Report 10372A
8 February 1996

Earth Observing System (EOS)/
Advanced Microwave Sounding Unit-A (AMSU-A)
Structural Math Model - A1

Contract No: NAS 5-32314
CDRL: 102

Submitted to:

National Aeronautics and Space Administration
Goddard Space Flight Center
Greenbelt, Maryland 20771

Submitted by:

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1100 West Hollyvale Street
Azusa, California 91702

TABLE OF CONTENTS

APPENDIX

FIGURES

TABLES

Section 1

INTRODUCTION

This Structural Math Model for the Earth Observing System (EOS) Advanced Microwave Sounding Unit-A (AMSU-A), A1 module, provides the description for the NASTRAN finite element model that is separately forwarded on computer disk. This is a description of the model following the EOS AMSU-A1 Mechanical/Structural Subsystem Critical Design Review (CDR), held 7 December 1995. The report has been prepared in accordance with Section 11.1 of GSFC 422-11-12-01, General Interface Requirements Document (GIRD) for EOS Common Spacecraft/Instruments, EOS PM Project.

1.1 Identification

This is the Structural Math Model for the Earth Observing System (EOS)/Advanced Microwave Sounding Unit-A (AMSU-A), module A1. This report is submitted to fulfill the requirements of Contract NAS 5-32314 CDRL 102, Structural Math Model, for the EOS AMSU-A1 module. The Structural Math Model for the A2 module has been submitted under separate cover.

1.2 Purpose and Objectives

The purpose of this report is to document the NASTRAN bulk data deck, transmitted under separate cover. The Structural Math Model is to be used by the Spacecraft Contractor for dynamic loads analysis.

1.3 Document Status and Schedule

This is the submittal of the Structural Math Model for the A1 unit following the EOS AMSU-A1 Mechanical/Structural Subsystem Critical Design Review (CDR), held 7 December 1995.

Section 2

REFERENCE DOCUMENTS

The following documents were used in the preparation of this report:

SPECIFICATIONS

422-11-12-01 Rev. A January 1994	General Interface Requirements Document (GIRD) for EOS Common Spacecraft/Instruments EOS PM Project
420-05-01 Rev. A 2 Aug. 1991	Earth Observing System (EOS) Performance Assurance Requirements for EOS General Instruments
422-12-12-04 March 1993	Contract Documentation Requirements List for the Advanced Microwave Sounding Unit-A (AMSU-A) EOS PM Project

Aerojet

Report 10381 June 1995	Earth Observing System/(EOS) Advanced Microwave Sounding Unit-A (AMSU-A) Stress Analysis Report, A1-Module
Report 10381 February 1996	Addendum 1 to the Earth Observing System/(EOS) Advanced Microwave Sounding Unit-A (AMSU-A) Stress Analysis Report, A1-Module

Section 3

MODEL DESCRIPTION

3.1 Supporting Analysis

The first natural frequency of the A1 Module has been determined to be 109 Hz as part of the structural analysis summarized in the Addendum 1 to the Stress Analysis Report (Aerojet Report 10381). If the lowest natural frequency is above 100 Hz, then the test-verified structural model requirements of Section 3.4.3 of GSFC 420-05-01, Performance Assurance Requirements for EOS General Instruments do not apply. Section 11.1 of GSFC 422-11-12-01, General Interface Requirements Document (GIRD) for EOS Common Spacecraft/Instruments, EOS PM Project allows for the delivery of a rigid mass NASTRAN model if the fixed-base frequencies are greater than 100 Hz.

The A1 Structural Math Model described herein is a rigid, lumped mass NASTRAN finite element model.

3.2 Finite Element Model

The NASTRAN bulk data deck contains twenty three GRID cards. Twenty-two of the GRIDs are at the interface attachment locations with the spacecraft. The twenty-third location is at the A1 module center of gravity that was determined in the stress analysis. All model identification (ID) numbers are in the range of 335001 through 335023. GRID 335023 is at the A1-Module center of gravity. GRIDs 335001 through 335017, 335019, 335020, and 335022 represent spacecraft mounting screw locations. GRIDs 335018 and 335021 are at shear pin locations.

Twenty-two bar elements with large cross-sectional areas connect the GRID at the center of gravity (c.g.) with each of the twenty-two mounting grids. CBAR element numbers 335101 through 335122 are used. A CONM2 point element (335123) is placed at the c.g.

Figure 1 shows the rigid mass model and the basic coordinate system used in the model. In addition, a local coordinate system, CORD2R No. 1, referenced to the noted lower baseplate bottom corner, is provided. Figures 2 and 3 identify GRIDs (in the local coordinate system), CBARs, and the CONM2 element. A listing of the GRID point locations in the local coordinate system is provided in Table 1 in SI units (meters).

The total mass of the model is 49.4 Kg (109.0 pounds), with c.g. and mass moments of inertia, relative to CORD2R No. 1 of:

Mass	49.4447 kg
X	0.40709 m
Y	0.16133
Z	0.24544
Ixx	1.88857 kg-m^2
Ixy	-0.00132
Ixz	0.50277
Iyy	3.48592
Iyz	0.02740
Izz	2.36331

The lumped mass model is run without the NASTRAN AUTOSPC feature for a Free-Free Eigenvalue analysis. In addition, a NASTRAN DMAP is included to verify the results of a stiffness equilibrium test performed. Appendix A contains the NASTRAN output showing the first six modes to be

rigid-body modes; a floppy disk which contains the input deck and output listing for the model is included with this report to fulfill contract requirements. Figures 4 through 9 show the rigid body modes, all at 0 Hz. The NASTRAN solution demonstrates compliance of the lumped mass model to the DMAP stiffness equilibrium check (no terms exist in the KFFRN matrix).

3.3 Boundary Conditions

The model is submitted with no constraints. GRIDs 335001 through 335022 would be constrained for static analysis.

Table 1 Grid Points Per Local System 1 (SI Units)

GRID	COORD SYSTEM	X (m)	Y (m)	Z (m)
335001	1	0.68661	0.01026	0.01349
335002	1	0.58999	0.01026	0.01349
335003	1	0.49337	0.01026	0.01349
335004	1	0.39675	0.01026	0.01349
335005	1	0.30013	0.01026	0.01349
335006	1	0.20351	0.01026	0.01349
335007	1	0.10688	0.01026	0.01349
335008	1	0.01026	0.01026	0.01349
335009	1	0.68661	0.32629	0.01349
335010	1	0.58999	0.32629	0.01349
335011	1	0.49337	0.32629	0.01349
335012	1	0.39675	0.32629	0.01349
335013	1	0.30013	0.32629	0.01349
335014	1	0.20351	0.32629	0.01349
335015	1	0.10688	0.31201	0.01349
335016	1	0.01026	0.31201	0.01349
335017	1	0.68661	0.08926	0.01349
335018	1	0.68661	0.16825	0.01349
335019	1	0.68661	0.24772	0.01349
335020	1	0.01026	0.08570	0.01349
335021	1	0.01026	0.16114	0.01349
335022	1	0.01026	0.23658	0.01349
335023	1	0.40709	0.16133	0.24544

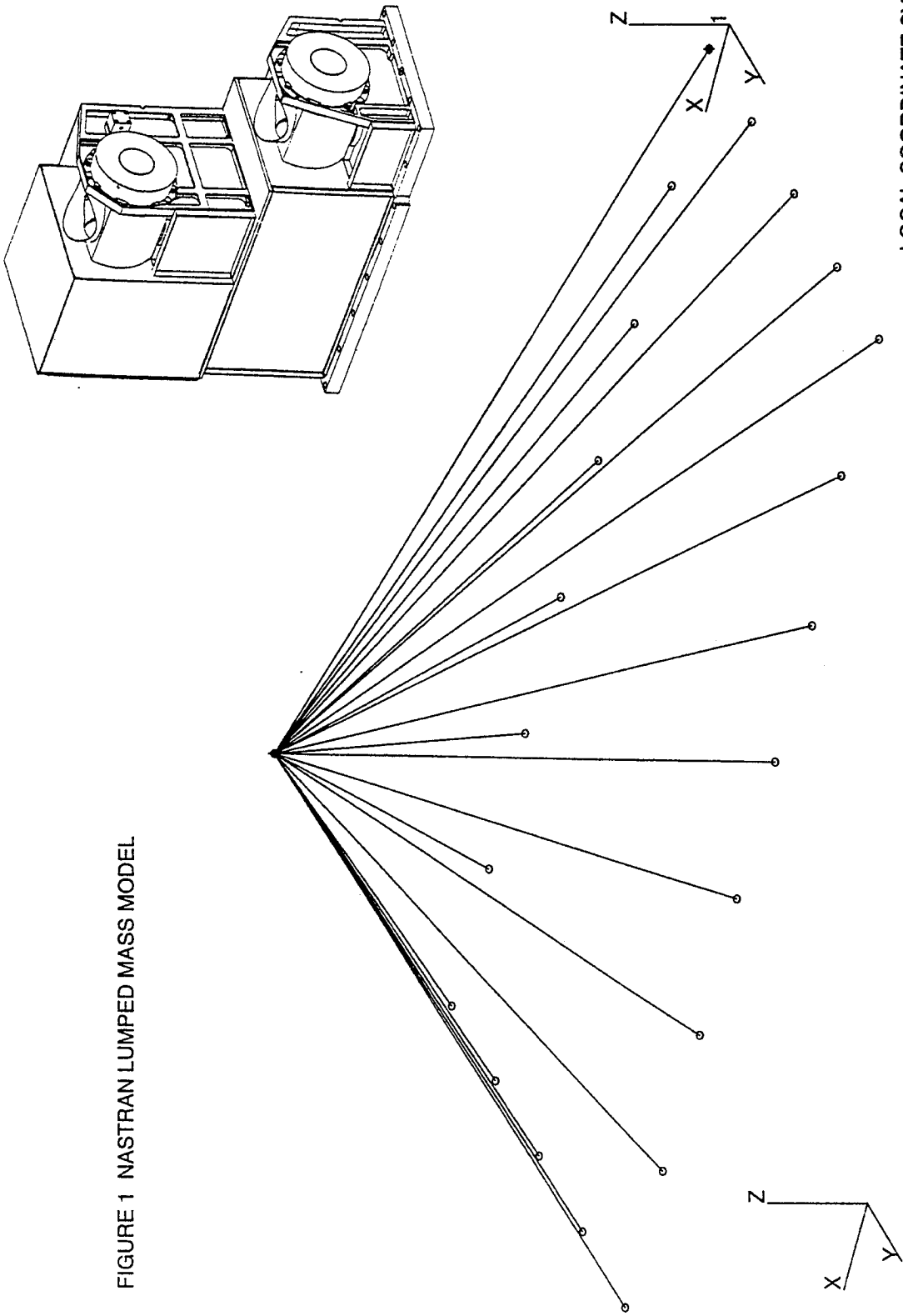
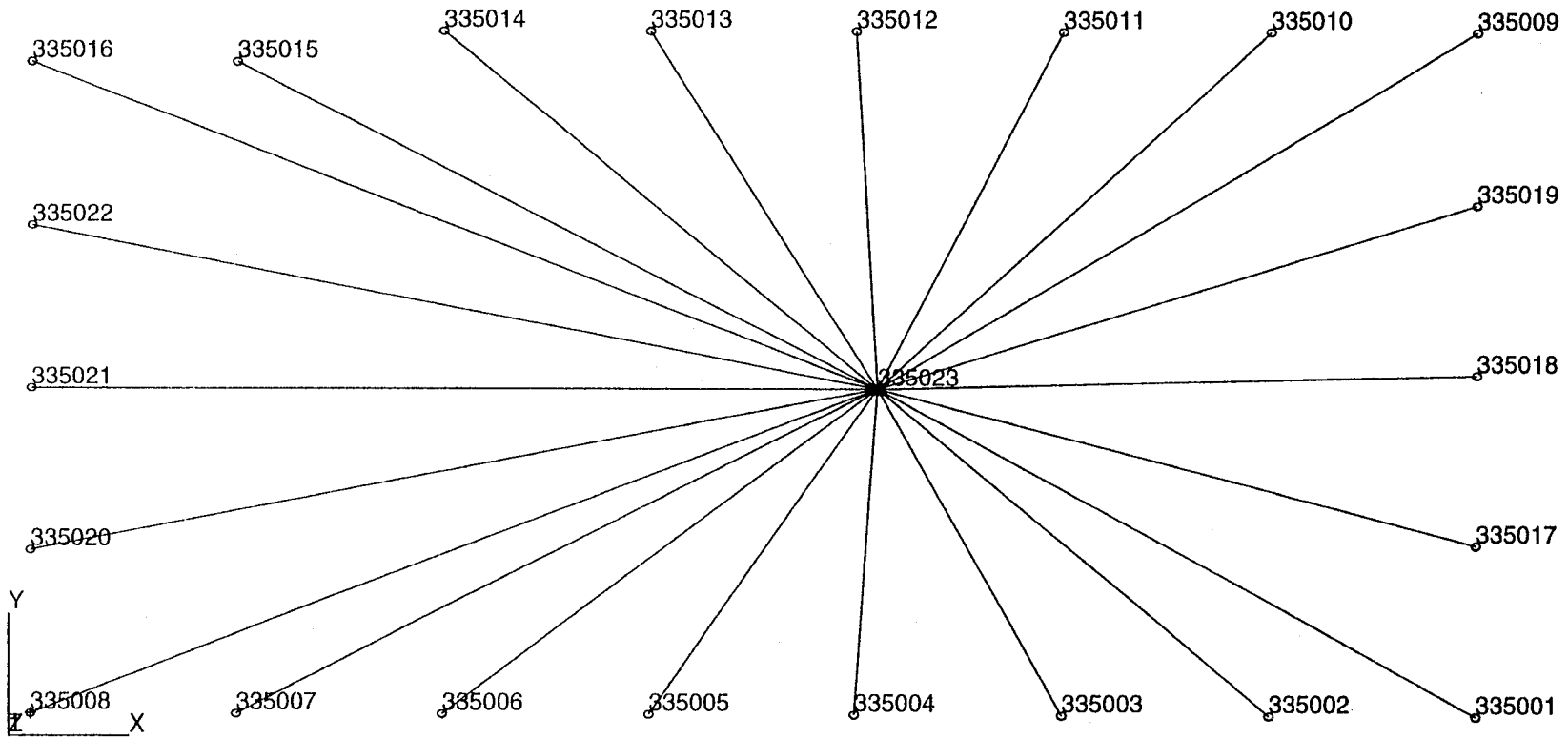


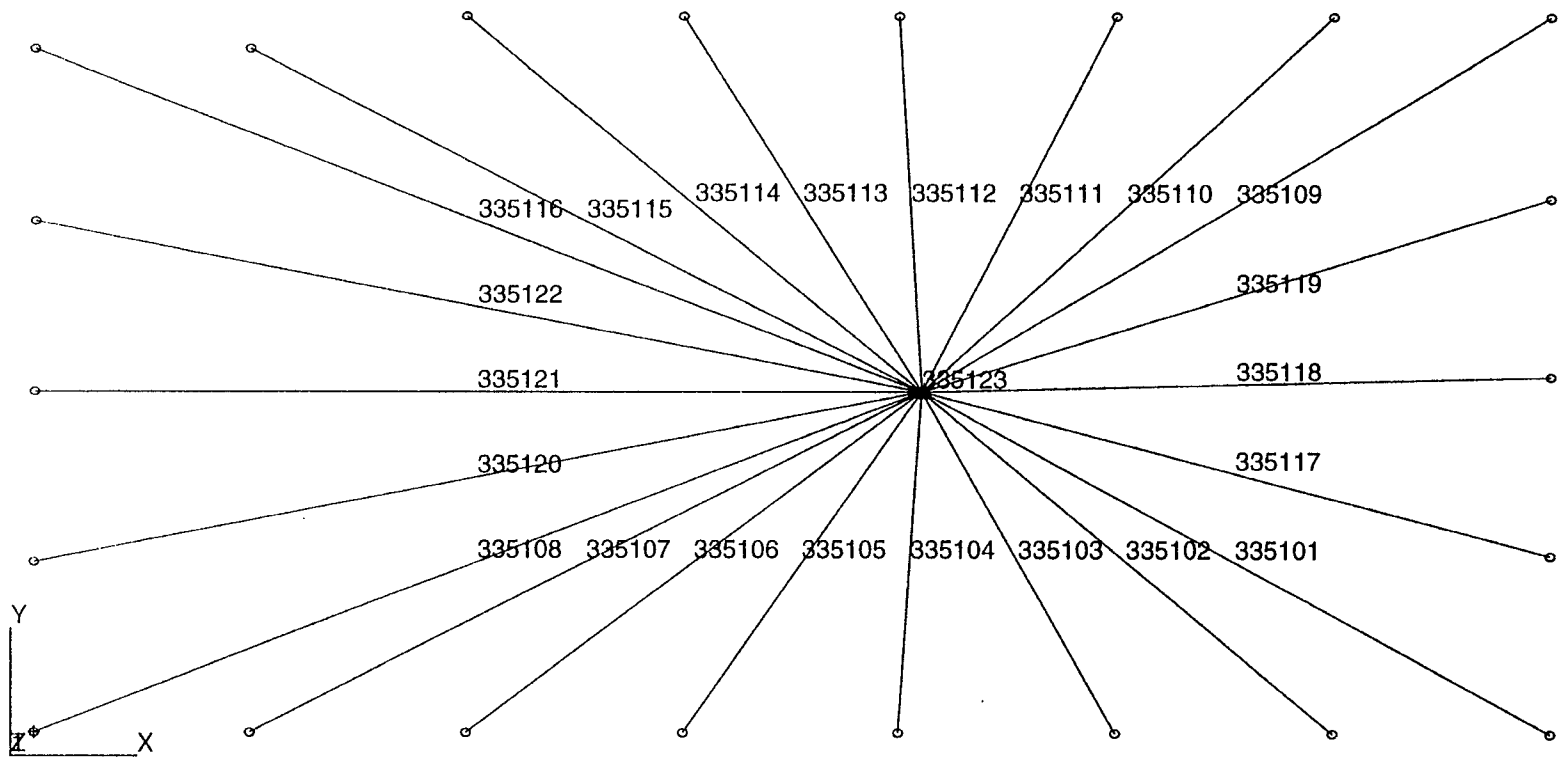
FIGURE 1 NASTRAN LUMPED MASS MODEL

FIGURE 2 NASTRAN LUMPED MASS MODEL - GRID POINTS



LOCAL COORDINATE SYSTEM 1

FIGURE 3 NASTRAN LUMPED MASS MODEL - CBAR'S AND CONM2'S



LOCAL COORDINATE SYSTEM 1

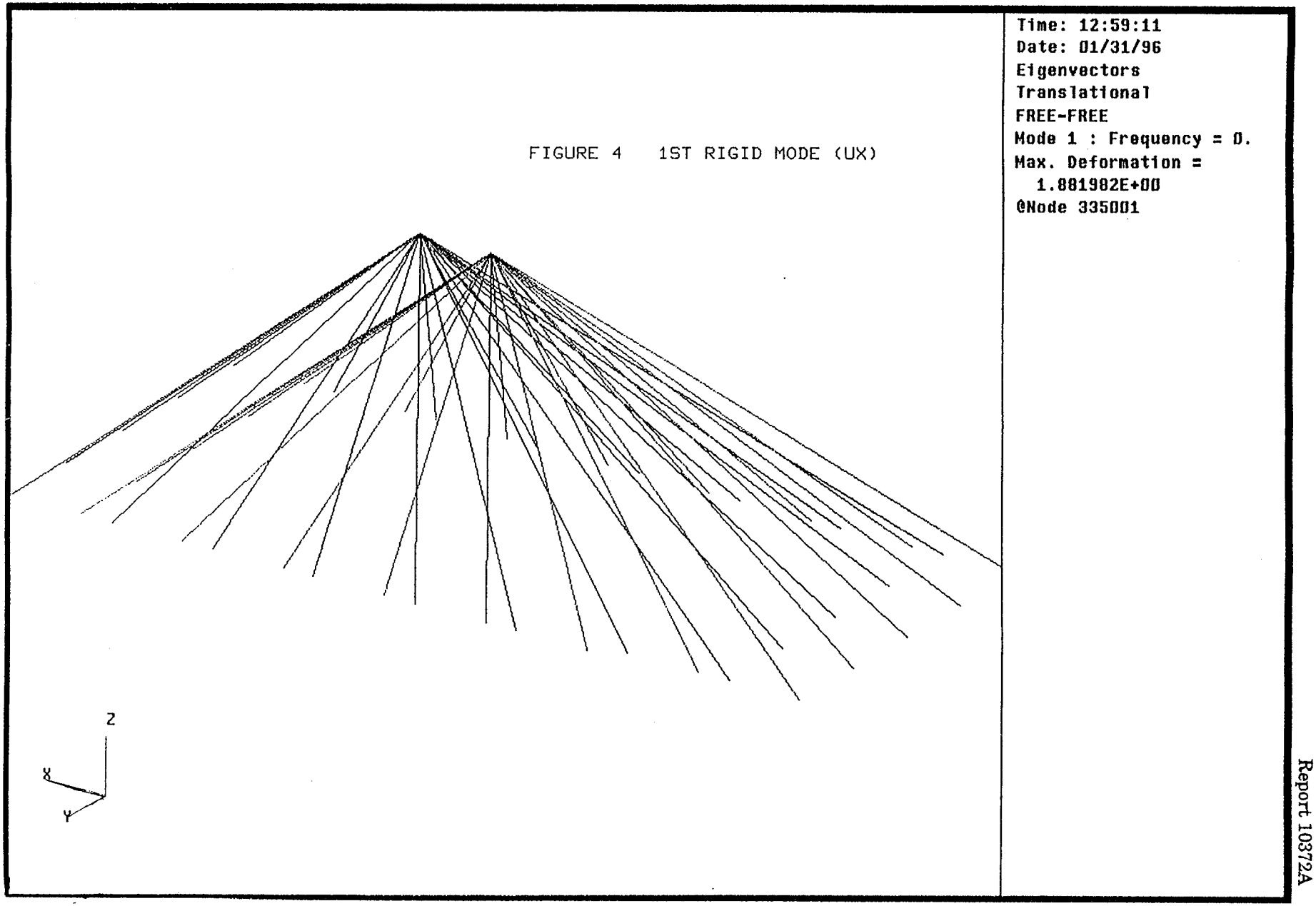
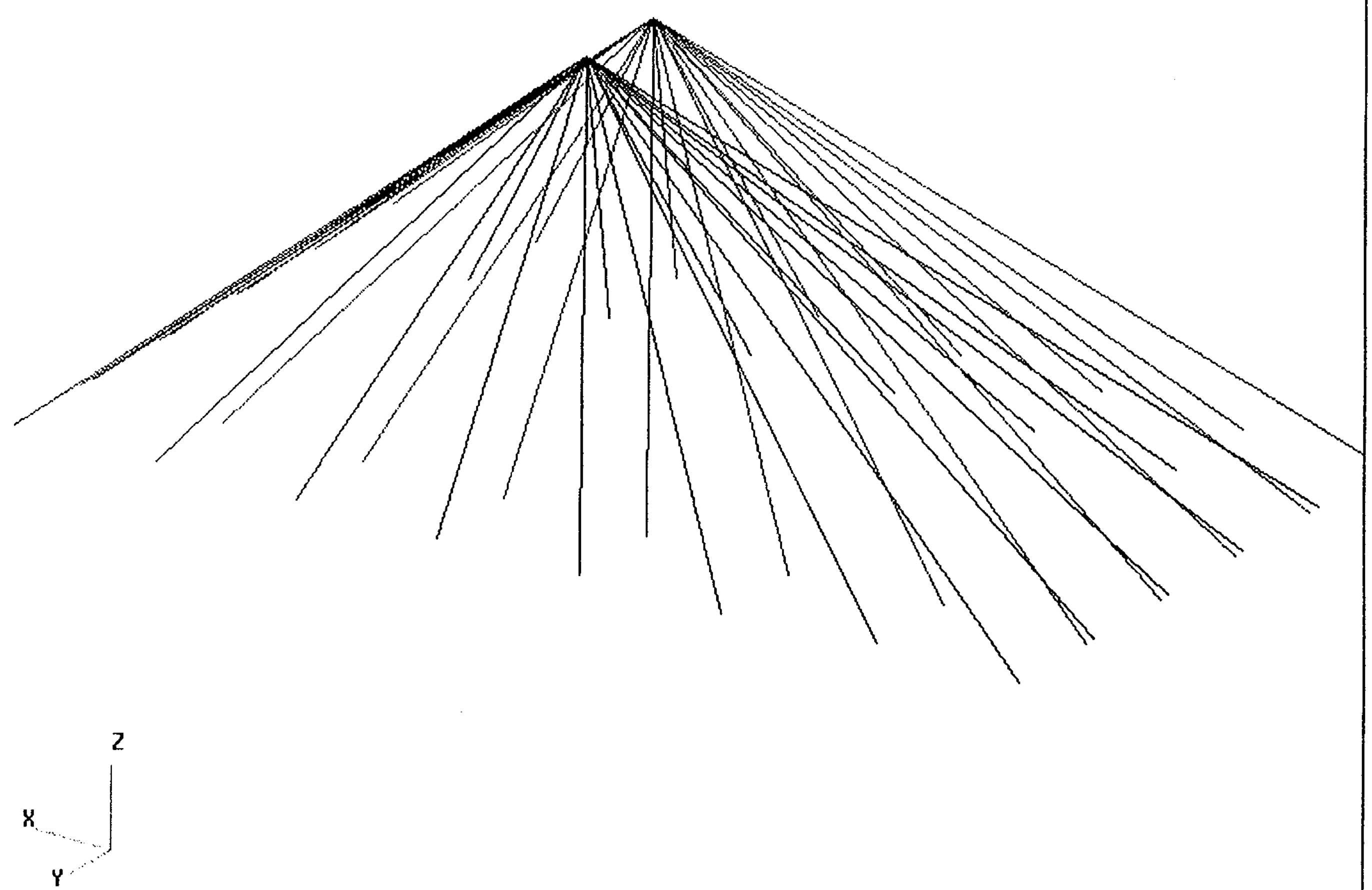


FIGURE 4 1ST RIGID MODE (UX)

FIGURE 5   2ND RIGID MODE (UY)



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FREE-FREE
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Max. Deformation =
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@Node 335001

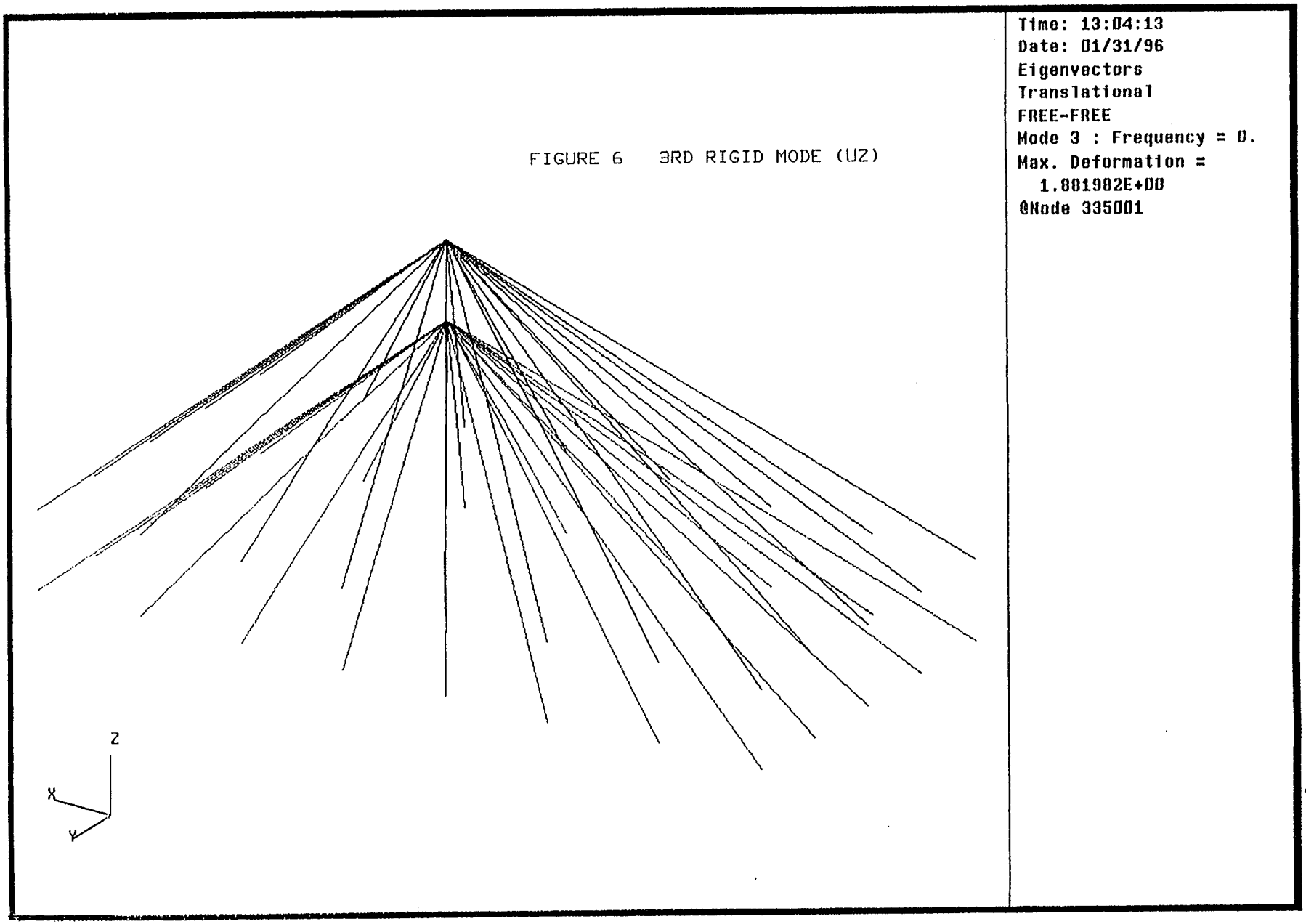


FIGURE 6 3RD RIGID MODE (UZ)

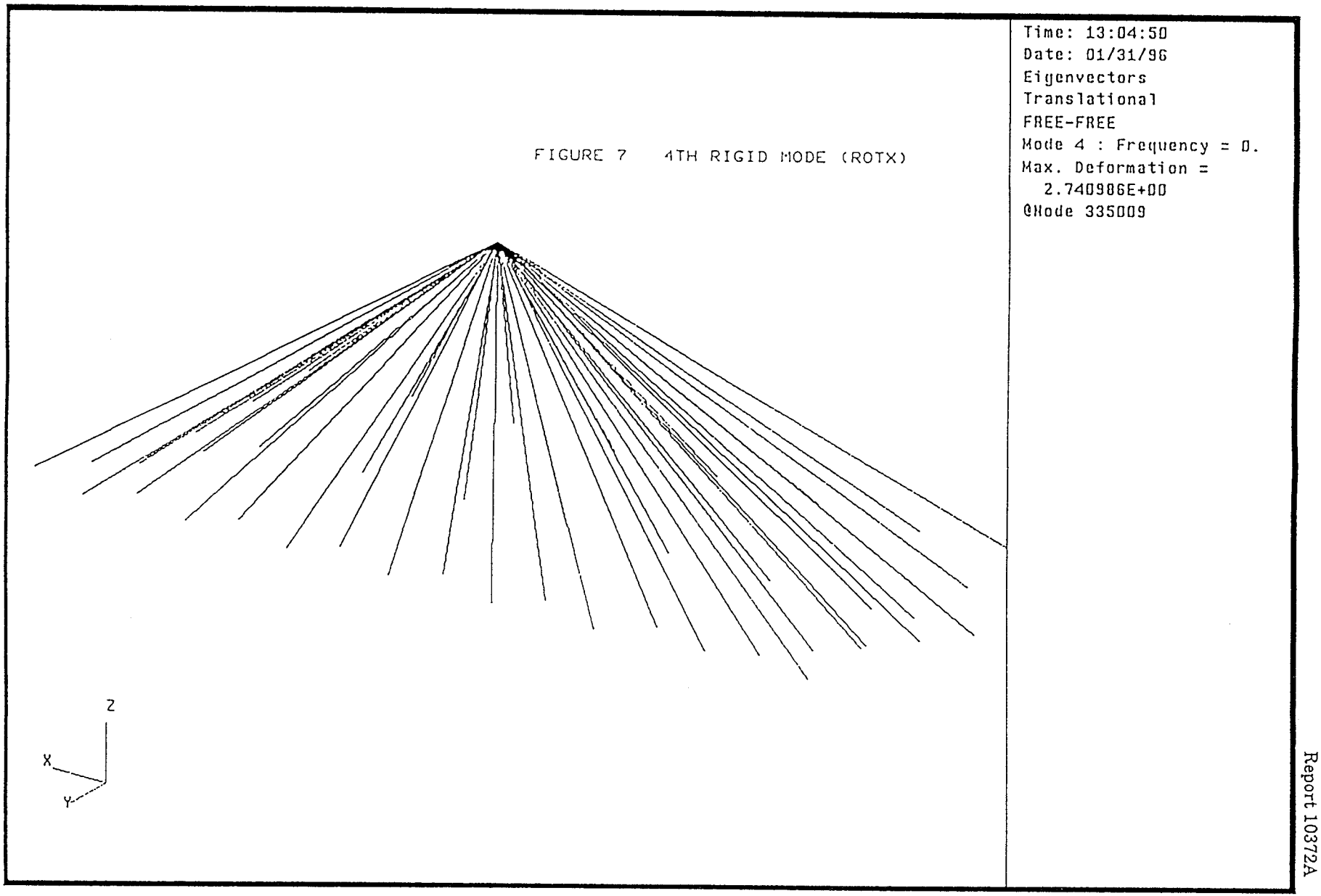


FIGURE 7 4TH RIGID MODE (ROTX)

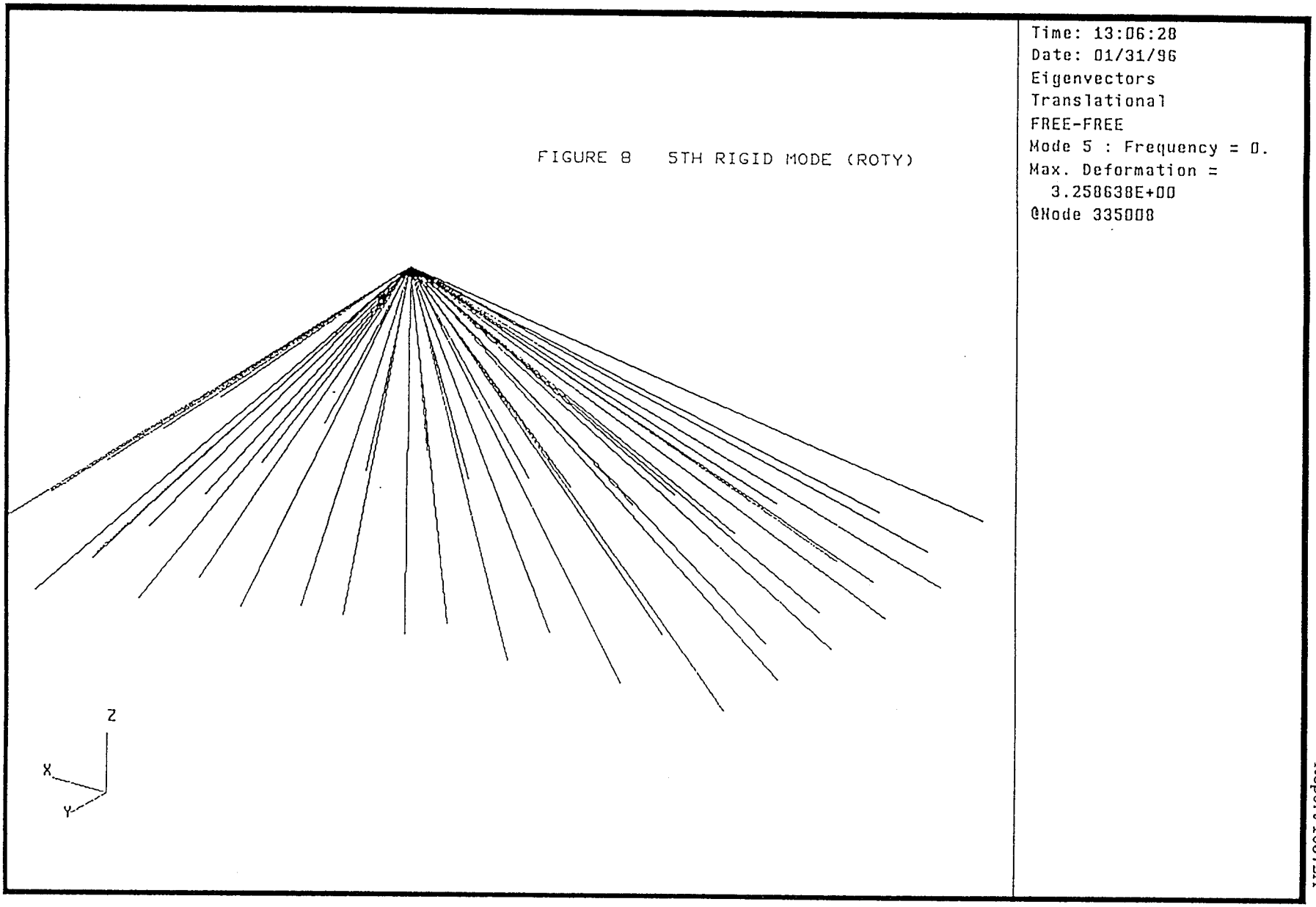


FIGURE 8 5TH RIGID MODE (ROTY)

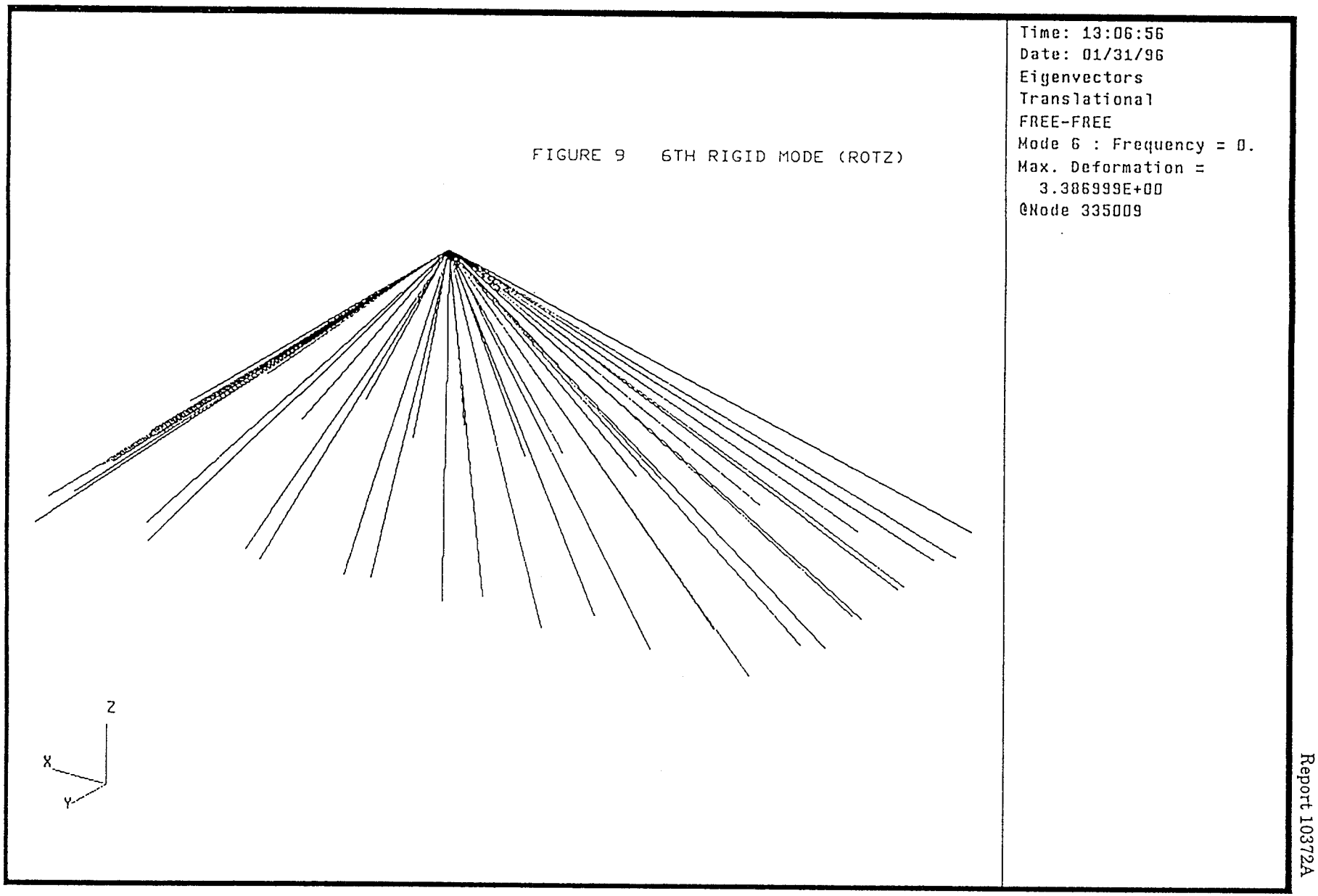


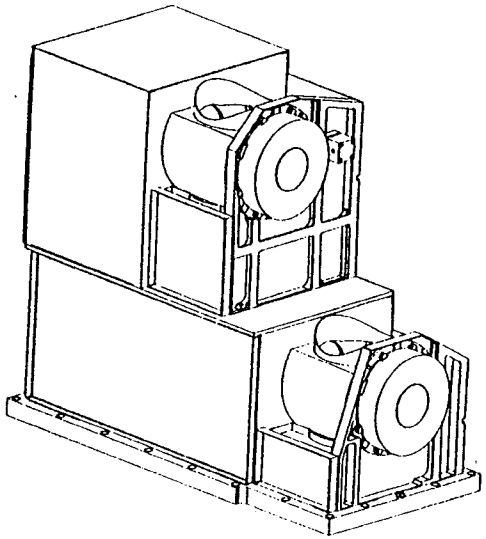
FIGURE 9 6TH RIGID MODE (ROTZ)

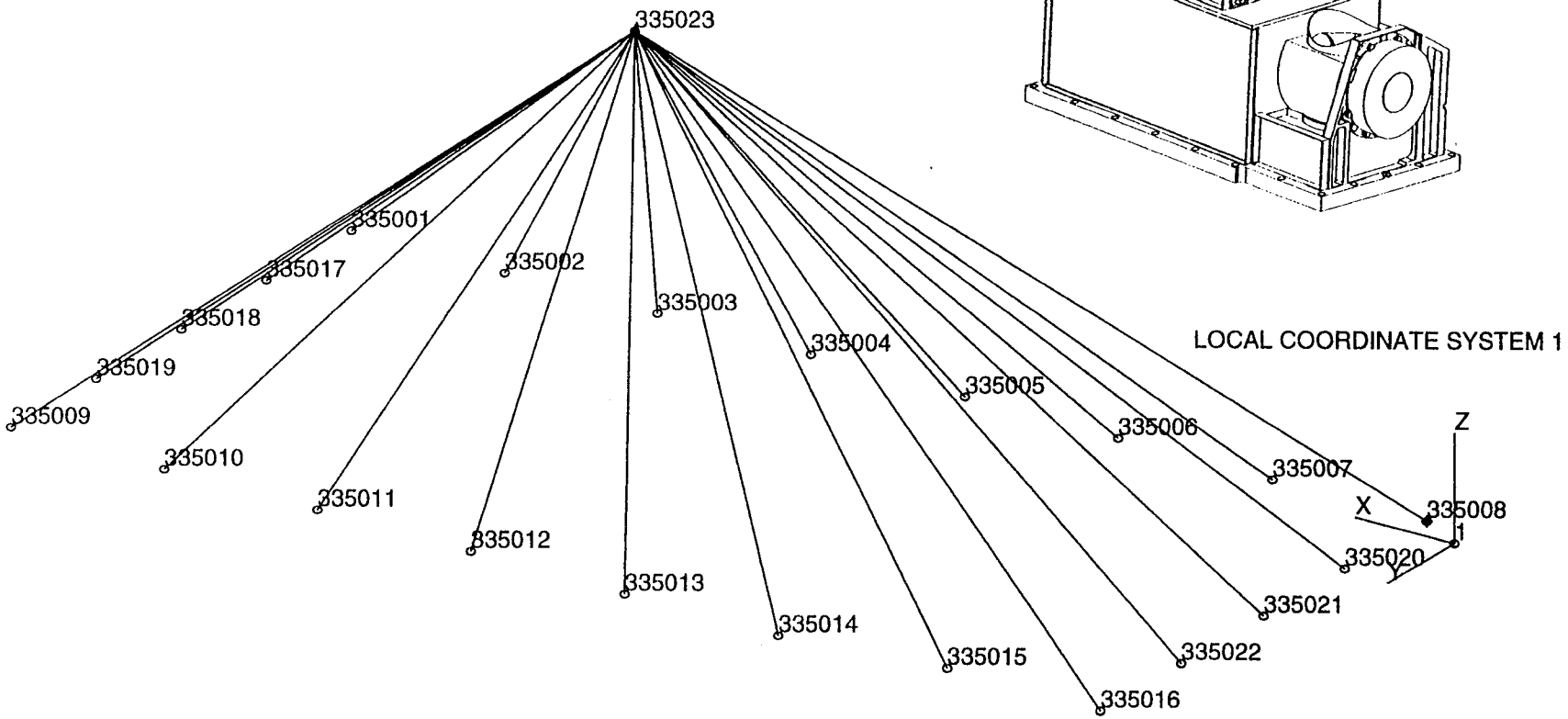
Appendix A

NASTRAN DMAP SOLUTION

Free-Free Eigenvalue Analysis

FIGURE A1 NASTRAN LUMPED MASS FINITE ELEMENT MODEL - W/GRID'S





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Welcome to MSC/NASTRAN Version 68

MSC/NASTRAN Version 68 adds the following major new capabilities:

* Completely rewritten documentation, including online delivery
* Shape optimization
* Dynamic and acoustic optimization
* Superelement optimization
* Aeroelastic optimization
* P-version elements and adaptivity
* 3D slideline contact
* Additional hyperelastic elements
* Improved differential stiffness
* Substantially enhanced heat transfer
* Multiple boundary conditions in SOLs 101, 103, and 200
* Performance enhancements (sparse solver in many SOLs)
* ... and other enhancements

See the "Version 68 Release Notes" for a complete description of the Version 68 capabilities.

The following changes have been made relative to previous versions:

* The basic coordinate system is now the default for solid element stress output.
* The sparse solver is now the default solver; you do not need NASTRAN SPARSE=25 in your input file anymore.
* The QUAD4 element formulation has been improved to give better accuracy for element offsets.

See the "Version 68 Release Notes" for a description of other changes.

This "news" information can be turned off by changing news=yes to news=no in the system runtime configuration (rc) file. Once turned off in the system rc file, it can be turned on by setting news=yes in the MSC/NASTRAN command line or local rc file.

THE
MACNEAL-SCHWENDLER
CORPORATION

M S C / N A S T R A N

VERSION - 68.0.3

AUG 24, 1994

DIGITAL EQUIPMENT

DEC 7000 Model 620

OpenVMS V6.1

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$ NASTRAN INPUT FILE CREATED BY THE PDA MSC/NASTRAN INPUT FILE
$ TRANSLATOR ( PAT3/MSC-NASTRAN RELEASE 1.4-2 ) ON JANUARY   31, 1996 AT
$  13:26:14.
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TIME 6
SOL 3
$
DIAG 64
$
COMPILE SOL3,SOUIN=MSCSOU
ALTER 126
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VEC USET/V1/'G'/'F'/'COMP' $
PARTN RBGLOBAL,V1,/RBFF,,,/0 $
TRNSP RBFF/RBFFT $
MPYAD KFF,RBFFT,/KFFR/ $
MATGPR GPL,USET,SIL,KFFR//'F'///1.E-2 $
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MATGPR GPL,USET,SIL,KFFRN//'F'///SMALL=1.E-5 $
ENDALTER
$
CEND
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                                  GEOM2,GEOM3,GEOM4,MATPOOL,AXIC,
                                  PVT,DMI,DMINDX,DTI,DTINDX,
                                  CASECC,PCDB,XYCDB,POSTCDB,FORCE// $
  2         2        $BEGIN    NO. 3 NORMAL MODES ANALYSIS / 25/MAY/94 $
  2         2        $ ++++++++++++ GEN      20-MAY-1994  +++++++++++++++++
  2         2        NOOP() $
  3         3        SETVAL    //S,N,CARDNO/0 $
  4         4        SETVAL    //S,N,NOKGGX/1 $
  5         5        SETVAL    //S,N,NOMGGX/1 $
  6         6        SETVAL    //S,N,NOBGGX/1 $
  7         7        PARAML    CASECC//'DTI'/-1/35//S,N,SPCREQ $
  8         8        PARAML    CASECC//'DTI'/-1/170//S,N,ESE $
  9         9        PARAML    CASECC//'DTI'/-1/167//S,N,GPFC $
 10        10        PARAML    XYCDB//'PRES'////S,N,NOXYCDB $
 11        11        PARAML    PCDB//'PRES'////S,N,JUMPPLOT $
 12        12        PARAM    //'NOT'/S,N,SPCREQ/V,N,SPCREQ/V,Y,NOGPF=1 $
 13        13        PARAM     //'NOT'/S,N,GPFO/GPFC $
 14        14        PARAM     //'NOT'/S,N,ESE/ESE $
 15        15        PARAM     //'AND'/S,N,NOSPC/GPFO/SPCREQ $
 16        16        PARAM     //'AND'/S,N,GPFDR/ESE/GPFO $
 17        17        PARAM     //'NOP'/S,Y,ASING=0/V,Y,CURVPLOT=-1/V,Y,CURV=-1 $
 18        18        SETVAL    //S,N,PLTFLG/1/S,N,PFILE/0 $
 19        19        PURGE     QG/NOSPC/PLTPAR/JUMPPLOT/GPSETS/JUMPPLOT/ELSETS/JUMPPLOT $
 20        20        EQUIV     GEOM1,GEOM1Q/NEWSEQ $
 21        21        COND      NOSEQP,NEWSEQ $
 22        22        SEQP      GEOM1,GEOM2,GEOM4,EPT/GEOM1Q,MATPARM/V,Y,SEQOUT=0/
                               V,Y,NEWSEQ=3//V,Y,SUPER=0/V,Y,FACTOR=10000/
                               V,Y,MPCX=0/V,Y,START=0 $
 23        23        LABEL     NOSEQP $
 24        24        GP1       GEOM1Q,GEOM2,,,/GPL,EQEXIN,GPDT,CSTM,BGPDT,SIL,/
                               S,N,LUSET/0/S,N,NOGPDT $
 25        25        COND      LNOGP,NOGPDT $
 26        26        GP2       GEOM2,EQEXIN,EPT/ECT $
 27        27        COND      NOELT,PROUT $
 28        28        ELTPRT    ECT,,,,,//V,Y,PROUT=-1 $
 29        29        LABEL     NOELT $
 30        30        COND      P1,JUMPPLOT $
 31        31        NOOP() $
 32        32        PLTHBDY   GEOM2,ECT,EPT,SIL,EQEXIN,BGPDT,CSTM/
                               PECT,PSIL,PEQIN,PBGPDT/S,N,NHBDY/V,Y,MESH='NO' $
 33        33        EQUIV     EQEXIN,PEQIN/NHBDY/ECT,PECT/NHBDY/BGPDT,PBGPDT/NHBDY/
                               SIL,PSIL/NHBDY $
 34        34        PLTSET    PCDB,PEQIN,PECT/PLTSETX,PLTPAR,GPSETS,ELSETS/S,N,NSIL/
                               S,N,JUMPPLOT $
 35        35        NOOP() $
 36        36        PRTMSG    PLTSETX// $
 37        37        COND      P1,JUMPPLOT $
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 40       40       LABEL    P1 $
 41       41       NOOP() $
 42       42       GP3      GEOM3,EQEXIN,GEOM2/SLT,ETT/0/V,N,NOGRAV/0 $
 43       43       TA1,     ,ECT,EPT,BGPDT,SIL,ETT,CSTM,/EST,,GEI,GPECT,/V,N,LUSET/-1/
                    S,N,NOSIMP/1/S,N,NOGENL/S,N,GENEL $
 44       44       COND     LSKPEMG,NOSIMP $
 45       45       PARAM    //'NOP'/S,Y,GPECT=-1 $
 46       46       COND     NOGPCT,GPECT $
 47       47       ELTPRT   ,,GPECT,SIL,GPL,,// $
 48       48       LABEL    NOGPCT $
 49       49       COND     NOEST,EST $
 50       50       ELTPRT.  ,,,,,EST,CSTM/VELEM/V,Y,EST=2 $
 51       51       LABEL    NOEST $
 52       52       EMG      EST,CSTM,MPT,DIT,,,,,,/KELM,KDICT,MELM,MDICT,,/
                    S,N,NOKGGX/S,N,NOMGGX/0/S,N,NOK4GG//V,Y,COUPMASS/
                      //////////V,Y,K6ROT=0.0 $
 53       53       COND     LEMAK,NOKGGX $
 54       54       EMA      GPECT,KDICT,KELM,BGPDT,SIL,CSTM,,/KGGX, $
 55       55       LABEL    LEMAK $
 56       56       COND     LEMAM,NOMGGX $
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 58       58       LABEL    LEMAM $
 59       59       EMG      EST,CSTM,MPT,DIT,,,,,,/,,,,BELM,BDICT/0/0/S,N,NOBGGX $
 60       60       COND     LEMAB,NOBGGX $
 61       61       EMA      GPECT,BDICT,BELM,BGPDT,SIL,CSTM,,/BGGX, $
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 63       63       COND     LSKPEMG,NOK4GG $
 64       64       EMA      GPECT,KDICT,KELM,BGPDT,SIL,CSTM,,/K4GG,/V,N,NOK4GG $
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 66       66       MTRXIN   CASECC,MATPOOL,EQEXIN,SIL,/K2GG,M2GG,B2GG/LUSET/S,N,NOK2GG/
                    S,N,NOM2GG/S,N,NOB2GG/1 $
 67       67       EQUIV    MGGX,MGG/NOM2GG $
 68       68       COND     LBLNOMX,NOM2GG $
 69       69       ADD      MGGX,M2GG/MGG/V,Y,CM1=(1.0,0.0)/V,Y,CM2=(1.0,0.0) $
 70       70       LABEL     LBLNOMX $
 71       71       PARAM    //'AND'/S,N,NOMGG=-1/NOMGGX/NOM2GG $
 72       72       COND     LGPWG,GRDPNT $
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 74       74       OFP      OGPWG // $
 75       75       LABEL    LGPWG $
 76       76       PARAM    //'AND'/S,N,NOKGG=-1/NOKGGX/NOK2GG $
 77       77       PARAM    //'AND'/S,N,NOKGG/NOKGG/NOGENL $
 78       78       PARAM    //'AND'/S,N,NOBGG=-1/NOBGGX/NOB2GG $
 79       79       EQUIV    KGGX,KGGY/NOK2GG $
 80       80       COND    LBLNOKX,NOK2GG $
 81       81       ADD      KGGX,K2GG/KGGY/V,Y,CK1=(1.0,0.0)/V,Y,CK2=(1.0,0.0) $
 82       82       LABEL    LBLNOKX $
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  89         89        COND      LBLNOBX,NOB2GG $
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  92         92        $ ++++++++++++++ KCON        1-APR-1994 ++++++++++++++++
  92         92        SETVAL    //S,N,NSKIP/0 $
  93         93        JUMP      LOOPTOP $
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                                 RG,YSB,USETB,ASET/
                                 LUSET/S,N,MPCF1/S,N,MPCF2/S,N,SINGLE/S,N,OMIT/S,N,REACT/
                                 S,N,NSKIP/S,N,REPEAT/S,N,NOSET/S,N,NOL/S,N,NOA/V,Y,SUBID $
  96         96        PURGE     GM/MPCF1 $
  97         97        COND      LBL2,MPCF2 $
  98         98        MCE1      USETB,RG/GM $
  99         99        LABEL     LBL2 $
 100        100        EQUIV     KGG,KNN/MPCF1 $
 101        101        COND      LBL2K,MPCF2 $
 102        102        MCE2      USETB,GM,KGG,,,/KNN,,, $
 103        103        LABEL     LBL2K $
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                                 V,Y,EPZERO=1.E-8/0/S,N,SING/V,Y,EPPRT=1.E-8/
                                 S,N,NOSET/S,N,NGERR $
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                                                    'B'/S,N,NOBSET/
                                                    'C'/S,N,NOCSET/
                                                    'G'/S,N,NOGSET/
                                                    'L'/S,N,NOLSET/
                                                    'O'/S,N,OMIT/
                                                    'S'/S,N,SINGLE/
                                                    'T'/S,N,NOTSET/
                                                    'Q'/S,N,NOQSET/
                                                    'R'/S,N,REACT/
                                                    'V'/S,N,NOVSET $
 106        106        PARAM     //'EQ'/S,N,NOA/NOGSET/NOASET $
 107        107        PARAM     //'AND'/S,N,NOSET/NOA/REACT  $
 108        108        COND      NOPRUST,USETPRT $
 109        109        TABPRT    USET,EQEXIN//'USET'/V,Y,USETPRT=-1/V,Y,USETSEL $
 110        110        LABEL     NOPRUST $
 111        111        COND      RFERR,NGERR $
 112        112        PARAML    CASECC//'DTI'/-1/150//S,N,DYNRED $
 113        113        PARAM     //'NOT'/S,N,NODYNRED/DYNRED $
 114        114        COND      DNOQSET,NOQSET $
 115        115        SETVAL    //S,N,ERRNO/4401 $
 116        116        COND      ERMSG,OMIT $
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    N A S T R A N   S O U R C E   P R O G R A M   C O M P I L A T I O N          SUBDMAP  =  SOL3
DMAP-DMAP INSTRUCTION
 OLD NO.   NEW NO.    ( *I* = INSERTED,    *D* = DELETED )
117       117       JUMP      DNOLSET $
118       118       LABEL     DNOQSET $
119       119       SETVAL    //S,N,ERRNO/4402 $
120       120       COND      ERMSG,NOLSET $
121       121       SETVAL    //S,N,ERRNO/4419 $
122       122       COND      ERMSG,DYNRED $
123       123       LABEL     DNOLSET $
124       124       EQUIV     KNN,KFF/SINGLE $
125       125       COND      LBL3,SINGLE $
126       126       SCE1      USET,KNN,,,/KFF,KFS,KSS,,, $
*I*       127       VECPLOT,  ,BGPDT,EQEXIN,CSTM,,,,/RBGLOBAL/GRDPNT=0//4 $

*** USER WARNING MESSAGE  42,
                          POSSIBLE ERROR IN DMAP INSTRUCTION VECPLOT    INSTRUCTION NO. 127
 PARAMETER NAMED GRDPNT   ALREADY HAD VALUE ASSIGNED PREVIOUSLY
*I*       128       VEC USET/V1/'G'/'F'/'COMP' $
*I*       129       PARTN RBGLOBAL,V1,/RBFF,,,/0 $
*I*       130       TRNSP RBFF/RBFFT $
*I*       131       MPYAD KFF,RBFFT,/KFFR/ $
*I*       132       MATGPR GPL,USET,SIL,KFFR//'F'///1.E-2 $
*I*       133       DIAGONAL KFF/KFFD/OPT='SQUARE'/POWER=-1. $
*I*       134       MPYAD KFFD,KFFR,/KFFRN/ $
*I*       135       MATGPR GPL,USET,SIL,KFFRN//'F'///SMALL=1.E-5 $
127       136       LABEL     LBL3  $
128       137       EQUIV     KFF,KTT/OMIT $
129       138       COND      LBL5,OMIT $
130       139       UPARTN    USET,KFF/KOO,,KCA,KAAB/'F'/'O'/'A' $
131       140       EQUIV     KOA,KOT/NOQSET /KAAB,KTT1/NOQSET $
132       141       COND      LNOTSET,NOQSET $
133       142       COND       LNOTSET,NOTSET $
134       143         VEC        USET/VAQT/'A'/'Q'/'T' $
135       144         PARTN      KOA,VAQT,/,,KOT,/1 $
136       145         UPARTN     USET,KAAB/,,,KTT1/'A'/'Q'/'T' $
137       146       LABEL      LNOTSET $
138       147       PARAML     KOA//'NULL'////S,N,NP $
139       148       EQUIV      KTT1,KTT/NP $
140       149       COND      LBL5,NP $
141       150       DECOMP     KOO/LOO,/1/0/S,N,MIND/S,N,DETER/S,N,POW/
                              S,N,SING/S,N,NBRCH/S,N,MAXRAT $
142       151       COND       NULLCO,SING $
143       152       PARAM      //'GT'/S,N,NP/NBRCH/0 $
144       153       COND       PRTMECHO,NP $
145       154       PARAMR     //'LE'//V,N,MAXRAT/V,Y,MAXRATIO=1.E7////S,N,NP $
146       155       COND       GOON,NP $
147       156       LABEL      PRTMECHO $
148       157       DIAGONAL   KOO/KDIAG $
149       158       DIAGONAL   LOO/LDIAG $
150       159       ADD        KDIAG,LDIAG/MECH///2 $
151       160       PRTPARM    //4420/'DMAP' $
152       161       MATGPR     GPL,USET,SIL,MECH//'H'/'O'//V,Y,MAXRATIO/1.0E-20 $
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N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N . SUBDMAP = SOL3

DMAP-DMAP INSTRUCTION

OLD NO.	NEW NO.	(*I* = INSERTED, *D* = DELETED)	
153	162	PARAM	//'NOP'/S,Y,BAILOUT=-1 $
154	163	COND	GOON,BAILOUT $
155	164	JUMP	RFERR $
156	165	LABEL	NULLCO $
157	166	MATMOD	KOO,,,,,/NULLO,/12/S,N,NP $
158	167	COND	GOON,NP $
159	168	MATGPR	GPL,USET,SIL,NULLO//'H'/'O' $
160	169	JUMP	RFERR $
161	170	LABEL	GOON $
162	171	FBS	LOO,,KOT/GO/1/-1 $
163	172	MPYAD	KOT,GO,KTT1/KTT/1////6 $
164	173	LABEL	LBL5 $
165	174	EQUIV	KTT,KAA/NOQSET $
166	175	EQUIV	KTT,KLL/REACT $
167	176	PURGE	DM/REACT $
168	177	COND	LBL6,NOLSET $
169	178	COND	LBL6X,REACT $
170	179	UPARTN	USET,KTT/KLL,,KLR,KRR/'T'/'L'/'R' $
171	180	JUMP	LBL6Y $
172	181	LABEL	LBL6X $
173	182	COND	LBL6,MODACC $
174	183	LABEL	LBL6Y $
175	184	DECOMP	KLL/LLL,/1/0/S,N,MIND/S,N,DETER/S,N,POW/S,N,SING/ S,N,NBRCH/S,N,MAXRAT/48 $
176	185	COND	NULLL,SING $
177	186	PARAM	//'NE'/S,N,NP/SING/1 $
178	187	COND	NOLLIST,NP $
179	188	TABPRT	USET,EQEXIN,//'USET'/0/256 $
180	189	JUMP	PRTMECHL $
181	190	LABEL	NOLLIST $
182	191	PARAM	//'GT'/S,N,NP/NBRCH/0 $
183	192	COND	PRTMECHL,NP $
184	193	PARAMR	//'LE'//V,N,MAXRAT/V,Y,MAXRATIO////S,N,NP $
185	194	COND	GCONL,NP $
186	195	LABEL	PRTMECHL $
187	196	DIAGONAL	KLL/KDIAGL $
188	197	DIAGONAL	LLL/LDIAGL $
189	198	ADD	KDIAGL,LDIAGL/MECHL///2 $
190	199	PRTPARM	//4420/'DMAP' $
191	200	MATGPR	GPL,USET,SIL,MECHL//'H'/'L'//V,Y,MAXRATIO /1.0E-20 $
192	201	COND	GOONL,BAILOUT $
193	202	JUMP	RFERR $
194	203	LABEL	NULLL $
195	204	MATMOD	KLL,,,,,/NULLL,/12/S,N,NP $
196	205	COND	RFERR,NP $
197	206	MATGPR	GPL,USET,SIL,NULLL//'H'/'L' $
198	207	JUMP	RFERR $
199	208	LABEL	GOONL $
200	209	COND	LBL6,REACT $
201	210	RBMG3	LLL,,KLR,KRR/DM $

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   N A S T R A N   S O U R C E   P R O G R A M   C O M P I L A T I O N            SUBDMAP  =  SOL3
DMAP-DMAP INSTRUCTION
 OLD NO.  NEW NO.    ( *I* = INSERTED,    *D* = DELETED )
202       211       LABEL     LBL6 $
203       212       $ ++++++++++++++ MCON.DP     1-APR-1986 ++++++++++++++++++
203       212       EQUIV     MGG,MNN/MPCF1 $
204       213       COND      LBL2M,MPCF2 $
205       214       MCE2      USET,GM,MGG,,,/MNN,,, $
206       215       LABEL     LBL2M $
207       216       EQUIV     MNN,MFF/SINGLE $
208       217       COND      LBL3M,SINGLE $
209       218       SCE1      USET,MNN,,,/MFF,,,,, $
210       219       LABEL     LBL3M $
211       220       EQUIV     MFF,MTT/OMIT $
212       221       COND      LBL4M,OMIT $
213       222       UPARTN     USET,MFF/MOO,,MOA,MAA1/'F'/'O'/'A' $
214       223       EQUIV      MOA,MOT1/NOQSET/MAA1,MTT1/NOQSET $
215       224       COND       MIKE1,NOQSET
216       225       EQUIV      MAA1,MQQ1/NOTSET/MOA,MOQ1/NOTSET $
217       226       SETVAL     //S,N,QNOTNULL/0 $                                  ++V66
218       227       COND       MNOTSET,NOTSET $
219       228       UPARTN     USET,MAA1/MQQ1,,MQT1,MTT1/'A'/'Q'/'T' $
220       229       PARTN      MOA,VAQT,/MOQ1,,MOT1,/1 $
221       230       PARAML     MQT1//'TRAILER'/5/S,N,QNOTNULL//S,N,NM $
222       231       LABEL      MNOTSET $
223       232       PARAM      //'ADD'/S,N,NP/QNOTNULL/C $
224       233       PARAML     MQQ1//'TRAILER'/5/S,N,QNOTNULL//S,N,NM $
225       234       PARAM      //'ADD'/S,N,NP/NP/QNOTNULL $
226       235       PARAML     MOQ1//'TRAILER'/5/S,N,QNOTNULL//S,N,NM $
227       236       PARAM      //'ADD'/S,N,QNOTNULL/QNOTNULL/NP $
228       237       PARAM      //'GT'/S,N,QNOTNULL/QNOTNULL/0 $
229       238       SETVAL     //S,N,ERRNO/4404 $
230       239       COND       RFERR,QNOTNULL $
231       240       LABEL      MIKE1 $
232       241       MPYAD      MOO,GO,MOT1/MOT $
233       242       MPYAD      MOT1,GO,MTT1/MTT2/1 $
234       243       MPYAD      GO,MOT,MTT2/MTT/1////6 $
235       244       LABEL     LBL4M $
236       245       COND       M8NORSET,REACT $
237       246       EQUIV      MTT,MR/NOLSET $
238       247       COND       M8NORSET,NOLSET $
239       248       UPARTN     USET,MTT/MLL,,MLR,MRR/'T'/'L'/'R' $
240       249       RBMG4     DM,MLL,MLR,MRR/MR $
241       250       LABEL      M8NORSET $
242       251       EQUIV      MTT,MAA/NOQSET
243       252       $ ++++++++++++ DRED        14-MAR-1991  +++++++++++++++++ BEGIN
243       252       EQUIV      GO,GOA/NOQSET $
244       253       COND       LBL5M,NOQSET $
245       254       COND       NOGOQ,NODYNRED $
246       255       IF ( REACT>-1 ) MESSAGE //' DMAP WARNING MESSAGE 9001 (DRED) -'/
                       ' GENERALIZED DYNAMIC REDUCTION'/
                       ' HAS BEEN REQUESTED IN THE PRESENCE OF SUPPORTED (SEE'/
                       ' SUPORT ENTRY) DEGREES OF FREEDOM. IN SOME CASES SOME'/
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N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

DMAP-DMAP INSTRUCTION
OLD NO. NEW NO. (*I* = INSERTED, *D* = DELETED)

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                    ' FLEXIBLE MODES MAY BE DISCARDED OR THOSE IN HIGH FREQUENCY'/
                    ' CLUSTERS MAY BE SKIPPED.' $
247       256       PARAM     //'AND'/S,N,NP/REACT/NOCSET $
248       257       EQUIV     MOO,MVV/NP $
249       258       COND      MIK30,NP $
250       259       EQUIVX    MTT1/MCOMP/NOBSET $
251       260       EQUIVX    MCT1/MOCOMP/NOBSET $
252       261       COND      M8NOBSET,NOBSET $
253       262       VEC       USET/VTBCOMP/'T'/'B'/'COMP' $
254       263       PARTN     MTT1,VTBCOMP,/,,,MCOMP $
255       264       PARTN     MOT1,VTBCOMP,/,,MOCOMP,/1 $
256       265       LABEL     M8NOBSET $
257       266       TRNSP     MOCOMP/MCOMPO $
258       267       VEC       USET/VVOCOMP/'V'/'O'/'COMP' $
259       268       MERGE     MOO,MCOMPO,MOCOMP,MCOMP,VVOCOMP,/MVV $
260       269       LABEL     MIK30 $
261       270       EQUIV     KOO,KVV/NP $
262       271       COND      MIK31,NP $
263       272       EQUIV     KTT1,KCOMP/NOBSET/KOT,KOCOMP/NOBSET $
264       273       COND      M8NOBK,NOBSET $
265       274       PARTN     KTT1,VTBCOMP,/,,,KCOMP $
266       275       PARTN     KOT,VTBCOMP,/,,KOCOMP,/1 $
267       276       LABEL     M8NOBK $
268       277       TRNSP     KOCOMP/KCOMPO $
269       278       MERGE     KOO,KCOMPO,KOCOMP,KCOMP,VVOCOMP,/KVV $
270       279       LABEL     MIK31 $
271       280       DYCNTRL   CASECC,DYNAMICS,KVV,MVV//S,N,DETER/S,N,NOYSET/
                              V,Y,EPSMALC=1.E-8/'MODAL'/REACT/NOQSET $
272       281       COND      NOGOQ,NOYSET $
273       282       ADD       MVV,KVV/AVV/V,N,DETER $
274       283       DECOMP    AVV/LVV,/1/0/S,N,MIND/S,N,DETER/S,N,POW/S,N,SING/
                              S,N,NBRCH/S,N,MAXRAT $
275       284       COND      GNULLV,SING $
276       285       PARAM     //'GT'/S,N,NP/NBRCH/0 $
277       286       COND      PRTMECHV,NP $
278       287       PARAMR    //'LE'//V,N,MAXRAT/V,Y,MAXRATIO////S,N,NP $
279       288       COND      GGOON,NP $
280       289       LABEL     PRTMECHV $
281       290       DIAGONAL  AVV/AVDIAG $
282       291       DIAGONAL  LVV/LVDIAG $
283       292       ADD       AVDIAG,LVDIAG/MECHV///2 $
284       293       MATGPR    GPL,USET,SIL,MECHV//'H'/'V'//V,Y,MAXRATIO $
285       294       COND      GGOON,BAILOUT $
286       295       JUMP      RFERR $
287       296       LABEL     GNULLV $
288       297       MATMOD    AVV,,,,,/NULLV,/12/S,N,NP $
289       298       COND      GGOON,NP $
290       299       MATGPR    GPL,USET,SIL,NULLV//'H'/'V' $
291       300       JUMP      RFERR $
292       301       LABEL     GGOON $
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    N A S T R A N   S O U R C E   P R O G R A M   C O M P I L A T I O N          SUBDMAP  =  SOL3
DMAP-DMAP INSTRUCTION
 OLD NO.   NEW NO.    ( *I* = INSERTED,    *D* = DELETED )
293         302       DYNREDU   LVV,MVV,CASECC,DYNAMICS/PHIVZ,MYY/NOYSET/NOYSET/
                                V,Y,EPSMALU=1.E-10/V,Y,EPSBIG/0/REACT $
294         303       MATGPR    GPL,USET,SIL,PHIVZ//'H'/'V'//V,Y,PRPHIVZ=1.+37 $
295         304       PARAM     //'ADD'/S,N,NOZSET/NOYSET/0 $
296         305       PARAM     //'AND'/S,N,NP/REACT/NOCSET $
297         306       MATGEN    ,/NULLAZ/7/NOASET/NOZSET $
298         307       EQUIV     PHIVZ,GOZ/NP/PHIVZ,PHIOZ/NP/NULLAZ,PHIAZ/NP $
299         308       COND      MIK45,NP $
300         309       VEC       USET /VVOC/'V'/'O'/'COMP' $
301         310       PARTN     PHIVZ,,VVOC/PHIOZ,PHICOMPZ,,/ 1 $
302         311       UMERGE    USET,,PHICOMPZ/PHITZ/'T'/'B'/'C' $
303         312       UMERGE    USET,PHITZ,/PHIAZ/'A'/'T'/'Q' $
304         313       EQUIV     PHIOZ,PHIOZ1/REACT/PHICOMPZ,PHCOMPZ1/REACT $
305         314       COND      M8EIG,REACT $
306         315       MATGEN    ,/VECZR/6/NOZSET/REACT/NOZSET $
307         316       PARTN     PHIOZ,VECZR,/,,PHIOZ1,/1 $
308         317       PARTN     PHICOMPZ,VECZR,/,,PHCOMPZ1,/ 1 $
309         318       LABEL     M8EIG $
310         319       EQUIV     GO,GOCOMP/NOBSET $
311         320       IF ( NOBSET>-1 ) PARTN     GO,VTBCOMP,/,,GOCOMP,/1 $
312         321       MPYAD     GOCOMP,PHCOMPZ1,PHIOZ1/GOZ//-1 $
313         322       LABEL     MIK45 $
314         323       MATGEN    ,/NULLOQ/7/OMIT/NOQSET $
315         324       ADD       NULLOQ,GOZ/GOQ $
316         325       SMPYAD    GOQ,KOO,GOQ,,,/KQQ/3////1////6 $
317         326       DIAGONAL  KQQ/KQDIAG/'COLUMN'/.5 $
318         327       ADD       KQDIAG,/FAPPROX/.15915 $
319         328       MATGPR    GPL,USET,SIL,FAPPROX//'H'/'Q'//V,Y,PRPHIVZ $
320         329       MPYAD     GOQ,MOT,/MQT/1 $
321         330       TRNSP     MQT/MTQ $
322         331       SMPYAD    GOQ,MOO,GOQ,,,/MQQ/3////1////6 $
323         332       LABEL     NOGOQ $
324         333       EQUIV     KQQ,KAA/NOTSET/MQQ,MAA/NOTSET/GOQ,GOA/NOTSET $
325         334       COND      LBL5M,NOTSET $
326         335       MERGE     KQQ,,,KTT,VAQT,/KAA $
327         336       MERGE     MQQ,MTQ,MQT,MTT,VAQT,/MAA $
328         337       MERGE     GOQ,,GO,,VAQT,/GOA/1 $
329         338       LABEL     LBL5M $
330         339       MGEN      CASECC,MATPOOL,EST,CSTM/MCHI,MLAM,GEG,MAR,,/LUSET/S,N,NOMGEN/
                                /WTMASS $
331         340       EQUIV     MAA,MMAA  /NOMGEN $
332         341       COND      NOMGEN,NOMGEN $
333         342       EQUIV     GEG,GTEA/NOA $
334         343       COND      NOVMRED,NOA $
335         344       SSG2      USET,GM,,,GOA,,GEG/,GEO,GES,GTEA,/ $
336         345       LABEL     NOVMRED $
337         346       TRNSP     GTEA/GEA $
338         347       DECOMP    MCHI/LCHI,UCHI/0 $
339         348       FBS       LCHI,UCHI,GEA/BMAT/0 $
340         349       MPYAD     MLAM,BMAT,/MEA $
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N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

DMAP-DMAP INSTRUCTION

OLD NO.	NEW NO.	(*I* = INSERTED, *D* = DELETED)
341	350	MPYAD GTEA,MEA,/VMAT/////6 $
342	351	TRNSP VMAT/VMATT $
343	352	ADD5 VMAT,VMATT,MAA ,,/MMAA/(0.5,0.0)/(0.5,0.0) $
344	353	LABEL NOMGEN $
345	354	$ ++++++++++++ DRED +++++++++++++++++ END
345	354	$ +++++++++++++++++ SLOAD 17-AUG-1993 +++++++++++++++++
345	354	LCGEN CASECC,SLT,ETT/CASESX/0/1 $
346	355	SSG1 SLT,BGPDT,CSTM,SIL,EST,MPT,ETT,EDT,MGG,CASESX,DIT,,,,/ PGSX,,/LUSET/1 $
347	356	MTRXIN CASECC,MATPOOL,EQEXIN,SIL,/P2G,,/LUSET/S,N,NP///2 $
348	357	EQUIV PGSX,PGS/NP $
349	358	COND NOP2G,NP $
350	359	ADD PGSX,P2G/PGS/V,N,CP1/V,N,CP2 $
351	360	LABEL NOP2G $
352	361	$ ++++++++++++ DPDD.DP 05 JUNE 1980 +++++++++++++++++
352	361	LABEL LNOGP $
353	362	DPD DYNAMICS,GPL,SIL,USET,SLT,PGS/ GPLD,SILD,USETD,TFPOOL,DLT,PSDL,FRL,NLFT,TRL,EED,EQDYN/ LUSET/S,N,LUSETD/S,N,NOTFL/S,N,NODLT/ S,N,NOPSDL/S,N,NOFRL/S,N,NONLFT/S,N,NOTRL/S,N,NOEED/0/ S,N,NOUE $
354	363	PARAML MMAA//'PRES'////S,N,NOMGG $
355	364	$ +++++++++++++++++ READ 2-MAR-1994 +++++++++++++++++
355	364	SETVAL ////////////S,N,FORM/'MODAL' $
356	365	SETVAL ////////////S,N,SETOUT/'HSET' $
357	366	SETVAL //S,N,ERRNO/4418 $
358	367	COND ERMSG,NOEED $
359	368	COND LBLNODM,REACT $
360	369	DIAGONAL MR/MRDIAG/ $
361	370	SETVAL //S,N,NOCSET/0 $
362	371	PARAML MRDIAG//'TRAILER'/6/S,N,NP//S,N,NOCSET $
363	372	PARAM //'NE'/S,N,NP/NP/10000 $
364	373	SETVAL //S,N,ERRNO/4407 $
365	374	COND ERMSG,NP $
366	375	VEC USET/VACOMPR/'A'/'COMP'/'R' $
367	376	COND LBLNODM,NOLSET $
368	377	VEC USET/VALCOMP/'A'/'L'/'COMP' $
369	378	PARTN VALCOMP,,VACOMPR/VLQ,,,/1 $
370	379	MERGE DM,,,,,VLQ/DMLQ/1 $
371	380	LABEL LBLNODM $
372	381	SETVAL //S,N,NOARED/-1 $
373	382	MATMOD CASECC,DYNAMICS,,,,/,/23/S,N,NP
374	383	PARAM //'EQ'/S,N,INVPOW/NP/1 $
375	384	PARAM //'EQ'/S,N,NP/NP/0 $
376	385	PARAM //'ADD'/S,N,NP/2/NP $
377	386	MATMOD MMAA,KAA,,,,/VAXW1,MATAA/12/S,N,NOARED/NP $
378	387	COND NOARED1,NOARED $
379	388	EQUIV VAXW1,VAXW/REACT $
380	389	COND NOARED1,REACT $
381	390	PARTN VAXW1,,VACOMPR/VLQXW,,,/1 $

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    N A S T R A N   S O U R C E   P R O G R A M   C O M P I L A T I O N            SUBDMAP  =  SOL3
DMAP-DMAP INSTRUCTION
 OLD NO.   NEW NO.    ( *I* = INSERTED,    *D* = DELETED )
382        391        MERGE     VLQXW,,,,,VACOMPR/VAXW/1 $
383        392        PARAML    VAXW//'NULL'////S,N,NOARED $
384        393        LABEL     NOARED1 $
385        394        EQUIV     KAA,KXX/NOARED/MMAA,MXX/NOARED/DMLQ,DMX/NOARED/
                                USET,VXCOMPR/NOARED $
386        395        COND      LBLNORED,NOARED $
387        396        MATGPR    GPL,USET,SIL,VAXW//'H'/'A' $
388        397        COND      RFERR,ASING $
389        398        PARTN     MMAA,VAXW,/MXX,,,/-1 $
390        399        PARTN     KAA,VAXW,/KXXBAR,KWX,,KWW1/-1 $
391        400        EQUIV     KXXBAR, KXX/INVPOW $
392        401        COND      KINV2,INVPOW $
393        402        PARAML    KWX//'NULL'////S,N,NOAOMIT $
394        403        EQUIV     KXXBAR,KXX/NOAOMIT $
395        404        COND      KINV2,NOAOMIT $
396        405        DECOMP    KWW1/LWW1,/1/////////58 $
397        406        FBS       LWW1,,KWX/GWX1/1/-1/0/0 $
398        407        MPYAD    GWX1,KWX,KXXBAR/KXX/1////6 $
399        408        LABEL     KINV2 $
400        409        COND      LBLNORED,REACT  $
401        410        PARTN     VACOMPR,,VAXW/VXCOMPR,,,/1 $
402        411        PARTN     DMLQ,,VLQXW/DMX,,,/1 $
403        412        LABEL     LBLNORED $
404        413        SETVAL    //S,N,NEIGV/-1 $
405        414        READ      KXX,MXX,MR,DMX,EED,VXCOMPR,CASECC,VAXW/
                                LAMA,PHIX,MI,OEIGS/'MODES'/S,N,NEIGV  $
406        415        OFP       LAMA,OEIGS// $
407        416        SETVAL    //S,N,ERRNO/4405 $
408        417        COND      ERMSG,NEIGV $
409        418        EQUIV     PHIX,PHIA/NOARED $
410        419        COND      LBLNOEXP,NOARED $
411        420        COND      KINV3,INVPOW $
412        421        MPYAD     GWX1,PHIX,/PHIW $
413        422        LABEL     KINV3 $
414        423        MERGE     PHIX,PHIW,,,,VAXW/PHIA/0 $
415        424        LABEL     LBLNOEXP $
416        425        PARAM     //'DIAGOFF'//47 $
417        426        VDR       CASECC,EQEXIN,USET,PHIA,LAMA,,/OPHIA,/'REIG'/'DIRECT'/0/
                                S,N,NP/S,N,NOPREQ/1 $
418        427        COND      LBLSKPH,NP
419        428        OFP       OPHIA//S,N,CARDNO $
420        429        LABEL     LBLSKPH $
421        430        PARAM     //'DIAGON'//47 $
422        431        $ ++++++++++++++++++ MODE  20-OCT-1993 ++++++++++++++++++
422        431        JUMP     LBLGO $
423        432        PARAM     //'NOP'/S,Y,MODACC=-1 $
424        433        PARAM     //'NOP'/S,Y,NOSORT1=1 $
425        434        MATGEN    ,/PG/3/1 $
426        435        MATGEN    ,/PG1/3/1 $
427        436        LABEL     LBLGO $
```

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

DMAP-DMAP INSTRUCTION

(*I* = INSERTED, *D* = DELETED)

OLD NO.	NEW NO.		
428	437	SETVAL	////////////S,N,SOLTYPE/'REIG' $
429	438	PARAM	//'NOT'/S,N,NODDRMM/-1 $
430	439	CASE	CASECC,/CASEXX/'CEIG'/-1 $
431	440	COND	NOMDATA,NOMGEN $
432	441	MDATA	CASECC,XYCDB,MAR,MEA,PHIA,LAMA/OEP/SOLTYPE $
433	442	OFP	OEP//S,N,CARDNO $
434	443	LABEL	NOMDATA $
435	444	PARAM	//'AND'/S,N,PJUMP/NOPREQ/JUMPPLOT $
436	445	COND	P2,PJUMP $
437	446	SDR1	USET,,PHIA,,,GOA,GM,,KFS,,/UGV,,QG/1/'REIG'/NOSPC $
438	447	PARAM	//'DIAGOFF'//47 $
439	448	SDR2	CASECC,CSTM,MPT,DIT,EQEXIN,,ETT,,BGPDT,LAMA,QG,UGV,EST, XYCDB,,,/OPG1,OQG1,OUGV1,OES1,OEF1,PUGV/SOLTYPE/S,N,NOSORT2 $
440	449	JUMP	LSORT1 $
441	450	$	++++++++++++++ DR1 14-FEB-1991 ++++++++++++++++++++
441	450	LABEL	LSORT1 $
442	451	OFP	OUGV1,OPG1,OQG1,OEF1,OES1//S,N,CARDNO $
443	452	COND	LS1,S1 $
444	453	STRSORT	OES1,/OES1X1/V,Y,NUMOUT=-2/V,Y,BIGER=0.0/V,Y,SRTOPT=0/ V,Y,SRTELTYP=0 $
445	454	OFP	OES1X1//S,N,CARDNO $
446	455	LABEL	LS1 $
447	456	COND	LS1G,CURV $
448	457	PARAM	//'NOP'/S,Y,S1=-1/V,Y,S1M=-1/V,Y,S1G=-1 $
449	458	CURV	OES1,MPT,CSTM,EST,SIL,GPL/OES1M,OES1G/V,Y,OUTOPT/ V,Y,OG/V,Y,NINTPTS=10 $
450	459	COND	LS1M,S1M $
451	460	STRSORT	OES1M,/OES1M1/NUMOUT/BIGER/SRTOPT/SRTELTYP $
452	461	OFP	OES1M1//S,N,CARDNO $
453	462	LABEL	LS1M $
454	463	STRSORT	OES1G,/OES1G1/NUMOUT/BIGER/SRTOPT/SRTELTYP $
455	464	OFP	OES1G1//S,N,CARDNO $
456	465	LABEL	LS1G $
457	466	COND	NOXYPL,NOXYCDB $
458	467	COND	NOXYPL,CURVPLOT $
459	468	CURVPLOT	EQEXIN,BGPDT,EDT,XYCDB,OPG1,OQG1,OUGV1,OES1G,/ OPG2X,OQG2X,OUG2X,OES2X,/V,Y,DOPT=0 $
460	469	XYTRAN	XYCDB,OPG2X,OQG2X,OUG2X,OES2X,/XYPLTS/'SET1'/'PSET'/ S,N,PFILE/S,N,CARDNO/S,N,NP $
461	470	COND	NOXYPL,NP $
462	471	XYPLOT	XYPLTS// $
463	472	LABEL	NOXYPL $
464	473	COND	P2,NODDRMM $
465	474	COND	LNOEDR,GPFDR $
466	475	GPFDR	CASEXX,UGV,KELM,KDICT,ECT,EQEXIN,GPECT,PG1,QG,BGPDT,SIL,CSTM, VELEM,/ONRGY1,OGPFB1/SOLTYPE/V,Y,TINY $
467	476	COND	LNOESE,ESE $
468	477	OFP	ONRGY1//S,N,CARDNO $
469	478	LABEL	LNOESE $
470	479	COND	LNOGPF,GPFO $

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    N A S T R A N   S O U R C E   P R O G R A M   C O M P I L A T I O N          SUBDMAP  =  SOL3
DMAP-DMAP INSTRUCTION
 OLD NO.   NEW NO.     ( *I* = INSERTED,    *D* = DELETED )
471        480         COND      LNOGPF,NOGPF $
472        481         OFP       OGPFB1 // $
473        482         LABEL     LNOGPF $
474        483         PARAM     //'AND'/S,N,SKPEDR/V,Y,NOELOF=-1/V,Y,NOELOP=-1 $
475        484         COND      LNOEDR,SKPEDR $
476        485         ELFDR     OGPFB1,GPECT,CSTM,SIL,GPL,BGPDT/OELOF1,OELOP1/
                                 V,Y,NOELOF/V,Y,NOELOP$
477        486         COND      LNOELF,NOELOF $
478        487         OFP       OELOF1 // $
479        488         LABEL     LNOELF $
480        489         COND      LNOEDR,NOELOP $
481        490         OFP       OELOP1 // $
482        491         LABEL     LNOEDR $
483        492         COND      P2,JUMPPLOT $
484        493         PLTSET    PCDB,EQEXIN,ECT/PSMES,PLTPAP,GPSETP,ELSETP/S,N,DSIL/V,N,DJ $
485        494         PRTMSG    PSMES// $
486        495         PLOT      PLTPAP,GPSETP,ELSETP,CASEXX,BGPDT,EQEXIN,SIL,PUGV,PUGV,GPECT,
                                 OES1/PLOTX2/DSIL/LUSET/JUMPPLOT/PLTFLG/S,N,PFILE $
487        496         PRTMSG    PLOTX2// $
488        497         LABEL     P2 $
489        498         $ ++++++++++++++ ERROUT.DP 19 JUNE 1980  ++++++++++++++++++++++++++
489        498         JUMP      FINIS $
490        499         LABEL     RFERR $
491        500         PRTPARM   ////1 $
492        501         JUMP      FINIS $
493        502         LABEL     ERMSG $
494        503         PRTPARM   //ERRNO/''DMAP' $
495        504         LABEL     FINIS $
496        505         END  $
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N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

MODULE NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

ADD	69	81	86	90	159	198	282	292	324
	327	359							
ADD5	352								
CASE	439								
CURV	458								
CURVPLOT	468								
DECOMP	150	184	283	347	405				
DIAGONAL	133	157	158	196	197	290	291	326	369
DPD	362								
DYCNTRL	280								
DYNREDU	302								
ELFDR	485								
ELTPRT	28	47	50						
EMA	54	57	61	64					
EMG	52	59							
FBS	171	348	406						
GP1	24								
GP2	26								
GP3	42								
GP4	95								
GPFDR	475								
GPSP	104								
GPWG	73								
LCGEN	354								
MATGEN	306	315	323	434	435				
MATGPR	132	135	161	168	200	206	293	299	303
	328	396							
MATMOD	166	204	297	382	386				
MCE1	98								
MCE2	102	214							
MDATA	441								
MERGE	268	278	335	336	337	379	391	423	
MGEN	339								
MPYAD	131	134	172	241	242	243	321	329	349
	350	407	421						
MTRXIN	66	356							
OFP	74	415	428	442	451	454	461	464	477
	481	487	490						
PARAM	12	13	14	15	16	17	45	71	76
	77	78	106	107	113	152	162	186	191
	232	234	236	237	256	285	304	305	372
	383	384	385	425	430	432	433	438	444
	447	457	483						
PARAML	7	8	9	10	11	105	112	147	230
	233	235	363	371	392	402			
PARAMR	154	193	287						
PARTN	129	144	229	263	264	274	275	310	316
	317	320-1	378	390	398	399	410	411	
PLOT	38	495							
PLTHBDY	32								
PLTSET	34	493							
PRTMSG	36	39	494	496					
PRTPARM	160	199	500	503					
RBMG3	210								
RBMG4	249								
READ	414								
SCE1	126	218							
SDR1	446								

SDR2	440								
SEQP	22								
SETVAL	3	4	5	6	18	92	115	119	121
	226	238	364	365	366	370	373	381	413
	416	437							
SMA3	85								
SMPYAD	325	331							
SSG1	355								
SSG2	344								
STRSORT	453	460	463						
SUBDMAP	1								
TA1	43								
TABPRT	109	188							
TRNSP	130	266	277	330	346	351			
UMERGE	311	312							
UPARTN	139	145	179	222	228	248			
VDR	426								
VEC	128	143	262	267	309	375	377		
VECPLOT	127								
XEQUIV	20	33	33-1	33-2	33-3	67	79	83	88
	100	124	137	140	140-1	148	174	175	212
	216	220	223	223-1	225	225-1	246	251	252
	257	259	260	270	272	272-1	307	307-1	307-2
	313	313-1	319	333	333-1	333-2	340	342	357
	388	394	394-1	394-2	394-3	400	403	418	
XPURGE	19	19-1	19-2	19-3	96	176			
XYPLOT	471								
XYTRAN	469								

TOTAL NAME COUNT = 69

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

EXECUTIVE NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

COND	21	25	27	30	37	44	46	49	53
	56	60	63	68	72	80	84	89	97
	101	108	111	114	116	120	122	125	138
	141	142	149	151	153	155	163	167	177
	178	182	185	187	192	194	201	205	209
	213	217	221	224	227	239	245	247	253
	254	258	261	271	273	281	284	286	288
	294	298	308	314	334	341	343	358	367
	368	374	376	387	389	395	397	401	404
	409	417	419	420	427	440	445	452	456
	459	466	467	470	473	474	476	479	480
	484	486	489	492					
EXIT	505								
IF	255	320							
JUMP	93	117	164	169	180	189	202	207	295
	300	431	449	498	501				
MESSAGE	255-1								

TOTAL NAME COUNT = 5

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

LABEL NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

DNOLSET	117		123	L								
DNOQSET	114		118	L								
ERMSG	116		120		122		367		374		417		493	L
FINIS	495	L	498		501							
GGOON	288		292	L	294		298					
GNULLV	284		287	L								
GOON	155		161	L	163		167					
GOONL	194		199	L	201							
KINV2	399	L	401		404							
KINV3	413	L	420									
LBL11	84		87	L								
LBL2	97		99	L								
LBL2K	101		103	L								
LBL2M	206	L	213									
LBL3	125		127	L								
LBL3M	210	L	217									
LBL4M	221		235	L								
LBL5	138		149		164	L						
LBL5M	253		329	L	334							
LBL6	177		182		202	L	209					
LBL6X	172	L	178									
LBL6Y	174	L	180									
LBLGO	427	L	431									
LBLNOBX	89		91	L								
LBLNODM	368		371	L	376							
LBLNOEXP	415	L	419									
LBLNOKX	80		82	L								
LBLNOMX	68		70	L								
LBLNORED	395		403	L	409							
LBLSKPH	420	L	427									
LEMAB	60		62	L								
LEMAK	53		55	L								
LEMAM	56		58	L								
LGPWG	72		75	L								
LNOEDR	474		482	L	484		489					
LNOELF	479	L	486									
LNOESE	469	L	476									
LNOGP	25		352	L	358							
LNOGPF	473	L	479		480							
LNOTSET	137	L	141		142							
LOOPTOP	93		94	L								
LS1	446	L	452									
LS1G	456	L	456									
LS1M	453	L	459									
LSKPEMG	44		63		65	L						
LSORT1	441	L	449									
M8EIG	309	L	314									
M8NOBK	267	L	273									
M8NOBSET	256	L	261									
M8NORSET	241	L	245		247							

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

LABEL NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

MIK30	258		260	L								
MIK31	270	L	271									
MIK45	308		313	L								
MIKE1	224		231	L								
MNOTSET	222	L	227									
NOARED1	384	L	387		389							
NOELT	27		29	L								
NOEST	49		51	L								
NOGOQ	254		281		323	L						
NOGPCT	46		48	L								
NOLLIST	181	L	187									
NOMDATA	434	L	440									
NOMGEN	341		344	L								
NOP2G	351	L										
NOPRUST	108		110	L								
NOSEQP	21		23	L								
NOVMRED	336	L	343									
NOXYPL	463	L	466		467		470					
NULLCO	151		156	L								
NULLL	185		194	L								
P1	30		37		40	L						
P2	445		473		488	L	492					
PRTMECHL	186	L	189		192							
PRTMECHO	147	L	153									
PRTMECHV	280	L	286									
RFERR	111		164		169		202	205	207	239	295	300
	397		490	L								

TOTAL NAME COUNT = 76

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3
DATABLOCK NAMES * * * D M A P C R O S S - R E F E R E N C E * * *
INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

ASET	95	O								
AVDIAG	290	O	292							
AVV	282	O	283		290	297				
AXIC	1									
B2GG	66	O	90							
BDICT	59	O	61							
BELM	59	O	61							
BGG	88	O	90	O						
BGGX	61	O	88		90					
BGPDT	24	O	32		33-2	43	54	57	61	64	73
	95		127		355	448	468	475	485	495	
BMAT	348	O	349							
CASECC	1		7		8	9	38	66	95	112	280
	302		339		354	356	382	414	426	439	441
	448										
CASESX	354	O	355							
CASEXX	439	O	475		495					
CSTM	24	O	32		43	50	52	54	57	59	61
	64		73		95	127	339	355	448	458	475
	485										
DIT	1		52		59	355	448				
DLT	362	O									
DM	176	O	210	O	249	379					
DMI	1										
DMINDX	1										
DMLQ	379	O	394-2		411						
DMX	394-2	O	411	O	414						
DTI	1										
DTINDX	1										
DYNAMICS	1		280		302	362	382				
ECT	26	O	28		32	33-1	38	43	475	493	
EDT	1		355		468						
EED	362	O	414								
ELSETP	493	O	495								
ELSETS	19-3	O	34	O	38						
EPT	1		22		26	32	43				
EQDYN	362	O									
EQEXIN	24	O	26		32	33	42	66	73	95	104
	109		127		188	356	426	448	468	475	493
	495										
EST	43	O	50		52	59	339	355	448	458	
ETT	42	O	43		354	355	448				
FAPPROX	327	O	328								
FORCE	1										
FRL	362	O									
GEA	346	O	348								
GEG	339	O	342		344						
GEI	43	O	85								
GEO	344	O									
GEOM1	1		20		22						

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

DATABLOCK NAMES *** D M A P C R O S S - R E F E R E N C E ***

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

GEOM1Q	20	O	22	O	24							
GEOM2	1		22		24		26	32	42			
GEOM3	1		42									
GEOM4	1		22		95		104					
GES	344	O										
GM	96	O	98	O	102		214	344	446			
GO	171	O	172		241		242	243	252	319	320-1	337
GOA	252	O	333-2	O	337	O	344	446				
GOCOMP	319	O	320-1	O	321							
GOQ	324	O	325		325		329	331	331	333-2	337	
GOZ	307	O	321	O	324							
GPDT	24	O	95									
GPECT	43	O	47		54		57	61	64	475	485	495
GPL	24	O	47		104		132	135	161	168	200	206
	293		299		303		328	362	396	458	485	
GPLD	362	O										
GPSETP	493	O	495									
GPSETS	19-2	O	34	O	38							
GTEA	342	O	344	O	346		350					
GWX1	406	O	407		421							
K2GG	66	O	81									
K4GG	64	O										
KAA	174	O	333	O	335	C	386	394	399			
KAAB	139	O	140-1		145							
KCOMP	272	O	274	O	278							
KCOMPO	277	O	278									
KDIAG	157	O	159									
KDIAGL	196	O	198									
KDICT	52	O	54		64		475					
KELM	52	O	54		64		475					
KFF	124	O	126	O	131		133	137	139			
KFFD	133	O	134									
KFFR	131	O	132		134							
KFFRN	134	O	135									
KFS	126	O	446									
KGG	83	O	86	O	100		102					
KGGX	54	O	79		81							
KGGY	79	O	81	O	83		86					
KGGZ	85	O	86									
KLL	175	O	179	O	184		196	204				
KLR	179	O	210									
KNN	100	O	102	O	104		124	126				
KOA	139	O	140		144		147					
KOCOMP	272-1	O	275	O	277		278					
KOO	139	O	150		157		166	270	278	325		
KOT	140	O	144	O	171		172	272-1	275			
KQDIAG	326	O	327									
KQQ	325	O	326		333		335					
KRR	179	O	210									
KSS	126	O										

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

DATABLOCK NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

KTT	137	O	148	O	172	O	174		175		179	335
KTT1	140-1	O	145	O	148		172		272		274	
KVV	270	O	278	O	280		282					
KWW1	399	O	405									
KWX	399	O	402		406		407					
KXX	394	O	400	O	403	O	407	O	414			
KXXBAR	399	O	400		403		407					
LAMA	414	O	415		426		441		448			
LCHI	347	O	348									
LDIAG	158	O	159									
LDIAGL	197	O	198									
LLL	184	O	197		210							
LOO	150	O	158		171							
LVDIAG	291	O	292									
LVV	283	O	291		302							
LWW1	405	O	406									
M2GG	66	O	69									
MAA	251	O	333-1	O	336	O	340		352			
MAA1	222	O	223-1		225		228					
MAR	339	O	441									
MATAA	386	O										
MATPARM	22	O										
MATPOOL	1		66		339		356					
MCHI	339	O	347									
MCOMP	259	O	263	O	268							
MCOMPO	266	O	268									
MDICT	52	O	57									
MEA	349	O	350		441							
MECH	159	O	161									
MECHL	198	O	200									
MECHV	292	O	293									
MELM	52	O	57									
MFF	216	O	218	O	220		222					
MGG	67	O	69	O	73		212		214		355	
MGGX	57	O	67		69							
MI	414	O										
MLAM	339	O	349									
MLL	248	O	249									
MLR	248	O	249									
MMAA	340	O	352	O	363		386		394-1		398	
MNN	212	O	214	O	216		218					
MOA	222	O	223		225-1		229					
MOCOMP	260	O	264	O	266		268					
MOO	222	O	241		257		268		331			
MOQ1	225-1	O	229	O	235							
MOT	241	O	243		329							
MOT1	223	O	229	O	241		242		260		264	
MPT	1		52		59		355		448		458	
MQQ	331	O	333-1		336							
MQQ1	225	O	228	O	233							

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

DATABLOCK NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

MQT	329	O	330		336							
MQT1	228	O	230									
MR	246	O	249	O	369		414					
MRDIAG	369	O	371									
MRR	248	O	249									
MTQ	330	O	336									
MTT	220	O	243	O	246		248		251		336	
MTT1	223-1	O	228	O	242		259		263			
MTT2	242	O	243									
MVV	257	O	268	O	280		282		302			
MXX	394-1	O	398	O	414							
MYY	302	O										
NLFT	362	O										
NULLAZ	306	O	307-2									
NULLL	204	O	206									
NULLO	166	O	168									
NULLOQ	323	O	324									
NULLV	297	O	299									
OEF1	448	O	451									
OEIGS	414	O	415									
OELOF1	485	O	487									
OELOP1	485	O	490									
OEP	441	O	442									
OES1	448	O	451		453		458		495			
OES1G	458	O	463		468							
OES1G1	463	O	464									
OES1M	458	O	460									
OES1M1	460	O	461									
OES1X1	453	O	454									
OES2X	468	O	469									
OGPFB1	475	O	481		485							
OGPWG	73	O	74									
ONRGY1	475	O	477									
OPG1	448	O	451		468							
OPG2X	468	O	469									
OPHIA	426	O	428									
OQG1	448	O	451		468							
OQG2X	468	O	469									
OUG2X	468	O	469									
OUGV1	448	O	451		468							
P2G	356	O	359									
PBGPDT	32	O	33-2	O	38							
PCDB	1		11		34		493					
PECT	32	O	33-1	O	34							
PEQIN	32	O	33	O	34		38					
PG	434	O										
PG1	435	O	475									
PGS	357	O	359	O	362							
PGSX	355	O	357		359							
PHCOMPZ1	313-1	O	317	O	321							

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

DATABLOCK NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

PHIA	418	O	423	O	426	441	446				
PHIAZ	307-2	O	312	O							
PHICOMPZ	310	O	311		313-1	317					
PHIOZ	307-1	O	310	O	313	316					
PHIOZ1	313	O	316	O	321						
PHITZ	311	O	312								
PHIVZ	302	O	303		307	307-1	310				
PHIW	421	O	423								
PHIX	414	O	418		421	423					
PLOTX1	38	O	39								
PLOTX2	495	O	496								
PLTPAP	493	O	495								
PLTPAR	19-1	O	34	O	38						
PLTSETX	34	O	36								
POSTCDB	1										
PSDL	362	O									
PSIL	32	O	33-3	O	38						
PSMES	493	O	494								
PUGV	448	O	495		495						
PVT	1										
QG	19	O	446	O	448	475					
RBFF	129	O	130								
RBFFT	130	O	131								
RBGLOBAL	127	O	129								
RG	95	O	98								
SIL	24	O	32		33-3	43	47	54	57	61	64
	66		95		104	132	135	161	168	200	206
	293		299		303	328	355	356	362	396	458
	475		485		495						
SILD	362	O									
SLT	42	O	354		355	362					
TFPOOL	362	O									
TRL	362	O									
UCHI	347	O	348								
UGV	446	O	448		475						
USET	104	O	105		109	126	128	132	135	139	143
	145		161		168	179	188	200	206	214	218
	222		228		248	262	267	293	299	303	309
	311		312		328	344	362	375	377	394-3	396
	426		446								
USETB	95	O	98		102	104					
USETD	362	O									
V1	128	O	129								
VACOMPR	375	O	378		390	391	410				
VALCOMP	377	O	378								
VAQT	143	O	144		229	335	336	337			
VAXW	388	O	391	O	392	396	398	399	410	414	423
VAXW1	386	O	388		390						
VEC2R	315	O	316		317						
VELEM	50	O	475								
VLQ	378	O	379								

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

DATABLOCK NAMES *** D M A P C R O S S - R E F E R E N C E ***

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

VLQXW	390	O	391		411					
VMAT	350	O	351		352					
VMATT	351	O	352							
VTBCOMP	262	O	263		264		274		275	320-1
VVOC	309	O	310							
VVOCOMP	267	O	268		278					
VXCOMPR	394-3	O	410	O	414					
XYCDB	1		10		441		448		468	469
XYPLTS	469	O	471							
YS	104	O								
YSB	95	O	104							

TOTAL NAME COUNT = 247

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

PARAMETER NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

ASING	I	17	S	397															
AUTOSPC	BCD	104																	
BAILOUT	I	162	S	163		201		294											
BIGER	RS	453		460		463													
CARDNO	I	3	S	428	S	442	S	451	S	454	S	461	S	464	S	469	S	477	S
CB1	CS	90																	
CB2	CS	90																	
CK1	CS	81																	
CK2	CS	81																	
CK3	CS	86																	
CM1	CS	69																	
CM2	CS	69																	
COUPMASS	I	52																	
CP1	CS	359																	
CP2	CS	359																	
CURV	I	17		456															
CURVPLOT	I	17		467															
DETER	CS	150	S	184	S	280	S	282		283	S								
DJ	I	493																	
DOPT	I	468																	
DSIL	I	493	S	495															
DYNRED	I	112	S	113		122													
EPPRT	RS	104																	
EPSBIG	RS	302																	
EPSMALC	RS	280																	
EPSMALU	RS	302																	
EPZERO	RS	104																	
ERRNO	I	115	S	119	S	121	S	238	S	366	S	373	S	416	S	503			
ESE	I	8	S	14	S	14		16		476									
EST	I	49		50															
FACTOR	I	22																	
FORM	BCD	364	S																
GENEL	I	43	S																
GPECT	I	45	S	46															
GPFDR	I	16	S	474															
GPFO	I	9	S	13		13	S	15		16		479							
GRDPNT	I	72		73		127													
INVPOW	I	383	S	400		401		420											
JUMPPLOT	I	11	S	19-1		19-2		19-3		30		34	S	37		38	S	444	
		492		495															
K6ROT	RS	52																	
LUSET	I	24	S	38		43		66		85		95		339		355		356	
		362		495															
LUSETD	I	362	S																
MAXRAT	RS	150	S	154		184	S	193		283	S	287							
MAXRATIO	RS	154		161		193		200		287		293							
MESH	BCD	32																	
MIND	RD	150	S	184	S	283	S												
MODACC	I	182		432	S														
MPCF1	I	95	S	96		100		212											

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

PARAMETER NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

MPCF2	I	95	S	97		101		213											
MPCX	I	22																	
NBRCH	I	150	S	152		184	S	191		283	S	285							
NEIGV	I	413	S	414	S	417													
NEWSEQ	I	20		21		22													
NGERR	I	104	S	111															
NHBDY	I	32	S	33		33-1		33-2		33-3									
NINTPTS	I	458																	
NM	I	230	S	233	S	235	S												
NOA	I	95	S	106	S	107		342		343									
NOAOMIT	I	402	S	403		404													
NOARED	I	381	S	386	S	387		392	S	394		394-1		394-2		394-3		395	
		418		419															
NOASET	I	105	S	106		306													
NOB2GG	I	66	S	78		88		89											
NOBGG	I	78	S																
NOBGGX	I	6	S	59	S	60		78											
NOBSET	I	105	S	259		260		261		272		272-1		273		319			
NOCSET	I	105	S	256		305		370	S	371	S								
NODDRMM	I	438	S	473															
NODLT	I	362	S																
NODYNRED	I	113	S	254															
NOEED	I	362	S	367															
NOELOF	I	483		485		486													
NOELOP	I	483		485		489													
NOFRL	I	362	S																
NOGENL	I	43	S	77		83		84		85									
NOGPDT	I	24	S	25															
NOGPF	I	12		480															
NOGRAV	I	42																	
NOGSET	I	105	S	106															
NOK2GG	I	66	S	76		79		80											
NOK4GG	I	52	S	63		64													
NOKGG	I	76	S	77	S	77													
NOKGGX	I	4	S	52	S	53		76											
NOL	I	95	S																
NOLSET	I	105	S	120		177		246		247		376							
NOM2GG	I	66	S	67		68		71											
NOMGEN	I	339	S	340		341		440											
NOMGG	I	71	S	363	S														
NOMGGX	I	5	S	52	S	56		71											
NONLFT	I	362	S																
NOPREQ	I	426	S	444															
NOPSDL	I	362	S																
NOQSET	I	105	S	114		140		140-1		141		174		223		223-1		224	
		251		252		253		280		323									
NOSET	I	95	S	104	S	107	S												
NOSIMP	I	43	S	44															
NOSORT1	I	433	S																
NOSORT2	I	448	S																

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

PARAMETER NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

NOSPC	I	15	S	19		446													
NOTFL	I	362	S																
NOTRL	I	362	S																
NOTSET	I	105	S	142		225		225-1		227		333		333-1		333-2		334	
NOUE	I	362	S																
NOVSET	I	105	S																
NOXYCDB	I	10	S	466															
NOYSET	I	280	S	281		302		302		304									
NOZSET	I	304	S	306		315		315											
NP	I	147	S	148		149		152	S	153		154	S	155		166	S	167	
		186	S	187		191	S	192		193	S	194		204	S	205		232	S
		234		234	S	236		256	S	257		258		270		271		285	S
		286		287	S	288		297	S	298		305	S	307		307-1		307-2	
		308		356	S	357		358		371	S	372	S	372		374		382	S
		383		384		384	S	385		385	S	386		426	S	427		469	S
		470																	
NSIL	I	34	S	38															
NSKIP	I	92	S	95	S														
NUMOUT	I	453		460		463													
OG	I	458																	
OMIT	I	95	S	105	S	116		137		138		220		221		323			
OPT	BCD	133																	
OUTOPT	I	458																	
PFILE	I	18	S	38	S	469	S	495	S										
PJUMP	I	444	S	445															
PLTFLG	I	18	S	38	S	495													
POW	I	150	S	184	S	283	S												
POWER	RS	133																	
PRGPST	BCD	104																	
PROUT	I	27		28															
PRPHIVZ	RS	303		328															
QNOTNULL	I	226	S	230	S	232		233	S	234		235	S	236	S	236		237	
		237	S	239															
REACT	I	95	S	105	S	107		175		176		178		209		245		256	
		280		302		305		313		313-1		314		315		368		388	
		389		409															
REPEAT	I	95	S																
S1	I	452		457	S														
S1G	I	457																	
S1M	I	457		459															
SEQOUT	I	22																	
SETOUT	BCD	365	S																
SING	I	104	S	150	S	151		184	S	185		186		283	S	284			
SINGLE	I	95	S	104	S	105	S	124		125		216		217					
SKPEDR	I	483	S	484															
SMALL	RS	135																	
SOLTYPE	BCD	437	S	441		448		475											
SPCGEN	I	104																	
SPCREQ	I	7	S	12		12	S	15											
SRTELTYP	I	453		460		463													
SRTOPT	I	453		460		463													

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

PARAMETER NAMES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

START	I	22			
SUBID	I	95			
SUPER	I	22			
TINY	RS	475			
USETPRT	I	108	109		
USETSEL	I	109			
WTMASS	RS	57	73	339	

TOTAL NAME COUNT = 145

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3

BCD CONSTANT VALUES * * * D M A P C R O S S - R E F E R E N C E * * *

INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

A	105	139	143	145	222	228	312	375	377
	396								
ADD	232	234	236	304	385				
ALL	132	135	161	168	200	206	293	299	303
	328	396							
AND	15	16	71	76	77	78	107	256	305
	444	483							
B	105	262	311						
C	105	311							
CEIG	439								
COLUMN	157	158	196	197	290	291	326	369	
COMP	128	262	267	309	375	377			
DIAGOFF	425	447							
DIAGON	430								
DIRECT	426								
DMAP	160	199	503						
DTI	7	8	9	112					
EQ	106	383	384						
F	128	132	135	139	222				
G	22	105	128						
GT	152	191	237	285					
H	161	168	200	206	293	299	303	328	396
HSET	365								
L	105	179	200	206	248	377			
LE	154	193	287						
MODAL	280	364							
MODES	414								
NE	186	372							
NOP	17	45	162	432	433	457			
NOT	12	13	14	113	438				
NULL	147	392	402						
O	105	139	161	168	222	267	309		
PEAK	448								
PRES	10	11	363						
PSET	469								
Q	105	143	145	228	312	328			
R	105	179	248	375					
REIG	426	437	446						
RESULTAN	127								
S	105								
SET1	469								
STATICS	355								
T	105	127	143	145	179	228	248	262	311
	312								
TRAILER	230	233	235	371					
USET	105	109	188						
V	105	267	293	299	303	309			
VECTOR	127								
X	132	135							
XXXXXXXX	500								

TOTAL NAME COUNT = 46

N A S T R A N S O U R C E P R O G R A M C O M P I L A T I O N SUBDMAP = SOL3
BCD CONSTANT VALUES * * * D M A P C R O S S - R E F E R E N C E * * *
INTERPRETED FROM THE OSCAR. NEGATIVE DMAP INDICATES A NON EXECUTABLE INSTRUCTION

```
+-------------------------------------------------+
+   KEY TO FLAGS IN DMAP CROSS REFERENCE LISTING  +
+                                                 +
+ *  - SIGNIFIES THAT A VARIABLE IS DB-STORED     +
+ L  - REPRESENTS THE LABEL STATEMENT DMAP NUMBER +
+ O  - SIGNIFIES THAT THE A DATABLOCK IS AN OUTPUT +
+ S  - SIGNIFIES THAT THE PARAMETER IS SAVED      +
+-------------------------------------------------+
```

C A S E C O N T R O L D E C K E C H O

```
CARD
COUNT
 1      SEALL = ALL
 2      SUPER = ALL
 3      TITLE = FREE-FREE EIGENVALUE SOLUTION  1ST 7 MODES  MODIFIED GIVENS
 4      ECHO = SORT
 5      MAXLINES = 999999999
 6      SUBCASE 1
 7      $ SUBCASE NAME : FREE-FREE
 8         SUBTITLE=FREE-FREE
 9         METHOD = 1
10         VECTOR(SORT1,REAL)=ALL
11         SPCFORCES(SORT1,REAL)=ALL
12     BEGIN BULK
```

INPUT BULK DATA CARD COUNT = 75

S O R T E D B U L K D A T A E C H O

```
CARD
COUNT      .  1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
   1-      CBAR    335101  1000    335023  335001  0.      0.      1.
   2-      CBAR    335102  1000    335023  335002  0.      0.      1.
   3-      CBAR    335103  1000    335023  335003  0.      0.      1.
   4-      CBAR    335104  1000    335023  335004  0.      0.      1.
   5-      CBAR    335105  1000    335023  335005  0.      0.      1.
   6-      CBAR    335106  1000    335023  335006  0.      0.      1.
   7-      CBAR    335107  1000    335023  335007  0.      0.      1.
   8-      CBAR    335108  1000    335023  335008  0.      0.      1.
   9-      CBAR    335109  1000    335023  335009  0.      0.      1.
  10-      CBAR    335110  1000    335023  335010  0.      0.      1.
  11-      CBAR    335111  1000    335023  335011  0.      0.      1.
  12-      CBAR    335112  1000    335023  335012  0.      0.      1.
  13-      CBAR    335113  1000    335023  335013  0.      0.      1.
  14-      CBAR    335114  1000    335023  335014  0.      0.      1.
  15-      CBAR    335115  1000    335023  335015  0.      0.      1.
  16-      CBAR    335116  1000    335023  335016  0.      0.      1.
  17-      CBAR    335117  1000    335023  335017  0.      0.      1.
  18-      CBAR    335118  1000    335023  335018  0.      0.      1.
  19-      CBAR    335119  1000    335023  335019  0.      0.      1.
  20-      CBAR    335120  1000    335023  335020  0.      0.      1.
  21-      CBAR    335121  1000    335023  335021  0.      0.      1.
  22-      CBAR    335122  1000    335023  335022  0.      0.      1.
  23-      CONM2   335123  335023          49.4468                         +       C
  24-      *       C1.888563       -.001325        3.485918        .502773 *       D
  25-      *       D.0274          2.363304
  26-      CORD2R  1               -.010262-.010262-.013487-.010262-.010262.986513 +       G
  27-      +       G.989738 -.010262-.013487
  28-      EIGR    1       MGIV                            7
  29-      GRID    1               -.010262-.010262-.013487
  30-      GRID    335001  1       .686613 .010262 .013487
  31-      GRID    335002  1       .589992 .010262 .013487
  32-      GRID    335003  1       .49337  .010262 .013487
  33-      GRID    335004  1       .396748 .010262 .013487
  34-      GRID    335005  1       .300127 .010262 .013487
  35-      GRID    335006  1       .203505 .010262 .013487
  36-      GRID    335007  1       .106884 .010262 .013487
  37-      GRID    335008  1       .010262 .010262 .013487
  38-      GRID    335009  1       .686613 .326289 .013487
  39-      GRID    335010  1       .589992 .326289 .013487
  40-      GRID    335011  1       .49337  .326289 .013487
  41-      GRID    335012  1       .396748 .326289 .013487
  42-      GRID    335013  1       .300127 .326289 .013487
  43-      GRID    335014  1       .203505 .326289 .013487
  44-      GRID    335015  1       .106884 .312014 .013487
  45-      GRID    335016  1       .010262 .312014 .013487
  46-      GRID    335017  1       .686613 .089256 .013487
  47-      GRID    335018  1       .686613 .16825  .013487
  48-      GRID    335019  1       .686613 .247244 .013487
  49-      GRID    335020  1       .010262 .0857   .013487
  50-      GRID    335021  1       .010262 .161138 .013487
```

S C R T E D B U L K D A T A E C H O

```
CARD
COUNT        .  1  ..   2  ..   3  ..   4  ..   5  ..   6  ..   7  ..   8  ..   9  ..  10  .
  51-        GRID    335022  1       .010262 .236576 .013487
  52-        GRID    335023  1       .407087 .161325 .245444
  53-        MAT1    *30             6.894757+23     2.65183+23      .3              *       E
  54-        *       E2.77-4                                                         *       F
  55-        +       F
  56-        PARAM   AUTOSPC NO
  57-        PARAM   COUPMASS0
  58-        PARAM   GRDPNT  1
  59-        PARAM   K6ROT   0.
  60-        PARAM   NOCOMPS -1
  61-        PARAM   PATVER  3.
  62-        PARAM   POST    -1
  63-        PBAR    *1000           30              .032258         2.081-5         *       A
  64-        *       A2.081-5        2.081-5                                         *       B
  65-        +       B.254   .254
  66-        SUPORT  335023  123456
             ENDDATA

      TOTAL COUNT=        67
```

SEQUENCE PROCESSOR OUTPUT

THERE ARE 24 POINTS DIVIDED INTO 1 GROUP(S).

CONNECTION DATA

ELEMENT TYPE	NUMBER	ASSEMBLY TIME(SEC)
BAR	22	0.02

TOTAL MATRIX ASSEMBLY TIME FOR 22 ELEMENTS IS 0.02 SECONDS.

ORIGINAL PERFORMANCE DATA

SUPER(GROUP) ID	NO. GRIDS	AV. CONNECTIVITY	C-AVERAGE	C-RMS	C-MAXIMUM	P-GROUPS	P-AVERAGE	DECOMP TIME(SEC) (6.0 DOF/GRID)
0	24	2.83	1.92	1.94	2	2	1.00	0.000

RESEQUENCED PERFORMANCE DATA

SUPER(GROUP) ID	NO. GRIDS	AV. CONNECTIVITY	C-AVERAGE	C-RMS	C-MAXIMUM	P-GROUPS	P-AVERAGE	DECOMP TIME(SEC) (6.0 DOF/GRID)	METHOD
0	24	2.83	10.67	12.58	22	0	0.00	0.057	ACTIVE
0 -- AS THE ORIGINAL SEQUENCE FOR THE ABOVE GROUP IS BETTER, IT WILL BE RETAINED AND USED. --								0.000	ORIGINAL

O U T P U T F R O M G R I D P O I N T W E I G H T G E N E R A T O R

REFERENCE POINT = 1

M O

* 4.944687E+01	0.000000E+00	0.000000E+00	0.000000E+00	1.213643E+01	-7.977016E+00	*
* 0.000000E+00	4.944687E+01	0.000000E+00	-1.213643E+01	0.000000E+00	2.012918E+01	*
* 0.000000E+00	0.000000E+00	4.944687E+01	7.977016E+00	-2.012918E+01	0.000000E+00	*
* 0.000000E+00	-1.213643E+01	7.977016E+00	6.154270E+00	-3.246014E+00	-5.443356E+00	*
* 1.213643E+01	0.000000E+00	-2.012918E+01	-3.246014E+00	1.465906E+01	-1.985309E+00	*
* -7.977016E+00	2.012918E+01	0.000000E+00	-5.443356E+00	-1.985309E+00	1.184452E+01	*

S

* 1.000000E+00	0.000000E+00	0.000000E+00	*
* 0.000000E+00	1.000000E+00	0.000000E+00	*
* 0.000000E+00	0.000000E+00	1.000000E+00	*

DIRECTION MASS AXIS SYSTEM (S)	MASS	X-C.G.	Y-C.G.	Z-C.G.
X	4.944687E+01	0.000000E+00	1.613250E-01	2.454438E-01
Y	4.944687E+01	4.070870E-01	0.000000E+00	2.454438E-01
Z	4.944687E+01	4.070870E-01	1.613250E-01	0.000000E+00

I(S)

* 1.888566E+00	-1.324892E-03	5.027733E-01	*
* -1.324892E-03	3.485922E+00	2.740014E-02	*
* 5.027733E-01	2.740014E-02	2.363307E+00	*

I(Q)

* 1.569849E+00			*
*	3.486725E+00		*
*		2.681220E+00	*

Q

* -8.445669E-01	9.892425E-03	5.353584E-01	*
* -7.072242E-03	9.995360E-01	-2.962654E-02	*
* -5.354031E-01	-2.880778E-02	-8.441050E-01	*

G R I D P O I N T S I N G U L A R I T Y T A B L E

POINT ID	TYPE	FAILED DIRECTION	STIFFNESS RATIO	OLD USET EXCLUSIVE	OLD USET UNION	NEW USET EXCLUSIVE	NEW USET UNION
1	G	1	0.00E+00	B	L	B	L
1	G	2	0.00E+00	B	L	B	L
1	G	3	0.00E+00	B	L	B	L
1	G	4	0.00E+00	B	L	B	L
1	G	5	0.00E+00	B	L	B	L
1	G	6	0.00E+00	B	L	B	L

*** USER INFORMATION MESSAGE 3035 FOR DATA BLOCK KLR

SUPPORT PT.NO.	EPSILON	STRAIN ENERGY
1	2.2270931E-16	0.0000000E+00
2	2.2270931E-16	-3.3554432E+07
3	2.2270931E-16	-6.7108864E+07
4	2.2270931E-16	-6.5536000E+05
5	2.2270931E-16	1.3107200E+06
6	2.2270931E-16	3.9321600E+05

EPSILONS LARGER THAN 0.001 ARE FLAGGED WITH ASTERISKS

Report 10372A

VAXW

POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE	POINT	VALUE
COLUMN 1									
1 T1	1.00000E+00	1 T2	1.00000E+00	1 T3	1.00000E+00	1 R1	1.00000E+00	1 R2	1.00000E+00
1 R3	1.00000E+00	335001 R1	1.00000E+00	335001 R2	1.00000E+00	335001 R3	1.00000E+00	335002 R1	1.00000E+00
335002 R2	1.00000E+00	335002 R3	1.00000E+00	335003 R1	1.00000E+00	335003 R2	1.00000E+00	335003 R3	1.00000E+00
335004 R1	1.00000E+00	335004 R2	1.00000E+00	335004 R3	1.00000E+00	335005 R1	1.00000E+00	335005 R2	1.00000E+00
335005 R3	1.00000E+00	335006 R1	1.00000E+00	335006 R2	1.00000E+00	335006 R3	1.00000E+00	335007 R1	1.00000E+00
335007 R2	1.00000E+00	335007 R3	1.00000E+00	335008 R1	1.00000E+00	335008 R2	1.00000E+00	335008 R3	1.00000E+00
335009 R1	1.00000E+00	335009 R2	1.00000E+00	335009 R3	1.00000E+00	335010 R1	1.00000E+00	335010 R2	1.00000E+00
335010 R3	1.00000E+00	335011 R1	1.00000E+00	335011 R2	1.00000E+00	335011 R3	1.00000E+00	335012 R1	1.00000E+00
335012 R2	1.00000E+00	335012 R3	1.00000E+00	335013 R1	1.00000E+00	335013 R2	1.00000E+00	335013 R3	1.00000E+00
335014 R1	1.00000E+00	335014 R2	1.00000E+00	335014 R3	1.00000E+00	335015 R1	1.00000E+00	335015 R2	1.00000E+00
335015 R3	1.00000E+00	335016 R1	1.00000E+00	335016 R2	1.00000E+00	335016 R3	1.00000E+00	335017 R1	1.00000E+00
335017 R2	1.00000E+00	335017 R3	1.00000E+00	335018 R1	1.00000E+00	335018 R2	1.00000E+00	335018 R3	1.00000E+00
335019 R1	1.00000E+00	335019 R2	1.00000E+00	335019 R3	1.00000E+00	335020 R1	1.00000E+00	335020 R2	1.00000E+00
335020 R3	1.00000E+00	335021 R1	1.00000E+00	335021 R2	1.00000E+00	335021 R3	1.00000E+00	335022 R1	1.00000E+00
335022 R2	1.00000E+00	335022 R3	1.00000E+00						

*** USER INFORMATION MESSAGE 5458, MODIFIED GIVENS METHOD IS FORCED BY USER .

REAL EIGENVALUES

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIANS	CYCLES	GENERALIZED MASS	GENERALIZED STIFFNESS
1	7	0.0	0.0	0.0	1.000000E+00	0.0
2	8	0.0	0.0	0.0	1.000000E+00	0.0
3	5	0.0	0.0	0.0	1.000000E+00	0.0
4	1	0.0	0.0	0.0	1.000000E+00	0.0
5	4	0.0	0.0	0.0	1.000000E+00	0.0
6	6	0.0	0.0	0.0	1.000000E+00	0.0
7	9	1.758102E+26	1.325934E+13	2.110290E+12	1.000000E+00	1.758102E+26
8	11	1.758102E+26	1.325934E+13	2.110290E+12	0.0	0.0
9	12	1.759798E+26	1.326574E+13	2.111308E+12	0.0	0.0
10	13	1.759798E+26	1.326574E+13	2.111308E+12	0.0	0.0
11	15	2.046127E+26	1.430429E+13	2.276598E+12	0.0	0.0
12	17	2.046127E+26	1.430429E+13	2.276598E+12	0.0	0.0
13	16	2.047192E+26	1.430801E+13	2.277190E+12	0.0	0.0
14	18	2.047192E+26	1.430801E+13	2.277191E+12	0.0	0.0
15	10	2.158402E+26	1.469150E+13	2.338225E+12	0.0	0.0
16	14	2.158402E+26	1.469150E+13	2.338225E+12	0.0	0.0
17	23	3.465092E+26	1.861476E+13	2.962631E+12	0.0	0.0
18	24	3.465092E+26	1.861476E+13	2.962631E+12	0.0	0.0
19	25	3.469786E+26	1.862736E+13	2.964637E+12	0.0	0.0
20	20	3.469787E+26	1.862736E+13	2.964637E+12	0.0	0.0
21	22	3.803655E+26	1.950296E+13	3.103992E+12	0.0	0.0
22	21	3.803655E+26	1.950296E+13	3.103992E+12	0.0	0.0
23	3	4.022666E+26	2.005659E+13	3.192105E+12	0.0	0.0
24	19	4.022666E+26	2.005659E+13	3.192105E+12	0.0	0.0
25	27	4.963550E+26	2.227903E+13	3.545817E+12	0.0	0.0
26	28	4.963550E+26	2.227903E+13	3.545817E+12	0.0	0.0
27	26	5.123214E+26	2.263452E+13	3.602395E+12	0.0	0.0
28	30	5.123214E+26	2.263452E+13	3.602395E+12	0.0	0.0
29	31	5.530495E+26	2.351701E+13	3.742847E+12	0.0	0.0
30	32	5.530496E+26	2.351701E+13	3.742847E+12	0.0	0.0
31	29	6.424166E+26	2.534594E+13	4.033931E+12	0.0	0.0
32	33	6.424166E+26	2.534594E+13	4.033931E+12	0.0	0.0
33	34	6.911115E+26	2.628900E+13	4.184024E+12	0.0	0.0
34	35	6.911115E+26	2.628900E+13	4.184024E+12	0.0	0.0
35	37	7.352432E+26	2.711537E+13	4.315545E+12	0.0	0.0
36	36	7.352433E+26	2.711537E+13	4.315545E+12	0.0	0.0
37	38	7.950996E+26	2.819751E+13	4.487773E+12	0.0	0.0
38	39	7.950996E+26	2.819751E+13	4.487773E+12	0.0	0.0
39	41	1.127041E+27	3.357143E+13	5.343059E+12	0.0	0.0
40	40	1.127041E+27	3.357143E+13	5.343059E+12	0.0	0.0
41	50	1.231154E+27	3.508780E+13	5.584396E+12	0.0	0.0
42	49	1.231154E+27	3.508780E+13	5.584396E+12	0.0	0.0
43	51	1.242290E+27	3.524614E+13	5.609597E+12	0.0	0.0
44	48	1.242290E+27	3.524614E+13	5.609597E+12	0.0	0.0
45	45	1.363186E+27	3.692134E+13	5.876214E+12	0.0	0.0
46	47	1.363186E+27	3.692134E+13	5.876214E+12	0.0	0.0
47	46	1.463948E+27	3.826157E+13	6.089519E+12	0.0	0.0
48	42	1.463948E+27	3.826157E+13	6.089519E+12	0.0	0.0
49	44	1.636378E+27	4.045217E+13	6.438163E+12	0.0	0.0
50	43	1.636378E+27	4.045217E+13	6.438163E+12	0.0	0.0

R E A L E I G E N V A L U E S

MODE NO.	EXTRACTION ORDER	EIGENVALUE	RADIANS	CYCLES	GENERALIZED MASS	GENERALIZED STIFFNESS
51	53	2.126729E+28	1.458331E+14	2.321006E+13	0.0	0.0
52	52	2.127427E+28	1.458570E+14	2.321386E+13	0.0	0.0
53	56	2.294258E+28	1.514681E+14	2.410689E+13	0.0	0.0
54	55	2.294651E+28	1.514810E+14	2.410896E+13	0.0	0.0
55	54	2.356258E+28	1.535011E+14	2.443045E+13	0.0	0.0
56	60	2.985479E+28	1.727854E+14	2.749965E+13	0.0	0.0
57	58	2.987501E+28	1.728439E+14	2.750896E+13	0.0	0.0
58	57	3.127931E+28	1.768596E+14	2.814807E+13	0.0	0.0
59	2	3.216723E+28	1.793522E+14	2.854480E+13	0.0	0.0
60	61	3.573163E+28	1.890281E+14	3.008476E+13	0.0	0.0
61	62	3.630178E+28	1.905303E+14	3.032383E+13	0.0	0.0
62	63	3.771713E+28	1.942090E+14	3.090932E+13	0.0	0.0
63	68	4.065042E+28	2.016195E+14	3.208874E+13	0.0	0.0
64	69	4.216292E+28	2.053361E+14	3.268026E+13	0.0	0.0
65	67	4.348827E+28	2.085384E+14	3.318992E+13	0.0	0.0
66	66	4.522384E+28	2.126590E+14	3.384573E+13	0.0	0.0
67	72	5.384266E+28	2.320402E+14	3.693035E+13	0.0	0.0
68	71	5.627465E+28	2.372228E+14	3.775517E+13	0.0	0.0
69	70	5.652860E+28	2.377574E+14	3.784027E+13	0.0	0.0
70	65	5.921533E+28	2.433420E+14	3.872908E+13	0.0	0.0
71	64	6.136482E+28	2.477192E+14	3.942574E+13	0.0	0.0
72	59	6.487815E+28	2.547119E+14	4.053866E+13	0.0	0.0

SUBCASE 1

EIGENVALUE = 0.000000E+00
CYCLES = 0.000000E+00 REAL EIGENVECTOR NO. 1

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
335001	G	1.422101E-01	3.529928E-16	-7.163178E-17	8.984951E-16	-1.665335E-16	1.165734E-15
335002	G	1.422101E-01	1.457700E-16	-2.549355E-16	9.855304E-16	1.221245E-15	0.0
335003	G	1.422101E-01	-1.577588E-32	8.125166E-18	-2.190012E-17	-2.220446E-16	5.551115E-17
335004	G	1.422101E-01	1.307172E-17	-7.729280E-18	8.209888E-17	1.110223E-16	-1.110223E-16
335005	G	1.422101E-01	-1.117809E-17	-3.029100E-18	-3.636965E-17	-1.110223E-16	5.551115E-17
335006	G	1.422101E-01	0.0	0.0	0.0	0.0	0.0
335007	G	1.422101E-01	-4.002652E-16	7.307222E-17	-9.345012E-16	-1.665335E-16	1.304512E-15
335008	G	1.422101E-01	1.119379E-16	-6.029113E-16	7.499697E-16	-1.998401E-15	2.775558E-17
335009	G	1.422101E-01	1.227013E-32	-1.810872E-17	-2.815504E-17	1.110223E-16	2.775558E-17
335010	G	1.422101E-01	2.056304E-16	6.808516E-17	7.721886E-16	1.665335E-16	7.216450E-16
335011	G	1.422101E-01	7.712875E-17	6.551236E-17	4.866116E-16	-2.220446E-16	0.0
335012	G	1.422101E-01	9.213899E-18	7.055919E-18	6.103985E-17	0.0	0.0
335013	G	1.422101E-01	-1.145350E-17	-8.145542E-18	-6.490176E-17	0.0	0.0
335014	G	1.422101E-01	2.319905E-16	9.131220E-17	8.436243E-16	0.0	-7.216450E-16
335015	G	1.422101E-01	-7.688075E-18	-4.994496E-18	-2.282787E-17	0.0	2.775558E-17
335016	G	1.422101E-01	-1.161772E-16	-6.053550E-16	-7.575506E-16	-1.970646E-15	0.0
335017	G	1.422101E-01	0.0	0.0	2.465190E-32	5.551115E-17	-2.775558E-17
335018	G	1.422101E-01	7.968115E-18	3.975712E-16	5.229433E-17	-2.109424E-15	1.734723E-18
335019	G	1.422101E-01	-1.016501E-16	-4.461875E-16	-6.666025E-16	2.220446E-15	2.775558E-17
335020	G	1.422101E-01	0.0	0.0	0.0	0.0	0.0
335021	G	1.422101E-01	-8.453961E-21	2.961978E-17	-5.324619E-20	1.110223E-16	-2.710505E-20
335022	G	1.422101E-01	-2.315242E-16	1.057385E-15	1.788467E-16	3.969047E-15	9.853229E-16
335023	G	1.422101E-01	0.0	0.0	0.0	0.0	0.0

SUBCASE 1

EIGENVALUE = 0.000000E+00
CYCLES = 0.000000E+00 REAL EIGENVECTOR NO. 2

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
335001	G	-1.578851E-17	1.422101E-01	8.656414E-18	-5.551115E-17	1.204351E-17	-5.551115E-17
335002	G	1.105195E-16	1.422101E-01	1.454612E-16	-4.996004E-16	-7.118752E-16	0.0
335003	G	-1.304032E-23	1.422101E-01	3.164413E-17	-3.330669E-16	-4.871634E-17	-8.326673E-17
335004	G	-1.304032E-23	1.422101E-01	-2.718085E-17	2.220446E-16	-5.493659E-18	-6.938894E-18
335005	G	-1.263080E-16	1.422101E-01	1.217465E-16	-7.771561E-16	7.208356E-16	-1.110223E-16
335006	G	1.420965E-16	1.422101E-01	-1.803696E-16	6.106227E-16	-8.852432E-16	5.551115E-17
335007	G	-1.894620E-16	1.422101E-01	3.062732E-16	-5.551115E-16	1.222439E-15	-5.551115E-17
335008	G	1.499907E-16	1.422101E-01	-3.029393E-16	3.885781E-16	-9.932240E-16	0.0
335009	G	-1.304032E-23	1.422101E-01	-2.671743E-18	0.0	7.038760E-18	0.0
335010	G	2.684044E-16	1.422101E-01	1.954274E-16	3.330669E-16	-1.284202E-15	-6.106227E-16
335011	G	2.210390E-16	1.422101E-01	4.599265E-17	-1.110223E-16	-9.366729E-16	-6.661338E-16
335012	G	-1.578851E-17	1.422101E-01	1.131338E-16	9.992007E-16	8.934357E-17	1.734723E-17
335013	G	3.157698E-17	1.422101E-01	-3.213540E-17	-2.220446E-16	-1.745942E-16	-2.775558E-17
335014	G	1.105195E-16	1.422101E-01	-1.953255E-16	-7.771561E-16	-8.010659E-16	1.110223E-16
335015	G	7.894236E-18	1.422101E-01	-1.119380E-17	0.0	-4.673328E-17	0.0
335016	G	-2.210390E-16	1.422101E-01	2.902817E-16	1.110223E-16	1.067153E-15	4.996004E-16
335017	G	-1.026252E-16	1.422101E-01	-1.094723E-16	5.551115E-17	5.950984E-16	-1.110223E-16
335018	G	-4.934036E-19	1.422101E-01	-5.153438E-19	0.0	2.937764E-18	0.0
335019	G	-1.304032E-23	1.422101E-01	-1.058937E-18	0.0	3.186890E-18	0.0
335020	G	-1.304032E-23	1.422101E-01	4.467334E-18	-5.551115E-17	1.225441E-17	5.551115E-17
335021	G	7.696187E-21	1.422101E-01	-1.221293E-20	0.0	-4.710425E-20	0.0
335022	G	-1.304032E-23	1.422101E-01	-4.689702E-19	0.0	-1.206774E-18	0.0
335023	G	-1.304032E-23	1.422101E-01	0.0	0.0	0.0	0.0

SUBCASE 1

EIGENVALUE = 0.000000E+00
CYCLES = 0.000000E+00 REAL EIGENVECTOR NO. 3

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
335001	G	-3.473470E-16	-2.605102E-16	1.422101E-01	-2.220446E-16	1.443290E-15	-1.214379E-15
335002	G	-4.307414E-23	3.157699E-17	1.422101E-01	1.665335E-16	1.110223E-16	7.870201E-17
335003	G	4.105009E-16	-4.736550E-17	1.422101E-01	-7.216450E-16	-1.999401E-15	1.033522E-15
335004	G	3.157695E-17	-6.151722E-24	1.422101E-01	0.0	-1.422473E-16	9.325013E-17
335005	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	0.0
335006	G	4.894434E-16	-2.210390E-16	1.422101E-01	-1.110223E-16	-2.164935E-15	1.511010E-15
335007	G	7.894244E-17	-4.105009E-16	1.422101E-01	-1.082467E-15	2.775558E-16	1.215852E-15
335008	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	3.081488E-33
335009	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	0.0
335010	G	-1.578850E-16	3.789239E-16	1.422101E-01	1.498801E-15	1.110223E-16	1.249470E-15
335011	G	-2.210390E-16	1.420965E-16	1.422101E-01	5.551115E-16	2.604228E-16	8.261856E-16
335012	G	1.578845E-17	-2.210390E-16	1.422101E-01	-1.443290E-15	-1.006140E-16	-5.902321E-18
335013	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	0.0
335014	G	-4.307414E-23	-2.368275E-17	1.422101E-01	-1.110223E-16	-1.110223E-16	5.905525E-17
335015	G	4.578664E-16	-2.052505E-16	1.422101E-01	-1.387779E-15	-2.886580E-15	-6.642111E-17
335016	G	7.894244E-17	3.591883E-16	1.422101E-01	6.661338E-16	2.775558E-16	-9.900193E-16
335017	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	0.0
335018	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	0.0
335019	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	-2.465190E-32
335020	G	-3.157704E-17	1.598585E-16	1.422101E-01	2.498002E-16	5.551115E-17	-4.550178E-16
335021	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	0.0
335022	G	6.631168E-16	3.947124E-17	1.422101E-01	-5.273559E-16	-4.163336E-15	-4.533352E-16
335023	G	-4.307414E-23	-6.151722E-24	1.422101E-01	0.0	0.0	0.0

EIGENVALUE = 0.000000E+00
CYCLES = 0.000000E+00 REAL EIGENVECTOR NO. 4

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
335001	G	2.912768E-16	1.687878E-01	-1.099239E-01	7.276691E-01	-1.054712E-15	9.992007E-16
335002	G	1.609438E-16	1.687878E-01	-1.099239E-01	7.276691E-01	-1.054712E-15	0.0
335003	G	-1.388535E-16	1.687878E-01	-1.099239E-01	7.276691E-01	5.551115E-16	-5.551115E-16
335004	G	3.786903E-19	1.687878E-01	-1.099239E-01	7.276691E-01	-1.387779E-16	-1.526557E-16
335005	G	-1.237058E-16	1.687878E-01	-1.099239E-01	7.276691E-01	1.110223E-15	1.665335E-16
335006	G	-2.511988E-16	1.687878E-01	-1.099239E-01	7.276691E-01	1.665335E-15	-5.551115E-17
335007	G	2.855966E-16	1.687878E-01	-1.099239E-01	7.276691E-01	-1.054712E-15	1.498801E-15
335008	G	-1.771962E-16	1.687878E-01	-1.099239E-01	7.276691E-01	2.220446E-16	-1.221245E-15
335009	G	-1.432716E-16	1.687878E-01	1.200392E-01	7.276691E-01	-1.665335E-16	1.554312E-15
335010	G	1.685174E-16	1.687878E-01	1.200392E-01	7.276691E-01	-9.992007E-16	-3.885781E-16
335011	G	-9.845997E-17	1.687878E-01	1.200392E-01	7.276691E-01	5.551115E-17	8.326673E-16
335012	G	5.049222E-18	1.687878E-01	1.200392E-01	7.276691E-01	-7.632783E-17	6.938894E-17
335013	G	-1.009848E-17	1.687878E-01	1.200392E-01	7.276691E-01	8.604228E-16	-8.326673E-16
335014	G	-3.345118E-17	1.687878E-01	1.200392E-01	7.276691E-01	-7.771561E-16	1.720846E-15
335015	G	-1.293865E-17	1.687878E-01	1.096517E-01	7.276691E-01	-1.110223E-16	3.885781E-16
335016	G	-3.302503E-16	1.687878E-01	1.096517E-01	7.276691E-01	1.665335E-15	5.551115E-16
335017	G	-9.435720E-17	1.687878E-01	-5.244238E-02	7.276691E-01	6.106227E-16	-1.110223E-16
335018	G	4.279992E-18	1.687878E-01	5.039108E-03	7.276691E-01	-4.163336E-17	-2.220446E-16
335019	G	-1.623640E-16	1.687878E-01	6.252061E-02	7.276691E-01	1.137979E-15	-5.551115E-16
335020	G	-1.251260E-16	1.687878E-01	-5.502998E-02	7.276691E-01	4.440892E-16	-8.326673E-16
335021	G	-4.266855E-19	1.687878E-01	-1.360729E-04	7.276691E-01	2.385245E-18	-4.996004E-16
335022	G	3.028742E-16	1.687878E-01	5.475784E-02	7.276691E-01	-1.665335E-15	-7.771561E-16
335023	G	-1.048829E-23	-1.248764E-07	-2.688779E-09	7.276691E-01	0.0	0.0

SUBCASE 1

EIGENVALUE = 0.000000E+00
CYCLES = 0.000000E+00 REAL EIGENVECTOR NO. 5

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
335001	G	-1.242362E-01	-8.716184E-05	-1.496576E-01	-3.757675E-04	5.356007E-01	-1.665335E-15
335002	G	-1.242362E-01	-8.716184E-05	-9.790731E-02	-3.757675E-04	5.356007E-01	2.220446E-16
335003	G	-1.242362E-01	-8.716184E-05	-4.615651E-02	-3.757675E-04	5.356007E-01	0.0
335004	G	-1.242362E-01	-8.716184E-05	5.594303E-03	-3.757675E-04	5.356007E-01	-2.775558E-16
335005	G	-1.242362E-01	-8.716184E-05	5.734459E-02	-3.757675E-04	5.356007E-01	-4.996004E-16
335006	G	-1.242362E-01	-8.716184E-05	1.090954E-01	-3.757675E-04	5.356007E-01	1.665335E-15
335007	G	-1.242362E-01	-8.716184E-05	1.608457E-01	-3.757675E-04	5.356007E-01	1.193490E-15
335008	G	-1.242362E-01	-8.716184E-05	2.125965E-01	-3.757675E-04	5.356007E-01	4.996004E-16
335009	G	-1.242362E-01	-8.716184E-05	-1.497764E-01	-3.757675E-04	5.356007E-01	5.828671E-16
335010	G	-1.242362E-01	-8.716184E-05	-9.802607E-02	-3.757675E-04	5.356007E-01	-2.442491E-15
335011	G	-1.242362E-01	-8.716184E-05	-4.627526E-02	-3.757675E-04	5.356007E-01	-4.440892E-16
335012	G	-1.242362E-01	-8.716184E-05	5.475550E-03	-3.757675E-04	5.356007E-01	-2.775558E-16
335013	G	-1.242362E-01	-8.716184E-05	5.722583E-02	-3.757675E-04	5.356007E-01	-1.110223E-16
335014	G	-1.242362E-01	-8.716184E-05	1.089766E-01	-3.757675E-04	5.356007E-01	-2.775558E-16
335015	G	-1.242362E-01	-8.716184E-05	1.607323E-01	-3.757675E-04	5.356007E-01	-2.581269E-15
335016	G	-1.242362E-01	-8.716184E-05	2.124831E-01	-3.757675E-04	5.356007E-01	-1.582068E-15
335017	G	-1.242362E-01	-8.716184E-05	-1.496873E-01	-3.757675E-04	5.356007E-01	2.220446E-16
335018	G	-1.242362E-01	-8.716184E-05	-1.497170E-01	-3.757675E-04	5.356007E-01	1.249001E-16
335019	G	-1.242362E-01	-8.716184E-05	-1.497467E-01	-3.757675E-04	5.356007E-01	-5.551115E-16
335020	G	-1.242362E-01	-8.716184E-05	2.125681E-01	-3.757675E-04	5.356007E-01	-6.245005E-16
335021	G	-1.242362E-01	-8.716184E-05	2.125398E-01	-3.757675E-04	5.356007E-01	-1.084202E-19
335022	G	-1.242362E-01	-8.716184E-05	2.125115E-01	-3.757675E-04	5.356007E-01	-1.817990E-15
335023	G	9.191527E-08	6.448604E-11	-3.330808E-08	-3.757675E-04	5.356007E-01	0.0

SUBCASE 1

EIGENVALUE = 0.000000E+00
CYCLES = 0.000000E+00 REAL EIGENVECTOR NO. 6

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
335001	G	9.997089E-02	2.285740E-01	-2.838720E-02	1.783004E-01	5.196676E-03	6.697623E-01
335002	G	9.997089E-02	1.638609E-01	-2.788509E-02	1.783004E-01	5.196676E-03	6.697623E-01
335003	G	9.997089E-02	9.914713E-02	-2.738298E-02	1.783004E-01	5.196676E-03	6.697623E-01
335004	G	9.997089E-02	3.443336E-02	-2.688086E-02	1.783004E-01	5.196676E-03	6.697623E-01
335005	G	9.997089E-02	-3.027974E-02	-2.637875E-02	1.783004E-01	5.196676E-03	6.697623E-01
335006	G	9.997089E-02	-9.499350E-02	-2.587664E-02	1.783004E-01	5.196676E-03	6.697623E-01
335007	G	9.997089E-02	-1.597066E-01	-2.537453E-02	1.783004E-01	5.196676E-03	6.697623E-01
335008	G	9.997089E-02	-2.244204E-01	-2.487242E-02	1.783004E-01	5.196676E-03	6.697623E-01
335009	G	-1.116921E-01	2.285740E-01	2.796054E-02	1.783004E-01	5.196676E-03	6.697623E-01
335010	G	-1.116921E-01	1.638609E-01	2.846264E-02	1.783004E-01	5.196676E-03	6.697623E-01
335011	G	-1.116921E-01	9.914713E-02	2.896476E-02	1.783004E-01	5.196676E-03	6.697623E-01
335012	G	-1.116921E-01	3.443336E-02	2.946687E-02	1.783004E-01	5.196676E-03	6.697623E-01
335013	G	-1.116921E-01	-3.027974E-02	2.996898E-02	1.783004E-01	5.196676E-03	6.697623E-01
335014	G	-1.116921E-01	-9.499350E-02	3.047109E-02	1.783004E-01	5.196676E-03	6.697623E-01
335015	G	-1.021312E-01	-1.597066E-01	2.842796E-02	1.783004E-01	5.196676E-03	6.697623E-01
335016	G	-1.021312E-01	-2.244204E-01	2.893008E-02	1.783004E-01	5.196676E-03	6.697623E-01
335017	G	4.706369E-02	2.285740E-01	-1.430253E-02	1.783004E-01	5.196676E-03	6.697623E-01
335018	G	-5.843507E-03	2.285740E-01	-2.178768E-04	1.783004E-01	5.196676E-03	6.697623E-01
335019	G	-5.875071E-02	2.285740E-01	1.386678E-02	1.783004E-01	5.196676E-03	6.697623E-01
335020	G	4.944537E-02	-2.244204E-01	-1.142180E-02	1.783004E-01	5.196676E-03	6.697623E-01
335021	G	-1.080160E-03	-2.244204E-01	2.028829E-03	1.783004E-01	5.196676E-03	6.697623E-01
335022	G	-5.160569E-02	-2.244204E-01	1.547945E-02	1.783004E-01	5.196676E-03	6.697623E-01
335023	G	3.366619E-09	1.105468E-08	-9.820157E-10	1.783004E-01	5.196676E-03	6.697623E-01

SUBCASE 1

EIGENVALUE = 1.758102E+26
CYCLES = 2.110290E+12 R E A L E I G E N V E C T O R N O . 7

POINT ID.	TYPE	T1	T2	T3	R1	R2	R3
1	G	0.0	0.0	0.0	0.0	0.0	0.0
335001	G	1.126439E-04	9.280787E-05	3.081671E-05	1.891907E-04	-3.404109E-04	2.578408E-04
335002	G	8.767227E-05	5.549303E-05	-5.035525E-06	1.587926E-04	-2.518730E-04	1.464417E-04
335003	G	8.090916E-05	4.003232E-05	-2.766054E-05	1.485088E-04	-2.308285E-04	1.118043E-04
335004	G	8.004072E-05	3.045804E-05	-4.874695E-05	1.484132E-04	-2.328462E-04	1.002996E-04
335005	G	8.415792E-05	2.280852E-05	-7.266668E-05	1.567105E-04	-2.591849E-04	1.008437E-04
335006	G	9.757531E-05	1.630397E-05	-1.089245E-04	1.829902E-04	-3.380762E-04	1.129177E-04
335007	G	1.477010E-04	9.409911E-06	-2.036201E-04	2.681612E-04	-6.285059E-04	1.646455E-04
335008	G	-3.471391E+02	1.404136E+01	5.847305E+02	-5.451278E+02	2.002765E+03	-3.717212E+02
335009	G	7.330244E-05	8.034927E-05	1.017313E-04	2.723935E-04	-3.915703E-04	1.212076E-04
335010	G	5.815346E-05	4.951026E-05	4.383183E-05	1.765124E-04	-2.607332E-04	7.422498E-05
335011	G	5.425606E-05	3.656127E-05	1.532276E-05	1.441807E-04	-2.268931E-04	6.177693E-05
335012	G	5.408305E-05	2.784628E-05	-7.122005E-06	1.291263E-04	-2.213634E-04	5.536051E-05
335013	G	5.714255E-05	2.064416E-05	-2.985238E-05	1.173482E-04	-2.348845E-04	4.642657E-05
335014	G	6.706936E-05	1.412046E-05	-6.067942E-05	9.517149E-05	-2.868009E-04	2.912535E-05
335015	G	1.008075E-04	6.801400E-06	-1.316047E-04	3.452560E-05	-4.800760E-04	-2.792512E-06
335016	G	4.998197E-02	-3.194699E-03	-8.758223E-02	-8.915343E-02	-2.970355E-01	-4.004293E-02
335017	G	8.879579E-05	7.559373E-05	3.927454E-05	1.727697E-04	-3.114527E-04	1.789343E-04
335018	G	7.719648E-05	6.988394E-05	5.108755E-05	1.773906E-04	-3.092684E-04	1.443091E-04
335019	G	7.173403E-05	7.067813E-05	6.879656E-05	2.025664E-04	-3.297947E-04	1.275298E-04
335020	G	4.667128E-04	-2.434718E-05	-7.903000E-04	4.392035E-04	-2.699189E-03	3.429126E-04
335021	G	3.230818E-04	-1.848909E-05	-5.523027E-04	9.349691E-05	-1.894407E-03	1.186922E-04
335022	G	3.831801E-04	-2.387803E-05	-6.626773E-04	-2.113119E-04	-2.282787E-03	-3.910919E-05
335023	G	1.517338E-05	-6.137174E-07	-2.555837E-05	1.177252E-04	-1.932370E-04	7.587176E-05

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12b. DISTRIBUTION CODE
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13. ABSTRACT (*Maximum 200 words*)

This report presents the description for the NSATRAN finite element model for the AMSU A-1 module.

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