DECK/       I=01,H=02

            ENDCOSY/
7
9COMPASS, I=02, L, R, P
77
88end-of-file
```

4.5 ONE CARD LOADER

In order to run the one-card loader program as listed in paragraph 4.5.1, the appropriate SEQUENCE, JOB, and COMPASS control cards must be inserted before the deck and the appropriate LOAD, RUN, and end-of-file cards must be placed after the deck.

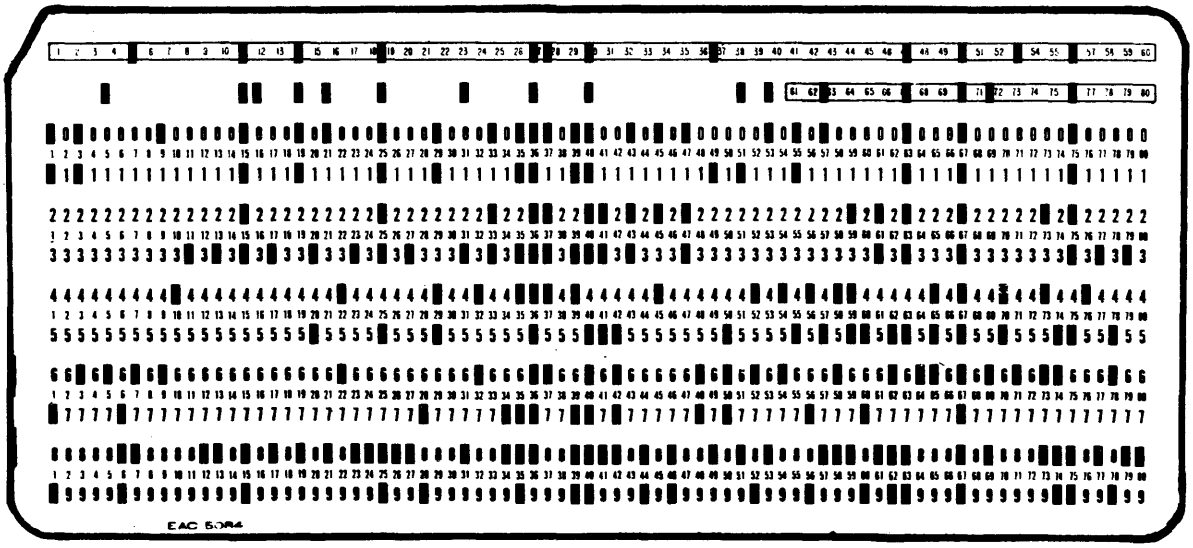
To terminate punching the one-card loader cards when executing the program, set SELECT JUMP 1 on.

4.5.1 ONE-CARD LOADER LISTING

```
                                                  LOAD512
                                                                        EXT         CIO
                                                                        ENTRY       LOAD512
00000  01077777 01 0   77777 0  LOAD512          UJP         **
00001  00777777 00 1 X77777 3                    RTJ         CIO
00002  02000076 02 0   00076 0                    02          62
00003  01000001 01 0 P00001 0                    UJP         *-2
00004  41000013 41 0 P00013 0                    41          ABS
00005  00000050 00 0   00050 0                                ABSE-ABS
00006  00700001 00 1 X00001 3                    RTJ         CIO
00007  13000076 13 0   00076 0                    13          62
00010  03200006 03 0 P00006 2                    AZJ,GE      *-2
00011  00100000 00 0 P00000 1                    S01         LOAD512
00012  01000001 01 0 P00001 0                    UJP         LOAD512+1
00013  14050000 14 0   50000 0  ABS              NOP         50000B
00014  14100000 14 0   00000 1                    ENI         0,1
00015  20100007 20 0   00007 1                    LDA         7,1
00016  40120000 40 0   20000 1                    STA         XQT,1
00017  10100040 10 0   00040 1                    ISI         XQTNO,1
00020  01000002 01 0   00002 0                    UJP         2
00021  01020000 01 0   20000 0                    UJP         XQT
00022  77032000 77 0   32000 0                    CON         EUUU,C
00023  01020000 01 0   20000 0                    UJP         XQT
00024  74020120 74 0   20120 0                    INPW        C,BFFR,BFFRE
00025  30020050 30 0   20050 0
00026  01020000 01 0   20000 0                    UJP         XQT
00027  77230002 77 0   30002 2                    EXS         2,C
00030  01020005 01 0   20005 0                    UJP         XQT5
00031  14600000 14 1   00000 2                    ENA         0
00032  21020050 21 0   20050 0                    LDQ         BFFR
00033  13000006 13 0   00006 0                    SHAQ        6
00034  15477776 15 1   77776 0                    INA,S       -1
00035  53500000 53 1   00000 1                    TAI         1
00036  15477737 15 1   77737 0                    INA,S       -BIF
00037  03220036 03 0   20036 2                    AZJ,GE      XQT30
00040  13000003 13 0   00003 0                    SHAQ        3
00041  12400003 12 1   00003 0                    SHQ         3
00042  13000014 13 0   00014 0                    SHAQ        12
00043  44020034 44 0   20034 0                    SWA         XQT28
00044  24020051 24 0   20051 0                    LCA         BFFR1
00045  30020050 30 0   20050 0                    ACA         BFFR
00046  14200045 14 0   00045 2                    ENI         37,2
00047  30220052 30 0   20052 2                    ACA         BFFR2,2
00050  02620025 02 1   20025 2                    IJP         XQT21,2
00051  03020033 03 0   20033 0                    AZJ,EQ      XQT27
00052  77230010 77 0   30010 2                    EXS         10B,C
00053  00700000 00 1   00000 3                    RTJ         0
00054  77770000 77 1   70000 3                    LCS
00055  20120060 20 0   20060 1                    LDA         PRGRM,1
00056  40100000 40 0   00000 1                    STA         0,1
00057  02520033 02 1   20033 1                    IJP         XQT27,1
00060  77230040 77 0   30040 2                    EXS         40B,C
00061  01020031 01 0   20031 0                    UJP         XQT25
00062  01020002 01 0   20002 0                    UJP         XQT2
                       00003       C             EQU         3
```

```
          LOAD512
02000     EUUU      EQU       2000B
20000     XQT       EQU       200008
20002     XQT2      EQU       XQT+2
20005     XQT5      EQU       XQT+5
20025     XQT21     EQU       XQT+21
20031     XQT25     EQU       XQT+25
20033     XQT27     EQU       XQT+27
20034     XQT28     EQU       XQT+28
20036     XQT30     EQU       XQT+30
00040     XQTNO     EQU       32
20050     BFFR      EQU       XQT+40
20051     BFFR1     EQU       BFFR+1
20052     BFFR2     EQU       BFFR+2
20060     PPGRM     EQU       BFFR+8
20120     BFFRE     EQU       BFFR+40
00040     RIF       EQU       40B
00063     ABSE      EQU       *
                    END       LOAD512
```

4.5.2 SAMPLE ONE-CARD LOADER



4.6 FCO LEVEL

RTS Version 2.0 is assumed to run on a configuration at the following field change order levels:

3100 Equipment		Product Designation
3114	Main frame	C03
3119	Memory	B01
3207	Channel	A04
3106	Channel	B06
3248	Card reader controller	A12
3256	Printer controller	B02
3228	Tape controller	A08
3446	Card punch controller	A08
3447	Card reader controller	B03

3200 Equipment		Product Designation
3204	Main frame	A01
3209	Memory	A08
3206	Channel	A07
3207	Channel	A01
3228	Tape controller	A08
3248	Card reader controller	A12
3245	Card punch controller	A05
3659	Printer controller	A11

3300 Equipment		Product Designation
3304	Main frame	A22
3302	Memory	A14
3310	Floating point	A09
3312	BDP Unit	A15
3306/06	Channel	A08
3307/06	Channel	A12
3649	Card reader controller	A23
3644	Card punch controller	A14
3659	Printer controller	A13
3421	Tape controller	A08

4.7 VERIFICATION DECK OUTPUT

The following paragraphs contain verification program outputs for the RTS product set members. BSIPP, SIPP, and error recovery routines do not have verification programs.

4.7.1 ADAPT

```
PARTNO  TEST TLRGT,TLLFT AND TLON                                          000
$$   THIS PROGRAM SHOULD HANG UP ON CARD 140 WITH ERROR NO. 503
LOOPST
CLPRNT                                                                     001
      L1=LINE/0,0,5,0    $$ X-AXIS                                         003
      L2=LINE/9,0,9,5       $$ LINE AT X=9                                 004
      L3=LINE/0,8,5,8       $$ LINE AT X=8                                 005
      L4=LINE/0,0,0,5       $$ Y-AXIS                                      006
STRAT=POINT/-1,-1,0                                                        007
  PP=PLANE/0,0,1,=.5
  PSIS/PP
      CUTTER/.5                                                            008
    MACHIN/ BENDIX, 1                                                      002
FROM/STRAT                                                                 01A
      GO/L1                                                                010
      TLRGT,GORGT/L1                                                       020
      GOLFT/L2,L3                                                          030
      GOLFT/L3                                                             040
      GOLFT/L4,L1                                                          050
       TLLFT,GOLFT/L1,PAST,L2                                              060
      GOLFT/L2                                                             070
      GOLFT/L3,PAST,L4                                                     080
LOOPND
   LOOPST
      GOLFT/L4                                                             090
      TLRGT,GOLFT/L1                                                       100
      TLLFT,GOLFT/L2                                                       110
      TLRGT,GOLFT/L3                                                       120
      TLON,GOLFT/L4,PAST,L1                                                130
           GOLFT/L1                                                        140
      GOLFT/L2,PAST,L3                                                     150
      GOLFT/L3,                                                            160
      GOLFT/L4,L1                                                          170
GOTO/STRAT                                                                 200
   LOOPND
END
      FINI                                                              FINI
```

```
      TEST TLRGT,TLLFT AND TLON                                    CARD NO.    000 TAPE NO.    2
CUTTER/    .5000       0                                           CARD NO.    008 TAPE NO.    5
MACHIN/BENDIX    1                                                 CARD NO.    002 TAPE NO.    7
                    X             Y             Z                  CARD NO.    01A TAPE NO.    9
               -1.0000000    -1.0000000          0
                    X             Y             Z                  CARD NO.    010 TAPE NO.   11
               -1.0000000    -0.2500000    -0.5000000
                    X             Y             Z                  CARD NO.    020 TAPE NO.   13
                9.2500000    -0.2500000    -0.5000000
                    X             Y             Z                  CARD NO.    030 TAPE NO.   15
                9.2500000     7.7500000    -0.5000000
                    X             Y             Z                  CARD NO.    040 TAPE NO.   17
               -0.2500000     7.7500000    -0.5000000
                    X             Y             Z                  CARD NO.    050 TAPE NO.   19
               -0.2500000      .2500000    -0.5000000
                    X             Y             Z                  CARD NO.    060 TAPE NO.   21
                9.2500000      .2500000    -0.5000000
                    X             Y             Z                  CARD NO.    070 TAPE NO.   23
                9.2500000     7.7500000    -0.5000000
                    X             Y             Z                  CARD NO.    080 TAPE NO.   25
               -0.2500000     7.7500000    -0.5000000
                    X             Y             Z                  CARD NO.    090 TAPE NO.   27
               -0.2500000    -0.2500000    -0.5000000
                    X             Y             Z                  CARD NO.    100 TAPE NO.   29
                8.7500000    -0.2500000    -0.5000000
                    X             Y             Z                  CARD NO.    110 TAPE NO.   31
                8.7500000     8.2500000    -0.5000000
                    X             Y             Z                  CARD NO.    120 TAPE NO.   33
                       0      8.2500000    -0.5000000
                    X             Y             Z                  CARD NO.    130 TAPE NO.   35
                       0     -0.2500000    -0.5000000
***** SECTION II ERROR   503 ON CARD NUMBER      140, CALL CARD NUMBER00000000

FINI                                                               CARD NO.    140 TAPE NO.   38
CHECK CLTAPE PRINTOUT FOR PROGRAM ERROR COMMENTS
```

```
PARTNO   ARLMG  TEST    7/30/66     D. B. HORNING                          001
   LOOPST  $$ FOR BLOCKING
  CLPRNT                                                                  002
     CUTTER/1                                                             005
        C1=CIRCLE/0,0,10                                                  010
  L1=LINE/0,-8,1,-8                                                       020
L2=LINE/0,0,1,0                                                           030
      FROM/-10.5,0,0                                                      040
     INDIRV/1,0,0                                                         050
   TLON,GOFWD/L2,ON,C1                                                    060
     GOFWD/L2,PAST,C1                                                     070
     GOFWD/L2,TO,C1                                                       080
     GOFWD/L2,ON,C1                                                       090
     GOFWD/L2,PAST,C1                                                     100
FROM/-7,-7.50,0
      INDIRV/1,0,0                                                        120
    TLLFT,GOFWD/L1,TO,C1                                                  130
    GOFWD/L1,ON,C1                                                        140
    GOFWD/L1,PAST,C1                                                      150
   LOOPND  $$FOR BLOCKING
     F I N I                                                              160
```

```
        ARLMG  TEST    7/30/66     D. B. HORNING          CARD NO.   001 TAPE NO.   2

CUTTER/   1.0000        0                                 CARD NO.   005 TAPE NO.   4

                    X              Y              Z
                -10.5000000            0              0   CARD NO.   040 TAPE NO.   6

                    X              Y              Z
                -10.0004500            0              0   CARD NO.   060 TAPE NO.   9

                    X              Y              Z
                 -9.4999500            0              0   CARD NO.   070 TAPE NO.  11

                    X              Y              Z
                  9.4999500            0              0   CARD NO.   080 TAPE NO.  13

                    X              Y              Z
                  9.9999500            0              0   CARD NO.   090 TAPE NO.  15

                    X              Y              Z
                 10.5004500            0              0   CARD NO.   100 TAPE NO.  17

                    X              Y              Z
                 -7.0000000   -7.5000000              0   CARD NO.       TAPE NO.  19

                    X              Y              Z
                  5.8308726   -7.5000000              0   CARD NO.   130 TAPE NO.  22

                    X              Y              Z
                  6.6143171   -7.5000000              0   CARD NO.   140 TAPE NO.  24

                    X              Y              Z
                  7.3491123   -7.5000000              0   CARD NO.   150 TAPE NO.  26

FINI                                                      CARD NO.   160 TAPE NO.  28
```

4.7.2 COBOL (BCD AND BDP)

```
COBOL HAS BEEN INSTALLED ON THIS LIBRARY
```

4.7.3 COMPASS

```
COMPASS HAS BEEN INSTALLED ON THIS LIBRARY.
```

4.7.4 COSY

```
CHKCOSY  DECK/      C=06
         ENDCOSY/
```

4.7.5 FORTRAN

```
 FORTRAN HAS BEEN INSTALLED ON THIS LIBRARY.
I FTNO 0060  STOP
```

4.7.6 PERT COST

```
MASTER TAPE LISTING -  TEST TEST (FOR 3200 PERT/COST)
PROGRAM DESIGNATION - C46

FILE ONE - SUMMARY NUMBER FILE
```

SUMMARY NO.	LEV	PARENT	RESP. ORG.	DESCRIPTION	HIERARCHY TABLE							
1000	1	0			1000	0	0	0	0	0	0	0
1100	2	1000			1000	1100	0	0	0	0	0	0
1200	2	1000			1000	1200	0	0	0	0	0	0
1300	2	1000			1000	1300	0	0	0	0	0	0
1110	3	1100			1000	1100	1110	0	0	0	0	0
1120	3	1100			1000	1100	1120	0	0	0	0	0
1210	3	1200			1000	1200	1210	0	0	0	0	0
1220	3	1200			1000	1200	1220	0	0	0	0	0
1310	3	1300			1000	1300	1310	0	0	0	0	0
1320	3	1300			1000	1300	1320	0	0	0	0	0
1330	3	1300			1000	1300	1330	0	0	0	0	0
1221	4	1220			1000	1200	1220	1221	0	0	0	0
1222	4	1220			1000	1200	1220	1222	0	0	0	0
1321	4	1320			1000	1300	1320	1321	0	0	0	0
1322	4	1320			1000	1300	1320	1322	0	0	0	0
1323	4	1320			1000	1300	1320	1323	0	0	0	0

FILE TWO - CHARGE NUMBER FILE

CHARGE NO.	L	PARENT	#CHG.	DESCRIPTION	HIERARCHY TABLE
1000000 4	1110		0		1000 1100 1110 0 0 0 0 0
91764		0		17 650216	3 650216 650226 1 15 15 650216 650226 640923
2000000 4	1110		0		1000 1100 1110 0 0 0 0 0
111064		0		17 650112	3 650112 650122 2 10 10 650112 650122 641123
3000000 4	1110		0		1000 1100 1110 0 0 0 0 0
91764		0		59 641203	3 641111 641223 1 10 5 641203 650122 640917
11000000 4	1120		0		1000 1100 1120 0 0 0 0 0
30365		0		17 650726	3 650726 650805 20 27 27 650726 650805 650329
12000000 4	1120		0		1000 1100 1120 0 0 0 0 0
61465		0		71 650804	3 650804 650924 25 30 30 650804 650924 650619
21000000 4	1210		0		1000 1200 1210 0 0 0 0 0
30365		0		81 650610	3 650610 650805 20 27 27 650610 650805 650308
22000000 4	1210		0		1000 1200 1210 0 0 0 0 0
50365		0		70 650618	3 650527 650715 23 28 26 650618 650820 650415
23000000 4	1210		0		1000 1200 1210 0 0 0 0 0
52665		0		17 650913	3 650913 650924 26 30 30 650913 650924 650505
31000000 5	1221		0		1000 1200 1220 1221 0 0 0 0
111064		0		192 641211	3 641211 650428 2 9 9 641211 650428 641128
41000000 5	1222		0		1000 1200 1220 1222 0 0 0 0
11365		0		77 650326	3 650326 650520 14 24 24 650326 650520 650112
42000000 5	1222		0		1000 1200 1220 1222 0 0 0 0
21565		0		77 650505	3 650505 650629 17 25 25 650505 650629 650229
51000000 4	1310		0		1000 1300 1310 0 0 0 0 0
91764		0		37 650115	3 641026 641119 1 14 4 650115 650310 640917
52000000 4	1310		0		1000 1300 1310 0 0 0 0 0
110264		0		37 641223	3 641223 650121 4 11 11 641223 650121 641018
53000000 4	1310		0		1000 1300 1310 0 0 0 0 0
102664		0		37 641110	3 641110 641208 4 7 7 641110 641208 641008
54000000 4	1310		0		1000 1300 1310 0 0 0 0 0
112064		0		77 641222	3 641222 650217 8 12 12 641222 650217 641117
61000000 5	1321		0		1000 1300 1320 1321 0 0 0 0
21165		0		17 650308	3 650308 650318 15 19 19 650308 650318 650218
71000000 5	1322		0		1000 1300 1320 1322 0 0 0 0
121064		0		70 650429	3 650429 650617 13 22 22 650429 650617 641211
72000000 5	1322		0		1000 1300 1320 1322 0 0 0 0
121864		0		70 650429	3 650429 650617 18 23 23 650429 650617 641217
81000000 5	1323		0		1000 1300 1320 1323 0 0 0 0
111164		0		37 650120	3 650120 650215 6 16 16 650120 650215 641111
82000000 5	1323		0		1000 1300 1320 1323 0 0 0 0
11565		0		17 650308	3 650308 650318 16 20 20 650308 650318 650120
91000000 4	1330		0		1000 1300 1330 0 0 0 0 0
31765		0		17 651005	3 651005 651015 20 31 31 651005 651015 650308

FILE THYEF - COST FILE

PERF. ORG.	RES. CODE	CHARGE NO.	DATE	BUDGETS		ESTIMATES	HOURS	ACTUALS DIRECT	TOTAL	COMMITTED COSTS		
1	00R2	1000000	0 0	0	I	1000	0	0	0	0	0	0
				0		3400	0	0	0			
				0		3150	0	0	0			
				0		2150	0	0	0			
				0		550	0	0	0			
				0		2300	0	0	0			
				0		150	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
1	00R4	1000000	0 0	0	D	23400	0	0	0	0	0	0
				0		3550	0	0	0			
				0		2350	0	0	0			
				0		3600	0	0	0			
				0		7250	0	0	0			
				0		4200	0	0	0			
				0		600	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
2	00R1	2000000	0 0	0	R	4890	0	0	0	0	0	0
				0		4865	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
3	00R4	3000000	0 0	0	D	20350	0	0	0	0	0	0
				0		3600	0	0	0			
				0		3500	0	0	0			
				0		4750	0	0	0			
				0		2500	0	0	0			
				0		350	0	0	0			
3	00R7	3000000	0 0	0	D	400	0	0	0	0	0	0
				0		350	0	0	0			
				0		550	0	0	0			
				0		600	0	0	0			
				0		350	0	0	0			
				0		200	0	0	0			
11	00R7	11000000	0 0	0	D	250	0	0	0	0	0	0
				0		600	0	0	0			
				0		650	0	0	0			
				0		650	0	0	0			
				0		650	0	0	0			
				0		550	0	0	0			
				0		200	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			
				0		0	0	0	0			

					0		0	0	0	0			
					0		0	0	0	0			
12	00R6	12000000	0	0	0	T	1000	0	0	0	0	0	0
					0		11000	0	0	0			
					0		9450	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
21	00R6	21000000	0	0	0	T	5000	0	0	0	0	0	0
					0		8300	0	0	0			
					0		25000	0	0	0			
					0		17500	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
22	00R2	22000000	0	0	0	T	750	0	0	0	0	0	0
					0		900	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
22	00R3	22000000	0	0	0	D	51200	0	0	0	0	0	0
					0		34700	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
23	00R1	23000000	0	0	0	H	3620	0	0	0	0	0	0
					0		3600	0	0	0			
					0		2450	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
23	00R6	23000000	0	0	0	T	4550	0	0	0	0	0	0
					0		900	0	0	0			
					0		1500	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
31	00R1	31000000	0	0	0	H	5400	0	0	0	0	0	0
					0		250	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
41	00R6	41000000	0	0	0	T	15000	0	0	0	0	0	0
					0		850	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
41	00R7	41000000	0	0	0	D	700	0	0	0	0	0	0
					0		300	0	0	0			
					0		0	0	0	0			

					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
42	00R4	42000000	0	0	0	D	7300	0	0	0	0	0	0	
					0		2450	0	0	0				
					0		4700	0	0	0				
					0		600	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
51	00R2	51000000	0	0	0	T	600	0	0	0	0	0	0	
					0		1350	0	0	0				
					0		200	0	0	0				
					0		100	0	0	0				
					0		1700	0	0	0				
					0		400	0	0	0				
52	00R1	52000000	0	0	0	H	14250	0	0	0	0	0	0	
					0		16300	0	0	0				
					0		13700	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
53	00R5	53000000	0	0	0	D	23500	0	0	0	0	0	0	
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
53	00R7	53000000	0	0	0	D	1600	0	0	0	0	0	0	
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
54	00R2	54000000	0	0	0	I	4250	0	0	0	0	0	0	
					0		2000	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
61	00R3	61000000	0	0	0	D	173450	0	0	0	0	0	0	
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
					0		0	0	0	0				
71	00R1	71000000	0	0	0	H	3600	0	0	0	0	0	0	
					0		3750	0	0	0				
					0		400	0	0	0				
					0		6400	0	0	0				
					0		12350	0	0	0				
					0		5100	0	0	0				
71	00R2	71000000	0	0	0	I	4500	0	0	0	0	0	0	
					0		5000	0	0	0				

					0		500	0	0	0			
					0		11000	0	0	0			
					0		1950[illegible]	0	0	0			
					0		8500	0	0	0			
71	00R4	71[illegible]0000	0	0	0	0	1200	0	0	0	0	0	0
					0		1250	0	0	0			
					0		1250	0	0	0			
					0		1250	0	0	0			
					0		1250	0	0	0			
					0		950	0	0	0			
72	00R1	72000000	0	0	0	0	1250	0	0	0	0	0	0
					0		1300	0	0	0			
					0		1450	0	0	0			
					0		1350	0	0	0			
					0		1200	0	0	0			
					0		0	0	0	0			
72	00R7	72000000	0	0	0	0	2500	0	0	0	0	0	0
					0		3000	0	0	0			
					0		4050	0	0	0			
					0		3200	0	0	0			
					0		1400	0	0	0			
					0		0	0	0	0			
81	00R7	81000000	0	0	0	0	400	0	0	0	0	0	0
					0		1250	0	0	0			
					0		1350	0	0	0			
					0		950	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
82	00R4	82000000	0	0	0	0	3550	0	0	0	0	0	0
					0		850	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			
91	00R7	91000000	0	0	0	0	700	0	0	0	0	0	0
					0		1050	0	0	0			
					0		1500	0	0	0			
					0		1400	0	0	0			
					0		0	0	0	0			
					0		0	0	0	0			

FILE FOUR - RATE FILE

PERF.ORG.	RES.CODE	RATES (GIVEN BY YYQ, UNIT RATE, AND OVERHEAD RATE)		
0	0001	642	45[illegible]	600
0	0002	642	10[illegible]	0
0	0003	642	10[illegible]	300
0	0004	642	101	1130
0	0005	642	10[illegible]	50
0	0006	642	10[illegible]	0
0	0007	642	10[illegible]	100

MASTER TAPE END OF FILE

PERT/COST
MANAGEMENT SUMMARY REPORT

REPORTING ORGN. CONTRACT NO. 333 TERM -

C36 TEST TEST (FOR 3200 PERT/COST) CUT-OFF DATE 9/17/64
RELEASE DATE 9/17/64

LEVEL / SUMMARY ITEM - 1 / 1000

ITEM	COST OF WORK / UNITS - DOLLARS								SCHEDULE
	WORK PERFORMED TO DATE			TOTALS AT COMPLETION					S - SCHED COMPL DATE - TOTAL ITEM A - ACTUAL COMPL DATE - TOTAL ITEM E - EARLIEST COMPL DATE - CRIT ITEM L - LATEST COMPL DATE - CRIT ITEM
	VALUE	ACTUAL COST	(OVERRUN) UNDERRUN	PLANNED COST	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN	MOST CRIT SLACK (WKS)	COMPL DATE	P 1964 1965 6789L YRJFMAMJJAS ONDJFMAMJJASOND YR
LEVEL 1								10/ 5/65	S
								10/ 5/65	E
1000					702275	(702275)	1.7	10/15/65	L
								8/ 4/65	S
LEVEL 2								7/26/65	E
1100					129905	(129905)	1.7	8/ 5/65	L
								9/13/65	S
LEVEL 2								9/13/65	E
1200					197520	(197520)	1.7	9/24/65	L
								10/ 5/65	S
LEVEL 2								10/ 5/65	E
1300					374850	(374850)	1.7	10/15/65	L

PERT/COST
PROGRAM/PROJECT STATUS REPORT

C36 TEST TEST (FEB 320) PERT/COST) REPORTING ORGN. CONTRACT NO. 333 TERM - CUT-OFF DATE 9/17/64 RELEASE DATE 9/17/64

LEVEL / SUMMARY ITEM = 1 / 1000

IDENTIFICATION				TIME STATUS			COST OF WORK / UNITS - DOLLARS					
							WORK PERFORMED TO DATE			TOTALS AT COMPLETION		
CHARGE OR SUMMARY NUMBER	I F V	FIRST EVENT NO.	LAST EVENT NO.	SCHD OR ACT (A) COMPL DATE	EARLIEST -LATEST COMPL DATE	MOST CRIT SLACK (WKS)	VALUE	ACTUAL COST	(OVERRUN) UNDERRUN	PLANNED COST	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN
1000	1	1	31		10/ 5/65 10/15/65	1.7 31					702275	(702275)
1100	2	1	30		8/ 4/65 9/24/65	1.7 27					129905	(129905)
1110	3	1	15		2/16/65 2/26/65	1.7 15					104905	(104905)
1100000	4	1	15		2/16/65 2/26/65	1.7 15					57650	(57650)
2000000	4	2	10		1/12/65 1/22/65	1.7 10					9755	(9755)
3000000	4	1	10		12/ 3/64 1/22/65	5.9 5					37500	(37500)
1120	3	20	30		8/ 4/65 9/24/65	1.7 27					25000	(25000)
1100000	4	20	27		7/26/65 8/ 5/65	1.7 27					3550	(3550)
1200000	4	25	30		8/ 4/65 9/24/65	7.1 30					21450	(21450)
1200	2	2	30		9/13/65 9/24/65	1.7 30					197520	(197520)
1210	3	20	30		9/13/65 9/24/65	1.7 30					159970	(159970)
2100000	4	20	27		6/10/65 8/ 5/65	8.1 27					55800	(55800)

UNCLASSIFIED PAGE 1

PERT/COST
PROGRAM/PROJECT STATUS REPORT

C36 TEST TEST (FOR 3200 PERT/COST) REPORTING ORGN. CONTRACT NO. 333 TERM - CUT-OFF DATE 9/17/64 RELEASE DATE 9/17/64

LEVEL / SUMMARY ITEM = 1 / 1000

IDENTIFICATION				TIME STATUS			COST OF WORK / UNITS = DOLLARS					
							WORK PERFORMED TO DATE			TOTALS AT COMPLETION		
CHARGE OR SUMMARY NUMBER	L E V	FIRST EVENT NO.	LAST EVENT NO.	SCHD OR ACT (A) COMPL DATE	EARLIEST -LATEST COMPL DATE	MOST CRIT SLACK (WKS)	VALUE	ACTUAL COST	(OVERRUN) UNDERRUN	PLANNED COST	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN
2200.000	4	23	26		6/18/65 6/20/65	7.0 26					87550	(87550)
2300.000	4	26	30		9/13/65 9/24/65	1.7 30					16620	(16620)
1220	3	2	25		5/ 5/65 6/29/65	7.7 25					37550	(37550)
1221	4	2	9		12/11/64 4/28/65	19.2 9					5650	(5650)
3100.000	5	2	9		12/11/64 4/28/65	19.2 9					5650	(5650)
1222	4	14	25		5/ 5/65 6/29/65	7.7 25					31900	(31900)
4100.000	5	14	24		3/26/65 5/20/65	7.7 24					16850	(16850)
4200.000	5	17	25		5/ 5/65 6/29/65	7.7 25					15050	(15050)
1300	2	1	31		10/ 5/65 10/15/65	1.7 31					374850	(374850)
1310	3	1	14		1/15/65 3/10/65	3.7 11					79950	(79950)
5100.000	4	1	14		1/15/65 3/10/65	3.7 4					4350	(4350)
5200.000	4	4	11		12/23/64 1/21/65	3.7 11					44250	(44250)

UNCLASSIFIED PAGE 2

PERT/COST
PROGRAM/PROJECT STATUS REPORT

C36 TEST TEST (FOR 3200 PERT/COST) REPORTING ORGN. CONTRACT NO. 333 TERM - CUT-OFF DATE 9/17/64 RELEASE DATE 9/17/64

LEVEL / SUMMARY ITEM = 1 / 1000

IDENTIFICATION				TIME STATUS			COST OF WORK / UNITS = DOLLARS					
							WORK PERFORMED TO DATE			TOTALS AT COMPLETION		
CHARGE OR SUMMARY NUMBER	L E V	FIRST EVENT NO.	LAST EVENT NO.	SCHD OR ACT (A) COMPL DATE	EARLIEST -LATEST COMPL DATE	MOST CRIT SLACK (WKS)	VALUE	ACTUAL COST	(OVERRUN) UNDERRUN	PLANNED COST	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN
					11/10/64	3.7						
53000000	4	4	7		12/ 8/64	7					25100	(25100)
					12/22/64	7.7						
54000000	4	8	12		2/17/65	12					6250	(6250)
					4/29/65	1.7						
1320	3	6	22		5/17/65	19					290250	(290250)
					3/ 8/65	1.7						
1321	4	15	19		3/18/65	19					173450	(173450)
					3/ 8/65	1.7						
61000000	5	15	19		3/18/65	19					173450	(173450)
					4/29/65	7.0						
1322	4	13	22		5/17/65	22					108450	(108450)
					4/29/65	7.0						
71000000	5	13	22		5/17/65	22					87750	(87750)
					4/29/65	7.0						
72000000	5	18	23		5/17/65	23					20700	(20700)
					3/ 8/65	1.7						
1323	4	6	20		3/18/65	20					8350	(8350)
					1/20/65	3.7						
81000000	5	6	16		2/15/65	16					3950	(3950)
					3/ 8/65	1.7						
82000000	5	16	20		3/18/65	20					4400	(4400)
					10/ 5/65	1.7						
1330	3	27	31		10/15/65	31					4650	(4650)

UNCLASSIFIED PAGE 3

PERT/COST
PROGRAM/PROJECT STATUS REPORT

C36 TEST TEST (FOR 3200 PERT/COST) REPORTING ORGN. CONTRACT NO. 333 TERM - CUT-OFF DATE 9/17/64 RELEASE DATE 9/17/64

LEVEL / SUMMARY ITEM - 1 / 1000

IDENTIFICATION				TIME STATUS			COST OF WORK / UNITS - DOLLARS					
							WORK PERFORMED TO DATE			TOTALS AT COMPLETION		
CHARGE OR SUMMARY NUMBER	L E V	FIRST EVENT NO.	LAST EVENT NO.	SCHD OR ACT (A) COMPL DATE	EARLIEST =LATEST COMPL DATE	MOST CRIT SLACK (WKS)	VALUE	ACTUAL COST	(OVERRUN) UNDERRUN	PLANNED COST	LATEST REVISED ESTIMATE	PROJECTED (OVERRUN) UNDERRUN
					10/ 5/65	1.7						
91000000	4	20	31		10/15/65	31					4650	(4650)

4.7.7 PERT TIME

PERT/TIME
ACTIVITY REPORT

TEST TEST (FOR 3200 PERT/TIME)

REPORTING ORGN. CONTRACT NO. 333 TERM-
REPORT DATE- 9/17/64
RELEASE DATE- 9/17/64

MAJOR SORT / MINOR SORT / EVENT PRED.	SUCC / PRED SUCC.	ACTIVITY DESCRIPTION	PROB.	ACTIV. TIME	DATE EXPECTED	DATE ALLOWED	DATE COMP/SCHED	REMAINING SLACK	REMAINING TIME	ACCOUNT NO.	ORG.
0	1			0.0		9/30/64	A 9/17/64	1.7	0.0	0	
I 1	2			7.6	11/10/64	11/23/64		1.7	7.6	1000000	
I 1	3			3.6	10/13/64	11/24/64		5.9	3.6	3000000	
I 1	4			5.3	10/26/64	11/19/64		3.7	5.3	51000000	
2	5			4.3	12/11/64	12/23/64		1.7	11.9	2000000	
3	5			4.1	11/11/64	12/23/64		5.9	7.7	3000000	
3	6			4.1	11/11/64	12/30/64		6.6	7.7	1000000	
4	7			2.3	11/10/64	12/ 8/64		3.7	7.6	53000000	
4	8			3.8	11/20/64	1/18/65		7.7	9.1	52000000	
9	9			4.3	12/11/64	4/28/65		19.2	11.9	31000000	
5	10			4.0	1/12/65	1/22/65		1.7	15.9	2000000	
6	10			3.0	12/ 3/64	1/22/65		6.9	10.7	3000000	
6	11			3.0	12/ 3/64	1/21/65		6.6	10.7	81000000	
7	11			6.0	12/23/64	1/21/65		3.7	13.6	52000000	
8	12			4.3	12/22/64	2/17/65		7.7	13.4	54000000	
9	13			0.0	12/11/64	4/28/65		19.2	11.9	31000000	
12	14			3.1	1/15/65	3/10/65		7.7	16.5	51000000	
10	15			5.0	2/16/65	2/26/65		1.7	20.9	1000000	
11	16			3.5	1/20/65	2/15/65		3.7	17.1	81000000	
14	17			4.6	2/17/65	4/12/65		7.7	21.1	41000000	
13	18			1.1	12/18/64	5/ 5/65		19.2	13.0	71000000	
15	19			2.8	3/ 8/65	3/18/65		1.7	23.7	61000000	
16	20			4.0	2/22/65	3/18/65		3.7	21.7	82000000	
19	20			0.0	3/ 8/65	3/18/65		1.7	23.7	82000000	
17	21			2.5	3/ 5/65	4/29/65		7.7	23.6	42000000	
15	22			6.8	4/ 5/65	6/17/65		10.6	27.7	71000000	
18	22			6.1	2/ 3/65	6/17/65		19.2	19.1	72000000	
20	22			7.6	4/29/65	6/17/65		7.0	31.3	71000000	
22	23			0.0	4/29/65	6/17/65		7.0	31.3	72000000	
21	24			3.0	3/26/65	5/20/65		7.7	26.6	41000000	
20	25			14.5	6/16/65	6/29/65		1.7	38.2	11000000	
24	25			5.6	5/ 5/65	6/29/65		7.7	32.2	42000000	
23	26			4.1	5/27/65	7/15/65		7.0	35.4	22000000	
20	27			13.6	6/10/65	8/ 5/65		8.1	37.3	21000000	
23	27			5.1	6/ 3/65	8/ 5/65		9.0	36.4	21000000	
25	27			5.5	7/26/65	8/ 5/65		1.7	43.7	11000000	
26	27			3.0	6/17/65	8/ 5/65		7.0	38.4	23000000	
24	28			3.1	6/18/65	8/20/65		9.0	38.5	22000000	
27	28			2.1	8/ 9/65	8/20/65		1.7	45.8	23000000	
25	29			2.0	6/30/65	8/19/65		7.1	40.2	12000000	
20	30			8.6	5/ 6/65	9/24/65		20.0	32.3	91000000	
28	30			4.8	9/13/65	9/24/65		1.7	50.6	23000000	
29	30			5.0	8/ 4/65	9/24/65		7.1	45.2	12000000	
30	31			3.1	10/ 5/65	10/15/65		1.7	53.7	91000000	

PERT/TIME
ACTIVITY REPORT

TEST TEST (FOR 3200 PERT/TIME)

REPORTING ORGN. CONTRACT NO. 333

TERM-
REPORT DATE- 9/17/64
RELEASE DATE- 9/17/64

MAJOR SORT / MINOR SORT / EVENT PRED.	EVENT SUCC.	SLK TE	ACTIVITY DESCRIPTION	PROB.	ACTIV. TIME	DATE EXPECTED	DATE ALLOWED	DATE COMP/SCHED	REMAINING SLACK	REMAINING TIME	ACCOUNT NO.	ORG.
0	1				0.0		9/30/64	A 9/17/64	1.7	0.0	0	
I 1	2				7.6	11/10/64	11/23/64		1.7	7.6	1000000	
2	5				4.3	12/11/64	12/23/64		1.7	11.9	2000000	
5	10				4.0	1/12/65	1/22/65		1.7	15.9	2000000	
10	15				5.0	2/16/65	2/26/65		1.7	20.9	1000000	
15	19				2.8	3/ 8/65	3/18/65		1.7	23.7	61000000	
19	20				0.0	3/ 8/65	3/18/65		1.7	23.7	82000000	
20	25				14.5	6/16/65	6/29/65		1.7	38.2	11000000	
25	27				5.5	7/26/65	8/ 5/65		1.7	43.7	11000000	
27	28				2.1	8/ 9/65	8/20/65		1.7	45.8	23000000	
28	30				4.8	9/13/65	9/24/65		1.7	50.6	23000000	
30	31				3.1	10/ 5/65	10/15/65		1.7	53.7	91000000	
I 1	4				5.3	10/26/64	11/19/64		3.7	5.3	51000000	
4	7				2.3	11/10/64	12/ 8/64		3.7	7.6	53000000	
7	11				6.0	12/23/64	1/21/65		3.7	13.6	52000000	
11	16				3.5	1/20/65	2/15/65		3.7	17.1	81000000	
16	20				4.6	2/22/65	3/18/65		3.7	21.7	82000000	
I 1	3				3.6	10/13/64	11/24/64		5.9	3.6	3000000	
3	5				4.1	11/11/64	12/23/64		5.9	7.7	3000000	
3	6				4.1	11/11/64	12/30/64		6.6	7.7	1000000	
6	11				3.0	12/ 3/64	1/21/65		6.6	10.7	81000000	
6	10				3.0	12/ 3/64	1/22/65		6.9	10.7	3000000	
22	23				0.0	4/29/65	6/17/65		7.0	31.3	72000000	
20	22				7.6	4/29/65	6/17/65		7.0	31.3	71000000	
23	26				4.1	5/27/65	7/15/65		7.0	35.4	22000000	
26	27				3.0	6/17/65	8/ 5/65		7.0	38.4	23000000	
25	29				2.0	6/30/65	8/19/65		7.1	40.2	12000000	
29	30				5.0	8/ 4/65	9/24/65		7.1	45.2	12000000	
4	8				3.8	11/20/64	1/18/65		7.7	9.1	52000000	
8	12				4.3	12/22/64	2/17/65		7.7	13.4	54000000	
12	14				3.1	1/15/65	3/10/65		7.7	16.5	51000000	
14	17				4.6	2/17/65	4/12/65		7.7	21.1	41000000	
17	21				2.5	3/ 5/65	4/29/65		7.7	23.6	42000000	
21	24				3.0	3/26/65	5/20/65		7.7	26.6	41000000	
24	25				5.6	5/ 5/65	6/29/65		7.7	32.2	42000000	
20	27				13.6	6/10/65	8/ 5/65		8.1	37.3	21000000	
23	27				5.1	6/ 3/65	8/ 5/65		9.0	36.4	21000000	
26	28				3.1	6/18/65	8/20/65		9.0	38.5	22000000	
15	22				6.8	4/ 5/65	6/17/65		10.6	27.7	71000000	
9	13				0.0	12/11/64	4/28/65		19.2	11.9	31000000	
2	9				4.3	12/11/64	4/28/65		19.2	11.9	31000000	
13	18				1.1	12/18/64	5/ 5/65		19.2	13.0	71000000	
18	22				6.1	2/ 3/65	6/17/65		19.2	19.1	72000000	
20	30				8.6	5/ 6/65	9/24/65		20.0	32.3	91000000	

PERT/TIME
ACTIVITY REPORT

TEST TEST (FOR 3200 PERT/TIME) REPORTING ORGN. CONTRACT NO. 333 TERM-
REPORT DATE- 9/17/64
RELEASE DATE- 9/17/64

MAJOR SORT / MINOR SORT / EVENT PRED.	TE SUCC / EVENT SUCC.	ACTIVITY DESCRIPTION	PROB.	ACTIV. TIME	DATE EXPECTED	DATE ALLOWED	DATE COMP/SCHED	SLACK	REMAINING TIME	ACCOUNT NO.	ORG.
0	1			0.0		9/30/64	A 9/17/64	1.7	0.0	0	
I 1	3			3.6	10/13/64	11/24/64		5.9	3.6	3000000	
T 1	4			5.3	10/26/64	11/19/64		3.7	5.3	51000000	
1	2			7.6	11/10/64	11/23/64		1.7	7.6	1000000	
4	7			2.3	11/10/64	12/ 8/64		3.7	7.6	53000000	
3	5			4.1	11/11/64	12/23/64		5.9	7.7	3000000	
3	6			4.1	11/11/64	12/30/64		6.6	7.7	1000000	
4	8			3.8	11/20/64	1/18/65		7.7	9.1	52000000	
6	10			3.0	12/ 3/64	1/22/65		6.9	10.7	3000000	
6	11			3.0	12/ 3/64	1/21/65		6.6	10.7	81000000	
2	5			4.3	12/11/64	12/23/64		1.7	11.9	2000000	
2	9			4.3	12/11/64	4/28/65		19.2	11.9	31000000	
9	13			0.0	12/11/64	4/28/65		19.2	11.9	31000000	
13	18			1.1	12/18/64	5/ 5/65		19.2	13.0	71000000	
8	12			4.3	12/22/64	2/17/65		7.7	13.4	54000000	
7	11			6.0	12/23/64	1/21/65		3.7	13.6	52000000	
5	10			4.0	1/12/65	1/22/65		1.7	15.9	2000000	
12	14			3.1	1/15/65	3/10/65		7.7	16.5	51000000	
11	16			3.5	1/20/65	2/15/65		3.7	17.1	81000000	
18	22			6.1	2/ 3/65	6/17/65		19.2	19.1	72000000	
10	15			5.0	2/16/65	2/26/65		1.7	20.9	1000000	
14	17			4.6	2/17/65	4/12/65		7.7	21.1	41000000	
16	20			4.6	2/22/65	3/18/65		3.7	21.7	82000000	
17	21			2.5	3/ 5/65	4/29/65		7.7	23.6	42000000	
15	19			2.4	3/ 8/65	3/18/65		1.7	23.7	61000000	
19	20			0.0	3/ 8/65	3/18/65		1.7	23.7	82000000	
21	24			3.0	3/26/65	5/20/65		7.7	26.6	41000000	
15	22			6.8	4/ 5/65	6/17/65		10.6	27.7	71000000	
20	22			7.6	4/29/65	6/17/65		7.0	31.3	71000000	
22	23			0.0	4/29/65	6/17/65		7.0	31.3	72000000	
24	25			5.6	5/ 5/65	5/29/65		7.7	32.2	42000000	
20	30			8.6	5/ 6/65	9/24/65		20.0	32.3	91000000	
23	26			4.1	5/27/65	7/15/65		7.0	35.4	22000000	
23	27			5.1	6/ 3/65	8/ 5/65		9.0	36.4	21000000	
20	27			13.6	6/10/65	8/ 5/65		8.1	37.3	21000000	
20	25			14.5	6/16/65	6/29/65		1.7	38.2	11000000	
26	27			3.0	6/17/65	8/ 5/65		7.0	38.4	23000000	
26	28			3.1	6/18/65	8/20/65		9.0	38.5	22000000	
26	29			2.0	6/30/65	8/19/65		7.1	40.2	12000000	
25	27			5.5	7/26/65	8/ 5/65		1.7	43.7	11000000	
29	30			5.0	8/ 4/65	9/24/65		7.1	45.2	12000000	
27	28			2.1	8/ 9/65	8/20/65		1.7	45.8	23000000	
28	30			4.4	9/13/65	9/24/65		1.7	50.6	23000000	
30	31			3.	10/ 5/65	10/15/65		1.7	53.7	91000000	

PERT/TIME
ACTIVITY REPORT

REPORTING ORGN. CONTRACT NO. 333 TERM-
REPORT DATE- 9/17/64
RELEASE DATE- 9/17/64

TEST TEST (FOR 3223 PERT/TIME)

MAJOR SORT / MINOR SORT / EVENT PRED.	SUCC.	ACTIVITY DESCRIPTION	PROB.	ACTIV. TIME	DATE EXPECTED	DATE ALLOWED	DATE COMP/SCHED	REMAINING SLACK	REMAINING TIME	ACCOUNT NO.	ORG.
0	1			0.0		9/30/64	A 9/17/64	1.7	0.0	0	
I 1	2			7.6	11/10/64	11/23/64		1.7	7.6	1000000	
3	4			4.1	11/11/64	12/30/64		6.6	7.7	1000000	
10	15			5.0	2/16/65	2/26/65		1.7	20.9	1000000	
2	5			4.3	12/11/64	12/23/64		1.7	11.9	2000000	
5	10			4.0	1/12/65	1/22/65		1.7	15.9	2000000	
3	5			4.1	11/11/64	12/23/64		5.9	7.7	3000000	
6	10			3.0	12/ 3/64	1/22/65		6.9	10.7	3000000	
I 1	3			3.6	10/13/64	11/24/64		5.9	3.6	3000000	
20	25			14.5	6/16/65	6/29/65		1.7	38.2	11000000	
25	27			5.8	7/26/65	8/ 5/65		1.7	43.7	11000000	
25	29			2.0	6/30/65	8/19/65		7.1	40.2	12000000	
29	30			5.0	8/ 4/65	9/24/65		7.1	45.2	12000000	
23	27			5.1	6/ 3/65	8/ 5/65		9.0	36.4	21000000	
20	27			13.6	6/10/65	8/ 5/65		8.1	37.3	21000000	
23	26			4.1	5/27/65	7/15/65		7.0	35.4	22000000	
26	28			3.1	6/18/65	8/20/65		9.0	38.5	22000000	
26	27			3.0	6/17/65	8/ 5/65		7.0	38.4	23000000	
27	28			2.1	8/ 9/65	8/20/65		1.7	45.8	23000000	
28	30			4.8	9/13/65	9/24/65		1.7	50.6	23000000	
2	9			4.3	12/11/64	4/28/65		19.2	11.9	31000000	
9	13			0.0	12/11/64	4/28/65		19.2	11.9	31000000	
14	17			4.6	2/17/65	4/12/65		7.7	21.1	41000000	
21	24			3.0	3/26/65	5/20/65		7.7	26.6	41000000	
17	21			2.5	3/ 5/65	4/29/65		7.7	23.6	42000000	
24	25			5.6	5/ 5/65	6/29/65		7.7	32.2	42000000	
12	14			3.1	1/15/65	3/10/65		7.7	16.5	51000000	
I 1	4			5.3	10/26/64	11/19/64		3.7	5.3	51000000	
4	8			3.8	11/20/64	1/18/65		7.7	9.1	52000000	
7	11			6.0	12/23/64	1/21/65		3.7	13.6	52000000	
4	7			2.3	11/10/64	12/ 8/64		3.7	7.6	53000000	
8	12			4.3	12/22/64	2/17/65		7.7	13.4	54000000	
15	19			2.8	3/ 8/65	3/18/65		1.7	23.7	61000000	
16	22			6.8	4/ 5/65	6/17/65		10.6	27.7	71000000	
20	22			7.6	4/29/65	6/17/65		7.0	31.3	71000000	
13	18			1.1	12/18/64	5/ 5/65		19.2	13.0	71000000	
22	23			0.0	4/29/65	6/17/65		7.0	31.3	72000000	
18	22			6.1	2/ 3/65	6/17/65		19.2	19.1	72000000	
11	16			3.5	1/20/65	2/15/65		3.7	17.1	81000000	
6	11			3.0	12/ 3/64	1/21/65		6.6	10.7	81000000	
16	20			4.6	2/22/65	3/18/65		3.7	21.7	82000000	
19	20			0.0	3/ 8/65	3/18/65		1.7	23.7	82000000	
20	30			8.6	5/ 6/65	9/24/65		20.0	32.3	91000000	
30	31			3.1	10/ 5/65	10/15/65		1.7	53.7	91000000	

PERT/TIME
MILESTONE REPORT

TEST TEST (FOR 3250 PERT/TIME)

REPORTING ORGN.

CONTRACT NO. 333

TERM-
REPORT DATE- 9/17/64
RELEASE DATE- 9/17/64

LEVEL/SUMMARY ITEM -9/ 0

EVENT NO.	EVENT DESCRIPTION	MILESTONE CODE	EXPECTED DATE	LATEST ALLOWABLE DATE	SCHEDULED DATE	ACTUAL DATE	SLACK
1	EVENT 1	1		9/30/64		9/17/64	1.7
2	EVENT 2	2	11/10/64	11/23/64	11/13/64		1.7
3	EVENT 3	3	10/13/64	11/24/64	10/15/64		5.9
4	EVENT 4	4	10/26/64	11/19/64	10/29/64		3.7
5	EVENT 5	5	12/11/64	12/23/64	12/14/64		1.7
6	EVENT 6	6	11/11/64	12/30/64	11/16/64		6.6
7	EVENT 7	7	11/10/64	12/ 8/64	11/16/64		3.7
8	EVENT 8	8	11/20/64	1/18/65	11/23/64		7.7
10	EVENT 10	10	1/12/65	1/22/65	1/ 8/65		1.7
11	EVENT 11	11	12/23/64	1/21/65	12/24/64		3.7
12	EVENT 12	12	12/22/64	2/17/65	12/24/64		7.7
13	EVENT 13	13	12/11/64	4/28/65	12/24/64		19.2
14	EVENT 14	14	1/15/65	3/18/65	1/18/65		7.7
15	EVENT 15	15	2/16/65	2/26/65	2/12/65		1.7
16	EVENT 16	16	1/20/65	2/15/65	1/22/65		3.7
18	EVENT 18	18	12/18/64	5/ 5/65	1/11/65		19.2
19	EVENT 19	19	3/ 8/65	3/18/65	3/ 5/65		1.7
20	EVENT 20	20	3/ 8/65	3/18/65	3/ 5/65		1.7
21	EVENT 21	21	3/ 5/65	4/29/65	3/15/65		7.7
22	EVENT 22	22	4/29/65	6/17/65	5/ 3/65		7.0
23	EVENT 23	23	4/29/65	6/17/65	5/ 3/65		7.0
24	EVENT 24	24	3/26/65	5/20/65	4/ 6/65		7.7
25	EVENT 25	25	6/16/65	6/29/65	6/18/65		1.7
26	EVENT 26	26	5/27/65	7/15/65	6/ 4/65		7.0
27	EVENT 27	27	7/26/65	8/ 5/65	8/ 2/65		1.7
28	EVENT 28	28	8/ 9/65	8/20/65	8/18/65		1.7
29	EVENT 29	29	6/30/65	8/19/65	7/12/65		7.1
30	EVENT 30	30	9/13/65	9/24/65	9/22/65		1.7
31	EVENT 31	31	10/ 5/65	10/15/65	10/15/65		1.7

I FTN6 0062 PAUSE 50003

4.7.8 REPORT GENERATOR

```
   RG=32     (1.0)

    OUT1     ASSIGN PRINT    BUF 1    LOW      BCD      UNIT 01
*   THERE IS NO RECORD AREA  AN ERROR MSG SHOULD APPEAR
          REPORT
                           *****  PD11  *****
    OUT1     RPTFMT
    DETAIL   DETAIL
L   THIS IS A NON STANDARD LABEL
          RPTOT
L   THIS IS THE END
    JERRY    PROCED
          GEN    DETAIL
          END
```

4.7.9 SAINT

4.7.10 SCOPE UTILITY

```
UTILITY HAS BEEN INSTALLED ON THIS LIBRARY.
```

4.7.11 TAPE SORT

```
I FTNO 0060  STOP
SORT
   01122111R 040301                              1100090010
   1ISI00800080F       BM01  01S01SORT-FILE      0112316801999
   10 000803040F       BM      C
   9ENDSORT
 I TSRT 213 B   INTERNAL MERGE IP LOG UNITS
04,03.
 I TSRT 214 B   INTERNAL MERGE OP LOG UNITS
01.
 A TSRT 323 B   UNIT 01 FOR SORT IP.
 I TSRT 239 B   IB 20       OB 2000      G 894 †
 A TSRT 303 B   UNIT  1.    MOUNT SCRATCH.
 I TSRT 222 B        38  IN
 I TSRT 223 B        38 OUT
 I TSRT 232 B         1 SEQ
 I TSRT 236 B   FINAL MERGE
 A TSRT 305 B   UNIT  1.    MOUNT O/P TAPE.
 I TSRT 216 B   UNIT  1.    FINAL OUTPUT.  REEL  01.
 I TSRT 222 B        38 IN
 I TSRT 223 B        38 OUT
```

† The OB and G figures are site dependent and will vary under a 32K or 16K system.

PART III

INSTALLATION-RELATED INFORMATION

HARDWARE INITIALIZATION 1

1.1 INSTALLATION AUTOLOAD ROUTINE

Each installation must manually establish an autoload routine in the autoload region of core. This routine is a basic and permanent machine entry. It is used to initiate machine operations, such as autoloading RTS or initiating a 512 image.

The tape/card reader autoload procedure serves a dual purpose. It can autoload from tape unit 0 or from the card reader if SELECT JUMP 6 is set. It halts at location xxx50 to allow hardware action to complete. (There is not enough space to check status.) When device motion stops, press GO to continue.

The format of the tape/card reader autoload routine is:

Location	Instruction	Comment
xxx40	006xxx52	If SELECT JUMP 6 is set, load card
xxx41	770cc000	Connect channel c, equipment e, tape unit 0
xxx42	010xxx41	Reject
xxx43	771c0010	Rewind channel c
xxx44	010xxx43	Reject
xxx45	740xxx70	Read first tape record into location 00000
xxx46	c0000000	
xxx47	010xxx45	Reject
xxx50	77770000	Stop
xxx51	01000000	Go to program, location 00000
xxx52	770cc000	Connect card reader unit 0, channel c, equipment e
xxx53	010xxx52	Reject
xxx54	740xxx37	Read first record into location 00000
xxx55	c0000000	
xxx56	010xxx54	Reject
xxx57	010xxx50	Go to stop instruction

An alternate autoload procedure may be used if error checking is desired (on magnetic tape only). The routine reads the library tape, loads the first record of RTS into core, and jumps to address 0. The routine checks for tape parity and lost data errors. If detected, the routine halts at xxx54 with the status of the unit in the A-register. To retry, the operator must press GO.

The format of the alternate autoload routine is:

Location	Instruction	Comment
xxx40	770ce00u	Connect
xxx41	010xxx40	
xxx42	771c0010	Rewind
xxx43	010xxx42	
xxx44	740xxx70	Input
xxx45	c0000000	
xxx46	010xxx44	
xxx47	772c0002	
xxx50	010xxx47	
xxx51	772c0000	Check status
xxx52	17602400	
xxx53	03000000	
xxx54	000xxx42	Halt and return to rewind

The installation must supply the following parameters:

c Channel number appropriate to equipment

e Equipment number appropriate to unit

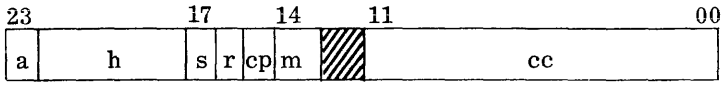
u Unit number

xxx is dependent on machine size and type as follows:

Memory	Type	xxx
16K	3100/3150	376
32K	3100/3150	776
16K	3200/3300	377
32K	3200/3300	777

AET defines the equipment available to the system. Each AET entry consists of two 24-bit words and an external definition which describes the hardware device and the system driver servicing it. Any channel or equipment dedicated to real-time or specialized operations must not appear in the AET.

The format of the AET entry is:



EXT driver entry point name

If two devices are serviced by the same driver, the second external definition may be omitted since only one definition is necessary.

The inscriptions are defined as follows:

a 0 Unit not assigned; a is set to 0 initially in AET for all entries which are not designated as system units.

1 Unit assigned; a is set to 1 initially in AET (e.g. the library device) for all entries designated as system units.

h Numeric hardware code. Each code represents a different hardware type.

01 Magnetic tape (MT)	07 Paper tape punch (TP)
02 Card reader (CR)	10 Typewriter station (TS)
03 Printer (PR)	11 Incremental plotter (PL)
04 Card punch (CP)	12 Satellite controller (SL)
05 Typewriter (TY) (console)	13 Disk pack controller (DP)
	15 Drum (DR)
06 Paper tape reader (TR)	16 Optical character reader (OR)

s 0 Implies unit is operable.

1 Implies unit is inoperable. Generally s is set to 0 for all entries unless a unit is temporarily down or not yet available for use.

r 0 Unit assigned for use by this computer.

1 Unit reserved for use by another computer.

cp 0 No transmission parity error detected.

1 Transmission parity error has occurred on previous READ, WRITE, READB operation.

m 0 Batch program indicator.

1 Priority program indicator. Set m at 0 as this bit is manipulated only by RTS.

cc Twelve bit connect code of the particular unit to which this entry relates. cc is euuu where:

e One octal digit equipment number.

uuu Up to three octal digits right justified represent the unit number.

e 0 No action.

1 Unit to be assigned. Set e at 0 as this bit is manipulated only by RTS.

c Eight-bit channel code specifying the channels available to an equipment. A bit set at 1 means the corresponding channel is available to a unit; a bit set at 0 means the channel is not available. The following table shows the correspondence between bit positions and channel numbers.

Bit Position	22	21	20	19	18	17	16	15
Corresponding Channel	0	1	2	3	4	5	6	7

daddr A 15-bit address which is the entry point name of the appropriate driver (see driver selection previously described). A zero value in this field indicates a nonresident driver and thus, a nonsystem unit. When RTS loads a nonresident driver, it supplies a driver address in this field. A system unit entry must have driver address in the daddr field.

Entry point names to be used in this field for the various equipments and their drivers are given in the table. Specific COSY corrections for adapting the AET to a particular installation are not given because of the diversity of configurations. Instead, the COSY correction causes the complete deletion of the AET and the user must insert his complete hardware description. A general format of the AET is:

```
AET     entry 1, word 1
        EXT   driver entry point name      Library
+1      entry 1, word 2

+2      entry 2, word 1
        EXT   driver entry point name      CTO/CFO
+3      entry 2, word 2

+4      entry 3, word 1
        EXT   driver entry point name      INP
+5      entry 3, word 2

+6      entry 4, word 1
        EXT   driver entry point name      OUT
+7      entry 4, word 2

+8      entry 5, word 1
        EXT   driver entry point name      PUN
+9      entry 5, word 2
```

In this scheme, the preceding are system units and the following are available units for batch or priority use.

```
+10     entry 6, word 1
        EXT   driver entry point name      Available equipment
+11     entry 6, word 2

+12     entry 7, word 1
        EXT   driver entry point name      Available equipment
+13     entry 7, word 2
```

SYSTEM DRIVERS

Hardware	Controllers	Equipment (in combination)	COSY Name	Entry Point
MT	362x 342x 322x	604 607	DRIVLABT	DRIVER01
MT	362x 342x 322x	601 603 606	DRIVLABT	DRIVER01
MT	3518 3528	657 659	DRIVMMTC	DRIVER01
CR	3447 3649	405	DRIV3649	DRIVER02
CR	3248	405	DRIV3248	DRIVER02
PR	3256 3659 3152	501 505	DRIV3659	DRIVER03
PR	3555	512	DRV512	DRV512
CP	3644 3446	415	DRIV3644	DRIVER04
CP	3245	415	DRIV3245	DRIVER04
TY	Console typewriter		DRIVTYWR	DRIVER05
TR TP	3691	Paper tape station	DRIV3691	DRIVER06 DRIVER07
PL	3293	Plotter	DRIV3293	DRIVER11
OR	3195	915	DRIVER12	DRIVER16

3.1 RHT MODIFICATION

The RHT is a 63-character table defining the equipment used during a batch run and the equipment assigned as system units (PUN, INP, OUT, etc.). In RTS, input/output units are referenced by logical unit numbers rather than by physical units. The character entries in the RHT, from character RHT+1 to RHT+63, correspond to logical units 01 to 63, respectively. Each RHT entry defining an equipment contains a nonzero value that is the ordinal of the AET and UST entry of the physical unit to which it is assigned. Certain system units must have permanent RHT entries as follows:

LIB	LUN	63
PUN	LUN	62
OUT	LUN	61
INP	LUN	60
CTO	LUN	59
CFO	LUN	58

Each RHT position for logical units 58-63 must point to the appropriate AET and UST entries of an equipment with a resident driver. All nonsystem entries must initially be zero. The initial entries for system units PUN=05, CTO/CFO=02, OUT=04, INP=03, and LIB=01 need not be changed if the AET is in the described format.

3.2 BRHT MODIFICATION

The Priority Running Hardware Table (BRHT) is similar to the RHT except that only logical units 1-49, 58, and 59 are available for reference by a priority program. Logical units 50-57 and 60-63 are illegal units for a priority program and their BRHT entries must be zero; logical units 58 and 59 are assembled to 02. The BRHT, like the RHT, contains 63 one-character entries from BRHT+1 to BRHT+63 that correspond to priority logical units 1-63, respectively. Entries for logical units 50-57 and 60-63 must be included in the BRHT but must have a zero value for detection of illegal priority program references.

PRELIB 4

The RTS product set includes PRELIB to modify and update the existing system library.

PRELIB permits the user to:

- Absolutize frequently used system programs (COMPASS, FORTRAN, etc.) to eliminate the necessity of relocating and linking their routines each time they are called.
- Place the variable resident routines (PROTECT, LOADER, OVPRO) in several places in the relocatable file (file 2) to reduce system overhead during library searches for needed routines.
- Delete, insert, or replace those routines anywhere in the relocatable file. Rearrangement of file 2 can place the most frequently used routines near the beginning of the file to reduce library search time.

System routines are absolutized either because RTS requires it (e.g. absolutizing resident in order to autoload it) or because doing so reduces system overhead. Whenever resident and variable resident are modified, all other absolute routines must be re-absolutized.

Creation or modification of the library requires a minimum of three tape units; duplication of the library requires at least two tape units.

4.1 LOADING AND EXECUTION

PRELIB requires all of memory and may not share time with another program. The PRELIB user must be familiar with the PRELIB source deck supplied for installation (Part II, section 4.1).

PRELIB detail cards (PDC) are binary cards for the relocatable programs to be placed on the new library. Each deck must begin with an IDC card and end with a TRA card (see RTS Reference Manual).

4.2 PRELIB CONTROL CARDS

PRELIB control cards (PCC) direct PRELIB in the generation of a new library; they allow addition and deletion of records and entry points.

4.2.1 PRELIB

The user loads PRELIB into core with the PRELIB statement. When PRELOAD encounters a PRELIB card, it calls the loader, which in turn calls OVPRO to load PRELIB and its overlays and segments from file 2 of the library tape. SEQUENCE, JOB, and any required EQUIP cards precede the PRELIB card. File 55, the scratch tape, must be equipped with an EQUIP, 55=MT, card.

RTS gives control to PRELIB, which reads from INP. PRELIB executes automatically when called; a RUN card is not needed.

$^{7}_{9}$PRELIB, u_i, u_o, S, A

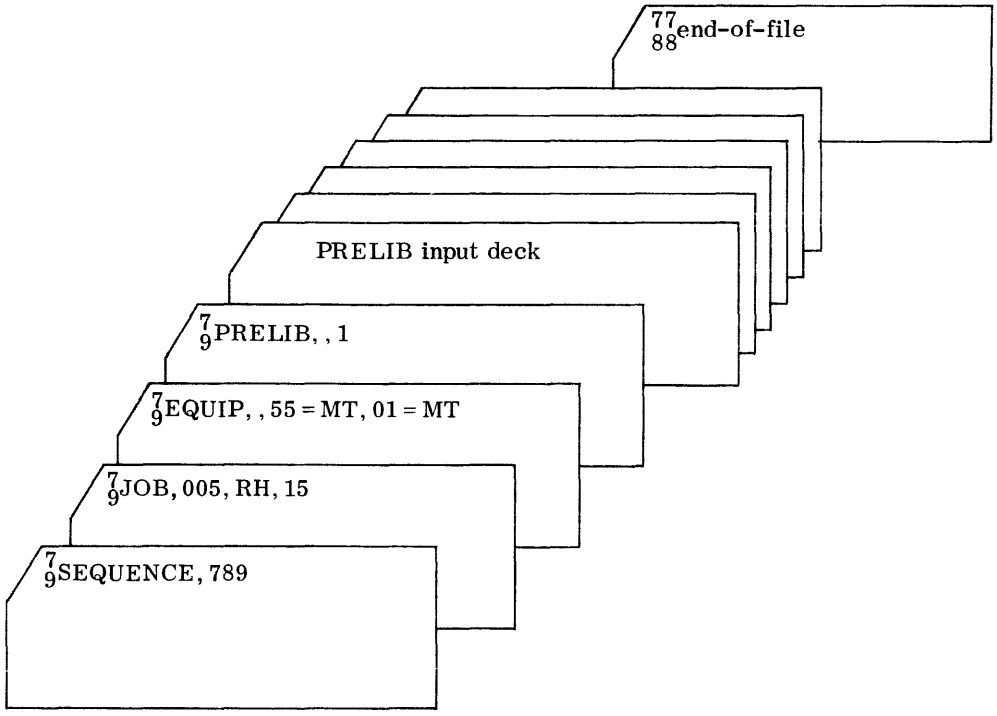
u_i Logical unit (1-54, 63) previously assigned by EQUIP to original input tape; if PRELIB, , u_o is used, standard INP logical unit 63 is assumed to be the input tape.

u_o Logical unit (1-54; different from u_i) previously assigned by EQUIP to the new output tape.

S If S is present, PRELIB generates a suppressed history of updated files on OUT. If S is omitted, PRELIB generates a detailed history of updated files on OUT (section 4.4).

A Must be present if modifications include records to be absolutized and added to variable resident; A is omitted if modifications are for the relocatable file only.

A comma follows the last parameter only if comments are to follow.

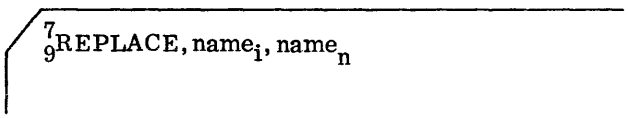


4.2.2 FILE

If a FILE card is the first card in the PRELIB input deck, it causes file 1 to be copied on the new library tape; it does no absolutizing for file 2. A FILE card also signals the completion of absolutizing for the library; it follows all input data to be absolutized by OV1. A second FILE card in a deck signals the end of file 2 input.

4.2.3 REPLACE

A REPLACE control card may also be used to identify records in file 2 to be replaced. A REPLACE card may be followed by a file 2 UNIT card if the replacement records are not on INP. If a REPLACE card is the first card in the PRELIB input deck, it instructs the PRELIB to replace resident. Normally variable resident and all file 2 absolute records are also re-absolutized since changes in resident may affect the addresses of system entry points referenced by these records (see example, section 4.3.3). When used for this purpose, the REPLACE card has no subfields.



$name_i$, $name_n$ Subprogram on existing relocatable file or blank

The possible combinations specify the following actions:

$name_i$	$name_n$	Action
specified	specified	Replace subprograms $name_i$; through $name_n$ with PDC records following REPLACE on INP or with PDC records on unit specified by UNIT card following REPLACE.
blank	specified	Replace subprograms from beginning of relocatable file through $name_n$ with indicated PDC's.
specified	blank	Replace subprograms from $name_i$ to end of relocatable file with indicated PDC's.
blank	blank	Replace entire relocatable file with indicated PDC's.
$name_i$=$name_n$		Replace named subprogram with indicated PDC's.

4.2.4 DELETE

A DELETE control card prevents the transfer of the designated records from the old library tape to the new one.

The user must delete subprograms in the order of their appearance in the relocatable file.

There is no provision for deletion of resident subprograms since any modification of resident requires replacement of all of resident, variable resident, and file 2 absolute records.

$^{7}_{9}$DELETE, $name_i$, $name_n$

$name_i$, $name_n$ Subprograms on existing relocatable file or blank. The possible combinations specify the following actions:

$name_i$	$name_n$	Action
specified	specified	Delete subprograms $name_i$ through $name_n$ on the relocatable file.
blank	specified	Delete subprograms from beginning of relocatable file through $name_n$.
specified	blank	Delete subprograms from $name_i$ through end of relocatable file.
blank	blank	Delete entire relocatable file.
$name_i$=$name_n$		Delete named subprogram.

4.2.5 INSERT

An INSERT control card adds records that are not on the old library tape to the new library tape. They are inserted on the relocatable file immediately after named subprogram. If no subprogram is specified, the new records become the first records of file 2.

$^{7}_{9}$INSERT, name

name Subprogram on existing relocatable file or blank

4.2,6 TAPE

A TAPE control card copies a requested file 2 absolute record from the old library tape to the scratch tape.

```
7
9TAPE, name, R
```

name Name of file 2 absolute record to be copied on scratch tape.

R Rewinds old library tape and writes an end-of-file on the intermediate tape; used only on the last TAPE card in the PRELIB input deck.

Each time PRELIB encounters a TAPE card or absolutizes a program, it fills one four-word entry in RECTABLE with the header for that record. The size of RECTABLE - a maximum of 28 entries - determines the maximum number of absolute records allowed on the scratch tape.

All absolutized routines to be added to file 2 must be on file 55 or on a unit designated by a UNIT card.

4.2.7 UNIT

A UNIT control card specifies the logical unit, other than INP, containing PRELIB detail card images. When a UNIT card is used to change resident or variable resident, it must follow an ORIGIN card or the PRELIB detail TRA card. When a UNIT card is used to control modifications of a relocatable file, it may follow a REPLACE, INSERT, or DELETE card.

```
7
9UNIT, u1, name
```

u_1 Logical unit containing PRELIB detail deck; if 55, record name must be given.

name Specifies absolute record on logical unit 55 to be copied on the new library tape; if not used, the unit is read until an end-of-file.

4.2.8 MACRO

A MACRO control card directs PRELIB to read Hollerith cards and write them on the new library tape in a form compatible with the system languages.

```
7
9MACRO, p, u
```

p Symbolic name, such as COMAC, that identifies a group of macros to be written.

u Logical unit containing macro cards; if blank, INP is assumed.

PRELIB adds a pseudo IDC card (word count of 41_8) and then processes the MACRO cards.

Each 80-column Hollerith card is read into core as a 20-word BCD record modified as follows:

Word 20 (columns 77-80) is deleted.

Words 1-19 are renumbered 2-20.

A new word 1 with a w field of 71_8 and with a $\overset{7}{9}$ punch in column one is added.

Two such cards are then written as a 40-word BCD card image.

COMPASS requires that all system macros occur in COMAC.

An END card (COMPASS Reference Manual) must follow the last macro in the PRELIB input stream.

4.2.9 SYMROUT

A SYMROUT control card directs PRELIB to copy file one onto the new library tape and absolutizes system routines (COMPASS, FORTRAN, etc.) according to cards that come after it in the PRELIB input deck. If used, it must be the first card in the PRELIB input deck. RECORD, ORIGIN, and UNIT or PDC must follow for each file 2 program to be absolutized.

```
7
9SYMROUT
```

4.2.10 RECORD

A RECORD control card marks the beginning of a new record. It permanently specifies the lowest storage location used by any portion of the record when the record is absolutized.

```
7
9RECORD, m
```

m — Symbol ± octal address; symbol is any entry point previously defined; octal address is $1\text{-}5_8$ digits. Either or both may be omitted; if both are omitted, address zero is assumed.

The m value indicates the beginning of the record area of the simulated target memory used during PRELIB processing. Simulated target memory corresponds to target (execution time) memory.

```
7
9RECORD,START+100
```

For example, START is location 743_8 and record area length is 4000_8; the record area corresponds to the section of simulated target memory between 1043_8 and 5043_8.

A RECORD card must be followed by an ORIGIN card.

4.2.11 ORIGIN

An ORIGIN control card designates a loading position within a simulated target memory.

$^{7}_{9}$ORIGIN,n,i

n — Unsigned 1-5 digit octal number or previously defined entry point in file 1; previously defined entry point may be modified by signed (+ or -) 1-5 digit octal number; may be blank.

If not blank, n must be greater than or equal to m on the preceding RECORD card.

i — Unsigned 1-5 digit octal number; it indicates number of words to be deleted from beginning of routine when record is written from core to tape; may be blank.

4.2.12 SEPOINT

A SEPOINT control card must be used to define and enter any entry point into a permanent position in the loader symbol table (LST).

$^{7}_{9}$SEPOINT,name

name — File 1 entry point name; if undefined in file 1, it is address of ABNORMAL; if present, it is entered in LST. Otherwise 77777_8 is entered in LST.

A SEPOINT card must be inserted directly after the LOADER record. When only system routines (e.g. COMPASS) are absolutized, SEPOINT cards are illegal.

A SEPOINT card may be used to prevent the loading of a subroutine or program; if the name specified on the control card is undefined, the symbol is equated to ABNORMAL, and the job will terminate. This technique is particularly useful for installations with optional floating-point and BCD hardware. For example, the following cards in file 1 input would prevent loading of hardware simulation routines FDPBOXS and BCDBOXS.

```
SEPOINT, FDPBOXS
SEPOINT, BCDBOXS
```

Other undefined system entry points (CIP, etc.) do not invalidate the PRELIB as long as no routines refer to the undefined SEPOINT name.

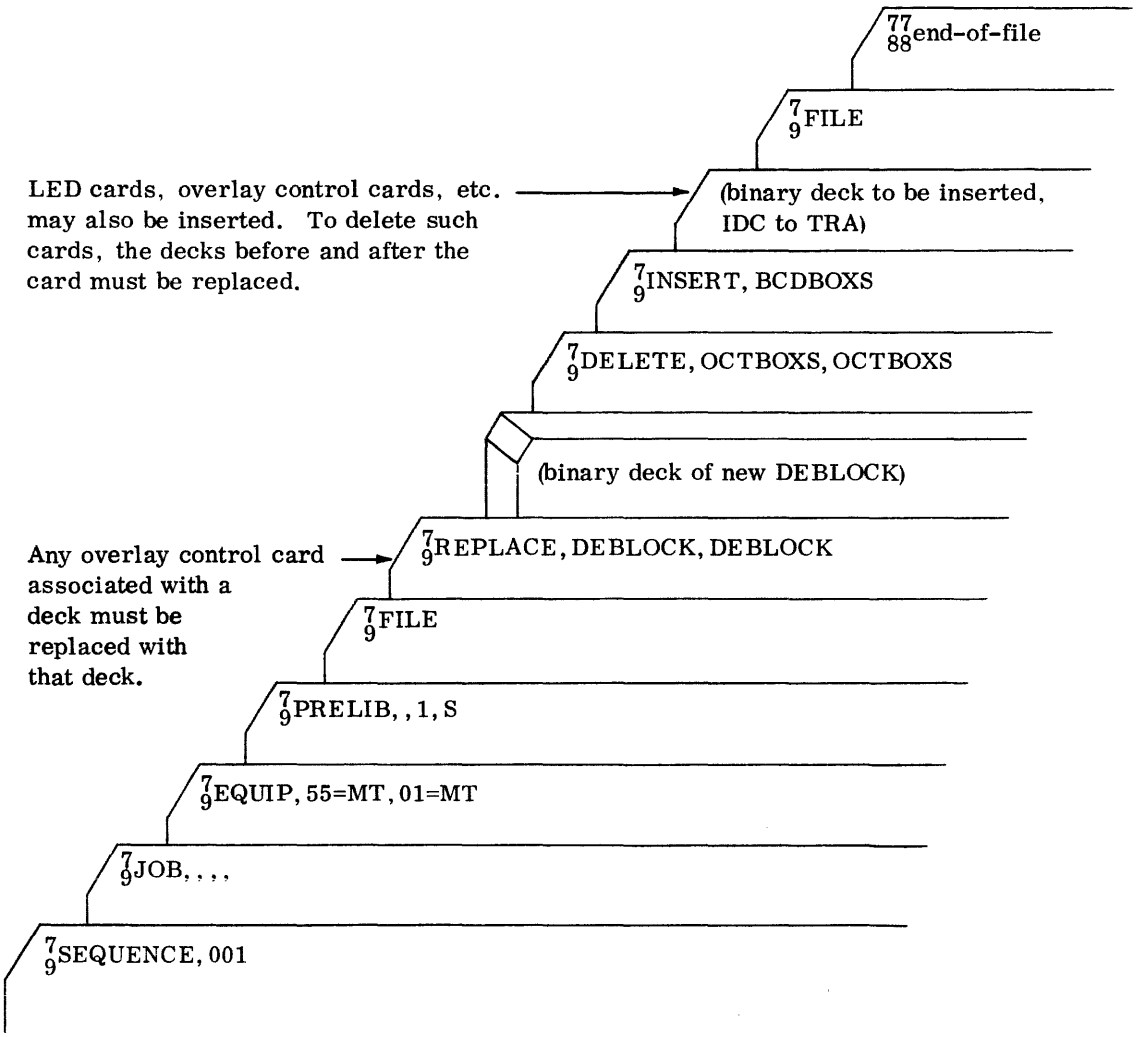
To link file 2 absolute records to system entry points, PRELIB generates its own loader symbol table. Therefore, if SEPOINT cards are inserted or deleted in resident, they should be inserted

or deleted in PLOVINT, the initializing routine of PRELIB. If this is not done, PRELIB may not load or a SYMROUT run may fail because of undefined references in COMPASS or FORTRAN.

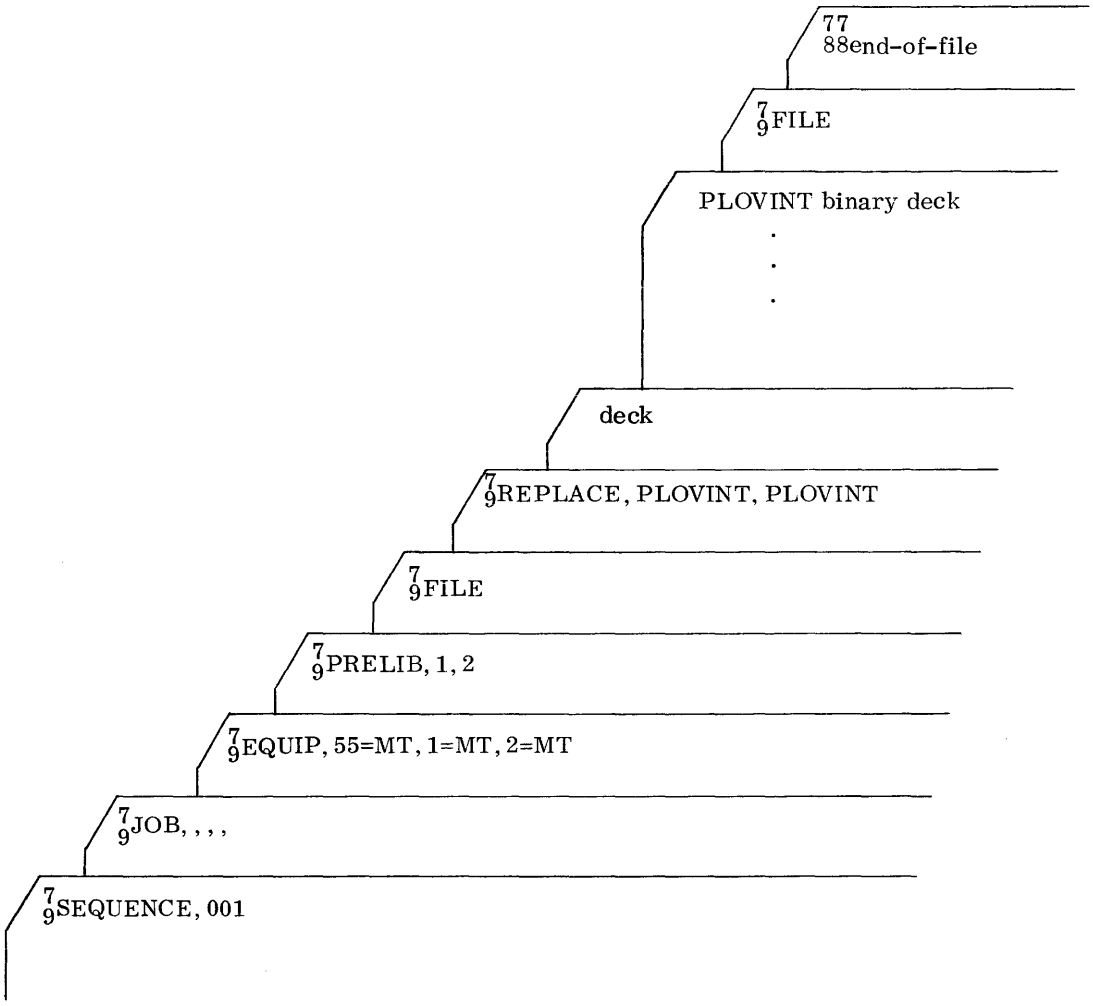
4.3 PRELIB EXAMPLES

4.3.1 MODIFY RELOCATABLE ROUTINES

Replace, delete, and insert relocatable routines in file 2:



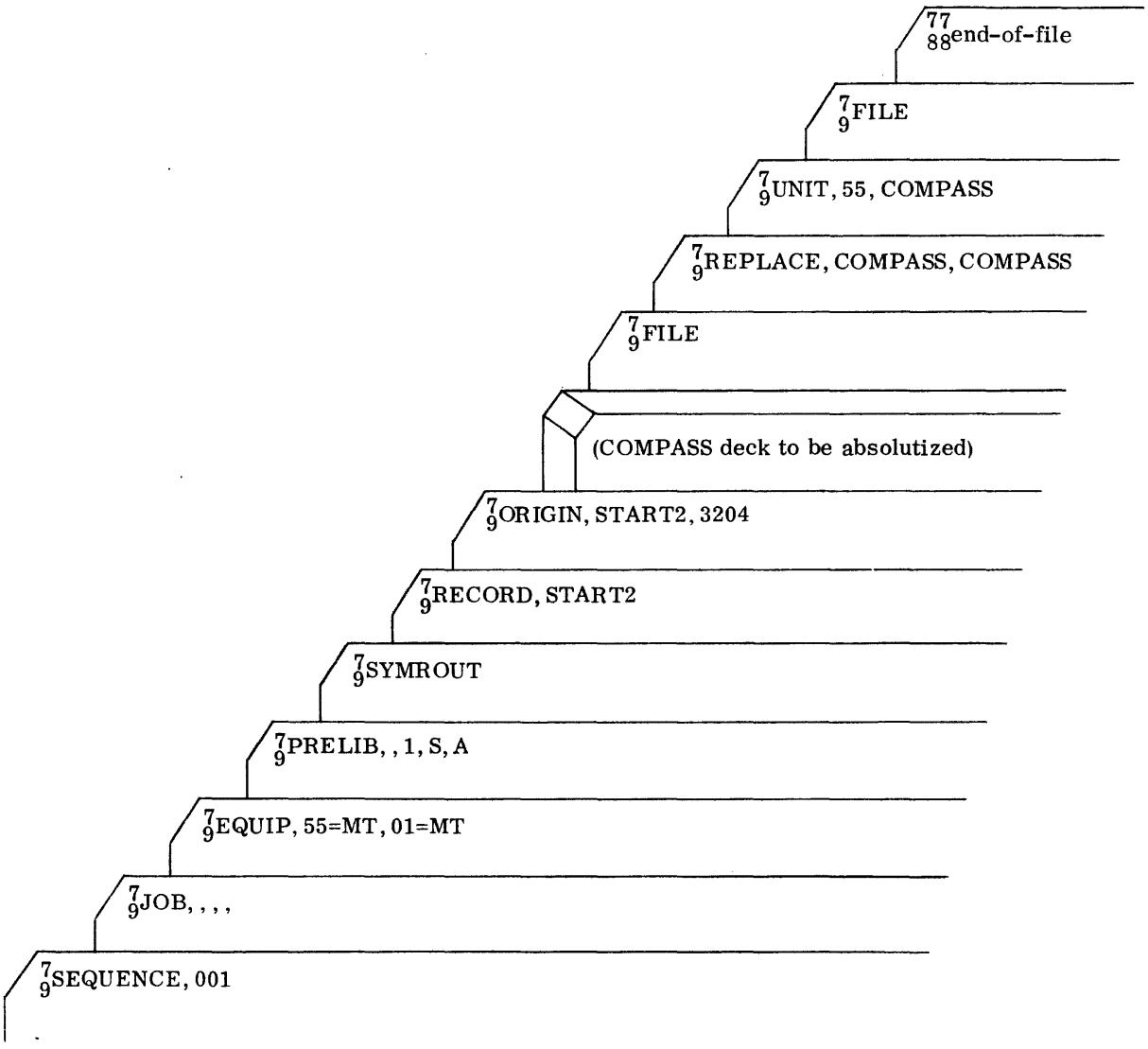
MODIFY file 2 relocatable routine on one system tape (lu=1) and place output on second tape. Use a third system tape as the operating system. (The contents of lu=1 are not altered.)



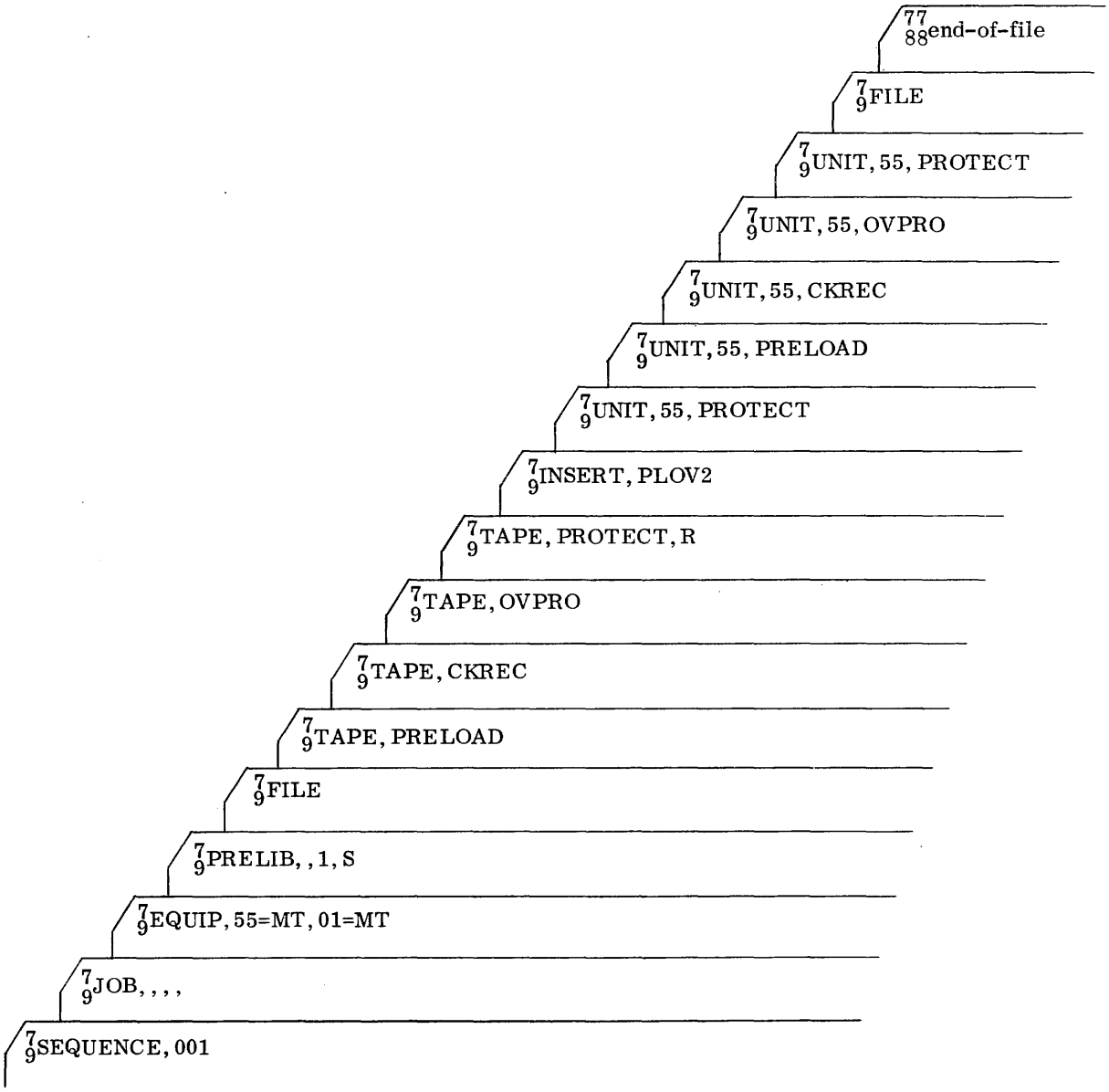
4.3.2 REPLACE ABSOLUTIZED PROGRAMS

Those products in file 2 partially comprised of absolute routines with overlays or segments (COMPASS, FORTRAN, etc.) can be modified during a SYMROUT run. Resident and variable resident need not be changed.

For example, to replace only COMPASS:



Insert variable resident routines at other places on the library.



PRELIB routines PHASE 2 and DEBLOCK write the absolutized records on the intermediate tape. These are transferred to the new library tape by file 2 UNIT cards.

When the PRELIB input deck is relocatable binary card images on tape, a UNIT control card must follow the ORIGIN card but it cannot indicate the original library tape as the input source.

After all records to be absolutized have been read, a 7/9FILE card follows, indicating the end of this phase of the absolutizing process (i.e., the loading of the decks into target memory). Before any file 2 modifications are made, PHASE 2 links the absolute records to their external references† and DEBLOCK writes them as contiguous records on file 55. Those records in file 2 which have been reabsolutized must be replaced:

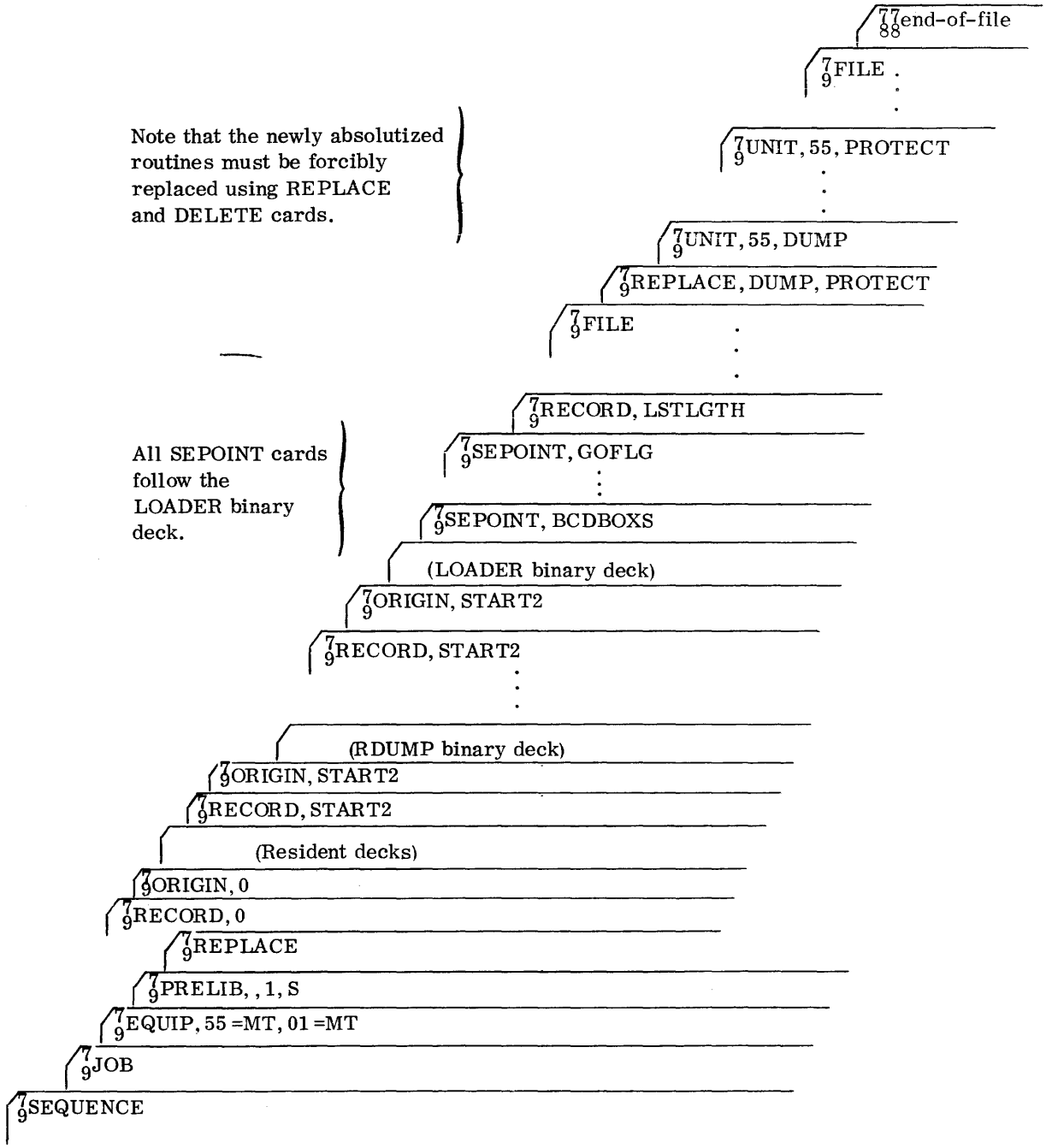
```
7/9REPLACE,COMPASS,COMPASS
7/9UNIT,55
```

The unit card informs PRELIB that COMPASS has been placed on file 55 previously. The procedure is identical for all other file 2 absolute records.

† Linking to externals is the reason that all absolute programs must be reabsolutized if resident is modified, since the absolute fw addresses of some system entry points probably have changed as a result of the modification.

4.3.3 REPLACE RESIDENT

All absolutized routines must be reabsolutized each time resident is modified.



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