

MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

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20. Abstract

REDIMEN was designed and implemented to eliminate most of the manual labor required to revise the SAINT source codes to tailor array sizes to the model or problem at hand. This document describes the REDIMEN program, its source code, necessary inputs, and its utilization in conjunction with SAINT applications efforts.

PREFACE

This report describes the FORTRAN program REDIMEN (REDIMENSIONING PROGRAM). REDIMEN was written to facilitate the redimensioning of the common variables in SAINT (Systems Analysis of Integrated Network of Tasks) to correspond to individual modeling requirements.

The initial concepts and detailed design of REDIMEN were formulated by Deborah J. Seifert. Preliminary implementation was accomplished by George Koeplinger. Initial use and minor modifications to the programs were accomplished by Constance M. Hoyland who also prepared all of the program documentation.

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INTRODUCTION

The SAINT program that is available for distribution has default array sizes to accommodate a model with certain characteristics. However, the model characteristics can be altered by changing the values of variables in the main program representing these default values and the dimensions of the associated arrays in the common blocks and all SAINT subprograms where their associated COMMON blocks appear.

REDIMEN was written to facilitate these changes. The user has only to provide the maximum value for each variable and the source program for SAINT as input. REDIMEN creates a new SAINT source program with the user-specified parameters and dimensions as output. Figure 1 shows the logic flow for operating the REDIMEN program.

INPUTS

Table 1 contains the SAINT maximum value variables, their definition, and their default values. (Definitions of all SAINT COMMON variables can be found in Table 2.)

The model characteristics that the SAINT program will accept can be altered by changing these variables. For example, assume that a SAINT model requires that the largest task number be 500. Entry 3 of Table 1 indicates that the name of the variable that is set to the largest task number is IMN (which is presently set to 100). Thus IMN must be changed to 500.

Values for the 34 maximum value variables are read into REDIMEN, Unit 5, one value to a card in an (I4) format. Be careful to maintain the exact format and sequence of these cards.

After REDIMEN reads in the maximum values, it begins reading the SAINT source, one 80 column card image at a time from Unit 8. REDIMEN determines whether a change in dimension size is required, and if so, makes the alteration before copying the record to the output file on Unit 9. This process continues until the entire SAINT source has been appropriately revised and copied.

OUTPUT

The output file on Unit 9 contains a new SAINT source with the user-specified COMMON block dimensions. However, since REDIMEN only alters the array sizes, the definition

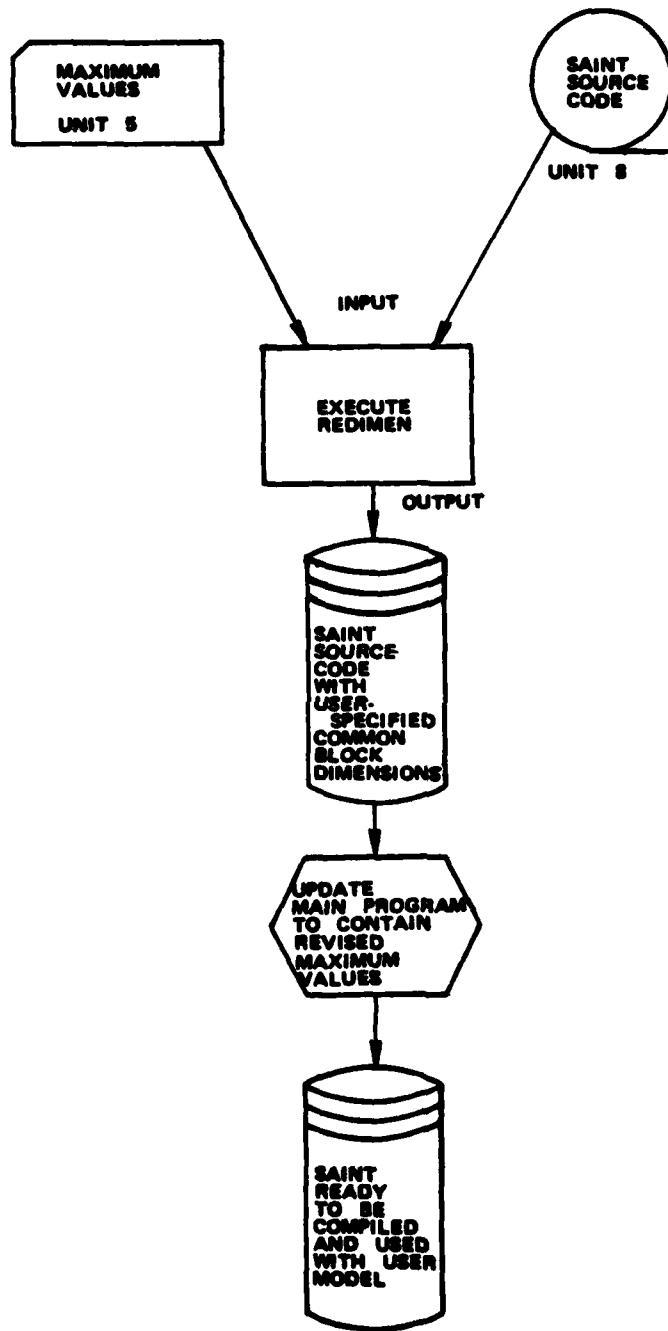


Figure 1. Implementation for REDIMEN

Table 1. Dimension Requirements for SAINT Arrays

Controlling Characteristic	Current Maximum Value	Variable Name for Maximum Value	Labelled COMMON Block Containing Arrays Affected	Arrays Affected
1. Number of tasks being performed + number of tasks awaiting assignment of resources.	100	ID	COM02	INSET(ID*4), QSET(ID*3)
2. Largest distribution set number.	100	NPANM	COM09	All dimensioned arrays in COM09
3. Largest task number.	100	IMH	COM10	All dimensioned arrays in COM10
4. Largest resource number.	20	NOFNO	COM11	BUSY, LLRES, NRES, NOPTR, TLST, RSTAT (NOFNO*4)
5. Number of tasks that require resources + total number of task-resource associations specified.	600	NRUPA	COM11	NRUPA
6. (Number of tasks that have branches emanating from their output side * 2) + number of tasks which require probabilistic branching + total number of deterministic branches specified + (total number of probabilistic branches specified * 2) + (total number of conditional branches specified * 5).	850	MYARA	COM12	YARA
7. Number of tasks that cause task modifications + (total number of task modifications specified * 2) + number of tasks that cause distribution set modifications + (total number of distribution set modifications specified * 2) + number of tasks that cause task clearing + (total number of task clearings specified * 2) + number of tasks that cause resource clearing + (total number of resource clearings * 2) + number of tasks that require different predecessors + total number of predecessors to tasks that require different predecessors.	250	INWA	COM12	MABA

Table 1 (Continued)

Controlling Characteristic	Current Maximum Value	Variable Name for Maximum Value	Labeled COMMON Block Containing Arrays Affected	Arrays Affected
8. Number of user-defined task characteristics for all tasks (the number of user-defined task characteristics for a task is equal to the largest characteristic number defined for that task).	200	NTCHUR	COM12	STCHUR
9. Largest moderator function number.	20	MMNPN	COM13	MNPNM, MFSU
10. Number of tasks at which moderator function status is updated + (total number of moderator function status updates specified * 2).	300	MNSTU	COM13	MFSU
11. Number of statistics tasks.	50	MNSTA	COM16	MNINK, MSTRM, MSTRN, MSTATUS, MCELLS, MLOW, MWIDTH, MUMMI, MUMAF
12. (Number of statistics tasks * 2) + total number of calls specified for statistics task histograms.	1350	MNCLS	COM14	JCELLS
13. Number of information packets in the network + (number of attributes per packet * 1).	1000	MNIDS	COM15	DESCR
14. Largest resource number * number of resource attributes per resource.	100	MDCAT	COM15	DCATF
15. (Number of tasks at which attribute assignments are to be made * 2) + (total number of attribute assignments to be made * 4).	800	MDCAT	COM15	MDCAT
16. Largest system attribute number.	100	MDCAT	COM15	MDCAT
17. Largest index for state variable equations (SS(-) or DD(-) variables).	100	MDCAT	COM17	All dimensioned arrays in COM17
18. Largest switch number.	20	MDCAT	COM18	18

Table 1 (Continued)

Controlling Characteristic	Current Maximum Value	Variable Name for Maximum Value	Labeled COMMON Block Containing Arrays Affected	Arrays Affected
19. Number of tasks at which switch values are changed + (total number of specified switch value changes as a result of task completion * 2).	300	MDAD	COM18	MABAD
20. Number of tasks at which state variable values are regulated + (total number of specified state variable regulations as a result of task completion * 3).	600	MDOR	COM18	YABAR
21. Largest state variable monitor number.	20	MF/LAG	COM19	LY/LAG, MPOSS, MPOST, LIMON, THRES (MF/LAG*6)
22. Number of state variable monitors causing tasks to be signaled + total number of specified task signalings as a result of monitor action.	40	MUMFT	COM19	MABAT
23. Number of state variable monitors causing switch values to be changed + (total number of specified switch value changes as a result of monitor action * 2).	60	MUNSS	COM19	MABAS
24. Number of state variables for which statistics are to be collected.	20	MSTAT	COM20	All dimensioned arrays in COM20
25. Largest state variable plot number.	10	M/LOT	COM21	DYFLT, ITAP, MUMFTS, MNUVAR, MNUVP, MYP (M/LOT*MNUVP)
26. Largest number of variables plotted on any state variable plot.	10	MNUVP	COM21	LLPFI, LLPLD, LLSTH, PPMI, PPLD, MYP (M/LOT*MNUVP), LLSVP (MNUVP * 1, 2)
27. Number of state variable core plot point sets * (number of variables being plotted + 1).	1100	MOQP	COM21	QPSY

Table 1 (Continued)

Controlling Characteristic	Current Maximum Value	Variable Name for Maximum Value	Labeled COMMON Block Containing Arrays Affected	Arrays Affected
28. Largest statistic number for user-generated statistics based on observation.	20	MMCLT	COM23	LLJUC, USORV
29. Largest statistic number for user-generated statistics based on time-persistent variables.	20	MMSTP	COM23	LLJUG, TTCLR, USSTV
30. Largest user-generated histogram number.	20	MMNIS	COM23	LLJGH, MMCEL, MMILW, MMRTD
31. (Number of user-generated histograms number. + total number of cells specified for user-generated histograms.	540	MMCEL	COM23	JUCEL
32. Largest user-generated plot number.	10	MMPLT	COM24	DPLOT, ITAPS, MPSTV, MYANS
33. Largest number of variables plotted on any user-generated plot.	10	MMVAR	COM24	LMNIS, LPLON, LSTIM, PREN, PLOW, LLJOP (MMVAR+1, 2)
34. Number of user-generated core plot point sets + (number of variables being plotted + 1)	1100	MMCUP	COM24	UPSET

The following arrays appear in a DIMENSION statement in subroutine UPDATE:
 S1, D1, A1, A2, A3, A4, A5, A6, A7
 The dimensions of these arrays must be changed in accordance with any changes made to the maximum number of state variables allowed.

of the maximum value variables that occurs in MAIN have not been updated. Since these values must exactly match the definitions of the variables that were used as input to the REDIMEN program, they should be changed by the user before compiling SAINT.

Table 2 contains a listing of the SAINT MAIN program. The MAIN program contains all of the SAINT COMMON blocks with the correct user-specified dimensions. Since user-written subroutines have access to any SAINT variable through the inclusion of the appropriate SAINT COMMON block, the user may copy any of the COMMONs from MAIN for this purpose.

Table 2. MAIN Program for SAINT

```

COMMON /COM01/ ID,IM,IMM,IMNA,IMN,MAXDS,MDAD,MDDR,MDNPT,MUNSS,      00000030
* MUGAT,MDCP,MDSR,MEQT,MFLAG,MMPTS,MMUFN,MMSTU,      00000040
* MNCEL,MNCLS,MNCLT,MNCUP,MNHIS,MNUPA,MNPLT,MNPTQ,      00000050
* MNSTP,MNSWA,MNVAR,MNVP,MOPNO,MOPARM,MPLUT,MSTAT,      00000060
* MSYAT,MTCHR,MXSTA,MYABA,NUQ      00000070
COMMON /COM02/ ATRIB(3),JTRID(2),QSET(300),NSET(400),MFA,MXX,      00000080
* MFE(3),MLE(3),NQ(3)      00000090
COMMON /COM03/ IPOS,JPOS,KPOS,LPOS,MPOS,NPA,NAN,IERRW,IERRF,IFIN,      00000100
* IIECH,INDXS,INDXT,INDX,JNDX,KNDX,IP,NUMFL,ICUNT,      00000110
* IISED,HIVAL,IBLNK,IZERO,LA,LB,LC,LD,LE,LF,LG,LH,LI,      00000120
* LJ,LK,LL,LM,LN,LO,LP,LQ,LR,LS,LT,LU,LV,LW,LX,LY,LZ      00000130
COMMON /COM04/ IUFAL(4),KREAD(40),IFLAG(50),IRSUL(50),RESUL(50),      00000140
* IABC(8,50),KARD(80),IDIG(9)      00000150
COMMON /COM05/ NPROJ,MUN,NDAY,NYR,NAME(2),NRUN,NRUNS,NSKSR,      00000160
* NSKST,LLCVD,NNEQD,NNEQS,NNEQT      00000170
COMMON /COM06/ TNUW,TTNEX,MFAD,SEED,ISEED,NCRDR,NPRNT,NPUNLH,      00000180
* NRNIT,NRENT,MNDC,NDC,NDTN,NNTC      00000190
COMMON /COM07/ NDE,NOPAT,NSYAT,NDUP,NM,NMNP,NMDFN,NN,NPRMS,IFLPR,      00000200
* JFLPR,KRKN,XINN,NFLAG,NNCLT,NNHIS,NNPLT,NNSTA,      00000210
* NNSTP,NPLOT,NSTTS      00000220
COMMON /COM08/ NEIP,NEIS,NSIP,NSIS,ITRACE,JTRACE,NRTSP,NKTEP,      00000230
* KTRACE,MTRACE,IIRS,IISR,IGRAF,JGRAF,IJTRAC,      00000240
* NSVVS,NSVVE,NTSUE,NTSUS,LTRACE,NRTSS,NRTES      00000250
COMMON /COM09/ PARAM(100,5),NPTBU(100),PARMI(100),PARM4(100)      00000260
COMMON /COM10/ CACIN(100,3),ITCHR(100),LLTSK(100,2),LSINK(100),      00000270
* MACIN(100,4),MFEN(100),MFSTT(100),NFTBU(100),      00000280
* MOP(100),MPO(100),NDCH(100,2),NDEL(100),NDPT(100),      00000290
* NPAR(100),NPOI(100),NPUDR(100),NPODS(100),NPUP(100),      00000300
* NPUR(100),NPSGN(100),NREL(100),NREL2(100),      00000310
* NREL2(100),NSIGN(100),NTC(100),NTCHR(100),      00000320
* NTYPE(100),KMARK(100),XMARK(100)      00000330
COMMON /COM11/ BUSY(20),LLRES(20,2),NBUS(20),NUPTR(20),TLST(20),      00000340
* NOPA(600),RSTAT(80)      00000350
COMMON /COM12/ YABA(850),NABA(250),STCHR(200)      00000360
COMMON /COM13/ MDFNS(20),MFSTW(20),MFSTU(300)      00000370
COMMON /COM14/ NSINK(50),KSTPE(50),KSTTM(50),XSTUS(50),NCELS(50),      00000380
* XLOW(50),WIDTH(50),SUMAI(50,5),SUMAF(50,5),      00000390
* JCELS(1350)      00000400
COMMON /COM15/ DESCR(1000),DJATT(100),NDSTR(800),SYSAT(100)      00000410
COMMON /COM16/ AAERR,DTMAX,DTMIN,DTSAV,IITES,LLERR,KRERR,TTLAS,      00000420
* TTSV,DTSAV,DTSAV,DTFUL,DTNUW,ISEES,RESLS,DTACC,LLSAV,      00000430
* LSAVE      00000440
COMMON /COM17/ SS(100),SSL(100),DD(100),DDL(100),LLSVR(100,2)      00000450
COMMON /COM18/ IS(20),NABAD(300),YABAR(600)      00000460
COMMON /COM19/ LFLAG(20),NPOSS(20),NPOST(20),LLMUN(20,2),      00000470
* NABAT(40),NABAS(60),THRES(120)      00000480
COMMON /COM20/ NSTAI(20),LLSVS(20,2),SSTPV(20,6)      00000490
COMMON /COM21/ DTPLT(10),ITAPE(10),NNPTS(10),NNVAR(10),NNVP(10),      00000500
* LLPLT,NNPT,LLPHI(10),LLPLU(10),LLSYM(10),PPHI(10),      00000510
* PPLO(10),NVP(100),LLSVP(11,2),QPSET(1100)      00000520
COMMON /COM22/ TTIME,PFIRB      00000530
COMMON /COM23/ LLUGC(20,2),USOBV(20,5),LLUGT(20,2),TTCLR(20),      00000540
* USTPV(20,6),LLUGH(20,2),NNCEL(20),HHLOW(20),      00000550
* HHWID(20),JJCEL(540)      00000560
COMMON /COM24/ DPLUT(10),ITAPE(10),NPTSV(10),NVAR(10),LPLUT,      00000570
* NPTEX,LPHIH(10),LPLOW(10),LSYMB(10),PHIH(10),      00000580
* PLOW(10),LLUGP(11,2),UPSET(1100)      00000590

```

Table 2 (Continued)

C	NCRDR=5	00000620
	NPRNT=6	00000630
	NPUNCH=7	00000640
	NRNIT=8	00000650
	NRENT=9	00000660
C		00000670
C	*****DEFINE VARIABLES WHICH REPRESENT ARRAY MAXIMA AND SIMULATION	00000680
C	*****LIMITS	00000690
C		00000700
	ID=100	00000710
	IMN=100	00000720
	IMNA=250	00000730
	MAXDS=1000	00000740
	MDAJ=300	00000750
	MDDR=600	00000760
	MDNPT=40	00000770
	MDNSS=60	00000780
	MDOAT=100	00000790
	MDQP=1100	00000800
	MDSTR=800	00000810
	MEQT=100	00000820
	MFLAG=20	00000830
	MMDFN=20	00000840
	MMSTU=300	00000850
	MNCEL=540	00000860
	MNCLS=1350	00000870
	MNCLT=20	00000880
	MNCUP=1100	00000890
	MNHIS=20	00000900
	MNDPA=600	00000910
	MNPLT=10	00000920
	MNSTP=20	00000930
	MNSWA=20	00000940
	MNVAR=10	00000950
	MNVPP=10	00000960
	MUPNO=20	00000970
	MPARM=100	00000980
	MPLOT=10	00000990
	MSTAT=20	00001000
	MSYAT=100	00001010
	MTCHR=200	00001020
	MXSTA=50	00001030
	MYABA=850	00001040
C		00001050
C	*****EXECUTION CYCLE -- READ INPUT DATA, THEN INITIATE THE SIMULATION	00001060
C		00001070
	IFIN=0	00001080
100	CALL DATIN	00001090
	IF(IERRF.EQ.0) CALL GASP	00001100
	IF(IERRF.EQ.0) CALL SUMRY	00001110
	IF (IFIN.EQ.0) GO TO 100	00001120
	STOP	00001130
C		00001140
	END	00001150
		00001160

APPENDIX A - SOURCE CODE

Following is a listing of the REDIMEN source code including an example of the JCL necessary to implement it on the IBM 370 (see Table 3). Different installations would, of course, use control cards appropriate to the specific machine and operating system in use at that facility.

Following the listing are sample input data by which a SAINT model could be scaled down from the default values. The model defined would be discrete (no use of state variables) with 20 or less tasks. Redimensioning in this way would require less space when SAINT is executed.

Table 3 (Continued)

```

GO TO 330
180 WRITE (9,470) M(27),M(27),M(27),M(27),M(27),INDX
      INDX=INDX+10
      WRITE (9,480) M(21),M21,INDX
      GO TO 140
190 WRITE (9,490) M(34),M(3),M(32),INDX
      GO TO 330
200 WRITE (9,500) M(14),M(14),M(15),INDX
      GO TO 330
210 WRITE(9,510) M(33),M(33),M(33),M(33),INDX
      INDX=INDX+10
      WRITE(9,520) M(33),M(33),M(33),M(33),INDX
      INDX=INDX+10
      WRITE(9,530) M(33),M(17),INDX
220 DO 230 K=1,2
230 READ (8,360) TAPIN,INDX
      GO TO 330
240 WRITE (9,540) M(4),M(9),M(11),M(31),INDX
      GO TO 330
250 WRITE (9,550) M(12),M(12),M(12),M(12),M(12),INDX
      GO TO 330
260 WRITE (9,560) M(24),M(5),M(6),INDX
      GO TO 330
270 WRITE (9,570) M(13),M(13),M(13),M(13),INDX
      INDX=INDX+10
      WRITE (9,580) M(7),M(8),M70 ,INDX
      GO TO 140
280 WRITE (9,590) M(30),M(30),M(30),INDX
      GO TO 330
290 WRITE (9,600) M(29),M(29),M(29),M(29),M(29),INDX
      INDX=INDX+10
      WRITE (9,610) M(26),M(26),M(26),M(26),INDX
      INDX=INDX+10
      WRITE (9,620) M(26),M69,M61,M(10),INDX
      GO TO 220
300 WRITE (9,630) M(18),M(18),M(23),M(23),INDX
      INDX=INDX+10
      WRITE (9,640) M(23),M(20),M(20),M(20),INDX
      INDX=INDX+10
      WRITE (9,650) M(20),M(16),INDX
      GO TO 220
310 WRITE (9,660) M(22),M(22),M(22),M(22),INDX
      INDX=INDX+10
      WRITE (9,670) M(25),M(25),M(25),M(25),INDX
      INDX=INDX+10
      WRITE (9,680) M(25),M5,M(19),INDX
      GO TO 220
320 WRITE (9,360) TAPIN,INDX
330 CONTINUE
340 WRITE (6,690) J
      END FILE 9
      STUP

C
C
C
C
350 FORMAT (14)
360 FCRMAT (18A4,18)
370 FORMAT (6X,'COMMON /COM02/ ATRIB(3),JTRIB(2),QSET(',13,')',NSET(',1

```

Table 3 (Continued)

```

13,') ,MFA, MXX, ',5X,18)
380  FORMAT (5X, '*',15X, 'MFE(3),MLE(3),NQ(3)',32X,18)
390  FORMAT (6X, 'COMMON /COM09/ PARAM(',13,',5),NPTBU(',13,') ,PARMI(',1
13,') ,PARM4(',13,') ',6X,18)
400  FORMAT (6X, 'COMMON /COM10/ CACIN(',13,',3),ITCHR(',13,') ,LLTSK(',1
13,',2),LSINK(',13,') ',3X,18)
410  FORMAT (5X, '*',15X, 'MACIN(',13,',4),MFEN(',13,') ,MFSTT(',13,') ,NFT
1BU(',13,') ',6X,18)
420  FORMAT (5X, '*',15X, 'MOP(',13,') ,MPO(',13,') ,NDCH(',13,',2),NDEL(',
113,') ,NOPT(',13,') ',1X,18)
430  FORMAT (5X, '*',15X, 'NPAR(',13,') ,NPU(',13,') ,NPODR(',13,') ,NPODS(',
113,') ,NPOP(',13,') ',18)
440  FORMAT (5X, '*',15X, 'NPOR(',13,') ,NPSGN(',13,') ,NKEL(',13,') ,NREL(
1',13,') ',9X,18)
450  FORMAT (5X, '*',15X, 'NREL2(',13,') ,NSIGN(',13,') ,NTC(',13,') ,NTCHR(
1',13,') ',9X,18)
460  FORMAT (5X, '*',15X, 'NTYPE(',13,') ,KMARK(',13,') ,XMARK(',13,') ',19X
1,18)
470  FORMAT (6X, 'COMMON /COM11/ BUSY(',12,') ,LLRES(',12,',2),NBUS(',12,
1') ,NOPTR(',12,') ,TLST(',12,') ',2X,18)
480  FORMAT (5X, '*',15X, 'NOPA(',13,') ,RSTAT(',14,') ',30X,18)
490  FORMAT (6X, 'COMMON /COM12/ YABA(',14,') ,NABA(',13,') ,STCHR(',13,')
1',20X,18)
500  FORMAT (6X, 'COMMON /COM13/ MDFNS(',12,') ,MFSTW(',12,') ,MFSTU(',13,
1') ',21X,18)
510  FORMAT (6X, 'COMMON /COM14/ NSINK(',14,') ,KSTPE(',14,') ,KSTTM(',14,
1') ,XSTUS(',14,') ',3X,18)
520  FORMAT (5X, '*',15X, 'NCELS(',14,') ,XLOW(',14,') ,WIDTH(',14,') ,SUMAI(
1',14,',5) ',2X,18)
530  FORMAT (5X, '*',15X, 'SUMAF(',14,',5),JCELS(',14,') ',26X,18)
540  FORMAT (6X, 'COMMON /COM15/ DESCR(',14,') ,DOATT(',13,') ,NDSTR(',13,
1') ,SYSAT(',13,') ',7X,18)
550  FORMAT (6X, 'COMMON /COM17/ SS(',13,') ,SSL(',13,') ,DD(',13,') ,DDL(',
113,') ,LLSVR(',13,',2) ',5X,18)
560  FORMAT (6X, 'COMMON /COM18/ IS(',12,') ,NABAD(',13,') ,YABAR(',13,') '
1,23X,18)
570  FORMAT (6X, 'COMMON /COM19/ LFLAG(',12,') ,NPOSS(',12,') ,NPOST(',12,
1') ,LLMON(',12,',2) ',9X,18)
580  FORMAT (5X, '*',15X, 'NABAT(',14,') ,NABAS(',14,') ,THRES(',13,') ',17X
1,18)
590  FORMAT (6X, 'COMMON /COM20/ NSTAI(',12,') ,LLSVS(',12,',2),SSTPV(',1
12,',6) ',18X,18)
600  FORMAT (6X, 'COMMON /COM21/ DTPLT(',12,') ,IITAP(',12,') ,NNPTS(',12,
1') ,NNVAR(',12,') ,NNVP(',12,') ',2X,18)
610  FORMAT (5X, '*',15X, 'LLPLT,NNPT,LLPHI(',12,') ,LLPLU(',12,') ,LLSYM(',
112,') ,PPHI(',12,') ',1X,18)
620  FORMAT (5X, '*',15X, 'PPLD(',12,') ,NVP(',13,') ,LLSVP(',12,',2),QPSET
1(',14,') ',10X,18)
630  FORMAT (6X, 'COMMON /COM23/ LLUGC(',12,',2),USOBV(',12,',5),LLUGT(',
112,',2),TTCLR(',12,') ',5X,18)
640  FORMAT (5X, '*',15X, 'USTPV(',12,',6),LLUGH(',12,',2),NNCEL(',12,') ,
1HHLOW(',12,') ',7X,18)
650  FORMAT (5X, '*',15X, 'HWWID(',12,') ,JJCEL(',13,') ',31X,18)
660  FORMAT (6X, 'COMMON /COM24/ DPLOT(',12,') ,ITAPE(',12,') ,NPTSV(',12,
1') ,NVAR(',12,') ,LPLOT, ',5X,18)
670  FORMAT (5X, '*',15X, 'NPTEX,LPHIH(',12,') ,LPLOW(',12,') ,LSYMB(',12,
1') ,PHIH(',12,') ',6X,18)
680  FORMAT (5X, '*',15X, 'PLOW(',12,') ,LLUGP(',12,',2),UPSET(',14,') ',19
1X,18)

```

Table 3 (Continued)

```

690  FORMAT ('J=',I5)
C
C
      END
//GO.FT08F001 DD UNIT=TAPE,VOL=SER=SAINT,DISP=OLD,LABEL=(1,NL),
//      DCB=(RECFM=FB,BLKSIZE=80,LRECL=80)
//GO.FT09F001 DD UNIT=DISK,VOL=SER=PUBLIC,DSN=NEWSAINT,
//      DISP=(NEW,KEEP),SPACE=(TRK,(10,5),RLSE,CONTIG),
//      DCB=(RECFM=FB,LRECL=80,BLKSIZE=6400)
//GO.SYSIN DD *
20      ID
20      IMN
25      IMNA
100     MAXDS
30      MDAD
60      MDDR
4       MDNPT
6       MDNSS
10      MDOAT
2       MDQP
100     MDSTR
5       MEQT
2       MFLAG
5       MMDFN
50      MMSTU
200     MNCEL
200     MNCLS
10      MNCLT
2       MNCUP
10      MNHIS
20      MNOPA
10      MNPLT
10      MNSTP
2       MNSWA
10      MNVAR
10      MNVPP
2       MOPNO
20      MPARM
10      MPLOT
2       MSTAT
5       MSYAT
40      MTCHR
10      MXSTA
150     MYABA

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