


```

MM      MM      TTTTTTTTTT  HH      HH      CCCCCCCC  LL      000000  GGGGGGGG
MM      MM      TTTT?TTTTT  HH      HH      CCCCCCCC  LL      000000  GGGGGGGG
MMMM    MMMM    TT          HH      HH      CC          LL      00      00  GG
MMMM    MMMM    TT          HH      HH      CC          LL      00      00  GG
MM      MM      TT          HH      HH      CC          LL      00      00  GG
MM      MM      TT          HH      HH      CC          LL      00      00  GG
MM      MM      TT          HHHHHHHHHH  CC          LL      00      00  GG
MM      MM      TT          HHHHHHHHHH  CC          LL      00      00  GG
MM      MM      TT          HH      HH      CC          LL      00      00  GG
MM      MM      TT          HH      HH      CC          LL      00      00  GG
MM      MM      TT          HH      HH      CC          LL      00      00  GG
MM      MM      TT          HH      HH      CC          LL      00      00  GG
MM      MM      TT          HH      HH      CC          LL      00      00  GG
MM      MM      TT          HH      HH      CCCCCCCC  LLLLLLLLLL  000000  GGGGGG
MM      MM      TT          HH      HH      CCCCCCCC  LLLLLLLLLL  000000  GGGGGG

```

```

LL      IIIIII  SSSSSSSS
LL      IIIIII  SSSSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SSSSSS
LL      II      SSSSSS
LL      II      SS
LL      II      SS
LL      II      SS
LL      II      SS
LLLLLLLLLLLL  IIIIII  SSSSSSSS
LLLLLLLLLLLL  IIIIII  SSSSSSSS

```

MTH
Syn
MTH

PSE

_M1

Pha

Iri
Con
Pas
Syn
Pas
Syn
Pse
Crc
Ass

The
129
The
135
0 p

Mac

_52
0 G
The
MAC

(2) 49
(3) 59
(4) 88

HISTORY ; Detailed Current Edit History
DECLARATIONS
MTHSCLOG

```

0000 1 .TITLE MTH$CLOG COMPLEX LOGARITHM
0000 2 .IDENT /1-003/ ; File: MTHCLOG.MAR Edit: SBL1003
0000 3
0000 4
0000 5 :*****
0000 6 :*
0000 7 :* COPYRIGHT (c) 1978, 1980, 1982, 1984 BY *
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0000 23 :* SOFTWARE ON EQUIPMENT WHICH IS NOT SUPPLIED BY DIGITAL. *
0000 24 :*
0000 25 :*
0000 26 :*****
0000 27 :
0000 28
0000 29 FACILITY: MATH LIBRARY
0000 30 ++
0000 31 ABSTRACT:
0000 32
0000 33 This module contains routine MTH$CLOG - perform complex log
0000 34
0000 35 --
0000 36
0000 37 VERSION: 0
0000 38
0000 39 HISTORY:
0000 40
0000 41 AUTHOR:
0000 42 Jonathan M. Taylor, 19-JUL-77: Version 0
0000 43
0000 44 MODIFIED BY:
0000 45
0000 46
0000 47

```

```
0000 49 .SBTTL HISTORY ; Detailed Current Edit History
0000 50
0000 51
0000 52 ; Edit History for Version 0 of MTHSCLOG
0000 53
0000 54 : 1-001 - Update version number and copyright notice. The last edit
0000 55 : 1-002 - Add "." to the PSECT directive. JBS 21-DEC-78
0000 56 : number for version 0 was 2. JBS 16-NOV-78
0000 57 : 1-003 - Use general mode addressing. SBL 30-Nov-1981
```

```
0000 59      .SBTTL  DECLARATIONS
0000 60
0000 61      :
0000 62      : INCLUDE FILES:
0000 63      :   OERR.MAR
0000 64      :
0000 65      :
0000 66      : EXTERNAL SYMBOLS:
0000 67      :   .GLOBL MTH$ATAN2
0000 68      :   .GLOBL MTH$CABS
0000 69      :   .GLOBL MTH$ALOG_R5
0000 70
0000 71      :
0000 72      : MACROS:
0000 73      :   NONE
0000 74      :
0000 75      :
0000 76      : PSECT DECLARATIONS:
0000 77      :
00000000 78      :   .PSECT  _MTH$CODE      PIC, SHR, LONG, EXE, NOWRT
0000 79      :
0000 80      :
00000004 81      : EQUATED SYMBOLS:
0000 82      :   argadr =      4      ; offset from AP to find arg adr
0000 83      :
0000 84      :
0000 85      : OWN STORAGE:
0000 86      :   NONE
```

```

0000 88      .SBTTL MTH$CLOG
0000 89
0000 90      :++
0000 91      : FUNCTIONAL DESCRIPTION:
0000 92      :
0000 93      :   The Natural Logarithm of a complex number (r, i) is
0000 94      :   computed as follows:
0000 95      :
0000 96      :       CLOG(r, i) = (ALOG(CABS(r, i)), ATAN2(i, r))
0000 97      :
0000 98      : CALLING SEQUENCE:
0000 99      :   Natural_log.wfc.v = MTH$CLOG(arg.rfc.r)
0000 100     :
0000 101     :
0000 102     : INPUT PARAMETERS:
0000 103     :   The one parameter is the address of a complex number (r, i),
0000 104     :   where r and i are both single-precision floating point values.
0000 105     :
0000 106     : IMPLICIT INPUTS:
0000 107     :   NONE
0000 108     :
0000 109     : OUTPUT PARAMETERS:
0000 110     :   NONE
0000 111     :
0000 112     : IMPLICIT OUTPUTS:
0000 113     :   NONE
0000 114     :
0000 115     : COMPLETION CODES:
0000 116     :   NONE
0000 117     :
0000 118     : SIDE EFFECTS:
0000 119     :   Signals Reserved Operand if the input parameter is bad (-0.0)
0000 120     :
0000 121     :--
0000 122
0000 123
007C 0000 124     .ENTRY MTH$CLOG,      ^M<R2,R3,R4,R5,R6>
0002 125     MTH$FLAG_JACKET      ; set up error handler
0002
6D  00000000'GF  9E 0002     MOVAB  G^MTH$$JACKET_HND, (FP)
0009                                     ; set handler address to jacket
0009                                     ; handler
0009
      50  04  AC  DO 0009 126     MOVL  argadr(AP), R0      ; R0 -> (r, i)
      80  DF  000D 127     PUSHAF (R0)+           ; push addr(r)
      50  DD  000F 128     PUSHL  R0              ; push addr(i)
00000000'GF  02  FB  0011 129     CALLS  #2, G^MTH$ATAN2  ; R0 = ATAN2(i, r)
      56  50  DO  0018 130     MOVL  R0, R6           ; R6 = ATAN2(i, r)
00000000'GF  6C  FA  001B 131     CALLG  (AP), G^MTH$CABS  ; R0 = CABS((r, i))
00000000'GF  16  0022 132     JSB   G^MTH$ALOG_R5     ; R0 = ALOG(CABS((r, i)))
      51  56  DO  0028 133     MOVL  R6, R1          ; R1 = ATAN2(i, r)
      04  002B 134     RET
002C 135
002C 136
002C 137     .END

```

MTHSCLOG
Symbol table

COMPLEX LOGARITHM

K 6

16-SEP-1984 01:10:33
6-SEP-1984 11:21:13

VAX/VMS Macro V04-00
[MTHRTL.SRC]MTHCLOG.MAR;1

Page 5
(4)

MTH
1-0

ARGADR	=	00000004		
MTH\$JACKET_HND	*****	X	01	
MTH\$ALOG_R5	*****	G	00	
MTH\$ATAN2	*****	G	00	
MTH\$CABS	*****	G	00	
MTH\$CLOG	00000000	RG	01	

! Psect synopsis !

PSECT name	Allocation	PSECT No.	Attributes													
ABS	00000000 (0.)	00 (0.)	NOPIC	USR	CON	ABS	LCL	NOSHR	NOEXE	NORD	NOWRT	NOVEC	BYTE			
MTH\$CODE	0000002C (44.)	01 (1.)	PIC	USR	CON	REL	LCL	SHR	EXE	RD	NOWRT	NOVEC	LONG			

! Performance indicators !

Phase	Page faults	CPU Time	Elapsed Time
Initialization	36	00:00:00.09	00:00:00.78
Command processing	123	00:00:00.63	00:00:04.57
Pass 1	81	00:00:00.57	00:00:03.41
Symbol table sort	0	00:00:00.00	00:00:00.00
Pass 2	39	00:00:00.39	00:00:03.60
Symbol table output	2	00:00:00.01	00:00:00.01
Psect synopsis output	2	00:00:00.02	00:00:00.02
Cross-reference output	0	00:00:00.00	00:00:00.00
Assembler run totals	285	00:00:01.72	00:00:12.39

The working set limit was 900 pages.
 2130 bytes (5 pages) of virtual memory were used to buffer the intermediate code.
 There were 10 pages of symbol table space allocated to hold 6 non-local and 0 local symbols.
 197 source lines were read in Pass 1, producing 11 object records in Pass 2.
 1 page of virtual memory was used to define 1 macro.

! Macro library statistics !

Macro library name	Macros defined
_\$255\$DUA28:[SYSLIB]STARLET.MLB;2	0

0 GETS were required to define 0 macros.

There were no errors, warnings or information messages.

MACRO/ENABLE=SUPPRESSION/DISABLE=(GLOBAL,TRACEBACK)/LIS=LIS:MTHCLOG/OBJ=OBS:MTHCLOG MSRCS:MTHJACKET/UPDATE=(ENH:MTHJACKET)+MSRCS:

