MASSACHUSETTS INSTITUTE OF TECHNOLOGY - Project MAC

CC-259 MAC-M-290

TO: All System Programmers

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SUBJECT: Complete CTSS Inventory

The following is a list of all those programs considered to be part of the CTSS system. This includes utility programs, supervisor modules, commands, and system libraries. Brief descriptions and references are given for most items in the list.

This memo is not intended to document the included items; it is merely an inventory of the system. It is felt that this inventory serves as a useful index to the system.

UTILITIES

The following pages list several utility programs necessary for maintaining CTSS. In addition, there are listed catastrophe procedures which depend upon certain "repair" programs, as well as basic setup decks. The correct operation of many of these programs is more completely described in indicated references. These Operating Staff Notes, (OSN), are maintained at the 7094 console and are available at all times.

Most of these jobs are either non-standard FMS jobs, (NSFMS) or the so-called stand-alone, (SA), jobs. It is understood that a stand-alone job is one which is loaded using the cylinder loader (described below). Some of the jobs may also be CTSS compatible FMS jobs, (FMS). For further reference on the operation of the various types of job, refer to OSN 25.

Non-Foreground Utility Routines

SALVAGER — Used to clean up the disk after abnormal shutdowns of CTSS. Versions: SA and NSFMS.
Ref: OSN 31 S. Dunten x6005

Disk Editor — Handles bulk input-output requests for users. Versions: SA,FMS, and NSFMS.
Ref: OSN 28, CTSS Programmer's Guide sections AE.1, AH.6.06

2 Card Loader — Calls the cylinder loader off the disk into B-core.
C. Garman x5889

Disk Drum Setup — Used to write formats, check disk surfaces, clear drum and/or disk, and load cylinder loader. Versions: NSFMS
Ref: OSN 32 C. Garman x5889

7750 Load
and 7750 Dump — Loads 7750 program and performs FMS-like dump of contents of 7750 core storage.
Versions: NSFMS
S. Dunten x6005

Dumper 01
and Dumper 02 — Special "sneak-on" program to process core-dump tapes produced by the dummy EDEC module in CTSS. Versions: FMS and NSFMS.
Ref: OSN 34 C. Garman x5889
D. Widrig x6005

Disk/Drum Patcher — Used to correct track pointers, dropped bits, etc. on disk or drums. Should only be used in dire emergencies where salvager cannot be used. Versions: NSFMS
C. Garman x5889

Drum Dump
and Drum Load — Dumps contents of low-speed drum on tape. Reloads from same: Used to preserve drum contents during c.e. repairs. Versions: NSFMS
Ref: OSN 33 S. Dunten x6005

Cylinder Loader — B-core program called off of disk by above-mentioned 2 CARD LOADER. Loads BSS modules into core-A mentioned in selected load list in M1416 CMFL01.
C. Garman x5889

STATAL — Produces complete statistics of all files on drum and disk. Versions: NSFMS
S. Dunten x6005

UTILITY SAVED FILES

BS — Used to determine line number that indicated user is dialed into computer on. To load and use:

```
MAD  BS  (LIST)
NCLOAD  BS  (CFL1)  (LIBE)  XLIBE
SAVE  BS
R  BS  PROBNO PROGNO
```

PROBNO must be in standard form. For example, T113 is written as T0113. Ref: PSN 57

REF

Searches SAVED files for address references. Uses index registers saved in machine conditions. To load and use:

```
MAD  REF  (LIST)
NCLOAD  REF
SAVE  REF
R  REF  NAME1  LOC  -DELTA-
```

NAME1 refers to NAME1 SAVED. LOC (OCTAL) indicates the desire to find references to location LOC. DELTA (decimal) indicates the desired range (plus or minus). If unspecified, DELTA is taken as 0.

SYSLST

Assembles and compiles modules indicated in a standard CTSSLD list. BCD listings are generated in the currently attached directory and a request file is generated. To load and use:

```
MAD  SYSLST (list)
MAD  RLIBE  (list)
MAD  INFORM (list)
NCLOAD  SYSLST  RLIBE  INFORM
SAVE  SYSLST
R  SYSLST  NAME1  -PROGN-
```

NAME1 refers to NAME1 CTSSLD. Typing of the class name of modules mentioned in the load list is done automatically by searching the UFD which contains NAME1 CTSSLD. The class name may be either FAP or MAD. After a successful assembly, the BSS files will be left in the UFD containing NAME1 CTSSLD. The optional argument 'PROGN' may be used to specify that NAME1 CTSSLD and all the source decks are in a directory different from the current directory. If unspecified, the current directory is assumed.

Note: SYSLST is unaware of the names of any INSERT files in the assemblies. Therefore, it is the user's responsibility to provide access to these files.

EXAMPLE ... to assemble CTSS and leave listings in comfil 3:

```
COMFIL 3
LINK    SYSLST SAVED  M1416 CMFLO5
LINK    EQU FAP  M1416 CMFLO1
LINK    COMMON FAP  M1416 CMFLO1
LINK    MADCOM MAD  M1416 CMFLO1
R       SYSLST MAC4A1 CMFLO1
```

AUDIT

Attaches to and searches comfil 2 for command files. Reports on commands longer than 4K who are not noted in exception list in supervisor. Also, reports on commands noted in exception list in supervisor and not found in comfil 2. To load and use:

```
MAD  AUDIT (LIST)
NCLOAD AUDIT (CFL1) (LIBE) XLIBE
SAVE AUDIT
R  AUDIT
```

REMOVE

Performs date-remove of unused files. Searches entire disk for old files and resets them to zero length. Adds mode bit to cause trap if these files are opened. Ref: PSN 60. To load and use:

```
MAD  REMOVE (list)
MAD  RLIBE (list)
FAP  .SETUP (list)
NCLOAD REMOVE RLIBE .SETUP
SAVE REMOVE
R  REMOVE MMDDYY
```

All files unused since MMDDYY will be removed from this disk.

PRELOD

Simulates actions of CTSS cylinder loader. Reports on missing entry points, missing files, core overlap, etc. To load and use:

```
MAD  PRELOD (list)
VLOAD  PRELOD
SAVE  PRELOD
R  PRELOD NAME1 -'COMB'- -'NOLIST'-
```

The BSS modules indicated in NAME1 CTSSLD are "loaded". That is, lengths, entry points, etc. are calculated and tables maintained. The optional argument 'COMB' indicates that several BSS decks have been combined into one larger deck. Thus, the entire deck must be searched for program cards, not just the beginning of the deck.

PRELOAD produces a map called 'NAME1 STOMAP' which completely cross-references the calls, etc. To get a very short map which contains only a summary of the preload, the argument 'NOLIST' may be used.

LDCMP

Compares load lists and itemizes differences between module names. To load and use:

```
MAD  LDCMP (list)
VLOAD  LDCMP
SAVE  LDCMP
R  LDCMP  NAME1 NAME2 .... -NAME10-
```

The indicated list of CTSSLD lists is compared and any differences are reported. This is an easy way of making sure that new systems have the proper modules in them.

BACKUP

Combines BSS decks mentioned as modules in CTSSLD lists. To load and use:

```
MAD  BACKUP (list)
NCLOAD  BACKUP
SAVE  BACKUP
R  BACKUP NAME1 NAME2
```

All of the BSS decks mentioned in NAME1 CTSSLD are combined into a deck called NAME2 BSS. In addition, a new load list, NAME2 CTSSLD, is created. This list has one entry, NAME2 in it.

CTSS MODULES

The following listing of the modules that makeup CTSS refers only to the generic name of the module. For example, the generic name of MAIN4A, the CTSS main program, is MAIN. Accompanying each module name is a capsule description of the module's function in the system. An overall view of the module's relation to each other may be found in MAC Technical Report 16. Although the system described in TR-16 is not the current system, the basic principles and relations have not changed.

CTSS SUPERVISOR MODULES

MAIN — CTSS main program. Initializes trap calls, 7750, file system, etc. Overlaid later by character buffers.

CLOC — Handles clock traps every 200 ms. Polls user lines and notifies scheduling algorithm of status changes. Receives all external key settings from operators.

CTRL — CTSS Main Control. Command search and loading handles automatic logouts.

CPYC — Check user's command lines and moves line into command buffers.

FINT — Receives file system interrupts. Handles file waits and notifies scheduling algorithm.

DUMP — Performs user swaps onto high-speed drums. Frees up core space on memory bound changes.

TCOR — Processes break characters from user consoles. Controls resetting of user lines during emergencies.

IBUF — Moves characters between character buffers and console lines. Also vice-versa.

SCDA — Main scheduling algorithm. Decides who is to run and for how long.

SCDB — Queue manipulator for scheduling algorithms.

SCDC — Handles all time accounting for user charges. Watches for users exceeding time allottments, etc.

SCDD — Statistics gathering package driven by SCDA.

SCDE — FAP utilities and interface handlers for scheduling algorithm.

SCDF — Plots user interactions and state of scheduling queues on ESL scope.

SCDG — Interface between SCDF and direct data lines to ESL scope.

PMTI	Receives and processes all user protection mode violations. Has dispatch table for user calls to supervisor subroutines.
PMBG	Utility routines for PMTI. Also, handles background-caused traps. Processes file system error returns for users.
RTRN	Saves basic machine conditions on traps and restores them on return.
SAVR	Routines to save and restore user machine conditions while supervisor processes user's supervisor calls.
UTRP	Processes user traps such as an STR trap.
WRFL	Handles output for console-less foreground programs, (i.e. FIB, DAEMON). Also, resets all active files for a user if the need arises.
COMC	Checks on commands in command directory. Also, sets users to a particular UFD if desired.
COMD	CTSS list of "exceptional" commands. Most regular commands are not mentioned here.
CONV	CTSS conversion routines to convert time into "clock ticks", etc.
ONLN	On-line print, punch and chronolog clock reaching.
EDBG	Debugging module for taking core dumps, file system traces, etc.
SAVC	CTSS SAVE,RESTOR type commands.
CHNE	7909 channel programs for 7750.
ADPI	Code conversion routines to map incoming and outgoing characters for user consoles.
HIGH	High speed 7750 line adapter.
WRHI	Entries to connect any logical console to high-speed lines.
AP75	7094 buffer control for 7909-7750 interface.
TSTO	7750 storage allocater. Used by AP75, ADPI, HIGH.

UNIT — Assigns logical unit numbers to incoming console lines. Also, releases lines when user hangs up.

MISCELLANEOUS MODULES

ESLD — Kludge adapter module for ESL display.

KLUDUM — Dummy adapter for non-ESL applications.

LIBE — Dummy library containing subroutines needed by scheduling algorithm.

FILE SYSTEM MODULES

FCOR — Co-ordinator for entire file system.

SEAR, SRCH, SCND, STIK, PUSH — M.F.D./U.F.D. search and minipulation modules.

TRAC — File activity trace module.

BUCM — Buffer control module. Handles and supervises all I/O.

IOCM — I/O control module. Interface between BUCM and strategy modules.

QMAN — Queue management. Manipulates queues holding I/O requests.

DDST — Strategy module for disk and drum. Transforms I/O requests into actual device dependent I/O tasks.

TMAN — Track management module. Accounts for all track usage on disk and drum.

DDAP — Adapter to drive channel(s) connected to disk and drum modules.

TPSM — Strategy module for tapes. Handles all requests for I/O and transforms them into device dependent I/O tasks.

TPAP — Tape adapter that communicates with channels controlling tape drives.

FOREGROUND COMMANDS

The following pages itemize all of the CTSS foreground commands with the exception of the experimental commands (i.e. CTEST0 through CTEST9). Associated with most commands is a name and phone number. This name represents the person most qualified to discuss the command although, in many cases, this person is not the original author.

In all cases, a functional description of what a given command does may be found in the CTSS Programmer's Guide.

A - Core Transfers and Privileged

LOGOUT	J. Spall		x4109
OTOLOG	"		
LOGIN	"		
ENDLOG	"		
START	A - core		-
RSTART	"		
SAVE	"		
MYSAVE	"		
RESTOR	"		
RECALL	"		
RESUME	"		
R	"		
CONTIN	"		
FIB	M. Padlipsky		x5904
DELFIB	"		
FIBMON	"		
LINK	D. Oppert		x6006
UNLINK	"		
TRIEVE	D. Widrig	(Daemon Retrieve)	x6005

TREEVE	M. Padlipsky (Interim Retrieve)	x5904
MAIL	T. Van Vleck	x6029

B-Core Transfers

USE	T&LIB1 (J. Spall)	x4109
FM	"	
STOPAT	"	
TRA	"	
PATCH	"	
FAPDBG		
STRACE	B. Wolman	x6022

Program Loading Commands

L	L. Odland	x4107
LOAD	"	
NCLOAD	"	
VLOAD	"	
LOADGO	"	
LDABS	D. Widrig	x6005

Source File Creation and Editing

INPUT	M. Child	x6009
EDIT	"	
FILE	E. Quisenberry	x6007
ED	C. Garman	x5889
EDL	J. Saltzer	x6039
TYPSET	"	

Tape Handling Commands

MOUNT	N. Morris	x6029
UMOUNT	"	
VERIFY	"	
LABEL	"	
TAPFIL	"	

File Manipulation and Printing

LISTF	S. Rosenbaum	x6035
PRINTF	C. Garman	x5889
CHMODE	M. Child	x6009
DELETE	"	
RENAME	"	
COMBIN	G. Schroeder	x6008
SPLIT	E. Quisenberry	x6007
PRESS	N. Morris	x6029
PRBIN	E. Quisenberrry	x6007
EXTBSS	N. Morris	x6029
UPDBSS	"	
SDUMP	C. Garman	x5889
SPATCH	G. Clancy	x6007
PRINT	E. Quisenberry	x6007
ARCHIV	D. Wagner	x6007
CRUNCH	C. Garman	x5889
RUNOFF	J. Saltzer	x6039

Message File Transmission and Creation

COPY	D. Widrig	x6005
UPDATE	"	
REMARK	"	
LOG		
RQUEST	M. Child	x6009

System Query and Error Interrogation

SD	K. Martin	x6009
SP	"	
PRNTER	D. Wagner	x6007
TTPEEK	D. Widrig	x6005

Compilers, Assemblers, and Sub-Systems

FAP	L. Odland	x4107
MADTRN	R. Rappaport	x6039
MAD	D. Widrig	x6005
SNOBOL	D. Shea	x4107
DYNAMO	A. Pugh	x4426
RUNCOM	G. Schroeder	x6008
BEFAP	C. Garman	x5889
STRUDL	R. Logcher	x5326
MADBUG	L. Odland	x4107
COGO		
OPS	D. Ness	
TIP	M. Kessler	x5687
GPSS	M. Jones	x5882
AED	C. Feldmann	x5880
COMIT	R. Fabry	(in Chicago)

LISP	J. Moses	x5867

Miscellaneous

TFILE		
COMFIL	C. Garman	x5889
GENCOM	N. Morris	x6029
SAVFIL		
RERUN		
PERMIT	D. Oppert	x6006
REVOKE	"	
CALL	D. Widrig	x6005
FMSTAP	P. Crisman	x6008

636 Commands

636TAP		
MRGEDT		

LIBRARIES

The following listing of relevant system libraries does not attempt to explain the usage of the various entry points. In most cases, references are indicated which give greater explanation.

XLIBE

Entry Names	Entry Names (con't)
EXIT	PAKDAY
ENDJOB	PROG
SNAP	RPAT
.SETUP	LSEQ
CLOUT	SEQNC
ABS	STSQ
ADD	SID
DEC	STA
APAT	STD
BRAKE	STL
BRFIL	STP
BRTIT	STT
COMFL1	SIGNED
COMLOC	STMAP
DA	TDEC
DXV	TOCT
DAYTIM	ZZZ
DLOC	CTIME
DUMRDF	TCTIME
ENTRY	DTBC
XECOM1	BTBC
IDUSER	OTBC
LDFDIR	BTOC
LDFIL	OCTDMP
LS	CRAM
RS	WCRAM
MNEM	ICRAM
	ACORE

TSLIB1

Entry Points

1300	CØN
1301	CØN
1311	CØN
3310	CØN
ACØS	CØN
ASIGN	CØN
AKNOLG	
SETBRK	6.03
SAVBRK	6.03
GETBRK	6.03
APPEND	2.03
ASSIGN	2.03
ENDRD	2.02
FILE	2.03
SEEK	2.02
ATAN	CØN
ATN	CØN
BFREAD	2.10
BFWRIT	2.10
BFCØDE	2.10
BFCLØS	2.10
BFØPEN	2.10
BCDEC	10.01
BCØCT	10.01
BREAD	2.02
.BSF	5.04
.BSR	5.04
.EFT	5.04
.RWT	5.04
(BST)	5.04
(EFT)	5.04
(RWT)	5.04

CØN means see consultants for one page write-up.

All references are AG.xx.xx

Entry Points (Con't)	
BWRITE	2.03
BZEL	10.04
CHFILE	3.07
DELFIL	7.07
CHMØDE	3.01
CHNCØM	8.03
.CLEAR	2.07
CLØCØF	12.03
CLØCØN	12.03
CØMFIL	3.03
CØLT	11.01
CØM	CØN
ANA	CØN
ØRA	CØN
CØMARG	8.04
CØMFIL	3.03
CØS	CØN
SIN	CØN
CØT	CØN
TAN	CØN
(CSH)	1.06
.READ	1.06
.READL	1.06
.LOOK	1.06
.SCRDS	1.06
DELBC	10.02
DELBC	10.02
DERBC	10.02
DELETE	3.02
ERASE	3.02
DETCS	CØN
DFAD	CØN
DFSB	CØN
DFMP	CØN
DCEXIT	CØN
DFDP	CØN

Entry Points (Con't)	
SFDP	CØN
DIM	CØN
DPNV	CØN
INDV	CØN
DREAD	2.02
DSKDMP	2.01
DSKLØD	2.01
DWRITE	2.03
(EFTM)	6.05
(LFTM)	6.05
EØFEXIT	4.03
SETEOF	4.03
WRDCNT	4.03
ERRØR	9.01
EXIT	4.04
CLKØUT	4.04
DUMP	4.04
ENDJØB	4.04
EXITM	4.04
PDUMP	4.04
EXMEM	6.06
EXP	CØN
EXP(1	CØN
EXP(2	CØN
EXP(3	CØN
FINT	10.07
MINT	10.07
FLIP	CØN
(FPT)	6.05
FREE	6.07
FRET	6.07
FSTAT	3.04
FSTATL	3.07
GCLC	8.03
GCLS	8.03
SCLC	8.03

Entry Points (Con't)

SCLS	8.03
GETCFN	7.02
GETCF	7.02
GETIME	12.01
GETNEM	6.06
SETMEM	6.06
GETTM	12.01
GLOC	7.01
GMEM	6.06
SMEM	6.06
GNAM	11.02
GETCLC	8.03
GETCLS	8.03
GETCØM	8.04
GETLØC	7.01
SETLØC	7.01
GTNAM	3.05
INT	CØN
IØDIAG	4.06
IØSET	CØN
IØEND	CØN
IØITR	CØN
IØPAR	CØN
(IØH)	10.05
STQUØ	10.05
(FIL)	10.05
(RTN)	10.05
IØHSIZ	10.05
LDFIL	2.09
LDUMP	4.05
LJUST	10.04
.LØAD	2.01
.DUMP	2.01
LØG	CØN
MAXO	CØN

Entry Points (Con't)

MAX1	CØN
MINO	CØN
MIN1	CØN
XMIN	CØN
MØD	CØN
MØUNT	5.05
UMØUNT	5.05
VERIFY	5.05
LABEL	5.05
TAPFIL	5.05
MØVE1	11.03
MØVE2	11.03
MØVE3	11.03
.MTX	
NEXCØM	8.01
NCØM	8.01
ØCABC	10.03
ØCDBC	10.03
ØCRBC	10.03
ØCLBC	10.03
ØPEN	2.08
FCHECK	2.08
FWAIT	2.08
BUFFER	2.08
CLØSE	2.08
UPDATE	3.07
PAKR	10.06
PAKL	10.06
UNPAKR	10.06
UNPAKL	10.06
.PCØMT	1.08
.WRITE	2.11
.DUMP	2.11
.LOAD	2.11
.ASIGN	2.11

Entry Points (Con't)	
.APEND	2.11
.SEEK	2.11
.RESET	2.11
.UPDAT	2.11
.ENDRD	2.11
.ERASE	2.11
.READK	2.11
.FSTAT	2.11
.DLETE	2.11
.FILE	2.11
.RENAM	2.11
PRNTER	4.06
PRNTP	1.03
PRNTPC	1.03
.PRSLT	1.09
.PRBCD	1.09
.PROCT	1.09
RANNØ	CØN
SETU	CØN
.RBIN	
.WBIN	
.RDATA	1.10
.RPDTA	1.10
RDFLXB	1.01
RDFLXC	1.01
RDFLX	1.01
RDFLXA	1.01
WRFLXA	1.01
RDFILE	2.08
RDWAIT	2.08
RECOUP	4.02
.RESET	3.06
.RENAM	2.11
.FSTAT	2.11
RENAME	3.01

Entry Points (Con't)	
RJUST	10.04
RESETF	3.06
UNLINK	7.03
.SET	(MAD Systems)
.SAVE	"
.SAVRN	"
.RSTOR	"
.RSTRN	"
(SCH)	5.01
(STH)	5.01
(STHM)	5.01
.PUNCH	5.01
.PNCHL	5.01
.TAPWR	5.01
SCHAIN	8.02
SETCLC	8.03
SETCLS	8.03
SETERR	4.02
SETFMT	11.04
SETNAM	11.04
SETPRI	2.08
.SETUP	6.05
XSIGN	CØN
SIGN	CØN
SIMCS	CØN
SLEEP	6.02
(SLI)	CØN
(SLØ)	CØN
SLØC	7.01
SNAP	4.02
(SPH)	1.07
(SPHM	1.07
.PRINT	1.07
.COMNT	1.07
.SPRNT	1.07

Entry Points (Con't)

SQRT	CØN
SQR	CØN
SRCH	2.06
BLK	2.06
FLK	2.06
ENDF	2.06
CLOUT	2.06
(STB)	5.03
(WLR)	5.03
(TSB)	5.03
(RLR)	5.03
SETFUL	1.02
SETBCD	1.02
STØMAP	6.04
STØRGE	3.07
SYPAR	7.01
TANH	CØN
TIMER	12.02
JOBTM	12.02
RSCLCK	12.02
STØPCL	12.02
KILLTR	12.02
TIMLFT	12.02
TILØCK	6.08
FERRTN	4.06
TRACE	(TSLIB2)
STRACE	"
TRANSP	(Mad Systems)
.SUBS	"
(SUBS	"
.03310	"
.03311	"
TRFILE	2.08

Entry Points (Con't)

TSSFIL	3.03
USRFIL	3.03
(TSH)	5.02
(TSHM)	5.02
.TAPRD	5.02
UPDMFD	7.03
DELMFD	7.03
ATTACH	7.03
RDFILE	2.08
MOVFIL	7.03
SETFIL	7.03
LINK	7.03
ALLØT	7.03
SETVB	2.05
VREAD	2.02
VWRITE	2.03
SETVBF	2.05
FWRITE	2.03
WHØAMI	7.05
WRFLX	1.01
DEAD	6.01
DØRMNT	6.01
WRFILE	2.08
WRWAIT	2.08
XDETRM	CØN
XSIMEQ	CØN
XDIM	CØN
XDTRM	CØN
XECØM	8.01
XFIX	CØN
XINT	CØN
XLØC	CØN
XMAX1	CØN
XMIN1	CØN
XMØD	CØN
XSMEQ	CØN
ZEL	10.04

ADMINISTRATIVE UTILITIES

One class of programs are necessary for the week-to-week operation of CTSS. These programs, the administrative utilities, are run at periodic intervals by the system administrators.

A. MAC Utilities

ALOCAT — Used by group leaders to create and edit the Group Allocation File (GAF) containing the total resource allotments for that group.

NOTIFY — Sets flags in a file called CURENT GAFS which notifies system administrator that a group's GAF has changed. Used by group leader.

CRANK — Process GAF of each group and creates new master time-accounting file, UACCNT TIMACC. Also, adds and deletes users from Master File Directory according to information in GAF.

GQUO — Assures that user's actual allotments and quotas agree with information in UACCNT TIMACC.

NEWKK — Handles group allocation for user's of KSL display system.

BILLER — Produces time reports for inspection by group leaders.

SCANUA — Scans UACCNT TIMACC for users who may have a selected privilege code.

B. Computation Center Utilities

MGG — Used to manipulate UACCNT TIMACC. Adds users, deletes users, and edits existing information.

CLERK — Information retrieval program to explore UACCNT TIMACC. Produces either single entry information items or summaries.

SUMMER — Produces totals and cross-footings for selected CTSS user groups.

NEW1 — General purpose file manipulator.

DAEMON*

The minimal package for secondary storage backup dumping and reloading consists of six programs:

a) DAEM3A SAVED - Initiate dump or load (CTSS).

b) DSDUMP SAVED - Incremental New File and Complete Dumper (CTSS)

c) DSLOAD SAVED - Reload Disk File (CTSS)

d) SADUMP - NSFMS job to start reloading disk files.

e) SALOAD - NSFMS job to perform complete dump.

f) PRIMER - NSFMS job to prime dumper's data files.

1. Dump and load initialization (DAEM3A SAVED) To load:

```
NCLOAD DAEM3A GETALC INSURE PRCODE
       PRNTER
SAVE   DAEM3A
```

1.1 DAEM3A FAP - Daemon Master Control.

1.2 GETALC FAP - Performs references to Core A supervisor.

1.3 INSURE FAP - Creates and restores primary file named "DRSTOR FILE.3".

1.4 PRCODE FAP - Prints message online "SET KEY CODE α 'message' ".

1.5 PRNTER FAP - Prints error messages on line.

2. Incremental and Complete Dumper (DSDUMP SAVED) To load:

```
VLOAD  DMAINA  DCYCLA  DPUSRA  DDPFLA
       DDMAPA  (MORE)
USE    DFIOMA  DERAZA  DKSETA  DRSTRA
       DGDTMA  (MORE)
USE    INSURE  PRCODE  SETTIM  NLREC
       XMOD    PRNTER
SAVE   DSDUMP
```

2.1 DMAINA FAP - Main control for CTSS dumper.

2.2 DCYCLA FAP - Cycles through M.F.D. decides whom to dump.

2.3 DDPFLA FAP - Initiates dump tape files.

2.4 DDMAPA FAP - Controls all phases of the dump map.

2.5 DFIOMA FAP - Controls all disk and tape I/O.

---

* Further information may be obtained by consulting CC-258 (MAC-M-289) and CC-252-2 (MAC-M-232-2

2.6 DERAZA FAP - Analyzes error returns and prints standard error message.

2.7 DRSETA FAP - Gets Daemon key signals and makes references to Core A.

2.8 DRSTRA FAP - Creates and restores Daemon data files.

2.10 DGDTMA FAP - General date and time manipulation routines.

2.11 INSURE FAP - 1.3

2.12 PRCODE FAP - 1.4

2.13 SETTIM MADE [uses insert file DEFINE MAD] - makes Julian calendar conversions.

2.14 NLREC MAD - Figures number of logical tape records in a disk file and vice-versa.

2.15 PRNTER FAP - 1.5

2.16 XMOD FAP - 3.10

3. CTSS Disk Reloader (DSLOAD SAVED) To load:

VLOAD	LMAINA	SLDTFA	LIORDA	LINITA
	LRFLDA	(MORE)		
USE	LRSTRA	PRCODE	NLREC	GETALC
	XMOD	IOB	PRNTER	
SAVE	DSLOAD			

3.1 LMAINA FAP - Main control for CTSS loads.

3.2 SLDTFA FAP - Loads main body of one dump tape file.

3.3 LIORDA FAP - Reads data from tape files.

3.4 LINITA FAP - Initiates and terminates tape files.

3.5 LRFLDA FAP - Reads individual entries from file directories.

3.6 LRSTRA FAP - Saves and restores loader data files.

3.7 PRCODE FAP - 1.4

3.8 NLREC MAD - 2.14

3.9 GETALC FAP - 1.2

3.10 XMOD FAP - CTSS library routine.

3.11 IOB FAP - Date and time manipulation.

3.12 PRNTER FAP - 1.5

4. Stand-alone Complete Dumper (SADUMP)

Use cylinder loader with "SADUMP" card.

(SADUMP CTSSLD)

Modules used are:

4.1 SADPMN FAP - Main control for stand alone dumper.

4.2 SDCYCA FAP - M.F.D. cycler directs whom to dump.

4.3 DPUSRA FAP - 2.2

4.4 DDPFLA FAP - 2.3

4.5 DDMAPA FAP - 2.4

4.6 DFIOMA FAP - 2.5

4.7 DERAZA FAP - 2.6

4.8 SDKSTA FAP - Dummy routine to snare calls to Core A and calls for Daemon key setting.

4.9 DRSTRA FAP - 2.8

4.10 DGDTMA FAP - 2.10

4.11 PRCODE FAP - 1.4

4.12 SETTIM MAD - 2.13

4.13 NLREC MAD - 2.14

4.14 XMOD FAP - 3.10

4.15 PRNTER FAP - 1.5

4.16 CPACA FAP - allows independent use of the file system.

4.17 Stand alone file system (see load list).

5. Stand-alone Disk Reloader (SALOAD)

(SALOAD CTSSLD)

Loaded from FMS input tape (A2).

SALOAD CTSSLD is the load list for modules used.

```
R  BACKUP  SALOAD TEMP
FMSTAP SALOAD  FMS
```

where file SALOAD FMS is the following

```
[I.D.]
[I.D.]
*  XEQ
*  BINSERT TEMP
*  DATA
```

5.1 SMAINA FAP - Main control for Stand-alone loader.
5.2 SLDTFA 3.2
5.3 LIORDA 3.3
5.4 LINITA 3.4
5.5 LRFLDA 3.5
5.6 LRSTRA 3.6
5.7 SLEEP Stand-alone sleeper (for compatibility)
5.8 GETA1 Pseudo Core-A references
5.9 NLREC 2.14
5.10 PRCODE 1.4
5.11 IOB 3.11
5.12 XMOD 3.10
5.13 CPACA 4.16
5.14 PRNTER 1.5
5.15 Stand alone file system 4.17

6. Daemon Data Files Primer (PRIMER)

Use Cylinder Loader with "PRIMER" card.

(PRIMER CTSSLD)

Modules used are:

6.1 PRIME FAP - Main routine for data primer.
6.2 RDCARD FAP - Reads a card from the card reader.
6.3 INSURE FAP - 1.3
6.4 CPACA FAP - 4.16
6.5 PRNTER FAP - 1.5
6.6 CKDATE MAD - Checks for valid date and time on primer card.
6.7 Stand alone file system - 4.17

DOCUMENTATION

A vital part of the complete system and its maintenance lies in its documentation. The following entries comprise the standard documentation. The persons currently in charge of the documentation are so noted.

1. CTSS Programmer's Guide, Edition II
   M. Padlipsky, Editor

2. CTSS Operating Manual
   W. Bjerstedt, Editor