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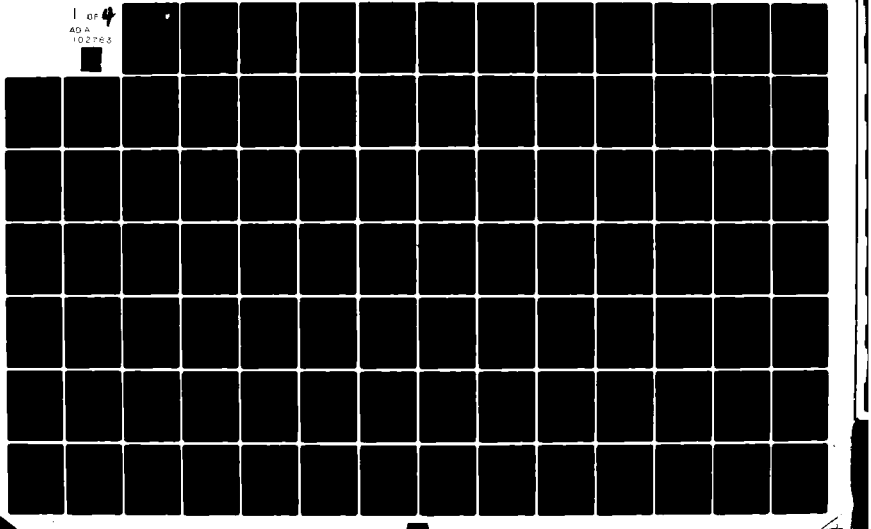
JUN 76 R J HANCOCK, F H CLEVELAND F30602-73-C-0380
UNCLASSIFIED RADC-TR-76-186-VOL-2-PT-2 NL



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AD A102783

RADC-TR-76-186, Vol II, Pt 2
Final Technical Report
June 1976

ENDO ATMOSPHERIC-EXO ATMOSPHERIC RADAR MODELING
(Computer Program Flow Charts)

General Dynamics

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ROME AIR DEVELOPMENT CENTER
AIR FORCE SYSTEMS COMMAND
GRIFFISS AIR FORCE BASE, NEW YORK 13441

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This technical report has been reviewed and is approved for publication.

APPROVED: John C. Cleary

JOHN C. CLEARY
Project Engineer

APPROVED: Moses A. Diab

MOSES A. DIAB
Acting Technical Director
Surveillance Division

FOR THE COMMANDER: John P. Huss

JOHN P. HUSS
Acting Chief, Plans Office

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	3. RECIPIENT'S CATALOG NUMBER:
4. TITLE (and Subtitle): ENDO ATMOSPHERIC-EXO ATMOSPHERIC RADAR MODELING, Computer Program Flow Charts	5. TYPE OF REPORT & PERIOD COVERED: Final Technical Report
	6. PERFORMING ORG. REPORT NUMBER: N/A
7. AUTHOR(s): Robert J. Hancock, Fred H. Cleveland	8. CONTRACT OR GRANT NUMBER(s): F30602-73-C-0380
9. PERFORMING ORGANIZATION NAME AND ADDRESS: General Dynamics, Convair Aerospace Division, P O Box 748, Ft Worth TX 76101	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS: 61101F, LDF 01707310
11. CONTROLLING OFFICE NAME AND ADDRESS: Rome Air Development Center (OCSA), Griffiss AFB NY 13441	12. REPORT DATE: June 1976
	13. NUMBER OF PAGES: 636
14. MONITORING AGENCY NAME & ADDRESS(if different from Controlling Office): Same	15. SECURITY CLASS. (of this report): UNCLASSIFIED
	15a. DECLASSIFICATION/DOWNGRADING SCHEDULE: N/A

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19. KEY WORDS (Continue on reverse side if necessary and identify by block number)
Radar
Simulation
Computer Modeling

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)
This effort is concerned with the development & implementation of a set of digital computer programs that will augment the RADC digital computer radar simulation model procured under Contr F30602-72-C-0393 (01/07201). The computer programs shall consist of a sequence of subroutines that correspond to separate functions such as a chaff model, target model, propagation effects and clutter model. The original radar simulation model will be expanded to include a bistatic capability and will include ECM and phase coded pulse compression receiver techniques. In addition, an interactive system has been designed for

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the simulation. Using an interactive display, an engineer would be able to understand what is happening by being able to observe results at several intermediate points in the problem. A picture is worth a thousand words. For example, an antenna pattern or waveform response to a target is more meaningful than a long table of numerical listings. Parts of the simulation were used by RADC for Deep Space Surveillance Radar (DSSR) waveform analysis, generating antenna patterns and tradeoffs involving phase shifter bit-size for the Advanced Space Defense Program (ASDP). The RADC radar simulation model is being used to support Seek Sail, Cobra Judy, Digital Coded Radar and Seek Sentry.

This report contains a large percentage of machine-produced copy which is not of the highest printing quality but because of economical consideration, it was determined in the best interest of the government that they be used in this publication.

This report contains Vol I, Pt 1 (Sections 1-7 and 9-10) (Pages 1-1 thru 1-5, 2-1 thru 2-24, 3-1 thru 3-35, 4-1 thru 4-23, 5-1 thru 5-6, 6-1 thru 6-39, 7-1 thru 7-30, 9-1 thru 9-3 and 10-1 thru 10-2).

Vol I, Pt 2 contains Section 8 (Pages 8-1 thru 8-174).

Vol I, Pt 3 contains Section 8 (Pages 8-175 thru 8-418).

Vol II, Pt 1 contains(Sections 1-8 and 10 & 11) (Pages 1-1, 2-1 thru 2-24, 3-1 thru 3-15, 4-1 thru 4-137, 5-1 thru 5-16, 6-1 thru 6-44, 7-1, 8-1 thru 8-26, 10-1 thru 10-4 and 11-1 thru 11-2).

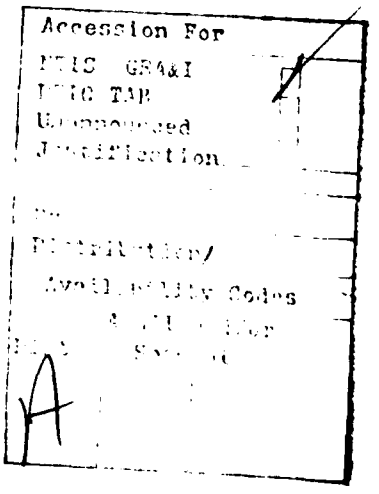
Vol II, Pt 2 contains Sections 9 and 10 (Pages 9-1 thru 9-234 and Pages 10-1 thru 10-4).

Vol III contains Sections 1 thru 6 (Pages 1-1 thru 1-2, 2-1 thru 2-22, 3-1 thru 3-53, 4-1 thru 4-141, 5-1 thru 5-3 and 6-1).

Vol IV, Pt 1 contains Appendices A-K and Appendix M.

Vol IV, Pt 2 contains Appendix L.

This software has been updated & changes are being made under existing RADC contracts



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HET	9-103	9-221
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TARGET	9-109	9-222
CLUTTR	9-112	9-222
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PROGRAM/ SUBROUTINE/ FUNCTION	FLOW CHART PAGE	CROSS REFS. PAGE
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IPACK	9-118	9-223
IBOOL	9-119	9-223
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PXFRM	9-147	9-227
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RNDARY	9-150	9-227
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PHENC	9-167	9-229
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PLTFMT	9-175	9-231
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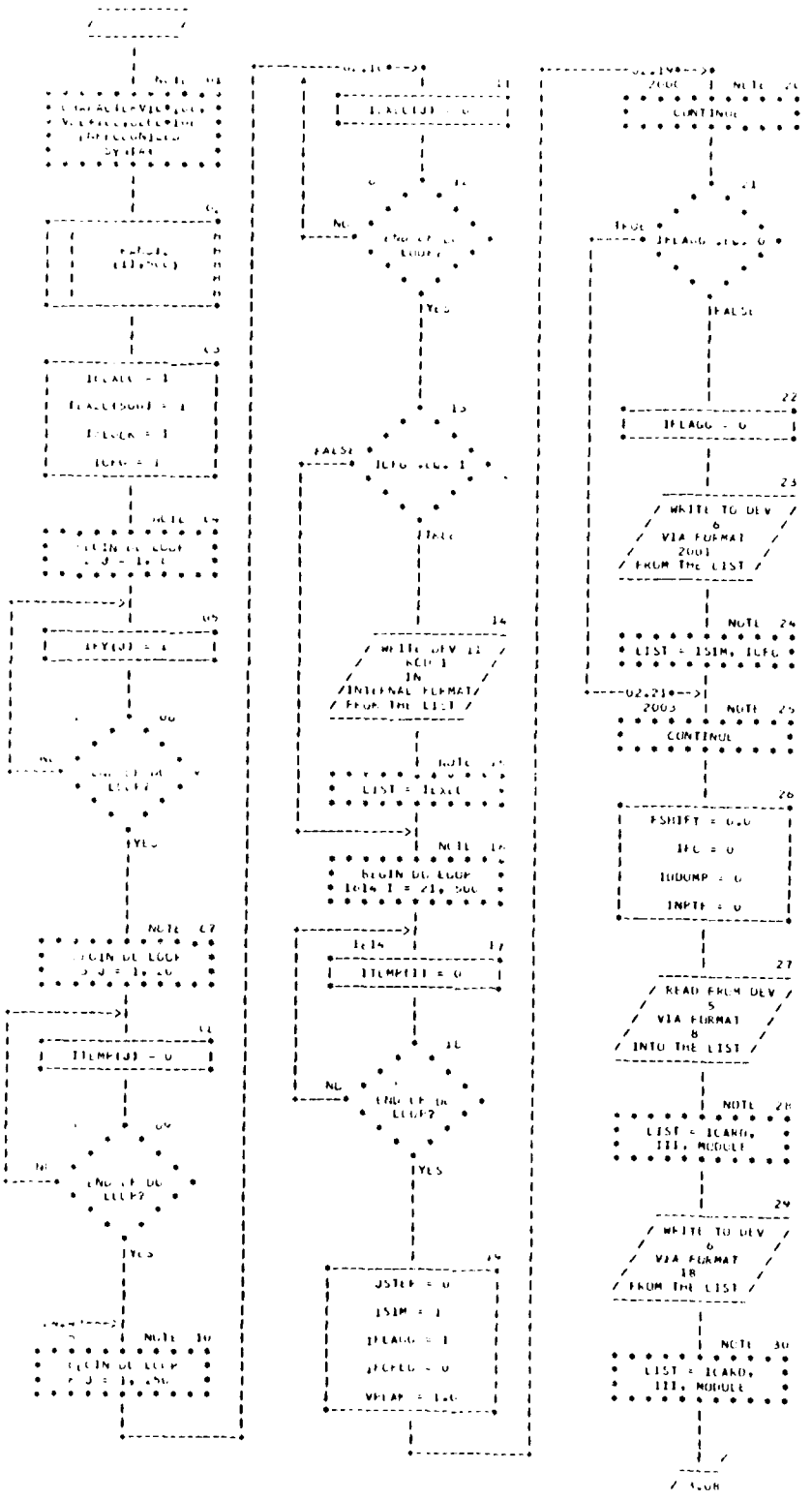
SECTION 9

RADSIM COMPUTER PROGRAM

FLOW CHARTS

This section includes the flow charts and cross references tables for all the modules of the radar simulation model.

Note that the page numbers referred to in the flow charts at various entry and exit points are those page numbers located in the upper right hand corner. These page numbers along with the box numbers are also referred to in the cross reference tables.



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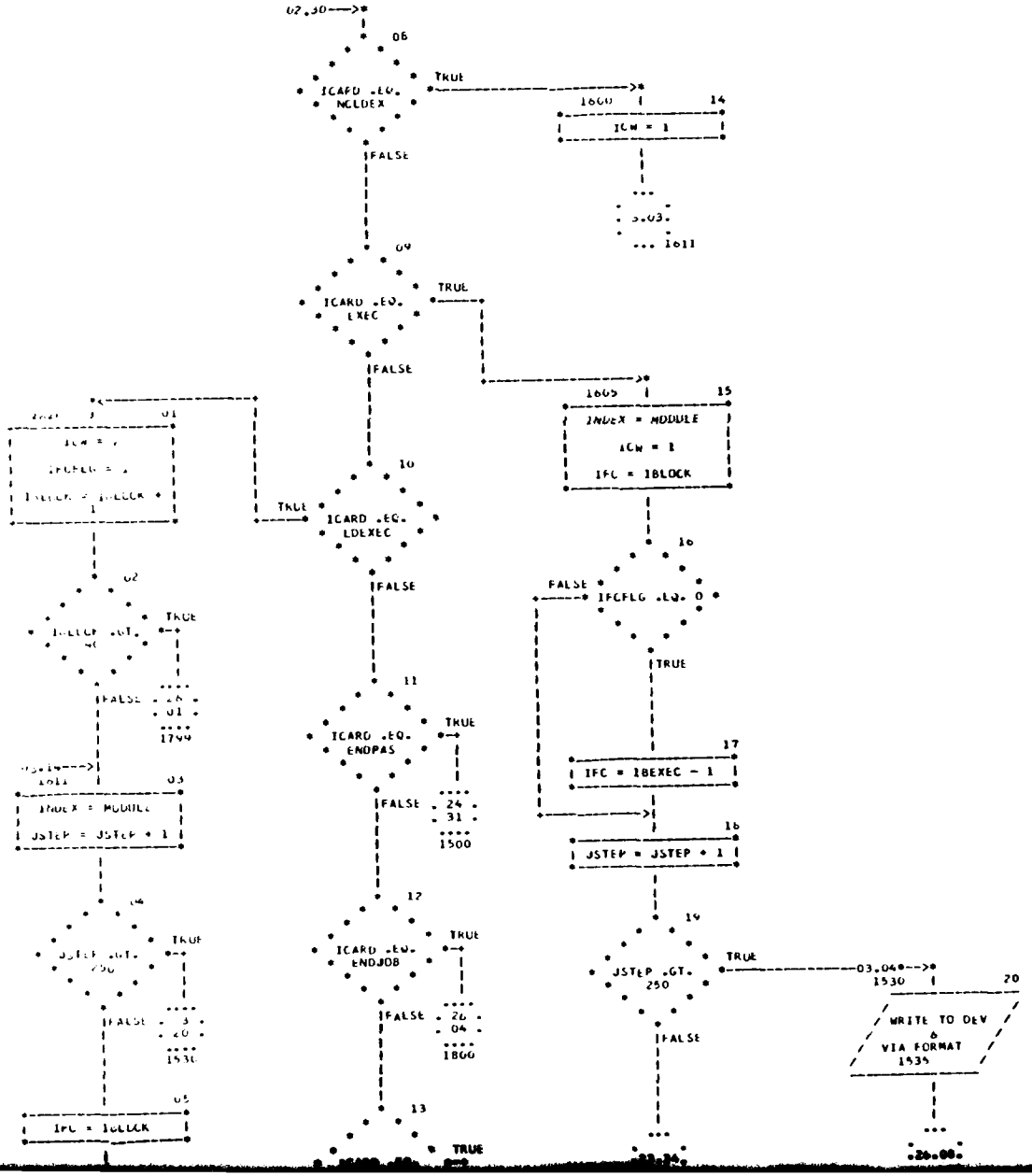

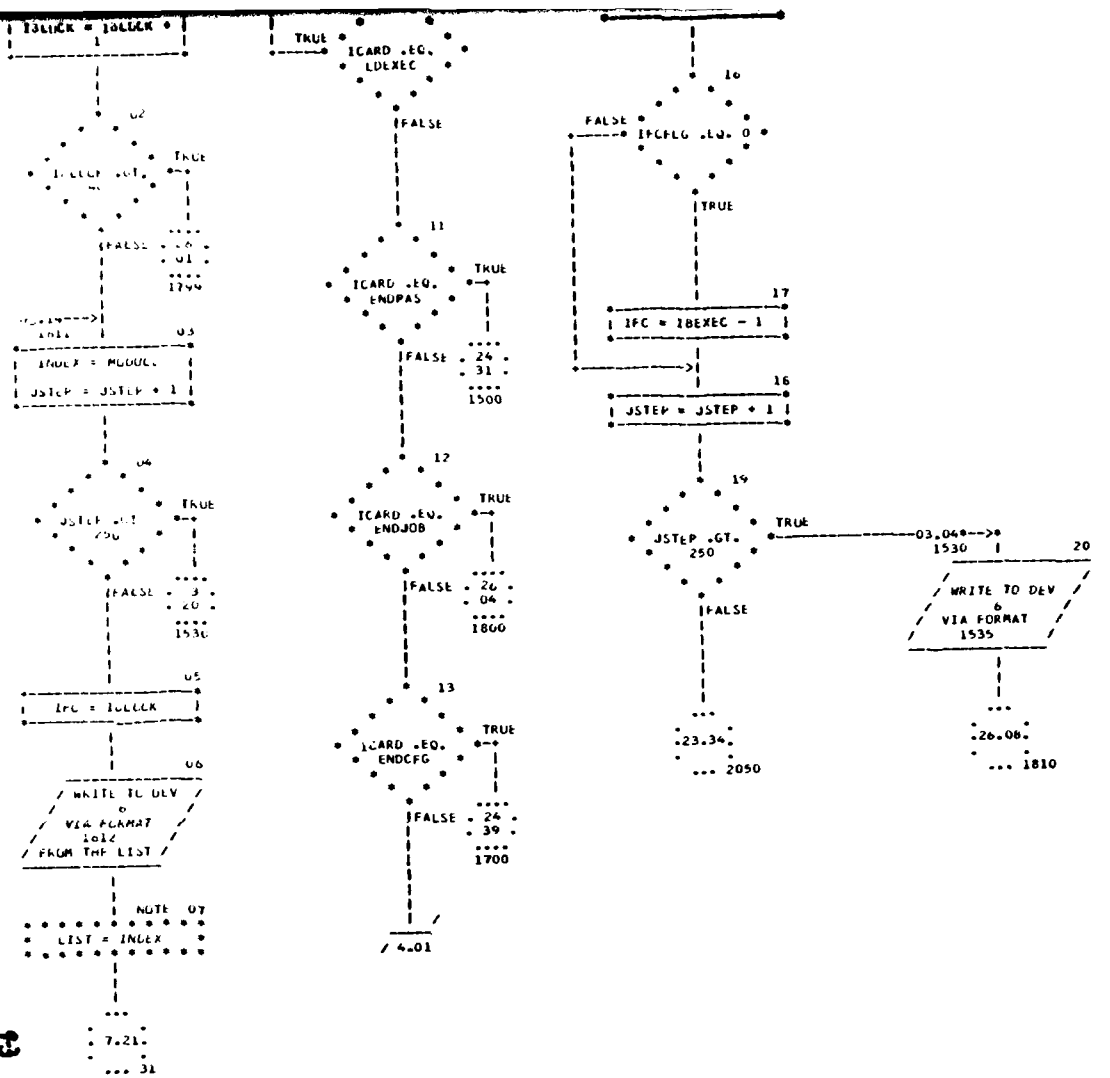
I3LOCK = IDLOCK + 1
02
TRUE
FALSE
1790
03
INDEX = MODULE
JSTEP = JSTEP + 1
04
TRUE
FALSE
3
20
1530
05
IFC = IDLOCK
06
WRITE TO DEV
6
VIA FORMAT
1012
FROM THE LIST
NOTE 07
LIST = INDEX
7.21.
... 31
TRUE
ICARD .EQ.
LDEXEC
FALSE
11
ICARD .EQ.
ENDPAS
TRUE
24
31
1500
FALSE
12
ICARD .EQ.
ENDJOB
TRUE
26
04
1800
FALSE
13
ICARD .EQ.
ENDCFG
TRUE
24
39
1700
FALSE
4.01
16
IFCFLG .EQ. 0
FALSE
TRUE
17
IFC = IBEXEC - 1
16
JSTEP = JSTEP + 1
19
JSTEP .GT.
250
TRUE
03.04
1530
FALSE
.23.34.
... 2050
20
WRITE TO DEV
6
VIA FORMAT
1535
.26.08.
... 1810

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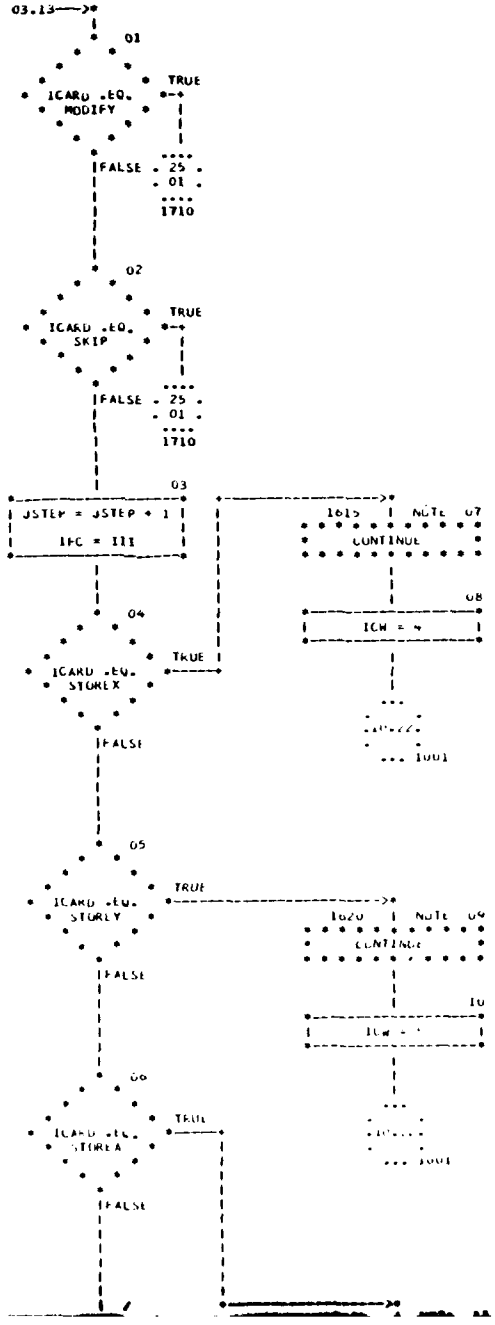
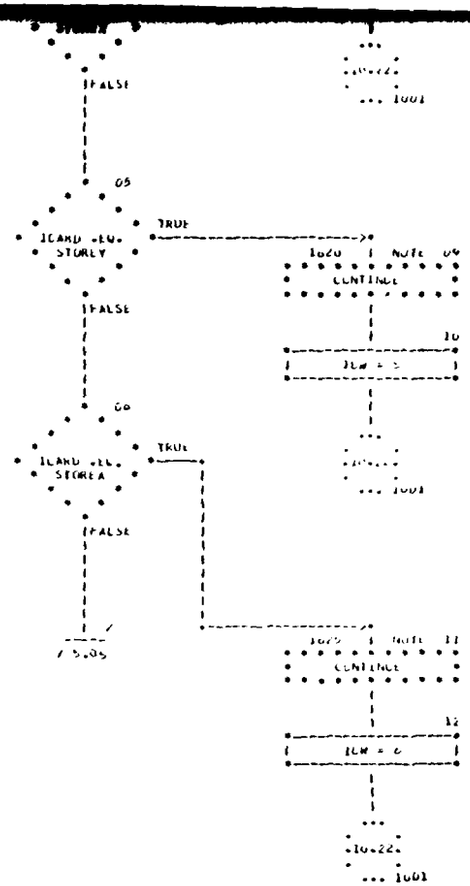
4-6




FALSE
05
ICARD .EQ.
STORLY
TRUE
1020
NOTE 04
CONTINUE
10
ICW = 1
06
ICARD .EQ.
STOREA
TRUE
FALSE
1025
NOTE 11
CONTINUE
12
ICW = 0
1022
1001

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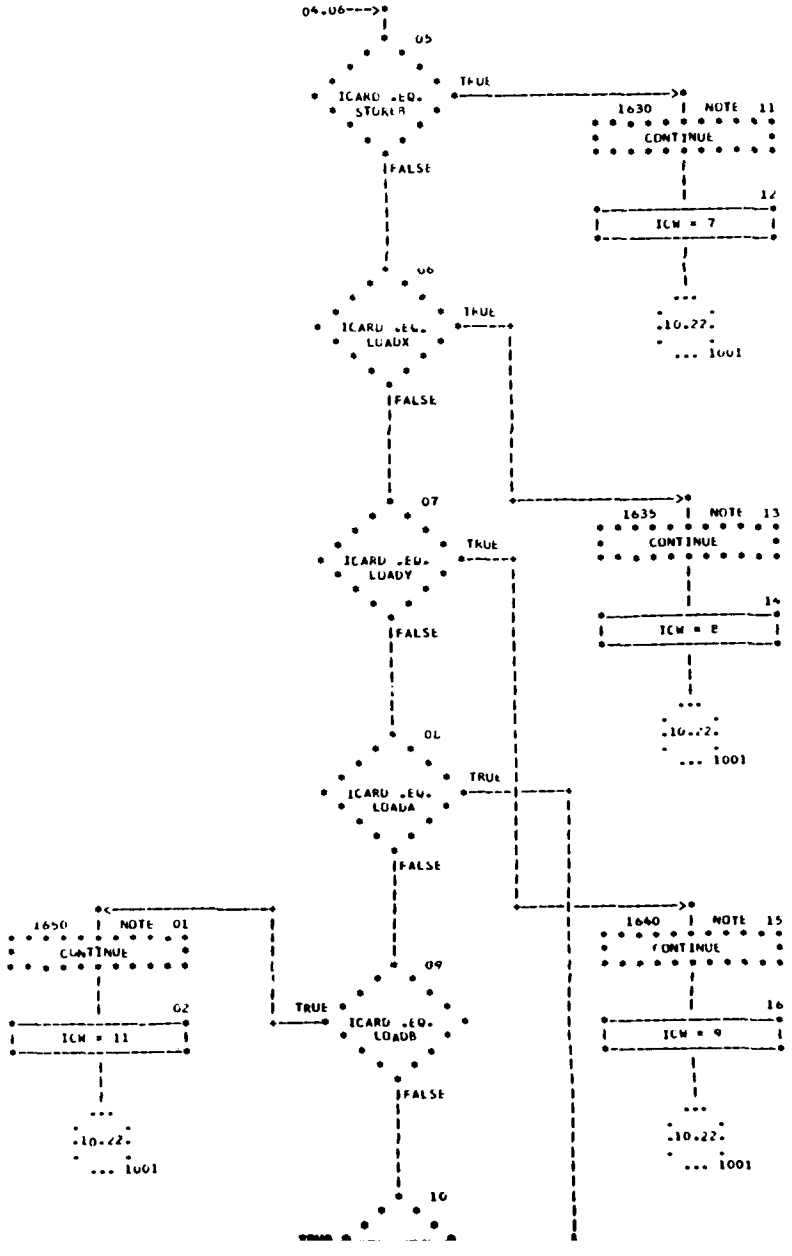


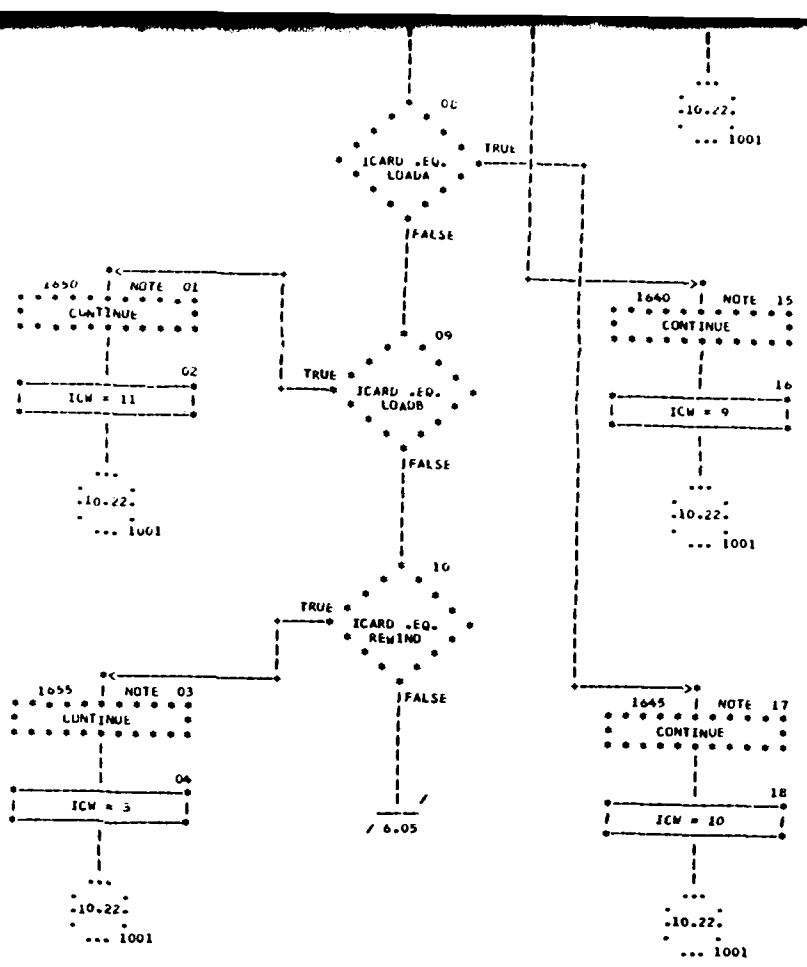
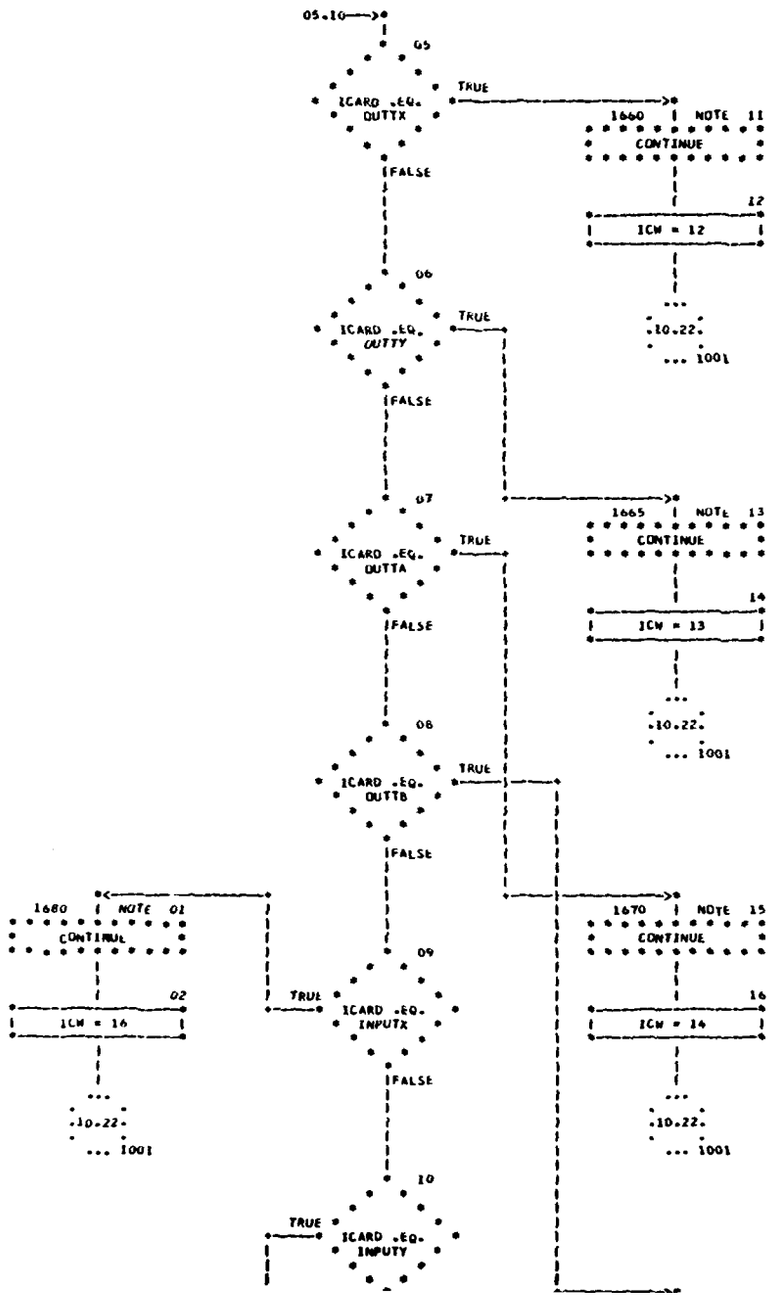
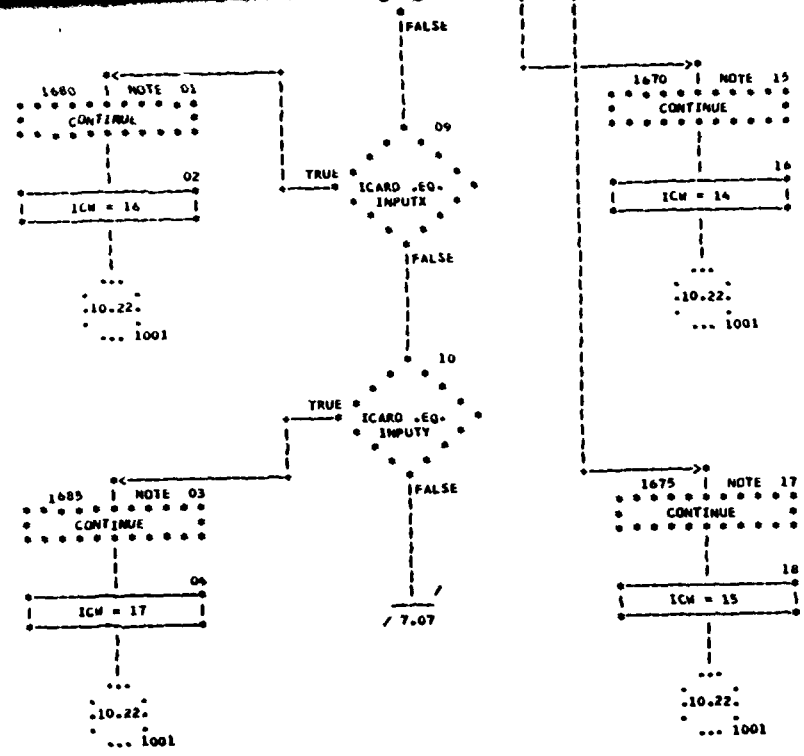

08
ICARD .EQ.
LOADA
TRUE
FALSE
1650 NOTE 01
CONTINUE
02
ICW = 11
...
.10.22.
... 1001
09
TRUE
ICARD .EQ.
LOADB
FALSE
10
TRUE
ICARD .EQ.
REWIND
FALSE
1655 NOTE 03
CONTINUE
04
ICW = 5
...
.10.22.
... 1001
/ 6.05
...
.10.22.
... 1001
1640 NOTE 15
CONTINUE
16
ICW = 9
...
.10.22.
... 1001
1645 NOTE 17
CONTINUE
18
ICW = 10
...
.10.22.
... 1001

CHART TITLE - PROCEDURES




FALSE
1680 NOTE 01
CONTINUE
09
TRUE
ICARD .EQ. INPUTX
02
ICW = 16
FALSE
...
.10.22.
... 1001
10
TRUE
ICARD .EQ. INPUTY
1685 NOTE 03
CONTINUE
FALSE
04
ICW = 17
/ 7.07
...
.10.22.
... 1001
1670 NOTE 15
CONTINUE
16
ICW = 14
...
.10.22.
... 1001
1675 NOTE 17
CONTINUE
18
ICW = 15
...
.10.22.
... 1001

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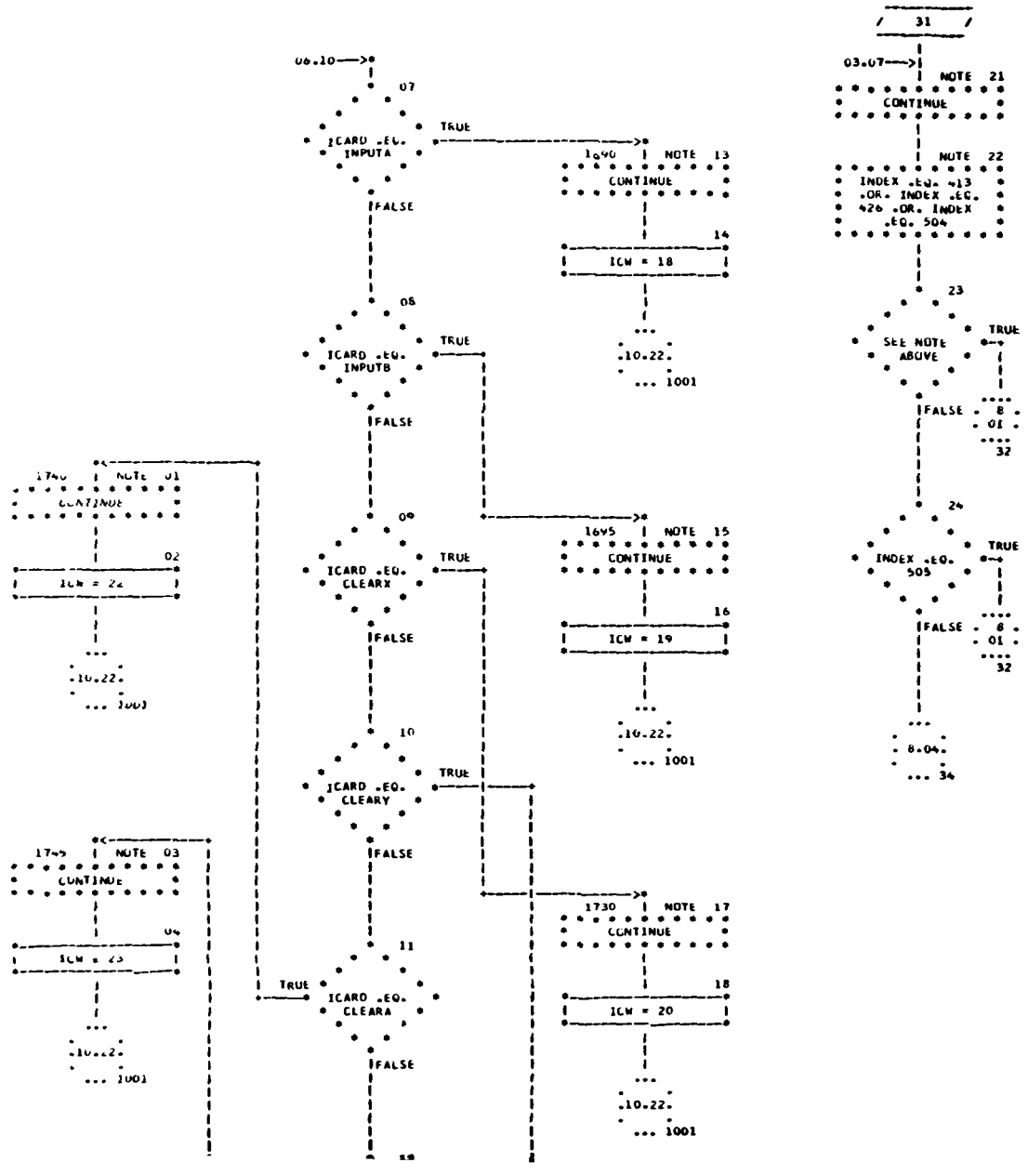

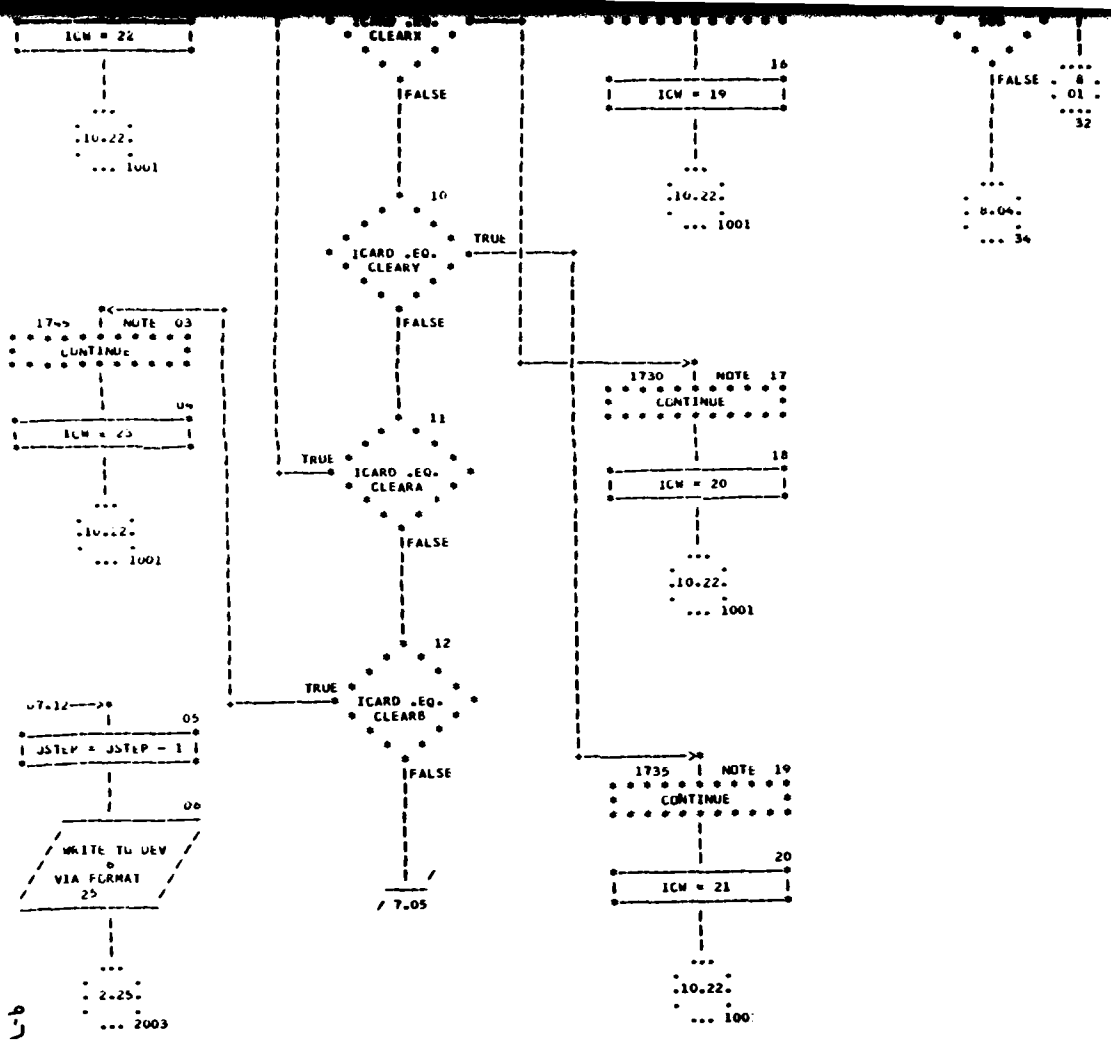
ICW = 22
.10.22.
... 1001
CLEARX
FALSE
16
ICW = 19
.10.22.
... 1001
FALSE
8.04.
... 34
10
ICARD .EQ. CLEARY
TRUE
FALSE
1730 NOTE 17
CONTINUE
18
ICW = 20
.10.22.
... 1001
1745 NOTE 03
CONTINUE
ICW = 23
.10.22.
... 1001
11
TRUE
ICARD .EQ. CLEARA
FALSE
12
TRUE
ICARD .EQ. CLEARB
FALSE
7.05
07.12
05
JSTEP = JSTEP - 1
06
WRITE TO DEV
VIA FORMAT
25
2.25.
... 2003
1735 NOTE 19
CONTINUE
20
ICW = 21
.10.22.
... 100

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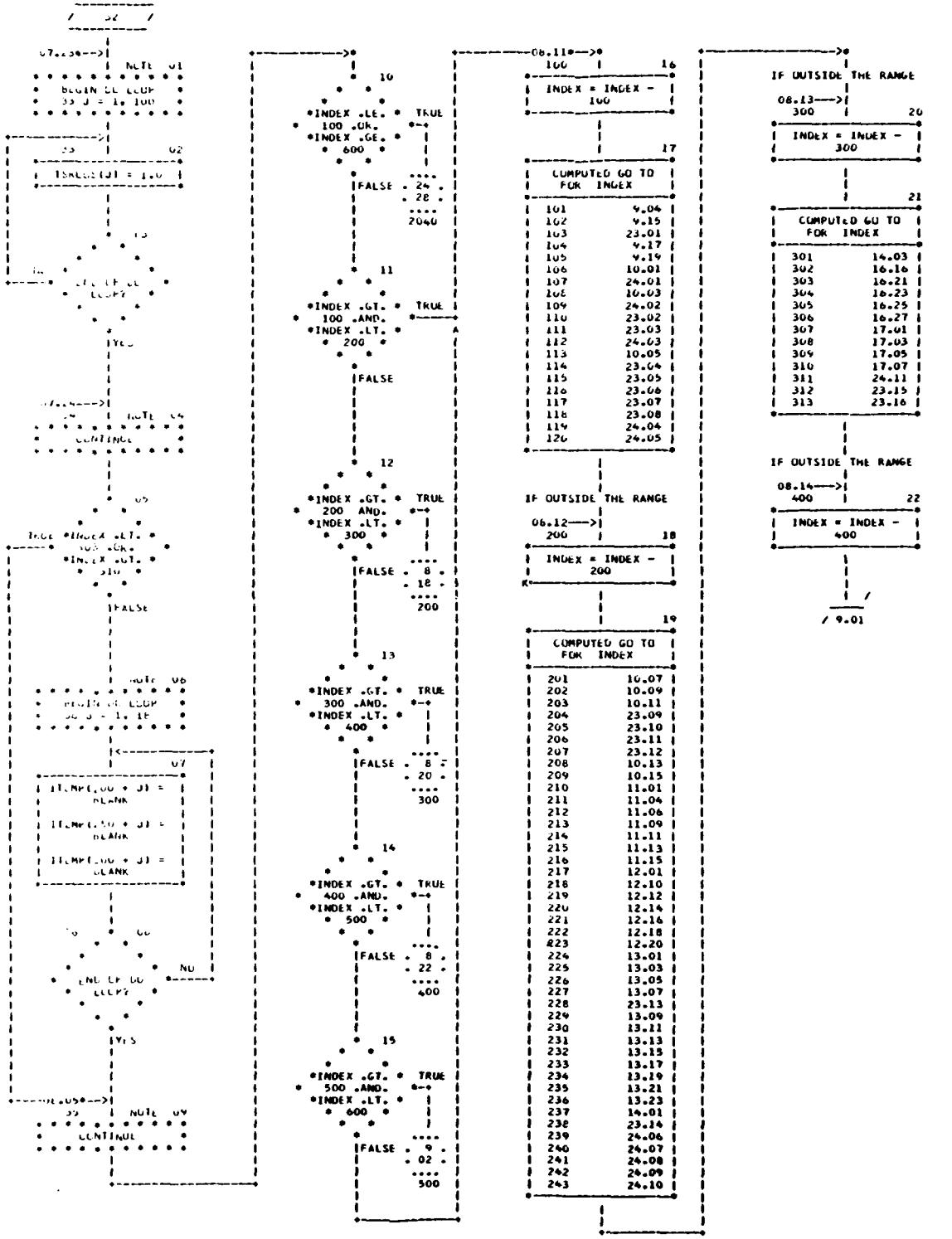

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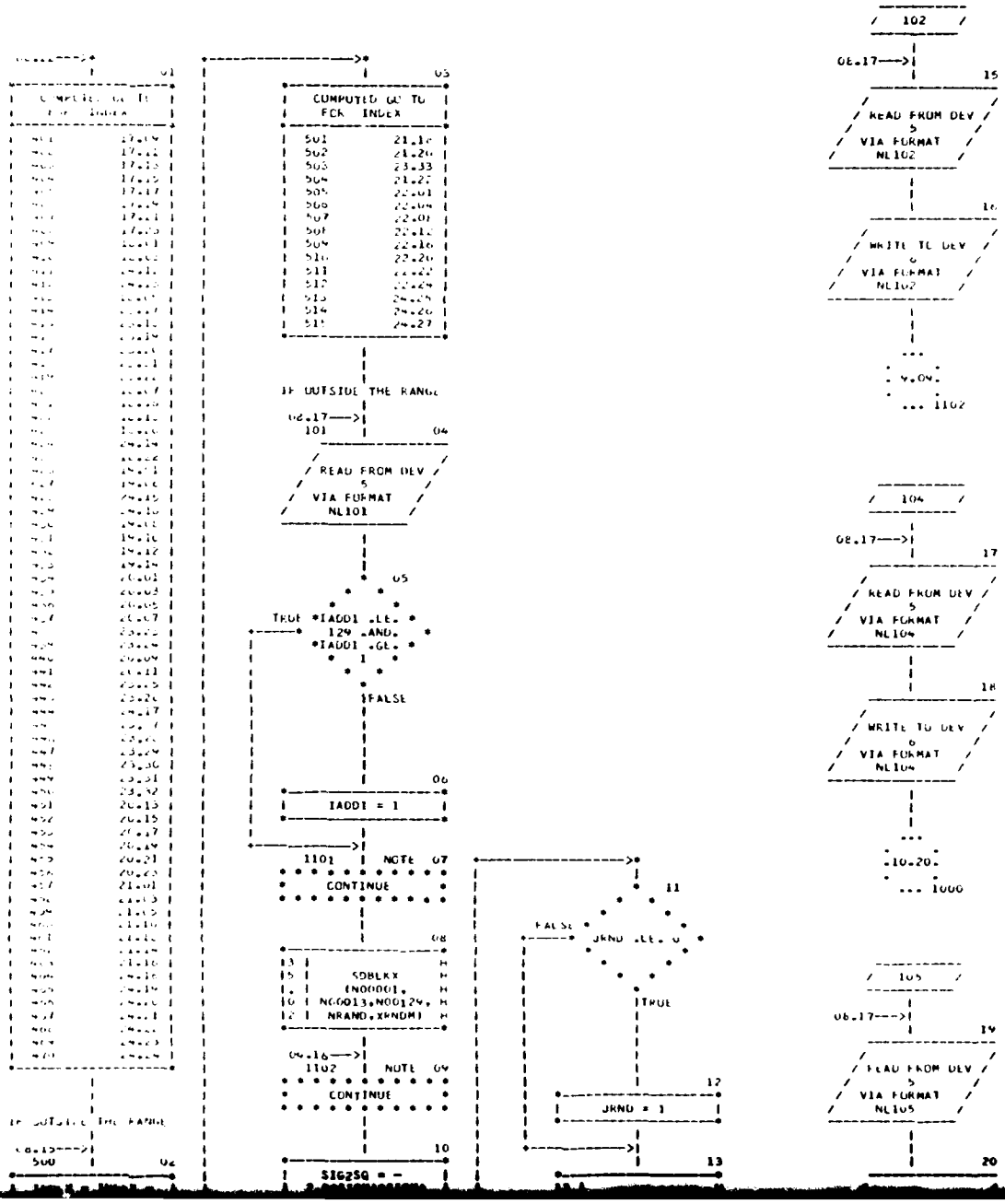

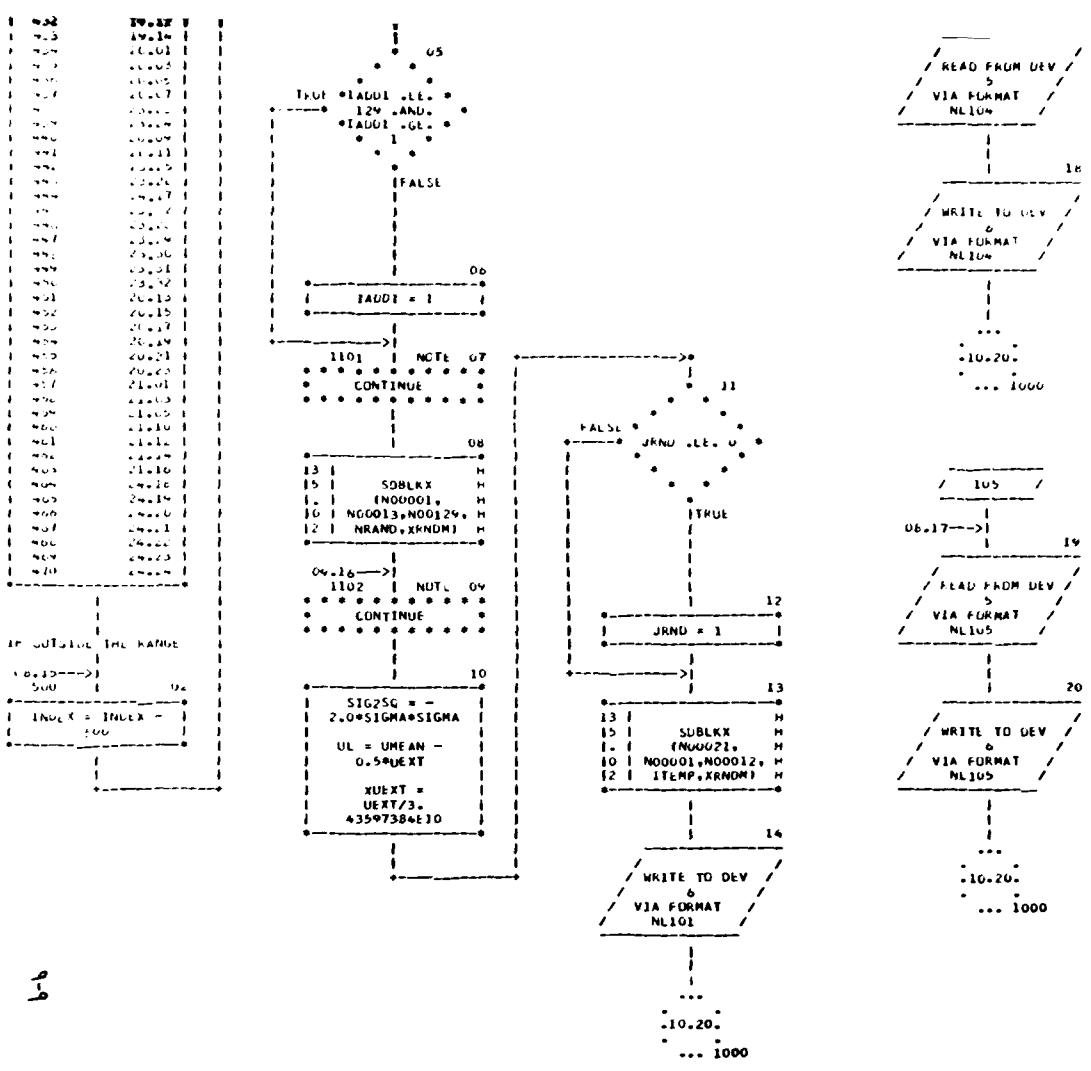
05
IADD1 .LE. 124 .AND. IADD1 .GE. 1
TRUE
FALSE
06
IADD1 = 1
1101 NOTE 07
CONTINUE
08
SDBLKX (N00001, N00013,N00129, NRAND,XRNDM)
04.16
1102 NOTE 09
CONTINUE
10
SIG2SQ = 2.0*SIGMA*SIGMA
UL = UMEAN - 0.5*UEXT
XUEXT = UEXT/3. 4359738E10
11
JRND .LE. 0
TRUE
FALSE
12
JRND = 1
13
SDBLKX (N00021, N00001,N00012, ITEMP,XRNDM)
14
WRITE TO DEV 6 VIA FORMAT NL101
... 1000
READ FROM DEV 5 VIA FORMAT NL104
18
WRITE TO DEV 6 VIA FORMAT NL104
... 1000
105
06.17
19
READ FROM DEV 5 VIA FORMAT NL105
20
WRITE TO DEV 6 VIA FORMAT NL105
... 1000

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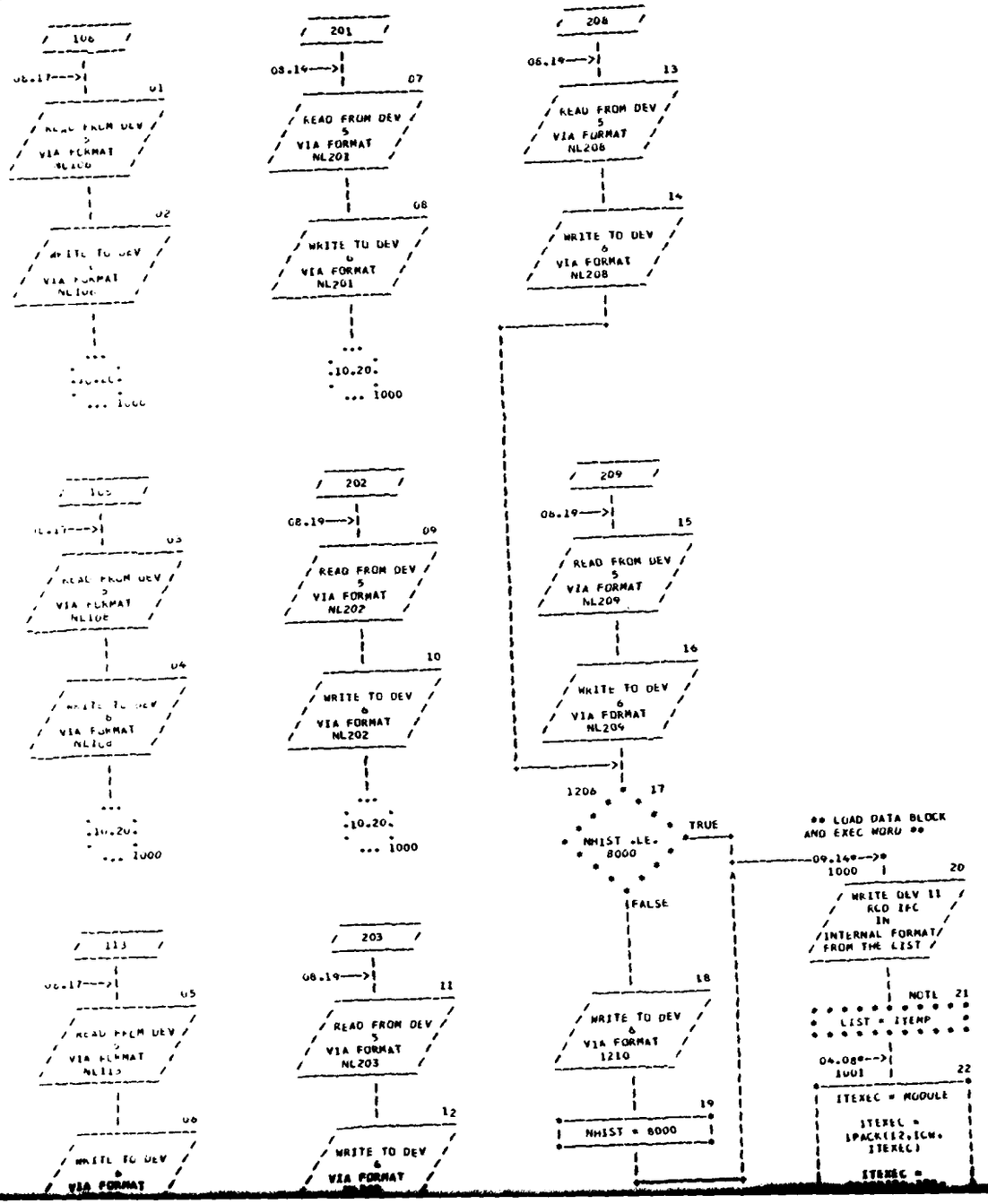

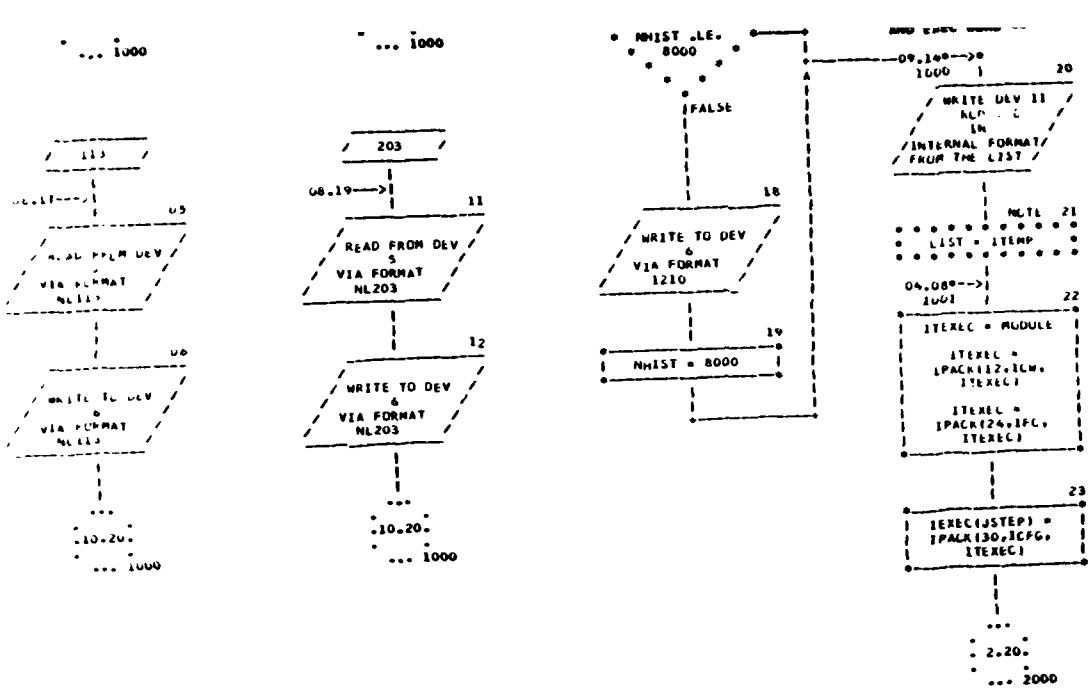
... 1000
203
08.19--->
11
READ FROM DEV
5
VIA FORMAT
NL203
12
WRITE TO DEV
6
VIA FORMAT
NL203
... 1000
.10.20.
... 1000
NHIST .LE.
8000
FALSE
18
WRITE TO DEV
6
VIA FORMAT
1210
19
NHIST = 8000
09.100--->
1000
20
WRITE DEV 11
IN
INTERNAL FORMAT
FROM THE LIST
NLTL 21
LIST = ITEMP
04.089--->
1001
22
ITEXEC = MODULE
ITEXEC =
IPACK(12,1CM,
ITEXEC)
ITEXEC =
IPACK(24,1FC,
ITEXEC)
23
IEXEC(JSTEP) =
IPACK(30,ICFG,
ITEXEC)
... 2000
2.20.
... 2000

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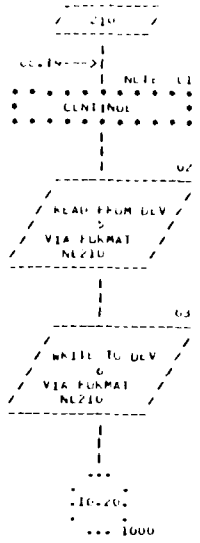
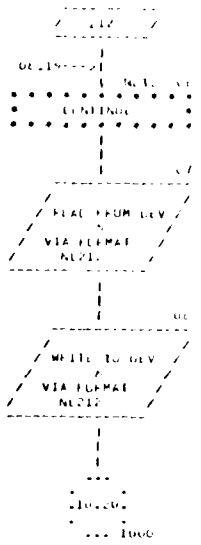
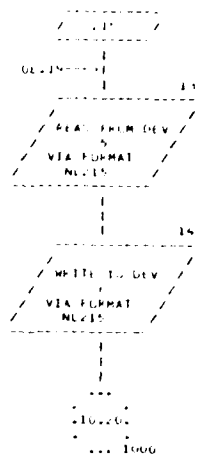
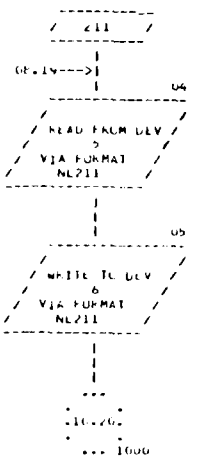
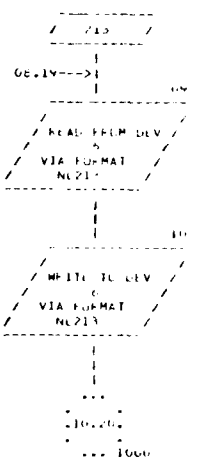
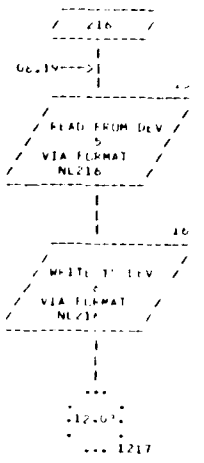


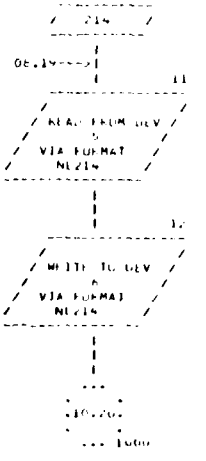












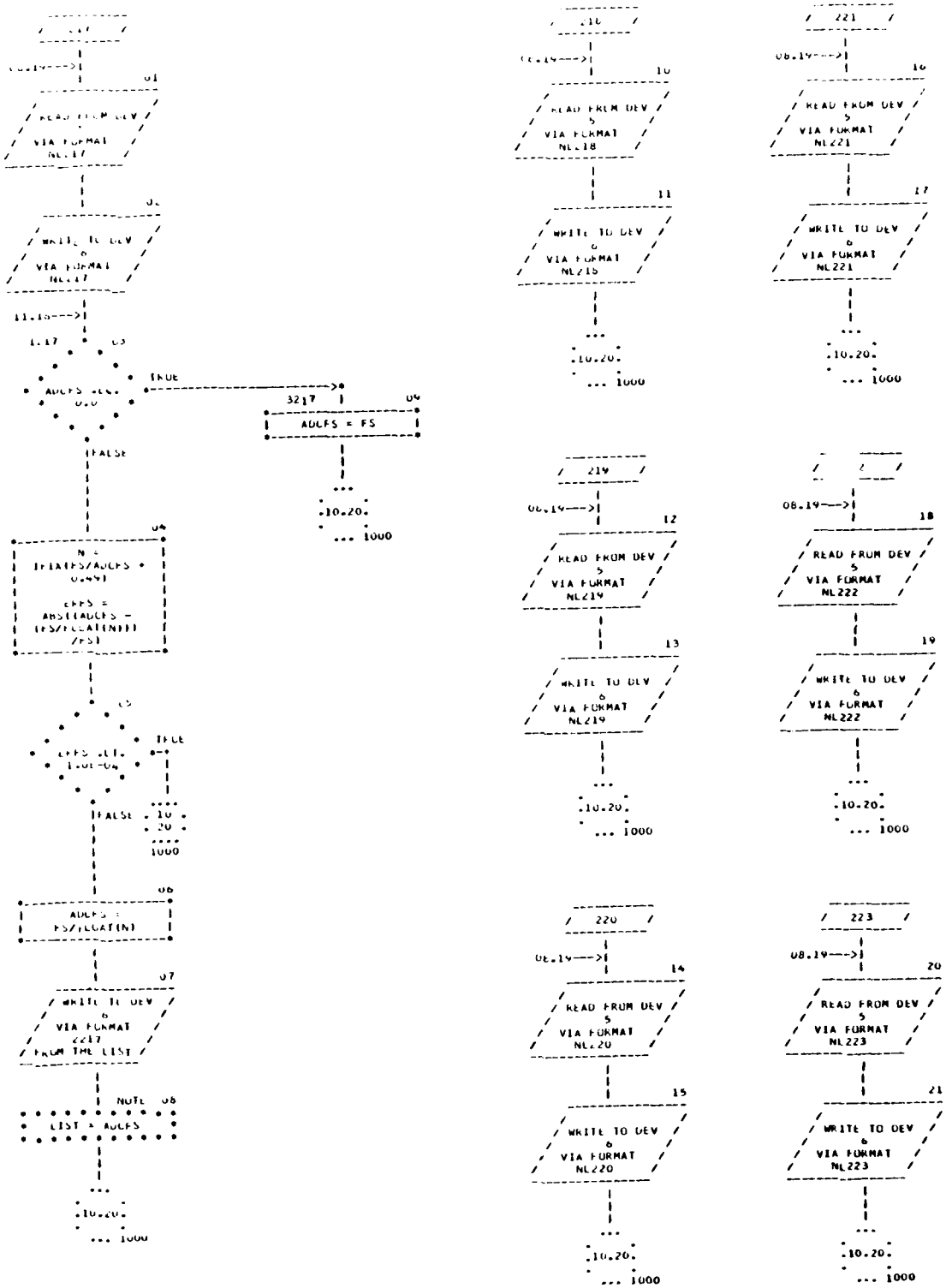
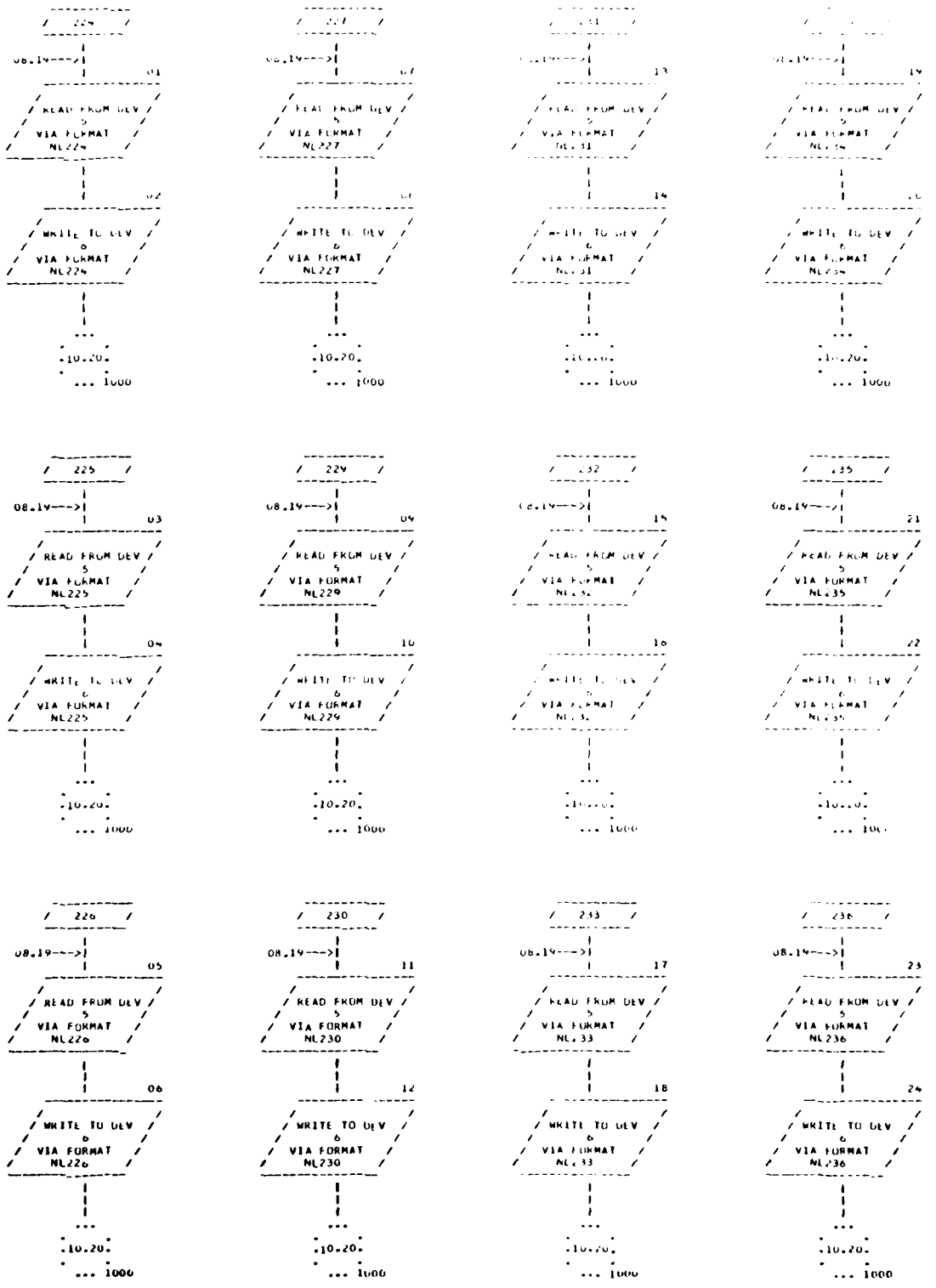

READ FROM DEV
5
VIA FORMAT
NL217
01
WRITE TO DEV
6
VIA FORMAT
NL217
02
03
TRUE
ADDFS = FS
04
FALSE
05
06
ADDFS =
FS/FLOAT(N)
07
WRITE TO DEV
6
VIA FORMAT
2217
FROM THE LIST
NOTE 08
LIST = ADDFS
.10.20.
... 1000
READ FROM DEV
5
VIA FORMAT
NL218
10
WRITE TO DEV
6
VIA FORMAT
NL218
11
READ FROM DEV
5
VIA FORMAT
NL221
16
WRITE TO DEV
6
VIA FORMAT
NL221
17
READ FROM DEV
5
VIA FORMAT
NL219
12
WRITE TO DEV
6
VIA FORMAT
NL219
13
READ FROM DEV
5
VIA FORMAT
NL222
18
WRITE TO DEV
6
VIA FORMAT
NL222
19
READ FROM DEV
5
VIA FORMAT
NL220
14
WRITE TO DEV
6
VIA FORMAT
NL220
15
READ FROM DEV
5
VIA FORMAT
NL223
20
WRITE TO DEV
6
VIA FORMAT
NL223
21

CHART TITLE = PROGRAM1



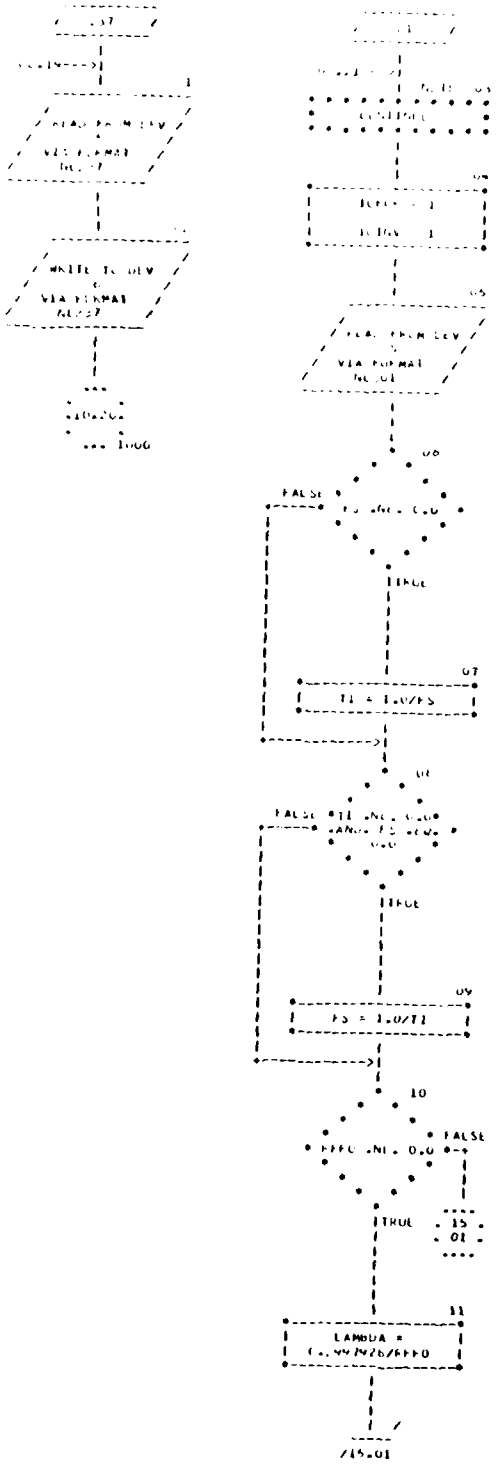
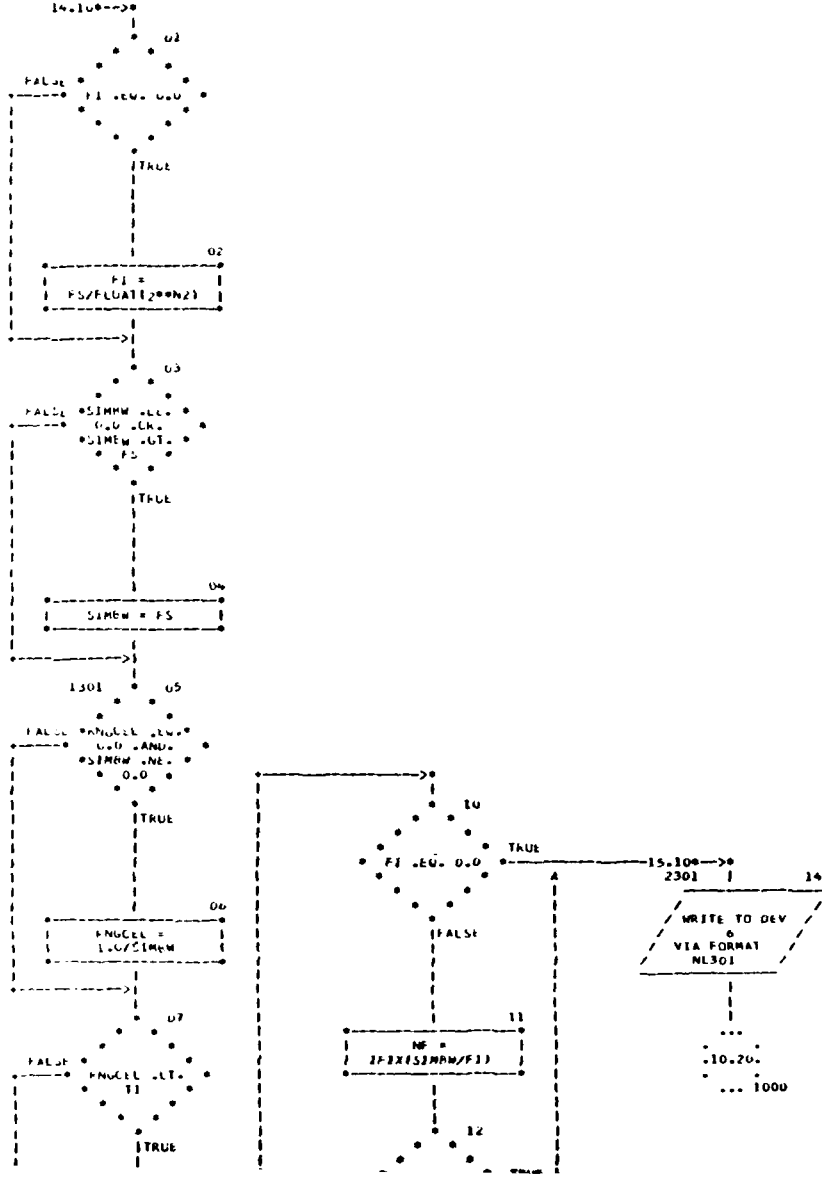

FALSE
TRUE
FALSE
TRUE
FALSE
TRUE

CHART TITLE - PROCEDURES



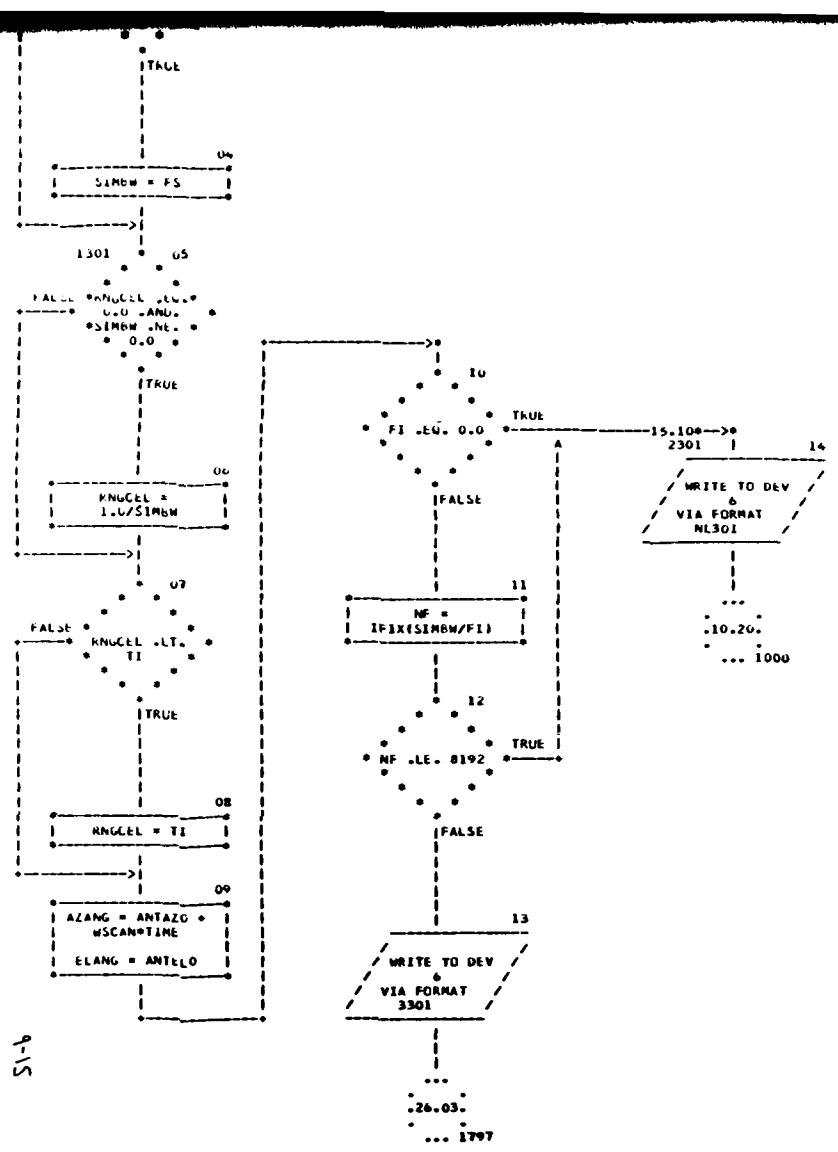
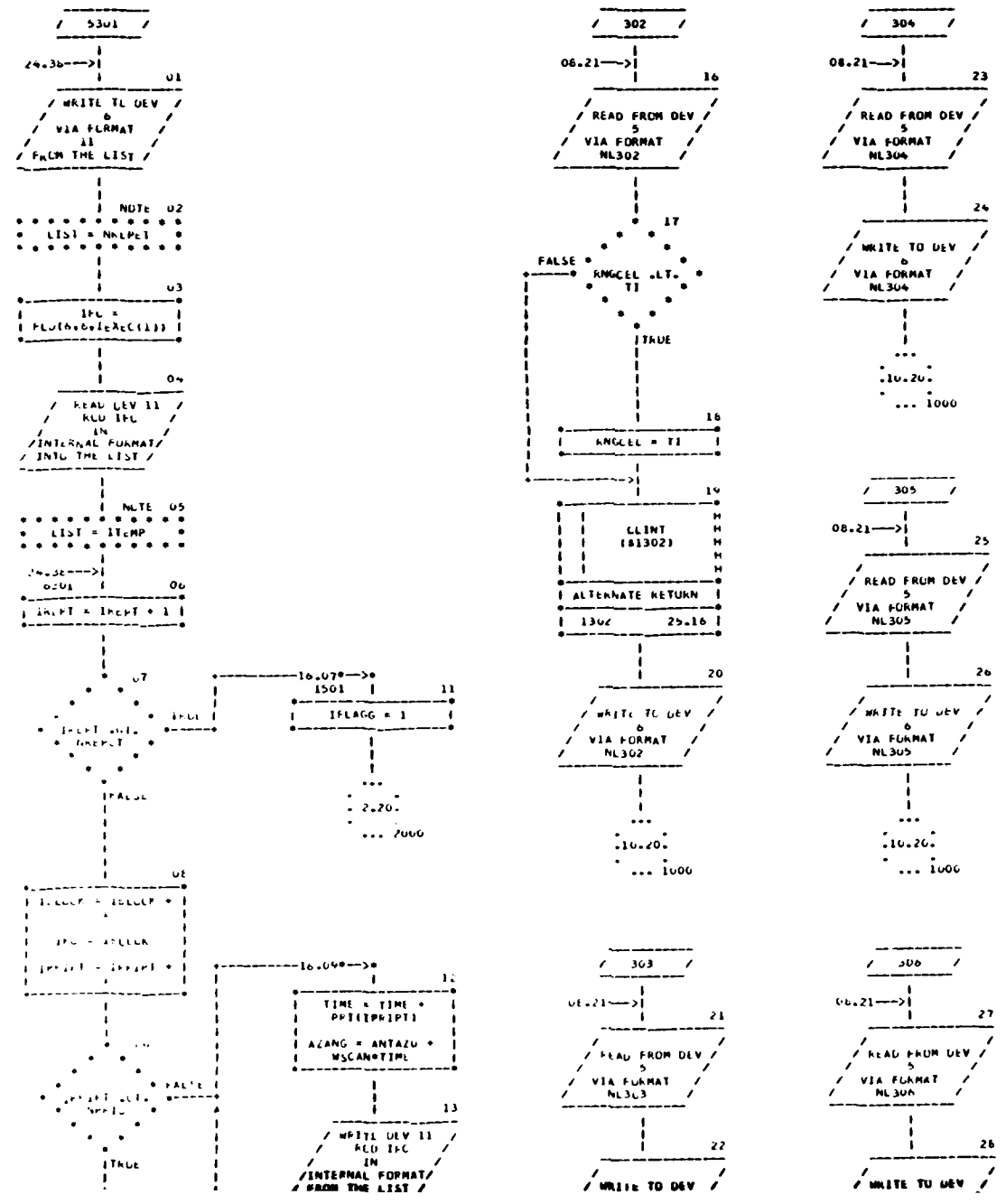

TRUE
04
SIMBW = FS
1301
05
TRUE
06
RNGCEL = 1.0/SIMBW
07
FALSE
TRUE
08
RNGCEL = TI
09
AZANG = ANTAZO + WSCAN*TIME
ELANG = ANTELO
10
FI .EQ. 0.0
TRUE
FALSE
11
NF = IFIX(SIMBW/FI)
12
NF .LE. 8192
TRUE
FALSE
13
WRITE TO DEV 6 VIA FORMAT 3301
.26.03.
... 1797
15.10
2301
14
WRITE TO DEV 6 VIA FORMAT NL301
.10.20.
... 1000

CHART TITLE - PROCEDURES



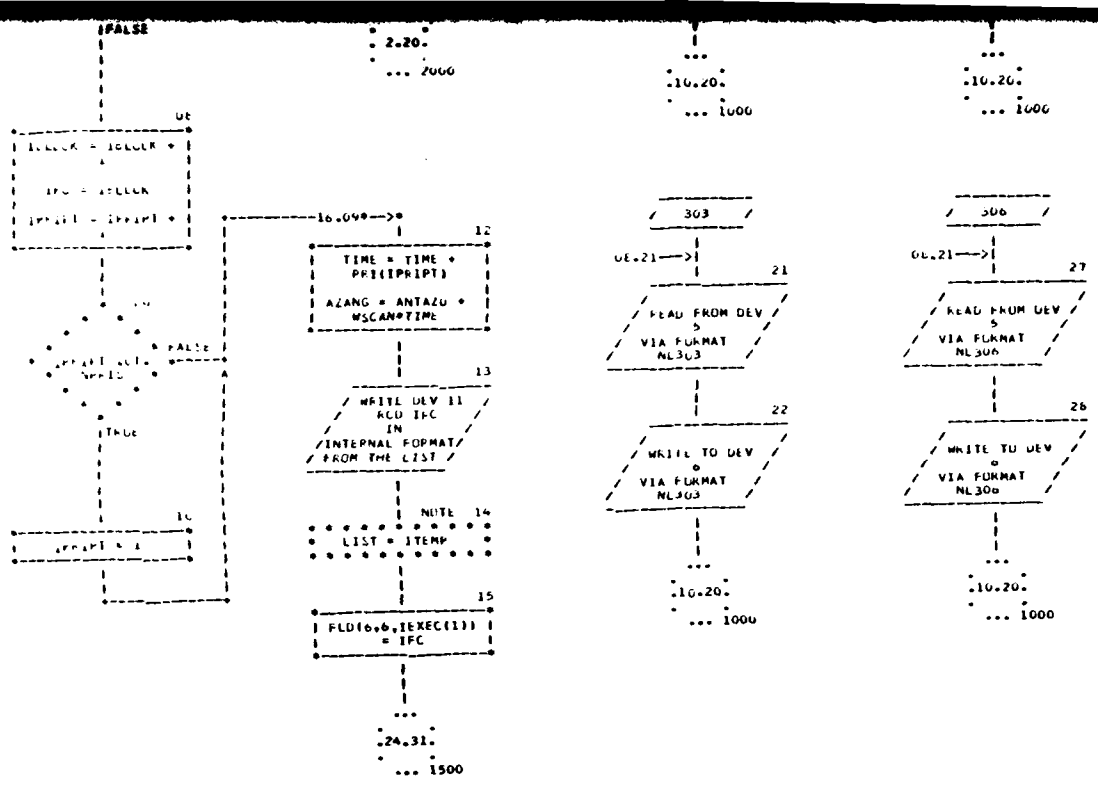

FALSE
2.20.
... 2000
.10.20.
... 1000
.10.20.
... 1000
16
TIME = TIME + PRI(IPRIPT)
AZANG = ANTAZU + WSCAN*TIME
12
WRITE DEV 11 RCD IFC IN INTERNAL FORMAT FROM THE LIST
13
NOTE 14
LIST = ITEMP
15
FLD(6,6,IEXEC(I)) = IFC
.24.31.
... 1500
303
06,21
21
READ FROM DEV 5 VIA FORMAT NL303
22
WRITE TO DEV 6 VIA FORMAT NL303
.10.20.
... 1000
306
06,21
27
READ FROM DEV 5 VIA FORMAT NL306
26
WRITE TO DEV 6 VIA FORMAT NL306
.10.20.
... 1000

CHART TITLE = PROCEDURES

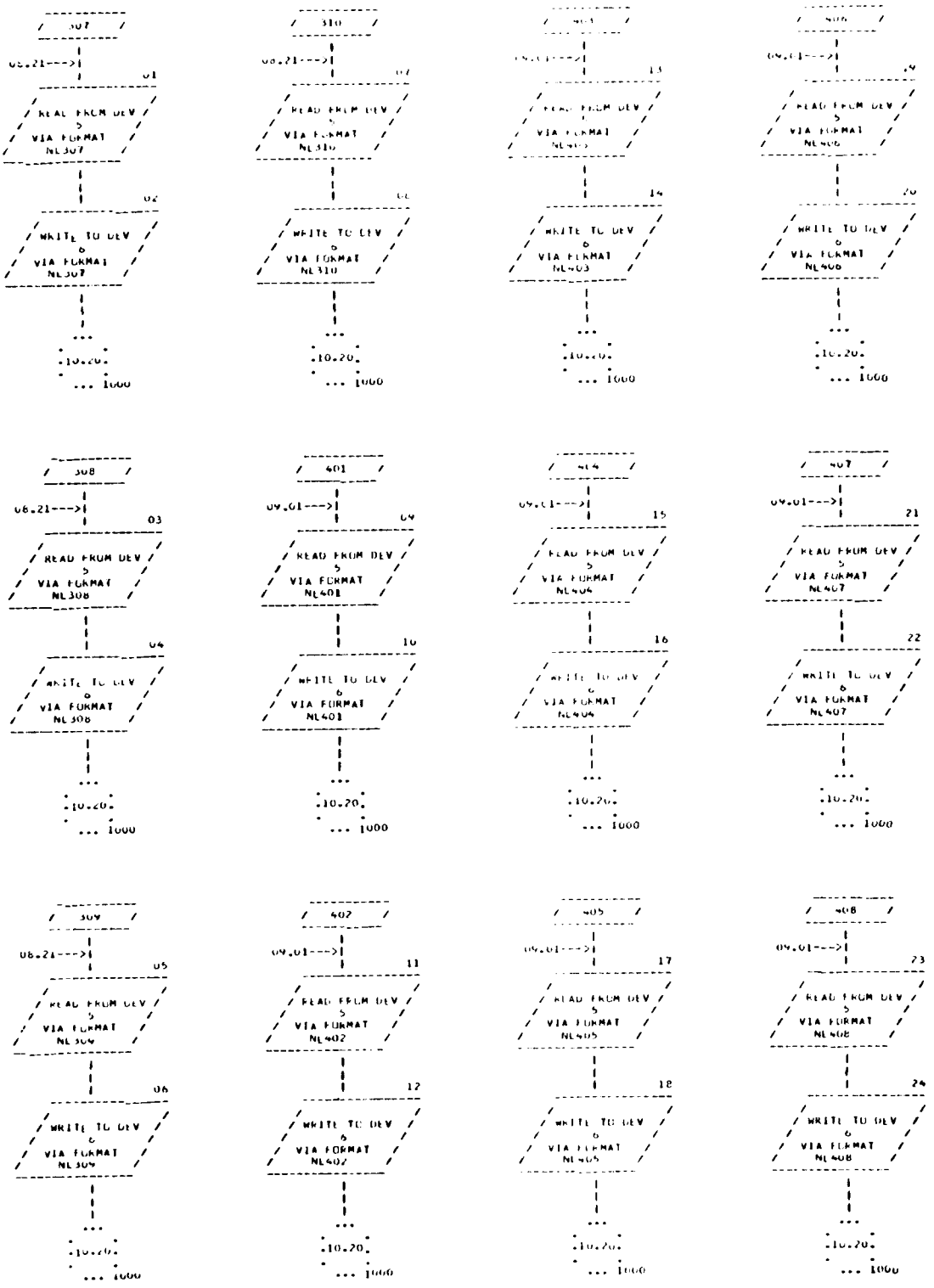


CHART TITLE - PROCEDURES

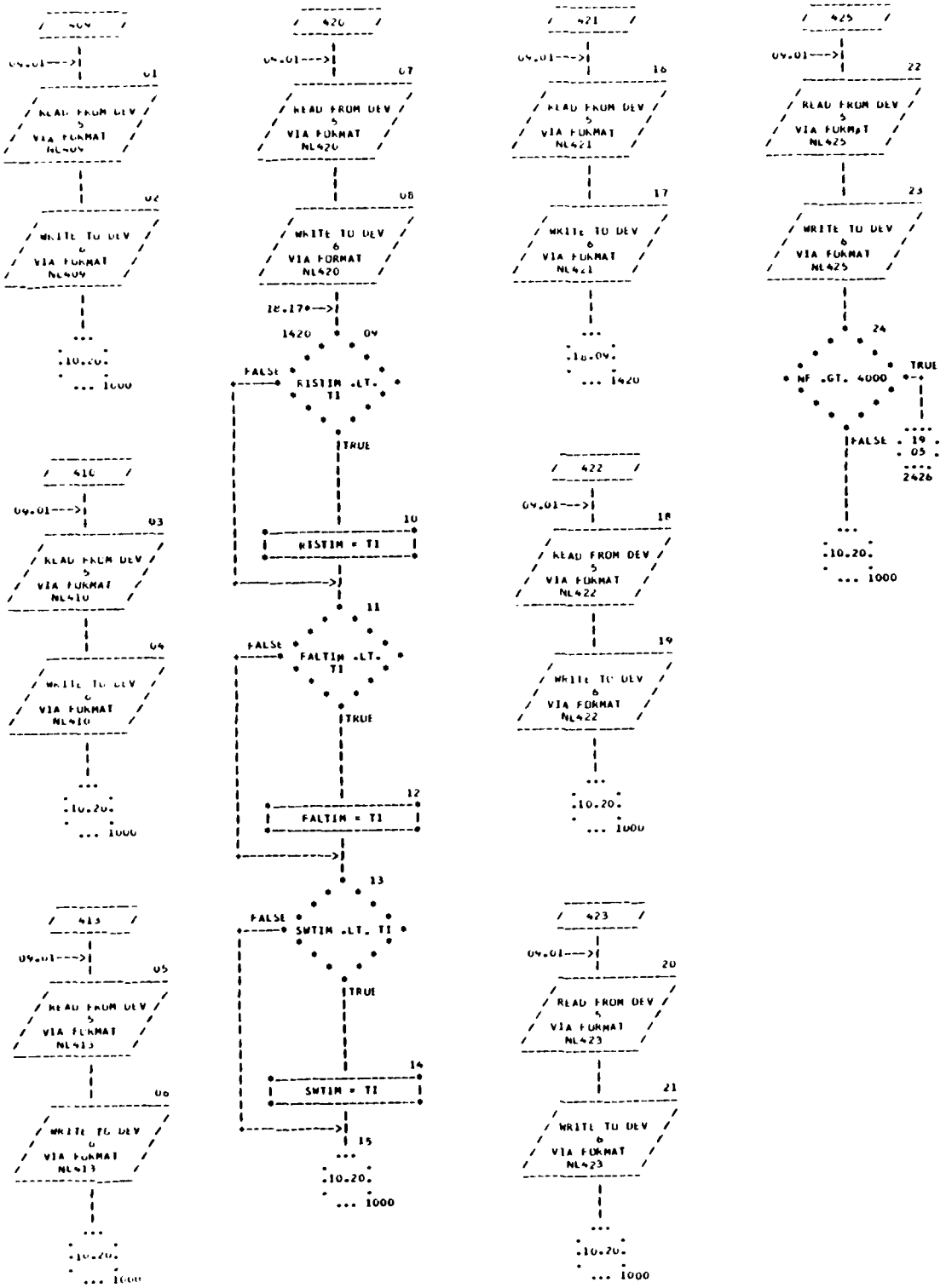
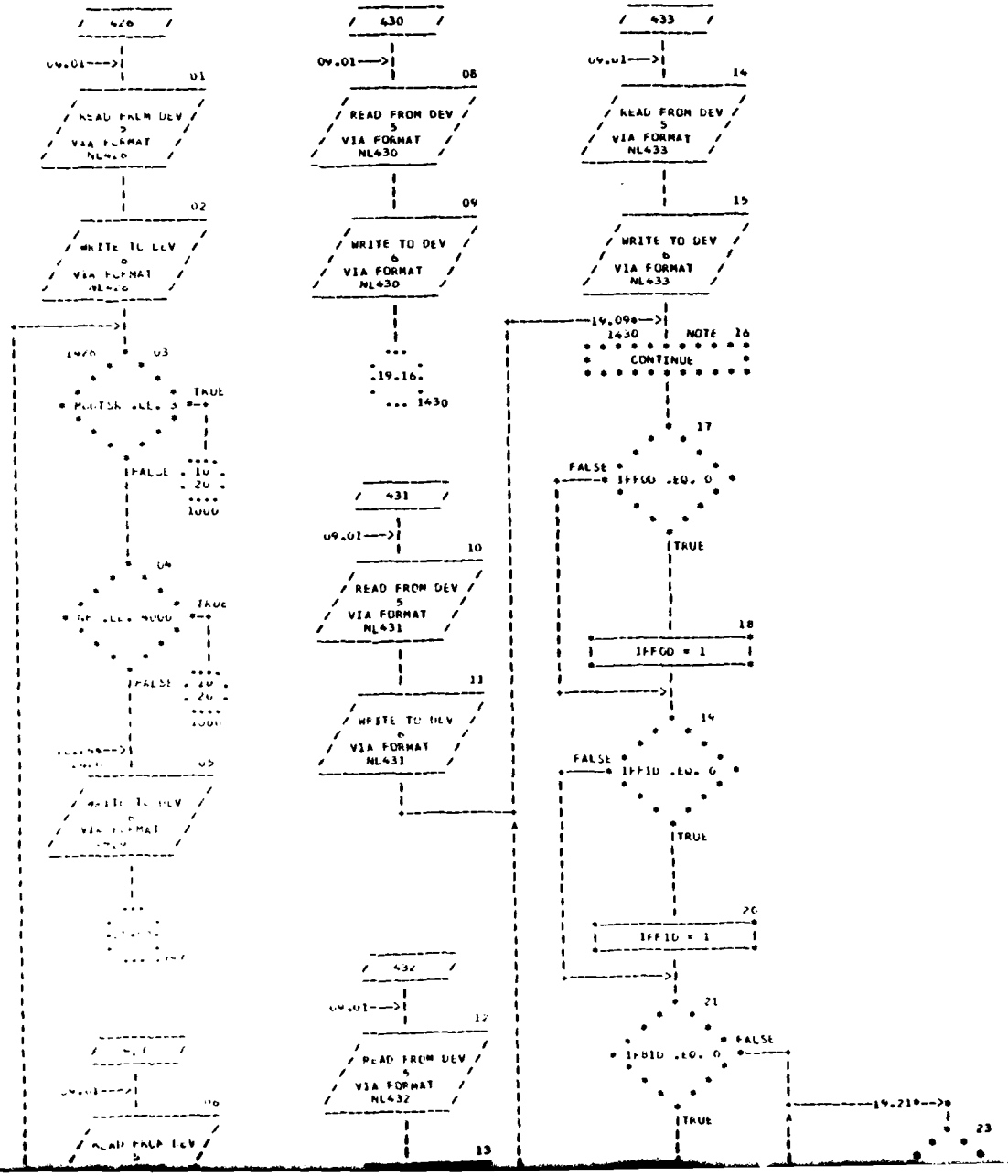


CHART TITLE - PROCEDURES



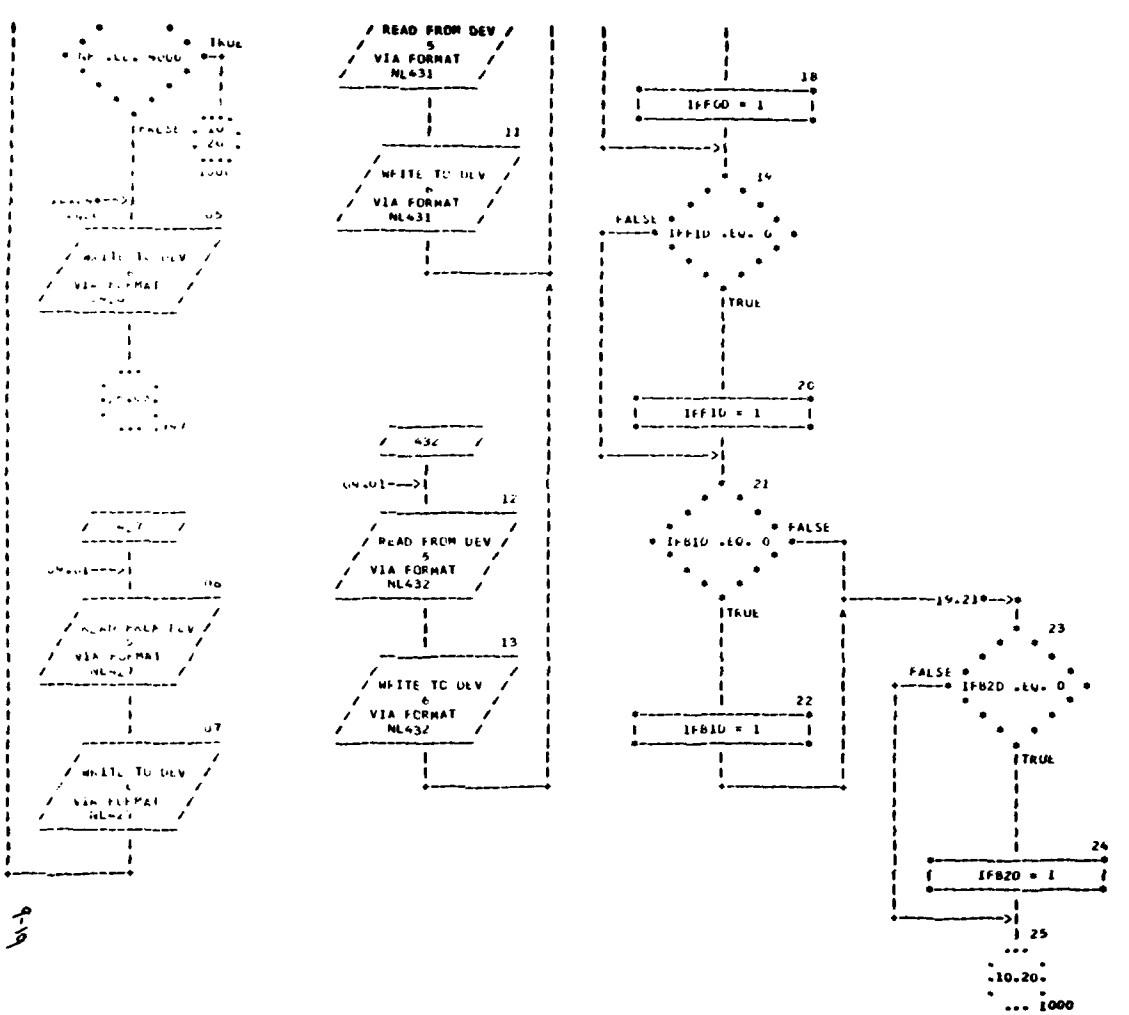
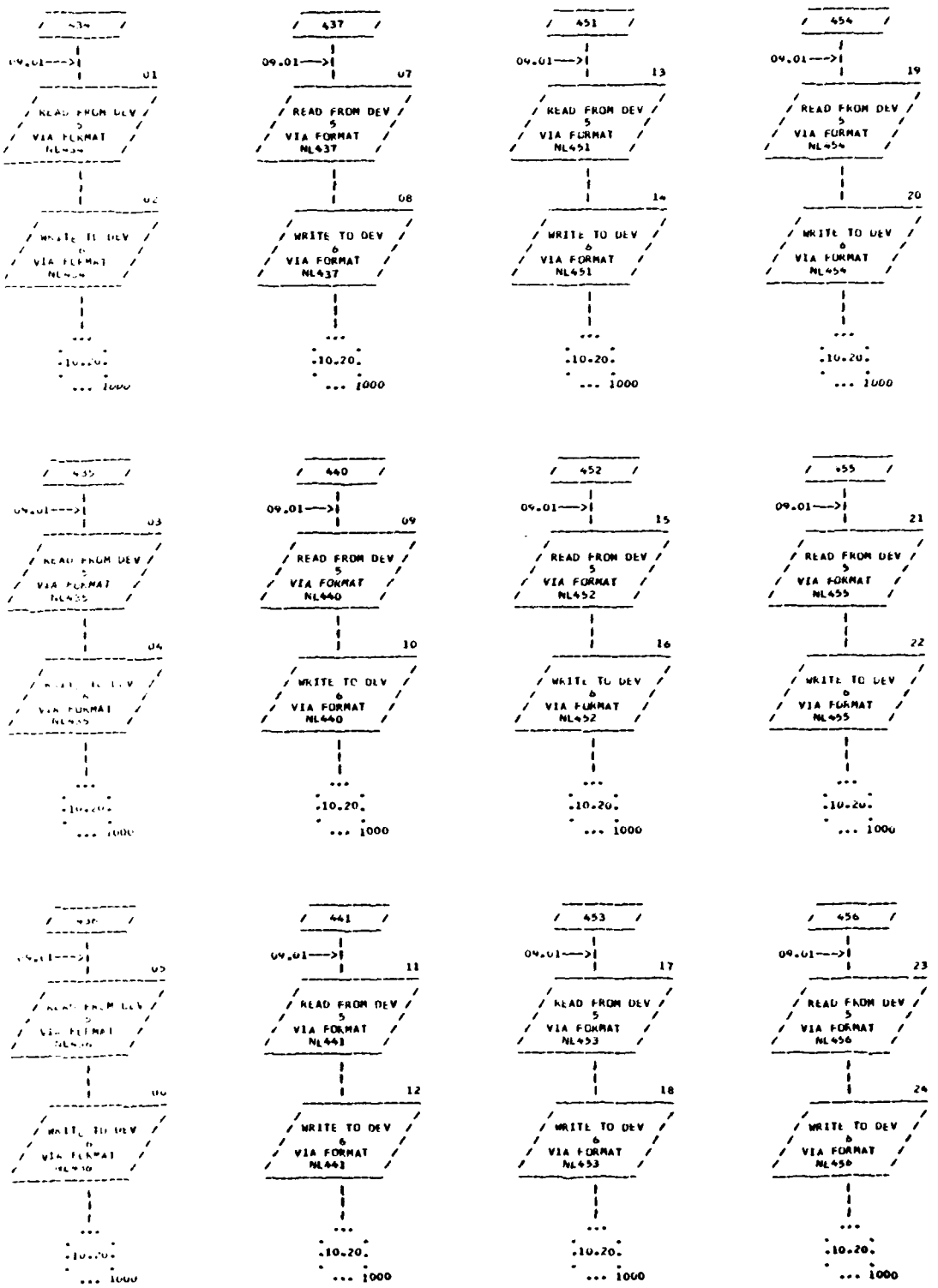
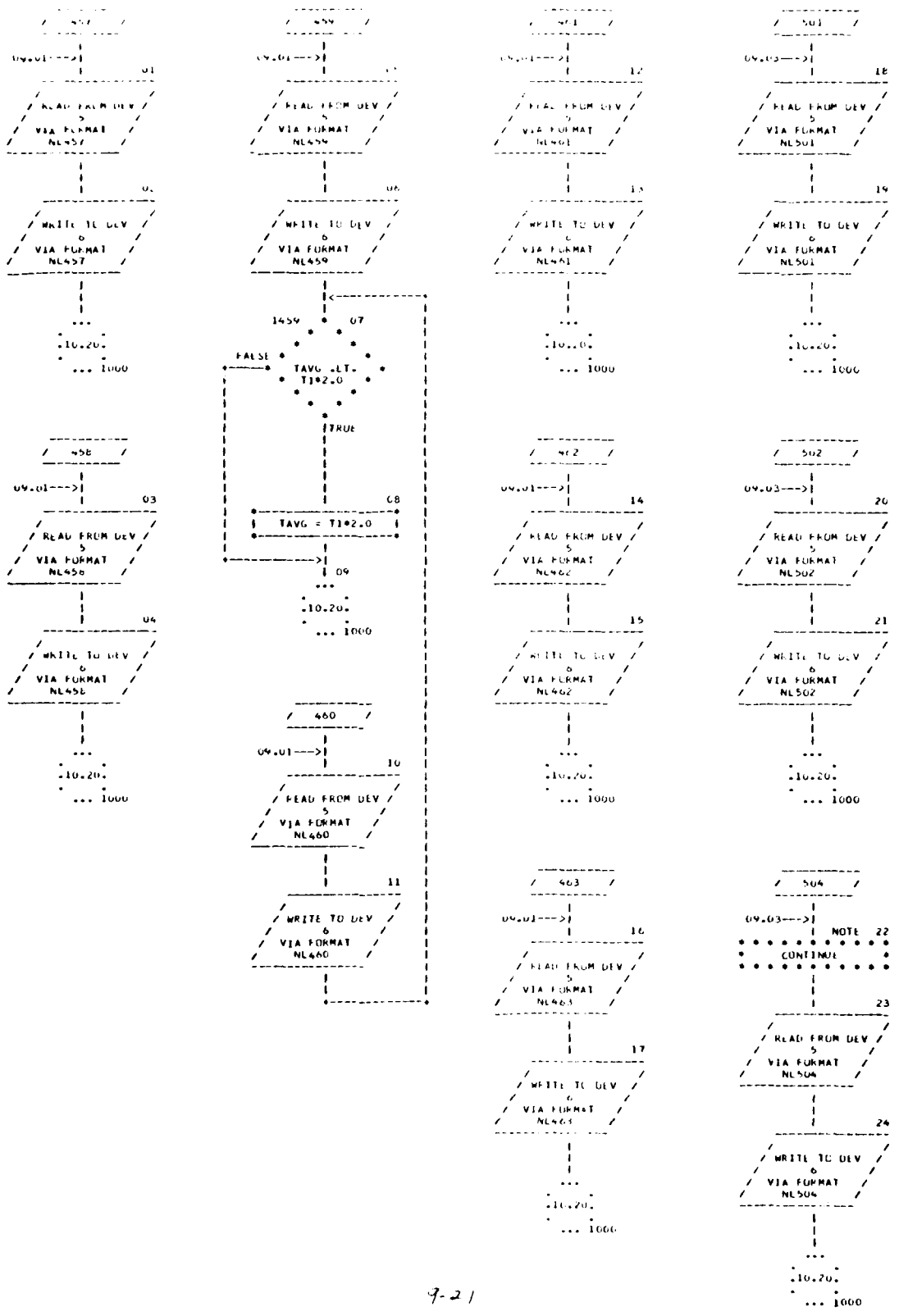

TRUE
FALSE
READ FROM DEV
5
VIA FORMAT
NL431
11
WRITE TO DEV
6
VIA FORMAT
NL431
18
IFFGD = 1
19
FALSE
IFFID .EQ. 0
TRUE
20
IFFID = 1
21
IFBID .EQ. 0
FALSE
TRUE
22
IFBID = 1
19,21
23
FALSE
IFB2D .EQ. 0
TRUE
24
IFB2D = 1
25
.10.20.
... 1000
READ FROM DEV
5
VIA FORMAT
NL432
12
13
WRITE TO DEV
6
VIA FORMAT
NL432

CHART TITLE - PROCEDURES




457
09.01
READ FROM DEV 5 VIA FORMAT NL457
01
WRITE TO DEV 6 VIA FORMAT NL457
05
... 10.20. ... 1000
459
09.01
READ FROM DEV 5 VIA FORMAT NL459
07
WRITE TO DEV 6 VIA FORMAT NL459
08
1459
TAVG .LT. T1*2.0
FALSE
TRUE
TAVG = T1*2.0
09
... 10.20. ... 1000
461
09.01
READ FROM DEV 5 VIA FORMAT NL461
12
WRITE TO DEV 6 VIA FORMAT NL461
13
... 10.20. ... 1000
501
09.03
READ FROM DEV 5 VIA FORMAT NL501
18
WRITE TO DEV 6 VIA FORMAT NL501
19
... 10.20. ... 1000
458
09.01
READ FROM DEV 5 VIA FORMAT NL458
03
WRITE TO DEV 6 VIA FORMAT NL458
04
... 10.20. ... 1000
462
09.01
READ FROM DEV 5 VIA FORMAT NL462
14
WRITE TO DEV 6 VIA FORMAT NL462
15
... 10.20. ... 1000
502
09.03
READ FROM DEV 5 VIA FORMAT NL502
20
WRITE TO DEV 6 VIA FORMAT NL502
21
... 10.20. ... 1000
460
09.01
READ FROM DEV 5 VIA FORMAT NL460
10
WRITE TO DEV 6 VIA FORMAT NL460
11
463
09.01
READ FROM DEV 5 VIA FORMAT NL463
16
WRITE TO DEV 6 VIA FORMAT NL463
17
... 10.20. ... 1000
504
09.03
NOTE 22
CONTINUE
READ FROM DEV 5 VIA FORMAT NL504
23
WRITE TO DEV 6 VIA FORMAT NL504
24
... 10.20. ... 1000

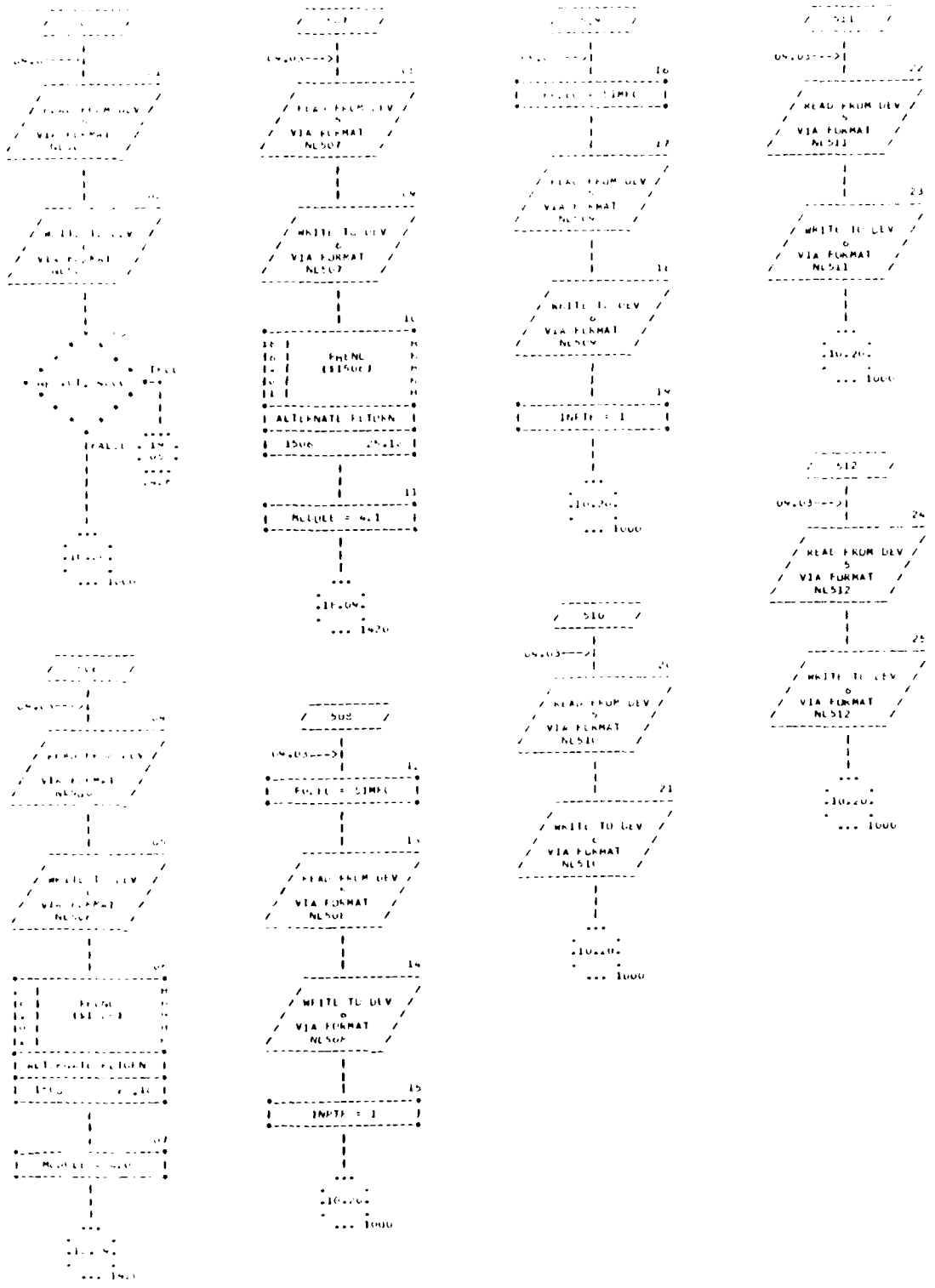
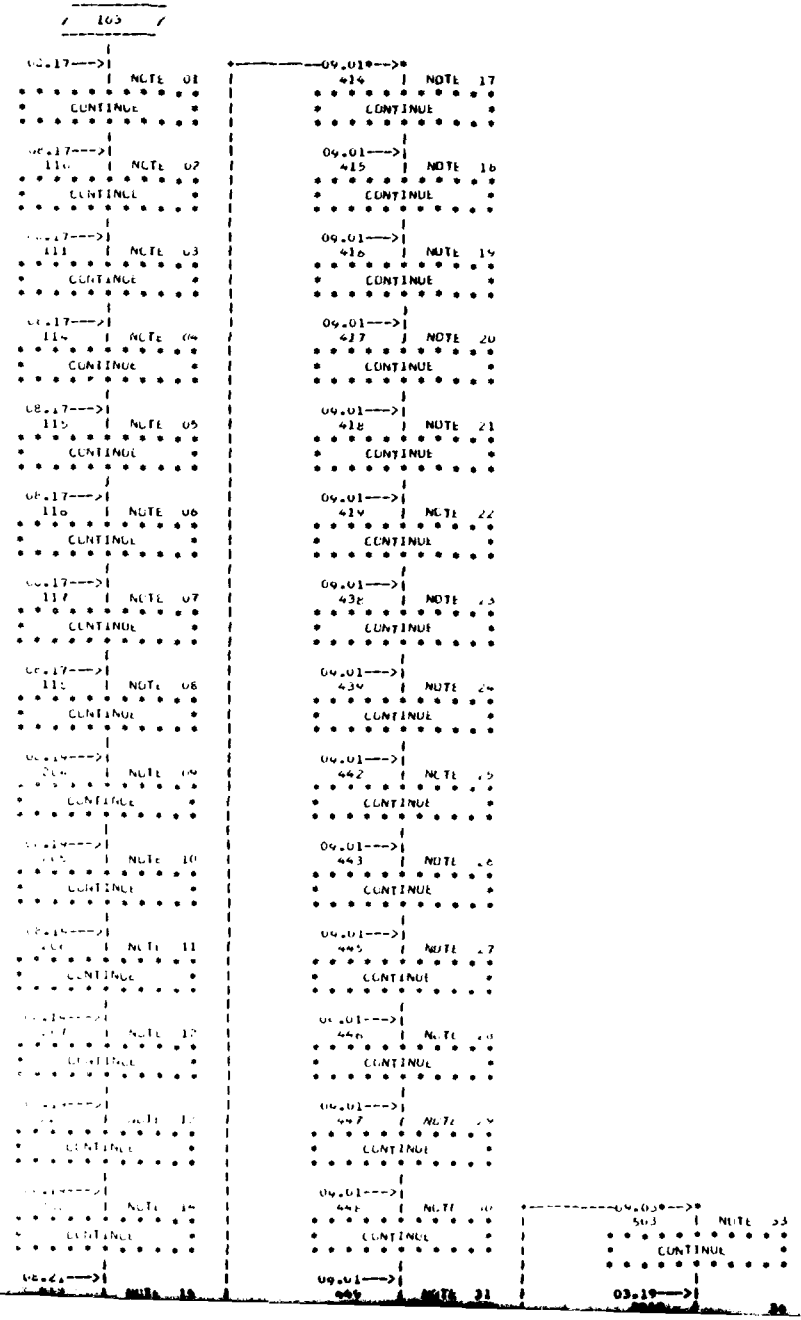


CHART TITLE = PROCEDURES



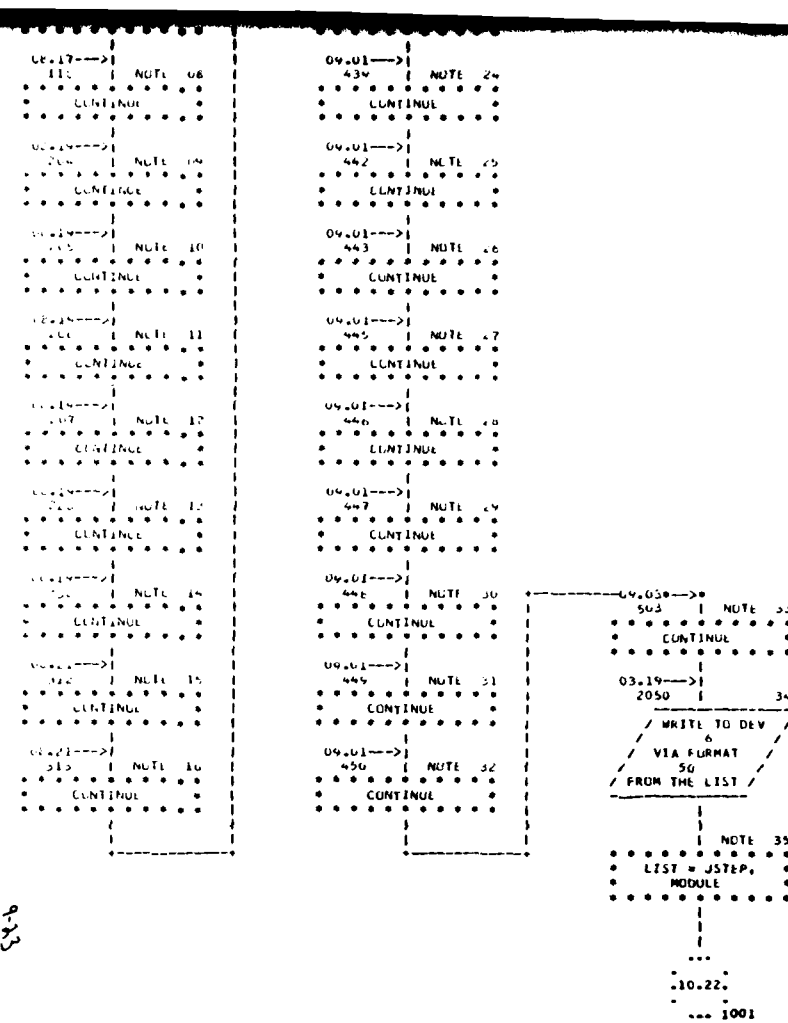
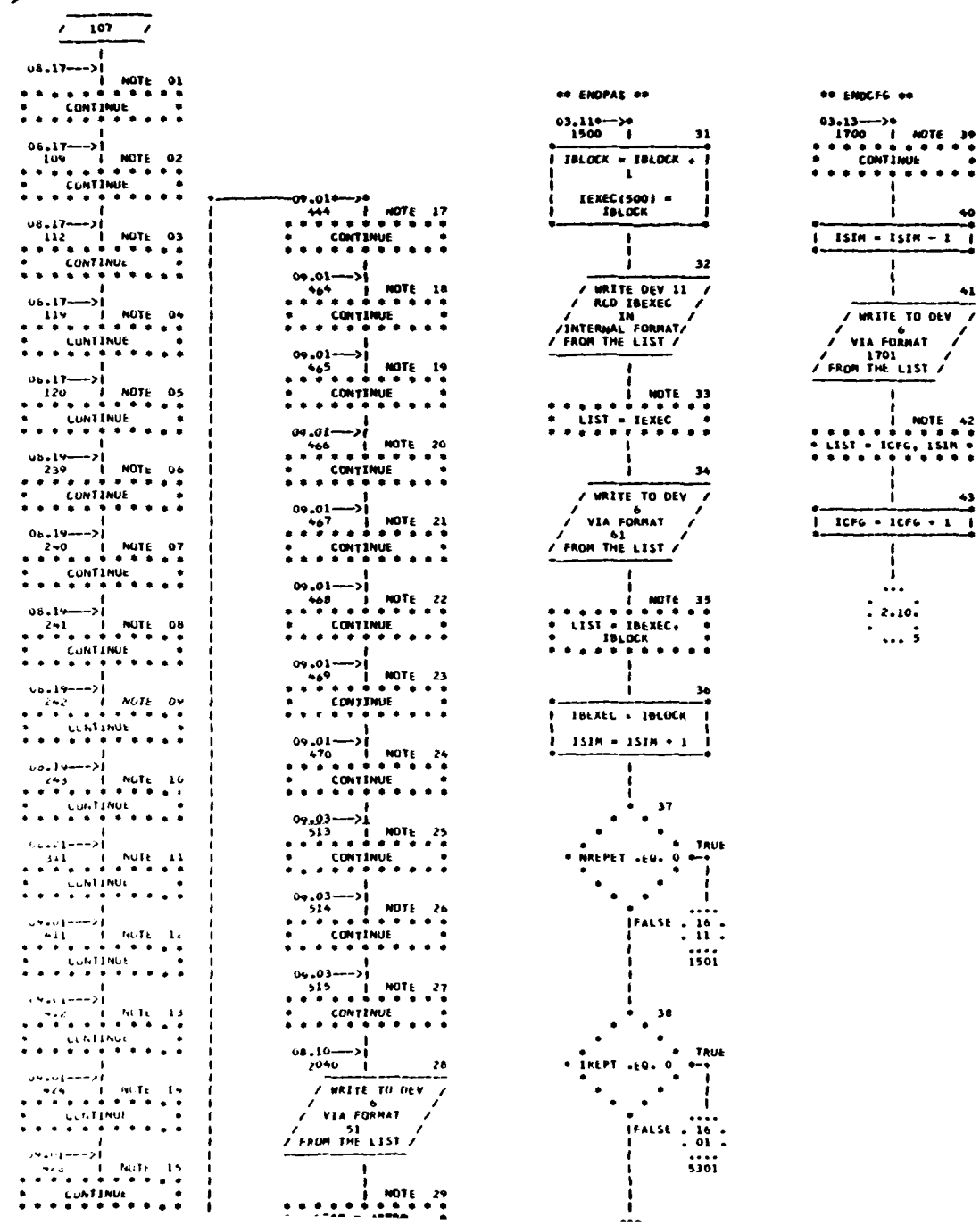
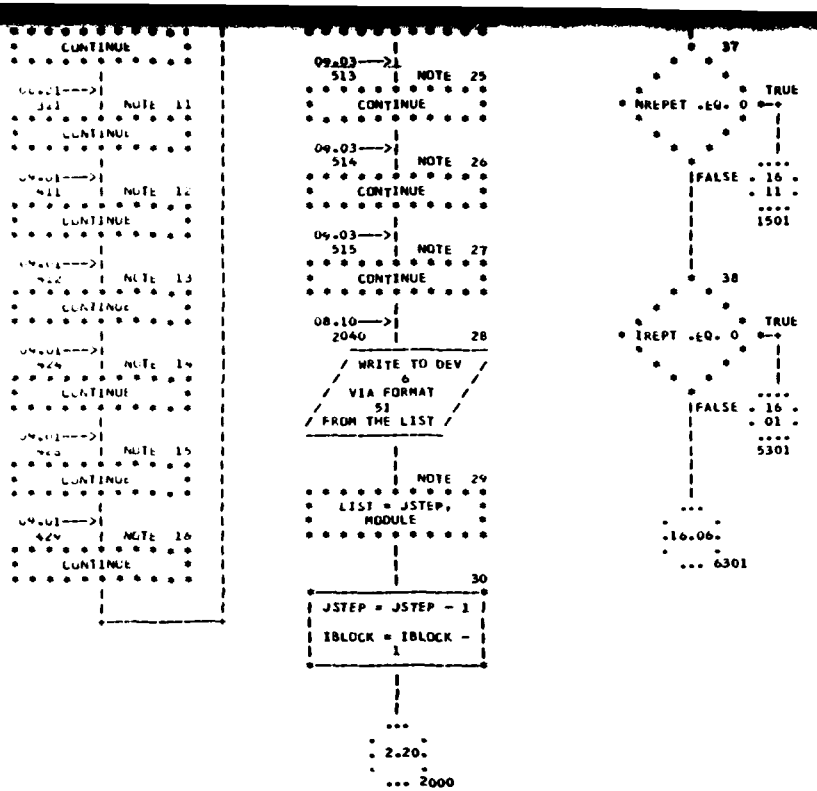

NOTE 28
CONTINUE
NOTE 29
CONTINUE
NOTE 30
CONTINUE
NOTE 31
CONTINUE
NOTE 32
CONTINUE
NOTE 33
CONTINUE
34
WRITE TO DEV
6
VIA FORMAT
50
FROM THE LIST
NOTE 35
LIST = JSTEP,
MODULE
.10.22.
... 1001

CHART TITLE - PROCEDURES

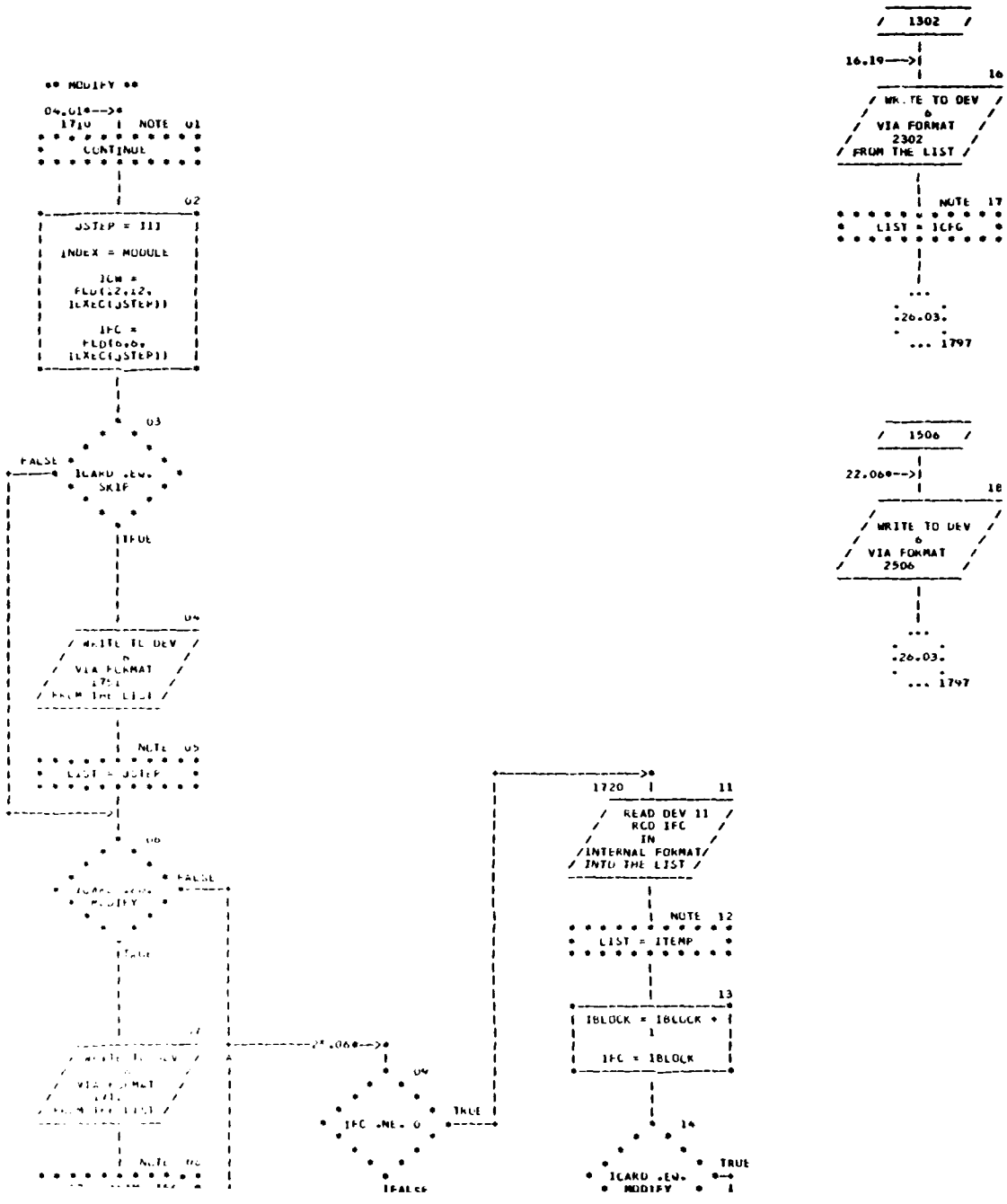



CONTINUE
NOTE 11
CONTINUE
NOTE 12
CONTINUE
NOTE 13
CONTINUE
NOTE 14
CONTINUE
NOTE 15
CONTINUE
NOTE 16
CONTINUE

09.03
513
NOTE 25
CONTINUE
09.03
514
NOTE 26
CONTINUE
09.03
515
NOTE 27
CONTINUE
08.10
2040
28
WRITE TO DEV
6
VIA FORMAT
51
FROM THE LIST
NOTE 29
LIST = JSTEP,
MODULE
30
JSTEP = JSTEP - 1
IBLOCK = IBLOCK -
1
2.20.
2000

37
NREPET .EQ. 0
TRUE
FALSE
16
11
1501
38
IREPT .EQ. 0
TRUE
FALSE
16
01
5301
16.06.
6301

CHART TITLE - PROCEDURES



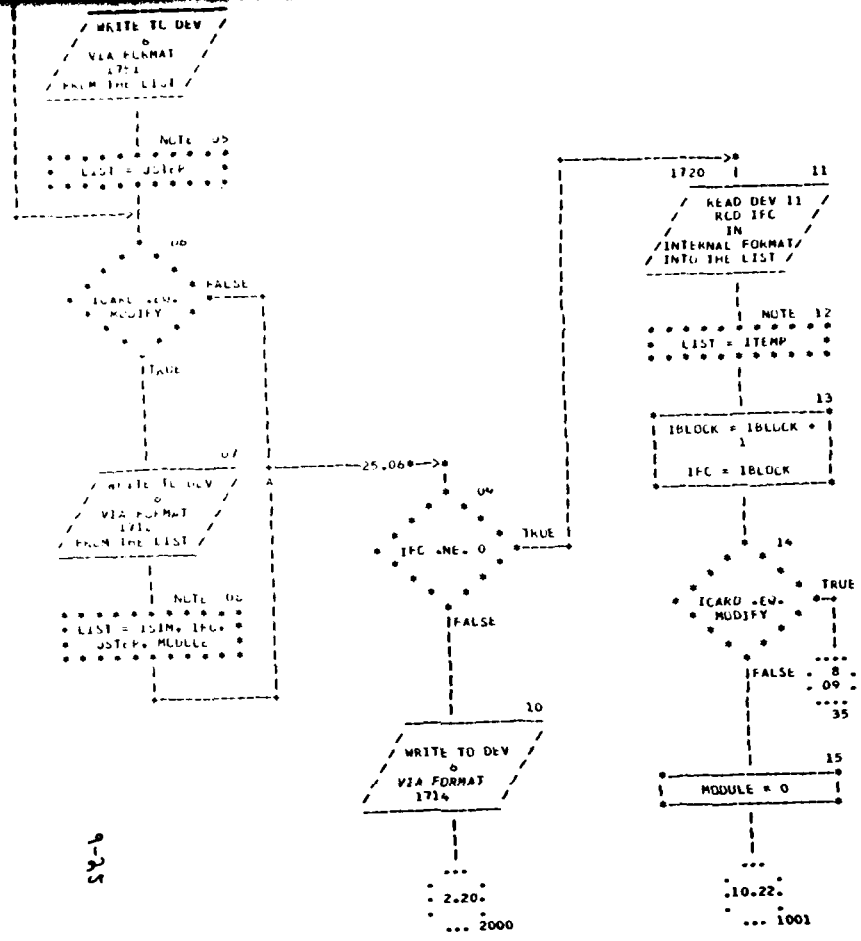

WRITE TO DEV
VIA FORMAT
1714
FROM THE LIST
NOTE 05
LIST = JSTEP
06
ICARD .EW. MODIFY
FALSE
TRUE
07
WRITE TO DEV
VIA FORMAT
1714
FROM THE LIST
NOTE 08
LIST = ISIM, IFC, JSTEP, MODULE
25.06
04
IFC .NE. 0
TRUE
FALSE
10
WRITE TO DEV
VIA FORMAT
1714
...
2.20.
... 2000
1720
11
READ DEV 11
RCD IFC
IN
INTERNAL FORMAT
INTO THE LIST
NOTE 12
LIST = ITEMP
13
IBLOCK = IBLOCK + 1
IFC = IBLOCK
14
ICARD .EW. MODIFY
TRUE
FALSE
8
09
35
15
MODULE = 0
...
.10.22.
... 1001
...
.26.03.
... 1797

CHART TITLE - PROCEDURES

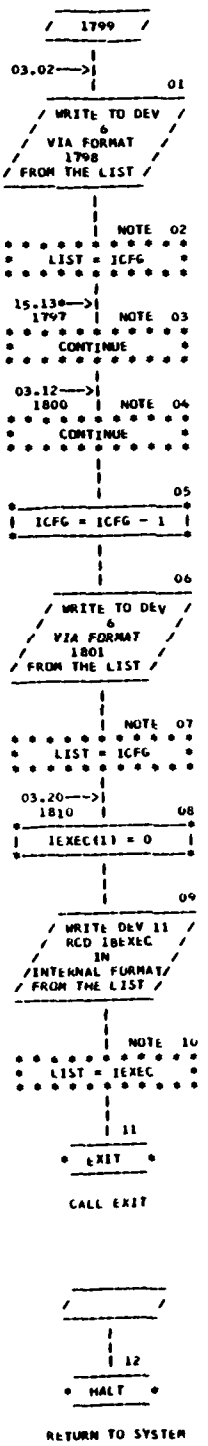


CHART FILE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ CSTATE(100)
      COMMON /BLK2/ ITEMPE(100),ITEMPI(100)
      COMMON/BLK3/NO/ XEMOME(45)
      DIMENSION ANTAZ(5,75)  , ANTEL(5,75)
      DIMENSION MTXE(5,100) , MTI(5,100) , [illegible] , PTEL(5,90),
     NRAND(129),TEND(2,50)
      DIMENSION PCOD(500), [illegible]
      DIMENSION TSCAT(5,100)
      DIMENSION TSKLOS(100)
      DIMENSION DETIME(5,100)
      DIMENSION ITAT(5,100)
      DIMENSION PRI(111,FSAME(2,100),FEC(,FE(,25),FFC(,FE(2,25)
      INTEGER  EXEC, ENDPAS, ENDJOB, ENDCFG, STOREX, STOREY, STOREA,
       STOREB, REWIND, OUTTX, OUTTY, OUTTA, [illegible]
      INTEGER CLEAPA,CLEAPE,CLEAPA,CLEAPY,CLEAPA,SKIP
      REAL LAMBDA,JSTART,JVEL,JPCKED,JPO
       REAL JRNG,JPSIM,JMAZ,JNGT,JEPP,JEMEN,JPM
      DATA EXEC/'EXEC  '/  , EDEXEC/'EDEXEC'/ ,  ENDPA/'ENDPAS'/  ,
         ENDJOB/'ENDJOB'/  , ENDCFG/'ENDCFG'/ ,  MODIFY/'MODIFY'/  ,
         STOREX/'STOREX'/  , STOREY/'STOREY'/ ,  STOREA/'STOREA'/  ,
         STOREB/'STOREB'/  , LOAD X/'LOAD X'/ ,  LOAD Y/'LOAD Y'/  ,
         LOAD A/'LOAD A'/  , LOAD B/'LOAD B'/ ,  REWIND/'REWIND'/  ,
         OUTT X/'OUTT X'/  , OUTT Y/'OUTT Y'/ ,  OUTT A/'OUTT A'/  ,
         OUTT B/'OUTT B'/  , INPUTX/'INPUTX'/ ,  INPUTY/'INPUTY'/  ,
         INPUTA/'INPUTA'/  , INPUTB/'INPUTB'/ ,  [illegible]  */
      DATA NCLEAR/'NCLEAR'/, CLEARX/'CLEARX'/, CLEARY/'CLEARY'/,
           CLEARA/'CLEARA'/, CLEARB/'CLEARB'/, CLEARP/'      '/
      EQUIVALENCE   (ITEMPE  1), NP          ),(ITEMPE  2), FS          ),
                    (ITEMPE  3), KEEP        ),(ITEMPE  4), SIMEN       ),
                    (ITEMPE  5), ISOUME      ),(ITEMPE  6), ICINV       ),
                    (ITEMPE  7), IDELE       ),(ITEMPE  8), SIMEO       ),
                    (ITEMPE  9), NORMET      ),(ITEMPE 10), NSCAN       ),
                    (ITEMPE 11), II          ),(ITEMPE 12), II          ),
                    (ITEMPE 13), LAMBDA      ),(ITEMPE 14), ENGCFG      ),
                    (ITEMPE 15), PSHIFT      ),(ITEMPE 16), TIME        ),
                    (ITEMPE 17), ACANG       ),(ITEMPE 18), ANTAZ0      ),
                    (ITEMPE 19), ELANG       ),(ITEMPE 20), ANTEL0      ),
                    (ITEMPE[illegible]), A[illegible]),(ITEMPE[illegible]), NCTAZ      ),
                    (ITEMPE[illegible]), EL[illegible]),(ITEMPE[illegible]), NCTEL     ),
                    (ITEMPE[illegible]), DEFINE[illegible],(ITEMPE[illegible]), NIMO   ),
                    (ITEMPE[illegible]), ANTAZ(1,1)),(ITEMPE[illegible]), ANTEL(1,1))
                   (ITEMPE[illegible]), PETIME      ),(ITEMPE[illegible]), NPETS     ),
                   (ITEMPE[illegible]), IPSIPE      ),(ITEMPE[illegible]), NCEPET    )
      EQUIVALENCE   (ITEMPE 251), IDOUMP     ),(ITEMPE 252), IPR        ),
                    (ITEMPE 253), IFLEX      ),(ITEMPE 254), JUMP       ),
                    (ITEMPE 255), IMEAN      ),(ITEMPE 256), STAT       ),
                    (ITEMPE 257), XMEAN      ),(ITEMPE 258), [illegible]),
                    (ITEMPE 259), DUMPSW     ),(ITEMPE 260), [illegible]),
                    (ITEMPE 261), OK         ),(ITEMPE 262), XOUNT      ),
                    (ITEMPE[illegible]), NMEAN(1))
```

CHART TITLE = NON-PROCEDURAL STATEMENTS

```
EQUIVALENCE   (ITEMP( 23), ABCLT     ),(ITEMP( 24), ASTRT     ),
              (ITEMP( 25), ATTCH     )
EQUIVALENCE   (ITEMP( 26), BAND      ),(ITEMP( 27), BOMB      ),
              (ITEMP( 28), CEIL      ),(ITEMP(1+1), WIT(1,1)  )
EQUIVALENCE   (ITEMP( 29), ICEIM     ),(ITEMP( 30), PCIM      ),
              (ITEMP( 31), NMCLR     ),(ITEMP( 32), NCLACK    ),
              (ITEMP( 33), NOPACK    )
EQUIVALENCE   (ITEMP( 34), NRNGPT    ),(ITEMP( 35), NEWPIP    )
EQUIVALENCE   (ITEMP( 36), PMCL      ),(ITEMP( 37), NPMPS     ),
              (ITEMP( 38), RWFD      ),(ITEMP( 39), RNGVEL    ),
              (ITEMP( 40), VELANG    ),(ITEMP( 41), RNGXI     ),
              (ITEMP( 42), RNG       ),(ITEMP( 43), AZIXI     ),
              (ITEMP( 44), AZO       ),(ITEMP( 45), MM        ),
              (ITEMP( 46), ELEXI     ),(ITEMP( 47), ELO       ),
              (ITEMP( 48), NN        ),
              (ITEMP(1,0), KK        ),(ITEMP(1,1), NPEAKS    ),
              (ITEMP(1,2), MODE      ),(ITEMP(1,3), DELAZ     ),
              (ITEMP(1,4), DELEL     ),(ITEMP(1,5), XVLANG    ),
              (ITEMP(1,6), IEFLG     ),(ITEMP(1,7), DOPPRN    )
             (ITEMP(128), KCELL      )
EQUIVALENCE   (ITEMP(113), IFCLDE    )
EQUIVALENCE   (ITEMP( 54), ST        ),(ITEMP( 60), RNG       ),
              (ITEMP( 61), FR        ),(ITEMP( 62), EF        ),
              (ITEMP( 63), NSKP      ),(ITEMP( 64), NAUTO     ),
              (ITEMP( 65), TH        ),(ITEMP( 66), TC        ),
               (ITEMP(,01),  VIL),(ITEMP(,+1),VEL),
              (ITEMP(301), GLBL      )
EQUIVALENCE   (ITEMP( 67), NTRN      ),(ITEMP(,01), TRN(1,1)  )
EQUIVALENCE   (ITEMP( 68), FFO       ),(ITEMP( 69), FFI       ),
              (ITEMP( 70), FDI       ),(ITEMP( 71), FDO       )
EQUIVALENCE (ITEMP( 68), FFI),(ITEMP( 69), FFO),
            (ITEMP( 70), FDO),(ITEMP( 71), FDI)
EQUIVALENCE   (ITEMP(160), IFFON     ),(ITEMP(161), IFFOO     ),
              (ITEMP(162), IFFIN     ),(ITEMP(163), IFFIO     ),
              (ITEMP(164), IFRIN     ),(ITEMP(165), IFRIO     ),
              (ITEMP(166), IFCON     ),(ITEMP(167), IFCIO     ),
              (ITEMP(168), MODEOF    ),(ITEMP(169), NFIIO     )
EQUIVALENCE (ITEMP(160), IFFON),(ITEMP(,+1), IFFOO),
            (ITEMP(162), IFFIN),(ITEMP(,+3), IFFIO),
            (ITEMP(164), IFRIN),(ITEMP(,+5), IFRIO),
            (ITEMP(166), IFCIN),(ITEMP(,+7), IFCIO)
EQUIVALENCE   (ITEMP( 72), NZ        ),(ITEMP( 73), NO        ),
              (ITEMP( 74), SF        ),(ITEMP(,+1), F(1,1)),
              (ITEMP(301), FPOLE(1,1))
EQUIVALENCE   (ITEMP( 75), FBCK      )
EQUIVALENCE   (ITEMP( 76), NTRAP     ),(ITEMP( 77), DX        ),
              (ITEMP( 78), INCTAS    ),(ITEMP( 79), NPCMS     ),
              (ITEMP( 80), NPPSCI    ),(ITEMP( 81), IFISCN    ),
              (ITEMP( 82), NPFSP     ),(ITEMP( 83), IFFSP     ),
              (ITEMP( 84), INCFM     ),(ITEMP( 85), NPCFS     ),
```

C ASTEC TABLE - NONEQUILIBRIUM STATEMENTS

```
                (ITEMP(  6), IDLENG    ),(ITEMP(  7), ANGLE     ),
                (ITEMP( 86), NCOFFS    ),(ITEMP( 194), ILGNUM    )
     .          (ITEMP(1159), TIMESC),(IT,MP(1160), MCOTSK)
     .          (ITEMP(1177), FCODEC),(ITEMP(1178), RECENT),
                (ITEMP(1194), THETAK)
     .           (ITEMP(4001), TSKL,SCII)  )
EQUIVALENCE (ITEMP(1000), ICEMP2)
EQUIVALENCE   (ITEMP( 90), FM          ),(ITEMP( 91), PSTKI     ),
              (ITEMP( 92), CDISF       ),(ITEMP( 93), FMDW      ),
              (ITEMP( 94), NEWTX       ),(ITEMP( 95), SPM       ),
              (ITEMP( 96), NSURF       ),(ITEMP( 97), SWTIM     ),
              (ITEMP( 98), KISTIM      ),(ITEMP( 99), FALTIM    ),
              (ITEMP(100), TSTART      ),(ITEMP(2011), FCODE(1)  ),
              (ITEMP(.01), WTX(1,1) ),(ITEMP(1134), BPKI ),
                (ITEMP(1295), VPEAK    ),
               (ITEMP(1344),  ICODE    )  ,  (ITEMP(1183),MODEPMI),
                (ITEMP(1845),  NSF   ),  (ITEMP(1866),  IFY(1))
EQUIVALENCE   (ITEMP(1011), NTAPS      ),(ITEMP(10,), FODEC     ),
              (ITEMP(1354),  IA(SPC),  (ITEMP(1355),  INPIF),
              (ITEMP(2011), ITAPI1,1)  ),(ITEMP(2011), DEC(1,1)  )
EQUIVALENCE   (ITEMP(1033), XCSB       ),(ITEMP(1034), NBITS     ),
              (ITEMP(1035), IKCIF      ),(ITEMP(1344), ADCFS     )
EQUIVALENCE   (ITEMP(1036), HTGT       ),(ITEMP(1037), KTGT      ),
              (ITEMP(1038), ANGTGT     ),(ITEMP(1094), TURINT    ),
              (ITEMP(1110), FSIM       ),(ITEMP(2111), NSCAT     ),
              (ITEMP(1112), TGTVEL     ),(ITEMP(2011), TSCAT(1,1))
EQUIVALENCE  (ITEMP(1700), NCELL       ),(ITEMP(1948), TAVG      )
 EQUIVALENCE  (ITEMP(1949), GAIN       )
EQUIVALENCE  (ITEMP(1950), SHIG        ),(ITEMP(1951), SHPHAS    )
 .           (ITEMP(1952), TJET        )
 EQUIVALENCE   (ITEMP(1960), CPKLO   ), (ITEMP(1971), XMLENG   ),
        (ITEMP(1958),SPGENS         )
 EQUIVALENCE (ITEMP(1959), FABIAS),  (ITEMP(1960), NSAM  ),
          (ITEMP(1971), NDFZ),  (ITEMP(2011), FSAMI(1,1))
 EQUIVALENCE  (ITEMP(1999), NSFC  ), (ITEMP(2011), FRCODE(1,1)),
          (ITEMP(2511), FECCEP(1,1))
 EQUIVALENCE  (ITEMP(1711), JKNG ),
          (ITEMP(1712), JKSIM ) , (ITEMP(1713), JMAZ ),
          (ITEMP(1714), JMGI  ) , (ITEMP(1715), JERP ),
          (ITEMP(1716), JEMPM ) , (ITEMP(1717), JPM  ),
          (ITEMP(1720), JFO   ) , (ITEMP(1721), JSTAKE),
          (ITEMP(1568), JVEE  ) , (ITEMP(1577), JPEKOD)
NAMELIST/NL101/IAEDI,IENG,JKNG,UMEAN,DCAT,SIGMA,XMEAN,NRAND,
  IODUMP
NAMELIST/NL102/ UMEAN,DCAT,SIGMA,XMEAN,,IODUMP
 NAMELIST/NL104/ NAVG
 NAMELIST/NL105/ NAVG
 NAMELIST/NL106/ NAVG
 NAMELIST/NL108/ NAVG
NAMELIST/NL113/ AUELT,ASTET,ASTIO
```

CHART TITLE - NUMERICAL SIMULATIONS

```
NAMELIST/NL405/ FFO,FFI,FFN1,FFN2,IFFON,IFFOD,IFFIN,IFFID,
 IFBON,IFBOD,IFBIN,IFBID,NBITOF,MODEOF
NAMELIST/NL406/ FFO,FFI,FFN1,FFN2,IFFON,IFFOD,IFFIN,IFFID,IFBIN,
 IFBID,IFB2N,IFB2D,NBITOF,MODEOF
NAMELIST/NL407/ FFO,FFI,FFN1,FFN2,IFFON,IFFOD,IFFIN,IFFID,IFBIN,
 IFBID,IFB2N,IFB2D,NBITOF,MODEOF
NAMELIST/NL408/ NZ,NP,SF,FZERO,FFOUT
NAMELIST/NL409/ NZ,NP,SF,FZERO,FFOUT
NAMELIST/NL409/ FFCR
NAMELIST/NL410/ FBCR
NAMELIST/NL412/ NTSAR,DX,FFFO,THETAS,NRUNS,NOPSCO,IRPSCO,NOPSR,
 IRFSR,INCRM,IDDUMP,NFILS,TSRLOS
NAMELIST/NL420/ PW,       FMBW,NFWTX,SPW,NSUFR,SWTIM,RISTIM,
 FALTIM,TSTART,PCODE,WTX,IDDUMP,SIMFC,VFCAR,CHIRP,FSTRT
NAMELIST/NL421/ PW,       FMBW,NFWTX,SPW,NSUFR,SWTIM,RISTIM,
 FALTIM,TSTART,PCODE,WTX,IDDUMP,SIMFC,VFCAR,CHIRP,FSTRT
NAMELIST/NL422/ NTAPS,DEC,FODEC,ITAP
NAMELIST/NL423/ NTAPS,DEC,FODEC,ITAP
NAMELIST/NL425/ DX,THETAS,NRUNS,NOPSCO,IFFSCO,
 NPULS,NCOPIES,TCGNOM,NPWTX,FMOW,WTX,RISTIM,FALTIM,
 IDDUMP,TIMESB
NAMELIST/NL426/ NTSAR,DX,THETAS,NRUNS,NFFSR,IRPSR,TDCINC,
 ANGLC,TSRLOS,IDDUMP,RECODE,THETAR,MODTSR,FBCR,TDCMON
NAMELIST/NL427/ NTSAR,DX,THETAS,NRUNS,NOPSR,IFPSR,TDCINC,
 ANGLC,IDDUMP,RECODE,THETAR,MODTSR,FBCR,TDCMON
NAMELIST/NL430/ FFO,FFI,FFN1,FFN2,IFFON,IFFOD,IFFIN,IFFID,IFBIN,
 IFBID,IFB2N,IFB2D,NBITOF,MODEOF
NAMELIST/NL431/ FFO,FFI,FFN1,FFN2,IFFON,IFFOD,IFFIN,IFFID,IFBIN,
 IFBID,IFB2N,IFB2D,NBITOF,MODEOF
NAMELIST/NL432/ FFO,FFI,FFN1,FFN2,IFFON,IFFOD,IFFIN,IFFID,IFBIN,
 IFBID,IFB2N,IFB2D,NBITOF,MODEOF
NAMELIST/NL433/ FFO,FFI,FFN1,FFN2,IFFON,IFFOD,IFFIN,IFFID,IFBIN,
 IFBID,IFB2N,IFB2D,NBITOF,MODEOF
NAMELIST/NL434/FFCR
NAMELIST/NL435/FBCR
NAMELIST/NL436/FFCR
NAMELIST/NL437/FBCR
NAMELIST/NL440/ NCELL
NAMELIST/NL441/ NCELL
NAMELIST/NL451/ FFCR,RECODE,RECINT,THETAR,DX,NRUNS
NAMELIST/NL452/ FFCR,RECODE,RECINT,THETAR,DX,NRUNS
NAMELIST/NL453/ DX,THETAS,NRUNS,NOPSCO,IFFSCO,
 NPULS,NCOPIES,TCGNOM,NPWTX,FMOW,WTX,RISTIM,FALTIM,TIMESB
 NAMELIST/NL454/ SIMFC,SPW,NSUFR,FFRT
 NAMELIST/NL455/ DX,THETAS,NRUNS,TCGNOM,SPW
 NAMELIST/NL456/ GAIN
 NAMELIST/NL457/ GAIN
 NAMELIST/NL458/ GAIN
 NAMELIST/NL459/ TAVG
 NAMELIST/NL460/ TAVG
```

```
                    NAMELIST/NL502/ IDDUMP,NIGH,NIGL,ANGLGL,IGFIN1,NSIM,NSCAT,
                     ISCAT,TOTVEL
                    NAMELIST/NL506/ NSR,MODEM,IPY,ICODE,CHIRP,FSTRT,SPW,NSUBP,SWTIM,
                     FSTART,SIMFQ,VPEAK,FISTIM,FALTIM
                    NAMELIST/NL507/ NSR,MODEM,IPY,ICODE,CHIRP,FSTRT,SPW,NSUBP,SWTIM,
                     FSTART,SIMFQ,VPEAK,FISTIM,FALTIM
                    NAMELIST/NL508/ FODEC,TAPSPC,INFIF
                    NAMELIST/NL509/ FODEC,TAPSPC,INFIF
                    NAMELIST/NL510/ CFREQ,XWIDTH
                    NAMELIST/NL511/ SEDENS
                    NAMELIST/NL512/ JFNC,JKSIM,JMAZ,JHGT,JCEP,JFMDM,JPM,
                      JFC,JVEL,JPERDC,RADIUS,NSAM,NDFZ,FSAM
                    DATA N00001,N00046,N00101,N00053,N00500/1,46,101,53,500/
                    DATA N00012,N00013,N00021,N001.9/1.,13.,21.,1.9/
 2001               FORMAT(1H1,'SIMULATION PASS',I4,'DATA LOAD FOR CONFIGURATION NUMBE
                    R',I4,' IS BEGINNING')
                    FORMAT( A6   , 3X, I3, 3X, I3 )
                    FORMAT(////,1H ,A6   ,10X,E5.1,10X,E3)
                    FORMAT ' INCORRECT ALPHA INPUT, CARD IGNORED, */ )
 1210               FORMAT ' THE SPECIFIED NUMBER OF POINTS IN HISTOGRAM EXCEEDS
                    6000  .....  NHIST SET TO 6000 ' )
 1217               FORMAT(' THE SPECIFIED VALUE OF  ( FS/ALIAS ) NOT',
                     ' AN INTEGER ...ALIAS SET EQUAL TO', E13.5)
 1301               FORMAT(' THE REQUIRED NUMBER OF FREQ. DOMAIN SAMPLES EXCEEDS'/
                    ,' 8192.....THIS JOB WILL BE TERMINATED')
 11                 FORMAT(' THIS CONFIGURATION WILL BE REPEATED',I3,
                     'TIMES')
 1420               FORMAT(' THE NUMBER OF FREQ. DOMAIN SAMPLES EXCEEDS 4000...',
                      ' THIS JOB WILL BE TERMINATED')
 40                 FORMAT(1H0, ' NOTHING LOADED FOR STEP NUMBER',I4, '.....THE MODULE
                     NUMBER IS',I4)
 51                 FORMAT( ' THE MODULE NUMBER FOR THE',I3,'TH STEP IS INVALID...THE
                     MODULE NUMBER IS ',I4)
 61                 FORMAT(' IBEXEC = ',I1,' IBLOCK = ',I10)
 1435               FORMAT ' MORE THAN 250 JOB STEPS PER SIMULATION PASS ATTEMPTED...
                     THE SIMULATION ACTIVITY IS DELETED')
 1414               FORMAT(1H0,' THE NEXT BLOCK OF DATA TO BE LOADED IS FOR MODULE NUM
                    BER', I4 // )
 1701               FORMAT(1H0,'REL DATA LOAD FOR CONFIGURATION NUMBER',I3,' HAS BEEN
                    COMPLETED.....',I4,' SIMULATION PASSES WERE LOADED')
```

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
1751    FORMAT('  STEP NUMBER',I3,' WILL BE BYPASSED FOR REMAINDER',
         ' OF THIS CONFIGURATION')
1712    FORMAT(1H ,'MOD FOR PASS NUMBER',I3,' DATA BLOCK',I3,' FOR J
        OB STEP',I4,' CALLING MODULE',I4,' IS TO BE MODIFIED' )
1714    FORMAT( ' IBLOCK = 0  MODIFICATION NOT PERFORMED.' )
2302    FORMAT(' NON-STANDARD RETURN FROM CLINT.....THE CONFIGURATIONS PRE
        CEEDING',I5,' WILL BE EXECUTED')
2506    FORMAT(' NON-STANDARD RETURN FROM PHENC....PRECEEDING
         CONFIGURATIONS WILL BE EXECUTED')
1798    FORMAT( ' THE NUMBER OF DATA BLOCKS TO BE LOADED EXCEEDS STORAGE A
        VAILABLE.....THE CONFIGURATIONS PRECEEDING',I5,' WILL BE EXECUTED'
        )
1801    FORMAT(1HO,'THE DATA LOAD FOR',I3,' CONFIGURATIONS HAS BEEN COMPLE
        TED.....SIMULATION ACTIVITY FOLLOWS')
```

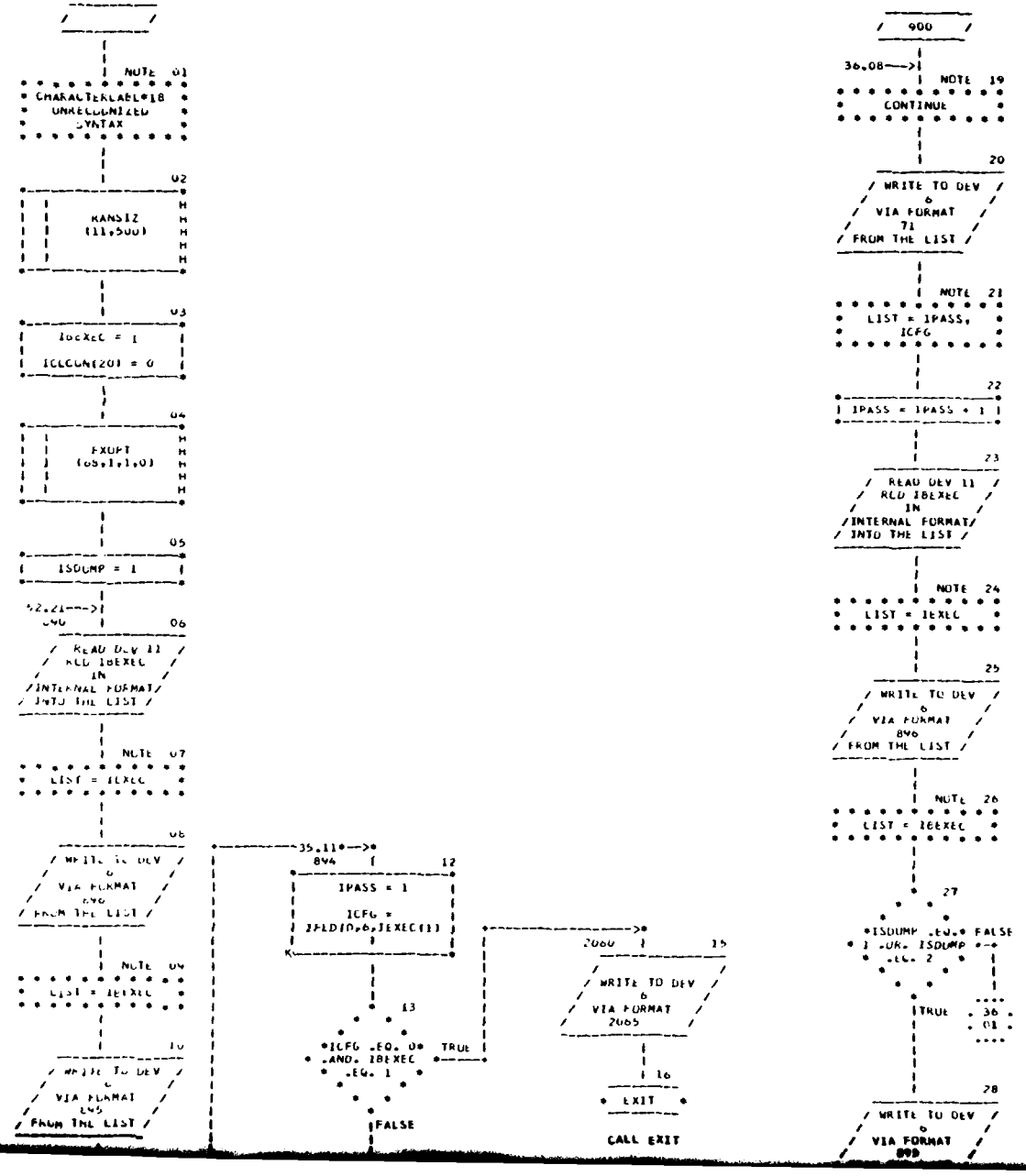
CHART TITLE - INTRODUCTORY COMMENTS

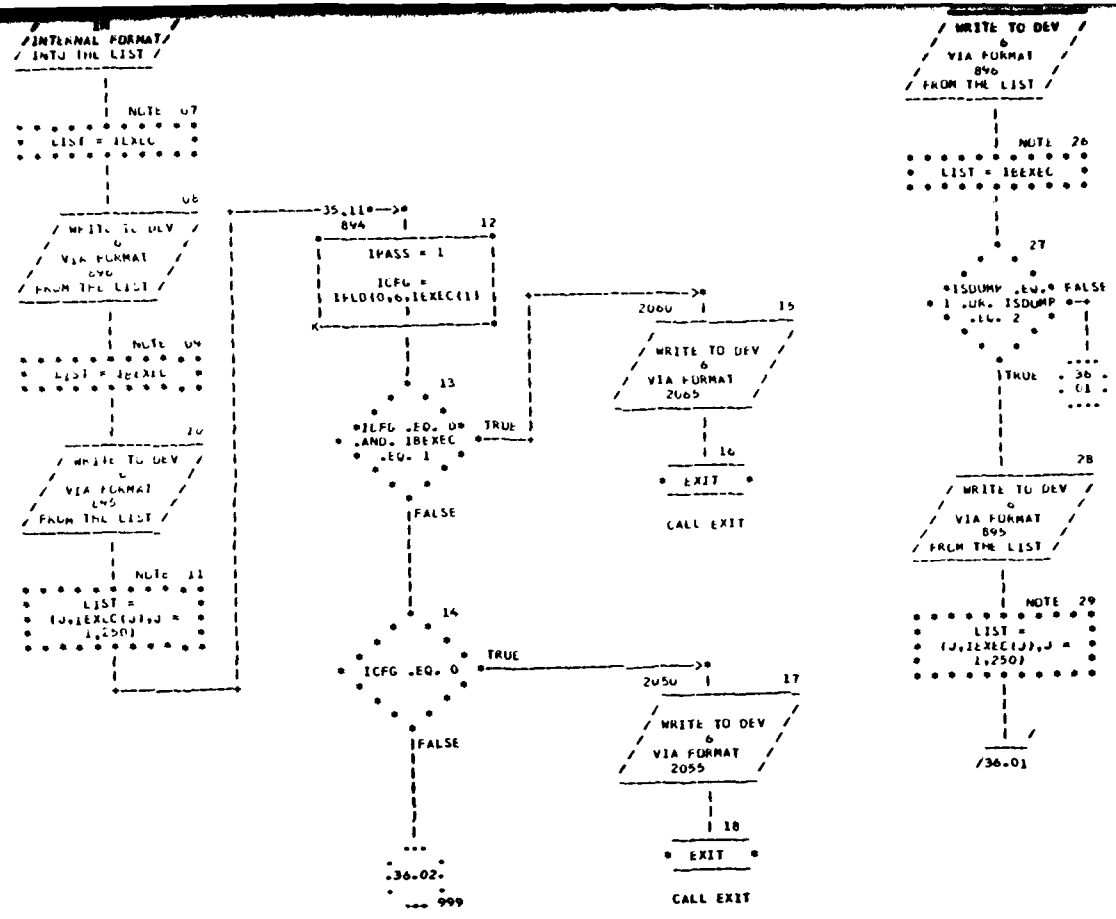
* MAIN 2 *

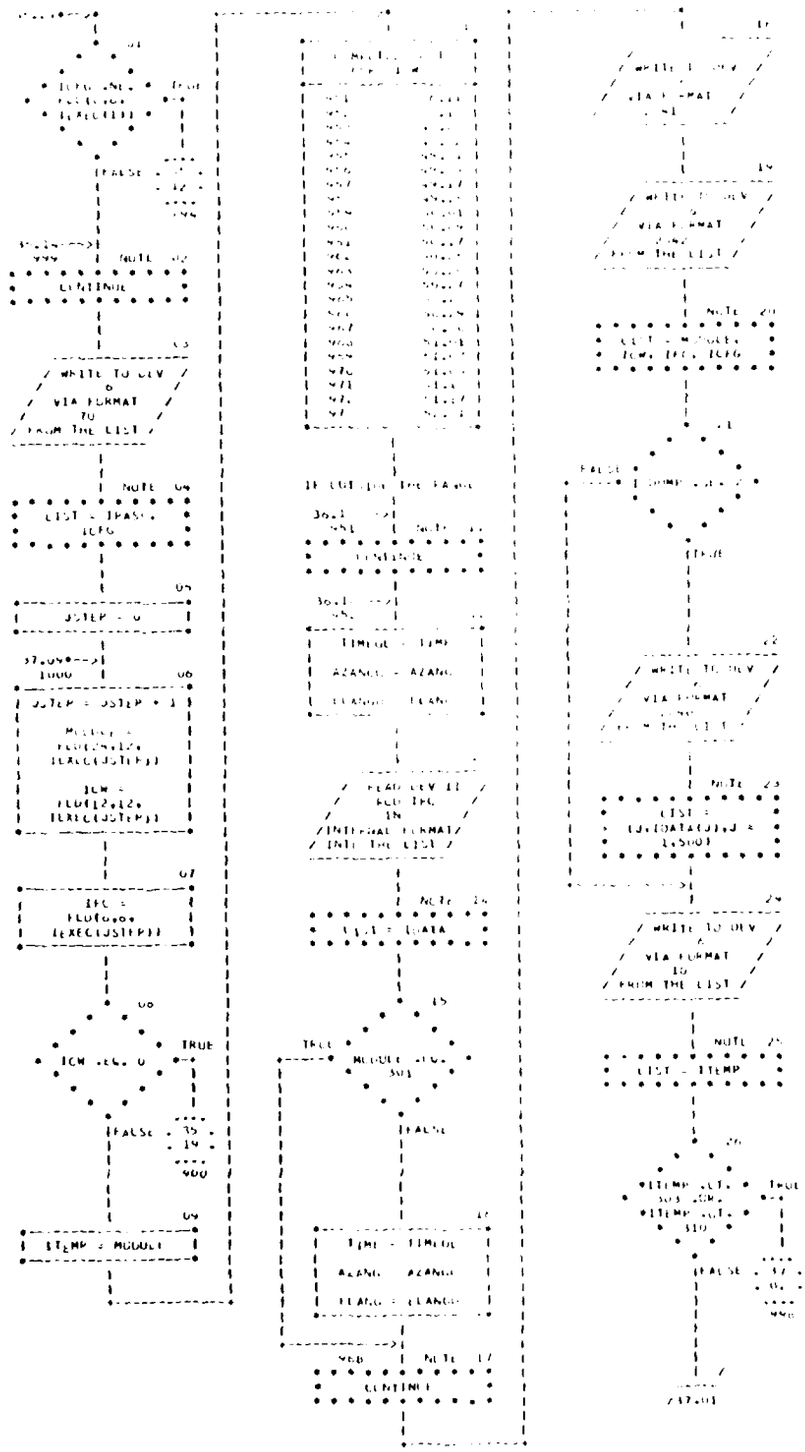
08/11/75

AUTOFLOW CHART SET - CMD/SCL RADSIM

CHART TITLE - PROCEDURES




INTERNAL FORMAT INTO THE LIST
NOTE 07
LIST = ILXEC
08
WRITE TO DEV 6 VIA FORMAT 896 FROM THE LIST
NOTE 09
LIST = IEXEC
10
WRITE TO DEV 6 VIA FORMAT 895 FROM THE LIST
NOTE 11
LIST = (J,IEXEC(J),J = 1,250)
35,11
894
12
IPASS = 1
ICFG = IFLD(0,6,IEXEC(1))
13
IICFG .EQ. 0 .AND. IBEXEC .EQ. 1
TRUE
FALSE
14
ICFG .EQ. 0
TRUE
FALSE
.36.02.
999
2060
15
WRITE TO DEV 6 VIA FORMAT 2065
16
EXIT
CALL EXIT
2050
17
WRITE TO DEV 6 VIA FORMAT 2055
18
EXIT
CALL EXIT
WRITE TO DEV 6 VIA FORMAT 896 FROM THE LIST
NOTE 26
LIST = IBEXEC
27
ISDUMP .EQ. 0 .OR. ISDUMP .EQ. 2
FALSE
TRUE
36 01
28
WRITE TO DEV 6 VIA FORMAT 895 FROM THE LIST
NOTE 29
LIST = (J,IEXEC(J),J = 1,250)
/36.01



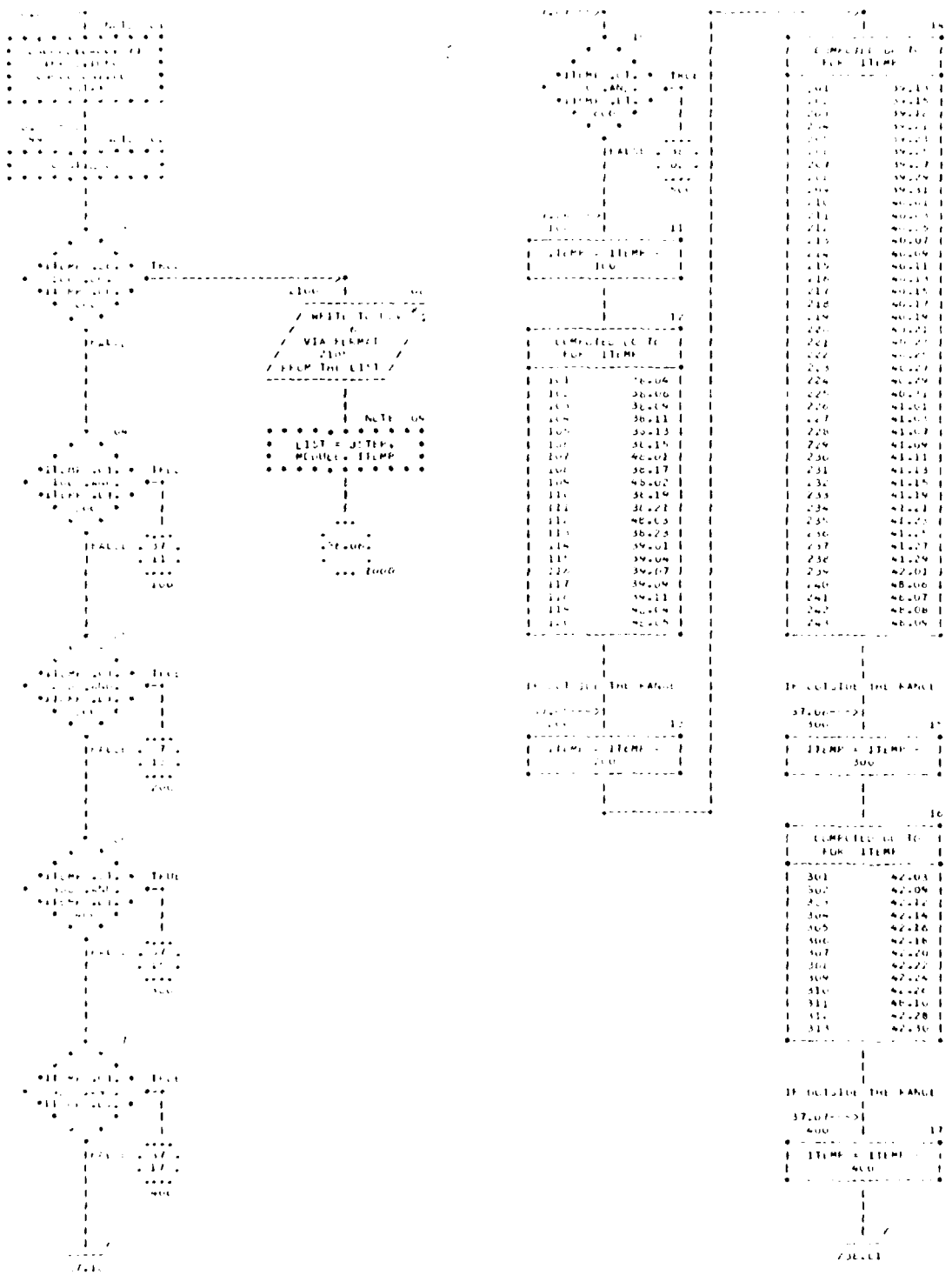
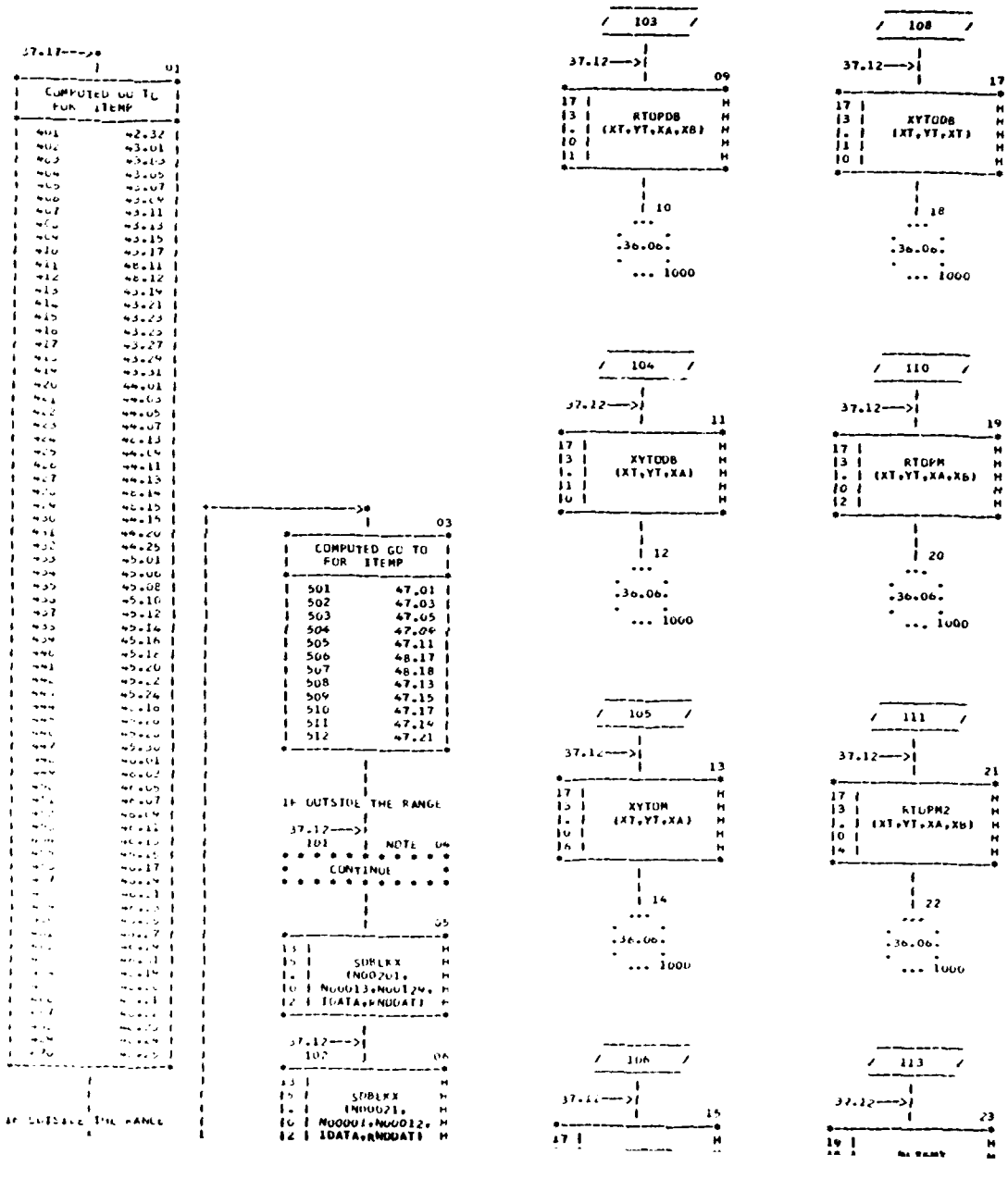


CHART TITLE - PROCEDURES



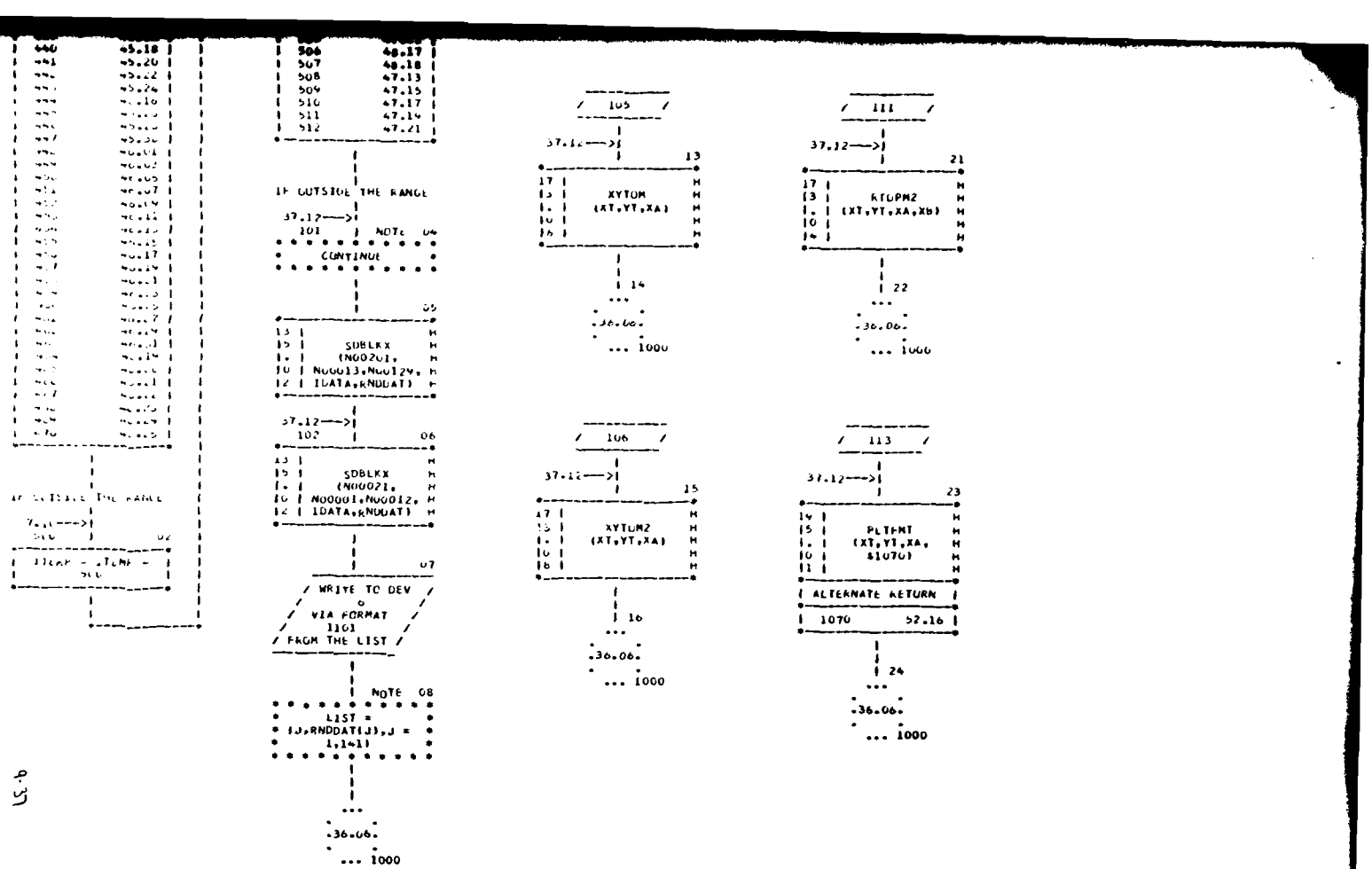
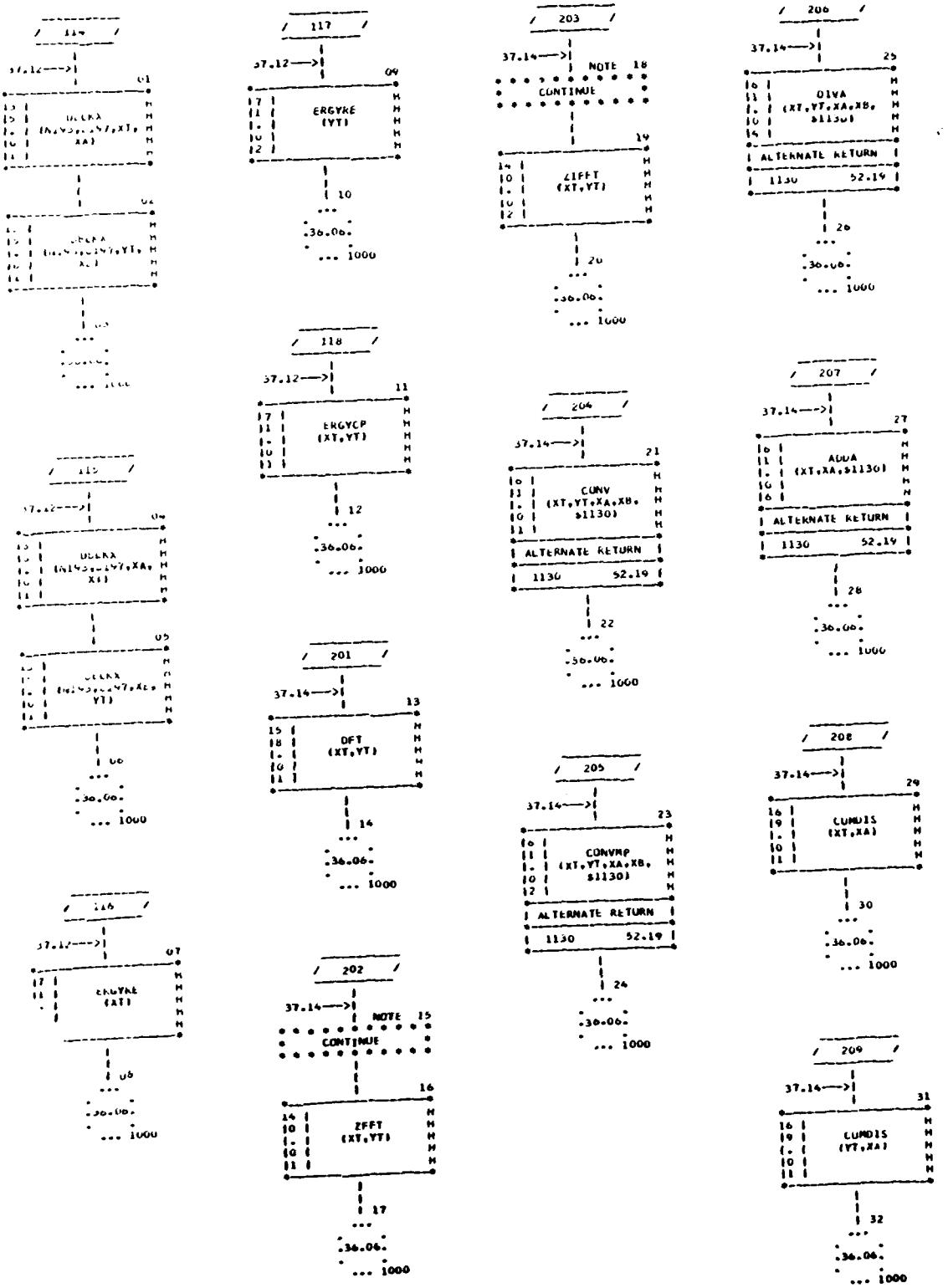
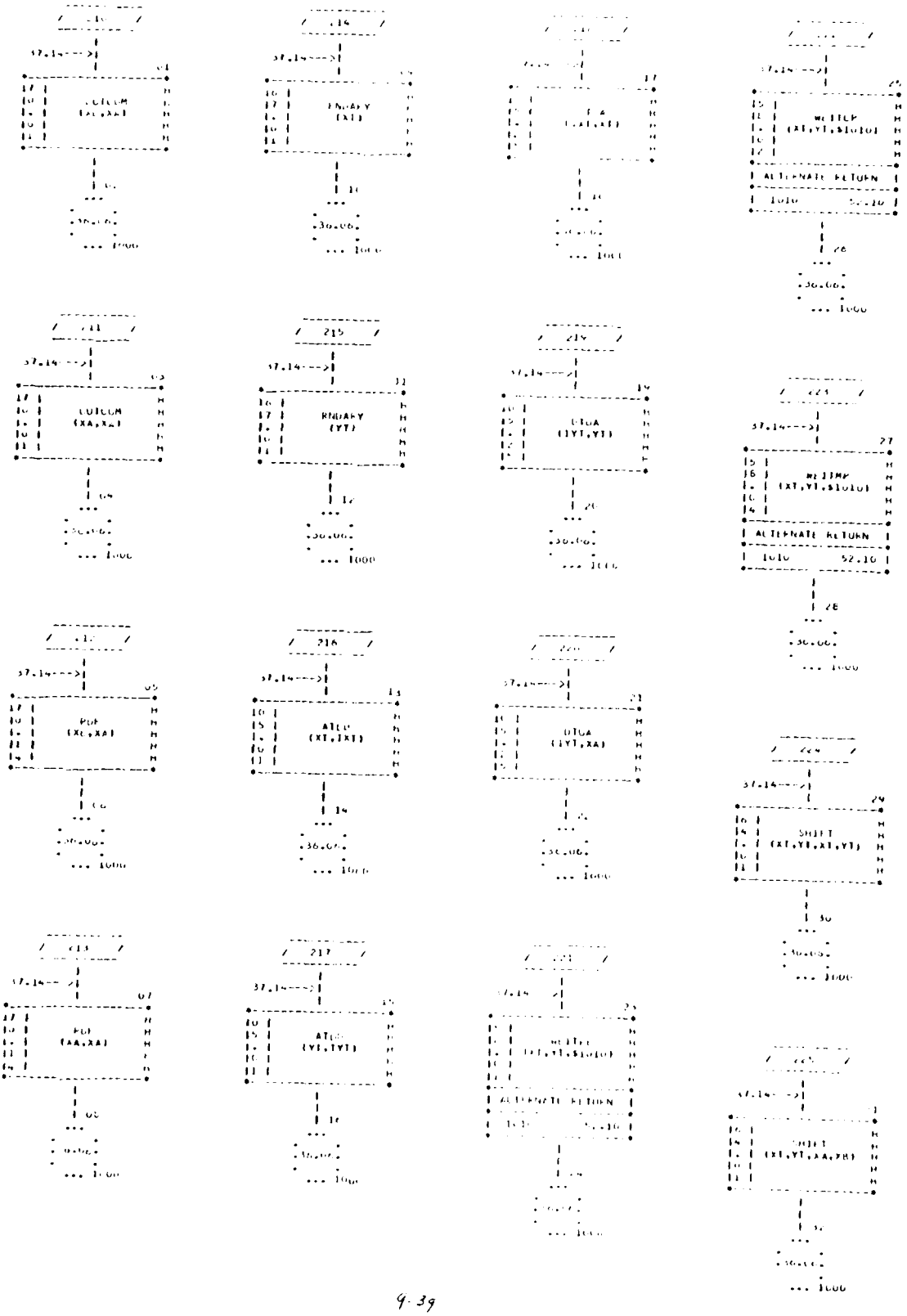
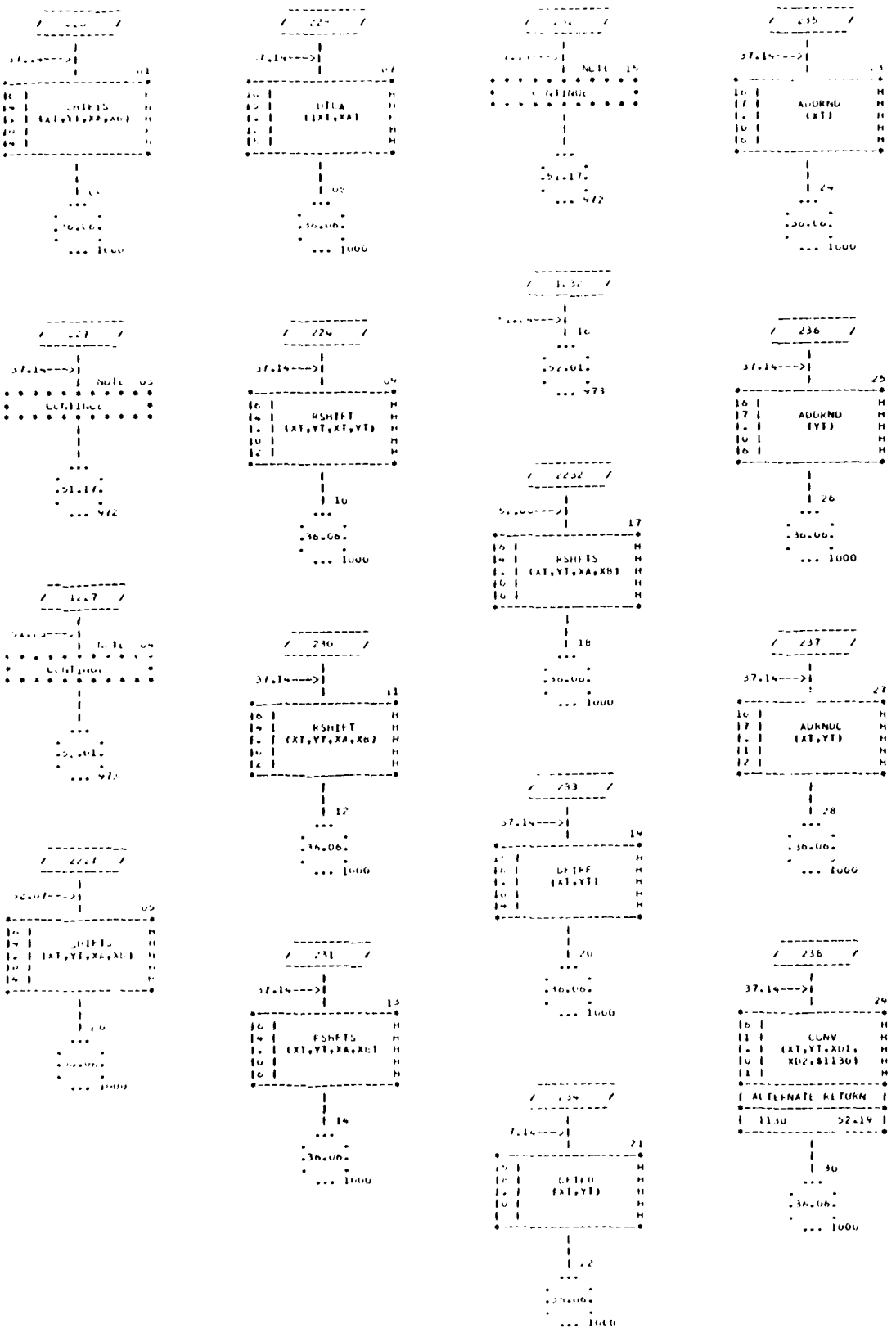
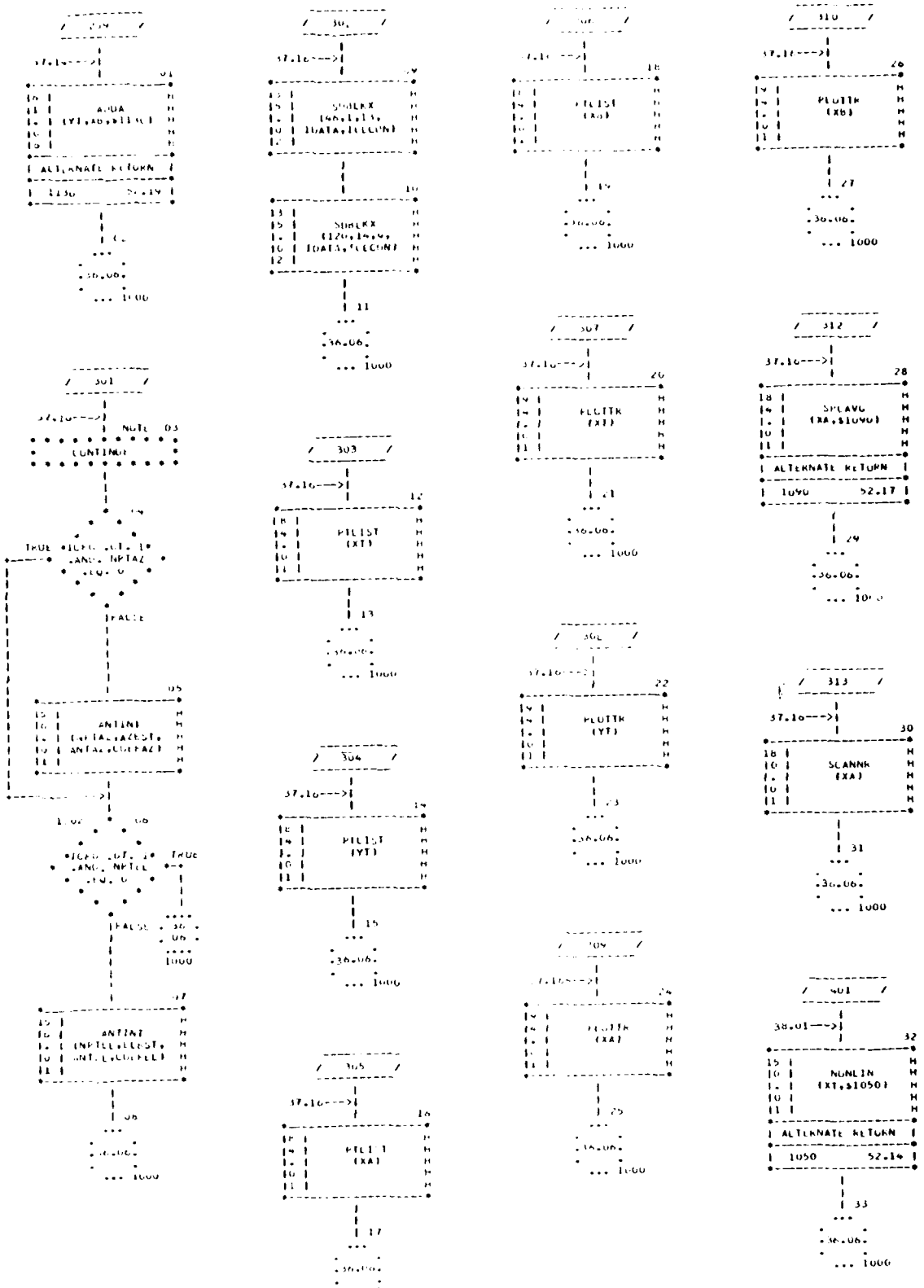

506 48.17
507 48.18
508 47.13
509 47.15
510 47.17
511 47.14
512 47.21
IF OUTSIDE THE RANGE
37.12
101 NOTE 04
CONTINUE
05
SDBLKX
(N00201,
N00013,N00129,
IDATA,RNDDAT)
37.12
102 06
SDBLKX
(N00021,
N00001,N00012,
IDATA,RNDDAT)
07
WRITE TO DEV
VIA FORMAT
1101
FROM THE LIST
NOTE 08
LIST =
(J,RNDDAT(J),J =
1,141)
.36.06.
... 1000
105
37.12
13
XYTOM
(XT,YT,XA)
14
.36.06.
... 1000
106
37.12
15
XYTOM2
(XT,YT,XA)
16
.36.06.
... 1000
111
37.12
21
RTOPM2
(XT,YT,XA,XB)
22
.36.06.
... 1000
113
37.12
23
PLTFMT
(XT,YT,XA,
$1070)
ALTERNATE RETURN
1070 52.16
24
.36.06.
... 1000

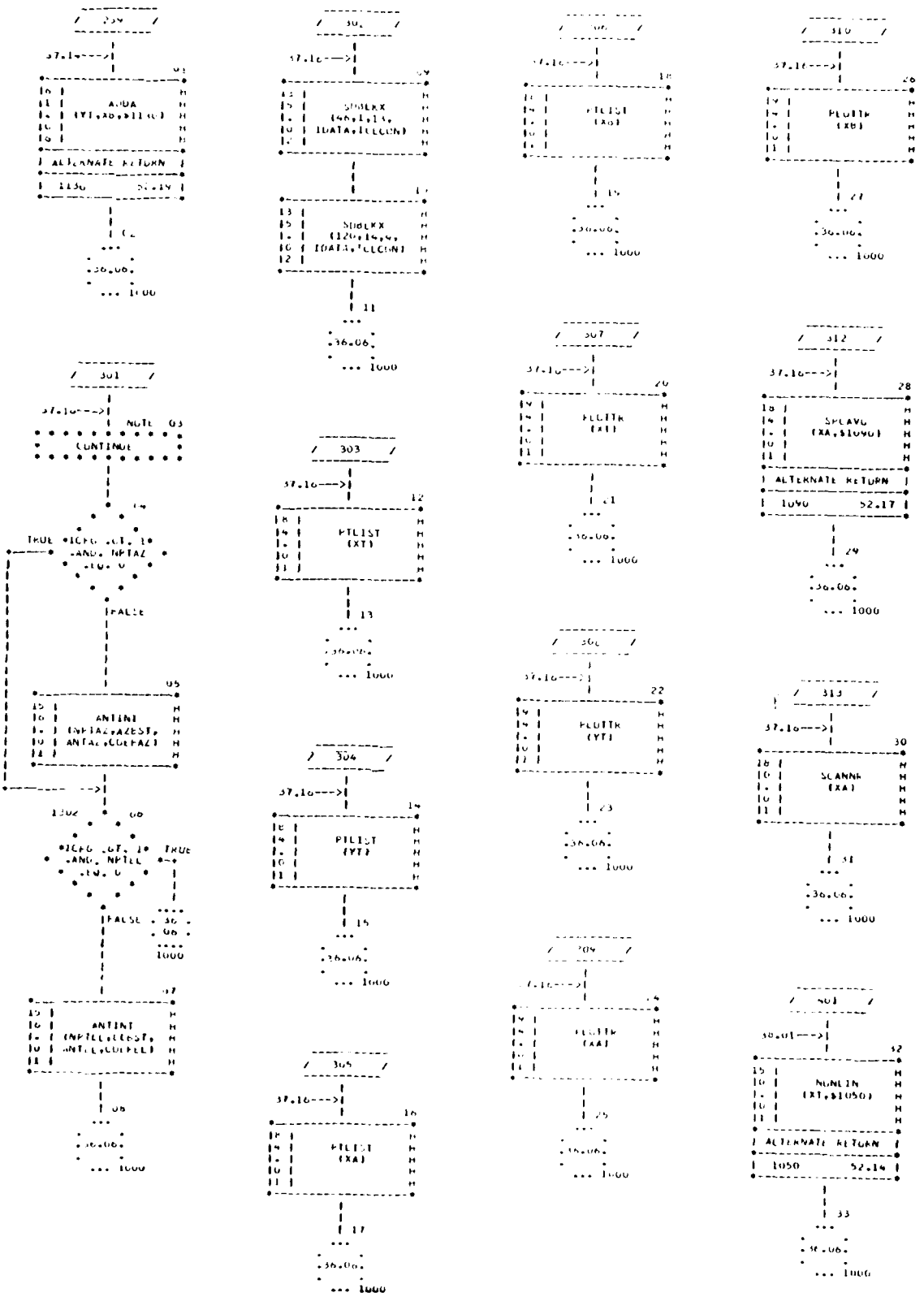
CHART TITLE - PROCEDURES

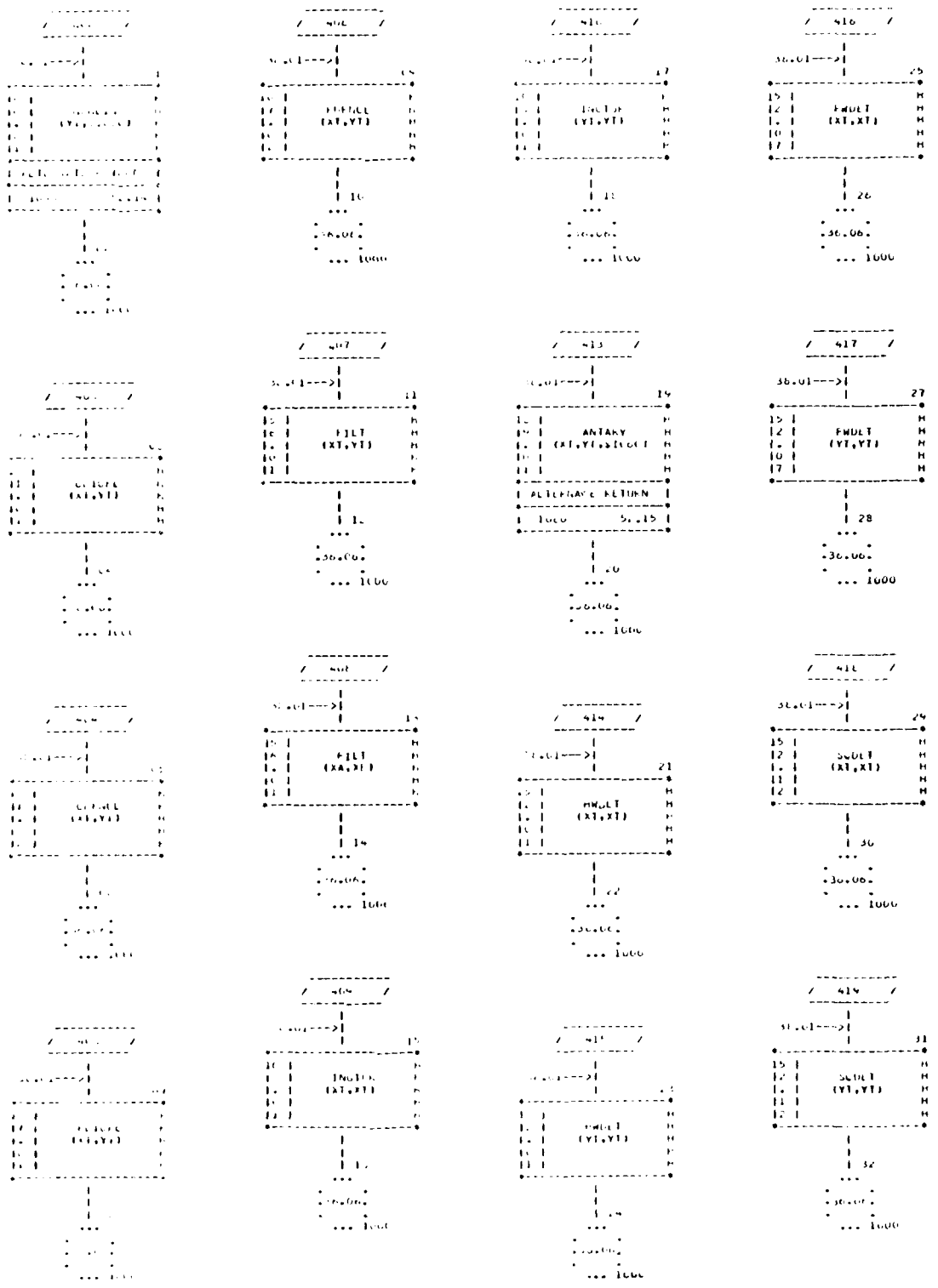


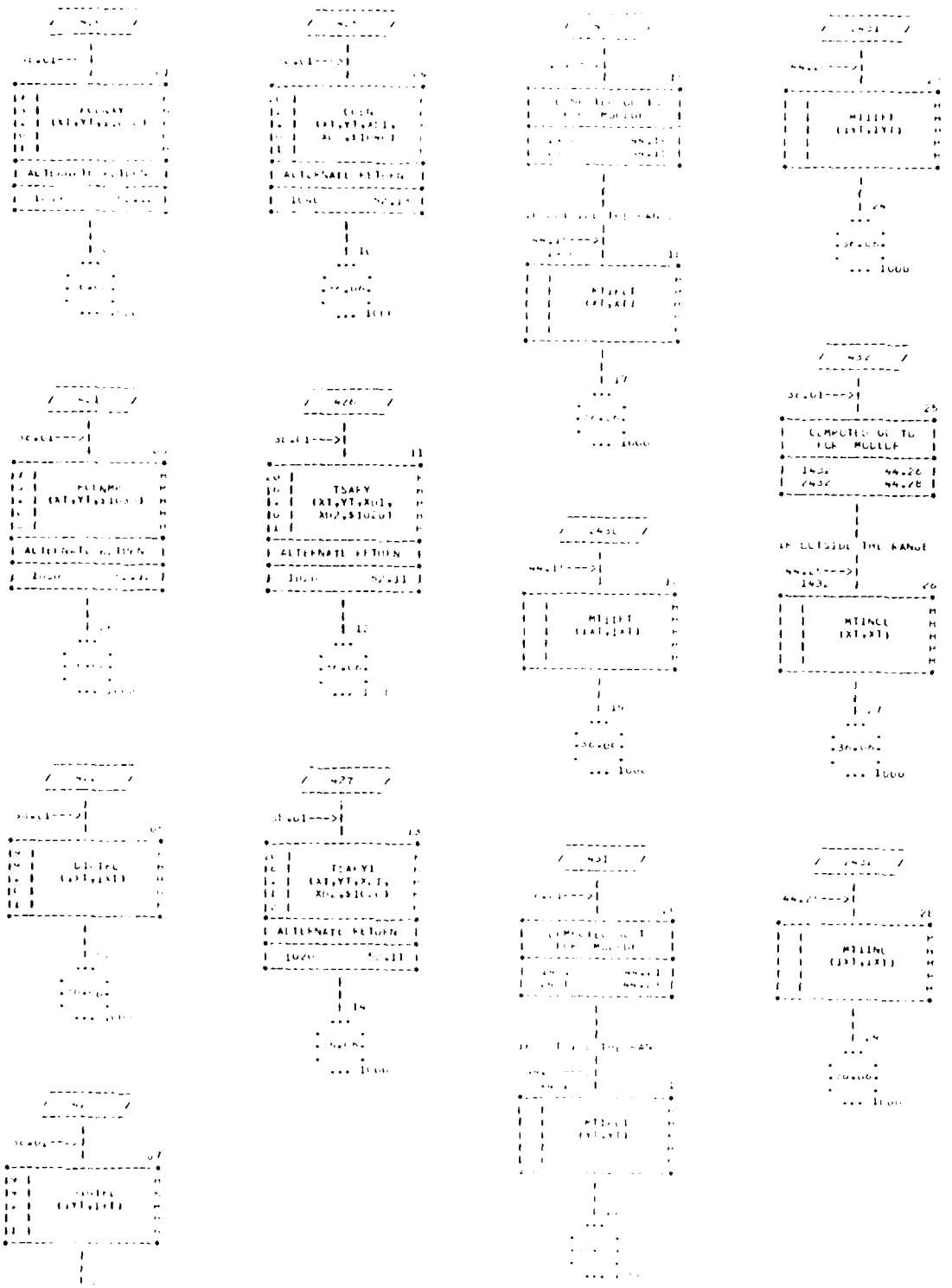


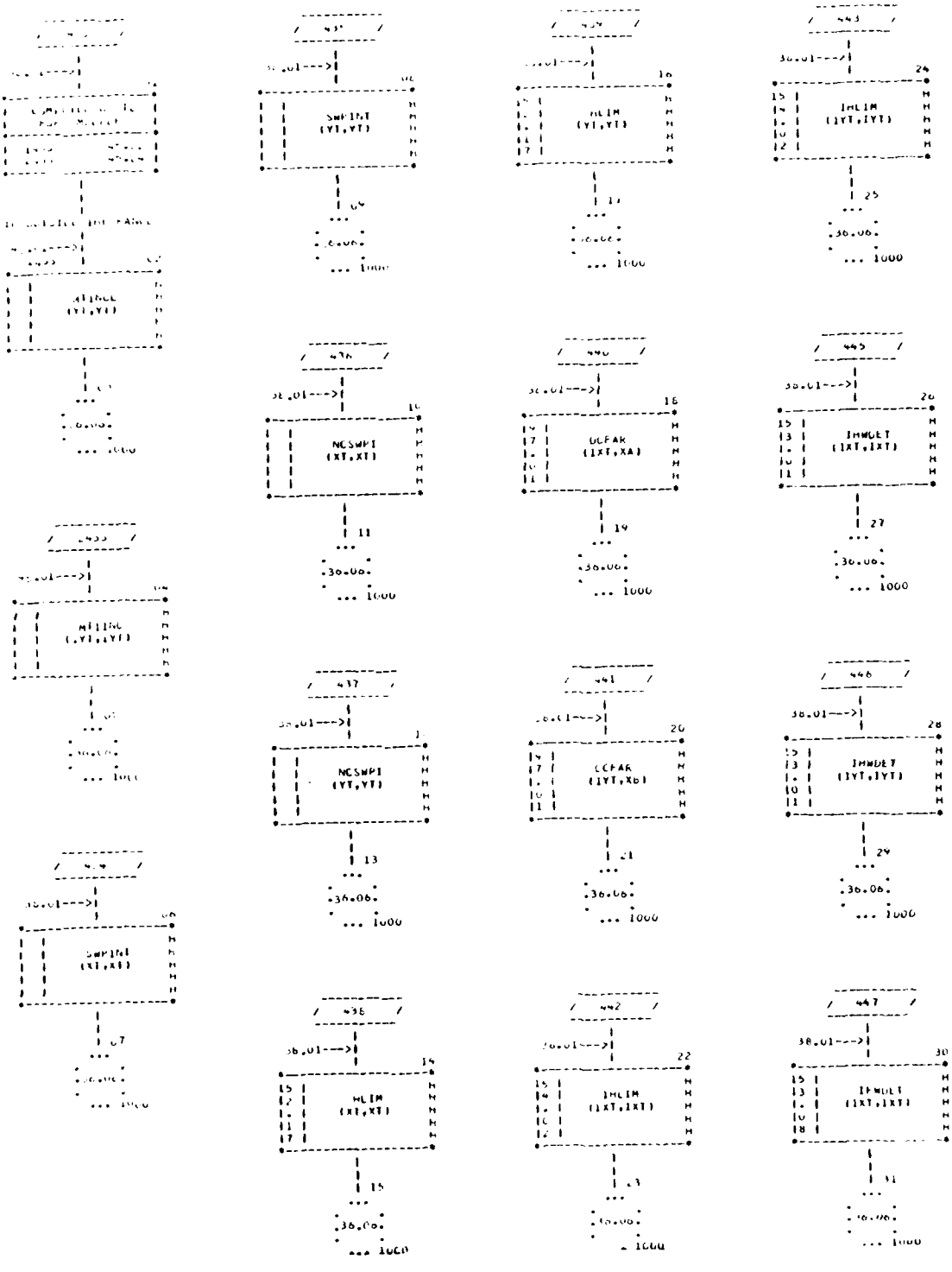

SHIFTS
(XI,YI,XA,XB)
DTLA
(IXI,XA)
NOIE
CONTINUE
RSHIFT
(XI,YI,XI,YI)
RSHIFTS
(XI,YI,XA,XB)
ADDRND
(XI)
ADDRND
(YI)
ADDRNDC
(XI,YI)
DFIRF
(XI,YI)
DFIFO
(XI,YI)
CONV
(XI,YI,XDI,
XD2,&1130)
ALTERNATE RETURN
1130
52,19
1000

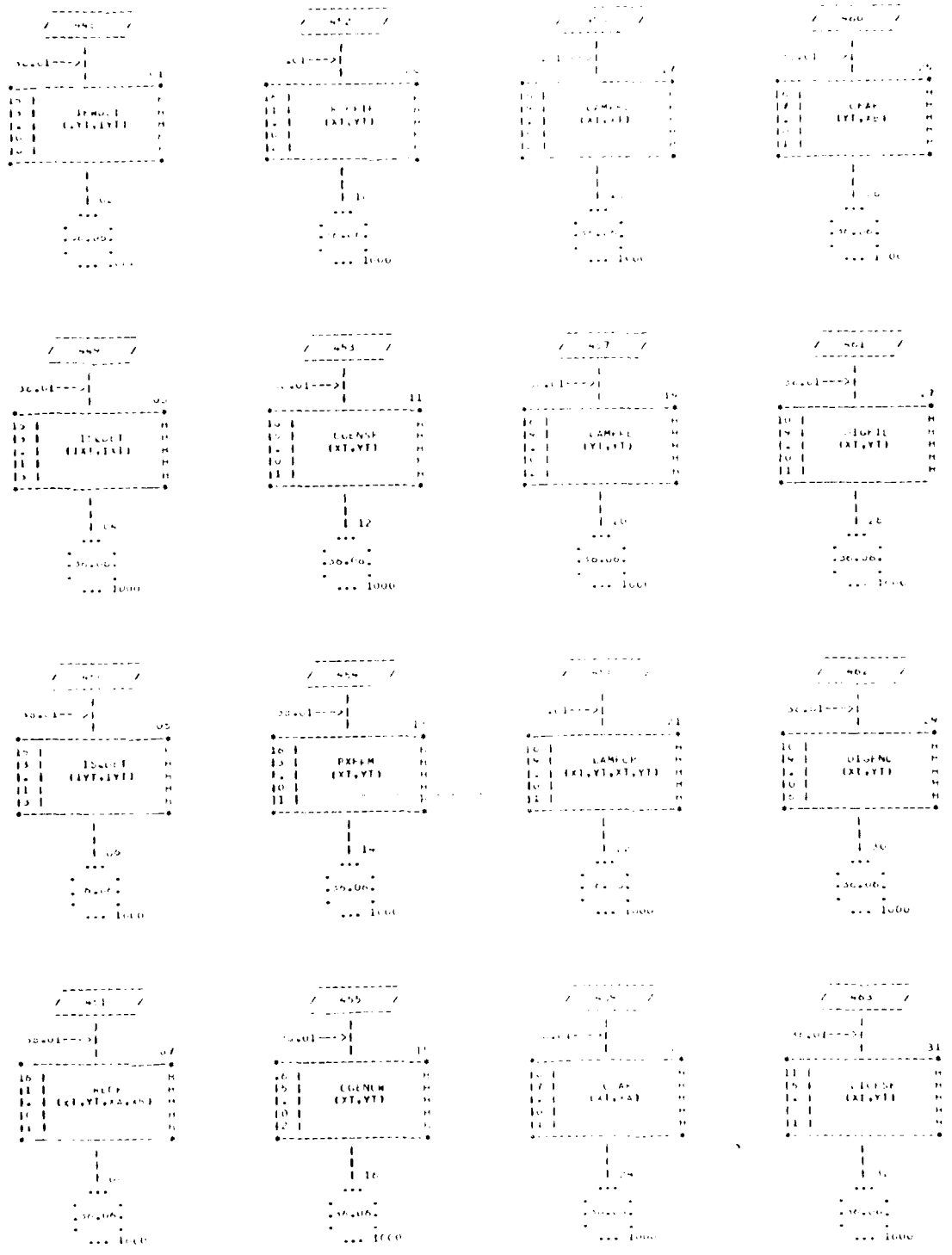

CONTINUE
TRUE
FALSE
TRUE
FALSE
ALTERNATE RETURN
ALTERNATE RETURN
1000


/ 299 /
37.14--->
ADDA
(YI,$A0,$11C0)
ALTERNATE RETURN
1130 52.19
/ 300 /
37.16--->
SUBLRX
(A6,$13,
(DATA,'CLCONT)
SUBLRX
(120,$4,*,
(DATA,'CLCONT)
/ 301 /
37.10--->
NOTE 03
CONTINUE
TRUE *ICFG .GT. 10* FALSE
.AND. NPTAZ
.EQ. 0
ANTINI
(NPTAZ,AZEST,
ANTAZ,COEFAZ)
1302
ICFG .GT. 10 TRUE
.AND. NPTEL
.EQ. 0
FALSE
ANTINT
(NPTEL,ELEST,
ANTEL,COEFEL)
/ 303 /
37.16--->
PTLIST
(XT)
/ 304 /
37.16--->
PTLIST
(YT)
/ 305 /
37.16--->
PTLIST
(XA)
/ 306 /
37.16--->
PTLIST
(A6)
/ 307 /
37.16--->
PLOTTR
(XT)
/ 308 /
37.16--->
PLOTTR
(YT)
/ 309 /
37.16--->
PLOTTR
(AA)
/ 310 /
37.16--->
PLOTTR
(XB)
/ 312 /
37.16--->
SPLAVG
(XA,$1090)
ALTERNATE RETURN
1090 52.17
/ 313 /
37.16--->
SCANNR
(XA)
/ 501 /
50.01--->
NONLIN
(XT,$1050)
ALTERNATE RETURN
1050 52.14


FMULT (XT,XT)
FMULT (YT,YT)
FILT (XT,YT)
FILT (XA,XT)
ANTAKY (XT,YT,$ERROR)
ALTERNATE RETURN
SCULT (XT,XT)
SCULT (YT,YT)
... 1000




SWPINT
(YI,YI)
NCSWPI
(XI,XI)
SWPINT
(YI,XI)
NCSWPI
(YI,YI)
NCSWPI
(XI,XI)
NCSWPI
(YT,YT)
NCSWPI
(XT,XT)
NCSWPI
(YT,YT)
NCSWPI
(XT,XT)
HLIM
(YI,YI)
CCLEAR
(IXT,XA)
CCLEAR
(IXT,XB)
IHLIM
(IXT,IXT)
IHLIM
(IXT,IXT)
IHMDET
(IXT,IXT)
IHMDET
(IXT,IXT)
IHMDET
(IXT,IXT)



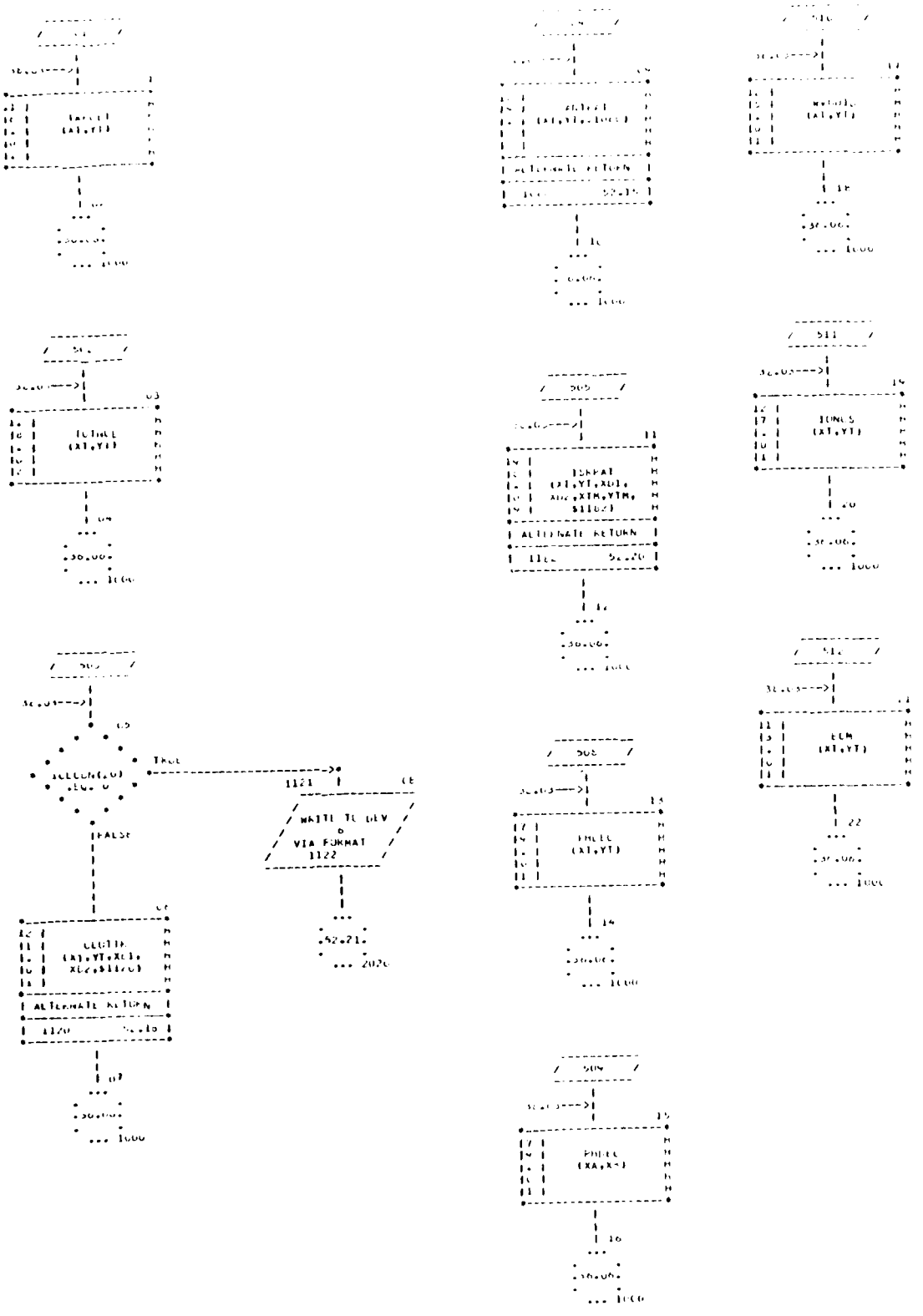
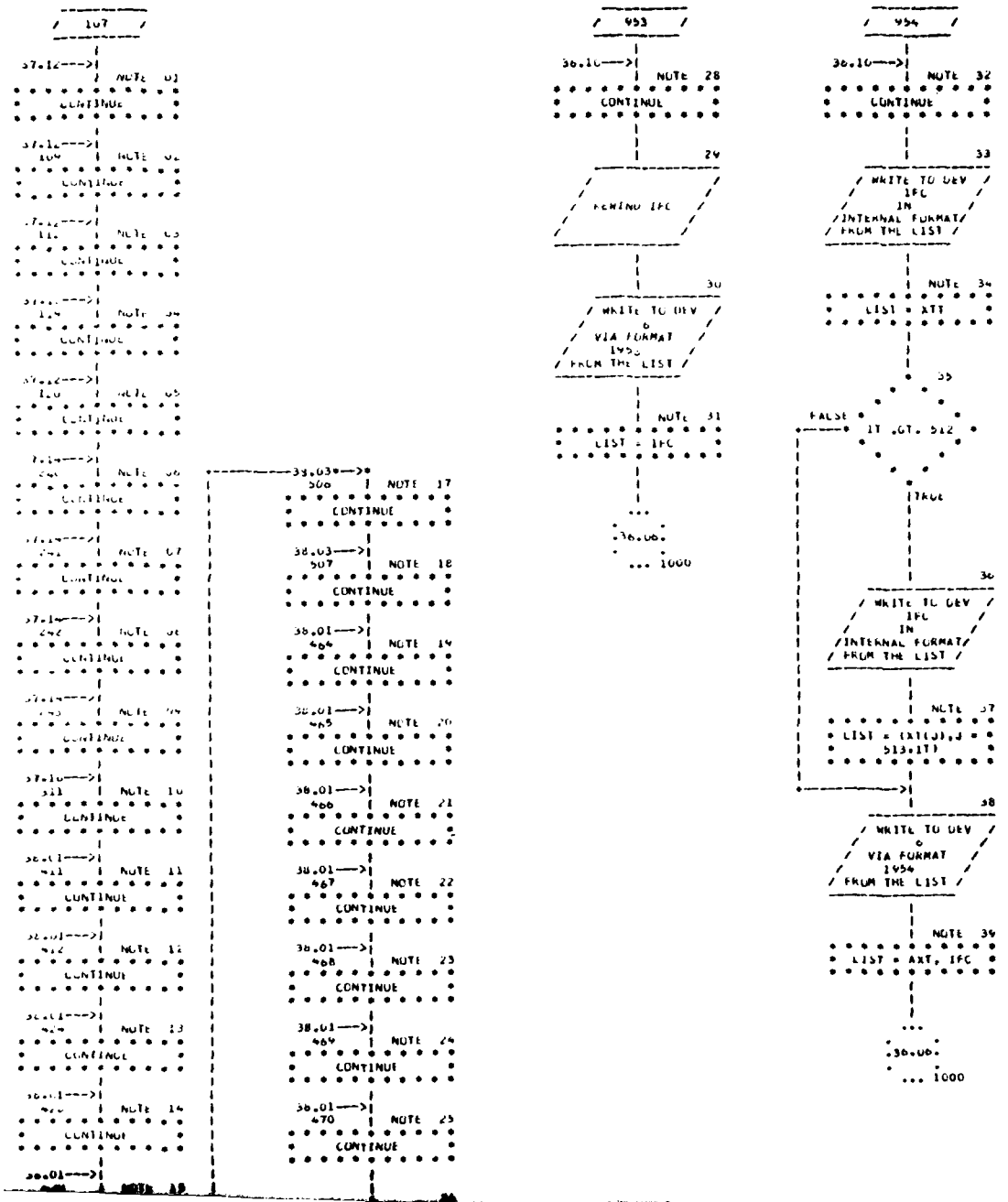


CHART TITLE - PROCEDURES



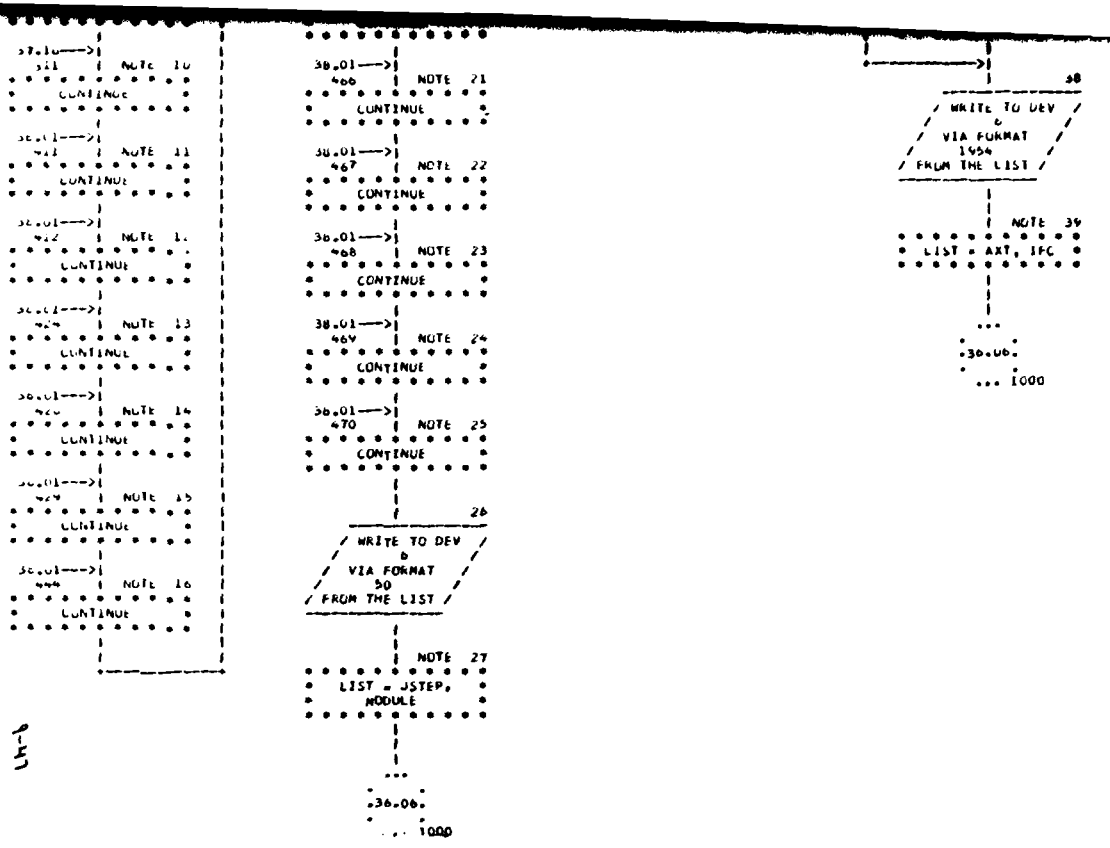
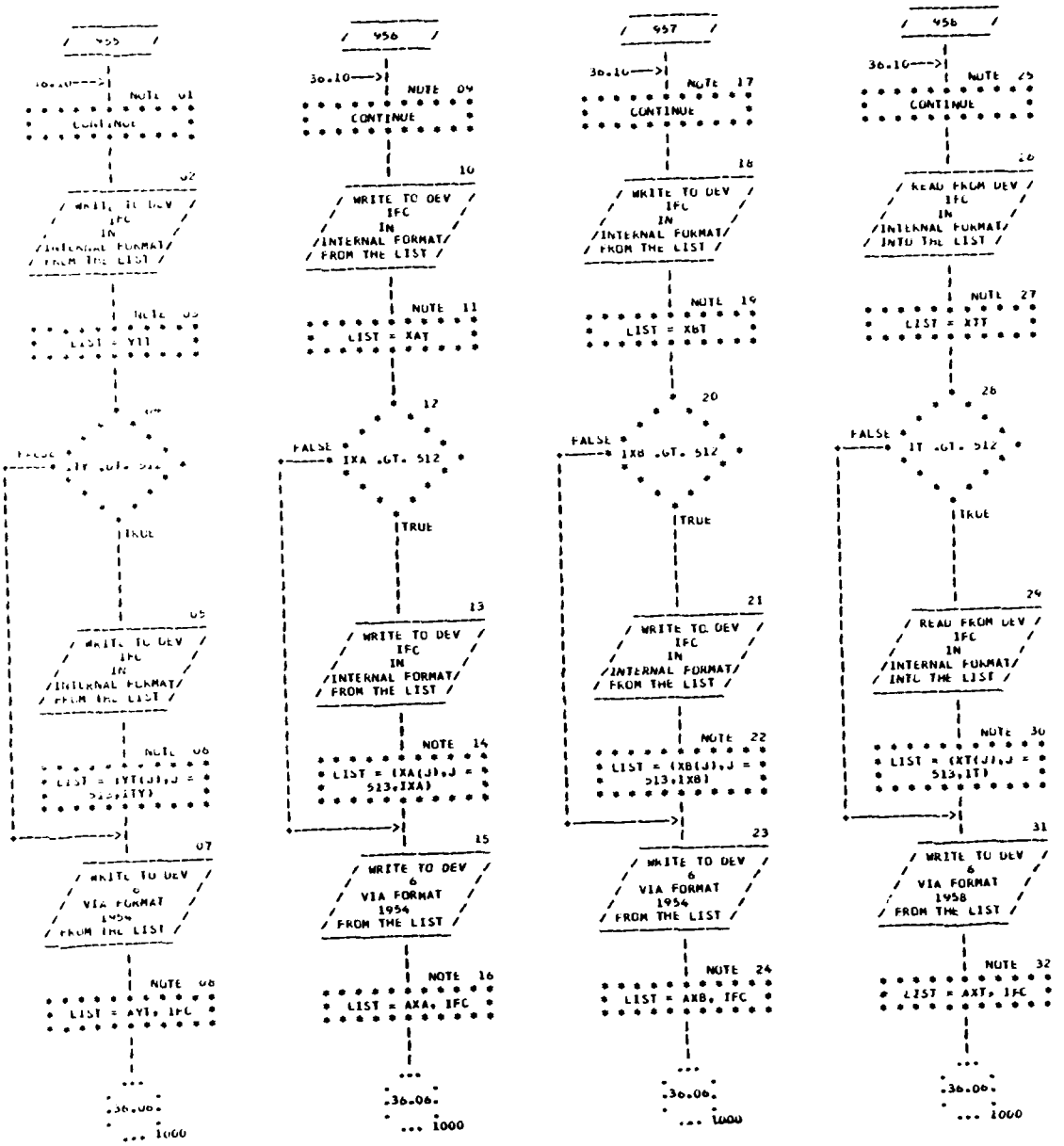
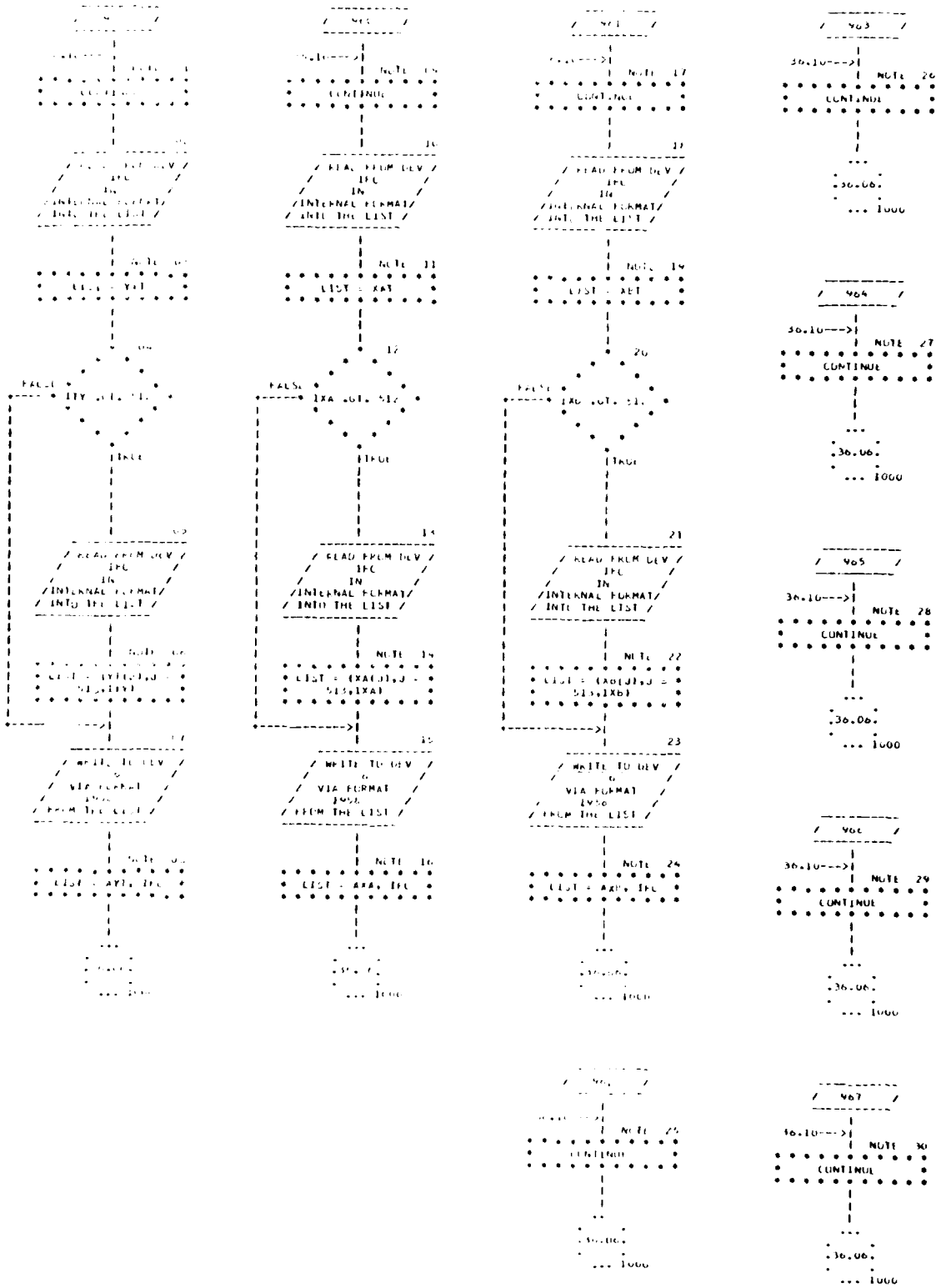

36.01
511
NOTE 10
CONTINUE
36.01
512
NOTE 11
CONTINUE
36.01
513
NOTE 12
CONTINUE
36.01
514
NOTE 13
CONTINUE
36.01
515
NOTE 14
CONTINUE
36.01
516
NOTE 15
CONTINUE
36.01
517
NOTE 16
CONTINUE
36.01
466
NOTE 21
CONTINUE
36.01
467
NOTE 22
CONTINUE
36.01
468
NOTE 23
CONTINUE
36.01
469
NOTE 24
CONTINUE
36.01
470
NOTE 25
CONTINUE
26
WRITE TO DEV
6
VIA FORMAT
50
FROM THE LIST
NOTE 27
LIST = JSTEP,
MODULE
36.06
1000
28
WRITE TO DEV
6
VIA FORMAT
1954
FROM THE LIST
NOTE 39
LIST = AXT, IFC
36.06
1000

CHART TITLE - PROCEDURES





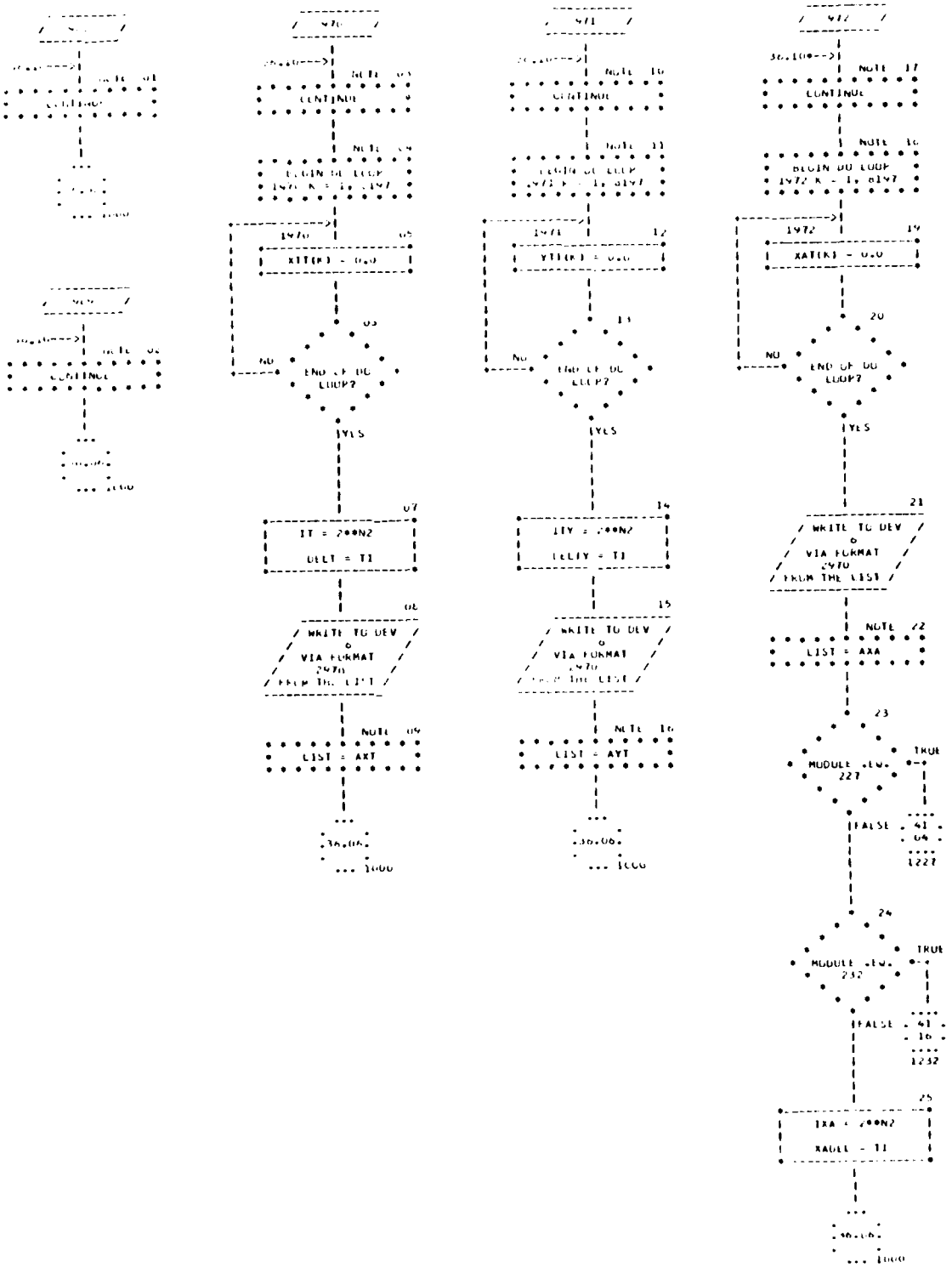

NOTE 17
CONTINUE
NOTE 16
BEGIN DO LOOP
1972 K = 1, 6197
1972
19
XATEK) = 0.0
20
END OF DO LOOP?
NO
YES
21
WRITE TO DEV
VIA FORMAT
2970
FROM THE LIST
NOTE 22
LIST = AXA
23
MODULE LEV.
227
TRUE
FALSE
41
64
1227
24
MODULE LEV.
232
TRUE
FALSE
41
16
1232
25
IXA = 2*6N2
XADEL = TI
30,100
30,106
1000

CHART TITLE = PROCEDURE

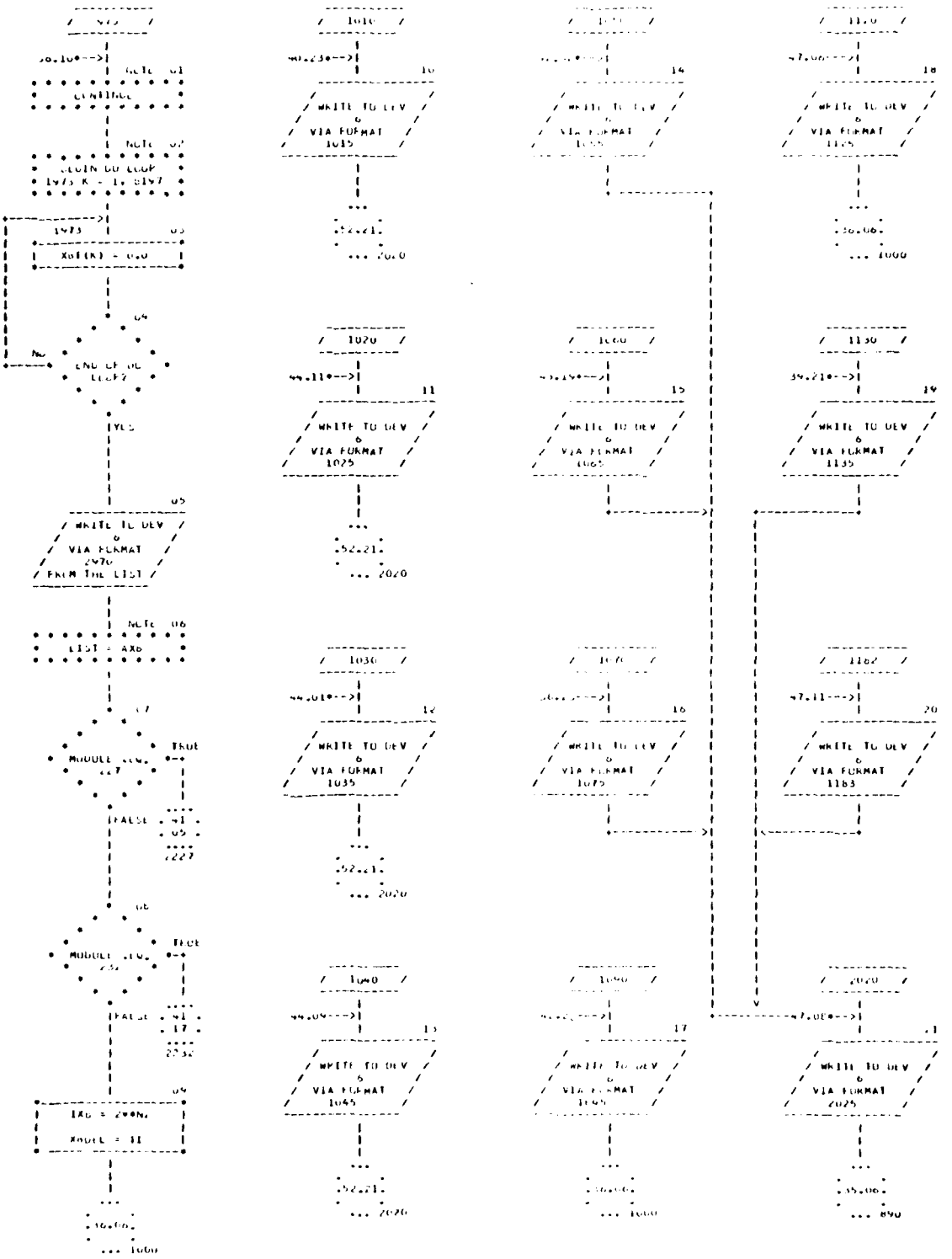
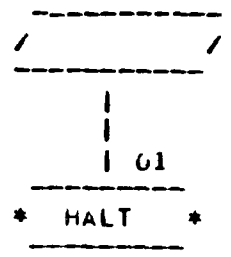


CHART TITLE - PROCEDURES



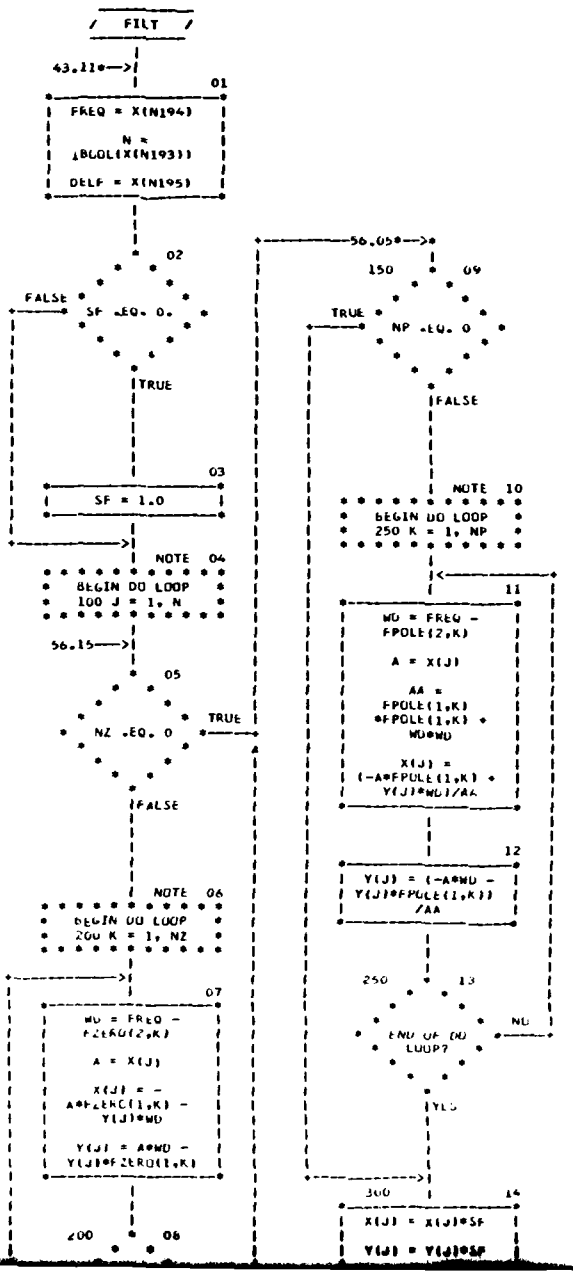
RETURN TO SYSTEM

```
      CHART SIZE = MIN(XSIZE/XTAC,YSIZE/YTAC,10.0)
      COMMON/G II,IXI,IYI,ICCC,IGCN,XI(1000),IIC,I,IC,YCCIY,IGUMY,
     1 XIC(1000),IXA,XAIC(1),XAC(1),XAUCM,XSC(1),IC,ZCC(1000)
      COMMON/ELN1/IGATA(1)
      COMMON/ELN2/IGATA(1)
      COMMON/AZPAT/ CUIAZ(500)
      COMMON/ELPAT/ CUIEL(500)
      COMMON/GCOM1/ IAC,XEOF,IC,ATCCC,XC(1000),XC(1)
      COMMON/DEFINE/ KNODATE(1)
      COMMON/SYS/ MCODE,ICM,IC
      DIMENSION XTT(510),YTT(510),XATE(10),XC(10)
      DIMENSION XDI(6010),XDC(6010),XII(6010),YII(6010)
      DIMENSION IXT(810),IYT(810)
      DIMENSION ANTAZ(1501),ANIEL(500)
      DIMENSION XTM(6010),YTM(6010)
      DATA AXT/' XI '/, AYI/' YI '/, AAZ/' IA '/, AXC/' XC '/
      DATA N193,N194,N195,N196/-3,-2,-1,0/
       EQUIVALENCE ( IC,ALC), IC,ALC(500))
       EQUIVALENCE (IDATAC(1),CAZC)
      EQUIVALENCE (XT(1),IXT(1)),(YT(1),IYT(1))
      EQUIVALENCE  ( XTT(1),  II      ), ( YTT(1),  IIY     ),
                   ( XAT(1),  IXA     ), ( XC(1),   IXC     )
      EQUIVALENCE (XDI(1),XAC(1)),(XDC(1),XAC(1))
       EQUIVALENCE (XII(1),XC(1)),(YII(1),YC(1))
      EQUIVALENCE (XTM(1),XT(6011)),(YTM(1),YT(6011))
      EQUIVALENCE  (IDATAC(501), AZ(1) ), (IDATAC(1001),DATA(1),
                   (IDATAC(1501),ANTAZ(1)), (IDATAC(2001),ANIEL(1))
      EQUIVALENCE (IDATAC(2501), MCODE )
      EQUIVALENCE   (IDATAC  1), %          ),(IDATAC  15), F5        ),
                    (IDATAC  3), FFFF       ),(IDATAC  45), SIMRM     ),
                    (IDATAC  5), 2500MS     ),(IDATAC  7), ICINV      ),
                    (IDATAC  7), SCSC       ),(IDATAC  8), SIMFO      ),
                    (IDATAC  9), NUMPEI     ),(IDATAC 10), NSCAN      ),
                    (IDATAC 11), FI         ),(IDATAC 12), I1         ),
                    (IDATAC 13), CAMPLA     ),(IDATAC 14), KNODEE     ),
                    (IDATAC 15), IAF        ),(IDATAC 16), TIME       ),
                    (IDATAC 17), AZANG      ),(IDATAC 18), ANTAZO     ),
                    (IDATAC 19), ELANG      ),(IDATAC 20), ANIELO     )
      DATA NOCOCO,NOCCC1,NOCCC2,NOCCC3,NOCCC4,NOCCC5,NOCCC6,NOCCC7
       /0,1,2,3,4,5,6,7/
 5%    FORMAT ' IFERIC  ',I10
 5%%   FORMAT(10H ,5(2X, *I5.5))* I5, *)  *, I10
 %1    FORMAT(10H,' SIMULATION PASS NUMBER',I5,' IS CONTINUATION NUMBER'
      +I3,' HAS BEEN COMPLETED.')
 %%    FORMAT(10H1,' SIMULATION IS  NUMBER',I5,' IS CONTINUATION NUMBER'
      +I3,' IS BEGINNING')
 %%%   FORMAT(1H1)
 %%%   FORMAT' MODULE ',I10,'  ICM ',I10,'  IC ',I10,'  IC ',I10)
 %%%%  FORMAT(10H ,I3,2X, *IDATAI*, I5, *)  *, I10)
 %     FORMAT' IN  MOVE ',I5,' ',I5,' ',I5,' AT ',I5,' TO  ',I5,' ',I5,' %M
```

CHART 0001 - NUMBERED FORMAT STATEMENTS

```
 7      FORMAT(' PASS=',I2,'    CYC=',I2)
 1003   FORMAT(1H , 'NC =',I4,' TEN,DAT(',I2,') = ',E15.8)
 15     FORMAT ( ' NOTHING PERFORMED FOR ',I2,' TH INPUT DATA ITEM, DATA I
        TEM = ',I4 )
 150    FORMAT ( ' TEMPORARY FILE NUMBER ',I2,' HAS BEEN REWOUND')
 1501   FORMAT ( ' THE ARRAY',A6,'HAS BEEN STORED IN DATA SET NO.',I5)
 1502   FORMAT ( ' THE ARRAY',A6,'HAS BEEN LOADED FROM DATA SET NO.',I5)
 2970   FORMAT(' THE ARRAY ',A6,' HAS BEEN SET TO ZERO ' )
 1015   FORMAT ( ' NON-STANDARD RETURN FROM SUBROUTINE WEIT' )
 1020   FORMAT ( ' NON-STANDARD RETURN FROM SUBROUTINE TSARY' )
 1035   FORMAT ( ' NON-STANDARD RETURN FROM SUBROUTINE PGENAY ')
 1045    FORMAT ' NON-STANDARD RETURN FROM SUBROUTINE CGEN')
 1055   FORMAT( 1H , ' NONLINEAR TRANSFORM IMPROPERLY DEFINED ' )
 1065   FORMAT( ' NON-STANDARD RETURN FROM SUBROUTINE ANTANY ')
 2079   FORMAT ' NON-STANDARD RETURN FROM SUBROUTINE PETEMI')
 1095   FORMAT ( ' NON-STANDARD RETURN FROM SUBROUTINE SPCAVG ' )
 2125   FORMAT(' NON-STANDARD RETURN FROM SUBROUTINE CCUTTR')
 2142   FORMAT ('0THE CLUTTER MODEL HAS NOT BEEN PROPERLY INITIALIZED BY '
        'CLINI'.  'CCUTTR' WILL NOT BE EXECUTED.')
 2235   FORMAT(' NON-STANDARD RETURN FROM SUBROUTINE CONV')
 1103   FORMAT ( ' SUBROUTINE TSREAT NOT EXECUTED ')
 1105   FORMAT ( ' STEP ', I4, ' WITH MODULE = ', I4, ' HAS SCHEDULED AN OP
        ERATION WITH EXEC NUMBER ', I3,' WHICH IS OUT OF RANGE.' )
 1015   FORMAT ('0A CONDITION EXISTS WHICH WILL CAUSE THE REMAINDER OF THI
        S CONFIGURATION TO BE BYPASSED.')
 1055   FORMAT ( ' THIS JOB COMPLETE ' )
 1005    FORMAT(' THIS JOB ABORTED BECAUSE OF IMPROPER INPUT DATA',
        '...SEE PRINT OUT FROM ACTIVITY I')
```

CHART TITLE - SUBROUTINE FILT(X,Y)



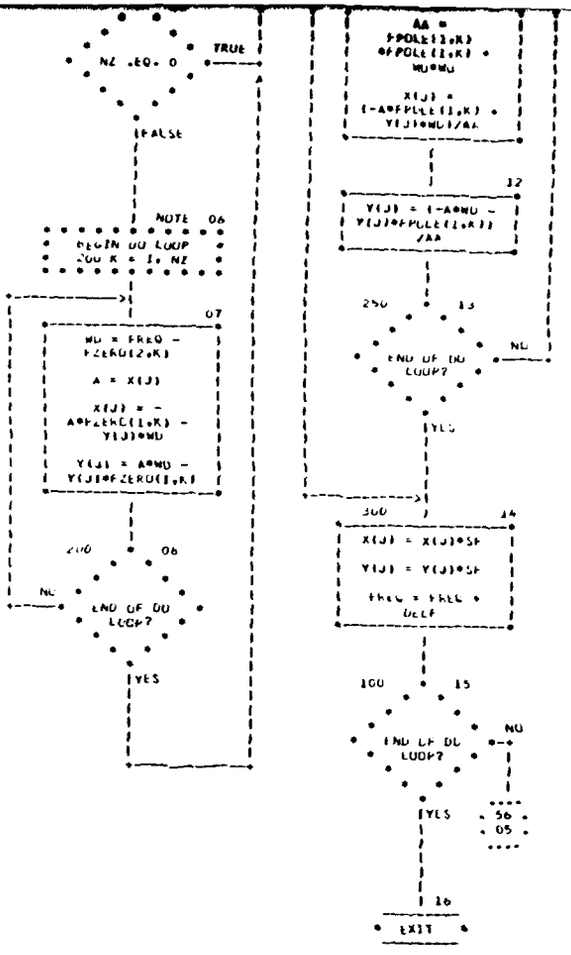
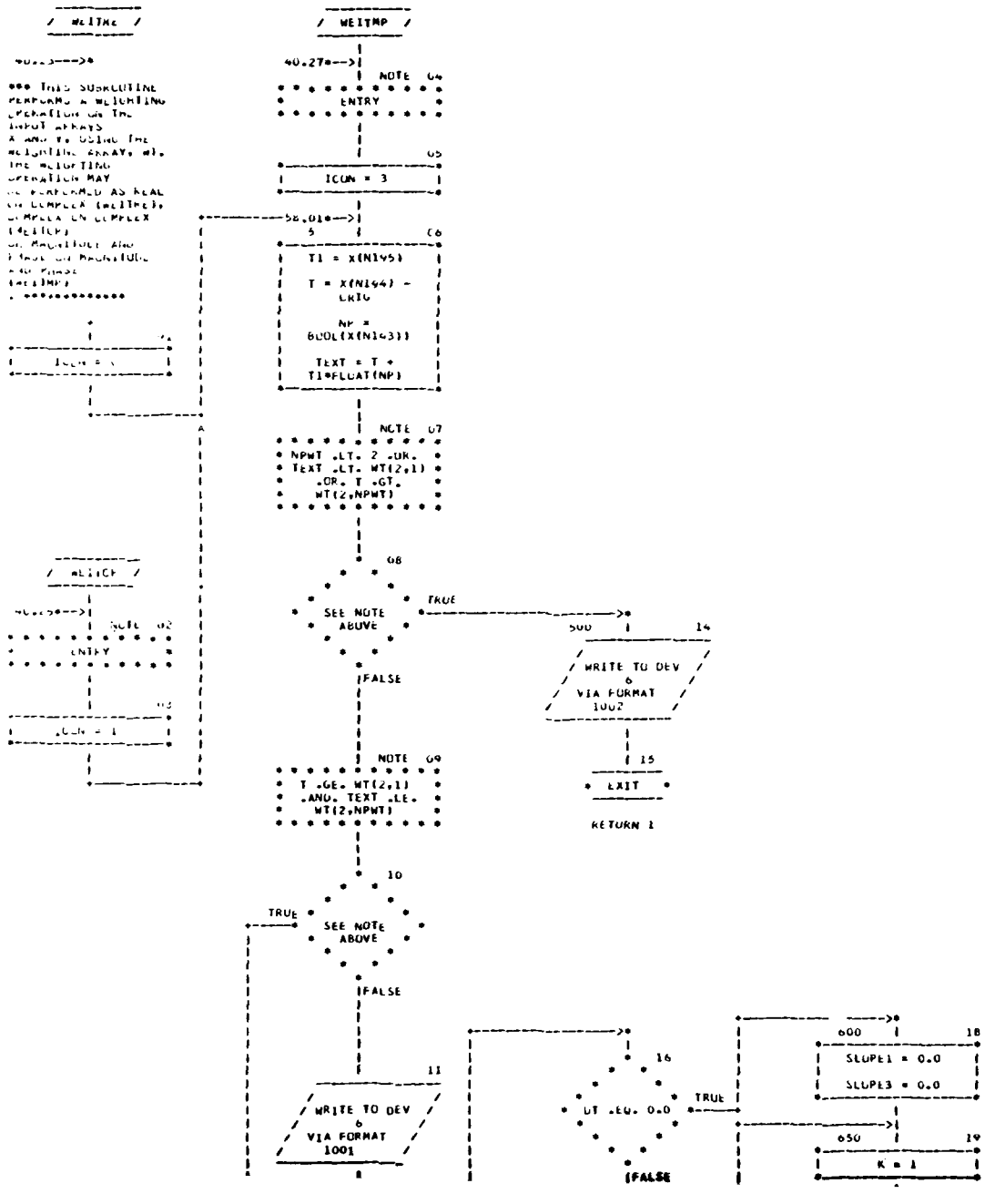

NZ .EQ. 0
TRUE
FALSE
NOTE 06
BEGIN DO LOOP
200 K = 1, NZ
07
MU = FREQ -
FZERO(Z,K)
A = X(J)
X(J) = -
A*FZERO(I,K) -
Y(J)*MU
Y(J) = A*MU -
Y(J)*FZERO(I,K)
200
06
NO
END OF DO
LOOP?
YES
AA =
FPOLE(I,K)
*FPOLE(I,K) +
MU*MU
X(J) =
(-A*FPOLE(I,K) +
Y(J)*MU)/AA
12
Y(J) = (-A*MU -
Y(J)*FPOLE(I,K))
/AA
250
13
END OF DO
LOOP?
NO
YES
300
14
X(J) = X(J)*SF
Y(J) = Y(J)*SF
FREQ = FREQ +
DELF
100
15
END OF DO
LOOP?
NO
YES
56
05
16
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/ BK1(200),FZERO(2,50),FPOLE(2,50)
EQUIVALENCE  ( NZ  ,BK1(72)) , ( NP  ,BK1(73)), ( SF  ,BK1(74))
DIMENSION X(1), Y(1)
DATA N193,N194,N195,N196/-3,-2,-1,0/
```

CHART TITLE - SUBROUTINE WEITHR(X,Y,*)



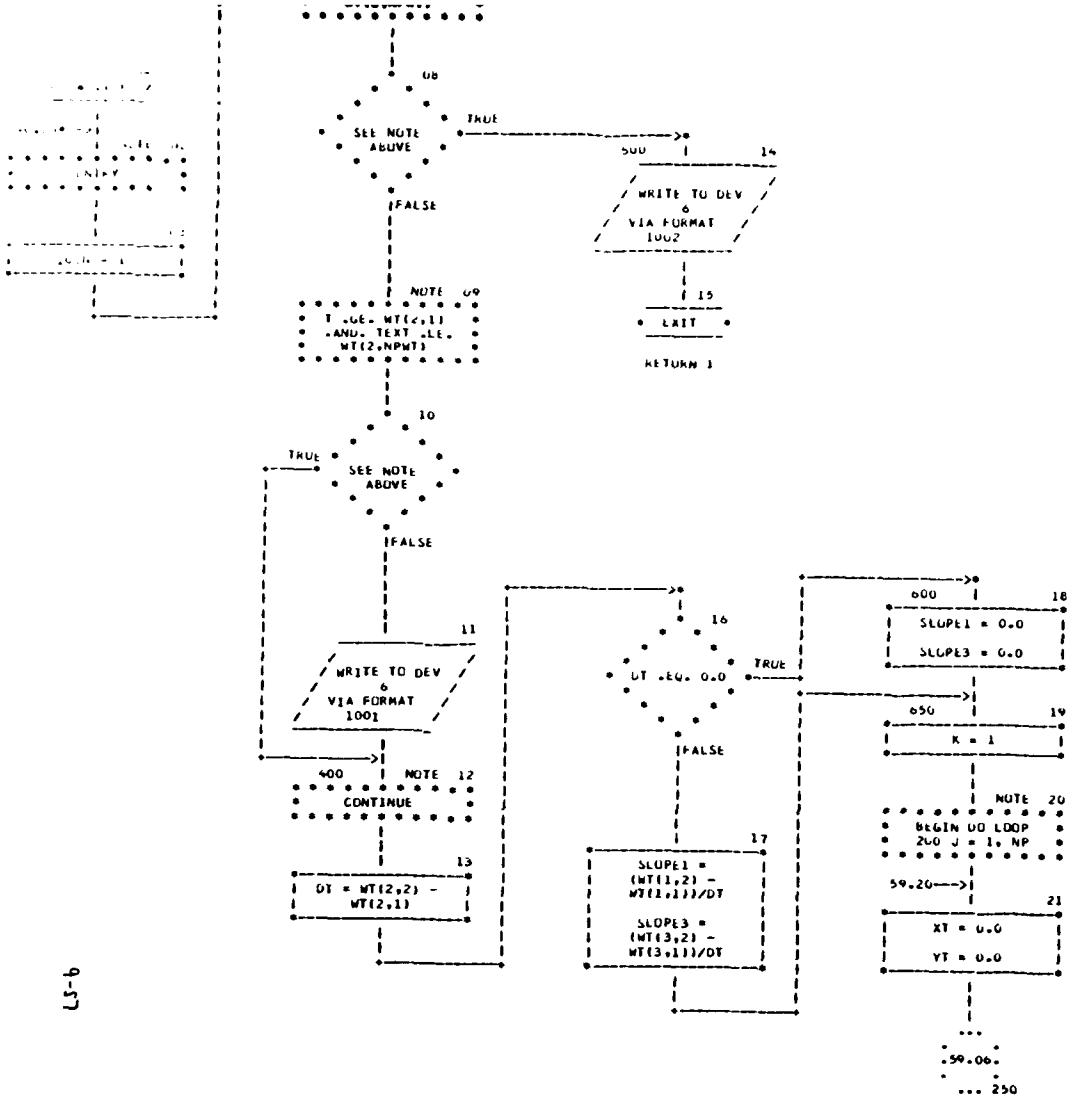
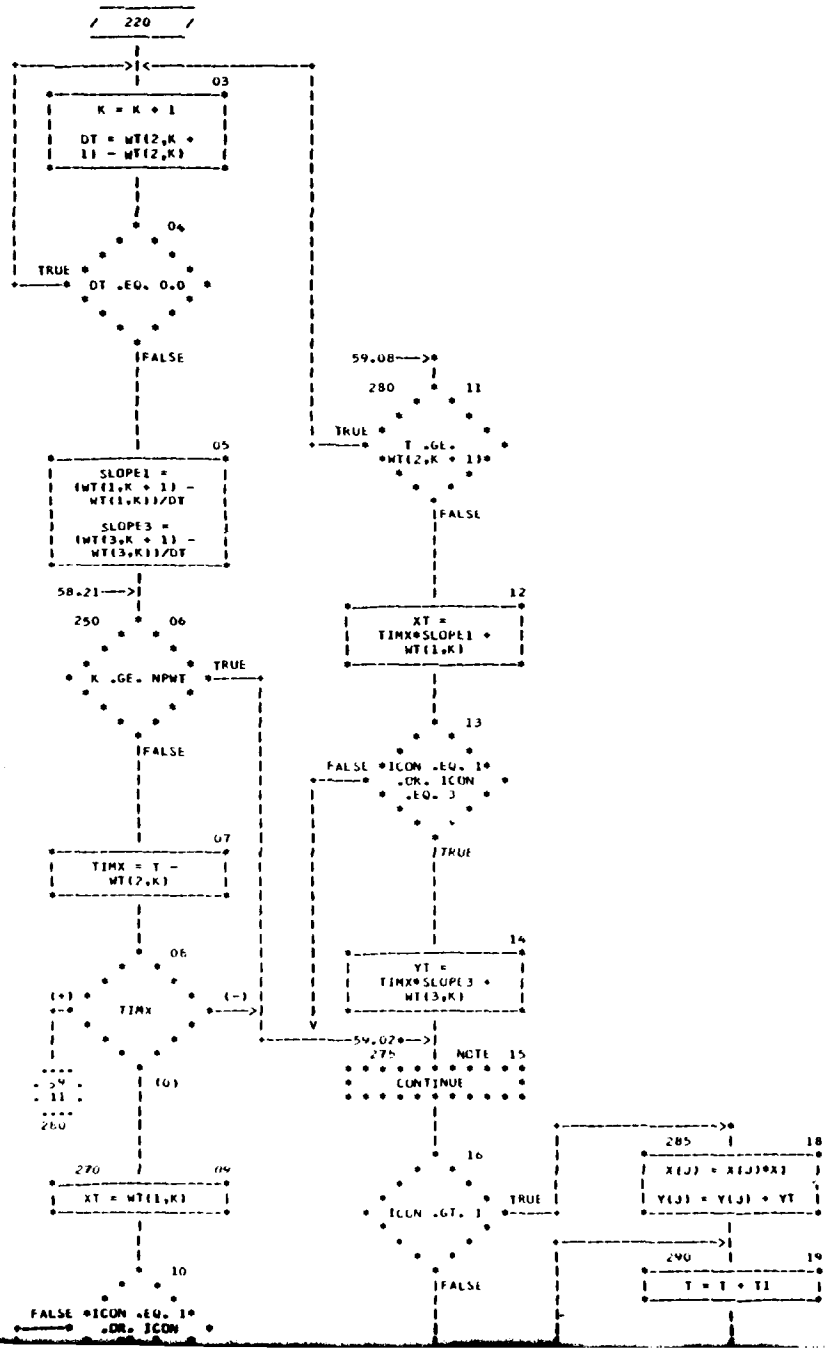

08
SEE NOTE ABOVE
TRUE
500
14
WRITE TO DEV 6 VIA FORMAT 1002
15
EXIT
RETURN 1
FALSE
NOTE 09
T .GE. WT(2,1) .AND. TEXT .LE. WT(2,NPWT)
10
SEE NOTE ABOVE
TRUE
FALSE
11
WRITE TO DEV 6 VIA FORMAT 1001
400
NOTE 12
CONTINUE
13
DT = WT(2,2) - WT(2,1)
16
DT .EQ. 0.0
TRUE
FALSE
17
SLOPE1 = (WT(1,2) - WT(1,1))/DT
SLOPE3 = (WT(3,2) - WT(3,1))/DT
600
18
SLOPE1 = 0.0
SLOPE3 = 0.0
650
19
K = 1
NOTE 20
BEGIN DO LOOP
200 J = 1, NP
59.20
21
XT = 0.0
YT = 0.0
59.06
250

CHART TITLE - SUBROUTINE WEITRE(X,Y,*)



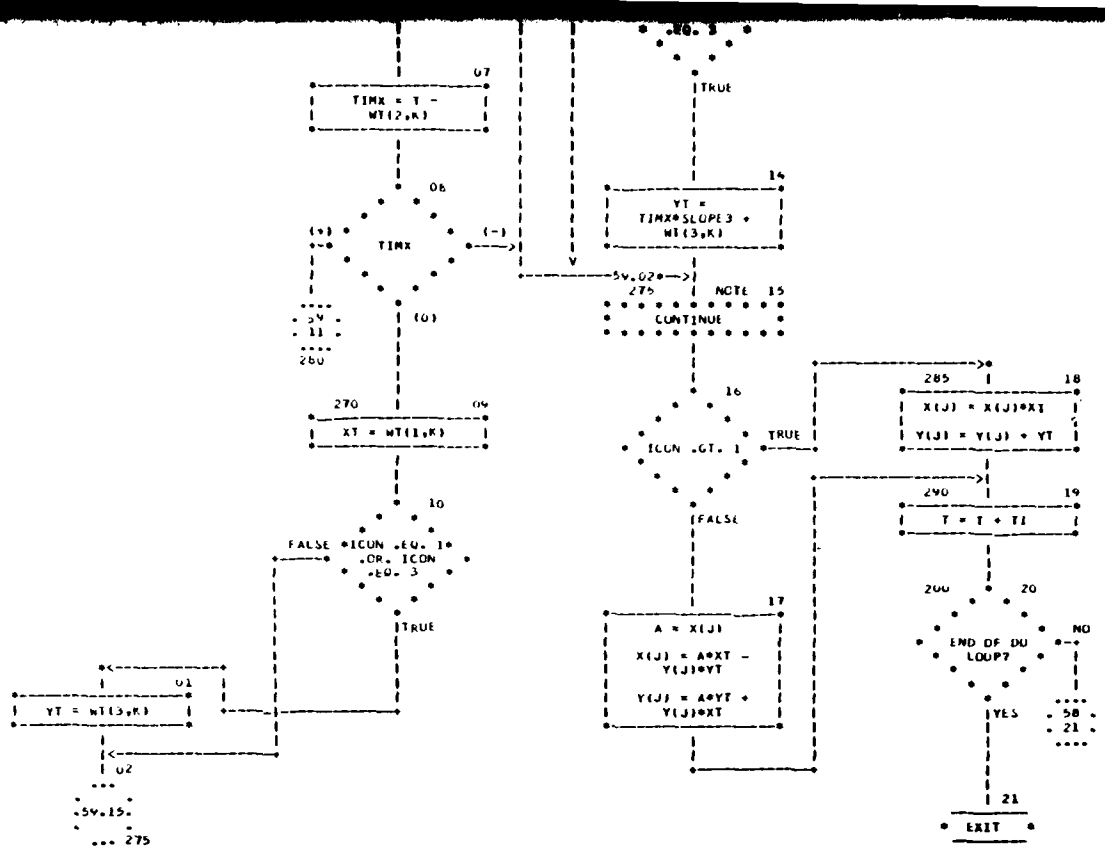

07
TIMX = T - WT(2,K)
06
TIMX
(+)
(-)
(0)
260
270
09
XT = WT(1,K)
10
ICON .EQ. 1 .OR. ICON .EQ. 3
FALSE
TRUE
01
YT = WT(3,K)
02
.5V,15,
275
14
YT = TIMX*SLOPE3 + WI(3,K)
.5V,02
275
NOTE 15
CONTINUE
16
ICON .GT. 1
TRUE
FALSE
17
A = X(J)
X(J) = A*XT - Y(J)*YT
Y(J) = A*YT + Y(J)*XT
285
18
X(J) = X(J)*XI
Y(J) = Y(J) + YT
290
19
T = T + TI
200
20
END OF DO LOOP?
NO
YES
.5V,58,
.21,
21
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(500)
      DIMENSION X(1), Y(1), WT(3,100)
      EQUIVALENCE  (BK1( 21),IDMY      ),
     1             (BK1( 37), NPWT      ), (BK1( 38), ORIG      ),
     2             (BK1(201), WT(1,1)   )
      DATA N193,N194,N195,N196/-3,-2,-1,0/
      DATA AI/7.45654044E05/
 1001 FORMAT(' THE WEIGHTING ARRAY, WT, IS NOT DEFINED OVER THE COMPLETE
     1 INPUT DATA RECORD. THE OUTPUT IS SET TO ZERO IN THE UNDEFINED REGI
     2 ONS.' / / )
 1002 FORMAT( 1H ,'THE WEIGHTING ARRAY, WT, IS NOT PROPERLY DEFINED.  TH
     1 E WEIGHTING OPERATION WILL NOT BE PERFORMED.'// )
```

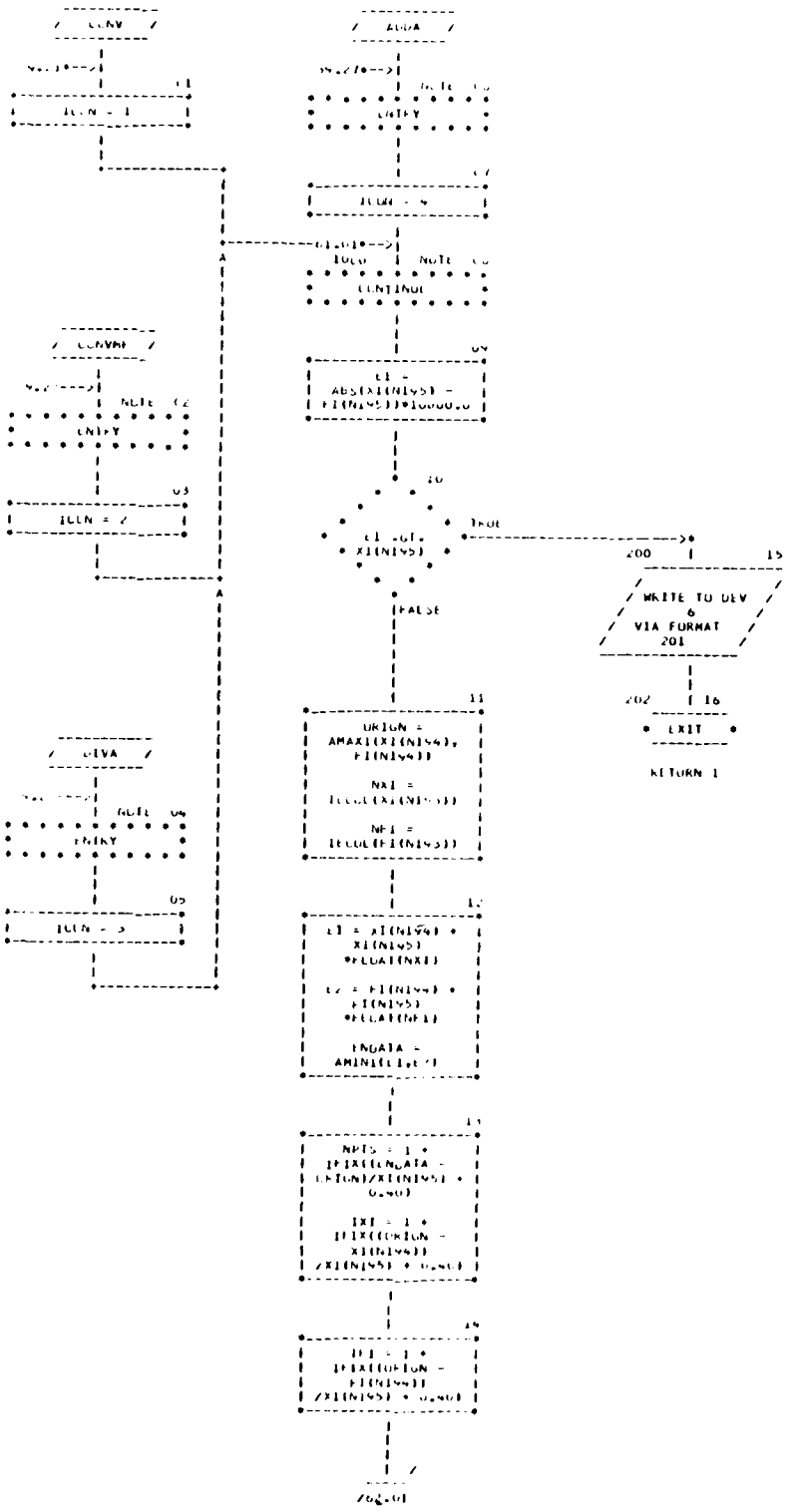
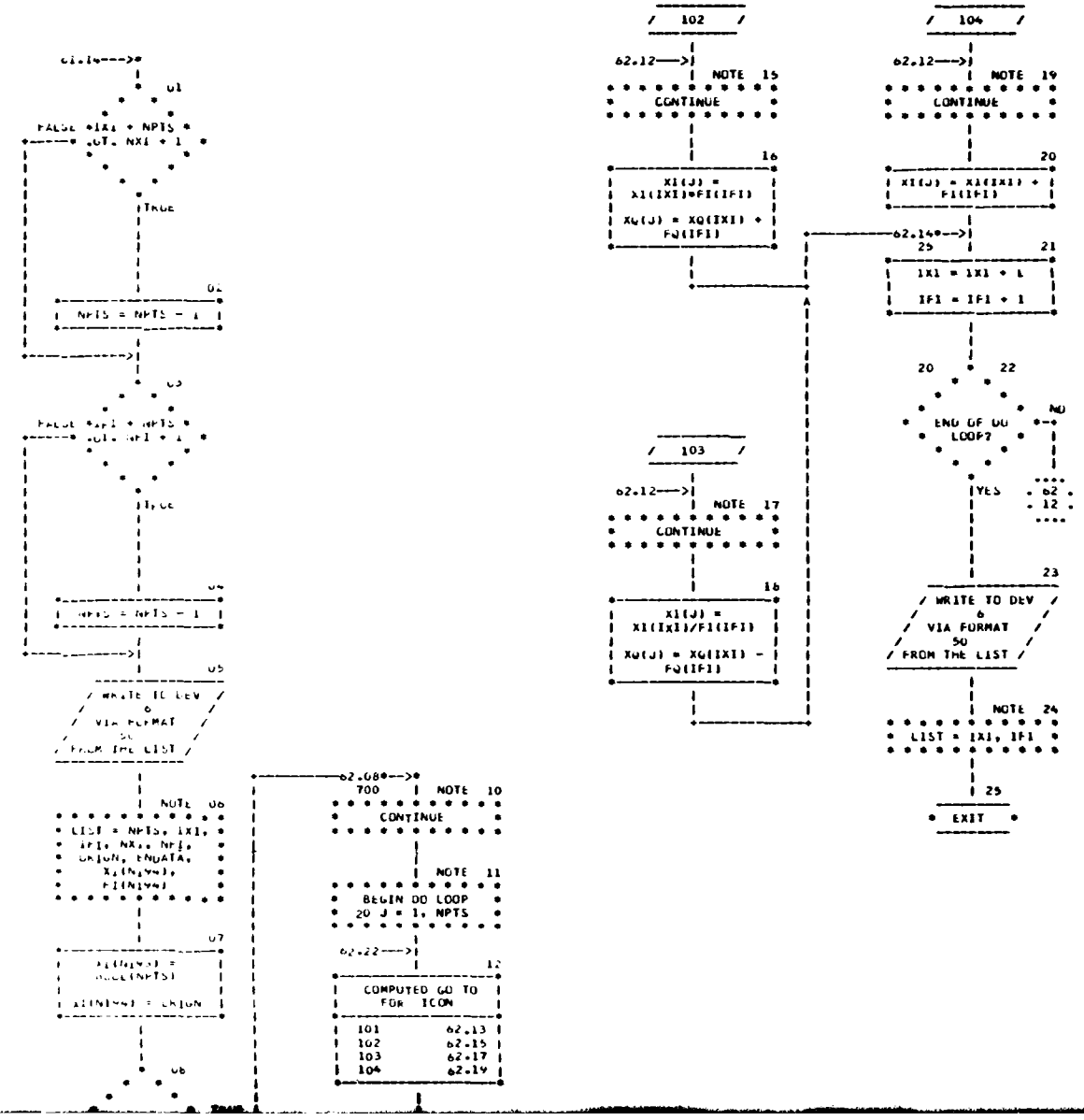

CONV
ICON = 1
ADDA
ENTRY
ICON = 4
ICON
NOTE
CONTINUE
CONVRT
ENTRY
ICON = 2
CONVERT
XI(N1=5) =
ABS(XI(N1=5) -
FI(N1=5))*10000.0
IF
XI(N1=5)
TRUE
FALSE
200
15
WRITE TO DEV
6
VIA FORMAT
201
202
16
EXIT
RETURN 1
DRIVA
ENTRY
ICON = 3
ORIGN =
AMAX1(XI(N1=4),
FI(N1=4))
NXI =
ICCOL(XI(N1=5))
NFI =
ICCOL(FI(N1=5))
XI(N1=4) =
XI(N1=5)
*EDATA(NXI)
FI(N1=4) =
FI(N1=5)
*EDATA(NFI)
ENDATA =
AMIN1(EDATA(1),
NPIS = 1 +
IFIX((ORIGN-DATA -
ORIGN)/XI(N1=5) +
0.=0)
IXI = 1 +
IFIX((ORIGN -
XI(N1=4))
/XI(N1=5) + 0.=0)
IFI = 1 +
IFIX((ORIGN -
FI(N1=4))
/XI(N1=5) + 0.=0)

CHART TITLE - SUBROUTINE CONV(XI,XQ,FI,FQ,*)



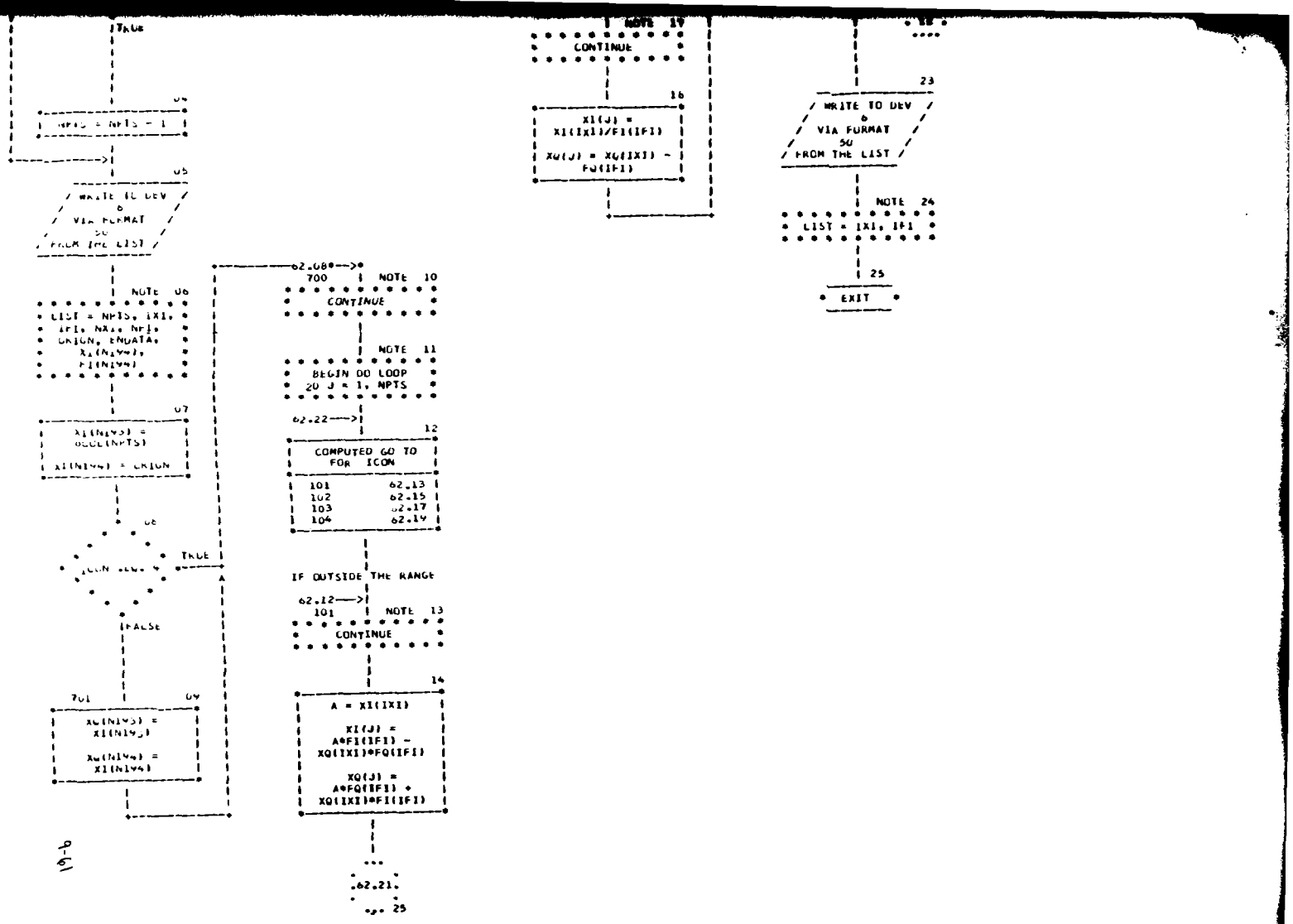
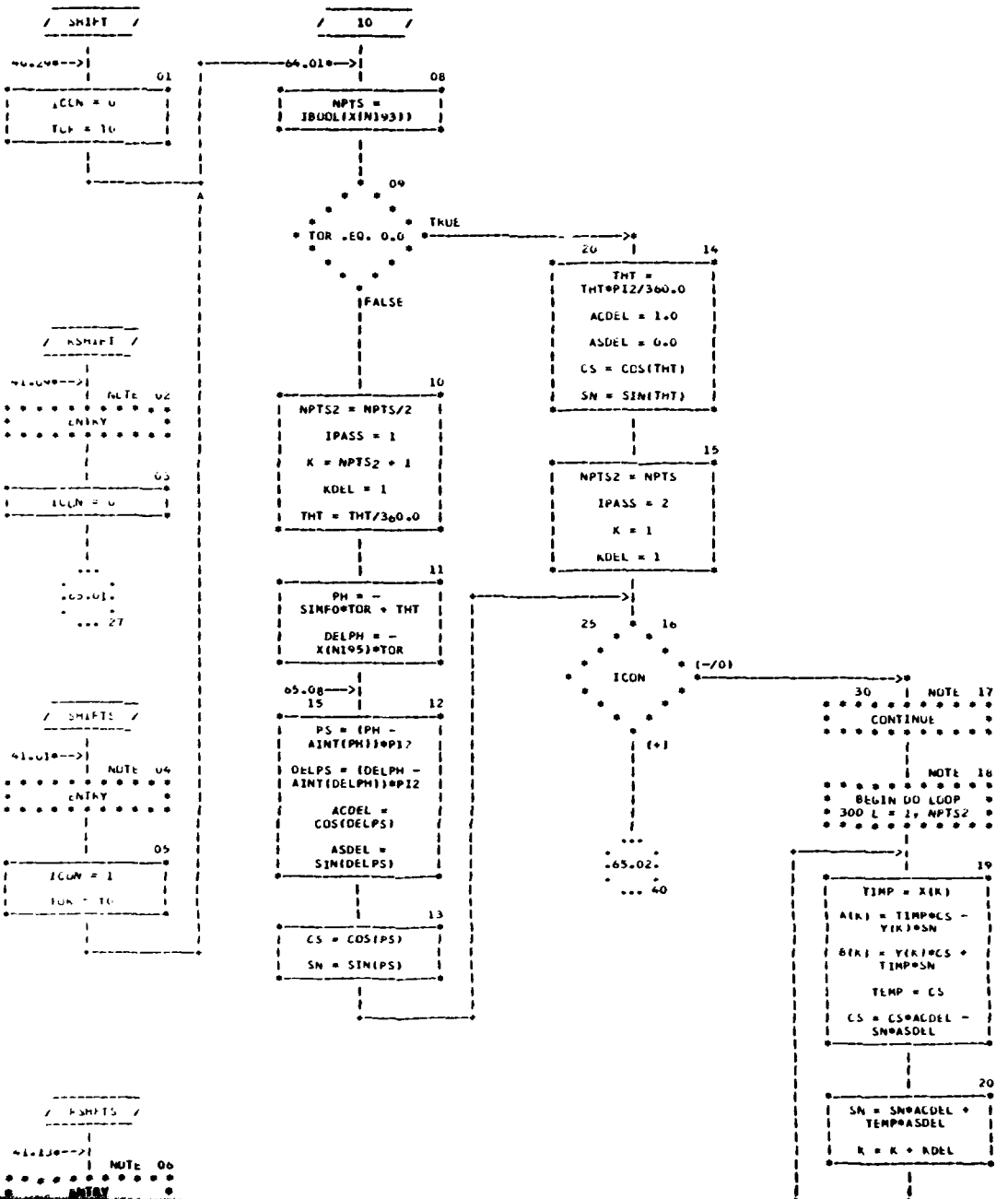

TRUE
05
WRITE TO DEV 6 VIA FORMAT 50 FROM THE LIST
NOTE 06
LIST = NPTS, IX1, IF1, NX1, NF1, ORIGN, ENDATA, X1(N1Y4), F1(N1Y4)
07
X1(N1Y3) = 0.0(NPTS)
X1(N1Y4) = ORIGN
08
TRUE
FALSE
701
09
62.08
700
NOTE 10
CONTINUE
NOTE 11
BEGIN DO LOOP 20 J = 1, NPTS
62.22
12
COMPUTED GO TO FOR ICON
101 62.13
102 62.15
103 62.17
104 62.19
IF OUTSIDE THE RANGE
62.12
101
NOTE 13
CONTINUE
14
A = X1(IX1)
X1(J) = A*F1(IF1) - XQ(IX1)*FQ(IF1)
XQ(J) = A*FQ(IF1) + XQ(IX1)*F1(IF1)
62.21
25
CONTINUE
16
X1(J) = X1(IX1)/F1(IF1)
XQ(J) = XQ(IX1) - FQ(IF1)
23
WRITE TO DEV 6 VIA FORMAT 50 FROM THE LIST
NOTE 24
LIST = IX1, IF1
25
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      DIMENSION XI(1),XG(1),FI(1),FQ(1)
      DATA N193,N194,N195,N196/-3,-2,-1,0/
50    FORMAT(1H ,5I12,4E14.6)
201   FORMAT(' INDEPENDENT VARIABLE INCREMENTS DO NOT MATCH ')
```

CHART TITLE - SUBROUTINE SHIFT(X,Y,A,B)



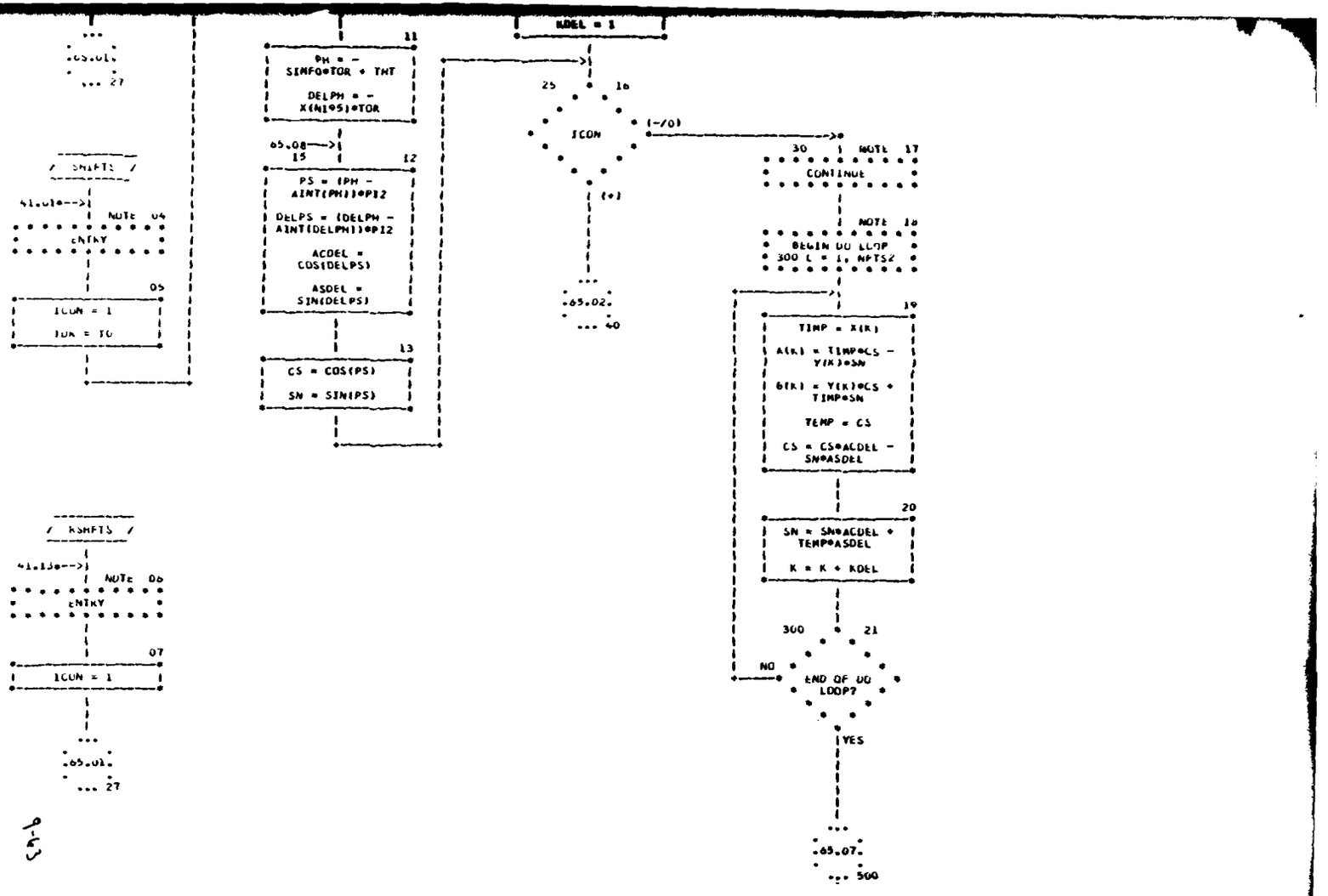
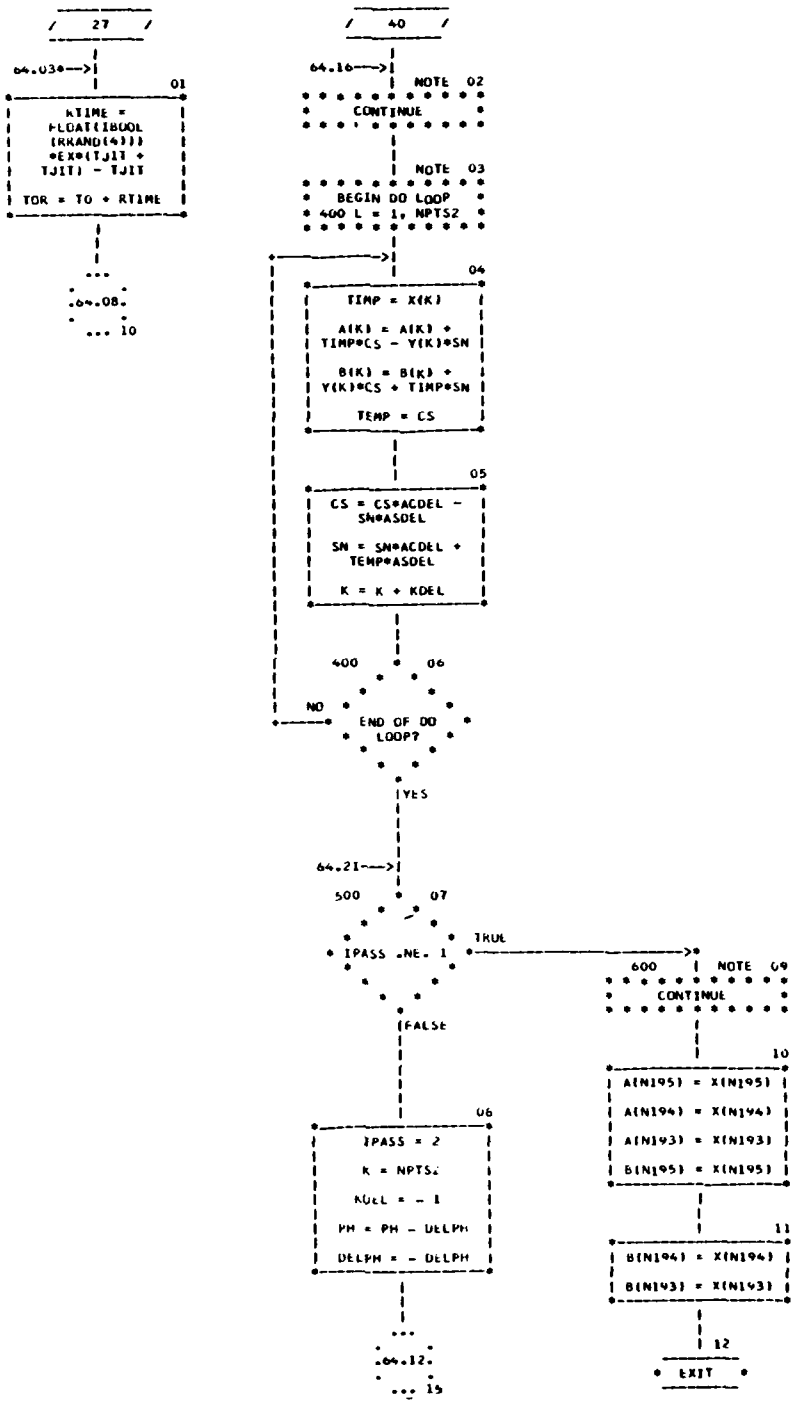

.65.01.
... 27
/ SNSFTS /
41.01e-->
NOTE 04
ENTRY
05
ICON = 1
IDX = IC
11
PH = -
SINF0*TOR + THT
DELPH = -
X(N105)*TOR
65.08-->
15
12
PS = (PH -
AINT(PH))*PI2
DELPS = (DELPH -
AINT(DELPH))*PI2
ACDEL =
COS(DELPS)
ASDEL =
SIN(DELPS)
13
CS = COS(PS)
SN = SIN(PS)
/ RSHFTS /
41.13e-->
NOTE 06
ENTRY
07
ICON = 1
.65.01.
... 27
KDEL = 1
25
16
ICON
(-/0)
(+)
.65.02.
... 40
30
NOTE 17
CONTINUE
NOTE 18
BEGIN DO LOOP
300 L = 1, NPTS2
19
TIMP = X(K)
A(K) = TIMP*CS -
Y(K)*SN
B(K) = Y(K)*CS +
TIMP*SN
TEMP = CS
CS = CS*ACDEL -
SN*ASDEL
20
SN = SN*ACDEL +
TEMP*ASDEL
K = K + KDEL
300
21
NO
END OF DO
LOOP?
YES
.65.07.
... 500

CHART TITLE - SUBROUTINE SHIFT(X,Y,A,B)

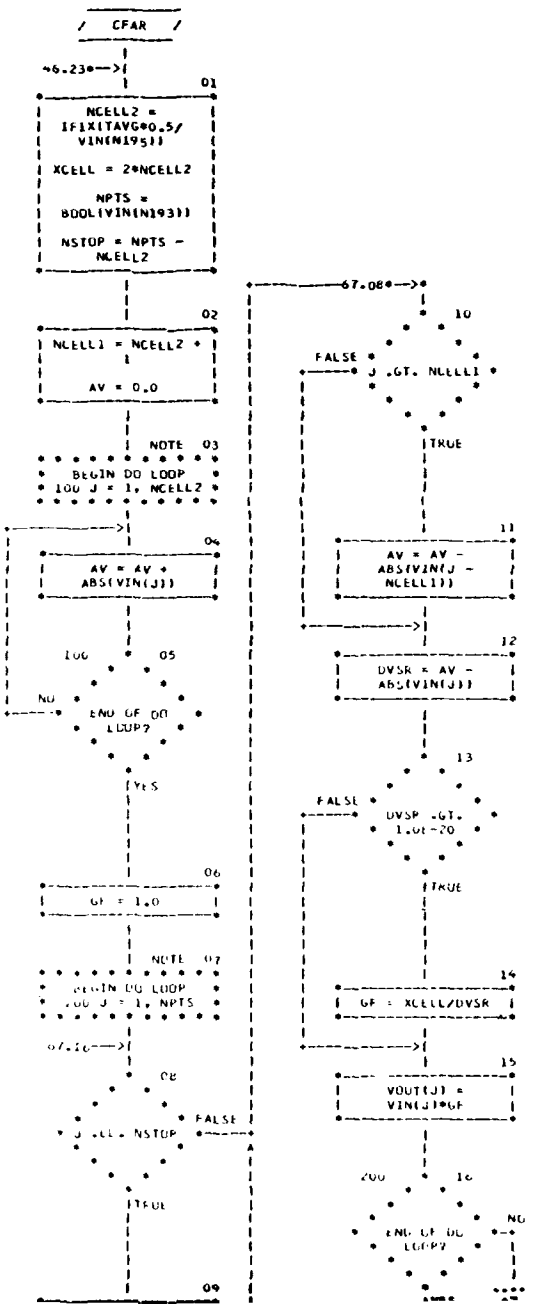


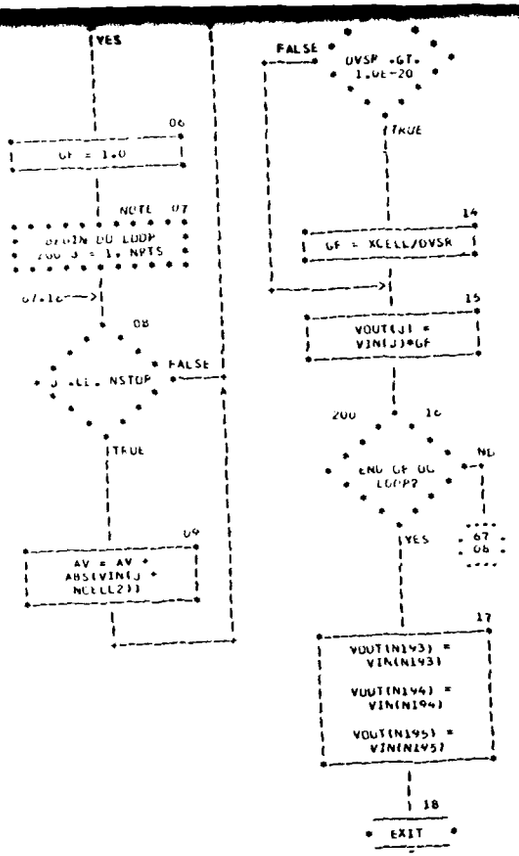
08/11/79 AUTOFLOW CHART SET - FWD/SCL RADSIM

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(200)
      EQUIVALENCE (BK1(180),TO),(BK1(181),THT),(BK1(182),TJIT)
                 ,(BK1(8),SIMFO)
      DIMENSION X(1),Y(1),A(1),B(1)
      DATA N193,N194,N195,N196/-3,-2,-1,0/
      DATA PI2,EX/6.2831853,2.9103830E-11/
```

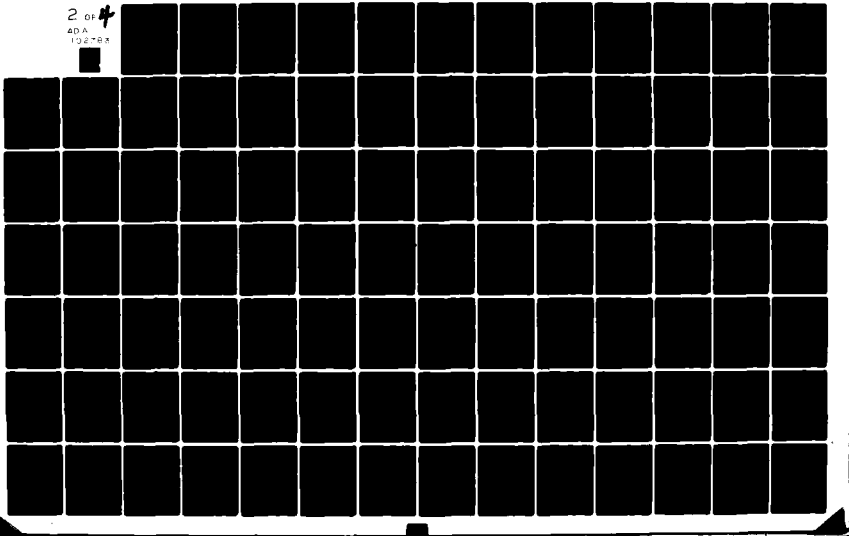
CHART TITLE - SUBROUTINE CFAR(VIN,VOUT)




YES
06
GF = 1.0
NOTE 07
BEGIN DO LOOP
J = 1, NPTS
07.10
08
FALSE
TRUE
09
AV = AV +
ABS(VIN(J) +
NCELL2))
FALSE
DVSP .GT.
1.0E-20
TRUE
14
GF = XCELL/DVSR
15
VOUT(J) =
VIN(J)*GF
200
16
END OF DO
LOOP?
NO
67
08
YES
17
VOUT(N193) =
VIN(N193)
VOUT(N194) =
VIN(N194)
VOUT(N195) =
VIN(N195)
18
EXIT

AD-A102 783 GENERAL DYNAMICS FORT WORTH TEX CONVAIR AEROSPACE DIV F/G 17/9
ENDO ATMOSPHERIC-EXO ATMOSPHERIC RADAR MODELING. VOLUME II. PAR--ETC(U)
JUN 76 R J HANCOCK, F H CLEVELAND F30602-73-C-0380
UNCLASSIFIED RADC-TR-76-186-VOL-2-PT-2 NL

2 OF 4
AD A
102783



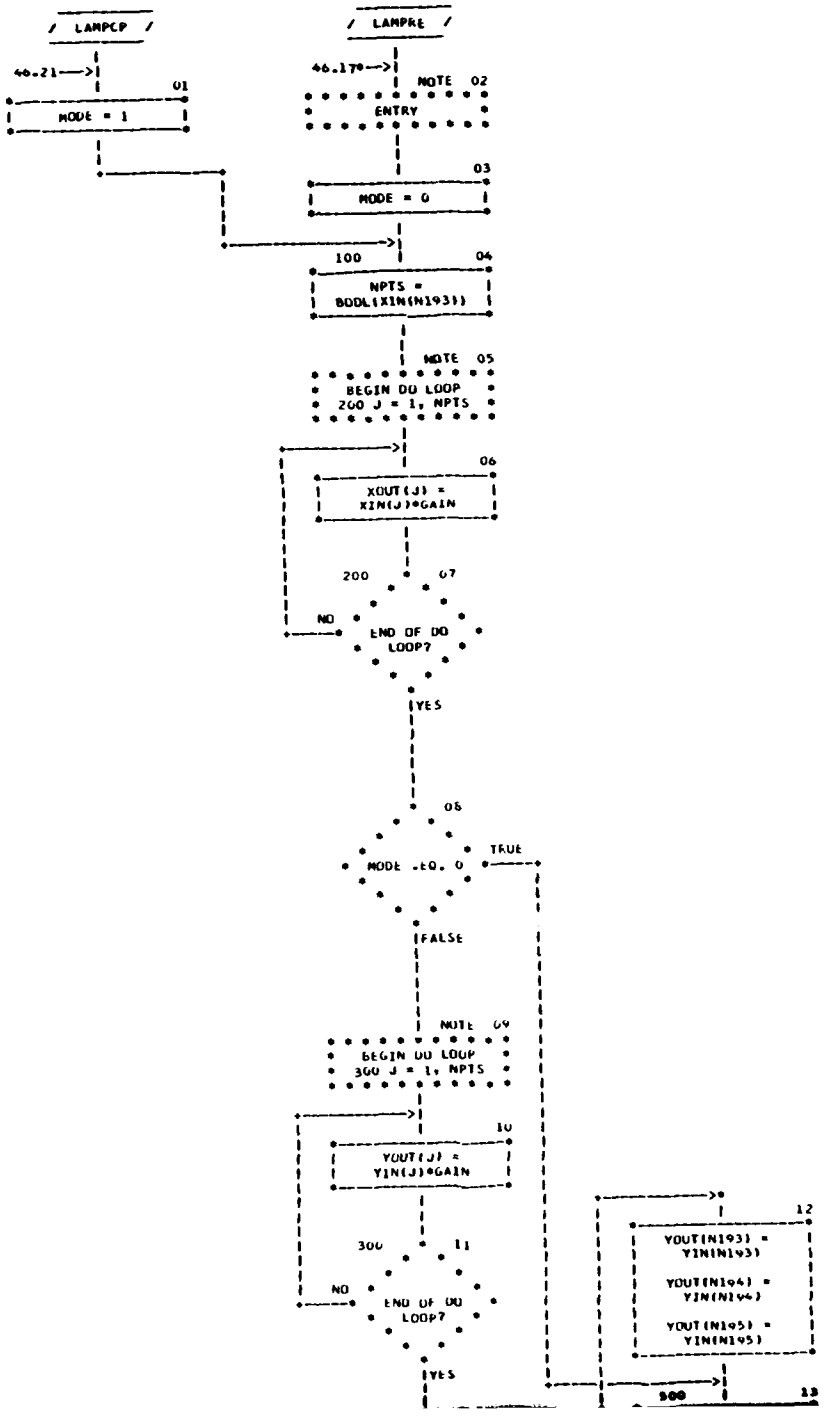
08/11/75 AUTOFLOW CHART SET - FWD/SCL RADSIM

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/ BK1(200)
DIMENSION VIN(1),VOUT(1)
EQUIVALENCE (BK1(196), TAVG )
DATA N193,N194,N195/-3,-2,-1/
```

CHART TITLE - SUBROUTINE LAMPCP(XIN,YIN,XOUT,YOUT)

4-C3



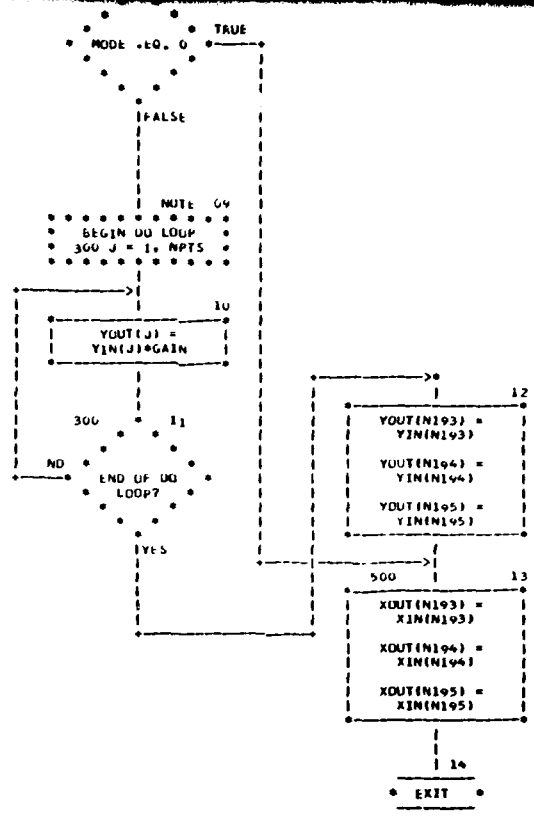

MODE .EQ. 0
TRUE
FALSE
NOTE 09
BEGIN DO LOOP
300 J = 1, NPTS
10
YOUT(J) =
YIN(J)*GAIN
300
11
NO
END OF DO
LOOP?
YES
12
YOUT(N193) =
YIN(N193)
YOUT(N194) =
YIN(N194)
YOUT(N195) =
YIN(N195)
500
13
XOUT(N193) =
XIN(N193)
XOUT(N194) =
XIN(N194)
XOUT(N195) =
XIN(N195)
14
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

69-6

```
      DIMENSION XIN(1),YIN(1),XOUT(1),YOUT(1)
      COMMON/BLK1/ B(200)
      DATA N193,N194,N195/-3,-2,-1/
      EQUIVALENCE  ( B(145) , GAIN )
```

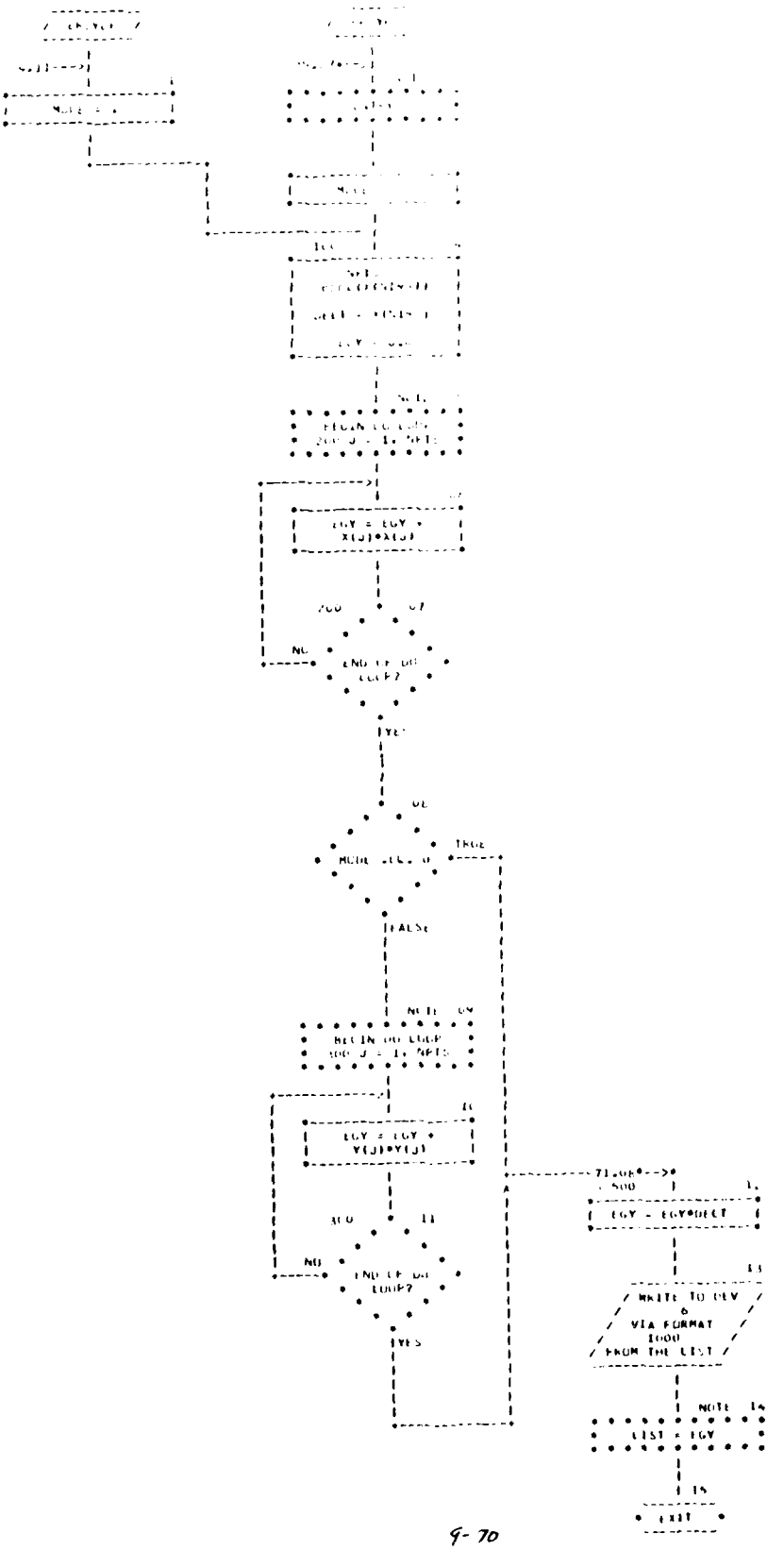
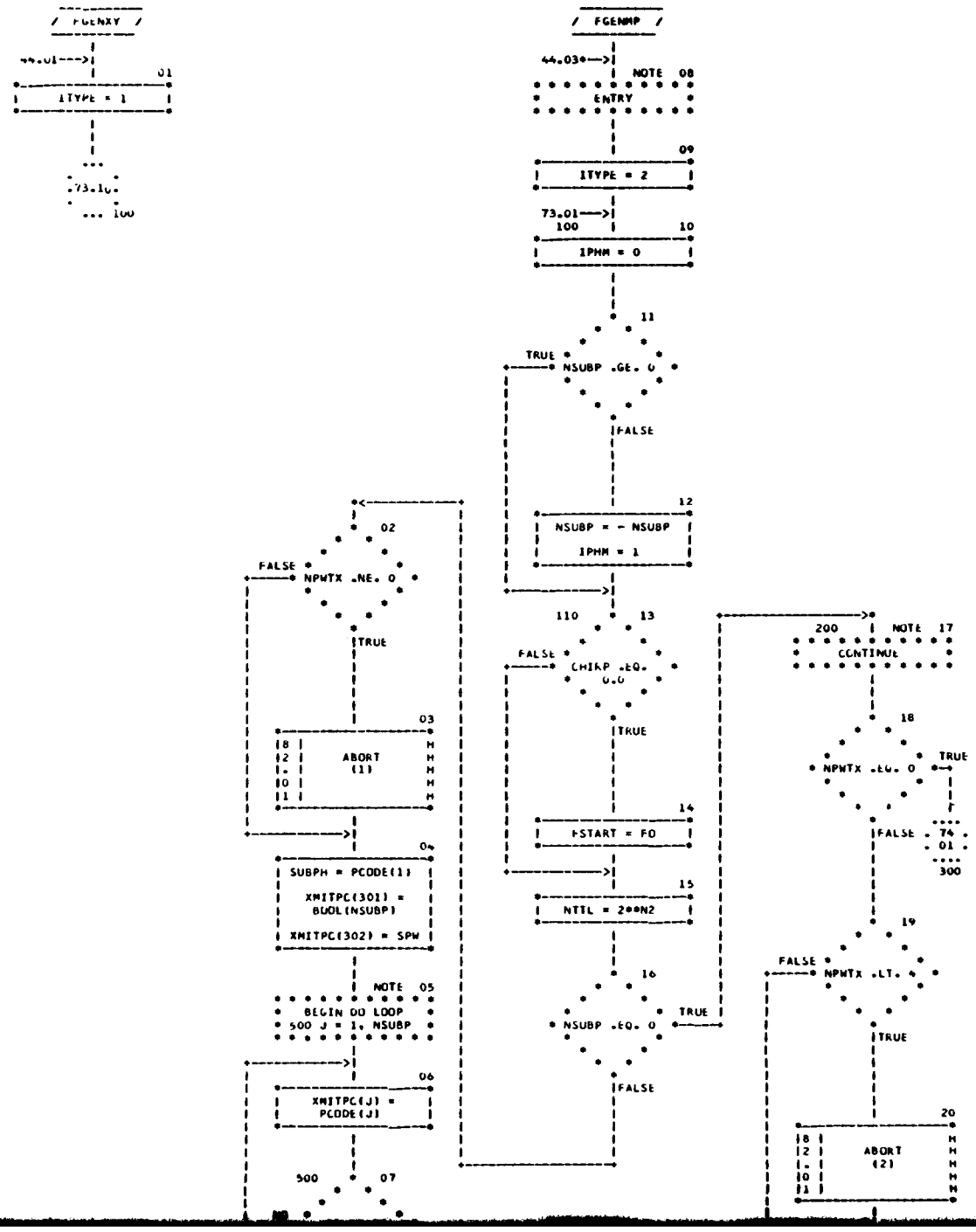
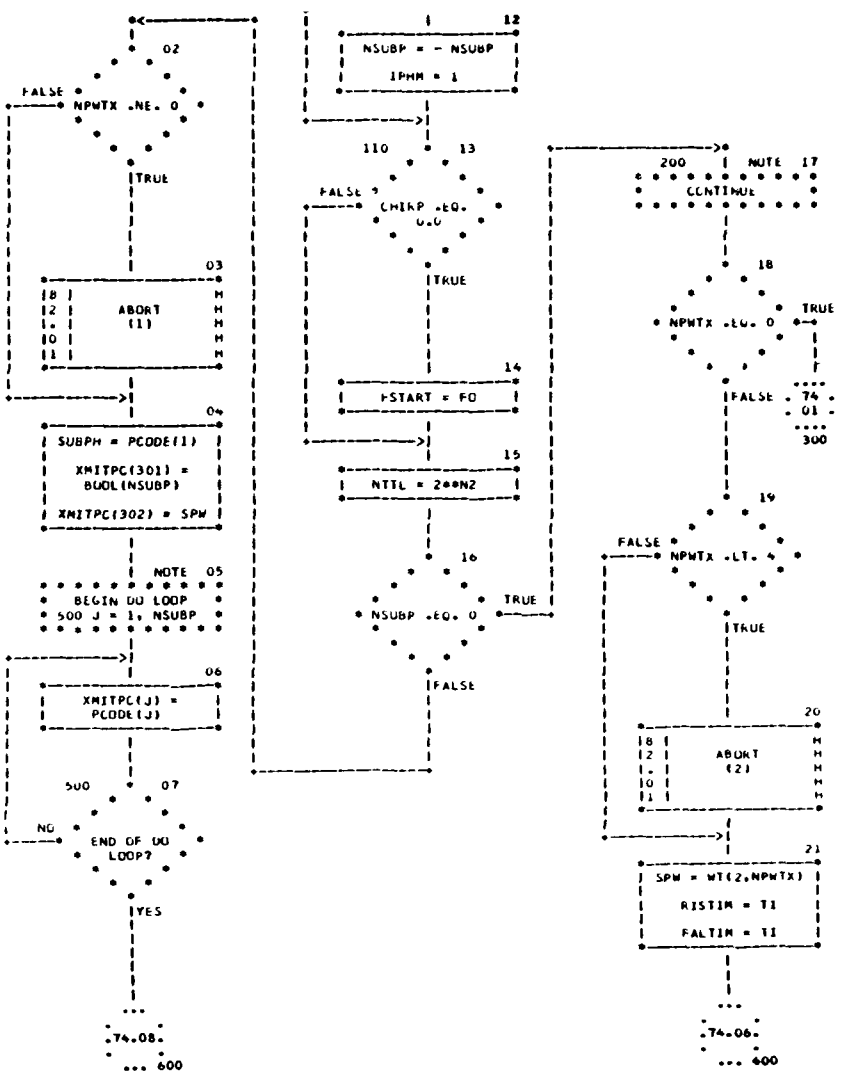

EGY = EGY +
X(J)*X(J)
NO
YES
TRUE
FALSE
EGY = EGY +
Y(J)*Y(J)
NO
YES
EGY = EGYOBJECT
WRITE TO DEV
6
VIA FORMAT
1000
FROM THE LIST
LIST = EGY
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      DIMENSION X(1),Y(1)
      DATA N193,N194,N195/-3,-2,-1/
1000  FORMAT(' ENERGY IN THE WAVEFORM =',E15.5,' WATT-NANOSECONDS ' )
```

CHART TITLE - SUBROUTINE FGENXY(X,Y)




02
FALSE
NPWTX .NE. 0
TRUE
03
ABORT (1)
04
SUBPH = PCODE(1)
XMITPC(301) = BOOL(NSUBP)
XMITPC(302) = SPW
NOTE 05
BEGIN DO LOOP
500 J = 1, NSUBP
06
XMITPC(J) = PCODE(J)
500
07
NO
END OF DO LOOP?
YES
.74.08.
600
12
NSUBP = - NSUBP
IPHM = 1
110
13
FALSE
CHIRP .EQ. 0.0
TRUE
14
FSTART = FO
15
NTTL = 2**N2
16
NSUBP .EQ. 0
TRUE
FALSE
200
NOTE 17
CONTINUE
18
NPWTX .EQ. 0
TRUE
FALSE
.74.01.
300
19
FALSE
NPWTX .LT. 4
TRUE
20
ABORT (2)
21
SPW = WT(2,NPWTX)
RISTIM = TI
FALTIM = TI
.74.06.
400

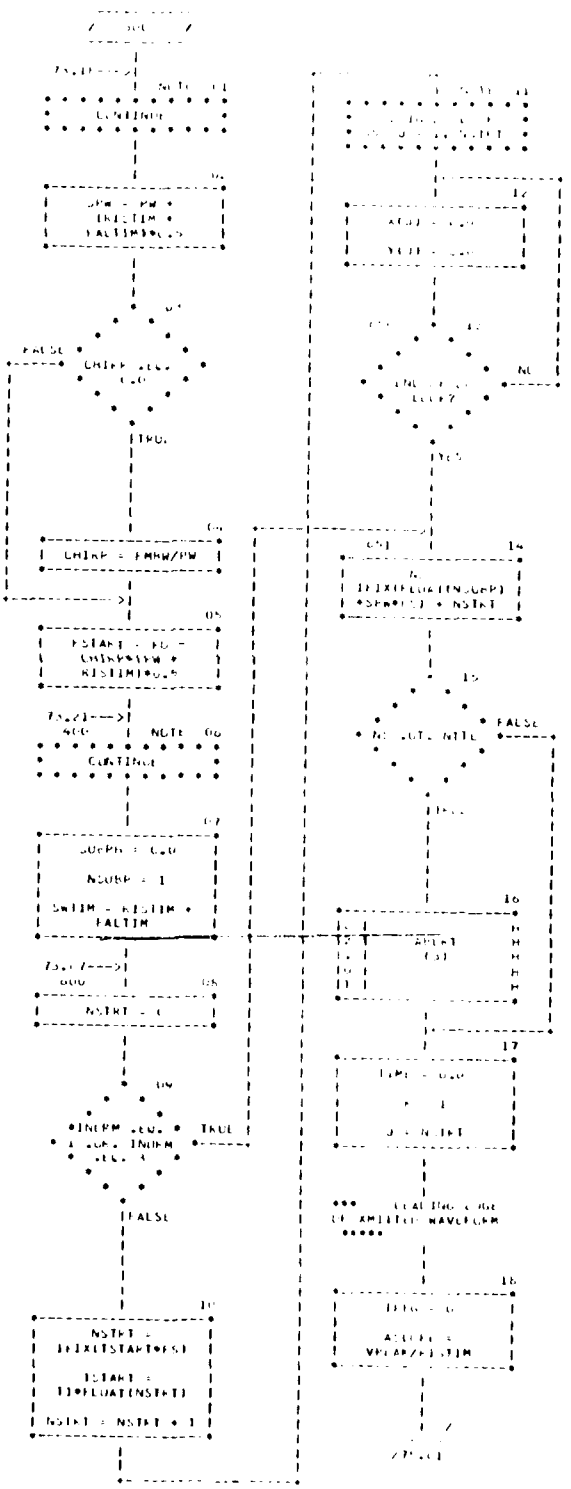


CHART TITLE = SUBROUTINE FORMAT(A,Y)

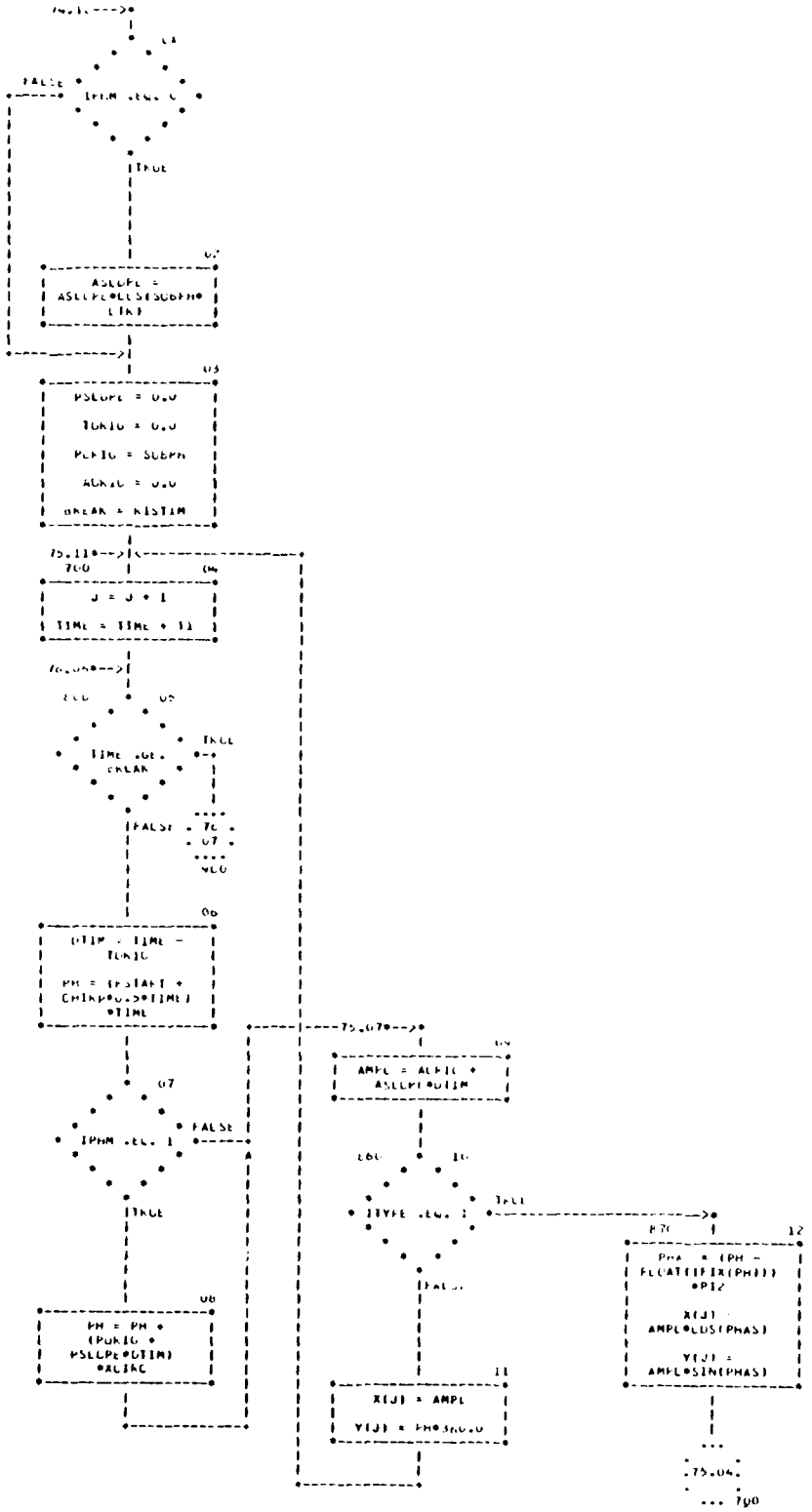
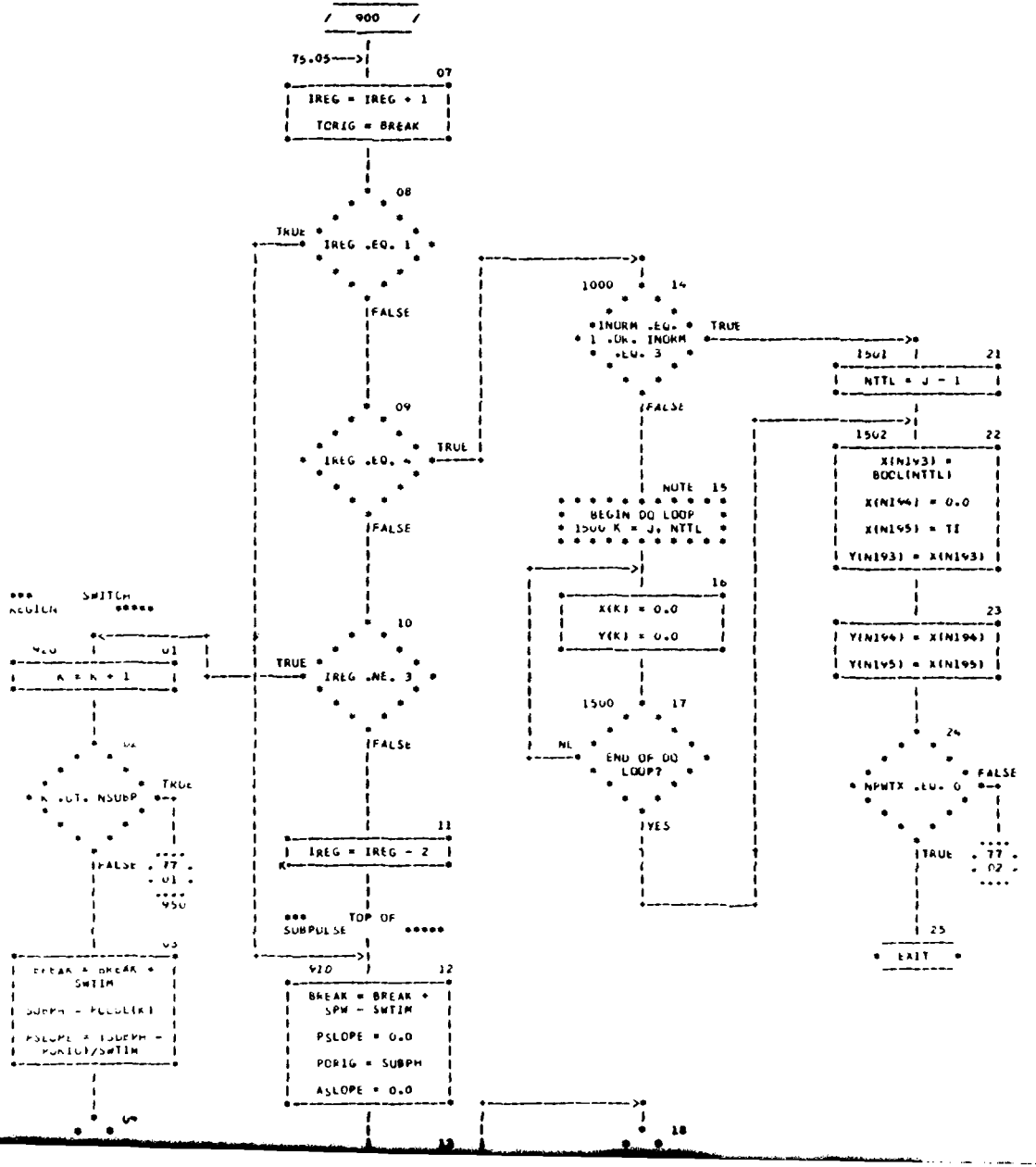


CHART TITLE - SUBROUTINE PGENXY(IX,Y)



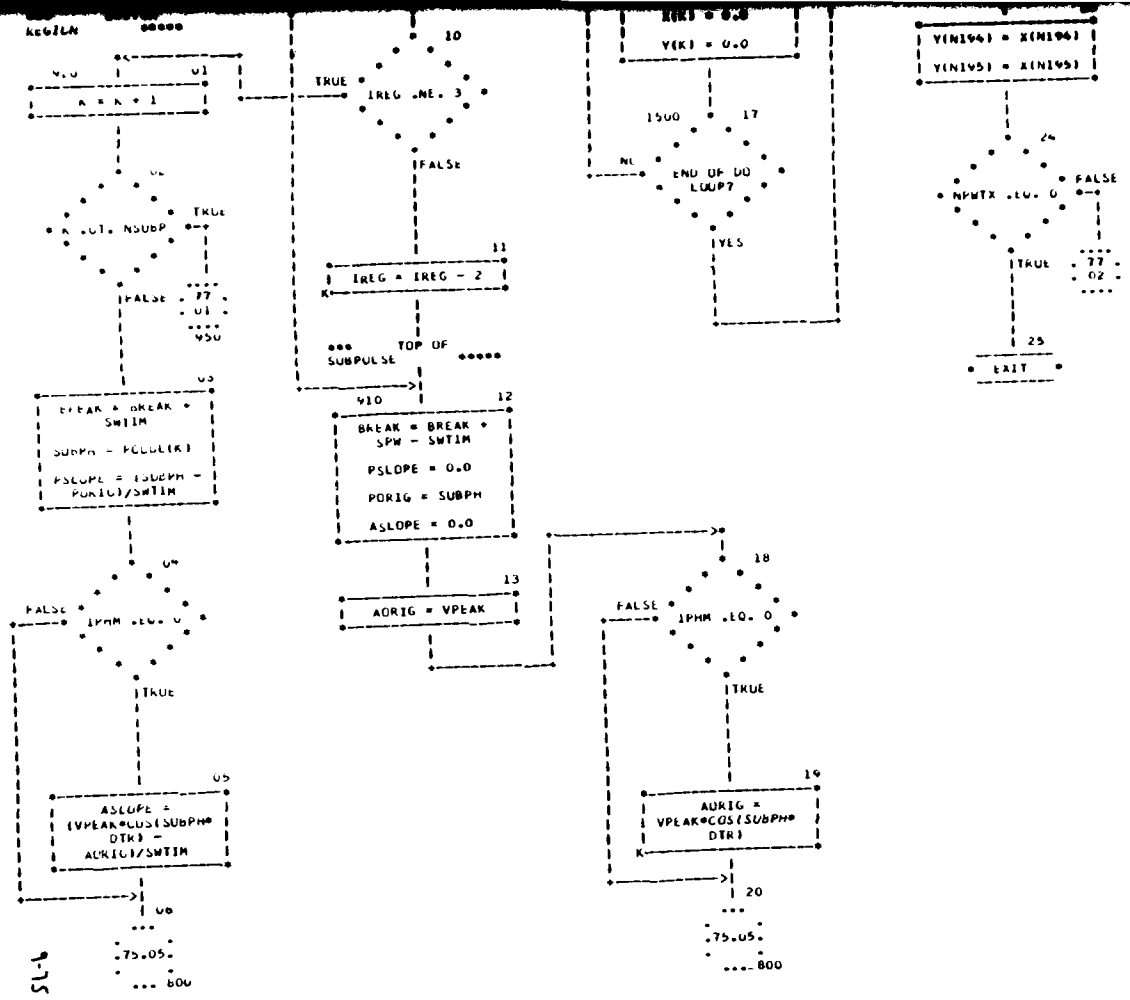

K=1,N
01
K = K + 1
02
K .GT. NSUBP
TRUE
FALSE
77
01
950
03
BREAK = BREAK + SWTIM
SUBPH = PEDDLE(K)
PSLOPE = (SUBPH - PORIG)/SWTIM
04
IPHM .EQ. 0
FALSE
TRUE
05
ASLOPE = (VPEAK*COS(SUBPH* DTR) - AORIG)/SWTIM
06
75.05
800
10
IREG .NE. 3
TRUE
FALSE
11
IREG = IREG - 2
K
TOP OF SUBPULSE
910
12
BREAK = BREAK + SPW - SWTIM
PSLOPE = 0.0
PORIG = SUBPH
ASLOPE = 0.0
13
AORIG = VPEAK
Y(K) = 0.0
1500
17
END OF DO LOOP7
NL
YES
18
IPHM .EQ. 0
FALSE
TRUE
19
AORIG = VPEAK*COS(SUBPH* DTR)
K
20
75.05
800
Y(N196) = X(N196)
Y(N195) = X(N195)
24
NPWTX .EQ. 0
FALSE
TRUE
77
02
25
EXIT

CHART TITLE - SUBROUTINE FUENRYER,YI

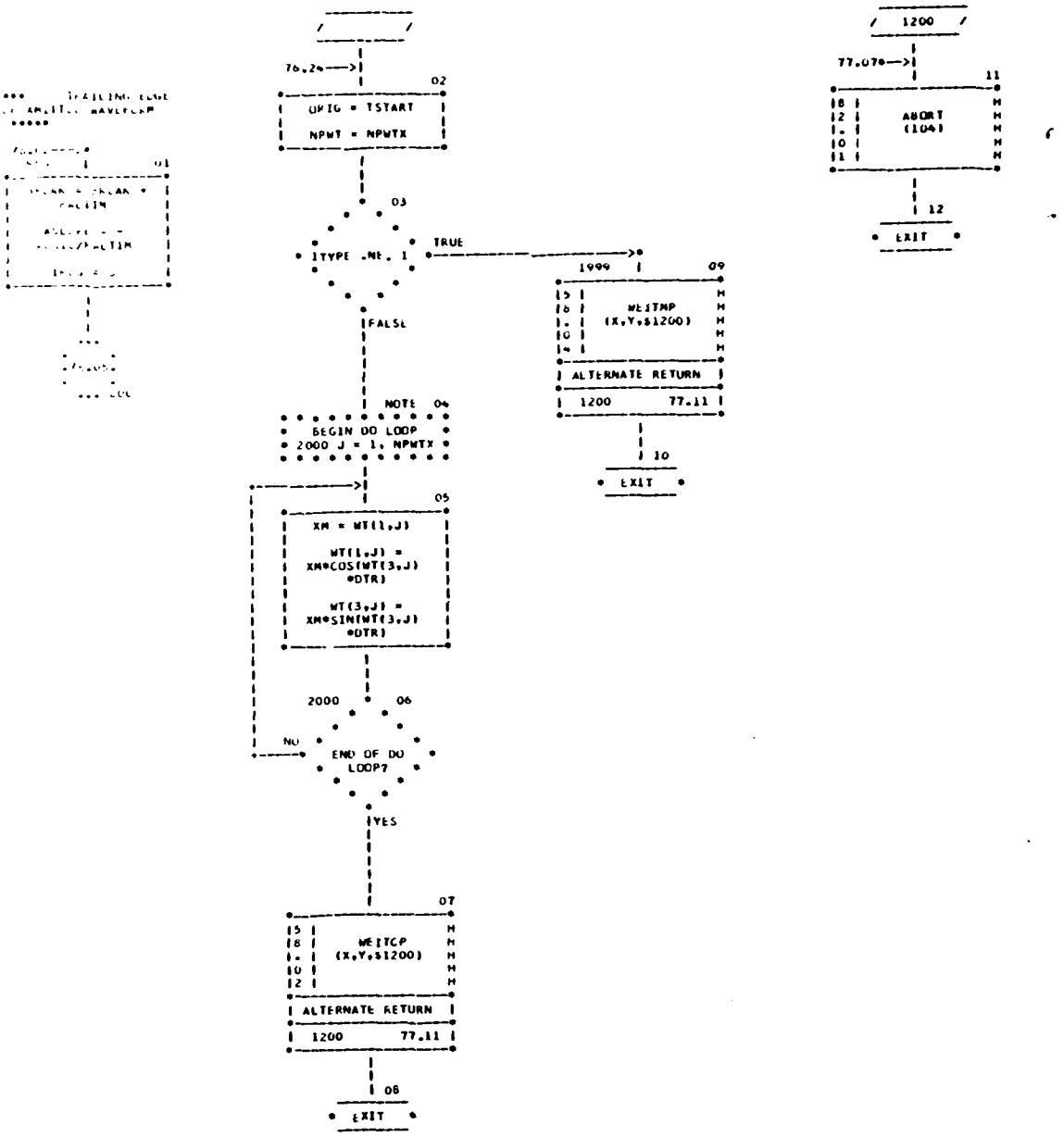


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ VAR(200), WT(3,100)
      COMMON/PRCODE/ XMITPC(302)
      DIMENSION PCODE(300),X(1),Y(1)
      EQUIVALENCE (WT(1,1) ,PCODE(1))
      EQUIVALENCE (VAR(  2) ,FS    ) , (VAR(  8) , FC    ),
                  (VAR(  9), INORM   ),
                 (VAR( 12) ,T1    ) , (VAR( 37) , NPWT  ),
                 (VAR(38) , CR1G  ) , (VAR( 92) , CHIRP ) ,
                 (VAR( 93) , FMBW  ) , (VAR( 94) ,NPWTX ),
                 (VAR( 95) , SPW   ) , (VAR( 96) , NSUBP ),
                 (VAR( 97) , SWTIM ) , (VAR( 98) , N1STIM),
                 (VAR( 99) , FALTIM) , (VAR(100) , TSTART),
                 (VAR( 91) , FSTART) , (VAR( 90) , PW    ),
                 (VAR(129) , VPEAK) , (VAR(  1) , N2    )
      DATA N193,N194,N195,DTR/-3,-2,-1,1.745329E-02/
      DATA XCIRC/2.7777E-03/,PI2/6.2831853/
```

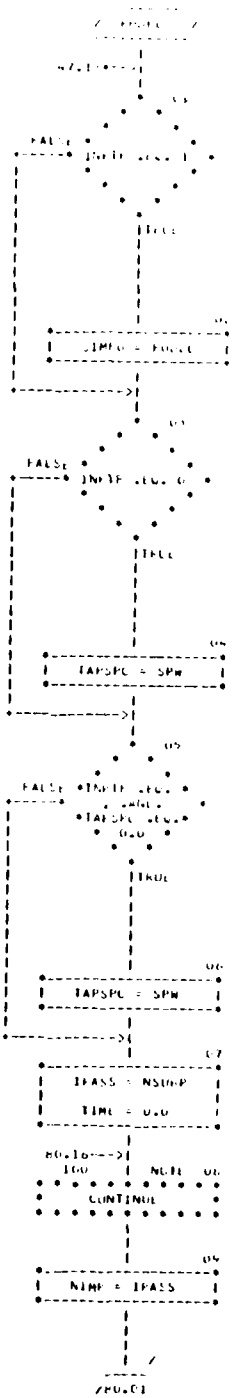
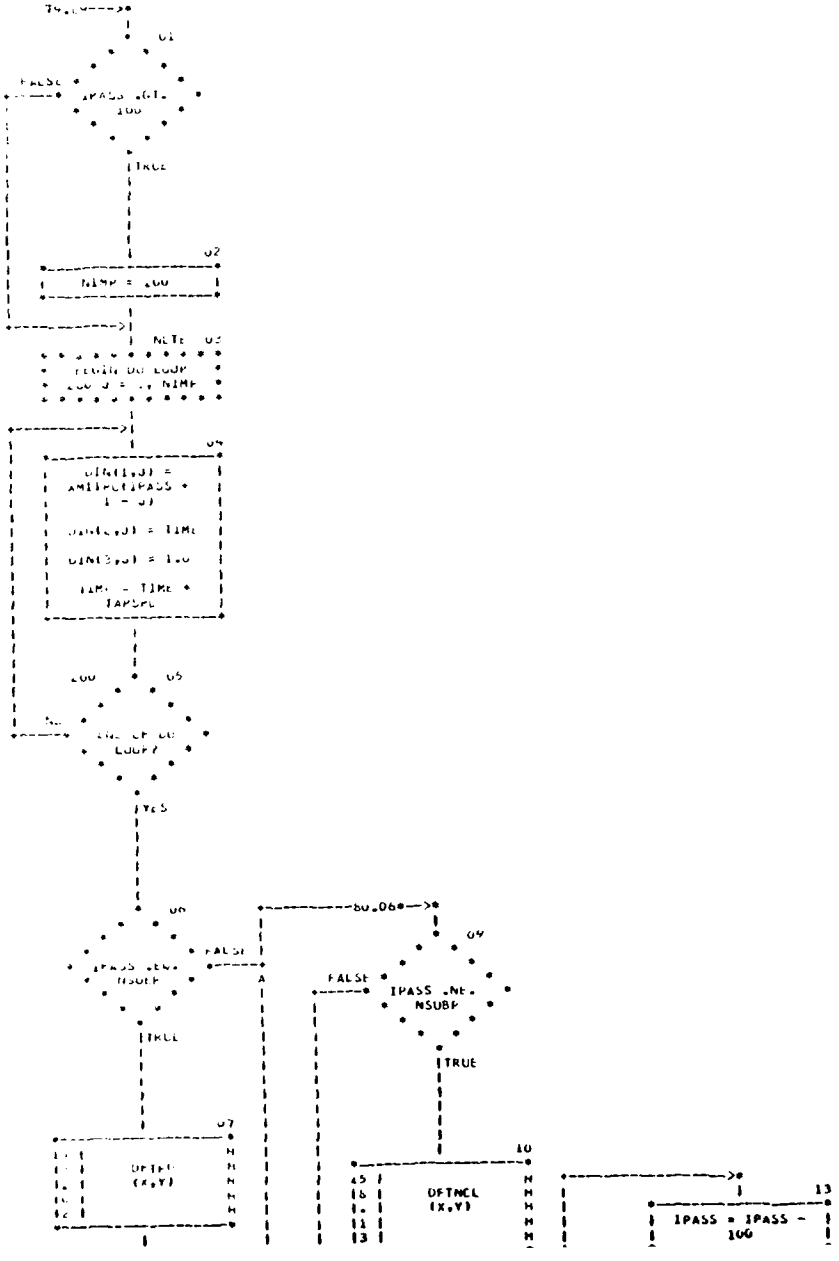


CHART TITLE - SUBROUTINE PHDEC(X,Y)



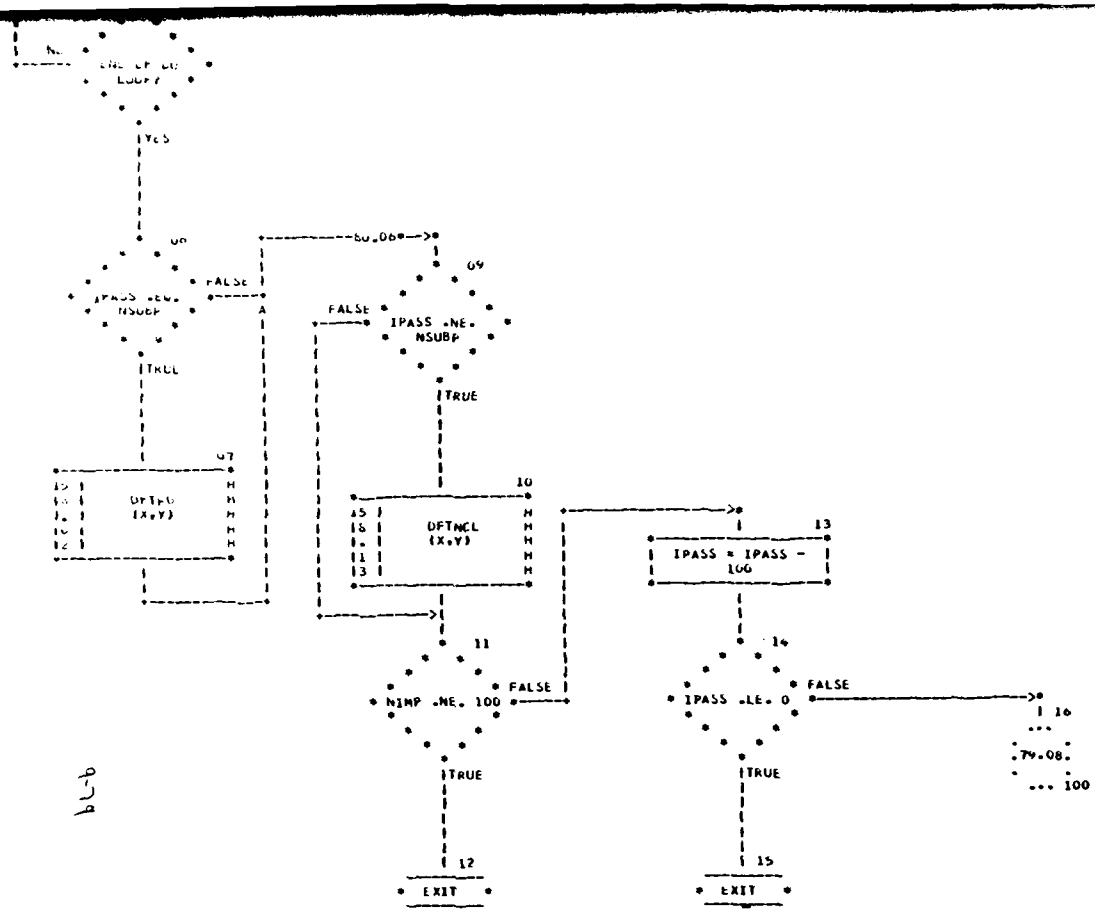
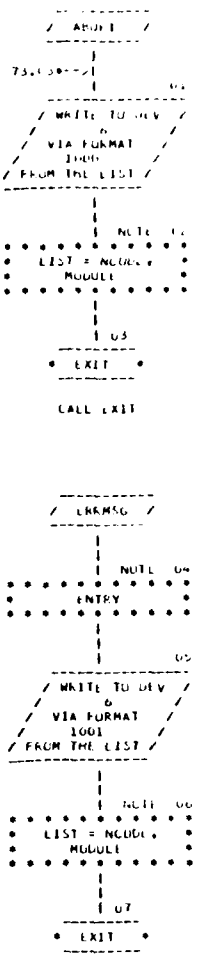

END OF DO LOOP?
YES
08
IPASS .EQ. NSUBP
FALSE
TRUE
07
DFTPO (X,Y)
08.08
09
IPASS .NE. NSUBP
FALSE
TRUE
10
DFTNCL (X,Y)
11
NIMP .NE. 100
FALSE
TRUE
12
EXIT
13
IPASS = IPASS - 100
14
IPASS .LE. 0
FALSE
TRUE
15
EXIT
16
79.08
100

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      DIMENSION X(1),Y(1)
      COMMON/PHCODE/ XMITPC(300),NSUBP,SPW
      COMMON/BLK1/ ITEMP(199),NIMP,DIN(3,100)
      EQUIVALENCE  (ITEMP(102),  FODEC) , (ITEMP(154),  TAPSPC),
                   (ITEMP(  8),  SIMFO) , (ITEMP(155),  INPTF)
```

CHART TITLE = [illegible]



NON-PROCEDURAL STATEMENTS

```
      COMMON/SYS/ MODULE
1000  FORMAT(' ERROR : ',I3,' OCCURRED DURING EXECUTION OF MODULE : ',
     1I3,'.....FATAL ERRORS JOB WILL TERMINATE' )
1001  FORMAT(' ERROR : ',I3,' OCCURRED DURING EXECUTION OF MODULE : ',
     1I3,'.....FIX-UP DONE, REFER TO [illegible] ; JOB WILL CONTINUE')
```

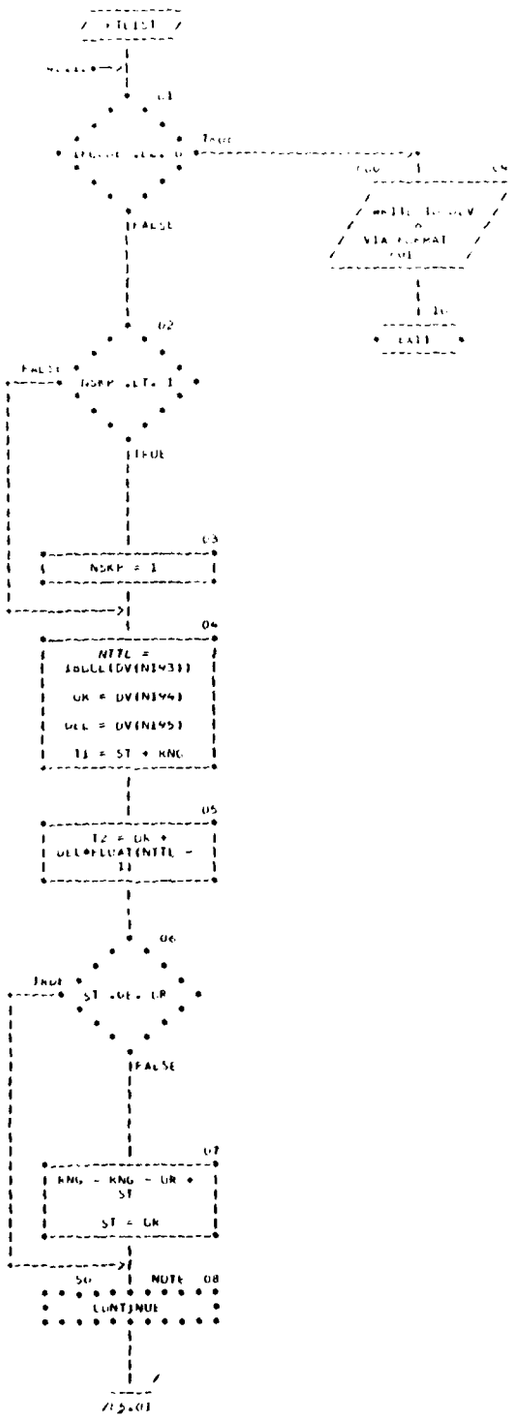
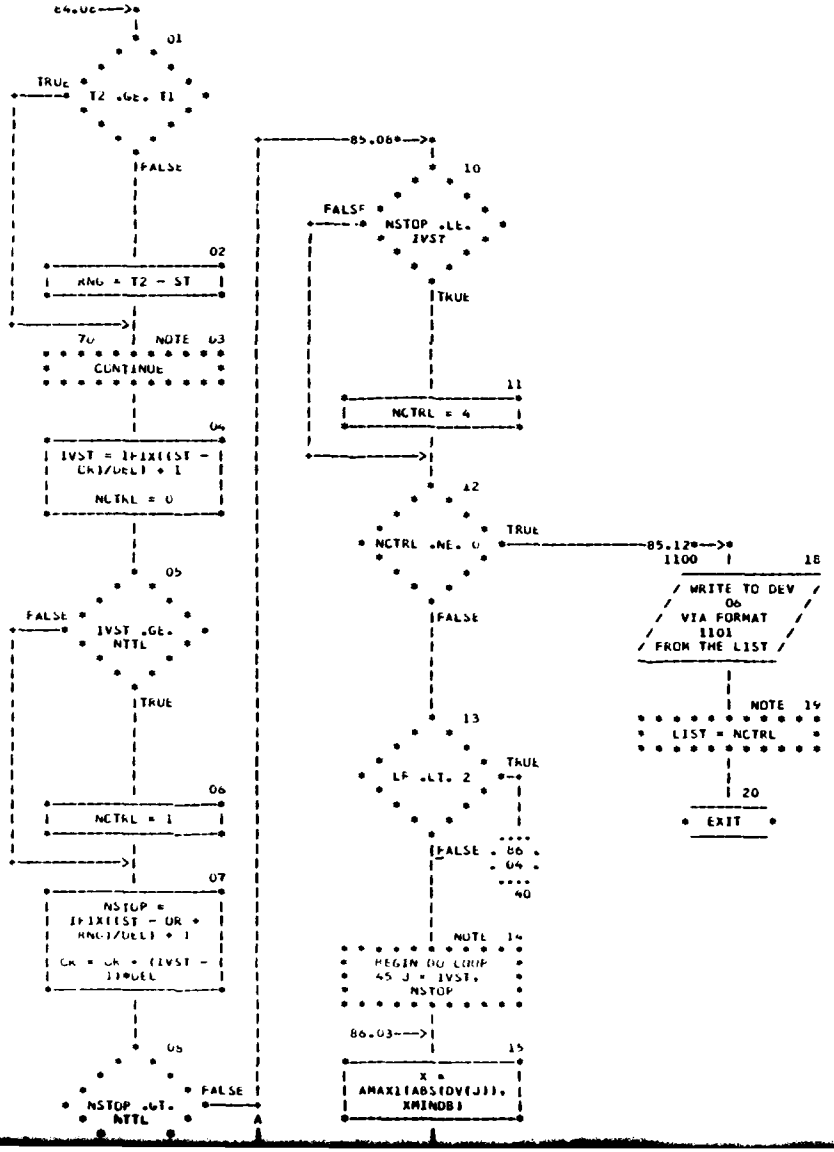

TRUE
FALSE
02
NSKP .GE. 1
TRUE
03
NSKP = 1
04
NTTL = IBCLR(DV(N1933))
OR = DV(N1946)
DEL = DV(N1951)
TI = ST + KNG
05
TZ = OR + DEL*FLOAT(NTTL - 1)
06
ST .GE. TR
TRUE
FALSE
07
KNG = KNG - OR + ST
ST = OR
50
CONTINUE
NOTE 08

CHART TITLE - SUBROUTINE PTLIST(DV)



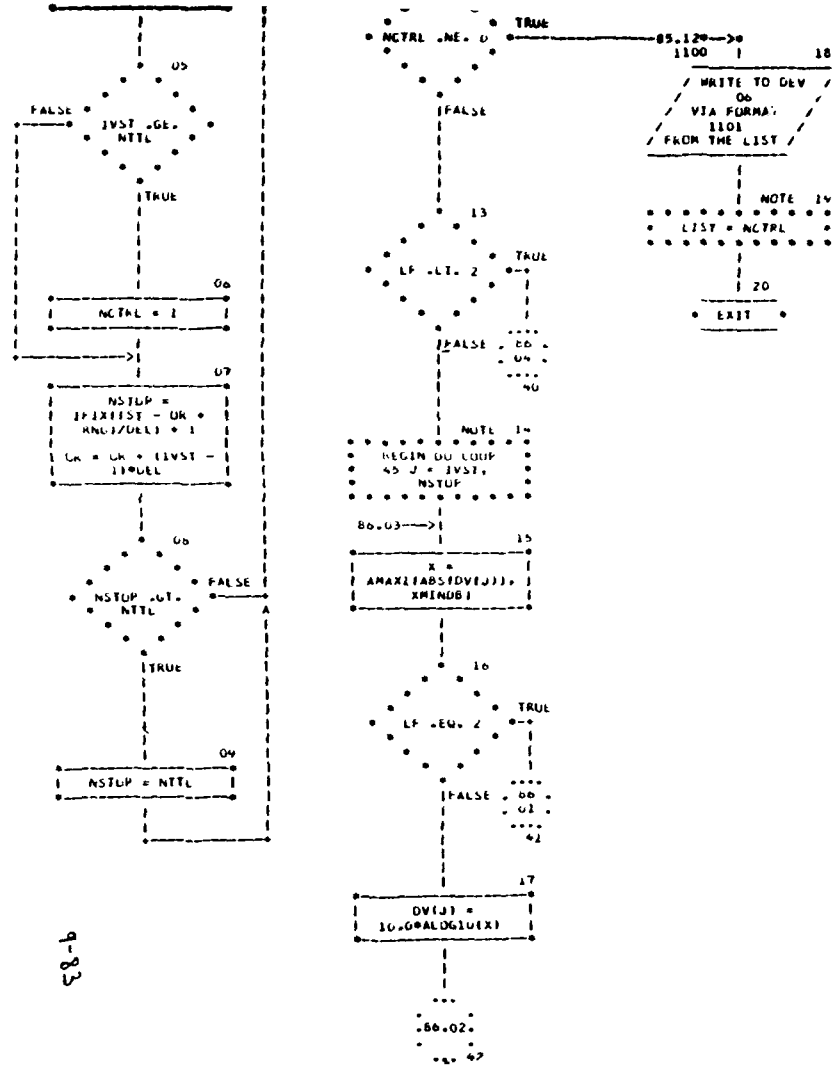
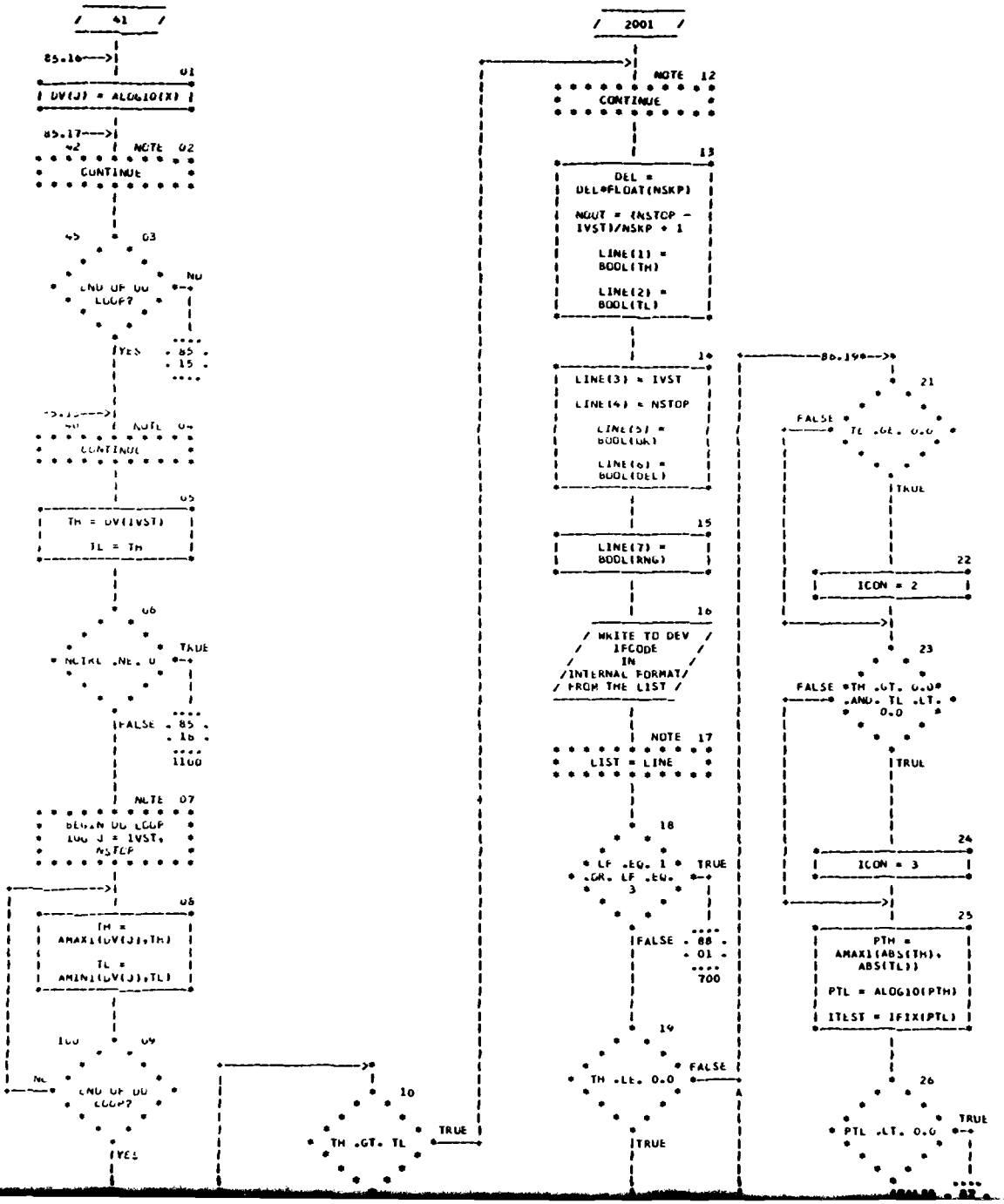

05
IVST .GE. NTTL
FALSE
TRUE
06
NCTRL = 1
07
NSTOP = IFIX(FIST - DR + RNG)/DELI + 1
DR = DR + FIVST - 1)*DEL
08
NSTOP .GT. NTTL
FALSE
TRUE
04
NSTOP = NTTL
A
NCTRL .NE. 0
TRUE
85.120
1100
18
WRITE TO DEV 06 VIA FORMAT 1101 FROM THE LIST
NOTE 14
LIST = NCTRL
20
EXIT
13
LF .LT. 2
TRUE
FALSE
86.04
40
NOTE 15
BEGIN DO LOOP 45 J = IVST, NSTOP
86.03
15
X = AMAX1(ABS(DV(J)), XMINDB)
16
LF .EQ. 2
TRUE
FALSE
86.01
42
17
DV(J) = 10.0*ALOG10(X)
86.02
42

CHART TITLE - SUBROUTINE PTLIST(DV)



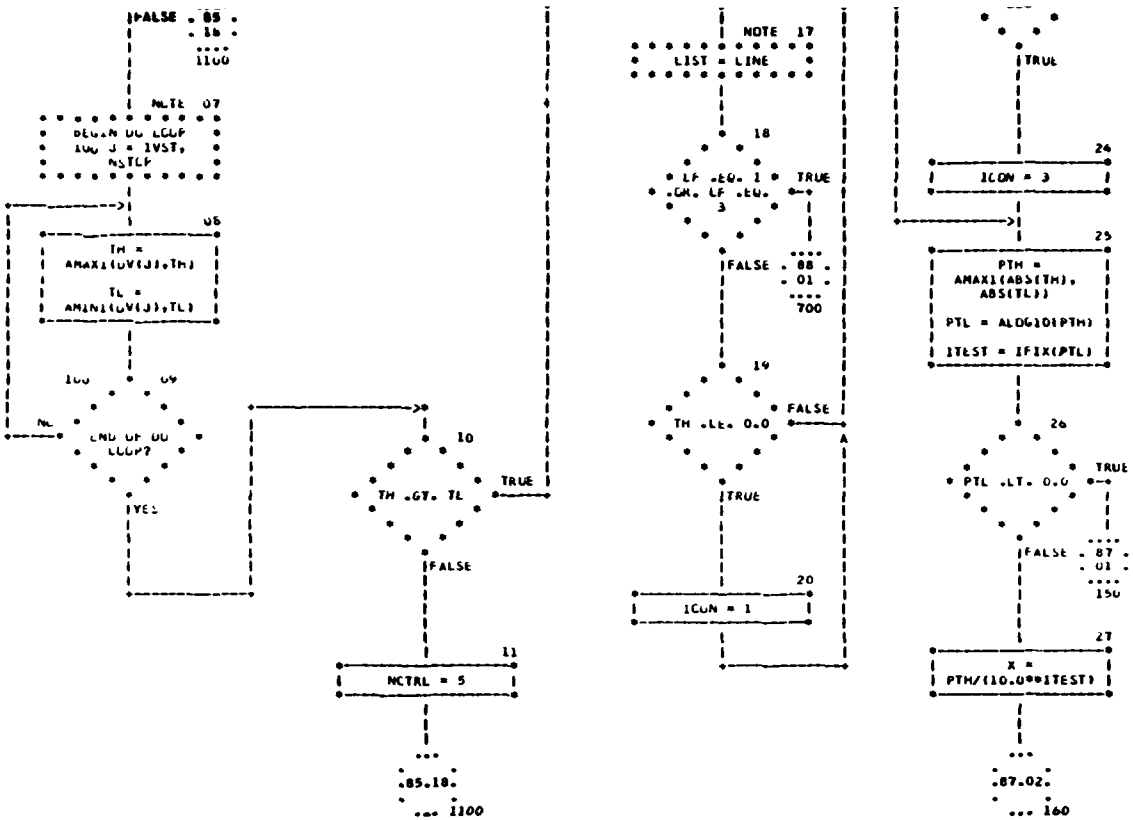
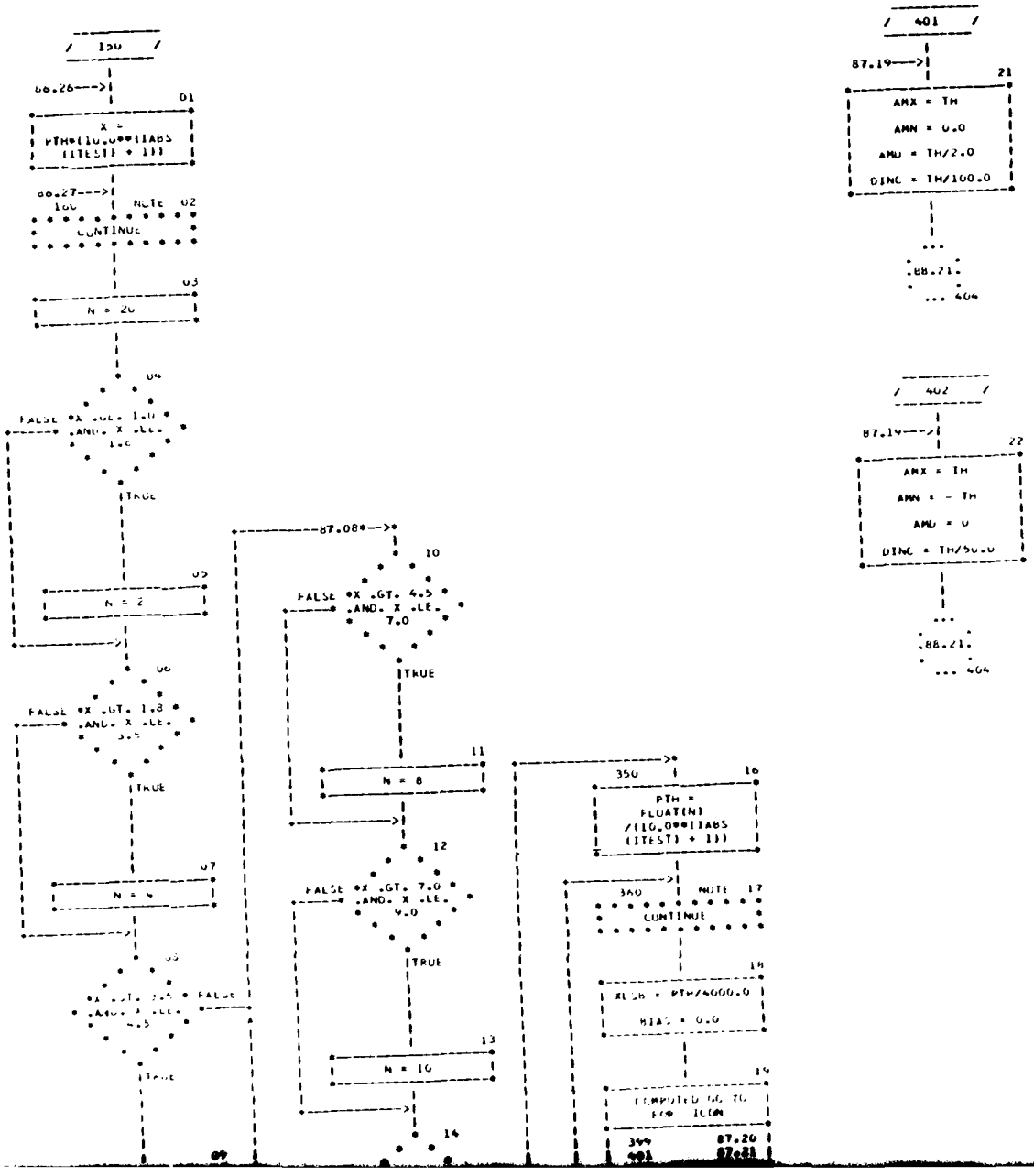
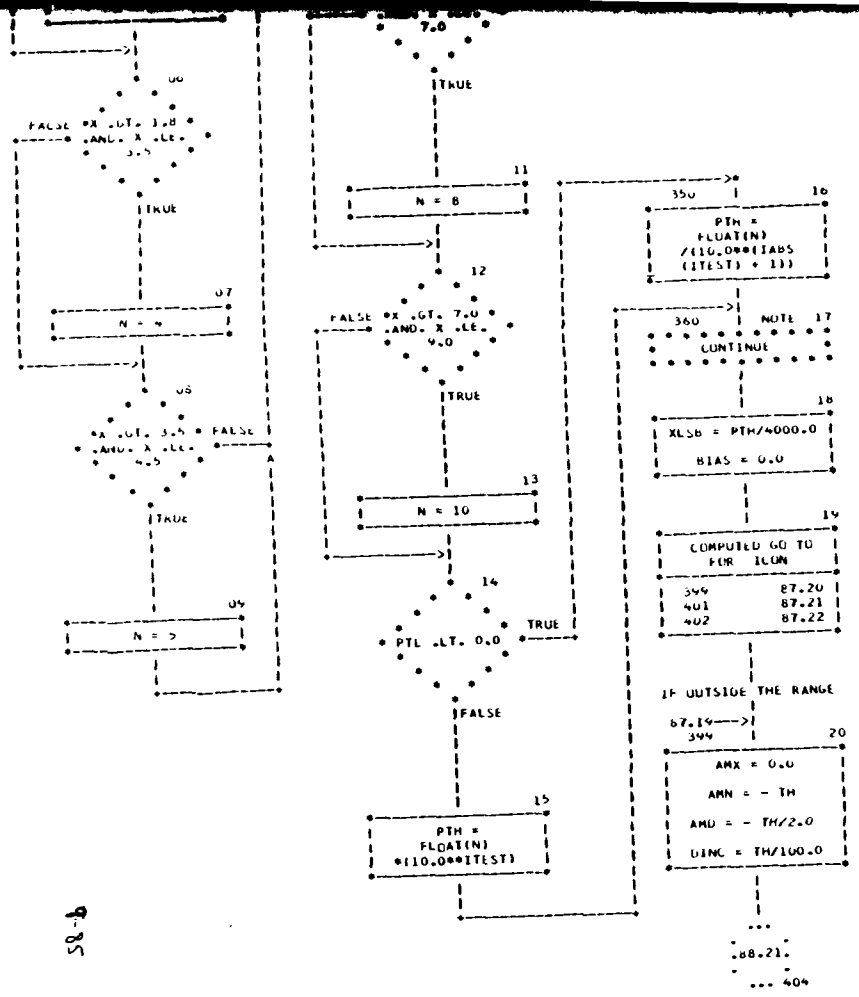

FALSE
.85.
.16.
1100
NLTE 07
BEGIN DO LOOP
IVST,
NSTEP
05
TH =
AMAX1(UV(J),TH)
TL =
AMIN1(UV(J),TL)
100
09
END OF DO
LOOP?
YES
10
TH .GT. TL
TRUE
FALSE
11
NCTRL = 5
.85.18.
1100
NOTE 17
LIST = LINE
18
LF .EQ. 1
.OR. LF .EQ.
3
TRUE
FALSE
.88.
.01.
700
19
TH .LE. 0.0
FALSE
TRUE
A
20
ICON = 1
TRUE
24
ICON = 3
25
PTH =
AMAX1(ABS(TH),
ABS(TL))
PTL = ALOG10(PTH)
ITEST = IFIX(PTL)
26
PTL .LT. 0.0
TRUE
FALSE
.87.
.01.
150
27
X =
PTH/(10.0**ITEST)
.87.02.
160

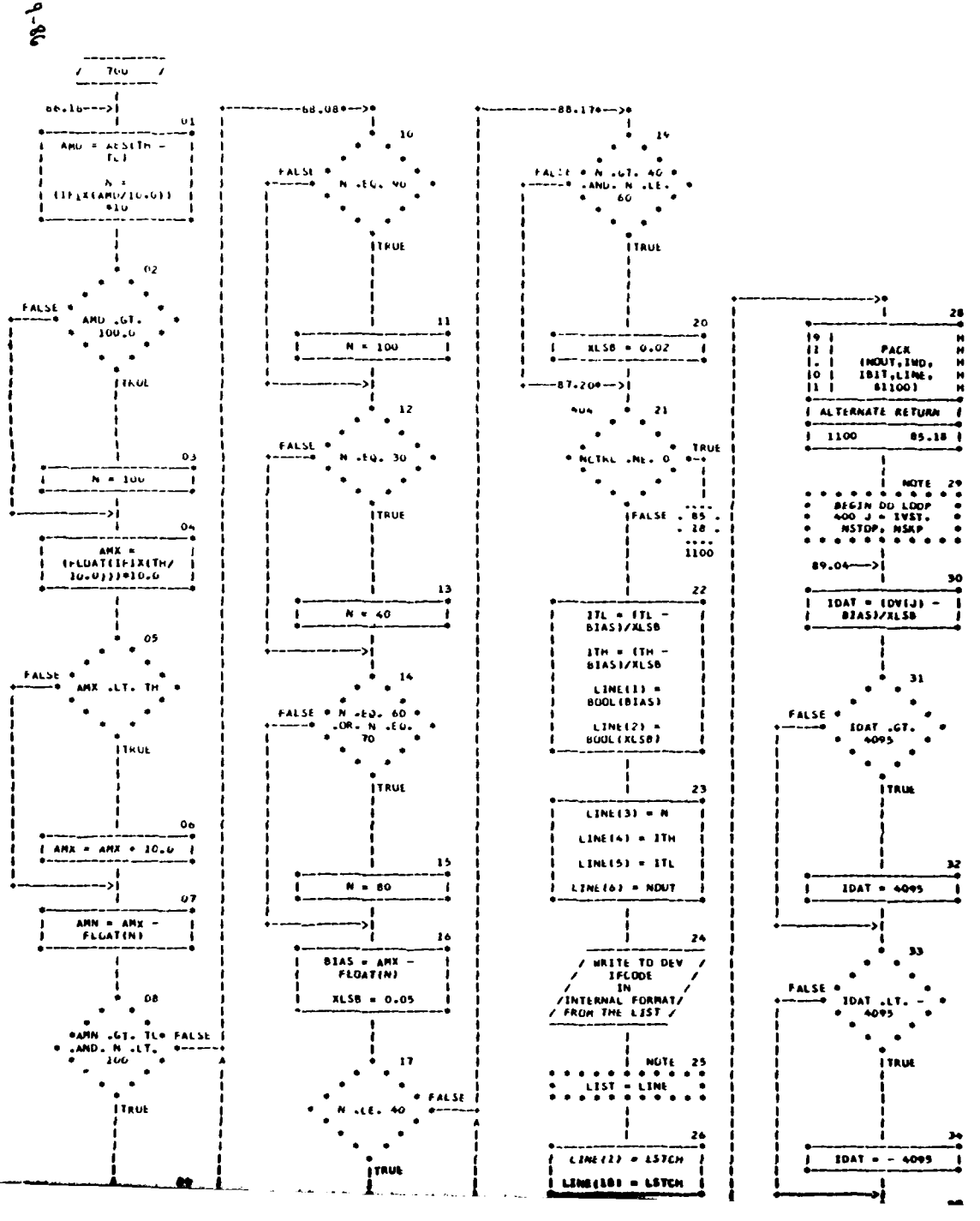
CHART TITLE - SUBROUTINE PTLIST(DV)




7.0
TRUE
11
N = 8
12
FALSE *X .GT. 7.0 *
.AND. X .LE.
9.0
TRUE
13
N = 10
14
* PTL .LT. 0.0
TRUE
FALSE
15
PTH =
FLOAT(N)
*(10.0**ITEST)
06
N = 6
FALSE
TRUE
05
N = 5
07
N = 7
FALSE *X .GT. 3.5 *
.AND. X .LE.
4.5
TRUE
08
FALSE *X .GT. 1.8 *
.AND. X .LE.
3.5
TRUE
00
350
16
PTH =
FLOAT(N)
/(10.0**(IABS
(ITEST) + 1))
360
NOTE 17
CONTINUE
18
XLSB = PTH/4000.0
BIAS = 0.0
19
COMPUTED GO TO
FOR ICON
399 87.20
401 87.21
402 87.22
IF OUTSIDE THE RANGE
87.19
399
20
AMX = 0.0
AMN = - TH
AMD = - TH/2.0
DINC = TH/100.0
.88.21.
... 404
.88.21.
... 404

58-b

CHART TITLE - SUBROUTINE PTLIST(DV)



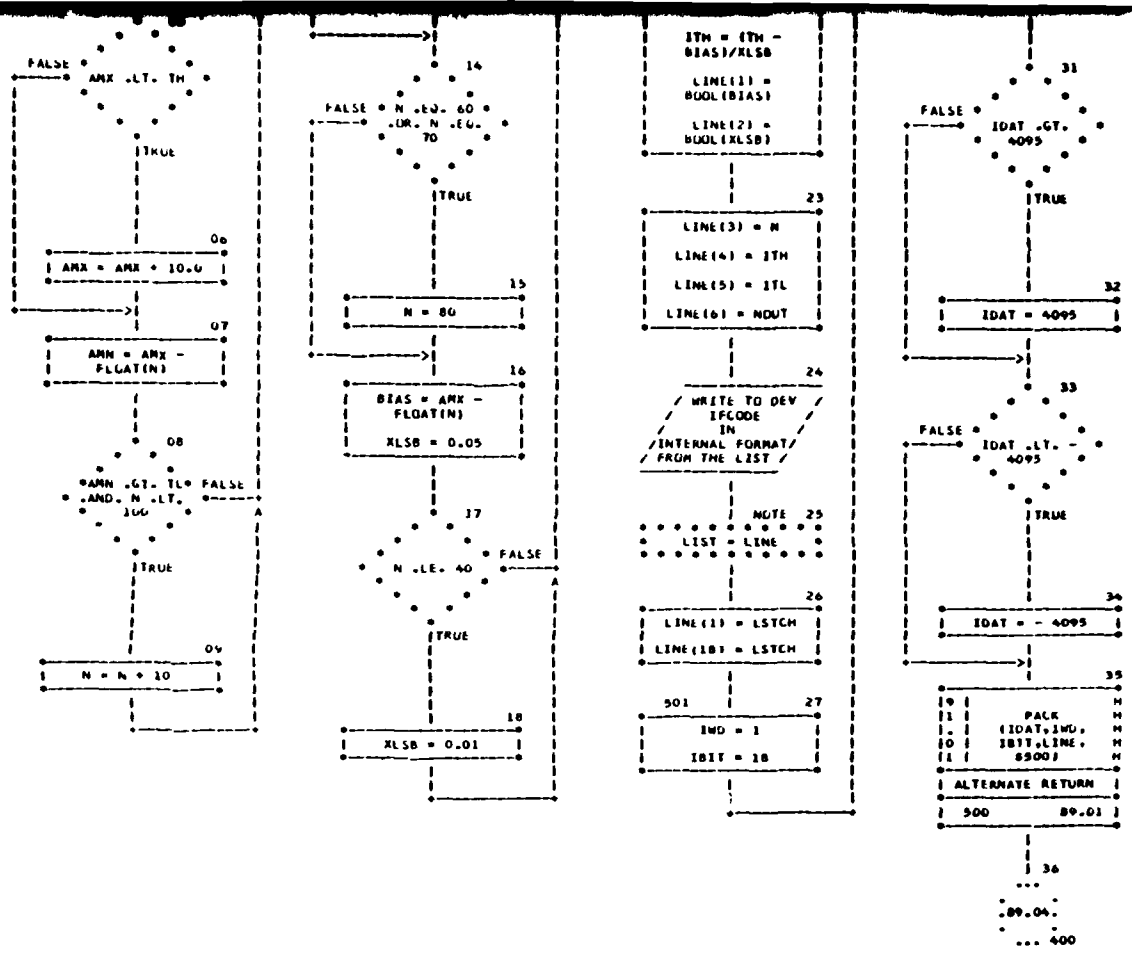
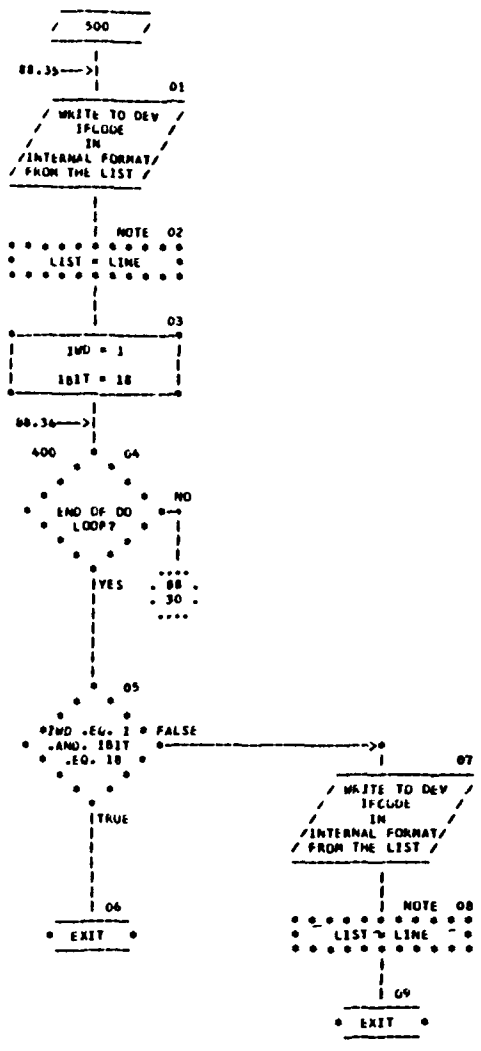

FALSE
AMX .LT. TH
TRUE
06
AMX = AMX + 10.0
07
AMN = AMX - FLOAT(N)
08
AMN .GT. TL .AND. N .LT. 100
FALSE
TRUE
09
N = N + 10
A
14
FALSE
N .EQ. 60 .OR. N .EQ. 70
TRUE
15
N = 80
16
BIAS = AMX - FLOAT(N)
XLSB = 0.05
17
N .LE. 40
FALSE
TRUE
18
XLSB = 0.01
A
ITH = (TH - BIAS)/XLSB
LINE(1) = BOOL(BIAS)
LINE(2) = BOOL(XLSB)
23
LINE(3) = N
LINE(4) = ITH
LINE(5) = ITL
LINE(6) = NOUT
24
/ WRITE TO DEV IFCODE IN /INTERNAL FORMAT/ FROM THE LIST /
NOTE 25
LIST = LINE
26
LINE(1) = LSTCH
LINE(IBI) = LSTCH
501
27
IWD = 1
IBIT = 18
31
FALSE
IDAT .GT. 4095
TRUE
32
IDAT = 4095
33
FALSE
IDAT .LT. -4095
TRUE
34
IDAT = -4095
35
PACK (IDAT,IWD, IBIT,LINE, 8500)
ALTERNATE RETURN
500
89.01
36
89.04
400

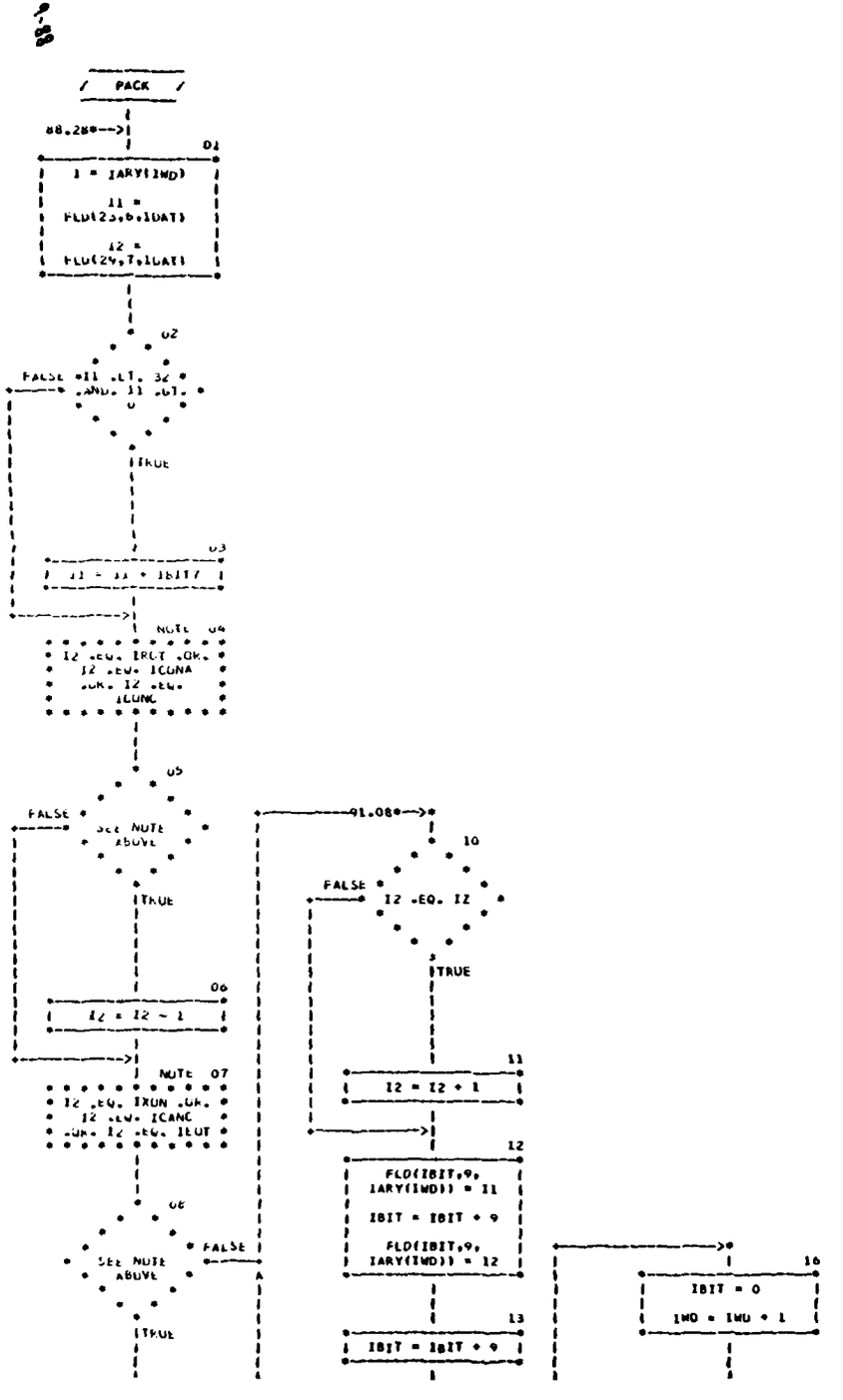
CHART TITLE - SUBROUTINE TLISTFLOW



NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(200),VIL(50),VDL(50),GLBL(50)
      EQUIVALENCE   ( BK1( 59), ST       ),( BK1( 60), RNG      ),
                    ( BK1( 62), LF       ),( BK1( 63), NSKP     ),
                    ( BK1( 64), NAUTO    ),( BK1( 65), TM       ),
                    ( BK1( 66), TL       ),( BK1(113),IFCODE    )
      DIMENSION DV(1),LINE(18)
      DATA N193,N194,N195,N196/-3,-2,-1,0/,XMIND8/1.0E-20/
       DATA LSTCH/076172000000/
 1101  FORMAT( ' PLOT NOT ATTEMPTED DUE TO CONDITION CODE =',I4)
  801  FORMAT(' THE PLOT DATA OUTPUT FILE IMPROPERLY DEFINED...',
       ' NO DATA TRANSFERED')
```

CHART TITLE - SUBROUTINE PACK(IDAT,IWD,IBIT,IARY,*)



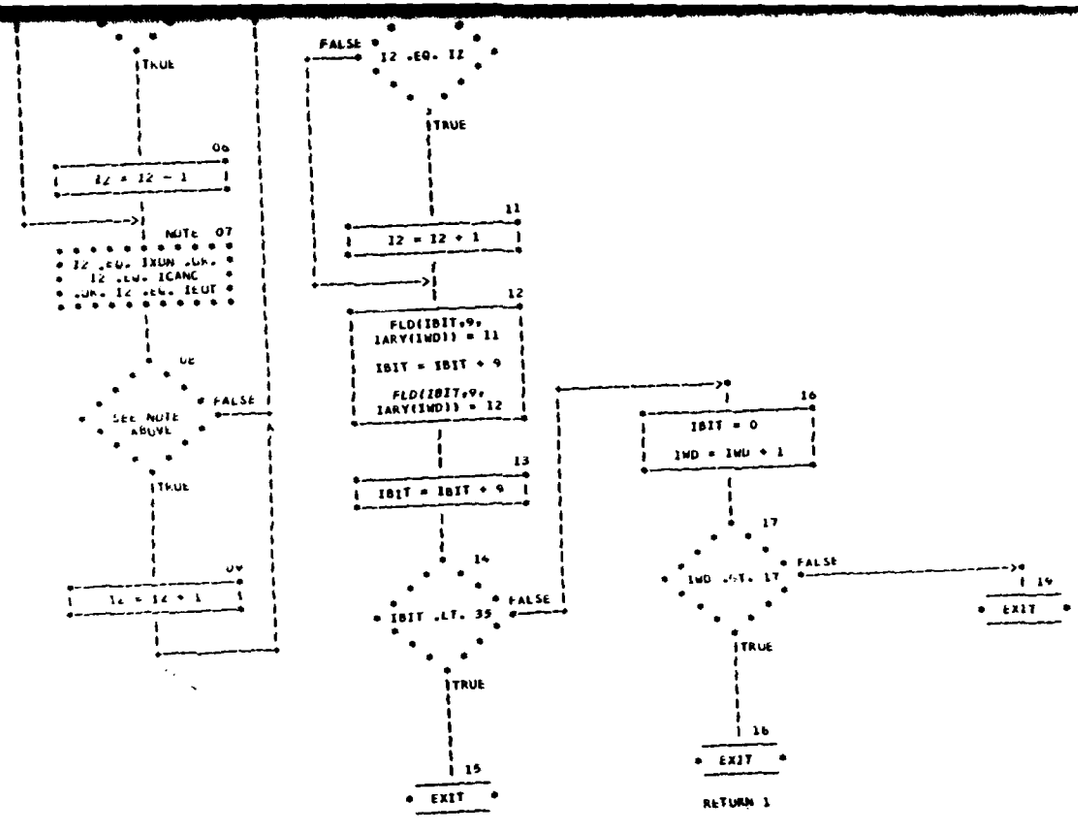

TRUE
06
I2 = I2 - 1
NOTE 07
I2 .EQ. IXUN .OR.
I2 .EQ. ICANC
.OR. I2 .EQ. IEOT
08
SEE NOTE
ABOVE
FALSE
TRUE
09
I2 = I2 + 1
FALSE
I2 .EQ. I2
TRUE
11
I2 = I2 + 1
12
FLD(IBIT+9,
IARY(IWD)) = I1
IBIT = IBIT + 9
FLD(IBIT+9,
IARY(IWD)) = I2
13
IBIT = IBIT + 9
14
IBIT .LT. 35
FALSE
TRUE
15
EXIT
16
IBIT = 0
IWD = IWD + 1
17
IWD .LT. 17
FALSE
TRUE
18
EXIT
19
EXIT
RETURN 1

CHART TITLE -

NON-PROCEDURAL STATEMENTS

```
DATA IROT/0177/,IBIT7/0100/,IXON/021/,ICANC/030/
 DATA IEOT/4/,IZ/0172/,ICONA/1/,ICONC/3/
 DIMENSION IARY(1)
```

CHART TITLE = SUBROUTINE PLOTTR(DV)

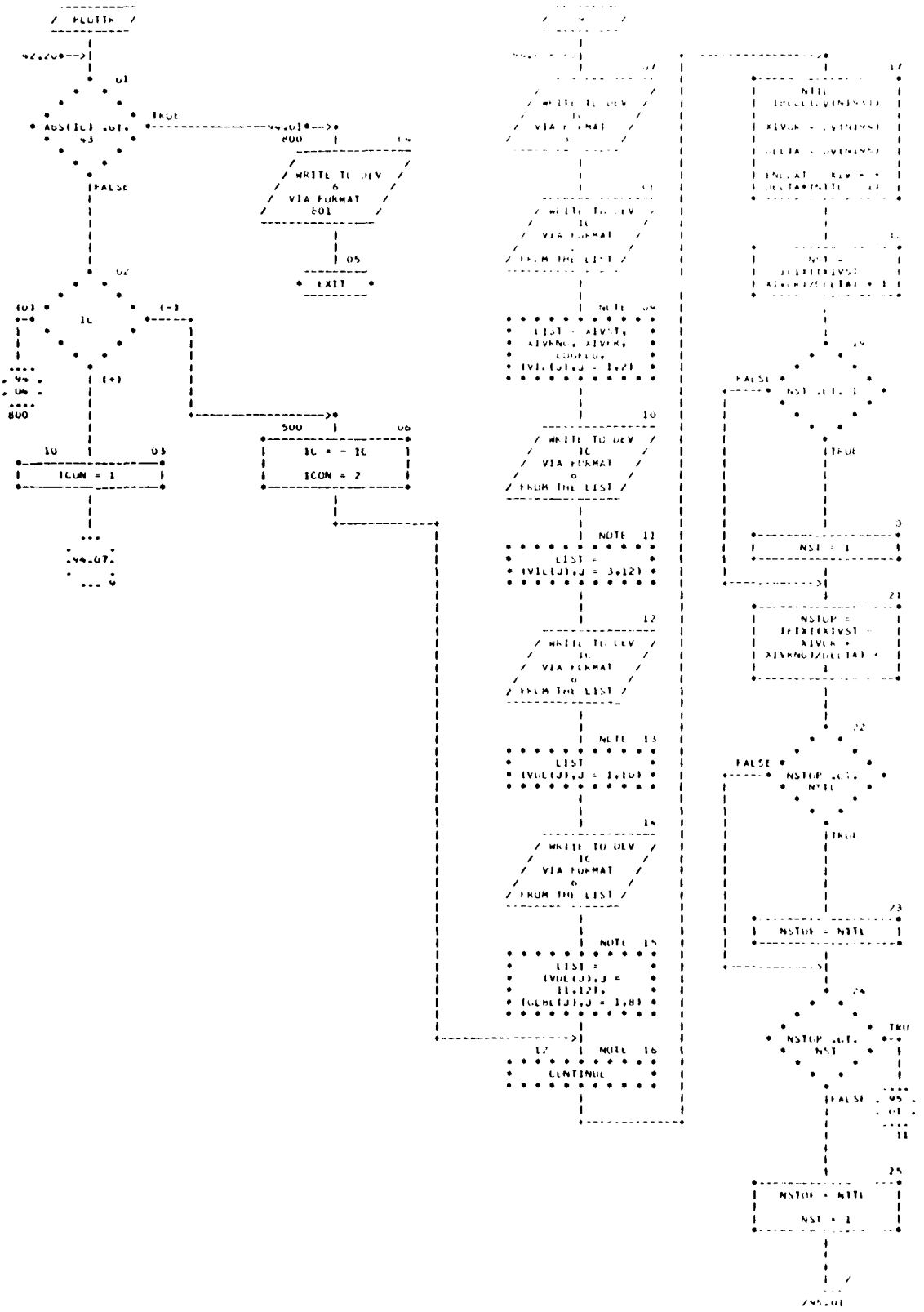
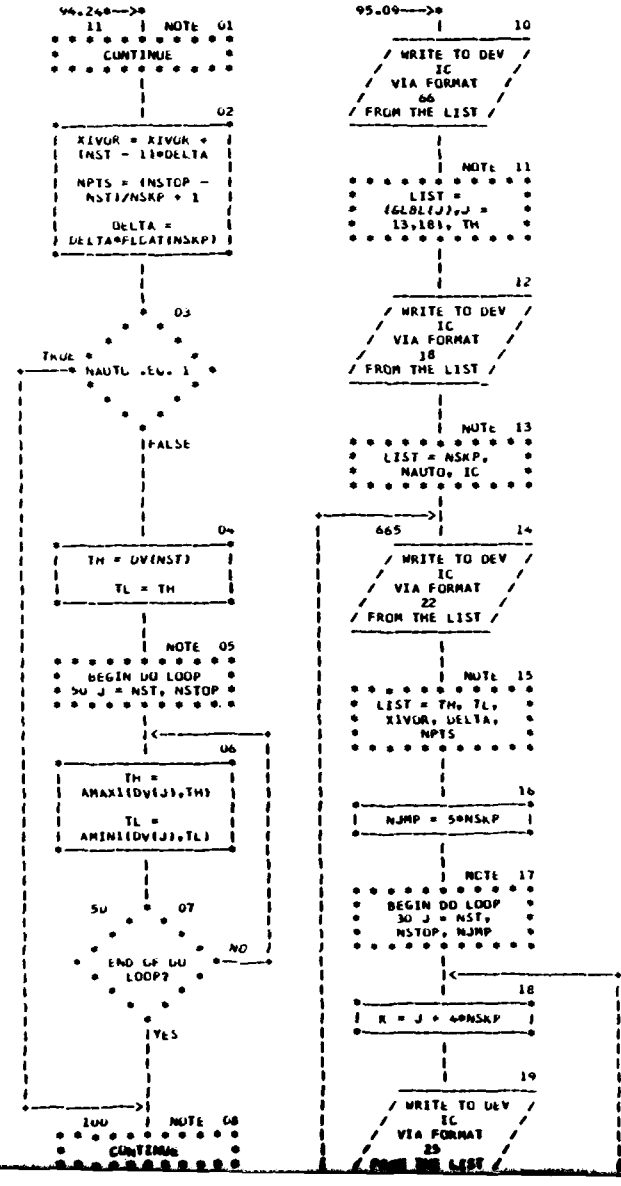


CHART TITLE - SUBROUTINE PLOTTR(DV)



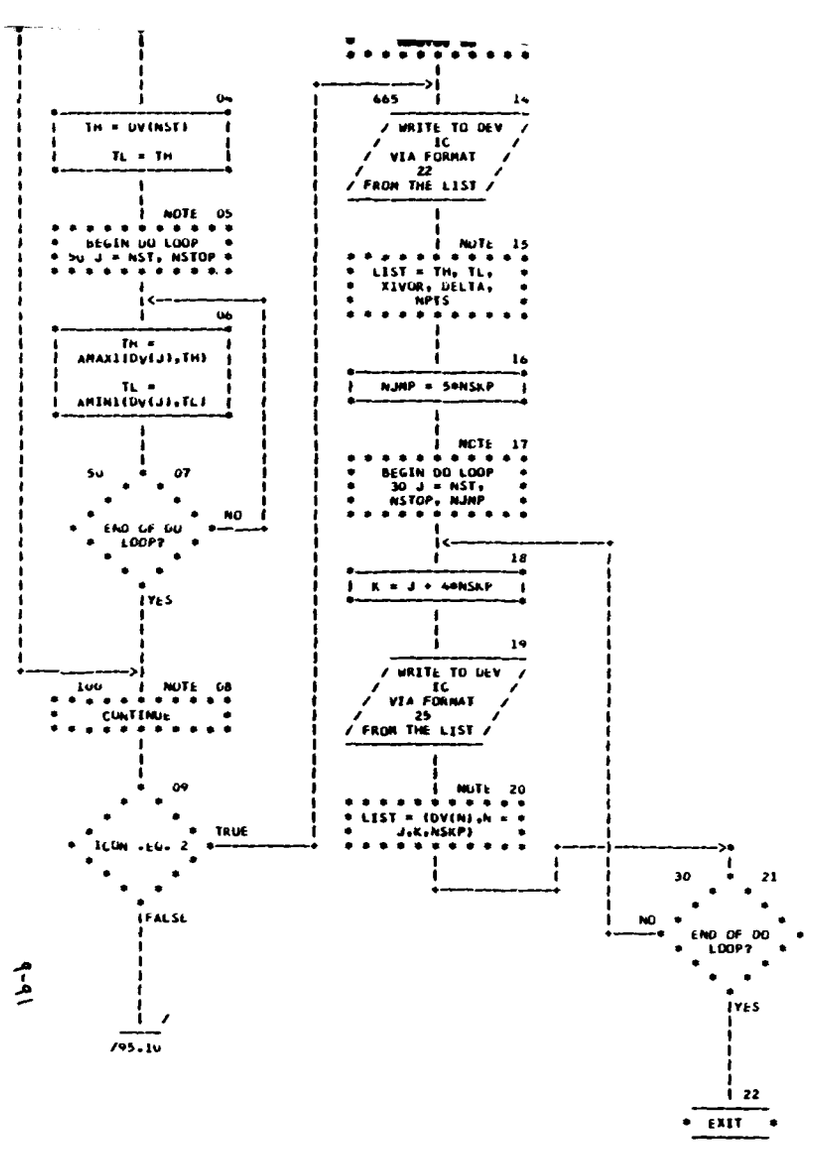
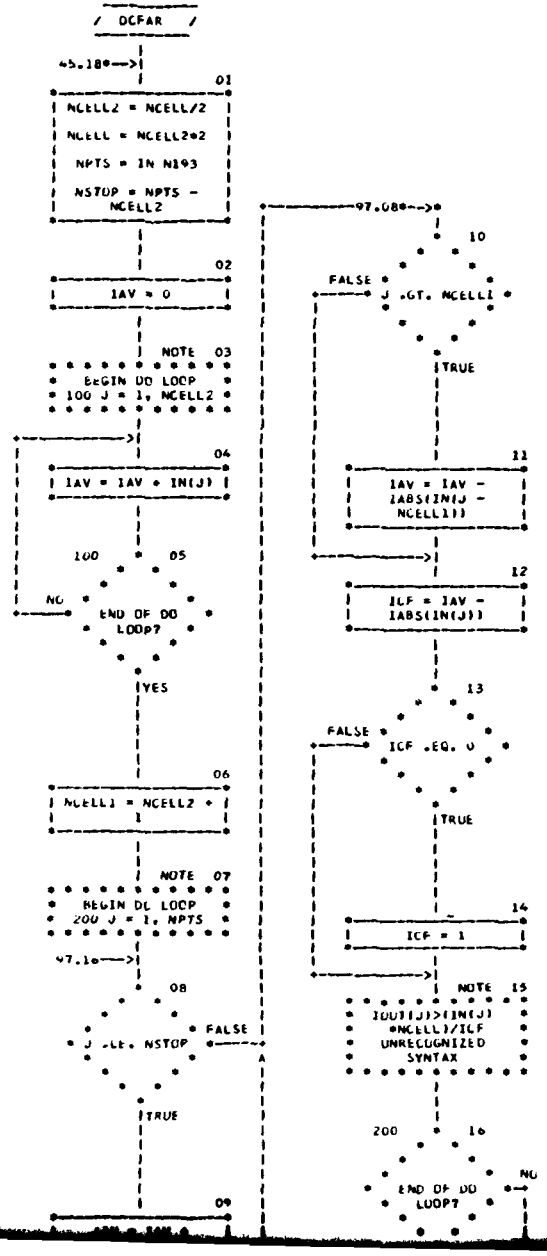
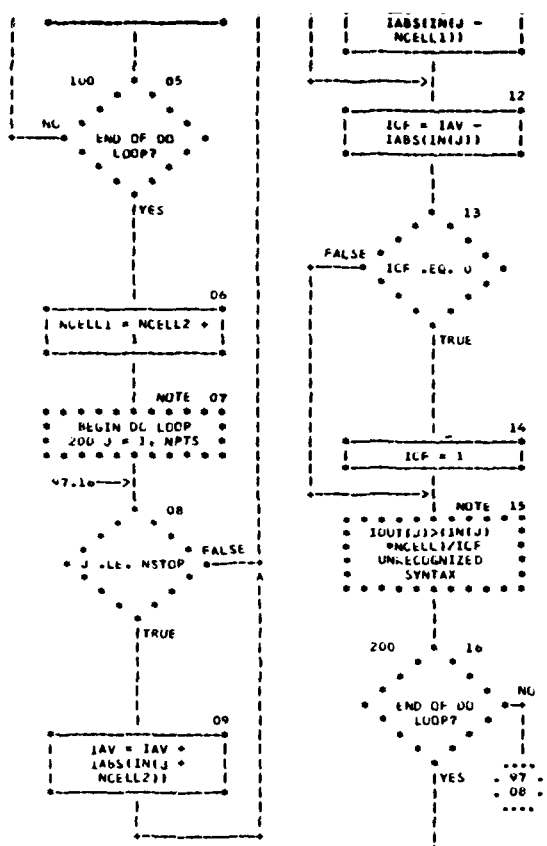

04
TH = DV(NST)
TL = TH
NOTE 05
BEGIN DO LOOP
DO J = NST, NSTOP
06
TH = AMAX1(DV(J),TH)
TL = AMIN1(DV(J),TL)
50
07
END OF DO LOOP?
NO
YES
100
NOTE 08
CONTINUE
09
ICON .EQ. 2
TRUE
FALSE
/95.10
665
14
WRITE TO DEV IC VIA FORMAT 22 FROM THE LIST
NOTE 15
LIST = TH, TL, XIVOR, DELTA, NPTS
16
NJMP = 5*NSKP
NOTE 17
BEGIN DO LOOP
30 J = NST, NSTOP, NJMP
18
K = J + 4*NSKP
19
WRITE TO DEV IC VIA FORMAT 25 FROM THE LIST
NOTE 20
LIST = (DV(N),N = J,K,NSKP)
30
21
NO
END OF DO LOOP?
YES
22
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(200),VIL(50),VDL(50),GLBL(50)
      EQUIVALENCE   (  BK1( 59), XIVST     ),(  BK1( 60), XIVRNG    ),
                    (  BK1( 61), XIVFR     ),(  BK1( 62), LOGFLG    ),
                    (  BK1( 63), NSKP      ),(  BK1( 64), NAUTO     ),
                    (  BK1( 65), TH        ),(  BK1( 66), TL        ),
                    (  BK1(113), IC        )
      DATA N193,N194,N195,N196/-3,-2,-1,0/
      DIMENSION DV(1)
3     FORMAT(' **    PUNCH CARD DATA OUTPUT ')
2     FORMAT(1H ,3E13.5,I13,2A6)
6     FORMAT(5H     ,10A6)
66     FORMAT(2H +,6A6,E15.6)
18     FORMAT( 1H ,3I13)
22    FORMAT(1P4E13.5,I13)
25    FORMAT(1P5E13.5)
801    FORMAT(' PLOT DATA FILE IMPROPERLY DESIGNATED...NO DATA',
       ' TRANSFERED')
```

CHART TITLE - SUBROUTINE DCFAR(IN,IOUT)




100
05
NO
END OF DO LOOP?
YES
06
NCELL1 = NCELL2 + 1
NOTE 07
BEGIN DO LOOP
200 J = 1, NPTS
47.1a
08
J .LE. NSTOP
FALSE
TRUE
09
IAV = IAV + IABS(IN(J + NCELL2))

IABS(IN(J - NCELL1))
12
ICF = IAV - IABS(IN(J))
13
FALSE
ICF .EQ. 0
TRUE
14
ICF = 1
NOTE 15
IOUT(J)=IN(J) *NCELL1/ICF UNRECOGNIZED SYNTAX
200
16
END OF DO LOOP?
NO
YES
97
08
17
IOUT(N193) = IN(N193)
IOUT(N194) = IN(N194)
IOUT(N195) = IN(N195)
IOUT(N196) = IN(N196)
18
EXIT

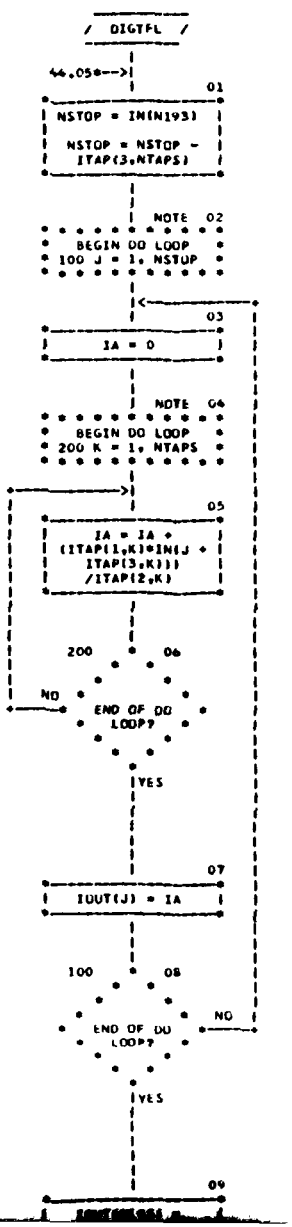
AUTOFLOW CHART SET - FWD/SCL RADSIM

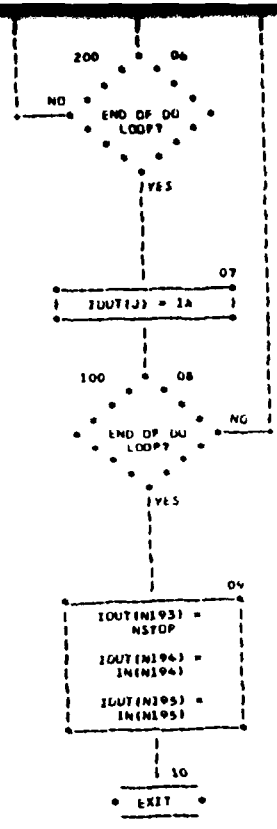
08/11/75

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/ BK1(200)
DIMENSION IN(1),IOUT(1)
EQUIVALENCE (BK1(170), NCELL
DATA N193,N194,N195,N196/-3,-2,-1,0/
```

CHART TITLE - SUBROUTINE DIGTFL(IN,IOUT)

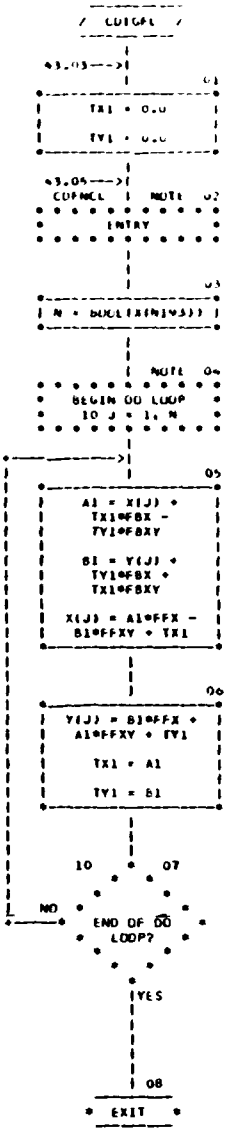




NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/BK1(200),ITAP(3,100)
DIMENSION IN(1),IOUT(1)
EQUIVALENCE (BK1(101), NTAPS
DATA N193,N194,N195,N196/-3,-2,-1,0/
```

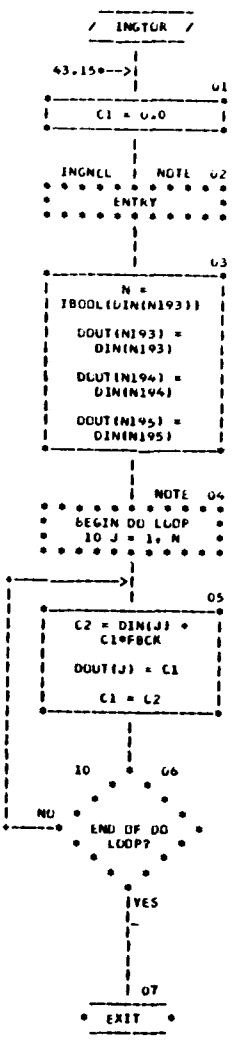
(MAKE FILL - SUBROUTINE COTGFL(X,Y)



NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/BK1(500)
EQUIVALENCE (BK1(68), FFX),(BK1(69), FFXY),
           (BK1(70), FBX),(BK1(71), FBXY)
DATA N193/-3/
DIMENSION X(1),Y(1)
```

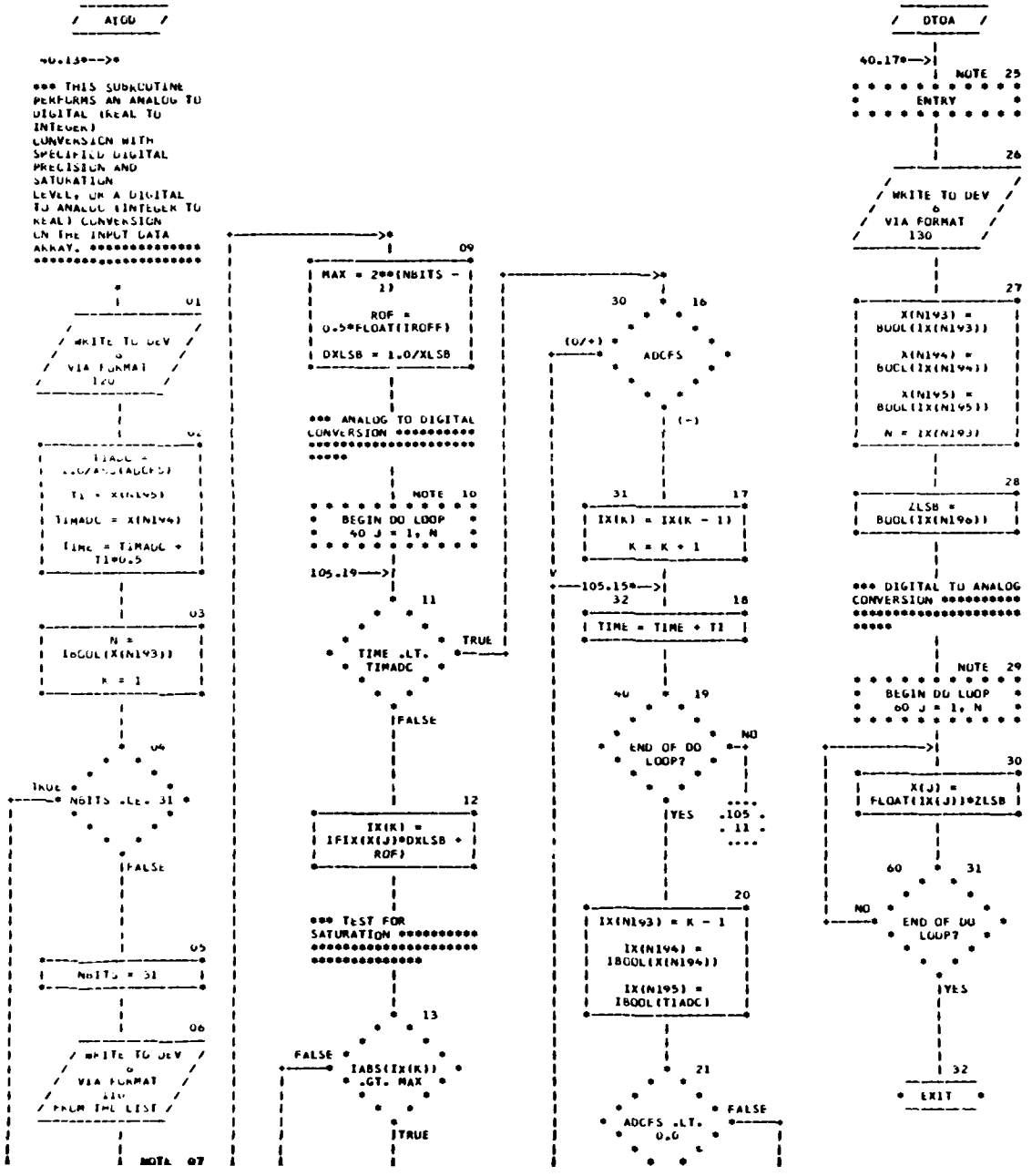
CHART TITLE - SUBROUTINE INGTOR(DIN,DOUT)



NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/BK1(500)
DIMENSION DIN(1),DOUT(1)
EQUIVALENCE (BK1(  21), IUMY        ), (BK1(  75), FBCK
DATA N193,N194,N195,N196/-3,-2,-1,0/
```

CHART TITLE - SUBROUTINE ATOD(X,IX)



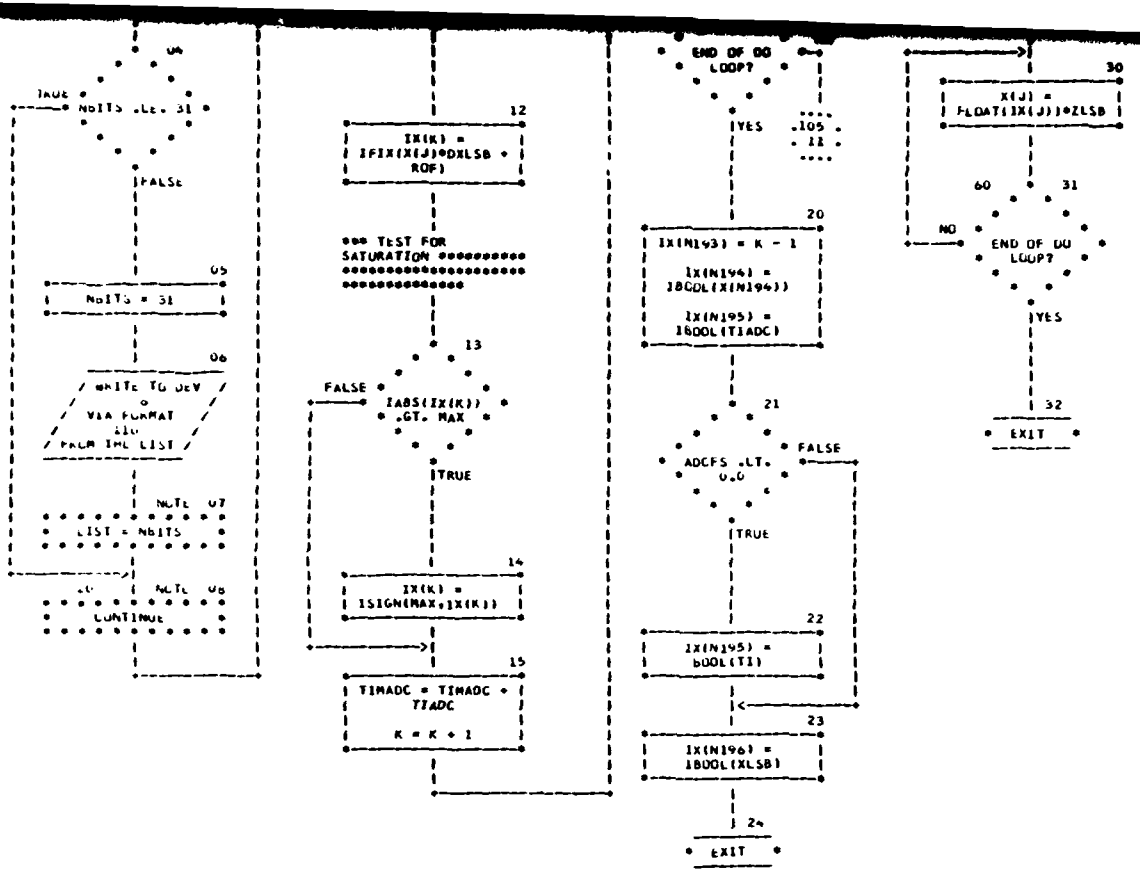
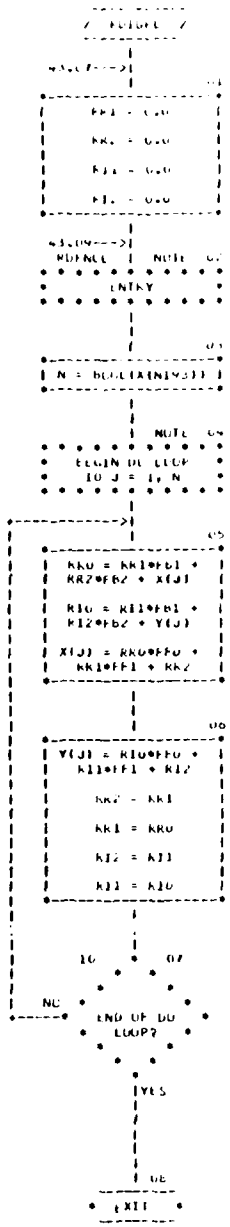

04
TRUE
NBITS .LE. 31
FALSE
05
NBITS = 31
06
WRITE TO DEV
VIA FORMAT
FROM THE LIST
NOTE 07
LIST = NBITS
NOTE 08
CONTINUE
12
IX(K) =
IFIX(X(J)*DXLSB +
ROF)
*** TEST FOR
SATURATION ***
13
FALSE
IABS(IX(K))
.GT. MAX
TRUE
14
IX(K) =
ISIGN(MAX,IX(K))
15
TIMADC = TIMADC +
TIADC
K = K + 1
END OF DO
LOOP?
YES
105
11
20
IX(N193) = K - 1
IX(N194) =
IBOOL(IX(N194))
IX(N195) =
IBOOL(TIADC)
21
ADCFS .LT.
0.0
FALSE
TRUE
22
IX(N195) =
BOOL(TI)
23
IX(N196) =
IBOOL(XLSB)
24
EXIT
30
X(J) =
FLOAT(IX(J))*ZLSB
60
31
NO
END OF DO
LOOP?
YES
32
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(500)
      DIMENSION X(1),IX(1)
      EQUIVALENCE (BK1(103), XLSB      ),
     1            (BK1(104), NBITS     ), (BK1(105), IROFF     )
     2,           (BK1(149), ADCFS     )
      DATA N193,N194,N195,N196/-3,-2,-1,0/
  110 FORMAT (' NBITS IS EXCESSIVE.  THE VALUE OF NBITS HAS BEEN SET TO
     1 ',I2 )
  120 FORMAT(/// 49X,'* * * * A TO D CONVERTER * * * *'/ / )
  130 FORMAT(/// 49X,'* * * * D TO A CONVERTER * * * *' / / )
```

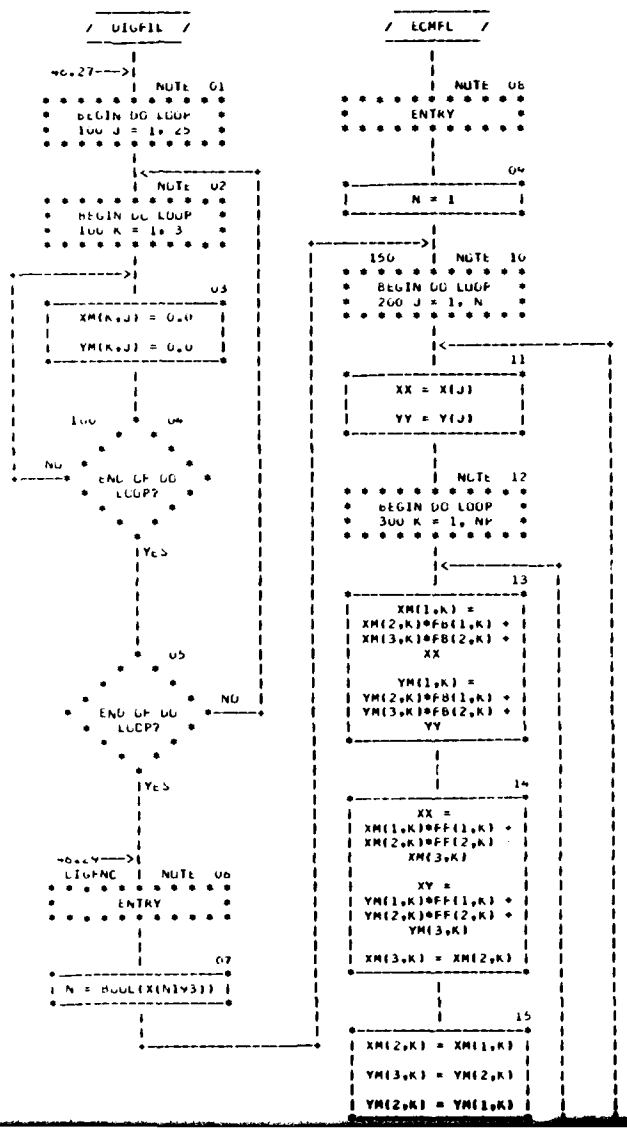
[illegible]



NON-PROCEDURAL STATEMENTS

```
COMMON/ELPIZ/PFIRST(500)
EQUIVALENCE (PFIRST(1), FF( 1) , (FIRST(501), FF( 1) , (PFIRST(701), FF( 1),
            (PFIRST(901), FF( 1)
DATA N1972/-3/
DIMENSION XF(1),YF(1)
```

CHART TITLE - SUBROUTINE DIGFIL(X,Y)



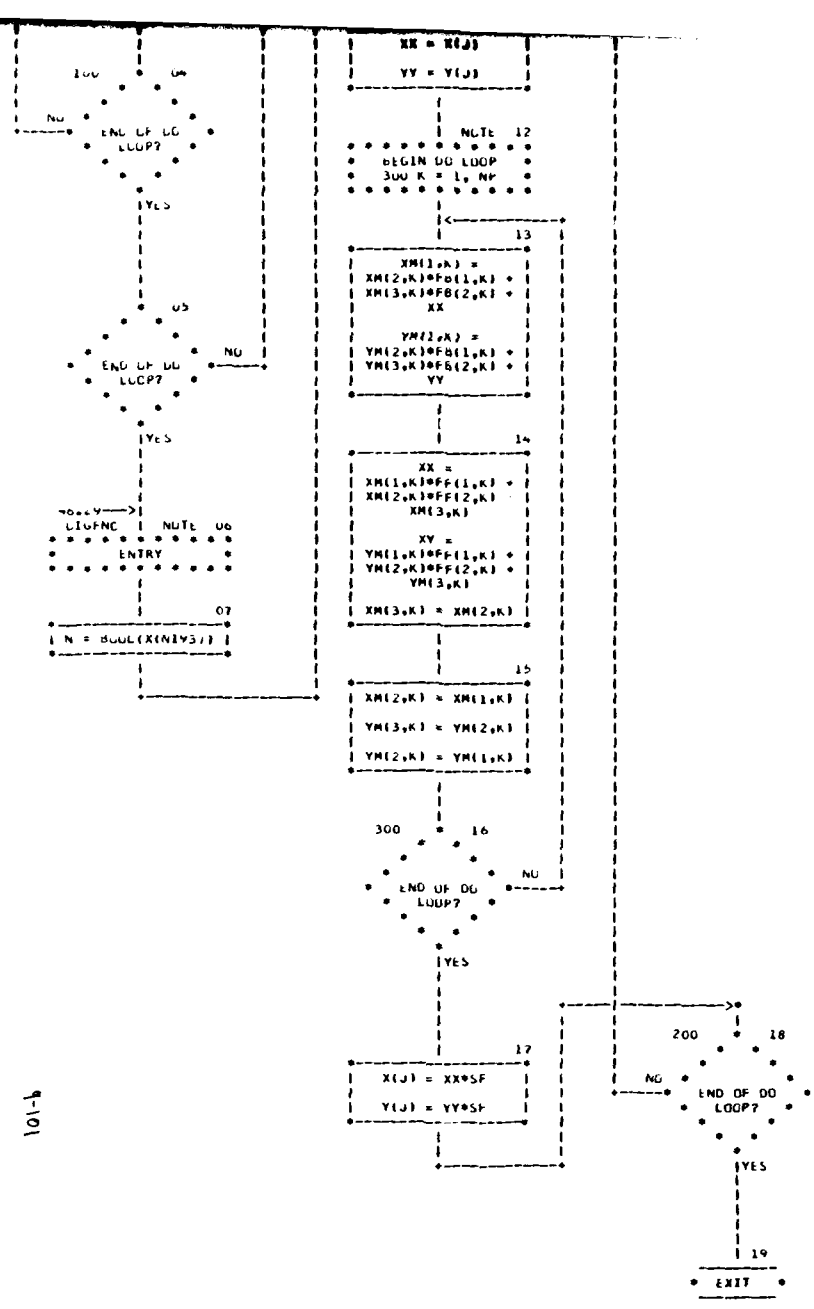
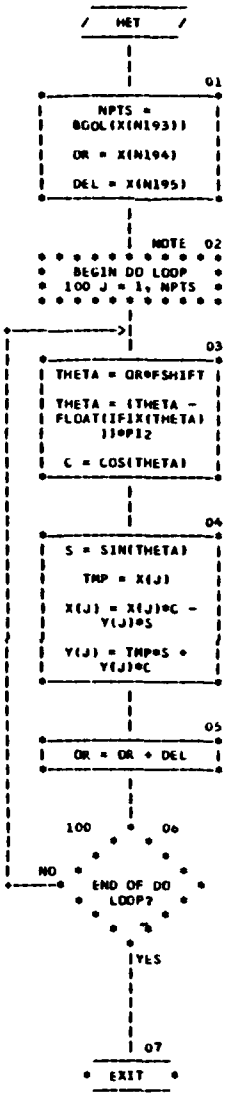

100
04
NO
END OF DO LOOP?
YES
05
END OF DO LOOP?
NO
YES
ENTRY
NOTE 06
07
N = BOOL(X(N1)Y3/)
XX = X(J)
YY = Y(J)
NOTE 12
BEGIN DO LOOP
300 K = 1, NP
13
XM(1,K) =
XM(2,K)*FB(1,K) +
XM(3,K)*FB(2,K) +
XX
YM(1,K) =
YM(2,K)*FB(1,K) +
YM(3,K)*FB(2,K) +
YY
14
XX =
XM(1,K)*FF(1,K) +
XM(2,K)*FF(2,K) +
XM(3,K)
XY =
YM(1,K)*FF(1,K) +
YM(2,K)*FF(2,K) +
YM(3,K)
XM(3,K) = XM(2,K)
15
XM(2,K) = XM(1,K)
YM(3,K) = YM(2,K)
YM(2,K) = YM(1,K)
300
16
END OF DO LOOP?
NO
YES
17
X(J) = XX*SF
Y(J) = YY*SF
200
18
NO
END OF DO LOOP?
YES
19
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/ BK1(200),FB(2,25),FF(2,25)
EQUIVALENCE (BK1(199), NP ) , (BK1( 74), SF )
DATA N193/-3/
DIMENSION X(1),Y(1),XM(3,25),YM(3,25)
```

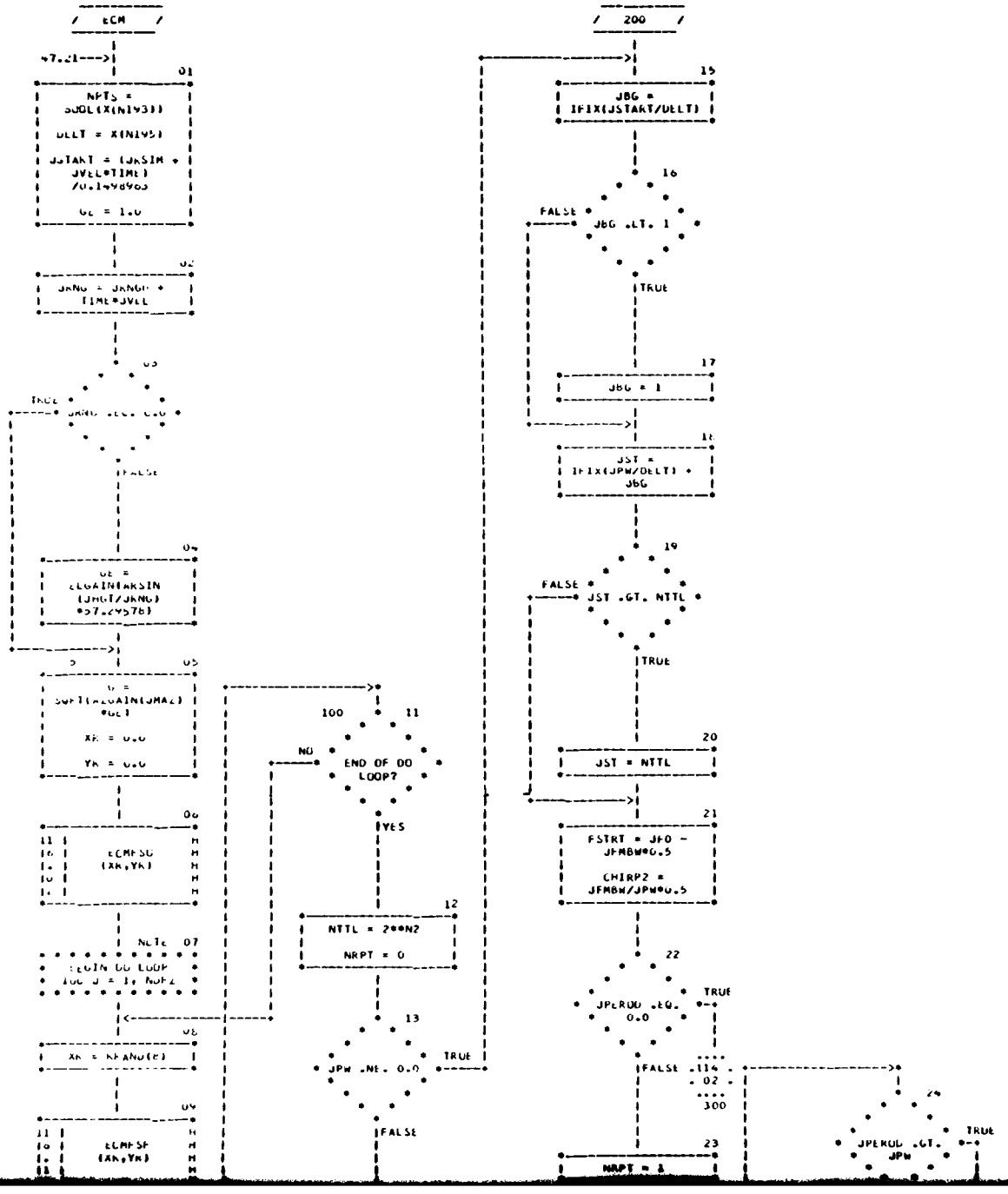
CHART TITLE - SUBROUTINE MET(X,Y)



NON-PROCEDURAL STATEMENTS

```
DIMENSION X(1),Y(1)
COMMON /BLK1/ VAR(500)
EQUIVALENCE (VAR(15), FSHIFT )
DATA N193,N194,N195,N196 /-3,-2,-1, 0/,PI2/6.283185/
```

CHART TITLE - SUBROUTINE ECM(X,Y)



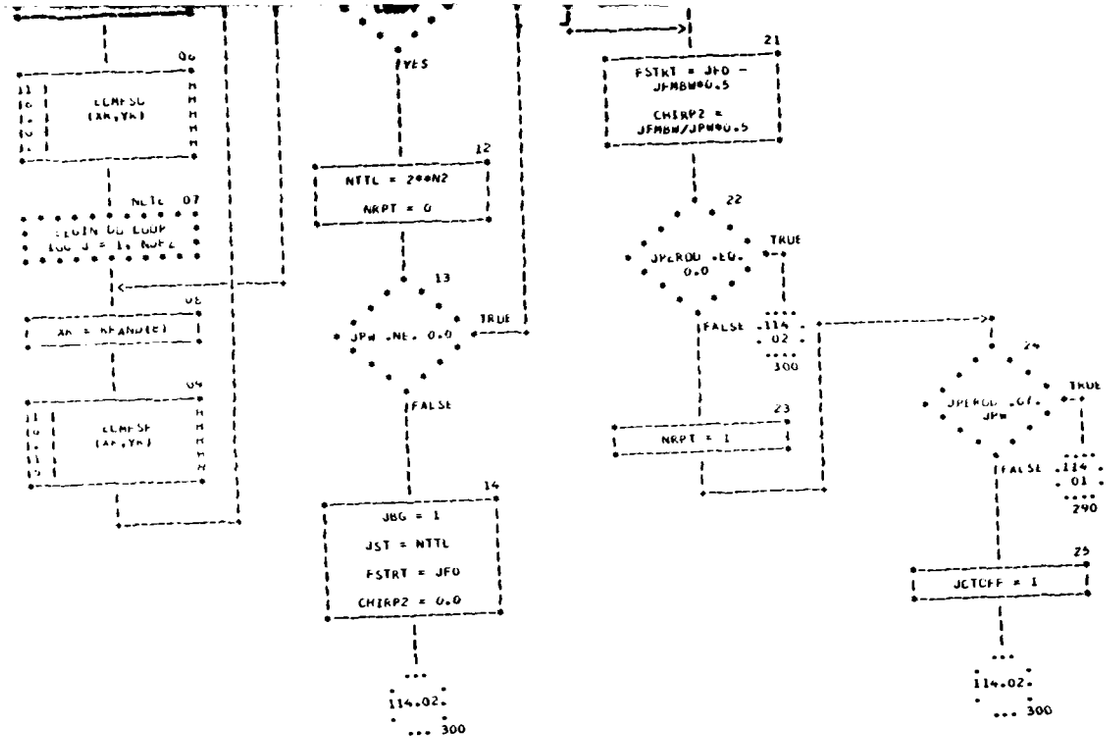
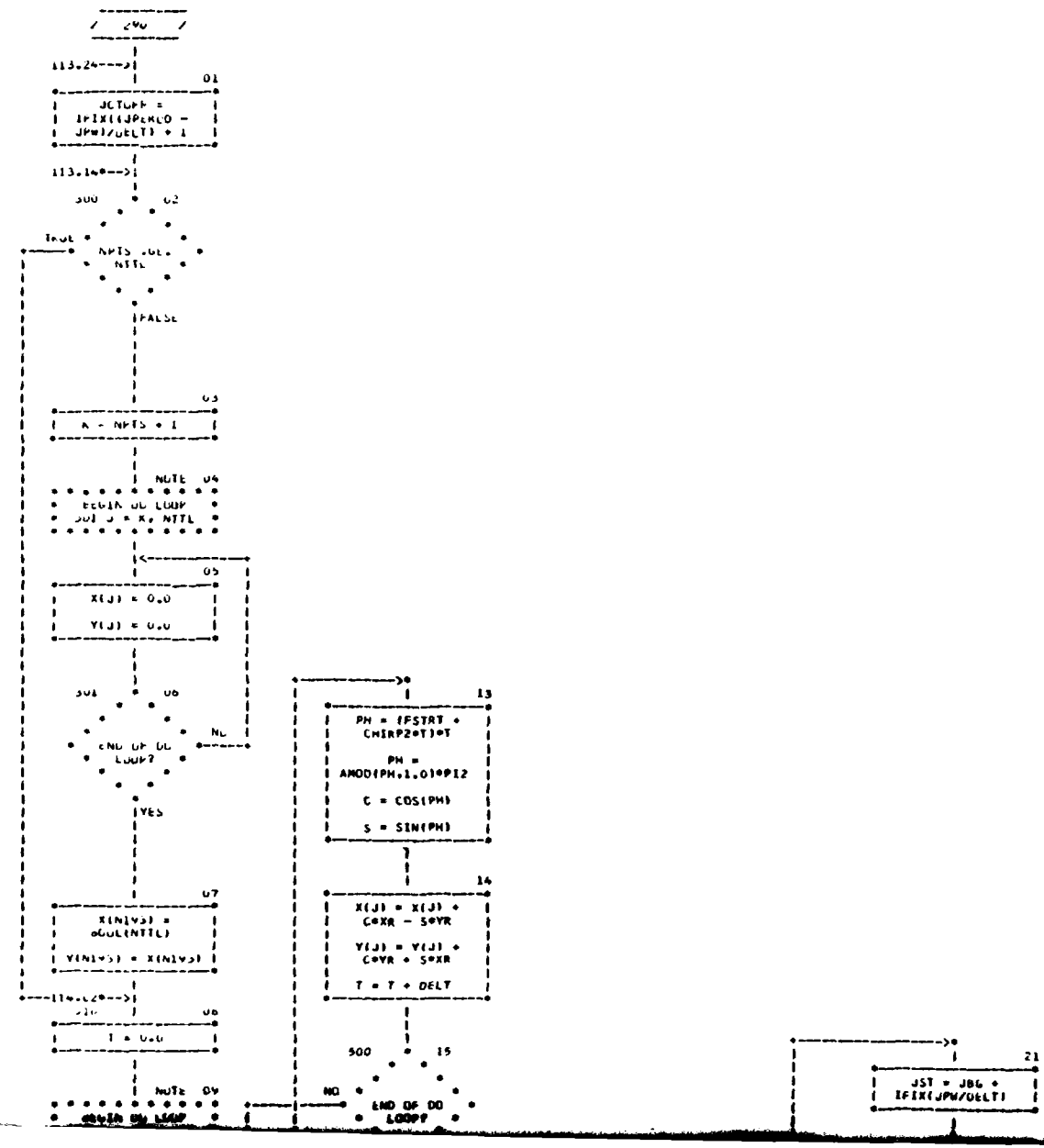
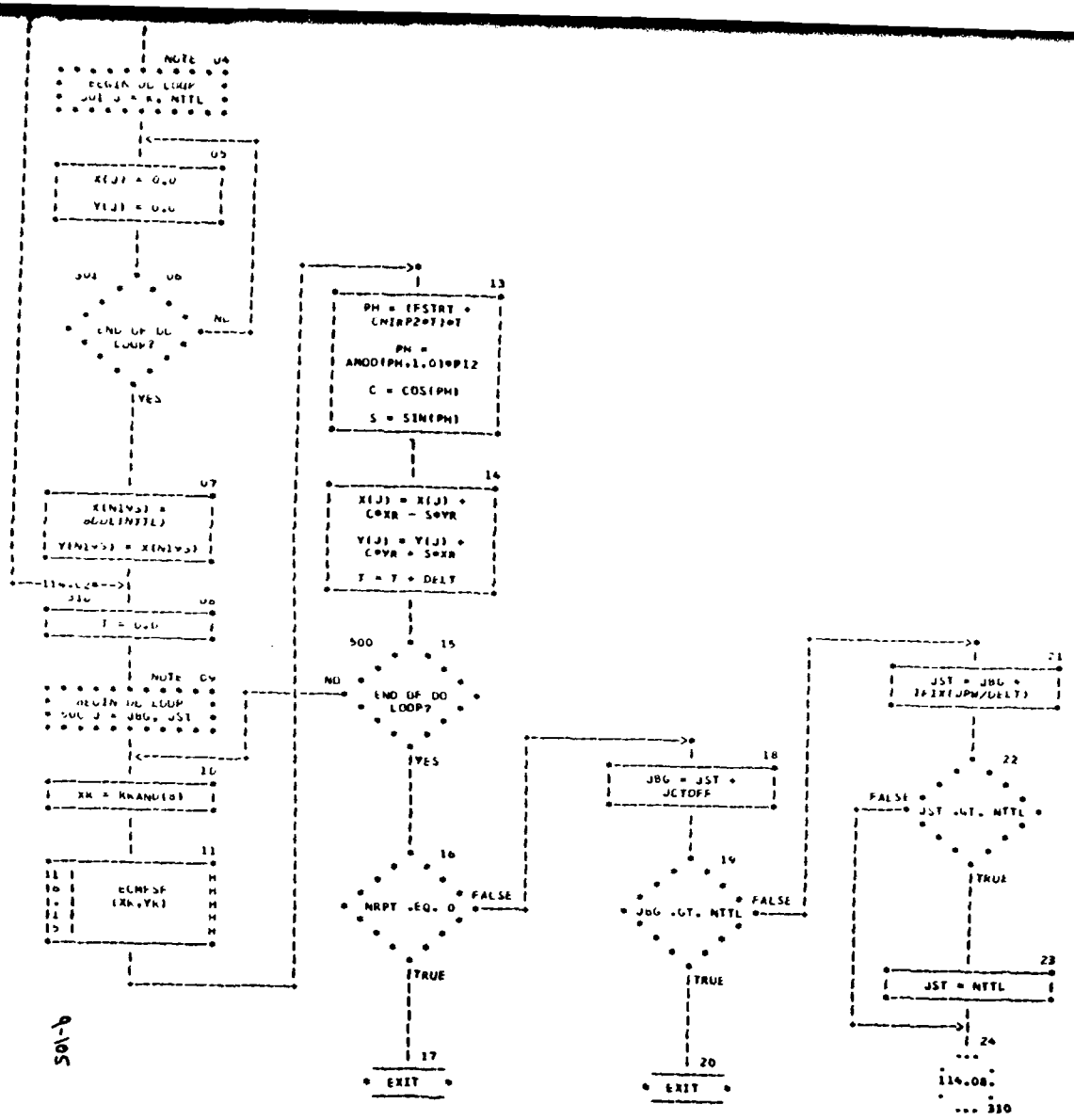

06
CLMPSG
(AR,YR)
NCTC 07
BEGIN DO LOOP
DO J = 1, NPTS
08
AR = RFAND(E)
09
CLMPSF
(AR,YR)
YES
12
NTTL = 2**N2
NRPT = 0
13
JPW .NE. 0.0
TRUE
FALSE
14
JBG = 1
JST = NTTL
FSTRT = JFD
CHIRP2 = 0.0
114.02
300
21
FSTRT = JFD -
JFMBW*0.5
CHIRP2 =
JFMBW/JPW*0.5
22
JPEROD .EQ.
0.0
TRUE
FALSE
114
02
300
23
NRPT = 1
24
TRUE
FALSE
114
01
290
25
JCTOFF = 1
114.02
300

CHART TITLE - SUBROUTINE ECM(X,Y)



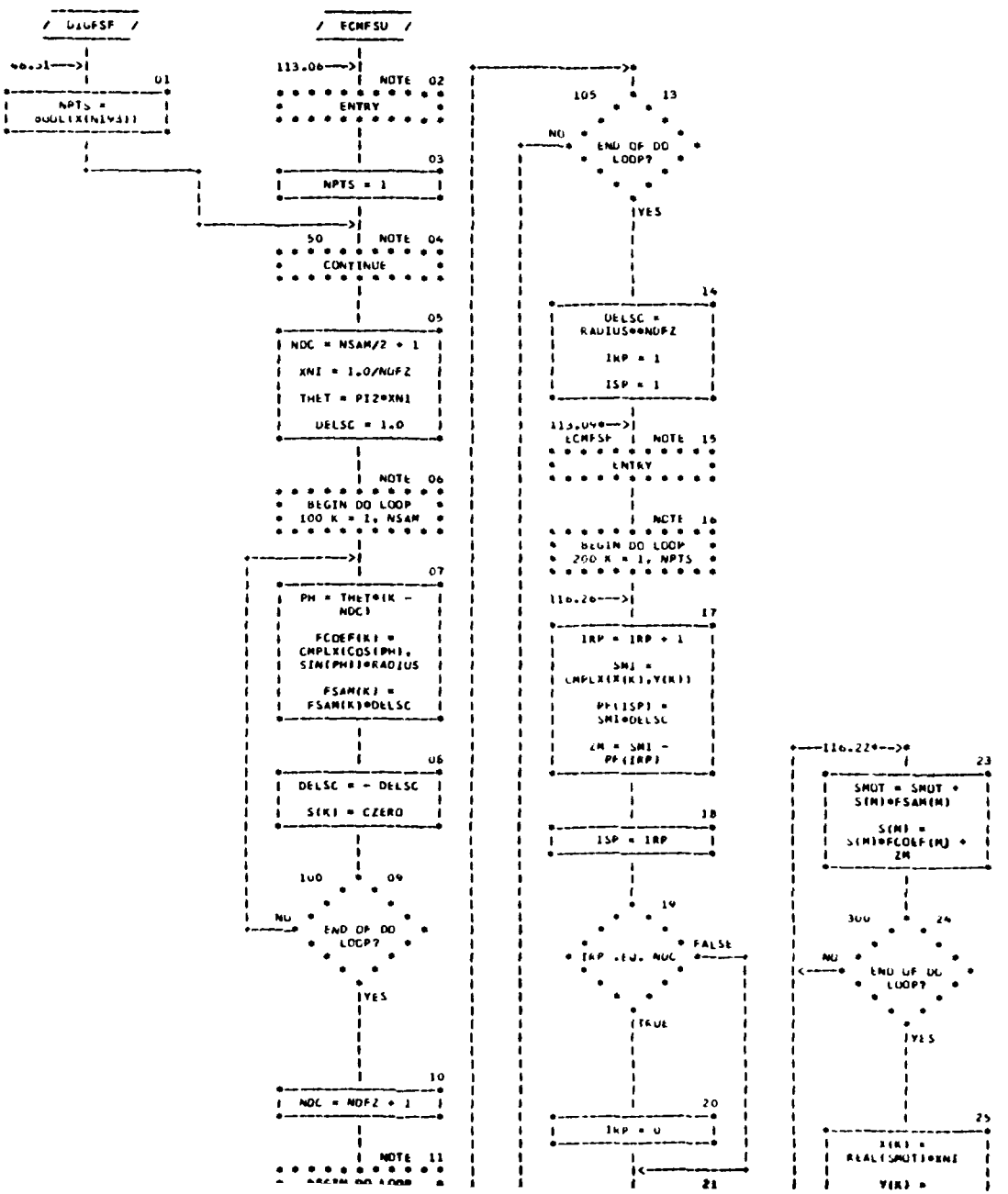

NOTE 04
BEGIN DO LOOP
DO J = 1, NTTL
05
X(J) = 0.0
Y(J) = 0.0
DO
END OF DO LOOP?
NO
YES
07
X(NTTL) = RGUESS(NTTL)
Y(NTTL) = X(NTTL)
08
T = 0.0
NOTE 09
BEGIN DO LOOP
DO J = JBG, JST
10
XK = KRAND(0)
11
CMPSF (XK,YK)
13
PH = (FSTRT + CMIAP2*T)*T
PH = AMOD(PH,1.0)*P12
C = COS(PH)
S = SIN(PH)
14
X(J) = X(J) + C*XR - S*YR
Y(J) = Y(J) + C*YR + S*XR
T = T + DELT
500
15
END OF DO LOOP?
NO
YES
16
NRPT .EQ. 0
FALSE
TRUE
17
EXIT
18
JBG = JST + JCTOFF
19
JBG .GT. NTTL
FALSE
TRUE
20
EXIT
21
JST = JBG + IFIX(JPM/DELT)
22
JST .GT. NTTL
FALSE
TRUE
23
JST = NTTL
24
...
114.08.
... 330

S01-6

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(500)
      COMMON/BLKRND/ DMY(8),YR
      EQUIVALENCE (BK1( 16), TIME  ) , (BK1(171), JRNGO ),
     1            (BK1(172), JRSIM ) , (BK1(173), JMAZ ),
     2            (BK1(174), JHGT  ) , (BK1(175), JERP ),
     3            (BK1(176), JFMBW ) , (BK1(177), JPW  ),
     4            (BK1(178), JFO   ) ,
     5            (BK1(156), JVEL  ) , (BK1(157), JPEROD)
     6           ,(BK1(  1), N2    ) , (BK1(197), NDFZ  )
      DIMENSION X(1),Y(1)
      DATA N193,N194,N195/-3,-2,-1/,PI2/6.2831853/
      REAL JRNG,JRSIM,JMAZ,JHGT,JERP,JFMBW,JPW,JFO
      REAL JVEL,JPEROD,JSTART,JRNGO
```

CHART TITLE - SUBROUTINE DIGFSF(X,Y)



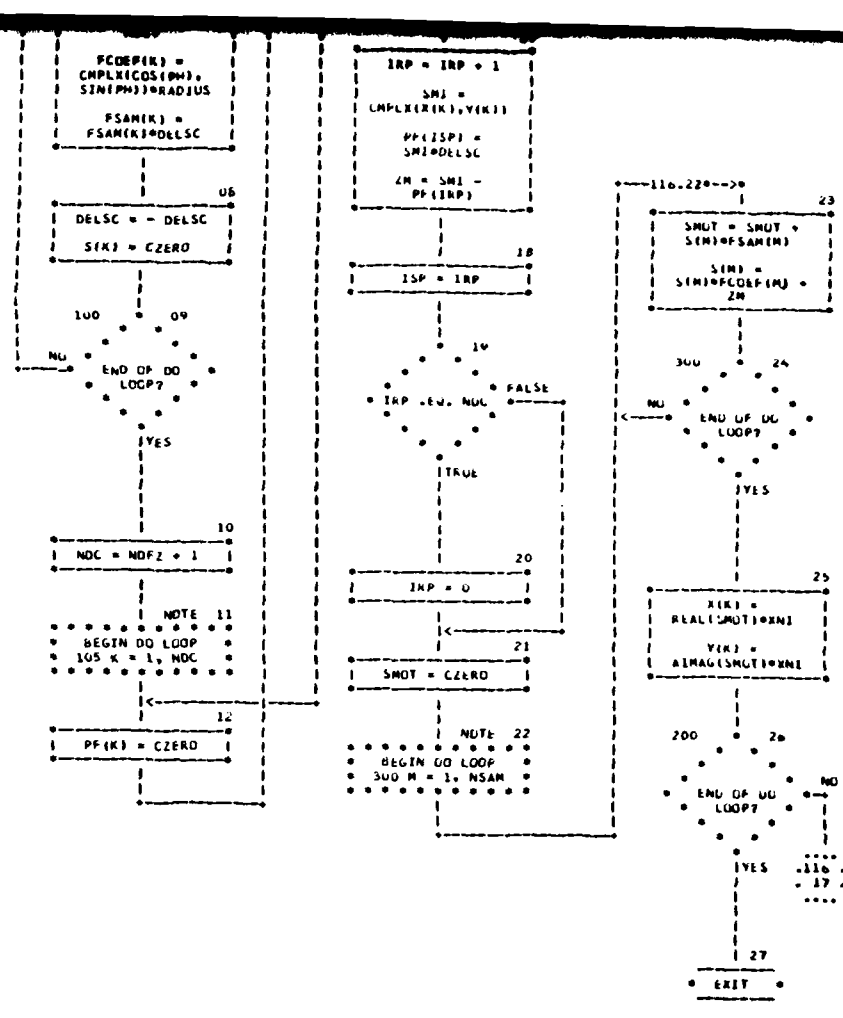

FCOEF(K) = CMPLX(COS(PH), SIN(PH))*RADIUS
FSAM(K) = FSAM(K)*DELSC
06
DELSC = - DELSC
S(K) = CZERO
100
09
NO
END OF DO LOOP?
YES
10
NDC = NDFZ + 1
NOTE 11
BEGIN DO LOOP 105 K = 1, NDC
12
PF(K) = CZERO
IRP = IRP + 1
SMJ = CMPLX(XI(K),YI(K))
PF(ISP) = SMJ*DELSC
ZM = SMJ - PF(IRP)
18
ISP = IRP
19
IRP .EQ. NDC
FALSE
TRUE
20
IRP = 0
21
SMOT = CZERO
NOTE 22
BEGIN DO LOOP 300 M = 1, NSAM
116.22
23
SMOT = SMOT + S(M)*FSAM(M)
S(M) = S(M)*FCOEF(M) + ZM
300
24
NO
END OF DO LOOP?
YES
25
X(K) = REAL(SMOT)*XNI
Y(K) = AIMAG(SMOT)*XNI
200
26
END OF DO LOOP?
NO
YES
116.17
27
EXIT

CHART TITLE NON PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ VAR(200),FSAM(100)
      EQUIVALENCE (VAR(195), RADIUS ) , (VAR(196), NSAM ),
                  (VAR(197), NDFZ   )
      COMPLEX FSAM,PF(256),FCOEF(100),S(100)
      COMPLEX SMI,SMCT,ZM,CZERO/(0.0,0.0)/
      DIMENSION X(1),Y(1)
      DATA NINE/-9/,PI/6.28318531/
```

08/11/79 AUTOFLOW CHART SET - FMC/SEE RADSIN

CHART TITLE - SUBROUTINE TARGET(X,Y)

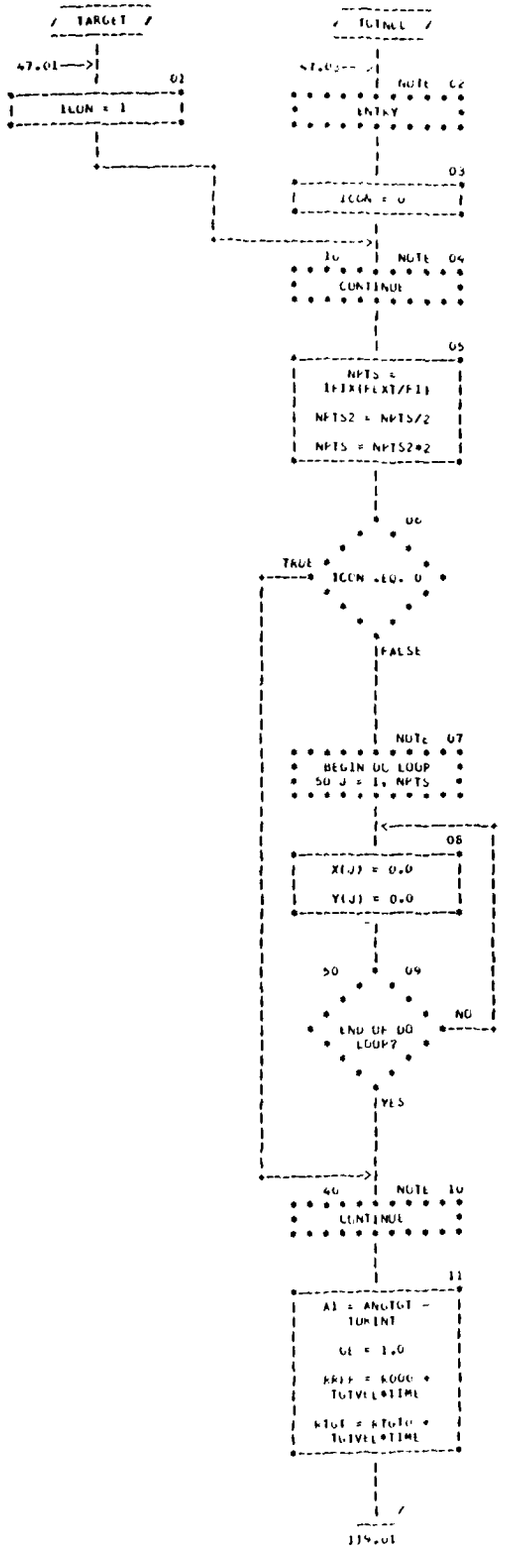
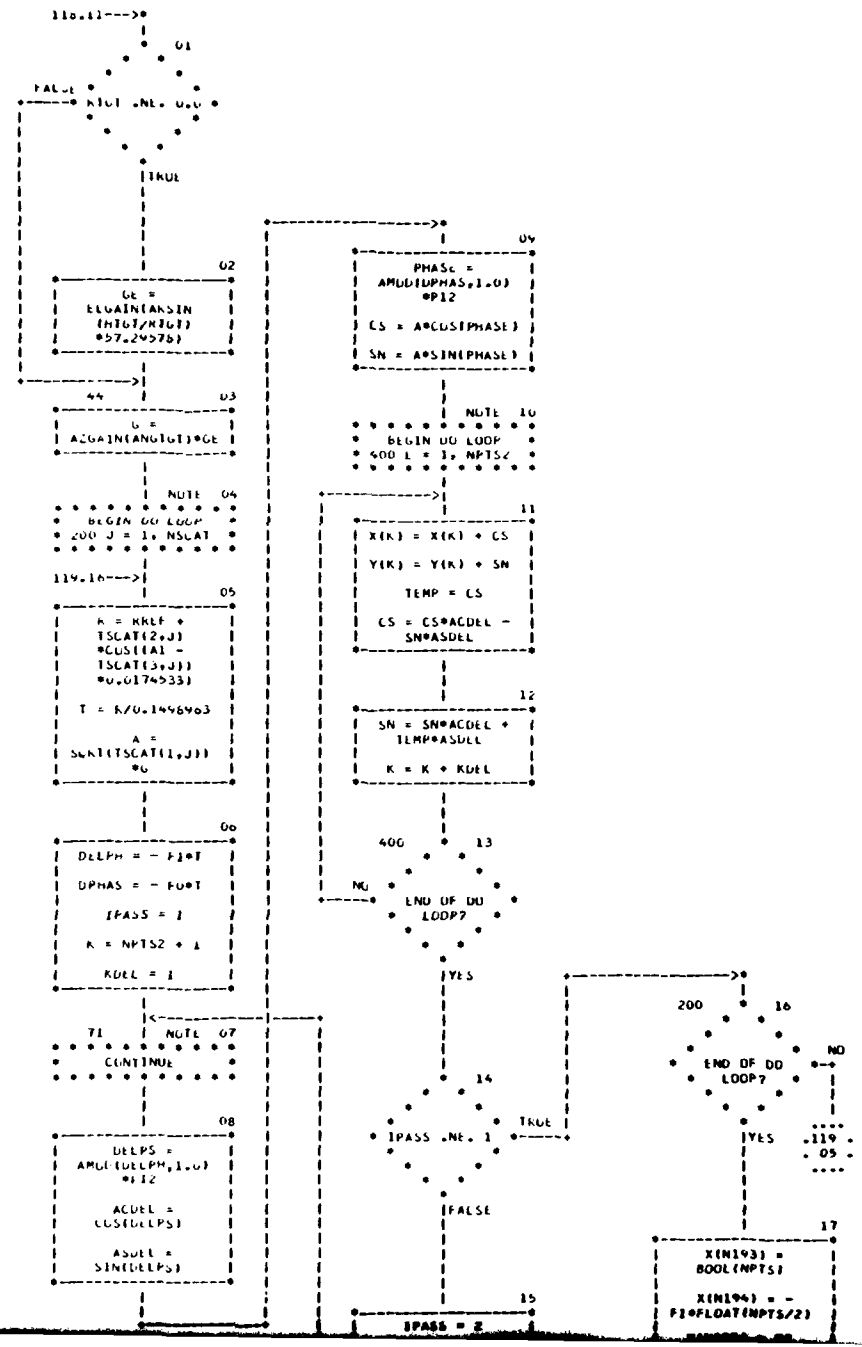


CHART TITLE - SUBROUTINE TARGET(X,Y)



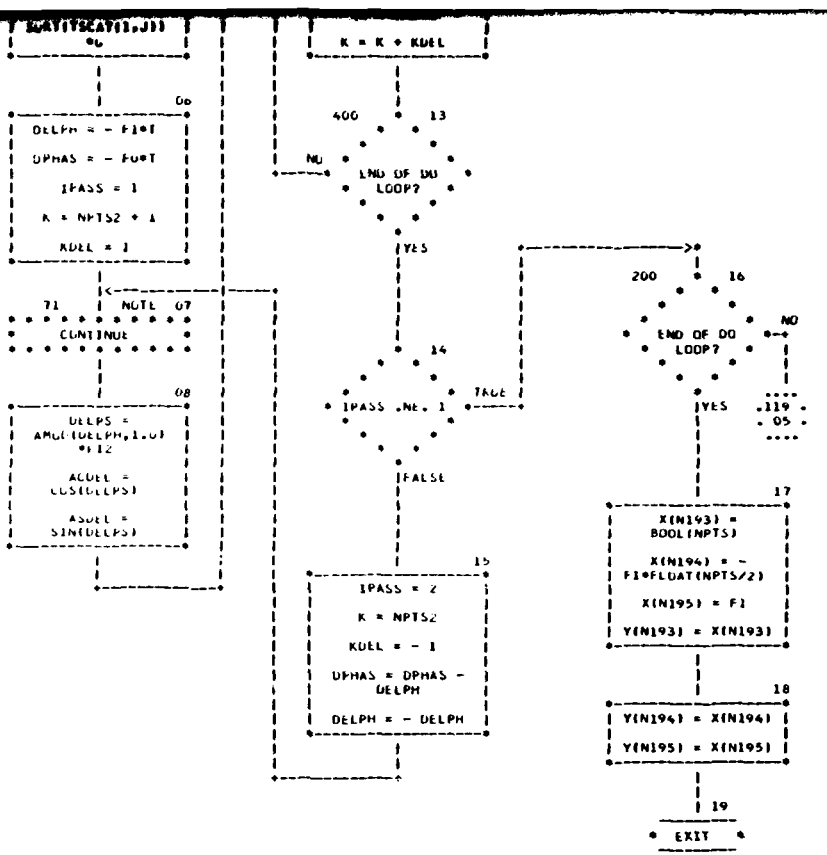

06
DELPH = - FI*I
DPHAS = - FU*I
IPASS = 1
K = NPTS2 + 1
KDEL = 1
71
CONTINUE
NOTE 07
08
DELPS = AMOD(DELPH,1.0) *6.12
ACOEL = COS(DELPS)
ASOEL = SIN(DELPS)
K = K + KDEL
400
13
NO
END OF DO LOOP?
YES
14
IPASS .NE. 1
TRUE
FALSE
15
IPASS = 2
K = NPTS2
KDEL = - 1
DPHAS = DPHAS - DELPH
DELPH = - DELPH
200
16
NO
END OF DO LOOP?
YES
.119
.05
17
X(N193) = BOOL(NPTS)
X(N194) = - FI*FLOAT(NPTS/2)
X(N195) = FI
Y(N193) = X(N193)
18
Y(N194) = X(N194)
Y(N195) = X(N195)
19
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(200),TSCAT(3,100)
      EQUIVALENCE   (  BK1(  3), FO        ),(  BK1(  4), FEXT      ),
                    (  BK1( 11), FI        ),
                    (  BK1( 21), IDMY      ),(  BK1(106), HTGT      ),
                    (  BK1(107), RTGTO     ),(  BK1(108), ANGTGT    ),
                    (  BK1(109), TCRINT    ),(  BK1(110), RODD      ),
                    (  BK1(111), NSCAT     ),(  BK1(112), TGTVEL    )
     ,              (  BK1( 16), TIME      )
      DIMENSION X(1) , Y(1)
       DATA N193,N194,N195,N196/-3,-2,-1,0/
      DATA PI2/6.2831853/
```

CHART TITLE = SUBROUTINE CLUTTK(XAZ,YE,GAZ,GEL,*)

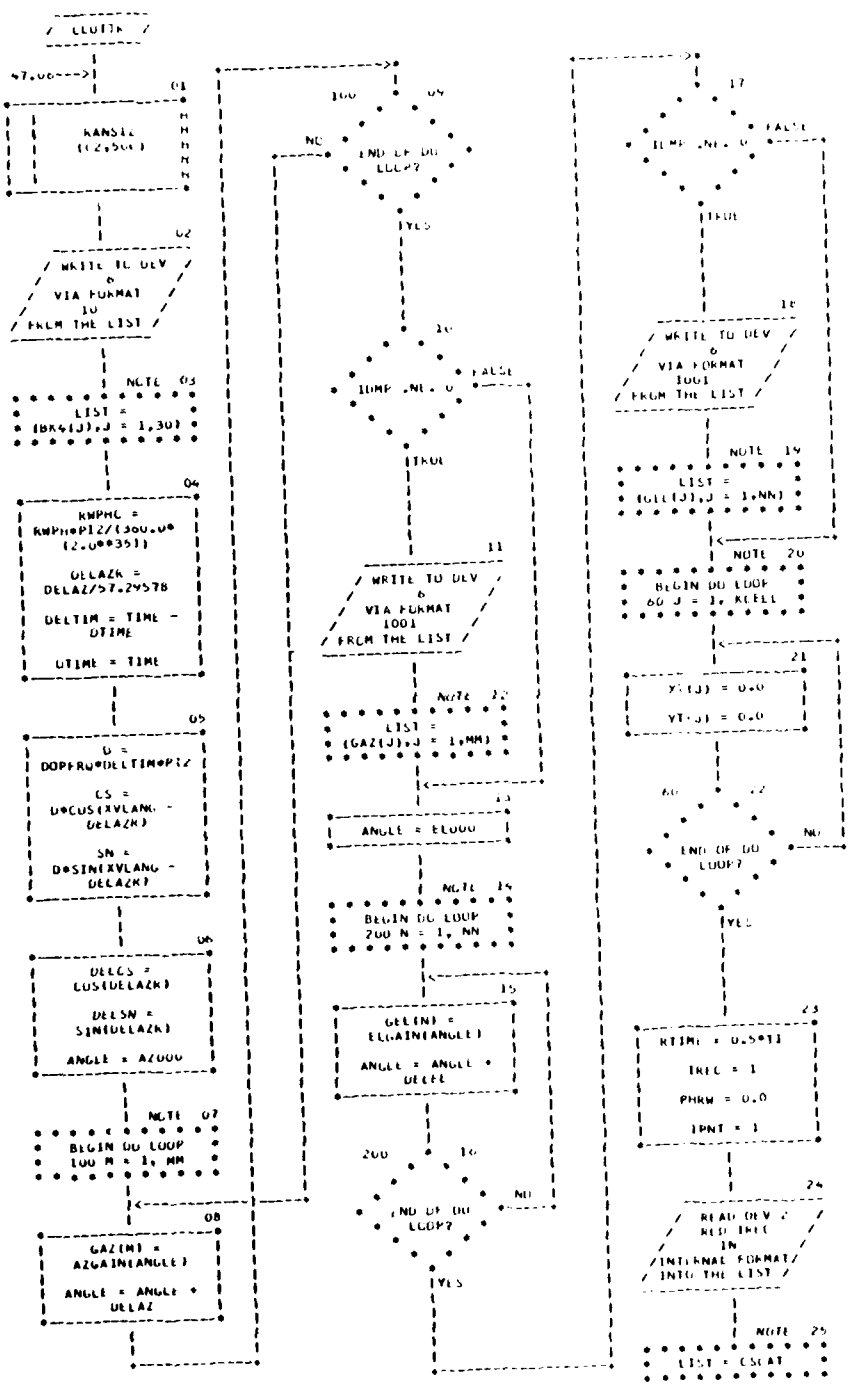
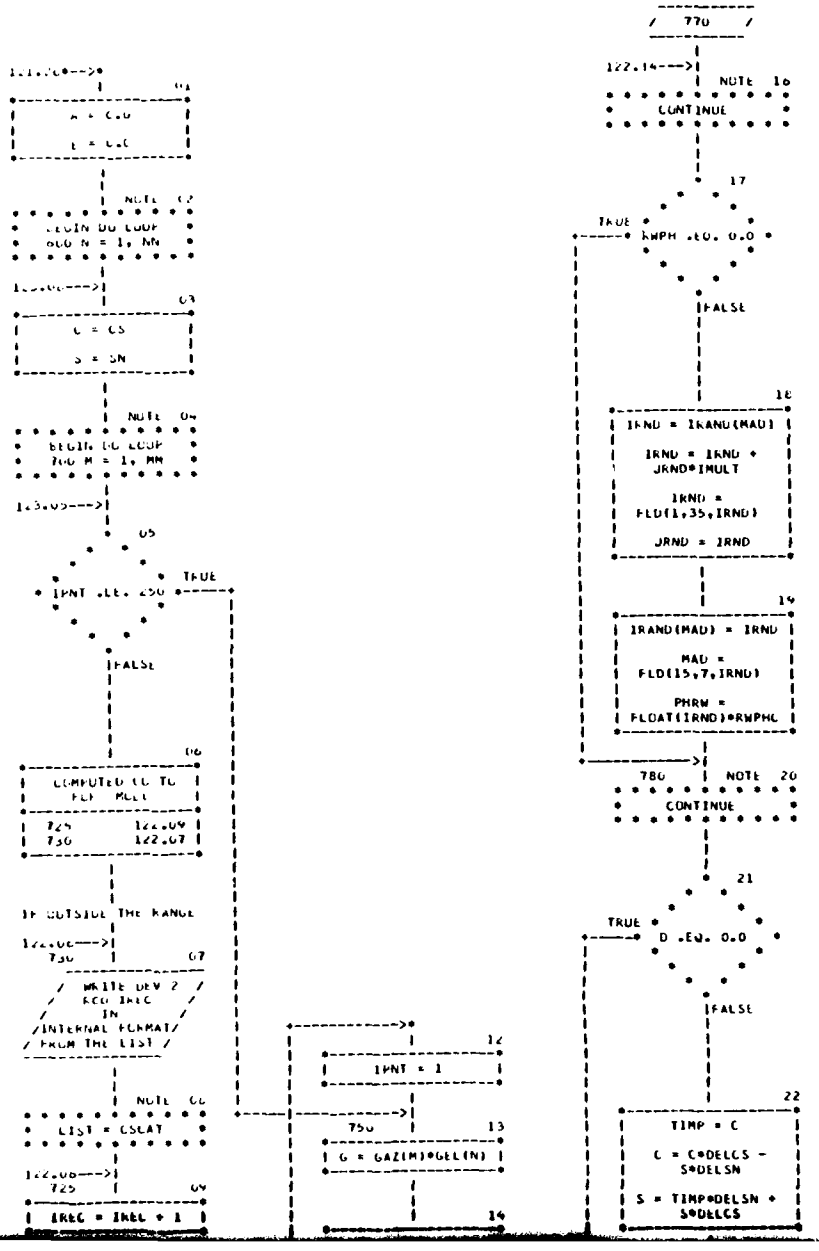

CLUTTK
47,00
01
KANSAS (02,500)
02
WRITE TO DEV 6 VIA FORMAT 10 FROM THE LIST
NOTE 03
LIST = (BR4(J),J = 1,30)
04
RMPHC = RMPH*PI2/(300.0* (2.0**35))
DELAZR = DELAZ/57.29578
DELTIM = TIME - OTIME
OTIME = TIME
05
D = DOPFRQ*DELTIM*PI2
CS = D*COS(XVLANG - DELAZR)
SN = D*SIN(XVLANG - DELAZR)
06
DELCS = COS(DELAZR)
DELSN = SIN(DELAZR)
ANGLE = AZ000
NOTE 07
BEGIN DO LOOP 100 M = 1, MM
08
GAZ(M) = AZGAIN(ANGLE)
ANGLE = ANGLE + DELAZ
100
09
END OF DO LOOP?
NO
YES
10
IDMP .NE. 0
FALSE
TRUE
11
WRITE TO DEV 6 VIA FORMAT 1001 FROM THE LIST
NOTE 12
LIST = (GAZ(J),J = 1,MM)
13
ANGLE = EL000
NOTE 14
BEGIN DO LOOP 200 N = 1, NN
15
GEL(N) = ELGAIN(ANGLE)
ANGLE = ANGLE + DELEL
200
16
END OF DO LOOP?
NO
YES
17
IDMP .NE. 0
FALSE
TRUE
18
WRITE TO DEV 6 VIA FORMAT 1001 FROM THE LIST
NOTE 19
LIST = (GEL(J),J = 1,NN)
NOTE 20
BEGIN DO LOOP 60 J = 1, KCELL
21
YE(J) = 0.0
YE(J) = 0.0
60
22
END OF DO LOOP?
NO
YES
23
RTIME = 0.5*TI
IREC = 1
PHRW = 0.0
IPNT = 1
24
READ DEV 2 REC IREC IN INTERNAL FORMAT INTO THE LIST
NOTE 25
LIST = CSCAT
NOTE 26
BEGIN DO LOOP 500 K = 1, KK
RETURN 1
RETURN 2
RETURN 3
RETURN 4
RETURN 5
RETURN 6
RETURN 7
RETURN 8
RETURN 9
RETURN 10
RETURN 11
RETURN 12
RETURN 13
RETURN 14
RETURN 15
RETURN 16
RETURN 17
RETURN 18
RETURN 19
RETURN 20
RETURN

CHART TITLE - SUBROUTINE CCUTINSAT,VT,DAZ,DEL,*)



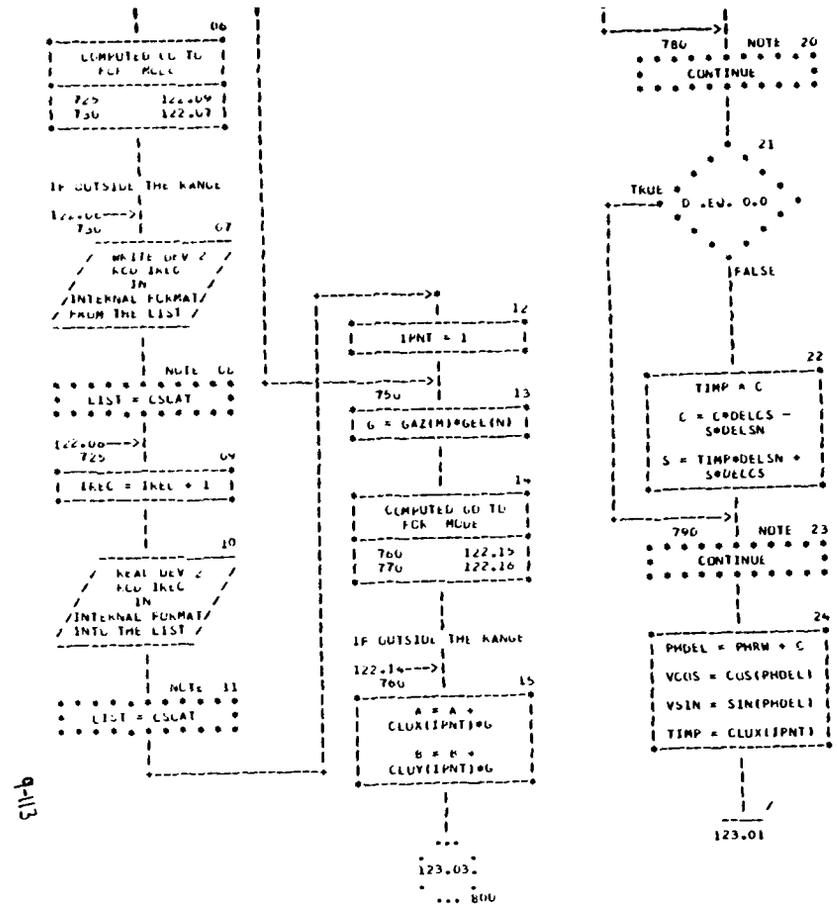
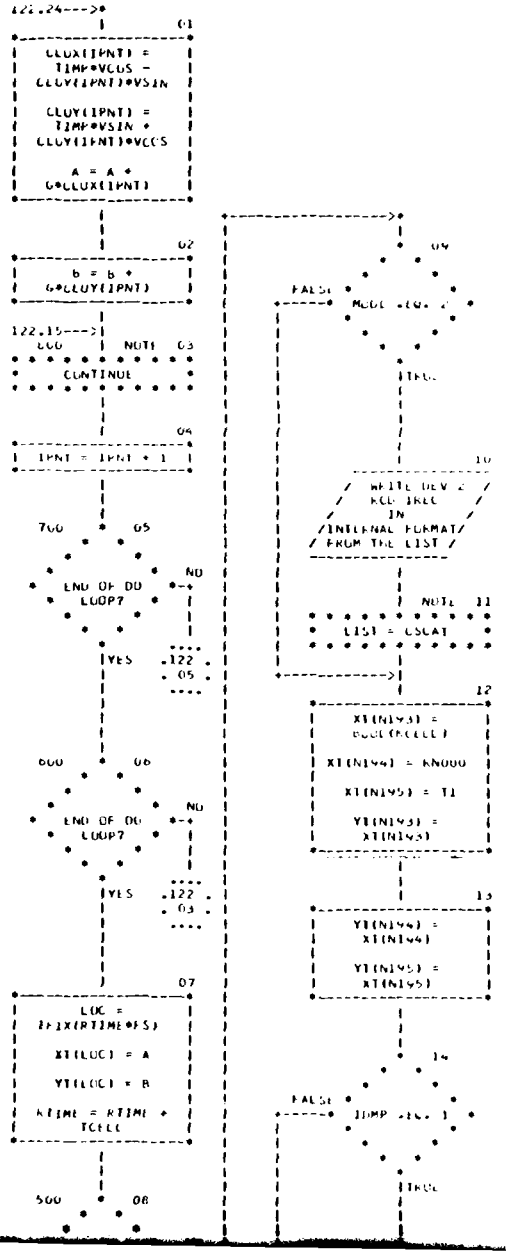

06
COMPUTED GO TO FOR MODE
725 122.04
730 122.07
IF OUTSIDE THE RANGE
122.06 730
07
WRITE DEV # REC IREC IN INTERNAL FORMAT FROM THE LIST
NOTE 08
LIST = CSLAT
122.08 725
09
IREC = IREC + 1
10
READ DEV # REC IREC IN INTERNAL FORMAT INTO THE LIST
NOTE 11
LIST = CSLAT
12
IPNT = 1
750
13
G = GAZ(IM)*GEL(N)
14
COMPUTED GO TO FOR MODE
760 122.15
770 122.16
IF OUTSIDE THE RANGE
122.14 760
15
A = A + CLUX(IPNT)*G
B = B + CLUY(IPNT)*G
...
123.03
... 800
780
NOTE 20
CONTINUE
21
TRUE
D .EQ. 0.0
FALSE
22
TIMP = C
C = C*DELCS - S*DELSN
S = TIMP*DELSN + S*DELCS
790
NOTE 23
CONTINUE
24
PHDEL = PHRW + C
VCOS = COS(PHDEL)
VSIN = SIN(PHDEL)
TIMP = CLUX(IPNT)
123.01

CHART TITLE = SUBROUTINE CLUTTR(XAT,YT,GAZ,GEL,*)



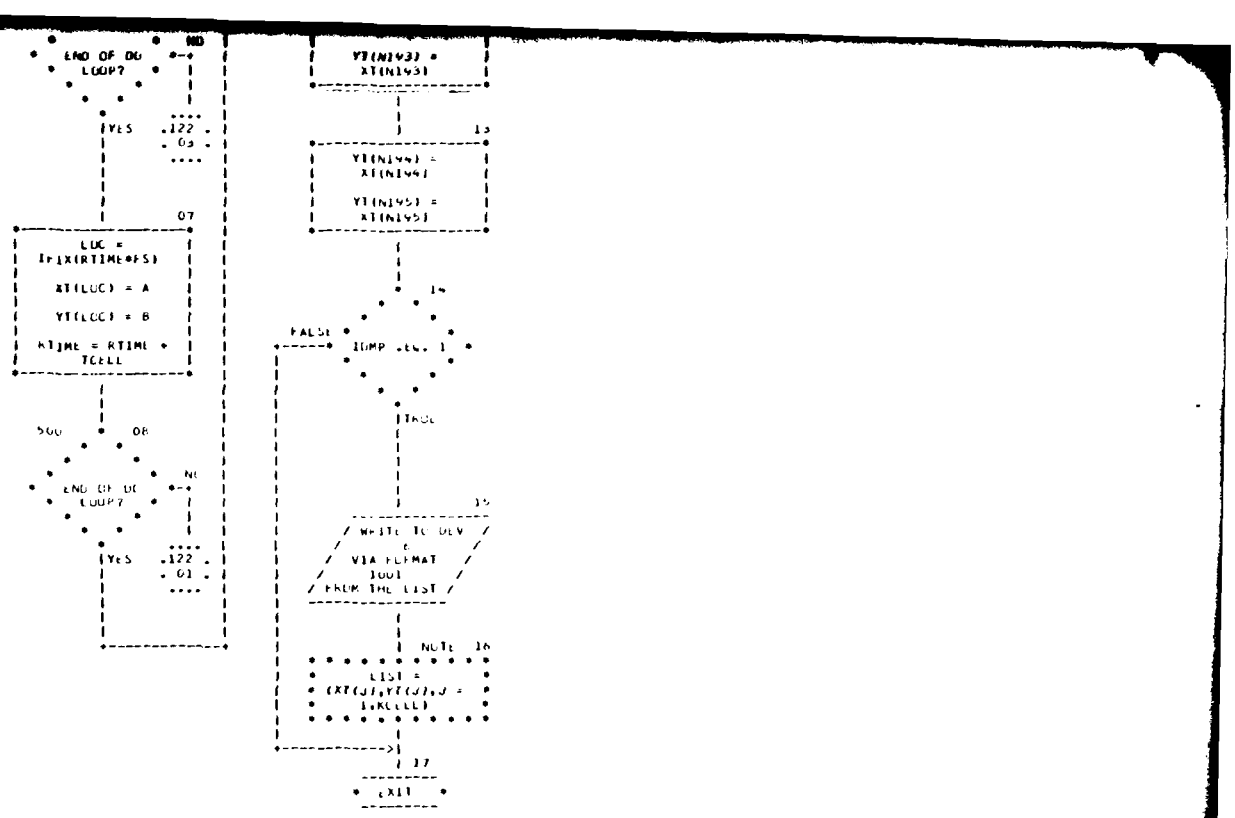

END OF DO LOOP?
NO
YES
.122.
.03.
07
LOC = IFIX(RTIME*FS)
XT(LOC) = A
YT(LOC) = B
RTIME = RTIME + TCELL
500
OR
END OF DO LOOP?
NO
YES
.122.
.01.
YT(N193) = XT(N193)
13
YT(N194) = XT(N194)
YT(N195) = XT(N195)
14
FALSE
IDMP .EQ. 1
TRUE
15
WRITE TO DEV
VIA FORMAT
1001
FROM THE LIST
NOTE 16
LIST =
17
EXIT

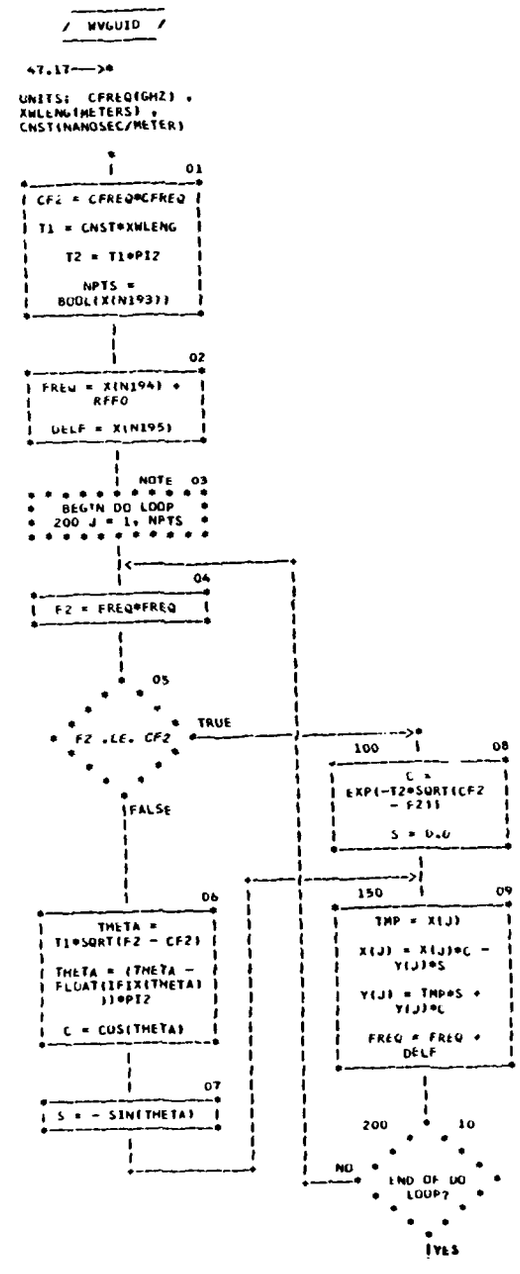
CHART TITLE - NON-PROCEDURAL STATEMENTS

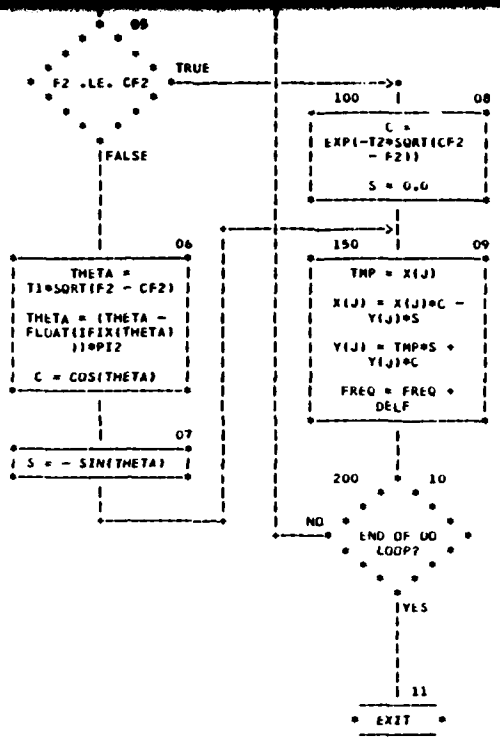
```
      COMMON/BLK1/ BK1(200)
      COMMON/BLK330/BK4(30)
       DIMENSION GAZ(1),GEL(1),CLUX(250),CLUY(250)
      COMMON/BLKRND/ IIII(12),NRAND(129)
      DIMENSION XT(1),YT(1),CSCAT(500),IRAND(128)
      EQUIVALENCE (CLUX(1),CSCAT(1)) , (IRAND(1),NRAND(2))
       EQUIVALENCE (CLUY(1),CSCAT(251))
      EQUIVALENCE  (BK1( 14), TCELL          ),(BK1( 21), IDMP         ),
                   (BK1( 12), TI             ),(BK1(  2), FS           ),
                   (BK4(  3), RWPH           ),
                   (BK4(  6), RNEXT          ),
                   (BK4(  7), RNOOO          ),(BK4(  9), AZOOO        ),
                   (BK4( 10), MM             ),(BK4( 12), ELOOO        ),
                   (BK4( 13), NN             ),(BK4( 14), KK           ),
                   (BK4( 16), MODE           ),(BK4( 17), DELAZ        ),
                   (BK4( 18), DELEL          ),(BK4( 19), XVLANG       ),
                   (BK4( 20), ICFLG          ),(BK4( 21), DOPFRQ       )
```

```
      EQUIVALENCE (CLUX(1),CSCAT(1)) , (IKAND(1),NKAND(2))
       EQUIVALENCE (CLUY(1),CSCAT(251))
      EQUIVALENCE  (BK1( 14), TCELL        ),(BK1( 21), IDMP        ),
                   (BK1( 12), TI           ),(BK1(  2), FS          ),
                   (BK4(  3), KWPH         ),
                   (BK4(  6), KNEXT        ),
                   (BK4(  7), KNOOO        ),(EK4(  9), AZOOO       ),
                   (EK4( 10), MM           ),(BK4( 12), ELOOO       ),
                   (BK4( 13), NN           ),(BK4( 14), KK          ),
                   (BK4( 16), MODE         ),(BK4( 17), DELAZ       ),
                   (BK4( 18), DELEL        ),(BK4( 19), XVLANG      ),
                   (BK4( 20), ICFLG        ),(EK4( 21), DOPFRQ      )
                   (BK4( 22), KCELL        )
      EQUIVALENCE  (EK1( 16), TIME         )
      DATA N193,N194,N195,N196/-3,-2,-1,0/
       DATA (TIME,IMULT,P12/0.0,12207031.5,0.2631853/
   10  FORMAT(1H , D12.8X,D12.8X,D12.8X,D12.8X,D12)
  1001 FORMAT(1H ,E20.5)
```

CHART TITLE - SUBROUTINE WVGUID(X,Y)

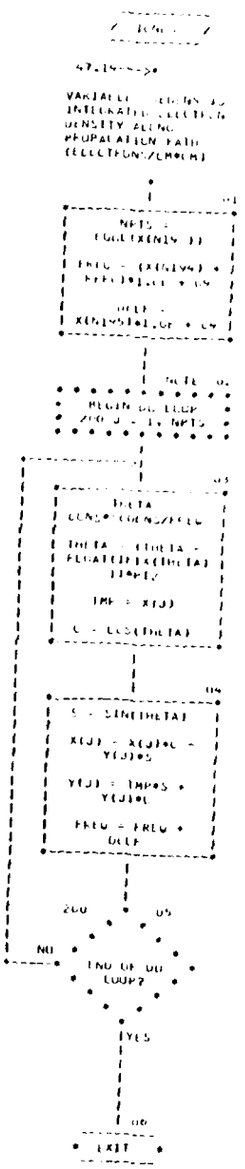
9-116





NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/ VAR(500)
DIMENSION X(1),Y(1)
EQUIVALENCE (VAR(146) , CFREQ ) , (VAR(147) , XWLENG )
EQUIVALENCE (VAR(  3) , RFFO )
DATA N193,N194,N195/-3,-2,-1/,CNST/3.3333/,PI2/6.283185/
```



NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/ VAR(500)
DIMENSION X(1),Y(1)
EQUIVALENCE (VAR(1),X(1)) , (VAR(
DATA NEW1,NEW2,NEW3/
```

CHART TITLE - FUNCTION IPACK(ISTR,IDATA,IWORD)

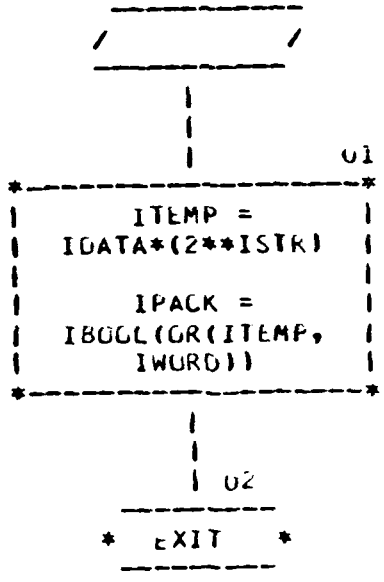
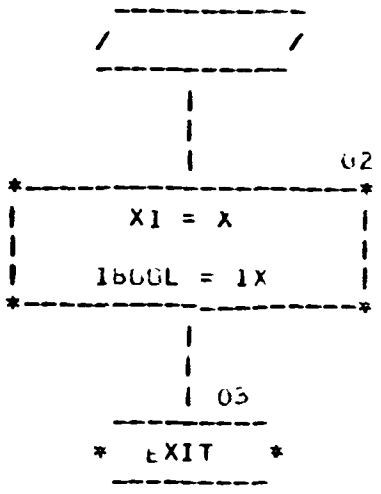


CHART TITLE - FUNCTION IBOOL(X)



NON-PROCEDURAL STATEMENTS

EQUIVALENCE(IX,XI)

CHART TITLE = FUNCTION KRAND(ITYPE)

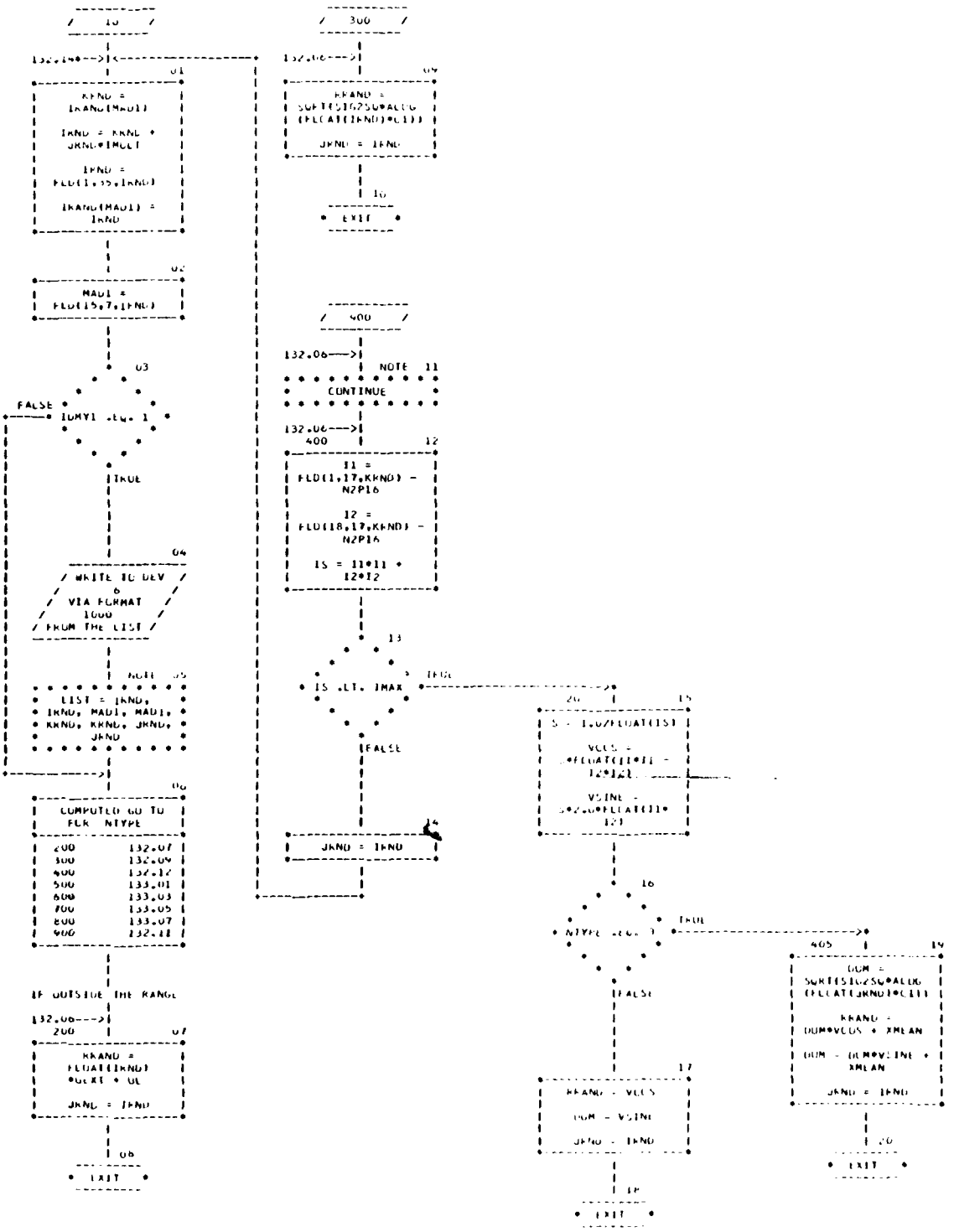
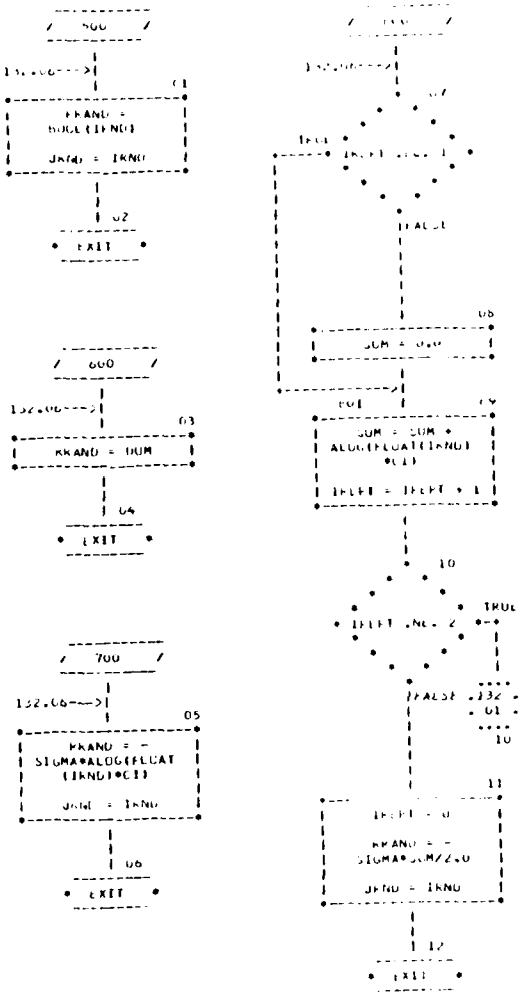


CHART 1 ... FUNCTION ... RANDENTYPE

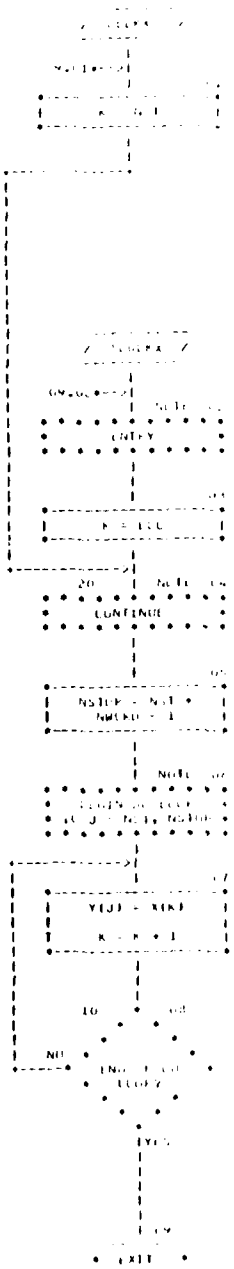


NON-PROCEDURAL STATEMENTS

```
COMMON/BLKKND/IDMY1, IKND, MAGIC, JKND, PLAG, CVLAT, AMEAN,
SIGMA, SUM, SIG2SUM, BUGLE, CE, IT, KKAND(2*3)
DIMENSION IRANDEI(2)
DATA IKEPT/0/, IMULT/16807/, IMOD/2147483647/
DATA IMAX/4294967296/, HALF/2147483648./
DATA CE/2.910383E-11/
EQUIVALENCE (IRANDEI(1),KKAND(1))
```

```
100      FORMAT(1H , 4E11.5,D15.8)
```

CHART TITLE = DECISION LOCATIONS(UNS,3X,Y)



NON-EXECUTABLE STATEMENTS

CHARACTER*(LEN=YEJJ)

CHART TITLE - FUNCTION IFLD(IST,NBITS,IWORD)

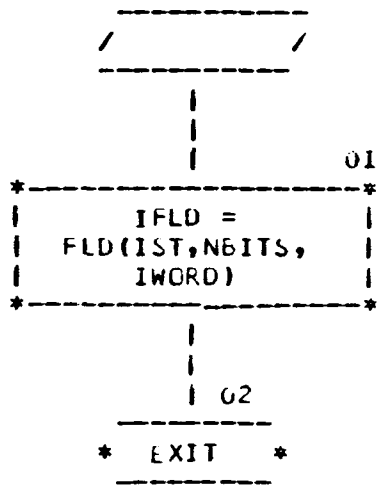
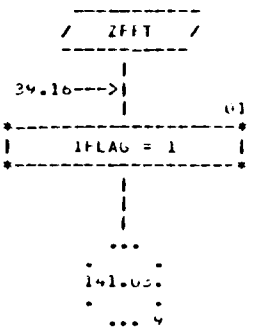


CHART TITLE - SUBROUTINE ZFFT(X,Y)



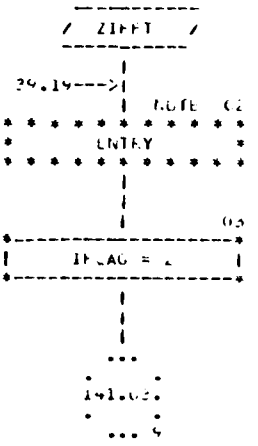
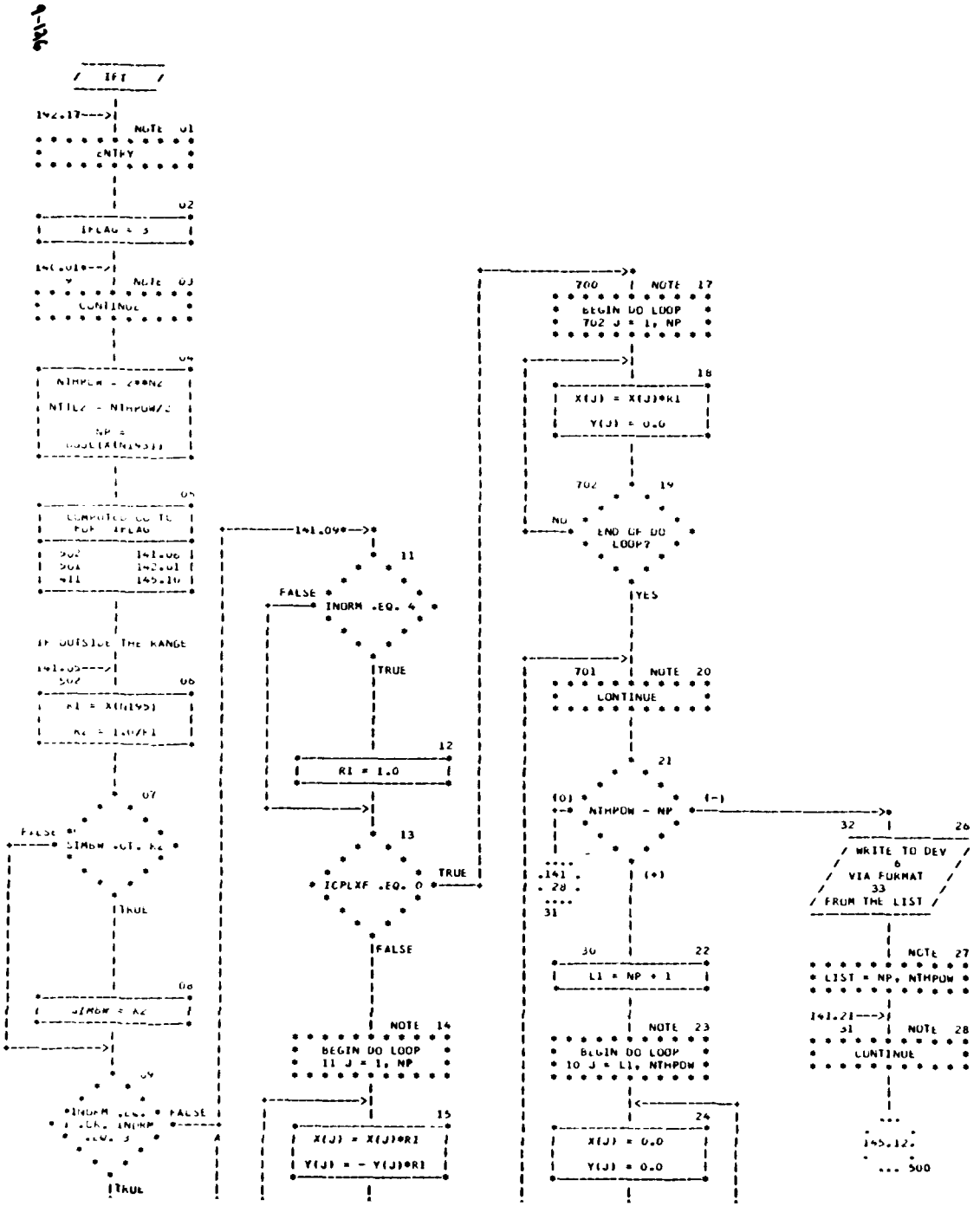


CHART TITLE - SUBROUTINE ZFFT(X,Y)



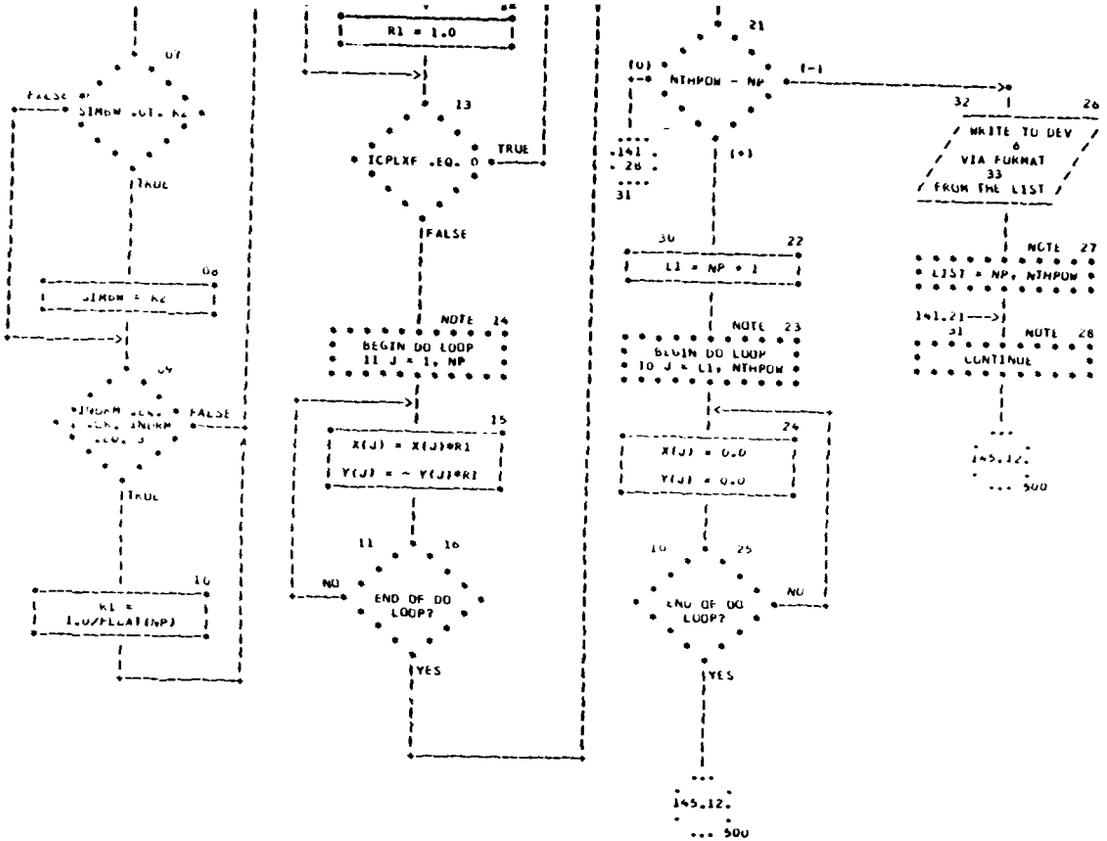

07
FALSE
TRUE
06
09
FALSE
TRUE
10
R1 = 1.0
13
TRUE
FALSE
NOTE 14
BEGIN DO LOOP
11 J = 1, NP
15
X(J) = X(J)*R1
11
16
NO
END OF DO LOOP?
YES
21
(0)
(-1)
(+1)
31
30
22
L1 = NP + 1
NOTE 23
BEGIN DO LOOP
10 J = L1, NTHPOW
24
X(J) = 0.0
10
25
NO
END OF DO LOOP?
YES
32
26
WRITE TO DEV
VIA FORMAT
33
FROM THE LIST
NOTE 27
141,21
31
NOTE 28
CONTINUE
145,12
... 500

CHART TITLE - SUBROUTINE ZPFT(X,Y)

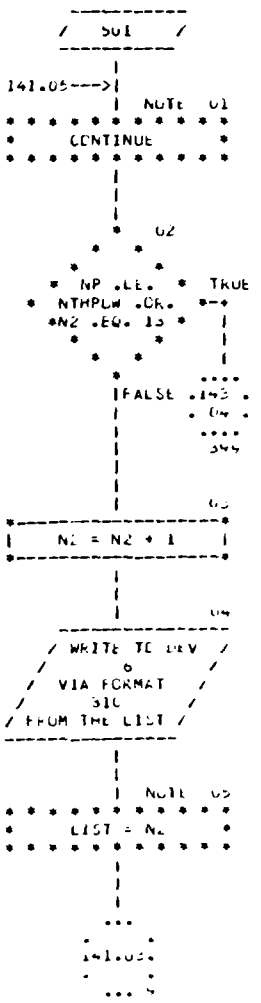
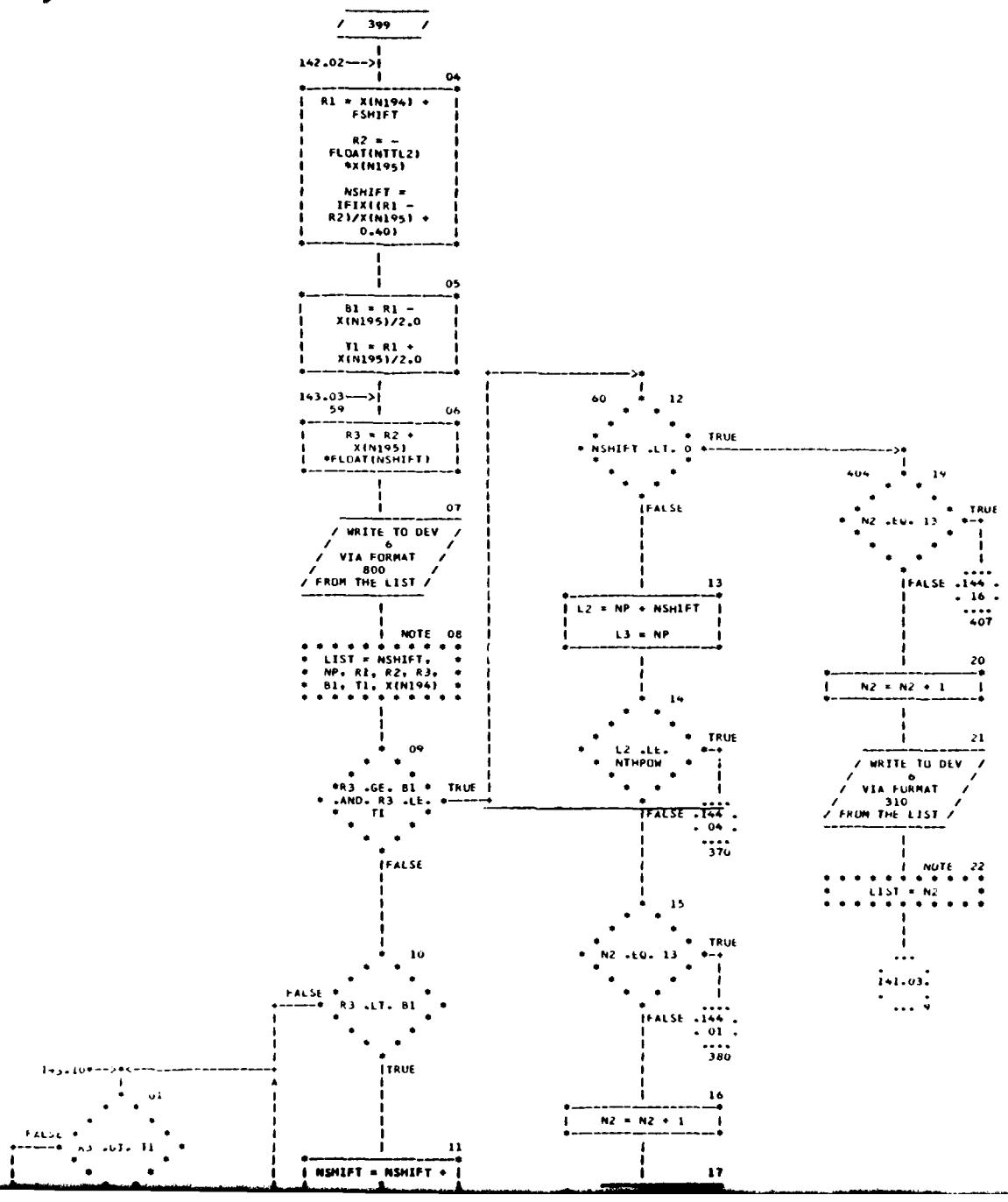


CHART TITLE - SUBROUTINE ZFFT(X,Y)



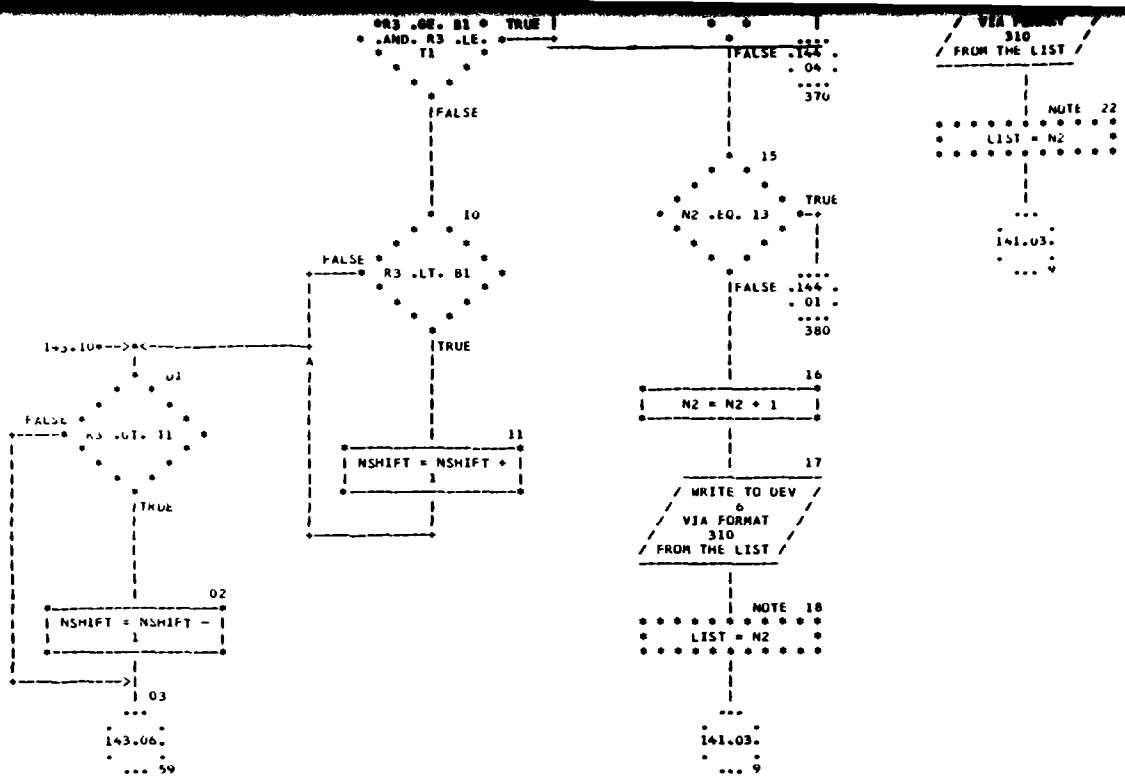
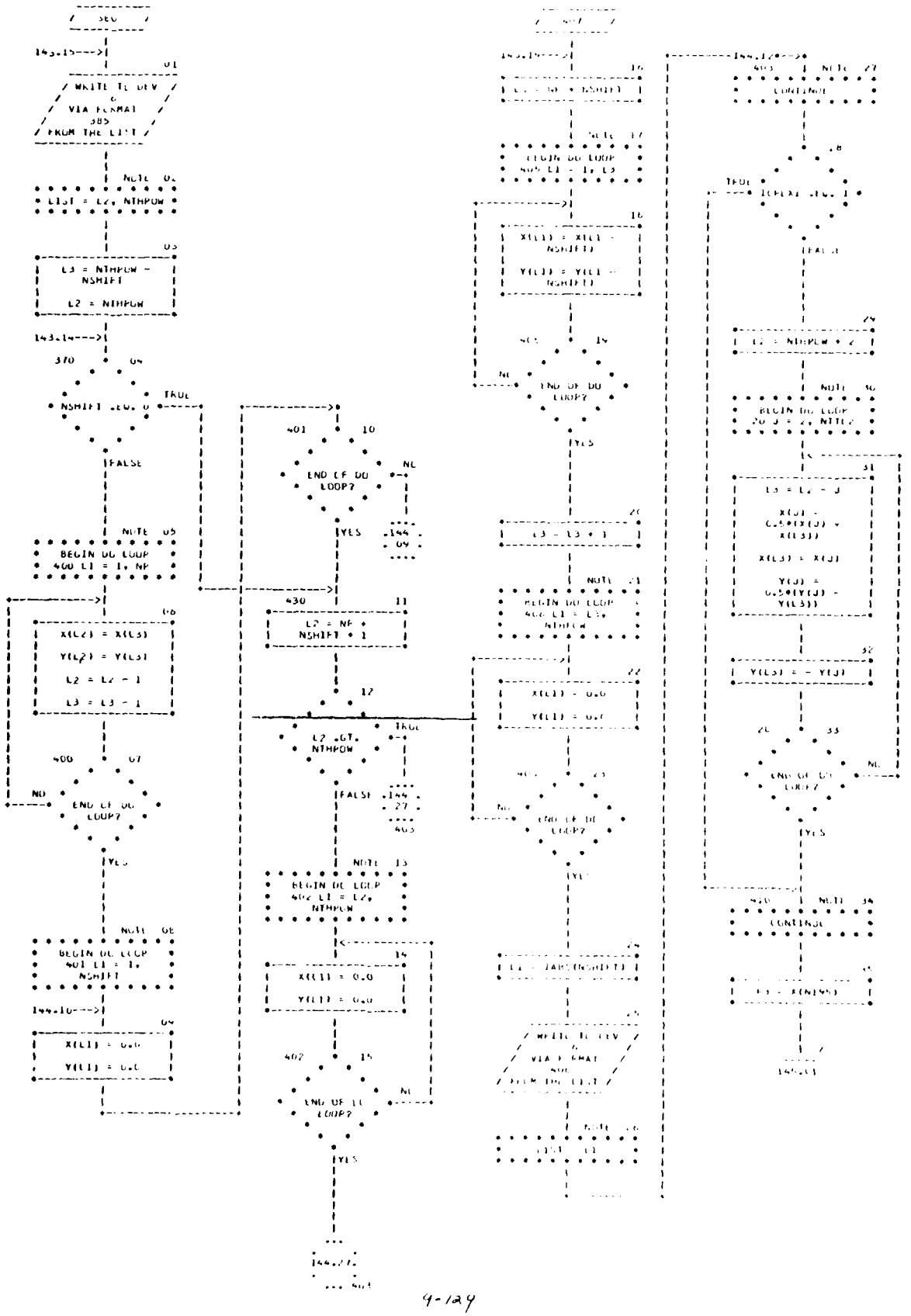

R3 .GE. B1 .AND. R3 .LE. T1
TRUE
FALSE
10
R3 .LT. B1
FALSE
TRUE
11
NSHIFT = NSHIFT + 1
143.10
01
R3 .GT. T1
FALSE
TRUE
02
NSHIFT = NSHIFT - 1
03
143.06.
... 59
15
N2 .EQ. 13
TRUE
FALSE .144. .04. 370
FALSE .144. .01. 380
16
N2 = N2 + 1
17
WRITE TO DEV 6 VIA FORMAT 310 FROM THE LIST
NOTE 18
LIST = N2
141.03.
... 9
VIA FORMAT 310 FROM THE LIST
NOTE 22
LIST = N2
141.03.
... 9

CHART TITLE = SUBROUTINE ZPFIT(X,Y)



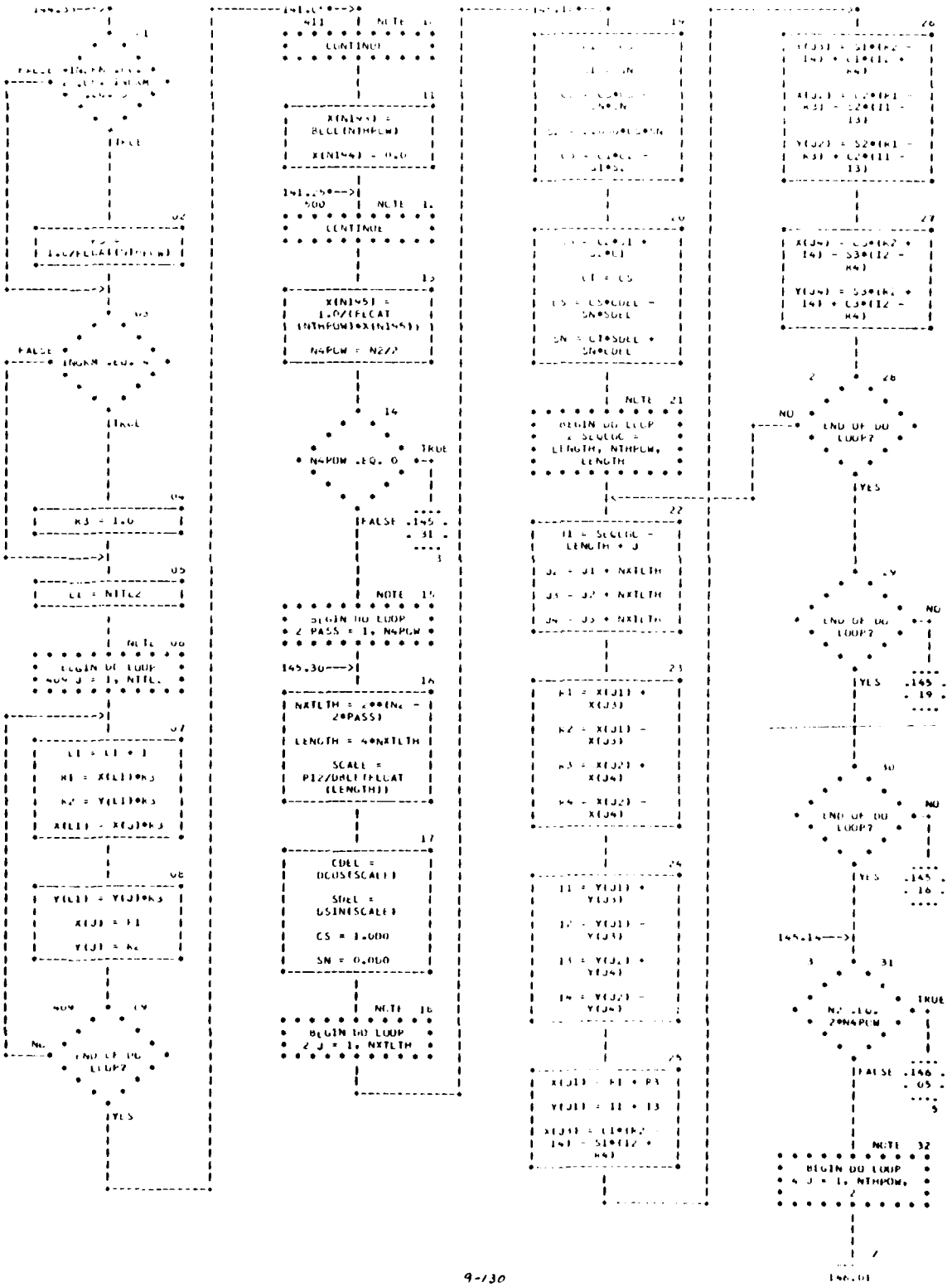


CHART TITLE - SUBROUTINE ZFFT(X,Y)

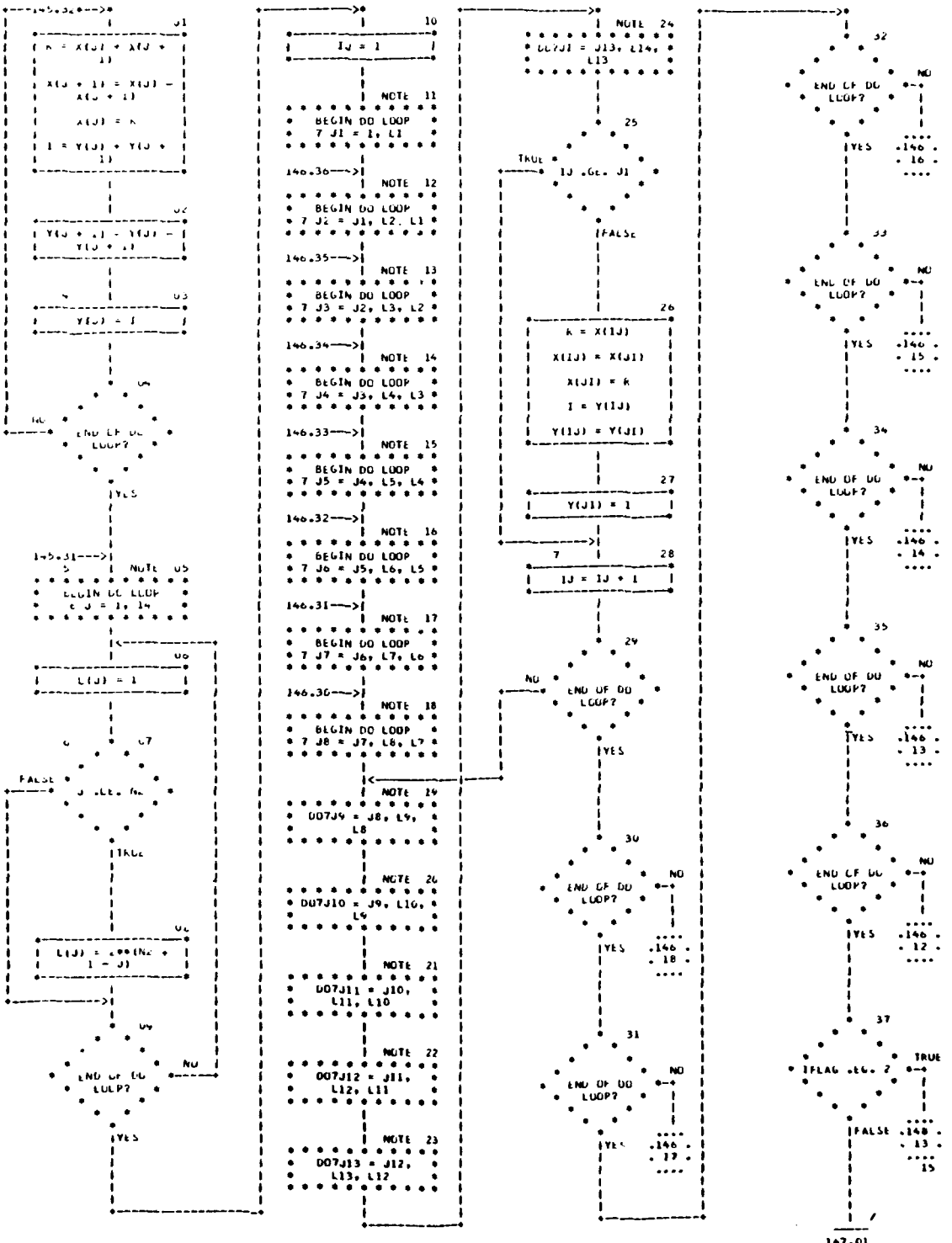
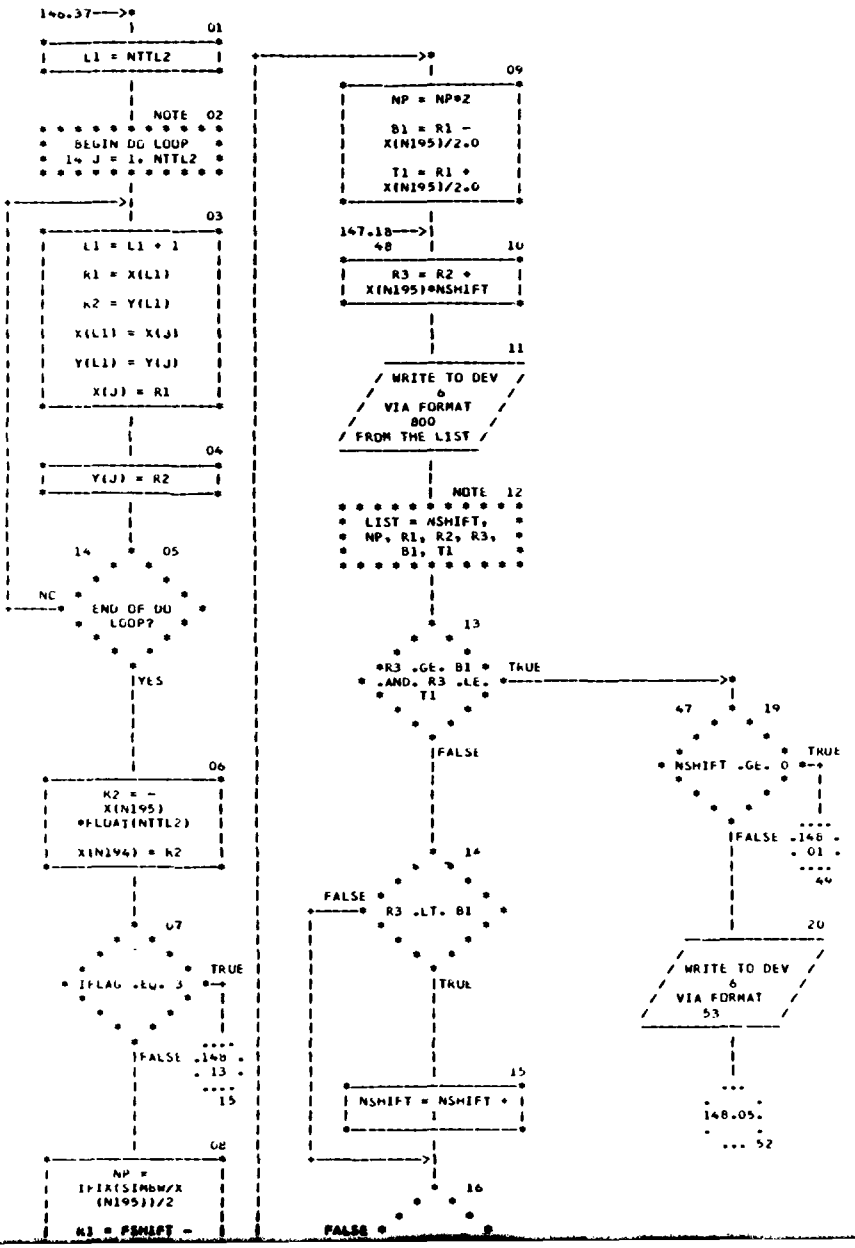


CHART TITLE - SUBROUTINE ZFFT(X,Y)



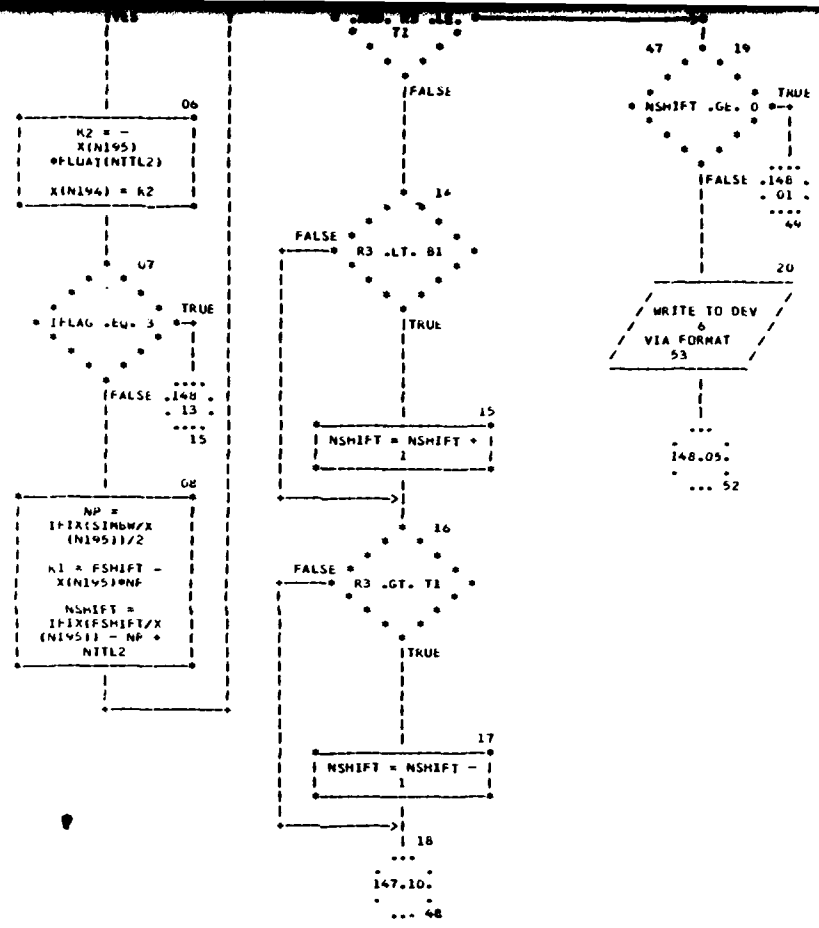
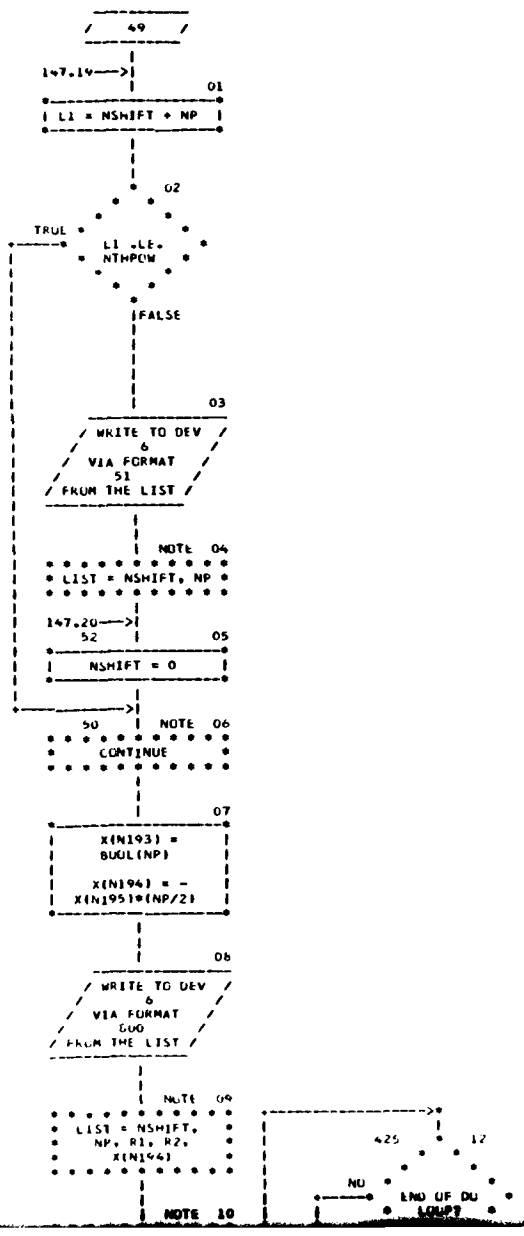

06
K2 = -
X(N195)
*FLOAT(NTTL2)
X(N194) = K2
07
IFLAG .EQ. 3
TRUE
FALSE
148.13.
15
08
NP =
IFIX(SIMBW/X
(N195))/2
K1 = FSHIFT -
X(N195)*NF
NSHIFT =
IFIX(FSHIFT/X
(N195)) - NP +
NTTL2
T1
FALSE
14
R3 .LT. B1
TRUE
15
NSHIFT = NSHIFT +
1
16
R3 .GT. T1
TRUE
17
NSHIFT = NSHIFT -
1
18
147.10.
48
47
19
NSHIFT .GE. 0
TRUE
FALSE
148.01.
49
20
WRITE TO DEV
6
VIA FORMAT
53
148.05.
52

CHART TITLE - SUBROUTINE ZFFT(X,Y)



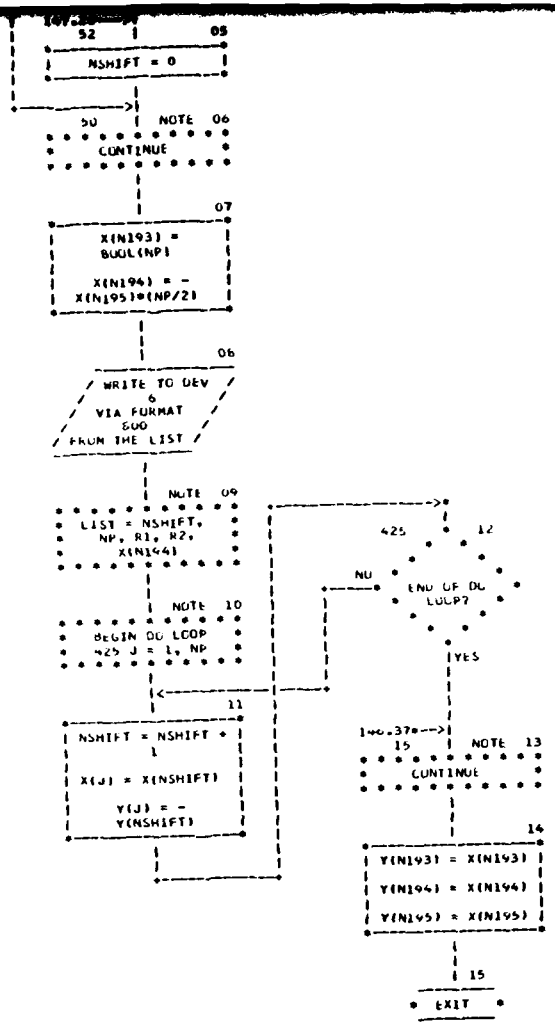

52
05
NSHIFT = 0
50
NOTE 06
CONTINUE
07
X(N193) = BUGL(NP)
X(N194) = - X(N195)*(NP/2)
06
WRITE TO DEV 6 VIA FORMAT 600 FROM THE LIST
NOTE 09
LIST = NSHIFT, NP, R1, R2, X(N194)
NOTE 10
BEGIN DO LOOP 425 J = 1, NP
11
NSHIFT = NSHIFT + 1
X(J) = X(NSHIFT)
Y(J) = - Y(NSHIFT)
425
12
END OF DO LOOP?
NO
YES
15
NOTE 13
CONTINUE
14
Y(N193) = X(N193)
Y(N194) = X(N194)
Y(N195) = X(N195)
15
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(500)
      DOUBLE PRECISION CDEL,SDEL,CS,SN,CT,PI2,SCALE
      EQUIVALENCE  ( N2  ,BK1(1))  ,(FSHIFT,BK1(15)) ,(ICPLX1,BK1(6)),
                   (ICPLXF,BK1(7)) ,(SIMBW,BK1(4)) ,(INORM ,BK1(9))
      DATA PI2/6.2831853066700/
      DATA N193,N194,N195,N196/-3,-2,-1,0/
      REAL X(1),Y(1),I,I1,I2,I3,I4
      INTEGER PASS, SEQLOC, L(14)
      EQUIVALENCE (J,JI), (N4POW,J5), (PASS,J6),
          (NXTLTH,J7), (LENGTH,J8), (SEQLOC,J9), (ISCALE,J10),
          (IARG,J11) , (A1,J12) , (C2,L1), (C3,L2), (S1,L3),
          (S2,L4),(S3,L5),(R1,L6),(R2,L7),(R3,L8),(R4,L9),
       (R,I)
      EQUIVALENCE (L14,L(1)),(L13,L(2)),(L12,L(3)),(L11,L(4)),
          (L10,L(5)),(L9,L(6)),(L8,L(7)),(L7,L(8)),(L6,L(9)),(L5,L(10)),
          (L4,L(11)),(L3,L(12)),(L2,L(13)),(L1,L(14))
33     FORMAT(' NUMBER OF INPUT SAMPLES',I4,'EXCEEDS SPECIFIED TIME',
       ' SPAN=2**N2=',I4)
310    FORMAT (' THE SIZE OF THE TRANSFORM ARRAY HAS BEEN EXPANDED',
       'TO 2**',I2)
800    FORMAT(1H ,2I10,6E15.6)
305    FORMAT(' THE NUMBER OF ARRAY ELEMENTS REQUIRED AFTER HETERODYNING'
       I5, 'EXCEEDED AVAILABLE STORAGE...ARRAY REDUCED TO',I5,
       ' BY DELETING HIGH FREQ TERMS')
406    FORMAT(' NUMBER OF LOCATIONS REQD AFTER HETERODYNING',
       'EXCEEDED AVAILABLE STORAGE...',I5,' ELEMENTS DELETED',
       'FROM NEGATIVE END OF ARRAY')
53     FORMAT(' THE VALUE OF NSHIFT IS NEGATIVE...NSHIFT SET TO 0')
51     FORMAT(1H ,' THE SUM OF NSHIFT',I10,' AND NP',I10,' IS GT NTHPOW..
       NSHIFT SET TO 0')
```

CHART TITLE = SUBROUTINE NLNEAREA,01

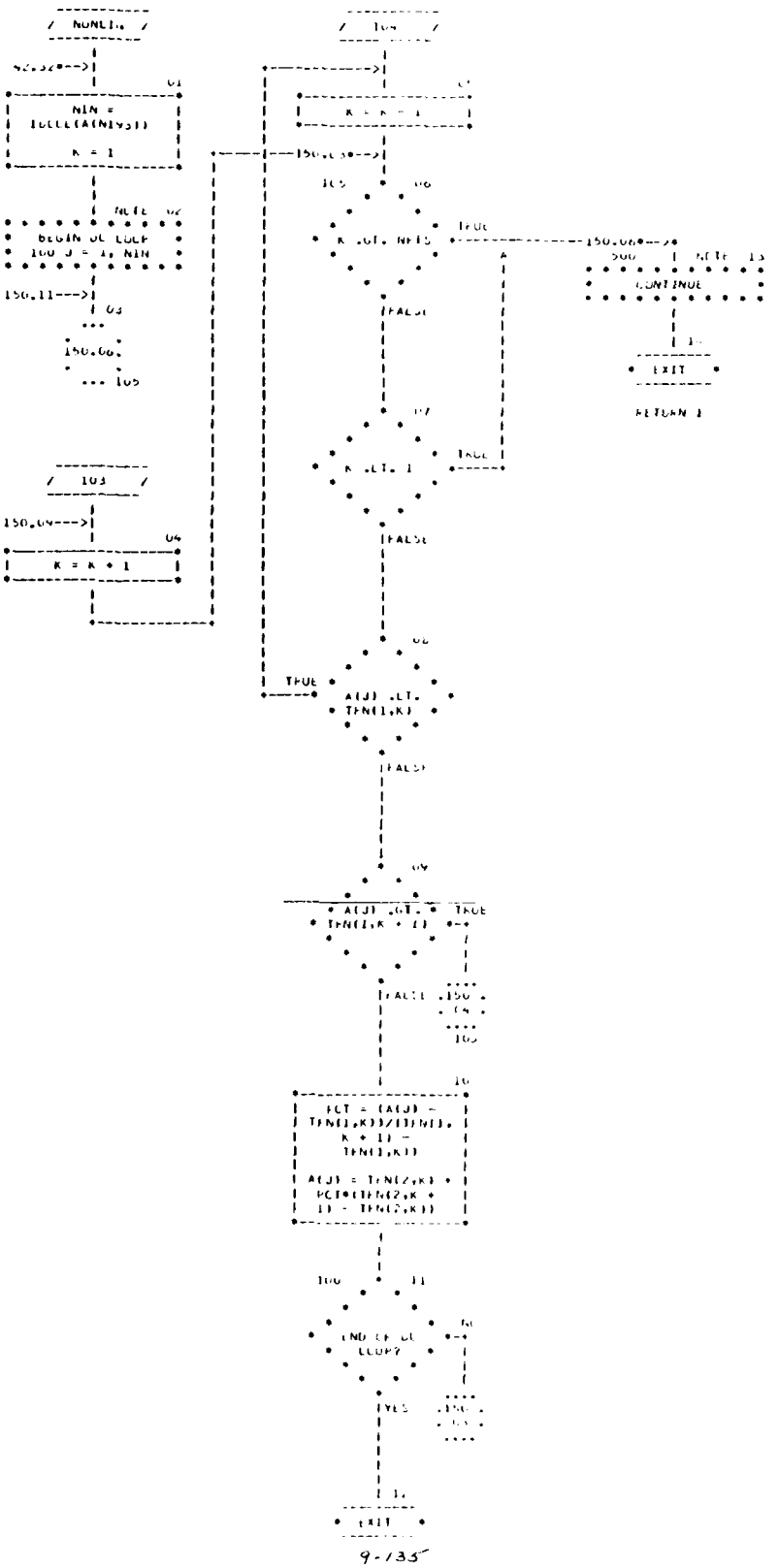
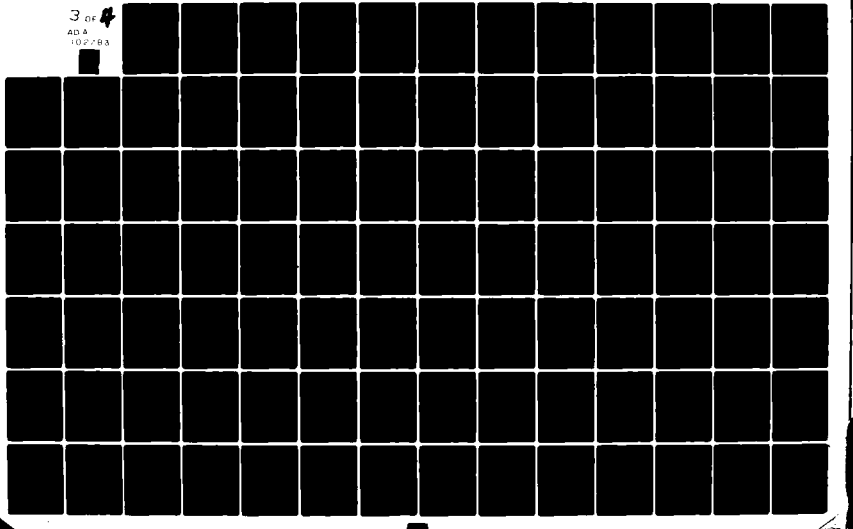


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(500)
      DIMENSION A(1),TEN(2,50)
      EQUIVALENCE (BK1( 21), IDMY      ), (BK1( 67), NPTS      ),
     1            (BK1(201), TEN(1,1)  )
      DATA N193,N194,N195,N196/-3,-2,-1,0/
```

AD-A102 783 GENERAL DYNAMICS FORT WORTH TEX CONVAIR AEROSPACE DIV F/G 17/9
ENDO ATMOSPHERIC-EXO ATMOSPHERIC RADAR MODELING. VOLUME II. PAR--ETC(U)
JUN 76 R J HANCOCK, F H CLEVELAND F30602-73-C-0380
UNCLASSIFIED RADC-TR-76-186-VOL-2-PT-2 NL



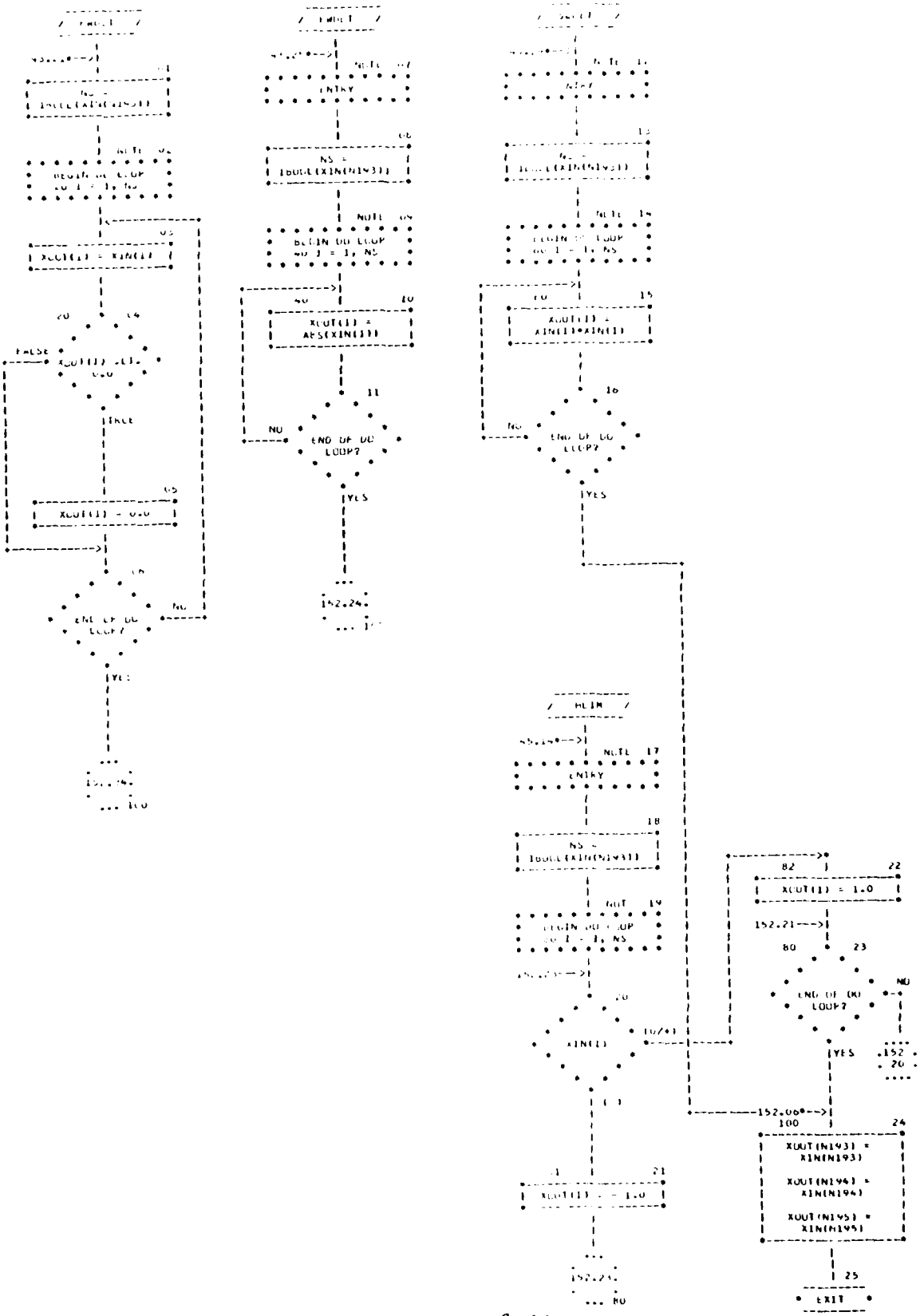
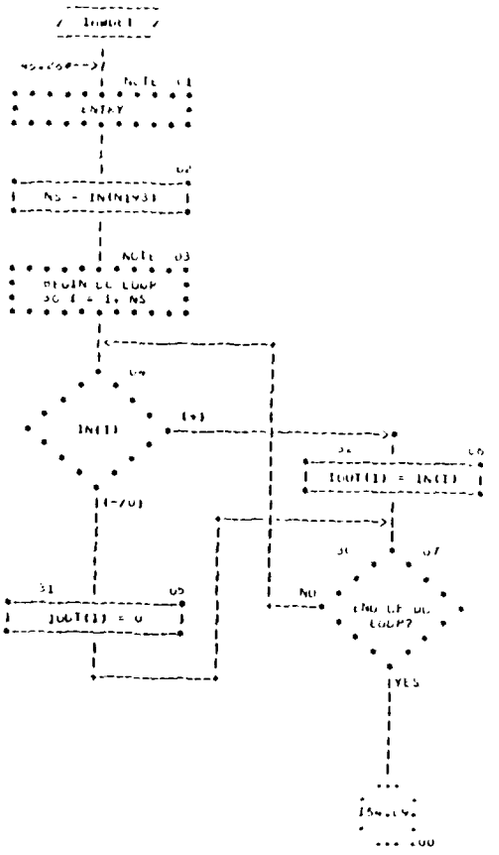
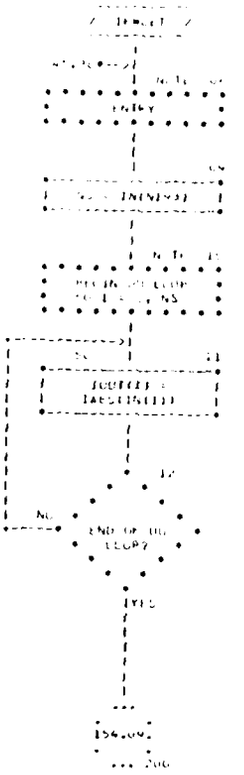

ENTRY
NOTE
BEGIN DO LOOP
XOUT(I) = XIN(I)
XOUT(I) = 0.0
END OF DO LOOP?
FALSE
YES
NO
XOUT(I) = ABS(XIN(I))
XOUT(I) = XIN(I)*XIN(I)
XOUT(I) = 1.0
XOUT(I) = -1.0
XIN(I) .LT. 0.0
XIN(I) .GT. 0.0
152.24
152.21
152.06
EXIT

CHART TITLE = SUBROUTINE WAVEFRM(NS,INEN,IOUT)





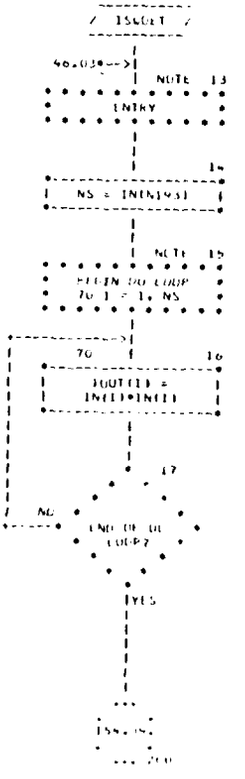
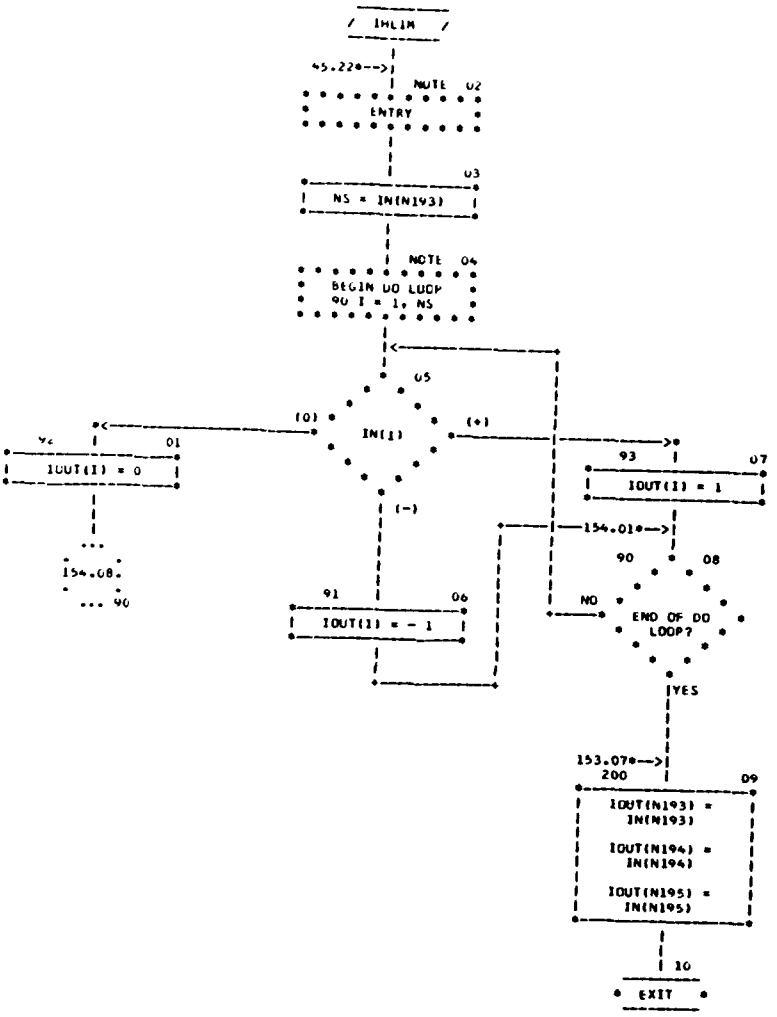


CHART TITLE - SUBROUTINE MNDET(XIN,IOUT)

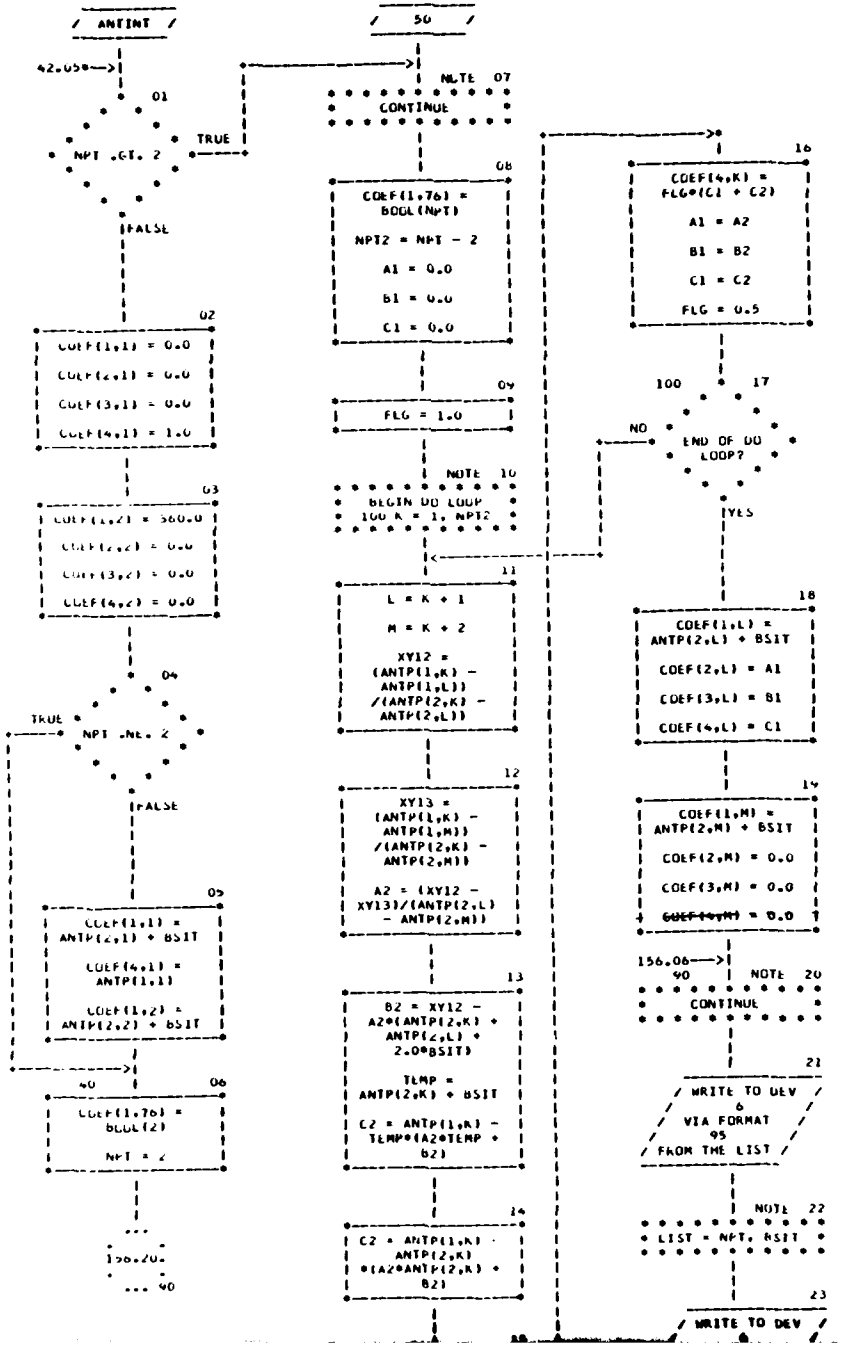


NON-PROCEDURAL STATEMENTS

```
DIMENSION  XIN(1),XOUT(1),IN(1),IOUT(1)
DATA N193,N194,N195,N196/-3,-2,-1,0/
```

CHART TITLE - SUBROUTINE ANTINT(NPT,BSIT,ANTP,COEF)

9-140



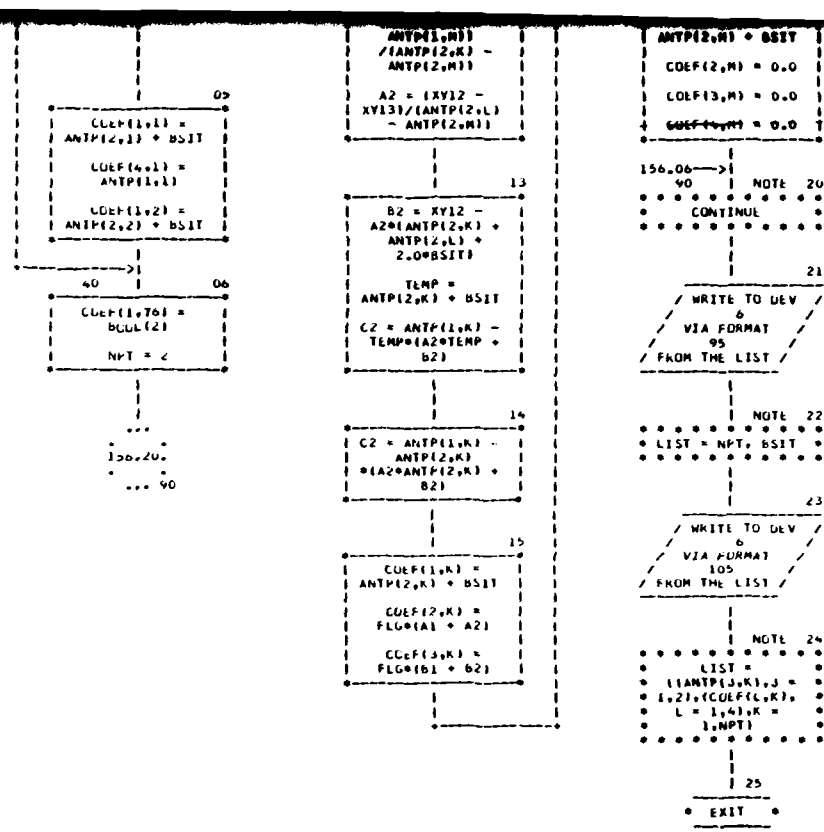

05
COEF(1,1) = ANTP(2,1) + BSIT
COEF(4,1) = ANTP(1,1)
COEF(1,2) = ANTP(2,2) + BSIT
40
06
COEF(1,76) = BCOE(2)
NPT = 2
...
130,20,
... 90
ANTP(1,M)) /(ANTP(2,K) - ANTP(2,M))
A2 = (XY12 - XY13)/(ANTP(2,L) - ANTP(2,M))
13
B2 = XY12 - A2*(ANTP(2,K) + ANTP(2,L) + 2.0*BSIT)
TEMP = ANTP(2,K) + BSIT
C2 = ANTP(1,K) - TEMP*(A2*TEMP + B2)
14
C2 = ANTP(1,K) - ANTP(2,K) *(A2*ANTP(2,K) + B2)
15
COEF(1,K) = ANTP(2,K) + BSIT
COEF(2,K) = FLG*(A1 + A2)
COEF(3,K) = FLG*(B1 + B2)
ANTP(2,M) + BSIT
COEF(2,M) = 0.0
COEF(3,M) = 0.0
COEF(4,M) = 0.0
156,06
90
NOTE 20
CONTINUE
21
WRITE TO DEV 6 VIA FORMAT 95 FROM THE LIST
NOTE 22
LIST = NPT, BSIT
23
WRITE TO DEV 6 VIA FORMAT 105 FROM THE LIST
NOTE 24
LIST = ((ANTP(J,K),J = 1,2),(COEF(L,K), L = 1,4),K = 1,NPT)
25
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

14 1-6

```
      DIMENSION ANTP(2,75),COEF(4,76)
95    FORMAT(1H1,'SUBROUTINE ANTINT    NPT =',I3,'    ESIT =',1PE13.7)
105   FORMAT (1H ,6(1PE20.7))
```

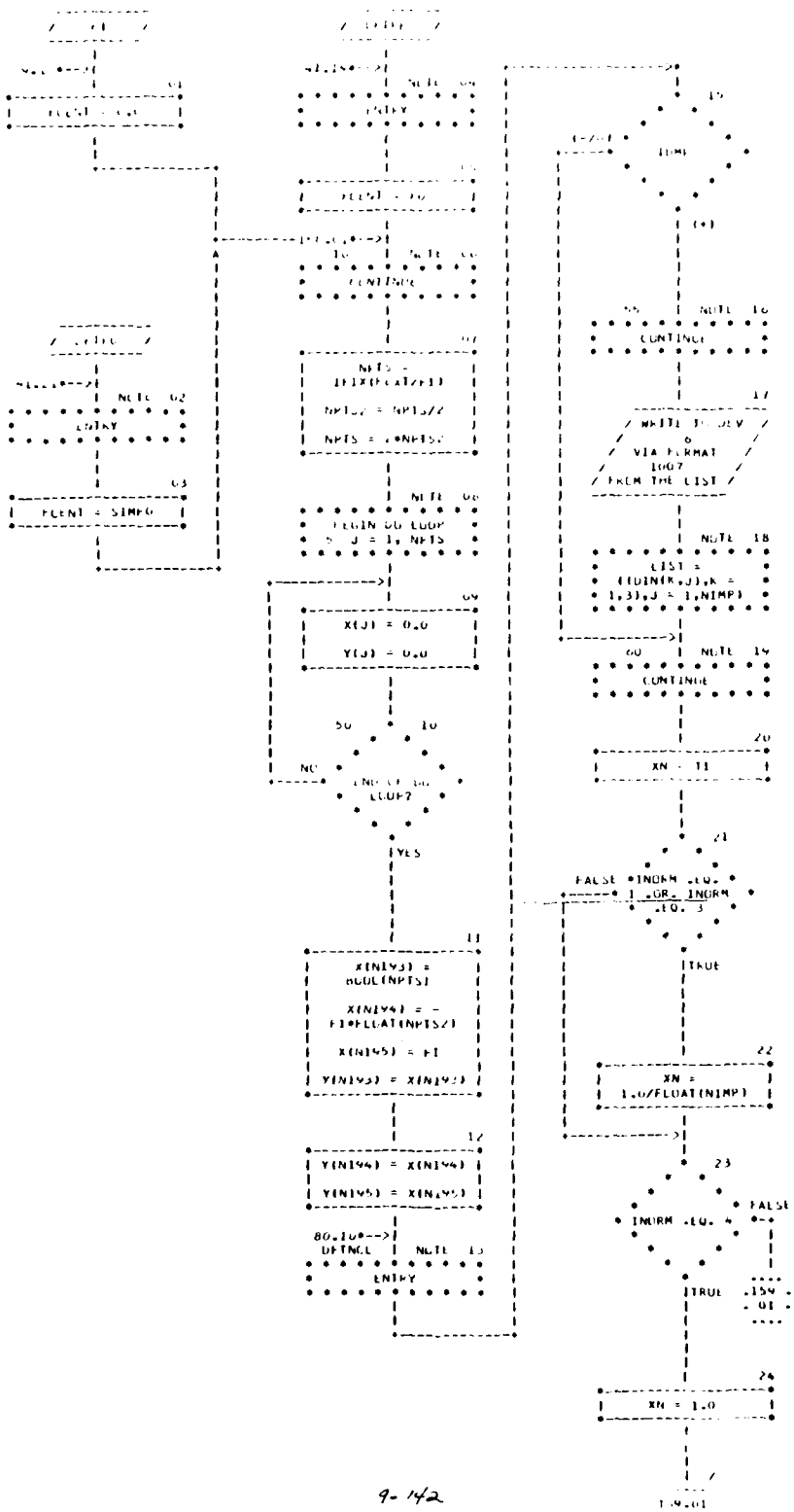
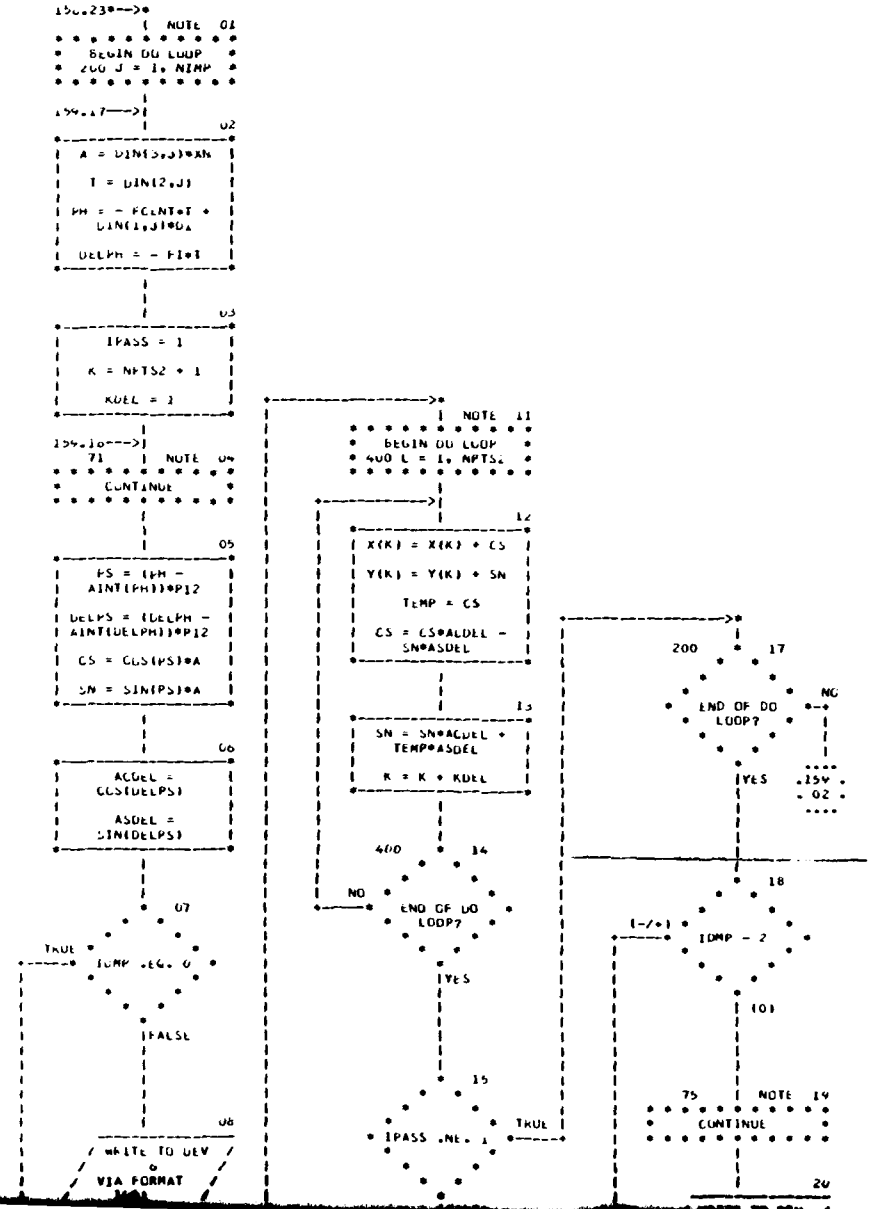

NOTE 02
ENTRY
FCENT = SIMPG
NOTE 00
ENTRY
NPTS = 2**(NEXP+1)
NPTS2 = NPTS/2
NPTS = 4*NPTS2
BEGIN DO LOOP I = 1, NPTS
X(I) = 0.0
Y(I) = 0.0
END OF DO LOOP?
NO
YES
X(NIN4) = BOOL(NPTS)
X(NIN4+1) = -1.0*FLOAT(NPTS/2)
X(NIN4+5) = PI
Y(NIN4+3) = X(NIN4+3)
Y(NIN4+4) = X(NIN4+4)
Y(NIN4+5) = X(NIN4+5)
DFINCL
NOTE 13
ENTRY
ITEM
CONTINUE
WRITE TO DEV 6 VIA FORMAT 1007 FROM THE LIST
NOTE 18
LIST = ((DUMMY(I,J),K = 1,3),J = 1,NIMP)
NOTE 19
CONTINUE
XN = TI
INORM .LT. 0 .OR. INORM .EQ. 3
TRUE
XN = 1.0/FLOAT(NIMP)
INORM .EQ. 4
TRUE
XN = 1.0

CHART TITLE - SUBROUTINE OPT(X,Y)



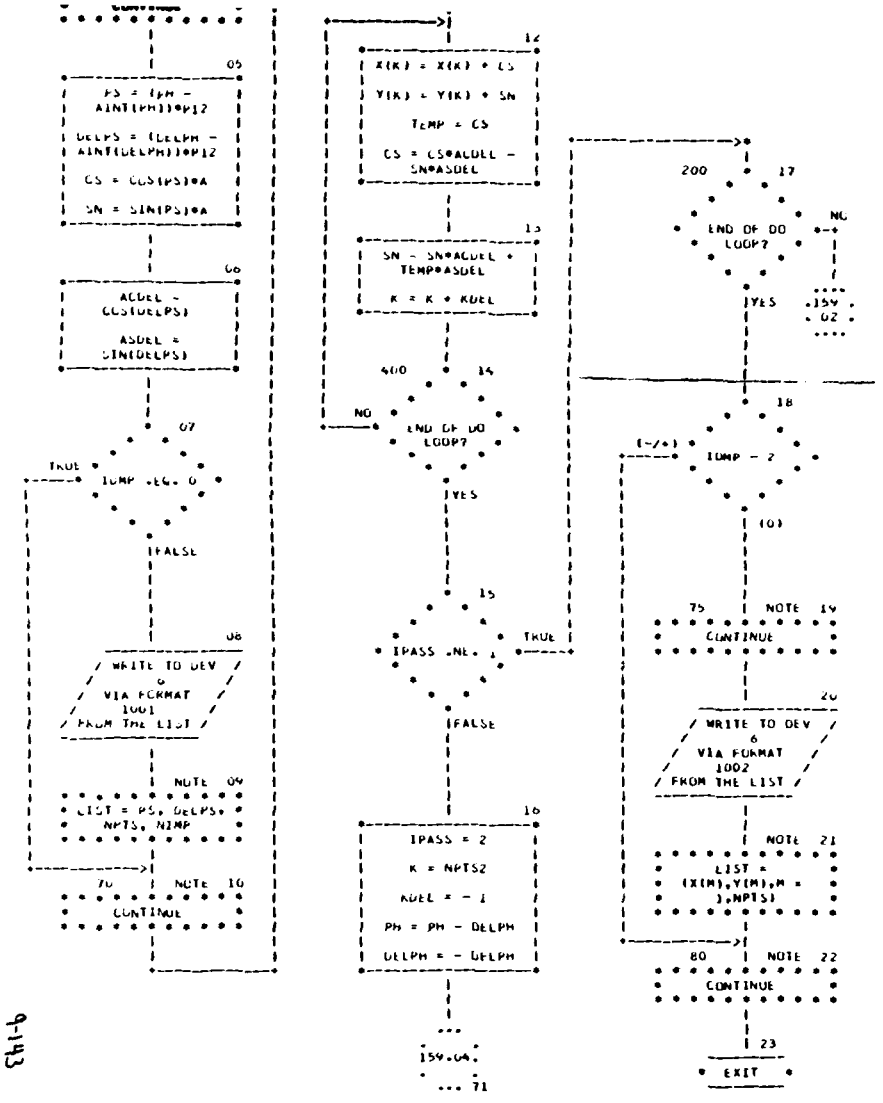
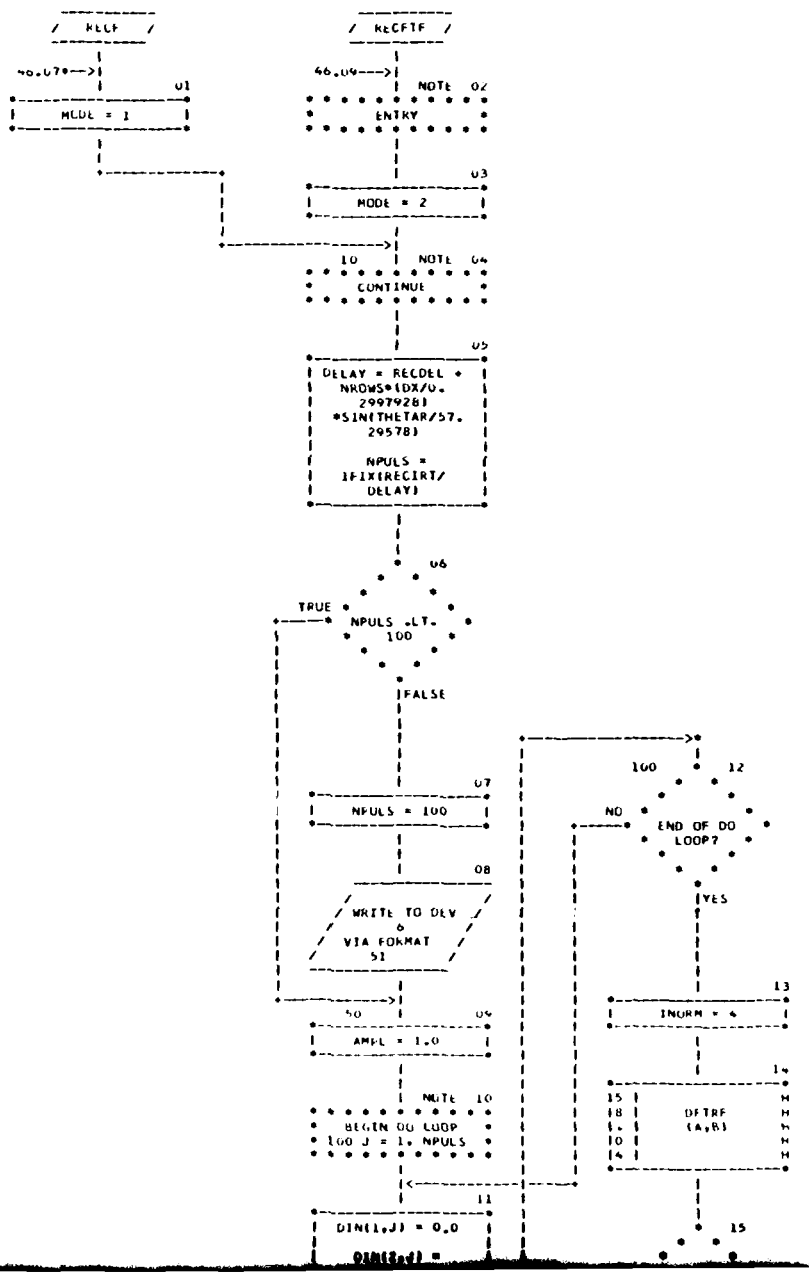

05
PS = (PH - AINT(PH))*P12
DELPS = (DELPH - AINT(DELPH))*P12
CS = COS(PS)*A
SN = SIN(PS)*A
06
ACDEL = COS(DELPS)
ASDEL = SIN(DELPS)
07
ICMP .EQ. 0
TRUE
FALSE
08
WRITE TO DEV 6 VIA FORMAT 1001 FROM THE LIST
NOTE 09
LIST = PS, DELPS, NPTS, NIMP
70
NOTE 10
CONTINUE
12
X(K) = X(K) * CS
Y(K) = Y(K) * SN
TEMP = CS
CS = CS*ACDEL - SN*ASDEL
13
SN = SN*ACDEL + TEMP*ASDEL
K = K + KDEL
400
14
END OF DO LOOP?
NO
YES
15
IPASS .NE. 1
TRUE
FALSE
16
IPASS = 2
K = NPTS2
KDEL = - 1
PH = PH - DELPH
DELPH = - DELPH
159.0A
71
200
17
END OF DO LOOP?
NO
YES
159.02
18
ICMP = 2
(-/+1)
(0)
75
NOTE 19
CONTINUE
20
WRITE TO DEV 6 VIA FORMAT 1002 FROM THE LIST
NOTE 21
LIST = (XIM),YIM),M = 1,NPTS)
80
NOTE 22
CONTINUE
23
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(200),DIN(3,100)
      EQUIVALENCE (SIMFO,BK1(8)) , (FI,BK1(11)) , (FEXT,BK1(4)),
                  (NIMP,BK1(200)), (IOMP,BK1(21)), (FO,BK1(3))
        ,(INORM ,BK1(9)), ( TI  ,BK1(12))
      DIMENSION     X(1) ,  Y(1)
      DATA N193,N194,N195,PI2,D1/-3,-2,-1,6.2831853,2.7777778E-03/
1007  FORMAT(1H ,8E15.5)
1001  FORMAT(' PH=',1PE13.6,'   DELPH=',1PE13.6,'   NPTS=',I10,'   NIMP=
      ',I10)
1002  FORMAT(1HO, 6E20.5)
```

CHART TITLE - SUBROUTINE RECFIX(X,Y,A,B)



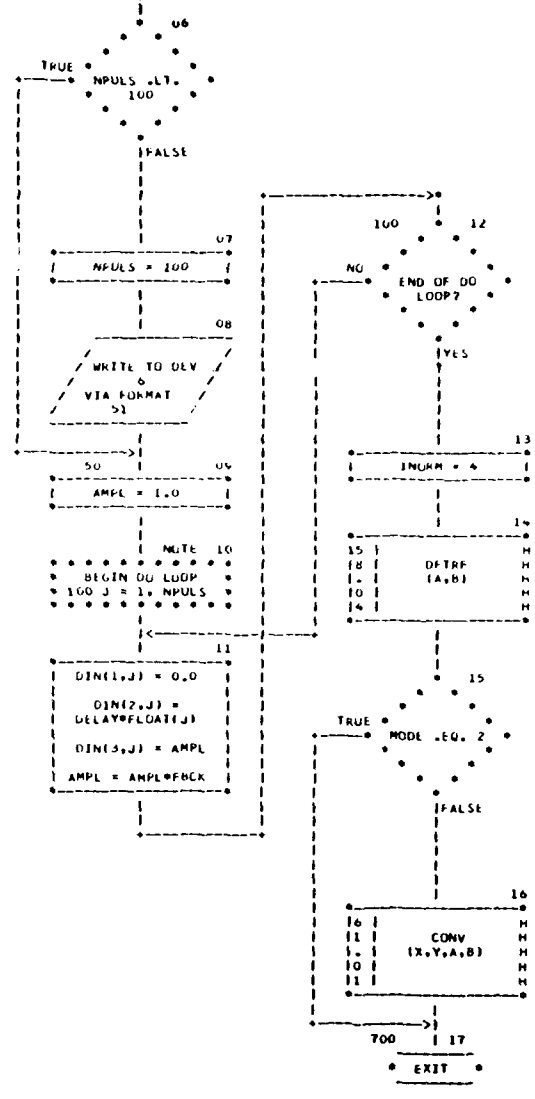
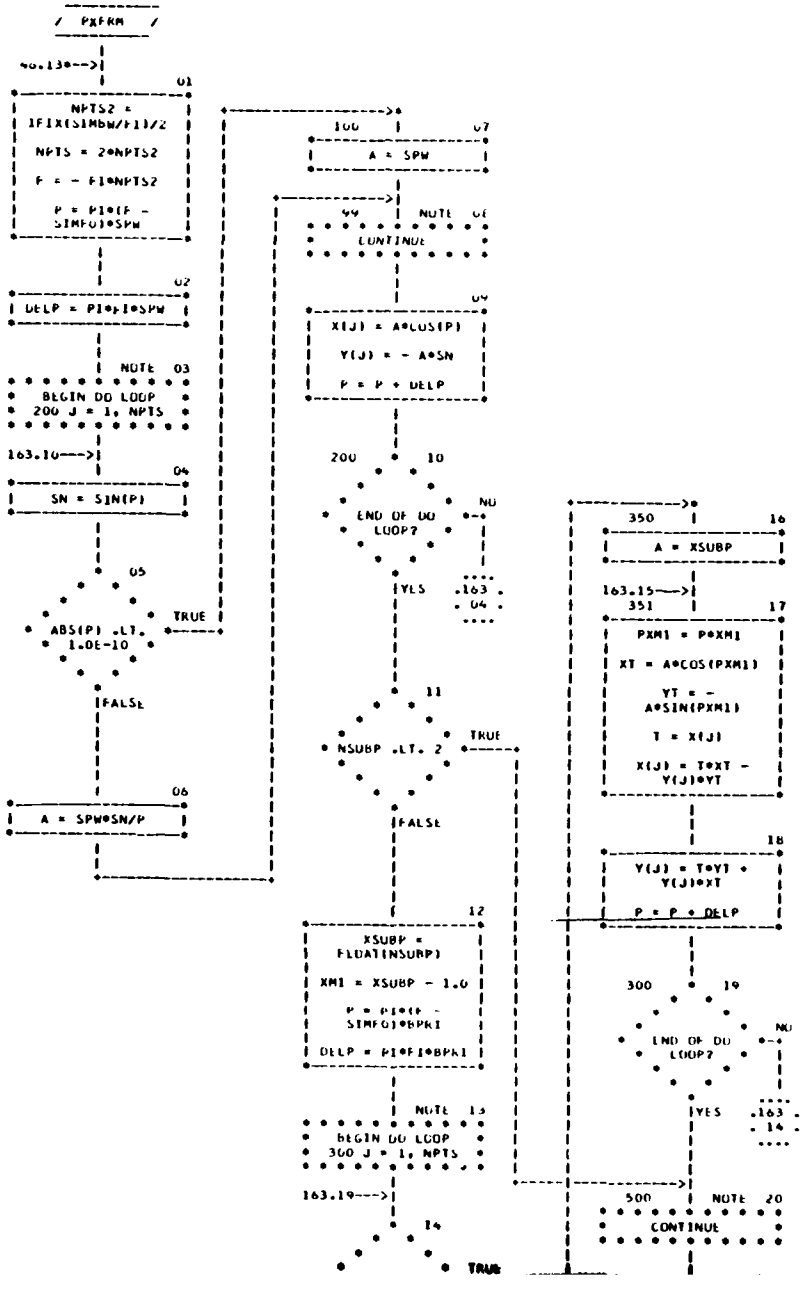

06
TRUE
NPULS .LT. 100
FALSE
07
NPULS = 100
08
WRITE TO DEV 6 VIA FORMAT 51
50
09
AMPL = 1.0
NOTE 10
BEGIN DO LOOP 100 J = 1, NPULS
11
DIN(1,J) = 0.0
DIN(2,J) = DELAY*FLOAT(J)
DIN(3,J) = AMPL
AMPL = AMPL*FBCK
100
12
NO
END OF DO LOOP?
YES
13
INORM = 4
14
DFTRF (A,B)
15
TRUE
MODE .EQ. 2
FALSE
16
CONV (X,Y,A,B)
700
17
EXIT

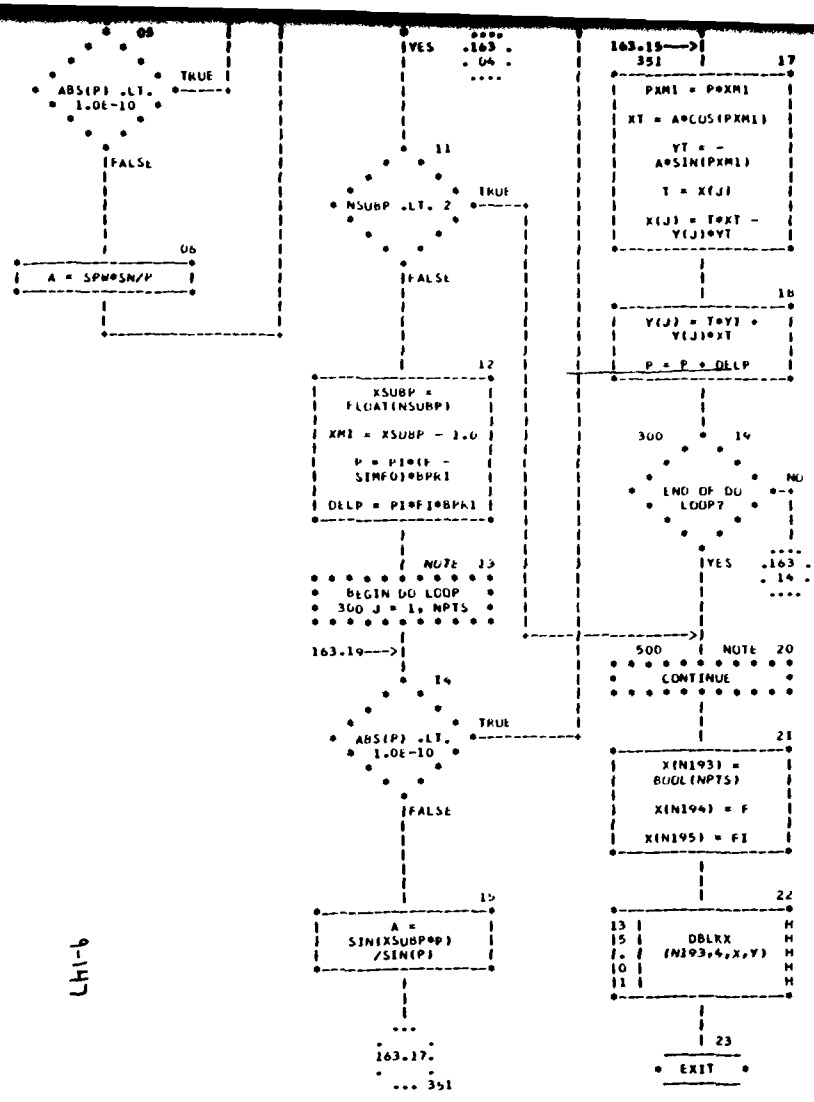
CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(200),DIN(3,100)
      DIMENSION X(1),Y(1),A(1),B(1)
      EQUIVALENCE (BK1( 75), FBCK),(BK1(117), RECDEL),
     *            (BK1(118),RECIRT),(BK1(119), THETAR),
     *            (BK1( 77),DX    ),(BK1( 79), NROWS ),
     *            (BK1(200),NPULS ),(INORM,BK1(9))
   51 FORMAT(' RECEIVER PROCESSOR IMPULSE RESPONSE LIMITED TO',
     * ' 100 LOOP DELAYS')
```

9-146

CHART TITLE - SUBROUTINE PXFRM(X,Y)



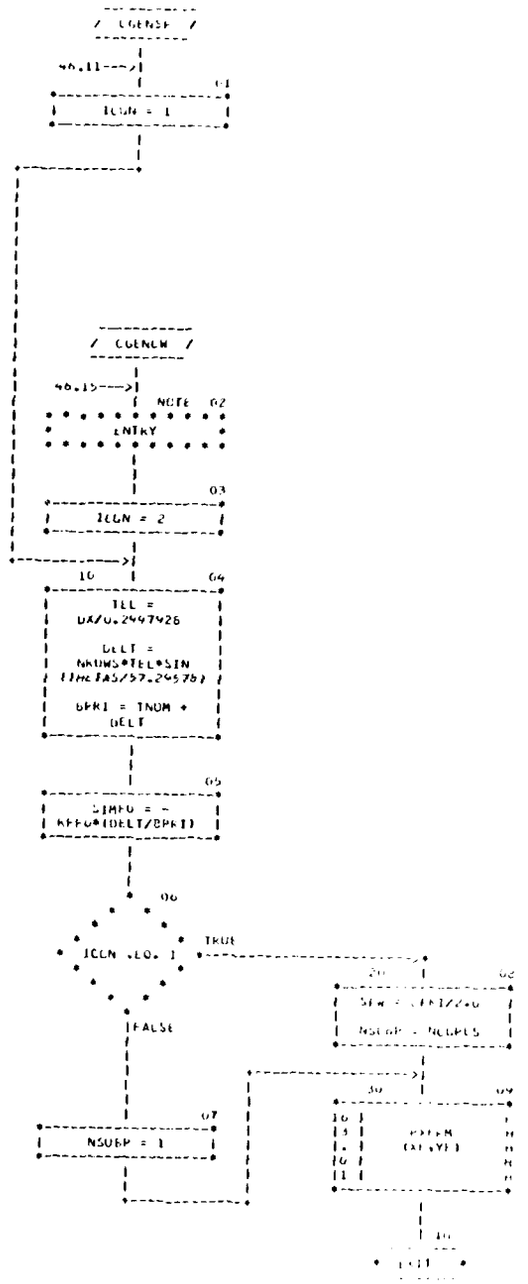

09
ABS(P) .LT. 1.0E-10
TRUE
FALSE
06
A = SPW*SN/P
YES
.163. .04.
11
NSUBP .LT. 2
TRUE
FALSE
12
XSUBP = FLOAT(NSUBP)
XM1 = XSUBP - 1.0
P = PI*(P - SIMF0)*BPK1
DELP = PI*FI*BPK1
NOTE 13
BEGIN DO LOOP
300 J = 1, NPTS
163.19--->
14
ABS(P) .LT. 1.0E-10
TRUE
FALSE
15
A = SIN(XSUBP*P) /SIN(P)
163.17.
351
163.19---> 351
17
PXM1 = P*XM1
XT = A*COS(PXM1)
YT = -A*SIN(PXM1)
T = X(J)
X(J) = T*XT - Y(J)*YT
18
Y(J) = T*YT + Y(J)*XT
P = P + DELP
300
19
END OF DO LOOP?
NO
YES
.163. .14.
500
NOTE 20
CONTINUE
21
X(N193) = BOOL(NPTS)
X(N194) = F
X(N195) = FI
22
DBLKX (N193,4,X,Y)
23
EXIT

Lh1-6

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
COMMON/BLK1/ BK1(500)
EQUIVALENCE (SIMFO,BK1(  8)),(SIMBW,BK1(  4)),
 (FI,BK1( 11)),(SPW,BK1( 95)),(NSUBP,BK1( 96)),
 (BPRI,BK1(114))
DIMENSION X(1),Y(1)
DATA PI,N193,N194,N195/3.1415926,-3,-2,-1/
```

CHART TITLE = SUBROUTINE CGENSF(XF)



NON-PROCEDURAL STATEMENTS

COMMON/HLP1Z/HP1(100)

DIMENSION PFII,VF(1)

EQUIVALENCE (HP(1),FII(201),(HP(1),CO = FII(701),

(NSUBPS,PFII(201),(PD,M,FII(1)

(SFW,PFII(501),(PSUM,PFII(901),(PFF = FII(1),(IMP,FII(1)

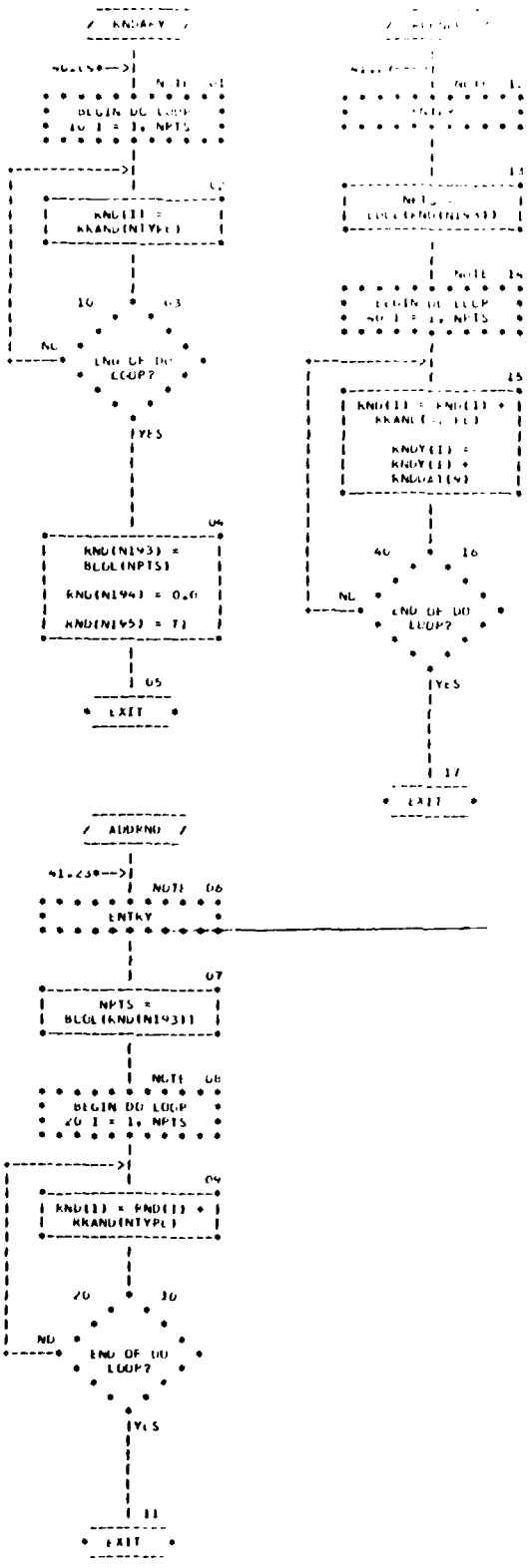
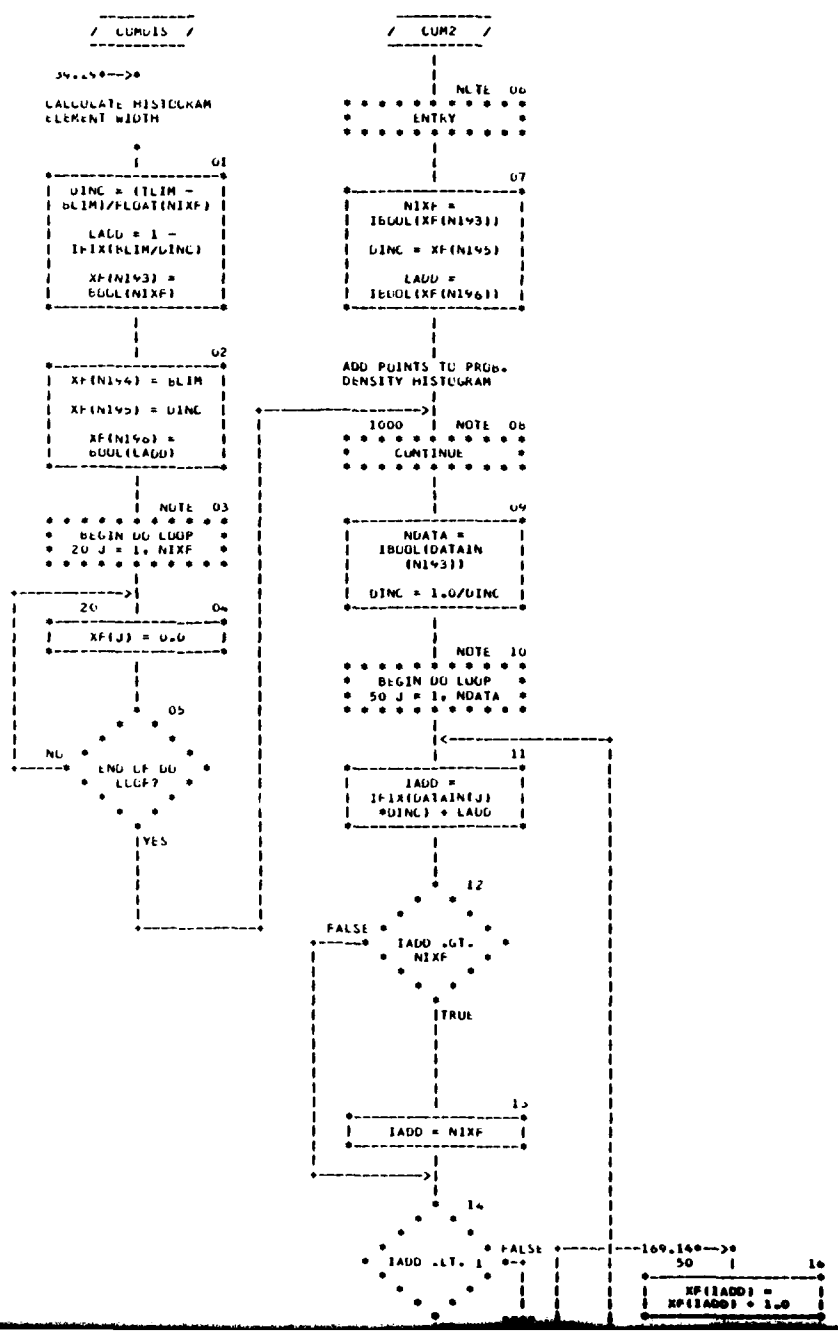

/ KNDARY /
NOTE 03
BEGIN DO LOOP
DO I = 1, NPTS
03
KND(I) =
KKAND(ENTYPE)
10
NO
END OF DO
LOOP?
YES
06
KND(N193) =
BEGL(NPTS)
KND(N194) = 0.0
KND(N195) = 71
05
EXIT
/ ADDKND /
NOTE 06
ENTRY
07
NPTS =
BEGL(KND(N193))
NOTE 08
BEGIN DO LOOP
DO I = 1, NPTS
09
KND(I) = KND(I) +
KKAND(ENTYPE)
20
30
NO
END OF DO
LOOP?
YES
11
EXIT
NOTE 15
KND(I) = KND(I) +
KKANL(, I)
KNDY(I) =
KNDY(I) +
KNDVAT(N)
40
16
NO
END OF DO
LOOP?
YES
17
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(500)
       COMMON/BLKRND/ RNDDAT(141)
      DIMENSION RND(1),RNDY(1)
       EQUIVALENCE (BK1( 44), NPTS  ),(BK1( 45), NTYPE)
       EQUIVALENCE (BK1( 12), TI)
      DATA N193,N194,N195,N196/-3,-2,-1,0/
```

CHART TITLE = SUBROUTINE CUMDIS(DATAIN,XF)



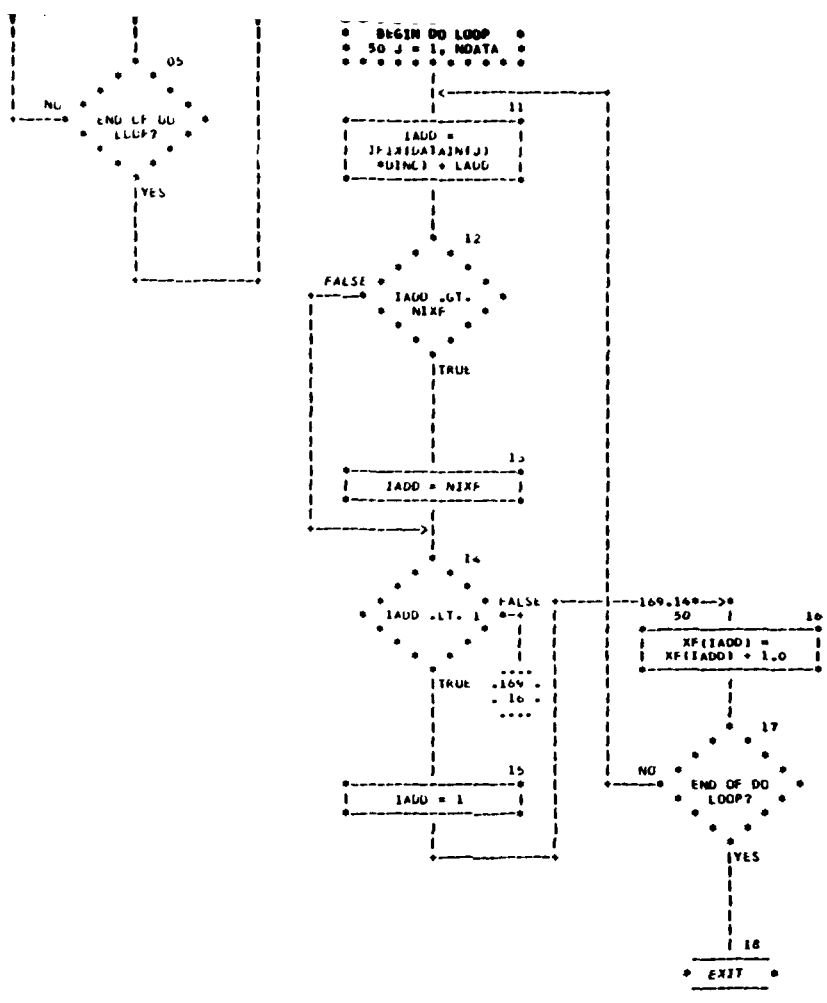
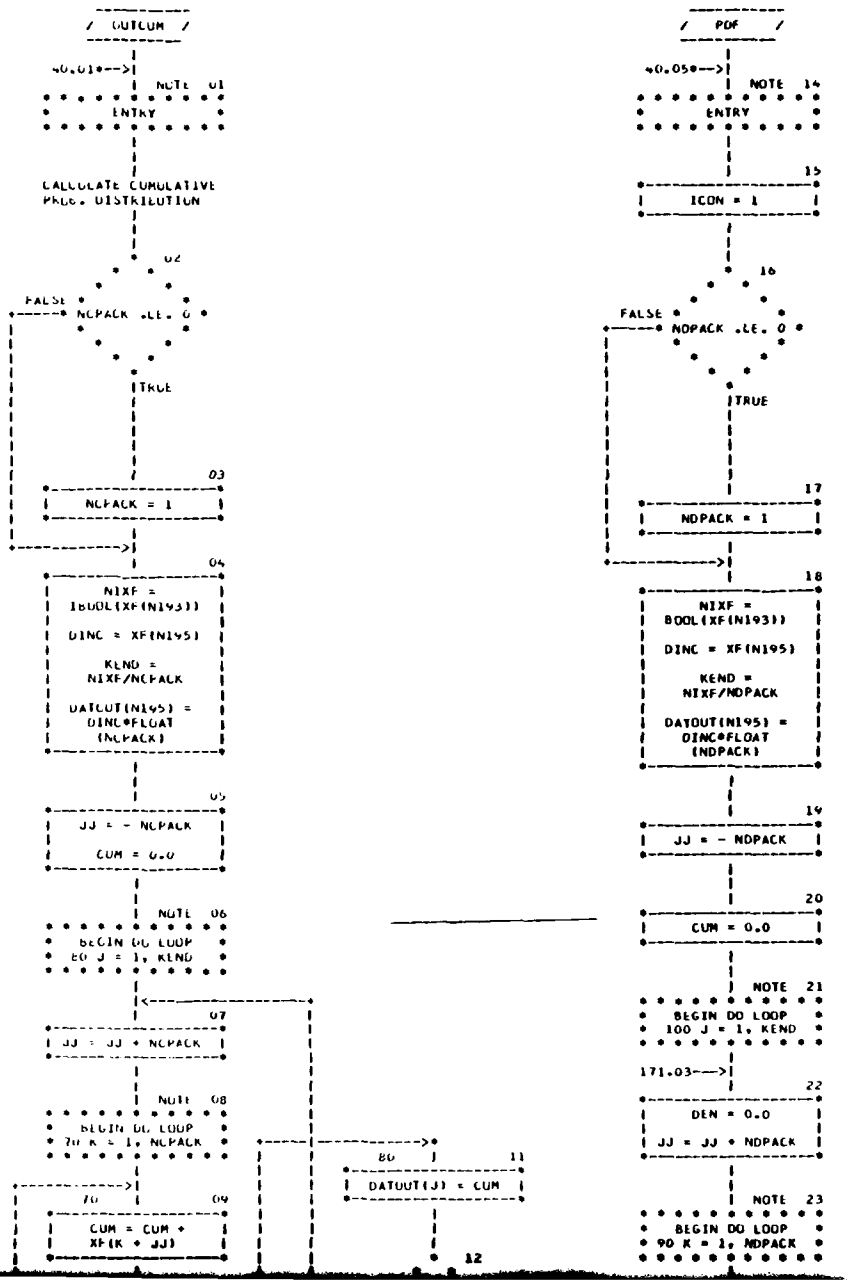

05
NO
END OF DO LOOP?
YES
BEGIN DO LOOP
50 J = 1, NDATA
11
IADD = IFIX(DATAIN(J) *DINC) + LADD
12
FALSE
IADD .GT. NIXF
TRUE
13
IADD = NIXF
14
IADD .LT. 1
FALSE
TRUE
.169.
.16.
15
IADD = 1
169,169
50
16
XF(IADD) = XF(IADD) + 1.0
17
NO
END OF DO LOOP?
YES
18
EXIT

CHART TITLE = SUBROUTINE CUMDIS(DATAIN,XF)



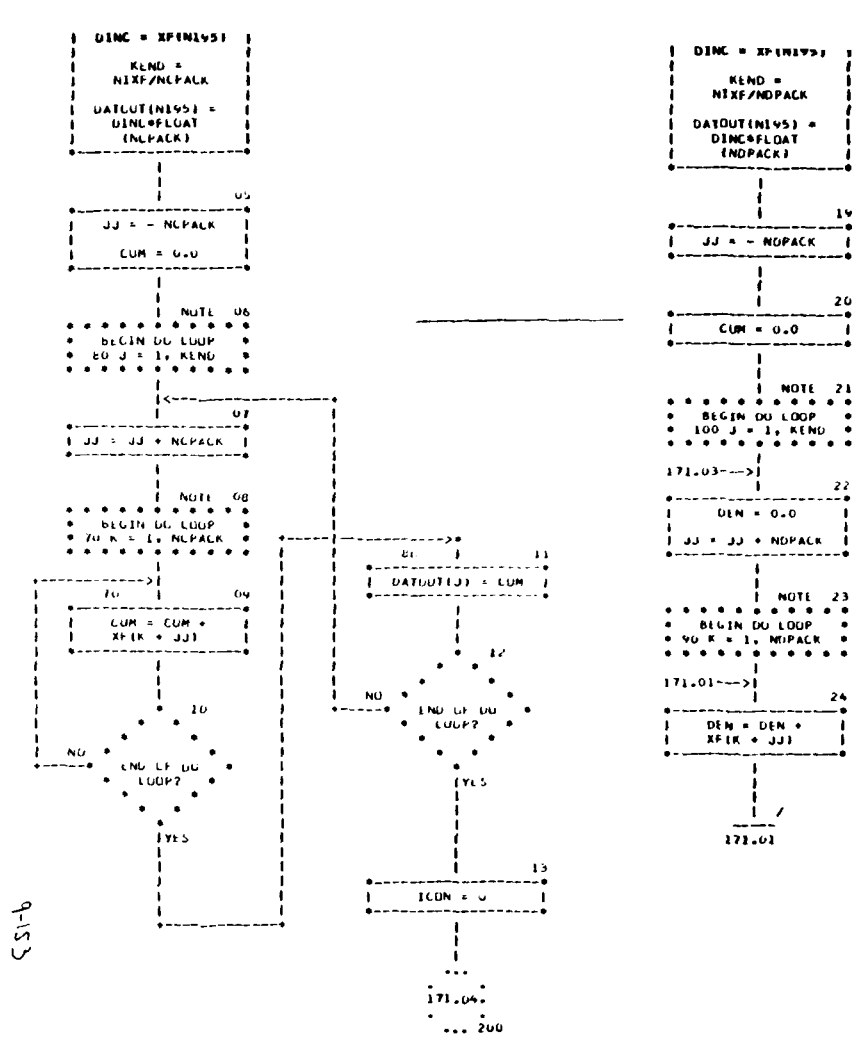
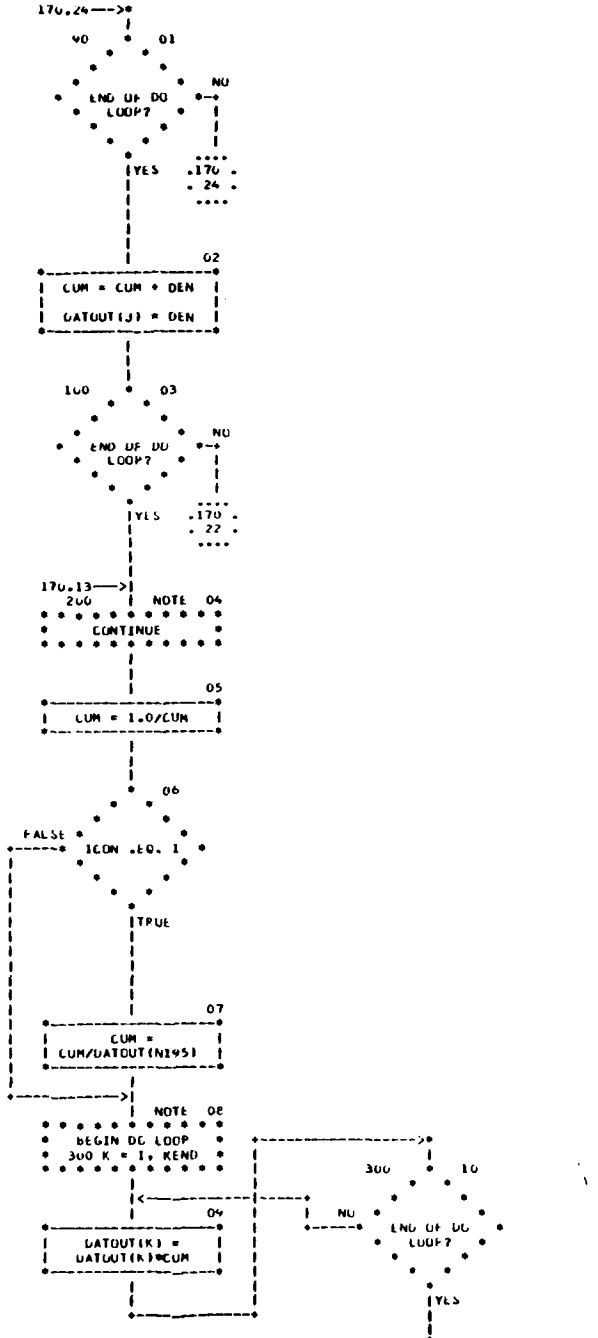

DINC = XF(N1+95)
KEND = NIXF/NCPACK
DATOUT(N1+95) = DINC*FLOAT(NCPACK)
05
JJ = - NCPACK
CUM = 0.0
NOTE 06
BEGIN DO LOOP
80 J = 1, KEND
07
JJ = JJ + NCPACK
NOTE 08
BEGIN DO LOOP
70 K = 1, NCPACK
70
09
CUM = CUM + XF(K + JJ)
10
NO
END OF DO LOOP?
YES
80
11
DATOUT(J) = CUM
12
NO
END OF DO LOOP?
YES
13
ICON = 0
...
171.04
... 200
DINC = XF(N1+95)
KEND = NIXF/NDPACK
DATOUT(N1+95) = DINC*FLOAT(NDPACK)
19
JJ = - NDPACK
20
CUM = 0.0
NOTE 21
BEGIN DO LOOP
100 J = 1, KEND
171.03
22
DEN = 0.0
JJ = JJ + NDPACK
NOTE 23
BEGIN DO LOOP
90 K = 1, NDPACK
171.01
24
DEN = DEN + XF(K + JJ)
171.01

CHART TITLE - SUBROUTINE CUMDIS(DATAIN,XF)

A-154



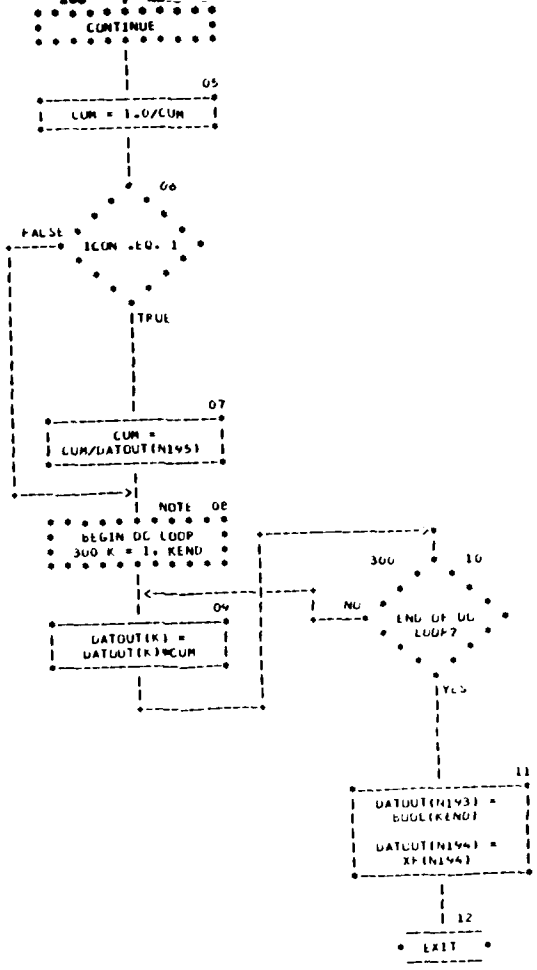
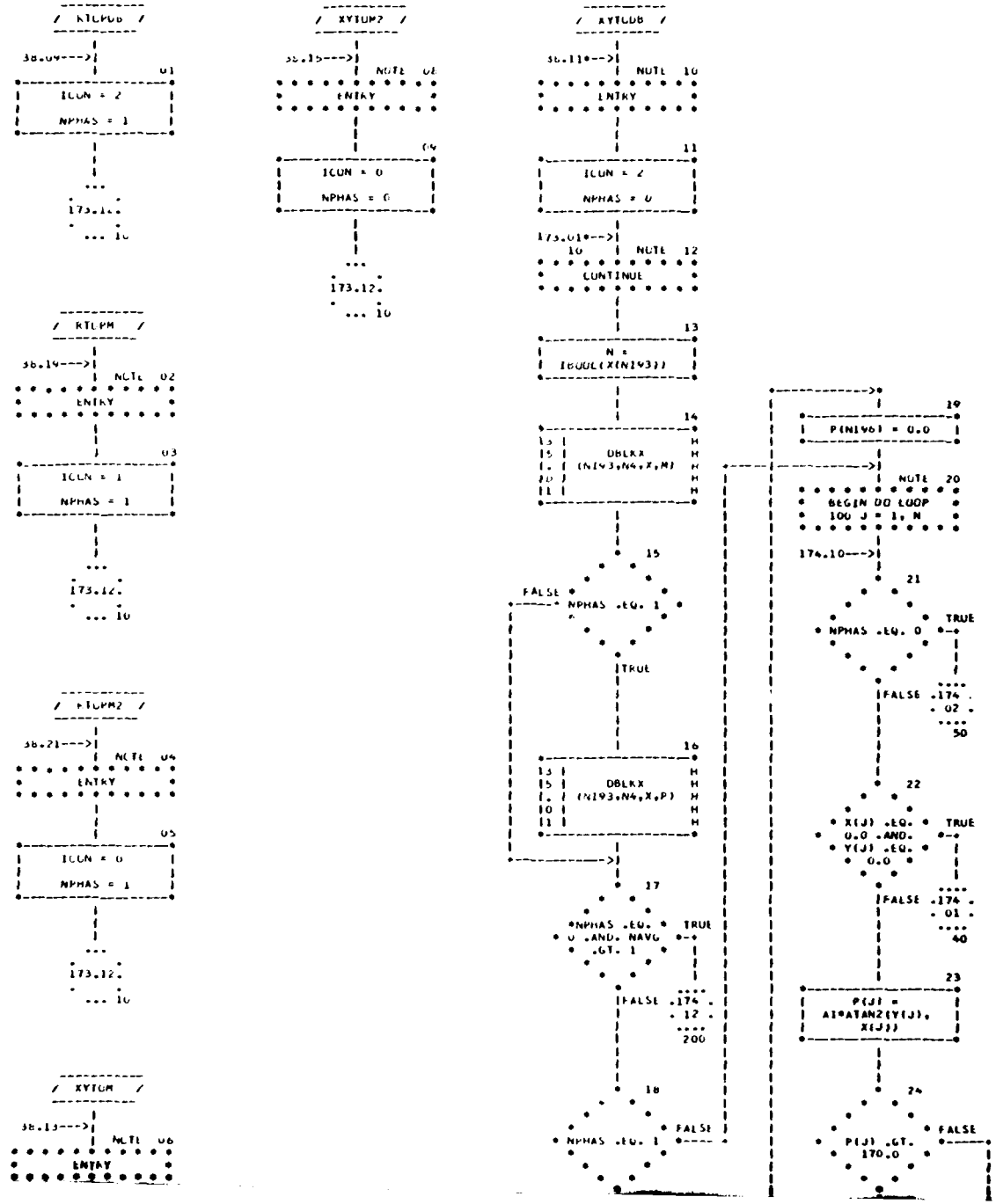
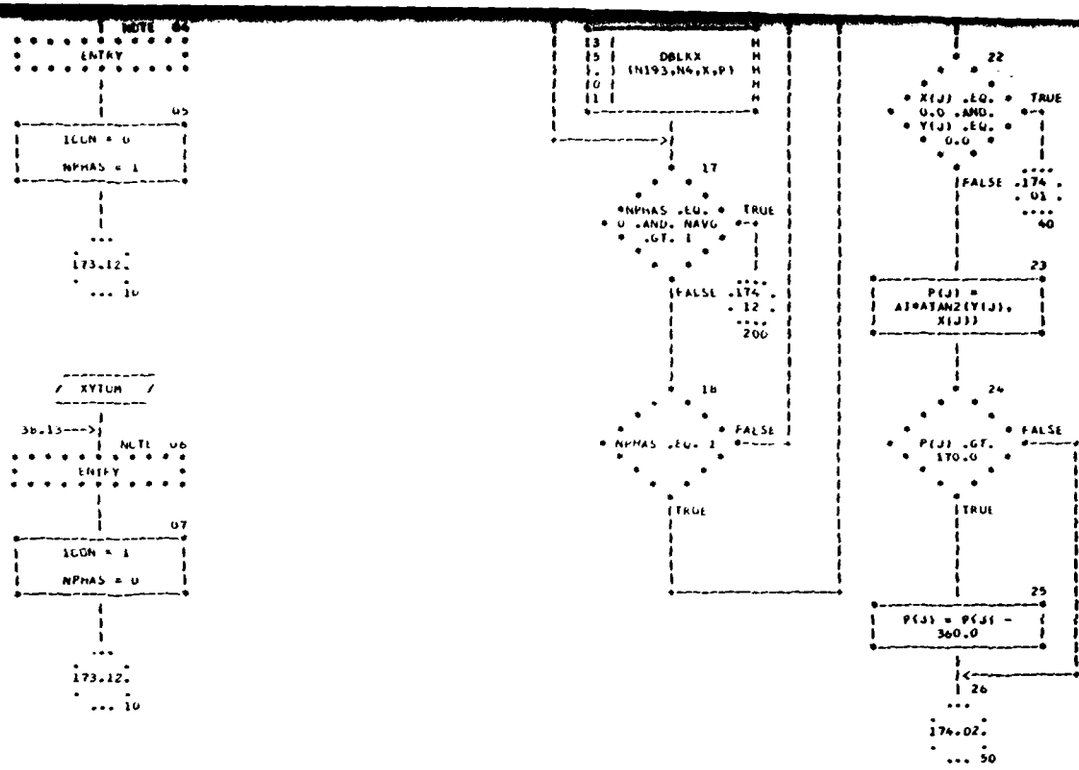

CONTINUE
05
CUM = 1.0/CUM
06
FALSE
ICON .EQ. 1
TRUE
07
CUM =
CUM/DATOUT(N195)
NOTE 08
BEGIN DO LOOP
300 K = 1, KEND
04
DATOUT(K) =
DATOUT(K)*CUM
300
10
NO
END OF DO
LOOP?
YES
11
DATOUT(N193) =
BOOL(KEND)
DATOUT(N194) =
XP(N194)
12
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(500)
      DIMENSION DATAIN(1),DATOUT(1),XF(1)
      EQUIVALENCE  (BK1( 39), TLIM        ),
                   (BK1( 40), BLIM        ), (BK1( 41), NIXF        ),
                   (BK1( 42), NCPACK      ), (BK1( 43), NDPACK      )
      DATA N193,N194,N195,N196/-3,-2,-1,0/
```

CHART TITLE = SUBROUTINE RTCPDE(A,Y,M,P)




NOTE 04
ENTRY
05
ICON = 0
NPHAS = 1
173.12
... 10
/ XYTUM /
36.13
NOTE 06
ENTRY
07
ICON = 1
NPHAS = 0
173.12
... 10
13
15
16
10
11
DBLKX (N193,N4,X,P)
17
NPHAS .EQ. 0 .AND. NAVG .GT. 1
TRUE
FALSE .174. .12. 200
18
NPHAS .EQ. 1
FALSE
TRUE
22
X(J) .EQ. 0.0 .AND. Y(J) .EQ. 0.0
TRUE
FALSE .174. .01. 40
23
P(J) = AI*ATAN2(Y(J), X(J))
24
P(J) .GT. 370.0
FALSE
TRUE
25
P(J) = P(J) - 360.0
26
174.02
... 50

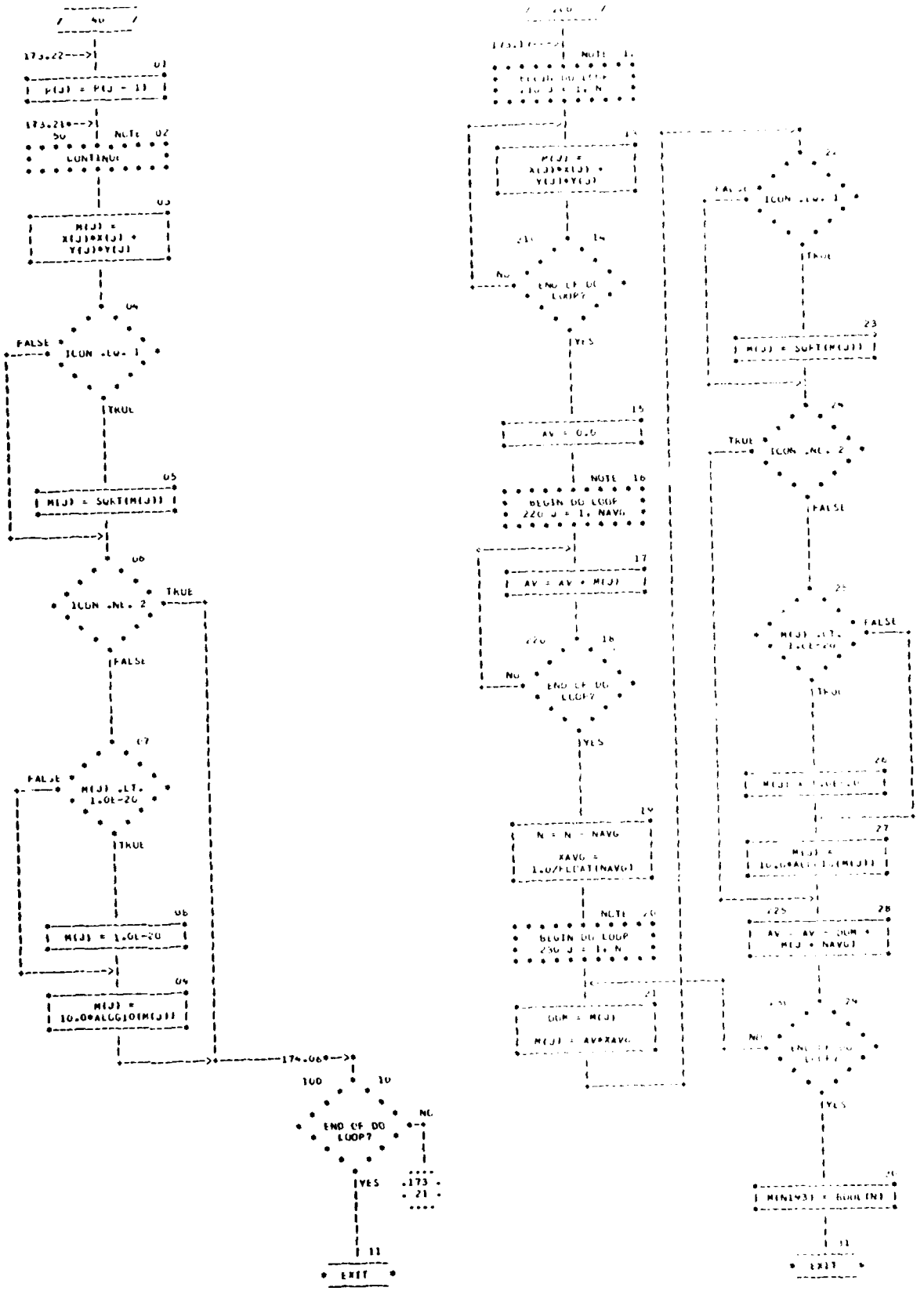
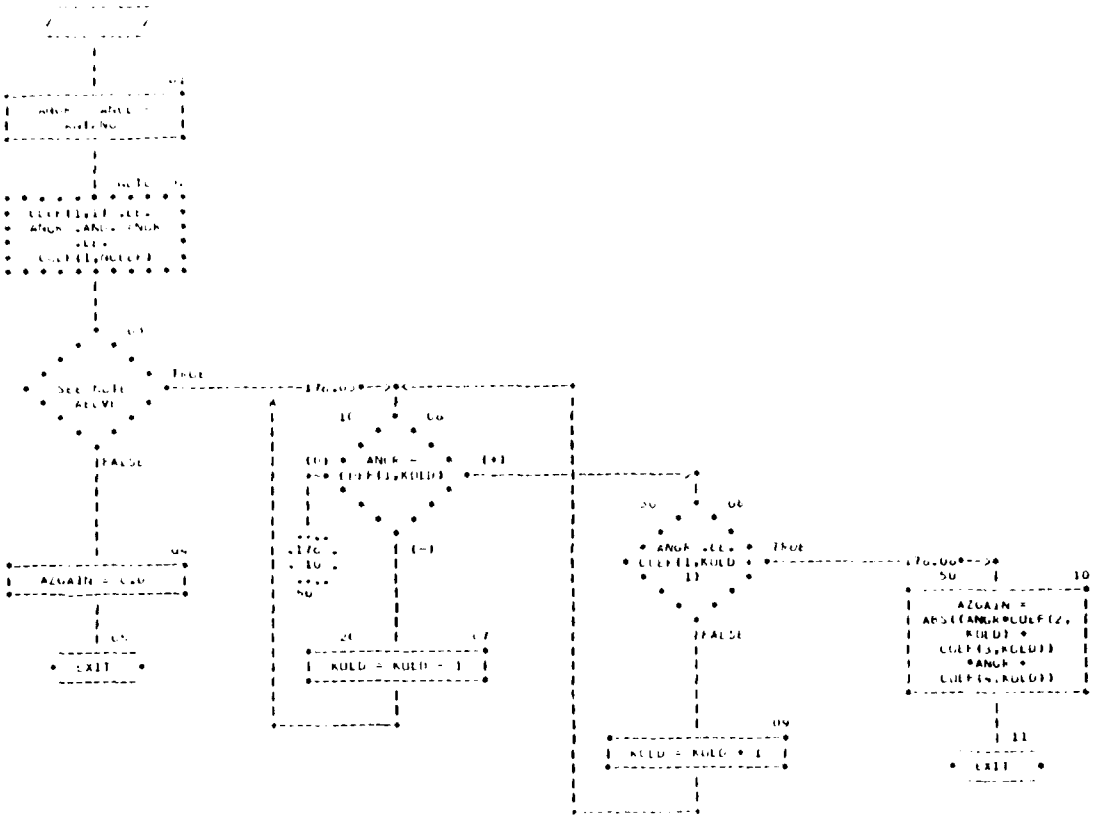

/ 40 /
173.22
01
P(J) = P(J - 1)
173.21
50
NOTE 02
CONTINUE
03
M(J) = X(J)*X(J) + Y(J)*Y(J)
04
FALSE
ICON .EQ. 1
TRUE
05
M(J) = SQRT(M(J))
06
ICON .NE. 2
TRUE
FALSE
07
FALSE
M(J) .LT. 1.0E-20
TRUE
08
M(J) = 1.0E-20
09
M(J) = 10.0**ALOG10(M(J))
174.06
100
10
END OF DO LOOP?
NO
YES
173.21
11
EXIT
/ 220 /
173.1
NOTE 12
BEGIN DO LOOP 220 J = 1, N
13
M(J) = X(J)*X(J) + Y(J)*Y(J)
220
14
END OF DO LOOP?
NO
YES
15
AV = 0.0
NOTE 16
BEGIN DO LOOP 220 J = 1, NAVG
17
AV = AV + M(J)
220
18
END OF DO LOOP?
NO
YES
19
N = N - NAVG
XAVG = 1.0/FLOAT(NAVG)
NOTE 20
BEGIN DO LOOP 230 J = 1, N
21
DUM = M(J)
M(J) = AV*XAVG
22
ICON .EQ. 1
TRUE
23
M(J) = SQRT(M(J))
24
TRUE
ICON .NE. 2
FALSE
25
M(J) .LT. 1.0E-20
FALSE
TRUE
26
M(J) = 1.0E-20
27
M(J) = 10.0**ALOG10(M(J))
225
28
AV = AV - DUM + M(J + NAVG)
230
29
END OF DO LOOP?
NO
YES
30
MEN1M93 = BOOK(N)
31
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

851-9

```
      COMMON/BLK1/ BK1(500)
      EQUIVALENCE (BK1( 36), NAVG)
      DIMENSION X(1),Y(1),M(1),P(1)
      REAL M
      DATA N193,N196,N4/-3,0,4/
      DATA AI/57.29578/
```



NON-PROCEDURAL STATEMENTS

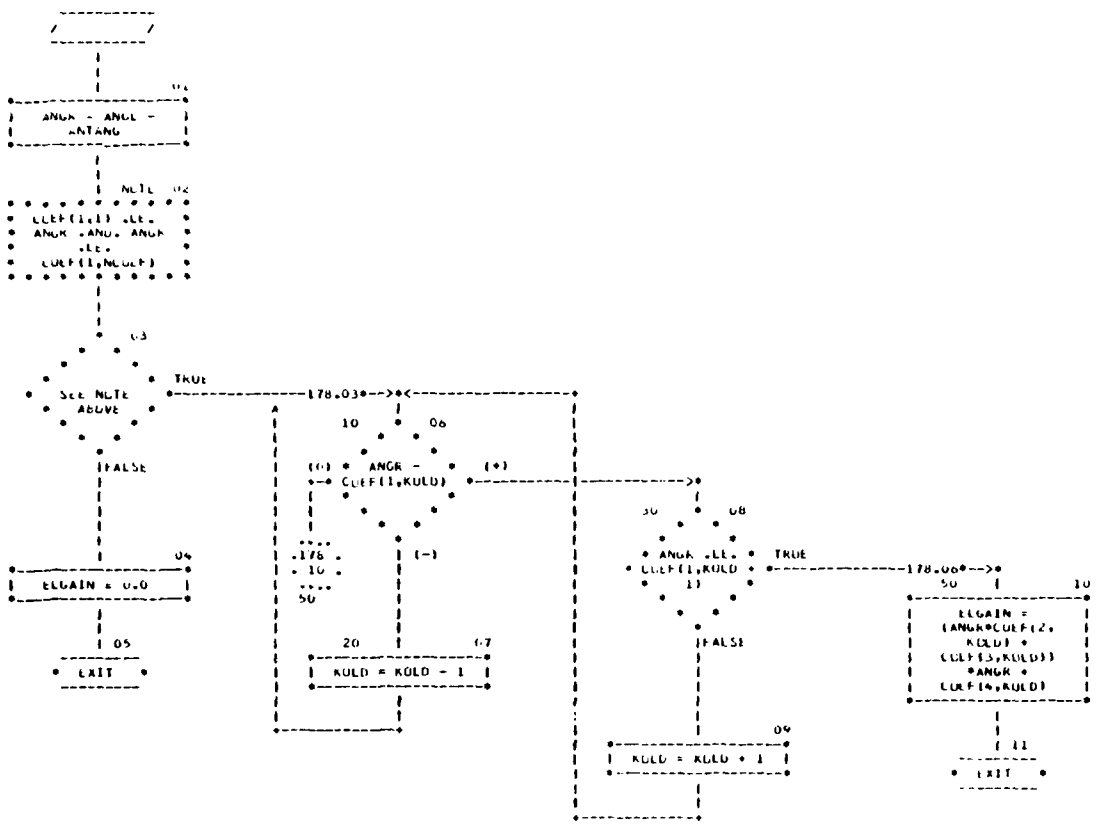
COMMON/AZEATZ COEFF(4,15),NCOEF

COMMON /BLK1Z PRIESOOI

EQUIVALENCE (ANTANG,PRIEII(1))

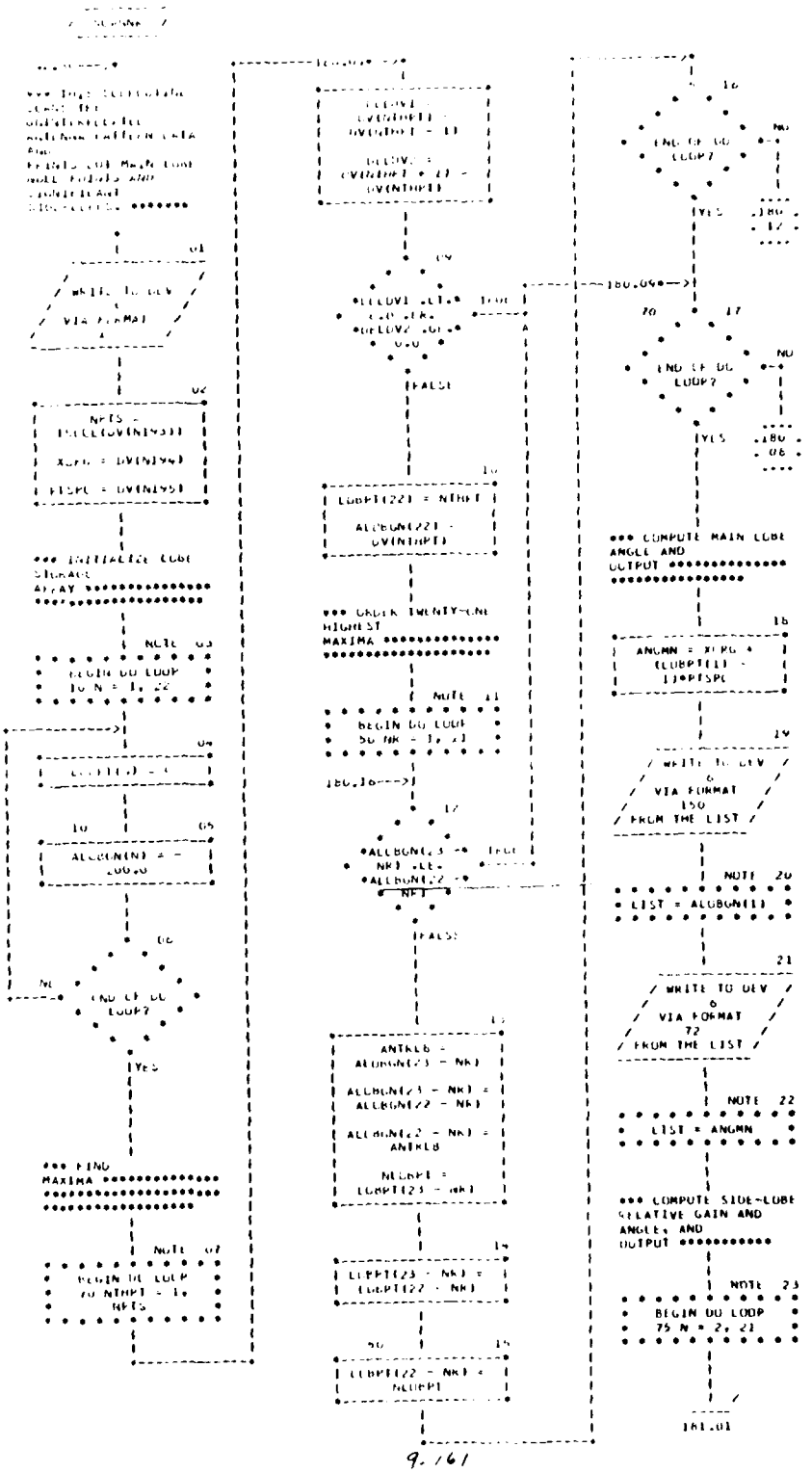
DATA K,LD/1Z

CHART TITLE = FUNCTION [illegible]



NON-PROCEDURAL STATEMENTS

```
COMMON/ELPAT/ CUEF(4,75),NCUEF
COMMON /BLK1/ BK1(500)
EQUIVALENCE (ANTANG,BK1(1))
DATA KOLD/1/
```



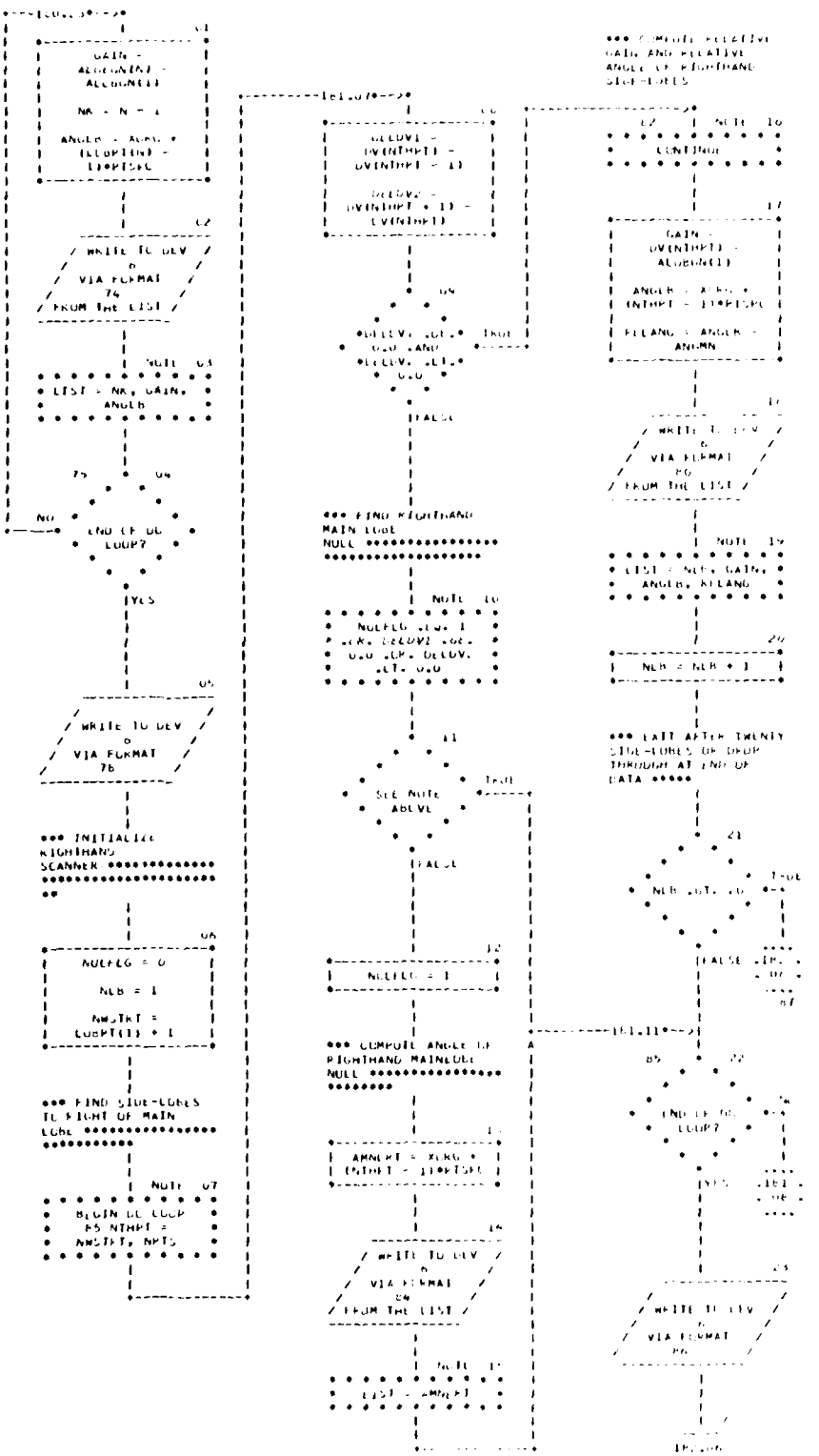
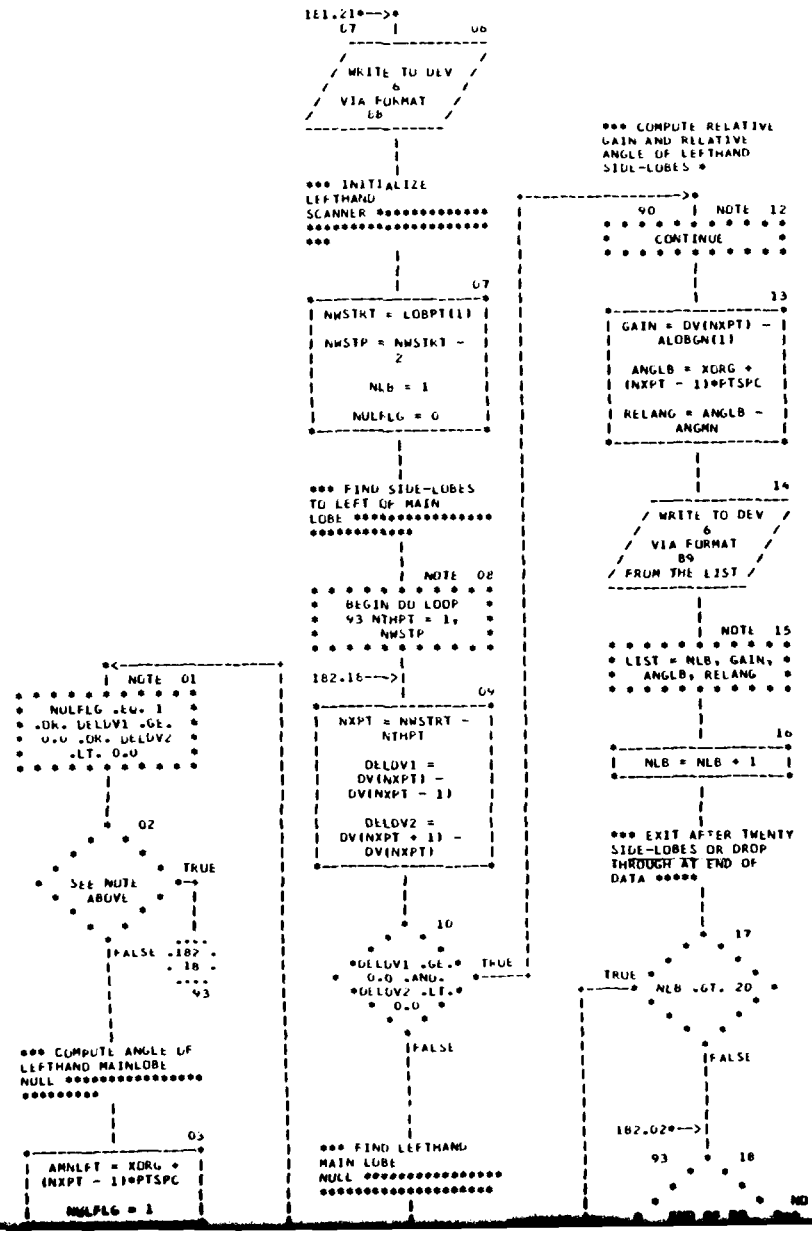

GAIN = ALGAIN(NF) + ALGAIN(I)
NA = N + 1
ANGLE = ALANG + ELOPTIN(I) + ELOPTSC
WRITE TO DEV 0 VIA FORMAT 74 FROM THE LIST
LIST = NA, GAIN, ANGLE
END OF DO LOOP?
NO
YES
WRITE TO DEV 0 VIA FORMAT 76
*** INITIALIZE RIGHTHAND SCANNER ***
NUFEG = 0
NLB = 1
NWITKT = LUBPTR(1) + 1
*** FIND SIDE-LOBES TO RIGHT OF MAIN LOBE ***
BEGIN DO LOOP FS NTHPT = ANSTRT, NPTS
DLEDV1 = DVENTHPT(I) - DVENTHPT(I-1)
DLEDV2 = DVENTHPT(I+1) - DVENTHPT(I)
DLEDV1 .GE. 0.0 .AND. DLEDV2 .LT. 0.0
TRUE
FALSE
*** FIND RIGHTHAND MAIN LOBE NULL ***
NUFEG .EQ. 1 .AND. DLEDV1 .GE. 0.0 .OR. DLEDV2 .LT. 0.0
SEE NOTE ABOVE
NUFEG = 1
*** COMPUTE ANGLE OF RIGHTHAND MAINLOBE NULL ***
AMNERT = ALANG + ENTHPT - ELOPTSC
WRITE TO DEV 0 VIA FORMAT 84 FROM THE LIST
LIST = AMNERT
*** COMPUTE RELATIVE GAIN AND RELATIVE ANGLE OF RIGHTHAND SIDE-LOBES
CONTINUE
GAIN = DVENTHPT(I) - ALGAIN(I)
ANGLE = ALANG + ENTHPT - ELOPTSC
RELANG = ANGLE - ANGMN
WRITE TO DEV 0 VIA FORMAT 86 FROM THE LIST
LIST = NLB, GAIN, RELANG
NLB = NLB + 1
*** EXIT AFTER TWENTY SIDE-LOBES OR DROP THROUGH AT END OF DATA *****
NLB .GT. 20
FALSE (IF ... OR ...)
END OF DO LOOP?
YES
IRTURN

CHART TITLE - SUBROUTINE SCANNER(DV)



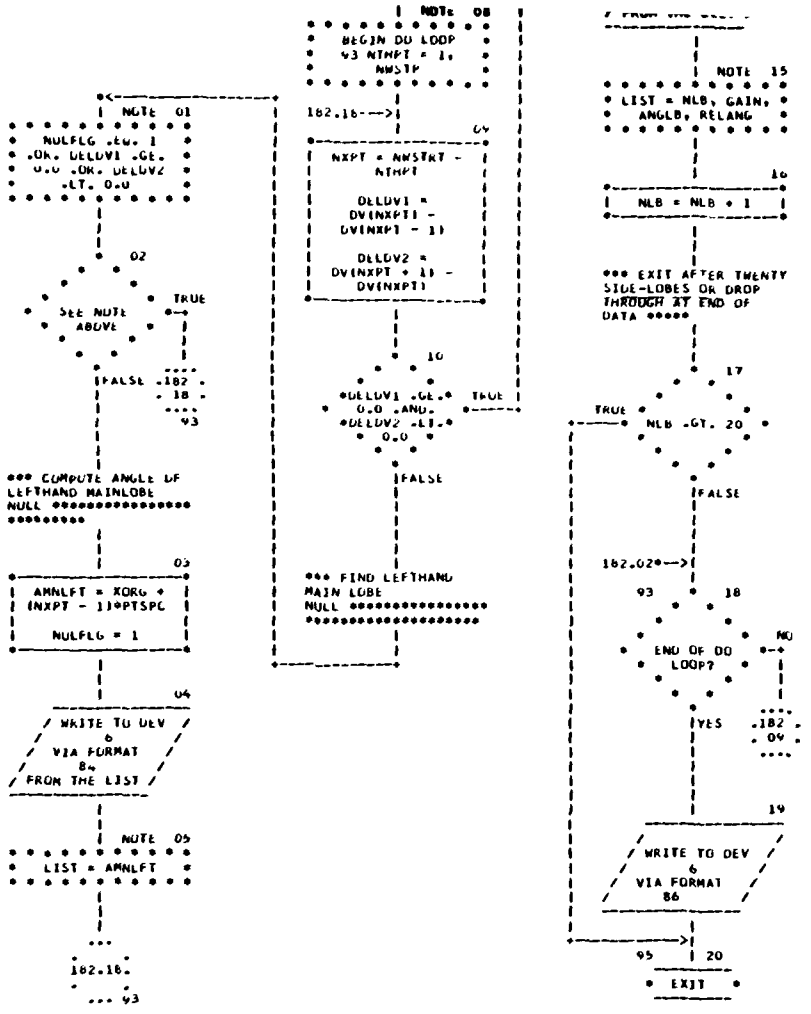

NOTE 01
NULFLG .EQ. 1 .OR. DELDV1 .GE. 0.0 .OR. DELDV2 .LT. 0.0
02
SEE NOTE ABOVE
TRUE
FALSE
182.18
93
*** COMPUTE ANGLE OF LEFTHAND MAINLOBE NULL **********
03
AMNLFT = XORG + (NXPT - 1)*PTSPC
NULFLG = 1
04
WRITE TO DEV 6 VIA FORMAT 84 FROM THE LIST
NOTE 05
LIST = AMNLFT
182.18
93
NOTE 08
BEGIN DO LOOP W3 NTHPT = 1, NWSTP
182.16
09
NXPT = NWSTRT - NTHPT
DELDV1 = DV(NXPT1) - DV(NXPT - 1)
DELDV2 = DV(NXPT + 1) - DV(NXPT1)
10
DELDV1 .GE. 0.0 .AND. *DELDV2 .LT.* 0.0
TRUE
FALSE
*** FIND LEFTHAND MAIN LOBE NULL **********
NOTE 15
LIST = NLB, GAIN, ANGLB, RELANG
16
NLB = NLB + 1
*** EXIT AFTER TWENTY SIDE-LOBES OR DROP THROUGH AT END OF DATA *****
17
NLB .GT. 20
TRUE
FALSE
182.02
93
18
END OF DO LOOP?
NO
YES
182
09
19
WRITE TO DEV 6 VIA FORMAT 86
95
20
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      DIMENSION LOBPT(22), ALOBN(22), DV(1)
      DATA N193,N194,N195,N196/-3,-2,-1,0/
      EQUIVALENCE (NPTS,XPTS)
1     FORMAT (1H0/47X,'* * * * ANTENNA LOBE SCANNER * * * *' / / / )
150   FORMAT(' THE MAIN LOBE GAIN IS ',F13.7)
72    FORMAT( 1H0, 34X, 'LOCATION AND RELATIVE GAIN OF HIGHEST 20 SIDE L
      OBES' / 35X,'RANK',17X,'REL. GAIN',16X,'ANGLE' / 58X,'( DB )',16X,
      '( DEG )' // 35X,'MAIN',20X,'0.0',17X,F13.7)
74    FORMAT ( 36X, I2, 18X, F13.7, 14X,F13.7)
78    FORMAT(1H1,21X,'MAIN LOBE NULL AND FIRST 20 SIDE-LOBES TO RIGHT OF
       (ABOVE) MAIN LOBE'
      /38X,'RANK',13X,'REL. GAIN',13X,'TRUE ANGLE',15X,'REL. ANGLE'
      / 57X,'( DB )',16X,'( DEG )',16X,'( DEG )' /)
84    FORMAT(36X,'MAIN LOBE',9X,'** NULL **',15X,F13.7)
90    FORMAT ( 34X,I3,2(13X,F13.7))
92    FORMAT( 43X, 'NO FURTHER SIDE LOBES ON THIS SIDE' )
96    FORMAT(1H0/22X,'MAIN LOBE NULL AND FIRST 20 SIDE-LOBES TO LEFT OF
      (BELOW) MAIN LOBE'
      /38X,'RANK',15X,'REL. GAIN',13X,'TRUE ANGLE',15X,'REL. ANGLE'
      /57X,'( DB )',16X,'( DEG )',16X,'( DEG )' / )
98    FORMAT(39X, I3, 3(13X,F13.7))
```

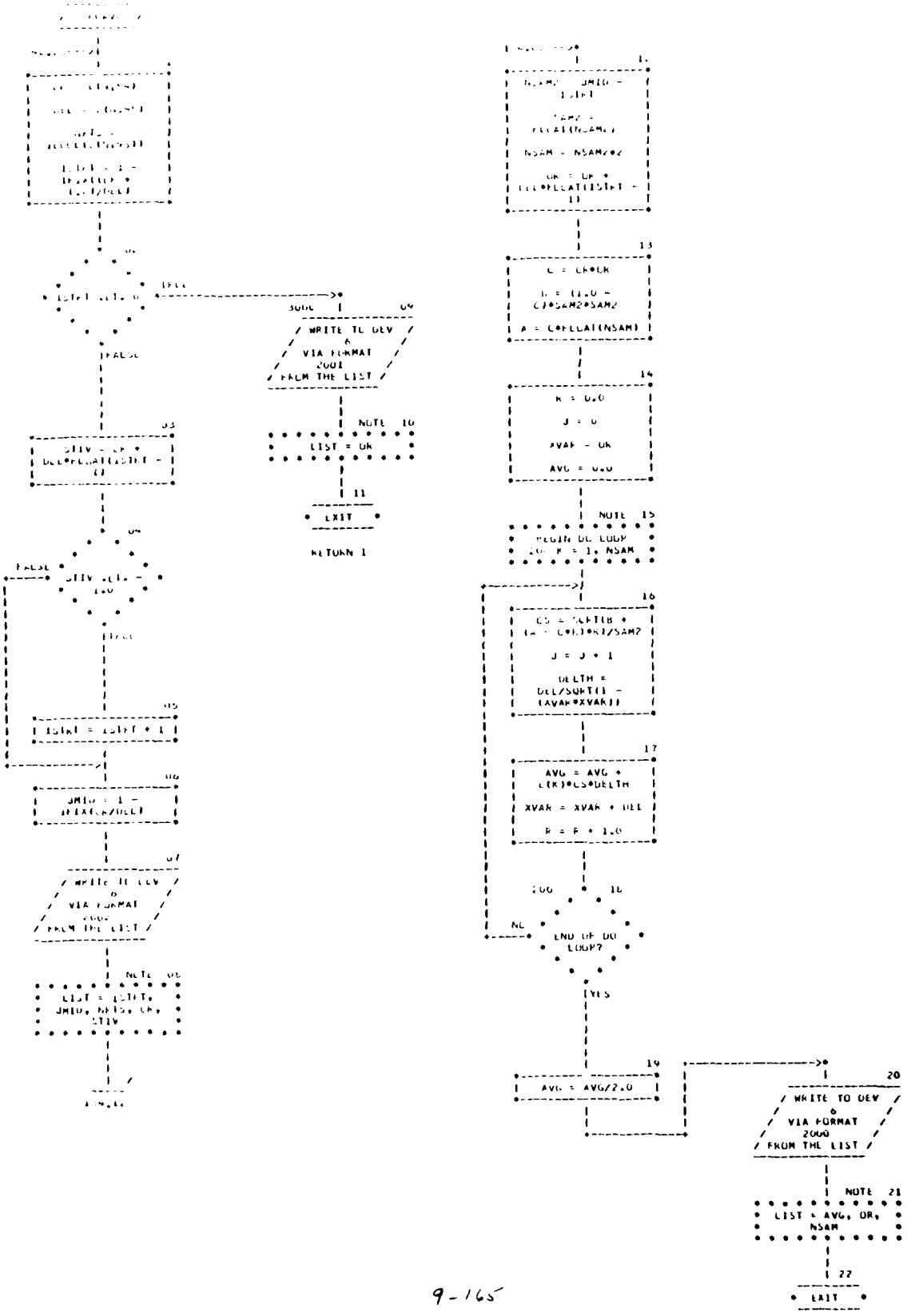

TRUE
FALSE
3000
09
WRITE TO DEV
&
VIA FORMAT
2001
FROM THE LIST
NOTE 10
LIST = OR
11
EXIT
RETURN 1
NOTE 15
BEGIN DO LOOP
FOR K = 1, NSAM
16
17
200
18
NO
END OF DO
LOOP?
YES
19
AVG = AVG/2.0
20
WRITE TO DEV
&
VIA FORMAT
2000
FROM THE LIST
NOTE 21
LIST = AVG, OR,
NSAM
22
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      DIMENSION E(1)
      DATA N193,N194,N195/-3,-2,-1/
2002  FORMAT(1H ,3I15,2E15.5)
2000  FORMAT(1H ,' AVG=',E15.7,'  UR=',E15.7,'  NSAM=',I10 )
2001  FORMAT(1H ,' THE ANTENNA PATTERN IS NOT DEFINED OVER ALL VISIBLE S
      PACE....AVERAGE POWER OVER ALL SPACE NOT DETERMINABLE',//' ORIGIN=
      ',E15.7)
```

CHART TITLE - SUBROUTINE PHENC(*)

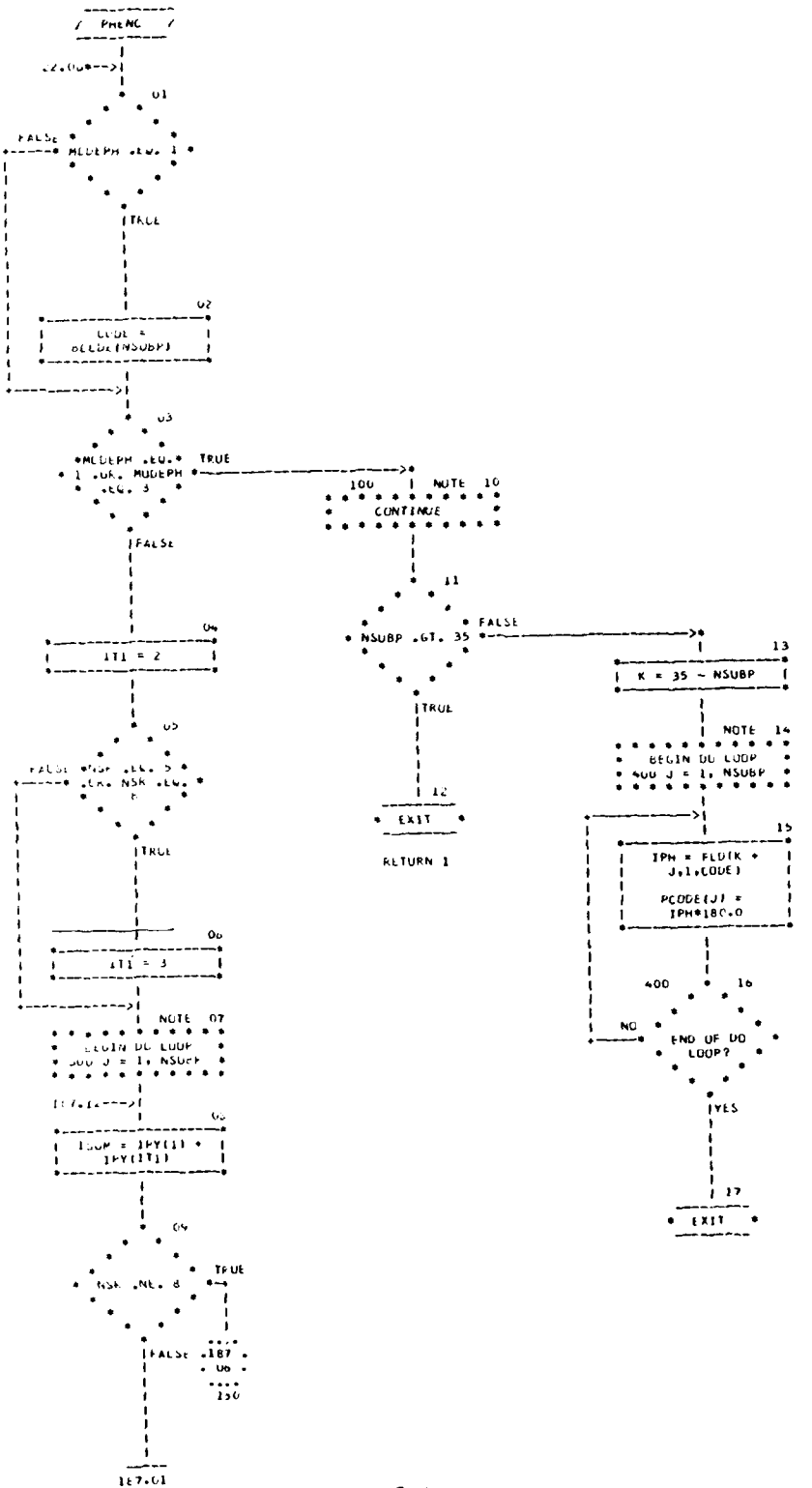
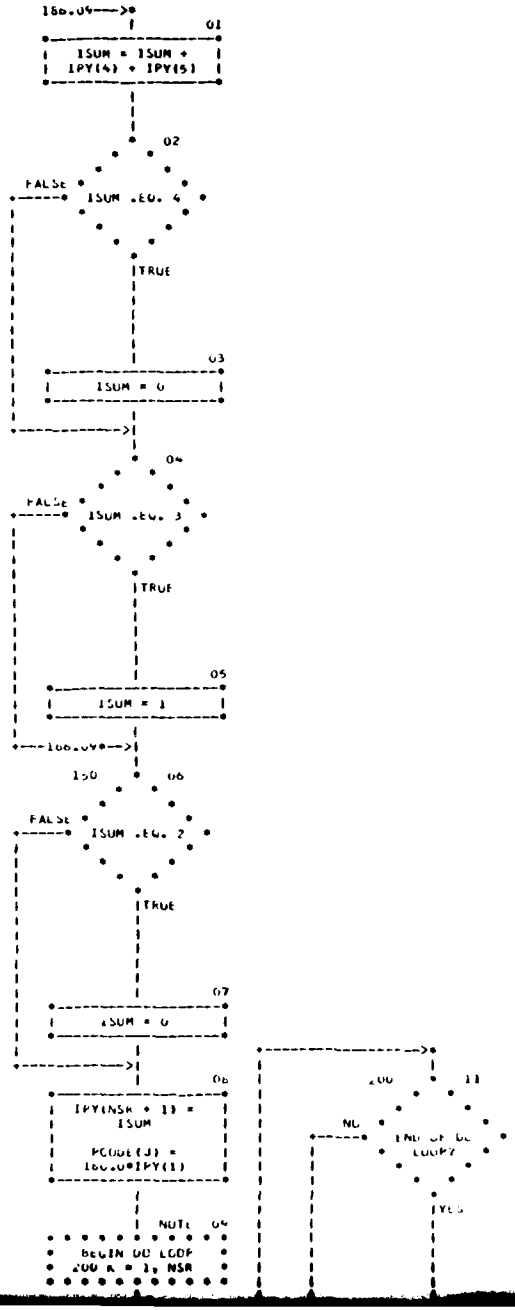


CHART TITLE - SUBROUTINE PHENC(*)



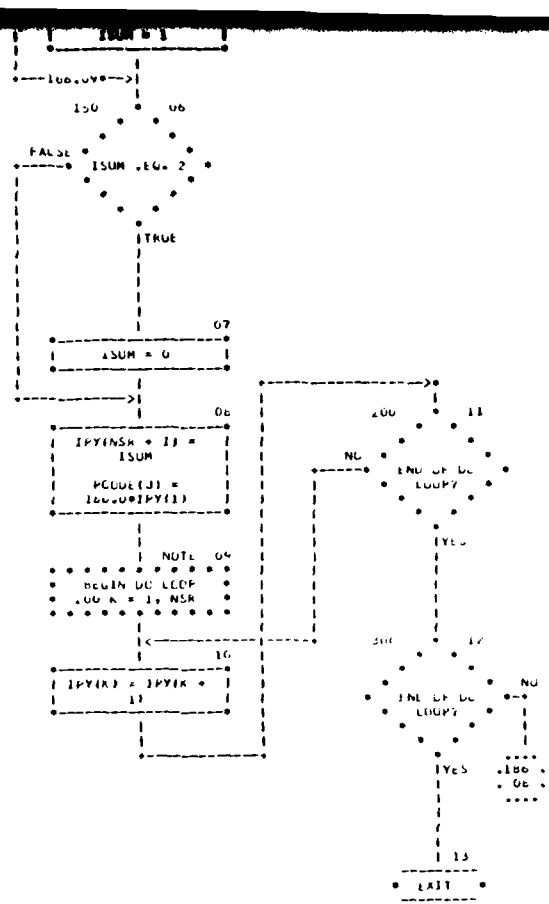
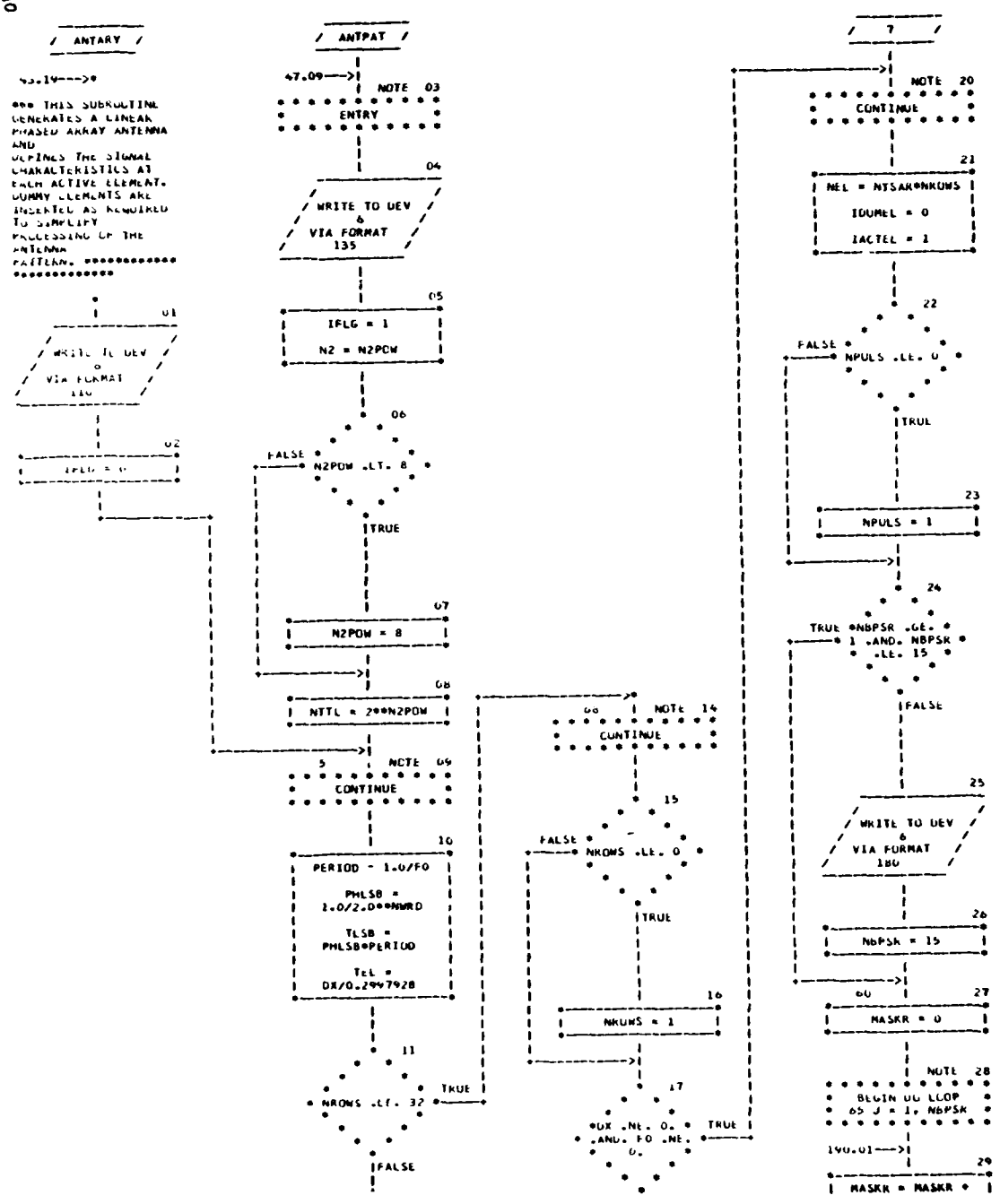
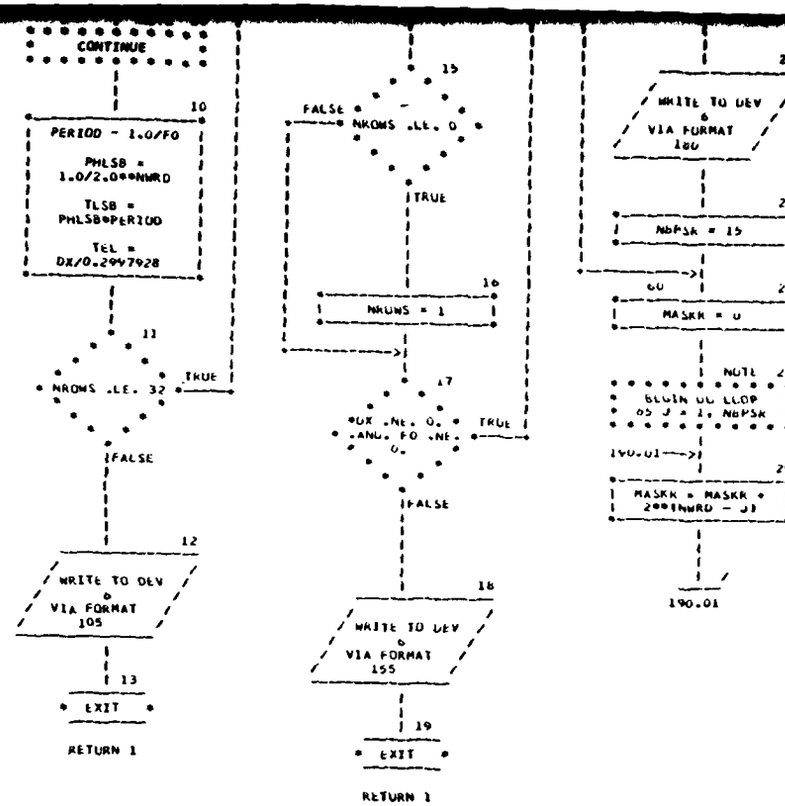

ISUM = 1
100.04
150
06
FALSE
ISUM .EQ. 2
TRUE
07
ISUM = 0
08
IPY(NSR + 1) = ISUM
PCODE(J) = 100.0*IPY(1)
NOTE 09
BEGIN DO LOOP
DO K = 1, NSR
10
IPY(K) = IPY(K + 1)
200
11
NO
END OF DO LOOP?
YES
300
12
NO
END OF DO LOOP?
YES
100.
06
13
EXIT

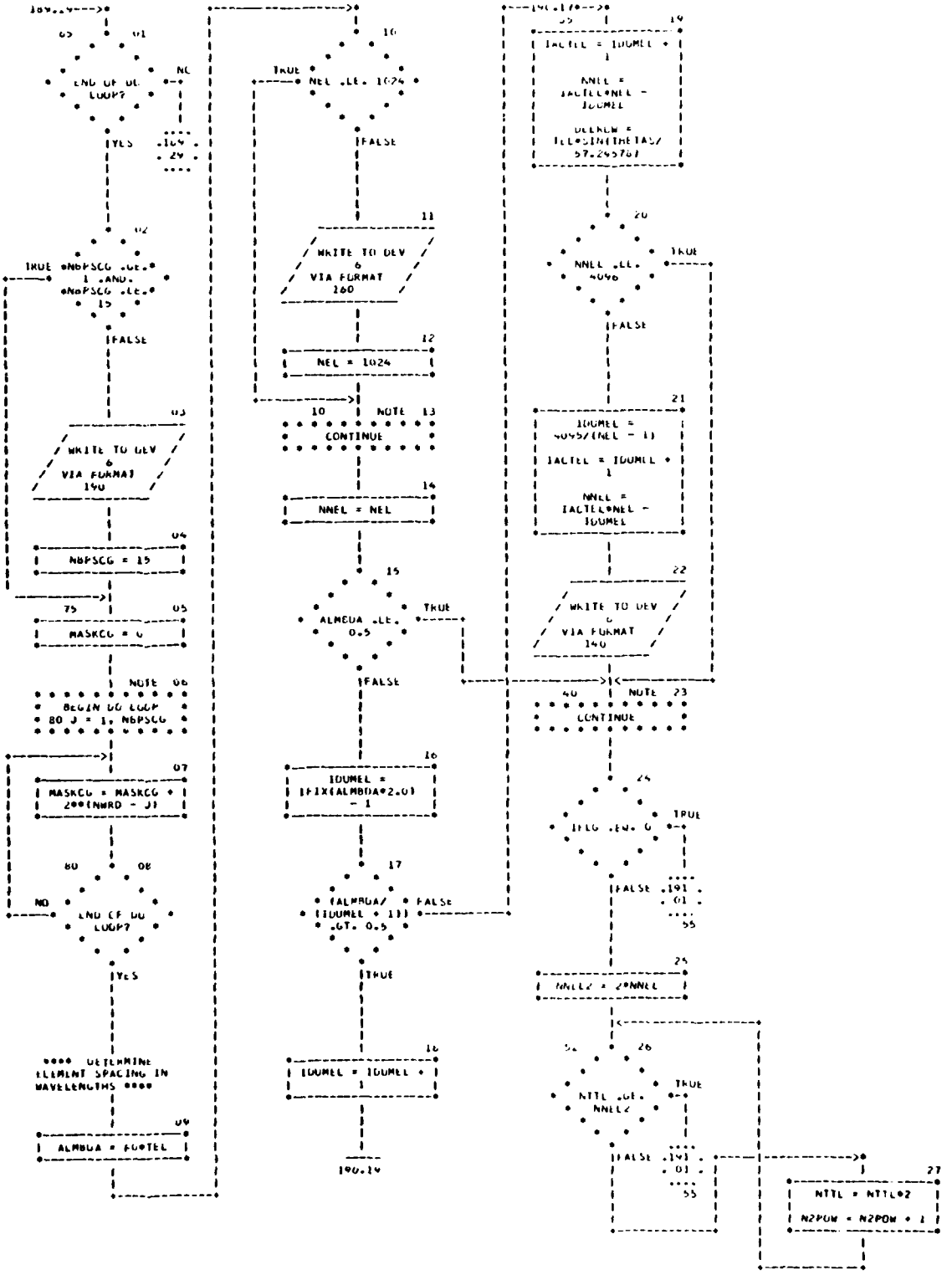
CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK2/ B(200),PCODE(300)
      EQUIVALENCE  (B( 96),  NSUBP), (B(183), MODEPH),
                   (B(184),  NSR   ) , (B(186), IPY(1) )  ,
                   (B(194),  CODE  )
      DIMENSION IPY(8),BCODE(13)
      DATA BCODE/00,01,01,02,02,00,015,00,00,00,0355,00,0312/,N1/1/
```

CHART TITLE - SUBROUTINE ANTARY(X,Y,*)




CONTINUE
10
PERIOD = 1.0/FO
PHLSB = 1.0/2.0**NWRD
TLSB = PHLSB*PERIOD
TEL = DX/0.2997928
11
NROWS .LE. 32
TRUE
FALSE
12
WRITE TO DEV
&
VIA FORMAT
105
13
EXIT
RETURN 1
15
NROWS .LE. 0
FALSE
TRUE
16
NROWS = 1
17
*DX .NE. 0. * .AND. FO .NE. 0.
TRUE
FALSE
18
WRITE TO DEV
&
VIA FORMAT
155
19
EXIT
RETURN 1
25
WRITE TO DEV
&
VIA FORMAT
180
26
NBPSK = 15
GO
27
MASKR = 0
NOTE 28
BEGIN DO LOOP
DO J = 1, NBPSK
190.01
29
MASKR = MASKR + 2**NWRD - J
190.01


01
END OF DO LOOP?
NO
YES
.164 . .29 .
02
NBPSCG .GE. 1 .AND. NBPSCG .LE. 15
TRUE
FALSE
03
WRITE TO DEV 6 VIA FORMAT 190
04
NBPSCG = 15
05
MASKCG = 0
NOTE 06
BEGIN DO LOOP DO J = 1, NBPSCG
07
MASKCG = MASKCG + 2**(NWRD - J)
08
END OF DO LOOP?
NO
YES
**** DETERMINE ELEMENT SPACING IN WAVELENGTHS ****
09
ALMBDA = FQ*TEL
10
NEL .LE. 1024
TRUE
FALSE
11
WRITE TO DEV 6 VIA FORMAT 160
12
NEL = 1024
10 NOTE 13
CONTINUE
14
NNEL = NEL
15
ALMBDA .LE. 0.5
TRUE
FALSE
16
IDUMEL = IFIX(ALMBDA*2.0) - 1
17
(ALMBDA/(IDUMEL + 1)) .GT. 0.5
FALSE
TRUE
18
IDUMEL = IDUMEL + 1
190.19
190.17
35
19
IACTEL = IDUMEL + 1
NNEL = IACTEL*NEL - IDUMEL
DELRAD = TELESIN(THETAS/57.295578)
20
NNEL .LE. 4096
TRUE
FALSE
21
IDUMEL = 4095/(NEL - 1)
IACTEL = IDUMEL + 1
NNEL = IACTEL*NEL - IDUMEL
22
WRITE TO DEV 6 VIA FORMAT 140
40 NOTE 23
CONTINUE
24
IFLG .EQ. 0
TRUE
FALSE .191 . .01 . 55
25
NNEL2 = 2*NNEL
26
NTTL .GE. NNEL2
TRUE
FALSE .191 . .01 . 55
27
NTTL = NTTL*2
N2POW = N2POW + 1

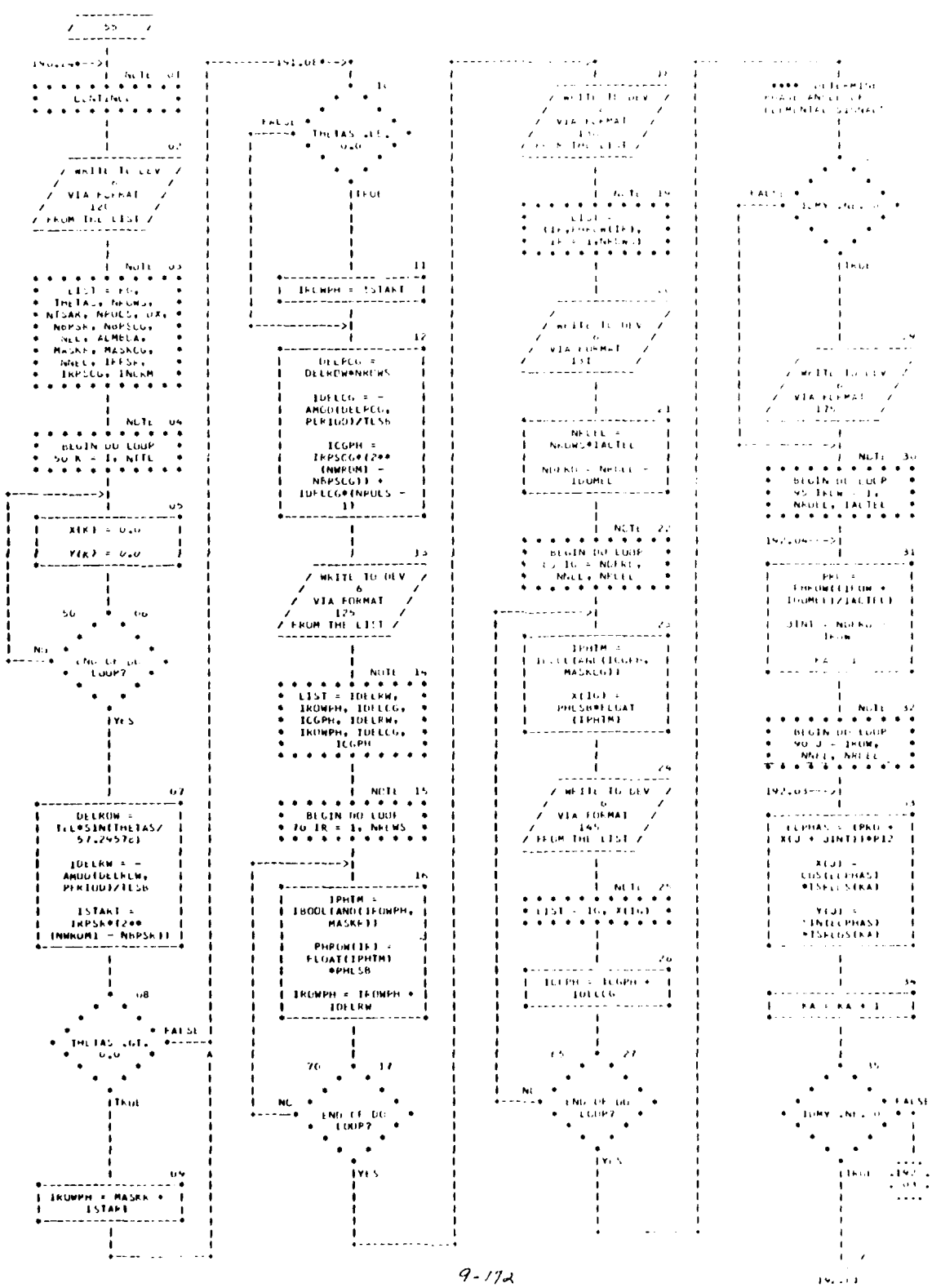
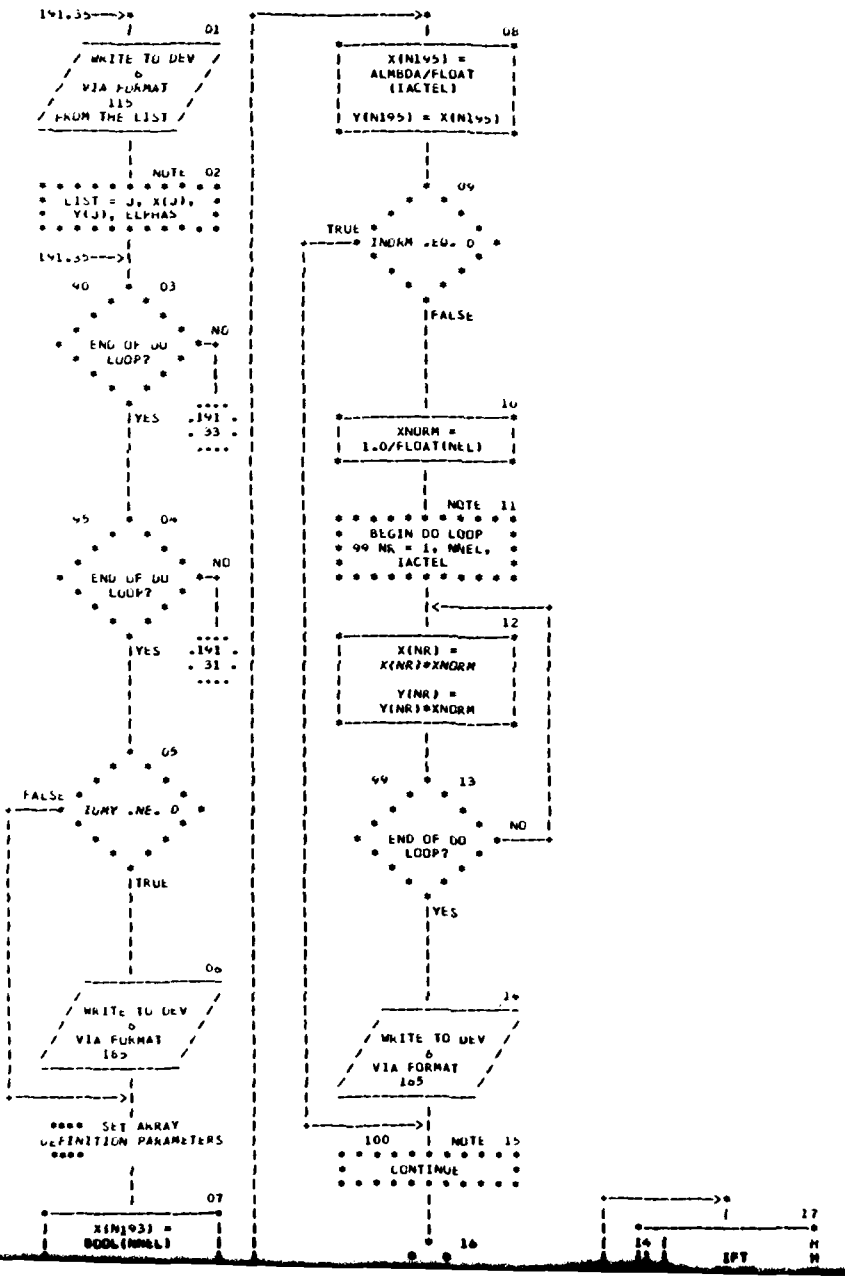


CHART TITLE - SUBROUTINE ANTARY(X,Y,*)



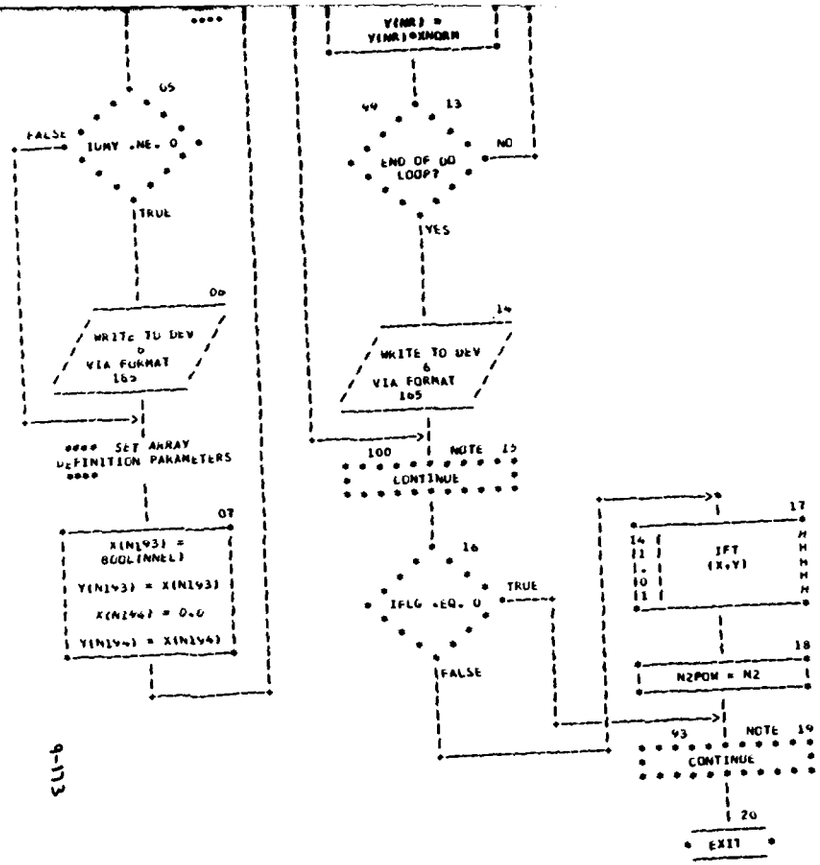
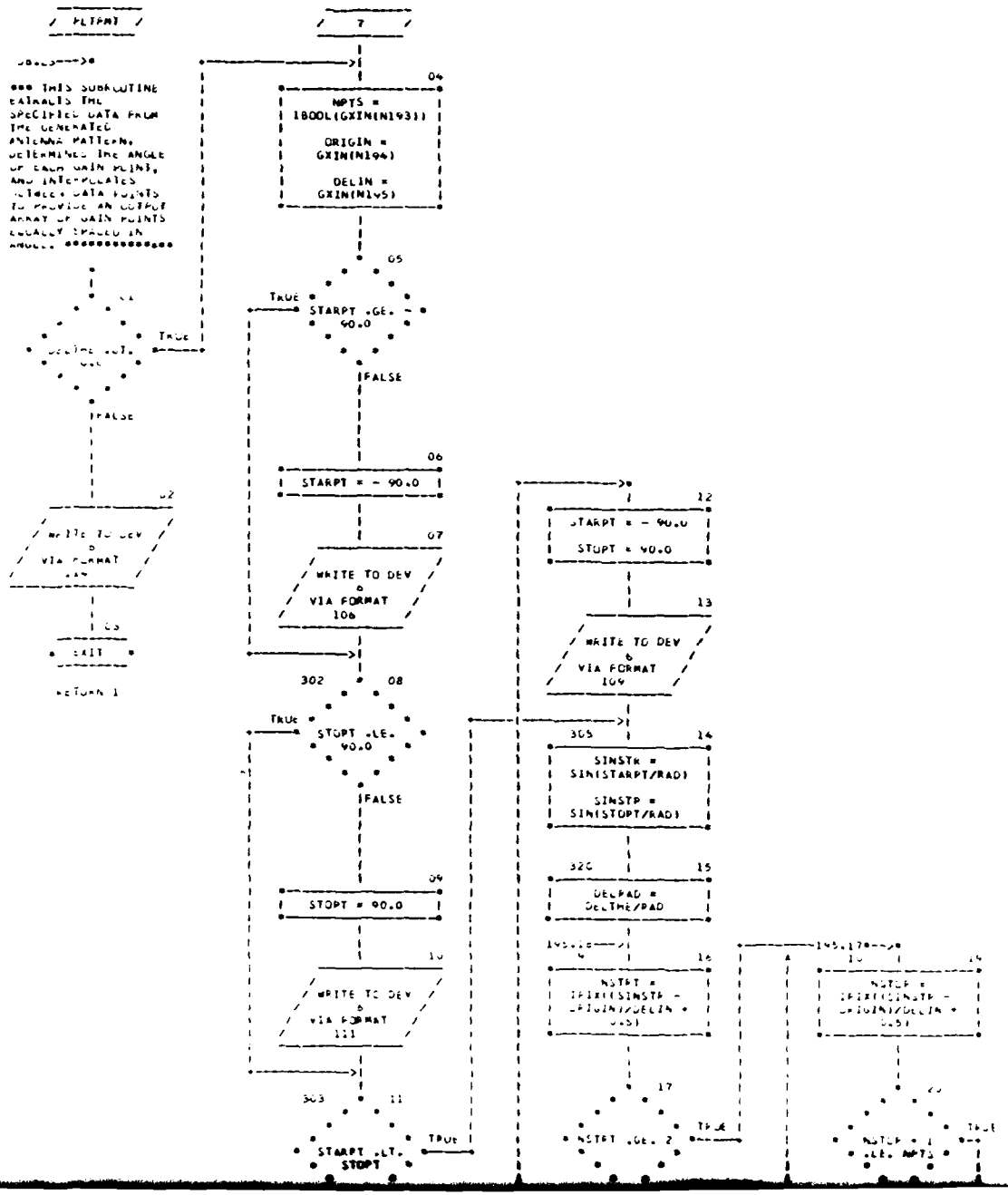

05
IUNY .NE. 0
FALSE
TRUE
06
WRITE TO DEV 6 VIA FORMAT 163
**** SET ARRAY DEFINITION PARAMETERS ****
07
X(N1+3) = 8.0D(INNEL)
Y(N1+3) = X(N1+3)
X(N1+4) = 0.0
Y(N1+4) = X(N1+4)
Y(NR) = Y(NR)*XNORM
44
13
END OF DO LOOP?
NO
YES
14
WRITE TO DEV 6 VIA FORMAT 165
100
NOTE 15
CONTINUE
16
IFLG .EQ. 0
TRUE
FALSE
17
IFT (X,Y)
18
N2POW = N2
93
NOTE 19
CONTINUE
20
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(400),TSRLOS(100)
      DIMENSION X(1),Y(1),PHROW(32)
      EQUIVALENCE  (BK1(  3), FO          ), (BK1( 21), IDMY        ),
                   (BK1( 76), NTSAK       ), (BK1( 77), DX          ),
                   (BK1( 78), THETAS      ), (BK1( 79), NKOWS       ),
                   (BK1( 80), NBPSCG      ), (BK1( 81), IKPSCG      ),
                   (BK1( 82), NBPSR       ), (BK1( 83), IKPSR       ),
                   (BK1( 84), INORM       ), (BK1( 85), NPULS       ),
                   (BK1(  1), N2POW       )
      DATA NWRD,NWRDM1/31,30/,PI2/6.2831853/
      DATA N193,N194,N195,N196/-3,-2,-1,0/
105   FORMAT (' NUMBER OF ROW CONTROL PHASE SHIFTERS EXCEEDS MAXIMUM.  P
     ROBLEM TERMINATED.')
110   FORMAT(1H1//50X,'* * * * ANTENNA ARRAY GENERATOR * * * *' ///)
115   FORMAT(' ',I4,'  X(J)=',E12.6,'  Y(J)=',E12.6,'  ELPHAS=',F10.6)
120   FORMAT(/' ',T4,'FREQUENCY-GHZ   = ',E12.6,T36,'POINT ANGLE DEG = '
     ,F6.3,T66,'NR PSHIFT ROWS  = ',I2,T100,'NR TIMSCAN SECS = ',I4 /
     ' ',T4,'START PULSE NR  = ',I4,T36,'ACT ELEM SPC-WTR= ',E12.6,T68
     ,'NR BITS PSHIFTER= ',I2,T100,'NR BITS CONGEN  = ',I2 / ' ',T4,
     'NR ACTIVE ELEM  = ',I4,T36,'ACT EL SPC-WVLTH= ',E12.6,T68,
     'PSHIFTER MASK   = ',O12,T100,'CONTR GEN MASK  = ',O12 / ' ',T4,
     'TOTAL NR ELEM   = ',I4,T68,
     'PS RNDOFF CONTR = ',I1,T100,'CGEN RNDOFF CONT= ',I1 / T4,
     'NORMALIZE CONTR = ',I1)
125   FORMAT(' ',T4,'DELTA ROW(INTEG)= ',I10,T36,'INIT ROPH(INTEG)= ',
     I10,T68,'DELTA CG (INTEG)= ',I10,T100,'INIT CGPH(INTEG)= ',I10/
     ' ',T4,'DELTA ROW (OCT) = ',O12,T36,'INIT ROPH (OCT) = ',O12,T68,
     'DELTA CG (OCT)  = ',O12,T100,'INIT CGPH (OCT) = ',O12 / )
130   FORMAT('1',52X,'ROW PHASE-SHIFTER SETTINGS'//T44,'ROW',18X,
     'PHASE SETTINGS',//(T45,I2,T56,1PE15.7))
145   FORMAT(1H ,T43,I4,T56,1PE15.7)
131   FORMAT(1H0,50X,'CONTROL GENERATOR PHASE OUTPUT'//T42,'SECTION',10X
     ,6X,'SECTION',16X,'PHASE SETTINGS'//)
135   FORMAT (1H1//44X,'* * * * PHASED ARRAY PATTERN GENERATOR * * * *'
     ///)
140   FORMAT(' INCOMPLETE PLOTTING DATA IS AVAILABLE DUE TO ARRAY SIZE L
     IMITS'/' ANY PLOT PROVIDED WILL NOT INCLUDE ALL VISIBLE SPACE.')
150   FORMAT(1H ,I4,' DUMMY ELEMENTS HAVE BEEN INSERTED BETWEEN ACTIVE E
     LEMENT PAIRS IN ORDER TO INCREASE AVAILABLE'/' PLOTTING DATA.')
155   FORMAT ('0ELEMENT SPACING (DX) AND/OR CENTER FREQUENCY (FO) HAS NO
     T BEEN PROPERLY SPECIFIED.  PROBLEM TERMINATED.')
160   FORMAT(' NUMBER OF ANTENNA ELEMENTS EXCEEDS ARRAY LIMITS (1024)'
     NEL SET TO 1024.')
165   FORMAT ('0THE OUTPUT ARRAY HAS BEEN NORMALIZED TO THE NUMBER OF AC
     TIVE ARRAY ELEMENTS.')
175   FORMAT (1H1,42X,'OUTPUT ELEMENTS (PRIOR TO ANY NORMALIZATION)'/)
180   FORMAT(' NUMBER OF BITS IN ROW CONTROL PHASE SHIFTER IS EXCESSIVE'
     NBPSR HAS BEEN SET TO 15.')
185   FORMAT (1H1)
190   FORMAT (' NUMBER OF BITS IN CONTROL GENERATOR IS EXCESSIVE'  NBPSC
     G HAS BEEN SET TO 15.')
```

CHART TITLE - SUBROUTINE PLTPNT(GXIN,GYIN,GOUT,*)



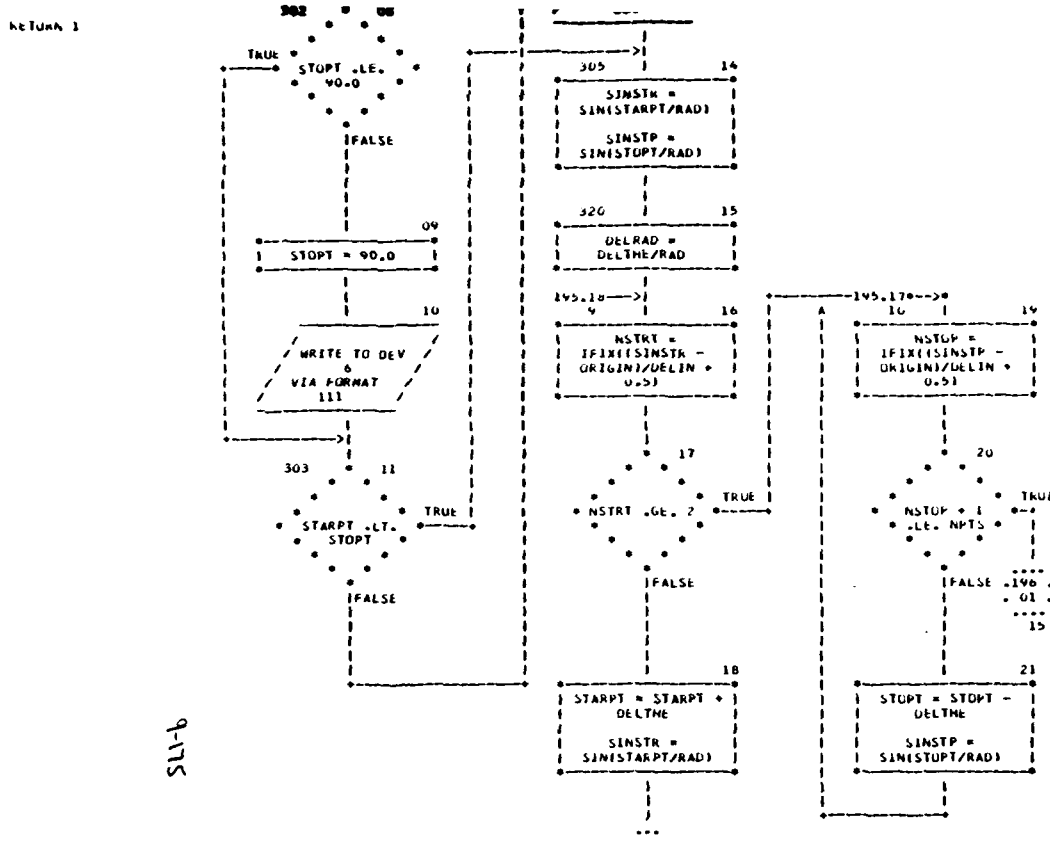

RETURN 1
302
TRUE
STOPT .LE. 90.0
FALSE
09
STOPT = 90.0
10
WRITE TO DEV 6 VIA FORMAT 111
303
11
STARPT .LT. STOPT
TRUE
FALSE
305
14
SINSTR = SIN(STARPT/RAD)
SINSTP = SIN(STOPT/RAD)
320
15
DELRAD = DELTHE/RAD
145.18
9
16
NSTRT = IFIX((SINSTR - ORIGIN)/DELIN + 0.5)
17
NSTRT .GE. 2
TRUE
FALSE
18
STARPT = STARPT + DELTHE
SINSTR = SIN(STARPT/RAD)
145.170
A
10
19
NSTOP = IFIX((SINSTP - ORIGIN)/DELIN + 0.5)
20
NSTOP + 1 .LE. NPTS
TRUE
FALSE .196 . 01 . 15
21
STOPT = STOPT - DELTHE
SINSTP = SIN(STOPT/RAD)

CHART TITLE - SUBROUTINE PLTFMT(GXIN,GYIN,GOUT,*)

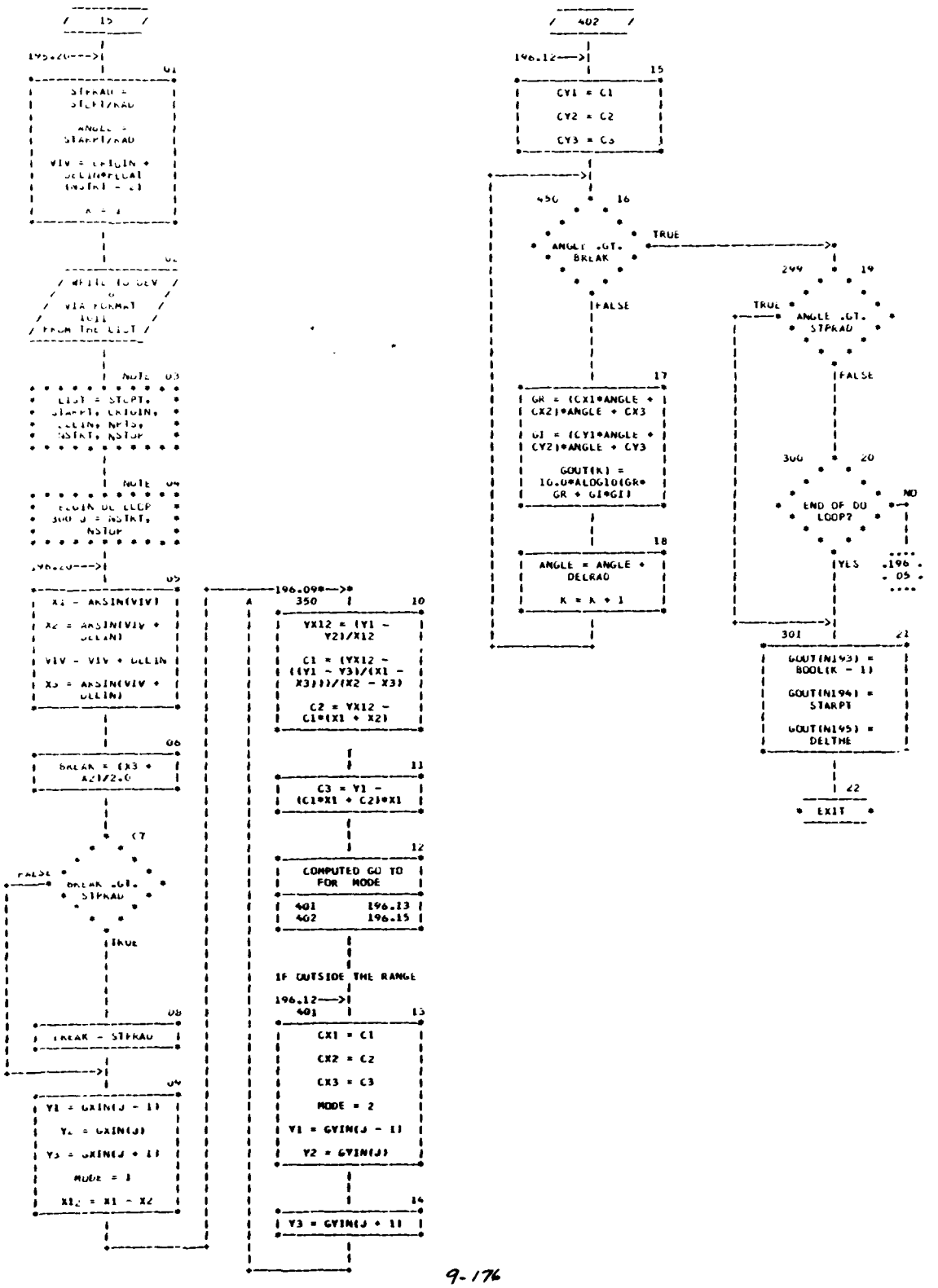
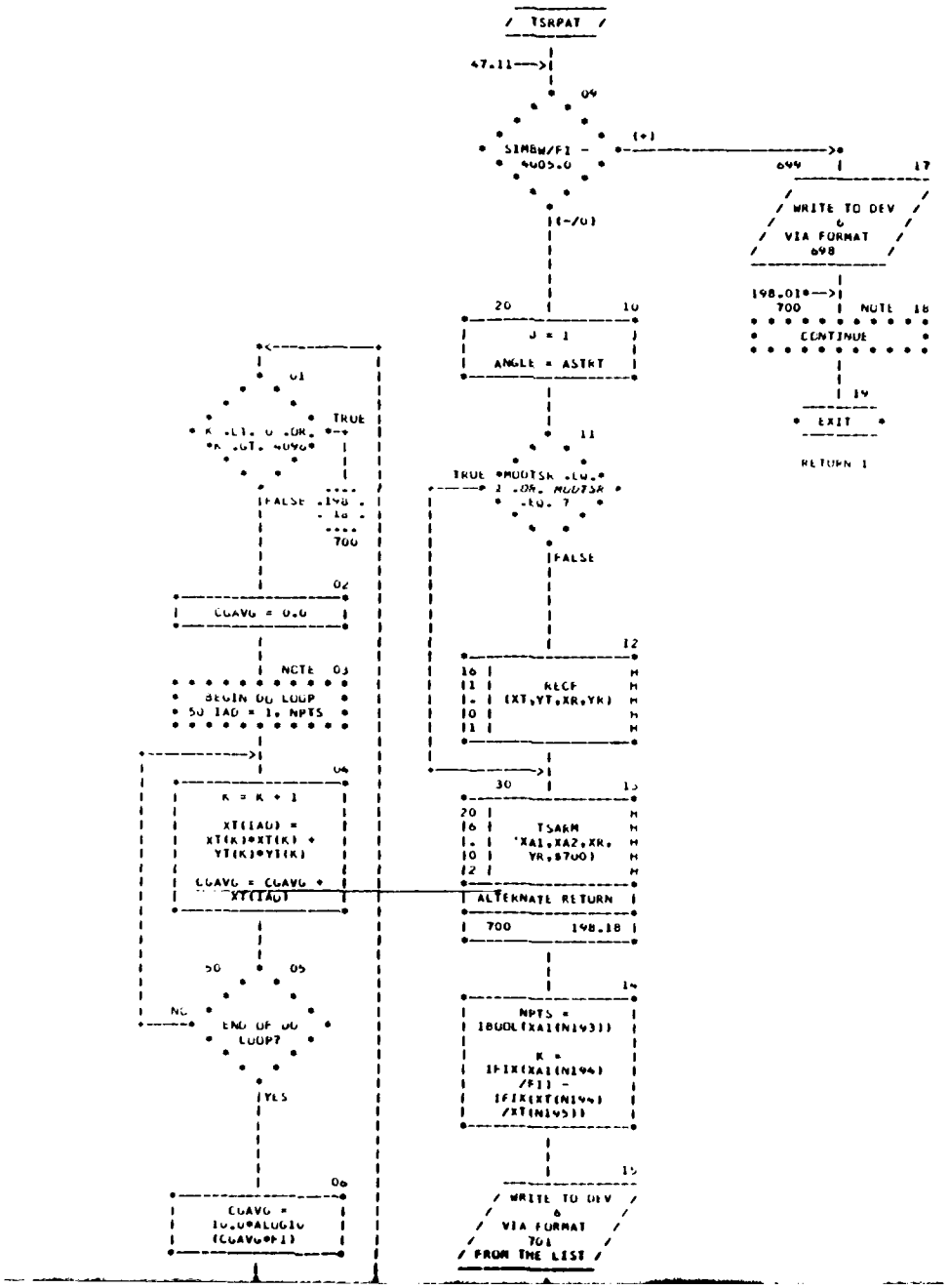


CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(500)
      DIMENSION GXIN(1),GYIN(1),GOUT(1)
      EQUIVALENCE (BK1( 21), IDMY    ), (BK1( 33), DELTHE   ),
                  (BK1( 34), STARPT  ), (BK1( 35), STOPT    )
      DATA N193,N194,N195,RAD/-3,-2,-1,57.29578/
  114 FORMAT('0AN ANGLE INCREMENT WAS NOT PROPERLY SPECIFIED FOR THE OUT
     PUT ARRAY.  EXECUTION WILL NOT BE ATTEMPTED.')
  106 FORMAT('0START POINT WAS DEFINED BELOW HORIZON.  START POINT HAS B
     EEN REDEFINED TO -90 DEG.')
  111 FORMAT('0STOP POINT WAS DEFINED BELOW HORIZON.  STOP POINT HAS BEE
     N REDEFINED TO 90 DEG.')
  109 FORMAT('0STARTING POINT SPECIFIED AS GREATER THAN OR EQUAL TO END
      POINT.  ALL AVAILABLE VISIBLE SPACE WILL BE INTERPOLATED.')
 1011 FORMAT(1H ,4E15.7,3I10)
```

CHART TITLE - SUBROUTINE TSRPAT(XT,YT,XA1,XA2,XR,YR,*)



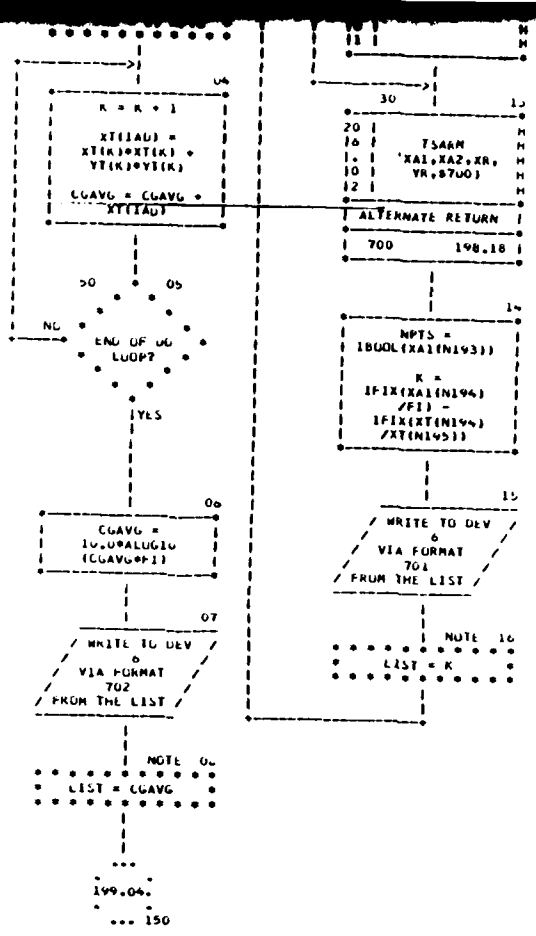
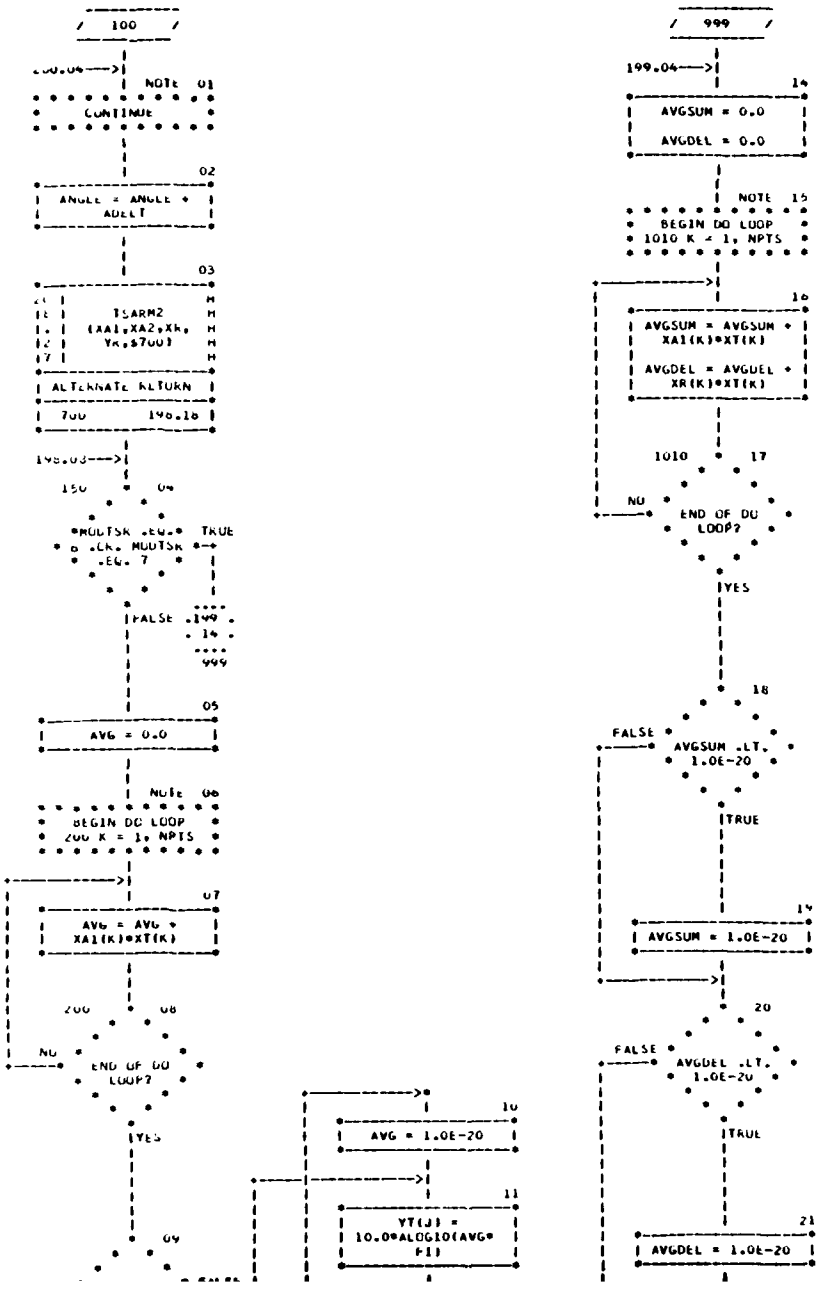

K = K + 1
XT(IAU) = XT(K)*XT(K) + YT(K)*YT(K)
CGAVG = CGAVG + XT(IAU)
>0
05
NO
END OF DO LOOP?
YES
CGAVG = 10.0*ALOG10 (CGAVG*PI)
WRITE TO DEV 6 VIA FORMAT 702 FROM THE LIST
NOTE
LIST = CGAVG
199,04,
150
30
20 6 10 2
TSAAM 'XA1,XA2,XR, YR,&700)
ALTERNATE RETURN
700
198,18
NPTS = IBOOL(XA1(N193))
K = IFIX(XA1(N194) /FI) - IFIX(XT(N194) /XT(N195))
WRITE TO DEV 6 VIA FORMAT 701 FROM THE LIST
NOTE
LIST = K

CHART TITLE - SUBROUTINE TSRPAT(XT,YT,XA1,XA2,XR,YR,*)



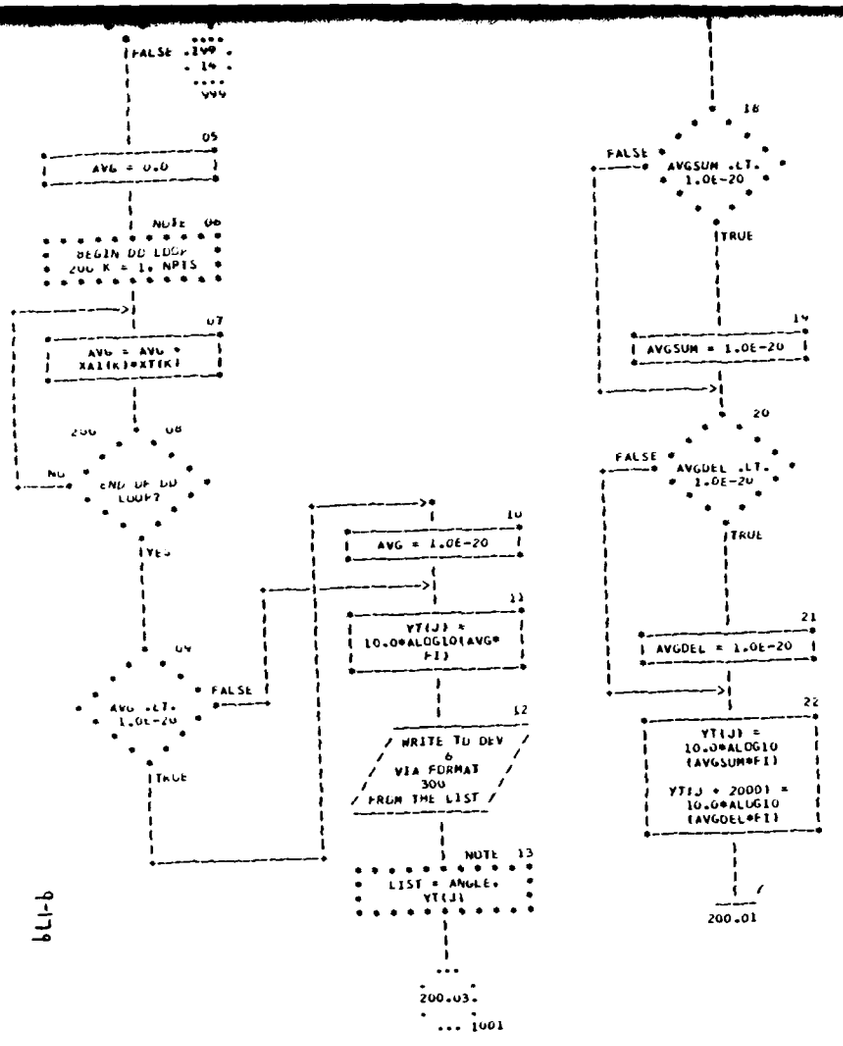
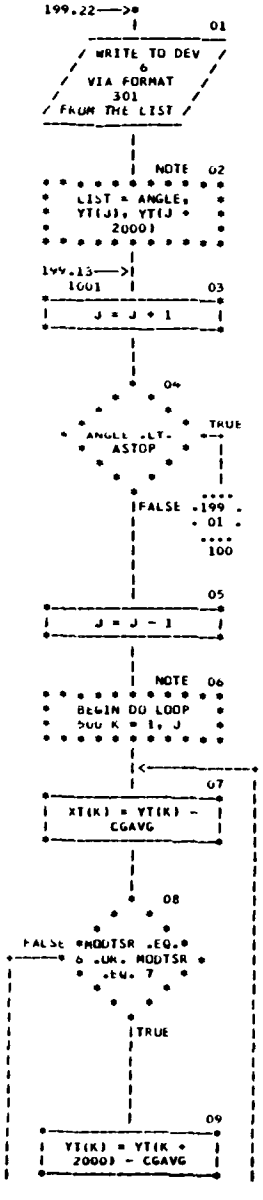

FALSE
05
AVG = 0.0
NOTE 06
BEGIN DO LOOP
200 K = 1, NPTS
07
AVG = AVG +
XA1(K)*XT(K)
200
06
END OF DO
LOOP?
NO
YES
04
AVG .LT.
1.0E-20
FALSE
TRUE
10
AVG = 1.0E-20
11
YT(J) =
10.0*ALOG10(AVG*
PI)
12
WRITE TO DEV
6
VIA FORMAT
300
FROM THE LIST
NOTE 13
LIST = ANGLE,
YT(J)
...
200.03
... 1001
18
FALSE
AVGSUM .LT.
1.0E-20
TRUE
19
AVGSUM = 1.0E-20
20
FALSE
AVGDEL .LT.
1.0E-20
TRUE
21
AVGDEL = 1.0E-20
22
YT(J) =
10.0*ALOG10
(AVGSUM*PI)
YT(J + 20001) =
10.0*ALOG10
(AVGDEL*PI)
200.01

CHART TITLE - SUBROUTINE TSRPAT(XT,YT,XA1,XA2,XR,YR,*)

9-180



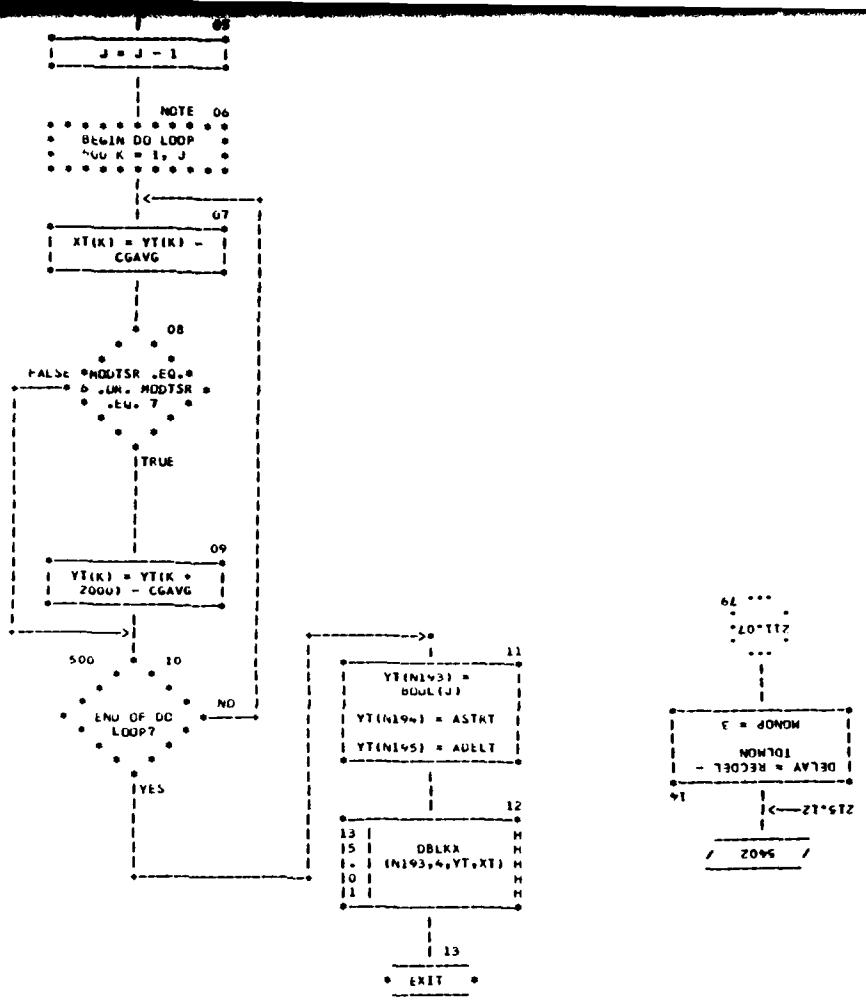

05
J = J - 1
NOTE 06
BEGIN DO LOOP
DO K = 1, J
07
XT(K) = YT(K) - CGAVG
08
FALSE *MODTSR .EQ.* & .OR. MODTSR * .EQ. 7
TRUE
09
YT(K) = YT(K + 2000) - CGAVG
500
10
END OF DO LOOP?
NO
YES
11
YT(N193) = BDUE(J)
YT(N194) = ASTRT
YT(N195) = ADELT
12
DBLKX (N193,4,YT,XT)
13
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/ BK1(500)
      EQUIVALENCE   (  BK1( 21), IDMY      ),(  BK1( 11), FI        ),
                    (  BK1( 57), ANGLE     ),(  BK1( 34), ASTRT     ),
                    (  BK1( 35), ASTOP     ),(  BK1( 33), ADELT     )
                   , (  BK1(  4), SIMEW     ),( BK1(110), MODTSR)
      DIMENSION XT(1),YT(1),XA1(1),XA2(1),XR(1),YR(1)
      DATA N193,N194,N195,N196/-3,-2,-1,0/
  701 FORMAT( ' K=', I10)
  702  FORMAT(' CGAVG=',E13.5,'WATT-NANOSECONDS IN DB')
  300 FORMAT(1H ,' ANGLE=',E13.5,' ENERGY=',E13.5)
  301  FORMAT(' ANGLE=',F12.5,'SUM ENERGY=',F12.5,
     *  ' DEL ENERGY=',F12.5)
  648 FORMAT(' THE REQUIRED NUMBER OF FREQ. DOMAIN SAMPLES',
     * ' EXCEEDS 4005')
```

181-6

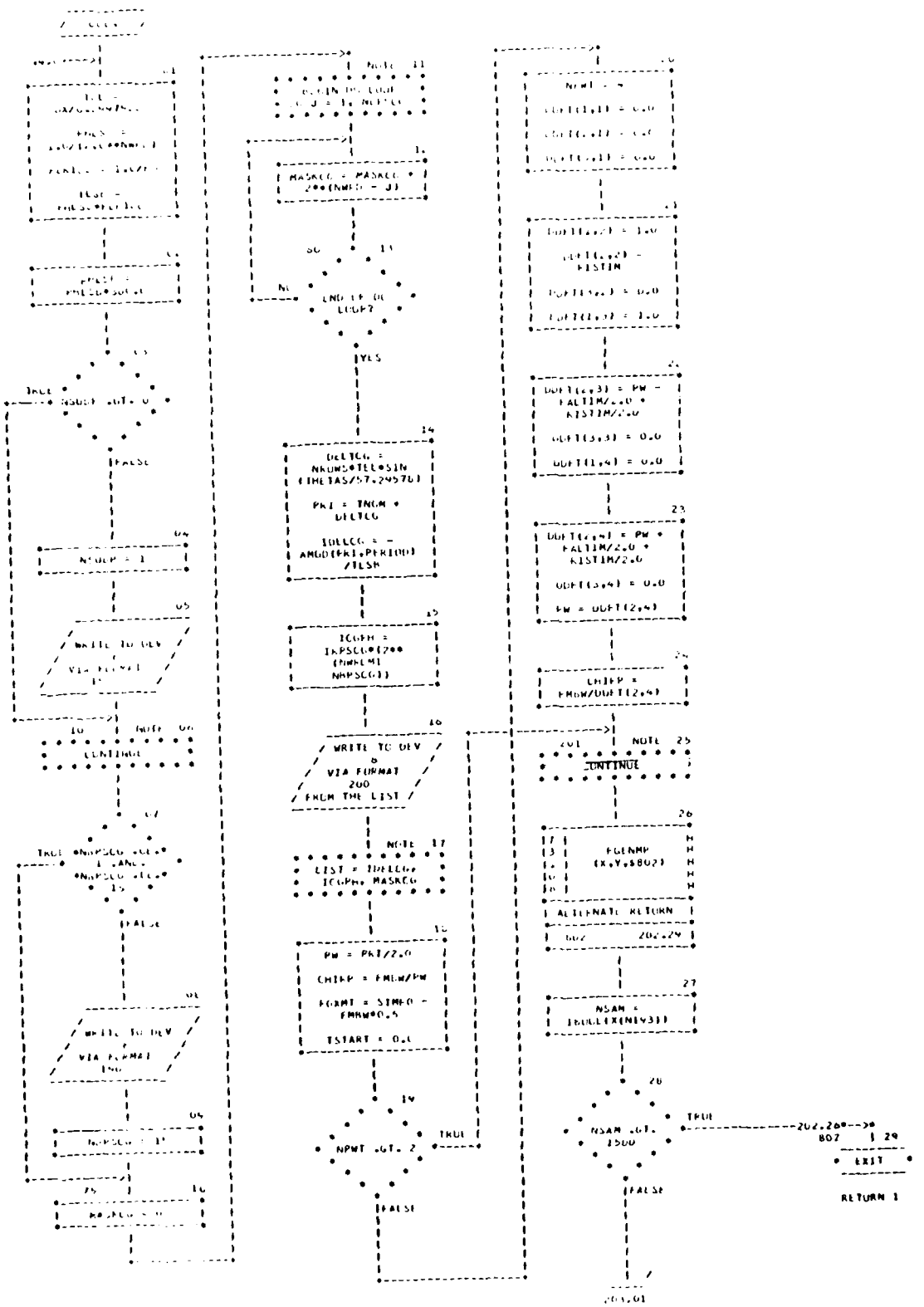

EXIT
RETURN 1
TRUE
FALSE
YES
NO
CONTINUE
WRITE TO DEV
VIA FORMAT
200
FROM THE LIST
ALTERNATE RETURN
NSAM .GT. 2500
NPMT .GT. 2
LOOP?

CHART TITLE - SUBROUTINE CGEN(X,Y,A,B,*)

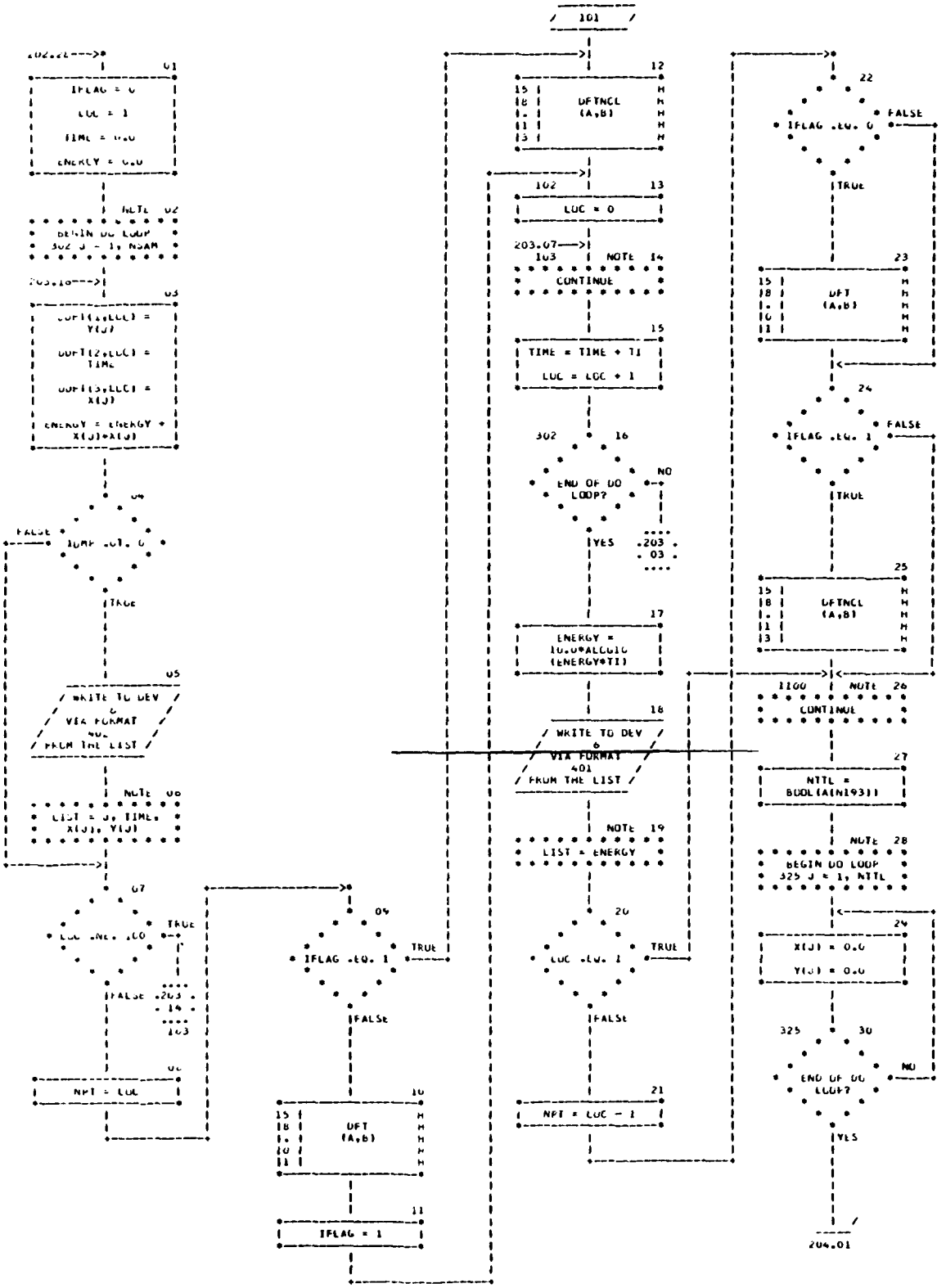
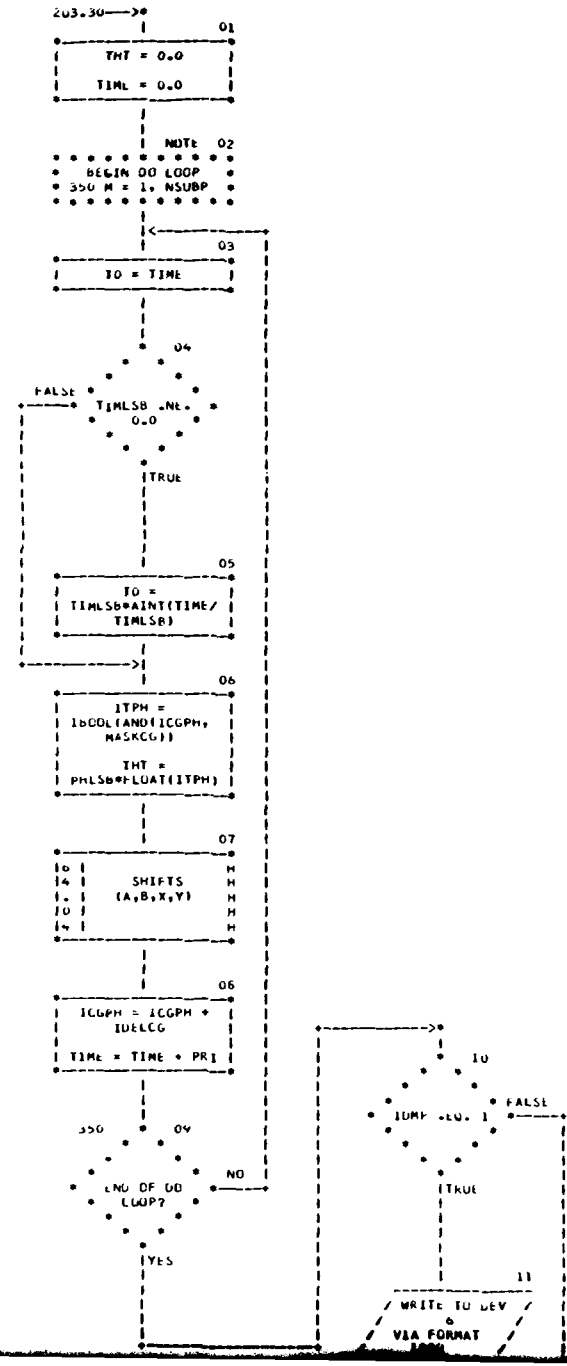


CHART TITLE - SUBROUTINE CGEN(X,Y,A,B,*)



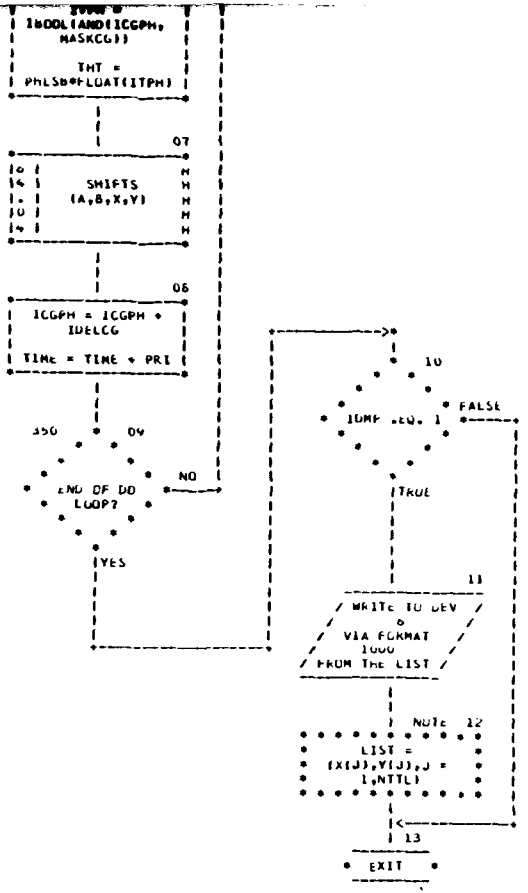

I&OOL(AND(ICGPH,
MASKCG))
TMT =
PHLSB*FLOAT(ITPH)
07
SHIFTS
(A,B,X,Y)
08
ICGPH = ICGPH +
IDELCG
TIME = TIME + PRI
350
09
END OF DO
LOOP?
NO
YES
10
IDMP .EQ. 1
FALSE
TRUE
11
WRITE TO DEV
&
VIA FORMAT
1000
FROM THE LIST
NOTE 12
LIST =
(X(J),Y(J),J =
1,NTTL)
13
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

-581-6

```
      COMMON/BLK1/ BK1(200),DDFT(3,100)
      EQUIVALENCE (FO    ,BK1(  3)),(SIMFO ,BK1(  6)),(TI    ,BK1( 12)),
                  (DX    ,BK1( 77)),(THETAS,BK1( 78)),
                  (NROWS ,BK1( 79)),(NBPSCG,BK1( 80)),(IKPSCG,BK1( 81)),
                  (NSUBP ,BK1( 88)),(TNUM  ,BK1( 89)),
                  (PW    ,BK1( 90)),(FOXMT ,BK1( 91)),(CHIRP ,BK1( 92)),
                  (EMEW  ,BK1( 93)),(NPWT  ,BK1( 94)),(TSTART,BK1(100)),
                  (TO    ,BK1(120)),(TH1   ,BK1(121)),(NPT   ,BK1(200))
                 (KISTIM,BK1( 98)),(FALTIM,BK1( 99)),(IDMP,BK1( 21))
                ,(TIMLSB,BK1(115)),(INCRM ,BK1(9))
      DIMENSION X(1),Y(1),A(1),E(1)
      DATA N193,N194,N195,N196/-3,-2,-1,0/
      DATA NWRD,NWRDM1/31,30/,C/2.147483E09/
   15 FORMAT(' NUMBER OF SUBFIELDS WAS LESS THAN OR EQUAL ZERO.....NSUBP
     * SET EQUAL TO 1 ')
  190 FORMAT(' THE NUMBER OF BITS IN CONTROL DEN PHASE SHIFTER SET TO 15
     * ')
  200 FORMAT(' IDELCG=',I12,' ICGPH=',I12,' MASKCG=',O12)
  400 FORMAT(' J=',I4,' TIME=',E13.5,' MAG=',E13.5,' PHASE=',E13.5)
  401 FORMAT(' ENERGY=',E13.5,' WATT-SAMPLE SECONDS')
 1000 FORMAT(1H ,8E15.5)
```

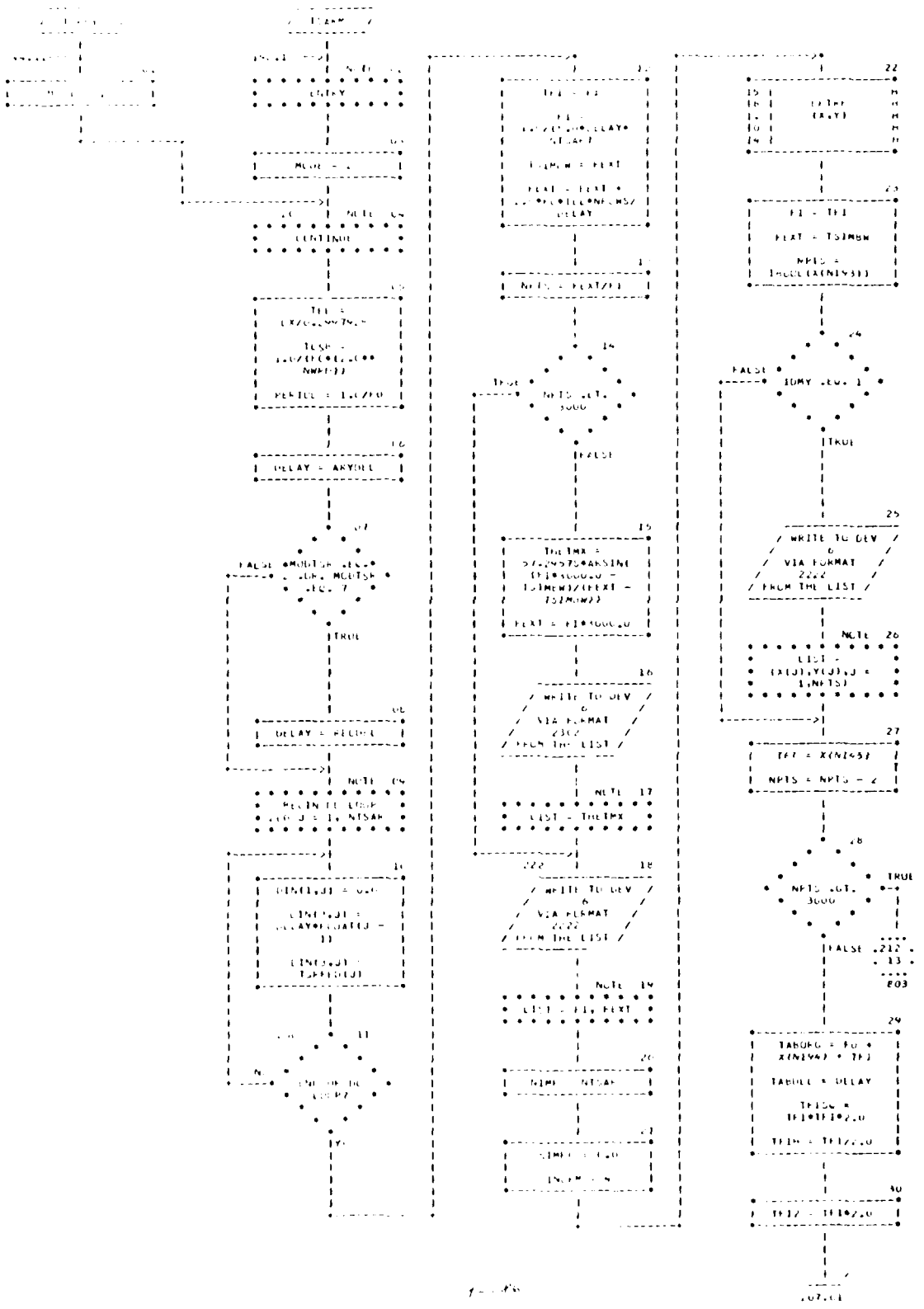
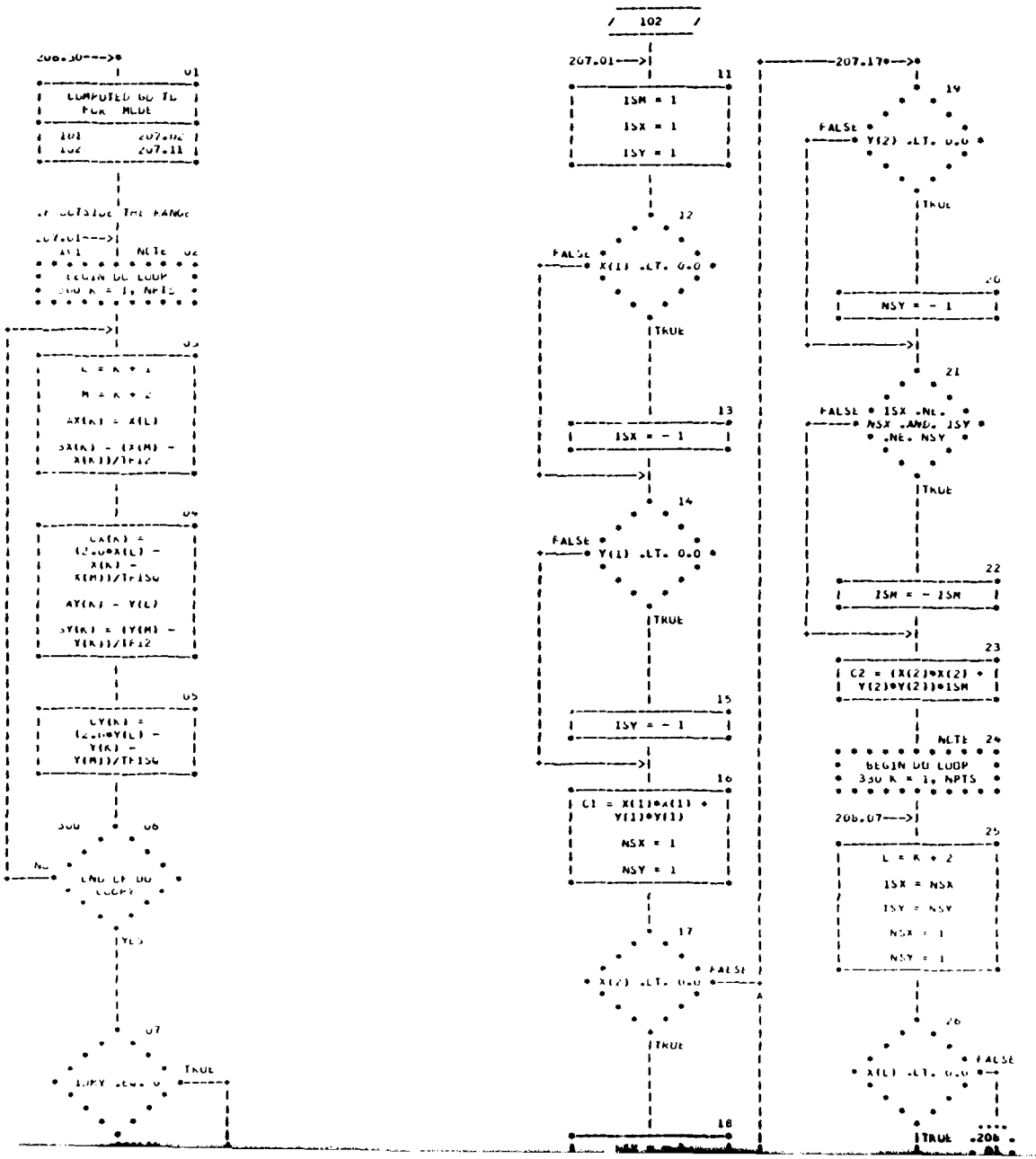
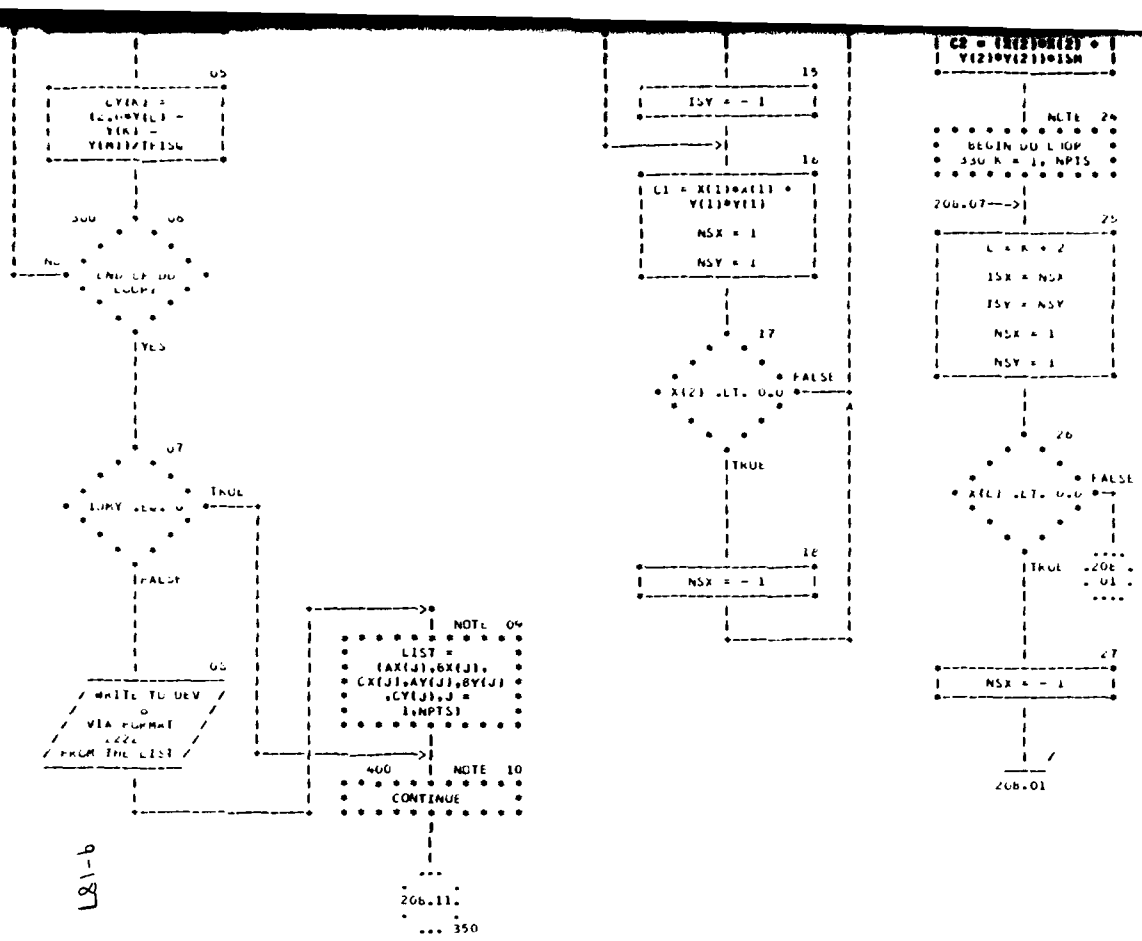


CHART TITLE - SUBROUTINE TSAKY(X,Y,XR,YR,*)




05
CY(K) =
Y(K) -
YEM1)*TFISC
300
06
NO
END OF DO
LOOP?
YES
07
TRUE
FALSE
08
WRITE TO DEV
O
VIA FORMAT
222
FROM THE LIST
NOTE 09
LIST =
(AX(J),BX(J),
CX(J),AY(J),BY(J)
,CY(J),J =
1,NPTS)
400
NOTE 10
CONTINUE
206.11
350
15
ISY = - 1
16
C1 = X(1)*X(1) +
Y(1)*Y(1)
NSX = 1
NSY = 1
17
X(2) .LT. 0.0
FALSE
TRUE
18
NSX = - 1
C2 = (X(2)*X(2) +
Y(2)*Y(2))*ISX
NOTE 24
BEGIN DO LOOP
350 K = 1, NPTS
206.07
25
C = K + 2
ISX = NSX
ISY = NSY
NSX = 1
NSY = 1
26
X(C) .LT. 0.0
FALSE
TRUE
206
.01
27
NSX = - 1
206.01

L81-b

08/11/75 AUTOFLOW CHART SET - FMD/SCL RADSIM

CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)

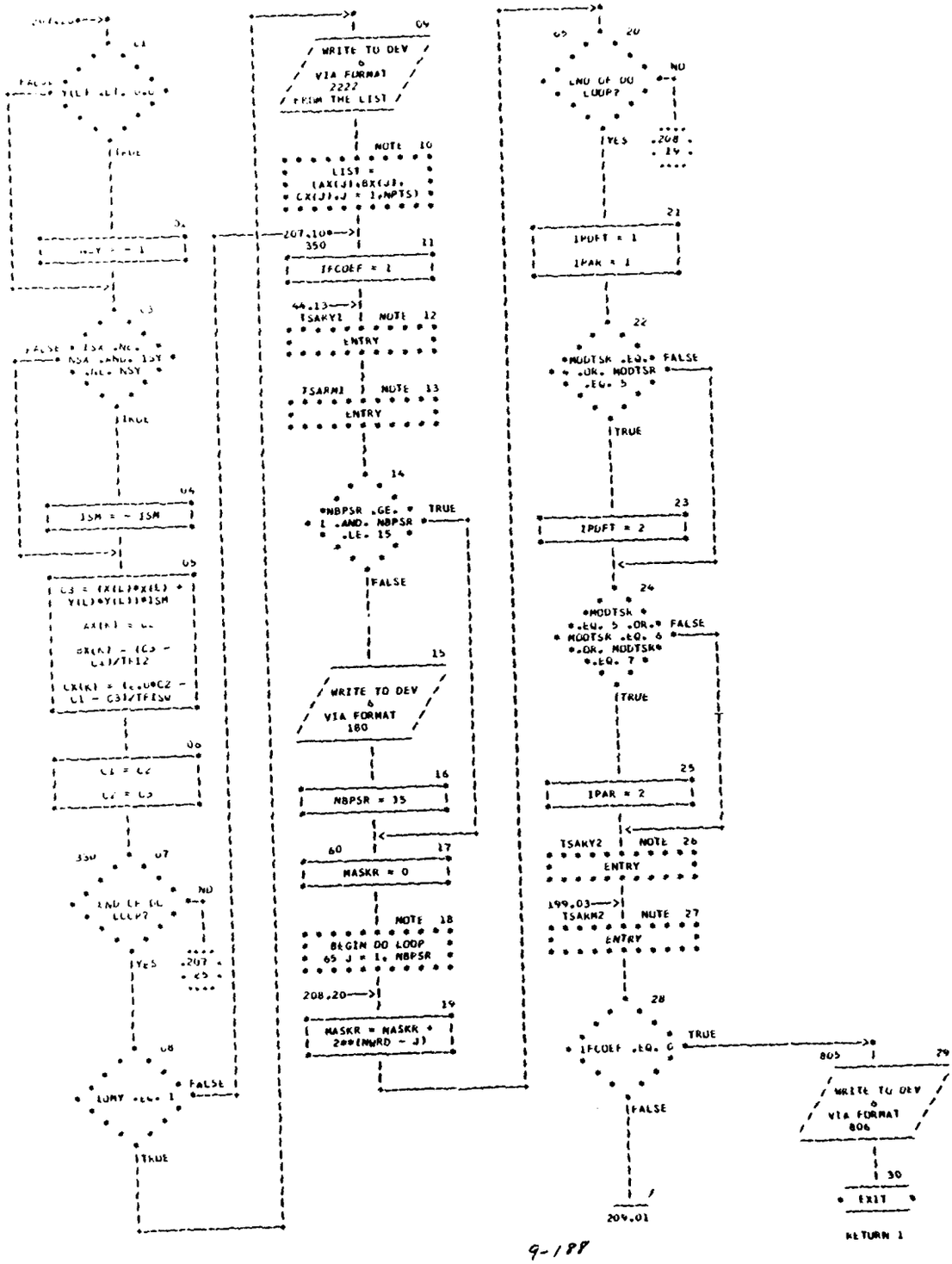


CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)

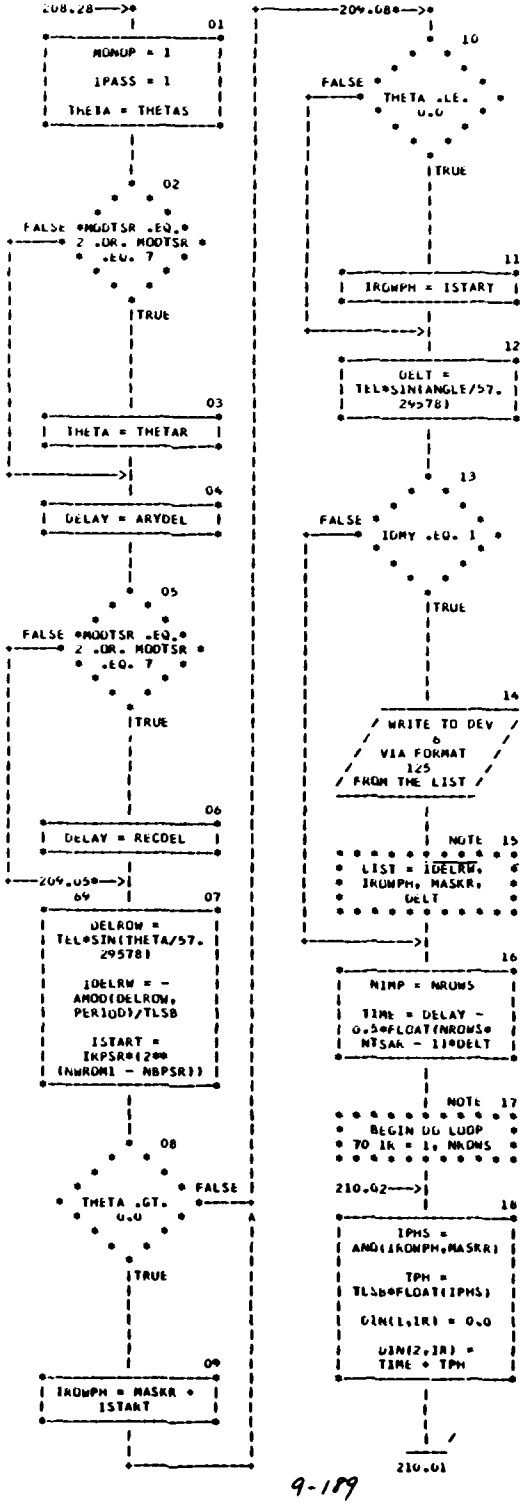
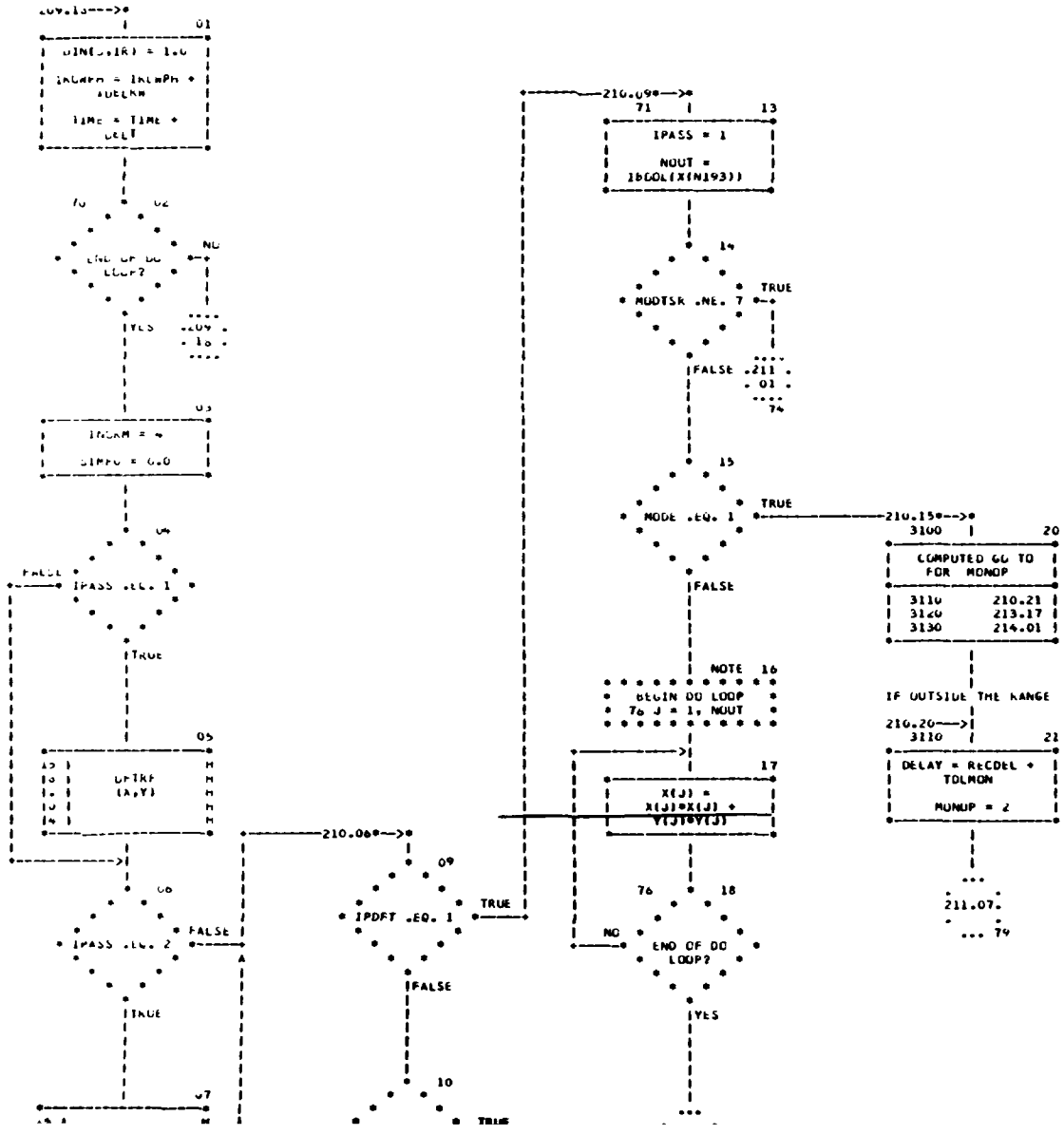
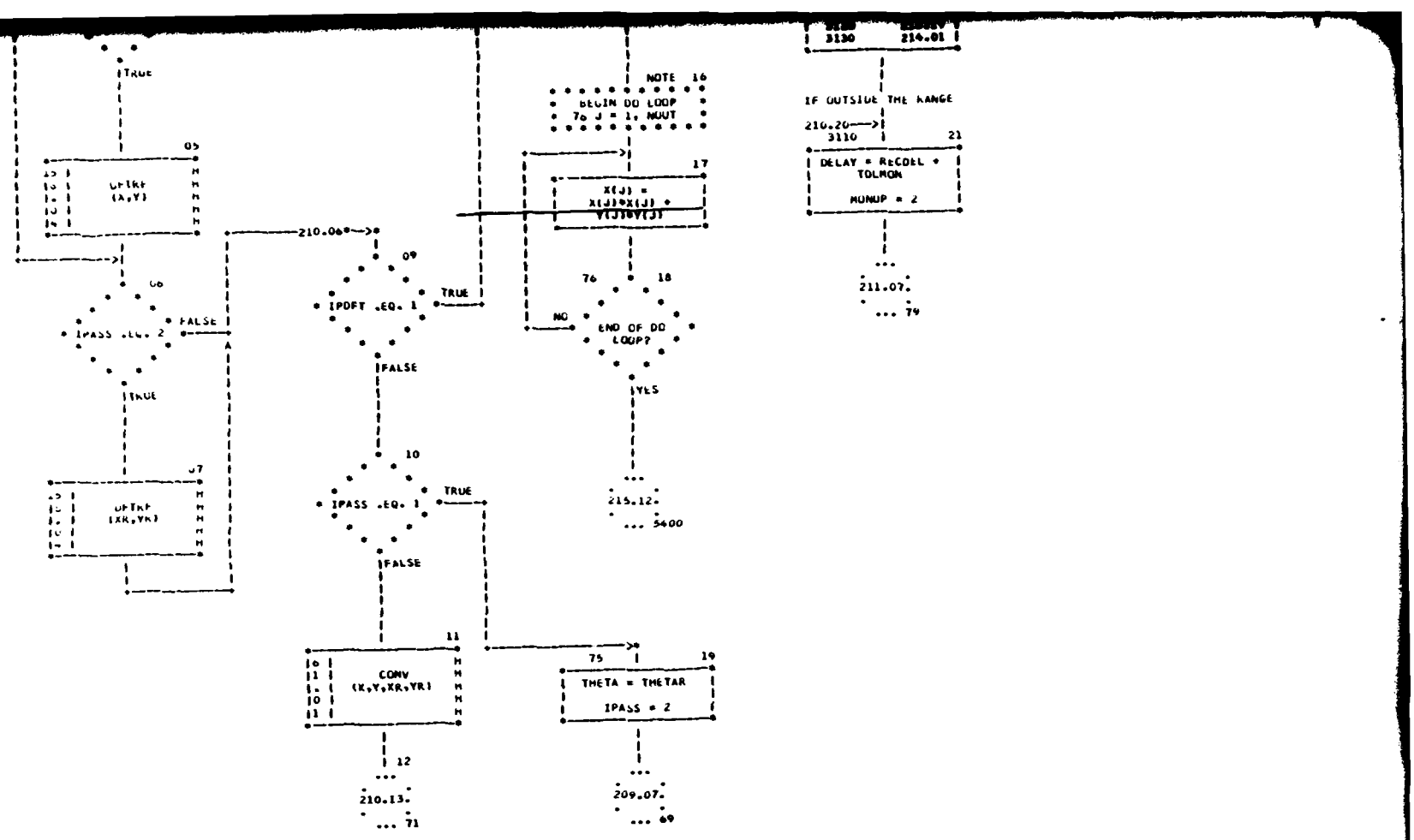


CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)

9-10




TRUE
05
DFTRF (A,Y)
210.06
06
IPASS .EQ. 2
FALSE
TRUE
07
DFTRF (XR,YR)
09
IPDFT .EQ. 1
TRUE
FALSE
10
IPASS .EQ. 1
TRUE
FALSE
11
CONV (X,Y,XR,YR)
12
210.13
... 71
NOTE 16
BEGIN DO LOOP
76 J = 1, NOUT
17
X(J) = X(J)*X(J) + Y(J)*Y(J)
76
18
NO
END OF DO LOOP?
YES
215.12
... 5400
75
19
THETA = THETAR
IPASS = 2
209.07
... 69
3130
214.01
IF OUTSIDE THE RANGE
210.20
3110
21
DELAY = RECDEL + TOLRGN
NUNUP = 2
211.07
... 79

08/11/75

AUTOFLOW CHART SET - FWD/SCL RADSIM

CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)

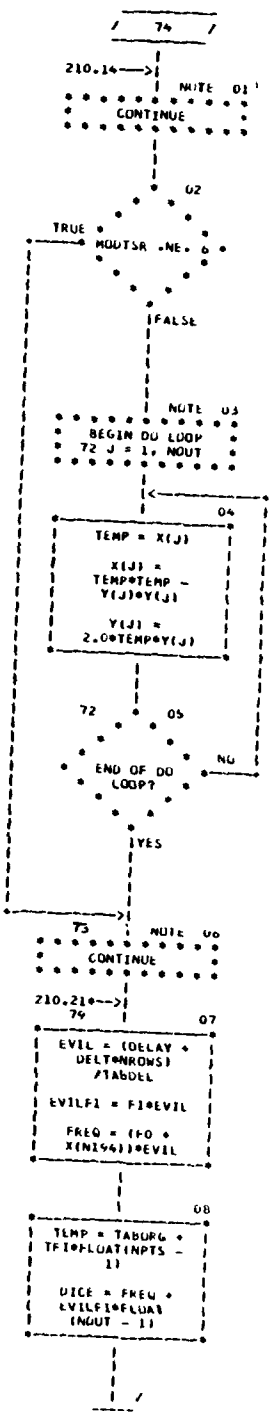
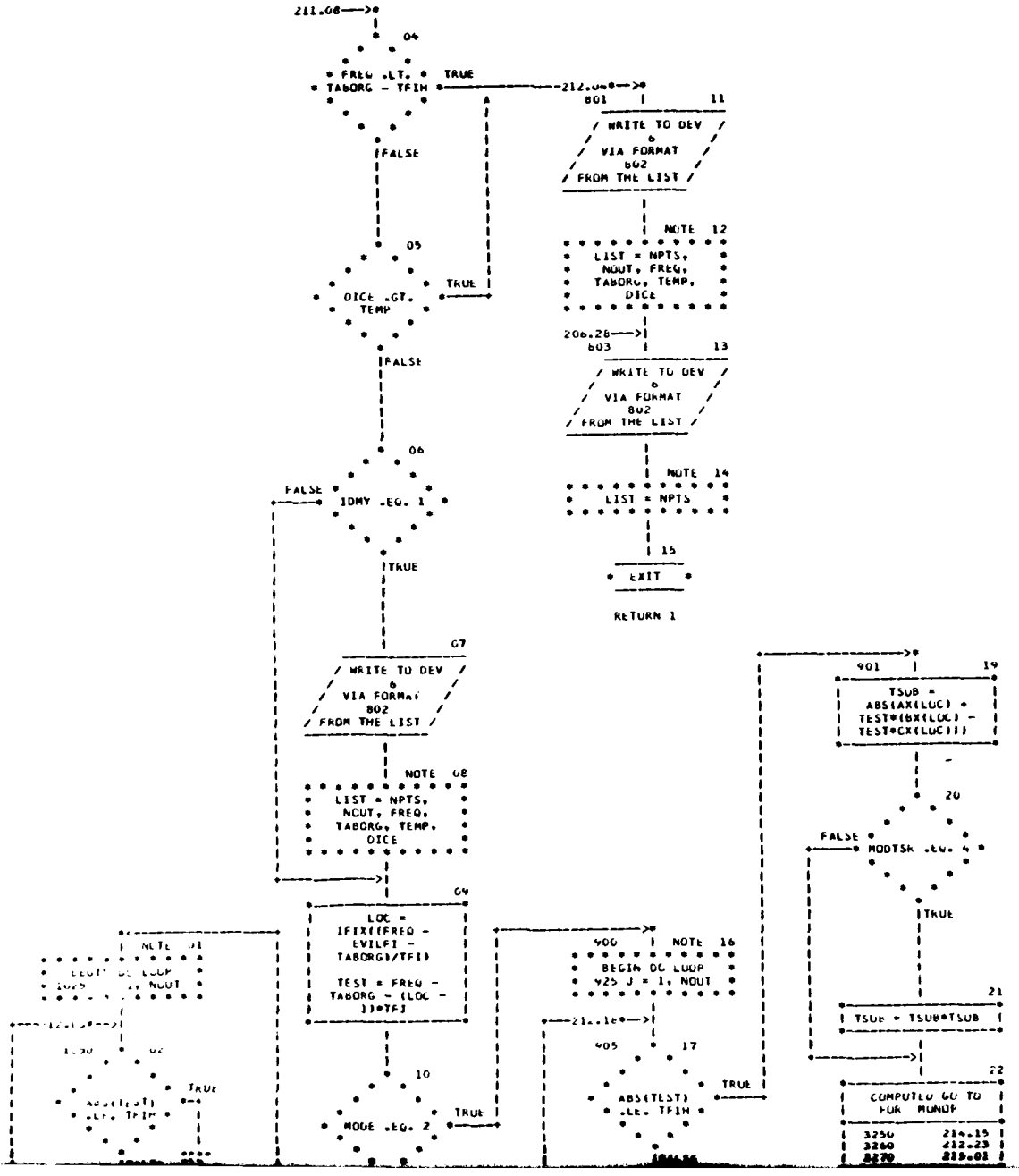
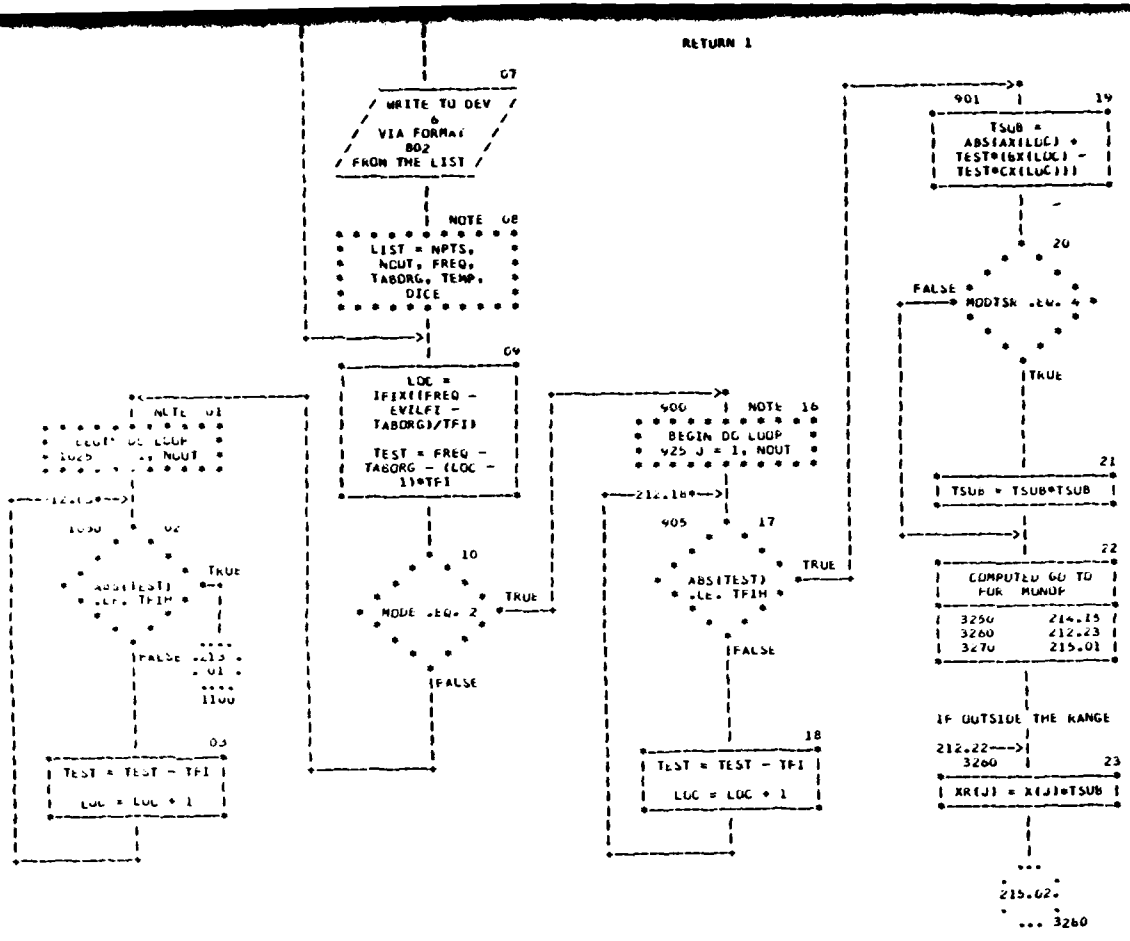


CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)

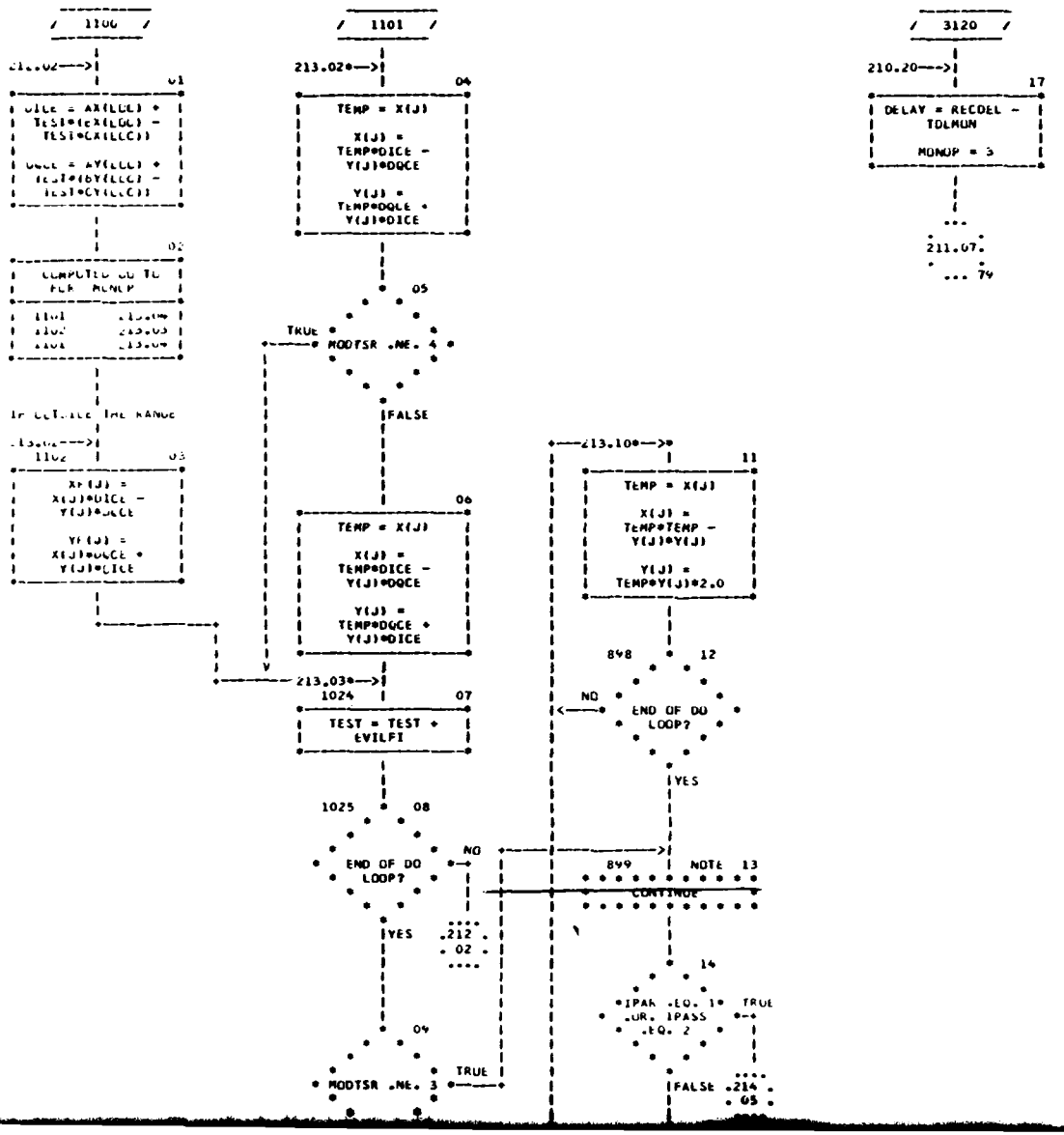
9-192




RETURN 1
07
WRITE TO DEV
&
VIA FORMAT
802
FROM THE LIST
NOTE 08
LIST = NPTS,
NOUT, FREQ,
TABORG, TEMP,
DICE
09
LOC =
IFIX((FREQ -
EVILFI -
TABORG)/TFI)
TEST = FREQ -
TABORG - (LOC -
1)*TFI
10
MODE .EQ. 2
TRUE
FALSE
NOTE 01
LOOP DO LOOP
1025 J = 1, NOUT
1030
02
ABS(TEST)
.LE. TFIH
TRUE
FALSE .213
.01
1100
03
TEST = TEST - TFI
LOC = LOC + 1
900
NOTE 16
BEGIN DO LOOP
925 J = 1, NOUT
212.18
905
17
ABS(TEST)
.LE. TFIH
TRUE
FALSE
18
TEST = TEST - TFI
LOC = LOC + 1
901
19
TSUB =
ABS(AX(LOC) +
TEST*(BX(LOC) -
TEST*CX(LOC)))
20
FALSE
MODTSK .EQ. 4
TRUE
21
TSUB = TSUB*TSUB
22
COMPUTED GO TO
FOR MUNOP
3250 214.15
3260 212.23
3270 215.01
IF OUTSIDE THE RANGE
212.22
3260
23
XR(J) = X(J)*TSUB
215.02
... 3260

08/11/79 AUTOFLOW CHART SET - FMD/SCL RADSIN

CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)



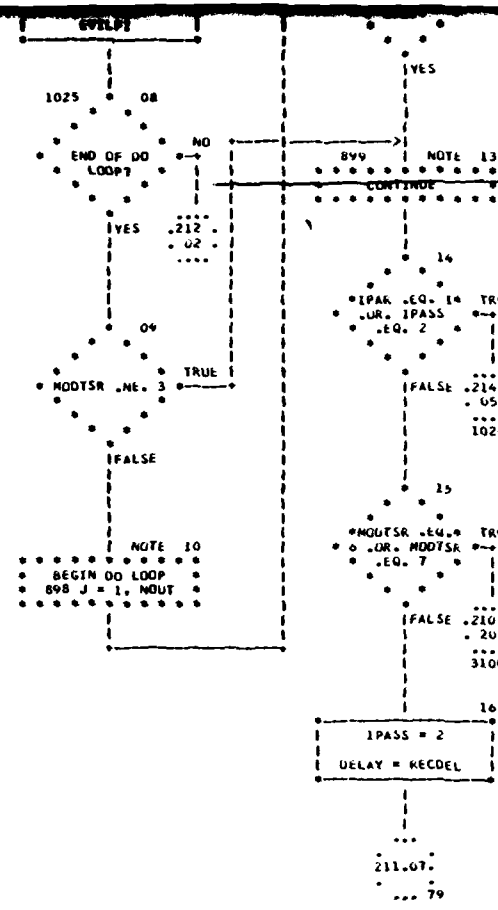
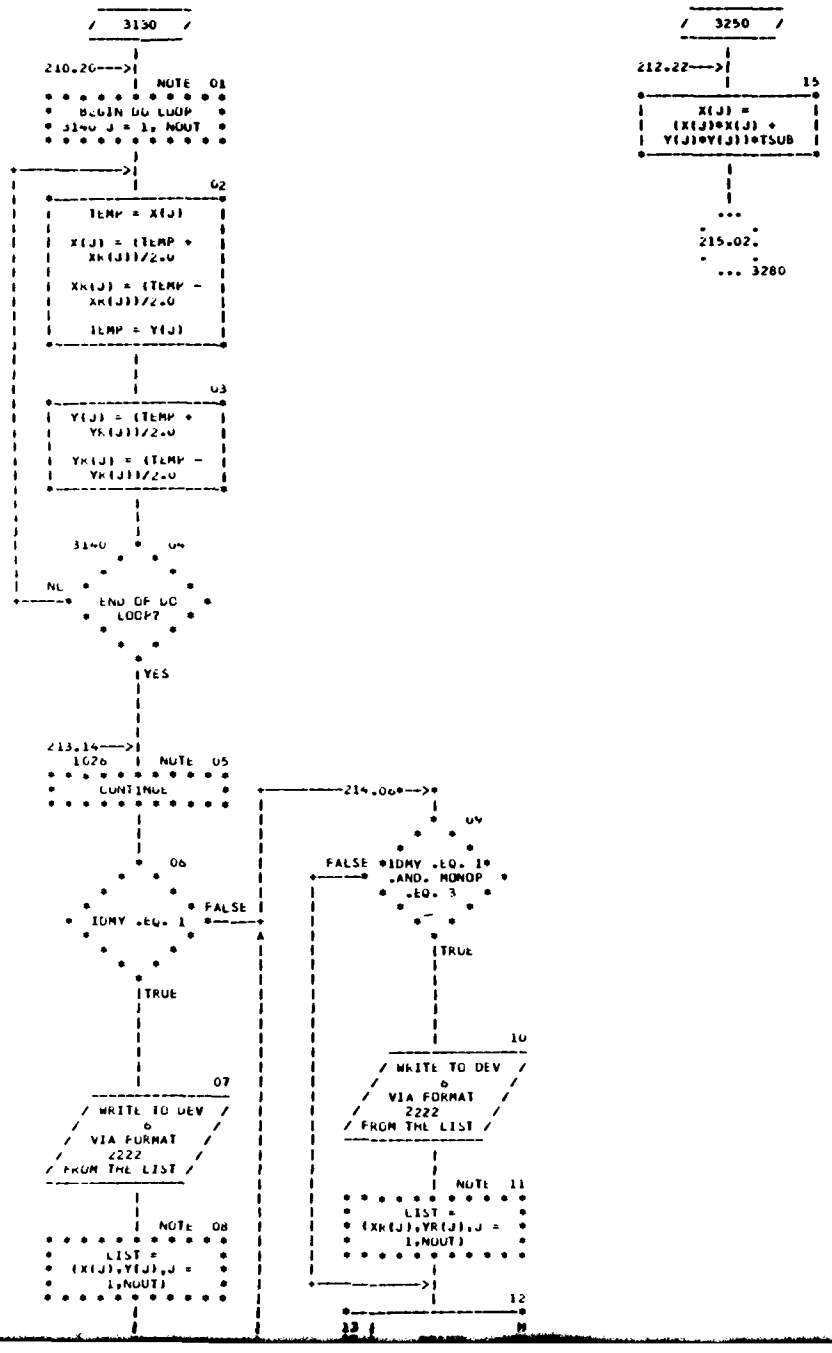

SUBR
1025
08
END OF DO LOOP?
NO
YES
.212.
.02.
04
MODTSR .NE. 3
TRUE
FALSE
NOTE 10
BEGIN DO LOOP
898 J = 1, NOUT
YES
899
NOTE 13
CONTINUE
14
IPAK .EQ. 14 .OR. IPASS .EQ. 2
TRUE
FALSE .214. .05. 1026
15
MODTSR .EQ. 4 .OR. MODTSR .EQ. 7
TRUE
FALSE .210. .20. 3100
16
IPASS = 2
DELAY = RECDEL
211.07.
79

CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)



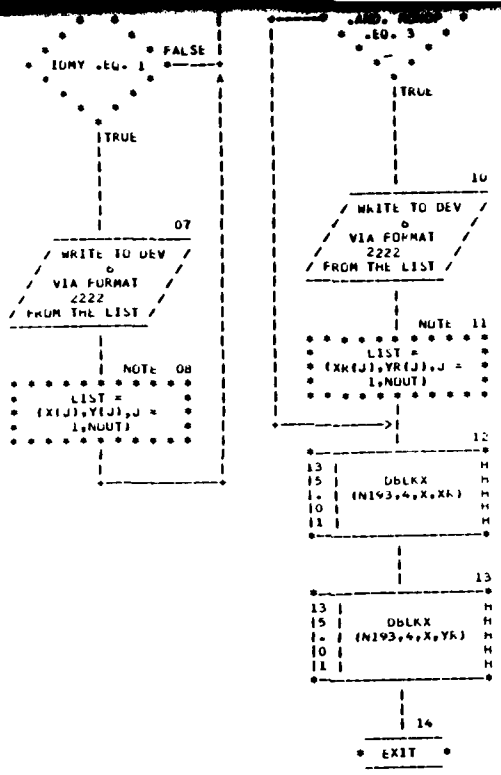
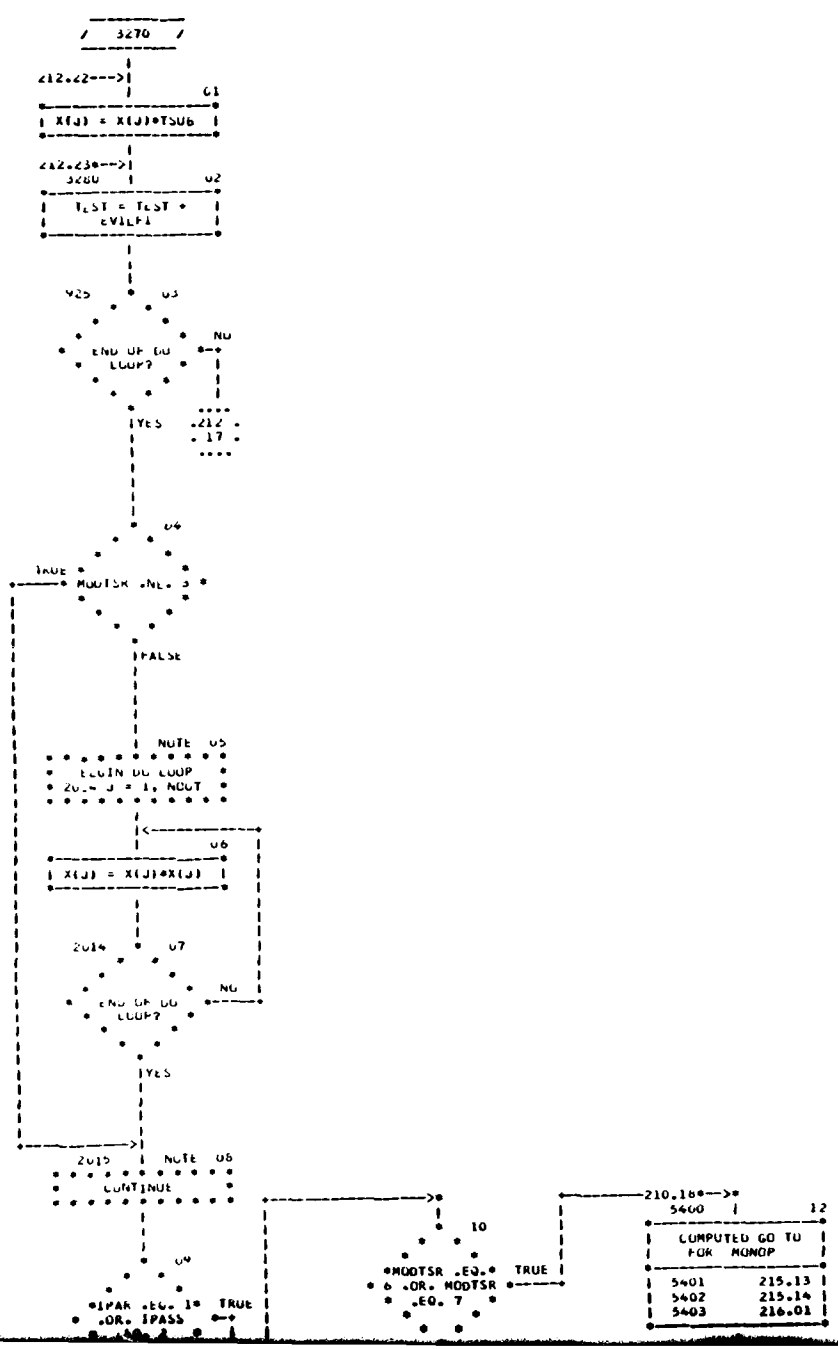

IDMY .EQ. 1
FALSE
TRUE
07
WRITE TO DEV
6
VIA FORMAT
2222
FROM THE LIST
NOTE 08
LIST =
(X(J),Y(J),J =
1,NOUT)
.EQ. 3
TRUE
10
WRITE TO DEV
6
VIA FORMAT
2222
FROM THE LIST
NOTE 11
LIST =
(XR(J),YR(J),J =
1,NOUT)
12
DBLKX
(N193,4,X,XR)
13
DBLKX
(N193,4,X,YR)
14
EXIT

CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)



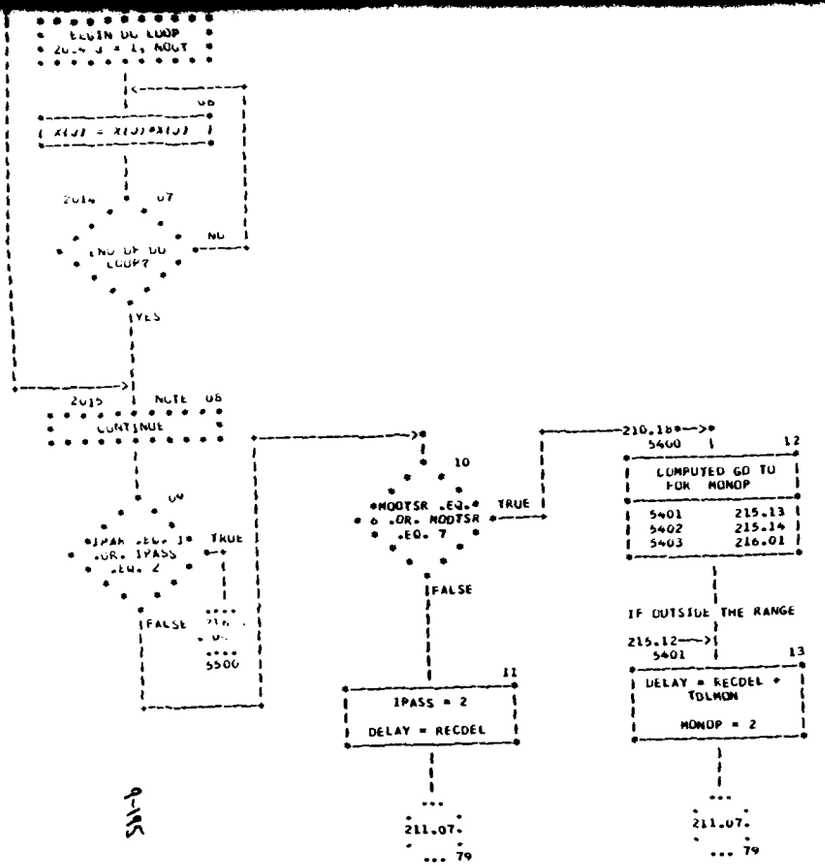
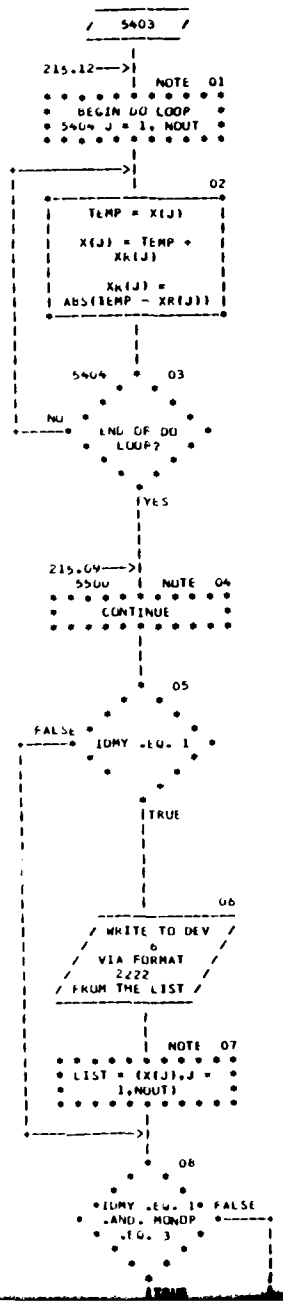

BEGIN DO LOOP
06
X(J) = X(J)*X(J)
2014
07
END OF DO LOOP?
NO
YES
2015
NOTE 08
CONTINUE
09
IPASS .EQ. 1
.OR. IPASS
.EQ. 2
TRUE
FALSE
5500
10
MODTSR .EQ.
6 .OR. MODTSR
.EQ. 7
TRUE
FALSE
11
IPASS = 2
DELAY = RECDEL
211.07.
... 79
210.16
5400
12
COMPUTED GO TO
FOR MONOP
5401 215.13
5402 215.14
5403 216.01
IF OUTSIDE THE RANGE
215.12
5401
13
DELAY = RECDEL +
TDLMON
MONOP = 2
211.07.
... 79

CHART TITLE - SUBROUTINE TSARY(X,Y,XR,YR,*)

9-16



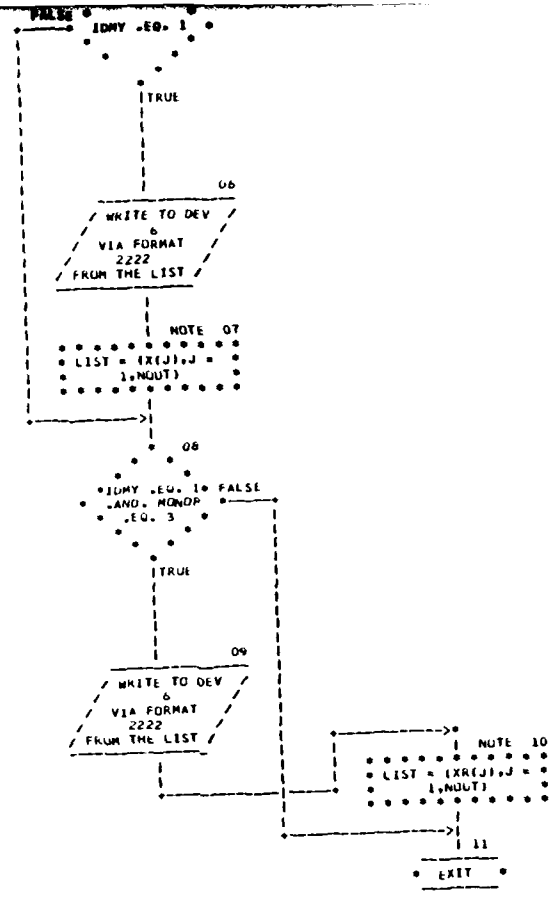

FALSE
IDMY .EQ. 1
TRUE
06
WRITE TO DEV
6
VIA FORMAT
2222
FROM THE LIST
NOTE 07
LIST = (X(J),J =
1,NOUT)
08
IDMY .EQ. 1 FALSE
.AND. MONOP
.EQ. 3
TRUE
09
WRITE TO DEV
6
VIA FORMAT
2222
FROM THE LIST
NOTE 10
LIST = (XR(J),J =
1,NOUT)
11
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(200),DIN(3,100)
      COMMON/BC0002/ AX(3000),EX(3000),XDUM(2197)
      DIMENSION X(1),Y(1),CX(3000),AY(3000),BY(3000),CY(3000)
       DIMENSION XR(1),YR(1)
      DIMENSION TSREED(100)
      EQUIVALENCE (DIN(3,67),TSREED(1) )
      EQUIVALENCE  (BK1(  3), FO          ),
                   (BK1( 11), FI          ),
                   (BK1( 21), IDMY        ), (BK1( 76), NTSAR       ),
                   (BK1( 77), DX          ), (BK1( 78), THETAS      ),
                   (BK1( 79), NROWS       ), (BK1( 82), NBPSR       ),
                   (BK1( 83), IRPSR       ), (BK1( 86), AKYDEL      ),
                   (BK1(  4), FEXT        ), (BK1( 87), ANGLE       ),
                   (BK1(200), NIMP        ), (BK1(  8), SIMFO       )
       EQUIVALENCE (BK1(117), RECDEL),(BK1(119), THETAR),
                   (BK1(116), MODTSR),(BK1(185), TDLMEN)
         ,( INDXM ,BK1(  9))
      DATA N193,N194,N195,NWEL,NWROW1,IRCOEF/-3,-2,-1,31,30,0/
  ...  FORMAT(' THE MAXIMUM ALLOWABLE ANGLE OFF BROADSIDE IS',F15.7)
  ...  FORMAT(1H ,6E20.6)
  ...  FORMAT(' NUMBER OF BITS IN ROW CONTROL PHASE SHIFTER SET TO 15')
  ...  FORMAT( ' IDELEM=',G12.,' IRUNPLT=',G12.,' MAGREF=',G12.,
       ' DELT=',E12.5)
  ...  FORMAT(1H ,2I10,9E15.5)
  ...  FORMAT(' INTERPOLATION COEFFICIENTS NOT INITIALIZED')
```

CHART TITLE = CORRELATING CLIENTS

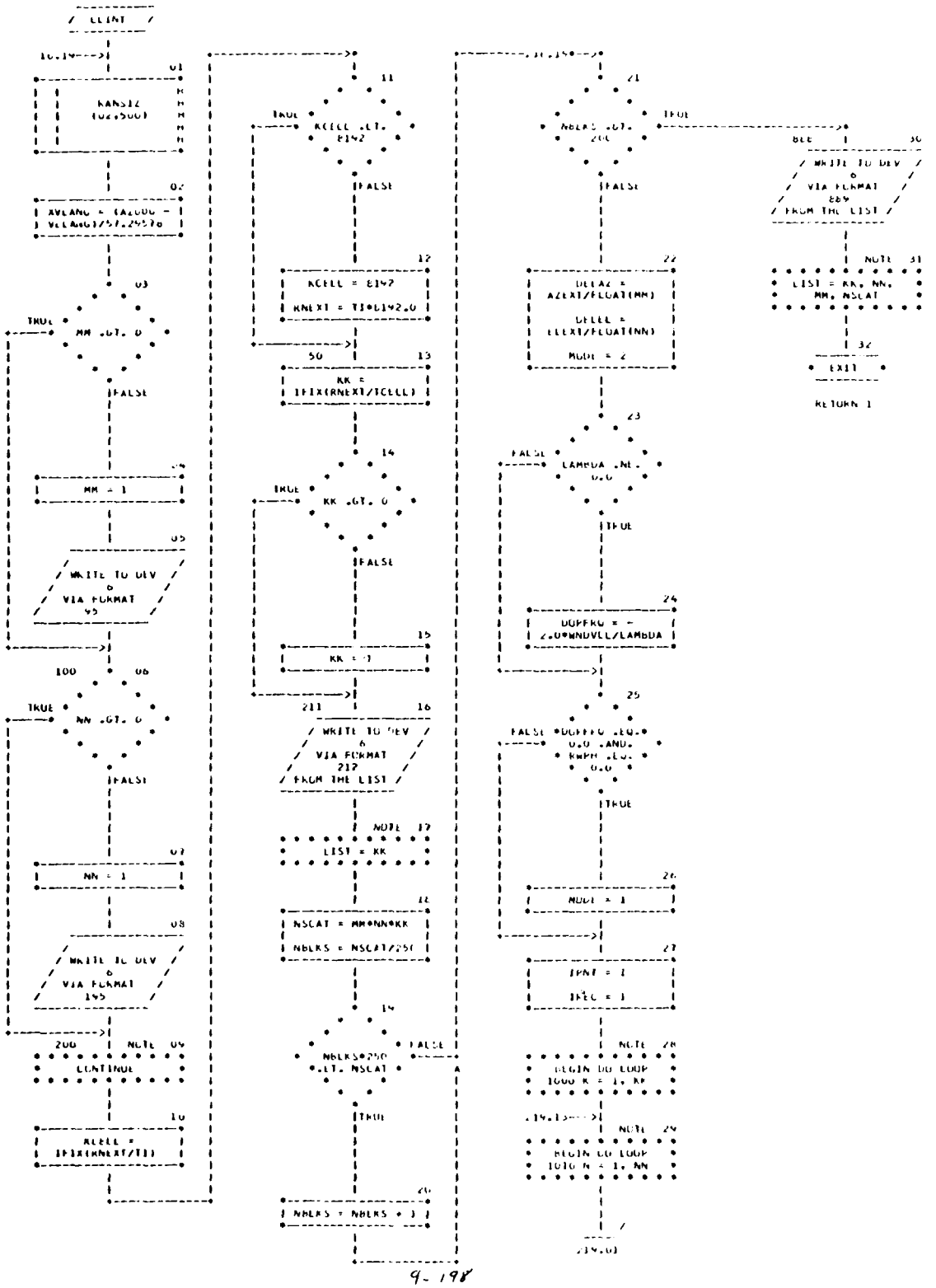
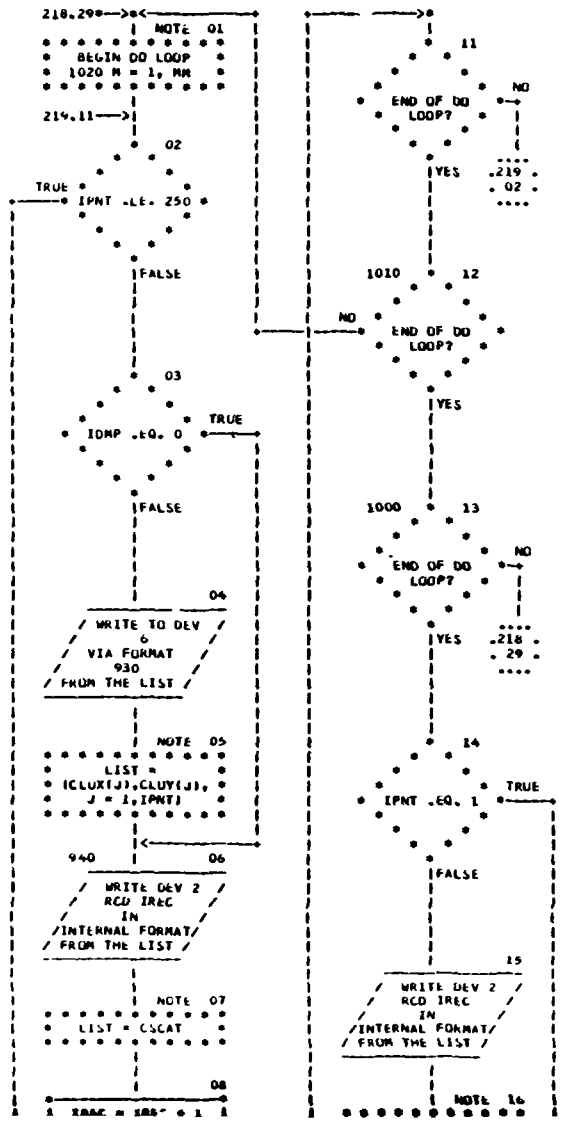


CHART TITLE - SUBROUTINE CLINT(*)



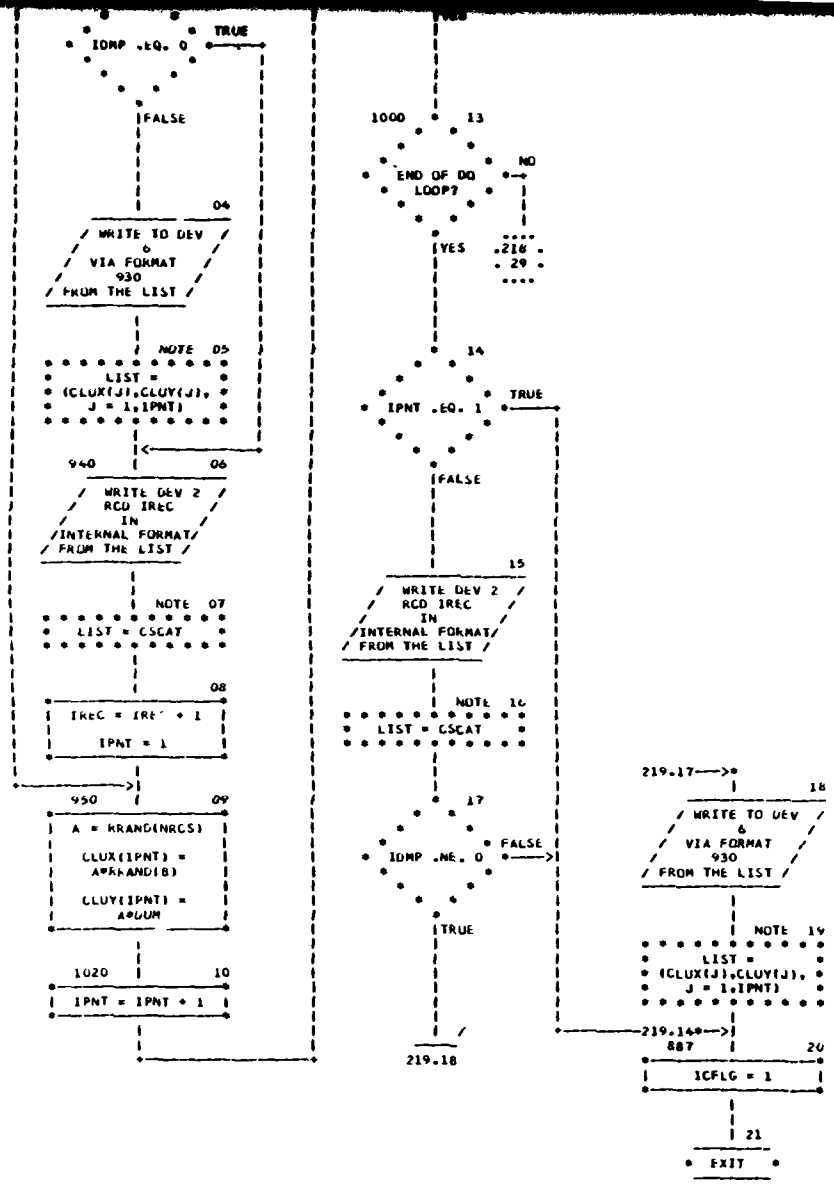
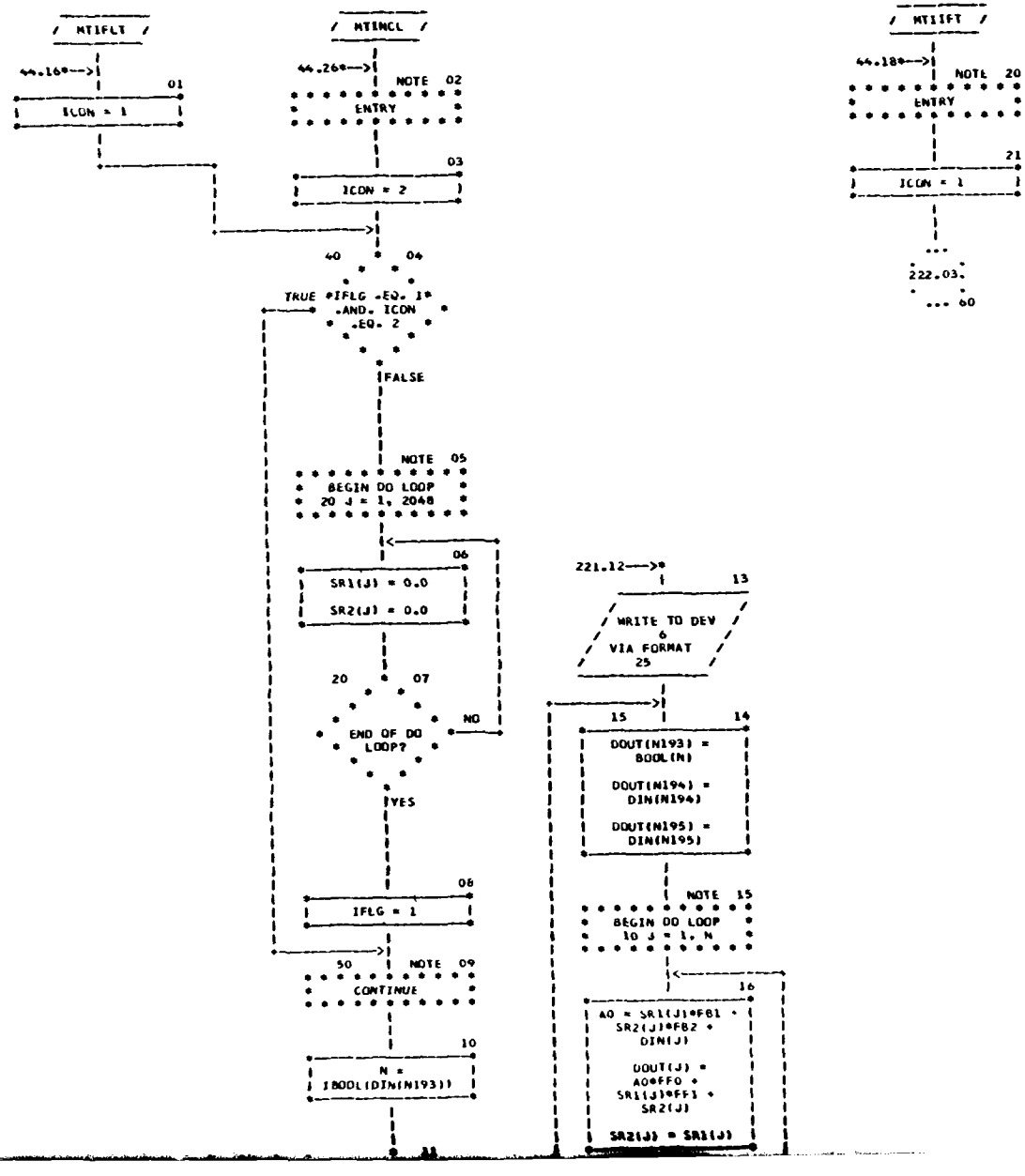

IDMP .EQ. 0
TRUE
FALSE
04
WRITE TO DEV 6 VIA FORMAT 930 FROM THE LIST
NOTE 05
LIST = (CLUX(J),CLUY(J), J = 1,IPNT)
940
06
WRITE DEV 2 RCD IREC IN INTERNAL FORMAT FROM THE LIST
NOTE 07
LIST = CSCAT
08
IREC = IREC + 1
IPNT = 1
950
09
A = KRAND(NRCS)
CLUX(IPNT) = A*KRAND(8)
CLUY(IPNT) = A*GUM
1020
10
IPNT = IPNT + 1
1000
13
END OF DO LOOP?
NO
YES
.216 . . 29 .
14
IPNT .EQ. 1
TRUE
FALSE
15
WRITE DEV 2 RCD IREC IN INTERNAL FORMAT FROM THE LIST
NOTE 16
LIST = CSCAT
17
IDMP .NE. 0
FALSE
TRUE
219.18
219.17
18
WRITE TO DEV 6 VIA FORMAT 930 FROM THE LIST
NOTE 19
LIST = (CLUX(J),CLUY(J), J = 1,IPNT)
219.14
887
20
ICFLG = 1
21
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

9-200

```
      COMMON/BLK1/ CLUX(250),CLUY(250)
      COMMON/BLK2/ BK2(500)
      COMMON/BLKRND/ IDMR(8),DUM
      DIMENSION CSCAT(500)
      EQUIVALENCE (CLUX(1),CSCAT(1))
      EQUIVALENCE  (BK2( 13), LAMBDA      ),(BK2( 14), ICELL      ),
                   (BK2( 21), IDMP        ),(BK2( 46), NRCS       ),
                   (BK2( 47), NRWPH       ),(BK2( 48), RWPH       ),
                   (BK2( 49), WNDVEL      ),(BK2( 50), VELANG     ),
                   (BK2( 51), RNEXT       ),(BK2( 52), RN000      ),
                   (BK2( 53), AZEXT       ),(BK2( 54), AZ000      ),
                   (BK2( 55), MM          ),(BK2( 56), ELEXT      ),
                   (BK2( 57), EL000       ),(BK2( 58), NN         ),
                   (BK2(120), KK          ),(BK2(121), NBLKS      ),
                   (BK2(122), MODE        ),(BK2(123), DELAZ      ),
                   (BK2(124), DELEL       ),(BK2(125), XVLANG     ),
                   (BK2(126), ICFLG       ),(BK2(127), DOPFRQ     )
                   (BK2(128), KCELL       ),(BK2( 12), TI    )
      REAL LAMBDA
95    FORMAT(1HO,' THE VARIABLE MM HAS BEEN SET TO 1 ' )
145   FORMAT(1HO,' THE VARIABLE NN HAS BEEN SET TO 1 ' )
215   FORMAT(1HO,' THE VARIABLE KK HAS BEEN SET TO',I5)
950   FORMAT(1H ,6E20.6)
989   FORMAT( 1H ,' THE PRODUCT OF KK=',I4,' NN=',I4,' MM=',I4,' IS TOO
      LARGE',I10,' THIS JOB WILL TERMINATE' )
```

CHART TITLE - SUBROUTINE MTIFLT(DIN,DOUT)



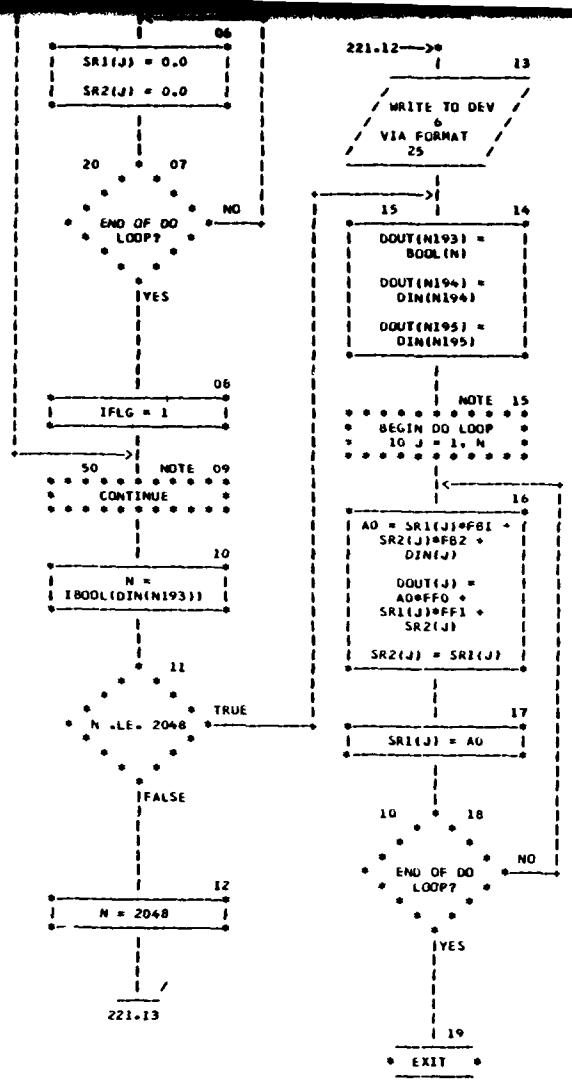
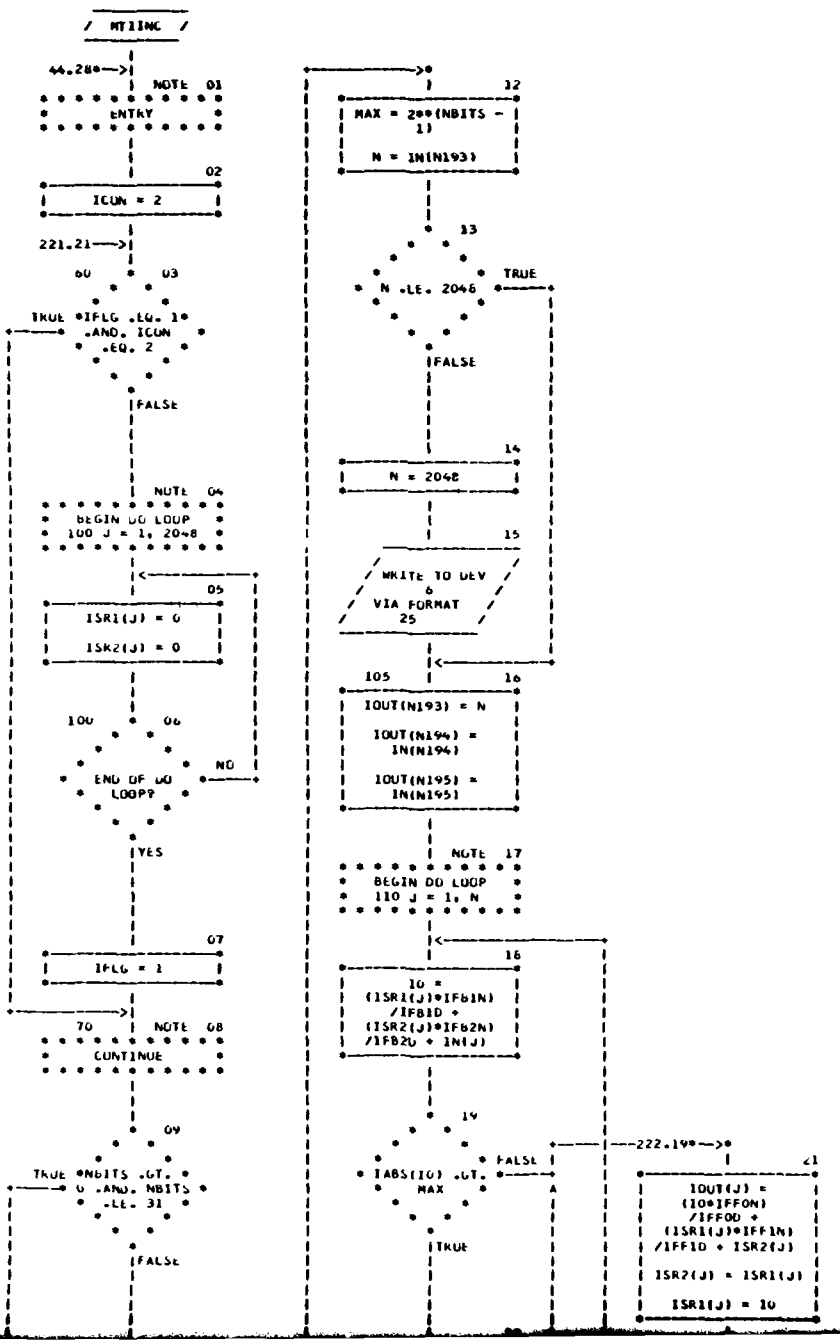

06
SR1(J) = 0.0
SR2(J) = 0.0
20
07
END OF DO LOOP?
NO
YES
06
IFLG = 1
50
NOTE 09
CONTINUE
10
N = IBOOL(DIN(N193))
11
N .LE. 2048
TRUE
FALSE
12
N = 2048
221.13
221.12
13
WRITE TO DEV 6 VIA FORMAT 25
15
14
DOUT(N193) = BOOL(N)
DOUT(N194) = DIN(N194)
DOUT(N195) = DIN(N195)
NOTE 15
BEGIN DO LOOP 10 J = 1, N
16
A0 = SR1(J)*FB1 + SR2(J)*FB2 + DIN(J)
DOUT(J) = A0*FF0 + SR1(J)*FF1 + SR2(J)
SR2(J) = SR1(J)
17
SR1(J) = A0
10
18
END OF DO LOOP?
NO
YES
19
EXIT

CHART TITLE - SUBROUTINE MTIFLT(DIN,DOUT)

9-202



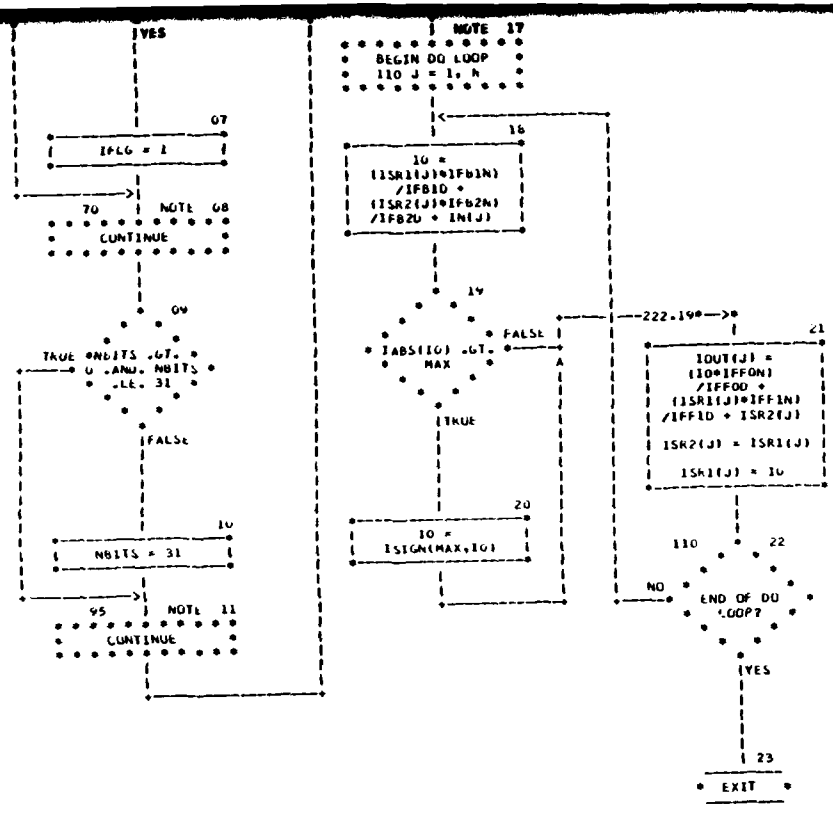
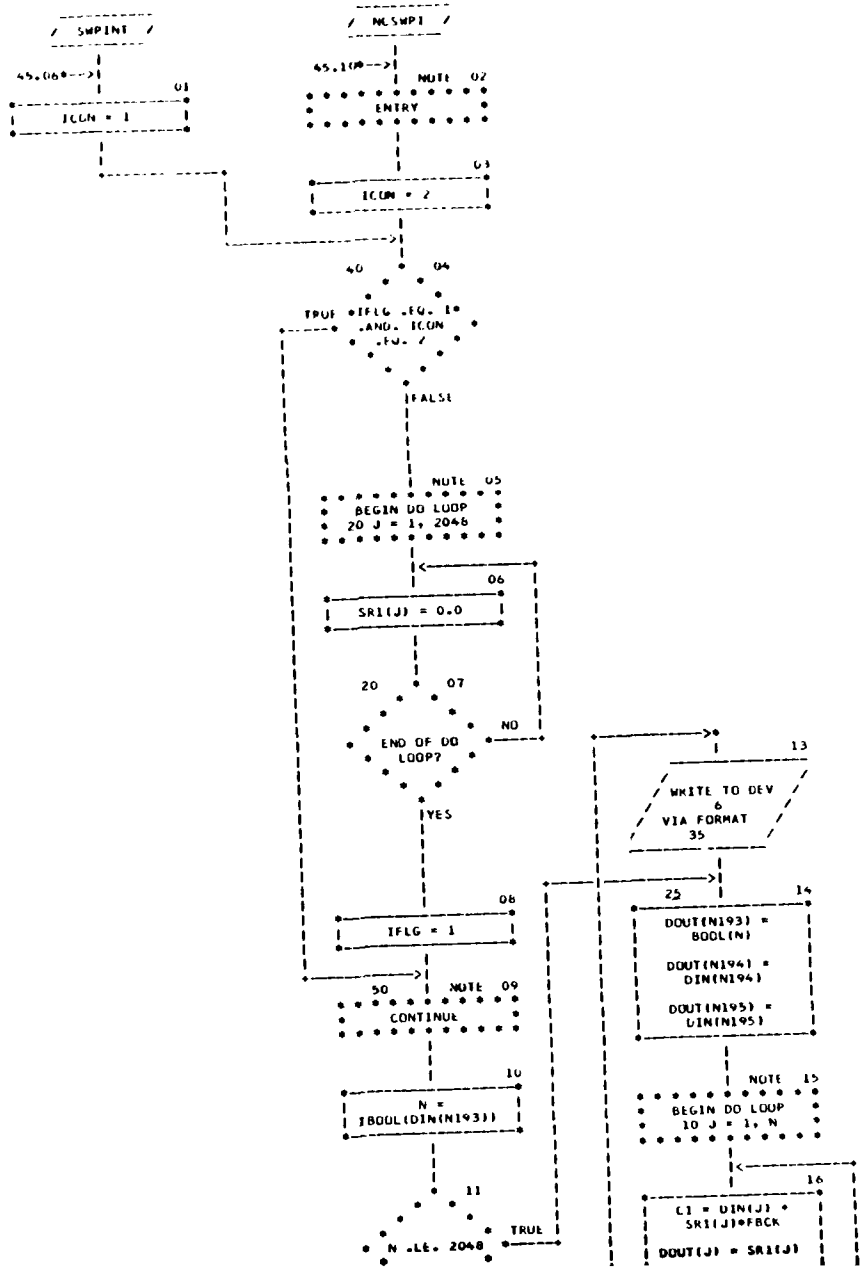
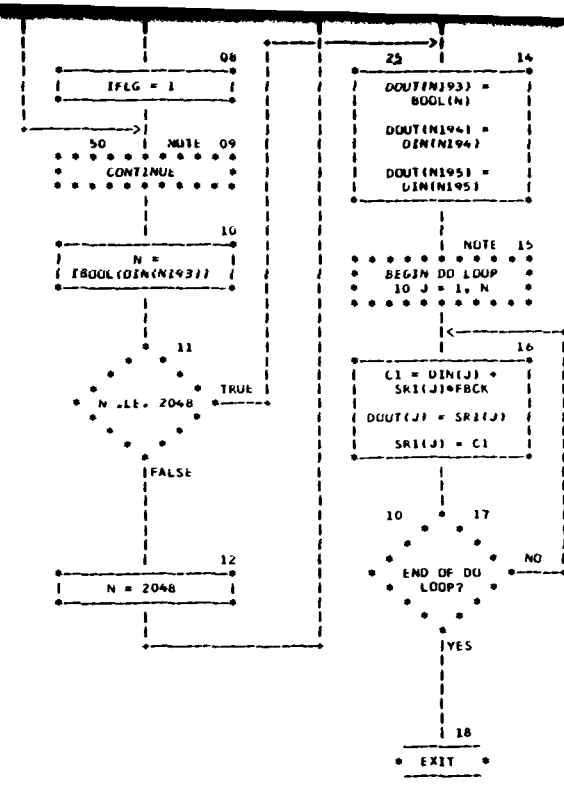

YES
07
IFLG = 1
70
NOTE 68
CONTINUE
09
TRUE NBITS .GT. 0 .AND. NBITS .LE. 31
FALSE
10
NBITS = 31
95
NOTE 11
CONTINUE
NOTE 17
BEGIN DO LOOP
110 J = 1, N
16
IO = (ISR1(J)*IFB1N) /IFB1D + (ISR2(J)*IFB2N) /IFB2D + IN(J)
19
IABS(IO) .GT. MAX
FALSE
TRUE
20
IO = ISIGN(MAX,IO)
A
222,190
21
IOUT(J) = (IO*IFFON) /IFFOD + (ISR1(J)*IFF1N) /IFF1D + ISR2(J)
ISR2(J) = ISR1(J)
ISR1(J) = IO
110
22
NO
END OF DO LOOP?
YES
23
EXIT

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(500)
      DIMENSION DIN(1),DOUT(1),IN(1),IOUT(1),SR1(2048),SR2(2048),
     1SR1(2048),ISR2(2048)
      EQUIVALENCE (SR1(1),ISR1(1) ) , (SR2(1),ISR2(1) )
      DATA N193,N194,N195,N196/-3,-2,-1,0/
      DATA IFLG/0/
      EQUIVALENCE (BK1( 21), IDMY       ), (BK1( 68), FF0        ),
                  (BK1( 69), FF1        ), (BK1( 70), FB1        ),
                  (BK1( 71), FB2        )
      EQUIVALENCE  (  BK1(160), IFFON     ),(  BK1(161), IFF0D     ),
                   (  BK1(162), IFF1N     ),(  BK1(163), IFF1D     ),
                   (  BK1(164), IFB1N     ),(  BK1(165), IFB1D     ),
                   (  BK1(166), IFB2N     ),(  BK1(167), IFB2D     ),
                   (  BK1(169), NBITS     )
   25 FORMAT( ' TOO MANY  POINTS IN INPUT ARRAY....FIRST 2048 PROCESSED'
```

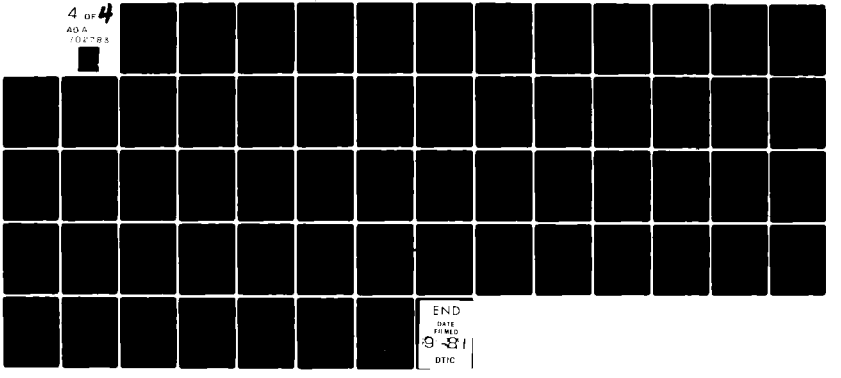
CHART TITLE - SUBROUTINE SWPINT(DIN,DOUT)




08
IFLG = 1
50
NOTE 09
CONTINUE
10
N = IBOOL(DIN(N193))
11
N .LE. 2048
TRUE
FALSE
12
N = 2048
25
14
DOUT(N193) = BOOL(N)
DOUT(N194) = DIN(N194)
DOUT(N195) = DIN(N195)
NOTE 15
BEGIN DO LOOP
10 J = 1, N
16
C1 = DIN(J) + SR1(J)*FBCK
DOUT(J) = SR1(J)
SR1(J) = C1
10
17
END OF DO LOOP?
NO
YES
18
EXIT

AD-A102 783 GENERAL DYNAMICS FORT WORTH TEX CONVAIR AEROSPACE DIV F/G 17/9
ENDO ATMOSPHERIC-EXO ATMOSPHERIC RADAR MODELING, VOLUME II, PAR--ETC(U)
JUN 76 R J HANCOCK, F H CLEVELAND F30602-73-C-0380
UNCLASSIFIED RADC-TR-76-186-VOL-2-PT-2 NL

4 OF 4
AD A
102783



END
DATE FILMED
9-81
DTIC

CHART TITLE - NON-PROCEDURAL STATEMENTS

```
      COMMON/BLK1/BK1(500)
      DIMENSION DIN(1),DOUT(1),SR1(2048)
      EQUIVALENCE (BK1( 21), IDMY        ), (BK1( 75), FBCK
      DATA N193,N194,N195,N196/-3,-2,-1,0/
      DATA IFLG/0/
   35 FORMAT( ' TOO MANY POINTS IN INPUT ARRAY....FIRST 2048 PROCESSED')
```

08/11/75 TABLE OF CONTENTS AND REFERENCES AUTOFLOW CHART SET - FMD/SCL

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FORTRAN MODULE RADSIM

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CHART TITLE - PROCEDURES

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(0003081) 2.06 2

(0003210) 2.08 (0000311) 2.09

(0003111) 2.09 3

(0003121) 2.10 5 830 24.43

(0003131) 2.11 (0000314) 2.12

(0003141) 2.11 6

(0003151) 2.16 (0000316) 2.13

(0003161) 2.17 1614

(0003241) 2.17 (0000319) 2.18

(0003261) 2.20 2000 (0000414) 10.23 (0000927) 10.11 (0000907) 24.30 (0001043) 25.10

(0003321) 2.25 2003 (0000327) 2.21 (0000376) 7.06

(0000941) 3.01 1610 (0000344) 3.10

(0000971) 3.02 1611 (0000942) 3.14

(0000941) 3.14 1600 (0000342) 3.08

(0000951) 3.15 1605 (0000343) 3.09

(0000971) 3.18 (0000436) 3.16

(0000981) 3.20 1550 (0000949) 3.04 (0000938) 3.19

756 4.07 1615 (0000352) 4.04

(0000541) 4.09 1620 (0000353) 4.05

(0000641) 4.11 1625 (0000354) 4.06

(0000771) 5.01 1650 (0000359) 5.09

(0000801) 5.03 1655 (0000360) 5.10

(0000651) 5.11 1630 (0000355) 5.05

(0000681) 5.13 1635 (0000356) 5.06

(0000711) 5.15 1640 (0000357) 5.07

(0000741) 5.17 1645 (0000358) 5.08

(0000951) 6.01 1680 (0000365) 6.09

(0000981) 6.03 1685 (0000366) 6.10

(0000851) 6.11 1660 (0000361) 6.05

(0000881) 6.13 1665 (0000362) 6.06

(0000911) 6.15 1670 (0000363) 6.07

(0000941) 6.17 1675 (0000364) 6.08

(0001013) 7.01 1740 (0000371) 7.11

(0001041) 7.03 1745 (0000372) 7.12

(0001071) 7.13 1690 (0000367) 7.07

(0001091) 7.15 1695 (0000368) 7.08

(0001101) 7.17 1730 (0000369) 7.09

(0001131) 7.19 1735 (0000370) 7.10

(0000974)	5.17	1645	(0000358)	5.08			
(0000975)	5.01	1650	(0000365)	6.09			
(0000978)	6.03	1655	(0000366)	6.10			
(0000979)	6.11	1660	(0000361)	6.05			
(0000980)	6.13	1665	(0000362)	6.06			
(0000984)	6.15	1670	(0000363)	6.07			
(0000992)	6.17	1675	(0000364)	6.08			
(0001013)	7.01	1740	(0000371)	7.11			
(0001016)	7.03	1745	(0000372)	7.12			
(0001001)	7.13	1690	(0000367)	7.07			
(0001004)	7.15	1695	(0000368)	7.08			
(0001007)	7.17	1730	(0000369)	7.09			
(0001010)	7.19	1735	(0000370)	7.10			
(0000376)	7.21	31	756	3.07			
(0000382)	8.01	32	(0000374)	7.23	(0000380)	7.24	
(0000383)	8.02	33					
(0000383)	8.02		(0000383)	8.03			
(0000384)	8.04	34	(0000381)	7.24			
(0000387)	8.07		(0000390)	[illegible]			
(0000390)	8.08	36					
(0000391)	8.09	35	(0000385)	8.05	(0001047)	25.14	
(0000401)	8.10	100	(0000394)	8.11			
(0000404)	8.16	200	(0000395)	8.12			
(0000408)	8.20	300	(0000396)	8.13			
(0000410)	8.22	400	(0000397)	8.14			

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(0000423)	9.07 1101	(0000421) 9.05	
(0000425)	9.09 1102	(0000436) 9.16	
(0000430)	9.13	(0000429) 9.11	
(0000434)	9.15 102	330 8.17	
(0000437)	9.17 104	330 8.17	
(0000440)	9.19 105	330 8.17	
(0000443)	10.01 106	330 8.17	
(0000446)	10.03 106	330 8.17	
(0000450)	10.05 113	330 8.17	
(0000454)	10.07 201	333 8.19	
(0000457)	10.09 202	333 8.19	
(0000460)	10.11 203	333 8.19	
(0000464)	10.13 208	333 8.19	
(0000467)	10.15 209	333 8.19	
(0000469)	10.17 1206	(0000466) 10.14	
(0000469)	10.20 1000	(0000432) 9.14 (0000439) 9.18 (0000442) 9.20 (0000445) 10.02 (0000448) 10.04 (0000452) 10.06 (0000456) 10.08 (0000459) 10.10 (0000462) 10.12 (0000469) 10.17 (0000474) 10.19 (0000480) 11.03 (0000483) 11.05 (0000487) 11.08 (0000490) 11.10 (0000494) 11.12 (0000497) 11.14 (0000506) 12.05 (0000511) 12.08 (0000513) 12.09 (0000516) 12.11 (0000519) 12.13 (0000523) 12.15 (0000526) 12.17 (0000529) 12.19 (0000532) 12.21 (0000535) 13.02 (0000538) 13.04 (0000541) 13.06 (0000544) 13.08 (0000547) 13.10 (0000550) 13.12 (0000553) 13.14 (0000556) 13.16 (0000559) 13.18 (0000562) 13.20 (0000565) 13.22 (0000568) 13.24 (0000571) 14.02 (0000594) 15.14 (0000615) 16.20 (0000618) 16.22 (0000621) 16.24 (0000624) 16.26 (0000627) 16.28 (0000630) 17.02 (0000633) 17.04 (0000636) 17.06 (0000639) 17.08 (0000643) 17.10 (0000646) 17.12 (0000650) 17.14 (0000653) 17.16 (0000656) 17.18 (0000659) 17.20 (0000663) 17.22 (0000666) 17.24 (0000669) 18.02 (0000672) 18.04 (0000675) 18.06 (0000682) 18.15 (0000689) 18.19 (0000692) 18.21 (0000697) 18.24 (0000700) 19.03 (0000701) 19.04 (0000725) 19.25 (0000728) 20.02 (0000731) 20.04 (0000734) 20.06 (0000737) 20.08 (0000740) 20.10 (0000743) 20.12 (0000746) 20.14 (0000749) 20.16 (0000752) 20.18 (0000755) 20.20 (0000758) 20.22 (0000762) 20.24 (0000765) 21.02 (0000768) 21.04 (0000772) 21.09 (0000778) 21.13 (0000781) 21.15 (0000784) 21.17 (0000788) 21.19 (0000791) 21.21 (0000795) 21.24 (0000799) 22.03 (0000815) 22.15 (0000820) 22.19 (0000823) 22.21 (0000826) 22.23 (0000829) 22.25
(0000910)	10.22 1001	(0000958) 4.08 (0000961) 4.10 (0000964) 4.12 (0000979) 5.02 (0000982) 5.04 (0000967) 5.12 (0000970) 5.14 (0000973) 5.16 (0000976) 5.18 (0000997) 6.02 (0001000) 6.04 (0000985) 6.12 (0000988) 6.14 (0000991) 6.16 (0000994) 6.18 (0001015) 7.02 (0001018) 7.04 (0001003) 7.14 (0001006) 7.16 (0001009) 7.18 (0001012) 7.20 (0000873) 23.35 (0001044) 25.15	
(0000477)	11.01 210	333 8.19	
(0000481)	11.04 211	333 8.19	
(0000484)	11.06 212	333 8.19	
(0000488)	11.09 213	333 8.19	
(0000492)	11.11 214	333 8.19	
(0000495)	11.13 215	333 8.19	
(0000498)	11.15 216	333 8.19	
(0000501)	12.01 217	333 8.19	
(0000503)	12.03 1217	(0000500) 11.16	
(0000512)	12.09 3217	(0000503) 12.03	
(0000514)	12.10 218	333 8.19	
(0000517)	12.12 219	333 8.19	
(0000521)	12.14 220	333 8.19	
(0000524)	12.16 221	333 8.19	
(0000527)	12.18 222	333 8.19	
(0000530)	12.20 223	333 8.19	
(0000533)	13.01 224	333 8.19	

			(0007737)	20.08	(0007740)	20.10	(0007743)	20.12	(0007746)	20.14	(0007749)	20.16	(0007752)	20.18
			(0007752)	20.18	(0007755)	20.20	(0007758)	20.22	(0007762)	20.24	(0007765)	21.00	(0007768)	21.02
			(0007768)	21.04	(0007772)	21.09	(0007778)	21.13	(0007781)	21.15	(0007784)	21.17	(0007788)	21.19
			(0007788)	21.19	(0007791)	22.21	(0007795)	21.24	(0007799)	22.03	(0008115)	22.15	(0008207)	22.19
			(0008207)	22.19	(0008823)	22.21	(0008826)	22.23	(0008829)	22.25				
(0009510)	10.22	1001	(0009558)	4.08	(0009961)	4.10	(0009964)	4.12	(0009970)	5.02	(0009982)	5.04	(0009967)	5.12
			(0009967)	5.12	(0009970)	5.14	(0009973)	5.16	(0009976)	5.18	(0009997)	6.02	(0010001)	6.04
			(0010001)	6.04	(0009985)	6.12	(0009988)	6.14	(0009991)	6.16	(0009994)	6.18	(0010015)	7.02
			(0010015)	7.02	(0010018)	7.04	(0010003)	7.14	(0010006)	7.16	(0010009)	7.18	(0010120)	7.20
			(0010120)	7.20	(0008873)	23.35	(0010449)	25.15						
(0006477)	11.01	210	333	8.19										
(0006481)	11.04	211	333	8.19										
(0006484)	11.06	212	333	8.19										
(0006488)	11.09	213	333	8.19										
(0006491)	11.11	214	333	8.19										
(0006495)	11.13	215	333	8.19										
(0006498)	11.15	216	333	8.19										
(0005011)	12.01	217	333	8.19										
(0005033)	12.03	1217	(0005000)	11.16										
(0005014)	12.04	3217	(0005003)	12.03										
(0005018)	12.10	218	333	8.19										
(0005021)	12.12	219	333	8.19										
(0005025)	12.14	220	333	8.19										
(0005028)	12.16	221	333	8.19										
(0005032)	12.18	222	333	8.19										
(0005035)	12.20	223	333	8.19										
(0005039)	13.01	224	333	8.19										
(0005042)	13.03	225	333	8.19										
(0005046)	13.05	226	333	8.19										
(0005049)	13.07	227	333	8.19										
(0005053)	13.09	228	333	8.19										
(0005056)	13.11	230	333	8.19										
(0005060)	13.13	231	333	8.19										
(0005063)	13.15	232	333	8.19										
(0005067)	13.17	233	333	8.19										
(0005070)	13.19	234	333	8.19										
(0005074)	13.21	235	333	8.19										
(0005077)	13.23	236	333	8.19										
(0005081)	14.01	237	333	8.19										

CARD ID	PAGE/BOX	NAME			REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)			
(0000573)	14.03	301	337	8.21				
(0000578)	14.08		(0000577)	14.06				
(0000579)	14.10		(0000578)	14.08				
(0000580)	15.01		(0000579)	14.10				
(0000581)	15.03		(0000580)	15.01				
(0000582)	15.05	1301						
(0000582)	15.05		(0000581)	15.03				
(0000583)	15.07		(0000582)	15.05				
(0000584)	15.09		(0000583)	15.07				
(0000593)	15.14	2301	(0000580)	15.10	(0000588)	15.12		
(0000923)	16.01	5301	(0000924)	24.38				
(0000924)	16.06	6301	(0000925)	24.38				
(0000926)	16.11	1501	(0000599)	16.07	(0000923)	24.37		
(0000604)	16.12		(0000603)	16.09				
(0000611)	16.16	302	337	8.21				
(0000613)	16.19		(0000612)	16.17				
(0000616)	16.21	303	337	8.21				
(0000619)	16.23	304	337	8.21				
(0000622)	16.25	305	337	8.21				
(0000625)	16.27	306	337	8.21				
(0000628)	17.01	307	337	8.21				
(0000631)	17.03	308	337	8.21				
(0000634)	17.05	309	337	8.21				
(0000637)	17.07	310	337	8.21				
(0000641)	17.09	401	339	9.01				
(0000644)	17.11	402	339	9.01				
(0000648)	17.13	403	339	9.01				
(0000651)	17.15	404	339	9.01				
(0000654)	17.17	405	339	9.01				
(0000657)	17.19	406	339	9.01				
(0000661)	17.21	407	339	9.01				
(0000664)	17.23	408	339	9.01				
(0000667)	18.01	409	339	9.01				
(0000670)	18.03	410	339	9.01				
(0000673)	18.05	413	339	9.01				
(0000677)	18.07	420	339	9.01				
(0000679)	18.09	1420	(0000685)	18.17	(0000805)	22.07	(0000810)	22.11
(0000680)	18.11		(0000679)	18.09				
(0000681)	18.13		(0000680)	18.11				
(0000683)	18.15		(0000681)	18.13				
(0000683)	18.16	421	339	9.01				
(0000687)	18.18	422	339	9.01				
(0000690)	18.20	423	339	9.01				
(0000694)	18.22	425	339	9.01				
(0000698)	19.01	426	339	9.01				
(0000700)	19.03	1426	(0000708)	19.07				

(0000683)	18.16	421	339	9.01					
(0000687)	18.18	422	339	9.01					
(0000690)	18.20	423	339	9.01					
(0000694)	18.22	425	339	9.01					
(0000698)	19.01	426	339	9.01					
(0000700)	19.03	1426	(0000708)	19.07					
(0000702)	19.05	2426	(0000696)	18.24	(0000798)	22.03			
(0000706)	19.06	427	339	9.01					
(0000709)	19.08	430	339	9.01					
(0000712)	19.10	431	339	9.01					
(0000715)	19.12	432	339	9.01					
(0000718)	19.14	433	339	9.01					
(0000720)	19.16	1430	(0000711)	19.09	(0000714)	19.11	(0000717)	19.13	
(0000722)	19.19		(0000721)	19.17					
(0000723)	19.21		(0000722)	19.19					
(0000724)	19.23		(0000723)	19.21					
(0000725)	19.25		(0000724)	19.23					
(0000726)	20.01	434	339	9.01					
(0000729)	20.03	435	339	9.01					

CARD ID	PAGE/BOX	NAME	REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)	
(0007732)	20.05	436	339	9.01
(0007735)	20.07	437	339	9.01
(0007738)	20.09	440	339	9.01
(0007741)	20.11	441	339	9.01
(0007744)	20.13	451	339	9.01
(0007747)	20.15	452	339	9.01
(0007750)	20.17	453	339	9.01
(0007753)	20.19	454	339	9.01
(0007756)	20.21	455	339	9.01
(0007760)	20.23	456	339	9.01
(0007763)	21.01	457	339	9.01
(0007766)	21.03	458	339	9.01
(0007769)	21.05	459	339	9.01
(0007771)	21.07	1459	(0007755)	21.11
(0007774)	21.09		(0007771)	21.07
(0007775)	21.10	460	339	9.01
(0007778)	21.12	461	339	9.01
(0007781)	21.14	462	339	9.01
(0007784)	21.16	463	339	9.01
(0007788)	21.18	501	(0004171)	9.03
(0007791)	21.20	502	(0004171)	9.03
(0007794)	21.22	504	(0004171)	9.03
(0007798)	22.01	505	(0004171)	9.03
(0007801)	22.04	506	(0004171)	9.03
(0007806)	22.06	507	(0004171)	9.03
(0007811)	22.12	508	(0004171)	9.03
(0007816)	22.16	509	(0004171)	9.03
(0007821)	22.20	510	(0004171)	9.03
(0007824)	22.22	511	(0004171)	9.03
(0007827)	22.24	512	(0004171)	9.03
(0008328)	23.01	105	330	8.17
(0008331)	23.02	110	330	8.17
(0008334)	23.03	111	330	8.17
(0008337)	23.04	114	330	8.17
(0008340)	23.05	115	330	8.17
(0008343)	23.06	116	330	8.17
(0008346)	23.07	117	330	8.17
(0008349)	23.08	118	330	8.17
(0008841)	23.09	204	333	8.19
(0008842)	23.10	205	333	8.19
(0008843)	23.11	206	333	8.19
(0008844)	23.12	207	333	8.19
(0008845)	23.13	223	333	8.19
(0008846)	23.14	238	333	8.19
(0008848)	23.15	312	337	8.21
(0008849)	23.16	313	337	8.21
(0008511)	22.17	414	339	9.01

(0006816)	22.16	509	(0006417)	9.03
(0006821)	22.20	510	(0006417)	9.03
(0006826)	22.22	511	(0006417)	9.03
(0006831)	22.24	512	(0006417)	9.03
(0006321)	23.01	109	330	8.17
(0006331)	23.02	110	330	8.17
(0006346)	23.03	111	330	8.17
(0006356)	23.04	114	330	8.17
(0006361)	23.05	115	330	8.17
(0006371)	23.06	116	330	8.17
(0006381)	23.07	117	330	8.17
(0006391)	23.08	118	330	8.17
(0006401)	23.09	204	333	8.19
(0006411)	23.10	205	333	8.19
(0006421)	23.11	206	333	8.19
(0006431)	23.12	207	333	8.19
(0006441)	23.13	208	333	8.19
(0006451)	23.14	209	333	8.19
(0006461)	23.15	210	333	8.19
(0006471)	23.16	211	334	8.21
(0006481)	23.17	212	334	8.21
(0006511)	23.18	413	339	9.01
(0006521)	23.19	414	339	9.01
(0006531)	23.20	415	339	9.01
(0006541)	23.21	416	339	9.01
(0006551)	23.22	417	339	9.01
(0006561)	23.23	418	339	9.01
(0006571)	23.24	419	339	9.01
(0006581)	23.25	432	339	9.01
(0006591)	23.26	433	339	9.01
(0006601)	23.27	434	339	9.01
(0006611)	23.28	435	339	9.01
(0006621)	23.29	436	339	9.01
(0006631)	23.29	437	339	9.01

LABEL ID	FACILITY	NAME		REFERENCES (SOURCE SEQUENCE NO. AND PAGE/BOX)					
(0000864)	23.30	440	339	9.01					
(0000865)	23.31	449	339	9.01					
(0000866)	23.32	450	339	9.01					
(0000867)	23.33	503	(0000417)	9.03					
(0000870)	23.34	2650	(0000339)	3.14					
(0000875)	24.01	107	330	8.17					
(0000876)	24.02	109	330	8.17					
(0000877)	24.03	112	330	8.17					
(0000878)	24.04	119	330	8.17					
(0000879)	24.05	120	330	8.17					
(0000880)	24.06	236	333	8.19					
(0000881)	24.07	240	333	8.19					
(0000882)	24.08	241	333	8.19					
(0000883)	24.09	242	333	8.19					
(0000884)	24.10	243	333	8.19					
(0000885)	24.11	311	337	8.21					
(0000886)	24.12	411	339	9.01					
(0000887)	24.13	412	339	9.01					
(0000888)	24.14	424	339	9.01					
(0000889)	24.15	426	339	9.01					
(0000890)	24.16	429	339	9.01					
(0000891)	24.17	444	339	9.01					
(0000892)	24.18	464	339	9.01					
(0000893)	24.19	465	339	9.01					
(0000894)	24.20	466	339	9.01					
(0000895)	24.21	467	339	9.01					
(0000896)	24.22	468	339	9.01					
(0000897)	24.23	469	339	9.01					
(0000898)	24.24	470	339	9.01					
(0000899)	24.25	513	(0000417)	9.03					
(0000900)	24.26	514	(0000417)	9.03					
(0000901)	24.27	515	(0000417)	9.03					
(0000902)	24.28	2040	(0000343)	8.10					
(0000910)	24.31	1500	(0000345)	3.11	(0000606)	16.15			
822	24.39	1760	(0000347)	3.13					
832	25.01	1710	(0000348)	4.01	(0000349)	4.02			
(0001036)	25.08		(0001033)	25.03					
840	25.09		(0001036)	25.06					
(0001044)	25.11	1720	840	25.09					
852	25.16	1302	(0000613)	16.10					
856	25.18	1506	(0000803)	22.06	(0000806)	22.10			
859	26.01	1799	(0000946)	3.02					
(0001063)	26.03	1797	(0000592)	15.13	(0000705)	19.05	855	25.17	(0001058) 25.18
(0001064)	26.04	1800	(0000346)	3.12					
(0001069)	26.06	1810	(0000931)	3.20					

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[illegible]	[illegible]	[illegible]	[illegible]	6.10					
(0009161)	24.31	1500	(0003451)	3.11	(0008061)	16.15			
822	24.39	1700	(0003471)	3.13					
832	25.01	1710	(0003481)	4.01	(0003491)	4.02			
(0010361)	25.06		(0010331)	25.03					
840	25.09		(0010361)	25.06					
(0010441)	25.11	1720	840	25.09					
852	25.16	1302	(0006131)	16.19					
856	25.18	1506	(0008031)	22.06	(0008061)	22.10			
859	26.01	1799	(0009461)	3.02					
(0010631)	26.03	1797	(0005921)	15.13	(0007051)	19.05	855	25.17	(0010581) 25.18
(0010641)	26.04	1800	(0003461)	3.12					
(0010691)	26.06	1810	(0009311)	3.20					

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - INTRODUCTORY COMMENTS

CHART TITLE - PROCEDURES

(0011291)	35.06	890	(0017151)	52.21
(0011341)	35.12	894	(0011471)	36.01
(0017201)	35.15	2060	(0011361)	35.13
(0017171)	35.17	2050	(0011371)	35.14
(0011391)	35.19	900	(0011581)	36.08
(0011471)	36.01		(0011461)	35.27

LABEL ID	PAGE/SEQ	NAME	REFERENCES (SOURCE SEQUENCE NOS AND PAGE/DOAT)									
(0011961)	36.02	999	(0011960)	36.14								
(0011543)	36.06	1000	(0011710)	37.09	(0012179)	36.08	(0012219)	36.10	(0012221)	38.12	(0012223)	38.14
			(0012225)	36.16	(0012227)	36.18	(0012229)	36.20	(0012231)	38.22	(0012233)	38.24
			(0012237)	39.03	(0012241)	39.06	(0012244)	39.08	(0012246)	39.10	(0012248)	39.12
			(0012251)	39.14	(0012254)	39.17	(0012257)	39.20	(0012259)	39.22	(0012261)	39.24
			(0012263)	39.26	(0012265)	39.28	(0012267)	39.30	(0012269)	39.32	(0012271)	40.02
			(0012273)	40.04	(0012275)	40.06	(0012277)	40.08	(0012279)	40.10	(0012281)	40.12
			(0012283)	40.14	(0012285)	40.16	(0012287)	40.18	(0012289)	40.20	(0012911)	40.22
			(0012293)	40.24	(0012295)	40.26	(0012297)	40.28	(0012299)	40.30	(0013011)	40.32
			(0013038)	41.02	(0013049)	41.06	(0013111)	41.08	(0013131)	41.10	(0013151)	41.12
			(0013171)	41.14	(0013221)	41.18	(0013241)	41.20	(0013261)	41.22	(0013281)	41.24
			(0013301)	41.26	(0013321)	41.28	(0013341)	41.30	(0013361)	42.02	(0013411)	42.06
			(0013431)	42.08	(0013461)	42.11	(0013481)	42.13	(0013501)	42.15	(0013521)	42.17
			(0013541)	42.19	(0013561)	42.21	(0013581)	42.23	(0013601)	42.25	(0013621)	42.27
			(0013641)	42.29	(0013661)	42.31	(0013701)	42.33	(0013721)	43.02	(0013741)	43.04
			(0013761)	43.06	(0013781)	43.08	(0013801)	43.10	(0013821)	43.12	(0013841)	43.14
			(0013861)	43.16	(0013881)	43.18	(0013901)	43.20	(0013921)	43.22	(0013941)	43.24
			(0013961)	43.26	(0013981)	43.28	(0014001)	43.30	(0014021)	43.32	(0014041)	44.02
			(0014061)	44.04	(0014081)	44.06	(0014101)	44.08	(0014121)	44.10	(0014141)	44.12
			(0014161)	44.14	(0014181)	44.17	(0014201)	44.19	(0014241)	44.22	(0014261)	44.24
			(0014281)	44.27	(0014311)	44.29	(0014341)	45.03	(0014361)	45.05	(0014381)	45.07
			(0014401)	45.09	(0014421)	45.11	(0014441)	45.13	(0014461)	45.15	(0014481)	45.17
			(0014501)	45.19	(0014521)	45.21	(0014541)	45.23	(0014561)	45.25	(0014581)	45.27
			(0014601)	45.29	(0014621)	45.31	(0014641)	46.02	(0014661)	46.04	(0014681)	46.06
			(0014701)	46.08	(0014721)	46.10	(0014741)	46.12	(0014761)	46.14	(0014781)	46.16
			(0014801)	46.18	(0014821)	46.20	(0014841)	46.22	(0014861)	46.24	(0014881)	46.26
			(0014901)	46.28	(0014921)	46.30	(0014941)	46.32	(0014971)	47.02	(0014991)	47.04
			(0015021)	47.07	(0015041)	47.10	(0015061)	47.12	(0015081)	47.14	(0015101)	47.16
			(0015121)	47.18	(0015141)	47.20	(0015161)	47.22	(0015511)	48.27	(0015571)	48.31
			(0015641)	48.39	(0015701)	49.08	(0015761)	49.16	(0015821)	49.24	(0015891)	49.32
			(0015951)	50.08	(0016011)	50.16	(0016071)	50.24	(0016091)	50.25	(0016111)	50.26
			(0016131)	50.27	(0016151)	50.28	(0016171)	50.29	(0016191)	50.30	(0016211)	51.01
			(0016231)	51.02	(0016321)	51.09	(0016341)	51.10	(0016481)	51.25	(0016571)	52.09
			(0016881)	52.17	(0016921)	52.18						
(0011962)	36.11	951	(0011960)	36.10								
(0011963)	36.12	952	(0011960)	36.10								
(0011971)	36.17	968	(0011967)	36.15								
(0011978)	36.24		(0011976)	36.21								
(0011844)	37.02	998	(0011841)	36.26								
(0011707)	37.06	2100	(0011865)	37.03								
(0011913)	37.11	100	(0011886)	37.04								
(0011946)	37.13	200	(0011887)	37.05								
(0012000)	37.15	300	(0011888)	37.06								
(0012002)	37.17	400	(0011889)	37.07								
(0012008)	38.02	500	(0011900)	37.10								
(0012141)	38.04	101	(0011940)	37.12								
1250	38.06	102	(0011940)	37.12								
(0012181)	38.09	103	(0011940)	37.12								
(0012201)	38.11	104	(0011940)	37.12								
(0012221)	38.13	405	(0011940)	37.12								
(0012241)	38.15	106	(0011940)	37.12								
(0012261)	38.17	108	(0011940)	37.12								
(0012281)	38.19	110	(0011940)	37.12								
(0012301)	38.21	111	(0011940)	37.12								
1430	38.23	113	(0011940)	37.12								
(0012351)	39.01	114	(0011940)	37.12								
(0012391)	39.04	115	(0011940)	37.12								
(0012431)	39.07	116	(0011940)	37.12								
(0012451)	39.09	117	(0011940)	37.12								
(0012471)	39.11	118	(0011940)	37.12								
(0011701)	39.13	201	(0011977)	37.14								
(0011982)	39.15	202	(0011977)	37.14								

(0011884)	37.02	996	(0011881)	36.26
(0011907)	37.06	2100	(0011885)	37.03
(0011931)	37.11	100	(0011886)	37.04
(0011956)	37.13	200	(0011887)	37.05
(0012004)	37.15	300	(0011888)	37.06
(0012027)	37.17	400	(0011889)	37.07
(0012051)	38.02	500	(0011890)	37.10
(0012074)	38.04	101	(0011944)	37.12
1250	38.06	102	(0011944)	37.12
(0012118)	38.09	103	(0011944)	37.12
(0012201)	38.11	104	(0011944)	37.12
(0012222)	38.13	105	(0011944)	37.12
(0012244)	38.15	106	(0011944)	37.12
(0012268)	38.17	108	(0011944)	37.12
(0012288)	38.19	110	(0011944)	37.12
(0012308)	38.21	111	(0011944)	37.12
1430	38.23	113	(0011944)	37.12
(0012351)	39.01	114	(0011944)	37.12
(0012391)	39.04	115	(0011944)	37.12
(0012431)	39.07	116	(0011944)	37.12
(0012465)	39.09	117	(0011944)	37.12
(0012487)	39.11	118	(0011944)	37.12
(0012508)	39.13	201	(0011947)	37.14
(0012528)	39.15	202	(0011947)	37.14
(0012555)	39.18	203	(0011947)	37.14
(0012588)	39.21	204	(0011947)	37.14
(0012608)	39.23	205	(0011947)	37.14
(0012628)	39.25	206	(0011947)	37.14
(0012648)	39.27	207	(0011947)	37.14
(0012668)	39.29	208	(0011947)	37.14
(0012688)	39.31	209	(0011947)	37.14
(0012708)	40.01	210	(0011947)	37.14
(0012728)	40.03	211	(0011947)	37.14
(0012748)	40.05	212	(0011947)	37.14
(0012768)	40.07	213	(0011947)	37.14
(0012788)	40.09	214	(0011947)	37.14
(0012808)	40.11	215	(0011947)	37.14

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(0012..)	40.12	218	(0011497)	37.14
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(0012..)	40.21	220	(0011497)	37.14
(0012..)	40.23	221	(0011497)	37.14
(0012..)	40.25	222	(0011497)	37.14
(0012..)	40.27	223	(0011497)	37.14
(0012..)	40.29	224	(0011497)	37.14
(0013001)	40.31	225	(0011497)	37.14
(0013023)	41.01	226	(0011497)	37.14
(0013044)	41.03	227	(0011497)	37.14
(0013063)	41.05	1227	(0010644)	51.23
(0013083)	41.05	2227	(0010655)	52.07
(0013101)	41.07	228	(0011497)	37.14
(0013123)	41.09	229	(0011497)	37.14
(0013145)	41.11	230	(0011497)	37.14
(0013166)	41.13	231	(0011497)	37.14
(0013187)	41.15	232	(0011497)	37.14
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(0013263)	41.21	234	(0011497)	37.14
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(0013331)	41.27	237	(0011497)	37.14
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(0013421)	42.06	1301	(0012034)	42.04
(0013444)	42.09	302	(0012011)	37.16
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(0013707)	43.07	405	(0012031)	38.01
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(0013731)	43.11	407	(0012031)	38.01
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(0013791)	43.21	414	(0012031)	38.01
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(0014417)	44.15	430	(0012003)	38.01
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(0014422)	44.20	431	(0012003)	38.01
(0014423)	44.21	1431	(0014422)	44.20
(0014425)	44.23	2431	(0014422)	44.20
(0014427)	44.25	432	(0012003)	38.01
(0014428)	44.26	1432	(0014427)	44.25
(0014430)	44.28	2432	(0014427)	44.25
(0014432)	45.01	433	(0012003)	38.01
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(0014437)	45.06	434	(0012003)	38.01
(0014439)	45.08	435	(0012003)	38.01
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(0014443)	45.12	437	(0012003)	38.01
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(0014453)	45.22	442	(0012003)	38.01
(0014455)	45.24	443	(0012003)	38.01
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(0015000)	47.05	503		(0012009)	38.03
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(0015221)	46.05 120	(0011948) 37.12	
(0015241)	46.06 240	(0011947) 37.14	
(0015251)	46.07 241	(0011947) 37.14	
(0015261)	46.08 242	(0011947) 37.14	
(0015271)	46.09 243	(0011947) 37.14	
(0015291)	46.10 311	(0012041) 37.16	
(0015311)	46.11 411	(0012031) 38.01	
(0015321)	46.12 412	(0012031) 38.01	
(0015331)	46.13 424	(0012031) 38.01	
(0015341)	46.14 428	(0012031) 38.01	
(0015351)	46.15 429	(0012031) 38.01	
(0015361)	46.16 444	(0012031) 38.01	
(0015381)	46.17 506	(0012091) 38.03	
(0015391)	46.18 507	(0012091) 38.03	
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(0015441)	46.23 468	(0012031) 38.01	
(0015451)	46.24 469	(0012031) 38.01	
(0015461)	46.25 470	(0012031) 38.01	
(0015531)	46.28 953	(0011601) 36.10	
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(0015621)	46.36	4140 46.35	
(0015661)	49.01 955	(0011601) 36.10	
(0015691)	49.07	4210 49.04	
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(0016081)	50.25 962	(0011601) 36.10	
(0016101)	50.26 963	(0011601) 36.10	
(0016121)	50.27 964	(0011601) 36.10	
(0016141)	50.28 965	(0011601) 36.10	
(0016161)	50.29 966	(0011601) 36.10	
(0016181)	50.30 967	(0011601) 36.10	
(0016201)	51.01 968	(0011601) 36.10	
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(0016594) 52.10 1010 (0012492) 40.23 (0012494) 40.25 (0012496) 40.27
5111 52.11 1020 (0014113) 44.11 (0014115) 44.13
5141 52.12 1030 (0014103) 44.01 2860 44.03
(0016700) 52.13 1040 (0014111) 44.09
(0016746) 52.14 1050 (0013694) 42.32 (0013711) 43.01
(0016760) 52.15 1060 2700 43.14 3590 47.04
(0016807) 52.16 1070 1430 38.23
(0016840) 52.17 1080 2500 42.28
(0016940) 52.18 1120 (0015011) 47.06
(0016994) 52.19 1130 (0012588) 39.21 (0012602) 39.23 (0012622) 39.25 (0012644) 39.27 (0013335) 41.29
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(0017031) 52.20 1162 (0015055) 47.11
(0017121) 52.21 2020 (0016971) 47.08 (0016616) 52.10 5113 52.11 (0016694) 52.12 (0017012) 52.13
(0016760) 52.14 (0016800) 52.15 (0016844) 52.16 (0017016) 52.19 (0017056) 52.20

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(0017455) 56.11 (0017500) 56.13
(0017500) 56.13 250
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(0017544) 56.15 100

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE WEITRE(X,Y,*)

(0017594) 56.01 WEITRE (0012492) 40.23-X
(0017733) 56.02 WEITCP (0012944) 40.25-X (0022220) 77.07-X
M 56.04 WEITMP (0012968) 40.27-X (0022222) 77.09-X
(0017788) 56.06 5 (0017722) 58.01 (0017755) 58.03
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(0017933) 56.13 500 (0017862) 58.08
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(0018094) 59.03 220 (0018009) 59.04 (0018044) 59.11

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CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE WEITRE(X,Y,*)

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(0018066)	59.09	270							
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(0018188)	59.16	285	(0018133)	59.16					
(0018200)	59.19	290	(0018177)	59.17					
(0018211)	59.20	200							

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(0018836)	61.01	CONV	(0012581	39.21-X	(0013331	41.29-X	(0038141	161.16-X	(0049861	210.11-X
(0018381	61.02	CONVMP	(0012601	39.23-X						
(0018411	61.04	DIVA	(0012621	39.25-X						
(0018441	61.06	ADDA	(0012641	39.27-X	(0013351	42.01-X				
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(0018471	61.10	200	(0018481	61.10						
(0018491	61.12	202								
(0018541	61.14		(0018561	62.01						
(0018601	62.00		(0018591	62.03						
(0018621	62.04	701								
(0018671	62.10	700	(0018041	62.08						
(0018701	62.12		(0018931	62.22						
(0018721	62.13	101	(0018701	62.12						
(0018741	62.15	102	(0018701	62.12						
(0018801	62.17	103	(0018701	62.12						
(0018821	62.19	104	(0018701	62.12						
(0018761	62.21	25	(0018761	62.14	(0018811	62.16	(0018861	62.18		
(0018901	62.22	20								

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE SHIFT(X,Y,A,B)

(0019041	64.01	SHIFT	(0012981	40.29-X	(0013001	40.31-X				
(0019131	64.02	RSHIFT	(0013121	41.09-X	(0013141	41.11-X				
(0019171	64.04	SHIFTS	(0013021	41.01-X	(0013081	41.05-X	(0046161	204.07-X		
(0019221	64.06	RSHFTS	(0013161	41.13-X	(0013211	41.17-X				
(0019261	64.08	10	(0019111	64.01	(0019201	64.05	(0019571	65.01		
(0019351	64.12	15	(0019881	65.08						
(0019391	64.14	20	(0019271	64.09						
(0019531	64.16	25	(0019411	64.13						
(0019591	64.17	30	(0019531	64.16						
(0019611	64.19		(0019681	64.21						
(0019661	64.21	300								
(0019551	65.01	27	(0019151	64.03	(0019241	64.07				
(0019741	65.02	40	(0019531	64.16						
(0019751	65.04		(0019801	65.06						
(0019781	65.06	400								
(0019761	65.07	500	(0019691	64.21						
(0019891	65.09	600	(0019821	65.07						

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE CFAR(VIN,VOUT)

(0019981 67.01 CFAR (0016851 44.23-X (0014871 46.25-X

(0019553) 64.16 25

(0019559) 64.17 30

(0019611) 64.19

(0019660) 64.21 300

(0019553) 65.01 27

(0019741) 65.06 46

(0019760) 65.06

(0019810) 65.08 400

(0019961) 65.07 500

(0019984) 65.09 600

(0019461) 64.13

(0019953) 64.16

(0019968) 64.21

(0019915) 64.03 (0019924) 64.07

(0019953) 64.16

(0019960) 65.06

(0019969) 64.21

(0019982) 65.07

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE CFAR(VIN,VOUT)

(0020005) 67.01 CFAR

(0020127) 67.04

(0020133) 67.05 100

(0020160) 67.08

(0020179) 67.10

(0020180) 67.12

(0020200) 67.15

(0020211) 67.16 200

(0019485) 46.23-X (0019487) 46.25-X

(0020133) 67.05

(0020211) 67.16

(0020160) 67.08

(0020179) 67.10

(0020199) 67.13

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE LAMPCP(XIN,YIN,XOUT,YOUT)

(0020320) 69.01 LAMPCP

(0019483) 46.21-X

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(0020034) 69.02 LAMPRE (0014794) 46.17-X (0014811) 46.19-X
(0020036) 69.04 100 (0020033) 69.01
(0020038) 69.06 (0020039) 69.07
(0020039) 69.07 200
(0020042) 69.10 (0020043) 69.11
(0020043) 69.11 300
(0020047) 69.13 500 (0020040) 69.08

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE ERGYLP(X,Y)

(0020055) 71.01 ERGYLP (0012471) 39.11-X
(0020578) 71.02 ERGYRE (0012431) 39.07-X (0012465) 39.09-X
(0020059) 71.04 100 (0020056) 71.01
(0020063) 71.06 (0020064) 71.07
(0020064) 71.07 200
(0020067) 71.10 (0020068) 71.11
(0020068) 71.11 300
(0020069) 71.12 500 (0020065) 71.08

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE FGENXY(X,Y)

(0020911) 73.01 FGENXY (0014603) 44.01-X
(0021103) 73.04 (0021102) 73.02
(0021107) 73.06 (0021108) 73.07
(0021108) 73.07 500
(0020943) 73.08 FGENMF 2660 44.03-X 1110 202.26-X
(0020955) 73.10 100 (0020928) 73.01
(0020999) 73.13 110 (0020946) 73.11
(0021001) 73.15 (0020999) 73.13
(0021101) 73.17 200 (0021011) 73.16
(0021113) 73.21 (0021112) 73.19
(0021117) 74.01 300 (0021111) 73.18
(0021201) 74.05 (0021191) 74.03
(0021211) 74.06 400 (0021161) 73.21
(0021251) 74.08 600 (0021091) 73.07
(0021311) 74.12 (0021331) 74.13
(0021331) 74.13 650
(0021341) 74.14 651 (0021261) 74.09
(0021361) 74.17 (0021351) 74.15
(0021451) 75.03 (0021441) 75.01
(0021501) 75.04 700 (0021601) 75.11 (0021641) 75.12
(0021521) 75.05 800 (0021901) 76.06 (0021801) 76.20 (0021971) 77.01

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(0020999)	73.13	110	(0020996)	73.11					
(0021000)	73.15		(0020999)	73.13					
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(0021113)	73.21		(0021121)	73.19					
(0021117)	74.01	300	(0021111)	73.18					
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(0021121)	74.06	400	(0021116)	73.21					
(0021125)	74.08	610	(0021109)	73.07					
(0021131)	74.12		(0021133)	74.13					
(0021133)	74.13	650							
(0021134)	74.14	651	(0021126)	74.09					
(0021136)	74.17		(0021135)	74.15					
(0021145)	75.03		(0021144)	75.01					
(0021150)	75.04	700	(0021160)	75.11	(0021164)	75.12			
(0021521)	75.05	800	(0021190)	76.06	(0021180)	76.20	(0021197)	77.01	
(0021156)	75.09		(0021155)	75.07					
(0021157)	75.10	660							
(0021161)	75.12	670	(0021157)	75.10					
(0021164)	76.01	920	(0021169)	76.10					
(0021901)	76.06		(0021189)	76.04					
(0021165)	76.07	900	(0021152)	75.05					
(0021174)	76.12	910	(0021167)	76.08					
(0021968)	76.14	1000	(0021168)	76.09					
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(0021860)	76.20		(0021174)	76.18					
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(0022144) 77.01 450 (0022165) 76.02

(0022210) 77.02 (0022211) 76.24

(0022234) 77.04 (0022234) 77.06

(0022219) 77.06 2000

(0022222) 77.09 1999 (0022214) 77.03

(0022224) 77.11 1200 (0022220) 77.07 (0022222) 77.09

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CHART TITLE = SUBROUTINE PROJ(X,Y)

(0022233) 79.01 PROJ (0001507) 47.13-X (0001506) 47.15-X

(0022234) 79.03 (0022233) 79.01

(0022235) 79.05 (0022234) 79.03

(0022236) 79.07 (0022235) 79.05

(0022238) 79.08 100 (0022252) 80.16

(0022241) 80.03 (0022240) 80.01

(0022242) 80.04 (0022246) 80.05

(0022246) 80.05 200

(0022251) 80.09 (0022247) 80.06

(0022249) 80.11 (0022248) 80.09

(0022250) 80.13 (0022249) 80.11

(0022252) 80.16 (0022251) 80.14

CHART TITLE = NON-PROCEDURAL STATEMENTS

CHART TITLE = SUBROUTINE ABORTINCODE)

(0022250) 82.01 ABORT (0021102) 73.03-X (0021103) 73.20-X (0021351) 74.16-X (0022244) 77.11-X

(0022260) 83.00 CARMSG

CHART TITLE = NON-PROCEDURAL STATEMENTS

CHART TITLE = SUBROUTINE PTLIST(DV)

(0022275) 84.01 PTLIST (0001347) 42.12-X (0001349) 42.14-X (0001351) 42.16-X (0001353) 42.18-X

(0022277) 84.04 (0022276) 84.02

(0022285) 84.05 50 (0022282) 84.06

(0022414) 84.09 800 (0022275) 84.01

(0022286) 85.03 70 (0022286) 85.01

(0022292) 85.04 (0022291) 85.05

(0022295) 85.10 (0022294) 85.08

(0022296) 85.12 (0022295) 85.10

(0022299) 85.15 (0023035) 86.03

(0024111) 85.16 1100 (0022296) 85.17 (0023094) 86.06 (0023164) 86.11 (0023833) 88.21 (0023972) 88.28

(0023033) 86.01 41 (0023000) 85.16

(0023034) 86.02 42 (0023002) 85.17

CHART TITLE - SUBROUTINE PTLIST(DV)

(0022759)	84.01	PTLIST	(0013471)	42.12-X	(0013491)	42.14-X	(0013511)	42.16-X	(0013531)	42.18-X	
(0022777)	84.04		(0022776)	84.02							
(0022859)	84.05	50	(0022862)	84.06							
(0024140)	84.09	800	(0022755)	84.01							
(0022868)	85.03	70	(0022868)	85.01							
(0022923)	85.07		(0022911)	85.05							
(0022955)	85.10		(0022944)	85.08							
(0022960)	85.12		(0022955)	85.10							
(0022999)	85.15		(0023059)	86.03							
(0024111)	85.16	1100	(0022968)	85.12	(0023094)	86.06	(0023161)	86.11	(0023883)	88.21	(0023947) 88.26
(0023038)	86.01	41	(0023000)	85.16							
(0023044)	86.02	42	(0023027)	85.17							
(0023059)	86.03	45									
(0023068)	86.04	40	(0022977)	85.13							
(0023111)	86.06		(0023133)	86.09							
(0023133)	86.09	100									
(0023177)	86.12	2001	(0023146)	86.10							
(0023301)	86.21		(0023249)	86.19							
(0023311)	86.23		(0023301)	86.21							
(0023321)	86.25		(0023311)	86.23							
(0023381)	87.01	150	(0023355)	86.26							
(0023394)	87.02	160	(0023377)	86.27							
(0023421)	87.06		(0023411)	87.04							
(0023431)	87.08		(0023421)	87.06							

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(0023463)	87.14		(0023453) 87.12	
(0023469)	87.16 350		(0023463) 87.14	
(0023501)	87.17 360		(0023483) 87.15	
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(0023603)	87.22 402		(0023533) 87.19	
(0023693)	86.01 700		(0023283) 86.18	
(0023723)	88.00		(0023713) 88.02	
(0023743)	88.07		(0023733) 88.05	
(0023763)	88.10		(0023753) 88.08	
(0023783)	88.12		(0023763) 88.10	
(0023803)	88.14		(0023773) 88.12	
(0023823)	88.16		(0023783) 88.14	
(0023843)	88.19		(0023813) 88.17	
(0023883)	86.21 400		(0023583) 87.20	(0023633) 87.21 (0023683) 87.22
(0023863)	88.21		(0023823) 88.19	
(0023953)	88.27 501			
(0023993)	88.30		(0024073) 89.04	
(0024013)	88.33		(0024003) 88.31	
(0024023)	88.35		(0024013) 88.33	
(0024043)	89.01 500		(0024023) 88.35	
(0024073)	89.04 400		(0024033) 88.36	
(0024093)	89.07		(0024083) 89.05	

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE PACK(IDAT,IWD,IBIT,IARY,*)

(0024233)	91.01	PACK	(0023973)	88.28-X	(0024023)	88.35-X		
(0024273)	91.04		(0024263)	91.02				
(0024283)	91.07		(0024273)	91.05				
(0024293)	91.10		(0024283)	91.08				
(0024303)	91.12		(0024293)	91.10				
(0024353)	91.16		(0024343)	91.14				
(0024383)	91.19		(0024373)	91.17				

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - INTRODUCTORY COMMENTS

CHART TITLE - SUBROUTINE PLOTTR(DV)

(0024503)	94.01	PLOTTR	(0013553)	42.20-X	(0013573)	42.22-X	(0013593)	42.24-X (0013613) 42.26-X
(0024523)	94.03	10						
(0024513)	94.04	800	(0024503)	94.01	(0024513)	94.02		

(0024094) 89.07 (0024088) 89.05

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE PACK(IDAT,IWD,IBIT,IARY,*)

(0024253) 91.01 PACK (0023971) 88.28-X (0024021) 88.35-X
(0024271) 91.04 (0024261) 91.02
(0024281) 91.07 (0024271) 91.05
(0024291) 91.10 (0024281) 91.08
(0024301) 91.12 (0024291) 91.10
(0024351) 91.16 (0024341) 91.14
(0024381) 91.19 (0024371) 91.17

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - INTRODUCTORY COMMENTS

CHART TITLE - SUBROUTINE PLOTTR(DV)

(0024501) 94.01 PLOTTR (0013551) 42.20-X (0013571) 42.22-X (0013591) 42.24-X (0013611) 42.26-X
(0024521) 94.03 10
(0024511) 94.04 600 (0024501) 94.01 (0024511) 94.02
(0024541) 94.06 500 (0024511) 94.02
(0024571) 94.07 9 (0024531) 94.03
(0024701) 94.16 12 (0024561) 94.06
(0024771) 94.21 (0024761) 94.19
(0024791) 94.24 (0024781) 94.22
(0024821) 95.01 11 (0024741) 94.24
(0024911) 95.06 (0024931) 95.07
(0024931) 95.07 50
(0024941) 95.08 100 (0024871) 95.03
(0025001) 95.14 665 (0024951) 95.09
(0025041) 95.18 (0025071) 95.21

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CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE DCFAR(IN,IOUT)

(0025201) 97.01 DCFAR (0001449) 45.18-X (0001451) 45.20-X
(0025261) 97.04 (0025271) 97.05
(0025271) 97.05 100
(0025301) 97.06 (0025351) 97.16
(0025321) 97.10 (0025301) 97.08
(0025331) 97.12 (0025311) 97.10
(0025341) 97.13 (0025331) 97.13
(0025351) 97.16 200

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE DIGTFL(IN,IOUT)

(0025471) 99.01 DIGTFL (0001407) 44.05-X (0001409) 44.07-X
(0025501) 99.03 (0025551) 99.08
(0025541) 99.05 (0025531) 99.06
(0025531) 99.06 200
(0025551) 99.08 400

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE CDIGFL(X,Y)

310 101.01 CDIGFL (0001373) 43.03-X
(0025641) 101.02 CDFNCL (0001375) 43.05-X
(0025721) 101.05 622 101.07
622 101.07 10

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE INGTOK(DIN,DOUT)

(0025661) 103.01 INGTOK (0001385) 43.15-X (0001387) 43.17-X
(0025671) 103.02 INGNCL
(0025931) 103.05 (0025961) 103.06
(0025981) 103.06 10

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE ATOD(X,IX)

(0025811) 105.01 ATOD (0001262) 40.13-X (0001264) 40.15-X

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CHART TITLE = SUBROUTINE INGTOK(DIN,DOUT)

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CHART TITLE = SUBROUTINE ATOD(X,IX)

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[illegible] 105.25 DTOA (0012868) 40.17-X (0012888) 40.19-X (0012901) 40.21-X (0013101) 41.07-X
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CHART TITLE - SUBROUTINE RDIGFL(X,Y)

(0026760) 107.01 RDIGFL (0013771) 43.07-X
(0026800) 107.02 RDFNCL (0013794) 43.09-X
(0026830) 107.03 (0026941) 107.07
(0026941) 107.07 10

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE DIGFIL(X,Y)

(0027004) 109.01 DIGFIL (0013684) 46.27-X
(0027007) 109.02 (0027703) 109.05
(0027011) 109.03 (0027703) 109.04
(0027033) 109.04 100
(0027054) 109.06 DIGFNC (0013691) 46.29-X
(0027077) 109.08 ECMPL
(0027094) 109.10 150 (0027066) 109.07
(0027110) 109.11 (0027240) 109.18
(0027139) 109.13 (0027221) 109.16
(0027211) 109.16 300
(0027234) 109.18 200

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE HETIX,Y)

(0027320) 111.01 HET
(0027360) 111.03 (0027444) 111.06
(0027444) 111.06 100

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE ECMIX,Y)

(0027611) 113.01 ECM (0015151) 47.21-X
(0027655) 113.05 5 (0027666) 113.03
(0027735) 113.08 (0027751) 113.11
(0027751) 113.11 100
(0027804) 113.15 200 (0027761) 113.13
(0027867) 113.18 (0027856) 113.16
(0027866) 113.21 (0027867) 113.19
(0027945) 114.01 290 (0027921) 113.24
(0027946) 114.02 300 (0027833) 113.14 (0027900) 113.22 (0027944) 113.25
(0027999) 114.05 (0028011) 114.06
(0028011) 114.06 301
(0028044) 114.08 310 (0027946) 114.02 (0028021) 114.24
(0028066) 114.10 (0028015) 114.15
(0028015) 114.15 500
(0028177) 114.16 (0028186) 114.16
(0028149) 114.21 (0028188) 114.19
(0028211) 114.24 (0028200) 114.22

CHART TITLE - NON-PROCEDURAL STATEMENTS

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(0028311) 110.01 DIGFSF (0014931) 46.31-X
(0028331) 110.02 ECMFSU (0027711) 113.06-X
(0028351) 110.04 50 (0028321) 110.01
(0028411) 110.07 (0028461) 110.09
(0028481) 110.09 100
(0028491) 110.12 (0028501) 110.13
(0028511) 110.13 109
(0028531) 110.15 ECMFSF (0027741) 113.09-X (0028071) 114.11-X
(0028561) 110.17 (0028691) 110.26
(0028641) 110.21 (0028611) 110.19
(0028691) 110.23 (0028661) 110.24
(0028681) 110.24 300
(0028691) 110.26 200

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE TARGET(X,Y)

(0028741) 118.01 TARGET (0014961) 47.01-X
(0028831) 118.02 TGTNCE (0014981) 47.03-X
(0028781) 118.04 10 (0028861) 118.01
(0028951) 118.06 (0029001) 118.09
(0029001) 118.09 50
(0029021) 118.10 40 (0028951) 118.06
(0029051) 119.03 44
(0029061) 119.03 (0029071) 119.01
(0029411) 119.05 (0029431) 119.16
(0029191) 119.07 71 (0029421) 119.15
(0029211) 119.11 (0029341) 119.13
(0029391) 119.13 400
(0029431) 119.16 200 (0029361) 119.14

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE CLUTTR(XI,YI,GA ,GEL,*)

(0029771) 121.01 CLUTTR (0015011) 47.06-X
(0029911) 121.02 (0029941) 121.09
(0029941) 121.04 100
(0029961) 121.13 (0029951) 121.10
(0029971) 121.15 (0030061) 121.16
(0030001) 121.16 200
(0030071) 121.20 (0030011) 121.17
(0030031) 121.21 (0030051) 121.22
(0030051) 121.22 60
(0030131) 122.01 (0030611) 123.08

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE CLUTTR(XT,YT,GAZ,GEL,*)

(0029771)	121.01	CLUTTR	(0001501)	47.06-X
(0029940)	121.02		(0029940)	121.09
(0029945)	121.09	100		
(0029946)	121.10		(0029945)	121.10
(0029961)	121.15		(0030000)	121.16
(0030000)	121.16	200		
(0030002)	121.20		(0030001)	121.17
(0030063)	121.21		(0030065)	121.22
(0030065)	121.22	60		
(0030133)	122.01		(0030041)	123.08
(0030160)	122.03		(0030561)	123.06
(0030174)	122.05		(0030555)	123.05
(0030211)	122.07	730	(0030200)	122.06
(0030223)	122.09	725	(0030200)	122.06
(0030251)	122.13	750	(0030191)	122.05
(0030271)	122.15	760	(0030261)	122.14
(0030301)	122.16	770	(0030261)	122.14
(0030341)	122.20	780	(0030311)	122.17
(0030441)	122.23	790	(0030401)	122.21
(0030531)	123.03	800	(0030291)	122.15
(0030551)	123.05	700		

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(003056) 123.06 600

(003061) 123.08 50C

(003064) 123.12 C 123.09

(003072) 123.17 (003071) 123.14

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE NVGUID(X,Y)

(003080) 125.01 NVGUID (001511) 47.17-X

(003088) 125.04 (003101) 125.10

(003095) 125.05 100 (003089) 125.05

(003097) 125.09 150 (003094) 125.07

(003101) 125.10 200

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE IUNUS(X,Y)

(003105) 127.01 IUNUS (001513) 47.19-X

(003115) 127.03 (003123) 127.05

(003123) 127.05 200

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - FUNCTION IPACK(ISTR,IDATA,IWORD)

CHART TITLE - FUNCTION IBCOL(X)

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - FUNCTION RRAND(ITYPE)

UC7RNY09 132.01 10 (003166) 132.14 UC7RNY54 133.10

250 132.06 (003150) 132.03

UC7RNY15 132.07 200 250 132.06

UC7RNY1a 132.09 300 250 132.06

320 132.11 400 250 132.06

(003161) 132.12 400 250 132.06

(003164) 132.13 20 (003164) 132.13

400 132.14 405 400 132.16

UC7RNY4C 133.01 500 250 132.06

UC7RNY45 133.03 600 250 132.06

UC7RNY47 133.05 700 250 132.06

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - FUNCTION IPACK(ISTR,IDATA,IWORD)

CHART TITLE - FUNCTION IBCDL(X)

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - FUNCTION RRAND(NTYPE)

UC7RNY04 132.01 10 (0003166) 132.14 UC7RNY54 133.10
250 132.06 (0003150) 132.03
UC7RNY15 132.07 200 250 132.06
UC7RNY16 132.09 300 250 132.06
320 132.11 900 250 132.06
(0003161) 132.12 400 250 132.06
(0003167) 132.13 20 (0003164) 132.13
480 132.14 405 400 132.16
UC7RNY42 133.01 500 250 132.06
UC7RNY43 133.03 600 250 132.06
UC7RNY47 133.05 700 250 132.06
UC7RNY50 133.07 800 250 132.06
UC7RNY52 133.09 801 UC7RNY50 133.07

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CHART TITLE - SUBROUTINE DBLKX(NST,NWORD,X,Y)

UC7DBL03 135.01 DBLKX (001235) 39.01-X (001236) 39.02-X (001239) 39.04-X (001240) 39.05-X (003862) 163.22-X
R 173.14-X R 173.16-X (004697) 200.12-X (005070) 214.12-X (005071) 214.13-X
UC7DBL05 135.02 SUBLKX (000424) 9.08-X (000430) 9.13-X 1240 38.05-X 1250 38.06-X (001344) 42.09-X
(001345) 42.10-X
UC7DBL07 135.04 20 UC7DBL04 135.01
UC7DBL10 135.07 UC7DBL12 135.08
UC7DBL12 135.08 10

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CHART TITLE - FUNCTION IFLD(IST,NBITS,IWORD)

CHART TITLE - BLOCK DATA

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE ZFFT(A,Y)

(0003270) 140.00 ZFFT (0001253) 39.16-X

(0003276) 140.02 ZIFFT (0001256) 39.19-X

(0003285) 141.01 IFT UC7ANT62 142.17-X

(0003277) 141.03 9 (0003271) 140.01 (0003274) 140.03 (0003316) 142.05 (0003336) 143.16 (0003364) 143.22

(0003283) 141.06 302 280 141.05

(0003283) 141.09 (0003284) 141.07

(0003286) 141.11 (0003285) 141.09

(0003287) 141.13 (0003286) 141.11

(0003289) 141.15 (0003291) 141.16

(0003291) 141.16 11

(0003293) 141.17 700 (0003287) 141.13

(0003294) 141.18 (0003296) 141.19

(0003296) 141.19 702

(0003297) 141.20 701 (0003292) 141.16

(0003299) 141.22 30

(0003301) 141.24 (0003303) 141.25

(0003303) 141.25 10

(0003305) 141.26 32 (0003298) 141.21

(0003306) 141.28 31 (0003298) 141.21

(0003310) 142.01 501 280 141.05

(0003327) 143.01 (0003326) 143.10

(0003328) 143.03 (0003327) 143.01

(0003317) 143.09 399 (0003311) 142.02

(0003324) 143.06 54 (0003328) 143.03

(0003329) 143.12 00 (0003325) 143.09

(0003361) 143.19 404 (0003329) 143.12

(0003337) 144.01 360 (0003333) 143.15

(0003343) 144.04 370 (0003332) 143.14

(0003345) 144.06 (0003349) 144.07

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(0003351) 144.09 (0003353) 144.10

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(0003357) 144.14 (0003359) 144.15

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(0003365) 144.16 407 (0003361) 143.19

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(0033329)	143.12	80		(0033325)	143.09		
(0033361)	143.19	404		(0033329)	143.12		
(0033337)	144.01	360		(0033333)	143.15		
(0033343)	144.04	370		(0033332)	143.14		
(0033345)	144.06			(0033349)	144.07		
(0033349)	144.07	400					
(0033351)	144.09			(0033353)	144.10		
(0033353)	144.10	401					
(0033354)	144.11	430		(0033343)	144.04		
(0033357)	144.13			(0033354)	144.13		
(0033358)	144.13	402					
(0033361)	144.16	407		(0033361)	143.19		
(0033367)	144.18			(0033369)	144.19		
(0033369)	144.19	405					
(0033372)	144.21			(0033374)	144.23		
(0033374)	144.23	406					
(0033360)	144.27	403		(0033355)	144.12	(0033360)	144.15
(0033384)	144.31			(0033389)	144.33		
(0033387)	144.33	20					
(0033390)	144.34	410		(0033381)	144.28		
(0033393)	145.03			(0033392)	145.01		
(0033394)	145.05			(0033393)	145.03		

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(0034003) 145.09 409

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(0034141) 145.16 (0034501) 145.30

1110 145.19 (0034503) 145.29

(0034301) 145.22 (0034502) 145.28

(0034502) 145.2[illegible] 4

(0034511) 145.31 3 (0034110) 145.14

(0034558) 146.04 (0034558) 146.04

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(0034601) 146.08 (0034601) 146.09

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(0034611) 146.09 (0034611) 146.07

(0034634) 146.1[illegible] (0034684) 146.36

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(0034668) 146.14 (0034684) 146.34

(0034677) 146.13 (0034684) 146.33

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(0034734) 146.26 7 (0034777) 146.25

(0034826) 147.05 (0034495) 147.05

(0034495) 147.05 14

(0035091) 147.10 46 (0035110) 147.18

(0035094) 147.16 (0035108) 147.14

(0035110) 147.18 (0035094) 147.16

(0035111) 147.19 47 (0035071) 147.13

(0035125) 148.01 49 (0035111) 147.19

(0035260) 148.05 52 (0035114) 147.20

(0035271) 148.06 56 (0035116) 148.02

(0035288) 148.11 (0035291) 148.12

(0035294) 148.12 425

(0035330) 148.13 15 (0034485) 146.37 (0034498) 147.07

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(0035541) 150.01 NUMLIN (0013694) 42.32-X (0013771) 43.01-X

(0035553) 150.11 (0035555) 150.11

(0035546) 150.09 103 (0035552) 150.09

(0035551) 150.08 104 (0035551) 150.08

(0035545) 150.03 105 (0035545) 150.03 (0035547) 150.04

(0035555) 150.11 100

(0035547) 150.13 500 (0035549) 150.06 (0035550) 150.07

(0034881) 147.03 (0034893) 147.05

(0035495) 147.05 14

(0035503) 147.10 46 (0035510) 147.18

(0035504) 147.16 (0035508) 147.14

(0035510) 147.18 (0035509) 147.16

(0035511) 147.19 47 (0035507) 147.13

(0035515) 148.01 49 (0035511) 147.19

(0035520) 148.05 52 (0035514) 147.20

(0035521) 148.06 50 (0035516) 148.02

(0035528) 148.11 (0035529) 148.12

(0035529) 148.12 425

(0035530) 148.13 15 (0034885) 148.37 (0034898) 147.07

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CHART TITLE - SUBROUTINE NONLIN(A,*)

(0035542) 150.01 NONLIN (0001369) 42.32-X (0001371) 43.01-X

(0035545) 150.03 (0035555) 150.11

(0035546) 150.04 103 (0035552) 150.09

(0035548) 150.05 104 (0035551) 150.08

(0035549) 150.06 105 (0035545) 150.03 (0035547) 150.04

(0035555) 150.11 100

(0035557) 150.13 500 (0035549) 150.06 (0035550) 150.07

CHART TITLE - NON-PROCEDURAL STATEMENTS

CHART TITLE - SUBROUTINE HWDET(XIN,XOUT)

(0035563) 152.01 HWDET (0001341) 43.21-X (0001343) 43.23-X

(0035565) 152.03 (0035566) 152.06

(0035566) 152.04 20

(0035568) 152.06 (0035566) 152.04

(0035569) 152.07 FWDET (0001345) 43.25-X (0001347) 43.27-X

(0035721) 152.10 40

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(0003575) 152.12 SOUET (0013499) 43.29-X (0014601) 43.31-X
(0003578) 152.15 60
(0003578) 152.15 (0003578) 152.16
(0003581) 152.17 MLIM (0014445) 45.14-X (0014447) 45.16-X
(0003584) 152.20 (0003588) 152.23
(0003587) 152.21 61
(0003587) 152.22 62 (0003584) 152.20
(0003590) 152.23 60 (0003586) 152.21
(0003590) 152.24 100 (0003567) 152.06 (0003573) 152.11 (0003579) 152.16
(0003593) 153.01 IMMUET (0014457) 45.26-X (0014459) 45.28-X
(0003596) 153.04 (0003602) 153.07
(0003599) 153.05 31
(0003601) 153.06 32 (0003598) 153.04
(0003604) 153.07 30 (0003600) 153.05
(0003605) 153.08 IMMUET (0014461) 45.30-X (0014463) 46.01-X
(0003608) 153.11 50
(0003608) 153.11 (0003608) 153.12
(0003611) 153.13 IMMUET (0014465) 46.03-X (0014467) 46.05-X
(0003614) 153.16 70
(0003614) 153.16 (0003614) 153.17
(0003623) 154.01 92 (0003620) 154.05
(0003617) 154.02 IMLIM (0014453) 45.22-X (0014455) 45.24-X
(0003626) 154.05 (0003626) 154.08
(0003621) 154.06 91
(0003625) 154.07 93 (0003620) 154.05
(0003628) 154.08 90 (0003624) 154.01 (0003622) 154.06
(0003629) 154.09 200 (0003603) 153.07 (0003609) 153.12 (0003615) 153.17

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CHART TITLE = SUBROUTINE ANTINT(INPT,BSIT,ANTP,COEF)

(0003636) 156.01 ANTINT (0013401) 42.05-X (0013421) 42.07-X
(0003649) 156.06 90 (0003645) 156.04
(0003654) 156.07 50 (0003636) 156.01
(0003660) 156.11 (0003678) 156.17
(0003678) 156.17 100
(0003684) 156.20 90 (0003651) 156.06

CHART TITLE = NON-PROCEDURAL STATEMENTS

CHART TITLE = SUBROUTINE DFT(X,Y)

(0003704) 158.01 DFT (0012790) 39.13-X (0004787) 203.10-X (0004801) 203.23-X
(0003707) 158.02 DFTRP (0013425) 41.21-X (0022471) 80.07-X
(0003711) 158.04 DFTRP (0013425) 41.19-X (0003812) 161.14-X (0004875) 206.22-X (0004882) 210.05-X (0004883) 210.07-X
(0003704) 158.00 10 (0003709) 158.03 (0003709) 158.03

CHART TITLE = NON-PARALLEDRAL STATEMENTS

CHART TITLE = SUBROUTINE DFT(X,Y)

(0037004) 156.01 DFT (0012950) 39.13-X (0047877) 203.10-X (0048801) 203.23-X

(0037071) 156.11 DFTFF (0013225) 41.21-X (0022447) 80.07-X

(0037111) 156.14 DFTRP (0013233) 41.19-X (0038812) 161.14-X (0048875) 206.22-X (0048982) 210.05-X (0048983) 210.07-X

(0037164) 156.07 10 (0037705) 158.01 (0037709) 158.03

(0037219) 156.09 (0037721) 156.10

(0037221) 156.10 50

(0037224) 156.12 DFINCL (0022468) 80.10-X (0047901) 203.12-X (0048802) 203.25-X

(0037327) 156.16 55

(0037334) 156.17 60 (0037730) 158.15

(0037337) 156.23 (0037736) 158.21

(0037338) 159.01 (0037737) 158.23

(0037339) 159.02 (0037775) 159.17

(0037347) 159.04 71 (0037774) 159.16

(0037358) 159.10 70 2190 159.07

(0037360) 159.12 (0037766) 159.14

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(0037?5)	159.17	200	(0037b8) 159.15
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(0037?2)	161.01	RECF	(0001469)	46.07-X	(0046441) 198.12-X
(0037?4)	161.02	RECFTF	(0001471)	46.09-X	
(0037?6)	161.04	10	(0037?3) 161.01		
(0037?9)	161.09	30	(0037?9) 161.06		
(0037??)	161.11		(0037?10) 161.12		
(0037?0)	161.12	100			
(0037?5)	161.17	700	(0037?13) 161.15		

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CHART TITLE = SUBROUTINE PXFRM(X,Y)

(0038?4)	163.01	PXFRM	(0001475)	46.13-X	(0038?4) 165.09-X
(0038?0)	163.04		(0038?9) 163.10		
(0038?4)	163.07	100	(0038?1) 163.05		
(0038?5)	163.08	99	(0038?3) 163.06		
(0038?9)	163.10	200			
(0038?0)	163.14		(0038?7) 163.19		
(0038?9)	163.16	350	(0038?6) 163.14		
(0038?0)	163.17	351	(0038?8) 163.15		
(0038?7)	163.19	300			
(0038?8)	163.20	500	(0038?0) 163.11		

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CHART TITLE = SUBROUTINE CGENSF(XF,YF)

(0038?1)	165.01	CGENSF	(0001473)	46.11-X
(0038?3)	165.02	CGENCM	(0001477)	46.15-X
(0038?5)	165.04	10	(0038?2) 165.01	
(0038?8)	165.08	20	(0038?9) 165.06	
(0038?4)	165.09	30	(0038?1) 165.07	

CHART TITLE = NON-PROCEDURAL STATEMENTS

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(0038[illegible]) 165.01  PXFRM        (0001475)  46.13-X   (0003884) 165.09-X
(0038[illegible]) 165.04                (0003834) 165.10
(0038[illegible]) 165.07  100           (0003831) 165.05
(0038[illegible]) 165.08  99            (0003833) 165.06
(0038[illegible]) 165.10  200
(0038[illegible]) 165.14                (0003857) 165.19
(0038[illegible]) 165.16  350           (0003846) 165.14
(0038[illegible]) 165.17  351           (0003848) 165.15
(0038[illegible]) 165.19  300
(0038[illegible]) 165.20  500           (0003840) 165.11

CHART TITLE = NON-PROCEDURAL STATEMENTS


CHART TITLE = SUBROUTINE  CGENSF(XF,YF)

(0038[illegible]) 165.01  CGENSF        (0001473)  46.11-X
(0038[illegible]) 165.02  CGENCW        (0001477)  46.15-X
(0038[illegible]) 165.04  10            (0003872) 165.01
(0038[illegible]) 165.06  20            (0003879) 165.06
(0038[illegible]) 165.09  30            (0003861) 165.07

CHART TITLE = NON-PROCEDURAL STATEMENTS


CHART TITLE = SUBROUTINE  RNDARY(RMO)

(0038[illegible]) 167.01  RNDARY        (0001278)  40.09-X   (0001280)  40.11-X
(0038[illegible]) 167.02                (0003897) 167.03
(0038[illegible]) 167.03  10
(0038[illegible]) 167.06  ADDRND        (0001327)  41.23-X   (0001329)  41.25-X
        R 167.09                                R 167.10
        R 167.10  20
(0038[illegible]) 167.12  ADRNDC        (0001331)  41.27-X
(0038[illegible]) 167.15                (0003914) 167.16
(0038[illegible]) 167.16  40

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C 169.16 C 169.14
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C 170.09 C 170.10
C 170.11 80
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R 173.12 10 R 173.01 R 173.03 R 173.05 R 173.07 R 173.09
(0040042) 173.17 R 173.15
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(0040060) 174.12 200 (0040042) 173.17
(0040061) 174.13 (0040062) 174.14
(0040062) 174.14 210
(0040065) 174.17 (0040066) 174.18
(0040066) 174.18 220
(0040070) 174.21 (0040077) 174.29
(0040073) 174.24 (0040720) 174.22
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B 176.08 30 B 176.06
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CHART TITLE - FUNCTION ELGAIN(ANGL)

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I 178.00 30 I 178.06
I 178.10 50 I 178.06 I 178.08

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CHART TITLE - SUBROUTINE SCANNR(DV)

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UC7SCN17 180.04 UC7SCN18 180.06
UC7SCN18 180.05 10
UC7SCN39 180.08 UC7SCN56 180.17
UC7SCN48 180.12 UC7SCN54 180.16
UC7SCN54 180.15 50
UC7SCN56 180.17 70 UC7SCN41 180.09 UC7SCN48 180.12
UC7SCN09 180.01 UC7SCN75 181.04
UC7SCN75 181.04 75
UC7SCN69 181.08 UC7SCN14 181.22
UC7SCN03 181.16 82 UC7SCN91 181.09
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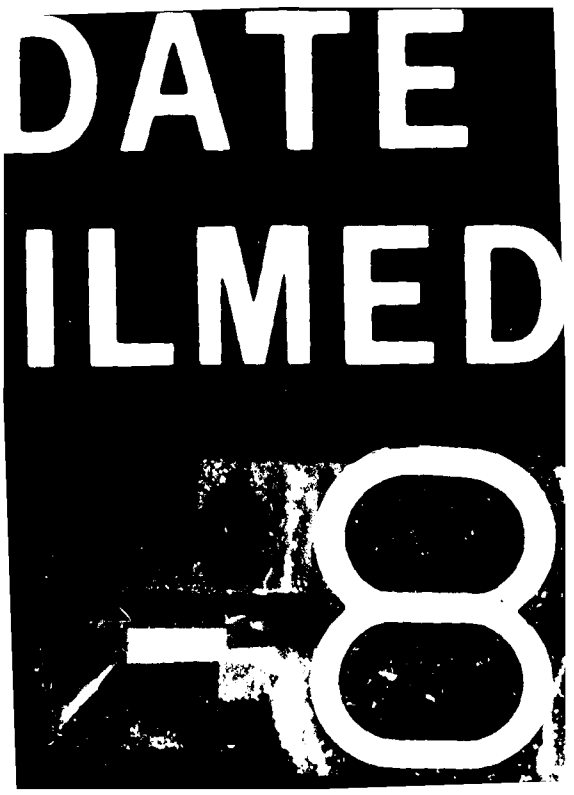
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