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ENHANCEMENT OF COMPUTER PROGRAM EAGLE. VOLUME II. EAGLE PROGRAM--ETC(U)
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B.S.

ENHANCEMENT OF COMPUTER PROGRAM EAGLE

Volume II: EAGLE Program Listing

May 1978

Prepared for

AERONAUTICAL SYSTEMS DIVISION
Wright-Patterson Air Force Base, Ohio

Under Contract F33657-77-D-0029-0012

ARINC RESEARCH CORPORATION

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COMPUTER PROGRAM EAGLE.

Volume II, EAGLE Program Listing,

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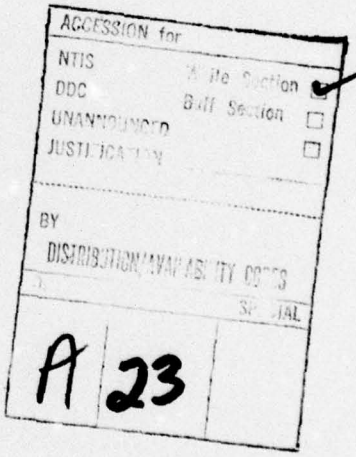
ABSTRACT

A project conducted by ARINC Research Corporation to enhance the capabilities of computer program EAGLE is described. Results of the task, performed for Aeronautical Systems Division, are presented as follows: Volume I, project summary; Volume II, EAGLE program listing; and Volume III, QUICK program listing.



FOREWORD

This report documents a project to enhance the capabilities of the on-line (interactive) computer program EAGLE, and the development of three new computer programs, QUICK, PURGNOW, and EST1000. These tasks were performed under Contract F33657-77-D-0029-0012 with Aeronautical Systems Division.

EAGLE enables calculation of acquisition costs for any type of system, and can readily be used to perform a broad range of other types of calculations. This report on EAGLE enhancement is divided as follows:

Volume I — Enhancement of Computer Program EAGLE: Enhancement Summary

Volume II — Enhancement of Computer Program EAGLE: EAGLE Program Listing.

Volume III — Enhancement of Computer Program EAGLE: QUICK Program Listing.

*ARINC Research Corporation, Computer Program EAGLE, three volumes, Publication 1977-01-1-1653, September 1977

EAGLE1

```
      *DECK EAGLE1
            OVERLAY(SAMMY,0,0)
CCCCCCC
C                       MAIN
C
C THIS ROUTINE ENABLES THE USER TO CONTROL THE PROGRAM AND PROVIDES AN
C
C INTERFACE WITH OTHER ROUTINES.
C
C/
C
            PROGRAM EAGLE1(INPUT=5138,OUTPUT=5138,TAPE5=INPUT,TAPE6=OUTPUT,
           *TAPE1=5138,TAPE2=5138,TAPE3=5138,TAPE4=5138,TAPE7=5138,
           *TAPE8=5138)
            DIMENSION HEADM(50,8),A(50,20),B(50,20)
            INTEGER PRODM(10,20)
            DATA IABC/7/
      C
       900) PRINT 1000
       1000 FORMAT(* THIS IS EAGLE1.  A USER'S MANUAL EXISTS.  ENTER 1 TO CONT
           1INUE. *)
      C
      C
      C
      C
            READ*,IA
            IF(EOF(5))9000,8000
       800) CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555) WRITE(6,2000)
        88  PRINT 1002
       1002 FORMAT(* ENTER THE NUMBER OF YEARS OVER WHICH COST DATA WILL BE GE
           *NERATED.*)
            READ*,NYEARS
            IF(EOF(5))  98,9089
       9089 CONTINUE
            WRITE(4,*)NYEARS
            IF(NYEARS.GT.1000)CALL SOS(NYEARS),
           XRETURNS(99,400,401,402,403,404,405,406,77,407,408,577,409,410,411,
           *425)
            IF(NYEARS.EQ.555) WRITE(6,2000)
        401 PRINT 1003
       1003 FORMAT(* ENTER THE NUMBER OF COST ELEMENTS IN THE OUTPUT ARRAY.*)
            READ*,NROWS
            IF(EOF(5)) 400,8400
       8400 CONTINUE
            WRITE(4,*)NROWS
            IF(NROWS.GT.1000)CALL SOS(NROWS),
           XRETURNS(99,400,401,402,403,404,405,406,77,407,408,577,409,410,411,
           *425)
            IF(NROWS.EQ.555) WRITE(6,2000)
        401 PRINT 1050
       1050   FORMAT(* IF YOU HAVE EXISTING FILES TO INPUT TO ARRAYS ENTER 1,
           *OTHERWISE ENTER 2.*)
             READ*,IFI
            IF(EOF(5)) 401,8401
       8401 CONTINUE
```

```
      WRITE(4,*)IFI
      IF(IFI.GT.1000)CALL GOS(IFI),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IFI.EQ.555) WRITE(6,2000)
      I13=1
      IF(IFI.EQ.1)CALL FILES(4,HEADW,PRODM,I13)
  402 PRINT 1052
 1052   FORMAT(* TO MODIFY PARTICULIAR ROWS IN THE HEADING, COST OR PROD
     *JCTION SCHEDULE ARRAYS ENTER 1, OTHERWISE 2.0*)
      READ*,M4
      IF(EOF(5)) 402,8402
 8402 CONTINUE
      WRITE(4,*)M4
      IF(M4.GT.1000)CALL GOS(M4),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(M4.EQ.555) WRITE(6,2000)
      IF(M4.EQ.1)CALL ROWMOD(HEADW,A,PRODM,NYEARS,COST)
  403 PRINT 1053
 1053   FORMAT(* TO MODIFY AN ELEMENT OF THE COST ARRAY ENTER 1, OTHERWI
     *SE 2*)
      READ*,M6
      IF(EOF(5)) 403,8403
 8403 CONTINUE
      WRITE(4,*)M6
      IF(M6.GT.1000)CALL GOS(M6),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,409,677,409,410,411,
     *425)
      IF(M6.EQ.555) WRITE(6,2000)
      IF(M6.EQ.1)CALL ELEMENT(A)
  404 PRINT 1055
 1055 FORMAT(* TO INSERT A ROW IN THE HEADING AND COST ARRAYS ENTER 1, O
     *THERWISE 2*)
      READ*,N5
      IF(EOF(5)) 404,8404
 8404 CONTINUE
      WRITE(4,*)N5
      IF(N5.GT.1000)CALL GOS(N5),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(N5.EQ.555) WRITE(6,2000)
      IF(N5.EQ.1)CALL RINSERT(A,NYEARS,NROWS,HEADW,PRODM)
  405 PRINT 1009
 1009 FORMAT(* TO SPECIFY OR MODIFY THE PRODUCTION SCHEDULE ENTER 1 OTHE
     *RWISE ENTER 2*)
      READ*,I5
      IF(EOF(5)) 405,8405
 8405 CONTINUE
      WRITE(4,*)I6
      IF(I6.GT.1000)CALL GOS(I5),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,409,677,409,410,411,
     *425)
      IF(I6.EQ.555) WRITE(6,2000)
      IF(I6.EQ.1)CALL PRODUC(PRODM)
  406 PRINT 1001
 1001 FORMAT(* TO CONSTRUCT OR MODIFY THE HEADING ARRAY ENTER 1, OTHERWI
```

```
      *SE ENTER 2*)
       READ*,I3
       IF(EOF(5)) 406,8406
 8406  CONTINUE
       WRITE(4,*)I3
       IF(I3.GT.1000)CALL GOS(I3),
      XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
      *425)
       IF(I3.EQ.555) WRITE(6,2000)
       IF(I3.EQ.1)CALL HARDON(HEADW,NROWS)
   77  PRINT 1004
 1004  FORMAT(* TO PERFORM CALCULATIONS ENTER 1, OTHERWISE ENTER 2*)
       READ*,ID
       IF(EOF(5))  77,8077
 8077  CONTINUE
       WRITE(4,*)ID
       IF(ID.GT.1000)CALL GOS(ID),
      XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
      *425)
       IF(ID.EQ.555) WRITE(6,2000)
       IF(ID.EQ.1)CALL CAL(A,NYEARS,NROWS,PROD4,HEADW)
  407  PRINT 1008
 1008  FORMAT(* TO SPREAD THE DATA ENTER 1, OTHERWISE ENTER 2*)
       READ*,I4
       IF(EOF(5)) 407,8407
 8407   CONTINUE
       WRITE(4,*)I4
       IF(I4.GT.1000)CALL GOS(I4),
      XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
      *425)
       IF(I4.EQ.555) WRITE(6,2000)
       IF(I4.EQ.1)CALL SPREAD(A,NYEARS,NROWS)
  408  PRINT 1006
 1006  FORMAT(* TO CALCULATE THEN YEAR DOLLAR COSTS OR TO CHANGE THE BASE
      *_INE YEAR ENTER 1, OTHERWISE ENTER 2*)
       READ*,IF
       IF(EOF(5)) 408,8408
 8408  CONTINUE
       WRITE(4,*)IF
       IF(IF.GT.1000)CALL GOS(IF),
      XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
      *425)
       IF(IF.EQ.555) WRITE(6,2000)
       IF(IF.EQ.1)CALL ESCALAT (A,B,NYEARS,NROWS)
        IF(IF.NE.1)GO TO 425
        DO 281 I=1,50
        DO 281 J=1,20
  281   A(I,J)=B(I,J)
  425  PRINT 1025
 1025  FORMAT(* TO INSERT A COLUMN IN THE COST ARRAY ENTER 1, OTHERWISE 2
      *,0*)
        READ*,IIN
       IF(EOF(5))425,8025
 8025  CONTINUE
       WRITE(4,*)IIN
       IF(IIN.GT.1000)CALL GOS(IIN),
      XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
```

1 03

```
     *,25)
      IF(IIN.EQ.555) WRITE(6,2000)
      IF(IIN.EQ.1)CALL CINSERT(A,NYEARS)
175   677  PRINT 1005
1005  FORMAT(* TO OUTPUT THE COST DATA ENTER 1. OTHERWISE ENTER 20*)
      READ*,IE
      IF(EOF(5)) 677,8677
8677  CONTINUE
180   WRITE(4,*)IE
      IF(IE.GT.1000)CALL GOS(IE),
     XRETURNS(33,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *,25)
      IF(IE.EQ.555) WRITE(6,2000)
185   IF(IE.EQ.1)CALL OUT(A,NYEARS,NROWS,HEADW)
      411 PRINT 105,
1051  FORMAT(    * IF A PRINTOUT OF THE COST, HEADING AND/OR PRODUCTION S
     *CHEDULE ARRAY IS DESIRED ENTER 1, OTHERWISE 20*)
      READ*,M8
190   IF(EOF(5)) 409,8409
8409  CONTINUE
      WRITE(4,*)M8
      IF(M8.GT.1000)CALL GOS(M8),
     XRETURNS(33,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
195   *,25)
      IF(M8.EQ.555) WRITE(6,2000)
      IF(M8.EQ.1)CALL APRINT(NYEARS,NROWS,A,HEADW,PRODM)
      411 PRINT 1051
1051  FORMAT(* IF YOU WISH TO SAVE EXISTING ARRAYS ENTER 1 OTHERWISE 20*
200   *)
      READ*,IZT
      IF(EOF(5)) 410,8410
8411  CONTINUE
      WRITE(4,*)IZT
205   IF(IZT.GT.1000)CALL GOS(IZT),
     XRETURNS(33,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *,25)
      IF(IZT.EQ.555) WRITE(6,2000)
      I19=2
210    IF(IZT.EQ.1)CALL FILES(A,HEADW,PRODM,I19)
      411 PRINT 1007
1007  FORMAT(* ENTER 2 TO TERMINATE, 1 TO CONTINUE AND 2000 FOR AN EXPLA
     *NATION OF GOS.*)
      READ*,IG
215   IF(EOF(5)) 411,8411
8411  CONTINUE
      WRITE(4,*)IG
      IF(IG.GT.1000)CALL GOS(IG),
     XRETURNS(33,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
220   *,25)
      IF(IG.EQ.555) WRITE(6,2000)
      IF(IG.EQ.1)GO TO 33
      IF(IG.EQ.2000)GO TO 411
      STOP
225   C
2000  FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1* )
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF INE REFERENCES

5664 EAGLE1 12

VARIABLES SN TYPE RELOCATION

10623 A REAL ARRAY REFS 15 64 76 88 100 135 146
158 174 185 197 210 DEFINED 162

12573 B REAL ARRAY REFS 15 159 162

7764 COST * REAL REFS 76

10003 HEADW REAL ARRAY REFS 15 64 76 100 124 135 185
197 210

7774 I INTEGER REFS 2*162 DEFINED 160

7756 IA INTEGER REFS 23 30 DEFINED 26

7156 IABC * INTEGER DEFINED 17

7770 IB INTEGER REFS 119 2*120 123 124 DEFINED 116

7771 ID INTEGER REFS 130 2*131 134 135 DEFINED 127

7777 IE INTEGER REFS 180 2*181 184 185 DEFINED 177

7773 IF INTEGER REFS 153 2*154 157 158 159
DEFINED 153

7761 IFI INTEGER REFS 58 2*59 62 64 DEFINED 55

10002 IG INTEGER REFS 217 2*218 221 222 223
DEFINED 214

7776 IIN INTEGER REFS 159 2*170 173 174 DEFINED 166

10001 IZT INTEGER REFS 214 2*205 208 210 DEFINED 201

7762 I19 INTEGER REFS 54 210 DEFINED 63 209

7772 I4 INTEGER REFS 141 2*142 145 146 DEFINED 138

7767 I6 INTEGER REFS 107 2*108 111 112 DEFINED 104

7775 J INTEGER REFS 2*162 DEFINED 161

7763 N4 INTEGER REFS 71 2*72 75 76 DEFINED 68

7765 N6 INTEGER REFS 83 2*84 87 88 DEFINED 80

10000 N8 INTEGER REFS 192 2*193 196 197 DEFINED 189

7760 NROWS INTEGER REFS 47 2*48 51 100 124 135 146
158 185 197 DEFINED 44

7757 NYEARS INTEGER REFS 37 2*38 41 76 100 135 146
158 174 185 197 DEFINED 34

7766 N5 INTEGER REFS 35 2*95 99 100 DEFINED 92

14543 PRODM INTEGER ARRAY REFS 16 64 76 100 112 135 197
210

FILE NAMES MODE

0 INPUT FREE READS 26 54 44 55 68 80 92 104
116 127 158 150 166 177 189 201 214

565 OUTPUT FMT WRITES 19 31 42 52 65 77 89 101
113 125 136 147 163 175 186 198 211

1352 TAPE1

2137 TAPE2

2724 TAPE3

3511 TAPE4 FREE WRITES 29 37 47 58 71 83 95 107
119 130 141 153 169 180 192 204 217

0 TAPE5

565 TAPE6 FMT WRITES 30 41 51 62 75 87 99 111
123 134 145 157 173 184 196 208 221

4276 TAPE7

5063 TAPE8

EXTERNALS	TYPE	ARGS	REFERENCES								
APRINT		5	137								
CAL		5	135								
CINSERT		2	174								
ELEMENT		1	88								
EOF	REAL	1	27	35	45	56	69	81	93	105	117
			129	139	151	167	179	190	202	215	
ESCALAT		4	158								
FILES		4	64	210							
GCS		1	38	48	59	72	84	96	108	120	131
			142	154	170	181	193	205	218		
HARCON		2	124								
OUT		4	185								
PRODUC		1	112								
RINSERT		5	100								
ROWMOD		5	76								
SPREAD		3	146								

STATEMENT LABELS			DEF LINE	REFERENCES							
6131	77		125	38	48	59	72	84	96	108	120
				131	142	154	170	181	193	205	218
5701	88		31	35	38	45	59	72	84	96	108
				131	142	154	170	181	193	205	218
	281		162	160	161						
5721	400		42	38	45	48	59	72	84	96	108
				131	142	154	170	181	193	205	218
5741	401		52	38	48	55	59	72	84	96	108
				131	142	154	170	181	193	205	218
5765	402		65	38	48	59	69	72	84	96	108
				131	142	154	170	181	193	205	218
6011	403		77	38	48	59	72	81	84	96	108
				131	142	154	170	181	193	205	218
6035	404		89	38	48	59	72	84	93	96	108
				131	142	154	170	181	193	205	218
6061	405		101	38	48	59	72	84	96	105	108
				131	142	154	170	181	193	205	218
6105	406		113	38	48	59	72	84	96	108	117
				131	142	154	170	181	193	205	218
5155	407		136	38	48	59	72	84	96	108	120
				139	142	154	170	181	193	205	218
6201	408		147	38	48	59	72	84	96	108	120
				142	151	154	170	181	193	205	218
6313	409		186	38	48	59	72	84	96	108	120
				142	154	170	181	190	193	205	218
5337	410		198	38	48	59	72	84	96	108	120
				142	154	170	181	193	202	205	218
6364	411		211	38	48	59	72	84	96	108	120
				142	154	170	181	193	205	215	218
6243	425		153	38	48	59	72	84	96	108	120
				142	154	159	167	170	181	193	205
6267	677		175	38	48	59	72	84	96	108	120
				142	154	170	179	181	193	205	218
7162	1000	FMT	20	19							
7444	1001	FMT	114	113							
7207	1002	FMT	32	31							
7235	1003	FMT	43	42							
7472	1004	FMT	126	125							

STATEMENT LABELS			DEF LINE	REFERENCES							
7620	1005	FMT	176	175							
7542	1006	FMT	148	147							
7723	1007	FMT	212	211							
7516	1008	FMT	137	136							
7416	1009	FMT	102	101							
7573	1025	FMT	164	163							
7262	1050	FMT	53	52							
7676	1051	FMT	199	198							
7311	1052	FMT	66	65							
7343	1053	FMT	78	77							
7644	1054	FMT	187	186							
7370	1055	FMT	90	89							
7746	2000	FMT	226	30	41	51	62	75	87	99	111	123
				134	145	157	173	184	196	208	221	
0	8000	INACTIVE	28	27								
0	8025	INACTIVE	168	167								
0	8077	INACTIVE	129	128								
0	8066	INACTIVE	36	35								
0	8400	INACTIVE	46	45								
0	8401	INACTIVE	57	56								
0	8402	INACTIVE	70	69								
0	8403	INACTIVE	82	81								
0	8404	INACTIVE	94	93								
0	8405	INACTIVE	106	105								
0	8406	INACTIVE	118	117								
0	8407	INACTIVE	140	139								
0	8408	INACTIVE	152	151								
0	8409	INACTIVE	191	190								
0	8410	INACTIVE	203	202								
0	8411	INACTIVE	216	215								
0	8677	INACTIVE	179	178								
5665	9030		19	27								

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
6230	281	* I	160 162	133	NOT INNER
6234	281	J	161 162	33	INSTACK

STATISTICS

PROGRAM LENGTH	72038	3715
BUFFER LENGTH	56508	2984

520003 CM USED

1 07

```
*DECK DAL1
C
C/
C
C    *********ARRAYS*********
C
C         HEADM(50,5) PROVIDES THE HEADINGS FOR THE ROWS OF THE COST ARRA
C
C         A(50,20) CONTAINS THE COST DATA.
C
C         B(50,20) CONTAINS THE COST INFORMATION ON THE RETURN FROM
C             ROUTINE ESCALAT.
C
C         PRODM(10,20) CONTAINS THE PRODUCTUON SCHEDULES FOR THE EQUIPMEN
C
C    *********ARRAYS*********
C
C    *********VARIABLES*********
C
C         IA IS AN INDEX THAT ALLOWS CONTINUED PROGRAM OPERATION.
C
C         NYEARS IS THE NUMBER OF YEARS OF INTEREST.
C
C         NROWS IS THE NUMBER OF ROWS OF COST DATA THAT WILL BE OUTPUT.
C
C         IB IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
C             SPECIFICATION OF THE HEADINGS WILL BE UTILIZED.
C
C         ID IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
C             CALCULATIONS TO BE MADE WILL BE UTILIZED.
C
C         I4 IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
C             THE SPREADING OF COST DATA WILL BE UTILIZED.
C
C         IE IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
C             THE OUTPUT OF COST DATA WILL BE UTILIZED.
C
C         IF IS AN INDEX THAT DELINEATES WHETHER THE BASELINE COSTS WILL
C             CONVERTED TO A NEW BASELINE. OR TO THEN YEAR DOLLARS,
C             OR REMAIN UNCHANGED.
C
C         I6 IS AN INDEX THAT DELINEATES WHETHER THE PRODUCTION SCHEDULE
C             WILL BE SPECIFIED OR LEFT UNCHANGED.
C
C         IG IS AN INDEX THAT DELINEATES WHETHER ANOTHER CASE WILL BE GEN
C             IT ALSO DELINEATES WHETHER CERTAIN INFORMATION WILL BE UNC
C             FROM THE PREVIOUS CASE.
C
C         IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C         IFI DELINEATES WHETHER EXISTING FILES ARE TO BE INPUT.
C
C         I4 DELINEATES WHETHER ROW MODIFICATION IS TO OCCUR.
C
C         I6 DELINEATES WHETHER AN ELEMENT OF THE COST ARRAY IS TO BE MOD
C
C         I5 DELINEATES WHETHER A ROW IS TO BE INSERTED IN THE COST OR HE
```

1 08

```
C             ARRAYS.
C
C        IIN DELINEATES WHETHER A COLUMN IS TO BE INSERTED IN THE COST A
C
C        MB DELINEATES WHETHER AN ARRAY IS TO BE OUTPUT.
C
C        IZT DELINEATES WHETHER AN ARRAY IS TO BE PLACED ON FILE.
C
C  ********VARIABLES********
C
C/
C
C             SUBROUTINE CAL1(COST,PRODM,INCRE)
C
C GIVEN THE COST OF THE FIRST ARTICLE, T1, THE LEARNING RATE, RATE, A
C
C PRODUCTION SCHEDULE, PROD, AND THE NUMBER OF TIME INCREMENTS TO BE CON
C
C INCRE, THEN THE SUBROUTINE CAL1 CALCULATES THE COST OF THE ITEMS IN
C
C QUESTION FOR EACH TIME INCREMENT IN BASELINE DOLLARS AND STORES THE
C
C INFORMATION IN THE ARRAY TITLED COST.
C
C THE FORMULA USED TO CALCULATE THE COST OF THE I TH ITEM IS
C
C              T1*(I**(ALOG(RATE)/ALOG(2.)))
C
C/
C
      SUBROUTINE CAL1(COST,PRODM,INCRE)
      DIMENSION COST(20),IX(21)
      INTEGER PRODM(10,20),PROD(20)
      DATA IABC/4/
      IF(PRODM(10,20).EQ.1)JJ3=1
      IF(PRODM(10,20).EQ.1)GO TO 8011
 9000 PRINT 1002
 1002 FORMAT(' SPECIFY THE INDEX OF THE PRODUCTION SCHEDULE TO BE USED')
      READ*,JJ3
      IF(EOF(5))9000,8000
 8000 CONTINUE
      WRITE(4,*)JJ3
 8011 CONTINUE
      IF(JJ3.EQ.555) WRITE(6,2000)
      DO 131 I=1,20
  131 PROD(I)=PRODM(JJ3,I)
 9001 PRINT 1000
 1000 FORMAT(' ENTER THE COST OF THE FIRST UNIT AND THE LEARNING RATE.')
      READ*,T1,RATE
      IF(EOF(5))9001,8001
 8001 CONTINUE
      WRITE(4,*)T1,RATE
      DO 37 I=1,20
   37 COST(I)=0.
      IX(1)=0
      DO 211 I=1,20
  211 IX(I+1)=PROD(I)+IX(I)
```

```
115                 A=ALOG(RATE)/ALOG(2.)
                    DO 10 I=1,INCRE
                    IA=IX(I)+1
                    IB=IX(I+1)
                    IF(IB.LT.IA)GO TO 10
120                 DO 11 J=IA,IB
                 11 COST(I)=T1*(J**A)+COST(I)
                 10 CONTINUE
                    RETURN
                C
125              2001 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1* )
                    END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 CAL1 88 123

VARIABLES	SN	TYPE			RELOCATION							
217 A		REAL				REFS	121	DEFINED	115			
0 COST		REAL	ARRAY	F.P.		REFS	99	121	DEFINED	88	111	121
214 I		INTEGER				REFS	2*103	111	3*114	117	118	2*121
						DEFINED	102	110	113	116		
220 IA		INTEGER				REFS	113	120	DEFINED	117		
131 IABC	*	INTEGER				DEFINED	91					
221 IB		INTEGER				REFS	113	120	DEFINED	118		
0 INCRE		INTEGER		F.P.		REFS	116	DEFINED	86			
223 IX		INTEGER	ARRAY			REFS	99	114	117	118	DEFINED	112	114
222 J		INTEGER				REFS	121	DEFINED	120			
213 JJ3		INTEGER				REFS	99	101	103	DEFINED	92	96
250 PROD		INTEGER	ARRAY			REFS	90	114	DEFINED	103		
0 PRODM		INTEGER	ARRAY	F.P.		REFS	90	92	93	103	DEFINED	88
216 RATE		REAL				REFS	113	115	DEFINED	106		
215 T1		REAL				REFS	113	121	DEFINED	106		

FILE NAMES	MODE		
INPUT	FREE	READS	96 116
OUTPUT	FMT	WRITES	94 114
TAPE4	FREE	WRITES	99 113
TAPE6	FMT	WRITES	101

EXTERNALS	TYPE	ARGS	REFERENCES
ALOG	REAL	1 LIBRARY	2*115
EOF	REAL	1	97 107

STATEMENT LABELS			DEF LINE	REFERENCES
122 10			122	116 119
0 11			121	120
0 37			111	110
0 131			103	102
0 211			114	113
162 1000	FMT		105	104
135 1002	FMT		95	94

STATEMENT LABELS			DEF LINE	REFERENCES
203	2000	FMT	125	101
0	9000	INACTIVE	88	97
0	9001	INACTIVE	108	107
33	9011		100	93
23	9000		94	97
51	9001		104	107

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
45	131	I	102 103	38	INSTACK	
65	87	I	110 111	28	INSTACK	
73	211	I	113 114	38	INSTACK	
105	10	* I	116 122	208	EXT REFS	NOT INNER
113	11	* J	120 121	78	EXT REFS	

STATISTICS

PROGRAM LENGTH 3029 194

520003 CM USED

```
      *DECK CAL3
      C/
      C
      C  ********ARRAYS********
      C
      C        PROD1(10,20) CONTAINS THE PRODUCTION SCHEDULES FOR ALL THE EQUI
      C
      C        COST(20) TRANSFERS THE COST INFORMATION AND
      C             IS ALSO USED IN MAKING THE COST CALCULATIONS.
      C
      C        PROD(20) DELINEATES THE NUMBER OF ITEMS PRODUCED
      C             DURING EACH TIME INCREMENT.
      C
      C        IX(21) IS AN ARRAY WHOSE SECOND THUR 21ST ELEMENTS ARE SET EQUA
      C             ELEMENTS OF PROD.  IX(1) IS SET EQUAL TO ZERO AND IX IS TH
      C             CONVERTED INTO A CUMULATIVE ARRAY.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        JJJ IS AN INDEX DELINEATING THE PRODUCTION SCHEDULE TO BE USED.
      C
      C        RATE IS THE LEARNING RATE, I.E., THE RATIO BETWEEN THE COST OF
      C             THE N TH AND 2N TH ITEMS.
      C
      C        INDRE IS THE NUMBER OF INCREMENTS (USUALLY YEARS) FOR WHICH
      C             CALCULATIONS ARE BEING MADE.
      C
      C        T1 IS THE COST OF THE FIRST ARTICLE PRODUCED.
      C
      C        A, IA, AND IB ARE TERMS USED IN THE CALCULATION.
      C
      C        IARC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE CAL3(A,COST)
      C
      C THIS SUBROUTINE CALCULATES A FRACTION OF AN EXISTING ROW IN THE COST
      C ARRAY, A.  THE USER SPECIFIES THE ROW OF A, IA, AND THE ASSOCIATED
      C FRACTION.  THE NEW COST INFORMATION IS STORED AND TRANSFERRED IN THE A
      C COST.
      C
      C/
            SUBROUTINE CAL3(A,COST,NYEARS)
            DIMENSION A(50,20),COST(20)
            DATA IARC/10/
        900 PRINT 100
        100 FORMAT(* SPECIFY THE ROW AND FRACTION.*)
            READ*,IA,FRAC
```

```
      IF(EOF(5))9000,8000
 8000 CONTINUE
60    WRITE(4,*)IA,FRAC
      DO 10 I=1,NYEARS
10    COST(I)=A(IA,I)*FRAC
      RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	CAL3	52	63

VARIABLES

	SN	TYPE		RELOCATION					
0	A	REAL	ARRAY	F.P.	REFS	53	62	DEFINED	52
0	COST	REAL	ARRAY	F.P.	REFS	53	DEFINED	52	62
57	FRAC	REAL			REFS	50	62	DEFINED	57
60	I	INTEGER			REFS	2*62	DEFINED	61	
56	IA	INTEGER			REFS	50	62	DEFINED	57
33	IABC	* INTEGER			DEFINED	54			
0	NYEARS	INTEGER		F.P.	REFS	51	DEFINED	52	

FILE NAMES

	MODE		
INPUT	FREE	READS	57
OUTPUT	FMT	WRITES	55
TAPE4	FREE	WRITES	60

EXTERNALS

	TYPE	ARGS	REFERENCES
EOF	REAL	1	58

STATEMENT LABELS

			DEF LINE	REFERENCES
0	10		52	61
37	1000	FMT	56	55
0	9000	INACTIVE	59	58
5	9000		55	58

LOOPS

	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
24	10	I	61 62	38	INSTACK

STATISTICS

PROGRAM LENGTH 613 49

520003 CM USED

```
      *DECK CAL2
C/
C*******ARRAYS********
C
C     A(50,20) IS THE ARRAY CONTAINING THE COST INFORMATION.
C
C     COST(20) IS USED TO STORE AND TRANSFER THE NEWLY CALCULATED COS
C          INFORMATION.
C
C$$$$$$$ARRAYS********
C
C********VARIABLES********
C
C     NYEARS IS THE NUMBER OF YEARS OVER WHICH COST INFORMATION IS
C          CALCULATED.
C
C     IA IS THE ROW OF INTEREST IN ARRAY A.
C
C     FRAC IS THE FRACTION OF THE ROW TO BE TAKEN.
C
C     I+3C DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C********VARIABLES********
C/
      SUBROUTINE CAL2(COST,PRODM,INCRE)
C     GIVEN THE COST OF THE FIRST ARTICLE, T1, A SET OF LEARNING RATES
C     RATES, A STIPULATION OF THE NUMBER OF THE PRODUCTION
C     ITEM WHEN EACH RATE BECOMES EFFECTIVE, (UNIT, THE TIME
C     INTERVAL TO BE CONSIDERED), INCRE, AND THE PRODUCTION SCHEDULE,
C     PROD, THEN SUBROUTINE CAL2 CALCULATES THE COST FOR EACH YEAR
C     IN BASELINE DOLLARS.
C     THE FORMULA USED TO CALCULATE THE COST OF THE I TH ITEM IS
C                    T1*(I**(ALOG(RATE(.))/ALOG(2.)))
C     IF A NEW LEARNING RATE IS TO COMMENCE WITH THE J TH ARTICLE THEN A
C     T1 IS CALCULATED SO THAT THE COST OF THE (J-1) TH ARTICLE WILL REM
C     UNCHANGED, NAMELY,
C                T1(NEW)=T1(OLD)*((J-1)**(OLD RATE - NEW RATE))
C/
      SUBROUTINE CAL2(COST,PRODM,INCRE)
```

```
      DIMENSION COST(20),RATES(10),IUNIT(10),IX(21)
      INTEGER PRODM(10,20),PROD(20)
      DATA I4BO/2/
      IF(PRODM(10,20).EQ.1)JJ3=1
      IF(PRODM(10,20).EQ.1)GO TO 8009
 9000 PRINT 1005
 1005 FORMAT(* SPECIFY THE INDEX OF THE PRODUCTION SCHEDULE TO BE USED*)
      READ*,JJ3
      IF(EOF(5))9000,8000
 8000 CONTINUE
      WRITE(4,*)JJ3
 8009 CONTINUE
      DO 213 I=1,20
  213 PROD(I)=PRODM(JJ3,I)
 9001 PRINT 1000
  100 FORMAT(* ENTER THE COST OF THE FIRST UNIT AND THE INITIAL LEARNING
     * RATE.*)
      READ*,T1,RATES(1)
      IF(EOF(5))9001,8001
 8001 CONTINUE
      WRITE(4,*)T1,RATES(1)
 9002 PRINT 1001
 1001 FORMAT(* ENTER THE NUMBER OF CHANGES THAT WILL OCCUR IN THE LEARNI
     *NG RATE.*)
      READ*,IA
      IF(EOF(5))9002,8002
 8002 CONTINUE
      WRITE(4,*)IA
      IF(IA.EQ.555) WRITE(6,2000)
      DO 143 I=1,IA
 9003 IF(I.EQ.1)PRINT 1003
 1003 FORMAT(* ENTER THE NEXT LEARNING RATE AND THE UNIT NUMBER AT WHICH
     * IT FIRST OCCURS.*)
      IF(I.NE.1)PRINT 1002
 1002 FORMAT(* ENTER LEARNING RATE, UNIT NUMBER*)
      READ*,RATES(I+1),IUNIT(I)
      IF(EOF(5))9003,8003
 8003 CONTINUE
      WRITE(4,*)RATES(I+1),IUNIT(I)
  143 CONTINUE
      IX(1)=0
      DO 37 I=1,20
      IX(I+1)=IX(I)+PROD(I)
   37 COST(I)=0.
      KK=1
      A=ALOG(RATES(1))/ALOG(2.)
      DO 10 I=1,INCRE
      IA=IX(I)+1
      IB=IX(I+1)
      IF(IB.LT.IA)GO TO 10
      DO 11 J=IA,IB
      IF(J.EQ.IUNIT(KK))CALL NEWRA(KK,RATES,T1,IUNIT,A)
   11    COST(I)=T1*(J**A)+ COST(I)
   10 CONTINUE
      RETURN
C
 2000 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1* )
```

```
      SUBROUTINE CAL2       74/74   OPT=1                          FTN 4.6+446       04/18/78  13.02.21       PAGE    3

  113             END

      SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS      DEF LINE     REFERENCES
   3 CAL2           57         112

VARIABLES       SN  TYPE          RELOCATION
  353 A             REAL                          REFS       103       110    DEFINED      103
    0 COST          REAL      ARRAY     F.P.      REFS        58       110    DEFINED       57       101       110
  347 I             INTEGER                       REFS      2*71        83         91     2*93      2*96     3*100      101
                                                   105       106     2*110    DEFINED       70        87        99      104
  351 IA            INTEGER                       REFS        55        85         87      107       108
                                               DEFINED        52       105
  203 IA3C        * INTEGER                    DEFINED        50
  354 IB            INTEGER                       REFS       107       108    DEFINED      106
    0 INCRE         INTEGER             F.P.      REFS       104   DEFINED         57
  370 IUNIT         INTEGER   ARRAY               REFS        56        96      2*109   DEFINED       93
  402 IX            INTEGER   ARRAY               REFS        58       100        105      106   DEFINED        98      100
  355 J             INTEGER                       REFS       103       110    DEFINED      108
  346 JJ3           INTEGER                       REFS        58        71    DEFINED       61        65
  352 KK            INTEGER                       REFS     2*109   DEFINED        102
  427 PROD          INTEGER   ARRAY               REFS        53       103    DEFINED       71
    0 PRODM         INTEGER   ARRAY     F.P.      REFS        53        61         62       71   DEFINED        57
  356 RATES         REAL      ARRAY               REFS        58        73         96      103       109
                                               DEFINED        75        93
  350 T1            REAL                          REFS        75       103        110   DEFINED       75

FILE NAMES        MODE
      INPUT       FREE               READS       65        75        82         93
      OUTPUT      FMT                WRITES      63        72        79         85       91
      TAPE4       FREE               WRITES      68        73        85         96
      TAPE6       FMT                WRITES      96

EXTERNALS           TYPE    ARGS       REFERENCES
      ALOG          REAL      1 LIBRARY  2*103
      EOF           REAL      1             66        76        33         94
      NEWRA                   5            109

STATEMENT LABELS             DEF LINE    REFERENCES
  165 10                       111         104        107
    0 11                       110         103
    0 37                       101          99
    0 143                       97          87
    0 213                       71          70
  231 1000     FMT              73          72
  255 1001     FMT              80          79
  320 1002     FMT              92          91
  303 1003     FMT              89          85
  207 1005     FMT              64          63
  336 2000     FMT             114          96
    0 3000          INACTIVE    67          66
    0 3001          INACTIVE    77          76
```

1 16

STATEMENT LABELS			DEF LINE	REFERENCES
0	9002	INACTIVE	84	83
0	8003	INACTIVE	85	94
33	8009		69	62
23	9010		63	66
45	9001		72	76
55	9002		79	83
72	9003		88	94

LOOPS	LABEL		INDEX	FROM-TO	LENGTH	PROPERTIES		
41	213		I	70 71	39	INSTACK		
72	143	*	I	87 97	339		EXT REFS	
131	37		I	99 101	48	INSTACK		
145	10	*	I	104 111	243		EXT REFS	NOT INNER
153	11	*	J	108 110	139		EXT REFS	

STATISTICS

PROGRAM LENGTH	4613	305

520003 CM USED)

```
      *DECK CAL4
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        PROD1(10,20) CONTAINS THE PRODUCTION SCHEDULES FOR ALL EQUIPMEN
      C
      C        IX(21) IS AN ARRAY WHOSE 2ND THUR 21ST ELEMENTS ARE SET EQUAL T
      C             PROD.  IX(1) IS SET EQUAL TO ZERO AND IX IS THEN
      C             CONVERTED TO A CUMULATIVE ARRAY.
      C
      C        PROD(20) DELINEATES THE NUMBER OF ITEMS PRODUCED
      C             DURING EACH TIME INCREMENT.
      C
      C        COST(20) TRANSFERS THE COST INFORMATION.
      C             IT IS ALSO USED IN MAKING THE COST CALCULATIONS.
      C
      C        RATES(10) CONTAINS THE LEARNING RATES THAT WILL EXIST OVER THE
      C             PRODUCTION LIFE.
      C
      C        IUNIT(10) CONTAINS THE NUMBER OF THE PRODUCTION ITEM AT WHICH A
      C             NEW LEARNING RATE BECOMES APPLICABLE.
      C
      C  ********ARRAYS********
      C
      C  *********VARIABLES********
      C
      C        A, IA, AND IB ARE TERMS USED IN THE CALCULATION.
      C
      C        T1 IS THE COST OF THE FIRST UNIT.  FOR MATHEMATICAL REASONS A N
      C             VALUE OF T1 IS CALCULATED AT EACH CHANGE IN THE LEARNING R
      C
      C        KK IS AN INDEX USED TO SPECIFY THE APPROPRIATE ELEMENT OF RATES
      C             AND IUNIT.
      C
      C        JJJ DELINEATES THE PRODUCTION SCHEDULE TO BE USED.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE CAL4(COST,NYEARS)
      C
      C  THIS ROUTINE ENABLES DIRECT SPECIFICATION OF A ROW IN THE COST ARRAY.
      C
      C/
      C
            SUBROUTINE CAL4(COST,NYEARS)
            DIMENSION COST(20)
            DATA IABC/11/
       900  PRINT 1002
       1002 FORMAT(' ENTER THE SET OF CONSTANTS.')
            READ*,(COST(I),I=1,NYEARS)
            IF(EOF(5))9000,8000
```

```
              6000 CONTINUE
                   WRITE(4,*)(COST(I),I=1,NYEARS)
     60            RETURN
                   END


     SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS      DEF LINE      REFERENCES
    3 CAL4             51           60

VARIABLES      SN  TYPE          RELOCATION
     0 COST         REAL        ARRAY    F.P.         REFS         52        59   DEFINED       51       56
    50 I            INTEGER                           REFS         55        59   DEFINED       56       59
    27 IABC       * INTEGER                        DEFINED         53
     0 NYEARS       INTEGER              F.P.         REFS         55        59   DEFINED       51

FILE NAMES         MODE
       INPUT        FREE                     READS        56
       OUTPUT       FMT                      WRITES       54
       TAPE4        FREE                     WRITES       59

EXTERNALS            TYPE    ARGS         REFERENCES
       EOF          REAL        1                57

STATEMENT LABELS                  DEF LINE    REFERENCES
    33  1002     FMT                  55          54
     0  8000          INACTIVE        58          57
     5  9000                          54          57

STATISTICS
   PROGRAM LENGTH                      51B         41
           52000B CM USED
```

1 19

```
      *DECK HARCON
C
C/
C
C  $$$$$$$$ARRAYS********
C
C        COST(20) THIS ARRAY STORES AND TRANSFERS THE SPECIFIED COST
C             INFORMATION.
C
C  $$$$$$$$ARRAYS********
C
C  $$$$$$$$VARIABLES********
C
C        NYEARS IS THE NUMBER OF YEARS OVER WHICH THE CALCULATION IS MAD
C
C        IARC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C
C/
C/
C
C                    SUBROUTINE HARCON(HEADW,NROWS)
C
C THIS ROUTINE ENABLES THE CONSRUCTION OF AN ARRAY CONTAINING THE
C
C TITLES OF EACH ROW OF THE OUTPUT ARRAY.
C
C/
      SUBROUTINE HARCON(HEADW,NROWS)
      DIMENSION HEADW(50,8)
      DATA IABC/9/
      DO 123 I=1,NROWS
      PRINT 1000,I
 1000 FORMAT(* SPECIFY THE HEADING FOR ROW NUMBER*,I3)
      READ 25,(HEADW(I,J),J=1,8)
      WRITE(4,25)(HEADW(I,J),J=1,8)
   25 FORMAT(8A10)
  123 CONTINUE
      RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	HARCON	31	40

VARIABLES

	SN	TYPE		RELOCATION						
0	HEADW	REAL	ARRAY	F.P.	REFS	31	37	DEFINED	30	36
107	I	INTEGER			REFS	34	36	37	DEFINED	33
55	IABC	* INTEGER			DEFINED	32				
110	J	INTEGER			REFS	36	37	DEFINED	36	37
0	NROWS	INTEGER		F.P.	REFS	33	DEFINED	30		

```
FILE NAMES        MODE
       INPUT      FMT                     READS        36
       OUTPUT     FMT                     WRITES       34
       TAPE4      FMT                     WRITES       37

STATEMENT LABELS               DEF LINE   REFERENCES
  105  25      FMT                 38         36        37
    0  123                         39         33
   62  1000    FMT                 35         34

LOOPS  LABEL     INDEX      FROM-TO    LENGTH    PROPERTIES
   16  123       * I         33 39      37B                EXT REFS  NOT INNER
   23            * J         36 36      11B                EXT REFS
   40            * J         37 37      11B                EXT REFS

STATISTICS
  PROGRAM LENGTH                 116B       78
         52000B CM USED
```

1 21

```
      *DECK SPREAD
C
C/
C
C  ********ARRAYS********
C
C        HEADW(50,3) CONTAINS THE HEADINGS FOR EACH ROW IN THE COST
C                    ARRAY.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C/
C
C                    SUBROUTINE SPREAD(A,NYEARS,NROWS)
C
C THIS ROUTINE SPREADS COSTS OVER MULTIPLE YEARS.  IN THE MAIN, IT RECEI
C
C THE COSTS DELINEATED IN THE YEAR A PRODUCT IS RECEIVED AND SPREADS THE
C
C COSTS OVER THE TIME PERIOD THEY ACTUALLY OCCURRED.
C
C/
C
      SUBROUTINE SPREAD(A,NYEARS,NROWS)
      DIMENSION A(50,20)
      DATA IABC/3/
      PRINT 4441
 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
      RETURN
      END
```

1 22

SYMBOLIC REFERENCE MAP (R=2)

```
ENTRY POINTS      DEF LINE     REFERENCES
    3  SPREAD          29          33

VARIABLES     SN  TYPE            RELOCATION
    0  A          REAL        ARRAY     F.P.        REFS        29    DEFINED       29
   10  IABC     * INTEGER                            DEFINED     30
    0  NROWS      INTEGER    *UNUSED     F.P.        DEFINED     28
    0  NYEARS     INTEGER    *UNUSED     F.P.        DEFINED     28

FILE NAMES        MODE
    OUTPUT        FMT                   WRITES       31

STATEMENT LABELS              DEF LINE    REFERENCES
   14  4441     FMT               32          31
```

STATISTICS
PROGRAM LENGTH 243 20
520003 CM USED

```
      *DECK CAL
      C/
      C
      C  ********ARRAYS********
      C
      C        AA(50) CONTAINS THE NAME OF EVERY SUBROUTINE.
      C
      C        EXPL(50,8) CONTAINS A VERY BRIEF DESCRIPTION OF EVERY SUBROUTIN
      C
      C        TEXT(8) IS AN ARRAY USED TO TRANSFER 80 CHARACTERS FROM A FILE.
      C
      C        TEST(1) IS USED TO CHECK FOR THE DIVIDERS BETWEEN THE
      C             (SUBROUTINE DESCRIPTION/SUBROUTINE LISTING/ARRAY AND VARIA
      C             DEFINITIONS).
      C
      C        IEM(5) CONTAINS RELEVANT INFORMATION IF AN ERROR OCCURS IN SYST
      C             ROUTINE PFSUB.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA WAS THE INTEGER FOR WHICH A VALUE WAS TO BE INPUT.  555 WAS
      C             ENTERED IN LIEU OF THIS VALUE SO THAT THIS SUBROUTINE, HEL
      C             COULD BE CALLED.  THE DESIRED VALUE FOR IA MUST BE INPUT
      C             BEFORE LEAVING THIS ROUTINE.
      C
      C        IB IS AN INDEX USED TO INDICAT THE ROUTINE FROM WHICH SUBROUTIN
      C             HELP WAS CALLED.
      C
      C        IY IS THE NUMBER OF ROUTINES DESCRIBED HEREIN.
      C
      C        IC IS AN INDEX DELINEATING WHETHER THE ROUTINES, TOGETHER WITH
      C             BRIEF EXPLANATION, WILL BE OUTPUT.
      C
      C        SUB TAKES ON THE NAME OF A SPECIFIED ROUTINE.
      C
      C        IX IS AN INDEX USED TO DETERMINE IF THE SUBROUTINE DESCRIPTION
      C             WILL BE PRINTED OUT.
      C
      C        IV IS AN INDEX USED TO DETERMINE IF THE PROGRAM LISTING WILL BE
      C             PRINTED OUT.
      C
      C        IZ IS AN INDEX USED TO DETERMINE IF THE ARRAY AND VARIABLE DEFI
      C             WILL BE PRINTED OUT.
      C
      C        ID IS AN INDEX INDICATING WHETHER ADDITIONAL INFORMATION WILL B
      C             SOUGHT.
      C
      C        IES,JCW,UN,PW,CT,M ARE VARIABLES USED IN THE CALL TO SYSTEM ROU
      C             PFSUB.
      C
      C        IJ DELINEATES WHETHER A RETURN IS MADE.
      C
      C  ********VARIABLES********
```

```
C/
C
C                  SUBROUTINE CAL(A,NYEARS,NROWS,PRODM,HEADM)
C
C THIS ROUTINE PROVIDES AN INTERFACE WITH THE ROUTINES THAT
C
C PERFORM CALCULATIONS.  THE ROUTINE PROVIDES INITIAL PROMPTING TO THE U
C
C SO THAT DETAILED PROMPTING IS NOT REPEATED EVERY TIME A CALCULATING
C
C ROUTINE IS CALLED.
C
C/
C
      SUBROUTINE CAL(A,NYEARS,NROWS,PRODM,HEADM)
      DIMENSION A(50,20),COST(20),HEADM(50,8)
      INTEGER PRODM(10,20)
      DATA IABC/1/
 9000 PRINT 1000
 1000 FORMAT(* IF AN EXPLANATION OF THIS ROUTINE IS REQUIRED ENTER 1, OT
     *HERWISE ENTER 2*)
      READ*,IA
      IF(EOF(5))9000,8000
 8000 CONTINUE
      WRITE(4,*)IA
      IF(IA.EQ.555) WRITE(6,2000)
      IF(IA.NE.1)GO TO 40
      PRINT 1001
 1001 FORMAT(* EACH COST ELEMENT (ROW) IS CALCULATED SEPARATELY. THERE A
     *RE 11 METHODS OF CALCULATION*,/,* THESE ARE NOW DESCRIBED ALONG WI
     *TH THE NUMBER BY WHICH THEY CAN BE REQUESTED.*,/,* (1) UNIT LEARNI
     *NG CURVE. SINGLE LEARNING RATE.*,/,* (2) UNIT LEARNING CURVE, MULT
     *IPLE RATES.*,/,* (3) A FRACTION OF A PREVIOUS LINE.*,/,  * (4) A S
     *ET OF CONSTANTS.*,/,* (5) MULTIPLE USE OF THE OTHER METHODS OF CAL
     *CULATION.*,/,* (6) THE*,1X                                    ,*
     *ROW REMAINS UNCHANGED FROM THE ROW CALCULATED IN THE PREVIOUS RUN.
     **,/,* (7) SPECIFIED ROWS ARE SUMMED AND MULTIPLIED BY A SPECIFIED
     *CONSTANT.*,/,* (8) QUOTIENT OF ONE ROW DIVIDED BY ANOTHER.*,/,* (9
     *) CUMULATIVE COSTS PLUS LEARNING RATE.*,/,* (10) 2 PRODUCTION LOTS
     * AND ASSOCIATED COSTS ARE SPECIFIED AND A FIRST UNIT COST*,/,6X,*
     *AND ASSOCIATED LEARNING RATE IS CALCULATED.*,/,* (11) PRODUCT OF O
     *NE ROW MULTIPLIED BY ANOTHER.*)
   40 DO 41 I=1,NROWS
      KKK=I
 9001 IF(I.EQ.1)PRINT 1002
      IF(I.NE.1)PRINT 1003,I,(HEADM(I,JA),JA=1,8)
 1002 FORMAT(* ENTER THE METHOD OF CALCULATION FOR ROW 1*)
 1003 FORMAT(* ROW*,I3,2X,8A10)
      READ*,IB
      IF(EOF(5))9001,8001
 8001 CONTINUE
      WRITE(4,*)IB
      IF(IB.EQ.555) WRITE(6,2000)
      IF(IB.EQ.1409)CALL  APRINT(NYEARS,NROWS,A,HEADM,PRODM)
      IF(IB.EQ.1409)GO TO 9001
      IF(IB.EQ.1)CALL CAL1(COST,PRODM,NYEARS)
      IF(IB.EQ.2)CALL CAL2(COST,PRODM,NYEARS)
```

```
      IF(IB.EQ.3)CALL CAL3(A,COST,NYEARS)
      IF(IB.EQ.4)CALL CAL4(COST,NYEARS)
      IF(IB.EQ.5)CALL CAL5(A,COST,NYEARS,PROD1,KKK)
      IF(IB.EQ.6)GO TO 41
      IF(IB.EQ.7)CALL ADDL(A,NYEARS,COST)
      IF(IB.EQ.8)CALL DIVIDEL(A,NYEARS,COST)
      IF(IB.EQ.9)CALL CUM(COST,PROJM,NYEARS)
      IF(IB.EQ.10)CALL TISL(COST,PRODM,NYEARS)
      IF(IB.EQ.11)CALL MULT(A,COST,NYEARS)
      DO 42 J=1,NYEARS
   42 A(I,J)=COST(J)
   41 CONTINUE
      RETURN
C
 2001 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1* )
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS — DEF LINE — REFERENCES

3	CAL	72	127

VARIABLES — SN — TYPE — RELOCATION

0	A	REAL	ARRAY	F.P.	REFS	73	111	115	117	119	120	123
					DEFINED	72	125					
504	COST	REAL	ARRAY		REFS	73	113	114	115	116	117	119
					120	121	122	123	125			
0	HEADW	REAL	ARRAY	F.P.	REFS	73	103	111	DEFINED	72		
477	I	INTEGER			REFS	101	102	3*103	125	DEFINED	100	
476	IA	INTEGER			REFS	82	83	84	DEFINED	79		
252	IABC	* INTEGER			DEFINED	75						
502	IB	INTEGER			REFS	109	110	111	112	113	114	115
					116	117	118	119	120	121	122	123
					DEFINED	105						
503	J	INTEGER			REFS	2*125	DEFINED	124				
501	JA	INTEGER			REFS	103	DEFINED	103				
500	KKK	INTEGER			REFS	117	DEFINED	101				
0	NPJWS	INTEGER		F.P.	REFS	110	111	DEFINED	72			
0	NYEARS	INTEGER		F.P.	REFS	111	113	114	115	116	117	119
					120	121	122	123	124	DEFINED	72	
0	PRODM	INTEGER	ARRAY	F.P.	REFS	74	111	113	114	117	121	122
					DEFINED	72						

FILE NAMES — MODE

INPUT	FREE	READS	79	105		
OUTPUT	FMT	WRITES	76	85	102	103
TAPE4	FREE	WRITES	82	109		
TAPE6	FMT	WRITES	83	110		

EXTERNALS — TYPE — ARGS — REFERENCES

ADDL		7	119
APRINT		5	111
CAL1		3	117

```
EXTERNALS           TYPE   ARGS        REFERENCES
      CAL2                  3            114
      CAL3                  3            115
      CAL4                  2            116
      CAL5                  5            117
      SUM                   3            121
      DIVIDEL               3            120
      EOF           REAL    1             80        107
      MULT                  3            123
      T1SL                  3            122

STATEMENT LABELS                DEF LINE   REFERENCES
   35  40                         100        84
  215  41                         126       100       118
    0  42                         125       124
  256  1000    FMT                 77        76
  304  1001    FMT                 86        85
  444  1002    FMT                104       102
  452  1003    FMT                105       103
  467  2000    FMT                129        83       110
    0  8000        INACTIVE        81        80
    0  8001        INACTIVE       108       107
   15  9000                        76        80
   40  9001                       102       107       112

LOOPS  LABEL    INDEX     FROM-TO    LENGTH   PROPERTIES
   36  41      * I        108 126     162B               EXT REFS  NOT INNER
   51          * JA       103 103      11B               EXT REFS
  211  42        J        124 125       3B    INSTACK

STATISTICS
  PROGRAM LENGTH                572B   378
        520008 CM USED
```

1 27

```
      *DECK ESCALAT
C/
C
C  ********ARRAYS********
C
C        A(50,20) STORES COST DATA.
C
C        COST(20) TRANSFERS THE COST DATA OBTAINED FROM A
C             PARTICULAR CALCULATION.
C
C        PROGM(10,20) CONTAINS THE PRODUCTION SCHEDULES.  EACH
C             ELEMENT REPRESENTS 1 YEAR.
C
C        HEADM(50,8) CONTAINS THE HEADING FOR EACH ROW IN THE COST ARRAY
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IA IS AN INDEX DELINEATING WHETHER AN EXPLANATION OF THE ROUTIN
C             IS REQUIRED.
C
C        NROWS IS THE NUMBER OF COST ELEMENTS IN THE COST ARRAY.
C
C        NYEARS IS THE NUMBER OF YEARS OVER WHICH COSTS OCCUR.
C
C        IB IS AN INDEX THAT DELINEATES THE TYPE OF CALCULATION TO BE
C             PERFORMED.
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C        KKK DELINEATES THE ROW OF THE COST ARRAY BEING CALCULATED.
C  ********VARIABLES********
C/
C
C                    SUBROUTINE ESCALAT (A,B,NYEARS,NROWS)
C
C  THIS ROUTINE RECEIVES COST DATA IN BASELINE YEAR DOLLARS AND TRANSFORM
C  THE DATA INTO THEN YEAR DOLLARS OR INTO DIFFERENT BASELINE DOLLARS.
C  THE COMPUTATIONAL PROCEDURE IS AS FOLLOWS.----------THE ARRAY,
C  A, CONTAINS THE COSTS PER SEGMENT PER YEAR IN A GIVEN YEAR DOLLARS.
C  BY SPECIFYING THE APPROPRIATE INFLATION OR DEFLATION FACTORS, OR A
C  SET OF DEFAULT VALUES, THE COSTS ARE TRANSFORMED.
C  THE BASELINE YEAR DOES NOT HAVE TO BE THE YEAR CORRESPOND-
C  ING TO THE FIRST ELEMENT OF THE ESCALATION ARRAY, BUT THE CORRESPON-
C  DANCE MUST BE SPECIFIED.
```

```
      C
      C/
 60         SUBROUTINE ESCALAT (A,B,NYEARS,NROWS)
            DIMENSION A(50,20),B(50,20),ESC(20),ES(20)
            DATA IABC/8/
            PRINT 4441
 4441       FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
 65         RETURN
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	ESCALAT	60	65

VARIABLES

	SN	TYPE	RELOCATION					
0	A	REAL	ARRAY	F.P.	REFS	61	DEFINED	60
0	B	REAL	ARRAY	F.P.	REFS	61	DEFINED	60
50	ES	REAL	*UNDEF		REFS	61		
24	ESC	REAL	*UNDEF		REFS	61		
10	IABC	INTEGER			DEFINED	62		
0	NROWS	INTEGER	*UNUSED	F.P.	DEFINED	60		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	60		

FILE NAMES

	MODE			
OUTPUT	FMT	WRITES	63	

STATEMENT LABELS

			DEF LINE	REFERENCES
14	4441	FMT	64	63

STATISTICS

PROGRAM LENGTH 748 60

520009 CM USED

```
      *DECK NEWRA
      C/
      C********ARRAYS********
      C
      C       A(50,20) IS THE ARRAY TO BE ESCALATED.
      C
      C       B(50,20) IS THE ARRAY AFTER ESCALATION.
      C
      C       ESC(20) IS THE DEFAULT ESCALATION ARRAY.
      C
      C       ES(20) IS THE OPERATIONAL ESCALATION ARRAY.
      C
      C********ARRAYS********
      C********VARIABLES********
      C
      C       IX DETERMINES IF THE DEFAULT ESCALATION ARRAY IS TO BE DISPLAYE
      C                1=DISPLAYED
      C                2=NOT DISPLAYED
      C
      C       IY DETERMINES WHETHER THE DEFAULT ESCALATION ARRAY IS TO BE
      C            ACCEPTED IN TOTO.
      C                1=ACCEPTED.
      C                2=NOT ACCEPTED IN TOTO.
      C
      C       IZ IS THE ELEMENT OF THE DEFAULT ESCALATION ARRAY TO BE CHANGED
      C
      C       C IS THE NEW VALUE FOR THE IZ ELEMENT.
      C
      C       IL IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO THE
      C            BASELINE YEAR.
      C
      C       ID IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO THE
      C            FIRST YEAR OF THE ANALYSIS.
      C
      C       KK IS AN INDEX USED IN MAKING THE ELEMENTS OF ES(.) PROPERLY
      C            CORRESPOND TO THOSE OF A(...).
      C
      C       NOLD IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO TH
      C            EXISTING BASELINE YEAR.
      C
      C       NNEW IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO TH
      C            NEW BASELINE YEAR.
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C       ICUM EQUALS 7 IF CUMULATIVE VALUES ARE TO BE INPUT INTO THE
      C            ESCALATION ARRAY.
      C
      C********VARIABLES********
      C/
      C
      C             SUBROUTINE NEWRA(KK,RATES,TL,IUNIT,A)
      C
      C     GIVEN THE OLD AND NEW LEARNING RATES, BOTH CONTAINED IN ARRAY RATE
      C
```

```
C     THE PRODUCTION NUMBER OF THE UNIT WITH WHICH THE CHANGE IS TO COMM
C
60    C     CONTAINED IN ARRAY IUNIT, AND INDEX <K, THEN THE NEW RATE IS
C     C     KNOWN AND A NEW T1 CAN BE DETERMINED SO THAT THE COST OF THE LAST
C     C     ARTICLE PRODUCED USING THE PREVIOUS LEARNING RATE REMAINS UNCHANGE
65    C
C     C     THE FORMULA IS
C     C
C     C        T1(NEW)=T1(OLD)*(PREVIOUS ARTICLE NUMBER**(OLD RATE-NEW RATE))
C     C
70    C/
C
      SUBROUTINE NEWRA(KK,RATES,T1,IUNIT,A)
      DIMENSION RATES(10),IUNIT(10)
      DATA IABC/13/
75    B=A
      N=IUNIT(KK)-1
      <K=KK+1
      A=ALOG(RATES(KK))/ALOG(2.)
      T1=T1*(N**(B-A))
80    RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	NEWRA	72	80

VARIABLES

		SN	TYPE		RELOCATION						
0	A		REAL		F.P.	REFS	75	79	DEFINED	72	78
27	B		REAL			REFS	73	DEFINED	75		
25	IABC	*	INTEGER			DEFINED	74				
0	IUNIT		INTEGER	ARRAY	F.P.	REFS	73	76	DEFINED	72	
0	<K		INTEGER		F.P.	REFS	75	77	78	DEFINED	72 77
30	N		INTEGER			REFS	79	DEFINED	76		
0	RATES		REAL	ARRAY	F.P.	REFS	73	78	DEFINED	72	
0	T1		REAL		F.P.	REFS	73	DEFINED	72	79	

EXTERNALS

	TYPE	ARGS	REFERENCES
ALOG	REAL	1 LIBRARY	2*78

STATISTICS

PROGRAM LENGTH 318 25

520003 CM USED

```
      *DECK CAL5
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        IUNIT(10) CONTAINS THE NUMBER OF THE PRODUCTION ITEM AT WHICH A
      C             NEW LEARNING RATE BECOMES APPLICABLE
      C
      C        RATES(10) CONTAINS THE LEARNING RATES WHICH WILL EXIST OVER THE
      C             PRODUCTION LIFE.
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        KK IS AN INDEX USED TO SPECIFY THE APPROPRIATE ELEMENT OF RATES
      C             AND IUNIT.
      C
      C        T1 IS THE COST OF THE FIRST UNIT.  FOR MATHEMATICAL REASONS A N
      C             VALUE OF T1 IS CALCULATED AT EACH CHANGE IN THE LEARNING R
      C
      C        B IS LN(OLD LEARNING RATE)/LN(2.)
      C
      C        A IS LN(NEW LEARNING RATE)/LN(2.)
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE CAL5(A,COST,NYEARS,PRODM,KKK)
      C
      C  IT IS NOT UNUSUAL FOR A COST ELEMENT (ROW OF THE COST ARRAY) TO BE COM
      C
      C  OF THE SUM OF TWO OR MORE COSTS OBTAINED FROM SEPARATE CALCULATIONS.
      C
      C  CAL5 ACCOMPLISHES THIS OVERALL CALCULATION BY STORING THE CUMULATIVE C
      C
      C  IN ARRAY TCOST.  THE USER SPECIFIES THE NUMBER OF SEPARATE CALCULATION
      C
      C  TO BE MADE.
      C
      C/
      C
            SUBROUTINE CAL5(A,COST,NYEARS,PRODM,KKK)
            DIMENSION A(50,20),COST(20),TCOST(20)
            INTEGER PRODM(10,20)
            DATA IABC/12/
            DO 115 I=1,20
        115 TCOST(I)=0.
       9000 PRINT 1000
       1000 FORMAT(* ENTER THE NUMBER OF TIMES SEPARATE CALCULATIONS WILL BE M
           *ADE IN CALCULATING THIS ROW*)
            READ*,IA
            IF(EOF(5))9000,8000
       8000 CONTINUE
```

```
      WRITE(4,*)IA
      IF(IA.EQ.555) WRITE(6,2000)
      DO 10 I=1,IA
 9001 PRINT 1001
 1001 FORMAT(* SPECIFY ROUTINE INDEX*)
      READ*,IB
      IF(EOF(5))9001,9001
 8001 CONTINUE
      WRITE(4,*)IB
      IF(IB.EQ.555) WRITE(6,2000)
      IF(IB.EQ.5.OR.IB.GT.11)PRINT 1012
      IF(IB.EQ.5.OR.IB.GT.11)GO TO 9001
 1012 FORMAT(* THE INTEGER ENTERED WAS NOT IN THE ALLOWABLE SET.*,/,* PL
     *EASE REFER TO USER"S MANUAL.*)
      IF(IB.EQ.1)CALL CAL1(COST,PRODM,NYEARS)
      IF(IB.EQ.2)CALL CAL2(COST,PRODM,NYEARS)
      IF(IB.EQ.3)CALL CAL3(A,COST,NYEARS)
      IF(IB.EQ.4)CALL CAL4(COST,NYEARS)
      IF(IB.EQ.7)CALL ADDL(A,NYEARS,COST)
      IF(IB.EQ.8)CALL DIVIDEL(A,NYEARS,COST)
      IF(IB.EQ.9)CALL CUM(COST,PRODM,NYEARS)
      IF(IB.EQ.10)CALL TISL(COST,PRODM,NYEARS)
      IF(IB.EQ.11)CALL MULT(A,COST,NYEARS)
       IF(IB.NE.6)GO TO 110
       DO 211 JJ=1,NYEARS
  211  TCOST(JJ)=TCOST(JJ)+A(KK,JJ)
       GO TO 10
  110  DO 11 J=1,NYEARS
   11 TCOST(J)=TCOST(J)+COST(J)
   10 CONTINUE
      DO 12 I=1,NYEARS
   12 COST(I)=TCOST(I)
      RETURN
C
 2000 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1*)
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	CAL5	45	90

VARIABLES

	SN	TYPE			RELOCATION							
0	A	REAL	ARRAY	F.P.	REFS	67	74	76	77	80	83	
					DEFINED	65						
0	COST	REAL	ARRAY	F.P.	REFS	67	72	73	74	75	76	77
						78	79	80	86	DEFINED	46	89
336	I	INTEGER			REFS	51	2*89	DEFINED	50	60	88	
337	IA	INTEGER			REFS	58	59	60	DEFINED	55		
237	IARG	* INTEGER			DEFINED	69						
340	IB	INTEGER			REFS	55	67	2*68	2*69	72	73	74
						75	76	77	78	79	80	81
					DEFINED	53						

VARIABLES	SN	TYPE		RELOCATION									
342	J	INTEGER			REFS	3*86	DEFINED	85					
341	JJ	INTEGER			REFS	3*83	DEFINED	82					
0	KKK	INTEGER		F.P.	REFS	33	DEFINED	46					
0	NYEARS	INTEGER		F.P.	REFS	72	73	74	75	76	77	78	
						79	80	82	85	88	DEFINED	46	
0	PRODM	INTEGER	ARRAY	F.P.	REFS	68	72	73	78	79			
					DEFINED	45							
343	TCOST	REAL	ARRAY		REFS	47	83	86	89	DEFINED	51	83	
					86								

FILE NAMES	MODE				
INPUT	FREE	READS	55	53	
OUTPUT	FMT	WRITES	52	51	69
TAPE4	FREE	WRITES	58	56	
TAPE6	FMT	WRITES	59	57	

EXTERNALS	TYPE	ARGS	REFERENCES		
ADDL		3	76		
CAL1		3	72		
CAL2		3	73		
CAL3		3	74		
CAL4		2	75		
CUM		3	78		
DIVIDEL		3	77		
EOF	REAL	1	56	64	
MULT		3	80		
TISL		3	79		

STATEMENT LABELS			DEF LINE	REFERENCES	
206	10		37	60	64
0	11		86	85	
0	12		89	88	
176	11J		85	81	
0	115		51	50	
0	211		83	82	
243	1000	FMT	53	52	
273	1001	FMT	62	61	
314	1012	FMT	70	68	
327	2000	FMT	92	59	67
0	3000	INACTIVE	57	56	
0	6001	INACTIVE	65	64	
23	9000		52	56	
46	9001		61	64	69

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
20	115	I	50 51	23	INSTACK
40	10	* I	56 87	1513	EXT REFS NOT INNER
171	211	JJ	82 83	33	INSTACK
202	11	J	85 86	33	INSTACK
215	12	I	85 89	23	INSTACK

STATISTICS
PROGRAM LENGTH 4333 283
520003 CM USED

```
      *DECK PRODUC
C/
C
C  ********ARRAYS********
C
C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
C
C        COST(20) STORES AND TRANSFERS THE COST INFORMATION EACH TIME AN
C             INTERFACE WITH ANOTHER ROUTINE IS MADE.
C
C        TCOST(20) STORES THE CUMULATIVE COSTS AS THE CALCULATION IS
C             BEING MADE.
C
C        A(50,20) CONTAINS THE BASELINE COST INFORMATION
C             TO BE OUTPUT.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IA INDICATES THE NUMBER OF SEPARATE CALCULATIONS THAT WILL BE M
C
C        IB IS AN INDEX USED TO DETERMINE THE SUBROUTINE TO BE CALLED.
C
C        NYEARS IS THE NUMBER OF YEARS OVER WHICH THE COST CALCULATION I
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C        KKK IS THE ROW OF THE COST ARRAY BEING CALCULATED.
C
C  ********VARIABLES********
C
C/
C
C                    SUBROUTINE PRODUC(PRODM)
C
C THIS ROUTINE IS USED TO SPECIFY THE PRODUCTION SCHEDULES, WHICH ARE ST
C
C IN ARRAY PRODM.  ELEMENT (10,20) OF PRODM RECORDS THE NUMBER OF SCHEDU
C
C/
C
      SUBROUTINE PRODUC(PRODM)
      INTEGER PRODM(10,20)
      DATA IABC/6/
 9000 PRINT 1000
 1000 FORMAT(' SPECIFY THE NUMBER OF PRODUCTION SCHEDULES.')
      READ*,IA
      IF(EOF(5))9000,6000
 6000 CONTINUE
      WRITE(4,*)IA
      IF(IA.EQ.555) WRITE(6,2100)
      PRODM(10,20)=IA
      DO 65 I=1,IA
 9001 PRINT 1001,I,I
 1001 FORMAT(' SPECIFY THE',I3,' PRODUCTION SCHEDULE, 20 NUMBERS, WHOSE
```

```
                *INDEX WILL BE*,I3)
                 READ*,(PROGM(I,JA),JA=1,20)
  60             IF(EOF(5))9001,9001
               9001 CONTINUE
                 WRITE(4,*)(PROGM(I,JA),JA=1,20)
                 GO CONTINUE
                 RETURN
  65           C
               2700 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1* )
                 END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

3	PRODUC	44	64

VARIABLES

164	I	INTEGER			REFS	2*56	59	62	DEFINED	55	
163	IA	INTEGER			REFS	52	53	54	55	DEFINED	49
77	IABC	* INTEGER			DEFINED	45					
165	JA	INTEGER			REFS	53	62	DEFINED	59	62	
0	PROGM	INTEGER	ARRAY	F.P.	REFS	65	62	DEFINED	44	54	59

FILE NAMES

INPUT	FREE	READS	49	53
OUTPUT	FMT	WRITES	47	55
TAPE4	FREE	WRITES	52	52
TAPE6	FMT	WRITES	53	

EXTERNALS

EOF	REAL	1	59	60

STATEMENT LABELS

0	65		63	55
103	1000	FMT	43	47
130	1001	FMT	57	56
154	2000	FMT	66	53
0	2000	INACTIVE	51	50
0	9001	INACTIVE	61	60
15	9000		47	50
34	9001		56	60

LOOPS

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
34	65	* I	55 63	419	EXT REFS	NOT INNER
41		* JA	59 59	113	EXT REFS	
50		* J1	62 62	113	EXT REFS	

STATISTICS

PROGRAM LENGTH 1719 121

520003 24 USED

```
      *DECK OUT
C
C/
C
C  ********ARRAYS********
C
C        PROD#(10,20) THIS ARRAY CONTAINS THE PRODUCTION SCHEDULES, EACH
C            REPRESENTS 1 YEAR.  ELEMENT (10,20) RECORDS THE NUMBER OF
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IA IS AN INDEX USED TO SPECIFY THE NUMBER OF PRODUCTION SCHEDUL
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C
C/
C
C     SUBROUTINE OUT(A,NYEARS,NROWS,HEADW)
C
C THIS ROUTINE OUTPUTS CALCULATED COSTS, BY YEAR AND TYPE.  EITHER OF TH
C
C FORMATS; I, E OR F, CAN BE SPECIFIED.  AN APPROPRIATE TABLE HEADING CA
C
C DELINEATED.
C
C/
C
      SUBROUTINE OUT(A,NYEARS,NROWS,HEADW)
      DIMENSION A(50,20),IZZ(20),HEADW(50,8)
      INTEGER HEADW
      DATA IABC/5/
      PRINT 4441
      PRINT 4441
 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
   47 RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS — DEF LINE — REFERENCES

3	OUT	32	39

VARIABLES	SN	TYPE		RELOCATION						
0	A	REAL	ARRAY	F.P.	REFS	33	DEFINED	32		
0	HEADW	INTEGER	ARRAY	F.P.	REFS	33	34	DEFINED	32	
12	IABC	INTEGER			DEFINED	35				
31	IZZ	INTEGER	*UNDEF		REFS	33				
0	NROWS	INTEGER	*UNUSED	F.P.	DEFINED	32				
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	32				

```
FILE NAMES     MODE
   OUTPUT      FMT                WRITES       36       37

STATEMENT LABELS          DEF LINE   REFERENCES
   0  47        INACTIVE     39
  21  4441    FMT            39         36        37

STATISTICS
  PROGRAM LENGTH            55B       45
        52000B CM USED
```

1 38

```
      *DECK FILES
C
C     ********ARRAYS********
C
C           A(50,20) CONTAINS THE DATA TO BE OUTPUT.
C
C           HEADW(50,8) CONTAINS THE HEADINGS FOR EACH ROW OF ARRAY A.
C
C           IZZ(20) CONTAINS THE SPECIFICATION OF THE YEARS.
C
C     ********ARRAYS********
C
C     ********VARIABLES********
C
C           NYEARS IS THE NUMBER OF YEARS OF INTEREST.
C
C           NROWS IS THE NUMBER OF ROWS IN ARRAY A WHICH CONTAIN COST
C                INFORMATION.
C
C           II IS A FORMAT INDEX.  1=E, 2=F, 3=I.
C
C           IX IS A TABLE HEADING INDEX.
C                1=BASELINE YEAR DOLLARS.
C                2=THEN YEAR DOLLARS.
C                3=.... YEAR DOLLARS. (WHERE .... IS SPECIFIED.)
C
C           IY IS THE VALUE OF THE YEAR INDICATED IN IX=3 ABOVE.
C
C           IZ IS THE FIRST YEAR IN WHICH COSTS ARE INCURRED.
C
C           IA IS A TABLE HEADING INDEX.  1=FISCAL YEARS, 2=CALENDAR YEARS.
C
C           NX=NYEARS + 1
C
C           N=NROWS + 1
C
C           INUM IS THE NUMBER OF THE DEVICE ON WHICH THE OUTPUT IS PRINTED
C
C           IFLAG IS AN INDEX DELINEATING WHETHER THE OUTPUT IS PRINTED OVE
C                     THE TERMINAL OR PLACED ON FILE.
C
C           IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C           L4 DELINEATES WHETHER THE FIRST COLUMN IS TO BE TITLED "PREVIOU
C                    COSTS".
C
C     ********VARIABLES********
C
C
                      SUBROUTINE FILES(A,HEADW,*ROOM,I19)
C     THIS ROUTINE ENABLES DATA STORED ON FILES TO BE INPUT TO THE COST,
C     HEADING AND PRODUCTION SCHEDULE ARRAYS DURING PROGRAM OPERATION.  ALSO
C     INFORMATION STORED IN THESE ARRAYS CAN BE PLACED ON FILES DURING
```

```
C
C PROGRAM OPERATION.
C
C/
C
      SUBROUTINE FILES(A,HEAD4,PRODM,I19)
      DIMENSION A(50,20),HEAD4(50,8)
      INTEGER PRODM(10,20),IE4(5),SUB
      DATA IABC/16/
      IF(I19.EQ.2)GO TO 22
3000  PRINT 1000
1000  FORMAT(* ENTER 1 IF YOU WISH TO SPECIFY, BY FILE, THE HEADING,COST
     *AND/OR PRODUCTION ARRAYS,*,/,* RESPECTIVELY, OTHERWISE ENTER 2*,*
     *A TYPICAL RESPONSE WOULD BE 1,2,1*)
      READ*,IA,IB,IC
      IF(EOF(5))3000,8009
8000  CONTINUE
      WRITE(4,*)IA,IB,IC
      IF(IA.NE.1)GO TO 201
2     PRINT 1001
1001  FORMAT(* SPECIFY THE FILE TO BE READ INTO THE HEADING ARRAY.*)
      CALL NAMCHK(SUB)
10    FORMAT(8A10)
      CALL RETURN(5HTAPE7)
      ERR=0.0
      CALL PERMFIL(ERR,6HATTACH,5HTAPE7,SUB,24DY,1)
      IF(ERR.NE.0.0)GO TO 2
      DO 41 I=1,50
      READ(7,100) (HEAD4(I,J),J=1,8)
100   FORMAT(8A10)
41    CONTINUE
      CALL RETURN(5HTAPE7)
201   IF(IB.NE.1)GO TO 301
3     PRINT 1002
1002  FORMAT(* SPECIFY THE FILE TO BE READ INTO THE COST ARRAY.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE1)
      ERR=0.0
      CALL PERMFIL(ERR,6HATTACH,5HTAPE1,SUB,24DY,1)
      IF(ERR.NE.0.0)GO TO 3
      READ(1,*)((A(I,J),I=1,50),J=1,20)
      CALL RETURN(5HTAPE1)
301   IF(IC.NE.1)RETURN
4     PRINT 1003
1003  FORMAT(* SPECIFY THE FILE TO BE READ INTO THE PRODUCTION ARRAY.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE1)
      ERR=0.0
      CALL PERMFIL(ERR,6HATTACH,5HTAPE1,SUB,24DY,1)
      IF(ERR.NE.0.0)GO TO 4
      READ(1,*)((PRODM(I,J),I=1,10),J=1,20)
      CALL RETURN(5HTAPE1)
      RETURN
22    PRINT 1004
1004  FORMAT(* FOR THE HEADING,COST AND/OR PRODUCTION ARRAYS, RESPECTIVE
     *_Y,*,/,* ENTER 1 TO SAVE ON FILES, OTHERWISE ENTER 2. *, / ,
     ** A TYPICAL RESPONSE WOULD BE 1,2,1*)
```

```
      READ*,JA,JB,JC
      IF(EOF(5))22,8022
8022  CONTINUE
      WRITE(4,*)JA,JB,JC
      IF(JA.NE.1)GO TO 202
6     PRINT 1005
1005  FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR HEADING ARRAY.---A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE8)
      CALL REQUEST(5HTAPE8,3H*PF)
      DO 141 I=1,50
      WRITE(8,157) (HEADW(I,J),J=1,8)
157   FORMAT(9A10)
141   CONTINUE
      ENDFILE 8
      ERR=0.0
      CALL PERMFIL(ERR,7HDATA_OG,5HTAPE8,SUB,2HCY,1)
      IF(ERR.NE.0.0)GO TO 22
      CALL RETURN(5HTAPE8)
202   IF(JB.NE.1)GO TO 302
7     PRINT 1006
1006  FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR COST ARRAY.--- A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE2)
      CALL REQUEST(5HTAPE2,3H*PF)
      WRITE(2,*)((A(I,J),I=1,50),J=1,20)
      ENDFILE 2
      ERR=0.0
      CALL PERMFIL(ERR,7HDATA_OG,5HTAPE2,SUB,2HCY,1)
      IF(ERR.NE.0.0)GO TO 7
      CALL RETURN(5HTAPE2)
302   IF(JC.NE.1)RETURN
9     PRINT 1007
1007  FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR PRODUCTION ARRAY.---A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE2)
      CALL REQUEST(5HTAPE2,3H*PF)
      WRITE(2,*)((PRODM(I,J),I=1,10),J=1,20)
      ENDFILE 2
      ERR=0.0
      CALL PERMFIL(ERR,7HDATA_OG,5HTAPE2,SUB,2HCY,1)
      IF(ERR.NE.0.0)GO TO 8
      CALL RETURN(5HTAPE2)
      RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 FILES 68 109 110 148 151

VARIABLES	SN	TYPE		RELOCATION								
0	A	REAL	ARRAY	F.P.	REFS	54	142	DEFINED	63	98		
654	ERR	REAL			REFS	83	94	96	97	106	107	132
					133	145	146	158	159	DEFINED	82	95
					105	131	144	157				
0	MEADW	REAL	ARRAY	F.P.	REFS	54	127	DEFINED	63	86		
655	I	INTEGER			REFS	85	99	108	127	142	155	
					DEFINED	85	98	108	126	142	155	
651	IA	INTEGER			REFS	75	76	DEFINED	72			
371	IA3C	* INTEGER			DEFINED	55						
652	IB	INTEGER			REFS	75	90	DEFINED	72			
653	IC	INTEGER			REFS	75	100	DEFINED	72			
662	IEM	INTEGER	*UNDEF		REFS	55						
0	I19	INTEGER		F.P.	REFS	57	DEFINED	63				
656	J	INTEGER			REFS	85	98	108	127	142	155	
					DEFINED	85	98	108	127	142	155	
657	JA	INTEGER			REFS	113	119	DEFINED	115			
660	JB	INTEGER			REFS	113	135	DEFINED	115			
661	JC	INTEGER			REFS	113	149	DEFINED	115			
0	PRODM	INTEGER	ARRAY	F.P.	REFS	55	155	DEFINED	63	108		
650	SUB	INTEGER			REFS	55	79	83	93	96	103	106
					123	132	139	145	152	158		

FILE NAMES	MODE									
INPUT	FREE	READS	72	115						
OUTPUT	FMT	WRITES	68	77	91	101	111	120	136	149
TAPE1	FREE	READS	98	113						
TAPE2	FREE	WRITES	142	155	MOTION	143	156			
TAPE4	FREE	WRITES	75	118						
TAPE7	FMT	READS	86							
TAPE8	FMT	WRITES	127	MOTION	130					

EXTERNALS	TYPE	ARGS	REFERENCES							
EOF	REAL	1	73	116						
NAMCHK		1	79	93	113	123	139	152		
PERMFIL		5	93	96	116	132	145	158		
REQUEST		2	125	141	154					
RETURN		1	81	89	94	99	104	109	124	134	148
			147	153	160					

STATEMENT LABELS			DEF LINE	REFERENCES		
31	2		77	94		
67	3		91	97		
107	4		101	107		
0	6	INACTIVE	120			
202	7		136	146		
226	9		149	159		
444	10	FMT NO REFS	80			
126	22		111	67	116	133
0	41		88	35		
455	100	FMT	87	36		
0	141		129	125		
577	157	FMT	123	127		
65	201		90	76		

STATEMENT LABELS				DEF LINE	REFERENCES
200	202			135	119
105	301			100	90
224	302			144	135
375	1000	FMT		69	68
435	1001	FMT		78	77
462	1002	FMT		92	91
500	1003	FMT		102	101
517	1004	FMT		112	111
556	1005	FMT		121	120
605	1006	FMT		137	136
627	1007	FMT		150	149
0	8000		INACTIVE	74	73
0	8022		INACTIVE	117	116
17	9000			65	73

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
44	41	* I	85 88	209	EXT REFS NOT INNER
47		* J	86 86	118	EXT REFS
151	141	* I	126 129	208	EXT REFS NOT INNER
154		* J	127 127	118	EXT REFS

STATISTICS

PROGRAM LENGTH	19103	520

520008 CM USED

```
*DECK ADDL
C/
C/
C
C  *******ARRAYS********
C
C        IEM(5) CONTAINS ERROR MESSAGE INFORMATION RESULTING FROM
C             A CALL TO SYSTEM ROUTINE PFSUB.
C
C        A(50,20) CONTAINS THE COST DATA.
C
C        HEADM(50,8) CONTAINS THE HEADINGS FOR THE COST DATA.
C
C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
C
C
C  ********ARRAYS********
C
C  *******VARIABLES********
C
C        IES,JCM,UN,PM,CT, AND M ARE VARIABLES USED BY SYSTEM ROUTINE
C             PFSUB.
C
C        I19 IS AN INDEX DELINEATING WHETHER DATA WILL BE INPUT ARE
C              SAVED.
C
C        IA,IB,IC ARE INDICES INDICATING WHETHER HEADING, COST AND/OR
C            PRODUCTION SCHEDULE INFORMATION WILL BE INPUT.
C
C        JA,JB,JC ARE INDICES INDICATING WHETHER HEADING, COST AND/OR
C            PRODUCTION SCHEDULE INFORMATION WILL BE SAVED.
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C        SUB TAKES ON A FILE NAME.
C
C  ********VARIABLES********
C
C
C                    SUBROUTINE ADDL(A,NYEARS,COST)
C
C  THIS ROUTINE ADDS ANY NUMBER OF SPECIFIED ROWS FROM THE COST ARRAY TO
C
C  FORM A NEW ROW.  ALL ELEMENTS OF THIS NEW ROW ARE THEN MULTIPLIED BY
C
C  A SPECIFIED CONSTANT.
C
C/
      SUBROUTINE ADDL(A,NYEARS,COST)
      DIMENSION A(50,20),IABC(50),COST(20)
      DATA IABC/15/
      DO 20 I=1,NYEARS
   20 COST(I)=0.
  900 PRINT 1000
```

```
                1001 FORMAT(* ENTER THE NUMBER OF ROWS TO BE ADDED AND THE FRACTION BY
                    *WHICH THE SUM OF THESE ROWS WILL BE MULTIPLIED.*)
     60             READ*,IA,FRAC
                    IF(EOF(5))9000,9000
                9000 CONTINUE
                    WRITE(4,*)IA,FRAC
                9001 PRINT 1001
     65         1001 FORMAT(* ENTER THE ROWS TO BE ADDED*)
                    READ*,(IARR(LX),LX=1,IA)
                    IF(EOF(5))9001,9001
                9001 CONTINUE
                    WRITE(4,*)(IARR(LX),LX=1,IA)
     70             DO 25 I=1,IA
                    J=IARR(I)
                    DO 26 L14=1,NYEARS
                 26 COST(L14)=COST(L14)+A(J,L14)
                 25 CONTINUE
     75             DO 30 I=1,NYEARS
                 30 COST(I)=FRAC*COST(I)
                    RETURN
                    END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS — DEF LINE — REFERENCES

3	ADDL	52	77

VARIABLES	SN	TYPE		RELOCATION								
0	A	REAL	ARRAY	F.P.	REFS	53	73	DEFINED	52			
0	COST	REAL	ARRAY	F.P.	REFS	53	73	76	DEFINED	52	56	73
					76							
160	FRAC	REAL			REFS	53	76	DEFINED	60			
156	I	INTEGER			REFS	55	71	2*76	DEFINED	55	70	75
157	IA	INTEGER			REFS	53	66	69	70	DEFINED	60	
104	IABC	* INTEGER			DEFINED	54						
164	IARR	INTEGER	ARRAY		REFS	53	69	71	DEFINED	66		
162	J	INTEGER			REFS	73	DEFINED	71				
161	LX	INTEGER			REFS	66	69	DEFINED	66	69		
163	L14	INTEGER			REFS	3*73	DEFINED	72				
0	NYEARS	INTEGER		F.P.	REFS	55	72	75	DEFINED	52		

FILE NAMES	MODE			
INPUT	FREE	READS	60	55
OUTPUT	FMT	WRITES	57	54
TAPE4	FREE	WRITES	63	59

EXTERNALS	TYPE	ARGS	REFERENCES	
EOF	REAL	1	61	67

STATEMENT LABELS	DEF LINE	REFERENCES
0 20	56	55
0 25	74	70
0 26	73	72

STATEMENT LABELS				DEF LINE	REFERENCES
0	30			76	75
110	1000	FMT		53	57
141	1001	FMT		65	64
0	8000		INACTIVE	62	61
0	9001		INACTIVE	69	67
24	9000			57	61
34	9001			64	67

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
21	20	I	55 56	29	INSTACK
54	25	* I	70 74	158	NOT INNER
63	26	L14	72 73	33	INSTACK
76	30	I	75 76	33	INSTACK

STATISTICS
PROGRAM LENGTH 2548 172
520008 CM USED

```
*DECK DIVIDEL
C
C/
C
C   ********ARRAYS********
C
C          A(50,20) CONTAINS THE COST DATA FOR THE ANALYSIS.
C
C          COST(20) IS USED TO CALCULATE AND TRANSFER THE COST DATA FOR TH
C               ROW BEING CALCULATED.
C
C          IARF(50) CONTAINS THE NUMBERS OF THE ROWS TO BE ADDED.
C
C   ********ARRAYS********
C
C   ********VARIABLES********
C
C          NYEARS IS THE NUMBER OF YEARS OF INTEREST.
C
C          IARC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C          IA IS THE NUMBER OF ROWS TO BE ADDED.
C
C          FRAC IS THE FRACTION BY WHICH THE SUM OF THE ROWS IS TO BE MULT
C
C   ********VARIABLES********
C
C/
C
C                    SUBROUTINE DIVIDEL(A,NYEARS,COST)
C
C THIS ROUTINE ENABLES THE FORMULATION OF A ROW THROUGH THE DIVISION OF
C
C EXISTING ROW BY A SECOND EXISTING ROW.
C
C
C/
C
      SUBROUTINE DIVIDEL(A,NYEARS,COST)
      DIMENSION A(50,20),COST(20)
      DATA IARC/13/
 9000 PRINT 1000
 1000 FORMAT(* ENTER THE ROW OF THE NUMERATOR AND THEN THE ROW OF THE DE
     *NOMINATOR*)
      READ*,IN,ID
      IF(EOF(5))9000,5000
 5000 CONTINUE
      WRITE(4,*)IN,ID
      DO 12 I=1,NYEARS
      IF(A(ID,I).LE.1.E-10)PRINT 205,I,ID
      IF(A(ID,I).LE.1.E-10)COST(I)=0.
      IF(A(ID,I).LE.1.E-10)GO TO 12
  205 FORMAT(" "," THE",I3," ELEMENT OF ROW",I3," IS ZERO.",/,
     *" THE COST ELEMENT BEING CALCULATED WAS SET TO ZERO.")
      COST(I)=A(IN,I)/A(ID,I)
   12 CONTINUE
      RETURN
      END
```

1 47

```
      SYMBOLIC REFERNCE MAP (R=2)

ENTRY POINTS      DEF LINE      REFERENCES
    3  DIVIDEL        33            56

VARIABLES      SN  TYPE              RELOCATION
    0  A             REAL        ARRAY      F.P.        REFS         33        49       50       51      2*54
                                                     DEFINED        33
    0  COST          REAL        ARRAY      F.P.        REFS         33   DEFINED       38       50        54
  130  I             INTEGER                            REFS       2*49      2*50       51     3*54   DEFINED      48
   55  IABC        * INTEGER                         DEFINED         43
  127  IO            INTEGER                            REFS         47      2*43       50       51        54
                                                     DEFINED         44
  126  IN            INTEGER                            REFS         47        54  DEFINED       44
    0  NYEARS        INTEGER                F.P.        REFS         48   DEFINED       38

FILE NAMES           MODE
       INPUT         FREE                    READS       44
       OUTPUT        FMT                     WRITES      41        49
       TAPE4         FREE                    WRITES      47

EXTERNALS              TYPE    ARGS         REFERENCES
       EOF           REAL        1              45

STATEMENT LABELS                    DEF LINE    REFERENCES
   56  12                              55          48          51
  116  205        FMT                  52          49
   61  1000       FMT                  42          41
    0  3000           INACTIVE         46          45
   15  3000                            41          45

LOOPS  LABEL      INDEX       FROM-TO      LENGTH      PROPERTIES
   26  12       * I            40 55         253                   EXT REFS

STATISTICS
  PROGRAM LENGTH                 1433         33
        520003 CM USED
```

1 48

```
      *DECK ELEMENT
      C
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST INFORMATION.
      C
      C        COST(20) TRANSFERS THE CALCULATED COST DATA.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        IN IS THE NUMBER OF THE NUMERATOR ROW.
      C
      C        ID IS THE NUMBER OF THE DENOMINATOR ROW.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C                    SUBROUTINE ELEMENT(A)
      C  THIS ROUTINE ENABLES A SPECIFIC ELEMENT OF THE COST ARRAY TO BE FORMED
      C  BY SPECIFICATION OR BY DIVIDING A SPECIFIED ELEMENT OF THE COST ARRAY
      C  BY ANOTHER SPECIFIED ELEMENT.
      C
      C
            SUBROUTINE ELEMENT(A)
            DIMENSION A(50,20)
            DATA IABC/13/
         99 PRINT 1000
       1000 FORMAT(' IF THE ELEMENT IS TO BE FORMED BY SPECIFICATION ENTER 1.
           */,' IF BY DIVISION ENTER 2.')
            READ*,IA
            IF(EOF(5))  99,6099
       6099 CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555) WRITE(6,2000)
            IF(IA.EQ.1)GO TO 35
       9000 PRINT 1001
       1001 FORMAT(' ENTER THE ROW AND COLUMN OF THE NUMERATOR ELEMENT',/,' FO
           'LOWED BY THE ROW AND COLUMN OF THE DENOMINATOR ELEMENT',/,' FOLLO
           'WED BY THE ROW AND COLUMN OF THE ELEMENT TO BE CALCULATED',/,' FO
           ' EXAMPLE     10,7,22,5,24,8')
            READ*,IN,INC,ID,IDC,IDR,ICC
            IF(EOF(5)) 9000,8000
       8000 CONTINUE
            WRITE(4,*)IF,INC,ID,IDC,IDR,ICC
```

```
                    A(ICR,ICC)=A(INR,INC)/A(IDR,IDC)
                 88 PRINT 1002
60          1002 FORMAT(* IF ANOTHER ELEMENT IS TO BE OBTAINED ENTER 1, OTHERWISE 2
                **)
                    READ*,ID
                    IF(EOF(5)) 88,8089
                8089 CONTINUE
65                  WRITE(4,*)ID
                    IF(ID.EQ.555) WRITE(6,2300)
                    IF(ID.EQ.1)GO TO 99
                    RETURN
                 35 PRINT 1003
70          1003 FORMAT(* SPECIFY THE VALUE OF THE ELEMENT, IT"S ROW AND COLUMN*)
                    READ*,X,ICR,ICC
                    IF(EOF(5)) 35,8035
                8035 CONTINUE
                     WRITE(4,*)X,ICR,ICC
75                  A(ICR,ICC)=X
                    GO TO 88
                C
                2300 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1* )
                    END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS — DEF LINE — REFERENCES

3	ELEMENT	37	66

VARIABLES		SN	TYPE		RELOCATION								
0	A		REAL	ARRAY	F.P.	REFS	88	2*58	DEFINED	37	58	75	
267	IA		INTEGER			REFS	46	47	48	DEFINED	43		
101	IABC	*	INTEGER			DEFINED	83						
275	ICC		INTEGER			REFS	57	58	DEFINED	54			
300	ICD		INTEGER			REFS	74	75	DEFINED	71			
274	ICR		INTEGER			REFS	57	58	74	75	DEFINED	54	71
276	ID		INTEGER			REFS	65	66	67	DEFINED	62		
273	IDC		INTEGER			REFS	57	58	DEFINED	54			
272	IDR		INTEGER			REFS	57	58	DEFINED	54			
271	INC		INTEGER			REFS	57	58	DEFINED	54			
270	INR		INTEGER			REFS	57	58	DEFINED	54			
277	X		REAL			REFS	74	75	DEFINED	71			

FILE NAMES	MODE					
INPUT	FREE	READS	43	54	62	71
OUTPUT	FMT	WRITES	40	49	59	69
TAPE4	FREE	WRITES	46	57	65	74
TAPE6	FMT	WRITES	47	55		

EXTERNALS	TYPE	ARGS	REFERENCES			
EOF	REAL	1	44	55	63	72

STATEMENT LABELS				DEF LINE	REFERENCES	
62	35			59	48	72
43	63			59	63	76
5	99			40	44	67
105	1000	FMT		41	40	
135	1001	FMT		50	49	
211	1002	FMT		60	59	
236	1003	FMT		70	69	
264	2000	FMT		73	47	66
0	3000		INACTIVE	56	55	
0	3035		INACTIVE	73	72	
0	3088		INACTIVE	64	63	
0	8099		INACTIVE	45	44	
23	9000			49	55	

STATISTICS
PROGRAM LENGTH 301B 193
520033 CM USED

```
      *DECK RINSERT
C
C/
C
C  ********ARRAYS********
C
C        A(50,20) CONTAINS THE COST INFORMATION.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IA DELINEATES HOW THE ELEMENT WILL BE FORMED.
C
C        INR,INC DELINEATE THE ROW AND COLUMN OF THE NUMERATOR ELEMENT
C             ,RESPECTIVELY.
C
C        IDR,IDC DELINEATE THE ROW AND COLUMN OF THE DENOMINATOR ELEMENT
C             RESPECTIVELY.
C
C        ICR,ICC DELINEATE THE ROW AND COLUMN OF THE ELEMENT TO BE CALCU
C             RESPECTIVELY.
C
C        ID DELINEATES WHETHER ANOTHER ELEMENT IS TO BE FORMED.
C
C        X IS THE SPECIFIED VALUE OF THE ELEMENT.
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C
C/
C
C                  SUBROUTINE RINSERT(A,NYEARS,NROWS,HEADW,PRODM)
C
C THIS ROUTINE ENABLES THE INSERTION OF A ROW IN THE HEADING AND COST AR
C
C INSERTION OF ROWS CAN BE REPEATED AS OFTEN AS DESIRED.
C
C/
C
      SUBROUTINE RINSERT(A,NYEARS,NROWS,HEADW,PRODM)
      DIMENSION HEADW(50,8),A(50,20),COST(20)
      INTEGER PRODM(10,20)
      DATA IABC/20/
   97 PRINT 1000
 1000 FORMAT(* ENTER THE NUMBER OF THE TWO ROWS, SMALLEST FIRST, BETWEEN
     * WHICH THE ROW WILL BE INSERTED.*)
      READ*,IS,IL
      IF(EOF(5)) 97,3097
 3097 CONTINUE
      WRITE(4,*)IS,IL
      N7=IL-IS
      IF(N7.NE.1)GO TO 97
      KK=NROWS+2
      DO 30 I=IL,NROWS
      KK=KK-1
```

```
                KS=KK-1
                DO 20 J=1,NYEARS
60              20  A(KK,J)=A(KS,J)
                DO 21 LT=1,4
                21  HEADM(KK,LT)=HEADM(KS,LT)
                30  CONTINUE
                NROWS=NROWS+1
65              PRINT 1001,NROWS,IL
              1001 FORMAT(*THERE ARE NOW*,I3,*  COST ELEMENTS. (ROWS)*,/,* YOU ARE NO
                 *W GOING TO USE A ROUTINE WHICH MODIFIES ROWS.*,/,* YOU WILL WISH T
                 *O MODIFY ROW*,I3,*  IN THE HEADING AND COST ARRAYS.*)
                CALL ROWMOD(HEADM,A,PROD,M,NYEARS,COST)
70              9000 PRINT 1002
              1002 FORMAT(* IF YOU WISH TO INSERT ANOTHER ROW ENTER 1, OTHERWISE 2*)
                READ*,IX
                IF(EOF(5))9000,8000
              8000 CONTINUE
75              WRITE(4,*)IX
                IF(IX.EQ.555) WRITE(6,2000)
                IF(IX.EQ.1)GO TO 97
                RETURN
              C
80            2000 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1* )
                END
```

1 53

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS — DEF LINE — REFERENCES

3	RINSERT	42	78

VARIABLES	SN	TYPE		RELOCATION								
0	A	REAL	ARRAY	F.P.	REFS	63	60	69	DEFINED	42	60	
255	COST	REAL	ARRAY		REFS	63	69					
0	HEADM	REAL	ARRAY	F.P.	REFS	63	62	69	DEFINED	42	62	
250	I	* INTEGER			DEFINED	55						
127	IABC	* INTEGER			DEFINED	65						
245	IL	INTEGER			REFS	52	53	56	65	DEFINED	49	
244	IS	INTEGER			REFS	52	53	DEFINED	49			
254	IX	INTEGER			REFS	75	76	77	DEFINED	72		
252	J	INTEGER			REFS	2*50	DEFINED	59				
247	KK	INTEGER			REFS	57	58	60	62	DEFINED	55	57
251	KS	INTEGER			REFS	60	62	DEFINED	58			
253	LT	INTEGER			REFS	2*62	DEFINED	61				
0	NROWS	INTEGER		F.P.	REFS	65	56	64	65	DEFINED	42	64
0	NYEARS	INTEGER		F.P.	REFS	59	69	DEFINED	42			
246	M7	INTEGER			REFS	64	DEFINED	53				
0	PRODM	INTEGER	ARRAY	F.P.	REFS	64	69	DEFINED	42			

FILE NAMES	MODE			
INPUT	FREE	READS	49	72
OUTPUT	FMT	WRITES	46	55 70
TAPE4	FREE	WRITES	52	73
TAPE6	FMT	WRITES	76	

```
EXTERNALS          TYPE    ARGS          REFERENCES
        EOF        REAL     1              50        73
        ROMMOD              5              69

STATEMENT LABELS                 DEF LINE   REFERENCES
     0  20                          60         59
     0  21                          62         61
     0  30                          63         56
    15  37                          46         50        54        77
   133  1000     FMT                47         46
   164  1001     FMT                66         65
   213  1002     FMT                71         70
   235  2000     FMT                38         76
     0  8000          INACTIVE      74         73
     0  9097          INACTIVE      51         50
    77  9000                        70         73

LOOPS  LABEL     INDEX        FROM-TO    LENGTH     PROPERTIES
   34  30      * I             56 63       313                      NOT INNER
   45  20        J             59 60        28      INSTACK
   57  21        LT            61 62        23      INSTACK

STATISTICS
  PROGRAM LENGTH                  3133B      203
         52000B CM USED
```

1 54

```
*DECK CUM
C
C/
C
C  ********ARRAYS********
C
C        A(50.20) CONTAINS THE COST DATA.
C
C        HEADW(50.8) CONTAINS THE COST ELEMENT HEADINGS.
C
C        PRODM(10.20) CONTAINS THE PRODUCTION SCHEDULES.
C
C        COST(20) IS USED TO TRANSFER COST DATA.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IS AND IL ARE THE 2 ROWS BETWEEN WHICH THE ROW IS BEING INSERTE
C            IS IS LESS THAN IL.
C
C        NROWS IS THE NUMBER OF COST ELEMENTS. (ROWS)
C
C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
C
C        IX DELINEATES WHETHER ANOTHER ROW WILL BE INSERTED.
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C        N7 IS USED TO GUARD AGAINST INVALID INPUT INFORMATION.
C
C  ********VARIABLES********
C
C/
C
C                SUBROUTINE CUM(COST,PRODM,NYEARS)
C
C THIS ROUTINE DETERMINES FIRST UNIT COST, GIVEN THE LEARNING RATE AND T
C
C TOTAL COST OF SPECIFIC ITEMS.
C
C/
C
      SUBROUTINE CUM(COST,PRODM.NYEARS)
      DIMENSION COST(20)
      INTEGER PRODM(10.20)
      DATA IABC/21/
 9000 PRINT 1000
 1000 FORMAT(* ENTER THE CUMULATIVE COST, THE FIRST AND LAST OF THE UNIT
     *S AND THE LEARNING RATE.*)
      READ*,CUMCOST,IFIRST,ISEC,RATE
      IF(EOF(5))9000,8000
 8000 CONTINUE
      WRITE(4,*)CUMCOST,IFIRST,ISEC,RATE
      X=ALOG(RATE)/ALOG(2.)
      SUM=0.
      DO 10 I=IFIRST,ISEC
```

```
                10  SUM=SUM + I**X
                    T1=CUMCOST/SUM
     60             PRINT 1001,T1
                1001 FORMAT(* THE FIRST UNIT COST IS*,E15.5)
               C*****************************
               C  IT IS POSSIBLE THAT T1 COULD BE USED WITH CAL2.  A LATER REVISION MAY
               C     BE IN ORDER.
     65             CALL CAL1(COST,PRODM,NYEARS)
               C*****************************
                    RETURN
                    END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	CUM	44	67

VARIABLES

	SN	TYPE		RELOCATION						
0	COST	REAL	ARRAY	F.P.	REFS	65	65	DEFINED	44	
122	CUMCOST	REAL			REFS	54	59	DEFINED	51	
130	I	INTEGER			REFS	53	DEFINED	57		
54	IABC	* INTEGER			DEFINED	47				
123	IFIRST	INTEGER			REFS	54	57	DEFINED	51	
124	ISEC	INTEGER			REFS	54	57	DEFINED	51	
0	NYEARS	INTEGER		F.P.	REFS	65	DEFINED	44		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	65	65	DEFINED	44	
125	RATE	REAL			REFS	54	55	DEFINED	51	
127	SUM	REAL			REFS	58	59	DEFINED	56	58
131	T1	REAL			REFS	60	DEFINED	59		
126	X	REAL			REFS	58	DEFINED	55		

FILE NAMES

	MODE		
INPUT	FREE	READS	51
OUTPUT	FMT	WRITES	48 60
TAPE4	FREE	WRITES	54

EXTERNALS

	TYPE	ARGS	REFERENCES
ALOG	REAL	1 LIBRARY	2*55
CAL1		3	65
EOF	REAL	1	52

STATEMENT LABELS

			DEF LINE	REFERENCES
0	10		58	57
60	1000	FMT	49	48
113	1001	FMT	61	60
0	9000	INACTIVE	53	52
5	9000		48	52

LOOPS

	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
24	10	* I	57 58	63	EXT REFS

1 50

STATISTICS
PROGRAM LENGTH 1523 30
520003 CM USED

```
      *DECK ROWMOD
C/
C
C  ********ARRAYS********
C
C        COST(20) TRANSFERS THE CALCULATED COST INFORMATION.
C
C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C        SUM IS THE CUMULATIVE COST IF THE FIRST UNIT COST WERE ONE.
C
C        CUMCOST IS THE CUMULATIVE COST OF THE GROUP OF UNITS.
C
C        IFIRST IS THE NUMBER OF THE FIRST PRODUCED UNIT OF THE GROUP.
C
C        ISEC IS THE NUMBER OF THE LAST PRODUCED UNIT OF THE GROUP.
C
C        RATE IS THE LEARNING RATE.
C
C        T1 IS THE COST OF THE FIRST PRODUCED UNIT.
C
C  ********VARIABLES********
C
C/
C                  SUBROUTINE ROWMOD(HEADW,A,PRODM,NYEARS,COST)
C  THIS ROUTINE ENABLES THE MODIFICATION OF A ROW IN THE HEADING, COST OR
C  PRODUCTION SCHEDULE ARRAYS.  ROW MODIFICATION CAN BE REPEATED AS OFTEN
C  AS DESIRED.
C
C/
C
      SUBROUTINE ROWMOD(HEADW,A,PRODM,NYEARS,COST)
      DIMENSION A(50,20),HEAD4(50,3),COST(20)
      INTEGER PRODM(10,20)
      DATA IABC/17/
   93 PRINT 1000
 1000 FORMAT(' TO CHANGE A ROW IN THE HEADING, COST OR PRODUCTION ARRAY,
     * ENTER 1, 2, OR 3, RESPECTIVELY.')
      READ*,IA
      IF(EOF(5)) 93,8093
 8093 CONTINUE
      WRITE(4,*)IA
      IF(IA.EQ.555) WRITE(6,2000)
      IF(IA.EQ.2)GO TO 42
      IF(IA.EQ.3)GO TO 43
 9001 PRINT 1001
```

```
      1001 FORMAT(* ENTER THE ROW NUMBER*)
           READ*,IB
   60      IF(EOF(5))9001,8001
      8001 CONTINUE
           WRITE(4,*)IB
           PRINT 1002,IB
      1002 FORMAT(* ENTER THE HEADING FOR ROW*,I3)
   65      READ 77,(HEADW(IB,JT),JT=1,8)
           WRITE(4,77)(HEADW(IB,JT),JT=1,8)
        77 FORMAT(8A10)
      128  PRINT 1003
      1003 FORMAT(* TO MODIFY ANOTHER ROW ENTER 1, OTHERWISE 2*)
   70      READ*,ID
           IF(EOF(5)) 126,8128
      8128 CONTINUE
           WRITE(4,*)ID
           IF(ID.EQ.1)GO TO 93
   75      RETURN
        42 PRINT 1004
      1004 FORMAT(* ENTER THE ROW NUMBER*)
           READ*,IB
           IF(EOF(5))  42,8042
   80      8042 CONTINUE
           WRITE(4,*)IB
           IF(IB.EQ.555) WRITE(6,2000)
      9002 PRINT 1005
      1005 FORMAT(* ENTER THE INDEX FOR THE METHOD OF CALCULATION.*)
   85      READ*,IF
           IF(EOF(5))9002,8002
      8002 CONTINUE
           WRITE(4,*)IF
           IF(IF.EQ.555) WRITE(6,2100)
   90      IF(IF.EQ.6.OR.IF.GT.11)GO TO 9002
           IF(IF.EQ.1)CALL CAL1(COST,PRODM,NYEARS)
           IF(IF.EQ.2)CALL CAL2(COST,PRODM,NYEARS)
           IF(IF.EQ.3)CALL CAL3(A,COST,NYEARS)
           IF(IF.EQ.4)CALL CAL4(COST,NYEARS)
   95      IF(IF.EQ.5)CALL CAL5(A,COST,NYEARS,PROD4,IE)
           IF(IF.EQ.7)CALL ADDL(A,NYEARS,COST)
           IF(IF.EQ.8)CALL DIVIDE(A,NYEARS,COST)
           IF(IF.EQ.9)CALL CU4(COST,PRODM,NYEARS)
           IF(IF.EQ.10)CALL T1SL(COST,PRODM,NYEARS)
  100      IF(IF.EQ.11)CALL MULT(A,COST,NYEARS)
           DO 83 JK=1,NYEARS
        83 A(IB,JK)=COST(JK)
           GO TO 128
        43 PRINT 1006
  105      1006 FORMAT(* ENTER THE ROW NUMBER*)
           READ*,IB
           IF(EOF(5))  43,8043
      8043 CONTINUE
           WRITE(4,*)IB
  110      IF(IB.EQ.555) WRITE(6,2100)
      9007 PRINT 1007,IB
      1007 FORMAT(* ENTER THE PRODUCTION SCHEDULE FOR ROW*,I3)
           READ*,(PROD4(IB,JX),JX=1,20)
           IF(EOF(5))9003,8003
```

```
115          3004 CONTINUE
                  WRITE(4,*)(PROOM(I3,JX),JX=1,20)
                  GO TO 126
             C
              2001 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1*)
121           126 END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 ROWMOD 43 75

VARIABLES	SN	TYPE		RELOCATION								
0 A		REAL	ARRAY	F.P.	REFS	64	93	95	96	97	100	
					DEFINED	63	102					
0 COST		REAL	ARRAY	F.P.	REFS	64	91	92	93	94	95	96
					97	98	99	100	102	DEFINED	43	
0 MEANW		REAL	ARRAY	F.P.	REFS	64	66	DEFINED	43	65		
642 IA		INTEGER			REFS	53	54	55	56	DEFINED	50	
401 IABC	*	INTEGER			DEFINED	66						
643 IB		INTEGER			REFS	52	63	65	66	81	82	102
					109	110	111	113	116	DEFINED	59	78
					106							
645 ID		INTEGER			REFS	73	74	DEFINED	70			
647 IE	*	INTEGER			REFS	95						
646 IF		INTEGER			REFS	88	89	2*90	91	92	93	94
					95	96	97	98	99	100		
					DEFINED	85						
650 IK		INTEGER			REFS	2*102	DEFINED	101				
644 IT		INTEGER			REFS	55	66	DEFINED	65	66		
651 JX		INTEGER			REFS	113	116	DEFINED	113	116		
0 MYEARS		INTEGER		F.P.	REFS	91	92	93	94	95	96	97
					98	99	100	101	DEFINED	43		
0 PROOM		INTEGER	ARRAY	F.P.	REFS	65	91	92	95	98	99	116
					DEFINED	63	117					

FILE NAMES	MODE							
INPUT	MIXED	READS	50	59	65	70	78	85	106	113
OUTPUT	FMT	WRITES	47	57	63	68	76	83	104	111
TAPE4	MIXED	WRITES	53	62	66	73	81	88	109	116
TAPE6	FMT	WRITES	54	82	89	110				

EXTERNALS	TYPE	ARGS	REFERENCES						
ADDL		3	96						
CAL1		3	91						
CAL2		3	92						
CAL3		3	93						
CAL4		2	94						
CAL5		5	95						
CUM		3	98						
DIVIDEL		3	97						
EOF	REAL	1	51	60	71	73	85	107	114
MULT		3	100						

EXTERNALS	TYPE	ARGS	REFERENCES
T1SL		3	99

STATEMENT LABELS			DEF LINE	REFERENCES			
114	42		76	56	79		
361	43		104	56	107		
476	77	FMT	67	65	66		
0	83		102	101			
15	93		47	51	74		
101	128		68	71	103	117	
405	1000	FMT	48	47			
435	1001	FMT	58	57			
454	1002	FMT	64	63			
503	1003	FMT	69	68			
523	1004	FMT	77	76			
544	1005	FMT	84	83			
570	1006	FMT	105	104			
612	1007	FMT	112	111			
633	2000	FMT	119	54	82	88	110
0	8001	INACTIVE	61	60			
0	8002	INACTIVE	87	86			
0	8003	INACTIVE	115	114			
0	9042	INACTIVE	80	79			
0	8043	INACTIVE	108	107			
0	8093	INACTIVE	52	51			
0	8128	INACTIVE	72	71			
35	9001		57	60			
130	9002		83	86	90		
315	9003		111	114			

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
52		* JT	65 65	113	EXT REFS
67		* JT	66 66	113	EXT REFS
275	83	IK	101 102	33	INSTACK
322		* JK	113 113	113	EXT REFS
341		* JX	116 116	113	EXT REFS

STATISTICS

PROGRAM LENGTH 6663 438

520008 CM USED

```
*DECK APRINT
C
C/
C
C  ********ARRAYS********
C
C        HEADM(50,3) CONTAINS THE HEADINGS FOR THE COST ARRAY.
C
C        A(50,20) CONTAINS THE COST DATA.
C
C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULE.
C
C        COST(20) TRANSFERS THE COST INFORMATION.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C        IA IS AN INDEX DELINEATING THE ARRAY TO BE MODIFIED.
C
C        IB IS THE NUMBER OF THE ROW TO BE MODIFIED.
C
C        ID DELINEATES WHETHER ANOTHER ROW WILL BE MODIFIED.
C
C        IF DELINEATES THE METHOD OF CALCULATION FOR A ROW IN THE COST A
C
C  ********VARIABLES********
C
C/
C
C                 SUBROUTINE APRINT(NYEARS,NROWS,A,HEADM,PRODM)
C
C THIS ROUTINE OUTPUTS WHAT IS PRESENTLY IN THE HEADING, COST OR PRODUCT
C
C SCHEDULE ARRAYS.
C
C/
C
      SUBROUTINE APRINT(NYEARS,NROWS,A,HEADM,PRODM)
      DIMENSION A(50,20),HEADM(50,3)
      INTEGER PRODM(10,20)
      DATA IABC/22/
   87 PRINT 1000
 1000 FORMAT(* TO OUTPUT THE COST ARRAY ENTER 1, THE HEADING ARRAY 2, TH
     *E*,/,* PRODUCTION SCHEDULE ARRAY 3 OR IF NO ARRAY ENTER 4.*)
      READ*,IA
      IF(EOF(5))  87,8087
 8087 CONTINUE
      WRITE(4,*)IA
      IF(IA.EQ.555) WRITE(6,2100)
      IF(IA.EQ.2)GO TO 25
      IF(IA.EQ.3)GO TO 35
      IF(IA.EQ.4)RETURN
      PRINT 109
  109 FORMAT("1"," THE COST ARRAY.")
```

1 62

```
                      DO 110 I=1,NROWS
                      PRINT 111,(A(I,J),J=1,NYEARS)
     60         111   FORMAT(" ",10E11.3)
                110   CONTINUE
                      GO TO 87
                 25   PRINT 209
                209   FORMAT("1"," THE HEADING ARRAY.")
     65               DO 210 I=1,NROWS
                      PRINT 211,(HEADW(I,J),J=1,9)
                211   FORMAT(" ",8A10)
                210   CONTINUE
                      GO TO 87
     70          35   IC=PRODM(10,20)
                      PRINT 309
                309   FORMAT("1"," THE PRODUCTION SCHEDULE ARRAY.")
                      DO 310 I=1,IC
                      PRINT 311,(PRODM(I,J),J=1,20)
     75         311   FORMAT(" ",20I5)
                310   CONTINUE
                      GO TO 87
                C
                200   FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE1*)
     80               END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	APRINT	41	55

VARIABLES	SN	TYPE		RELOCATION								
0	A	REAL	ARRAY	F.P.	REFS	62	59	DEFINED	41			
0	HEADW	REAL	ARRAY	F.P.	REFS	62	66	DEFINED	41			
261	I	INTEGER			REFS	59	66	74	DEFINED	58	65	73
260	IA	INTEGER			REFS	51	52	53	54	55		
					DEFINED	48						
133	IARC	* INTEGER			DEFINED	44						
263	IC	INTEGER			REFS	73	DEFINED	70				
262	J	INTEGER			REFS	59	66	74	DEFINED	59	66	74
0	NROWS	INTEGER		F.P.	REFS	55	65	DEFINED	41			
0	NYEARS	INTEGER		F.P.	REFS	59	DEFINED	41				
0	PRODM	INTEGER	ARRAY	F.P.	REFS	63	70	74	DEFINED	41		

FILE NAMES	MOD							
INPUT	FREE	READS	48					
OUTPUT	FMT	WRITES	45	56	59	63	66	71	74
TAPE4	FREE	WRITES	51					
TAPE5	FMT	WRITES	52					

EXTERNALS	TYPE	ARGS	REFERENCES
EOF	REAL	1	43

STATEMENT LABELS			DEF LINE	REFERENCES			
61	25		63	53			
104	35		71	54			
15	37		45	49	62	63	77
172	109	FMT	57	56			
0	110		61	58			
204	111	FMT	60	59			
212	209	FMT	64	63			
0	210		68	65			
224	211	FMT	67	66			
232	309	FMT	72	71			
0	310		76	73			
246	311	FMT	75	74			
137	1000	FMT	46	45			
251	2000	FMT	79	52			
0	8037	INACTIVE	50	49			

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
41	110	* I	56 61	208	EXT REFS	NOT INNER
44		* J	59 59	113	EXT REFS	
64	210	* I	65 68	203	EXT REFS	NOT INNER
67		* J	66 66	113	EXT REFS	
111	310	* I	73 76	208	EXT REFS	NOT INNER
114		* J	74 74	113	EXT REFS	

STATISTICS
PROGRAM LENGTH 2773 191
520003 CM USED

```
      *DECK GCS
C
C/
C
C  ********ARRAYS********
C
C        A(50,20) CONTAINS THE COST INFORMATION.
C
C        HEADW(50,6) CONTAINS THE HEADINGS FOR THE COST ELEMENTS. (ROWS)
C
C        PROD1(10,20) CONTAINS THE PRODUCTION SCHEDULES.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IA DELINEATES THE ARRAY TO BE OUTPUT.
C
C        IC IS THE NUMBER OF PRODUCTION SCHEDULES.
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C
C/
C
C                    SUBROUTINE GCS(N),
C THIS SUBROUTINE ENALES DIRECT TRANSFER FROM ANY INTEGER RESPONSE
C LOCATION IN THE MAIN ROUTINE TO 15 DESIGNATED LOCATIONS IN THE MAIN RO
C
C/
C
      SUBROUTINE GCS(N),
     XRETURNS (L1,L2,L3,L4,L5,L6,L7,L8,L9,L10,L11,L12,L13,L14,L15,L16)
      DATA IABC/23/
      IF(N.EQ.1000)RETURN L1
      IF(N.EQ.1400)RETURN L2
      IF(N.EQ.1401)RETURN L3
      IF(N.EQ.1402)RETURN L4
      IF(N.EQ.1403)RETURN L5
      IF(N.EQ.1404)RETURN L6
      IF(N.EQ.1405)RETURN L7
      IF(N.EQ.1406)RETURN L8
      IF(N.EQ.1077)RETURN L9
      IF(N.EQ.1407)RETURN L10
      IF(N.EQ.1408)RETURN L11
      IF(N.EQ.1677)RETURN L12
      IF(N.EQ.1409)RETURN L13
      IF(N.EQ.1410)RETURN L14
      IF(N.EQ.1411)RETURN L15
      IF(N.EQ.1425)RETURN L16
      IF(N.NE.2000)GO TO 17
      PRINT 1000
 1000 FORMAT(* THE FOLLOWING IS APPLICABLE TO THE MAIN ROUTINE ONLY.*)
      PRINT 1001
```

```
1001 FORMAT(* IF IN RESPONSE TO AN INTEGER REQUEST 1000 PLUS ONE OF CER
    *TAIN SPECIFIED STATEMENT*,/,* NUMBERS IS INPUT THEN THE USER IS SE
    *NT DIRECTLY TO THAT STATEMENT NUMBER.*,/,* THUS, FOR EXAMPLE, A RE
    *SPONSE OF 1088 WOULD SEND THE USER TO STATEMENT 88 WHICH REQUESTS
    *THE NUMBER OF YEARS OF INTEREST.*  ,/,* THIS IS APPLICABLE FOR THE
    * FOLLOWING STATEMENT NUMBERS WHOSE REQUESTS END IN THE SYMBOL 8.*)
     PRINT 1010
1010 FORMAT(* STATEMENT NUMBER                                  REQUESTS*)
     PRINT 1200
1200 FORMAT(*  88      YEARS SPECIFICATION*,/,
    ** 430     ROWS SPECIFICATION*,/,
    ** 481     INPUT FILES*,/,
    ** 482     ROW MODIFICATION*,/,
    ** 483     ELEMENT MODIFICATION*,/,
    ** 484     POW INSERTION*,/,
    ** 485     PRODUCTION SCHEDULE*,/,
    ** 486     HEADING ARRAY SPECIFICATION*,/,
    **  77     CALCULATIONS*,/,
    ** 487     SPREADING THE DATA*,/,
    ** 488     ALLOWING FOR INFLATION*,/,
    ** 677     OUTPUT*,/,
    ** 489     ARRAY CHECK*,/,
    ** 410     STORE FILES*,/,
    ** 411     TERMINATE*,/,
    ** 425     COLUMN INSERT*)
 17  RETURN
     END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEFINE	REFERENCES
3	GCS	35	33

VARIABLES

	SN	TYPE	RELOCATION							
120	IABC	* INTEGER		DEFINED	37					
0	L1	RETURNS		REFS	39					
0	L10	RETURNS		REFS	47					
0	L11	RETURNS		REFS	48					
0	L12	RETURNS		REFS	49					
0	L13	RETURNS		REFS	50					
0	L14	RETURNS		REFS	51					
0	L15	RETURNS		REFS	52					
0	L16	RETURNS		REFS	53					
0	L2	RETURNS		REFS	39					
0	L3	RETURNS		REFS	40					
0	L4	RETURNS		REFS	41					
0	L5	RETURNS		REFS	42					
0	L6	RETURNS		REFS	43					
0	L7	RETURNS		REFS	44					
0	L8	RETURNS		REFS	45					
0	L9	RETURNS		REFS	46					
0	V	INTEGER	F.P.	REFS	38	39	40	41	42	43	44
					45	46	47	48	49	50	51	52

VARIABLES SN TYP RELOCATION 53 54 DEFINED 35

FILE NAMES ROOT
OUTPUT FMT WRITES 55 57 64 66

STATEMENT LABELS			DEF LINE	REFERENCES
117	17		53	54
124	1000	FMT	56	55
136	1001	FMT	59	57
212	1010	FMT	65	64
224	1200	FMT	67	66

STATISTICS
PROGRAM LENGTH 3045 196
520003 CM USED

```
      *DECK INTEPR
C
C/
C
C  ********ARRAYS********
C
C        NONE
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        IARC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C        N DELINEATES THE RETURN LOCATION IN THE MAIN ROUTINE.
C
C  ********VARIABLES********
C
C/
C
                  SUBROUTINE INTEPR(INUM,NX,NROWS,A,HEADW)
C
C THIS ROUTINE ENABLES INTEGER FORMAT OUTPUT.
C
C/
C
      *DECK T1SL
C
C/
C
C  ********ARRAYS********
C
C        A(50,20) CONTAINS THE COST INFORMATION.
C
C        IA(50,20) CONTAINS THE COST INFORMATIN, IN THOUSANDS, IN
C             INTEGER FORMAT.
C
C        HEADW(50,6) CONTAINS THE HEADINGS FOR THE COST ELEMENTS. (ROWS)
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        INUM DELINEATES IF THE PRINTOUT IS TO BE SENT TO A REMOTE
C             LOCATION.
C
C        NX DELINEATES THE NUMBER OF COLUMNS TO BE OUTPUT.
C
C        NROWS DELINEATES THE NUMBER OF ROWS TO BE OUTPUT.
C
C  ********VARIABLES********
C
C/
C
                  SUBROUTINE T1SL(COST,PRODM,NYEARS)
C
C GIVEN THE COST OF TWO SPECIFIC GROUPS OF ITEMS THEN THIS ROUTINE CALCU
```

```
C
C THE FIRST UNIT COST AND THE LEARNING RATE.
C
C/
      SUBROUTINE T1SL(COST,PRODM,NYEARS)
      DIMENSION COST(20)
      INTEGER PRODM(10,2)
      DATA IABC/25/
      K=1
   93 PRINT 1000
 1000 FORMAT(' ENTER THE FIRST AND LAST UNITS OF THE FIRST GROUP, THEN T
     *HE SECOND GROUP.',/,' FOLLOW BY THE UNIT COST AND PRODUCTION NUMBE
     *R FOR THE FIRST GROUP, THEN THE SECOND.')
      READ*,J1,J2,J3,J4,U1,P1,U2,P2
      IF(EOF(5))93,8000
 8000 CONTINUE
      WRITE(4,*)J1,J2,J3,J4,U1,P1,U2,P2
      S1=U1*P1
      S2=U2*P2
      S=S1/S2
      XX=.1
      ABC=.5
  450 DO 100 I=1,10
      X=ABC+(I-1)*XX
      E=ALOG(X)/ALOG(2.)
      SUM1=0.
      SUM2=0.
      DO 110 I1=J1,J2
  110 SUM1=SUM1+I1**E
      DO 120 I1=J3,J4
  120 SUM2=SUM2+I1**E
      G=SUM1/SUM2
      IF(I.NE.1.AND.G.GT.S)IZ=1
      IF(I.EQ.1.AND.G.GT.S)IY=1
      IF(I.EQ.1.AND.G.GT.S)IZ=1
      IF(I.EQ.1.AND.G.LT.S)IY=2
      IF(I.EQ.1.AND.G.LT.S)IZ=2
      IF(I.NE.1.AND.G.LT.S)IZ=2
      IF(IY.NE.IZ)X=X-XX
      IF(IY.NE.IZ)GO TO 250
  100 CONTINUE
  250 XX=XX*.1
      ABC=X
      KK=KK+1
      IF(KK.LE.4)GO TO 450
      SUM=0.
      E=ALOG(ABC)/ALOG(2.)
      DO 515 I=J1,J2
  515 SUM=SUM+I**E
      T1=S1/SUM
      PRINT 610,T1,ABC
  610 FORMAT(' ',' THE VALUES FOR T1 AND SLOPE ARE',2E15.5)
      CALL CAL1(COST,PRODM,NYEARS)
      RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 T1SL 62 111

VARIABLES	SN	TYPE										
302 ABC		REAL			REFS	31	104	108	DEFINED	79	108	
300 C		REAL			REFS	30	91	92	93	94	95	
					DEFINED	77						
0 COST		REAL	ARRAY	F.P.	REFS	53	110	DEFINED	62			
305 E		REAL			REFS	35	88	106	DEFINED	82	104	
311 G		REAL			REFS	30	91	92	93	94	95	
					DEFINED	33						
303 I		INTEGER			REFS	31	90	91	92	93	94	95
					106	DEFINED	80	105				
173 IABC	*	INTEGER			DEFINED	55						
313 IY		INTEGER			REFS	35	97	DEFINED	91	93		
312 IZ		INTEGER			REFS	35	97	DEFINED	90	92	94	95
310 I1		INTEGER			REFS	36	88	DEFINED	85	87		
266 J1		INTEGER			REFS	74	85	105	DEFINED	71		
267 J2		INTEGER			REFS	74	85	105	DEFINED	71		
270 J3		INTEGER			REFS	74	87	DEFINED	71			
271 J4		INTEGER			REFS	74	87	DEFINED	71			
265 KK		INTEGER			REFS	111	102	DEFINED	66	101		
0 NYEARS		INTEGER		F.P.	REFS	113	DEFINED	62				
0 PRODM		INTEGER	ARRAY	F.P.	REFS	54	110	DEFINED	62			
273 P1		REAL			REFS	74	75	DEFINED	71			
275 P2		REAL			REFS	74	76	DEFINED	71			
314 SUM		REAL			REFS	115	107	DEFINED	103	106		
306 SUM1		REAL			REFS	35	89	DEFINED	83	86		
307 SUM2		REAL			REFS	35	89	DEFINED	84	88		
276 S1		REAL			REFS	77	107	DEFINED	75			
277 S2		REAL			REFS	77	DEFINED	76				
315 T1		REAL			REFS	118	DEFINED	107				
272 U1		REAL			REFS	74	75	DEFINED	71			
274 U2		REAL			REFS	74	76	DEFINED	71			
304 X		REAL			REFS	32	96	100	DEFINED	81	96	
301 XX		REAL			REFS	31	96	99	DEFINED	78	99	

FILE NAMES	MODE			
INPUT	FREE	READS	71	
OUTPUT	FMT	WRITES	67	118
TAPE4	FREE	WRITES	74	

EXTERNALS	TYPE	ARGS		REFERENCES	
ALOG	REAL	1	LIBRARY	2*82	2*104
CAL1		3		110	
EOF	REAL	1		72	

STATEMENT LABELS	DEF LINE	REFERENCES
6 33	67	72
0 100	98	80
0 110	96	95
0 120	88	87
127 250	99	97
25 450	90	102

STATEMENT LABELS			DEF LINE	REFERENCES
0	515		106	105
253	610	FMT	109	108
177	1010	FMT	68	67
0	9000	INACTIVE	73	72

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	EXITS	NOT INNER
26	103	* I	80 93	1013	EXT REFS		
41	110	* I1	85 86	63	EXT REFS		
51	120	* I1	87 88	63	EXT REFS		
143	515	* I	105 106	68	EXT REFS		

STATISTICS
PROGRAM LENGTH 3168 206
520003 CM USED

```
      *DECK CINSERT
C
C/
C
C  ********ARRAYS********
C
C        COST(20) STORES AND TRANSFERS THE COST INFORMATION.
C
C        PROUM(10,20) STORES THE PRODUCTION SCHEDULES FOR ALL EQUIPMENTS
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C        J1 AND J2 ARE THE FIRST AND LAST UNITS OF GROUP 1.
C
C        J3 AND J4 ARE THE FIRST AND LAST UNITS OF GROUP 2.
C
C        U1 AND P1 ARE 2 NUMBERS WHOSE PRODUCT EQUALS THE COST OF THE
C                  GROUP 1 UNITS.
C
C        U2 AND P2 ARE 2 NUMBERS WHOSE PRODUCT EQUALS THE COST OF THE
C                  GROUP 2 UNITS.
C
C        S1 IS THE TOTAL COST OF GROUP 1 UNITS.
C
C        S2 IS THE TOTAL COST OF GROUP 2 UNITS.
C
C        C IS THE RATIO OF THE COSTS: S1/S2.
C
C        X IS THE TRIAL LEARNING RATE.
C
C        E IS THE TRIAL EXPONENT.
C
C        SUM1 AND SUM2 ARE TRIAL COSTS FOR GROUP 1 AND GROUP 2.
C
C        G IS THE RATIO OF THE TRIAL COSTS.
C
C        ABC HAS A FINAL VALUE EQUAL TO THE ESTIMATE OF THE LEARNING RAT
C
C        T1 IS THE ESTIMATE OF THE FIRST UNIT COST.
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C
C/
C
C                  SUBROUTINE CINSERT(A,NYEARS)
C
C THIS ROUTINE ENABLES THE INSERTION OF A COLUMN IN THE COST ARRAY.
C
C/
      SUBROUTINE CINSERT(A,NYEARS)
      DIMENSION A(50,20)
      DATA IABC/26/
```

```
                PRINT 1011
           1011 FORMAT(* THIS ROUTINE DOES NOT EXIST.*)
     60         RETURN
                END
```

```
      SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS       DEF LINE      REFERENCES
    3 CINSERT         55            60

VARIABLES      SN  TYPE                RELOCATION
    0 A             REAL        ARRAY     F.P.         REFS        55    DEFINED        55
   10 IABC       *  INTEGER                          DEFINED       57
    0 NYEARS        INTEGER    *UNUSED    F.P.       DEFINED       55

FILE NAMES          MODE
       OUTPUT       FMT                             WRITES       58

STATEMENT LABELS                  DEF LINE    REFERENCES
   14 1011          FMT              59          58

STATISTICS
  PROGRAM LENGTH                     21B         17
          520003 CM USED
```

```
      *DECK NAMCHK
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        B(50,21) IS USED TO FORMULATE THE NEW COST ARRAY.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        IA AND IB ARE THE COLUMNS BETWEEN WHICH THE NEW COLUMN WILL BE
      C                INSERTED.  IA IS SMALLER THAN IB AND MAY BE EQUAL TO Z
      C
      C        IC IS USED TO CHECK FOR INPUT ERRORS.
      C
      C        ID DELINEATES THE NUMBER OF NON-ZERO ELEMENTS IN THE NEW COLUMN
      C
      C        IE DELINEATES THE ROW OF A NON-ZERO ELEMENT IN THE NEW COLUMN.
      C
      C        VAL DELINEATES THE VALUE OF THAT NON-ZERO ELEMENT.
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE NAMCHK(SUB)
      C
      C THIS ROUTINE CHECKS THAT THE INPUT FILE NAME WILL NOT CAUSE PROGRAM
      C
      C TERMINATION.
      C
      C/
            SUBROUTINE NAMCHK(SUB)
           DIMENSION SNAM(9)
           INTEGER SUB
           DATA SYM/1H*/,BLANK/1H /
      5    READ(5,10)SUB
           WRITE(4,10)SUB
      10   FORMAT(A10)
           IF(SUB.NE.BLANK)GO TO 75
      20   PRINT 25
      25   FORMAT(* THE NAME YOU CHOOSE DID NOT MEET THE REQUIREMENTS
           *OF LENGTH/OR TYPE OF CHARACTER,I.E. ALPHA.*)
           GO TO 5
      75   DECODE(7,100,SUB)(SNAM(I),I=2,8)
      100  FORMAT(8A1)
           SNAM(1)=SYM
           IF(SNAM(2).LT.1HA.OR.SNAM(2).GT.1H7)GO TO 20
           DO 200 I=2,8
           IF(SNAM(I).EQ.BLANK)GO TO 250
```

```
                200   CONTINUE
                      I=9
      60        250   SNAM(I)=SYM
                      ENCODE(I,100,SUB)(SNAM(J),J=1,I)
                      RETURN
                      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	NAMCHK	43	62

VARIABLES

	SN	TYPE	RELOCATION								
46	BLANK	REAL		REFS	47	57	DEFINED	43			
120	I	INTEGER		REFS	52	57	60	2*61	DEFINED	52	56
					59						
121	J	INTEGER		REFS	51	DEFINED	61				
122	SNAM	REAL	ARRAY	REFS	41	2*55	57	61	DEFINED	52	54
					60						
0	SUB	INTEGER	F.P.	REFS	42	45	47	52	DEFINED	40	44
					61						
45	SYM	REAL		REFS	54	60	DEFINED	43			

FILE NAMES

	MODE			
OUTPUT	FMT	WRITES	48	
TAPE4	FMT	WRITES	45	
TAPE5	FMT	READS	44	

STATEMENT LABELS

			DEF LINE	REFERENCES	
5	5		44	51	
60	10	FMT	46	44	45
14	20		48	55	
65	25	FMT	49	48	
17	75		52	47	
106	100	FMT	53	52	61
0	200		58	56	
35	250		60	57	

LOOPS

	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
27	200	* I	56 58	58	INSTACK	EXITS

STATISTICS

PROGRAM LENGTH 1333 91

520008 CM USED

```
      *DECK MULT
C
C/
C
C  ********ARRAYS*********
C
C        A(50,20) CONTAINS THE COST DATA.
C
C        HEADW(50,8) CONTAINS THE HEADINGS FOR THE COST DATA.
C
C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
C
C        IEM(5) CONTAINS ERROR MESSAGE INFORMATION RESULTING FROM A CALL
C             TO SYSTEM ROUTINE PFSUB.
C
C  ********ARRAYS*********
C
C  ********VARIABLES*********
C
C        IEM,UCW,UN,PW,CT, AND M ARE VARIABLES USED BY SYSTEM ROUTINE PF
C
C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C        SUB TAKES ON A FILE NAME.
C
C        KK IS AN INDEX USED TO CONTROL THE ROUTINE.  IT ASSURES THAT AL
C             3 FILES ARE TRANSFERED TO THE ARRAYS AND THAT A RETURN IS
C
C  ********VARIABLES*********
C
C/
C
C                    SUBROUTINE MULT(A,COST,NYEARS)
C
C THIS ROUTINE FORMS A ROW IN THE COST ARRAY BY OBTAINING THE
C
C PRODUCT OF TWO EXISTING ROWS.
C
C/
      SUBROUTINE MULT(A,COST,NYEARS)
      DIMENSION A(50,20),COST(20)
      DATA IABC/30/
 9000 PRINT 1000
 1000 FORMAT(* SPECIFY THE TWO ROWS TO BE MULTIPLIED.*)
      READ*,IA,IB
      IF(EOF(5))9000,8000
 8000 CONTINUE
      WRITE(4,*)IA,IB
      DO 12 I=1,NYEARS
   12 COST(I)=A(IA,I)*A(IB,I)
      RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 MULT 40 51

VARIABLES	SN	TYPE		RELOCATION					
0	A	REAL	ARRAY	F.P.	REFS	41	2*50	DEFINED	40
0	COST	REAL	ARRAY	F.P.	REFS	41	DEFINED	40	50
62	I	INTEGER			REFS	3*50	DEFINED	49	
60	IA	INTEGER			REFS	43	50	DEFINED	45
34	IABC	* INTEGER			DEFINED	42			
61	IB	INTEGER			REFS	44	50	DEFINED	45
0	NYEARS	INTEGER		F.P.	REFS	49	DEFINED	40	

FILE NAMES	MODE		
INPUT	FREE	READS	45
OUTPUT	FMT	WRITES	43
TAPE4	FREE	WRITES	48

EXTERNALS	TYPE	ARGS	REFERENCES
EOF	REAL	1	46

STATEMENT LABELS			DEF LINE	REFERENCES
0	12		50	49
40	1000	FMT	44	47
0	5000	INACTIVE	47	46
5	9000		43	46

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
26	12	I	49 50	33	INSTACK

STATISTICS
PROGRAM LENGTH 638 51
520008 CM USED

```
LOAD MAP - EAGLE1                          CYBER LOADER 1.3-446      04/18/79  13.03.46.      PAGE     1
OVERLAY(SAMMY,1,3)


-------- OVERLAY(SAMMY,0,0)

         FWA OF THE LOAD              111
         LWA+1 OF THE LOAD          43422

         TRANSFER ADDRESS -- EAGLE1          5775


         PROGRAM AND BLOCK ASSIGNMENTS.

         BLOCK       ADDRESS    LENGTH    FILE      DATE      PROCESSR  VER LEVEL  HARDWARE   COMMENTS

         EAGLE1          111     15053    LGO       04/18/78  FTN       4.6 446    6600 I     PROGRAM   OPT=1
         CAL1          15164       302    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         CAL3          15466        61    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         CAL2          15547       461    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         CAL4          16230        51    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         HARCON        16301       116    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         SPREAD        16417        24    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         CAL           16443       572    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         ESCALAT       17235        74    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         NEWRA         17331        31    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         CAL5          17362       433    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         PRODUC        20015       171    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         OUT           20206        55    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         FILES         20263      1010    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         ADDL          21273       254    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         DIVIDEL       21547       143    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         ELEMENT       21712       301    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         RINSERT       22213       313    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         SUM           22526       132    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         ROWMOD        22660       666    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         APRINT        23546       277    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         SCS           24145       304    LGO       04/18/79  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         TISL          24351       316    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         CINSERT       24667        21    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         NAMCHK        24710       133    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         MULT          25043        63    LGO       04/18/78  FTN       4.6 446    6600 I     SUBROUTINEOPT=1
         PERMFIL       25126      1054    UL-S      04/28/77  COMPASS   3. 2-414               PERMFILE FUNCTION SUBROUTINE
         RETURN        26202        70    UL-S      04/28/77  COMPASS   3. 2-414               FTN-CALLABLE FILE RETURN/UNLOAD
         REQUEST       26272       472    UL-S      04/28/77  COMPASS   3. 2-414               FTN-CALLABLE EQUIPMENT REQUEST PROCESSOR
         /STP.END/     26764         1
         /FCL.C./      26765        23
         /08.ID./      27110       133
         ZENTRY=       27143         0    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               FCL INITIALIZATION ROUTINE.
         COMIO=        27143        64    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               COMMON CODED I/O ROUTINES AND CONSTANTS.
         DECODE=       27227        73    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               FORMATTED READ FROM CORE.
         ENDFIL=       27322        61    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               WRITE END OF LOGICAL FILE MARK.
         FECMSK=       27403        41    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               INITIALIZE CONSTANTS.
         FLTOUT=       27444       311    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               COMMON FLOATING OUTPUT CODE
         FORSYS=       27755       604    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               FORTRAN OBJECT LIBRARY UTILITIES.
         INCOM=        30561       276    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               COMMON INPUT FORMATTING CODE
         INPC=          1157       160    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               FORMATTED READ FORTRAN RECORD.
         KRAKER=       31237       406    SL-FORTRAN 07/27/77  COMPASS   3. 4-446               PROCESS FORMATTED FORTRAN INPUT.
```

1 78

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCSSR	VER LEVEL	HARDWARE	COMMENTS
LDIN=	01645	260	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		LIST DIRECTED INPUT FORMATTING
OUTCOM=	02125	154	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		COMMON OUTPUT CODE
SYS=1ST	02301	62	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		MATH LIBRARY LINK TO ERROR MESSAGE PROCESSOR.
ENCODE=	02363	123	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		FORMATTED WRITE INTO CORE.
EOF	02506	16	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		TEST FOR END OF FILE STATUS.
FLTIN=	02524	156	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		COMMON FLOATING INPUT CONVERTER.
FMTAP=	02702	353	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		CRACK APLIST AND FORMAT FOR KODER/KRAKER.
FORUTL=	03255	16	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		FCL MISC. UTILITIES.
GETFIT=	03273	42	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		LOCATE AN FIT GIVEN A FILE NAME.
INPF=	03335	201	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		LIST DIRECTED INPUT CONTROL
KODER=	03536	456	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		OUTPUT FORMAT INTERPRETER.
LDOUT=	04214	241	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		LIST DIRECTED OUTPUT FORMATTING
OUTC=	04455	172	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		FORMATTED WRITE FORTRAN RECORD.
OUTF=	04647	163	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		LIST DIRECTED OUTPUT CONTROL
ALOG	05032	73	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		COMPUTE COMMON AND NATURAL LOGARITHMS. OPT=ALL.
EXP	05125	75	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		EXPONENTIAL FUNCTION. E TO POWER X. OPT=ALL.
ITOX=	05222	10	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		INTEGER TO A REAL POWER.
SYSAID=	05232	1	SL-FORTRAN	07/27/77	COMPASS	3. 4-446		LINK BETWEEN SYS=AID AND INITIALIZATION CODE.
/CON.RM/	05233	6						
CIO.RM	05241	40	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/ADB.RM/	05301	10						
MOVE.RM	05311	66	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
MCT.RM	05377	233	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/JMPS.RM/	05532	11						
/MEMC.RM/	05543	3						
/OPES.FO/	05546	1						
/OPEN.FO/	05547	7						
OPEN.RM	05556	237	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/TERM.RM/	06115	1						
/PUT.FO/	06116	7						
PUT.SQ	06125	1411	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
WAR.SQ	07536	260	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/CLSF.FO/	10016	7						
CLSF.RM	10025	22	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/GET.BT/	10047	5						
BTRT.SQ	10054	115	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
WEOX.SQ	10171	150	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/SKFL.FO/	10341	7						
SKFL.SQ	10350	51	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
SYS.RM	10421	40	SL-SYSIO	02/15/78	COMPASS	3. 4-446		PROCESS SYSTEM REQUEST.
ERR.RM	10461	406	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
CHAR.SQ	11067	7	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
OSUB.RM	11076	71	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
OPEN.SQ	11167	257	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
OPEX.SQ	11446	14	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/PUT.RT/	11462	11						
RLED.RM	11473	43	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
CLSF.SQ	11536	134	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/CLSV.FO/	11772	7						
CLSV.SQ	12001	137	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/REW.FO/	12140	7						
REW.SQ	12147	42	SL-SYSIO	07/27/77	COMPASS	3. 4-446		
/GET.FO/	12211	7						
/PPAP.XX/	12220	1						

/GET.RT/	42121	11			
GET.SQ	42132	1062	SL-SYSIO	07/27/77 COMPASS	3. 4-446
Z.SQ	43214	101	SL-SYSIO	07/27/77 COMPASS	3. 4-446
FSU.SQ	43315	105	SL-SYSIO	07/27/77 COMPASS	3. 4-446

1.395 CP SECONDS 533013 CM STORAGE USED 110 TABLE MOVES

```
  CSA     NOS/BE L454J P'S  L454J-0421 02/16/79
13.02.17.ZABAOBT  FROM     /AJ
13.02.17.IP  00007192 WORDS - FILE INPUT  , JC 04
13.02.17.ZAB.T25,ID100,CM100000.  A750567,KJVALS.
13.02.17.YYPF,54211
13.02.21.REMOTE JOB - - NO CARDS WITH THIS DECK ?
13.02.21.JT IN BIN-YM
13.02.21.ATTACH,SOURCE1.
13.02.21.PFN IS
13.02.21.SOURCE1
13.02.21.PF CYCLE NO. = 003
13.02.21.FTN,I=SOURCE1,P=2.
13.03.35.      7.083 CP SECONDS COMPILATION TIME
13.03.35.ATTACH,S,NOSLIB,ID=X654321.
13.03.35.PF CYCLE NO. = 001
13.03.35.LIBRARY,S.
13.03.35.REQUEST,SAMMY,*PF.
13.03.37.MAP,PART.
13.03.38.LOAD,LGO.
13.03.38.NOGO.
13.03.46.CATALOG,SAMMY,EAGLE1,RP=999.
13.03.48.INITIAL CATALOG
13.03.49.JT ID=  A750567 PFN=EAGLE1
13.03.49.JT CY= 001  00018176 WORDS.
13.03.51.CP  00024512 WORDS - FILE OUTPUT , JC 40
13.03.51.MS   46592  WORDS  (   57344 MAX USED)
13.03.51.SCM  64000  WORDS MAXIMUM
13.03.51.CPA       3.628 SEC.         3.745 ADJ.
13.03.51.IO       44.674 SEC.        22.350 ADJ.
13.03.51.CM     1035.608 KWS.         8.286 ADJ.
13.03.51.CRUS                        34.383
13.03.51.COST                 $       2.66
13.03.51.PP       60.267 SEC.     DATE 04/18/79
13.03.51.EJ  END OF JOB. AD  A750567.


**********        ZABAOBT   //// END  OF LIST ////
```

1 81 / 1 82

EAGLE2

```
      *DECK EAGLE2
            OVERLAY(FLIER,0,0)
      C
      C                    MAIN
      C
      C THIS ROUTINE ENABLES THE USER TO CONTROL THE PROGRAM AND PROVIDES AN
      C
      C INTERFACE WITH OTHER ROUTINES.
      C
      C/
      C
            PROGRAM EAGLE2(INPUT=5138,OUTPUT=5138,TAPE5=INPUT,TAPE6=OUTPUT,
           *TAPE1=5138,TAPE2=5138,TAPE3=5138,TAPE4=5138,TAPE7=5138,
           *TAPE8=5138)
            DIMENSION HEADM(50,8),A(50,20),B(50,20)
            INTEGER PRODM(10,20)
            DATA IABC/7/
       9000 PRINT 1000
       1000 FORMAT(* THIS IS EAGLE2.  A USER'S MANUAL EXISTS.  ENTER 1 TO CONT
           1INUE. *)
      C
      C
      C
            READ*,IA
            IF(EOF(5))9000,8000
       8000 CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555) WRITE(6,2000)
        88  PRINT 1002
       1002 FORMAT(* ENTER THE NUMBER OF YEARS OVER WHICH COST DATA WILL BE GE
           *NERATED.*)
            READ*,NYEARS
            IF(EOF(5))  88,8888
       8888 CONTINUE
            WRITE(4,*)NYEARS
            IF(NYEARS.GT.1000)CALL GCS(NYEARS),
           XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
           *425)
            IF(NYEARS.EQ.555) WRITE(6,2000)
       400  PRINT 1003
       1003 FORMAT(* ENTER THE NUMBER OF COST ELEMENTS IN THE OUTPUT ARRAY.*)
            READ*,NROWS
            IF(EOF(5)) 400,9400
       8400 CONTINUE
            WRITE(4,*)NROWS
            IF(NROWS.GT.1000)CALL GCS(NROWS),
           XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
           *425)
            IF(NROWS.EQ.555) WRITE(6,2000)
        401 PRINT 1050
       1050   FORMAT(* IF YOU HAVE EXISTING FILES TO INPUT TO ARRAYS ENTER 1,
           *OTHERWISE ENTER 2.*)
             READ*,IFI
            IF(EOF(5)) 401,8401
       8401 CONTINUE
            WRITE(4,*)IFI
            IF(IFI.GT.1000)CALL GCS(IFI),
```

```
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IFI.EQ.555) WRITE(6,2000)
      I19=1
      IF(IFI.EQ.1)CALL FILES(A,HEADM,PRODM,I19)
  402 PRINT 1052
 1052   FORMAT(* TO MODIFY PARTICULIAR ROWS IN THE HEADING, COST OR PROD
     *UCTION SCHEDULE ARRAYS ENTER 1, OTHERWISE 2.*)
      READ*,M4
      IF(EOF(5)) 402,8402
 8402 CONTINUE
      WRITE(4,*)M4
      IF(M4.GT.1000)CALL GCS(M4),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(M4.EQ.555) WRITE(6,2000)
      IF(M4.EQ.1)CALL ROWMOD(HEADM,A,PRODM,NYEARS,COST)
  403 PRINT 1053
 1053   FORMAT(* TO MODIFY AN ELEMENT OF THE COST ARRAY ENTER 1, OTHERWI
     *SE 2*)
      READ*,M6
      IF(EOF(5)) 403,8403
 8403 CONTINUE
      WRITE(4,*)M6
      IF(M6.GT.1000)CALL GCS(M6),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(M6.EQ.555) WRITE(6,2000)
      IF(M6.EQ.1)CALL ELEMENT(A)
  404 PRINT 1055
 1055 FORMAT(* TO INSERT A ROW IN THE HEADING AND COST ARRAYS ENTER 1, O
     *THERWISE 2*)
      READ*,N5
      IF(EOF(5)) 404,8404
 8404 CONTINUE
      WRITE(4,*)N5
      IF(N5.GT.1000)CALL GCS(N5),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(N5.EQ.555) WRITE(6,2000)
      IF(N5.EQ.1)CALL RINSERT(A,NYEARS,NROWS,HEADM,PRODM)
  405 PRINT 1009
 1009 FORMAT(* TO SPECIFY OR MODIFY THE PRODUCTION SCHEDULE ENTER 1 OTHE
     *RWISE ENTER 2*)
      READ*,I6
      IF(EOF(5)) 405,8405
 8405 CONTINUE
      WRITE(4,*)I6
      IF(I6.GT.1000)CALL GCS(I6),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(I6.EQ.555) WRITE(6,2000)
      IF(I6.EQ.1)CALL PRODUC(PRODM)
  406 PRINT 1001
 1001 FORMAT(* TO CONSTRUCT OR MODIFY THE HEADING ARRAY ENTER 1, OTHERWI
     *SE ENTER 2*)
      READ*,I8
```

```
      IF(EOF(5)) 406,8406
 8406 CONTINUE
      WRITE(4,*)I8
      IF(I8.GT.1000)CALL GCS(I8),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(I8.EQ.555) WRITE(6,2000)
      IF(I8.EQ.1)CALL HARCON(HEADH,NROWS)
   77 PRINT 1004
 1004 FORMAT(* TO PERFORM CALCULATIONS ENTER 1, OTHERWISE ENTER 20*)
      READ*,ID
      IF(EOF(5)) 77,8877
 8877 CONTINUE
      WRITE(4,*)ID
      IF(ID.GT.1000)CALL GCS(ID),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(ID.EQ.555) WRITE(6,2000)
      IF(ID.EQ.1)CALL CAL(A,NYEARS,NROWS,PROOM,HEADH)
  407 PRINT 1008
 1008 FORMAT(* TO SPREAD THE DATA ENTER 1, OTHERWISE ENTER 20*)
      READ*,I4
      IF(EOF(5)) 407,8407
 8407  CONTINUE
      WRITE(4,*)I4
      IF(I4.GT.1000)CALL GCS(I4),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(I4.EQ.555) WRITE(6,2000)
      IF(I4.EQ.1)CALL SPREAD(A,NYEARS,NROWS)
  406 PRINT 1006
 1006 FORMAT(* TO CALCULATE THEN YEAR DOLLAR COSTS OR TO CHANGE THE BASE
     *LINE YEAR ENTER 1, OTHERWISE ENTER 20*)
      READ*,IF
      IF(EOF(5)) 408,8408
 8408 CONTINUE
      WRITE(4,*)IF
      IF(IF.GT.1000)CALL GCS(IF),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IF.EQ.555) WRITE(6,2000)
      IF(IF.EQ.1)CALL ESCALAT (A,B,NYEARS,NROWS)
       IF(IF.NE.1)GO TO 425
       DO 281 I=1,58
       DO 281 J=1,20
  281  A(I,J)=B(I,J)
  425  PRINT 1025
 1025 FORMAT(* TO INSERT A COLUMN IN THE COST ARRAY ENTER 1, OTHERWISE 2
     *,0*)
       READ*,IIN
       IF(EOF(5))425,8025
 8025 CONTINUE
      WRITE(4,*)IIN
      IF(IIN.GT.1000)CALL GCS(IIN),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IIN.EQ.555) WRITE(6,2000)
```

```
      IF(IIN.EQ.1)CALL CINSERT(A,NYEARS)
  677  PRINT 1005
 1005 FORMAT(* TO OUTPUT THE COST DATA ENTER 1, OTHERWISE ENTER 2*)
      READ*,IE
      IF(EOF(5)) 677,8677
 8677 CONTINUE
      WRITE(4,*)IE
      IF(IE.GT.1000)CALL GCS(IE),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IE.EQ.555) WRITE(6,2000)
      IF(IE.EQ.1)CALL OUT(A,NYEARS,NROWS,HEADW)
  409 PRINT 1054
 1054 FORMAT(   * IF A PRINTOUT OF THE COST, HEADING AND/OR PRODUCTION S
     *CHEDULE ARRAY IS DESIRED ENTER 1, OTHERWISE 2*)
      READ*,M8
      IF(EOF(5)) 409,8409
 8409 CONTINUE
      WRITE(4,*)M8
      IF(M8.GT.1000)CALL GCS(M8),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(M8.EQ.555) WRITE(6,2000)
      IF(M8.EQ.1)CALL APRINI(NYEARS,NROWS,A,HEADW,PRODM)
  410 PRINT 1051
 1051 FORMAT(* IF YOU WISH TO SAVE EXISTING ARRAYS ENTER 1 OTHERWISE 2*
     *)
      READ*,IZT
      IF(EOF(5)) 410,8410
 8410 CONTINUE
      WRITE(4,*)IZT
      IF(IZT.GT.1000)CALL GCS(IZT),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IZT.EQ.555) WRITE(6,2000)
      I19=2
      IF(IZT.EQ.1)CALL FILES(A,HEADW,PRODM,I19)
  411 PRINT 1007
 1007 FORMAT(* ENTER 2 TO TERMINATE, 1 TO CONTINUE AND 2000 FOR AN EXPLA
     *NATION OF GCS.*)
      READ*,IG
      IF(EOF(5)) 411,8411
 8411 CONTINUE
      WRITE(4,*)IG
      IF(IG.GT.1000)CALL GCS(IG),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IG.EQ.555) WRITE(6,2000)
      IF(IG.EQ.1)GO TO 88
      IF(IG.EQ.2000)GO TO 411
      STOP
C
 2000 FORMAT(10X,*ROUTINE HELP DOES NOT EXIST IN EAGLE2* )
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

5704	EAGLE2	12

VARIABLES

	SN	TYPE	RELOCATION							
10643	A	REAL	ARRAY	REFS	15	62	74	86	96	133	144
				156	172	183	195	208	DEFINED	169	
12613	B	REAL	ARRAY	REFS	15	156	160				
10004	COST	* REAL		REFS	74						
10023	HEADH	REAL	ARRAY	REFS	15	62	74	93	122	133	183
				195	208						
10014	I	INTEGER		REFS	2*160	DEFINED	158				
7776	IA	INTEGER		REFS	27	28	DEFINED	24			
7176	IABC	* INTEGER		DEFINED	17						
10010	IB	INTEGER		REFS	117	2*118	121	122	DEFINED	114	
10011	ID	INTEGER		REFS	128	2*129	132	133	DEFINED	125	
10017	IE	INTEGER		REFS	178	2*179	182	183	DEFINED	175	
10013	IF	INTEGER		REFS	151	2*152	155	156	157		
				DEFINED	148						
10001	IFI	INTEGER		REFS	56	2*57	60	62	DEFINED	53	
10022	IG	INTEGER		REFS	215	2*216	219	220	221		
				DEFINED	212						
10016	IIN	INTEGER		REFS	167	2*168	171	172	DEFINED	164	
10021	IZT	INTEGER		REFS	202	2*203	206	208	DEFINED	199	
10102	I19	INTEGER		REFS	62	208	DEFINED	61	207		
10012	I4	INTEGER		REFS	139	2*140	143	144	DEFINED	136	
10007	I6	INTEGER		REFS	105	2*106	109	110	DEFINED	102	
10015	J	INTEGER		REFS	2*160	DEFINED	159				
10003	M4	INTEGER		REFS	69	2*70	73	74	DEFINED	66	
10005	M6	INTEGER		REFS	81	2*82	85	86	DEFINED	75	
10020	M8	INTEGER		REFS	190	2*191	194	195	DEFINED	187	
10000	NROWS	INTEGER		REFS	45	2*46	49	98	122	133	144
				156	183	195	DEFINED	42			
7777	NYEARS	INTEGER		REFS	35	2*36	39	74	98	133	144
				156	172	183	195	DEFINED	32		
10006	N5	INTEGER		REFS	93	2*94	97	98	DEFINED	91	
14563	PRODH	INTEGER	ARRAY	REFS	16	62	74	96	110	133	195
				208							

FILE NAMES

0	INPUT	FREE	READS	24	32	42	53	66	76	90	102
			114	125	136	148	164	175	187	199	212
567	OUTPUT	FMT	WRITES	18	29	46	59	63	75	87	99
			111	123	134	145	161	173	184	196	209
1356	TAPE1										
2145	TAPE2										
2734	TAPE3										
3523	TAPE4	FREE	WRITES	27	35	45	56	69	81	93	105
			117	126	133	151	167	178	190	202	215
0	TAPE5										
567	TAPE6	FMT	WRITES	28	39	49	60	73	85	97	109
			121	132	143	155	171	182	194	206	219
4312	TAPE7										
5101	TAPE8										

EXTERNALS	TYPE	ARGS	REFERENCES								
APRINT		5	195								
CAL		5	133								
CINSERT		2	172								
ELEMENT		1	86								
EOF	REAL	1	25	33	43	54	67	79	91	103	115
			126	137	149	165	176	188	200	213	
ESCALAT		4	156								
FILES		4	62	208							
GCS		1	36	46	57	70	82	94	106	118	129
			140	152	168	179	191	203	216		
HARCON		2	122								
OUT		4	183								
PRODUC		1	110								
RINSERT		5	98								
ROWMCO		5	74								
SPREAD		3	144								

STATEMENT LABELS			DEF LINE	REFERENCES							
6151	77		123	36	46	57	70	82	94	106	116	126
				129	140	152	168	179	191	203	216	
5721	88		29	33	36	46	57	70	82	94	106	118
				129	140	152	168	179	191	203	216	221
0	201		168	158	159							
5741	400		40	36	43	46	57	70	82	94	106	116
				129	140	152	168	179	191	203	216	
5761	401		50	36	46	54	57	70	82	94	106	116
				129	140	152	168	179	191	203	216	
6005	402		63	36	46	57	67	70	82	94	106	116
				129	140	152	168	179	191	203	216	
6031	403		75	36	46	57	70	79	82	94	106	116
				129	140	152	168	179	191	203	216	
6055	404		87	36	46	57	70	82	91	94	106	118
				129	140	152	168	179	191	203	216	
6101	405		99	36	46	57	70	82	94	103	106	116
				129	140	152	168	179	191	203	216	
6125	406		111	36	46	57	70	82	94	106	115	118
				129	140	152	168	179	191	203	216	
6175	407		134	36	46	57	70	82	94	106	118	129
				137	140	152	168	179	191	203	216	
6221	408		145	36	46	57	70	82	94	106	118	129
				140	149	152	168	179	191	203	216	
6333	409		184	36	46	57	70	82	94	106	118	129
				140	152	168	179	198	191	203	216	
6357	410		196	36	46	57	70	82	94	106	116	129
				140	152	168	179	191	200	203	216	
6404	411		209	36	46	57	70	82	94	106	115	129
				140	152	168	179	191	203	213	216	221
6263	425		161	36	46	57	70	82	94	106	118	129
				140	152	157	165	168	179	191	203	216
6307	677		173	36	46	57	70	82	94	106	118	129
				140	152	168	176	179	191	203	216	
7202	1000	FMT	19	18								
7464	1001	FMT	112	111								
7227	1002	FMT	30	29								
7255	1003	FMT	41	40								
7512	1004	FMT	124	123								

STATEMENT LABELS			DEF LINE	REFERENCES								
7640	1005	FMT	174	173								
7562	1006	FMT	146	145								
7743	1007	FMT	210	209								
7536	1008	FMT	135	134								
7436	1009	FMT	100	99								
7613	1025	FMT	162	161								
7302	1050	FMT	51	50								
7716	1051	FMT	197	196								
7331	1052	FMT	64	63								
7363	1053	FMT	76	75								
7664	1054	FMT	185	184								
7410	1055	FMT	88	87								
7766	2000	FMT	224	28	39	49	60	73	85	97	109	121
				132	143	155	171	182	194	206	219	
0	8000	INACTIVE	26	25								
0	8025	INACTIVE	166	165								
0	8077	INACTIVE	127	126								
0	8088	INACTIVE	34	33								
0	8400	INACTIVE	44	43								
0	8401	INACTIVE	55	54								
0	8402	INACTIVE	68	67								
0	8403	INACTIVE	80	79								
0	8404	INACTIVE	92	91								
0	8405	INACTIVE	104	103								
0	8406	INACTIVE	116	115								
0	8407	INACTIVE	138	137								
0	8408	INACTIVE	150	149								
0	8409	INACTIVE	189	188								
0	8410	INACTIVE	201	200								
0	8411	INACTIVE	214	213								
9	8677	INACTIVE	177	176								
5705	9000		18	25								

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
6250	281	* I	158 160	138	NOT INNER
6254	281	J	159 160	38	INSTACK

STATISTICS

PROGRAM LENGTH	72038	3715
BUFFER LENGTH	56720	3380

520005 CM USED

207

AD-A058 350 ARINC RESEARCH CORP ANNAPOLIS MD F/G 9/2
ENHANCEMENT OF COMPUTER PROGRAM EAGLE. VOLUME II. EAGLE PROGRAM--ETC(U)
MAY 78 P J ORTH F33657-77-D-0029
UNCLASSIFIED 1982-01-1-1756-VOL-2 NL

2 OF 3
AD
A058 350

```
      *DECK CAL1
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        HEADH(50,8) PROVIDES THE HEADINGS FOR THE ROWS OF THE COST ARRA
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        B(50,20) CONTAINS THE COST INFORMATION ON THE RETURN FROM
      C             ROUTINE ESCALAT.
      C
      C        PROOM(10,20) CONTAINS THE PRODUCTUON SCHEDULES FOR THE EQUIPMEN
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA IS AN INDEX THAT ALLOWS CONTINUED PROGRAM OPERATION.
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        NROWS IS THE NUMBER OF ROWS OF COST DATA THAT WILL BE OUTPUT.
      C
      C        IB IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
      C             SPECIFICATION OF THE HEADINGS WILL BE UTILIZED.
      C
      C        ID IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
      C             CALCULATIONS TO BE MADE WILL BE UTILIZED.
      C
      C        I4 IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
      C             THE SPREADING OF COST DATA WILL BE UTILIZED.
      C
      C        IF IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
      C             THE OUTPUT OF COST DATA WILL BE UTILIZED.
      C
      C        IF IS AN INDEX THAT DELINEATES WHETHER THE BASELINE COSTS WILL
      C             CONVERTED TO A NEW BASELINE, OR TO THEN YEAR DOLLARS,
      C             OR REMAIN UNCHANGED.
      C
      C        I6 IS AN INDEX THAT DELINEATES WHETHER THE PRODUCTION SCHEDULE
      C             WILL BE SPECIFIED OR LEFT UNCHANGED.
      C
      C        IG IS AN INDEX THAT DELINEATES WHETHER ANOTHER CASE WILL BE CAN
      C             IT ALSO DELINEATES WHETHER CERTAIN INFORMATION WILL BE USE
      C             FROM THE PREVIOUS CASE.
      C
      C        IAPC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        IFI DELINEATES WHETHER EXISTING FILES ARE TO BE INPUT.
      C
      C        M4 DELINEATES WHETHER ROW MODIFICATION IS TO OCCUR.
      C
      C        M6 DELINEATES WHETHER AN ELEMENT OF THE COST ARRAY IS TO BE MOD
      C
      C        N5 DELINEATES WHETHER A ROW IS TO BE INSERTED IN THE COST OR HE
```

```
C              ARRAYS.
C
C         IIN DELINEATES WHETHER A COLUMN IS TO BE INSERTED IN THE COST A
C
C         NB DELINEATES WHETHER AN ARRAY IS TO BE OUTPUT.
C
C         IZT DELINEATES WHETHER AN ARRAY IS TO BE PLACED ON FILE.
C
C  ********VARIABLES********
C
C/
C
C              SUBROUTINE CAL1(COST,PRODM,INCRE)
C
C GIVEN THE COST OF THE FIRST ARTICLE, T1, THE LEARNING RATE, RATE, A
C
C PRODUCTION SCHEDULE, PROD, AND THE NUMBER OF TIME INCREMENTS TO BE CON
C
C INCRE, THEN THE SUBROUTINE CAL1 CALCULATES THE COST OF THE ITEMS IN
C
C QUESTION FOR EACH TIME INCREMENT IN BASELINE DOLLARS AND STORES THE
C
C INFORMATION IN THE ARRAY TITLED COST.
C
C THE FORMULA USED TO CALCULATE THE COST OF THE I TH ITEM IS
C
C               T1*(I**(ALOG(RATE)/ALOG(2.)))
C
C/
C
      SUBROUTINE CAL1(COST,PRODM,INCRE)
      DIMENSION COST(20),IX(21)
      INTEGER PRODM(10,20),PROD(20)
      DATA IABC/4/
      PRINT 4441
 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE THIRD VERSION OF AGE...*)
      RETURN
*DECK CAL3
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CAL1	88	94

VARIABLES		SN	TYPE		RELOCATION				
0	COST		REAL	ARRAY	F.P.	REFS	89	DEFINED	88
10	IABC	*	INTEGER			DEFINED	91		
0	INCRE		INTEGER	*UNUSED	F.P.	DEFINED	88		
24	IX		INTEGER	*UNDEF		REFS	89		
51	PROD		INTEGER	*UNDEF		REFS	90		
0	PRODM		INTEGER	ARRAY	F.P.	REFS	90	DEFINED	88

2 09

```
FILE NAMES       MODE
    OUTPUT       FMT               WRITES       92

STATEMENT LABELS            DEF LINE   REFERENCES
   14  4441     FMT            93         92

STATISTICS
  PROGRAM LENGTH               75B        61
          52000B CM USED
```

2 10

```
      C/
      C
      C  ********ARRAYS********
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES FOR ALL THE EQUI
      C
      C        COST(20) TRANSFERS THE COST INFORMATION AND
      C             IS ALSO USED IN MAKING THE COST CALCULATIONS.
      C
      C        PROD(20) DELINEATES THE NUMBER OF ITEMS PRODUCED
      C             DURING EACH TIME INCREMENT.
      C
      C        IX(21) IS AN ARRAY WHOSE SECOND THUR 21ST ELEMENTS ARE SET EQUA
      C             ELEMENTS OF PROD.  IX(1) IS SET EQUAL TO ZERO AND IX IS TH
      C             CONVERTED INTO A CUMULATIVE ARRAY.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        JJ3 IS AN INDEX DELINEAING THE PRODUCTION SCHEDULE TO BE USED.
      C
      C        RATE IS THE LEARNING RATE, I.E., THE RATIO BETWEEN THE COST OF
      C             THE N TH AND 2N TH ITEMS.
      C
      C        INCRE IS THE NUMBER OF INCREMENTS (USUALLY YEARS) FOR WHICH
      C             CALCULATIONS ARE BEING MADE.
      C
      C        T1 IS THE COST OF THE FIRST ARTICLE PRODUCED.
      C
      C        A, IA, AND IB ARE TERMS USED IN THE CALCULATION.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE CAL3(A,COST)
      C
      C THIS SUBROUTINE CALCULATES A FRACTION OF AN EXISTING ROW IN THE COST
      C
      C ARRAY, A.  THE USER SPECIFIES THE ROW OF A, IA, AND THE ASSOCIATED
      C
      C FRACTION.  THE NEW COST INFORMATION IS STORED AND TRANSFERRED IN THE A
      C
      C COST.
      C
      C/
      C
            SUBROUTINE CAL3(A,COST,NYEARS)
            DIMENSION A(50,20),COST(20)
            DATA IABC/10/
            PRINT 4441
      4441  FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK CAL2
```

```
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CAL3	51	56

VARIABLES	SN	TYPE		RELOCATION				
0	A	REAL	ARRAY	F.P.	REFS	52	DEFINED	51
0	COST	REAL	ARRAY	F.P.	REFS	52	DEFINED	51
10	IABC	* INTEGER			DEFINED	53		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	51		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	54

STATEMENT LABELS		DEF LINE	REFERENCES
14	4441 FMT	55	54

STATISTICS

PROGRAM LENGTH 248 20

520000B CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       A(50,28) IS THE ARRAY CONTAINING THE COST INFORMATION.
      C
      C       COST(24) IS USED TO STORE AND TRANSFER THE NEWLY CALCULATED COS
      C            INFORMATION.
      C
      C  $$$$$$$$ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       NYEARS IS THE NUMBER OF YEARS OVER WHICH COST INFORMATION IS
      C            CALCULATED.
      C
      C       IA IS THE ROW OF INTEREST IN ARRAY A.
      C
      C       FRAC IS THE FRACTION OF THE ROW TO BE TAKEN.
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C            SUBROUTINE CAL2(COST,PRODM,INCRE)
      C
      C     GIVEN THE COST OF THE FIRST ARTICLE, T1, A SET OF LEARNING RATES
      C
      C     ,RATES, A STIPULATION OF THE NUMBER OF THE PRODUCTION
      C
      C     ITEM WHEN EACH RATE BECOMES EFFECTIVE, IUNIT, THE TIME
      C
      C     INTERVAL TO BE CONSIDERED, INCRE, AND THE PRODUCTION SCHEDULE,
      C
      C     PROD, THEN SUBROUTINE CAL2 CALCULATES THE COST FOR EACH YEAR
      C
      C     IN BASELINE DOLLARS.
      C
      C     THE FORMULA USED TO CALCULATE THE COST OF THE I TH ITEM IS
      C
      C                     T1*(I**(ALOG(RATE(.))/ALOG(2.)))
      C
      C     IF A NEW LEARNING RATE IS TO COMMENCE WITH THE J TH ARTICLE THEN A
      C
      C     T1 IS CALCULATED SO THAT THE COST OF THE (J-1) TH ARTICLE WILL REM
      C
      C     UNCHANGED, NAMELY,
      C
      C                  T1(NEW)=T1(OLD)*((J-1)**(OLD RATE - NEW RATE))
      C
      C/
      C
            SUBROUTINE CAL2(COST,PRODM,INCRE)
            DIMENSION COST(20),RATES(10),IUNIT(10),IX(21)
```

```
                      INTEGER PRODM(18,28),PROD(28)
                      DATA IABC/2/
      60              PRINT 4441
                4441  FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
                      RETURN
                *DECK CAL4
                      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	CAL2	56	62

VARIABLES

	SN	TYPE	RELOCATION					
0	COST	REAL	ARRAY	F.P.	REFS	57	DEFINED	56
18	IABC	* INTEGER			DEFINED	59		
8	INCRE	INTEGER	*UNUSED	F.P.	DEFINED	56		
36	IUNIT	INTEGER	*UNDEF		REFS	57		
58	X	INTEGER	*UNDEF		REFS	57		
75	PROD	INTEGER	*UNDEF		REFS	58		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	58	DEFINED	56
24	RATES	REAL	*UNDEF		REFS	57		

FILE NAMES

	MODE		
OUTPUT	FMT	WRITES	60

STATEMENT LABELS

			DEF LINE	REFERENCES
14	4441	FMT	61	60

STATISTICS

PROGRAM LENGTH 1218 91

528889 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES FOR ALL EQUIPMEN
      C
      C       IX(21) IS AN ARRAY WHOSE 2ND THUR 21ST ELEMENTS ARE SET EQUAL T
      C            PROD.  IX(1) IS SET EQUAL TO ZERO AND IX IS THEN
      C            CONVERTED TO A CUMULATIVE ARRAY.
      C
      C       PROD(26) DELINEATES THE NUMBER OF ITEMS PRODUCED
      C            DURING EACH TIME INCREMENT.
      C
      C       COST(20) TRANSFERS THE COST INFORMATION.
      C            IT IS ALSO USED IN MAKING THE COST CALCULATIONS.
      C
      C       RATES(10) CONTAINS THE LEARNING RATES THAT WILL EXIST OVER THE
      C            PRODUCTION LIFE.
      C
      C       IUNIT(10) CONTAINS THE NUMBER OF THE PRODUCTION ITEM AT WHICH A
      C            NEW LEARNING RATE BECOMES APPLICABLE.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       A, IA, AND IB ARE TERMS USED IN THE CALCULATION.
      C
      C       T1 IS THE COST OF THE FIRST UNIT.  FOR MATHEMATICAL REASONS A N
      C            VALUE OF T1 IS CALCULATED AT EACH CHANGE IN THE LEARNING R
      C
      C       KK IS AN INDEX USED TO SPECIFY THE APPROPRIATE ELEMENT OF RATES
      C            AND IUNIT.
      C
      C       JJ3 DELINEATES THE PRODUCTION SCHEDULE TO BE USED.
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE CAL4(COST,NYEARS)
      C
      C THIS ROUTINE ENABLES DIRECT SPECIFICATION OF A ROW IN THE COST ARRAY.
      C
      C/
      C
            SUBROUTINE CAL4(COST,NYEARS)
            DIMENSION COST(20)
            DATA IABC/11/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK HARCON
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CAL4	58	55

VARIABLES	SN	TYPE		RELOCATION				
0	COST	REAL	ARRAY	F.P.	REFS	51	DEFINED	56
10	IABC	* INTEGER			DEFINED	52		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	56		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	53

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	54	53

STATISTICS

PROGRAM LENGTH	248	20

520008 CM USED

```
      C
      C/
      C
      C  $$$$$$$$ARRAYS********
      C
      C        COST(20) THIS ARRAY STORES AND TRANSFERS THE SPECIFIED COST
      C             INFORMATION.
      C
      C  $$$$$$$$ARRAYS********
      C
      C  $$$$$$$$VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OVER WHICH THE CALCULATION IS MAD
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE HARCON(HEADW,NROWS)
      C
      C THIS ROUTINE ENABLES THE CONSPUCTION OF AN ARRAY CONTAINING THE
      C
      C TITLES OF EACH ROW OF THE OUTPUT ARRAY.
      C
      C/
            SUBROUTINE HARCON(HEADW,NROWS)
            DIMENSION HEADW(50,8)
            DATA IABC/9/
            DO 123 I=1,NROWS
            PRINT 1000,I
       1000 FORMAT(* SPECIFY THE HEADING FOR ROW NUMBER*,I3)
            READ 25,(HEADW(I,J),J=1,8)
            WRITE(4,25)(HEADW(I,J),J=1,8)
         25 FORMAT(8A10)
        123 CONTINUE
            RETURN
           *DECK SPREAD
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	HARCON	28	38

VARIABLES

		SN	TYPE		RELOCATION						
0	HEADW		REAL	ARRAY	F.P.	REFS	29	35	DEFINED	29	34
100	I		INTEGER			REFS	32	34	35	DEFINED	31
46	IABC	*	INTEGER			DEFINED	30				
101	J		INTEGER			REFS	34	35	DEFINED	34	35
0	NROWS		INTEGER		F.P.	REFS	31	DEFINED	26		

FILE NAMES	MODE			
INPUT	FMT		READS	34
OUTPUT	FMT		WRITES	32
TAPE4	FMT		WRITES	35

STATEMENT LABELS			DEF LINE	REFERENCES	
76	25	FMT	36	34	35
0	123		37	31	
53	1020	FMT	33	32	

LOOPS	LABEL		INDEX	FROM-TO	LENGTH	PROPERTIES	
7	123	*	I	31 37	378	EXT REFS	NOT INNER
14		*	J	34 34	118	EXT REFS	
31		*	J	35 35	118	EXT REFS	

STATISTICS

PROGRAM LENGTH 1068 70

520008 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR EACH ROW IN THE COST
      C                    ARRAY.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C/
      C
      C                    SUBROUTINE SPREAD(A,NYEARS,NROWS)
      C
      C THIS ROUTINE SPREADS COSTS OVER MULTIPLE YEARS.  IN THE MAIN, IT RECEI
      C
      C THE COSTS DELINEATED IN THE YEAR A PRODUCT IS RECEIVED AND SPREADS THE
      C
      C COSTS OVER THE TIME PERIOD THEY ACTUALLY OCCURRED.
      C
      C/
      C
            SUBROUTINE SPREAD(A,NYEARS,NROWS)
            DIMENSION A(50,20)
            DATA IABC/3/
            PRINT 1007
      1007  FORMAT(* THIS ROUTINE DOES NOT EXIST.*)
            RETURN
      *DECK CAL
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	SPREAD	27	32

VARIABLES	SN	TYPE	RELOCATION					
0	A	REAL	ARRAY	F.P.	REFS	28	DEFINED	27
10	IABC	* INTEGER			DEFINED	29		
0	NROWS	INTEGER	*UNUSED	F.P.	DEFINED	27		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	27		

FILE NAMES

	MODE		
OUTPUT	FMT	WRITES	31

STATEMENT LABELS

			DEF LINE	REFERENCES
14	1007	FMT	31	30

STATISTICS
PROGRAM LENGTH 218 17
520000 CM USED

```
      C
      C/
      C
      C ********ARRAYS********
      C
      C     A(50,28) IS THE ARRAY CONTAINING THE ORIGINAL COST DATA.  UPON
      C          RETURN FROM THIS SUBROUTINE IT CONTAINS THE COSTS AFTER
      C          SPREADING.
      C
      C     B(50,30) IS USED IN CALCULATING THE SPREAD COST DATA.
      C
      C     SPR(50,9) IS USED TO SPECIFY HOW THE COSTS ARE SPREAD.
      C          IF A COST IS ORIGINALLY SPECIFIED FOR YEAR J THEN THIS ROU
      C          CAN SPREAD THE COSTS OVER THE (J-4)TH TO THE (J+4)TH YEAR.
      C          SPR CAN CONTAIN 50 DIFFERENT SPREADING ARRAYS.
      C
      C ********ARRAYS********
      C
      C ********VARIABLES********
      C
      C     IA IS AN INDEX THAT DELINEATES WHETHER AN EXPLANATION OF THIS
      C          ROUTINE WILL BE OUTPUT.
      C
      C     IB DELINEATES IF THE DEFAULT ARRAY WILL BE ACCEPTED.
      C
      C     IC HAS THE SAME FUNCTION AS IB.
      C
      C     ID DELINEATES WHETHER EACH COST IS TO BE IDENTICALLY SPREAD.
      C
      C     IE IS THE NUMBER OF DIFFERENT WAYS THE COST DATA WILL BE SPREAD
      C
      C     IF DELINEATES THE SPREADING VERSION TO BE USED.
      C
      C     KK IS USED TO DETERMINE THE FIRST NON-ZERO COST COLUMN
      C          OF ARRAY B AND TO SET THIS COLUMN EQUAL TO THE FIRST COLUM
      C          IN ARRAY A.
      C
      C     KA IS USED TO INDEX THE COLUMNS OF THE COST ARRAY.  IT IS THE L
      C          NON-ZERO COLUMN NUMBER.
      C
      C     NYEARS IS THE NUMBER OF YEARS OF INTEREST.----NOTE. THIS VALUE
      C          MAY CHANGE AS THE RESULT OF SPREADING.
      C
      C     NROWS IS THE NUMBER OF DIFFERENT COST ELEMENTS (ROWS) IN
      C               THE COST ARRAY.
      C
      C      IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C ********VARIABLES********
      C ********VARIABLES********
      C
      C/
      C
      C                SUBROUTINE CAL(A,NYEARS,NROWS,PRODM,HEADM)
      C
      C THIS ROUTINE PROVIDES AN INTERFACE WITH THE ROUTINES THAT
      C
```

2 21

```
        C PERFORM CALCULATIONS.  THE ROUTINE PROVIDES INITIAL PROMPTING TO THE U
        C
        C SO THAT DETAILED PROMPTING IS NOT REPEATED EVERY TIME A CALCULATING
        C
        C ROUTINE IS CALLED.
        C
        C/
        C
              SUBROUTINE CAL(A,NYEARS,NROWS,PRODM,HEADM)
              DIMENSION A(50,20),COST(20),HEADM(50,6)
              INTEGER PRODM(10,20)
              DATA IABC/1/
              PRINT 4441
         4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
              RETURN
        *DECK ESCALAT
              END

   SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS      DEF LINE      REFERENCES
   3  CAL            66           72

VARIABLES       SN  TYPE          RELOCATION
    0  A            REAL       ARRAY     F.P.       REFS        67   DEFINED      66
   24  COST         REAL      *UNDEF                REFS        67
    0  HEADM        REAL       ARRAY     F.P.       REFS        67   DEFINED      66
   10  IABC       * INTEGER                      DEFINED        69
    0  NROWS        INTEGER   *UNUSED    F.P.    DEFINED        66
    0  NYEARS       INTEGER   *UNUSED    F.P.    DEFINED        66
    0  PRODM        INTEGER    ARRAY     F.P.       REFS        68   DEFINED      66

FILE NAMES          MODE
   OUTPUT           FMT               WRITES       70

STATEMENT LABELS                 DEF LINE     REFERENCES
   14  4441      FMT                71           70

STATISTICS
  PROGRAM LENGTH                    50B        40
        52000B CM USED
```

2 22

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       A(50,20) STORES COST DATA.
      C
      C       COST(20) TRANSFERS THE COST DATA OBTAINED FROM A
      C            PARTICULIAR CALCULATION.
      C
      C       PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.  EACH
      C            ELEMENT REPRESENTS 1 YEAR.
      C
      C       HEADM(50,8) CONTAINS THE HEADING FOR EACH ROW IN THE COST ARRAY
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       IA IS AN INDEX DELINEATING WHETHER AN EXPLANATION OF THE ROUTIN
      C            IS REQUIRED.
      C
      C       NROWS IS THE NUMBER OF COST ELEMENTS IN THE COST ARRAY.
      C
      C       NYEARS IS THE NUMBER OF YEARS OVER WHICH COSTS OCCUR.
      C
      C       IB IS AN INDEX THAT DELINEATES THE TYPE OF CALCULATION TO BE
      C            PERFORMED.
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C       KKK DELINEATES THE ROW OF THE COST ARRAY BEING CALCULATED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE ESCALAT (A,B,NYEARS,NROWS)
      C
      C THIS ROUTINE RECEIVES COST DATA IN BASELINE YEAR DOLLARS AND TRANSFORM
      C
      C THE DATA INTO THEN YEAR DOLLARS OR INTO DIFFERENT BASELINE DOLLARS.
      C
      C THE COMPUTATIONAL PROCEDURE IS AS FOLLOWS.------------------THE ARRAY,
      C
      C A, CONTAINS THE COSTS PER SEGMENT PER YEAR IN A GIVEN YEAR DOLLARS.
      C
      C BY SPECIFYING THE APPROPRIATE INFLATION OR DEFLATION FACTORS, OR A
      C
      C SET OF DEFAULT VALUES, THE COSTS ARE TRANSFORMED.
      C
      C THE BASELINE YEAR DOES NOT HAVE TO BE THE YEAR CORRESPONG-
      C
      C ING TO THE FIRST ELEMENT OF THE ESCALATION ARRAY, BUT THE CORRESPON-
      C
      C DANCE MUST BE SPECIFIED.
      C
```

```
      C/
            SUBROUTINE ESCALAT (A,B,NYEARS,NROWS)
      60    DIMENSION A(50,20),B(50,20),ESC(20),ES(20)
            DATA IABC/9/
      C
      C** DEFINE DEFAULT ESCALATION ARRAY.
            DATA (ESC(I),I=1,20)/2*1.,1.027,1.067,1.062,1.057,14*1.055/
      65    9688 PRINT 688
             688  FORMAT(* IF YOU WISH AN EXPLANATION OF THE OPERATION OF THIS SUBR
                 1OUTINE ENTER 1, OTHERWISE ENTER 2. *)
                  READ*,IEXPL
                  IF(EOF(5))9688,8688
      70    8688 CONTINUE
                  IF(IEXPL.EQ.555)WRITE(6,2000)
                  WRITE(4,*)IEXPL
                  IF(IEXPL.EQ.1)PRINT 616
            C** DEFINE DEFAULT ESCALATION ARRAY.
      75     616 FORMAT(* THIS ROUTINE ESCALATES THE DATA IN THE COST ARRAY BASED U
                 9*, / ,
                 1PON ONE OF TWO TYPES OF INPUT.  THE FIRST METHOD IS BY INPUTTING A
                 9*, / ,
                 2SET OF 20 INFLATION RATES WHICH CORRESPOND TO YEARLY ESCALATION IN
      80         9*, / ,
                 3DICES, I.E. 1.04,1.05 ETC.  THE SECOND METHOD IS BY INPUTTING A SE
                 9*, / ,
                 4T OF 20 CUMULATIVE INFLATION INDICES SUCH AS: 1.00,1.04,1.08,1.12,
                 5ETC.*)
      85          IF(IEXPL.EQ.1)PRINT 7001
                7001 FORMAT(* THE FOLLOWING EXAMPLES ILLUSTRATE EACH METHOD OF ESCALATI
                 9*, / ,
                 1ON.  THE EXAMPLES ASSUME THE COST DATA HAS BEEN CALCULATED IN CONS
                 9*, / ,
      90         2TANT FISCAL 1975 DOLLARS.  THE FIRST YEAR OF ANALYSIS IS 1978.*)
                  IF(IEXPL.EQ.1)PRINT 7002
                7002 FORMAT(* IN METHOD ONE THE FOLLOWING VALUES ARE INPUT INTO THE ESC
                 9*, / ,
                 1ALATION ARRAY.  1.00,1.00,1.04,1.05,1.06,1.05,1.04,1.04,10(1.)
      95         9*, / ,
                 2THE ELEMENT OF THE ESCALATION ARRAY THAT CORRESPONDS TO THE BASELI
                 9*, / ,
                 3NE YEAR (1975) IS 2 AND THE ELEMENT CORRESPONDING TO THE FIRST YEA
                 9*, / ,
     100         4R OF THE ANALYSIS (1978) IS 5.  HENCE THE COSTS INCURRED IN 1978 A
                 9*, / ,
                 5RE MULTIPLIED BY 1.156; I.E. (1.04)(1.05)(1.06).*)
                  IF(EXPL.EQ.1)PRINT 7004
            C** SET TO ZERO THE ARRAY THAT WILL CONTAIN THE ESCALATED ARRAY.
     105     7004 FORMAT(* IN METHOD TWO THE FOLLOWING VALUES ARE INPUT INTO THE ESC
                 9*, / ,
                 1ALATION ARRAY.  1.00,1.025,1.060,1.0816,1.12486,1.16986,1.21665,1.
                 9*, / ,
                 221665,1.26532,1.31593,1.36857,(10)1.36857. (NOTE: THESE ARE WEIGHT
     110         9*, / ,
                 3ED INDICES WHERE 1975 FISCAL YEAR DOLLARS HAVE AN INDEX OF 1.025)*
                 4)
                  IF(EXPL.EQ.1)PRINT 7009
                7009 FORMAT(* THE ELEMENT OF THE ESCALATION ARRAY WHICH CORRESPONDS TO
```

```
      9*, / ,                                                           *
     1THE BASELINE YEAR (1975) IS 1, SINCE SOME INFLATION OCCURS IN THE
      9*, / ,                                                           *
     2BASELINE YEAR WHEN USING WEIGHTED INDICES.  THE ELEMENT CORRESPOND
      9*, / ,                                                           *
     3ING TO THE FIRST YEAR OF ANALYSIS (1976) IS 5.  HENCE THE COSTS IN
      9*, / ,                                                           *
     4CURRED IN 1978 ARE MULTIPLIED BY 1.12486.---WHEN DEALING WITH A WE
      9*, / ,                                                           *
     5IGHTED ESCALATION INDEX THE DOLLARS IN THE BASE YEAR ARE MULTIPLIE
      9*, / ,                                                           *
     6D BY A NUMBER OTHER THAN ONE, SAY 1.025.*)
 9020 PRINT 1020
 1020 FORMAT(* IF CUMULATIVE VALUES ARE TO BE INPUT FOR THE ESCALATION A
     *RRAY*,/,* ENTER 7, OTHERWISE ENTER 1.*)
      READ*,ICUM
      IF(EOF(5))9020,8020
 8020 CONTINUE
      WRITE(4,*)ICUM
      IF(ICUM.EQ.555) WRITE(6,2000)
      DO 100 I=1,50
      DO 100 J=1,20
  100 B(I,J)=0.
C** SET TO ZERO THE ARRAY THAT WILL CONTAIN THE ESCALATED ARRAY.
C
C** DISPLAY ESCALATION APRAY.
 3000 PRINT 1030
 1000 FORMAT(* ENTER 1 IF YOU WISH TO SEE THE DEFAULT ESCALATION ARRAY,
     *OTHERWISE ENTER 2*)
      READ*,IX
      IF(EOF(5))9000,8000
 8000 CONTINUE
      WRITE(4,*)IX
      IF(IX.EQ.555) WRITE(6,2000)
      IF(IX.NE.1)GO TO 10
      PRINT 11,(ESC(I),I=1,20)
   11 FORMAT(10F6.3,/,"0",10F6.3)
C** DISPLAY ESCALATION ARRAY.
C
C** ACCEPT ESCALATION ARRAY.
   10 PRINT 1001
 1001 FORMAT(* ENTER 1 IF YOU WISH TO ACCEPT THE DEFAULT ESCALATION ARRA
     *Y, OTHERWISE ENTER 2*)
      READ*,IY
      IF(EOF(5))  10,8010
 8010 CONTINUE
      WRITE(4,*)IY
      IF(IY.EQ.555) WRITE(6,2000)
      IF(IY.EQ.1)GO TO 12
C** ACCEPT ESCALATION ARRAY.
C
C** CONSTRUCT ESCALATION ARRAY.
 9001 PRINT 1002
 1002 FORMAT(* ENTER THE NUMBER OF THE ELEMENT OF THE ESCALATION ARRAY T
     *O BE CHANGED FOLLOWED BY A COMMA AND THE NEW VALUE.*,/," ",*REPEAT
     * UNTIL ALL DESIRED CHANGES HAVE BEEN MADE, THEN ENTER 100,0.*)
   13 READ*,IZ,C
```

```
      IF(EOF(5))9001,8981
 8981 CONTINUE
      WRITE(4,*)IZ,C
      IF(IZ.EQ.100)GO TO 12
      ESC(IZ)=C
      GO TO 13
C** CONSTRUCT ESCALATION ARRAY.
C
C** DEVELOP ESCALATION ARRAY SO THAT IT CORRESPONDS WITH ARRAY TO BE ESC
   12 CONTINUE
      IF(ICUM.NE.7)GO TO 9002
      DO 5792 I7=1,19
 5792 ESC(21-I7)=ESC(21-I7)/ESC(20-I7)
 9002 PRINT 1006
 1006 FORMAT(* IF A CHANGE IN BASELINE IS DESIRED, AS OPPOSED TO A TRANS
     *FORMATION TO THEN YEAR DOLLARS, ENTER 1, OTHERWISE ENTER 2*)
      READ*,IS
      IF(EOF(5))9002,8002
 8002 CONTINUE
      WRITE(4,*)IS
      IF(IS.EQ.555) WRITE(6,2000)
      IF(IS.EQ.1)GO TO 831
 9003 PRINT 1003
 1003 FORMAT(* ENTER THE ELEMENT OF THE ESCALATION ARRAY THAT CORRESPOND
     *S TO THE BASELINE YEAR*)
      READ*,IL
      IF(EOF(5))9003,8003
 8003 CONTINUE
      WRITE(4,*)IL
      IF(IL.EQ.555) WRITE(6,2000)
      ILA=IL-1
      ILB=IL+1
      ES(IL)=1
      IF(ILA.LT.1)GO TO 86
      DO 15 I=1,ILA
   15 ES(IL-I)=ES(IL-I+1)/ESC(IL-I+1)
   86 CONTINUE
      IF(ILB.GT.20)GO TO 89
      DO 16 I=ILB,20
   16 ES(I)=ES(I-1)*ESC(I)
   89 CONTINUE
 9004 PRINT 1004
 1004 FORMAT(* ENTER THE ELEMENT OF THE ESCALATION ARRAY WHICH CORRESPON
     *DS WITH THE FIRST YEAR OF THE ANALYSIS*)
      READ*,ID
      IF(EOF(5))9004,8004
 8004 CONTINUE
      WRITE(4,*)ID
      IF(ID.EQ.555) WRITE(6,2000)
      IE=20-ID-NYEARS
      IF(IE.LT.0)PRINT 1005
 1005 FORMAT(* THE DIMENSION OF THE ESCALATION ARRAY MUST BE INCREASED O
     *R THE PROGRAM OR INPUT DATA OTHERWISE MODIFIED.*)
      IF(IE.LT.0)RETURN
      KK=1
      DO 25 I=ID,20
      ES(KK)=ES(I)
```

```
                25  KK=KK+1
230                 DO 26 I=1,NYEARS
                    DO 26 J=1,NROWS
                26  B(J,I)=A(J,I)*ES(I)
               C** DEVELOP ESCALATION ARRAY SO THAT IT CORRESPONDS WITH ARRAY TO BE ESC
               C
235                 RETURN
               831  PRINT 1007
               1007 FORMAT(* ENTER THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING T
                   *O THE PRESENT BASELINE YEAR AND THEN THE ELEMENT CORRESPONDING*,/,
                   ** TO THE NEW BASELINE YEAR*)
240                 READ*,MOLD,MNEW
                    IF(EOF(5)) 831,8831
               8831 CONTINUE
                    WRITE(4,*)MOLD,MNEW
                    IF(MOLD.LT.MNEW)GO TO 832
245                 IQ=MOLD-MNEW
                    AX=1.
                    DO 833 I=1,IQ
                833  AX=AX/ESC(MNEW+I)
                    GO TO 850
250                 IQ=MNEW-MOLD
                832  AX=1.
                    DO 834 I=1,IQ
                834  AX=AX*ESC(MOLD+I)
                850  DO 861 I=1,NROWS
255                 DO 861 J=1,NYEARS
                861  B(I,J)=A(I,J)*AX
                    RETURN
               C
                2000 FORMAT(10X,*ROUTINE HELP DOES NOT EXIST IN EAGLE2* )
269                 END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES		
3	ESCALAT	59	225	235	257

VARIABLES	SN	TYPE		RELOCATION								
0	A	REAL	ARRAY	F.P.	REFS	60	232	256	DEFINED	59		
1335	AX	REAL			REFS	248	253	256	DEFINED	246	248	251
						253						
0	B	REAL	ARRAY	F.P.	REFS	61	DEFINED	59	137	232	256	
1321	C	REAL			REFS	174	176	DEFINED	171			
1362	ES	REAL	ARRAY		REFS	60	207	211	225	232		
					DEFINED	204	207	211	228			
1336	ESC	REAL	ARRAY		REFS	60	150	2*164	207	211	246	253
					DEFINED	64	176	184				
1312	EXPL	REAL	*UNDEF		REFS	103	113					
1314	I	INTEGER			REFS	137	150	3*207	3*211	228	3*232	248
						253	2*256	DEFINED	135	154	206	210	227
						230	247	252	254			
377	IA9C	* INTEGER			DEFINED	61						

VARIABLES	SN	TYPE	RELOCATION								
1313	ICUM	INTEGER		REFS	133	134	182	DEFINED	130		
1327	ID	INTEGER		REFS	219	220	221	227	DEFINED	215	
1330	IE	INTEGER		REFS	222	225	DEFINED	221			
1311	IEXPL	INTEGER		REFS	71	72	73	65	91		
				DEFINED	68						
1324	IL	INTEGER		REFS	230	201	202	203	204	3*237	
				DEFINED	197						
1325	ILA	INTEGER		REFS	205	206	DEFINED	202			
1326	ILB	INTEGER		REFS	209	210	DEFINED	203			
1334	IQ	INTEGER		REFS	247	252	DEFINED	245	250		
1323	IS	INTEGER		REFS	191	192	193	DEFINED	186		
1316	IX	INTEGER		REFS	147	148	149	DEFINED	144		
1317	IY	INTEGER		REFS	161	162	163	DEFINED	156		
1320	IZ	INTEGER		REFS	174	175	176	DEFINED	171		
1322	I7	INTEGER		REFS	3*184	DEFINED	183				
1315	J	INTEGER		REFS	137	2*232	2*256	DEFINED	136	231	255
1331	KK	INTEGER		REFS	228	229	DEFINED	226	229		
1333	MNEW	INTEGER		REFS	243	244	245	249	251		
				DEFINED	240						
1332	MOLD	INTEGER		REFS	243	244	245	250	253		
				DEFINED	240						
0	NROWS	INTEGER	F.P.	REFS	231	254	DEFINED	59			
0	NYEARS	INTEGER	F.P.	REFS	221	230	255	DEFINED	59		

FILE NAMES	MODE								
INPUT	FREE	READS	68	139	144	156	171	188	197	216
		240								
OUTPUT	FMT	WRITES	65	73	85	91	103	113	127	141
		150	155	167	185	194	213	222	236	
TAPE4	FREE	WRITES	72	133	147	161	174	191	200	219
		243								
TAPE6	FMT	WRITES	71	134	148	162	192	201	220	

EXTERNALS	TYPE	ARGS	REFERENCES							
EOF	REAL	1	69	131	145	159	172	189	196	217	241

STATEMENT LABELS			DEF LINE	REFERENCES	
116	10		155	143	159
1015	11	FMT	151	150	
150	12		181	163	175
136	13		171	177	
0	15		207	206	
0	16		211	210	
0	25		229	227	
0	26		232	230	231
227	88		208	205	
240	89		212	209	
0	100		137	135	136
433	616	FMT	75	73	
403	688	FMT	66	65	
315	831		236	193	241
342	832		250	244	
0	833		248	247	
0	834		253	252	
356	850		254	249	
0	861		256	254	255
765	1000	FMT	142	141	

STATEMENT LABELS				DEF LINE	REFERENCES						
1024	1001	FMT		156	155						
1053	1002	FMT		164	167						
1147	1003	FMT		195	194						
1176	1004	FMT		214	213						
1227	1005	FMT		223	222						
1114	1006	FMT		186	185						
1247	1007	FMT		237	236						
734	1020	FMT		123	127						
1301	2000	FMT		259	71	134	149	162	192	241	220
0	5792			184	183						
503	7001	FMT		86	85						
534	7002	FMT		92	91						
611	7004	FMT		105	103						
651	7009	FMT		114	113						
0	8000		INACTIVE	146	145						
0	8001		INACTIVE	173	172						
0	8002		INACTIVE	190	189						
0	8003		INACTIVE	199	198						
0	8004		INACTIVE	219	217						
0	8010		INACTIVE	160	159						
0	8020		INACTIVE	132	131						
0	8698		INACTIVE	70	69						
0	8831		INACTIVE	242	241						
76	9000			141	145						
134	9001			167	172						
161	9002			185	182	189					
177	9003			194	198						
240	9004			213	217						
46	9020			127	131						
6	9688			65	69						

LOOPS	LABEL		INDEX	FROM-TO	LENGTH	PROPERTIES
63	100	*	I	135 137	138	NOT INNER
70	100		J	136 137	28	INSTACK
156	5792		I7	183 184	28	INSTACK
224	15		I	206 207	28	INSTACK
234	16		I	210 211	38	INSTACK
271	25		I	227 229	38	INSTACK
276	26	*	I	230 232	168	NOT INNER
306	26		J	231 232	38	INSTACK
336	833		I	247 248	38	INSTACK
352	834		I	252 253	38	INSTACK
357	861	*	I	254 256	158	NOT INNER
365	861		J	255 256	38	INSTACK

STATISTICS

PROGRAM LENGTH 14228 786

520008 CM USED

2 29

```
      *DECK NEWRA
      C/
      C
      C********ARRAYS********
      C
      C     A(50,20) IS THE ARRAY TO BE ESCALATED.
      C
      C     B(50,20) IS THE ARRAY AFTER ESCALATION.
      C
      C     ESC(20) IS THE DEFAULT ESCALATION ARRAY.
      C
      C     ES(20) IS THE OPERATIONAL ESCALATION ARRAY.
      C
      C********ARRAYS********
      C********VARIABLES********
      C
      C     IX DETERMINES IF THE DEFAULT ESCALATION ARRAY IS TO BE DISPLAYE
      C           1=DISPLAYED
      C           2=NOT DISPLAYED
      C
      C     IY DETERMINES WHETHER THE DEFAULT ESCALATION ARRAY IS TO BE
      C        ACCEPTED IN TOTO.
      C           1=ACCEPTED.
      C           2=NOT ACCEPTED IN TOTO.
      C
      C     IZ IS THE ELEMENT OF THE DEFAULT ESCALATION ARRAY TO BE CHANGED
      C
      C     C IS THE NEW VALUE FOR THE IZ ELEMENT.
      C
      C     IL IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO THE
      C        BASELINE YEAR.
      C
      C     ID IS THE ELEMENT OF THE ESCALATION ARRAY CORPESPONDING TO THE
      C        FIRST YEAR OF THE ANALYSIS.
      C
      C     KK IS AN INDEX USED IN MAKING THE ELEMENTS OF ES(.) PROPERLY
      C        CORRESPOND TO THOSE OF A(...).
      C
      C     MOLD IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO TH
      C        EXISTING BASELINE YEAR.
      C
      C     MNEW IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO TH
      C        NEW BASELINE YEAR.
      C
      C     IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C     ICUM EQUALS 7 IF CUMULATIVE VALUES ARE TO BE INPUT INTO THE
      C           ESCALATION ARRAY.
      C
      C********VARIABLES********
      C
      C/
      C
      C           SUBROUTINE NEWRA(KK,RATES,T1,IUNIT,A)
      C
      C     GIVEN THE OLD AND NEW LEARNING RATES, BOTH CONTAINED IN ARRAY RATE
      C
```

```
                C     THE PRODUCTION NUMBER OF THE UNIT WITH WHICH THE CHANGE IS TO COMM
                C
      60        C     CONTAINED IN ARRAY IUNIT, AND INDEX KK, THEN THE NEW RATE IS
                C
                C     KNOWN AND A NEW T1 CAN BE DETERMINED SO THAT THE COST OF THE LAST
                C
                C     ARTICLE PRODUCED USING THE PREVIOUS LEARNING RATE REMAINS UNCHANGE
      65        C
                C     THE FORMULA IS
                C
                C        T1(NEW)=T1(OLD)*(PREVIOUS ARTICLE NUMBER**(OLD RATE-NEW RATE))
                C
      70        C/
                C
                      SUBROUTINE NEWRA(KK,RATES,T1,IUNIT,A)
                      DIMENSION RATES(10),IUNIT(10)
                      DATA IABC/13/
      75              PRINT 4441
                4441  FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
                      RETURN
                *DECK CAL5
                      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	NEWRA	72	77

VARIABLES

	SN	TYPE	RELOCATION						
0	A	REAL	*UNUSED	F.P.	DEFINED	72			
10	IABC	* INTEGER			DEFINED	74			
0	IUNIT	INTEGER	ARRAY	F.P.	REFS	73	DEFINED	72	
0	KK	INTEGER	*UNUSED	F.P.	DEFINED	72			
0	RATES	REAL	ARRAY	F.P.	REFS	73	DEFINED	72	
0	T1	REAL	*UNUSED	F.P.	DEFINED	72			

FILE NAMES

	MODE		
OUTPUT	FMT	WRITES	75

STATEMENT LABELS

			DEF LINE	REFERENCES
14	4441	FMT	76	75

STATISTICS

PROGRAM LENGTH 248 20

520000 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        IUNIT(10) CONTAINS THE NUMBER OF THE PRODUCTION ITEM AT WHICH A
      C             NEW LEARNING RATE BECOMES APPLICABLE
      C
      C        RATES(10) CONTAINS THE LEARNING RATES WHICH WILL EXIST OVER THE
      C             PRODUCTION LIFE.
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        KK IS AN INDEX USED TO SPECIFY THE APPROPRIATE ELEMENT OF RATES
      C           AND IUNIT.
      C
      C        T1 IS THE COST OF THE FIRST UNIT.  FOR MATHEMATICAL REASONS A N
      C             VALUE OF T1 IS CALCULATED AT EACH CHANGE IN THE LEARNING R
      C
      C        B IS LN(OLD LEARNING RATE)/LN(2.)
      C
      C        A IS LN(NEW LEARNING RATE)/LN(2.)
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE CAL5(A,COST,NYEARS,PRODM,KKK)
      C
      C IT IS NOT UNUSUAL FOR A COST ELEMENT (ROW OF THE COST ARRAY) TO BE COM
      C
      C OF THE SUM OF TWO OR MORE COSTS OBTAINED FROM SEPARATE CALCULATIONS.
      C
      C CAL5 ACCOMPLISHES THIS OVERALL CALCULATION BY STORING THE CUMULATIVE C
      C
      C IN ARRAY TCOST.  THE USER SPECIFIES THE NUMBER OF SEPARATE CALCULATION
      C
      C TO BE MADE.
      C
      C/
      C
            SUBROUTINE CAL5(A,COST,NYEARS,PRCOM,KKK)
            DIMENSION A(50,20),COST(20),TCOST(20)
            INTEGER PRCOM(10,20)
            DATA IABC/12/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK PRODUC
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CAL5	45	51

VARIABLES	SN	TYPE		RELOCATION				
0	A	REAL	ARRAY	F.P.	REFS	46	DEFINED	45
0	COST	REAL	ARRAY	F.P.	REFS	46	DEFINED	45
10	IABC	* INTEGER			DEFINED	48		
0	KKK	INTEGER	*UNUSED	F.P.	DEFINED	45		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	45		
0	PROOM	INTEGER	ARRAY	F.P.	REFS	47	DEFINED	45
24	TCOST	REAL	*UNDEF		REFS	46		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	49

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	59	49

STATISTICS
PROGRAM LENGTH 508 40
520008 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C        COST(20) STORES AND TRANSFERS THE COST INFORMATION EACH TIME AN
      C             INTERFACE WITH ANOTHER ROUTINE IS MADE.
      C
      C        TCOST(20) STORES THE CUMULATIVE COSTS AS THE CALCULATION IS
      C             BEING MADE.
      C
      C        A(50,20) CONTAINS THE BASELINE COST INFORMATION
      C             TO BE OUTPUT.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA INDICATES THE NUMBER OF SEPARATE CALCULATIONS THAT WILL BE M
      C
      C        IB IS AN INDEX USED TO DETERMINE THE SUBROUTINE TO BE CALLED.
      C
      C        NYEARS IS THE NUMBER OF YEARS OVER WHICH THE COST CALCULATION I
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        KKK IS THE ROW OF THE COST ARRAY BEING CALCULATED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE PRODUC(PRODM)
      C
      C THIS ROUTINE IS USED TO SPECIFY THE PRODUCTION SCHEDULES, WHICH ARE ST
      C
      C IN ARRAY PRODM.  ELEMENT (10,20) OF PRODM RECORDS THE NUMBER OF SCHEDU
      C
      C/
      C
            SUBROUTINE PRODUC(PRODM)
            INTEGER PRODM(10,20)
            DATA IABC/6/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK OUT
            END
```

SYMBOLIC REFERENCE MAP (R=2)

```
ENTRY POINTS      DEF LINE    REFERENCES
    3  PRODUC          43        48

VARIABLES     SN  TYPE            RELOCATION
   10  IABC      * INTEGER                       DEFINED       45
    0  PRODM       INTEGER    ARRAY     F.P.      REFS        44    DEFINED       43

FILE NAMES        MODE
      OUTPUT      FMT                    WRITES       46

STATEMENT LABELS              DEF LINE   REFERENCES
   14  4441     FMT               47         46

STATISTICS
  PROGRAM LENGTH                  24E       20
        520008 CM USED
```

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       PROGM(10,20) THIS ARRAY CONTAINS THE PRODUCTION SCHEDULES, EACH
      C            REPRESENTS 1 YEAR.  ELEMENT (1),20) RECORDS THE NUMBER OF
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       IA IS AN INDEX USED TO SPECIFY THE NUMBER OF PRODUCTION SCHEDUL
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C     SUBROUTINE CUT(A,NYEARS,NROWS,HEADW)
      C
      C THIS ROUTINE OUTPUTS CALCULATED COSTS, BY YEAR AND TYPE.  EITHER OF TH
      C
      C FORMATS: I, E OR F, CAN BE SPECIFIED.  AN APPROPRIATE TABLE HEADING CA
      C
      C DELINEATED.
      C
      C/
      C
            SUBROUTINE OUT(A,NYEARS,NROWS,HEADW)
            DIMENSION A(50,20),IZZ(20),HEADW(50,6)
            DIMENSION NAME(12),TITLE(6)
            INTEGER HEADW
            DATA IBLANK/1H /
            DATA NAME(1)/10H----------/
            DATA IABC/5/
            DO 1492 IXY=2,12
         1492 NAME(IXY)=NAME(1)
            N=NROWS+1
            NX=NYEARS+1
            DO 80 I1=1,NYEARS
           80 A(N,I1)=0.
            DO 81 I1=1,NROWS
           81 A(I1,NX)=0.
            A(N,NX)=0.
            DO 82 I=1,NYEARS
            DO 82 J=1,NROWS
            A(N,I)=A(N,I)+A(J,I)
           82 A(J,NX)=A(J,NX)+A(J,I)
            DO 83 I=1,NYEARS
           83 A(N,NX)=A(N,NX)+A(N,I)
         9027 PRINT 1027
         1027 FORMAT(* ENTER 1 TO CHANGE AN ELEMENT OF THE COST ARRAY, OTHERWISE
           * 2.*)
            READ*,L5
            IF(EOF(5))9027,8027
```

```
      8027 CONTINUE
           WRITE(4,*)L5
           IF(L5.EQ.555) WRITE(6,2000)
           IF(L5.EQ.1)CALL ELEMENT(A)
           INUM=6
      9000 PRINT 1011
      1011 FORMAT(* IF YOU DESIRE REMOTE PRINTOUT ENTER 1, OTHERWISE 2.*)
           READ*,IFLAG
           IF(EOF(5))9000,8000
      8000 CONTINUE
           WRITE(4,*)IFLAG
           IF(IFLAG.EQ.555) WRITE(6,2000)
           IF(IFLAG.EQ.1)INUM=3
C     ********HEADING DETERMINATION.********
      2593 PRINT 1592
      1592 FORMAT(* SPECIFY A TITLE, 60 CHARACTERS OR LESS, CENTERED 39 SPACE
          1S FROM THE LEFT.*)
           READ 1593,(TITLE(IX1),IX1=1,8)
      1593 FORMAT(8A10)
           IF(EOF(5))2593,3593
      3593 CONTINUE
           WRITE(4,7029)(TITLE(IX1),IX1=1,8)
      7029 FORMAT(8A10)
      9001 PRINT 1010
      1010 FORMAT(* IF E-FORMAT IS DESIRED ENTER 1, FOR MILLONS ENTER 2, FOR
          * THOUSANDS ENTER 3.*)
           READ*,II
           IF(EOF(5))9001,8001
      8001 CONTINUE
           WRITE(4,*)II
           IF(II.EQ.555) WRITE(6,2000)
      9002 PRINT 1000
      1000 FORMAT(* SHOULD THE TABLE HEADING READ BASELINE, THEN YEAR, OR A S
          *PECIFIC YEAR DOLLARS---ENTER 1, 2, OR 3 RESPECTIVELY*)
           READ*,IX
           IF(EOF(5))9002,8002
      8002 CONTINUE
           WRITE(4,*)IX
           IF(IX.EQ.555) WRITE(6,2000)
      9003 IF(IX.EQ.3)PRINT 1002
      1002 FORMAT(* ENTER THE YEAR IN QUESTION.*)
           IF(IX.EQ.3)READ*,IY
           IF(EOF(5))9003,8003
      8003 CONTINUE
           IF(IX.EQ.3)WRITE(4,*)IY
           IF(IY.EQ.555.AND.IX.EQ.3) WRITE(6,2000)
      9004 PRINT 1003
      1003 FORMAT(* SPECIFY THE FIRST YEAR*)
           READ*,IZ
           IF(EOF(5))9004,8004
      8004 CONTINUE
           WRITE(4,*)IZ
           IF(IZ.EQ.555) WRITE(6,2000)
           IZZ(1)=IZ
      9005 PRINT 1004
      1004 FORMAT(* ENTER 1 FOR FISCAL YEARS OR 2 FOR CALENDAR YEARS.*)
           READ*,IA
```

```
      IF(EOF(5))9005,8005
 8005 CONTINUE
      WRITE(4,*)IA
      IF(IA.EQ.555) WRITE(6,2000)
 9026 PRINT 1026
 1026 FORMAT(* IF THE FIRST COLUMN IS TO BE TITLED "PREVIOUS COSTS" ENTE
     *R 1, OTHERWISE 2.---MAKE RESPONSE AND ADJUST PAPER BEFORE DEPRESSI
     9NG RETURN KEY. *)
      READ*,L4
      IF(ECF(5))9026,8026
 8026 CONTINUE
      WRITE(4,*)L4
      IF(L4.EQ.555) WRITE(6,2000)
C  ********HEADING DETERMINATION.********
C  ********PRINT HEADINGS.********
      WRITE(INUM,9017)(TITLE(IX1),IX1=1,3)
 9017 FORMAT(*1*,8A10)
      IF(IX.EQ.1)WRITE(INUM,21)
      IF(IX.EQ.2)WRITE(INUM,22)
      IF(IX.EQ.3)WRITE(INUM,23)IY
   21  FORMAT(" ",30X,"BASELINE YEAR DOLLARS")
   22  FORMAT(" ",30X,"THEN YEAR DOLLARS")
   23  FORMAT(" ",30X,I4," YEAR DOLLARS")
      IF(II.EQ.2)WRITE(INUM,137)
  137 FORMAT(" ",32X,"(IN MILLIONS)")
      IF(II.EQ.3)WRITE(INUM,138)
  138 FORMAT(" ",32X,"IN THOUSANDS")
      IF(IA.EQ.1)WRITE(INUM,30)
      IF(IA.NE.1)WRITE(INUM,31)
   30 FORMAT("0","FISCAL YEARS")
   31 FORMAT("0","CALENDAR YEARS")
      DO 25 I=2,NYEARS
   25 IZZ(I)=I7+I-1
      NYEARX=NYEARS-1
      IF(L4.NE.1)GO TO 643
      WRITE(INUM,6626)
 6626 FORMAT(" ",3X,"PREVIOUS")
      WRITE(INUM,6627)(IZZ(J),J=1,NYEARX)
 6627 FORMAT(" ",4X,"COSTS",11X,8(I4,9X))
      IF(NYEARS.EQ.1)WRITE(INUM,61)
      IF(NYEARS.EQ.2)WRITE(INUM,62)
      IF(NYEARS.EQ.3)WRITE(INUM,63)
      IF(NYEARS.EQ.4)WRITE(INUM,64)
      IF(NYEARS.EQ.5)WRITE(INUM,65)
      IF(NYEARS.EQ.6)WRITE(INUM,66)
      IF(NYEARS.EQ.7)WRITE(INUM,67)
      IF(NYEARS.EQ.8)WRITE(INUM,68)
   61 FORMAT("+",19X,"TOTAL")
   62 FORMAT("+",32X,"TOTAL")
   63 FORMAT("+",45X,"TOTAL")
   64 FORMAT("+",58X,"TOTAL")
   65 FORMAT("+",71X,"TOTAL")
   66 FORMAT("+",84X,"TOTAL")
   67 FORMAT("+",97X,"TOTAL")
   68 FORMAT("+",110X,"TOTAL")
      GO TO 644
  643 CONTINUE
```

```
      LEARS=0
      M123X=NYEARS
      NYP1=0
175   IF(NYEARS.GT.8)LEARS=NYEARS
      IF(NYEARS.GT.8)NYP1=9
      IF(NYEARS.GT.8)NYEARS=8
      WRITE(INUM,26)(IZZ(J),J=1,NYEARS)
   26 FORMAT(" ",7X,8(I4,9X))
180   IF(NYP1.EQ.9)WRITE(INUM,26)(IZZ(J),J=NYP1,LEARS)
      IF(NYP1.EQ.3)NYEARS=LEARS-8
      IF(NYEARS.EQ.1)WRITE(INUM,71)
      IF(NYEARS.EQ.2)WRITE(INUM,72)
      IF(NYEARS.EQ.3)WRITE(INUM,73)
185   IF(NYEARS.EQ.4)WRITE(INUM,74)
      IF(NYEARS.EQ.5)WRITE(INUM,75)
      IF(NYEARS.EQ.6)WRITE(INUM,76)
      IF(NYEARS.EQ.7)WRITE(INUM,77)
      IF(NYEARS.EQ.8)WRITE(INUM,78)
190   JX12=M123X+2
      IF(M123X.GT.4)JX12=JX12+1
      IF(M123X.GT.6)JX12=JX12+1
      IF(JX12.GE.12)JX12=12
   71 FORMAT("+",19X,"TOTAL")
195   72 FORMAT("+",32X,"TOTAL")
   73 FORMAT("+",45X,"TOTAL")
   74 FORMAT("+",58X,"TOTAL")
   75 FORMAT("+",71X,"TOTAL")
   76 FORMAT("+",84X,"TOTAL")
200   77 FORMAT("+",97X,"TOTAL")
   78 FORMAT("+",110X,"TOTAL")
      WRITE(INUM,1193)(NAME(IZ10),IZ10=1,JX12)
 1193 FORMAT("+",12A10)
      IF(NYP1.EQ.9)NYEARS=LEARS
205 C ********PRINT HEADINGS.********
  644 CONTINUE
    C ********PRINT OUTPUT.********
      DO 40 I=1,NROWS
      WRITE(INUM,41)(HEADW(I,J),J=1,8)
210   41 FORMAT(" ",8A10)
      IF(NYEARS.EQ.8)GO TO 2056
      IF(II.EQ.1)WRITE(INUM,42)(A(I,J),J=1,NX)
      IF(II.EQ.2)WRITE(INUM,43)(A(I,J),J=1,NX)
      IF(II.EQ.3)WRITE(INUM,44)(A(I,J),J=1,NX)
215   42 FORMAT(" ",8E13.4)
   43 FORMAT(" ",8(-6PF13.3))
   44 FORMAT(" ",8(-3PF13.3))
      GO TO 40
 2056 IF(II.EQ.1)WRITE(INUM,52)(A(I,J),J=1,NX)
220   IF(II.EQ.2)WRITE(INUM,53)(A(I,J),J=1,NX)
      IF(II.EQ.3)WRITE(INUM,54)(A(I,J),J=1,NX)
   52 FORMAT(* *,9E13.4)
   53 FORMAT(* *,9(-6PF13.3))
   54 FORMAT(* *,9(-3PF13.3))
225   40 CONTINUE
    C ********PRINT OUTPUT.********
      DO 7005 IQ=1,25
      PRINT 7006,IBLANK
```

```
                7006 FORMAT(A10)
  230           7005 CONTINUE
                 47  RETURN
                C
                2000 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE2* )
                     END
```

CARD NR. SEVERITY DETAILS DIAGNOSIS OF PROBLEM

120 I 2300 122 TOTAL RECORD LENGTH IS GREATER THAN 137 CHARACTERS. IT MAY EXCEED THE I/O DEVICE CAPACITY.

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 OUT 31 231

VARIABLES	SN	TYPE		RELOCATION							
0 A		REAL	ARRAY	F.P.	REFS	32	2*49	2*50	2*52	61	212	213
					214	219	220	221	DEFINED	31	43	45
					46	49	50	52				
0 HEADW		INTEGER	ARRAY	F.P.	REFS	32	34	209	DEFINED	31		
1653 I		INTEGER			REFS	3*49	50	52	2*147	209	212	213
					214	219	220	221	DEFINED	47	51	146
					206							
1665 IA		INTEGER			REFS	117	118	142	143	DEFINED	114	
727 IABC	*	INTEGER			DEFINED	37						
726 IBLANK		INTEGER			REFS	226	DEFINED	35				
1657 IFLAG		INTEGER			REFS	68	69	70	DEFINED	65		
1661 II		INTEGER			REFS	87	88	138	140	212	213	214
					219	220	221	DEFINED	84			
1656 INUM		INTEGER			DEFINED	62	71	I/O REFS	130	132	133	134
					136	140	142	143	150	152	154	155
					156	157	158	159	160	161	178	181
					182	183	184	185	186	187	188	189
					202	203	212	213	214	219	220	221
1675 IQ	*	INTEGER			DEFINED	227						
1662 IX		INTEGER			REFS	95	96	97	99	102	103	132
					133	134	DEFINED	92				
1647 IXY		INTEGER			REFS	39	DEFINED	36				
1660 IX1		INTEGER			REFS	75	79	130	DEFINED	75	79	130
1663 IY		INTEGER			REFS	102	103	134	DEFINED	99		
1664 IZ		INTEGER			REFS	109	110	111	147	DEFINED	106	
1676 IZZ		INTEGER	ARRAY		REFS	32	152	178	180	DEFINED	111	147
1674 IZ10		INTEGER			REFS	202	DEFINED	202				
1652 I1		INTEGER			REFS	43	45	DEFINED	42	44		
1654 J		INTEGER			REFS	49	3*50	152	178	180	209	212
					213	214	219	220	221	DEFINED	48	152
					178	180	209	212	213	214	219	220
					221							
1673 JX12		INTEGER			REFS	191	192	193	202	DEFINED	190	191

VARIABLES SN TYPE RELOCATION

					192	193						
1670	LEARS	INTEGER			REFS	180	181	204	DEFINED	172	175	
1666	L4	INTEGER			REFS	126	127	149	DEFINED	123		
1655	L5	INTEGER			REFS	59	61	61	DEFINED	56		
1671	M123X	INTEGER			REFS	190	191	192	DEFINED	173		
1650	N	INTEGER			REFS	43	46	2*49	3*52	DEFINED	40	
1722	NAME	INTEGER	ARRAY		REFS	33	39	202	DEFINED	36	38	
0	NROWS	INTEGER		F.P.	REFS	43	44	48	206	DEFINED	34	
1651	NX	INTEGER			REFS	45	46	2*50	2*52	212	213	214
					219	220	221	DEFINED	41			
0	NYEARS	INTEGER		F.P.	REFS	41	42	47	51	146	148	154
					155	156	157	158	159	160	161	173
					2*175	176	177	178	182	183	184	185
					186	187	188	189	211	DEFINED	31	177
					181	204						
1667	NYEARX	INTEGER			REFS	152	DEFINED	149				
1672	NYP1	INTEGER			REFS	2*181	181	204	DEFINED	174	176	
1736	TITLE	REAL	ARRAY		REFS	33	79	139	DEFINED	75		

FILE NAMES MODE

INPUT	MIXED	READS	56	65	75	84	92	95	106	114
		123								
OUTPUT	FMT	WRITES	53	63	72	81	89	97	104	112
		119	228							
TAPE4	MIXED	WRITES	59	66	79	87	95	102	109	117
		126								
TAPE6	FMT	WRITES	61	69	86	96	103	116	118	127

VARIABLES USED AS FILE NAMES, SEE ABOVE

EXTERNALS TYPE ARGS REFERENCES

ELEMENT		1	61						
EOF	REAL	1	57	66	77	65	93	104	107	115	124

STATEMENT LABELS DEF LINE REFERENCES

1260	21	FMT	135	132	
1265	22	FMT	136	133	
1272	23	FMT	137	134	
0	25		147	146	
1435	26	FMT	179	178	180
1322	30	FMT	144	142	
1326	31	FMT	145	143	
711	40		225	206	218
1541	41	FMT	210	209	
1566	42	FMT	215	212	
1571	43	FMT	216	213	
1574	44	FMT	217	214	
9	47	INACTIVE	231		
1621	52	FMT	222	219	
1624	53	FMT	223	220	
1627	54	FMT	224	221	
1401	61	FMT	152	154	
1404	62	FMT	163	155	
1407	63	FMT	164	156	
1412	64	FMT	165	157	
1415	65	FMT	166	158	
1420	66	FMT	167	159	
1423	67	FMT	168	160	

STATEMENT	LABELS			DEF LINE	REFERENCES							
1426	68	FMT		169	161							
1474	71	FMT		194	182							
1477	72	FMT		195	183							
1502	73	FMT		196	184							
1505	74	FMT		197	185							
1510	75	FMT		198	186							
1513	76	FMT		199	187							
1516	77	FMT		200	188							
1521	78	FMT		201	189							
0	80			43	42							
0	81			45	44							
0	82			50	47	48						
0	83			52	51							
1301	137	FMT		139	138							
1310	138	FMT		141	140							
414	643			171	149							
536	644			206	170							
1064	1000	FMT		90	89							
1116	1002	FMT		98	97							
1140	1003	FMT		105	104							
1161	1004	FMT		113	112							
1035	1010	FMT		82	81							
760	1011	FMT		64	63							
1205	1026	FMT		120	119							
733	1027	FMT		54	53							
1530	1193	FMT		203	202							
0	1492			39	38							
1904	1592	FMT		73	72							
1022	1593	FMT		76	75							
1648	2000	FMT		233	69	69	86	96	103	118	116	127
634	2056			219	211							
141	2593			72	77							
0	3593		INACTIVE	78	77							
1335	6626	FMT		151	150							
1345	6627	FMT		153	152							
0	7005			230	227							
1636	7006	FMT		229	228							
1039	7029	FMT		80	79							
0	8000		INACTIVE	67	66							
0	8001		INACTIVE	86	85							
0	8002		INACTIVE	94	93							
0	8003		INACTIVE	101	100							
0	8004		INACTIVE	108	107							
0	8005		INACTIVE	116	115							
1243	8017	FMT		131	130							
0	8026		INACTIVE	125	124							
0	8027		INACTIVE	58	57							
122	9000			63	66							
151	9001			81	85							
165	9002			89	93							
201	9003			97	100							
225	9004			104	107							
243	9005			112	115							
257	9026			119	124							
101	9027			53	57							

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
11	1492	IXY	38 39	38	INSTACK
26	80	I1	42 43	28	INSTACK
37	81	I1	44 45	28	INSTACK
46	82	* I	47 50	178	NOT INNER
56	92	J	48 58	48	INSTACK
75	83	I	51 52	38	INSTACK
335	25	I	146 147	38	INSTACK
537	40	* I	208 225	1558	EXT REFS NOT INNER
542		* J	209 209	118	EXT REFS
563		* J	212 212	118	EXT REFS
602		* J	213 213	118	EXT REFS
621		* J	214 214	118	EXT REFS
641		* J	219 219	118	EXT REFS
660		* J	220 220	118	EXT REFS
677		* J	221 221	118	EXT REFS
715	7005	* IO	227 230	58	EXT REFS

STATISTICS
PROGRAM LENGTH 17648 1012
520008 CM USED

```
      *DECK ADDL
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE DATA TO BE OUTPUT.
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR EACH ROW OF ARRAY A.
      C
      C        IZZ(2*) CONTAINS THE SPECIFICATION OF THE YEARS.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        NROWS IS THE NUMBER OF ROWS IN ARRAY A WHICH CONTAIN COST
      C             INFORMATION.
      C
      C        II IS A FORMAT INDEX.  1=E, 2=F, 3=I.
      C
      C        IX IS A TABLE HEADING INDEX.
      C             1=BASELINE YEAR DOLLARS.
      C             2=THEN YEAR DOLLARS.
      C             3=.... YEAR DOLLARS. (WHERE .... IS SPECIFIED.)
      C
      C        IY IS THE VALUE OF THE YEAR INDICATED IN IX=3 ABOVE.
      C
      C        IZ IS THE FIRST YEAR IN WHICH COSTS ARE INCURRED.
      C
      C        IA IS A TABLE HEADING INDEX.  1=FISCAL YEARS, 2=CALENDAR YEARS.
      C
      C        NX=NYEARS + 1
      C
      C        N=NROWS + 1
      C
      C        INUM IS THE NUMBER OF THE DEVICE ON WHICH THE OUTPUT IS PRINTED
      C
      C        IFLAG IS AN INDEX DELINEATING WHETHER THE OUTPUT IS PRINTED OVE
      C                THE TERMINAL OR PLACED ON FILE.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        L4 DELINEATES WHETHER THE FIRST COLUMN IS TO BE TITLED "PREVIOU
      C                COSTS".
      C
      C  ********VARIABLES********
      C/
      C
      C
      C
      C                  SUBROUTINE ADDL(A,NYEARS,COST)
      C
      C THIS ROUTINE ADDS ANY NUMBER OF SPECIFIED ROWS FROM THE COST ARRAY TO
      C
      C FORM A NEW ROW.  ALL ELEMENTS OF THIS NEW ROW ARE THEN MULTIPLIED BY
```

```
                C
                C A SPECIFIED CONSTANT.
      60        C
                C/
                C
                      SUBROUTINE ADDL(A,NYEARS,COST)
                      DIMENSION A(50,20),IARR(50),COST(20)
      65              DATA IABC/15/
                      PRINT 4441
                 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
                      RETURN
                *DECK DIVDEL
      70              END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	ADDL	63	68

VARIABLES	SN	TYPE		RELOCATION				
0	A	REAL	ARRAY	F.P.	REFS	64	DEFINED	63
3	COST	REAL	ARRAY	F.P.	REFS	64	DEFINED	63
10	IABC	* INTEGER			DEFINED	65		
24	IARR	INTEGER	*UNDEF		REFS	64		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	63		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	06

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	67	66

STATISTICS

PROGRAM LENGTH 1068 70

520008 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       A(50,20) CONTAINS THE COST DATA FOR THE ANALYSIS.
      C
      C       COST(20) IS USED TO CALCULATE AND TRANSFER THE COST DATA FOR TH
      C            ROW BEING CALCULATED.
      C
      C       IADD(50) CONTAINS THE NUMBERS OF THE ROWS TO BE ADDED.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C       IA IS THE NUMBER OF ROWS TO BE ADDED.
      C
      C       FRAC IS THE FRACTION BY WHICH THE SUM OF THE ROWS IS TO BE MULT
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE DIVIDEL(A,NYEARS,COST)
      C
      C THIS ROUTINE ENABLES THE FORMULATION OF A ROW THROUGH THE DIVISION OF
      C
      C EXISTING ROW BY A SECOND EXISTING ROW.
      C
      C/
      C
            SUBROUTINE DIVIDEL(A,NYEARS,COST)
            DIMENSION A(50,20),COST(20)
            DATA IABC/18/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
           *DECK ELEMENT
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	DIVIDEL	37	42

VARIABLES	SN	TYPE	RELOCATION					
0	A	REAL	ARRAY	F.P.	REFS	38	DEFINED	37
0	COST	REAL	ARRAY	F.P.	REFS	38	DEFINED	37

VARIABLES	SN	TYPE	RELOCATION			
10	IABC	* INTEGER			DEFINED	39
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	37

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	46

STATEMENT LABELS		DEF LINE	REFERENCES
14	4441 FMT	41	40

STATISTICS
PROGRAM LENGTH 248 20
520008 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST INFORMATION.
      C
      C        COST(20) TRANSFERS THE CALCULATED COST DATA.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        IN IS THE NUMBER OF THE NUMERATOR ROW.
      C
      C        ID IS THE NUMBER OF THE DENOMINATOR ROW.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE ELEMENT(A)
      C
      C THIS ROUTINE ENABLES A SPECIFIC ELEMENT OF THE COST ARRAY TO BE FORMED
      C
      C BY SPECIFICATION OR BY DIVIDING A SPECIFIED ELEMENT OF THE COST ARRAY
      C
      C BY ANOTHER SPECIFIED ELEMENT.
      C
      C/
      C
            SUBROUTINE ELEMENT(A)
            DIMENSION A(50,20)
            DATA IABC/19/
         99 PRINT 1000
       1000 FORMAT(* IF THE ELEMENT IS TO BE FORMED BY SPECIFICATION ENTER 1*,
           */,* IF BY DIVISION ENTER 2.*)
            READ*,IA
            IF(EOF(5))  99,8099
       8099 CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555) WRITE(6,2000)
            IF(IA.EQ.1)GO TO 35
       9000 PRINT 1001
       1001 FORMAT(* ENTER THE ROW AND COLUMN OF THE NUMERATOR ELEMENT*,/,* FO
           *LLOWED BY THE ROW AND COLUMN OF THE DENOMINATOR ELEMENT*,/,* FOLLO
           *WED BY THE ROW AND COLUMN OF THE ELEMENT TO BE CALCULATED*,/,* FOR
           * EXAMPLE      18,7,22,5,24,8*)
            READ*,INR,INC,IDR,IDC,ICR,ICC
            IF(EOF(5))9000,8000
       8000 CONTINUE
            WRITE(4,*)INR,INC,IDR,IDC,ICR,ICC
            A(ICR,ICC)=A(INR,INC)/A(IDR,IDC)
```

```
                88  PRINT 1002
              1002 FORMAT(* IF ANOTHER ELEMENT IS TO BE OBTAINED ENTER 1, OTHERWISE 2
     68         **)
                  READ*,ID
                  IF(EOF(5))  88,8088
              8088 CONTINUE
                  WRITE(4,*)ID
     65           IF(ID.EQ.555) WRITE(6,2000)
                  IF(ID.EQ.1)GO TO 99
                  RETURN
                35  PRINT 1003
              1003 FORMAT(* SPECIFY THE VALUE OF THE ELEMENT, ITS ROW AND COLUMN*)
     79           READ*,X,ICR,ICD
                  IF(EOF(5))  35,8035
              8035 CONTINUE
                   WRITE(4,*)X,ICR,ICD
                  A(ICR,ICD)=X
     75           GO TO 88
                C
                 2000 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE2* )
                  END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 ELEMENT 35 67

VARIABLES	SN	TYPE	RELOCATION								
0	A	REAL	ARRAY F.P.	REFS	37	2*57	DEFINED	36	57	74	
267	IA	INTEGER		REFS	45	46	47	DEFINED	62		
101	IABC	* INTEGER		DEFINED	33						
275	ICC	INTEGER		REFS	56	57	DEFINED	53			
300	ICD	INTEGER		REFS	73	74	DEFINED	73			
274	ICR	INTEGER		REFS	56	57	73	74	DEFINED	53	74
276	ID	INTEGER		REFS	64	65	66	DEFINED	61		
273	IDC	INTEGER		REFS	56	57	DEFINED	53			
272	IDR	INTEGER		REFS	56	57	DEFINED	53			
271	INC	INTEGER		REFS	56	57	DEFINED	53			
270	INR	INTEGER		REFS	56	57	DEFINED	53			
277	X	REAL		REFS	73	74	DEFINED	71			

FILE NAMES	MODE					
INPUT	FREE	READS	42	53	61	70
OUTPUT	FMT	WRITES	39	48	58	66
TAPE4	FREE	WRITES	45	56	64	73
TAPE6	FMT	WRITES	46	65		

EXTERNALS	TYPE	ARGS	REFERENCES			
EOF	REAL	1	43	54	62	71

STATEMENT LABELS	DEF LINE	REFERENCES		
62 35	68	47	71	
43 88	58	62	75	

STATEMENT LABELS			DEF LINE	REFERENCES	
5	99		39	43	66
105	1000	FMT	40	39	
135	1001	FMT	49	48	
211	1002	FMT	59	58	
236	1003	FMT	69	68	
260	2000	FMT	77	46	65
0	8030	INACTIVE	55	54	
0	8035	INACTIVE	72	71	
0	8088	INACTIVE	63	62	
0	8099	INACTIVE	44	43	
23	9000		48	54	

STATISTICS

PROGRAM LENGTH 301E 193

520000 CM USED

```
      *DECK RINSERT
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST INFORMATION.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA DELINEATES HOW THE ELEMENT WILL BE FORMED.
      C
      C        INR,INC DELINEATE THE ROW AND COLUMN OF THE NUMERATOR ELEMENT
      C             ,RESPECTIVELY.
      C
      C        IDR,IDC DELINEATE THE ROW AND COLUMN OF THE DENOMINATOR ELEMENT
      C             RESPECTIVELY.
      C
      C        ICR,ICC DELINEATE THE ROW AND COLUMN OF THE ELEMENT TO BE CALCU
      C             RESPECTIVELY.
      C
      C        ID DELINEATES WHETHER ANOTHER ELEMENT IS TO BE FORMED.
      C
      C        X IS THE SPECIFIED VALUE OF THE ELEMENT.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE RINSERT(A,NYEARS,NROWS,HEADM,PRODM)
      C
      C THIS ROUTINE ENABLES THE INSEPTION OF A ROW IN THE HEADING AND COST AR
      C
      C INSERTION OF ROWS CAN BE REPEATED AS OFTEN AS DESIRED.
      C
      C/
      C
            SUBROUTINE RINSERT(A,NYEARS,NROWS,HEADM,PRODM)
            DIMENSION HEADM(50,8),A(50,20),COST(20)
            INTEGER PRODM(10,20)
            DATA IABC/20/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE CM VERSION OF EAGLE.*)
            RETURN
      *DECK CUM
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS	DEF LINE	REFERENCES
3 RINSERT	42	48

VARIABLES	SN	TYPE	RELOCATION					
0 A		REAL	ARRAY	F.P.	REFS	43	DEFINED	42
23 COST		REAL	*UNDEF		REFS	43		
0 HEADW		REAL	ARRAY	F.P.	REFS	43	DEFINED	42
10 IABC	*	INTEGER			DEFINED	45		
0 NROWS		INTEGER	*UNUSED	F.P.	DEFINED	42		
0 NYEARS		INTEGER	*UNUSED	F.P.	DEFINED	42		
0 PRODM		INTEGER	ARRAY	F.P.	REFS	44	DEFINED	42

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	46

STATEMENT LABELS		DEF LINE	REFERENCES
14 4441	FMT	47	46

STATISTICS

PROGRAM LENGTH	478	39

520000B CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C     A(50,20) CONTAINS THE COST DATA.
      C
      C     HEADM(50,8) CONTAINS THE COST ELEMENT HEADINGS.
      C
      C     PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C     COST(20) IS USED TO TRANSFER COST DATA.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C     IS AND IL ARE THE 2 ROWS BETWEEN WHICH THE ROW IS BEING INSERTE
      C          IS IS LESS THAN IL.
      C
      C     NROWS IS THE NUMBER OF COST ELEMENTS. (ROWS)
      C
      C     NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C     IX DELINEATES WHETHER ANOTHER ROW WILL BE INSERTED.
      C
      C     IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C     N7 IS USED TO GUARD AGAINST INVALID INPUT INFORMATION.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C              SUBROUTINE CUM(COST,PRODM,NYEARS)
      C
      C THIS ROUTINE DETERMINES FIRST UNIT COST, GIVEN THE LEARNING RATE AND T
      C
      C TOTAL COST OF SPECIFIC ITEMS.
      C
      C/
      C
            SUBROUTINE CUM(COST,PRODM,NYEARS)
            DIMENSION COST(20)
            INTEGER PRODM(10,20)
            DATA IABC/21/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISIS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK ROWMOD
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CUM	43	49

VARIABLES	SN	TYPE		RELOCATION				
0	COST	REAL	ARRAY	F.P.	REFS	44	DEFINED	43
10	IABC	* INTEGER			DEFINED	46		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	43		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	45	DEFINED	43

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	47

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	48	47

STATISTICS

PROGRAM LENGTH	248	20

520000 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C     COST(20) TRANSFERS THE CALCULATED COST INFORMATION.
      C
      C     PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        SUM IS THE CUMULATIVE COST IF THE FIRST UNIT COST WERE ONE.
      C
      C        CUMCOST IS THE CUMULATIVE COST OF THE GROUP OF UNITS.
      C
      C        IFIRST IS THE NUMBER OF THE FIRST PRODUCED UNIT OF THE GROUP.
      C
      C        ISEC IS THE NUMBER OF THE LAST PRODUCED UNIT OF THE GROUP.
      C
      C        RATE IS THE LEARNING RATE.
      C
      C        T1 IS THE COST OF THE FIRST PRODUCED UNIT.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE ROWMOD(HEADW,A,PRODM,NYEARS,COST)
      C
      C THIS ROUTINE ENABLES THE MODIFICATION OF A ROW IN THE HEADING, COST OR
      C
      C PRODUCTION SCHEDULE ARRAYS.  ROW MODIFICATION CAN BE REPEATED AS OFTEN
      C
      C AS DESIRED.
      C
      C/
      C
            SUBROUTINE ROWMOD(HEADW,A,PRODM,NYEARS,COST)
            DIMENSION A(50,20),HEADW(50,6),COST(20)
            INTEGER PRODM(10,20)
            DATA IABC/17/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK APRINT
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	ROWMOD	42	48

VARIABLES	SN	TYPE		RELOCATION				
0	A	REAL	ARRAY	F.P.	REFS	43	DEFINED	42
0	COST	REAL	ARRAY	F.P.	REFS	43	DEFINED	42
0	HEADM	REAL	ARRAY	F.P.	REFS	43	DEFINED	42
10	IABC	* INTEGER			DEFINED	45		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	42		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	44	DEFINED	42

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	46

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	47	46

STATISTICS

PROGRAM LENGTH	248	20

520008 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       HEADM(50,8) CONTAINS THE HEADINGS FOR THE COST ARRAY.
      C
      C       A(50,20) CONTAINS THE COST DATA.
      C
      C       PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULE.
      C
      C       COST(20) TRANSFERS THE COST INFORMATION.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C       IA IS AN INDEX DELINEATING THE ARRAY TO BE MODIFIED.
      C
      C       IB IS THE NUMBER OF THE ROW TO BE MODIFIED.
      C
      C       ID DELINEATES WHETHER ANOTHER ROW WILL BE MODIFIED.
      C
      C       IF DELINEATES THE METHOD OF CALCULATION FOR A ROW IN THE COST A
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE APRINT(NYEARS,NROWS,A,HEADM,PRODM)
      C
      C THIS ROUTINE OUTPUTS WHAT IS PRESENTLY IN THE HEADING, COST OR PRODUCT
      C
      C SCHEDULE ARRAYS.
      C
      C/
      C
            SUBROUTINE APRINT(NYEARS,NROWS,A,HEADM,PRODM)
            DIMENSION A(50,20),HEADM(50,8)
            INTEGER PRODM(10,20)
            DATA IABC/22/
         87 PRINT 1000
       1000 FORMAT(* TO OUTPUT THE COST ARRAY ENTER 1, THE HEADING ARRAY 2, TH
           *E*,/,* PRODUCTION SCHEDULE ARRAY 3 OR IF NO ARRAY ENTER 4.*)
            READ*,IA
            IF(EOF(5)) 87,8087
       8087 CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555) WRITE(6,2000)
            IF(IA.EQ.2)GO TO 25
            IF(IA.EQ.3)GO TO 35
            IF(IA.EQ.4)RETURN
            PRINT 109
       109  FORMAT("1"," THE COST ARRAY.")
            DO 110 I=1,NROWS
```

```
                      PRINT 111,(A(I,J),J=1,MYEARS)
                  111 FORMAT(" ",10E11.3)
      60          110 CONTINUE
                      GO TO 87
                   25 PRINT 209
                  209 FORMAT("1"," THE HEADING ARRAY.")
                      DO 210 I=1,NROWS
      65              PRINT 211,(HEADM(I,J),J=1,8)
                  211 FORMAT(" ",8A10)
                  213 CONTINUE
                      GO TO 87
                   35 IC=PRODM(10,20)
      70              PRINT 309
                  309 FORMAT("1"," THE PRODUCTION SCHEDULE ARRAY.")
                      DO 310 I=1,IC
                      PRINT 311,(PRODM(I,J),J=1,20)
                  311 FORMAT(" ",20I5)
      75          310 CONTINUE
                      GO TO 87
                C
                 2000 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE2* )
                      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	APRINT	40	54

VARIABLES

	SN		TYPE		RELOCATION								
0		A	REAL	ARRAY	F.P.	REFS	41	58	DEFINED	40			
0		HEADM	REAL	ARRAY	F.P.	REFS	41	65	DEFINED	40			
252		I	INTEGER			REFS	58	65	73	DEFINED	57	64	72
251		IA	INTEGER			REFS	50	51	52	53	54		
						DEFINED	47						
124		IABC	* INTEGER			DEFINED	43						
254		IC	INTEGER			REFS	72	DEFINED	69				
253		J	INTEGER			REFS	58	65	73	DEFINED	58	65	73
0		NROWS	INTEGER		F.P.	REFS	57	64	DEFINED	40			
0		MYEARS	INTEGER		F.P.	REFS	58	DEFINED	40				
0		PRODM	INTEGER	ARRAY	F.P.	REFS	42	69	73	DEFINED	40		

FILE NAMES

	MODE							
INPUT	FREE	READS	47					
OUTPUT	FMT	WRITES	44	55	58	62	65	73	73
TAPE4	FREE	WRITES	50					
TAPE6	FMT	WRITES	51					

EXTERNALS

	TYPE	ARGS	REFERENCES
EOF	REAL	1	48

STATEMENT LABELS

		DEF LINE	REFERENCES
52	25	62	52
75	35	69	53

STATEMENT LABELS			DEF LINE	REFERENCES			
6	87		44	48	61	68	76
163	109	FMT	56	55			
0	110		60	57			
175	111	FMT	59	58			
203	209	FMT	63	62			
0	210		67	64			
215	211	FMT	66	65			
223	309	FMT	71	70			
0	310		75	72			
237	311	FMT	74	73			
130	1000	FMT	45	44			
242	2000	FMT	78	51			
0	8087	INACTIVE	49	49			

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
32	110	* I	57 60	208	EXT REFS	NOT INNER
35		* J	58 58	118	EXT REFS	
55	210	* I	64 67	208	EXT REFS	NOT INNER
60		* J	65 65	118	EXT REFS	
102	310	* I	72 75	208	EXT REFS	NOT INNER
105		* J	73 73	118	EXT REFS	

STATISTICS

PROGRAM LENGTH 2646 180

520008 CM USED

```
*DECK GCS
C
C/
C
C  ********ARRAYS********
C
C       A(50,20) CONTAINS THE COST INFORMATION.
C
C       HEADW(50,8) CONTAINS THE HEADINGS FOR THE COST ELEMENTS. (ROWS)
C
C       PRODW(10,20) CONTAINS THE PRODUCTION SCHEDULES.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C       IA DELINEATES THE ARRAY TO BE OUTPUT.
C
C       IC IS THE NUMBER OF PRODUCTION SCHEDULES.
C
C
C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C
C/
C
C                  SUBROUTINE GCS(N),
C
C THIS SUBROUTINE ENALES DIRECT TRANSFER FROM ANY INTEGER RESPONSE
C
C LOCATION IN THE MAIN ROUTINE TO 15 DESIGNATED LOCATIONS IN THE MAIN RO
C
C/
C
      SUBROUTINE GCS(N),
     XRETURNS (L1,L2,L3,L4,L5,L6,L7,L8,L9,L10,L11,L12,L13,L14,L15,L16)
      DATA IABC/23/
      IF(N.EQ.1000)RETURN L1
      IF(N.EQ.1405)RETURN L2
      IF(N.EQ.1401)RETURN L3
      IF(N.EQ.1402)RETURN L4
      IF(N.EQ.1403)RETURN L5
      IF(N.EQ.1404)RETURN L6
      IF(N.EQ.1425)RETURN L7
      IF(N.EQ.1406)RETURN L8
      IF(N.EQ.1977)RETURN L9
      IF(N.EQ.1407)RETURN L10
      IF(N.EQ.1408)RETURN L11
      IF(N.EQ.1677)RETURN L12
      IF(N.EQ.1409)RETURN L13
      IF(N.EQ.1410)RETURN L14
      IF(N.EQ.1411)RETURN L15
      IF(N.EQ.1425)RETURN L16
      IF(N.NE.2000)GO TO 17
      PRINT 1000
 1000 FORMAT(* THE FOLLOWING IS APPLICABLE TO THE MAIN ROUTINE ONLY.*)
```

```
                      PRINT 1001
                1001 FORMAT(* IF IN RESPONSE TO AN INTEGER REQUEST 1000 PLUS ONE OF CER
      60             *TAIN SPECIFIED STATEMENT*,/,* NUMBERS IS INPUT THEN THE USER IS SE
                     *NT DIRECTLY TO THAT STATEMENT NUMBER.*,/,* THUS, FOR EXAMPLE, A RE
                     *SPONSE OF 1088 WOULD SEND THE USER TO STATEMENT 88 WHICH REQUESTS
                     *THE NUMBER OF YEARS OF INTEREST.*  ,/,* THIS IS APPLICABLE FOR THE
                     * FOLLOWING STATEMENT NUMBERS WHOSE REQUESTS END IN THE SYMBOL 8.*)
      65             PRINT 1010
                1010 FORMAT(* STATEMENT NUMBER                                REQUESTS*)
                     PRINT 1200
                1200 FORMAT(*  88     YEARS SPECIFICATION*,/,
                     ** 401     ROWS SPECIFICATION*,/,
      70             ** 401     INPUT FILES*,/,
                     ** 402     ROW MODIFICATION*,/,
                     ** 403     ELEMENT MODIFICATION*,/,
                     ** 404     ROW INSERTION*,/,
                     ** 405     PRODUCTION SCHEDULE*,/,
      75             ** 406     HEADING ARRAY SPECIFICATION*,/,
                     **  77     CALCULATIONS*,/,
                     ** 407     SPREADING THE DATA*,/,
                     ** 408     ALLOWING FOR INFLATION*,/,
                     ** 677     OUTPUT*,/,
      80             ** 409     ARRAY CHECK*,/,
                     ** 410     STORE FILES*,/,
                     ** 411     TERMINATE*,/,
                     ** 425     COLUMN INSERT*)
                      17  RETURN
      85            *DECK INTERP
                      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

3	GCS	36	84

VARIABLES

		SN	TYPE	RELOCATION		
120	IABC	*	INTEGER		DEFINED	38
0	L1		RETURNS		REFS	39
0	L10		RETURNS		REFS	48
0	L11		RETURNS		REFS	49
0	L12		RETURNS		REFS	50
0	L13		RETURNS		REFS	51
0	L14		RETURNS		REFS	52
0	L15		RETURNS		REFS	53
0	L16		RETURNS		REFS	54
0	L2		RETURNS		REFS	40
0	L3		RETURNS		REFS	41
0	L4		RETURNS		REFS	42
0	L5		RETURNS		REFS	43
0	L6		RETURNS		REFS	44
0	L7		RETURNS		REFS	45
0	L8		RETURNS		REFS	46
0	L9		RETURNS		REFS	47

VARIABLES	SN	TYPE	RELOCATION							
J	N	INTEGER	F.P.	REFS	39	40	41	42	43	44	45
					46	47	48	49	50	51	52	53
					54	55	DEFINED	36				

FILE NAMES	MODE						
OUTPUT	FMT	WRITES	56	58	65	67	

STATEMENT LABELS			DEF LINE	REFERENCES
117	17		84	55
124	1000	FMT	57	56
136	1001	FMT	59	58
212	1010	FMT	66	65
224	1200	FMT	68	67

STATISTICS

PROGRAM LENGTH 314E 196

520000 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        NONE
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        N DELINEATES THE RETURN LOCATION IN THE MAIN ROUTINE.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C
      C                    SUBROUTINE T1SL(COST,PRODM,NYEARS)
      C
      C GIVEN THE COST OF TWO SPECIFIC GROUPS OF ITEMS THEN THIS ROUTINE CALCU
      C
      C THE FIRST UNIT COST AND THE LEARNING RATE.
      C
      C/
            SUBROUTINE T1SL(COST,PRODM,NYEARS)
            DIMENSION COST(20)
            INTEGER PRODM(10,20)
            DATA IABC/25/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK CINSERT
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	T1SL	28	34

VARIABLES

	SN	TYPE	RELOCATION					
8	COST	REAL	ARRAY	F.P.	REFS	29	DEFINED	28
10	IABC	* INTEGER			DEFINED	31		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	28		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	30	DEFINED	28

FILE NAMES

	MODE		
OUTPUT	FMT	WRITES	32

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	33	32

STATISTICS

PROGRAM LENGTH	248	20

528888 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       COST(20) STORES AND TRANSFERS THE COST INFORMATION.
      C
      C       PRODM(10,20) STORES THE PRODUCTION SCHEDULES FOR ALL EQUIPMENTS
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       J1 AND J2 ARE THE FIRST AND LAST UNITS OF GROUP 1.
      C
      C       J3 AND J4 ARE THE FIRST AND LAST UNITS OF GROUP 2.
      C
      C       U1 AND P1 ARE 2 NUMBERS WHOSE PRODUCT EQUALS THE COST OF THE
      C                 GROUP 1 UNITS.
      C
      C       U2 AND P2 ARE 2 NUMBERS WHOSE PRODUCT EQUALS THE COST OF THE
      C                 GROUP 2 UNITS.
      C
      C       S1 IS THE TOTAL COST OF GROUP 1 UNITS.
      C
      C       S2 IS THE TOTAL COST OF GROUP 2 UNITS.
      C
      C       C IS THE RATIO OF THE COSTS; S1/S2.
      C
      C       X IS THE TRIAL LEARNING RATE.
      C
      C       E IS THE TRIAL EXPONENT.
      C
      C       SUM1 AND SUM2 ARE TRIAL COSTS FOR GROUP 1 AND GROUP 2.
      C
      C       G IS THE RATIO OF THE TRIAL COSTS.
      C
      C       ABC HAS A FINAL VALUE EQUAL TO THE ESTIMATE OF THE LEARNING RAT
      C
      C       T1 IS THE ESTIMATE OF THE FIRST UNIT COST.
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                 SUBROUTINE CINSERT(A,NYEARS)
      C
      C THIS ROUTINE ENABLES THE INSERTION OF A COLUMN IN THE COST ARRAY.
      C
      C/
            SUBROUTINE CINSERT(A,NYEARS)
            DIMENSION A(50,20)
            DATA IABC/26/
            PRINT 4441
      4441  FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
```

```
                  RETURN
                  END

          SYMBOLIC REFERENCE MAP (R=2)

 ENTRY POINTS        DEF LINE     REFERENCES
     3  CINSERT         53           58

 VARIABLES      SN  TYPE              RELOCATION
     0  A           REAL       ARRAY      F.P.      REFS        54    DEFINED      53
    10  IABC      * INTEGER                         DEFINED     55
     0  NYEARS      INTEGER    *UNUSED    F.P.      DEFINED     53

 FILE NAMES         MODE
        OUTPUT      FMT                  WRITES      56

 STATEMENT LABELS              DEF LINE    REFERENCES
    14  4441      FMT             57          56

 STATISTICS
   PROGRAM LENGTH                248       20
        52000B CM USED
```

2 66

```
      *DECK NAMCHK
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        IEM(5) CONTAINS ERROR MESSAGE INFORMATION RESULTING FROM
      C            A CALL TO SYSTEM ROUTINE PFSUE.
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        HEADM(50,6) CONTAINS THE HEADINGS FOR THE COST DATA.
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IES,UCW,UN,PW,CT, AND M ARE VARIABLES USED BY SYSTEM ROUTINE
      C             PFSUE.
      C
      C        I19 IS AN INDEX DELINEATING WHETHER DATA WILL BE INPUT ARE
      C              SAVED.
      C
      C        IA,IB,IC ARE INDICES INDICATING WHETHER HEADING, COST AND/OR
      C            PRODUCTION SCHEDULE INFORMATION WILL BE INPUT.
      C
      C        JA,JB,JC ARE INDICES INDICATING WHETHER HEADING, COST AND/OR
      C            PRODUCTION SCHEDULE INFORMATION WILL BE SAVED.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED).
      C
      C        SUB TAKES ON A FILE NAME.
      C
      C  ********VARIABLES********
      C
      C/
      C                  SUBROUTINE NAMCHK(SUB)
      C
      C THIS ROUTINE CHECKS THAT THE INPUT FILE NAME WILL NOT CAUSE PROGRAM
      C
      C TERMINATION.
      C
      C/
            SUBROUTINE NAMCHK(SUB)
           DIMENSION SNAM(9)
           INTEGER SUB
           DATA SYM/1H*/,BLANK/1H /
      5    READ(5,10)SUB
           WRITE(4,10)SUB
      10   FORMAT(A10)
           IF(SUB.NE.BLANK)GO TO 75
      20   PRINT 25
      25   FORMAT(* THE NAME YOU CHOOSE DID NOT MEET THE REQUIREMENTS
           *OF LENGTH/OR TYPE OF CHARACTER,I.E. ALPHA.*)
```

```
                    GO TO 5
               75   DECODE(7,100,SUB)(SNAM(I),I=2,6)
     60        100  FORMAT(9A1)
                    SNAM(1)=SYM
                    IF(SNAM(2).LT.1HA.OR.SNAM(2).GT.1HZ)GO TO 20
                    DO 200 I=2,8
                    IF(SNAM(I).EQ.BLANK)GO TO 250
     65        200  CONTINUE
                    I=9
               250  SNAM(I)=SYM
                    ENCODE(I,100,SUB)(SNAM(J),J=1,I)
                    RETURN
     70             END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	NAMCHK	47	69

VARIABLES

	SN	TYPE		RELOCATION								
46	BLANK	REAL			REFS	54	64	DEFINED	50			
120	I	INTEGER			REFS	59	64	67	2*66	DEFINED	59	63
					66							
121	J	INTEGER			REFS	68	DEFINED	68				
122	SNAM	REAL	ARRAY		REFS	48	2*62	64	68	DEFINED	53	61
					67							
0	SUB	INTEGER		F.P.	REFS	49	52	54	59	DEFINED	47	51
					60							
45	SYM	REAL			REFS	61	67	DEFINED	56			

FILE NAMES

	MODE		
OUTPUT	FMT	WRITES	55
TAPE4	FMT	WRITES	52
TAPE5	FMT	READS	51

STATEMENT LABELS

			DEF LINE	REFERENCES	
5	5		51	58	
60	10	FMT	53	51	52
14	20		55	62	
65	25	FMT	56	55	
17	75		59	54	
106	100	FMT	60	59	60
0	200		65	63	
35	250		67	64	

LOOPS

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
27	200	* I	63 65	58	INSTACK	EXITS

STATISTICS

PROGRAM LENGTH 1336 91

520000 CM USED

```
      *DECK MULT
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        HEADM(50,8) CONTAINS THE HEADINGS FOR THE COST DATA.
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C        IEM(5) CONTAINS ERROR MESSAGE INFORMATION RESULTING FROM A CALL
      C            TO SYSTEM ROUTINE FFSUB.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IEM,UCM,UM,PM,CT, AND M ARE VARIABLES USED BY SYSTEM ROUTINE FF
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        SUB TAKES ON A FILE NAME.
      C
      C        KK IS AN INDEX USED TO CONTROL THE ROUTINE.  IT ASSURES THAT AL
      C             3 FILES ARE TRANSFERED TO THE ARRAYS AND THAT A RETURN IS
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE MULT(A,COST,NYEARS)
      C
      C THIS ROUTINE FORMS A ROW IN THE COST ARRAY BY OBTAINING THE
      C
      C PRODUCT OF TWO EXISTING ROWS.
      C
      C/
            SUBROUTINE MULT(A,COST,NYEARS)
            DIMENSION A(50,20),COST(20)
            DATA IABC/30/
             PRINT 4000
       4000 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE*)
            RETURN
      *DECK FILES
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS	DEF LINE	REFERENCES
3 MULT	40	45

VARIABLES	SN	TYPE	RELOCATION					
0	A	REAL	ARRAY	F.P.	REFS	41	DEFINED	40
0	COST	REAL	ARRAY	F.P.	REFS	41	DEFINED	40
10	IABC	* INTEGER			DEFINED	42		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	40		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	43

STATEMENT LABELS		DEF LINE	REFERENCES
14 4000	FMT	44	43

STATISTICS

PROGRAM LENGTH	248	20

520008 CM USED

```
      C
      C/
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE DATA TO BE OUTPUT.
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR EACH ROW OF ARRAY A.
      C
      C        IZZ(20) CONTAINS THE SPECIFICATION OF THE YEARS.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        NROWS IS THE NUMBER OF ROWS IN ARRAY A WHICH CONTAIN COST
      C             INFORMATION.
      C
      C        II IS A FORMAT INDEX.  1=E, 2=F, 3=I.
      C
      C        IX IS A TABLE HEADING INDEX.
      C             1=BASELINE YEAR DOLLARS.
      C             2=THEN YEAR DOLLARS.
      C             3=.... YEAR DOLLARS. (WHERE .... IS SPECIFIED.)
      C
      C        IY IS THE VALUE OF THE YEAR INDICATED IN IX=3 ABOVE.
      C
      C        IZ IS THE FIRST YEAR IN WHICH COSTS ARE INCURRED.
      C
      C        IA IS A TABLE HEADING INDEX.  1=FISCAL YEARS, 2=CALENDAR YEARS.
      C
      C        NX=NYEARS + 1
      C
      C        N=NROWS + 1
      C
      C        INUM IS THE NUMBER OF THE DEVICE ON WHICH THE OUTPUT IS PRINTED
      C
      C        IFLAG IS AN INDEX DELINEATING WHETHER THE OUTPUT IS PRINTED OVE
      C                THE TERMINAL OR PLACED ON FILE.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        L4 DELINEATES WHETHER THE FIRST COLUMN IS TO BE TITLED "PREVIOU
      C             COSTS".
      C
      C  ********VARIABLES********
      C
      C/
      C
                        SUBROUTINE FILES(A,HEADW,PROOM,I19)
      C
      C THIS ROUTINE ENABLES DATA STORED ON FILES TO BE INPUT TO THE COST,
      C
      C HEADING AND PRODUCTION SCHEDULE ARRAYS DURING PROGRAM OPERATION.  ALSO
      C
      C INFORMATION STORED IN THESE ARRAYS CAN BE PLACED ON FILES DURING
```

```
      C
      C PROGRAM OPERATION.
   60 C
      C/
      C
            SUBROUTINE FILES(A,HEADM,PRODM,I19)
            DIMENSION A(50,20),HEADM(50,8)
   65       INTEGER PRODM(10,20),IEM(5),SUB
            DATA IABC/16/
            IF(I19.EQ.2)GO TO 22
         9000 PRINT 1000
         1000 FORMAT(* ENTER 1 IF YOU WISH TO SPECIFY, BY FILE, THE HEADING,COST
   70      *AND/OR PRODUCTION ARRAYS,*,/,* RESPECTIVELY, OTHERWISE ENTER 2*,*
           *A TYPICAL RESPONSE WOULD BE 1,2,1*)
            READ*,IA,IB,IC
            IF(EOF(5))9000,8000
         8000 CONTINUE
   75       WRITE(4,*)IA,IB,IC
            IF(IA.NE.1)GO TO 201
         2  PRINT 1001
         1001 FORMAT(* SPECIFY THE FILE TO BE READ INTO THE HEADING ARRAY.*)
            CALL NAMCHK(SUB)
   80    10  FORMAT(8A10)
            CALL RETURN(5HTAPE7)
            ERR=0.0
            CALL PERMFIL(ERR,6HATTACH,5HTAPE7,SUB,2HCY,1)
            IF(ERR.NE.0.0)GO TO 2
   85       DO 41 I=1,50
            READ(7,100) (HEADM(I,J),J=1,8)
         100  FORMAT(8A10)
         41   CONTINUE
            CALL RETURN(5HTAPE7)
   90    201  IF(IB.NE.1)GO TO 301
         3    PRINT 1002
         1002 FORMAT(* SPECIFY THE FILE TO BE READ INTO THE COST ARRAY.*)
            CALL NAMCHK(SUB)
            CALL RETURN(5HTAPE1)
   95       ERR=0.0
            CALL PERMFIL(ERR,6HATTACH,5HTAPE1,SUB,2HCY,1)
            IF(ERR.NE.0.0)GO TO 3
            READ(1,*)((A(I,J),I=1,50),J=1,20)
            CALL RETURN(5HTAPE1)
  100    301  IF(IC.NE.1)RETURN
         4    PRINT 1003
         1003 FORMAT(* SPECIFY THE FILE TO BE READ INTO THE PRODUCTION ARRAY.*)
            CALL NAMCHK(SUB)
            CALL RETURN(5HTAPE1)
  105       ERR=0.0
            CALL PERMFIL(ERR,6HATTACH,5HTAPE1,SUB,2HCY,1)
            IF(ERR.NE.0.0)GO TO 4
            READ(1,*)((PRODM(I,J),I=1,10),J=1,20)
            CALL RETURN(5HTAPE1)
  110       RETURN
         22 PRINT 1004
         1004 FORMAT(* FOR THE HEADING,COST AND/OR PRODUCTION ARRAYS, RESPECTIVE
           *LY,*,/,* ENTER 1 TO SAVE ON FILES, OTHERWISE ENTER 2.*, / ,
           ** A TYPICAL RESPONSE WOULD BE 1,2,1. * )
```

```
      READ*,JA,JB,JC
      IF(EOF(5))22,8022
 8022 CONTINUE
      WRITE(4,*)JA,JB,JC
      IF(JA.NE.1)GO TO 202
    6 PRINT 1005
 1005 FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR HEADING ARRAY.---A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE8)
      CALL REQUEST(5HTAPE8,3H*PF)
      DO 141 I=1,50
      WRITE(8,157) (HEADM(I,J),J=1,8)
  157 FORMAT(8A10)
  141 CONTINUE
      ENDFILE 8
      ERR=0.0
      CALL PERMFIL(ERR,7HCATALOG,5HTAPE8,SUB,2HCY,1)
      IF(ERR.NE.0.0)GO TO 22
      CALL RETURN(5HTAPE8)
  202 IF(JB.NE.1)GO TO 302
    7 PRINT 1006
 1006 FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR COST ARRAY.--- A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE2)
      CALL REQUEST(5HTAPE2,3H*PF)
      WRITE(2,*)((A(I,J),I=1,50),J=1,20)
      ENDFILE 2
      ERR=0.0
      CALL PERMFIL(ERR,7HCATALOG,5HTAPE2,SUB,2HCY,1)
      IF(ERR.NE.0.0)GO TO 7
      CALL RETURN(5HTAPE2)
  302 IF(JC.NE.1)RETURN
    8 PRINT 1007
 1007 FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR PRODUCTION ARRAY.---A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE2)
      CALL REQUEST(5HTAPE2,3H*PF)
      WRITE(2,*)((PRODM(I,J),I=1,10),J=1,20)
      ENDFILE 2
      ERR=0.0
      CALL PERMFIL(ERR,7HCATALOG,5HTAPE2,SUB,2HCY,1)
      IF(ERR.NE.0.0)GO TO 8
      CALL RETURN(5HTAPE2)
      RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES								
3	FILES	63	100	110	148	161					

VARIABLES	SN	TYPE	RELOCATION									
0	A	REAL	ARRAY	F.P.	REFS	64	142	DEFINED	63	98		
644	ERR	REAL			REFS	83	84	96	97	106	107	132
					133	145	146	158	159	DEFINED	82	85
					105	131	144	157				
0	HEADM	REAL	ARRAY	F.P.	REFS	64	127	DEFINED	63	66		
645	I	INTEGER			REFS	86	98	108	127	142	155	
					DEFINED	85	96	108	126	142	155	
641	IA	INTEGER			REFS	75	76	DEFINED	72			
361	IABC	* INTEGER			DEFINED	66						
642	IB	INTEGER			REFS	75	90	DEFINED	72			
643	IC	INTEGER			REFS	75	100	DEFINED	72			
652	IEM	INTEGER	*UNDEF		REFS	65						
0	I19	INTEGER		F.P.	REFS	67	DEFINED	63				
646	J	INTEGER			REFS	86	98	108	127	142	155	
					DEFINED	86	96	108	127	142	155	
647	JA	INTEGER			REFS	116	119	DEFINED	115			
650	JB	INTEGER			REFS	118	135	DEFINED	115			
651	JC	INTEGER			REFS	118	148	DEFINED	115			
0	PRODM	INTEGER	ARRAY	F.P.	REFS	65	155	DEFINED	63	108		
640	SUB	INTEGER			REFS	65	79	83	93	96	103	106
					123	132	139	145	152	158		

FILE NAMES	MODE									
INPUT	FREE	READS	72	115						
OUTPUT	FMT	WRITES	68	77	91	101	111	120	136	145
TAPE1	FREE	READS	96	108						
TAPE2	FREE	WRITES	142	155	MOTION	143	156			
TAPE4	FREE	WRITES	75	116						
TAPE7	FMT	READS	86							
TAPE8	FMT	WRITES	127	MOTION	130					

EXTERNALS	TYPE	ARGS	REFERENCES							
EOF	REAL	1	73	116						
NAMCHK		1	79	93	103	123	139	152		
PERMFIL		6	83	96	106	132	145	158		
REQUEST		2	125	141	154					
RETURN		1	81	89	94	99	104	109	124	134	140
			147	153	160					

STATEMENT LABELS			DEF LINE	REFERENCES		
22	2		77	84		
60	3		91	97		
100	4		101	107		
0	6	INACTIVE	120			
173	7		136	146		
217	8		149	159		
434	10	FMT NO REFS	80			
117	22		111	67	116	133
0	41		88	85		
445	100	FMT	87	86		
0	141		129	126		
567	157	FMT	128	127		
56	201		90	76		

STATEMENT LABELS				DEF LINE	REFERENCES
171	202			135	119
76	301			100	90
215	302			149	135
365	1000	FMT		69	68
425	1001	FMT		78	77
452	1002	FMT		92	91
470	1003	FMT		102	101
507	1004	FMT		112	111
546	1005	FMT		121	120
575	1006	FMT		137	136
617	1007	FMT		150	149
0	8000		INACTIVE	74	73
0	8022		INACTIVE	117	116
10	9000			68	73

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
35	41	* I	85 88	208	EXT REFS	NOT INNER
40		* J	86 86	118	EXT REFS	
142	141	* I	126 129	208	EXT REFS	NOT INNER
145		* J	127 127	118	EXT REFS	

STATISTICS

PROGRAM LENGTH 7728 506

520008 CM USED

OVERLAY(FLIER,0,0)

-------- OVERLAY(FLIER,0,0)

FWA OF THE LOAD 111
LWA+1 OF THE LOAD 42431

TRANSFER ADDRESS -- EAGLE2 6015

PROGRAM AND BLOCK ASSIGNMENTS.

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCSSR	VER	LEVEL	HARDWARE	COMMENTS
EAGLE2	111	15073	LGO	04/19/78	FTN	4.6	460	666X I	PROGRAM OPT=1
CAL1	15204	75	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
CAL3	15301	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
CAL2	15325	121	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
CAL4	15446	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
HARCON	15472	106	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
SPREAD	15600	21	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
CAL	15621	50	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
ESCALAT	15671	1422	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
NEWRA	17313	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
CAL5	17337	50	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
PRODUC	17407	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
OUT	17433	1764	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
ADDL	21417	106	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
DIVIDEL	21525	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
ELEMENT	21551	301	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
RINSERT	22052	47	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
CUM	22121	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
ROWMCD	22145	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
APRINT	22171	264	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
GCS	22455	304	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
T1SL	22761	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
CINSERT	23005	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
WAMCHK	23031	133	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
MULT	23164	24	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
FILES	23210	772	LGO	04/19/78	FTN	4.6	460	666X I	SUBROUTINEOPT=1
PERMFIL	24202	1054	UL-S	04/28/77	COMPASS	3.	2-414		PERMFILE FUNCTION SUBROUTINE
RETURN	25256	70	UL-S	04/28/77	COMPASS	3.	2-414		FTN-CALLABLE FILE RETURN/UNLOAD
REQUEST	25346	472	UL-S	04/28/77	COMPASS	3.	2-414		FTN-CALLABLE EQUIPMENT REQUEST PROCESSOR
/STP.END/	26040	1							
/FCL.C./	26041	26							
/08.IO./	26067	141							
Q8NTRY=	26230	3	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		FCL INITIALIZATION ROUTINE.
COMIC=	26233	64	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		COMMON CODED I/O ROUTINES AND CONSTANTS.
DECODE=	26317	73	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		FORMATTED READ FROM CORE.
ENDFIL=	26412	27	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		WRITE END OF LOGICAL FILE MARK.
FECMSK=	26441	41	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		INITIALIZE CONSTANTS.
FLTOUT=	26502	311	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		COMMON FLOATING OUTPUT CODE
FORSYS=	27213	611	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		FORTRAN OBJECT LIBRARY UTILITIES.
INCOM=	27624	302	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		COMMON INPUT FORMATTING CODE
INPC=	30126	174	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		FORMATTED READ FORTRAN RECORD.
KRAKER=	30322	406	SL-FORTRAN	03/06/78	COMPASS	3.	4-446		PROCESS FORMATTED FORTRAN INPUT.

OVERLAY(FLIER,0,0)

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCESR VER	LEVEL	HARDWARE	COMMENTS
LDIN=	30730	260	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		LIST DIRECTED INPUT FORMATTING
OUTCOM=	31210	154	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		COMMON OUTPUT CODE
ENCODE=	31364	123	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		FORMATTED WRITE INTO CORE.
EOF	31507	16	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		TEST FOR END OF FILE STATUS.
FLTIN=	31525	156	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		COMMON FLOATING INPUT CONVERTER.
FMTAF=	31703	356	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		CRACK APLIST AND FORMAT FOR KOLER/KRAKER.
FORUTL=	32261	46	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		FCL MISC. UTILITIES.
GETFIT=	32327	42	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		LOCATE AN FIT GIVEN A FILE NAME.
INPF=	32371	203	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		LIST DIRECTED INPUT CONTROL
KODE=	32574	460	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		OUTPUT FORMAT INTERPRETER.
LDOUT=	33254	241	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		LIST DIRECTED OUTPUT FORMATTING
OUTC=	33515	156	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		FORMATTED WRITE FORTRAN RECORD.
OUTF=	33673	155	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		LIST DIRECTED OUTPUT CONTROL
SPA=	34050	11	SL-FORTRAN	03/06/78	COMPASS 3.	4-446		SPA= - SUBSTITUTE PARAMETER ADDRESSES.
SYSAID=	34061	1	SL-FORTRAN	03/16/78	COMPASS 3.	4-446		LINK BETWEEN SYS=AID AND INITIALIZATION CODE.
SYS.RM	34062	40	SL-SYSIO	02/15/78	COMPASS 3.	4-446		PROCESS SYSTEM REQUEST.
/CON.RM/	34122	6						
CIO.RM	34130	40	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/ABB.RM/	34170	10						
MOVE.PP	34200	66	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
MCT.RM	34266	233	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/JMPS.PM/	34521	11						
/MEMC.PM/	34532	3						
/OPES.FO/	34535	1						
/OPEN.FO/	34536	7						
OPEN.PP	34545	236	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/TERM.PM/	35003	1						
/PUT.FC/	35004	7						
PUT.SQ	35013	1477	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
WAR.SQ	36512	303	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/CLSF.FO/	37015	7						
CLSF.RM	37024	22	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/GET.RT/	37046	5						
BTRT.SQ	37053	115	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
WEOX.SQ	37170	150	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/SKFL.FO/	37340	7						
SKFL.SQ	37347	51	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
ERR.RM	37420	406	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
CHWR.SQ	40026	7	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
OSUB.RM	40035	71	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
OPEN.SQ	40126	305	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
OPEX.SQ	40433	14	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/PUT.RT/	40447	11						
RLEQ.RM	40460	43	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
CLSF.SQ	40523	136	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/CLSV.FO/	40661	7						
CLSV.SQ	40670	137	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/REW.FC/	41027	7						
REW.SQ	41036	42	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
/GET.FC/	41100	7						
/RPAR.XX/	41107	1						
/GET.RT/	41110	11						
GET.SQ	41121	1070	SL-SYSIO	03/03/78	COMPASS 3.	4-446		
Z.SQ	42211	110	SL-SYSIO	03/03/78	COMPASS 3.	4-446		

FSU.SQ 42321 110 SL-SYSIO 03/03/78 COMPASS 3. 4-446

1.275 CP SECONDS 62300B CM STORAGE USED 74 TABLE MOVES

```
  CSA     NOS/BE L454D ECS  L454D-CMR1 02/16/78
19.08.26.ZA8ADOS  FROM     /AD
19.08.26.IP  00008192 WORDS - FILE INPUT  , DC 84
19.08.26.ZA8,T25,IO180,CM100000.  A750567,KOVACS,
19.08.26.YYPF,54211
19.08.28.REMOTE JOB - - NO CARDS WITH THIS DECK P
19.08.28.UT IN BIN-YM
19.08.28.ATTACH,SOURCE2.
19.08.28.PFN IS
19.08.28.SOURCE2
19.08.28.PF CYCLE NO. = 014
19.08.28.FTN,I=SOURCE2,R=2.
19.13.25.      6.365 CP SECONDS COMPILATION TIME
19.13.25.ATTACH,S,NOSLIB,ID=X654321.
19.13.25.PF CYCLE NO. = 011
19.13.25.LIBRARY,S.
19.13.25.REQUEST,FLIER,*PF.
19.13.26.MAP,PART.
19.13.27.LOAD,LGO.
19.13.27.NOGO.
19.14.39.CATALOG,FLIER,EAGLE2,RP=999.
19.14.40.INITIAL CATALOG
19.14.40.CT ID=  A750567 PFN=EAGLE2
19.14.40.CT CY= 001  00017664 WORDS.
19.14.41.OP  00023168 WORDS - FILE OUTPUT , DC 40
19.14.41.MS   43008  WORDS  (   50176 MAX USED)
19.14.41.SCM  64000  WORDS MAXIMUM
19.14.41.CPA       7.784 SEC.          3.378 ADJ.
19.14.41.IO       59.322 SEC.         29.678 ADJ.
19.14.41.CM     1345.932 KWS.         10.778 ADJ.
19.14.41.CRUS                         43.828
19.14.41.COST                  $       2.62
19.14.41.PP       68.255 SEC.    DATE 04/19/78
19.14.41.EJ  END OF JOB, AD  A750567.


**********          ZA8ADOS  //// END OF LIST ////
**********          ZA8ADOS  //// END OF LIST ////
```

2 79 / 2 80

EAGLE3

```
      C/
      *DECK EAGLE3
            OVERLAY(FLIER,0,0)
      C
      C                    MAIN
      C
      C THIS ROUTINE ENABLES THE USER TO CONTROL THE PROGRAM AND PROVIDES AN
      C
      C INTERFACE WITH OTHER ROUTINES.
      C
      C/
      C
            PROGRAM EAGLE3(INPUT=5138,OUTPUT=5138,TAPE5=INPUT,TAPE6=OUTPUT,
           *TAPE1=5138,TAPE2=5138,TAPE3=5138,TAPE4=5138,TAPE7=5138,
           *TAPE8=5138)
            DIMENSION HEADW(50,8),A(50,20),B(50,20)
            INTEGER PROOM(10,20)
            DATA IABC/7/
       9000 PRINT 1000
       1000 FORMAT(* THIS IS EAGLE3.  A USER'S MANUAL EXISTS.  ENTER 1 TO CONT
           1INUE. *)
      C
      C
      C
            READ*,IA
            IF(EOF(5))9000,8000
       8000 CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555) WRITE(6,2)00)
         88 PRINT 1002
       1002 FORMAT(* ENTER THE NUMBER OF YEARS OVER WHICH COST DATA WILL BE GE
           *NERATED.*)
            READ*,NYEARS
            IF(EOF(5))  66,8088
       8088 CONTINUE
            WRITE(4,*)NYEARS
            IF(NYEARS.GT.1000)CALL GOS(NYEARS),
           XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
           *425)
            IF(NYEARS.EQ.555) WRITE(6,2000)
        400 PRINT 1003
       1003 FORMAT(* ENTER THE NUMBER OF COST ELEMENTS IN THE OUTPUT ARRAY.*)
            READ*,NROWS
            IF(EOF(5)) 400,8400
       8400 CONTINUE
            WRITE(4,*)NROWS
            IF(NROWS.GT.1000)CALL GOS(NROWS),
           XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
           *425)
            IF(NROWS.EQ.555) WRITE(6,2000)
        401 PRINT 1050
       1050   FORMAT(* IF YOU HAVE EXISTING FILES TO INPUT TO ARRAYS ENTER 1,
           *OTHERWISE ENTER 2.*)
             READ*,IFI
            IF(EOF(5)) 401,8401
       8401 CONTINUE
            WRITE(4,*)IFI
```

3 01

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      IF(IFI.GT.1000)CALL GCS(IFI),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IFI.EQ.555) WRITE(6,2000)
      I19=1
      IF(IFI.EQ.1)CALL FILES(A,HEADW,PRODM,I19)
  402 PRINT 1052
 1052   FORMAT(* TO MODIFY PARTICULIAR ROWS IN THE HEADING, COST OR PROD
     *JCTION SCHEDULE ARRAYS ENTER 1, OTHERWISE 2.0*)
      READ*,M4
      IF(EOF(5)) 402,8402
 8402 CONTINUE
      WRITE(4,*)M4
      IF(M4.GT.1000)CALL GCS(M4),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(M4.EQ.555) WRITE(6,2000)
      IF(M4.EQ.1)CALL ROWMOD(HEADW,A,PRODM,NYEARS,COST)
  403 PRINT 1053
 1053   FORMAT(* TO MODIFY AN ELEMENT OF THE COST ARRAY ENTER 1, OTHERWI
     *SE 2*)
      READ*,M6
      IF(EOF(5)) 403,8403
 8403 CONTINUE
      WRITE(4,*)M6
      IF(M6.GT.1000)CALL GCS(M6),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(M6.EQ.555) WRITE(6,2000)
      IF(M6.EQ.1)CALL ELEMENT(A)
  404 PRINT 1055
 1055 FORMAT(* TO INSERT A ROW IN THE HEADING AND COST ARRAYS ENTER 1, O
     *THERWISE 2*)
      READ*,N5
      IF(EOF(5)) 404,8404
 8404 CONTINUE
      WRITE(4,*)N5
      IF(N5.GT.1000)CALL GCS(N5),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(N5.EQ.555) WRITE(6,2000)
      IF(N5.EQ.1)CALL RINSERT(A,NYEARS,NROWS,HEADW,PRODM)
  405 PRINT 1009
 1009 FORMAT(* TO SPECIFY OR MODIFY THE PRODUCTION SCHEDULE ENTER 1 OTHE
     *RWISE ENTER 2*)
      READ*,I6
      IF(EOF(5)) 405,8405
 8405 CONTINUE
      WRITE(4,*)I6
      IF(I6.GT.1000)CALL GCS(I6),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(I6.EQ.555) WRITE(6,2000)
      IF(I6.EQ.1)CALL PRODUC(PRODM)
  406 PRINT 1001
 1001 FORMAT(* TO CONSTRUCT OR MODIFY THE HEADING ARRAY ENTER 1, OTHERWI
     *SE ENTER 2*)
```

3 02

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      READ*,IB
      IF(EOF(5)) 406,8406
 8406 CONTINUE
      WRITE(4,*)IB
      IF(IB.GT.1000)CALL GOS(IB),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IB.EQ.555) WRITE(6,2000)
      IF(IB.EQ.1)CALL HARDON(HEADW,NROWS)
   77 PRINT 1004
 1004 FORMAT(* TO PERFORM CALCULATIONS ENTER 1, OTHERWISE ENTER 2*)
      READ*,ID
      IF(EOF(5))  77,8077
 8077 CONTINUE
      WRITE(4,*)ID
      IF(ID.GT.1000)CALL GOS(ID),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(ID.EQ.555) WRITE(6,2000)
      IF(ID.EQ.1)CALL CAL(A,NYEARS,NROWS,PROD1,HEADW)
  407 PRINT 1008
 1008 FORMAT(* TO SPREAD THE DATA ENTER 1, OTHERWISE ENTER 2*)
      READ*,I4
      IF(EOF(5)) 407,8407
 8407  CONTINUE
      WRITE(4,*)I4
      IF(I4.GT.1000)CALL GOS(I4),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(I4.EQ.555) WRITE(6,2000)
      IF(I4.EQ.1)CALL SPREAD(A,NYEARS,NROWS)
  408 PRINT 1006
 1006 FORMAT(* TO CALCULATE THEN YEAR DOLLAR COSTS OR TO CHANGE THE BASE
     *LINE YEAR ENTER 1, OTHERWISE ENTER 2*)
      READ*,IF
      IF(EOF(5)) 408,8408
 8408 CONTINUE
      WRITE(4,*)IF
      IF(IF.GT.1000)CALL GOS(IF),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IF.EQ.555) WRITE(6,2000)
      IF(IF.EQ.1)CALL ESCALAT (A,B,NYEARS,NROWS)
       IF(IF.NE.1)GO TO 425
       DO 281 I=1,50
       DO 281 J=1,20
  281   A(I,J)=B(I,J)
  425  PRINT 1025
 1025 FORMAT(* TO INSERT A COLUMN IN THE COST ARRAY ENTER 1, OTHERWISE 2
     *,0*)
       READ*,IIN
      IF(EOF(5))425,8025
 8025 CONTINUE
      WRITE(4,*)IIN
      IF(IIN.GT.1000)CALL GOS(IIN),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
```

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      IF(IIN.EQ.555) WRITE(6,2000)
      IF(IIN.EQ.1)CALL CINSERT(A,NYEARS)
  677  PRINT 1005
 175  1005 FORMAT(* TO OUTPUT THE COST DATA ENTER 1, OTHERWISE ENTER 2*)
      READ*,IE
      IF(EOF(5)) 677,8677
 8677 CONTINUE
      WRITE(4,*)IE
 180   IF(IE.GT.1000)CALL GOS(IE),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IE.EQ.555) WRITE(6,2000)
      IF(IE.EQ.1)CALL OUT(A,NYEARS,NROWS,HEAD)
 185   409 PRINT 1054
 1054 FORMAT(    * IF A PRINTOUT OF THE COST, HEADING AND/OR PRODUCTION S
     *CHEDULE ARRAY IS DESIRED ENTER 1, OTHERWISE 2*)
      READ*,M8
      IF(EOF(5)) 409,8409
 190  8409 CONTINUE
      WRITE(4,*)M8
      IF(M8.GT.1000)CALL GOS(M8),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
 195   IF(M8.EQ.555) WRITE(6,2000)
      IF(M8.EQ.1)CALL APRINT(NYEARS,NROWS,A,HEADW,PRODM)
       410 PRINT 1051
 1051 FORMAT(* IF YOU WISH TO SAVE EXISTING ARRAYS ENTER 1 OTHERWISE 2*
     *)
 200   READ*,IZT
      IF(EOF(5)) 410,8410
 8410 CONTINUE
      WRITE(4,*)IZT
      IF(IZT.GT.1000)CALL GOS(IZT),
 205  XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
      IF(IZT.EQ.555) WRITE(6,2000)
      I19=2
       IF(IZT.EQ.1)CALL FILES(A,HEADW,PRODM,I19)
 210   411 PRINT 1007
 1007 FORMAT(* ENTER 2 TO TERMINATE, 1 TO CONTINUE AND 2000 FOR AN EXPLA
     *NATION OF GOS.*)
      READ*,IG
      IF(EOF(5)) 411,8411
 215  8411 CONTINUE
      WRITE(4,*)IG
      IF(IG.GT.1000)CALL GOS(IG),
     XRETURNS(88,400,401,402,403,404,405,406,77,407,408,677,409,410,411,
     *425)
 220   IF(IG.EQ.555) WRITE(6,2000)
      IF(IG.EQ.1)GO TO 88
      IF(IG.EQ.2000)GO TO 411
      STOP
C
 225  2000 FORMAT(10X,*ROUTINE HELP DOES NOT EXIST IN EAGLE3* )
      END
```

3 04

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
5664 EAGLE3 13

VARIABLES SN TYPE RELOCATION

10623	A	REAL	ARRAY	REFS	16	63	75	87	99	134	145
				157	173	184	196	209	DEFINED	161	
12573	B	REAL	ARRAY	REFS	16	157	161				
7764	COST	* REAL		REFS	75						
10003	HEADW	REAL	ARRAY	REFS	15	63	75	99	123	134	184
				196	209						
7774	I	INTEGER		REFS	2*151	DEFINED	159				
7756	IA	INTEGER		REFS	28	29	DEFINED	25			
7156	IABC	* INTEGER		DEFINED	18						
7770	IB	INTEGER		REFS	118	2*119	122	123	DEFINED	115	
7771	ID	INTEGER		REFS	129	2*130	133	134	DEFINED	126	
7777	IE	INTEGER		REFS	179	2*180	183	184	DEFINED	176	
7773	IF	INTEGER		REFS	152	2*153	156	157	158		
				DEFINED	169						
7761	IFI	INTEGER		REFS	57	2*58	61	63	DEFINED	54	
10002	IG	INTEGER		REFS	216	2*217	220	221	222		
				DEFINED	213						
7776	IIN	INTEGER		REFS	168	2*169	172	173	DEFINED	165	
10001	IZT	INTEGER		REFS	203	2*204	207	209	DEFINED	200	
7762	I19	INTEGER		REFS	53	209	DEFINED	62	208		
7772	I4	INTEGER		REFS	140	2*141	144	145	DEFINED	137	
7767	I6	INTEGER		REFS	105	2*107	110	111	DEFINED	103	
7775	J	INTEGER		REFS	2*151	DEFINED	160				
7763	M4	INTEGER		REFS	70	2*71	74	75	DEFINED	67	
7765	M6	INTEGER		REFS	82	2*83	86	87	DEFINED	79	
10000	M8	INTEGER		REFS	191	2*192	195	196	DEFINED	188	
7760	NROWS	INTEGER		REFS	45	2*47	50	99	123	134	145
				157	134	196	DEFINED	43			
7757	NYEARS	INTEGER		REFS	36	2*37	40	75	99	134	145
				157	173	184	196	DEFINED	33		
7766	N5	INTEGER		REFS	94	2*95	98	99	DEFINED	91	
14543	PROOM	INTEGER	ARRAY	REFS	17	63	75	99	111	134	196
				209							

FILE NAMES MODE

0	INPUT	FREE	READS	25	33	43	54	67	79	91	103
			115	126	137	149	165	176	188	200	213
565	OUTPUT	FMT	WRITES	19	30	41	51	64	76	88	100
			112	124	135	146	162	174	185	197	210
1352	TAPE1										
2137	TAPE2										
2724	TAPE3										
3511	TAPE4	FREE	WRITES	28	86	46	57	70	82	94	106
			118	129	140	152	168	179	191	203	216
0	TAPE5										
565	TAPE6	FMT	WRITES	29	40	50	61	74	86	98	110
			122	133	144	156	172	183	195	207	220
4276	TAPE7										
5063	TAPE8										

3 05

EXTERNALS	TYPE	ARGS	REFERENCES								
APRINT		5	196								
CAL		5	134								
CINSERT		2	173								
ELEMENT		1	87								
EOF	REAL	1	26	34	44	55	68	80	92	104	116
			127	138	150	166	177	189	201	214	
ESCALAT		4	157								
FILES		4	63	209							
GCS		1	37	47	58	71	83	95	107	119	130
			141	153	159	180	192	204	217		
HARCON		2	123								
OUT		4	184								
PRODUC		1	111								
RINSERT		5	99								
ROWMOD		5	75								
SPREAD		3	145								

STATEMENT LABELS			DEF LINE	REFERENCES								
6131	77		124	37	47	58	71	83	95	107	119	127
				130	141	153	169	180	192	204	217	
5701	88		30	34	37	47	58	71	83	95	107	119
				130	141	153	169	180	192	204	217	221
0	281		161	159	160							
5721	400		41	37	44	47	58	71	83	95	107	119
				130	141	153	169	180	192	204	217	
5741	401		51	37	47	55	58	71	83	95	107	119
				130	141	153	169	180	192	204	217	
5765	402		64	37	47	58	66	71	83	95	107	119
				130	141	153	169	180	192	204	217	
6011	403		76	37	47	58	71	80	83	95	107	119
				130	141	153	169	180	192	204	217	
6035	404		88	37	47	58	71	83	92	95	107	119
				130	141	153	163	180	192	204	217	
6061	405		100	37	47	58	71	83	95	104	107	119
				130	141	153	169	180	192	204	217	
6105	406		112	37	47	58	71	83	95	107	116	119
				130	141	153	169	180	192	204	217	
6155	407		135	37	47	58	71	83	95	107	119	130
				138	141	153	169	180	192	204	217	
6201	408		146	37	47	58	71	83	95	107	119	130
				141	150	153	163	180	192	204	217	
6313	409		185	37	47	58	71	83	95	107	119	130
				141	153	159	180	189	192	204	217	
6337	410		197	37	47	58	71	83	95	107	119	130
				141	153	159	180	192	201	204	217	
6364	411		210	37	47	58	71	83	95	107	119	130
				141	153	159	180	192	204	214	217	222
6243	425		162	37	47	58	71	83	95	107	119	130
				141	153	158	166	169	180	192	204	217
6267	677		174	37	47	58	71	83	95	107	119	130
				141	153	159	177	180	192	204	217	
7162	1000	FMT	20	19								
7444	1001	FMT	113	112								
7207	1002	FMT	31	30								
7235	1003	FMT	42	41								
7472	1004	FMT	125	124								

STATEMENT LABELS

			DEF LINE	REFERENCES
7620	1005	FMT	175	174
7542	1006	FMT	147	146
7723	1007	FMT	211	210
7516	1008	FMT	136	135
7416	1009	FMT	101	100
7573	1025	FMT	163	162
7262	1050	FMT	52	51
7676	1051	FMT	198	197
7311	1052	FMT	65	64
7343	1053	FMT	77	76
7644	1054	FMT	186	185
7370	1055	FMT	89	88
7746	2000	FMT	225	29 40 50 61 74 86 98 110 122 133 144 155 172 183 195 207 220
0	8000	INACTIVE	27	26
0	8025	INACTIVE	167	166
0	8077	INACTIVE	128	127
0	8088	INACTIVE	35	34
0	8400	INACTIVE	45	44
0	8401	INACTIVE	56	55
0	8402	INACTIVE	69	68
0	8403	INACTIVE	81	80
0	8404	INACTIVE	93	92
0	8405	INACTIVE	105	104
0	8406	INACTIVE	117	116
0	8407	INACTIVE	139	138
0	8408	INACTIVE	151	150
0	8409	INACTIVE	190	189
0	8410	INACTIVE	202	201
0	8411	INACTIVE	215	214
0	8677	INACTIVE	178	177
5665	9000		19	26

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
6230	281	* I	159 161	13R	NOT INNER
6234	281	J	160 161	3B	INSTACK

STATISTICS

PROGRAM LENGTH	72038	3715
BUFFER LENGTH	56508	2984

520008 CM USED

3 07

```
      *DECK DAL1
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        HEADM(50,8) PROVIDES THE HEADINGS FOR THE ROWS OF THE COST ARRA
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        B(50,20) CONTAINS THE COST INFORMATION ON THE RETURN FROM
      C             ROUTINE ESCALAT.
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES FOR THE EQUIPMEN
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA IS AN INDEX THAT ALLOWS CONTINUED PROGRAM OPERATION.
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        NROWS IS THE NUMBER OF ROWS OF COST DATA THAT WILL BE OUTPUT.
      C
      C        IB IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
      C             SPECIFICATION OF THE HEADINGS WILL BE UTILIZED.
      C
      C        ID IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
      C             CALCULATIONS TO BE MADE WILL BE UTILIZED.
      C
      C        I4 IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
      C             THE SPREADING OF COST DATA WILL BE UTILIZED.
      C
      C        IE IS AN INDEX THAT DELINEATES WHETHER THE ROUTINE THAT ENABLES
      C             THE OUTPUT OF COST DATA WILL BE UTILIZED.
      C
      C        IF IS AN INDEX THAT DELINEATES WHETHER THE BASELINE COSTS WILL
      C             CONVERTED TO A NEW BASELINE, OR TO THEN YEAR DOLLARS,
      C             OR REMAIN UNCHANGED.
      C
      C        I6 IS AN INDEX THAT DELINEATES WHETHER THE PRODUCTION SCHEDULE
      C             WILL BE SPECIFIED OR LEFT UNCHANGED.
      C
      C        IG IS AN INDEX THAT DELINEATES WHETHER ANOTHER CASE WILL BE GEN
      C             IT ALSO DELINEATES WHETHER CERTAIN INFORMATION WILL BE UNC
      C             FROM THE PREVIOUS CASE.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        IFI DELINEATES WHETHER EXISTING FILES ARE TO BE INPUT.
      C
      C        M4 DELINEATES WHETHER ROW MODIFICATION IS TO OCCUR.
      C
      C        I6 DELINEATES WHETHER AN ELEMENT OF THE COST ARRAY IS TO BE MOD
      C
      C        N5 DELINEATES WHETHER A ROW IS TO BE INSERTED IN THE COST OR HE
```

```
C             ARRAYS.
C
C        IIN DELINEATES WHETHER A COLUMN IS TO BE INSERTED IN THE COST A
C
C        M8 DELINEATES WHETHER AN ARRAY IS TO BE OUTPUT.
C
C        IZT DELINEATES WHETHER AN ARRAY IS TO BE PLACED ON FILE.
C
C  ********VARIABLES********
C
C/
C
C            SUBROUTINE CAL1(COST,PRODM,INCRE)
C
C GIVEN THE COST OF THE FIRST ARTICLE, T1, THE LEARNING RATE, RATE, A
C
C PRODUCTION SCHEDULE, PROD, AND THE NUMBER OF TIME INCREMENTS TO BE CON
C
C INCRE, THEN THE SUBROUTINE CAL1 CALCULATES THE COST OF THE ITEMS IN
C
C QUESTION FOR EACH TIME INCREMENT IN BASELINE DOLLARS AND STORES THE
C
C INFORMATION IN THE ARRAY TITLED COST.
C
C THE FORMULA USED TO CALCULATE THE COST OF THE I TH ITEM IS
C
C              T1*(I**(ALOG(RATE)/ALOG(2.)))
C
C/
C
      SUBROUTINE CAL1(COST,PRODM,INCRE)
      DIMENSION COST(20),IX(21)
      INTEGER PRODM(10,20),PROD(20)
[illegible]
[illegible]
[illegible] IN THE OTHER VERSION OF EAGLE.*)
      RETURN
*DECK CAL3
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS	DEF LINE	REFERENCES
3 CAL1	88	94

VARIABLES	SN	TYPE		RELOCATION				
0 COST		REAL	ARRAY	F.P.	REFS	39	DEFINED	88
10 IABC	*	INTEGER			DEFINED	91		
0 INCRE		INTEGER	*UNUSED	F.P.	DEFINED	88		
24 IX		INTEGER	*UNDEF		REFS	89		
51 PROD		INTEGER	*UNDEF		REFS	90		
0 PRODM		INTEGER	ARRAY	F.P.	REFS	90	DEFINED	88

3 09

WRITES 92

	DEF LINE	REFERENCES
	93	92

PROGRAM LENGTH	759	61

000009 CM USED

```
C/
C
C  ********ARRAYS********
C
C       PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES FOR ALL THE EQUI
C
C       COST(20) TRANSFERS THE COST INFORMATION AND
C            IS ALSO USED IN MAKING THE COST CALCULATIONS.
C
C       PROD(20) DELINEATES THE NUMBER OF ITEMS PRODUCED
C            DURING EACH TIME INCREMENT.
C
C       IX(21) IS AN ARRAY WHOSE SECOND THUR 21ST ELEMENTS ARE SET EQUA
C            ELEMENTS OF PROD.  IX(1) IS SET EQUAL TO ZERO AND IX IS TH
C            CONVERTED INTO A CUMULATIVE ARRAY.
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C       JJ3 IS AN INDEX DELINEAING THE PRODUCTION SCHEDULE TO BE USED.
C
C       RATE IS THE LEARNING RATE, I.E., THE RATIO BETWEEN THE COST OF
C            THE N TH AND 2N TH ITEMS.
C
C       INCRE IS THE NUMBER OF INCREMENTS (USUALLY YEARS) FOR WHICH
C            CALCULATIONS ARE BEING MADE.
C
C       T1 IS THE COST OF THE FIRST ARTICLE PRODUCED.
C
C       A, IA, AND IB ARE TERMS USED IN THE CALCULATION.
C
C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C
C/
C
C                  SUBROUTINE CAL3(A,COST)
C
C THIS SUBROUTINE CALCULATES A FRACTION OF AN EXISTING ROW IN THE COST
C
C ARRAY, A.  THE USER SPECIFIES THE ROW OF A, IA, AND THE ASSOCIATED
C
C FRACTION.  THE NEW COST INFORMATION IS STORED AND TRANSFERRED IN THE A
C
C COST.
C
C/
C
      SUBROUTINE CAL3(A,COST,NYEARS)
      DIMENSION A(50,20),COST(20)
      DATA IABC/10/
      PRINT 4441
 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
      RETURN
*DECK CAL2
```

```
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CAL3	51	56

VARIABLES	SN	TYPE		RELOCATION				
0	A	REAL	ARRAY	F.P.	REFS	52	DEFINED	51
0	COST	REAL	ARRAY	F.P.	REFS	52	DEFINED	51
10	IABC	* INTEGER			DEFINED	53		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	51		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	54

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	55	54

STATISTICS

PROGRAM LENGTH	248	20

520008 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) IS THE ARRAY CONTAINING THE COST INFORMATION.
      C
      C        COST(20) IS USED TO STORE AND TRANSFER THE NEWLY CALCULATED COS
      C            INFORMATION.
      C
      C  $$$$$$$$ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OVER WHICH COST INFORMATION IS
      C            CALCULATED.
      C
      C        IA IS THE ROW OF INTEREST IN ARRAY A.
      C
      C        FRAC IS THE FRACTION OF THE ROW TO BE TAKEN.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C              SUBROUTINE CAL2(COST,PRODM,INCRE)
      C
      C     GIVEN THE COST OF THE FIRST ARTICLE, T1, A SET OF LEARNING RATES
      C     ,RATES, A STIPULATION OF THE NUMBER OF THE PRODUCTION
      C     ITEM WHEN EACH RATE BECOMES EFFECTIVE, IUNIT, THE TIME
      C     INTERVAL TO BE CONSIDERED, INCRE, AND THE PRODUCTION SCHEDULE,
      C     PROD, THEN SUBROUTINE CAL2 CALCULATES THE COST FOR EACH YEAR
      C     IN BASELINE DOLLARS.
      C     THE FORMULA USED TO CALCULATE THE COST OF THE I TH ITEM IS
      C                        T1*(I**(ALOG(RATE(.))/ALOG(2.)))
      C     IF A NEW LEARNING RATE IS TO COMMENCE WITH THE J TH ARTICLE THEN A
      C     T1 IS CALCULATED SO THAT THE COST OF THE (J-1) TH ARTICLE WILL REM
      C     UNCHANGED, NAMELY,
      C                     T1(NEW)=T1(OLD)*((J-1)**(OLD RATE - NEW RATE))
      C
      C/
      C
            SUBROUTINE CAL2(COST,PRODM,INCRE)
            DIMENSION COST(20),RATES(10),IUNIT(10),IX(21)
```

```
                INTEGER PRODM(10,20),PROD(20)
                DATA IABC/2/
60              PRINT 4441
             4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
                RETURN
             *DECK CAL4
                END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CAL2	55	62

VARIABLES	SN	TYPE		RELOCATION				
0	COST	REAL	ARRAY	F.P.	REFS	57	DEFINED	56
10	IABC	* INTEGER			DEFINED	59		
0	INCRE	INTEGER	*UNUSED	F.P.	DEFINED	55		
36	IUNIT	INTEGER	*UNDEF		REFS	57		
50	IX	INTEGER	*UNDEF		REFS	57		
75	PROD	INTEGER	*UNDEF		REFS	58		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	58	DEFINED	56
24	RATES	REAL	*UNDEF		REFS	57		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	60

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	61	60

STATISTICS

PROGRAM LENGTH 1218 91

520008 CM USED

3 14

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        PROD1(10,20) CONTAINS THE PRODUCTION SCHEDULES FOR ALL EQUIPMEN
      C
      C        IX(21) IS AN ARRAY WHOSE 2ND THUR 21ST E.EMENTS ARE SET EQUAL T
      C             PROD.  IX(1) IS SET EQUAL TO ZERO AND IX IS THEN
      C             CONVERTED TO A CUMULATIVE ARRAY.
      C
      C        PROD(20) DELINEATES THE NUMBER OF ITEMS PRODUCED
      C             DURING EACH TIME INCREMENT.
      C
      C        COST(20) TRANSFERS THE COST INFORMATION.
      C             IT IS ALSO USED IN MAKING THE COST CALCULATIONS.
      C
      C        RATES(10) CONTAINS THE LEARNING RATES THAT WILL EXIST OVER THE
      C             PRODUCTION LIFE.
      C
      C        IUNIT(10) CONTAINS THE NUMBER OF THE PRODUCTION ITEM AT WHICH A
      C             NEW LEARNING RATE BECOMES APPLICABLE.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        A, IA, AND IB ARE TERMS USED IN THE CALCULATION.
      C
      C        T1 IS THE COST OF THE FIRST UNIT.  FOR MATHEMATICAL REASONS A N
      C             VALUE OF T1 IS CALCULATED AT EACH CHANGE IN THE LEARNING R
      C
      C        KK IS AN INDEX USED TO SPECIFY THE APPROPRIATE ELEMENT OF RATES
      C             AND IUNIT.
      C
      C        JJ3 DELINEATES THE PRODUCTION SCHEDULE TO BE USED.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE CAL4(COST,NYEARS)
      C
      C THIS ROUTINE ENABLES DIRECT SPECIFICATION OF A ROW IN THE COST ARRAY.
      C
      C/
      C
            SUBROUTINE CAL4(COST,NYEARS)
            DIMENSION COST(20)
            DATA IABC/11/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK 4ARCON
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 CAL4 50 55

VARIABLES SN TYPE RELOCATION
0 COST REAL ARRAY F.P. REFS 51 DEFINED 50
10 IABC * INTEGER DEFINED 52
0 NYEARS INTEGER *UNUSED F.P. DEFINED 50

FILE NAMES MODE
OUTPUT FMT WRITES 53

STATEMENT LABELS DEF LINE REFERENCES
14 4441 FMT 54 53

STATISTICS
PROGRAM LENGTH 248 20
520008 CM USED

```
      C
      C/
      C
      C  $$$$$$$$ARRAYS********
      C
      C        COST(20) THIS ARRAY STORES AND TRANSFERS THE SPECIFIED COST
      C             INFORMATION.
      C
      C  $$$$$$$$ARRAYS********
      C
      C  $$$$$$$$VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OVER WHICH THE CALCULATION IS MAD
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE HARCON(HEADW,NROWS)
      C
      C THIS ROUTINE ENABLES THE CONSRUCTION OF AN ARRAY CONTAINING THE
      C
      C TITLES OF EACH ROW OF THE OUTPUT ARRAY.
      C
      C/
            SUBROUTINE HARCON(HEADW,NROWS)
            DIMENSION HEADW(50,5)
            DATA IABC/9/
            DO 123 I=1,NROWS
            PRINT 1000,I
       1000 FORMAT(* SPECIFY THE HEADING FOR ROW NUMBER*,I3)
            READ 25,(HEADW(I,J),J=1,8)
            WRITE(4,25)(HEADW(I,J),J=1,8)
         25 FORMAT(8A10)
        123 CONTINUE
            RETURN
           *DECK SPREAD
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	HARCON	28	38

VARIABLES

		SN	TYPE		RELOCATION					
0	HEADW		REAL	ARRAY	F.P.	REFS	29	35	DEFINED 28	34
107	I		INTEGER			REFS	32	34	35 DEFINED	31
55	IABC	*	INTEGER			DEFINED	30			
110	J		INTEGER			REFS	34	35	DEFINED 34	35
0	NROWS		INTEGER		F.P.	REFS	31	DEFINED	28	

FILE NAMES MODE

INPUT	FMT	READS	34
OUTPUT	FMT	WRITES	32
TAPE4	FMT	WRITES	35

STATEMENT LABELS			DEF LINE	REFERENCES	
105	25	FMT	36	34	35
0	123		37	31	
62	1000	FMT	33	32	

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
16	123	* I	31 37	378	EXT REFS	NOT INNER
23		* J	34 34	118	EXT REFS	
40		* J	35 35	118	EXT REFS	

STATISTICS

PROGRAM LENGTH 1168 78

520008 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR EACH ROW IN THE COST
      C                    ARRAY.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C/
      C
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) IS THE ARRAY CONTAINING THE ORIGINAL COST DATA.  UPON
      C             RETURN FROM THIS SUBROUTINE IT CONTAINS THE COSTS AFTER
      C             SPREADING.
      C
      C        B(50,30) IS USED IN CALCULATING THE SPREAD COST DATA.
      C
      C        SPR(50,9) IS USED TO SPECIFY HOW THE COSTS ARE SPREAD.
      C             IF A COST IS ORIGINALLY SPECIFIED FOR YEAR J THEN THIS ROU
      C             CAN SPREAD THE COSTS OVER THE (J-4)TH TO THE (J+4)TH YEAR.
      C             SPR CAN CONTAIN 50 DIFFERENT SPREADING ARRAYS.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA IS AN INDEX THAT DELINEATES WHETHER AN EXPLANATION OF THIS
      C             ROUTINE WILL BE OUTPUT.
      C
      C        IB DELINEATES IF THE DEFAULT ARRAY WILL BE ACCEPTED.
      C
      C        IC HAS THE SAME FUNCTION AS IB.
      C
      C        ID DELINEATES WHETHER EACH COST IS TO BE IDENTICALLY SPREAD.
      C
      C        IE IS THE NUMBER OF DIFFERENT WAYS THE COST DATA WILL BE SPREAD
      C
      C        IF DELINEATES THE SPREADING VERSION TO BE USED.
      C
      C        KK IS USED TO DETERMINE THE FIRST NON-ZERO COST COLUMN
      C             OF ARRAY B AND TO SET THIS COLUMN EQUAL TO THE FIRST COLUM
      C             IN ARRAY A.
      C
      C        KA IS USED TO INDEX THE COLUMNS OF THE COST ARRAY.  IT IS THE L
      C             NON-ZERO COLUMN NUMBER.
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.----NOTE. THIS VALUE
```

```
C             MAY CHANGE AS THE RESULT OF SPREADING.
C
C         NROWS IS THE NUMBER OF DIFFERENT COST ELEMENTS (ROWS) IN
C                   THE COST ARRAY.
C
C          IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C  ********VARIABLES********
C
C/
C
C                   SUBROUTINE CAL(A,NYEARS,NROWS,PRODM,HEADW)
C
C THIS ROUTINE PROVIDES AN INTERFACE WITH THE ROUTINES THAT
C
C PERFORM CALCULATIONS.  THE ROUTINE PROVIDES INITIAL PROMPTING TO THE U
C
C SO THAT DETAILED PROMPTING IS NOT REPEATED EVERY TIME A CALCULATING
C
C ROUTINE IS CALLED.
C
C/
C
      SUBROUTINE CAL(A,NYEARS,NROWS,PRODM,HEADW)
      DIMENSION A(50,20),COST(20),HEADW(50,8)
      INTEGER PRODM(10,20)
      DATA IABC/1/
      PRINT 4441
 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
      RETURN
*DECK ESCALAT
      END
```

3 20

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS — DEF LINE — REFERENCES

3	CAL	82	88

VARIABLES — SN — TYPE — RELOCATION

0	A	REAL	ARRAY	F.P.	REFS	83	DEFINED	82
24	COST	REAL	*UNDEF		REFS	83		
0	HEADW	REAL	ARRAY	F.P.	REFS	83	DEFINED	82
10	IABC	* INTEGER			DEFINED	85		
0	NROWS	INTEGER	*UNUSED	F.P.	DEFINED	82		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	82		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	84	DEFINED	82

FILE NAMES — MODE

OUTPUT	FMT	WRITES	86

STATEMENT LABELS

		DEF LINE	REFERENCES
14	4441 FMT	87	86

STATISTICS

PROGRAM LENGTH	508	40

520009 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) STORES COST DATA.
      C
      C        COST(20) TRANSFERS THE COST DATA OBTAINED FROM A
      C             PARTICULIAR CALCULATION.
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.  EACH
      C             ELEMENT REPRESENTS 1 YEAR.
      C
      C        HEADW(50,8) CONTAINS THE HEADING FOR EACH ROW IN THE COST ARRAY
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES******** .
      C
      C        IA IS AN INDEX DELINEATING WHETHER AN EXPLANATION OF THE ROUTIN
      C             IS REQUIRED.
      C
      C        NROWS IS THE NUMBER OF COST ELEMENTS IN THE COST ARRAY.
      C
      C        NYEARS IS THE NUMBER OF YEARS OVER WHICH COSTS OCCUR.
      C
      C        IB IS AN INDEX THAT DELINEATES THE TYPE OF CALCULATION TO BE
      C             PERFORMED.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        KKK DELINEATES THE ROW OF THE COST ARRAY BEING CALCULATED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE ESCALAT (A,B,NYEARS,NROWS)
      C
      C THIS ROUTINE RECEIVES COST DATA IN BASELINE YEAR DOLLARS AND TRANSFORM
      C
      C THE DATA INTO THEN YEAR DOLLARS OR INTO DIFFERENT BASELINE DOLLARS.
      C
      C THE COMPUTATIONAL PROCEDURE IS AS FOLLOWS.----------THE ARRAY,
      C
      C A, CONTAINS THE COSTS PER SEGMENT PER YEAR IN A GIVEN YEAR DOLLARS.
      C
      C BY SPECIFYING THE APPROPRIATE INFLATION OR DEFLATION FACTORS, OR A
      C
      C SET OF DEFAULT VALUES, THE COSTS ARE TRANSFORMED.
      C
      C THE BASELINE YEAR DOES NOT HAVE TO BE THE YEAR CORRESPOND-
      C
      C ING TO THE FIRST ELEMENT OF THE ESCALATION ARRAY, BUT THE CORRESPON-
      C
      C DANCE MUST BE SPECIFIED.
      C
```

```
                C/
                      SUBROUTINE ESCALAT (A,B,NYEARS,NROWS)
      60              DIMENSION A(50,20),B(50,20),ESC(20),ES(20)
                      DATA IABC/8/
                C
                C** DEFINE DEFAULT ESCALATION ARRAY.
                      DATA (ESC(I),I=1,20)/2*1.,1.027,1.067,1.062,1.057,14*1.055/
      65               9688 PRINT 688
                       688  FORMAT(* *,* SUBROUTINE ESCALAT DOES NOT EXIST HERE..*)
                            RETURN
                            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	ESCALAT	59	67

VARIABLES	SN	TYPE		RELOCATION				
0	A	REAL	ARRAY	F.P.	REFS	60	DEFINED	59
0	B	REAL	ARRAY	F.P.	REFS	60	DEFINED	59
47	ES	REAL	*UNDEF		REFS	60		
23	ESC	REAL	ARRAY		REFS	60	DEFINED	64
10	IABC	* INTEGER			DEFINED	61		
0	NROWS	INTEGER	*UNUSED	F.P.	DEFINED	59		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	59		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	65

STATEMENT LABELS		DEF LINE	REFERENCES
14	688 FMT	66	65
0	9688 INACTIVE	65	

STATISTICS

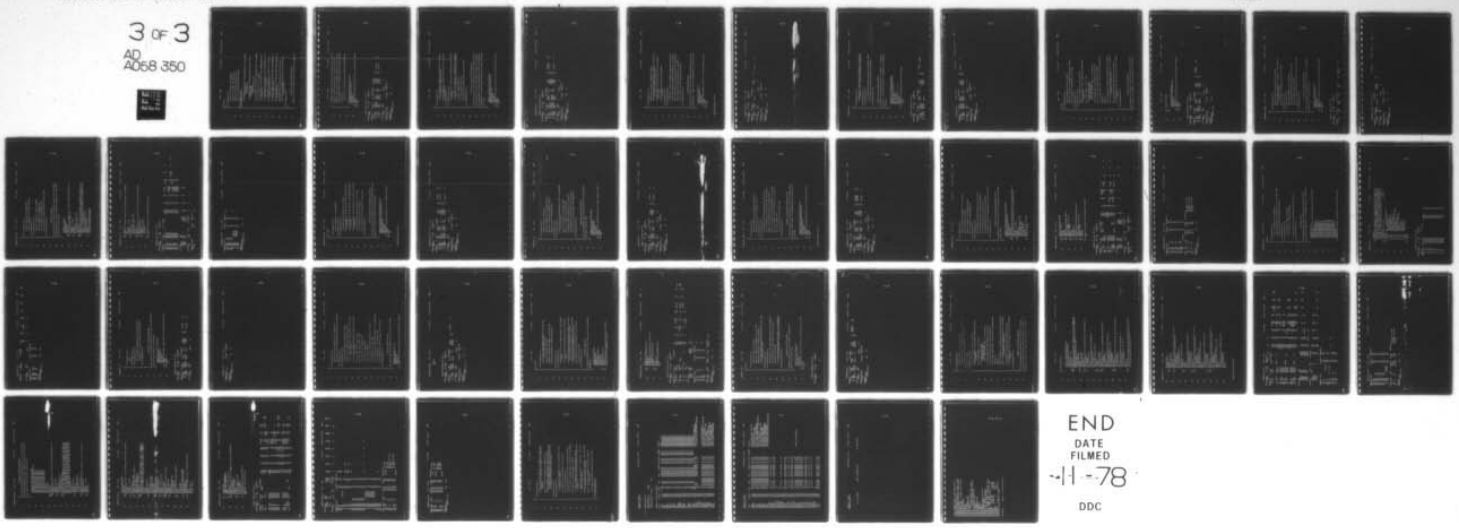
PROGRAM LENGTH 738 59

520008 CM USED

3 23

AD-A058 350 ARINC RESEARCH CORP ANNAPOLIS MD F/G 9/2
ENHANCEMENT OF COMPUTER PROGRAM EAGLE. VOLUME II. EAGLE PROGRAM--ETC(U)
MAY 78 P J ORTH F33657-77-D-0029
UNCLASSIFIED 1982-01-1-1756-VOL-2 NL

3 OF 3
AD
A058 350



END
DATE
FILMED
-11-78
DDC

```
      *DECK NEWRA
      C/
      C
      C********ARRAYS********
      C
      C        A(50,20) IS THE ARRAY TO BE ESCALATED.
      C
      C        B(50,20) IS THE ARRAY AFTER ESCALATION.
      C
      C        ESC(20) IS THE DEFAULT ESCALATION ARRAY.
      C
      C        ES(20) IS THE OPERATIONAL ESCALATION ARRAY.
      C
      C********ARRAYS********
      C********VARIABLES********
      C
      C        IX DETERMINES IF THE DEFAULT ESCALATION ARRAY IS TO BE DISPLAYE
      C                 1=DISPLAYED
      C                 2=NOT DISPLAYED
      C
      C        IY DETERMINES WHETHER THE DEFAULT ESCALATION ARRAY IS TO BE
      C             ACCEPTED IN TOTO.
      C                 1=ACCEPTED.
      C                 2=NOT ACCEPTED IN TOTO.
      C
      C        IZ IS THE ELEMENT OF THE DEFAULT ESCALATION ARRAY TO BE CHANGED
      C
      C        C IS THE NEW VALUE FOR THE IZ ELEMENT.
      C
      C        IL IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO THE
      C             BASELINE YEAR.
      C
      C        ID IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO THE
      C             FIRST YEAR OF THE ANALYSIS.
      C
      C        KK IS AN INDEX USED IN MAKING THE ELEMENTS OF ES(.) PROPERLY
      C             CORRESPOND TO THOSE OF A(.,.).
      C
      C        MOLD IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO TH
      C             EXISTING BASELINE YEAR.
      C
      C        MNEW IS THE ELEMENT OF THE ESCALATION ARRAY CORRESPONDING TO TH
      C             NEW BASELINE YEAR.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        ICUM EQUALS 7 IF CUMULATIVE VALUES ARE TO BE INPUT INTO THE
      C                 ESCALATION ARRAY.
      C
      C********VARIABLES********
      C
      C/
      C
      C                 SUBROUTINE NEWRA(KK,RATES,IL,IUNIT,A)
      C
      C     GIVEN THE OLD AND NEW LEARNING RATES, BOTH CONTAINED IN ARRAY RATE
      C
```

3 24

```
                C     THE PRODUCTION NUMBER OF THE UNIT WITH WHICH THE CHANGE IS TO COMM
                C
     60         C     CONTAINED IN ARRAY IUNIT, AND INDEX KK, THEN THE NEW RATE IS
                C
                C     KNOWN AND A NEW T1 CAN BE DETERMINED SO THAT THE COST OF THE LAST
                C
                C     ARTICLE PRODUCED USING THE PREVIOUS LEARNING RATE REMAINS UNCHANGE
     65         C
                C     THE FORMULA IS
                C
                C        T1(NEW)=T1(OLD)*(PREVIOUS ARTICLE NUMBER**(OLD RATE-NEW RATE))
                C
     70         C/
                C
                      SUBROUTINE NEWRA(KK,RATES,T1,IUNIT,A)
                      DIMENSION RATES(10),IUNIT(10)
                      DATA IABC/13/
     75               PRINT 4441
                 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
                      RETURN
                *DECK CAL5
                      END
```

SYMBOLIC REFERENCE MAP (R=2)

```
ENTRY POINTS      DEF LINE     REFERENCES
    3  NEWRA          72         77

VARIABLES     SN  TYPE           RELOCATION
    0  A          REAL       *UNUSED     F.P.       DEFINED       72
   10  IABC     * INTEGER                             DEFINED       74
    0  IUNIT      INTEGER     ARRAY       F.P.         REFS        73    DEFINED       72
    0  KK         INTEGER    *UNUSED      F.P.       DEFINED       72
    0  RATES      REAL        ARRAY       F.P.         REFS        73    DEFINED       72
    0  T1         REAL       *UNUSED      F.P.       DEFINED       72

FILE NAMES        MODE
     OUTPUT       FMT                     WRITES       75

STATEMENT LABELS              DEF LINE   REFERENCES
   14  4441     FMT              76         75

STATISTICS
  PROGRAM LENGTH                  248       20
        520008 CM USED)
```

3 25

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        IUNIT(10) CONTAINS THE NUMBER OF THE PRODUCTION ITEM AT WHICH A
      C             NEW LEARNING RATE BECOMES APPLICABLE
      C
      C        RATES(10) CONTAINS THE LEARNING RATES WHICH WILL EXIST OVER THE
      C             PRODUCTION LIFE.
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        KK IS AN INDEX USED TO SPECIFY THE APPROPRIATE ELEMENT OF RATES
      C             AND IUNIT.
      C
      C        T1 IS THE COST OF THE FIRST UNIT.  FOR MATHEMATICAL REASONS A N
      C             VALUE OF T1 IS CALCULATED AT EACH CHANGE IN THE LEARNING R
      C
      C        B IS LN(OLD LEARNING RATE)/LN(2.)
      C
      C        A IS LN(NEW LEARNING RATE)/LN(2.)
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE CAL5(A,COST,NYEARS,PRODM,KKK)
      C
      C IT IS NOT UNUSUAL FOR A COST ELEMENT (ROW OF THE COST ARRAY) TO BE COM
      C
      C OF THE SUM OF TWO OR MORE COSTS OBTAINED FROM SEPARATE CALCULATIONS.
      C
      C CAL5 ACCOMPLISHES THIS OVERALL CALCULATION BY STORING THE CUMULATIVE C
      C
      C IN ARRAY TCOST.  THE USER SPECIFIES THE NUMBER OF SEPARATE CALCULATION
      C
      C TO BE MADE.
      C
      C/
      C
            SUBROUTINE CAL5(A,COST,NYEARS,PRODM,KKK)
            DIMENSION A(50,20),COST(20),TCOST(20)
            INTEGER PRODM(10,20)
            DATA IABC/12/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK PRODUC
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CAL5	45	51

VARIABLES	SN	TYPE	RELOCATION					
0	A	REAL	ARRAY	F.P.	REFS	66	DEFINED	45
0	COST	REAL	ARRAY	F.P.	REFS	46	DEFINED	45
10	IABC	* INTEGER			DEFINED	68		
0	KKK	INTEGER	*UNUSED	F.P.	DEFINED	65		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	65		
0	PROOM	INTEGER	ARRAY	F.P.	REFS	67	DEFINED	45
24	TCOST	REAL	*UNDEF		REFS	66		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	49

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	50	49

STATISTICS

PROGRAM LENGTH 508 40

520008 CM USED

3 27

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C        COST(20) STORES AND TRANSFERS THE COST INFORMATION EACH TIME AN
      C             INTERFACE WITH ANOTHER ROUTINE IS MADE.
      C
      C        TCOST(20) STORES THE CUMULATIVE COSTS AS THE CALCULATION IS
      C             BEING MADE.
      C
      C        A(50,20) CONTAINS THE BASELINE COST INFORMATION
      C             TO BE OUTPUT.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA INDICATES THE NUMBER OF SEPARATE CALCULATIONS THAT WILL BE M
      C
      C        IB IS AN INDEX USED TO DETERMINE THE SUBROUTINE TO BE CALLED.
      C
      C        NYEARS IS THE NUMBER OF YEARS OVER WHICH THE COST CALCULATION I
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        KKK IS THE ROW OF THE COST ARRAY BEING CALCULATED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE PRODUC(PRODM)
      C
      C THIS ROUTINE IS USED TO SPECIFY THE PRODUCTION SCHEDULES, WHICH ARE ST
      C
      C IN ARRAY PRODM.  ELEMENT (10,20) OF PRODM RECORDS THE NUMBER OF SCHEDU
      C
      C/
      C
            SUBROUTINE PRODUC(PRODM)
            INTEGER PRODM(10,20)
            DATA IABC/6/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK OUT
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 PRODUC 43 48

VARIABLES SN TYPE RELOCATION
10 IABC * INTEGER DEFINED 45
0 PROOM INTEGER ARRAY F.P. REFS 44 DEFINED 43

FILE NAMES MODE
OUTPUT FMT WRITES 46

STATEMENT LABELS DEF LINE REFERENCES
14 4441 FMT 47 46

STATISTICS
PROGRAM LENGTH 248 20
520008 CM USED

3 29

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       PROOM(10,20) THIS ARRAY CONTAINS THE PRODUCTION SCHEDULES, EACH
      C            REPRESENTS 1 YEAR.  ELEMENT (10,20) RECORDS THE NUMBER OF
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       IA IS AN INDEX USED TO SPECIFY THE NUMBER OF PRODUCTION SCHEDUL
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C     SUBROUTINE OUT(A,NYEARS,NROWS,HEADW)
      C
      C THIS ROUTINE OUTPUTS CALCULATED COSTS, BY YEAR AND TYPE.  EITHER OF TH
      C
      C FORMATS: I, E OR F, CAN BE SPECIFIED.  AN APPROPRIATE TABLE HEADING CA
      C
      C DELINEATED.
      C
      C/
      C
            SUBROUTINE OUT(A,NYEARS,NROWS,HEADW)
            DIMENSION A(50,20),IZZ(20),HEADW(50,8)
            DIMENSION NAME(12),ITIT_E(8)
            INTEGER HEADW
            DATA IBLANK/1H /
            DATA NAME(1)/10H----------/
            DATA IABC/5/
            PRINT 6299
 6299 FORMAT(* *,* SUBROUTINE OUT DOES NOT EXIST HERE.*)
             RETURN
             END
```

3 30

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	OUT	31	40

VARIABLES

	SN	TYPE		RELOCATION						
0	A	REAL	ARRAY	F.P.	REFS	32	DEFINED	31		
0	HEADW	INTEGER	ARRAY	F.P.	REFS	32	34	DEFINED	31	
11	IABC	* INTEGER			DEFINED	37				
10	IBLANK	* INTEGER			DEFINED	35				
63	ITITLE	INTEGER	*UNDEF		REFS	33				

VARIABLES	SN	TYPE	RELOCATION				
23	IZZ	INTEGER	*UNDEF		REFS	32	
47	NAME	INTEGER	ARRAY		REFS	33	DEFINED 36
0	NROWS	INTEGER	*UNUSED	F.P.	DEFINED	31	
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	31	

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	38

STATEMENT LABELS		DEF LINE	REFERENCES
15	6299 FMT	39	38

STATISTICS

PROGRAM LENGTH	738	59

520008 CM USED

```
      *DECK ADDL
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE DATA TO BE OUTPUT.
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR EACH ROW OF ARRAY A.
      C
      C        IZZ(20) CONTAINS THE SPECIFICATION OF THE YEARS.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        NROWS IS THE NUMBER OF ROWS IN ARRAY A WHICH CONTAIN COST
      C             INFORMATION.
      C
      C        II IS A FORMAT INDEX.  1=E, 2=F, 3=I.
      C
      C        IX IS A TABLE HEADING INDEX.
      C             1=BASELINE YEAR DOLLARS.
      C             2=THEN YEAR DOLLARS.
      C             3=.... YEAR DOLLARS. (WHERE .... IS SPECIFIED.)
      C
      C        IY IS THE VALUE OF THE YEAR INDICATED IN IX=3 ABOVE.
      C
      C        IZ IS THE FIRST YEAR IN WHICH COSTS ARE INCURRED.
      C
      C        IA IS A TABLE HEADING INDEX.  1=FISCAL YEARS, 2=CALENDAR YEARS.
      C
      C        NX=NYEARS + 1
      C
      C        N=NROWS + 1
      C
      C        INUM IS THE NUMBER OF THE DEVICE ON WHICH THE OUTPUT IS PRINTED
      C
      C        IFLAG IS AN INDEX DELINEATING WHETHER THE OUTPUT IS PRINTED OVE
      C                  THE TERMINAL OR PLACED ON FILE.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        L4 DELINEATES WHETHER THE FIRST COLUMN IS TO BE TITLED "PREVIOU
      C              COSTS".
      C
      C  ********VARIABLES********
      C
      C/
      C
      C
      C
      C                  SUBROUTINE ADDL(A,NYEARS,COST)
      C
      C THIS ROUTINE ADDS ANY NUMBER OF SPECIFIED ROWS FROM THE COST ARRAY TO
      C
      C FORM A NEW ROW.  ALL ELEMENTS OF THIS NEW ROW ARE THEN MULTIPLIED BY
```

3 32

```
                C
                C A SPECIFIED CONSTANT.
      60        C
                C/
                C
                      SUBROUTINE ADDL(A,NYEARS,COST)
                      DIMENSION A(50,20),IARR(50),COST(20)
      65              DATA IABC/15/
                      PRINT 4441
                 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
                      RETURN
                *DECK DIVDEL
      70              END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	ADDL	63	68

VARIABLES	SN	TYPE	RELOCATION						
0	A	REAL	ARRAY	F.P.	REFS	54	DEFINED	63	
0	COST	REAL	ARRAY	F.P.	REFS	54	DEFINED	63	
10	IABC	* INTEGER			DEFINED	55			
24	IARR	INTEGER	*UNDEF		REFS	54			
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	53			

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	66

STATEMENT LABELS			DEF LINE	REFERENCES
14	4441	FMT	67	66

STATISTICS

PROGRAM LENGTH 1068 70

520008 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST DATA FOR THE ANALYSIS.
      C
      C        COST(20) IS USED TO CALCULATE AND TRANSFER THE COST DATA FOR TH
      C             ROW BEING CALCULATED.
      C
      C        IARR(50) CONTAINS THE NUMBERS OF THE ROWS TO BE ADDED.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        IA IS THE NUMBER OF ROWS TO BE ADDED.
      C
      C        FRAC IS THE FRACTION BY WHICH THE SUM OF THE ROWS IS TO BE MULT
      C
      C  ********VARIABLES********
      C
      C/                                                                    3 3-1
      C
      C                    SUBROUTINE DIVIDEL(A,NYEARS,COST)
      C
      C THIS ROUTINE ENABLES THE FORMULATION OF A ROW THROUGH THE DIVISION OF
      C
      C EXISTING ROW BY A SECOND EXISTING ROW.
      C
      C/
      C
            SUBROUTINE DIVIDEL(A,NYEARS,COST)
            DIMENSION A(50,20),COST(20)
            DATA IABC/18/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK ELEMENT
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	DIVIDEL	37	42

VARIABLES	SN	TYPE		RELOCATION				
0	A	REAL	ARRAY	F.P.	REFS	33	DEFINED	37
0	COST	REAL	ARRAY	F.P.	REFS	33	DEFINED	37

```
VARIABLES     SN  TYPE          RELOCATION
   10  IABC     * INTEGER                        DEFINED      59
    0  NYEARS     INTEGER     *UNUSED    F.P.     DEFINED      57

FILE NAMES        MODE
      OUTPUT      FMT                  WRITES      40

STATEMENT LABELS              DEF LINE   REFERENCES
   14  4441     FMT              41         40

STATISTICS
  PROGRAM LENGTH                  248        20
        520008 CM USED
```

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST INFORMATION.
      C
      C        COST(20) TRANSFERS THE CALCULATED COST DATA.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        IN IS THE NUMBER OF THE NUMERATOR ROW.
      C
      C        ID IS THE NUMBER OF THE DENOMINATOR ROW.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE ELEMENT(A)
      C
      C THIS ROUTINE ENABLES A SPECIFIC ELEMENT OF THE COST ARRAY TO BE FORMED
      C
      C BY SPECIFICATION OR BY DIVIDING A SPECIFIED ELEMENT OF THE COST ARRAY
      C
      C BY ANOTHER SPECIFIED ELEMENT.
      C
      C/
      C
            SUBROUTINE ELEMENT(A)
            DIMENSION A(50,20)
            DATA IABC/19/
         99 PRINT 1000
       1000 FORMAT(* IF THE ELEMENT IS TO BE FORMED BY SPECIFICATION ENTER 1*,
           */,* IF BY DIVISION ENTER 2.*)
            READ*,IA
            IF(EOF(5))  99,8099
       8099 CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555) WRITE(6,2000)
            IF(IA.EQ.1)GO TO 35
       9000 PRINT 1001
       1001 FORMAT(* ENTER THE ROW AND COLUMN OF THE NUMERATOR ELEMENT*,/,* FO
           *LLOWED BY THE ROW AND COLUMN OF THE DENOMINATOR ELEMENT*,/,* FOLLO
           *WED BY THE ROW AND COLUMN OF THE ELEMENT TO BE CALCULATED*,/,* FOR
           * EXAMPLE     10,7,22,5,24,8*)
            READ*,INR,INC,IDR,IDC,ICR,ICC
            IF(EOF(5))9000,8000
       8000 CONTINUE
            WRITE(4,*)INR,INC,IDR,IDC,ICR,ICC
            A(ICR,ICC)=A(INR,INC)/A(IDR,IDC)
```

```
      88  PRINT 1002
     1002 FORMAT(* IF ANOTHER ELEMENT IS TO BE OBTAINED ENTER 1, OTHERWISE 2
     **)
           READ*,ID
           IF(EOF(5))  88,8088
     8088 CONTINUE
           WRITE(4,*)ID
           IF(ID.EQ.555) WRITE(6,2000)
           IF(ID.EQ.1)GO TO 99
           RETURN
      35   PRINT 1003
     1003 FORMAT(* SPECIFY THE VALUE OF THE ELEMENT, IT'S ROW AND COLUMN*)
           READ*,X,ICR,ICO
           IF(EOF(5))  35,8035
     8035 CONTINUE
           WRITE(4,*)X,ICR,ICO
           A(ICR,ICO)=X
           GO TO 88
     C
      2000 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE3* )
           END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	ELEMENT	35	67

VARIABLES

	SN	TYPE		RELOCATION								
0	A	REAL	ARRAY	F.P.	REFS	57	2*57	DEFINED	36	57	74	
267	IA	INTEGER			REFS	45	46	47	DEFINED	42		
101	IABC	* INTEGER			DEFINED	88						
275	ICC	INTEGER			REFS	56	57	DEFINED	53			
300	ICO	INTEGER			REFS	73	74	DEFINED	70			
274	ICR	INTEGER			REFS	55	57	73	74	DEFINED	53	78
276	ID	INTEGER			REFS	64	65	66	DEFINED	61		
273	IOC	INTEGER			REFS	56	57	DEFINED	53			
272	IOR	INTEGER			REFS	55	57	DEFINED	53			
271	INC	INTEGER			REFS	55	57	DEFINED	53			
270	INR	INTEGER			REFS	55	57	DEFINED	53			
277	X	REAL			REFS	73	74	DEFINED	70			

FILE NAMES

	MODE						
INPUT	FREE	READS	42	53	61	70	
OUTPUT	FMT	WRITES	39	48	58	68	
TAPE4	FREE	WRITES	45	56	64	73	
TAPE6	FMT	WRITES	46	55			

EXTERNALS

	TYPE	ARGS	REFERENCES				
EOF	REAL	1	43	54	62	71	

STATEMENT LABELS

		DEF LINE	REFERENCES		
62	35	68	47	71	
43	88	58	62	75	

STATEMENT LABELS				DEF LINE	REFERENCES	
5	99			39	43	66
105	1000	FMT		40	39	
135	1001	FMT		49	48	
211	1002	FMT		59	58	
236	1003	FMT		69	68	
260	2000	FMT		77	46	65
0	8000		INACTIVE	55	54	
0	8035		INACTIVE	72	71	
0	8068		INACTIVE	63	62	
0	8099		INACTIVE	44	43	
23	9000			49	54	

STATISTICS

PROGRAM LENGTH 3018 193

520008 CM USED

```
      *DECK RINSERT
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST INFORMATION.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA DELINEATES HOW THE ELEMENT WILL BE FORMED.
      C
      C        INR,INC DELINEATE THE ROW AND COLUMN OF THE NUMERATOR ELEMENT
      C             ,RESPECTIVELY.
      C
      C        IDR,IDC DELINEATE THE ROW AND COLUMN OF THE DENOMINATOR ELEMENT
      C             RESPECTIVELY.
      C
      C        ICR,ICC DELINEATE THE ROW AND COLUMN OF THE ELEMENT TO BE CALCU
      C             RESPECTIVELY.
      C
      C        ID DELINEATES WHETHER ANOTHER ELEMENT IS TO BE FORMED.
      C
      C        X IS THE SPECIFIED VALUE OF THE ELEMENT.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE RINSERT(A,NYEARS,NROWS,HEADW,PRODM)
      C
      C THIS ROUTINE ENABLES THE INSERTION OF A ROW IN THE HEADING AND COST AR
      C
      C INSERTION OF ROWS CAN BE REPEATED AS OFTEN AS DESIRED.
      C
      C/
      C
            SUBROUTINE RINSERT(A,NYEARS,NROWS,HEADW,PRODM)
            DIMENSION HEADW(50,8),A(50,20),COST(20)
            INTEGER PRODM(10,20)
            DATA IABC/20/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OH VERSION OF EAGLE.*)
            RETURN
      *DECK DUM
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 RINSERT 42 48

VARIABLES	SN	TYPE	RELOCATION					
0 A		REAL	ARRAY	F.P.	REFS	63	DEFINED	42
23 COST		REAL	*UNDEF		REFS	63		
0 HEADW		REAL	ARRAY	F.P.	REFS	63	DEFINED	42
10 IABC	*	INTEGER			DEFINED	45		
0 NROWS		INTEGER	*UNUSED	F.P.	DEFINED	42		
0 NYEARS		INTEGER	*UNUSED	F.P.	DEFINED	42		
0 PROOM		INTEGER	ARRAY	F.P.	REFS	64	DEFINED	42

FILE NAMES MODE
OUTPUT FMT WRITES 46

STATEMENT LABELS DEF LINE REFERENCES
14 4441 FMT 47 46

STATISTICS
PROGRAM LENGTH 478 39
520003 CM USED

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        HEADM(50,8) CONTAINS THE COST ELEMENT HEADINGS.
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C        COST(20) IS USED TO TRANSFER COST DATA.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IS AND IL ARE THE 2 ROWS BETWEEN WHICH THE ROW IS BEING INSERTE
      C             IS IS LESS THAN IL.
      C
      C        NROWS IS THE NUMBER OF COST ELEMENTS. (ROWS)
      C
      C        NYEARS IS THE NUMBER OF YEARS OF INTEREST.
      C
      C        IX DELINEATES WHETHER ANOTHER ROW WILL BE INSERTED.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        N7 IS USED TO GUARD AGAINST INVALID INPUT INFORMATION.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE CUM(COST,PRODM,NYEARS)
      C
      C THIS ROUTINE DETERMINES FIRST UNIT COST, GIVEN THE LEARNING RATE AND T
      C
      C TOTAL COST OF SPECIFIC ITEMS.
      C
      C/
      C
            SUBROUTINE CUM(COST,PRODM,NYEARS)
            DIMENSION COST(20)
            INTEGER PRODM(10,20)
            DATA IABC/21/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK ROWMOD
            END
```

3 41

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	CUM	43	49

VARIABLES	SN	TYPE	RELOCATION					
0	COST	REAL	ARRAY	F.P.	REFS	64	DEFINED	43
10	IABC	* INTEGER			DEFINED	66		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	63		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	65	DEFINED	43

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	47

STATEMENT LABELS		DEF LINE	REFERENCES
14	4441 FMT	48	47

STATISTICS

PROGRAM LENGTH 243 20

520008 CM USED

3 42

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C       COST(20) TRANSFERS THE CALCULATED COST INFORMATION.
      C
      C       PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C       SUM IS THE CUMULATIVE COST IF THE FIRST UNIT COST WERE ONE.
      C
      C       CUMCOST IS THE CUMULATIVE COST OF THE GROUP OF UNITS.
      C
      C       IFIRST IS THE NUMBER OF THE FIRST PRODUCED UNIT OF THE GROUP.
      C
      C       ISEC IS THE NUMBER OF THE LAST PRODUCED UNIT OF THE GROUP.
      C
      C       RATE IS THE LEARNING RATE.
      C
      C       T1 IS THE COST OF THE FIRST PRODUCED UNIT.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE ROWMOD(HEADM,A,PRODM,NYEARS,COST)
      C
      C THIS ROUTINE ENABLES THE MODIFICATION OF A ROW IN THE HEADING, COST OR
      C
      C PRODUCTION SCHEDULE ARRAYS.  ROW MODIFICATION CAN BE REPEATED AS OFTEN
      C
      C AS DESIRED.
      C
      C/
      C
            SUBROUTINE ROWMOD(HEADM,A,PRODM,NYEARS,COST)
            DIMENSION A(50,20),HEAD4(50,8),COST(20)
            INTEGER PRODM(10,20)
            DATA IABC/17/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK APRINT
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS DEF LINE REFERENCES
3 ROWMOD 42 48

VARIABLES	SN	TYPE	RELOCATION					
0 A		REAL	ARRAY	F.P.	REFS	43	DEFINED	42
0 COST		REAL	ARRAY	F.P.	REFS	43	DEFINED	42
0 HEADW		REAL	ARRAY	F.P.	REFS	43	DEFINED	42
10 IABC	*	INTEGER			DEFINED	45		
0 NYEARS		INTEGER	*UNUSED	F.P.	DEFINED	42		
0 PRODM		INTEGER	ARRAY	F.P.	REFS	44	DEFINED	42

FILE NAMES MODE
OUTPUT FMT WRITES 46

STATEMENT LABELS		DEF LINE	REFERENCES
14 4441	FMT	47	46

STATISTICS
PROGRAM LENGTH 248 20
520008 CM USED

3 44

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR THE COST ARRAY.
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULE.
      C
      C        COST(20) TRANSFERS THE COST INFORMATION.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        IA IS AN INDEX DELINEATING THE ARRAY TO BE MODIFIED.
      C
      C        IB IS THE NUMBER OF THE ROW TO BE MODIFIED.
      C
      C        ID DELINEATES WHETHER ANOTHER ROW WILL BE MODIFIED.
      C
      C        IF DELINEATES THE METHOD OF CALCULATION FOR A ROW IN THE COST A
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                  SUBROUTINE APRINT(NYEARS,NROWS,A,HEADW,PRODM)
      C
      C THIS ROUTINE OUTPUTS WHAT IS PRESENTLY IN THE HEADING, COST OR PRODUCT
      C
      C SCHEDULE ARRAYS.
      C
      C/
      C
            SUBROUTINE APRINT(NYEARS,NROWS,A,HEADW,PRODM)
            DIMENSION A(50,20),HEADW(50,8)
            INTEGER PRODM(10,20)
            DATA IABC/22/
         87 PRINT 1000
       1000 FORMAT(* TO OUTPUT THE COST ARRAY ENTER 1, THE HEADING ARRAY 2, TH
           *E*,/,* PRODUCTION SCHEDULE ARRAY 3 OR IF NO ARRAY ENTER 4.*)
            READ*,IA
            IF(EOF(5))  87,8087
       8087 CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555) WRITE(6,2000)
            IF(IA.EQ.2)GO TO 25
            IF(IA.EQ.3)GO TO 35
            IF(IA.EQ.4)RETURN
            PRINT 109
       109  FORMAT("1"," THE COST ARRAY.")
            DO 110 I=1,NROWS
```

```
                PRINT 111,(A(I,J),J=1,NYEARS)
            111 FORMAT(" ",10E11.3)
 60         110 CONTINUE
                GO TO 87
             25 PRINT 209
            209 FORMAT("1"," THE HEADING ARRAY.")
                DO 210 I=1,NROWS
 65             PRINT 211,(HEADH(I,J),J=1,8)
            211 FORMAT(" ",8A10)
            210 CONTINUE
                GO TO 87
             35 IC=PRODM(10,20)
 70             PRINT 309
            309 FORMAT("1"," THE PRODUCTION SCHEDULE ARRAY.")
                DO 310 I=1,IC
                PRINT 311,(PRODM(I,J),J=1,20)
            311 FORMAT(" ",20I5)
 75         310 CONTINUE
                GO TO 87
            C
             2000 FORMAT(10X,*ROUTINE HELP NOT AVAILABLE IN EAGLE3* )
                END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	APRINT	40	54

VARIABLES

	SN		TYPE		RELOCATION								
0		A	REAL	ARRAY	F.P.	REFS	61	58	DEFINED	40			
0		HEADH	REAL	ARRAY	F.P.	REFS	61	65	DEFINED	40			
261		I	INTEGER			REFS	59	65	73	DEFINED	57	64	72
260		IA	INTEGER			REFS	50	51	52	53	54		
						DEFINED	47						
133		IABC	* INTEGER			DEFINED	43						
263		IC	INTEGER			REFS	72	DEFINED	69				
262		J	INTEGER			REFS	58	65	73	DEFINED	58	65	73
0		NROWS	INTEGER		F.P.	REFS	57	64	DEFINED	40			
0		NYEARS	INTEGER		F.P.	REFS	58	DEFINED	40				
0		PRODM	INTEGER	ARRAY	F.P.	REFS	62	69	73	DEFINED	40		

FILE NAMES

	MODE						
INPUT	FREE	READS	47				
OUTPUT	FMT	WRITES	44	55	58	62	65	70	73
TAPE4	FREE	WRITES	50				
TAPE6	FMT	WRITES	51				

EXTERNALS

	TYPE	ARGS	REFERENCES
EOF	REAL	1	48

STATEMENT LABELS

		DEF LINE	REFERENCES
61	25	62	52
104	35	69	53

STATEMENT LABELS			DEF LINE	REFERENCES			
15	87		44	48	61	68	76
172	109	FMT	56	55			
0	110		60	57			
204	111	FMT	59	58			
212	209	FMT	63	62			
0	210		67	64			
224	211	FMT	66	65			
232	309	FMT	71	70			
0	310		75	72			
246	311	FMT	74	73			
137	1000	FMT	45	44			
251	2000	FMT	78	51			
0	8087	INACTIVE	49	48			

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
41	110	* I	57 60	208	EXT REFS	NOT INNER
44		* J	58 58	118	EXT REFS	
64	210	* I	64 67	208	EXT REFS	NOT INNER
67		* J	65 65	118	EXT REFS	
111	310	* I	72 75	208	EXT REFS	NOT INNER
114		* J	73 73	118	EXT REFS	

STATISTICS

PROGRAM LENGTH 2778 191

520008 CM USED

```
      *DECK GCS
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST INFORMATION.
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR THE COST ELEMENTS. (ROWS)
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IA DELINEATES THE ARRAY TO BE OUTPUT.
      C
      C        IC IS THE NUMBER OF PRODUCTION SCHEDULES.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE GCS(N),
      C
      C THIS SUBROUTINE ENALES DIRECT TRANSFER FROM ANY INTEGER RESPONSE
      C
      C LOCATION IN THE MAIN ROUTINE TO 15 DESIGNATED LOCATIONS IN THE MAIN PO
      C
      C/
      C
           SUBROUTINE GCS(N),
          XRETURNS (L1,L2,L3,L4,L5,L6,L7,L8,L9,L10,L11,L12,L13,L14,L15,L16)
           DATA IABC/23/
           IF(N.EQ.1068)RETURN L1
           IF(N.EQ.1400)RETURN L2
           IF(N.EQ.1401)RETURN L3
           IF(N.EQ.1402)RETURN L4
           IF(N.EQ.1403)RETURN L5
           IF(N.EQ.1404)RETURN L6
           IF(N.EQ.1405)RETURN L7
           IF(N.EQ.1406)RETURN L8
           IF(N.EQ.1077)RETURN L9
           IF(N.EQ.1407)RETURN L10
           IF(N.EQ.1408)RETURN L11
           IF(N.EQ.1577)RETURN L12
           IF(N.EQ.1409)RETURN L13
           IF(N.EQ.1410)RETURN L14
           IF(N.EQ.1411)RETURN L15
           IF(N.EQ.1425)RETURN L16
           IF(N.NE.2000)GO TO 17
           PRINT 1000
      1000 FORMAT(* THE FOLLOWING IS APPLICABLE TO THE MAIN ROUTINE ONLY.*)
```

```
      PRINT 1001
 1001 FORMAT(* IF IN RESPONSE TO AN INTEGER REQUEST 1000 PLUS ONE OF CER
     *TAIN SPECIFIED STATEMENT*,/,* NUMBERS IS INPUT THEN THE USER IS SE
     *NT DIRECTLY TO THAT STATEMENT NUMBER.*,/,* THUS, FOR EXAMPLE, A RE
     *SPONSE OF 1088 WOULD SEND THE USER TO STATEMENT 88 WHICH REQUESTS
     *THE NUMBER OF YEARS OF INTEREST.*  ,/,* THIS IS APPLICABLE FOR THE
     * FOLLOWING STATEMENT NUMBERS WHOSE REQUESTS END IN THE SYMBOL 0.*)
      PRINT 1010
 1010 FORMAT(* STATEMENT NUMBER                              REQUESTS*)
      PRINT 1200
 1200 FORMAT(*  88     YEARS SPECIFICATION*,/,
     ** 400     ROWS SPECIFICATION*,/,
     ** 401     INPUT FILES*,/,
     ** 402     ROW MODIFICATION*,/,
     ** 403     ELEMENT MODIFICATION*,/,
     ** 404     ROW INSERTION*,/,
     ** 405     PRODUCTION SCHEDULE*,/,
     ** 406     HEADING ARRAY SPECIFICATION*,/,
     **  77     CALCULATIONS*,/,
     ** 407     SPREADING THE DATA*,/,
     ** 408     ALLOWING FOR INFLATION*,/,
     ** 677     OUTPUT*,/,
     ** 409     ARRAY CHECK*,/,
     ** 410     STORE FILES*,/,
     ** 411     TERMINATE*,/,
     ** 425     COLUMN INSERT*)
      17  RETURN
*DECK INTERP
      END
```


SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	GCS	36	84

VARIABLES

		SN	TYPE	RELOCATION		
120	IABC	*	INTEGER		DEFINED	58
0	L1		RETURNS		REFS	59
0	L10		RETURNS		REFS	68
0	L11		RETURNS		REFS	69
0	L12		RETURNS		REFS	50
0	L13		RETURNS		REFS	51
0	L14		RETURNS		REFS	52
0	L15		RETURNS		REFS	53
0	L16		RETURNS		REFS	54
0	L2		RETURNS		REFS	60
0	L3		RETURNS		REFS	61
0	L4		RETURNS		REFS	62
0	L5		RETURNS		REFS	63
0	L6		RETURNS		REFS	64
0	L7		RETURNS		REFS	65
0	L8		RETURNS		REFS	66
0	L9		RETURNS		REFS	67

```
      SUBROUTINE GCS        74/74   OPT=1                     FTN 4.6+446        04/18/78  16.21.02       PAGE    3

VARIABLES      SN  TYPE              RELOCATION
    0  N           INTEGER                 F.P.      REFS        39        40        41        42        43        44        45
                                                       46        47        48        49        50        51        52        53
                                                       54        55    DEFINED       36

FILE NAMES          MODE
      OUTPUT      FMT                         WRITES       56        58        65        67

STATEMENT LABELS                DEF LINE    REFERENCES
  117  17                          84           55
  124  1000      FMT               57           56
  136  1001      FMT               59           58
  212  1010      FMT               66           65
  224  1200      FMT               68           67

STATISTICS
  PROGRAM LENGTH                  304B       196
           52000B CM USED
```

```
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        NONE
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        N DELINEATES THE RETURN LOCATION IN THE MAIN ROUTINE.
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE T1SL(COST,PRODM,NYEARS)
      C
      C GIVEN THE COST OF TWO SPECIFIC GROUPS OF ITEMS THEN THIS ROUTINE CALCU
      C
      C THE FIRST UNIT COST AND THE LEARNING RATE.
      C
      C/
            SUBROUTINE T1SL(COST,PRODM,NYEARS)
            DIMENSION COST(20)
            INTEGER PRODM(10,20)
            DATA IABC/25/
            PRINT 4441
       4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
            RETURN
      *DECK CINSERT
            END
```

3 51

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS		DEF LINE	REFERENCES
3	T1SL	29	34

VARIABLES	SN	TYPE		RELOCATION				
0	COST	REAL	ARRAY	F.P.	REFS	29	DEFINED	28
10	IABC	* INTEGER			DEFINED	31		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	28		
0	PRODM	INTEGER	ARRAY	F.P.	REFS	30	DEFINED	28

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	32

STATEMENT LABELS	DEF LINE	REFERENCES
14 6441 FMT	33	32

STATISTICS

PROGRAM LENGTH	248	20

520003 CM USED

```
C
C/
C
C  ********ARRAYS********
C
C       COST(20) STORES AND TRANSFERS THE COST INFORMATION.
C
C       PRODM(10,20) STORES THE PRODUCTION SCHEDULES FOR ALL EQUIPMENTS
C
C  ********ARRAYS********
C
C  ********VARIABLES********
C
C       J1 AND J2 ARE THE FIRST AND LAST UNITS OF GROUP 1.
C
C       J3 AND J4 ARE THE FIRST AND LAST UNITS OF GROUP 2.
C
C       U1 AND P1 ARE 2 NUMBERS WHOSE PRODUCT EQUALS THE COST OF THE
C                 GROUP 1 UNITS.
C
C       U2 AND P2 ARE 2 NUMBERS WHOSE PRODUCT EQUALS THE COST OF THE
C                 GROUP 2 UNITS.
C
C       S1 IS THE TOTAL COST OF GROUP 1 UNITS.
C
C       S2 IS THE TOTAL COST OF GROUP 2 UNITS.
C
C       C IS THE RATIO OF THE COSTS: S1/S2.
C
C       X IS THE TRIAL LEARNING RATE.
C
C       E IS THE TRIAL EXPONENT.
C
C       SUM1 AND SUM2 ARE TRIAL COSTS FOR GROUP 1 AND GROUP 2.
C
C       G IS THE RATIO OF THE TRIAL COSTS.
C
C       ABC HAS A FINAL VALUE EQUAL TO THE ESTIMATE OF THE LEARNING RAT
C
C       T1 IS THE ESTIMATE OF THE FIRST UNIT COST.
C
C       IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C  ********VARIABLES********
C
C/
C
C                 SUBROUTINE CINSERT(A,NYEARS)
C
C THIS ROUTINE ENABLES THE INSERTION OF A COLUMN IN THE COST ARRAY.
C
C/
      SUBROUTINE CINSERT(A,NYEARS)
      DIMENSION A(50,20)
      DATA IABC/26/
      PRINT 4441
 4441 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE.*)
```

```
                RETURN
                END


      SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS      DEF LINE      REFERENCES
    3  CINSERT        53            53

VARIABLES      SN   TYPE              RELOCATION
    0  A             REAL       ARRAY      F.P.       REFS        54   DEFINED       53
   10  IABC      *   INTEGER                          DEFINED     55
    0  NYEARS        INTEGER   *UNUSED     F.P.       DEFINED     53

FILE NAMES            MODE
       OUTPUT         FMT                      WRITES       56

STATEMENT LABELS                DEF LINE     REFERENCES
   14  4441      FMT                57            56

STATISTICS
  PROGRAM LENGTH                     24B        20
         52000B CM USED
```

3 54

```
      *DECK NAMCHK
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        IEM(5) CONTAINS ERROR MESSAGE INFORMATION RESULTING FROM
      C             A CALL TO SYSTEM ROUTINE PFSUB.
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR THE COST DATA.
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IES,UCW,UN,PW,CT, AND M ARE VARIABLES USED BY SYSTEM ROUTINE
      C             PFSUB.
      C
      C        I19 IS AN INDEX DELINEATING WHETHER DATA WILL BE INPUT ARE
      C              SAVED.
      C
      C        IA,IB,IC ARE INDICES INDICATING WHETHER HEADING, COST AND/OR
      C             PRODUCTION SCHEDULE INFORMATION WILL BE INPUT.
      C
      C        JA,JB,JC ARE INDICES INDICATING WHETHER HEADING, COST AND/OR
      C             PRODUCTION SCHEDULE INFORMATION WILL BE SAVED.
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        SUB TAKES ON A FILE NAME.
      C
      C  ********VARIABLES********
      C
      C/
      C                    SUBROUTINE NAMCHK(SUB)
      C
      C THIS ROUTINE CHECKS THAT THE INPUT FILE NAME WILL NOT CAUSE PROGRAM
      C
      C TERMINATION.
      C
      C/
            SUBROUTINE NAMCHK(SUB)
           DIMENSION SNAM(9)
           INTEGER SUB
           DATA SYM/1H*/,BLANK/1H /
      5    READ(5,10)SUB
           WRITE(4,10)SUB
      10   FORMAT(A10)
           IF(SUB.NE.BLANK)GO TO 75
      20   PRINT 25
      25   FORMAT(* THE NAME YOU CHOOSE DID NOT MEET THE REQUIREMENTS
           *OF LENGTH/OR TYPE OF CHARACTER,I.E. ALPHA.*)
```

3 55

```
                    GO TO 5
               75   DECODE(7,100,SUB)(SNAM(I),I=2,8)
     60        100  FORMAT(8A1)
                    SNAM(1)=SYM
                    IF(SNAM(2).LT.1HA.OR.SNAM(2).GT.1H7)GO TO 20
                    DO 200 I=2,8
                    IF(SNAM(I).EQ.BLANK)GO TO 250
     65        200  CONTINUE
                    I=9
               250  SNAM(I)=SYM
                    ENCODE(I,100,SUB)(SNAM(J),J=1,I)
                    RETURN
     70             END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	NAMCHK	47	59

VARIABLES

	SN	TYPE	RELOCATION									
46		BLANK	REAL		REFS	54	64	DEFINED	50			
120		I	INTEGER		REFS	53	64	67	2*68	DEFINED	59	63
					66							
121		J	INTEGER		REFS	55	DEFINED	68				
122		SNAM	REAL	ARRAY	REFS	68	2*62	64	68	DEFINED	59	61
					67							
0		SUB	INTEGER	F.P.	REFS	63	52	54	59	DEFINED	47	51
					60							
45		SYM	REAL		REFS	51	67	DEFINED	50			

FILE NAMES

	MODE		
OUTPUT	FMT	WRITES	55
TAPE4	FMT	WRITES	52
TAPE5	FMT	READS	51

STATEMENT LABELS

			DEF LINE	REFERENCES	
5	5		51	58	
60	10	FMT	53	51	52
14	20		55	62	
65	25	FMT	56	55	
17	75		59	54	
106	100	FMT	60	59	68
0	200		65	63	
35	250		67	64	

LOOPS

	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES	
27	200	* I	63 65	53	INSTACK	EXITS

STATISTICS

PROGRAM LENGTH 133B 91

520008 CM USED

```
      *DECK MULT
      C
      C/
      C
      C  ********ARRAYS********
      C
      C        A(50,20) CONTAINS THE COST DATA.
      C
      C        HEADW(50,8) CONTAINS THE HEADINGS FOR THE COST DATA.
      C
      C        PRODM(10,20) CONTAINS THE PRODUCTION SCHEDULES.
      C
      C        IEM(5) CONTAINS ERROR MESSAGE INFORMATION RESULTING FROM A CALL
      C             TO SYSTEM ROUTINE PFSUB.
      C
      C  ********ARRAYS********
      C
      C  ********VARIABLES********
      C
      C        IEM,UCW,UN,PW,CT, AND M ARE VARIABLES USED BY SYSTEM ROUTINE PF
      C
      C        IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C        SUB TAKES ON A FILE NAME.
      C
      C        KK IS AN INDEX USED TO CONTROL THE ROUTINE.  IT ASSURES THAT AL
      C             3 FILES ARE TRANSFERED TO THE ARRAYS AND THAT A RETURN IS
      C
      C  ********VARIABLES********
      C
      C/
      C
      C                    SUBROUTINE MULT(A,COST,NYEARS)
      C
      C THIS ROUTINE FORMS A ROW IN THE COST ARRAY BY OBTAINING THE
      C
      C PRODUCT OF TWO EXISTING ROWS.
      C
      C/
            SUBROUTINE MULT(A,COST,NYEARS)
            DIMENSION A(50,20),COST(20)
            DATA IABC/30/
             PRINT 4000
       4000 FORMAT(* THIS ROUTINE EXISTS ONLY IN THE OTHER VERSION OF EAGLE*)
            RETURN
      *DECK FILES
            END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS	DEF LINE	REFERENCES
3 MULT	40	45

VARIABLES	SN	TYPE	RELOCATION					
0	A	REAL	ARRAY	F.P.	REFS	61	DEFINED	40
0	COST	REAL	ARRAY	F.P.	REFS	61	DEFINED	40
10	IABC	* INTEGER			DEFINED	62		
0	NYEARS	INTEGER	*UNUSED	F.P.	DEFINED	60		

FILE NAMES	MODE		
OUTPUT	FMT	WRITES	43

STATEMENT LABELS		DEF LINE	REFERENCES
14 4000	FMT	44	43

STATISTICS

PROGRAM LENGTH 248 20

520003 CM USED

```
C/
C ********ARRAYS********
C
C       A(50,20) CONTAINS THE DATA TO BE OUTPUT.
C
C       HEADM(50,3) CONTAINS THE HEADINGS FOR EACH ROW OF ARRAY A.
C
C       IZZ(20) CONTAINS THE SPECIFICATION OF THE YEARS.
C
C ********ARRAYS********
C
C ********VARIABLES********
C
C       NYEARS IS THE NUMBER OF YEARS OF INTEREST.
C
C       NROWS IS THE NUMBER OF ROWS IN ARRAY A WHICH CONTAIN COST
C            INFORMATION.
C
C       II IS A FORMAT INDEX.  1=E, 2=F, 3=I.
C
C       IX IS A TABLE HEADING INDEX.
C            1=BASELINE YEAR DOLLARS.
C            2=THEN YEAR DOLLARS.
C            3=.... YEAR DOLLARS. (WHERE .... IS SPECIFIED.)
C
C       IY IS THE VALUE OF THE YEAR INDICATED IN IX=3 ABOVE.
C
C       IZ IS THE FIRST YEAR IN WHICH COSTS ARE INCURRED.
C
C       IA IS A TABLE HEADING INDEX.  1=FISCAL YEARS, 2=CALENDAR YEARS.
C
C       NX=NYEARS + 1
C
C       N=NROWS + 1
C
C       INUM IS THE NUMBER OF THE DEVICE ON WHICH THE OUTPUT IS PRINTED
C
C       IFLAG IS AN INDEX DELINEATING WHETHER THE OUTPUT IS PRINTED OVE
C                 THE TERMINAL OR PLACED ON FILE.
C
C       IARC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
C
C       L4 DELINEATES WHETHER THE FIRST COLUMN IS TO BE TITLED "PREVIOU
C              COSTS".
C
C ********VARIABLES********
C
C/
      SUBROUTINE FILES(A,HEADM,PROD4,I19)
C
C THIS ROUTINE ENABLES DATA STORED ON FILES TO BE INPUT TO THE COST,
C HEADING AND PRODUCTION SCHEDULE ARRAYS DURING PROGRAM OPERATION.  ALSO
C INFORMATION STORED IN THESE ARRAYS CAN BE PLACED ON FILES DURING
```

```
C
C PROGRAM OPERATION.
C
C/
C
      SUBROUTINE FILES(A,HEADA,PRODM,I19)
      DIMENSION A(50,20),HEADA(50,8)
      INTEGER PRODM(10,20),IE1(5),SUB
      DATA IABC/16/
      IF(I19.EQ.2)GO TO 22
9000  PRINT 1000
1000  FORMAT(* ENTER 1 IF YOU WISH TO SPECIFY; BY FILE, THE HEADING,COST
     *AND/OR PRODUCTION ARRAYS,*,/,* RESPECTIVELY, OTHERWISE ENTER 2*,*/
     *A TYPICAL RESPONSE WOULD BE 1,2,1*)
      READ*,IA,IB,IC
      IF(EOF(5))9000,8000
8000  CONTINUE
      WRITE(4,*)IA,IB,IC
      IF(IA.NE.1)GO TO 201
2     PRINT 1001
1001  FORMAT(* SPECIFY THE FILE TO BE READ INTO THE HEADING ARRAY.*)
      CALL NAMCHK(SUB)
10    FORMAT(8A10)
      CALL RETURN(5HTAPE7)
      ERR=0.0
      CALL PERMFIL(ERR,6HATTACH,5HTAPE7,SUB,24CY,1)
      IF(ERR.NE.0.0)GO TO 2
      DO 41 I=1,50
      READ(7,100) (HEADA(I,J),J=1,8)
100   FORMAT(8A10)
41    CONTINUE
      CALL RETURN(5HTAPE7)
201   IF(IB.NE.1)GO TO 301
3     PRINT 1002
1002  FORMAT(* SPECIFY THE FILE TO BE READ INTO THE COST ARRAY.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE1)
      ERR=0.0
      CALL PERMFIL(ERR,6HATTACH,5HTAPE1,SUB,24CY,1)
      IF(ERR.NE.0.0)GO TO 3
      READ(1,*)((A(I,J),I=1,50),J=1,20)
      CALL RETURN(5HTAPE1)
301   IF(IC.NE.1)RETURN
4     PRINT 1003
1003  FORMAT(* SPECIFY THE FILE TO BE READ INTO THE PRODUCTION ARRAY.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE1)
      ERR=0.0
      CALL PERMFIL(ERR,6HATTACH,5HTAPE1,SUB,24CY,1)
      IF(ERR.NE.0.0)GO TO 4
      READ(1,*)((PRODM(I,J),I=1,10),J=1,20)
      CALL RETURN(5HTAPE1)
      RETURN
22    PRINT 1004
1004  FORMAT(* FOR THE HEADING,COST AND/OR PRODUCTION ARRAYS, RESPECTIVE
     *LY,*,/,* ENTER 1 TO SAVE ON FILES, OTHERWISE ENTER 2.*, / ,
     ** A TYPICAL RESPONSE WOULD BE 1,2,1. * )
```

3 60

```
      READ*,JA,JB,JC
      IF(EOF(5))22,8022
 8022 CONTINUE
      WRITE(4,*)JA,JB,JC
      IF(JA.NE.1)GO TO 202
    6 PRINT 1005
 1005 FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR HEADING ARRAY.---A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE8)
      CALL REQUEST(5HTAPE8,3H*PF)
      DO 141 I=1,50
      WRITE(8,157) (HEADM(I,J),J=1,8)
  157 FORMAT(8A10)
  141 CONTINUE
      ENDFILE 8
      ERR=0.0
      CALL PERMFIL(ERR,7HCATALOG,5HTAPE8,SUB,24CY,1)
      IF(ERR.NE.0.0)GO TO 22
      CALL RETURN(5HTAPE8)
  202 IF(JB.NE.1)GO TO 302
    7 PRINT 1006
 1006 FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR COST ARRAY.--- A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE2)
      CALL REQUEST(5HTAPE2,3H*PF)
      WRITE(2,*)((A(I,J),I=1,30),J=1,20)
      ENDFILE 2
      ERR=0.0
      CALL PERMFIL(ERR,7HCATALOG,5HTAPE2,SUB,24CY,1)
      IF(ERR.NE.0.0)GO TO 7
      CALL RETURN(5HTAPE2)
  302 IF(JC.NE.1)RETURN
    9 PRINT 1007
 1007 FORMAT(* INPUT THE NAME YOU CHOOSE TO GIVE THE FILE*,/,
     +*YOUR PRODUCTION ARRAY.---A UNIQUE FILE NAME.*)
      CALL NAMCHK(SUB)
      CALL RETURN(5HTAPE2)
      CALL REQUEST(5HTAPE2,3H*PF)
      WRITE(2,*)((PRODM(I,J),I=1,10),J=1,20)
      ENDFILE 2
      ERR=0.0
      CALL PERMFIL(ERR,7HCATALOG,5HTAPE2,SUB,24CY,1)
      IF(ERR.NE.0.0)GO TO 9
      CALL RETURN(5HTAPE2)
      RETURN
      END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS	DEF LINE	REFERENCES			
3 FILES	63	100	110	148	151

VARIABLES	SN	TYPE		RELOCATION								
0 A		REAL	ARRAY	F.P.	REFS	54	142	DEFINED	63	98		
654 ERR		REAL			REFS	83	84	96	97	106	107	132
					133	145	146	158	159	DEFINED	82	95
					105	181	144	157				
0 HEADW		REAL	ARRAY	F.P.	REFS	54	127	DEFINED	63	86		
655 I		INTEGER			REFS	86	98	108	127	142	155	
					DEFINED	85	98	108	126	142	155	
651 IA		INTEGER			REFS	75	76	DEFINED	72			
371 IABC	*	INTEGER			DEFINED	55						
652 IB		INTEGER			REFS	75	90	DEFINED	72			
653 IC		INTEGER			REFS	75	100	DEFINED	72			
662 IEM		INTEGER	*UNDEF		REFS	55						
0 I19		INTEGER		F.P.	REFS	57	DEFINED	63				
656 J		INTEGER			REFS	86	98	108	127	142	155	
					DEFINED	86	98	108	127	142	155	
657 JA		INTEGER			REFS	118	119	DEFINED	115			
660 JB		INTEGER			REFS	118	135	DEFINED	115			
661 JC		INTEGER			REFS	118	148	DEFINED	115			
0 PROGM		INTEGER	ARRAY	F.P.	REFS	55	155	DEFINED	63	108		
650 SUM		INTEGER			REFS	55	79	83	93	96	103	106
					123	132	139	145	152	158		

FILE NAMES	MODE									
INPUT	FREE	READS	72	115						
OUTPUT	FMT	WRITES	68	77	91	101	111	120	136	149
TAPE1	FREE	READS	98	108						
TAPE2	FREE	WRITES	142	155	MOTION	143	156			
TAPE4	FREE	WRITES	75	118						
TAPE7	FMT	READS	86							
TAPE8	FMT	WRITES	127	MOTION	130					

EXTERNALS	TYPE	ARGS	REFERENCES							
EOF	REAL	1	73	116						
NAMCHK		1	79	93	113	123	139	152		
PERMFIL		6	83	96	116	132	145	158		
REQUEST		2	125	141	154					
RETURN		1	81	89	34	99	104	109	124	134	140
			147	153	150					

STATEMENT LABELS			DEF LINE	REFERENCES		
31 2			77	84		
67 3			91	97		
107 4			101	107		
0 6		INACTIVE	120			
202 7			136	146		
226 8			149	159		
444 10	FMT	NO REFS	80			
126 22			111	67	116	133
0 41			88	85		
455 100	FMT		87	86		
0 141			129	126		
577 157	FMT		128	127		
65 201			90	76		

STATEMENT LABELS				DEF LINE	REFERENCES
200	202			135	119
105	301			100	90
224	302			148	135
375	1000	FMT		69	68
435	1001	FMT		78	77
462	1002	FMT		92	91
500	1003	FMT		102	101
517	1004	FMT		112	111
556	1005	FMT		121	120
605	1006	FMT		137	136
627	1007	FMT		150	149
0	8000		INACTIVE	74	73
0	8022		INACTIVE	117	116
17	9000			68	73

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
44	41	* I	85 88	208	EXT REFS NOT INNER
47		* J	86 86	118	EXT REFS
151	141	* I	126 129	208	EXT REFS NOT INNER
154		* J	127 127	118	EXT REFS

STATISTICS

PROGRAM LENGTH 10108 520

520008 CM USED

```
      C
      C                  SUBROUTINE SPREAD(A,NYEARS,NROWS)
      C
      C THIS ROUTINE SPREADS COSTS OVER MULTIPLE YEARS.  IN THE MAIN, IT RECEI
      C
      C THE COSTS DELINEATED IN THE YEAR A PRODUCT IS RECEIVED AND SPREADS THE
      C
      C COSTS OVER THE TIME PERIOD THEY ACTUALLY OCCURRED.
      C
      C/
      C
            SUBROUTINE SPREAD(A,NYEARS,NROWS)
            DIMENSION A(50,20),B(50,30),SPR(50,9)
            DATA (SPR(I,1),I=1,50) /50*0./
            DATA (SPR(I,2),I=1,50) /50*.2/
            DATA (SPR(I,3),I=1,50) /50*.2/
            DATA (SPR(I,4),I=1,50) /50*.2/
            DATA (SPR(I,5),I=1,50) /50*.4/
            DATA (SPR(I,6),I=1,50) /50*0./
            DATA (SPR(I,7),I=1,50) /50*0./
            DATA (SPR(I,8),I=1,50) /50*0./
            DATA (SPR(I,9),I=1,50) /50*0./
            DATA IABC/3/
            DO 755 I=1,50
            DO 755 J=1,30
      755   B(I,J)=0.
      9000  PRINT 1000
      1000  FORMAT(* IF AN EXPLANATION OF THIS ROUTINE IS REQUIRED ENTER 1, OT
           *HERWISE ENTER 2*)
            READ*,IA
            IF(EOF(5))9000,8000
      8000  CONTINUE
            WRITE(4,*)IA
            IF(IA.EQ.555)PRINT 2000
            IF(IA.NE.1)GO TO 10
      9001  PRINT 1001,(SPR(1,J),J=1,9)
      1001  FORMAT(* COSTS CAN BE SPREAD OVER 9 YEARS.  9 DIGITS ARE USED, E.G
           *.*,/,9F7.3,/,* -THE 1ST NUMBER GIVES THE FRACTION OF THE COST SPRE
           *AD TO THE 4 TH PREVIOUS YEAR,*,/,* THE 5 TH NUMBER GIVES THE FRACT
           *ION OF THE COSTS APPLICABLE TO THE YEAR IN WHICH THE COSTS ARE PRE
           *SENTLY ALLOCATED, ETC.*,//,* IF THE METHOD OF SPREADING AS DISPLAY
           *ED IN THE ABOVE EXAMPLE IS ACCEPTABLE (FOR EACH ROW) ENTER 1, OTHE
           *RWISE ENTER 2*)
            READ*,IB
            IF(EOF(5))9001,8001
      8001  CONTINUE
            WRITE(4,*)IB
            IF(IB.EQ.555)PRINT 2000
            IF(IB.EQ.1)GO TO 20
            GO TO 30
       10   PRINT 1002,(SPR(1,J),J=1,9)
      1002  FORMAT(* IF EACH COST IS TO BE SPREAD AS*,/, 9F7.3,/,* ENTER 1, OT
           *HERWISE ENTER 2*)
            READ*,IC
            IF(EOF(5))  10,8010
      8010  CONTINUE
            WRITE(4,*)IC
```

```
      IF(IC.EQ.555)PRINT 2000
      IF(IC.EQ.1)GO TO 20
   30 PRINT 1003
 1003 FORMAT(* IF EACH COST IS TO BE IDENTICALLY SPREAD ENTER 1, OTHERWI
     *SE ENTER 2*)
      READ*,ID
      IF(EOF(5)) 30,8030
 8030 CONTINUE
      WRITE(4,*)ID
      IF(ID.EQ.555)PRINT 2000
 2000 FORMAT(* *,* HELP IS NOT IN EAGLE3.*)
      IF(ID.EQ.1)GO TO 40
C     SPREAD COSTS INDEPENDENTLY.
C     SPREAD COSTS INDEPENDENTLY.
 9002 PRINT 1004
 1004 FORMAT(* THE COSTS ARE SPREAD AS DEFINED BY A SET OF 9 NUMBERS, AS
     * DESCRIBED EARLIER.*,/,* ENTER THE NUMBER OF SETS OF 9 NUMBERS TO
     *BE USED, THE FIRST SET ENTERED WILL HAVE THE INDEX 1, THE SECOND 2
     *, ETC.*)
      READ*,IE
      IF(EOF(5))9002,8002
 8002 CONTINUE
      WRITE(4,*)IE
      IF(IE.EQ.555)PRINT 2000
      IF(IE.GT.50)GO TO 9002
      DO 110 I=1,IE
 9003 PRINT 1005,I
 1005 FORMAT(* ENTER SET*,I2)
      READ*,(SPR(I,J),J=1,9)
      IF(EOF(5))9003,8003
 8003 CONTINUE
      WRITE(4,*)(SPR(I,J),J=1,9)
  110 CONTINUE
      DO 111 I=1,NROWS
 9004 PRINT 1006,I
 1006 FORMAT(* SPECIFY INDEX FOR ROW*,I3)
      READ*,IF
      IF(EOF(5))9004,8004
 8004 CONTINUE
      WRITE(4,*)IF
      IF(IF.EQ.555)PRINT 2000
      DO 111 J=1,NYEARS
      DO 111 K=1,9
  111 B(I,J+K-1)=B(I,J+K-1)+A(I,J)*SPR(IF,K)
  444 KK=100
      KA=-1
      DO 112 I=1,50
      DO 112 J=1,30
      IF(B(I,J).GT.0..AND.J.GT.KA)KA=J
  112 IF(B(I,J).GT.0..AND.J.LT.KK)KK=J
      NYEARS=KA-KK+1
      PRINT 1010,NYEARS
 1010 FORMAT(* THE NUMBER OF YEARS OF INTEREST IS NOW*,I3)
      IK=0
      DO 113 I=KK,KA
      IK=IK+1
      DO 113 J=1,NROWS
```

```
                  113  A(J,IK)=B(J,I)
                C       SPREAD COSTS INDEPENDENTLY.
                C       SPREAD COSTS INDEPENDENTLY.
                   98  RETURN
                C       SPREAD ALL THE COSTS THE SAME.
                   40  PRINT 1007
                 1007  FORMAT(* SPECIFY THE SET OF 9 NUMBERS TO BE USED FOR SPREADING. SE
                      *PARATE BY COMMAS*)
                       READ*,(SPR(1,I),I=1,9)
                       IF(EOF(5))  40,8040
                 8040  CONTINUE
                       WRITE(4,*)(SPR(1,I),I=1,9)
                   20  DO 211 I=1,NROWS
                       DO 211 J=1,NYEARS
                       DO 211 K=1,9
                  211  B(I,J+K-1)=B(I,J+K-1)+A(I,J)*SPR(1,K)
                       GO TO 444
                C       SPREAD ALL THE COSTS THE SAME.
                       END
```

SYMBOLIC REFERENCE MAP (R=2)

ENTRY POINTS

		DEF LINE	REFERENCES
3	SPREAD	12	118

VARIABLES

		SN	TYPE		RELOCATION								
0	A		REAL	ARRAY	F.P.	REFS	13	101	130	DEFINED	12	115	
1022	B		REAL	ARRAY		REFS	13	101	106	107	115	130	
						DEFINED	26	101	130				
1006	I		INTEGER			REFS	26	84	86	89	92	3*101	106
							107	115	123	126	3*130	DEFINED	24	83
							91	114	112	123	126	127		
1010	IA		INTEGER			REFS	33	34	35	DEFINED	30			
427	IABC	*	INTEGER			DEFINED	23							
1011	IB		INTEGER			REFS	47	48	49	DEFINED	44			
1012	IC		INTEGER			REFS	57	58	59	DEFINED	54			
1013	ID		INTEGER			REFS	65	67	69	DEFINED	63			
1014	IE		INTEGER			REFS	80	81	82	83	DEFINED	77		
1015	IF		INTEGER			REFS	97	98	101	DEFINED	94			
1021	IK		INTEGER			REFS	113	115	DEFINED	111	113			
1007	J		INTEGER			REFS	26	36	51	86	89	3*101	3*106	
							3*107	2*115	3*130	DEFINED	25	36	51	86
							89	99	105	114	128			
1016	K		INTEGER			REFS	3*101	3*130	DEFINED	100	129			
1020	KA		INTEGER			REFS	106	109	112	DEFINED	103	106		
1017	KK		INTEGER			REFS	107	108	112	DEFINED	102	107		
0	NROWS		INTEGER		F.P.	REFS	91	114	127	DEFINED	12			
0	NYEARS		INTEGER		F.P.	REFS	99	109	128	DEFINED	12	108		
3756	SPR		REAL	ARRAY		REFS	13	36	51	89	101	126	130	
						DEFINED	14	15	16	17	18	19	20	
							21	22	86	123				

FILE NAMES	MODE									
INPUT	FREE	READS	30	44	54	63	77	86	94	123
OUTPUT	FMT	WRITES	27	34	36	48	51	58	60	67
		72	81	34	92	98	109	120		
TAPE4	FREE	WRITES	33	47	57	66	80	89	97	126

EXTERNALS	TYPE	ARGS	REFERENCES						
EOF	REAL	1	31	45	55	64	78	87	95	124

STATEMENT LABELS			DEF LINE	REFERENCES					
100	10		51	35	55				
377	20		127	49	59				
130	30		60	50	64				
343	40		120	69	124				
0	98	INACTIVE	118						
0	110		90	83					
0	111		101	91	99	100			
0	112		107	104	105				
0	113		115	112	114				
0	211		130	127	128	129			
270	444		102	131					
0	755		26	24	25				
433	1000	FMT	28	27					
464	1001	FMT	37	36					
557	1002	FMT	52	51					
605	1003	FMT	61	60					
640	1004	FMT	73	72					
704	1005	FMT	85	84					
726	1006	FMT	93	92					
761	1007	FMT	121	120					
758	1010	FMT	110	109					
630	2000	FMT	68	34	48	58	67	81	98
0	8000	INACTIVE	32	31					
0	8001	INACTIVE	46	45					
0	8002	INACTIVE	79	78					
0	8003	INACTIVE	88	87					
0	8004	INACTIVE	96	95					
0	8010	INACTIVE	56	55					
0	8030	INACTIVE	65	64					
0	8040	INACTIVE	125	124					
31	9000		27	31					
47	9001		36	45					
146	9002		72	78	82				
165	9003		84	87					
227	9004		92	95					

LOOPS	LABEL	INDEX	FROM-TO	LENGTH	PROPERTIES
16	755	* I	24 26	138	NOT INNER
23	755	J	25 26	29	INSTACK
52		* J	36 36	108	EXT REFS
103		* J	51 51	108	EXT REFS
165	110	* I	83 90	418	EXT REFS NOT INNER
172		* J	86 86	119	EXT REFS
211		* J	89 89	118	EXT REFS
227	111	* I	91 101	418	EXT REFS NOT INNER
244	111	* J	99 101	218	NOT INNER
256	111	K	100 101	48	INSTACK

LOOPS	LABEL		INDEX	FROM-TO	LENGTH	PROPERTIES
273	112	*	I	104 107	228	NOT INNER
308	112		J	105 107	128	OPT
324	113	*	I	112 115	168	NOT INNER
335	113		J	114 115	28	INSTACK
356		*	I	123 123	108	EXT REFS
366		*	I	126 126	108	EXT REFS
400	211	*	I	127 130	248	NOT INNER
401	211	*	J	129 130	208	NOT INNER
412	211		K	129 130	48	INSTACK

STATISTICS
PROGRAM LENGTH 46733 2491
520008 CM USED

```
      C
      C/
      C
      C********APRAYS********
      C
      C     A(50,20) IS THE ARRAY CONTAINING THE ORIGINAL COST DATA.  UPON
      C          RETURN FROM THIS SUBROUTINE IT CONTAINS THE COSTS AFTER
      C          SPREADING.
      C
      C     B(50,30) IS USED IN CALCULATING THE SPREAD COST DATA.
      C
      C     SPR(50,9) IS USED TO SPECIFY HOW THE COSTS ARE SPREAD.
      C          IF A COST IS ORIGINALLY SPECIFIED FOR YEAR J THEN THIS ROU
      C          CAN SPREAD THE COSTS OVER THE (J-4)TH TO THE (J+4)TH YEAR.
      C          SPR CAN CONTAIN 50 DIFFERENT SPREADING ARRAYS.
      C
      C********ARRAYS********
      C
      C********VARIABLES********
      C
      C     IA IS AN INDEX THAT DELINEATES WHETHER AN EXPLANATION OF THIS
      C          ROUTINE WILL BE OUTPUT.
      C
      C     IB DELINEATES IF THE DEFAULT ARRAY WILL BE ACCEPTED.
      C
      C     IC HAS THE SAME FUNCTION AS IB.
      C
      C     ID DELINEATES WHETHER EACH COST IS TO BE IDENTICALLY SPREAD.
      C
      C     IE IS THE NUMBER OF DIFFERENT WAYS THE COST DATA WILL BE SPREAD
      C
      C     IF DELINEATES THE SPREADING VERSION TO BE USED.
      C
      C     KK IS USED TO DETERMINE THE FIRST NON-ZERO COST COLUMN
      C          OF ARRAY B AND TO SET THIS COLUMN EQUAL TO THE FIRST COLUM
      C          IN ARRAY A.
      C
      C     KA IS USED TO INDEX THE COLUMNS OF THE COST ARRAY.  IT IS THE L
      C          NON-ZERO COLUMN NUMBER.
      C
      C     NYEARS IS THE NUMBER OF YEARS OF INTEREST.----NOTE. THIS VALUE
      C          MAY CHANGE AS THE RESULT OF SPREADING.
      C
      C     NROWS IS THE NUMBER OF DIFFERENT COST ELEMENTS (ROWS) IN
      C               THE COST ARRAY.
      C
      C      IABC DELINEATES THE ROUTINE FROM WHICH HELP WAS CALLED.
      C
      C********VARIABLES********
      C********VARIABLES********
      C
      C/
```

OVERLAY(FLIER,0,0)

-------- OVERLAY(FLIER,0,0)

FWA OF THE LOA 111
LWA+1 OF THE LOAD 43667

TRANSFER ADDRESS -- EAGLE3 5773

PROGRAM AND BLOCK ASSIGNMENTS.

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCESSR	VER	LEVEL	HARDWARE	COMMENTS
EAGLE3	111	15053	LGO	04/18/78	FTN	4.6	446	666X I	PROGRAM OPT=1
CAL1	15164	75	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
CAL3	15261	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
CAL2	15305	121	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
CAL4	15426	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
HARCON	15452	116	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
CAL	15570	50	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
ESCALAT	15640	73	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
NEWRA	15733	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
CAL5	15757	50	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
PRODUC	16027	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
OUT	16053	73	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
ADDL	16146	106	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
DIVIDEL	16254	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
ELEMENT	16300	301	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
RINSERT	16601	47	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
CUM	16650	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
ROWMOD	16674	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
APRINT	16720	277	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
GCS	17217	304	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
T1SL	17523	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
CINSERT	17547	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
NAMCHK	17573	133	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
MULT	17726	24	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
FILES	17752	1010	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
SPREAD	20762	4673	LGO	04/18/78	FTN	4.6	446	666X I	SUBROUTINEOPT=1
PERMFIL	25655	1054	UL-S	04/28/77	COMPASS	3.	2-414		PERMFILE FUNCTION SUBROUTINE
RETURN	26731	70	UL-S	04/28/77	COMPASS	3.	2-414		FTN-CALLABLE FILE RETURN/UNLOAD
REQUEST	27021	472	UL-S	04/28/77	COMPASS	3.	2-414		FTN-CALLABLE EQUIPMENT REQUEST PROCESSOR
/STP.END/	27513	1							
/FCL.C./	27514	23							
/Q8.IO./	27537	133							
Q8NTRY=	27572	0	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		FCL INITIALIZATION ROUTINE.
COMIO=	27572	64	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		COMMON CODED I/O ROUTINES AND CONSTANTS.
DECODE=	27756	73	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		FORMATTED READ FROM CORE.
ENDFIL=	30051	61	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		WRITE END OF LOGICAL FILE MARK.
FECMSK=	30132	41	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		INITIALIZE CONSTANTS.
FLTOUT=	30173	311	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		COMMON FLOATING OUTPUT CODE
FORSYS=	30504	604	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		FORTRAN OBJECT LIBRARY UTILITIES.
INCOM=	31310	276	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		COMMON INPUT FORMATTING CODE
INPC=	31606	160	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		FORMATTED READ FORTRAN RECORD.
KRAKER=	31766	406	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		PROCESS FORMATTED FORTRAN INPUT.

BLOCK	ADDRESS	LENGTH	FILE	DATE	PROCESSR	VER	LEVEL	HARDWARE	COMMENTS
LOIN=	32374	260	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		LIST DIRECTED INPUT FORMATTING
OUTCOM=	32654	154	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		COMMON OUTPUT CODE
ENCODE=	33030	123	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		FORMATTED WRITE INTO CORE.
EOF	33153	16	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		TEST FOR END OF FILE STATUS.
FLTIN=	33171	156	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		COMMON FLOATING INPUT CONVERTER.
FMTAP=	33347	353	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		CRACK APLIST AND FORMAT FOR KODER/KRAKER.
FORUTL=	33722	16	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		FCL MISC. UTILITIES.
GETFIT=	33740	42	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		LOCATE AN FIT GIVEN A FILE NAME.
INPF=	34002	201	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		LIST DIRECTED INPUT CONTROL
KODER=	34203	456	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		OUTPUT FORMAT INTERPRETER.
LDOUT=	34661	241	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		LIST DIRECTED OUTPUT FORMATTING
OUTC=	35122	172	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		FORMATTED WRITE FORTRAN RECORD.
OUTF=	35314	163	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		LIST DIRECTED OUTPUT CONTROL
SYSAID=	35477	1	SL-FORTRAN	07/27/77	COMPASS	3.	4-446		LINK BETWEEN SYS=AID AND INITIALIZATION CODE.
/CON.RM/	35500	6							
CIO.RM	35506	40	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/ADB.RM/	35546	10							
MOVE.RM	35556	66	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
MCT.RM	35644	233	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/JMPS.RM/	36077	11							
/MEMC.RM/	36110	3							
/OPES.FO/	36113	1							
/OPEN.FO/	36114	7							
OPEN.RM	36123	237	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/TERM.RM/	36362	1							
/PUT.FO/	36363	7							
PUT.SQ	36372	1411	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
WAR.SQ	40003	260	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/CLSF.FO/	40263	7							
CLSF.RM	40272	22	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/GET.BT/	40314	5							
BTRT.SQ	40321	115	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
WEOX.SQ	40436	150	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/SKFL.FO/	40506	7							
SKFL.SQ	40515	51	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
SYS.RM	40566	40	SL-SYSIO	02/15/78	COMPASS	3.	4-446		PROCESS SYSTEM REQUEST.
ERR.RM	40726	406	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
CHWR.SQ	41334	7	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
OSUB.RM	41343	71	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
OPEN.SQ	41434	257	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
OPEX.SQ	41713	14	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/PUT.RT/	41727	11							
RLEQ.RM	41740	43	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
CLSF.SQ	42003	134	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/CLSV.FO/	42137	7							
CLSV.SQ	42146	137	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/REW.FO/	42305	7							
REW.SQ	42314	42	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
/GET.FO/	42356	7							
/RPAR.XX/	42365	1							
/GET.RT/	42366	11							
GET.SQ	42377	1062	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
Z.SQ	43461	101	SL-SYSIO	07/27/77	COMPASS	3.	4-446		
FSU.SQ	43562	105	SL-SYSIO	07/27/77	COMPASS	3.	4-446		

1.240 CP SECONDS 635008 CM STORAGE USED 102 TABLE MOVES

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  CSA    NOS/BE L454D ECS  L454D-CMR1 02/16/78
16.20.02.ZA8ADJX  FROM    /AD
16.20.02.IP  00000192 WORDS - FILE INPUT  , DC 04
16.20.02.ZA8,T25,ID100,CM100000.  A750567,KJVACS,
16.20.02.YYPF,54211
16.20.05.REMOTE JOB - - NO CARDS WITH THIS DECK >
16.20.05.UT IN BIN-YM
16.20.05.ATTACH,SOURCE3.
16.20.05.PFN IS
16.20.05.SOURCE3
16.20.06.PF CYCLE NO. = 004
16.21.02.FTN,I=SOURCE3,P=2.
16.36.20.LOCKIN.
16.36.20.  NULL PROGRAM IGNORED AFTER  SPREAD
16.36.21.     4.779 CP SECONDS COMPILATION TIME
16.36.21.ATTACH,S,NOSLIB,ID=X654321.
16.36.21.PF CYCLE NO. = 001
16.36.21.LIBRARY,S.
16.36.22.REQUEST,FLIER,*PF.
16.36.24.MAP,PART.
16.36.24.LOAD,LGO.
16.36.25.NOGO.
16.36.35.CATALOG,FLIER,EAGLE3,RP=999.
16.36.36.INITIAL CATALOG
16.36.36.CT ID=  A750567 PFN=EAGLE3
16.36.36.CT CY= 001  00013368 WORDS.
16.36.36.OP  00020288 WORDS - FILE OUTPUT , DC 40
16.36.36.MS   43008  WORDS  (   50176 MAX USED)
16.36.36.SCM  70000  WORDS MAXIMUM
16.36.36.CPA      6.165 SEC.        2.675 ADJ.
16.36.36.IO      42.686 SEC.       21.355 ADJ.
16.36.36.CM     960.834 KWS.        7.688 ADJ.
16.36.36.CRUS                      31.719
16.36.36.COST                %     1.90
16.36.36.PP      67.731 SEC.     DATE 04/18/78
16.36.36.EJ  END OF JOB, AD  A750567.

**********        ZA8ADJX   //// END  OF LIST ////
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