

CATALOGED BY ASTIA
AS AD No. 401447

63 3-1

TM-(L)-715/019/01

TECHNICAL MEMORANDUM

(TM Series)

ASTIA AVAILABILITY NOTICE

Qualified requesters may obtain
copies of this report from ASTIA.

This document was produced by SDC in performance of contract AF 19(628)-1648, Space
Systems Division Program, for Space Systems Division, AFSC.

Utility Program Descriptions
Milestone 11
Symbolic Dump Routine (SYMDUMP)

By

F. J. LaChapelle
R. L. Kinhead

14 March 1963

Approved

J. B. Munson

SYSTEM

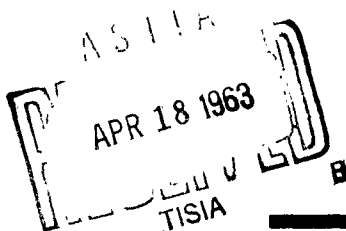
DEVELOPMENT

CORPORATION

2500 COLORADO AVE.

SANTA MONICA

CALIFORNIA



The views, conclusions or recommendations expressed in this document do not necessarily reflect the official views or policies of agencies of the United States Government.

Permission to quote from this document or to reproduce it, wholly or in part, should be obtained in advance from the System Development Corporation.

Although this document contains no classified information it has not been cleared for open publication by the Department of Defense. Open publication, wholly or in part, is prohibited without the prior approval of the System Development Corporation.



401 447

14 March 1963

-1-

TM-(L)-715/019/01

SUBROUTINE IDENTIFICATION

- A. Title: Symbolic Dump Routine (SYMDUMP) - Ident A48, Mod AB
- B. Programmed and Documented: 14 July 1962
F. J. LaChapelle, System Development Corporation
- C. Revised: 14 February 1963, documented: 14 March 1963
R. L. Kinkead, System Development Corporation

PURPOSE

To provide octal, symbolic, floating point decimal, or BCD dumps of COPII routines using their names to define the areas in core to be dumped.

USAGE

- A. Calling Sequence

L	RTJ	SYMDUMP
L+1	Normal	Return
	ZRO	N
L+2	BCD	1XXXXXXXX
L+3	DEC	T
L+4	BCD	1PROG1
L+5	BCD	1PROG2
.	.	.
.	.	.
.	.	.
L+K	BCD	1PROG(LAST)

Where:

N = the total number of parameters

T = the logical tape or printer to write dump on ($2 \leq T \leq 13$).

PROG1 ... PROG(LAST) = the names of the specific routines to dump
(left adjusted with trailing blanks).

B. The Parameter XXXXXXXX is optional and if it is present, the result will be that the routines will be dumped in the specified format. The possible values of XXXXXXXX are:

1. SYMBOLIC - mnemonic format
2. FLOATDEC - floating point decimal format, and
3. BCD - BCD format.

If absent, the dump will be in octal.

C. When called by a function card:

* SYMDUMP XXXXXXXX T PROG1 ... PROG(LAST)

where all parameters are defined as above with XXXXXXXX again optional.

RESTRICTIONS

- A. SYMDUMP uses the TTTT table, LCOUNT, LINFO, and INAMES.
- B. SYMDUMP uses the subroutine CORE, (TM-(L)-715/016/001A).
- C. A page eject follows the dump of each program and no end of file is written following a dump.
- D. A maximum of twenty routines may be dumped with one call to SYMDUMP.
- E. Only those routines defined previously by a DEFINES card or those routines which have been loaded by MTCII at execution time may be dumped by SYMDUMP.
- F. It is possible to call six selected areas of core by six special names. These areas and their mnemonics are: COMMON (06743₈ - 07106₈), POOL (04700₈ - 07106₈), COP (00000₈ - 07777₈ and 70000₈ - 77777₈), ZEROTEN (00000₈ - 00010₈), INOUT (00000₈ - 07777₈), and ALLCOP (00000₈ - 07777₈ and 70000₈ - 77777₈). Note that COP and ALLCOP are

the same areas and consist of two separate parts. INOUT is everything below 10000₈ since the I/O routines and buffers are scattered throughout this area.

- G. If a routine is requested which is not a special name or has not been loaded or defined, a one-line record to this effect is written on the output tape. The normal dumping of the remaining routines then resumes.
- H. If an absolute program is requested, a dump beginning with the first cell of the program and extending through 76432₈ is made.
- I. If the logical tape is illegal, a normal return is made with no error message.
- J. Output is called into core by CORE using the ADDR0F feature in MTCII if FLOATDEC or BCD formats are selected.

TIMING

SYMDUMP takes a maximum of one minute to dump "32K" core.

STORAGE

- 233₈ cells total.
- 121₈ cells are instruction cells.
- 15₈ cells for a table defining the special areas of core.
- 25₈ cells contain messages.
- 15₈ cells are constants.
- 33₈ cells are temporary storage.

VALIDATION TESTS

SYMDUMP was tested by the use of function cards. It was tested for dumping defined routines, routines called from the master tape, and the special areas of core (in all of the possible formats). Tests were made which printed on tape and the on-line printer. Multiple dumps were tested, as

14 March 1963

-4-

TM-(L)-715/019/01

was SYMDUMP's response to illegal tape numbers and to subroutines not in core.

See Appendix A for the function card inputs and the dump results of these tests.

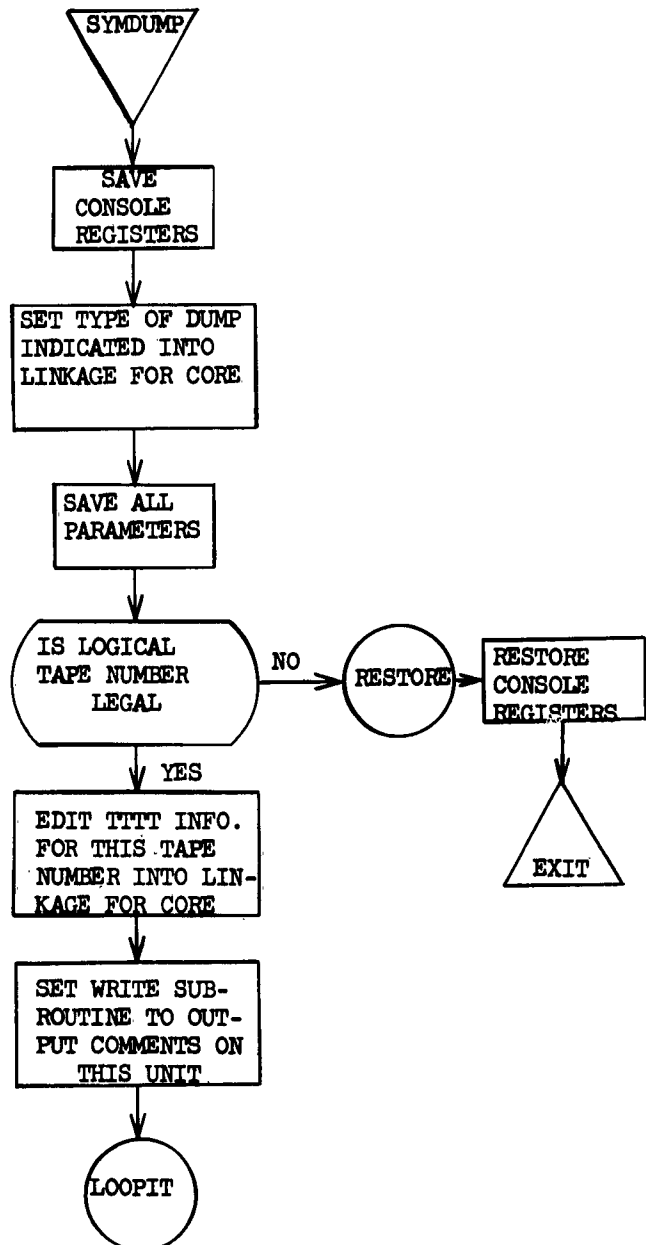
REFERENCES

- A. "1604 Systems Manual", Lockheed Missiles and Space Division
LMSC - 44758, 1 January 1962, P. 50.12.01.
- B. Computer Program Library Catalog No. 75048.

14 March 1963

-5-

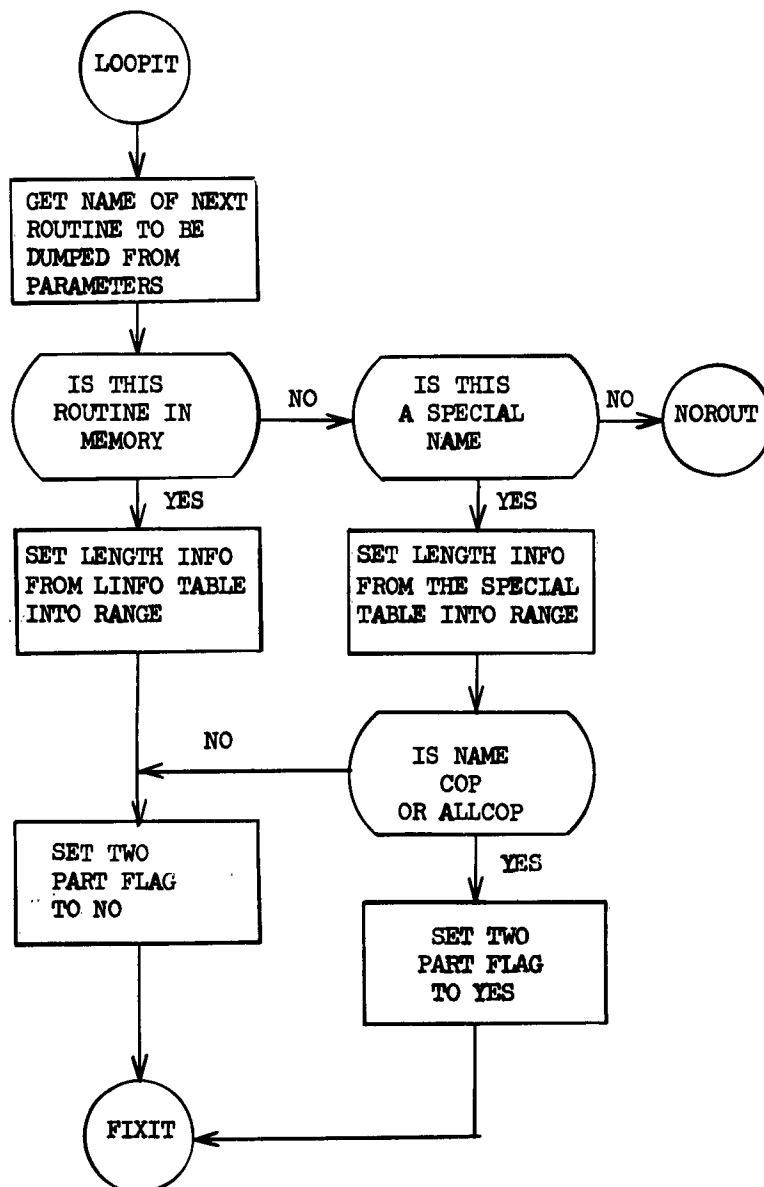
TM-(L)-715/019/01



14 March 1963

-6-

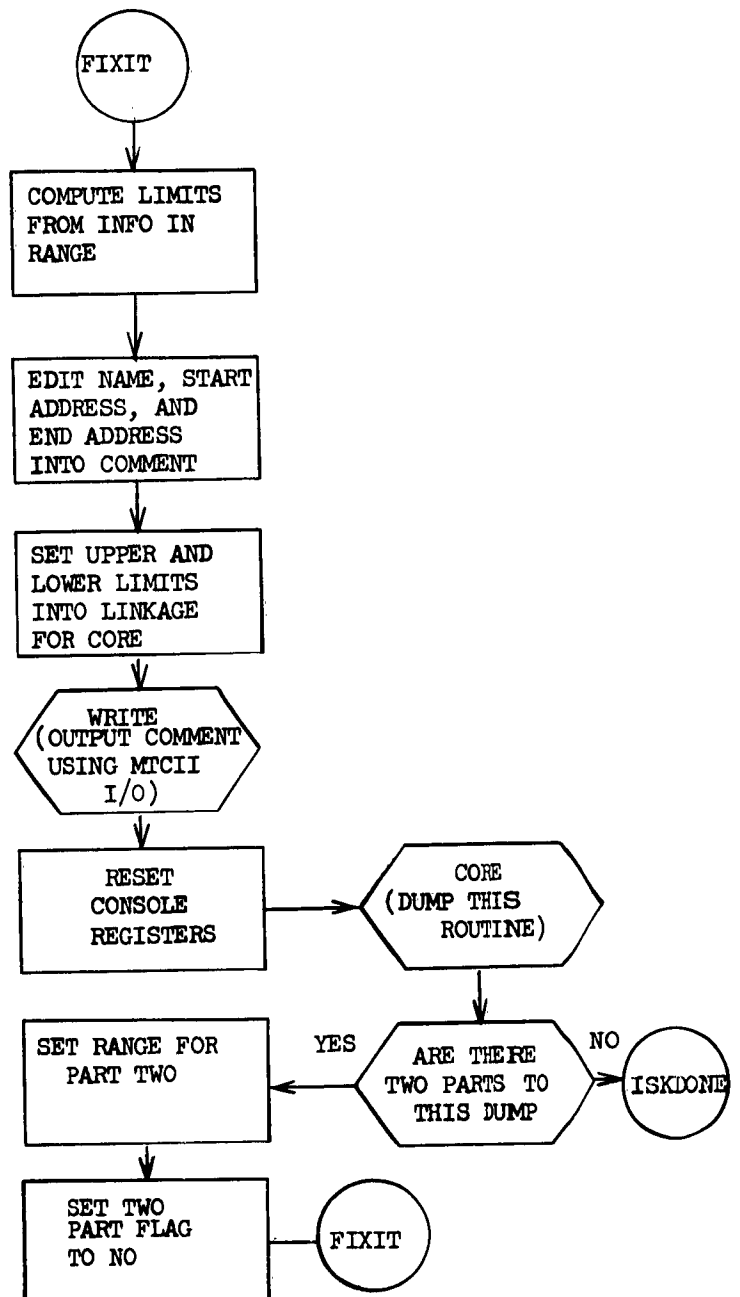
TM-(L)-715/019/01



14 March 1963

-7-

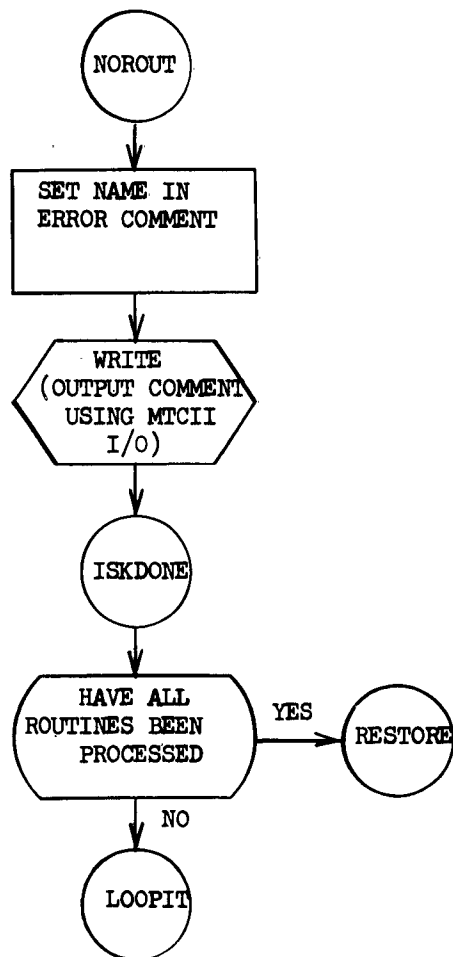
TM-(L)-715/019/01



14 March 1963

-8-

TM-(L)-715/019/01



15 March 1963

-9-

TM-(L)-715/019/01

APPENDIX A

SS:IM 1A MASTER
UTILITY MASTER SUM17 MON 15 13 MAR 63

```

*CLR
*CARDS
DEFINES ALPHA 100
* 4 SYNDU:P 13 SIN ALPHA USUCH EXP

```

STORAGE ANALYSIS

(* = RELOCATABLE N = NEWLY DEFINED H = REDEFINITION)

NAME	ADDRESS	NAME	ADDRESS	NAME	ADDRESS
CURE	* 10251	SYNDUMP	* 11272	UNPACK	* 11242
FLOATIN	* 11254	EXP	* 10164	SIN	* 10100
ALPHA	* 10000				

*SYNDJMP SYMBOLIC 4 SIN ZERO TEN
 *SYNDJMP FLOATDEC 13 EXP
 *SYNDJMP BCD 4 ALPHA NOSUBM

DUMP OF THE ACCUMULATOR	ROUTINE.	RANGE IS FROM				O-REGISTER					
		1-1	1-2	1-3	1-4	1-5	1-6	1-7	1-8	1-9	1-10
5165664746464320	0000000000000000	00000	00251	76432	00771	00000	00000				
10100	56 1 10133	42 0 10136	20 0 10153	22 2 10103	42 0 10136	52 1 10100	57 1 10133				
10104	75 6 10107	51 1 00001	57 1 10133	65 0 10140	75 0 10130	13 0 10153	75 0 10133				
10110	21 0 10154	75 4 11242	50 0 00000	50 1 00003	22 2 10134	42 0 10136	61 0 10114				
10114	03 0 77777	27 0 10142	42 0 10136	36 0 10153	14 0 10154	40 0 10143	11 0 10125				
10120	44 0 10136	22 0 10133	75 0 77777	15 0 10142	75 0 10128	42 0 10136	75 0 10125				
10124	42 0 10136	20 0 10153	26 0 10153	20 0 10152	26 0 10144	14 1 10146	26 0 10152				
10130	14 0 10145	26 0 10153	03 0 00044	75 4 11254	50 0 00000	50 1 77777	75 0 77777				
10134	10 0 00000	07 0 77777	75 0 10115	77 7 77777	77 7 77777	20 5 77777	77 7 77777				
10140	00 0 00000	20 0 14000	00 0 00000	31 1 03755	24 2 10242	77 7 77777	77 7 77774				
10144	63 1 36752	00 0 17777	77 7 77775	77 7 65252	52 5 25746	00 0 02104	21 0 26751				
10150	76 4 12550	00 0 00005	61 3 27443	00 0 00000	00 0 00000	00 0 00000	00 0 00000				
10154	*****	00 0 00000	00 0 00000	*****							
10164	50 1 10225	65 0 10230	75 0 10164	52 1 10164	51 1 00001	65 0 10231	75 0 10172				

15 March 1963

-10-

TM-(1)-715/019/01

DUMP OF THE ALPHA ACCUMULATOR	ROUTINE.	RANGE IS FROM		10000 TO 10100					
		O-REGISTER		1-1	1-2	1-3	1-4	1-5	1-6
5165664746464320		0000000000000000		00000	00251	76432	00771	00000	00000
10060	51 6 26364	65 6 66770	71 4 14243	44 4 54647	50 5 12223	24 2 52427			30 3 11201 02 0 30405
10004	06 0 71011	14 3 45474	13 3 35373	40 2 16020	20 2 06162	63 6 46566			67 7 06162 63 6 46566
10010	*****	61 6 26364	65 6 66770	*****					
10020	50 0 10100	50 0 10164	00 0 00000	00 0 00000	00 0 00000	00 0 00000			00 0 00000 00 0 00000
10024	*****	00 0 00000	00 0 00000	*****					
10074	00 0 00000	00 0 00000	00 0 00000	00 0 00000	00 0 00000	00 0 00000			00 0 00000 00 0 00000
10100	75 0 77777	56 1 10133	42 0 10136	20 0 10153	22 2 10103	42 0 10136			52 1 10100 57 1 10133

THE ROUTINE NOSUCH IS NOT IN CORE. CHECK YOUR FUNCTION CALLS FOR AN ERROR.

DUMP OF THE EYP ACCUMULATOR	ROUTINE.	RANGE IS FROM		10164 TO 10251					
		O-REGISTER		1-1	1-2	1-3	1-4	1-5	1-6
5165664746464320		0000000000000000		00000	00251	76432	00771	00000	00000
10164	75 0 77777	56 1 10225	65 0 10230	75 0 10164	52 1 10164	51 1 00001			65 0 10231 75 0 10172
10170	57 1 10171	52 1 10225	10 0 00000	75 0 77777	75 4 11242	50 0 00000			22 2 10177 42 0 10232
10174	60 0 10176	10 0 00000	23 2 10176	10 0 77777	02 0 77777	75 0 10202			60 0 10201 10 0 00000
10200	23 2 10201	10 0 77777	07 0 77777	50 0 00000	27 0 10233	20 0 10245			44 0 10232 01 0 00002
10204	20 0 10246	26 0 10246	20 0 10247	14 0 10234	20 0 10244	12 0 10235			27 0 10244 14 0 10236
10210	26 0 10247	07 0 00604	14 0 10237	15 0 10246	20 0 10244	12 0 10246			27 0 10244 14 0 10240
10214	57 1 10225	34 1 00857	20 0 10247	12 0 10245	03 0 00001	22 2 10226			23 3 10227 11 0 77776
10220	11 1 77721	50 1 00000	16 0 10247	06 0 00001	03 0 00014	44 0 10232			41 0 10241 42 0 10240
10224	55 1 10225	32 0 10242	50 1 77777	75 0 77777	23 2 10227	75 0 10220			11 1 77721 75 0 10221
10230	20 1 25424	26 0 02400	57 6 52353	51 7 75377	77 7 77777	77 7 77777			05 4 27102 77 5 75066
10234	25 0 03355	62 1 15462	01 1 63465	11 6 22313	00 6 31225	67 4 33611			10 0 00000 00 0 00141
10240	20 0 00000	00 0 00000	40 0 00000	00 0 00000	20 0 15520	23 6 31477			00 0 00000 00 0 00000
10244	00 0 00000	00 0 00000	00 0 00000	00 0 00000	00 0 00000	00 0 00000			00 0 00000 00 0 00000
10250	00 0 00000	00 0 00000	75 0 11372	75 0 10255	20 0 11164	75 4 10653			10 0 77776 20 0 11012

15 March 1963

-11-

TM-(L)-715/019/01

```

DUMP OF THE SIN ROUTINE, RANGE IS FROM 10100 TO 10164
ACCUMULATOR 0-REGISTER I-1 I-2 I-3 I-4 I-5 I-6
5165664746464320 0000000000000000 00000 00251 76432 00771 00000
10100 SLJ 77777 SIU 1 10133 SCH 10136 STA 10153 AJP P 10103 SCH 10136 LIU 1 10100 SIL 1 10133
10104 TMS 10137 SLJ 10107 INT 1 00001 SIL 1 10133 TMS 10140 SLJ 10110 LAC 10153 SLJ 10133
10110 EVO 77775 STO 10154 RTJ 11242 NOP 00000 ENI 1 00003 AJP P 10134 SCH 10136 SAL 10114
10114 ENA 00000 LRS 77777 DVF 10142 SCH 10136 SSK 10153 ADD 10154 SST 10143 INA 10125
10120 SAL 10121 LDL 10136 AJP 2 10133 SLJ 77777 SUB 10142 SLJ 10125 SCH 10136 SLJ 10125
10124 SUB 10142 SCH 10136 STA 10153 MUF 10153 STA 10152 MUF 10144 ADD 1 10146 MUF 10152
10130 LJP 1 10127 ADD 10145 MUF 10153 LRS 00044 RTJ 11254 NOP 00000 ENI 1 77777 SLJ 77777
10134 SAU 10135 ENA 00000 LLS 77777 SLJ 10115 SEV 7 77777 SEV 7 77777 STA 5 77777 SEV 7 77777
10140 LOC 3 24000 ZRO 00000 STA 14000 ZRO 00000 FSB 1 03755 HUI 2 10242 SEV 7 77777 SEV 7 77774
10144 SEV 7 77777 OUT 1 36752 ZRO 17777 SEV 7 77775 SEV 7 65252 LIU 5 25746 ZRO 02104 STO 26751
10150 SEV 7 77627 SRJ 12550 ZRO 00005 SAL 3 27443 ZRO 00000 ZRO 00000 ZRO 00000 ZRO 00000
10154 ***** ZRO 00000 ZRO 00000 *****
10164 SLJ 77777 SIU 1 10225 TMS 10230 SLJ 10164 LIU 1 10164 INT 1 00001 TMS 10231 SLJ 10172

```

```

DUMP OF THE ZEROTEN ROUTINE, RANGE IS FROM 00000 TO 00011
ACCUMULATOR 0-REGISTER I-1 I-2 I-3 I-4 I-5 I-6
5165664746464320 0000000000000000 00000 00251 76432 00771 00000
00000 SEL 32005 SEN 32000 SEN 00004 ZRO 01004 ENI 3 01325 SLJ 01325 ZRO 02356 ZRO 02356
00004 LLS 11224 OLS 11242 LLS 00014 SAU 00006 ACT 3 00250 SLJ 00034 SLJ 04141 SLJ 04142
00010 ENI 3 00003 SIL 00003 ACT 3 00000 SLJ 00044 ACT 3 00002 SEN 32000 ENI 1 07717 ENO 00000

```

15 March 1963

-12-
(Last Page)

TM-(L)-715/019/01

DUMP OF THE EXP	ROUTINE	RANGE IS FROM	10164	TO	10251
ACCUMULATOR	O-REGISTER	I-1	I-2	I-3	I-4
5165647464320	00000000000000	00000	00251	76432	00771
10164	750777756110225	-225342629 -96		-373827614+113	
10170	-174793390 +17	100000075077777		-339542765-260	
10174	-484603882 +0	232101761007777		484572660-267	
10200	232102011007777	103495994-170		2701023320010245	
10204	2001024628010246	2001024714010234		2001024412010235	
10210	200102470700004	1401023715010246		2001024412010246	
10214	-173571568 +17	2001024712010245		0300000122210226	
10220	.591449906-130	150102470600001		0300001444010232	
10224	-590630373 +55	501777775077777		2321022775010220	
10230	.709085957 +3	-709085957 +3		-0	
10234	2500335562115462	0116346511622313		0063122567433611	
10240	200000000000000	-898846567+308		.141421356 +1	
10244	0	0		0	
10250	0	-142067603-250		2001116475410653	

DUMP OF THE ALPHA	ROUTINE	RANGE IS FROM	10000	TO	10100
ACCUMULATOR	O-REGISTER	I-1	I-2	I-3	I-4
5165647464320	00000000000000	00000	00251	76432	00771
10000	ABCDEFH	IJKLMNO	QRSTUVWX	YZ012345	
10004	67890123	45678901	23456789	01234567	
10010	00000000	00000000	00000000	00000000	
10020	0110				
10024	00000000				
10074					
10100	2711091	K11E 11E	S/13K11E	>91	

THE ROUTINE NOSUCH IS NOT IN CORE. CHECK YOUR FUNCTION CARD FOR AN ERROR.

14 March 1963

TM-(L)-715/019/01

DISTRIBUTION LIST

External

Space Systems Division
(Contracting Agency)
Major C. R. Bond (SSOCD)

6594th Aerospace Test Wing
(Contracting Agency)
Lt. Col. A. W. Dill (TWRD)
Lt. Col. M. S. McDowell (TWRU) (2)
TWACS (6)
V. Thomas

PIR-E1 (Lockheed)
N. N. Epstein
C. H. Finnie
H. R. Miller
H. F. Grover
W. E. Moorman (5)
461 Program Office
698BK Program Office

PIR-E2 (Philco)
J. A. Bean
J. A. Isaacs
R. Morrison
S. M. Stanley

PIR-E3 (LFE)
D. F. Criley
K. B. Williams (5)

PIR-E8 (Mellonics)
F. Drudgin

PIR-E5 (Aerospace)
F. M. Adair
R. V. Bigelow
R. D. Brandsberg
L. H. Garcia
G. J. Hansen
C. S. Hoff
L. J. Kreisberg
T. R. Parkin
E. E. Retzlaff
H. M. Reynolds
D. Saadeh
R. G. Stephenson
V. White

PIR-E7 (STL)
A. J. Carlson (3)

PIR-E4 (GE-Sunnyvale)
J. Farrentine
N. Kirby

PIR-E4 (GE-Santa Clara)
D. Alexander

PIR-E4 (GE-Box 8555)
J. S. Brainard
R. J. Katucki
J. D. Selby

PIR-E4 (GE-3198 Chestnut)
J. F. Butler
H. D. Gilman

PIR-E4 (GE-Bethesda)
W. L. Massey

PIR-E4 (GE-Box 8661)
J. D. Rogers

14 March 1963

TM-(L)-715/019/01

DISTRIBUTION LIST

INTERNAL

<u>NAME</u>	<u>ROOM</u>	<u>NAME</u>	<u>ROOM</u>
Busch, R. E.	22088B	Munson, J. B.	22087
Champaign, M. E.	22152	Myers, G. L.	14056A
Dobbs, G. H.	22116B	Polk, T. W.	24113
LaChapelle, F.	22093	Seiden, H. R.	22126B
Greenwald, I. D.	22094A	Stone, E. S.	24058B
Kinthead, R. L.	22093	Tennant, T. C.	27029
Kneemeyer, J. A.	22088A	Vorhaus, A. H.	24074
Knight, R. D.	22119	Wong, J. P.	Sunnyvale
		AFCPL (5)	14059

UNCLASSIFIED

System Development Corporation,
Santa Monica, California
UTILITY PROGRAM DESCRIPTIONS
MILESTONE 11 SYMBOLIC DUMP ROUTINE
(SYMDUMP)
Scientific rept., TM(L)-715/019/01,
by F. J. LaChapelle, R. L. Kinkead.
14 March 1963, 12p., 2 refs.
(Contract AF 19(628)-1648, Space
Systems Division Program, for Space
Systems Division, AFSC)

Unclassified report

DESCRIPTORS: Programming (Computers).
Satellite Networks.

UNCLASSIFIED

States that the Symbolic Dump
Routine (SYMDUMP) provides octal,
symbolic, floating point decimal,
or BCD dumps of COPII (Control for
Operational Programs) routines using
their names to define the areas in
core to be dumped.

UNCLASSIFIED

UNCLASSIFIED