

Advanced CAE Applications for Professionals

Software that works — for you.SM

UAI/NASTRAN eBASE ARCHIVE Schemata Description for Version 20.1

 **UNIVERSAL ANALYTICS, INC.**

Publication ND-003

**© 1993-1999 UNIVERSAL ANALYTICS, INC.
Torrance, California USA
All Rights Reserved**

*First Edition, April 1994
Second Edition, September 1995
Third Edition, December 1997
Fourth Edition, December 1998*

Restricted Rights Legend:

The use, duplication, or disclosure of the information contained in this document is subject to the restrictions set forth in your Software License Agreement with Universal Analytics, Inc. Use, duplication, or disclosure by the Government of the United States is subject to the restrictions set forth in Subdivision (b)(3)(ii) of the Rights in Technical Data and Computer Software clause, 48 CFR 252.227-7013.

The information contained herein is subject to change without notice. Universal Analytics Inc. does not warrant that this document is free of errors or defects and assumes no liability or responsibility to any person or company for direct or indirect damages resulting from the use of any information contained herein.

UNIVERSAL ANALYTICS, INC.

**3625 Del Amo Blvd., Suite 370
Torrance, CA 90503
Tel: (310) 214-2922
FAX: (310) 214-3420**

FOREWORD

This manual presents the schemata definitions for the entities saved on the **UAI/NASTRAN** Archive Database. You create such a database by using the Case Control command **ARCHIVE**, which is documented in the *User's Reference Manual*. The Archive database may then be queried using the *eShell* Interactive Interface program, or, on some computers, the Windows-based **UAI/DataMaster** program.

This page is intentionally blank.

TABLE OF CONTENTS

MODEL DEFINITION	1	MAT1NL1	16
ELEMENT CONNECTIONS	1	MAT2	17
BAR_GEOM	1	MAT3	17
BEAM_GEOM	1	MAT4	17
BUSH_GEOM	2	MAT5	18
CONM1_GEOM	2	MAT8	18
CONEAX_GEOM	3	MAT9	19
GENEL_GEOM	3	MATF	19
CONM2_GEOM	3	MATT1	19
CONROD_GEOM	3	MATT2	19
DAMP1_GEOM	4	MATT3	19
DAMP2_GEOM	4	MATT4	20
DAMP3_GEOM	4	MATT5	20
DAMP4_GEOM	4	MATT9	20
ELAS1_GEOM	4	ELEMENT PROPERTIES	21
ELAS2_GEOM	4	PACABS	21
ELAS3_GEOM	5	PACBAR	21
ELAS4_GEOM	5	PBAR	21
ELASNL_GEOM	5	PBAR1	22
FLSTR_GEOM	5	PBEAM	22
GAP_GEOM	5	PBEAM1	26
HBDY_GEOM	6	PBUSH	26
HACAB_GEOM	6	PCOMP	27
HACBR_GEOM	7	PCOMP1	27
HEXA_GEOM	7	PCOMP2	28
MASS1_GEOM	8	PCONEAX	28
MASS2_GEOM	8	PDAMP	28
MASS3_GEOM	8	PELAS	29
MASS4_GEOM	8	PGAP	29
PENTA_GEOM	8	PHBDY	29
PILE_GEOM	9	PMASS	29
PIPE_GEOM	9	PPILE	29
PLOTEL	9	PPILE1	30
QUAD4_GEOM	10	PPIPE	30
QUADR_GEOM	10	PROD	30
QUAD8_GEOM	11	PSHEAR	31
ROD_GEOM	11	PSHELL	31
SHEAR_GEOM	11	PSOIL	32
TETRA_GEOM	12	PSOLID	32
TORDRG_GEOM	12	PTORDRG	32
TRAPAX_GEOM	12	PTRAPAX	32
TRAPRG_GEOM	12	PTRIAAX	33
TRIA3_GEOM	13	PTUBE	33
TRIAR_GEOM	13	PTWIST	33
TRIA6_GEOM	14	PVISC	33
TRIAAX_GEOM	14	VIEW	33
TRIARG_GEOM	14	VIEWOP	34
TUBE_GEOM	15	GRID POINT DATA	35
TWIST_GEOM	15	FLFREE_GEOM	35
VISC_GEOM	15	GRID	35
MATERIAL PROPERTIES	16	RINGFL	35
MAT1	16	SEQGP	35
MAT1NL	16	SPOINT	35

COORDINATE SYSTEMS	36
CSTM_COORD	36
BOUNDARY CONSTRAINTS AND REDUCTIONS	37
ASET	37
ASET1	37
ASETAX	37
ASETAX1	37
BDYC	37
BDYS	37
BDYS1	38
CONCT	38
CONCT1	38
DYNRED	38
GPFIELD	39
GTRAN	39
MPC	39
MPCADD	39
MPCAX	40
MPCS	40
OMIT	40
OMIT1	40
OMITAX	40
POINTAX	41
PRESAX	41
PRESPT	41
RBAR	42
RBE1	42
RBE2	42
RBE3	42
RELES	43
RELES1	43
RROD	43
RSPLINE	43
RTRPLT	44
SPC	44
SPC1	44
SPCADD	44
SPCAX	45
SPCD	45
SPCS	45
SPCS1	45
SPCSD	45
SUPAX	45
SUPPORT	46
SUPPORTS	46
TRANS	46
USET	46
USET1	46
APPLIED LOADS	47
ACCEL_LOAD	47
ACCEL1_LOAD	47
COMBINE_LOAD	47
FORCE_LOAD	47
FORCE1_LOAD	48
FORCE2_LOAD	48
FORCEAX_LOAD	48

GRAV_LOAD	48
LOADC_LOAD	49
LOADCYH_LOAD	49
LOADCYN_LOAD	49
MOMENT_LOAD	49
MOMENT1_LOAD	50
MOMENT2_LOAD	50
MOMAX_LOAD	50
PLOAD_LOAD	50
PLOAD1_LOAD	51
PLOAD2_LOAD	51
PLOAD4_LOAD	51
QBDY1_LOAD	51
QBDY2_LOAD	52
QHBDY_LOAD	52
QVECT_LOAD	52
QVOL_LOAD	52
RFORCE_LOAD	53
RFORCE1_LOAD	53
SLOAD_LOAD	53
TEMP_LOAD	54
TEMPAX_LOAD	54
TEMPD_LOAD	54
TEMPP1_LOAD	54
TEMPP2_LOAD	54
TEMPP3_LOAD	55
TEMPRB_LOAD	55
VECLOAD	55
DIRECT INPUT TABLES	56
FSIDATA	56
TABDMP1	56
TABDMP2	56
TABLED1	56
TABLED2	57
TABLED3	57
TABLED4	57
TABLEM1	57
TABLEM2	57
TABLEM3	57
TABLEM4	58
TABLENL	58
TABRND1	58
DYNAMICS PROBLEM DEFINITION	59
ACSRCE	59
DAREA	59
DAREAS	59
DELAY	59
DELAYS	60
DLOAD	60
DLOAD1	60
DPHASE	60
DPHASES	60
EIGB	61
EIGC	61
EIGR	62
EPOINT	62
NOLIN1	62

NOLIN2	62	FLFREQ	88
NOLIN3	63	FLFREQ1	88
NOLIN4	63	FLSOLVE	89
RANDPS	63	FLVEL	89
RANDT1	63	SET1	89
RLOAD1	64	SET2	89
RLOAD2	64	SPLINE1_GEOM	89
SEQEP	64	SPLINE2_GEOM	90
SHOCK	64		
TF	65	SOLUTION SUMMARY	91
TIC	65	GRID_RESULTS	91
TICRV	65	ELEMENT_RESULTS	92
TICS	65	EIGEN_SUMMARY	92
TICTV	66	CEIGEN_SUMMARY	92
TLOAD1	66	FREQ_SUMMARY	92
TLOAD2	66	TIME_SUMMARY	93
GENERAL PROBLEM CONTROL DATA	67	PLY_STRESS_SUMMARY	93
CASE_CONTROL	67	PLY_STRAIN_SUMMARY	93
DSFACT	78	HSET	93
FREQ	78	UENERGY	94
FREQ1	79	KENERGY	94
FREQ2	79	ANALYSIS_SUMMARY	94
FREQ3	79	MESH_ERROR	94
NLSOLVE	80		
PARAM	80	GRID POINT WEIGHT SUMMARY	95
TSTEP	80	GPW_MASS	95
AXISYMMETRIC MODELING DATA	81	GPW_BPTRANS	95
AXIC	81	GPW_CG	95
RINGAX	81	GPW_INERTIA	95
SECTAX	81	GPW_MOMENTS	96
DESIGN CONSTRAINTS	82	GPW_PPTRANS	96
DCDYNRG	82		
DCELEM	82	GRID SOLUTION RESULTS	97
DCFREQ	82	GPFORCE	97
DCGRID	83	ELEM_GPFORCE	97
DCGRIDM	83	ELEMSUM_GPFORCE	97
DCMODE	83	GPSSRF	98
DCMODEL	83	GPSVOL	98
DCMODR	84	GPUSRF	99
DESIGN VARIABLES	85	GPUVOL	99
DVGRID	85	GPSDIS	100
DVGRIDS	85	GPUDIS	100
DVLINK	85	DISP	101
DVMATH	85	VELO	101
DVPROP	86	ACCEL	102
DVPROPS	86	GPFSPC	102
AERODYNAMICS	87	GPFASPC	103
AEFACT	87	GPFMPC	103
AEREFS	87	LOAD	104
AEUNITS	87	PRESS	104
ATMOS	87	GPKEN	105
ATMOSBD	88		
AERO1_GEOM	88	LINEAR ELEMENT SOLUTION RESULTS	106
FLFACT	88	STRESSES	106
		AXIF2_STRESS	106

AXIF3_STRESS	106	TRIARG_STRAIN	130
AXIF4_STRESS	107	TUBE_STRAIN	131
BAR_STRESS	107	TWIST_STRAIN	131
BEAM_STRESS	108	FORCES 132	
CONROD_STRESS	108	BAR_FORCE	132
ELAS1_STRESS	108	BEAM_FORCE	132
ELAS2_STRESS	109	BMST_FORCE	133
ELAS3_STRESS	109	CONROD_FORCE	133
ELAS4_STRESS	109	DAMP1_FORCE	133
HEXA_STRESS	110	DAMP2_FORCE	134
PENTA_STRESS	110	DAMP3_FORCE	134
PILE_STRESS	111	DAMP4_FORCE	134
PIPE_STRESS	111	ELAS1_FORCE	134
QUAD4_STRESS	112	ELAS2_FORCE	135
QUADR_STRESS	112	ELAS3_FORCE	135
QUAD8_STRESS	113	ELAS4_FORCE	135
ROD_STRESS	113	GAP_FORCE	135
SHEAR_STRESS	113	PILE_FORCE	136
TETRA_STRESS	114	PIPE_FORCE	136
TORDRG_STRESS	114	QUAD4_FORCE	137
TRAPAX_STRESS	115	QUADR_FORCE	137
TRAPRG_STRESS	115	QUAD8_FORCE	138
TRIA3_STRESS	116	ROD_FORCE	138
TRIAR_STRESS	116	SHEAR_FORCE	139
TRIA6_STRESS	117	TRAPAX_FORCE	139
TRIAAX_STRESS	117	TRIA3_FORCE	140
TRIARG_STRESS	117	TRIAR_FORCE	140
TUBE_STRESS	118	TRIA6_FORCE	141
TWIST_STRESS	118	TRIAAX_FORCE	141
STRAINS 119		TUBE_FORCE	141
AXIF2_STRAIN	119	TWIST_FORCE	142
AXIF3_STRAIN	119	KINETIC ENERGY 143	
AXIF4_STRAIN	120	AXIF2_KENERGY	143
BAR_STRAIN	120	AXIF3_KENERGY	143
BEAM_STRAIN	121	AXIF4_KENERGY	143
CONROD_STRAIN	121	BAR_KENERGY	143
ELAS1_STRAIN	121	BEAM_KENERGY	144
ELAS2_STRAIN	122	CONROD_KENERGY	144
ELAS3_STRAIN	122	ELAS1_KENERGY	144
ELAS4_STRAIN	122	ELAS2_KENERGY	144
HEXA_STRAIN	123	ELAS3_KENERGY	145
PENTA_STRAIN	123	ELAS4_KENERGY	145
PILE_STRAIN	124	HEXA_KENERGY	145
PIPE_STRAIN	124	MASS1_KENERGY	145
QUAD4_STRAIN	125	MASS2_KENERGY	146
QUADR_STRAIN	125	MASS3_KENERGY	146
QUAD8_STRAIN	126	MASS4_KENERGY	146
ROD_STRAIN	126	PENTA_KENERGY	146
SHEAR_STRAIN	126	PILE_KENERGY	147
TETRA_STRAIN	127	PIPE_KENERGY	147
TORDRG_STRAIN	127	QUAD4_KENERGY	147
TRAPAX_STRAIN	128	QUADR_KENERGY	147
TRAPRG_STRAIN	128	QUAD8_KENERGY	148
TRIA3_STRAIN	129	ROD_KENERGY	148
TRIAR_STRAIN	129	SHEAR_KENERGY	148
TRIA6_STRAIN	130	TETRA_KENERGY	148
TRIAAX_STRAIN	130	TORDRG_KENERGY	149

TRAPAX_KENERGY	149	HBDY_FLUX	164
TRAPRG_KENERGY	149	PILE_FLUX	164
TRIA3_KENERGY	149	PIPE_FLUX	164
TRIA6_KENERGY	150	QUAD4_FLUX	164
TRIAA6_KENERGY	150	QUADR_FLUX	165
TRIAAX_KENERGY	150	QUAD8_FLUX	165
TRIARG_KENERGY	150	ROD_FLUX	165
TUBE_KENERGY	151	SHEAR_FLUX	165
TWIST_KENERGY	151	TRAPAX_FLUX	166
STRAIN ENERGY	152	TRIA3_FLUX	166
AXIF2_UENERGY	152	TRIA6_FLUX	166
AXIF3_UENERGY	152	TRIAAX_FLUX	167
AXIF4_UENERGY	152	TUBE_FLUX	167
BAR_UENERGY	152	TWIST_FLUX	167
BEAM_UENERGY	153		
CONROD_UENERGY	153	COMPOSITE ELEMENT SOLUTION RESULTS . .	168
ELAS1_UENERGY	153	COMPOSITE ELEMENT STRESSES	168
ELAS2_UENERGY	153	QUAD4_PLY_STRESS	168
ELAS3_UENERGY	154	QUADR_PLY_STRESS	168
ELAS4_UENERGY	154	QUAD8_PLY_STRESS	168
HEXA_UENERGY	154	TRIA3_PLY_STRESS	169
MASS1_UENERGY	154	TRIA6_PLY_STRESS	169
MASS2_UENERGY	155		
MASS3_UENERGY	155	COMPOSITE ELEMENT STRAINS	170
MASS4_UENERGY	155	QUAD4_PLY_STRAIN	170
PENTA_UENERGY	155	QUADR_PLY_STRAIN	170
PILE_UENERGY	156	QUAD8_PLY_STRAIN	170
PIPE_UENERGY	156	TRIA3_PLY_STRAIN	170
QUAD4_UENERGY	156	TRIA6_PLY_STRAIN	171
QUADR_UENERGY	156		
QUAD8_UENERGY	157	NONLINEAR ELEMENT SOLUTION RESULTS . .	172
ROD_UENERGY	157	NONLINEAR STRESSES	172
SHEAR_UENERGY	157	BAR_NLSTRESS	172
TETRA_UENERGY	157	BEAM_NLSTRESS	172
TORDRG_UENERGY	158	ELASNL_NLSTRESS	173
TRAPAX_UENERGY	158	GAP_NLSTRESS	173
TRAPRG_UENERGY	158	HEXA_NLSTRESS	173
TRIA3_UENERGY	158	PENTA_NLSTRESS	174
TRIA6_UENERGY	159	PILE_NLSTRESS	174
TRIAA6_UENERGY	159	QUAD4_NLSTRESS	175
TRIAAX_UENERGY	159	QUADR_NLSTRESS	175
TRIARG_UENERGY	159	ROD_NLSTRESS	176
TUBE_UENERGY	160	TETRA_NLSTRESS	176
TWIST_UENERGY	160	TRIA3_NLSTRESS	177
		TRIA6_NLSTRESS	177
FLUXES	161	NONLINEAR STRAINS	178
BAR_FLUX	161	BAR_NLSTRAIN	178
BEAM_FLUX	161	BEAM_NLSTRAIN	178
CONROD_FLUX	161	ELASNL_NLSTRAIN	179
DAMP1_FLUX	161	GAP_NLSTRAIN	179
DAMP2_FLUX	162	HEXA_NLSTRAIN	179
DAMP3_FLUX	162	PENTA_NLSTRAIN	180
DAMP4_FLUX	162		
ELAS1_FLUX	162		
ELAS2_FLUX	163		
ELAS3_FLUX	163		
ELAS4_FLUX	163		
GAP_FLUX	163		

PILE_NLSTRAIN	180	FREQCONA	195
QUAD4_NLSTRAIN	181	GRIDCONA	195
QUADR_NLSTRAIN	181	PROPCONA	196
ROD_NLSTRAIN	182	WGHTCONA	197
TETRA_NLSTRAIN	182		
TRIA3_NLSTRAIN	183	RANDOM RESPONSE RESULTS	198
TRIA3_NLSTRAIN	183	AVE_PSD	198
NONLINEAR FORCES	184	FUNC_PSD	198
BAR_NLFORCE	184	AVE_AUTO	198
BEAM_NLFORCE	184	FUNC_AUTO	198
ELASNL_NLFORCE	185		
PILE_NLFORCE	185	MODAL CHECKING DATA	199
GAP_NLFORCE	185	TOTAL_EMASS_FRACTION	199
QUAD4_NLFORCE	186	MODAL_EMASS	199
QUADR_NLFORCE	186	ASET_MASS	200
ROD_NLFORCE	187	MODAL_EMASS_FRACTION	200
TRIA3_NLFORCE	187	EMASS_PFACTORS	201
TRIA3_NLFORCE	188	TOTAL_UENERGY_FRACTION	201
		MODAL_UENERGY	201
MDO SOLUTION RESULTS	189	RES_UENERGY	201
DVVEC	189	MODAL_UENERGY_FRACTION	201
MDVTABLE	189	UENERGY_PFACTORS	202
OPTIMHIST	190		
PDVTABLE	190	FLUTTER	203
		FLUT_VG	203
SENSITIVITY ANALYSIS RESULTS	191	FLUT_VG_REAL	203
DGRDCONA	191	FLUT_CROSSINGS	204
DSAGVAL	192	MATCH_POINT_CROSSINGS	204
DSARESP	192	FLUT_SWEEP	205
DSASENS	192	AERO_TOC	205
ELEMCONA	193	FLUT_COND	205
EVCCONA	194		

MODEL DEFINITION

ELEMENT CONNECTIONS

ENTITY: BAR_GEOM

ENTITY TYPE: Relation

DESCRIPTION: BAR element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
PID	INT	Identification number of a PBAR or PBAR1 property entry.	
GID1	INT	GRID point identification numbers of connection points.	
GID2	INT		
V	RSP (3)	Components of a vector, V, originating at End A. This vector, along with the vector from End A to End B, is used to determine the orientation of the element coordinate system. These vectors define the X-Y plane (also called Plane 1) of the element coordinate system. Vi must be specified in the output coordinate system for GID1.	
GID0	INT	GRID point identification number used to define the element orientation. Direction of orientation vector is End A to GID0.	
EFLG	INT	Identifier Flag	
		0	Vector, V
		1	Grid point identification
PINA	INT	Pin flags for BAR Ends A and B respectively.	
PINB	INT		
WA	RSP (3)	Components of offset vectors, measured in the displacement coordinate systems at GRID points GID1 and GID2, from the GRID points to the end points of the axis of shear center.	
WB	RSP (3)		

ENTITY: BEAM_GEOM

ENTITY TYPE: Relation

DESCRIPTION: BEAM element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
PID	INT	Identification number of a PBEAM or PBEAM1 property entry.	
GID1	INT	GRID point identification numbers of connection points.	
GID2	INT		
V	RSP (3)	Components of a vector, V, originating at End A. This vector, along with the vector from End A to End B, is used to determine the orientation of the element coordinate system. These vectors define the X-Y plane (also called Plane 1) of the element coordinate system. Vi must be specified in the output coordinate system for GID1.	
GID0	INT	GRID point identification number used to define element orientation. Direction of orientation vector is End A to GID0.	
EFLG	INT	Identifier Flag	
		0	Vector, V
		1	Grid point identification
PINA	INT	Pin flags for BEAM Ends A and B respectively.	
PINB	INT		
WA	RSP (3)	Components of offset vectors, measured in the displacement coordinate systems at GRID points GID1 and GID2, from the GRID points to the end points of the axis of shear center.	
WB	RSP (3)		
WIDA	INT	SCALAR or GRID point identification numbers for warping variables at Ends A and B.	
WIDB	INT		

ENTITY: BUSH_GEOM

ENTITY TYPE: Relation

DESCRIPTION: BUSHing element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PBUSH property entry.
GID1	INT	GRID point identification numbers of connection points.
GID2	INT	
V	RSP (3)	Components of a vector, V, originating at GID1 that defines the orientation of the element. Vi must be specified in the output coordinate system for GID1.
GID0	INT	GRID point identification number used to define element orientation.
EFLG	INT	Identifier Flag
		0 Vector, V
		1 Grid point identification
CID	INT	Identification number of a coordinate system which defines the element orientation.

ENTITY: CONM1_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Symmetric mass matrix at a GRID point for a structural model.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GID	INT	GRID point identification number.
CID	INT	Coordinate system identification number.
M11	RSP	Mass matrix values.
M21	RSP	
M22	RSP	
M31	RSP	
M32	RSP	
M33	RSP	
M41	RSP	
M42	RSP	
M43	RSP	
M44	RSP	
M51	RSP	
M52	RSP	
M53	RSP	
M54	RSP	
M55	RSP	
M61	RSP	
M62	RSP	
M63	RSP	
M64	RSP	
M65	RSP	
M66	RSP	

ENTITY: CONEAX_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Defines an axisymmetric conical shell element, CONEAX, for a struct

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PCONEAX property entry.
RID1	INT	Axisymmetric ring identification numbers.
RID2	INT	

ENTITY: GENEL_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Defines a GENEL for a structural model.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GIREF	INT	Independent grid reference.
GDREF	INT	Dependent grid reference.
KZREF	INT	KZ reference.
SREF	INT	S reference.
M	INT	M size.
N1	INT	N1 size.
I	INT	I size.
N2	INT	N2 size.

ENTITY: CONM2_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Concentrated mass at a GRID point of a structural model.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GID	INT	GRID point identification number.
CID	INT	Coordinate system identification number.
M	RSP	Mass Value.
V	RSP (3)	Offset distances to the center of gravity of the mass from GID in the coordinate system CID.
I11	RSP	Mass moments of inertia measured at the center of gravity of the mass, in the coordinate system CID.
I12	RSP	
I22	RSP	
I31	RSP	
I32	RSP	
I33	RSP	

ENTITY: CONROD_GEOM

ENTITY TYPE: Relation

DESCRIPTION: ROD element connection and its properties.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
MID	INT	Material identification number.
GID1	INT	GRID point identification numbers of connection points.
GID2	INT	
A	RSP	Area of rod.
J	RSP	Torsional constant.
C	RSP	Coefficient for torsional stress determination.
NSM	RSP	Nonstructural mass per unit length.

ENTITY: DAMP1_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Damping element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PDAMP property entry.
GID1	INT	GRID or SCALAR point identification numbers.
GID2	INT	
DOF1	INT	Single degree of freedom.
DOF2	INT	

ENTITY: DAMP2_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Damping element and it damping value.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
B	RSP	The damping value.
GID1	INT	GRID or SCALAR point identification numbers.
GID2	INT	
DOF1	INT	Single degree of freedom.
DOF2	INT	

ENTITY: DAMP3_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Damping element which is connected to Scalar points.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PDAMP property entry.
SID1	INT	SCALAR point identification numbers.
SID2	INT	

ENTITY: DAMP4_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Damping element which is connected to Scalar points and its property.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
B	RSP	The damping value.
SID1	INT	SCALAR point identification numbers.
SID2	INT	

ENTITY: ELAS1_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Spring element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PELAS property entry.
GID1	INT	GRID or SCALAR point identification numbers.
GID2	INT	
DOF1	INT	Single degree of freedom.
DOF2	INT	

ENTITY: ELAS2_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Spring element connection and the spring value

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
K	RSP	The spring stiffness value.
GID1	INT	GRID or SCALAR point identification numbers.
GID2	INT	
DOF1	INT	Single degree of freedom.
DOF2	INT	
GE	RSP	Damping coefficient.
S	RSP	Stress coefficient.

ENTITY: ELAS3_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Spring element connection which is only connected to Scalar points.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PELAS property entry.
SID1	INT	SCALAR point identification numbers.
SID2	INT	

ENTITY: ELAS4_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Spring element connection and its stiffness value which is connected only to Scalar points.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
K	RSP	The spring stiffness value.
SID1	INT	SCALAR point identification numbers.
SID2	INT	

ENTITY: ELASNL_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear spring element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
TNL	INT	Table identification number that defines the element force-deflection curve.	
K	RSP	Constant stiffness value.	
EFLG	INT	Identifier Flag	
		0	Constant stiffness, K
		1	Table identification number, TNL
GID1	INT	GRID or SCALAR point identification numbers.	
GID2	INT		
DOF1	INT	Single degree of freedom.	
DOF2	INT		

ENTITY: FLSTR_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Defines a list of structural elements which are in contact with a fluid element in fluid/structure interaction models.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EIDF	INT	Identification number of a fluid element in contact with one or more structural elements.
EID	INT	Identification number of structural elements in contact with the referenced fluid element.

ENTITY: GAP_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Gap, cable, and/or friction element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
PID	INT	Identification number of a PGAP property entry.	
GID1	INT	GRID point identification numbers of connection points.	
GID2	INT		
V	RSP (3)	Components of a vector V, originating at GRID point GID1 that defines the element orientation.	
GID0	INT	GRID point identification number used to define the element orientation.	
EFLG	INT	Identifier Flag	
		0	Vector, V
		1	Grid point identification
CID	INT	Identification number of a coordinate system that defines the element orientation.	

ENTITY: HBDY_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Boundary Element, HBDY, which is used for heat flux, thermal vector flux, convection and/or radiation in a heat transfer model.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PHBDY property
TYPE	CHAR(8)	Boundary area shape. (POINT, LINE, REV, AREA3, AREA4, ELCYL)
GID1	INT	GRID point identification numbers of primary connected points.
GID2	INT	
GID3	INT	
GID4	INT	
GIDA1	INT	GRID or SCALAR point identification numbers of associated ambient points.
GIDA2	INT	
GIDA3	INT	
GIDA4	INT	
V	RSP(3)	Vector in the Basic Coordinate System used for element orientation.
VIEWID	INT	Identification number of a VIEW entry which controls radiation effects.

ENTITY: HACAB_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Three-dimensional acoustic absorber, HACAB, element for fluid-structure interaction analyses.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PACABS property entry.
GID1	INT	GRID point identification numbers defining the element.
GID2	INT	
GID3	INT	
GID4	INT	
GID5	INT	
GID6	INT	
GID7	INT	
GID8	INT	
GID9	INT	Midside GRID point identification number defining the element.
GID10	INT	
GID11	INT	
GID12	INT	
GID13	INT	
GID14	INT	
GID15	INT	
GID16	INT	
GID17	INT	
GID18	INT	
GID19	INT	
GID20	INT	

ENTITY: HACBR_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Defines a three-dimensional acoustic barrier, HACBR, element for fluid-structure interaction analyses.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PACBAR property entry.
GID1	INT	GRID point identification numbers defining the element.
GID2	INT	
GID3	INT	
GID4	INT	
GID5	INT	
GID6	INT	
GID7	INT	
GID8	INT	
GID9	INT	Midside GRID point identification number defining the element.
GID10	INT	
GID11	INT	
GID12	INT	
GID13	INT	
GID14	INT	
GID15	INT	
GID16	INT	
GID17	INT	
GID18	INT	
GID19	INT	
GID20	INT	

ENTITY: HEXA_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Three-dimensional isoparametric hexahedron, HEXA, solid element connecton.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PSOLID property entry.
GID1	INT	GRID point identification numbers defining the element.
GID2	INT	
GID3	INT	
GID4	INT	
GID5	INT	
GID6	INT	
GID7	INT	
GID8	INT	
GID9	INT	Midside GRID point identification number defining the element.
GID10	INT	
GID11	INT	
GID12	INT	
GID13	INT	
GID14	INT	
GID15	INT	
GID16	INT	
GID17	INT	
GID18	INT	
GID19	INT	
GID20	INT	

ENTITY: MASS1_GEOM

ENTITY TYPE: Relation

DESCRIPTION: MASS element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PMASS property entry.
GID1	INT	GRID or SCALAR point identification numbers.
GID2	INT	
DOF1	INT	Single degree of freedom.
DOF2	INT	

ENTITY: MASS2_GEOM

ENTITY TYPE: Relation

DESCRIPTION: MASS element connection and its mass value.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
M	RSP	The value of the mass.
GID1	INT	GRID or SCALAR point identification numbers.
GID2	INT	
DOF1	INT	Single degree of freedom.
DOF2	INT	

ENTITY: MASS3_GEOM

ENTITY TYPE: Relation

DESCRIPTION: MASS element connection to Scalar points.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PMASS property entry.
SID1	INT	SCALAR point identification numbers.
SID2	INT	

ENTITY: MASS4_GEOM

ENTITY TYPE: Relation

DESCRIPTION: MASS element connection to Scalar points and its mass value.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
M	RSP	The mass value.
SID1	INT	SCALAR point identification numbers.
SID2	INT	

ENTITY: PENTA_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Three-dimensional isoparmetric pentahedron, PENTA, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PSOLID property entry.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	
GID3	INT	
GID4	INT	
GID5	INT	
GID6	INT	
GID7	INT	Identification numbers of MIDSIDE GRID points defining the element.
GID8	INT	
GID9	INT	
GID10	INT	
GID11	INT	
GID12	INT	
GID13	INT	
GID14	INT	
GID15	INT	

ENTITY: PILE_GEOM

ENTITY TYPE: Relation

DESCRIPTION: One-dimensional line element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION				
EID	INT	Element identification number.				
PID	INT	Identification number of a PPILE or PPILE1 property entry.				
PSOIL	INT	Identification number of a PSOIL property entry.				
GID1	INT	Identification numbers of GRID or SCALAR points defining the element.				
GID2	INT					
V	RSP (3)	Components of a vector, V, originating at End A. This vector, along with the vector from End A to End B, is used to determine the orientation of the element coordinate system. These vectors define the X-Y plane (also called Plane 1) of the element coordinate system. Vi must be specified in the output coordinate system for GID1.				
GIDO	INT	GRID point identification number used to define the element coordinate system orientation. The irection of the orientation vector is End A to GIDO.				
EFLG	INT	Identifier Flag <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">0</td> <td>Vector, V</td> </tr> <tr> <td style="text-align: center;">1</td> <td>Grid point identification</td> </tr> </table>	0	Vector, V	1	Grid point identification
0	Vector, V					
1	Grid point identification					
PINA	INT	Pin flags for PILE Ends A and B, respectively.				
PINB	INT					
ZA	RSP (3)	Components of offset vectors, measured in the displacement coordinate systems at GRID points GID1 and GID2, from the GRID points to the end points of the axis of the shear center.				
ZB	RSP (3)					

ENTITY: PIPE_GEOM

ENTITY TYPE: Relation

DESCRIPTION: One-dimensional curved element PIPE connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION				
EID	INT	Element identification number.				
PID	INT	Identification number of a PPIPE property entry.				
GID1	INT	Identification numbers of GRID points defining the element.				
GID2	INT					
V	RSP (3)	Components of tangent vector in the Basic Coordinate System.				
GIDO	INT	GRID point identification number used to define the tangent vector.				
EFLG	INT	Identifier Flag <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="text-align: center;">0</td> <td>Vector, V</td> </tr> <tr> <td style="text-align: center;">1</td> <td>Grid point identification</td> </tr> </table>	0	Vector, V	1	Grid point identification
0	Vector, V					
1	Grid point identification					
PINA	INT	Pin flags for PIPE Ends A and B, respectively, that are used to ensure that the PIPE cannot resist a force or moment corresponding to the pin flag at that respective end.				
PINB	INT					

ENTITY: PLOTTEL

ENTITY TYPE: Relation

DESCRIPTION: Line plotting element.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GID1	INT	GRID point identification numbers.
GID2	INT	

ENTITY: QUAD4_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Two-dimensional linear quadrilateral, QUAD4, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
PID	INT	Identification number of a PSHELL or PCOMPi property entry.	
GID1	INT	Identification numbers of GRID points defining the element.	
GID2	INT		
GID3	INT		
GID4	INT		
THETA	RSP	Material property orientation angle in degrees.	
MCSID	INT	Material coordinate system identification number. The material x-axis of the element is in the direction of the projection of the x-axis of this system on the surface of the element.	
EFLG	INT	Identifier Flag	
		0	Material coordinate system identification, MCSID
		1	Material property orientation angle, THETA
ZO	RSP	Offset of the element reference plane from the plane of GRID points.	
T1	RSP	Membrane thickness of the element at GRID point GIDi.	
T2	RSP		
T3	RSP		
T4	RSP		

ENTITY: QUADR_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Two-dimensional linear quadrilateral, QUADR, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
PID	INT	Identification number of a PSHELL or PCOMPi property entry.	
GID1	INT	Identification numbers of GRID points defining the element.	
GID2	INT		
GID3	INT		
GID4	INT		
THETA	RSP	Material property orientation angle in degrees.	
MCSID	INT	Material coordinate system identification number. The material x-axis of the element is in the direction of the projection of the x-axis of this system on the surface of the element.	
EFLG	INT	Identifier Flag	
		0	Material coordinate system identification, MCSID
		1	Material property orientation angle, THETA
ZO	RSP	Offset of the element reference plane from the plane of GRID points.	
T1	RSP	Membrane thickness of the element at GRID point GIDi.	
T2	RSP		
T3	RSP		
T4	RSP		

ENTITY: QUAD8_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Quadratic isoparametric curved quadrilateral shell, QUAD8, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
PID	INT	Identification number of a PSHELL or PCOMPi property entry.	
GID1	INT	Identification numbers of GRID points defining the element.	
GID2	INT		
GID3	INT		
GID4	INT		
GID5	INT	Identification numbers of MDSIDE GRID points defining the element.	
GID6	INT		
GID7	INT		
GID8	INT		
THETA	RSP	Material property orientation angle in degrees.	
MCSID	INT	Material coordinate system identification number. The material x-axis of the element is in the direction of the projection of the x-axis of this system on the surface of the element.	
EFLG	INT	Identifier Flag	
		0	Material coordinate system identification, MCSID
		1	Material property orientation angle, THETA
ZO	RSP	Offset of the element reference plane from the plane of GRID points.	
T1	RSP	Membrane thickness of the element at GRID point GIDi.	
T2	RSP		
T3	RSP		
T4	RSP		
T5	RSP		
T6	RSP		
T7	RSP		
T8	RSP		

ENTITY: ROD_GEOM

ENTITY TYPE: Relation

DESCRIPTION: One-dimensional tension-compression-torsion, ROD, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PROD property entry.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	

ENTITY: SHEAR_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Two-dimensional shear panel, SHEAR, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PSHEAR property entry.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	
GID3	INT	
GID4	INT	

ENTITY: TETRA_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Three-dimensional solid tetrahedron, TETRA, isoparametric element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PSOLID property entry.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	
GID3	INT	
GID4	INT	
GID5	INT	Identification numbers of MDSIDE GRID points defining the element.
GID6	INT	
GID7	INT	
GID8	INT	
GID9	INT	
GID10	INT	

ENTITY: TORDRG_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Axisymmetric toroidal cross-section ring, TORDRG, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Property identification number.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	
ALPHA1	RSP	Angles of curvature at GID1 and GID2, in degrees.
ALPHA2	RSP	

ENTITY: TRAPAX_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Axisymmetric trapezoidal cross-section ring (solid of revolution) element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PTRAPAX entry.
RID1	INT	Axisymmetric ring identification numbers.
RID2	INT	
RID3	INT	
RID4	INT	
THETA	RSP	Material property orientation angle in degrees.

ENTITY: TRAPRG_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Axisymmetric trapezoidal cross-section ring (solid of revolution) element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	
GID3	INT	
GID4	INT	
THETA	RSP	Material property orientation angle in degrees.
MID	INT	Material property identification number.

ENTITY: TRIA3_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Two-dimensional linear triangular shell, TRIA3, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
PID	INT	Identification number of a PSHELL or PCOMPi property entry.	
GID1	INT	Identification numbers of GRID points defining the element.	
GID2	INT		
GID3	INT		
THETA	RSP	Material property orientation angle in degrees.	
MCSID	INT	Material coordinate system identification number. The material x-axis of the element is in the direction of the projection of the x-axis of this system on the surface of the element.	
EFLG	INT	Identifier Flag	
		0	Material coordinate system identification, MCSID
		1	Material property orientation angle, THETA
ZO	RSP	Offset of the element reference plane from the plane of GRID points.	
T1	RSP	Membrane thickness of the element at GRID point GIDi.	
T2	RSP		
T3	RSP		

ENTITY: TRIAR_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Two-dimensional linear triangular shell, TRIAR, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION	
EID	INT	Element identification number.	
PID	INT	Identification number of a PSHELL or PCOMPi property entry.	
GID1	INT	Identification numbers of GRID points defining the element.	
GID2	INT		
GID3	INT		
THETA	RSP	Material property orientation angle in degrees.	
MCSID	INT	Material coordinate system identification number. The material x-axis of the element is in the direction of the projection of the x-axis of this system on the surface of the element.	
EFLG	INT	Identifier Flag	
		0	Material coordinate system identification, MCSID
		1	Material property orientation angle, THETA
ZO	RSP	Offset of the element reference plane from the plane of GRID points.	
T1	RSP	Membrane thickness of the element at GRID point GIDi.	
T2	RSP		
T3	RSP		

ENTITY: TRIA6_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Isoparametric curved triangular shell, TRIA6, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PSHELL or PCOMPi property entry.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	
GID3	INT	
GID4	INT	Identification numbers of MIDSIDE GRID points defining the element.
GID5	INT	
GID6	INT	
THETA	RSP	Material property orientation angle in degrees.
MCSID	INT	Material coordinate system identification number. The material x-axis of the element is in the direction of the projection of the x-axis of this system on the surface of the element.
EFLG	INT	Identifier Flag
		0 Material coordinate system identification, MCSID
		1 Material property orientation angle, THETA
ZO	RSP	Offset of the element reference plane from the plane of GRID points.
T1	RSP	Membrane thickness of the element at GRID point GIDi.
T2	RSP	
T3	RSP	
T4	RSP	
T5	RSP	
T6	RSP	

ENTITY: TRIAAX_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Axisymmetric trangular cross-section ring (solid of revolution) element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PTRIAAX property entry.
RID1	INT	Axisymmetric ring identification numbers.
RID2	INT	
RID3	INT	
THETA	RSP	Material property orientation angle in degrees.

ENTITY: TRIARG_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Axisymmetric triangular cross-section ring (solid of revolution) element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	
GID3	INT	
THETA	RSP	Material property orientation angle in degrees.
MID	INT	Material identification number.

ENTITY: TUBE_GEOM

ENTITY TYPE: Relation

DESCRIPTION: One-dimensional tension-compression-torsion, TUBE, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PTUBE property entry.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	

ENTITY: TWIST_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Two-dimensional twist panel, TWIST, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of a PTWIST property entry.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	
GID3	INT	
GID4	INT	

ENTITY: VISC_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Viscous damper, VISC, element connection.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
PID	INT	Identification number of PVISC property entry.
GID1	INT	Identification numbers of GRID points defining the element.
GID2	INT	

MATERIAL PROPERTIES

ENTITY: MAT1

ENTITY TYPE: Relation

DESCRIPTION: Material properties for linear, temperature- independent, isotropic materials.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material identification number.
E	RSP	Young's modulus.
G	RSP	Shear modulus.
NU	RSP	Poisson's ratio.
RHO	RSP	Mass density.
ALPHA	RSP	Thermal expansion coefficient.
T0	RSP	Thermal expansion reference temperature.
GE	RSP	Structural element damping coefficient.
ST	RSP	Stress/strain limits for tension, compression and shear.
SC	RSP	
SS	RSP	

ENTITY: MAT1NL

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear isotropic material properties for BAR, HEXA, ROD, PENTA, PILE, and TETRA elements.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
TNLID	INT	TABLENL identification number which defines the material stress as a function of strain.
TYPE	CHAR(8)	Nonlinear material type. (PLASTIC, NLELAST, EPCOMB)
YC	CHAR(8)	Yield criterion. (VONM, TRESCA, MC, DP)

ENTITY: MAT1NL1

ENTITY TYPE: Relation

DESCRIPTION: Bi-linear isotropic material properties for BAR, HEXA, ROD, PENTA, PILE and TETRA elements.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
TYPE	CHAR(8)	Nonlinear material type. (PLASTIC, NLELAST)
YC	CHAR(8)	Yield criterion. (VONM, TRESCA, MC, DP)
YIELD	RSP	Yield stress or cohesion.
ET	RSP	The second slope of the bilinear stress/strain curve.
HYSTYP	CHAR(8)	Hysteretic hardening rule used with PLASTIC materials. (ISOT, KINE, COMB)
PHI	RSP	Angle of internal friction in degrees.
BETA	RSP	Combination factor.

ENTITY: MAT2

ENTITY TYPE: Relation

DESCRIPTION: Material properties for linear, temperature- independent, anisotropic materials for plate and curved shell elements.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material identification number.
G11	RSP	The elements of the 3x3 symmetric material property matrix.
G12	RSP	
G13	RSP	
G22	RSP	
G23	RSP	
G33	RSP	
RHO	RSP	Mass density.
ALPHA1	RSP	Thermal expansion coefficient vector.
ALPHA2	RSP	
ALPHA12	RSP	
T0	RSP	Thermal expansion reference temperature.
GE	RSP	Structural element damping coefficient.
ST	RSP	Stress/strain limits for tension, compression, and shear.
SC	RSP	
SS	RSP	

ENTITY: MAT3

ENTITY TYPE: Relation

DESCRIPTION: Material properties for linear, temperature independent, orthotropic materials referenced by the axisymmetric elements TORDRG, TRAPRG, TRIARG, TRIAAX and TRAPAX.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material identification number.
ER	RSP	Young's moduli in the ith direction.
ET	RSP	
EZ	RSP	
NUXT	RSP	Poisson's ratios. (Coupled strain ratios in the rtheta, thetaz and zr directions)
NUZT	RSP	
NUZX	RSP	
RHO	RSP	Mass density.
GZR	RSP	Shear modulus.
ALPHAR	RSP	Thermal expansion coefficient.
ALPHAT	RSP	
ALPHAZ	RSP	
T0	RSP	Thermal expansion reference temperature.
GE	RSP	Structural element damping coefficient.

ENTITY: MAT4

ENTITY TYPE: Relation

DESCRIPTION: Thermal properties for temperature-independent, isotropic material.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material identification number.
K	RSP	Thermal conductivity or convective film coefficient.
CP	RSP	Thermal capacity per unit volume, or film capacity per unit area.

ENTITY: MAT5

ENTITY TYPE: Relation

DESCRIPTION: Thermal material properties for temperature independent, anisotropic materials.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material identification number.
KXX	RSP	Thermal conductivity.
KXY	RSP	
KXZ	RSP	
KYY	RSP	
KYZ	RSP	
KZZ	RSP	
CP	RSP	Thermal capacity per unit volume.

ENTITY: MAT8

ENTITY TYPE: Relation

DESCRIPTION: Material property for an orthotropic material plate elements.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material identification number.
E1	RSP	Modulus of elasticity in the material x and y directions.
E2	RSP	
NU12	RSP	Poisson's Ratio.
G12	RSP	In plane shear modulus.
G1Z	RSP	Transverse shear moduli.
G2Z	RSP	
RHO	RSP	Mass density.
ALPHA1	RSP	Thermal expansion coefficients in the material x and y directions.
ALPHA2	RSP	
T0	RSP	Thermal expansion reference temperature.
XT	RSP	Allowable tensile stress/strain in the material x-direction.
XC	RSP	Allowable compressive stress/strain in the material x-direction.
YT	RSP	Allowable tensile stress/strain in the material y-direction.
YC	RSP	Allowable compressive stress/strain in the material y-direction.
S	RSP	Allowable stress/strain for in plane shear.
GE	RSP	Structural damping coefficient.
F12	RSP	Tsai Wu interaction term.

ENTITY: MAT9

ENTITY TYPE: Relation

DESCRIPTION: Material properties for linear, temperature independent, anisotropic materials for solid isoparametric elements.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
G11	RSP	Elements of the 6x6 symmetric material property matrix.
G12	RSP	
G13	RSP	
G14	RSP	
G15	RSP	
G16	RSP	
G22	RSP	
G23	RSP	
G24	RSP	
G25	RSP	
G26	RSP	
G33	RSP	
G34	RSP	
G35	RSP	
G36	RSP	
G44	RSP	
G45	RSP	
G46	RSP	
G55	RSP	
G56	RSP	
G66	RSP	
RHO	RSP	Mass density.
ALPHA	RSP (6)	Thermal expansion coefficient vector.
T0	RSP	Thermal expansion reference temperature.
GE	RSP	Structural elemetn damping coefficient.

ENTITY: MATF

ENTITY TYPE: Relation

DESCRIPTION: Defines fluid density and compressibility properties for fluid mate

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
R	RSP	Mass density.
B	RSP	Bulk modulus.

ENTITY: MATT1

ENTITY TYPE: Relation

DESCRIPTION: Table references for isotropic material properties which are temperature-dependent.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
TID	INT (9)	Table identification numbers.

ENTITY: MATT2

ENTITY TYPE: Relation

DESCRIPTION: Data Recovery for Grid Results.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
TID	INT (16)	Table identification numbers.

ENTITY: MATT3

ENTITY TYPE: Relation

DESCRIPTION: Table references for orthotropic material properties which are temperature-dependent.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
TID	INT (28)	Table identification numbers.

ENTITY: MATT4

ENTITY TYPE: Relation

DESCRIPTION: Table references for temperature dependent thermal conductivity or convective film coefficients.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
TID	INT	Table identification number.

ENTITY: MATT5

ENTITY TYPE: Relation

DESCRIPTION: Table references for a temperature dependent conductivity

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
TID	INT (6)	Table identification numbers.

ENTITY: MATT9

ENTITY TYPE: Relation

DESCRIPTION: Table references to properties for linear, temperature-dependent, anisotropic materials for solid isoparametric elements.

DATA BLOCKS USED: MPT

ATTRIBUTE	TYPE	DEFINITION
MID	INT	Material property identification number.
TID	INT (30)	Table identification numbers.

ELEMENT PROPERTIES

ENTITY: PACABS

ENTITY TYPE: Relation

DESCRIPTION: Defines the properties of an acoustic absorber element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
OP	CHAR (4)	Specifies whether the properties will be defined by tabular data (YES) or derived from an equivalent structural model (NO).
RDEF	INT	Identification number of a TABLEDi entry which defines the resistance.
XDEF	INT	Identification number of a TABLEDi entry which defines the reactance.
WDEF	INT	Identification number of a TABLEDi entry which defines the weighting function.
TSTAREA	RSP	Area of the test specimen.
FCUTOFF	RSP	Cutoff frequency for tables defined by RDEF, XDEF, and WDEF.
B	RSP	Equivalent damping, stiffness and mass values.
K	RSP	
M	RSP	

ENTITY: PACBAR

ENTITY TYPE: Relation

DESCRIPTION: Defines the properties of an acoustic barrier element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MBACK	RSP	Mass per unit area of the backing material.
MSEPTM	RSP	Mass per unit area of the septum material.
FRESON	RSP	Resonant frequency of the sandwich construction (Hz).
KRESON	RSP	Resonant stiffness per unit area of the sandwich construction.

ENTITY: PBAR

ENTITY TYPE: Relation

DESCRIPTION: Properties of a general BAR element

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION	
PID	INT	Property identification number.	
MID	INT	Material identification number.	
A	RSP	Area of the BAR cross-section.	
I1	RSP	Area moments of inertia.	
I2	RSP		
I12	RSP	Product area moment of inertia.	
J	RSP	Torsional constant.	
NSM	RSP	Nonstructural mass per unit length.	
SHAPE	CHAR (4)	Cross sectional shape for Nonlinear material analysis. (BAR , TUBE , ROD)	
Y1	RSP	Coordinates of stress recovery points on the element cross section.	
Z1	RSP		
Y2	RSP		
Z2	RSP		
Y3	RSP		
Z3	RSP		
Y4	RSP		
Z4	RSP		
K1	RSP	Area factors for shear.	
K2	RSP		
YN	RSP	Coordinates of the neutral axis.	
ZN	RSP		
POFFSET	CHAR (4)	Output media selection	
		SHEAR EN	Shear Center.
		CENTRO ID	Centroid where axis passes through.
YR	RSP	Coordinates of the Reference Point.	
			REPOIN T
ZR	RSP		

ENTITY: PBAR1

ENTITY TYPE: Relation

DESCRIPTION: Properties of a BAR element by specifying its cross-sectional characteristics.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
SHAPE	CHAR(4)	Cross sectional shape. (I, T, BOX, BAR, TUBE, ROD, HAT)
D	RSP(10)	Cross-sectional dimensions.
NSM	RSP	Nonstructural mass per unit length.
POFFSET	CHAR(4)	Output media selection
		SHEARCEN Shear Center.
		CENTROID Centroid where axis passes through.
		REPOINT Reference Point.

ENTITY: PBEAM

ENTITY TYPE: Relation

DESCRIPTION: Properties of a general BEAM element

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
ISEGNO	INT	Number of segments.
ICONSEC	INT	Constant Cross sectional flag.
IENDA	INT	If 1, only end A geometry present, otherwise 0.
STRESSA	CHAR(4)	Stress recovery option for this axial station. (YES, YESA, NO)
STATNA	RSP	Position of the axial station as a fraction of the element length measured from End A.
AA	RSP	Cross sectional area at End A.
I1A	RSP	Area moments of inertia about the neutral axis at End A for planes 1 and 2.
I2A	RSP	
I12A	RSP	Area product of inertia at End A.
JA	RSP	Torsional stiffness parameter at End A.
NSMA	RSP	Nonstructural mass per unit length at End A.
Y1A	RSP	Coordinates of stress recovery points on the cross section at End A.
Z1A	RSP	
Y2A	RSP	
Z2A	RSP	
Y3A	RSP	
Z3A	RSP	
Y4A	RSP	
Z4A	RSP	
STRESS1	CHAR(4)	Stress recovery option for axial station 1. (YES, YESA, NO)
STATNS1	RSP	Position of axial station 1 as a fraction of the element length measured from End A.
AS1	RSP	Cross sectional area at station 1.
I1S1	RSP	Area moments of inertia about the neutral axis at station 1 for planes 1 and 2.
I2S1	RSP	
I12S1	RSP	Area product of inertia at station 1.
JS1	RSP	Torsional stiffness parameter.
NSMS1	RSP	Nonstructural mass per unit length.

ATTRIBUTE	TYPE	DEFINITION
Y1S1	RSP	Coordinates of stress recovery points on the cross section at station 1.
Z1S1	RSP	
Y2S1	RSP	
Z2S1	RSP	
Y3S1	RSP	
Z3S1	RSP	
Y4S1	RSP	
Z4S1	RSP	
STRESS2	CHAR (4)	Stress recovery option for axial station 2. (YES, YESA, NO)
STATNS2	RSP	Position of axial station 2 as a fraction of the element length measured from END A.
AS2	RSP	Cross sectional area at station 2.
I1S2	RSP	Area moments of inertia about the neutral axis at station 2 for planes 1 and 2.
I2S2	RSP	
I12S2	RSP	Area product of inertia at station 2.
JS2	RSP	Torsional stiffness parameter.
NSMS2	RSP	Nonstructural mass per unit length.
Y1S2	RSP	Coordinates of stress recovery points on the cross section at station 2.
Z1S2	RSP	
Y2S2	RSP	
Z2S2	RSP	
Y3S2	RSP	
Z3S2	RSP	
Y4S2	RSP	
Z4S2	RSP	
STRESS3	CHAR (4)	Stress recovery option for axial station 3. (YES, YESA, NO)
STATNS3	RSP	Position of axial station 3 as a fraction of the element length measured from End A.
AS3	RSP	Cross sectional area at station 3.
I1S3	RSP	Area moments of inertia about the neutral axis at station 3 for planes 1 and 2.
I2S3	RSP	
I12S3	RSP	Area product of inertia at station 3.
JS3	RSP	Torsional stiffness parameter.
NSMS3	RSP	Nonstructural mass per unit length.

ATTRIBUTE	TYPE	DEFINITION
Y1S3	RSP	Coordinates of stress recovery points on the cross section at station 3.
Z1S3	RSP	
Y2S3	RSP	
Z2S3	RSP	
Y3S3	RSP	
Z3S3	RSP	
Y4S3	RSP	
Z4S3	RSP	
STRESS4	CHAR (4)	Stress recovery option for axial station 4. (YES, YESA, NO)
STATNS4	RSP	Position of axial station 4 as a fraction of the element length measured from End A.
AS4	RSP	Cross sectional area at station 4.
I1S4	RSP	Area moments of inertia about the neutral axis at station 4 for planes 1 and 2.
I2S4	RSP	
I12S4	RSP	Area product of inertia at station 4.
JS4	RSP	Torsional stiffness parameter.
NSMS4	RSP	Nonstructural mass per unit length.
Y1S4	RSP	Coordinates of stress recovery points on the cross section at station 4.
Z1S4	RSP	
Y2S4	RSP	
Z2S4	RSP	
Y3S4	RSP	
Z3S4	RSP	
Y4S4	RSP	
Z4S4	RSP	
STRESS5	CHAR (4)	Stress recovery option for axial station 5. (YES, YESA, NO)
STATNS5	RSP	Position of axial station 5 as a fraction of the element length measured from End A.
AS5	RSP	Cross sectional area at station 5.
I1S5	RSP	Area moments of inertia about the neutral axis at station 5 for planes 1 and 2.
I2S5	RSP	
I12S5	RSP	Area product of inertia at station 5.
JS5	RSP	Torsional stiffness parameter.
NSMS5	RSP	Nonstructural mass per unit length.

ATTRIBUTE	TYPE	DEFINITION
Y1S5	RSP	Coordinates of stress recovery points on the cross section at station 5.
Z1S5	RSP	
Y2S5	RSP	
Z2S5	RSP	
Y3S5	RSP	
Z3S5	RSP	
Y4S5	RSP	
Z4S5	RSP	
STRESS6	CHAR (4)	Stress recovery option for axial station 6. (YES, YESA, NO)
STATNS6	RSP	Position of axial station 6 as a fraction of the element length measured from End A.
AS6	RSP	Cross sectional area at station 6.
I1S6	RSP	Area moments of inertia about the neutral axis at station 6 for planes 1 and 2.
I2S6	RSP	
I12S6	RSP	Area product of inertia at station 6.
JS6	RSP	Torsional stiffness parameter.
NSMS6	RSP	Nonstructural mass per unit length.
Y1S6	RSP	Coordinates of stress recovery points on the cross section at station 6.
Z1S6	RSP	
Y2S6	RSP	
Z2S6	RSP	
Y3S6	RSP	
Z3S6	RSP	
Y4S6	RSP	
Z4S6	RSP	
STRESS7	CHAR (4)	Stress recovery option for axial station 7. (YES, YESA, NO)
STATNS7	RSP	Position of axial station 7 as a fraction of the element length measured from End A.
AS7	RSP	Cross sectional area at station 7.
I1S7	RSP	Area moments of inertia about the neutral axis at station 7 for planes 1 and 2.
I2S7	RSP	
I12S7	RSP	Area product of inertia at station 7.
JS7	RSP	Torsional stiffness parameter.
NSMS7	RSP	Nonstructural mass per unit length.

ATTRIBUTE	TYPE	DEFINITION
Y1S7	RSP	Coordinates of stress recovery points on the cross section at station 7.
Z1S7	RSP	
Y2S7	RSP	
Z2S7	RSP	
Y3S7	RSP	
Z3S7	RSP	
Y4S7	RSP	
Z4S7	RSP	
STRESS8	CHAR (4)	Stress recovery option for axial station 8. (YES, YESA, NO)
STATNS8	RSP	Position of axial station 8 as a fraction of the element length measured from End A.
AS8	RSP	Cross sectional area at station 8.
I1S8	RSP	Area moments of inertia about the neutral axis at station 8 for planes 1 and 2.
I2S8	RSP	
I12S8	RSP	Area product of inertia at station 8.
JS8	RSP	Torsional stiffness parameter.
NSMS8	RSP	Nonstructural mass per unit length.
Y1S8	RSP	Coordinates of stress recovery points on the cross section at station 8.
Z1S8	RSP	
Y2S8	RSP	
Z2S8	RSP	
Y3S8	RSP	
Z3S8	RSP	
Y4S8	RSP	
Z4S8	RSP	
STRESS9	CHAR (4)	Stress recovery option for axial station 9. (YES, YESA, NO)
STATNS9	RSP	Position of axial station 9 as a fraction of the element length measured from End A.
AS9	RSP	Cross sectional area at station 9.
I1S9	RSP	Area moments of inertia about the neutral axis at station 9 for planes 1 and 2.
I2S9	RSP	
I12S9	RSP	Area product of inertia at station 9.
JS9	RSP	Torsional stiffness parameter.
NSMS9	RSP	Nonstructural mass per unit length.

ATTRIBUTE	TYPE	DEFINITION
Y1S9	RSP	Coordinates of stress recovery points on the cross section at station 9.
Z1S9	RSP	
Y2S9	RSP	
Z2S9	RSP	
Y3S9	RSP	
Z3S9	RSP	
Y4S9	RSP	
Z4S9	RSP	
STRESSB	CHAR (4)	
STATNB	RSP	Position of the axial station as a fraction of the element length measured from End A.
AB	RSP	Cross sectional area at End B.
I1B	RSP	Area moments of inertia about the neutral axis at End B for planes 1 and 2.
I2B	RSP	
I12B	RSP	Area product of inertia at End B.
JB	RSP	Torsional stiffness parameter at End B.
NSMB	RSP	Nonstructural mass per unit length at End B.
Y1B	RSP	Coordinates of stress recovery points on the cross section at End B.
Z1B	RSP	
Y2B	RSP	
Z2B	RSP	
Y3B	RSP	
Z3B	RSP	
Y4B	RSP	
Z4B	RSP	
K1	RSP	Area factors for shear for planes 1 and 2.
K2	RSP	
S1	RSP	Shear Relief coefficients.
S2	RSP	
NSIA	RSP	Moments of inertia per unit length about the nonstructural mass center of gravity at End A and End B.
NSIB	RSP	
CWA	RSP	Warping coefficients for End A and End B.
CWB	RSP	
YMA	RSP	Coordinates of the nonstructural mass center of gravity at End A and End B.
ZMA	RSP	
YMB	RSP	
ZMB	RSP	

ATTRIBUTE	TYPE	DEFINITION
YNA	RSP	Coordinates of the neutral axis at End A and END B.
ZNA	RSP	
YNB	RSP	
ZNB	RSP	
TYPE	CHAR (4)	Cross-Section Type
BEMCOL	INT	Nonlinear BEAM/Column Flag
POFFSET	CHAR (4)	Output media selection
		SHEAR EN Shear Center.
		CENTRO ID Centroid where axis passes through.
		REPOIN T Reference Point.
YRA	RSP	Coordinates of the Reference Point at End A and END B.
ZRA	RSP	
ZRB	RSP	

ENTITY: PBEAM1

ENTITY TYPE: Relation

DESCRIPTION: Properties of a BEAM element by specifying its cross-sectional characteristics.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION	
PID	INT	Property identification number.	
MID	INT	Material identification number.	
SHAPE	CHAR (4)	Cross-sectional shape. (I, T, BOX, BAR, TUBE, ROD, HAT)	
CCF	INT	Constant cross section flag	
		0	Non-Constant Cross Section
		1	Constant Cross Section
DA	RSP (5)	Cross-sectional dimensions at End A and End B of the element.	
DB	RSP (5)		
NSMA	RSP	Nonstructural mass per unit length at End A and End B of the element.	
NSMB	RSP		
NSTAT	INT	Number of BEAM stations at which solutions results is printed.	
IENDA	INT	ENDA data only flag.	
BEMCOL	INT	Nonlinear BEAM/Column Flag	
STOUT	INT	Station OUT.	
POFFSET	CHAR (4)	Output media selection	
		SHEARCEN	Shear Center.
		CENTROID	Centroid where axis passes through.
		REPOINT	Reference Point.

ENTITY: PBUSH

ENTITY TYPE: Relation

DESCRIPTION: Properties of a Bushing element by specifying the spring stiffness and damping factors.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
K	RSP (6)	Constant stiffness values in directions 1 through 6.
B	RSP (6)	Constant damping values in directions 1 through 6.
TIDK	INT (6)	Identification number of a TABLED1 or TABLENL entry that defines the stiffness vs. frequency or force vs. deflection relationship.
TIDB	INT (6)	Identification number of a TABDMP1 entry that defines the damping vs. frequency relationship.
SA	RSP	Stress recovery coefficients in axial (translational) directions 1 through 3.
ST	RSP	Stress recovery coefficients in torsional (rotational) directions 4 through 6.
EA	RSP	Strain recovery coefficients in axial directions 1 through 3.
ET	RSP	Strain recovery coefficients in torsional directions 4 through 6.

ENTITY: PCOMP

ENTITY TYPE: Relation

DESCRIPTION: Properties of an n-ply laminated composite material for a plate element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
Z0	RSP	Offset of the laminate lower surface from the element mean plane. A positive value means the +Ze direction.
NSM	RSP	Non-structural mass per unit area.
SBOND	RSP	Allowable shear stress of the bonding material.
FT	CHAR(8)	Failure theory. (HILL, HOFF, TSAI, STRESS STRESS, STRAIN)
T0	RSP	Thermal expansion reference temperature.
GE	RSP	Structural damping coefficient.
LAM	CHAR(8)	Lamination generation option. (ALL, SYM, MEM, SYMEM)
MID	INT	Material identification number of the ith layer.
TPLY	RSP	Thickness of each layer.
THETA	RSP	Angle between the longitudinal direction of the fibers of layer i and the material X-axis.
SOUT	CHAR(4)	Stress output request for layer i. (YES, NO)

ENTITY: PCOMP1

ENTITY TYPE: Relation

DESCRIPTION: Properties of an n-ply laminated composite material for plate elements where all plies are composed of the same material and are of equal thickness.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
Z0	RSP	Offset of the laminate lower surface from the element mean plane. A positive value means the +Ze direction.
NSM	RSP	Non-structural mass per unit area.
SBOND	RSP	Allowable shear stress of the bonding material.
FT	CHAR(8)	Failure theory. (HILL, HOFF, TSAI, STRESS STRESS, STRAIN)
MID	INT	Material identification number of the ith layer.
LAM	CHAR(8)	Lamination generation option. (ALL, SYM, MEM, SYMEM)
TPLY	RSP	Thickness of each layer.
THETA	RSP	Angle between the longitudinal direction of the fibers of layer i and the material X-axis.

ENTITY: PCOMP2

ENTITY TYPE: Relation

DESCRIPTION: Properties of an n-ply laminated composite material for plate elements where all plies are of the same material.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
Z0	RSP	Offset of the laminate lower surface from the element mean plane. A positive value means the +Ze direction.
NSM	RSP	Non-structural mass per unit area.
SBOND	RSP	Allowable shear stress of the bonding material.
FT	CHAR (8)	Failure theory. (HILL, HOFF, TSAI, STRESS STRESS, STRAIN)
MID	INT	Material identification number of the ith layer.
LAM	CHAR (8)	Lamination generation option. (ALL, SYM, MEM, SYSTEM)
TPLY	RSP	Thickness of each layer.
THETA	RSP	Angle between the longitudinal direction of the fibers of layer i and the material X-axis.

ENTITY: PCONEAX

ENTITY TYPE: Relation

DESCRIPTION: Defines the properties of a CONEAX conical shell element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID1	INT	Material identification number for membrane, bending, and transverse shear.
T1	RSP	Membrane thickness.
MID2	INT	Material identification number for bending.
I	RSP	Moment of Inertia per unit width.
MID3	INT	Material identification number for transverse shear.
T2	RSP	Transverse shear thickness.
NSM	RSP	Nonstructural mass per unit area.
Z1	RSP	Fiber distances for stress recovery.
Z2	RSP	
F	RSP (14)	Azimuthal coordinates (in degrees) for stress recovery.

ENTITY: PDAMP

ENTITY TYPE: Relation

DESCRIPTION: Damping value for damping elements DAMP1 and DAMP2.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
B	RSP	Damping value.

ENTITY: PELAS

ENTITY TYPE: Relation

DESCRIPTION: Stiffness, damping coefficient, and stress coefficient of spring elements ELAS1 and ELAS3.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
K	RSP	Spring constant.
GE	RSP	Damping coefficient.
S	RSP	Stress coefficient.

ENTITY: PGAP

ENTITY TYPE: Relation

DESCRIPTION: Properties of the GAP element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
U0	RSP	Initial gap opening.
F0	RSP	Axial force preload value.
KCLS	RSP	Axial stiffness for closed gap.
KOPN	RSP	Axial stiffness for opened gap.
KTRAN	RSP	Transverse stiffness when surfaces are in contact.
UTRANY	RSP	Coefficient of friction in y transverse direction.
UTRANZ	RSP	Coefficient of friction in z transverse direction.

ENTITY: PHBDY

ENTITY TYPE: Relation

DESCRIPTION: Properties of the heat boundary element, QHBDY.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
AF	RSP	Area Factor.
E	RSP	Emissivity which is used only for radiation calculations.
ALPHA	RSP	Absorptivity which is used only for thermal vector flux calculations.
R1	RSP	Radii of elliptic cylinder for HBDY type ELCYL.
R2	RSP	

ENTITY: PMASS

ENTITY TYPE: Relation

DESCRIPTION: Mass element's, MASS1 and MASS3, mass value.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
M	RSP	Mass value.

ENTITY: PPILE

ENTITY TYPE: Relation

DESCRIPTION: Properties of a tubular PILE element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
A	RSP	Area of the PILE cross-section.
T	RSP	Wall thickness of the PILE.
D	RSP	Outside diameter of the PILE.
NSM	RSP	Nonstructural mass per unit area.

ENTITY: PPILE1

ENTITY TYPE: Relation

DESCRIPTION: Properties of a general PILE element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
A	RSP	Area of PILE cross-section.
I1	RSP	Area moments of inertia.
I2	RSP	
I12	RSP	Product area moment of inertia.
J	RSP	Torsional constant.
NSM	RSP	Nonstructural mass per unit length.
R	RSP	Radius Gyration.
Y1	RSP	Coordinates of stress recovery points on the element cross-section in the element coordinate system.
Y2	RSP	
Y3	RSP	
Y4	RSP	
Z1	RSP	
Z2	RSP	
Z3	RSP	
Z4	RSP	
K1	RSP	Area factors for shear.
K2	RSP	
B1	RSP	Effective width of the PILE in the lateral direction of Plane 1, Plane 2.
B2	RSP	
C	RSP	Effective circumference of the PILE for torsional friction.
SHAPE	CHAR (4)	Cross-sectional shape for Nonlinear material analysis correction. (BAR, ROD, TUBE)

ENTITY: PPIPE

ENTITY TYPE: Relation

DESCRIPTION: Properties of a circular cross-section PIPE element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number of a MAT1 entry.
OD	RSP	Outside diameter of pipe cross-section.
T	RSP	Thickness of pipe cross-section.
NSM	RSP	Nonstructural mass per unit length.
P	RSP	Internal Pressure.
C1	RSP	Stress recovery coordinates in the element coordinate system.
C2	RSP	
D1	RSP	
D2	RSP	
E1	RSP	
E2	RSP	
F1	RSP	
F2	RSP	

ENTITY: PROD

ENTITY TYPE: Relation

DESCRIPTION: Properties of a ROD element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
A	RSP	Area of rod.
J	RSP	Torsional constant.
C	RSP	Coefficient to determine torsional stress.
NSM	RSP	Nonstructural mass per unit length.

ENTITY: PSHEAR

ENTITY TYPE: Relation

DESCRIPTION: Properties of a SHEAR panel element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
T	RSP	Thickness of shear panel.
NSM	RSP	Nonstructural mass per unit area.
F1	RSP	Area factor for extensional stiffness along sides 1-2 and 3-4.
F2	RSP	

ENTITY: PSHELL

ENTITY TYPE: Relation

DESCRIPTION: Properties of the plate and shell elements, QUAD4, QUADR, QUAD8, TRIA3, TRIAR and TRIA6.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID1	INT	Material identification number for membrane.
T	RSP	Membrane thickness.
MID2	INT	Material identification number for bending.
SFACT	RSP	Bending stiffness parameter, $12I/T3$.
MID3	INT	Material identification number for transverse shear.
TFACT	RSP	Transverse shear thickness divided by membrane thickness, TS/T .
NSM	RSP	Nonstructural mass per unit area.
Z1	RSP	Fiber distances for stress computation. The positive direction is determined by the righthand rule and the order in which the GRID points are listed on the connection entry.
Z2	RSP	
MID4	INT	Material identification number for membrane-bending coupling.
THETAM	RSP	Material angle.
MCSID	INT	Identification number of material coordinate system.
MFLG	INT	Identifier Flag
		0 Material coordinate system identification, MCSID
		1 Material property orientation angle, THETA
INTORD	INT	Integration Order.
THETAS	RSP	Stress angle.
SCSID	INT	Identification number of stress coordinate system.
SFLG	INT	Identifier Flag
		0 Stress coordinate system identification, SCSID
		1 Stress angle, THETAS
Z0	RSP	Offset of the element reference plane from the plane of GRID points.
NSP	INT	Number of sample points.
PLSTR	INT	Plane Strain flag

ENTITY: PSOIL

ENTITY TYPE: Relation

DESCRIPTION: Linear and Nonlinear properties of soil attached to a PILE element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
KA	RSP	Constant axial stiffness.
TIDA	INT	Identification number of a TABLENL entry that defines soil properties in the axial direction of the PILE.
EFLG	INT	Identifier Flag
		1 Table identification, TIDA
		2 Axial stiffness, KA
KJ	RSP	Constant torsional stiffness.
TIDJ	INT	Identification number of a TABLENL entry that defines soil properties in the axial direction of the PILE.
JFLG	INT	Identifier Flag
		1 Table identification, TIDJ
		2 Torsional stiffness, KJ
KL	RSP	Constant lateral stiffness.
TIDL	INT	Identification number of a TABLENL entry that defines soil properties in the axial direction of the PILE.
KFLG	INT	Identifier Flag
		1 Table identification, TIDL
		2 Lateral stiffness, KL

ENTITY: PSOLID

ENTITY TYPE: Relation

DESCRIPTION: Properties of the solid hexahedral element, HEXA, pentahedral element, PENTA, and tetrahedral element, TETRA.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MATID	INT	Material identification number.
MCSID	INT	Identification number of material coordinate system.
ORDER	INT	Integration Order.
		0 Optimized Reduced Integration
		2 2x2x2
		3 3x3x3
SCSID	INT	Identification number of stress coordinate system.

ENTITY: PTORDRG

ENTITY TYPE: Relation

DESCRIPTION: Properties of the toroidal ring, TORDRG, element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
TM	RSP	Thickness for membrane.
TF	RSP	Thickness for flexure.

ENTITY: PTRAPAX

ENTITY TYPE: Relation

DESCRIPTION: Properties of a TRAPAX axisymmetric trapezoidal cross-section ring element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
F	RSP (14)	Azimuthal coordinates (in degrees) for stress recovery.

ENTITY: PTRIAAX

ENTITY TYPE: Relation

DESCRIPTION: Properties of a TRIAAX axisymmetric trapezoidal cross-section ring element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
F	RSP (14)	Azimuthal coordinates (in degrees) for stress recovery.

ENTITY: PTUBE

ENTITY TYPE: Relation

DESCRIPTION: Properties of a cylindrical tube, TUBE, element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
OD	RSP	Outside diameter of the tube.
T	RSP	Wall thickness.
NSM	RSP	Nonstructural mass per unit area.

ENTITY: PTWIST

ENTITY TYPE: Relation

DESCRIPTION: Elastic properties of a TWIST panel element.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
MID	INT	Material identification number.
T	RSP	Thickness of twist panel.
NSM	RSP	Nonstructural mass per unit area.

ENTITY: PVISC

ENTITY TYPE: Relation

DESCRIPTION: Viscous properties of a one-dimensional viscous element, VISC.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
PID	INT	Property identification number.
B1	RSP	Viscous coefficients for extension and rotation.
B2	RSP	

ENTITY: VIEW

ENTITY TYPE: Relation

DESCRIPTION: Defines shading and subelement mesh for radiation exchange calculation

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
VID	INT	VIEW identification number.
SHDR	CHAR (4)	Indicates that the element can shade other elements (YES , NO).
SHD3	CHAR (4)	Indicates that the element can be shaded by other elements (YES , NO).
NB	INT	Subelement mesh size in the B-direction.
NG	INT	Subelement mesh size in the G-direction.
DLIN	RSP	Displacement of a surface perpendicular to the active side of the surface.

ENTITY: VIEWOP

ENTITY TYPE: Relation

DESCRIPTION: Options to control the operations performed with the automatic calc radiation view factors.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
OUT	CHAR(8)	Output option. (PRINT , PUNCH , BOTH , NONE).
METHOD	CHAR(4)	View factor computation method. (FDIFF , CONT).
RMAX	RSP	Threshold value to be used in automatically selecting a view factor computation method.
SHADE	CHAR(4)	Shading computation selector. (YES , NO).
SUM_SHADE	CHAR(4)	Requests a summary of the shading conditions and subelement divisions for each HBDY element (YES , NO).
PREC	CHAR(8)	Specifies the precision of RADMTX Bulk Data output (STANDARD , HIGH).
TOL	RSP	Used in checking the planarity of HBDY AREA4 elements. The value specifies an allowable deviation from planarity.

GRID POINT DATA

ENTITY: FLFREE_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Defines a list of fluid GRID points on a free surface. These GRID p be attached to fluid solid elements HEXA, PENTA or TETRA.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
FLUID_POINT	INT	FLUID point identification number.

ENTITY: GRID

ENTITY TYPE: Relation

DESCRIPTION: GRID point.

DATA BLOCKS USED: BGPDT, GPL, GPDT

ATTRIBUTE	TYPE	DEFINITION
GID	INT	External GRID point identification.
IGID	INT	Internal GRID point identification.
PTYPE	CHAR(8)	Point Type (GRID, SCALAR)
X	RSP	Location of the GRID point defined in the Basic system.
Y	RSP	
Z	RSP	
CIDIN	INT	Identification number of coordinate system in which the location of the GRID point is defined.
PSPC	INT	Permanent single-point constraints associated with the GRID point.
CIDOUT	INT	Identification number of coordinate system in which displacements, degrees of freedom, constraints, and solution vectors are defined at the GRID point.
X1	RSP	Location of the GRID point in coordinate system CIDIN.
X2	RSP	
X3	RSP	

ENTITY: RINGFL

ENTITY TYPE: Relation

DESCRIPTION: Defines a fluid point in an axisymmetric fluid model.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
FID	INT	Fluid point identification number.
X1	RSP	Coordinates of point in fluid coordinate system defined by the AXIF Bulk Data entry.
X2	RSP	
X3	RSP	

ENTITY: SEQGP

ENTITY TYPE: Relation

DESCRIPTION: Reference for the resequencing of EXTRA points.

DATA BLOCKS USED: GEOM1

ATTRIBUTE	TYPE	DEFINITION
EPID	INT	EXTRA point identification.
SEQ	INT	Sequenced identification.

ENTITY: SPOINT

ENTITY TYPE: Relation

DESCRIPTION: Defines SCALAR points of the structural model.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
SPID	INT	Scalar point identification number.

COORDINATE SYSTEMS

ENTITY: `CSTM_COORD`

ENTITY TYPE: Relation

DESCRIPTION: Reference coordinate system

DATA BLOCKS USED: `CSTM`, `GEOM1`

ATTRIBUTE	TYPE	DEFINITION	
CID	INT	Coordinate system identification number.	
CTYPE	INT	Coordinate system type.	
INTYPE	INT	Coordinate system input	
		1	CORD1x
		2	CORD2x
GID1	INT	Grid identification defining the system. Used for CORD1x data, NULL for CORD2x.	
GID2	INT		
GID3	INT		
CSYS	INT	Coordinate system in which A, B and C are specified. Used for CORD2x data, NULL for CORD1x.	
A	RSP (3)	Coordinates of three points in coordinate system CIDREF.	
B	RSP (3)	Coordinates of three points in coordinate system CIDREF.	
C	RSP (3)	Coordinates of three points in coordinate system CIDREF.	
T	RSP (3)	Coordinate origin.	
R	RSP (9)	Transformation matrix.	

BOUNDARY CONSTRAINTS AND REDUCTIONS

ENTITY: ASET

ENTITY TYPE: Relation

DESCRIPTION: Component degrees-of-freedom that is placed in the analysis set.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: ASET1

ENTITY TYPE: Relation

DESCRIPTION: Component degrees-of-freedom that is placed in the analysis set.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: ASETAX

ENTITY TYPE: Relation

DESCRIPTION: Set of generalized harmonic motions that define the allowable motions of axisymmetric rings.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
RID	INT	Axisymmetric ring, RINGAX, identification number.
HID	INT	Harmonic identification number.
DOF	INT	List of degrees of freedom.

ENTITY: ASETAX1

ENTITY TYPE: Relation

DESCRIPTION: Set of generalized harmonic motions that define the allowable motions of axisymmetric rings.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
HID	INT	Harmonic identification number.
HCODE	INT	Harmonic sequence specifier.
DOF	INT	List of degrees of freedom.
RID	INT	Axisymmetric ring, RINGAX, identification number.

ENTITY: BDYC

ENTITY TYPE: Relation

DESCRIPTION: Boundary set for a REDUCE, MREDUCE, or CREDUCE operation.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of the boundary set.
SNAME	CHAR (8)	Name of a Basic Substructure which contains the GRID points referenced by boundary set SIDI.
BS_SID	INT	Identification number of the boundary set (BDYS and BDYS1 entries) associated with Basic Substructure SNAME.

ENTITY: BDYS

ENTITY TYPE: Relation

DESCRIPTION: Boundary set of GRID points and degrees of freedom for a Basic Substructure. BDYS boundary sets are used in the substructure REDUCE, MREDUCE and CREDUCE operations.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of a BDYS set.
GID	INT	GRID or SCALAR point identification number in a Basic Substructure.
DOF	INT	Degees of freedom.

ENTITY: BDYS1

ENTITY TYPE: Relation

DESCRIPTION: Boundary set of GRID points and degrees of freedom for a Basic Substructure. BDYS1 boundary sets are used in the substructure REDUCE, MREDUCE and CREDUCE operations.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of a BDYS1 set.
DOF	INT	List of degrees of freedom.
GID	INT	GRID or SCALAR point identification number of a Basic Substructure.

ENTITY: CONCT

ENTITY TYPE: Relation

DESCRIPTION: GRID point and degree of freedom connectivities between two substructures for a manual COMBINE operation.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of connectivity set.
GROUP	INT	Group identification.
DOF	INT	List of degrees of freedom.
SNAME1	CHAR (8)	Names of Basic Substructures being connected.
SNAME2	CHAR (8)	
GID1	INT	GRID or SCALAR point identification numbers where GID1 from SNAME1 connects to GID2 from SNAME2 at the degrees of freedom specified by DOF.
GID2	INT	

ENTITY: CONCT1

ENTITY TYPE: Relation

DESCRIPTION: GRID point and degree of freedom connectivities between two or more substructures for a manual COMBINE operation.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of connectivity set.
GROUP	INT	Group identification.
SNAME1	CHAR (8)	Basic Substructure names.
SNAME2	CHAR (8)	
SNAME3	CHAR (8)	
SNAME4	CHAR (8)	
SNAME5	CHAR (8)	
SNAME6	CHAR (8)	
SNAME7	CHAR (8)	
DOF1	INT	List of degrees of freedom.
GID1	INT	GRID or SCALAR point identification numbers in SNAMEj which are connected at DOF.
GID2	INT	
GID3	INT	
GID4	INT	
GID5	INT	
GID6	INT	
GID7	INT	

ENTITY: DYNRED

ENTITY TYPE: Relation

DESCRIPTION: Dynamic reduction control parameters.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Dynamic reduction set identification number.
FMAX	RSP	The highest frequency of interest.
NVEC	INT	Number of desired eigenvectors.
EVEC	INT	Number of estimated eigenvectors.

ENTITY: GPFIELD

ENTITY TYPE: Relation

DESCRIPTION: Two- or Three-dimensional stress/strain field for GRID point stress or strain recovery.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
FID	INT	Stress field identification number.
TYPE	CHAR (8)	Stress field type.
CIDOUT	INT	Stress field output coordinate system identification number.
AXIS	CHAR (4)	Nominal x-axis of CIDOUT.
NORM	CHAR (4)	Nominal z-axis of CIDOUT.
TOLER	RSP	Tolerance angle, in degrees, for interelement continuity tests.
EID	INT	Identification numbers of element comprising the stress field.

ENTITY: GTRAN

ENTITY TYPE: Relation

DESCRIPTION: Output coordinate system transformation to be applied to the displacements of a selected GRID point in a specified substructure.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of the transformation set.
SNAME	CHAR (8)	Basic Substructure name.
GID	INT	GRID point identification number.
TID	INT	Identification number of a TRANS entry.

ENTITY: MPC

ENTITY TYPE: Relation

DESCRIPTION: Multipoint constraint equation.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
GROUP	INT	Group identification.
DGID	INT	Identification number of dependent GRID or SCALAR point.
IGID	INT	Identification number of independent GRID or SCALAR point.
TYPE	CHAR (12)	Defines the type of multipoint constraints within or between substructures (DEPENDENT , INDEPENDENT)
DOF	INT	Single degree of freedom.
COEF	RSP	Coefficient of degree of freedom.

ENTITY: MPCADD

ENTITY TYPE: Relation

DESCRIPTION: Multipoint constraint set as the union of multipoint constraint sets defined with MPC Bulk Data.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
MPCID	INT	Set identification numbers of multipoint constraints sets defined with MPC data.

ENTITY: MPCAX

ENTITY TYPE: Relation

DESCRIPTION: Defines a multipoint constraint equation for an axisymmetric harmon

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
GROUP	INT	Group identification.
DRID	INT	Ring identification number for dependent degree of freedom.
IRID	INT	Ring identification number for independent degree of freedom.
TYPE	CHAR (12)	Defines the type of multipoint constraints within or between substructures (DEPENDENT , INDEPENDENT)
DOF	INT	Single degree of freedom.
COEF	RSP	Coefficient of degree of freedom.

ENTITY: MPC3

ENTITY TYPE: Relation

DESCRIPTION: Multipoint constraints within or between substructures.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
GROUP	INT	Group identification.
SNAME	CHAR (8)	Basic Substructure name containing the degree of freedom.
DGID	INT	Identification number of dependent GRID or SCALAR point in substructure SNAME.
IGID	INT	Identification number of independent GRID or SCALAR point in substructure SNAME.
TYPE	CHAR (12)	Defines the type of multipoint constraints within or between substructures (DEPENDENT , INDEPENDENT)
DOF	INT	Single degree of freedom.
COEF	RSP	Coefficient of degree of freedom.

ENTITY: OMIT

ENTITY TYPE: Relation

DESCRIPTION: Component degrees of freedom that are omitted, using static condensation, from the analysis set (a-set).

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: OMIT1

ENTITY TYPE: Relation

DESCRIPTION: Component degrees of freedom that are omitted, using static condensation, from the analysis set (a-set).

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: OMITAX

ENTITY TYPE: Relation

DESCRIPTION: Defines component degrees of freedom that the user desires to omit, static condensation, from the analysis set (a-set) in axisymmetric harmonic anal

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
RID	INT	RINGAX identification number.
HID	INT	Harmonic identification number.
DOF	INT	List of degrees of freedom.

ENTITY: POINTAX

ENTITY TYPE: Relation

DESCRIPTION: Defines the location of a discrete point on an axisymmetric ring. T may be used to obtain the motions of discrete points or to apply discrete point loads.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
GID	INT	Point identification number.
RID	INT	Identification number of a RINGAX entry.
F	RSP	Azimuthal angle in degrees.

ENTITY: PRESAX

ENTITY TYPE: Relation

DESCRIPTION: Defines the static pressure loading for an axisymmetric harmonic mo

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
P	RSP	Pressure value.
RID1	INT	Ring identification numbers.
RID2	INT	
F1	RSP	Azimuthal angle in degrees.
F2	RSP	

ENTITY: PRESPT

ENTITY TYPE: Relation

DESCRIPTION: Defines the location of PRES-SURE points in the fluid for recovery o data.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
FID	INT	Identification number of a fluid point defined by a RINGFL Bulk Data entry.
IDP1	INT	Pressure point identification number.
F1	RSP	Azimuthal position on fluid point, referenced by FID, in the fluid coordinate system.
IDP2	INT	Pressure point identification number.
F2	RSP	Azimuthal position on fluid point, referenced by FID, in the fluid coordinate system.
IDP3	INT	Pressure point identification number.
F3	RSP	Azimuthal position on fluid point, referenced by FID, in the fluid coordinate system.

ENTITY: RBAR

ENTITY TYPE: Relation

DESCRIPTION: Rigid bar with six degrees of freedom at each end.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
IGID1	INT	GRID point identification number of connection point.
IDOF1	INT	Independent degrees of freedom in the global coordinate system for the element.
IGID2	INT	GRID point identification number of connection point.
IDOF2	INT	Independent degrees of freedom in the global coordinate system for the element.
DGID1	INT	GRID point identification number of connection point.
DDOF1	INT	Dependent degrees of freedom in the global coordinate system assigned by the element.
DGID2	INT	GRID point identification number of connection point.
DDOF2	INT	Dependent degrees of freedom in the global coordinate system assigned by the element.

ENTITY: RBE1

ENTITY TYPE: Relation

DESCRIPTION: Rigid body connected to an arbitrary number of GRID points.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GROUP	INT	Group identification.
GID	INT	GRID point identification number at which degrees of freedom for the element are assigned.
TYPE	CHAR (12)	Defines the type of multipoint constraints within or between substructures (DEPENDENT , INDEPENDENT)
DOF	INT	List of degrees of freedom in the global coordinate system for the rigid element at GRID point GID.

ENTITY: RBE2

ENTITY TYPE: Relation

DESCRIPTION: Rigid body whose independent degrees of freedom are specified at a single GRID point and whose dependent degrees of freedom are specified at an arbitrary number of GRID points.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GROUP	INT	Group identification.
GID	INT	The GRID point to which all six degrees of freedom for the element are assigned.
TYPE	CHAR (12)	Defines the type of degrees of freedom at an arbitrary GRID point (DEPENDENT , INDEPENDENT)
DOF	INT	Degrees of freedom in the global coordinate system at the grid point GID.

ENTITY: RBE3

ENTITY TYPE: Relation

DESCRIPTION: Motion at a reference GRID point as the weighted average of the motions at a set of other GRID points.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GROUP	INT	Group identification.
OPTION	INT	Equilibrium option.
TYPE	CHAR (12)	Defines the type of degrees of freedom (REFERENCE , INDEPENDENT , DEPENDENT)
GID	INT	GRID point identification number.
WT	RSP	Weighting factor for degrees of freedom defined by GRID point IGID.
DOF	INT	List of global degrees of freedom whose values are computed at the GRID point.

ENTITY: RELES

ENTITY TYPE: Relation

DESCRIPTION: Component degrees of freedom at substructure GRID points which are not to be connected during a substructure COMBINE operation.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
GROUP	INT	Group identification.
SNAME	CHAR (8)	Name of a Basic Substructure.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: RELES1

ENTITY TYPE: Relation

DESCRIPTION: Component degrees of freedom at substructure GRID points which are not to be connected during a substructure COMBINE operation.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
SNAME	CHAR (8)	Name of a Basic Substructure.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: RROD

ENTITY TYPE: Relation

DESCRIPTION: Pin-ended rod that is rigid in extension.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GID1	INT	GRID point identification numbers of connection points.
GID2	INT	
DDOF1	INT	Single dependent translational degree of freedom in the global coordinate system for GIDi.
DDOF2	INT	

ENTITY: RSPLINE

ENTITY TYPE: Relation

DESCRIPTION: Multipoint constraints for the interpolation of displacements at GRID points.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
GROUP	INT	Group identification.
RATIO	RSP	Ratio of the diameter of an elastic tube, which the SPLINE represents, to its length.
GIDF	INT	GRID point identification numbers of the internal, dependent connection points.
GIDL	INT	
GID	INT	GRID point identification numbers of internal, dependent connection points.
DOF	INT	Degrees of freedom to be constrained at GRID point GIDi.

ENTITY: RTRPLT

ENTITY TYPE: Relation

DESCRIPTION: Rigid triangular plate.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Element identification number.
IGID1	INT	GRID point identification numbers of connection point.
IDOF1	INT	Independent degrees of freedom in the global coordinate system for the element at GRID point GID1.
IGID2	INT	GRID point identification numbers of connection point.
IDOF2	INT	Independent degrees of freedom in the global coordinate system for the element at GRID point GID2.
IGID3	INT	GRID point identification numbers of connection point.
IDOF3	INT	Independent degrees of freedom in the global coordinate system for the element at GRID point GID3.
DGID1	INT	GRID point identification numbers of connection point.
DDOF1	INT	Dependent degrees of freedom in the global coordinate system for the element at GRID point GID1.
DGID2	INT	GRID point identification numbers of connection point.
DDOF2	INT	Dependent degrees of freedom in the global coordinate system for the element at GRID point GID2.
DGID3	INT	GRID point identification numbers of connection point.
DDOF3	INT	Dependent degrees of freedom in the global coordinate system for the element at GRID point GID3.

ENTITY: SPC

ENTITY TYPE: Relation

DESCRIPTION: Sets of single-point constraints and static enforced displacements.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Single-point constraint set identification number.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.
D	RSP	Value of enforced displacement for all components designated by GID and DOF.

ENTITY: SPC1

ENTITY TYPE: Relation

DESCRIPTION: Sets of single-point constraints.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Single-point constraint set identification number.
DOF	INT	List of degrees of freedom.
GID	INT	GRID or SCALAR point identification number.

ENTITY: SPCADD

ENTITY TYPE: Relation

DESCRIPTION: Single-point constraint set as the union of single-point constraint sets defined with SPC or SPC1 Bulk Data entries.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Single-point constraint set identification number.
SETID	INT	Single-point constraint set identification numbers defined with SPC or SPC1 entries.

ENTITY: SPCAX

ENTITY TYPE: Relation

DESCRIPTION: Defines a single-point constraint set for axisymmetric harmonic mod

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Single-point constraint set identification number.
RID	INT	Ring identification number.
HID	INT	Harmonic identification number.
DOF	INT	List of degrees of freedom.
D	RSP	Enforced displacement value.

ENTITY: SPCD

ENTITY TYPE: Relation

DESCRIPTION: Enforced displacement values for static analysis.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Static load set identification number.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.
D1	RSP	Value of enforced displacement for all components designated by GID and DOF.

ENTITY: SPCS

ENTITY TYPE: Relation

DESCRIPTION: Single-point constraint set for a specified Basic Substructure.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Single-point constraint set identification number.
SNAME	CHAR (8)	Basic Substructure name.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: SPCS1

ENTITY TYPE: Relation

DESCRIPTION: Set of single-point constraints for a specified Basic Substructure.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Single-point constraint set identification number.
SNAME	CHAR (8)	Basic Substructure name.
DOF	INT	List of degrees of freedom.
GID	INT	GRID or SCALAR point identification number.

ENTITY: SPCSD

ENTITY TYPE: Relation

DESCRIPTION: Enforced static displacements for a Basic Substructure.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Static load set identification number.
SNAME	CHAR (8)	Basic Substructure name.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.
D	RSP	Value of enforced displacement for all components designated by GID and DOF.

ENTITY: SUPAX

ENTITY TYPE: Relation

DESCRIPTION: Defines a set of component degrees of freedom sufficient to constra motion of axisymmetric harmonic models.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
RID	INT	Axisymmetric rign, RINGAX, identification number.
HID	INT	Harmonic identification number.
DOF	INT	List of degrees of freedom.

ENTITY: SUPORT

ENTITY TYPE: Relation

DESCRIPTION: Set of component degrees of freedom sufficient to constrain free-body motion.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: SUPPORTS

ENTITY TYPE: Relation

DESCRIPTION: Set of component degrees of freedom in a Basic Substructure, sufficient to constrain free-body motion of a solution structure.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
SNAME	CHAR (8)	Basic Substructure name.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.

ENTITY: TRANS

ENTITY TYPE: Relation

DESCRIPTION: Basic Coordinate System of a component substructure relative to the Basic Coordinate System of the combined substructure.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
CID	INT	Coordinate system identification number.
A	RSP (3)	Coordinates, in the Basic Coordinate System of the combined substructure, of points defining the orientation of the Basic Coordinate System of a component substructure.
B	RSP (3)	
C	RSP (3)	

ENTITY: USET

ENTITY TYPE: Relation

DESCRIPTION: Degrees of freedom of a user set.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.
SET	INT	User set name.

ENTITY: USET1

ENTITY TYPE: Relation

DESCRIPTION: Degrees of freedom of a user set.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.
SET	INT	User set name.

APPLIED LOADS

ENTITY: ACCEL_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static acceleration loads.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
CID	INT	Coordinate system identification number used for definition of the acceleration vector.
V1	RSP	Components of the acceleration vector measured in coordinate system CID.
V2	RSP	
V3	RSP	
DIR	CHAR(2)	Component direction of acceleration variation. (x1, x2, x3)
LOC	RSP	Location along direction DIR in coordinate system CID for specification of a load factor.
VAL	RSP	The load factor associated with location LOC.

ENTITY: ACCEL1_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static acceleration loads at individual GRID points of the model.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
CID	INT	Coordinate system identification number used for definition of the acceleration vector.
G	RSP	Constant multiplier for the acceleration vector.
V1	RSP	Components of the acceleration vector measured in coordinate system CID.
V2	RSP	
V3	RSP	
GRID	INT	Grid identification.

ENTITY: COMBINE_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static load as a linear combination of load sets.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
SCALE	RSP	Scale factor applied to the combined load set LID.
SCALE_COMB	RSP	Scale factor for load set LIDi.
LID_COMB	INT	Set identification numbers of loads being combined.

ENTITY: FORCE_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static loads at GRID points.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GRID	INT	GRID point identification number.
CID	INT	Coordinate system identification number used for definition of the force vector.
F	RSP	Load scale factor.
V1	RSP	Components of the load vector measured in coordinate system CID.
V2	RSP	
V3	RSP	

ENTITY: FORCE1_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static loads.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GID	INT	GRID point identification number.
F	RSP	Value of load.
GID1	INT	GRID point identification numbers defining the direction of the resulting force vector.
GID2	INT	

ENTITY: FORCE2_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static loads.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GID	INT	GRID point identification number.
F	RSP	Value of load.
GID1	INT	GRID point identification numbers defining the direction of the resulting force vector.
GID2	INT	
GID3	INT	
GID4	INT	

ENTITY: FORCEAX_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Defines a static load of the form: $f = F \text{ dot } V$, for use in an axisy harmonic analysis.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
RID	INT	RINGAX identification number.
HID	INT	Harmonic identification number.
F	RSP	Load scale factor.
V1	RSP	Components of load vector in the cylindrical coordinate system.
V2	RSP	
V3	RSP	

ENTITY: GRAV_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Gravity loading on the structural model.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
CID	INT	Coordinate system identification number.
G	RSP	Gravity vector scale factor.
V1	RSP	Gravity vector components.
V2	RSP	
V3	RSP	

ENTITY: LOADC_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static load for a Substructuring analysis as a linear combination of load sets defined for each Basic Substructure.

DATA BLOCKS USED: GEOM4

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
S	RSP	Scale factor applied to the combined load.
SNAME	CHAR (8)	Basic Substructure name.
SUB_LID	INT	Identification number of a load set in substructure SNAME.
SUB_S	RSP	Scale factor for load set SID.

ENTITY: LOADCYH_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Harmonic coefficients of a static load for use in Cyclic Symmetry analyses.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
SCALE	RSP	Scale factor applied to the combined load.
HID	INT	Harmonic identification number.
HTYPE	CHAR (8)	Harmonic type C S CSTAR SSTAR GRAV RFORCE
SCALE_LOAD	RSP	Scale factor applied to the specified load set.
LID_LOAD	INT	Load set identification number.

ENTITY: LOADCYN_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Physical static load for use in Cyclic Symmetry analysis.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
SCALE	RSP	Scale factor applied to the combined load.
SEGID	INT	Segment identification number.
SEGTYPE	CHAR (8)	Segment type (L, R).
SCALE_LOAD	RSP	Scale factor applied to the specified load set.
LID_LOAD	INT	Load set identification number.

ENTITY: MOMENT_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static moment.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GID	INT	GRID point identification number.
CID	INT	Coordinate system identification number in which the resulting vector is applied.
M	RSP	Moment scale factor.
V1	RSP	Components of the moment vector measured in coordinate system CID.
V2	RSP	
V3	RSP	

ENTITY: MOMENT1_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static moment.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GID	INT	GRID point identification number.
M	RSP	Magnitude of moment.
GID1	INT	GRID point identification numbers defining the direction of the resulting force vector.
GID2	INT	

ENTITY: MOMENT2_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static moment.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GID	INT	GRID point identification number.
M	RSP	Magnitude of moment.
GID1	INT	GRID point identification numbers defining the direction of the resulting force vector.
GID2	INT	
GID3	INT	
GID4	INT	

ENTITY: MOMAX_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Defines a static moment, m , of the form: $m = M \text{ dot } V$, for use in an axisymmetric harmonic model.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
RID	INT	RINGAX identification number.
HID	INT	Harmonic identification number.
M	RSP	Moment scale factor.
V1	RSP	Components of moment vector in the cylindrical coordinate system.
V2	RSP	
V3	RSP	

ENTITY: PLOAD_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static pressure load on triangular or quadrilateral surface.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
P	RSP	Pressure value.
GID1	INT	GRID point identification numbers.
GID2	INT	
GID3	INT	
GID4	INT	

ENTITY: PLOAD1_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Concentrated, uniformly distributed, or linearly distributed applied loads to the BAR or BEAM elements at selected points along the element axis.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
EID	INT	Element identification number.
TYPE	CHAR(4)	The load type. FX or MX FY or MY FZ or MZ FXE or MXE FYE or MYE FZE or MZE
SCALE	CHAR(4)	The scaling rule for the positions X1 and X2 (LE , FR , LEPR , FRPR)
X1	RSP	Position along the element between which the load is applied.
P1	RSP	Load intensity per unit length at positions X1.
X2	RSP	Position along the element between which the load is applied.
P2	RSP	Load intensity per unit length at positions X2.

ENTITY: PLOAD2_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Uniform static pressure load applied to plate elements.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
P	RSP	Pressure value.
EID	INT	Element identification.

ENTITY: PLOAD4_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static loads on surfaces.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
EID	INT	Element identification number.
P1	RSP	Pressure at the GRID points defining the loaded element face.
P2	RSP	
P3	RSP	
P4	RSP	
EIDL	INT	Last Element identification number.
GIDD1	INT	Identification numbers of GRID points defining a diagonal of the loaded face of the element.
GIDD2	INT	
CID	INT	Coordinate system identification number.
V1	RSP	Components of a vector in system CID that defines the direction of the GRID point loads generated by the pressure.
V2	RSP	
V3	RSP	

ENTITY: QBDY1_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Uniform heat flux into an HBDY element.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
Q0	RSP	Heat flux into element.
EID	INT	HBDY element identification.

ENTITY: QBDY2_LOAD

ENTITY TYPE: Relation

DESCRIPTION: GRID point flux into an HBDY element.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
EID	INT	Identification number of an HBDY element.
Q01	RSP	Heat flux at GRID point i of the referenced HBDY element.
Q02	RSP	
Q03	RSP	
Q04	RSP	

ENTITY: QHBDY_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Uniform heat flux into a set of GRID points.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
TYPE	CHAR(4)	Type of area involved. (POINT , LINE , REV , AREA3 , AREA4)
Q0	RSP	Heat flux into element.
AF	RSP	Area factor which depends on TYPE.
GID1	INT	GRID point identification numbers.
GID2	INT	
GID3	INT	
GID4	INT	

ENTITY: QVECT_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Thermal vector flux from a distant source into HBDY elements.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
Q0	RSP	Magnitude of thermal flux vector.
V1	RSP	Vector components (in Basic Coordinate System) of the thermal vector flux.
V2	RSP	
V3	RSP	
EID	INT	Identification of the HBDY element irradiated by the distant source.

ENTITY: QVOL_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Rate of internal heat generation in an element.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
QV	RSP	Power input per unit volume produced by a heat conduction element.
EID	INT	Heat conduction element identification.

ENTITY: RFORCE_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static loading condition due to centrifugal and centripetal force fields.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GID	INT	GRID point identification number.
CID	INT	Coordinate system in which V is defined.
A	RSP	Scale factor for rotational velocity in revolutions per unit time.
V1	RSP	Components of the vector defining the direction of rotation in coordinate system CID.
V2	RSP	
V3	RSP	
METHOD	INT	Method used to compute the centrifugal 1, Model does not contain coupled mass term 2, Models with coupled mass terms.
RACC	RSP	Scale factor for rotational acceleration in units of revolutions per unit time squared.

ENTITY: RFORCE1_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static loading condition due to centrifugal and centripetal force fields.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GID	INT	GRID point identification number.
CID	INT	Coordinate system in which V is defined.
A	RSP	Scale factor for rotational velocity in revolutions per unit time.
V1	RSP	Components of the vector defining the direction of rotation in coordinate system CIDA.
V2	RSP	
V3	RSP	
METHOD	INT	Method used to compute the centrifugal force vector.
GIDB	INT	GRID point identification number.
CIDB	INT	Coordinate system in which W is defined.
B	RSP	Scale factor for rotational acceleration in revolutions per unit time squared.
W1	RSP	Components of the vector defining the direction of rotational acceleration in coordinate system CIDB.
W2	RSP	
W3	RSP	

ENTITY: SLOAD_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Static loads applied to SCALAR points.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
SPID	INT	SCALAR point identification.
F	RSP	Load value.

ENTITY: TEMP_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Temperature set at GRID points.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Temperature set identification number.
GRID	INT	GRID point identification.
TEMP	RSP	Temperature value.

ENTITY: TEMPAX_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Defines a temperature set for an axisymmetric harmonic model.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Temperature set identification number.
RID	INT	Ring identification number.
F	RSP	Azimuthal angle in degrees.
TEMP	RSP	Temperature value.

ENTITY: TEMPD_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Temperature default for all GRID points of the structural model for which temperatures have not been explicitly defined.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Temperature set 1 identification.
TEMP	RSP	Default temperature value for temperature set.

ENTITY: TEMPP1_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Temperature field for the plate and shell elements.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Temperature set identification number.
EID	INT	Element identification.
TBAR	RSP	Average temperature over the cross section.
T	RSP	Effective linear thermal gradient.
T1	RSP	Temperature values at stress recovery fibers.
T2	RSP	

ENTITY: TEMPP2_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Temperature field for the plate and shell elements as an average temperature and thermal moments.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Temperature set identification number.
EID	INT	Element identification numbers.
TBAR	RSP	Average temperature over the cross section.
MX	RSP	Resultant thermal moments per unit width in element coordinate system.
MY	RSP	
MXY	RSP	
T1	RSP	Temperature values at stress recovery fibers.
T2	RSP	

ENTITY: TEMPP3_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Temperature field for the plate and shell elements.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Temperature set identification.
EID	INT	Element identification.
Z0	RSP	Position of the bottom surface with respect to an arbitrary reference plane.
T0	RSP	Temperature at the bottom surface.
Z1	RSP	Position through the thickness relative to the arbitrary reference plane.
T1	RSP	Temperature at position Z1.
Z2	RSP	Position through the thickness relative to the arbitrary reference plane.
T2	RSP	Temperature at position Z2.
Z3	RSP	Position through the thickness relative to the arbitrary reference plane.
T3	RSP	Temperature at position Z3.
Z4	RSP	Position through the thickness relative to the arbitrary reference plane.
T4	RSP	Temperature at position Z4.
Z5	RSP	Position through the thickness relative to the arbitrary reference plane.
T5	RSP	Temperature at position Z5.
Z6	RSP	Position through the thickness relative to the arbitrary reference plane.
T6	RSP	Temperature at position Z6.
Z7	RSP	Position through the thickness relative to the arbitrary reference plane.
T7	RSP	Temperature at position Z7.
Z8	RSP	Position through the thickness relative to the arbitrary reference plane.
T8	RSP	Temperature at position Z8.
Z9	RSP	Position through the thickness relative to the arbitrary reference plane.
T9	RSP	Temperature at position Z9.
Z10	RSP	Position through the thickness relative to the arbitrary reference plane.
T10	RSP	Temperature at position Z10.

ENTITY: TEMPRB_LOAD

ENTITY TYPE: Relation

DESCRIPTION: Temperature field for the BAR, BEAM, ROD, TUBE and CONROD elements.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Temperature set identification number.
EID	INT	Element identification number.
TBARA	RSP	Average temperature over the cross sectional area at Ends A and B.
TBARB	RSP	
T1A	RSP	Effective linear gradient in directions 1 and 2 at Ends A and B.
T1B	RSP	
T2A	RSP	
T2B	RSP	
TCA	RSP	Temperatures at points C through F as defined on the property entries at ends A and B.
TDA	RSP	
TEA	RSP	
TFA	RSP	
TCB	RSP	
TDB	RSP	
TEB	RSP	
TFB	RSP	

ENTITY: VECLOAD

ENTITY TYPE: Relation

DESCRIPTION: Vector loads

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Load set identification number.
SCALE	RSP	Overall scale factor for load set SID.
FACTOR	RSP	Scale factor for column identification.
COL_ID	INT	Column identification numbers.

DIRECT INPUT TABLES

ENTITY: FSIDATA

ENTITY TYPE: Relation

DESCRIPTION: Defines fluid-structure interaction data.

DATA BLOCKS USED: GEOM2

ATTRIBUTE	TYPE	DEFINITION
GRAVID	INT	Identification number of a GRAV Bulk Data entry.
TOLER	RSP	Tolerance, in units of length, used to determine points on the fluid-structure interface.
PREFDB	RSP	Reference sound pressure level.
FSIEPS	RSP	The fluid stiffness matrix inversion parameter.
DBOUT	INT	Selects the sound pressure level output method (PEAK , RMS).
CFREQ	INT	Specifies that input frequencies are defined as the center frequencies of n-octave bands (YES , NO).
NTANKS	INT	Specifies the number of of isolated fluid compartments, or tanks.

ENTITY: TABDMP1

ENTITY TYPE: Relation

DESCRIPTION: Defines a tabular function, used in generating frequency-dependent time-dependent dynamic loads, of the form: $y(x) = Y_i(X_i)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
XAXIS	CHAR (4)	Specifies the method used for interpolation for x-axis data: (LINEAR , LOG)
YAXIS	CHAR (4)	Specifies the method used for interpolation for y-axis data: (LINEAR , LOG)
DMPTYP	CHAR (4)	Type of damping data: (G , FRACTION , PERCENT , Q)
F	RSP	Frequency values in cycles per unit time.
D	RSP	Damping value.

ENTITY: TABDMP2

ENTITY TYPE: Relation

DESCRIPTION: Defines structural modal damping as a tabular function of frequency form: $G(f) = G_i(f_i)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
DMPTYP	CHAR (4)	Type of damping data: (G , FRACTION , PERCENT , Q)
DEFDMP	RSP	Default damping value to be used if a mode does not appear in the Mode index.
INDEX	CHAR (4)	Defines the meaning of the Mode Index (Mi) given below. A value of MODE indicates that the indices are mode identification numbers, while a value of HSET indicates that the indices are modal degrees of freedom in the h-set.
M	INT	Mode index.
D	RSP	Damping value.

ENTITY: TABLED1

ENTITY TYPE: Relation

DESCRIPTION: Defines a tabular function, used in generating frequency-dependent time-dependent dynamic loads, of the form: $y(x) = Y_i(X_i)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
XAXIS	CHAR (4)	Specifies the method used for interpolation for x-axis data: (LINEAR , LOG)
YAXIS	CHAR (4)	Specifies the method used for interpolation for y-axis data: (LINEAR , LOG)
X	RSP	Tabular entry.
Y	RSP	

ENTITY: TABLED2

ENTITY TYPE: Relation

DESCRIPTION: Defines a parametric tabular function, used in generating frequency and time-dependent dynamic loads, of the form: $y(x) = Y_i(X_i - C_1)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
C1	RSP	Function parameter.
X	RSP	Tabular entry.
Y	RSP	

ENTITY: TABLED3

ENTITY TYPE: Relation

DESCRIPTION: Defines a parametric tabular function, used in generating frequency and time-dependent dynamic loads, of the form: $y(x) = Y_i((X_i - C_1)/C_2)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
C1	RSP	Function parameters.
C2	RSP	
X	RSP	Tabular entry.
Y	RSP	

ENTITY: TABLED4

ENTITY TYPE: Relation

DESCRIPTION: Defines the coefficients of a power series, used in generating freq dependent and time-dependent dynamic loads.

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
C1	RSP	Function parameters.
C2	RSP	
C3	RSP	
C4	RSP	
A1	RSP	Coefficient entries.
A2	RSP	

ENTITY: TABLEM1

ENTITY TYPE: Relation

DESCRIPTION: Defines a tabular function, used in generating temperature-dependen material properties, of the form: $y(x) = Y_i(X_i)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
X	RSP	Tabular entry.
Y	RSP	

ENTITY: TABLEM2

ENTITY TYPE: Relation

DESCRIPTION: Defines a tabular function, used in generating temperature-dependen material properties, of the form: $y(x) = Z * Y_i(X_i - C_1)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
C1	RSP	Function parameter.
X	RSP	Tabular entry.
Y	RSP	

ENTITY: TABLEM3

ENTITY TYPE: Relation

DESCRIPTION: Defines a tabular function, used in generating temperature-dependen material properties, of the form: $y(x) = Z * Y_i((X_i - C_1)/C_2)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
C1	RSP	Function parameters.
C2	RSP	
X	RSP	Tabular entry.
Y	RSP	

ENTITY: TABLEM4

ENTITY TYPE: Relation

DESCRIPTION: Defines a tabular function, used in generating temperature-dependen material properties.

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
C1	RSP	Function parameters.
C2	RSP	
C3	RSP	
C4	RSP	
A1	RSP	Coefficient entries.
A2	RSP	

ENTITY: TABLENL

ENTITY TYPE: Relation

DESCRIPTION: Defines a nonlinear material property using a tabular function of the form: $y(x) = \text{SCALE} * Y_i(X_i)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
KU	RSP	Plastic unloading slope.
SCALE	RSP	Function scale factor.
HYSTYP	CHAR (4)	Type of hysteretic material behavior. (CYCLIC, NONC, ISOT, KINE, COMB)
YIELD	INT	Yield stress value.
F	RSP	The angle of internal friction, in degrees.
B	RSP	Combination factor.
SYM	CHAR (4)	Reflective symmetry indicator.
X	RSP	Tabular entries.
Y	RSP	

ENTITY: TABRND1

ENTITY TYPE: Relation

DESCRIPTION: Defines power spectral density factors for use in random analysis, as a tabular function or frequency of the form: $\text{PSD}(F) = G_i(F_i)$

DATA BLOCKS USED: DIT

ATTRIBUTE	TYPE	DEFINITION
TID	INT	Table identification number.
XAXIS	CHAR (4)	Specifies the method used for interpolation for x-axis data: (LINEAR, LOG)
YAXIS	CHAR (4)	Specifies the method used for interpolation for y-axis data: (LINEAR, LOG)
F	RSP	Frequency values in cycles per unit time.
G	RSP	Power Spectral Density values.

DYNAMICS PROBLEM DEFINITION

ENTITY: ACSRCE

ENTITY TYPE: Relation

DESCRIPTION: Defines an acoustic source of the form: $Q(f) = A * q(f) * e^{i * (\theta - 2 * \pi * f * \tau)}$

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
ADEF	INT	Identification number of a DAREA Bulk Data entry which defines A.
TDEF	INT	Identification number of a DELAY set which defines T.
QDEF	INT	Identification number of a DPHASE set which defines Q.
CTAB	INT	Identification number of a TABLEDi entry which define power versus frequency.
RHO	RSP	Density of the fluid.
B	RSP	Bulk modulus of the fluid.

ENTITY: DAREA

ENTITY TYPE: Relation

DESCRIPTION: Location of a dynamic load or enforced motion and a scale factor.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of DAREA set.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	Single degree of freedom.
A	RSP	Scale factor for the designated degree of freedom.

ENTITY: DAREAS

ENTITY TYPE: Relation

DESCRIPTION: Location of a dynamic load or enforced motion and a scale factor in reference to a Basic Substructure.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of DAREA set.
GID1	INT	GRID or SCALAR point identification number.
DOF1	INT	Single degree of freedom.
A1	RSP	Scale factor for the designated degree of freedom.
GID2	INT	GRID or SCALAR point identification number.
DOF2	INT	Single degree of freedom.
A2	RSP	Scale factor for the designated degree of freedom.

ENTITY: DELAY

ENTITY TYPE: Relation

DESCRIPTION: Time delay for frequency or time dependent dynamic loads.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of DELAY set.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.
T	RSP	Time delay for designated coordinate.

ENTITY: DELAYS

ENTITY TYPE: Relation

DESCRIPTION: Time delay for frequency or time dependent loads in reference to a Basic Substructure.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of DELAY set.
SNAME	CHAR (8)	Basic Substructure name.
GID1	INT	GRID or SCALAR point identification number.
DOF1	INT	List of degrees of freedom.
T1	RSP	Time delay for designated component.
GID2	INT	GRID or SCALAR point identification number.
DOF2	INT	List of degrees of freedom.
T2	RSP	Time delay for designated component.

ENTITY: DLOAD

ENTITY TYPE: Relation

DESCRIPTION: Dynamic loads and enforced motions for frequency response and transient response problems as a linear combination of load sets.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
SCALE	RSP	Overall scale factor for load set LID.
FACTOR	RSP	Scale factor for load set L.
L	INT	Load set identification numbers.

ENTITY: DLOAD1

ENTITY TYPE: Relation

DESCRIPTION: Dynamic loads and enforced motions for frequency response and transient response problems as a linear combination of load sets.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
S	RSP	Overall scale factor for load set LID.
LOADID	INT	Load set identification number.

ENTITY: DPHASE

ENTITY TYPE: Relation

DESCRIPTION: Phase load term for frequency-dependent loads.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of DPHASE set.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.
Q	RSP	Phase lead (in degrees) for designated degrees of freedom.

ENTITY: DPHASES

ENTITY TYPE: Relation

DESCRIPTION: The phase load term for frequency-dependent loads in reference to a Basic Substructure.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Identification number of DPHASE set.
SNAME	CHAR (8)	Basic Substructure name.
GID	INT	GRID or SCALAR point identification number.
DOF	INT	List of degrees of freedom.
Q	RSP	Phase lead (in degrees) for the designated degree of freedom.

ENTITY: EIGB

ENTITY TYPE: Relation

DESCRIPTION: Buckling analysis eigenvalue extraction control data.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
METHOD	CHAR (8)	Method of eigenvalue extraction. (SINV, LANCZOS)
FL	RSP	The lower and upper limits specifying the range of buckling load factors desired.
FU	RSP	
NVEC	INT	The maximum number of eigenvectors to be computed.
E	RSP	Convergence criteria.
NORM	CHAR (8)	Method for normalizing buckling mode shapes (MAX, POINT)
GID	INT	GRID or SCALAR point identification number.
DOF	INT	Single degree of freedom.

ENTITY: EIGC

ENTITY TYPE: Relation

DESCRIPTION: Complex eigensolution control data.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
METHOD	CHAR (8)	Method of complex eigenvalue extraction. (INV, HESS)
NORM	CHAR (8)	Method for normalizing eigenvectors. (MAX, POINT)
GID	INT	GRID, SCALAR or EXTRA point identification number.
DOF	INT	Single degree of freedom of GRID point GID.
E	RSP	Convergence criterion.
NUMDES	INT	The desired number of eigenvectors to be computed.
EPS	RSP	Zero threshold value.
PA	RSP	Complex point pairs defining lines in the complex plane.
QA	RSP	
PB	RSP	
QB	RSP	
W	RSP	Width of region i in complex plane.
NE	INT	Estimated number of roots in each region.
ND	INT	Desired number of roots in each region.

ENTITY: EIGR

ENTITY TYPE: Relation

DESCRIPTION: Real eigensolution control data.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
METHOD	CHAR(8)	Method of eigenvalue extraction. (GIV, MGIV, SINV, LANCZOS, SUBS)
FL	RSP	Frequency range for eigenvector computations.
FU	RSP	
NEST	INT	Estimated number of roots in the frequency range FL to FU.
NVEC	INT	Number of eigenvectors to compute.
MAXDIM	INT	Maximum dimension of the subspace.
E	RSP	Mass orthogonality test parameter. A non-zero value requests a check of the mass orthogonality of the eigenvectors.
NORM	CHAR(8)	Method for eigenvectors normalization. (MASS, MAX, POINT)
GID	INT	GRID or SCALAR point identification number.
DOF	INT	Single degree of freedom of GID.

ENTITY: EPOINT

ENTITY TYPE: Relation

DESCRIPTION: EXTRA points as generalized coordinates for use in dynamics analyses.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
EXTRA_POINT	INT	EXTRA point identification number.

ENTITY: NOLIN1

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear transient forcing function.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
NLLID	INT	Nonlinear load set identification number.
GIDI	INT	GRID, SCALAR or EXTRA point identification number at which the nonlinear load is to be applied.
DOFI	INT	Single degree of freedom for GIDI.
S	RSP	Scale factor.
GIDJ	INT	GRID, SCALAR or EXTRA point identification number whose response helps determine the value of the forcing function.
DOFJ	INT	Single degree of freedom for GIDJ.
TID	INT	Identification number of a TABLEDi entry.
RESPJ	CHAR(4)	Type of response at degree of freedom J. (DISP, VELO)

ENTITY: NOLIN2

ENTITY TYPE: Relation

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear transient forcing function.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
NLLID	INT	Nonlinear load set identification number.
GIDI	INT	GRID, SCALAR or EXTRA point identification number at which the nonlinear load is to be applied.
DOFI	INT	Single degree of freedom for GIDI.
S	RSP	Scale factor.
GIDJ	INT	GRID, SCALAR or EXTRA point identification number.
DOFJ	INT	Single degree of freedom for GIDJ.
RESPJ	CHAR(4)	Type of response at degree of freedom J. (DISP, VELO)
OP	CHAR(4)	Mathematical operator (+, -, *)
GIDK	INT	GRID, SCALAR or EXTRA point identification number.
DOFK	INT	Single degree of freedom for GIDK.
RESPK	CHAR(4)	Type of response at degree of freedom K. (DISP, VELO)

ENTITY: NOLIN3

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear transient forcing functions.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
NLLID	INT	Nonlinear load set identification number.
GIDI	INT	GRID, SCALAR or EXTRA point identification number at which the nonlinear load is to be applied.
DOFI	INT	Single degree of freedom for GIDI.
S	RSP	Scale factor.
GIDJ	INT	GRID, SCALAR or EXTRA point identification number whose response helps determine the value of the forcing function.
DOFJ	INT	Single degree of freedom for GIDJ.
RESPJ	CHAR (4)	Type of response at degree of freedom j. (DISP VELO)
A	RSP	Amplification factor.

ENTITY: NOLIN4

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear transient forcing function.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
NLLID	INT	Nonlinear load set identification number.
GIDI	INT	GRID, SCALAR or EXTRA point identification number at which the nonlinear load is to be applied.
DOFI	INT	Single degree of freedom for GIDI.
S	RSP	Scale factor.
GIDJ	INT	GRID, SCALAR or EXTRA point identification number whose response helps determine the value of the forcing function.
DOFJ	INT	Single degree of freedom for GIDJ.
RESPJ	CHAR (4)	Type of response at degree of freedom j. (DISP VELO)
A	RSP	Amplification factor.

ENTITY: RANDPS

ENTITY TYPE: Relation

DESCRIPTION: Load set power spectral density factors for use in random analysis.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Random analysis set identification number.
SUBJ	INT	Subcase identification number of excited load set.
SUBK	INT	Subcase identification number of applied load set.
X	RSP	Components of the complex coefficient.
Y	RSP	
TID	INT	Identification number of a TABRND1 entry which defines G(f).

ENTITY: RANDT1

ENTITY TYPE: Relation

DESCRIPTION: Time lag constants for use in random analysis autocorrelation function computations.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Random analysis set identification number.
N	INT	Number of time lag intervals.
T0	RSP	Starting time lag.
TMAX	RSP	Maximum time lag.

ENTITY: RLOAD1

ENTITY TYPE: Relation

DESCRIPTION: Frequency-dependent dynamic load for use in frequency response analyses.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
ADEF	INT	Identification number of loads data which defines A.
TDEF	INT	Identification number of a DELAY or DELAYS Bulk Data entry which defines t.
QDEF	INT	Identification number of a DPHASE or DPHASES Bulk Data entry which defines q.
CTAB	INT	Identification number of a TABLEDi Bulk Data entry which gives C(f).
DTAB	INT	Identification number of a TABLEDi Bulk Data entry which gives D(f).
DYNEX	INT	Type of dynamic excitation.

ENTITY: RLOAD2

ENTITY TYPE: Relation

DESCRIPTION: Frequency-dependent dynamic load for use in frequency response analyses.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Set identification number.
ADEF	INT	Identification number of loads data which defines A.
TDEF	INT	Identification number of a DELAY or DELAYS Bulk Data entry which defines t.
QDEF	INT	Identification number of a DPHASE or DPHASES Bulk Data entry which defines q.
BTAB	INT	Identification number of a TABLEDi Bulk Data entry which defines B(f).
CTAB	INT	Identification number of a TABLEDi Bulk Data entry which defines C(f).
DYNEX	INT	Type of dynamic excitation.

ENTITY: SEQEP

ENTITY TYPE: Relation

DESCRIPTION: Explicit definition of the formation sequence of EXTRA points of the structural model to optimize bandwidth.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
EPID	INT	EXTRA point identification numbers.
SEQ	INT	Sequenced identification number.

ENTITY: SHOCK

ENTITY TYPE: Relation

DESCRIPTION: Response Spectra Shock Response load.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
GID	INT	Grid point identification number.
COMP	INT	Component code.
DYNEX	INT	Type of dynamic excitation.
DMPTYP	CHAR (4)	Type of damping. (G, FRACTION, PERCENT, Q)
EVAL	RSP	Excitation value.
DVAL	RSP	Modal damping value.
TID	INT	Identification number of a TABLEDi Bulk Data entry which defines the peak.

ENTITY: TF

ENTITY TYPE: Relation

DESCRIPTION: Transfer function of the form:

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
GROUP	INT	Group identification.
DGID	INT	Identification number of the dependent GRID, SCALAR or EXTRA point.
IGID	INT	Identification number of the independent GRID, SCALAR or EXTRA point.
TYPE	CHAR (12)	Defines the type of multipoint constraints within or between substructures (DEPENDENT , INDEPENDENT)
DOF	INT	Single degree of freedom.
COEF	RDP (3)	Transfer function coefficients.

ENTITY: TIC

ENTITY TYPE: Relation

DESCRIPTION: Initial displacements and velocities for Direct or Modal Transient Response analyses.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
GID	INT	GRID, SCALAR or EXTRA point identification number for d-set (physical coordinate) input, or Mode Number for h-set (modal coordinate) input.
DOF	INT	Single degree of freedom for d-set input or 1 for h-set input.
U0	RSP	Initial displacement value.
V0	RSP	Initial velocity value.

ENTITY: TICRV

ENTITY TYPE: Relation

DESCRIPTION: Rotational (and translational) velocity initial conditions for the structural model for Direct or Modal Transient Response analyses.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
GID	INT	GRID identification number to define a point on the axis of rotation.
CID	INT	Coordinate system identification number in which V is defined.
A	RSP	The value of rotational velocity.
V1	RSP	Components of a vector, in coordinate system CID, defining the direction of rotation.
V2	RSP	
V3	RSP	
IGID	INT	Initial GRID point which has the velocity initial conditions computed.

ENTITY: TICS

ENTITY TYPE: Relation

DESCRIPTION: Initial displacements and velocities for a Basic Substructure in direct transient response analyses.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
SNAME	CHAR (8)	Basic Substructure name.
GID	INT	GRID, SCALAR or EXTRA point identification number.
DOF	INT	List of Degrees of freedom.
U0	RSP	Initial displacement value.
V0	RSP	Initial velocity value.

ENTITY: TICTV

ENTITY TYPE: Relation

DESCRIPTION: Translational velocity initial conditions for the structural model for Direct or Modal Transient Response analyses.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
CID	INT	Coordinate system identification number in which V is defined.
A	RSP	The value of rotational velocity.
V1	RSP	Components of a vector, in coordinate system CID, defining the direction of rotation.
V2	RSP	
V3	RSP	
IGID	INT	Initial GRID point which has the velocity initial conditions computed.

ENTITY: TLOAD1

ENTITY TYPE: Relation

DESCRIPTION: Time-dependent dynamic load.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
ADEF	INT	Identification number of loads data which defines A.
TDEF	INT	Identification number of a DELAY or DELAYS set which defines t.
DYNEX	INT	Type of dynamic excitation.
FTAB	INT	Identification number of a TABLEDi entry which gives F(t-t).

ENTITY: TLOAD2

ENTITY TYPE: Relation

DESCRIPTION: Time-dependent dynamic load.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
LID	INT	Load set identification number.
ADEF	INT	Identification number of loads data which defines A.
TDEF	INT	Identification number of a DELAY or DELAYS set which defines T.
DYNEX	INT	Type of dynamic excitation.
T1	RSP	Time constant.
T2	RSP	Time constant.
F	RSP	Frequency in cycles per unit time.
Q	RSP	Phase angle in degrees.
C	RSP	Exponential Coefficient.
B	RSP	Growth coefficient.

GENERAL PROBLEM CONTROL DATA

ENTITY: CASE_CONTROL

ENTITY TYPE: Relation

DESCRIPTION: Case Control Description

DATA BLOCKS USED: CASECC

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Subcase identifier
MPC	INT	Multipoint constraint set
SPC	INT	Single-point constraint set
LOAD	INT	External static load set
METHOD	INT	Real eigenvalue extraction set
DEFORM	INT	Element deformation set
TEMP_LOAD	INT	Thermal load set
TEMP	INT	Thermal material set
IC	INT	Transient initial conditions
NLLOAD	INT	Nonlinear load output set
NLLOAD_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
NLLOAD_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
DLOAD	INT	Dynamic load set
FREQUENCY	INT	Frequency response set
TFL	INT	Transfer function set
SYMM_FLAG	INT	Symmetry flag
OLOAD	INT	Load output set
OLOAD_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
OLOAD_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
DISP	INT	Displacement output set

ATTRIBUTE	TYPE	DEFINITION
DISP_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
DISP_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
STRESS	INT	Stress output set
STRESS_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
STRESS_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
FORCE	INT	Force output set
FORCE_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
FORCE_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
ACCEL	INT	Acceleration output set
ACCEL_OUT_SEL	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
ACCEL_OUT_FRM	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
VELO	INT	Velocity output set

ATTRIBUTE	TYPE	DEFINITION	
VELO_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
VELO_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
MPCF	INT	Forces of constraint output set	
MPCF_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
MPCF_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
TSTEP	INT	Time step set selection for transient problem	
TITLE	CHAR(128)	Title	
SUBTITLE	CHAR(128)	Subtitle	
LABEL	CHAR(128)	Label	
PLOT	INT	Structure plotter flag	
AXIS	INT	Axisymmetric set	
		0	COSINE
		1	SINE
		2	FLUID
HARM_OUT	INT	Number of harmonics to output	
DISCO	INT	Differential stiffness coefficient set	
K2PP	CHAR(8)	Name of K2PP matrix	
M2PP	CHAR(8)	Name of M2PP matrix	
B2PP	CHAR(8)	Name of B2PP matrix	
DYNAMICS	INT	Output frequency or time or modes set selection	
EPIV	INT	EPIV set	
LAMLST	INT	LAMLST set	
CMETHOD	INT	Complex eigenvalue extraction set	
DAMPING_MODAL	INT	Structural damping table set	
METHOD_FLUID	INT	Fluid modes set	
DISP_SOL	INT	Solution set displacements	

ATTRIBUTE	TYPE	DEFINITION	
DISP_SOL_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
DISP_SOL_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
VELO_SOL	INT	Solution set velocity	
VELO_SOL_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
VELO_SOL_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
ACCEL_SOL	INT	Nonlinear load output set	
ACCEL_SOL_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
ACCEL_SOL_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
NONLINEAR	INT	Nonlinear load set in transient problems	
STRUCT_MODES_SET	INT	Structure modes set	
CYC_SYM_OPT	INT	Symmetry option in cyclic symmetry	
RANDOM	INT	Random analysis set	
PIECEWISE	INT	Piecewise linear coefficient set	
FLUTTER	INT	Flutter set	
LENGTH_CASE	INT	Length of case control	
GPFORCE_SET	INT	Grid point force output set	
GPFORCE_OUT_SEL	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH

ATTRIBUTE	TYPE	DEFINITION	
GPFORCE_OUT_FRM	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
ESE	INT	Strain_energy_output set	
ESE_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
ESE_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
PEMF	INT	PEMF	
CAITERATE	INT	CAITERATE	
CAPCHANGE	INT	CAPCHANGE	
CASTRATE	INT	CASTRATE	
STRAIN	INT	Strain output set	
STRAIN_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
STRAIN_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
ELOAD	INT	Eload output set	
ELOAD_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
ELOAD_FRM	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
POTENTIAL	INT	Nonlinear load output set	
POTENTIAL_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH

ATTRIBUTE	TYPE	DEFINITION	
POTENTIAL_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
POTENTIAL_PUNCH	INT	Potential punch SID	
THERMAL_PUNCH	INT	Thermal punch SID	
VPOINT	INT	VPOINT SID	
AUTOOMIT	INT	AUTOOMIT option	
		0	OFF
		1	ON
		2	NOPRINT
		4	NONZERO
		8	PUNCH
		16	EPS
		32	KEEP
		64	SPC
		128	MASS
256	NONE		
AUTOOMIT_EPS	RSP	AUTOOMIT EPS	
AUTOSPC_OPT	INT	AUTOSPC Option same as AUTOOMIT	
AUTOSPC_SID	INT	AUTOSPC SID for bulk data	
AUTOSPC_EPS	RSP	AUTOSPC EPS	
DYNRED	INT	DYNRED SID	
AUTOOMIT_MASSX	RSP	AUTOOMIT MASSX	
AUTOSPC_SET	INT	AUTOSPC SET 30=OSET 26=FSET	
INERTIA	INT	INERTIA SID	
DYNRED_MODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
AUTOOMIT_KEEPZ	RSP	AUTOOMIT KEEPZ	
HOUTPUT	CHAR(8)	HOUTPUT C OR S	
HOUTPUT_SID	INT	HOUTPUT SID	
LOADSET_SID	INT	LOADSET SID	
NOUT_K	INT	NOUT K	
NOUT_R_L	CHAR(4)	NOUT R OR L	
NOUT_SID	INT	NOUT SID	

ATTRIBUTE	TYPE	DEFINITION
AUTOMIT	INT	AUTOMIT OSET flag
		24 LSET
		26 FSET
		30 OSET
STRESS_OPT	INT	STRESS option flag
		1 GP
		2 IP
		4 MAXSHEAR
		8 VONMISES
		16 EXTREME
		32 LAYERS
		256 CORNER
AUTOREDUCE_OPT	INT	AUTOREDUCE option
		0 OFF
		1 PRINT
		2 NO PRINT
		256 NONE
NLSET_BOUNDARY	INT	BOUNDARY set (NLSET) for NONLINEAR
NSTEP	INT	nstep - number of nonlinear steps
RESTART_SUBCASE	INT	Restart subcase number
RESTART_STEP	INT	Restart step number
RESTART_INCR	INT	Restart increment number
STEPID	INT	Stepid
INCRID	INT	IncrId
GP_STRESS	INT	Grid point stresses output set
		-1 ALL
		-2 ALLFIELDS
		0 NONE
		>0 (10*SID+1 FIELD) (10*SID+2 GRID)
GP_STRESS_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
GP_STRESS_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE

ATTRIBUTE	TYPE	DEFINITION
STRESS_EVAL_FLAG	INT	Stress evaluation flag
		1 GRID POINT
		2 INTEGRATION POINT
		4 PRINCIPAL
		8 VON MISES
NLSOLVE_SID	INT	NLSOLVE SID
NLSAVE_INCR	INT	NLSAVE increments
NLPRINT	INT	NLPRINT flag
K2GG	CHAR (8)	Name of K2GG matrix
B2GG	CHAR (8)	Name of B2GG matrix
M2GG	CHAR (8)	Name of M2GG matrix
PERCENT_LOAD	INT	Percent load for nonlinear statics
		1 GP
		2 IP
STRAIN_OPTION	INT	STRAIN option flag
		1 GP
		2 IP
		4 MAX
		8 VONM
		16 EXTREME
		32 LAYER
		64 FIBERS
		128 STRCUR
		256 CORNER
NLSTRESS	INT	Nonlinear stress output output set
NLSTRESS_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
NLSTRESS_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
NLFORCE	INT	Nonlinear force output set
NLFORCE_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH

ATTRIBUTE	TYPE	DEFINITION	
NLFORCE_FMT	INT	Format of output	
		1	REAL
		2	REAL/IMAG
		3	MAG/PHASE
FFT_SID	INT	FFT SID	
NLSTRESS_OPT	INT	NLSTRESS option flag	
		1	GP
		2	IP
		4	MAXSHEAR
		8	VONMISES
		16	EXTREME
		32	LAYERS
MPCF_OUT	INT	MPCF output set	
MPCF_OUTMODE	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
MPCF_OUTFMT	INT	Output media selection	
		1	PRINT
		2	PLOT/POST
		4	PUNCH
NLSTRAIN_FLAG	INT	NLSTRAIN option flag	
DISP_SUMMARY	INT	DISP summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
16384	VU		
DISP_CID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID

ATTRIBUTE	TYPE	DEFINITION	
OLOAD_SUMMARY	INT	OLOAD summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
OLOAD_CID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID
SPCF_SUMMARY	INT	SPCF summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
SPCF_CID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID
MPCF_SUMMARY	INT	MPCF summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
MPCF_CID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID

ATTRIBUTE	TYPE	DEFINITION	
ACCEL_SUMMARY	INT	ACCEL summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
		16384	VU
ACCE_CID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID
VELO_SUMMARY	INT	Disp summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
		16384	VU
VELO_CID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID
STRESS_SUMMARY	INT	STRESS summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
		16384	VU
STRESS_CID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID

ATTRIBUTE	TYPE	DEFINITION	
FORCE_SUMMARY	INT	FORCE summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
		16384	VU
FORCE_CSID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID
STRAIN_SUMMARY	INT	STRAIN summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
		16384	VU
STRAIN_CSID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID
NLSTRESS_SUMMARY	INT	NLSTRESS summary bits	
		1	PRINT
		4	PUNCH
		512	AMAX
		1024	MAX
		2048	MIN
		4096	MAXMIN
		8192	U
		16384	VU
NLSTRESS_CSID	INT	Coordinate set id	
		-1	GLOBAL
		0	BASIC
		N	SID

ATTRIBUTE	TYPE	DEFINITION
NLFORCE_SUMMARY	INT	NLFORCE summary bits
		1 PRINT
		4 PUNCH
		512 AMAX
		1024 MAX
		2048 MIN
		4096 MAXMIN
		8192 U
		16384 VU
		32768 VU
65536 VU		
NLFORCE_CSID	INT	Coordinate set id
		-1 GLOBAL
		0 BASIC
		N SID
NLSTRAIN_SUMMARY	INT	NLSTRAIN summary bits
		1 PRINT
		4 PUNCH
		512 AMAX
		1024 MAX
		2048 MIN
		4096 MAXMIN
		8192 U
		16384 VU
		32768 VU
65536 VU		
NLSTRAIN_CSID	INT	Coordinate set id
		-1 GLOBAL
		0 BASIC
		N SID
SPLIT	INT	SPLIT request in SPCF
		0 ORIGINAL
BOUNDARY	INT	1 SPLIT INTO USER & AUTO
		Boundary set
CASE_FLAG	INT	Subcase identification flag
		0 DEFINED WITHOUT A SUBCASE
SUB_LOAD	INT	1 DEFINED WITH A SUBCASE
		Substructuring combination external static load set

ATTRIBUTE	TYPE	DEFINITION
ELFORCE	INT	Element oriented force set
ELFORCE_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		3 SUMM
		4 PUNCH
ELFORCE_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
MEFFMASS	INT	3 MAG/PHASE
		MEFFMASS request
		1 SUM
		2 FULL
		4 DETAIL
		8 PRINT
		16 PUNCH
32 WEIGHT		
MEFFMASS_RGID	INT	64 MASS
		MEFFMASS reference grid identification
MEFFMASS_THRES	INT	MEFFMASS print threshold value
RESFLEX	INT	RESFLEX set id
RESFLEX_REQUEST	INT	RESFLEX request
		1 SUM
		2 FULL
		4 DETAIL
		8 PRINT
		16 PUNCH
		32 COUPLE
		64 AUGMENT
		128 GRAMSHM
		RESFLEX_THRES
RESFLEX_ORTH	INT	RESFLEX orthogonal check value
FLUID_ID_USING	INT	Fluid modes analysis case identification specified by using.
COUPLED_MFLAG	CHAR (4)	Flag for coupled model, dry structural model or rigid wall fluid model in modal analysis or modal dynamics.
STAT_ID_USING	INT	Static analysis identification for buckling analysis specified by using.
AERO_ID_USING	INT	Aero analysis identification for flutter analysis specified by using.

ATTRIBUTE	TYPE	DEFINITION
FLUT_ID_USING	INT	Flutter analysis identification for flutter analysis specified by using.
MODE_ID_USING	INT	Structural modes analysis case identification specified by using.
DIRECT_FLAG	INT	Flag for checking direct or modal dynamics in loopcvt.
ARCH_AERO_FLAG	INT	Flag to indicate if an archive command is in a aero case.
ARCH_MODE_FLAG	INT	Flag to indicate if an archive command is in a modes case.
REFERENCE_DATA	INT (5)	Unused reference data
NLTPSV	INT	Flag the (OVER_ALL_NLTYPE) system cell.
		0 MAT
		1 GEOM
		2 BOTH
NLTYPE	INT	Material/geometric nonlinear analysis type
		0 MAT
		1 GEOM
		2 BOTH
DISCOR	INT	Displaced element coordinate system flag
		-1 YES
		1 NO
GNLSTN	INT	Strain flag for geometric nonlinear analysis
		0 LINEAR
		1 GREEN
		2 MODERATE
FFORCE	INT	Flag for geometric nonlinear analysis
		-1 YES
		1 NO
FORCE_OPT2	INT	Force option flag 2
		0 CENTER OUTPUT
		1 CORNER OUTPUT
STRESS_OPT2	INT	Stress option flag 2
		0 CENTER OUTPUT
		1 CORNER OUTPUT
STRAIN_OPT2	INT	Strain option flag 2
		0 CENTER OUTPUT
		1 CORNER OUTPUT
NLSTRAIN	INT	NLSTRAIN set identification

ATTRIBUTE	TYPE	DEFINITION
NLSTRAIN_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
NLSTRAIN_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
EQUIL_REQ	INT	Equilibrium request flag
		0 NUNE
		1 PRINT
		2 POST
	4 PUNCH	
EQUIL_REQID	INT	Equilibrium point identification
ESE_THRES	INT	Element strain energy print threshold
PILE_OUT	INT (3)	PILEOUT COMMANDS
DESIGN_CON_SET	INT	Design constraint set
DESIGN_VAR_SET	INT	Design variables set
DISP_SENT	INT	Set identification for print, post, punch for displacement sensitivity.
DISP_SENT_MODE	INT	Displacement sensitivity
		1 PRINT
		2 PLOT/POST
		4 PUNCH
DISP_SENT_FMT	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
DISP_SENT_SET	INT	Set identification for user file in displacement sensitivity
DISP_SENT_THRES	INT	Threshold value for displacement sensitivity
STRESS_SENT	INT	Set identification for print, post, punch for stress sensitivity.
STRESS_SENT_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
STRESS_SENT_FMT	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH

ATTRIBUTE	TYPE	DEFINITION
STRESS_SENT_SET	INT	Set identification for user file in stress sensitivity
STRESS_SENT_THRS	INT	Threshold value for stress sensitivity
FORCE_SENT	INT	Set identification for print, post, punch for force sensitivity.
FORCE_SENT_MODE	INT	Output media selection for
		1 PRINT
		2 PLOT/POST
		4 PUNCH
FORCE_SENT_FMT	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
FORCE_SENT_SET	INT	Set identification for user file in force sensitivity
FORCE_SENT_THRES	INT	Threshold value for force sensitivity
STRAIN_SENT	INT	Set identification for print, post, punch for strain sensitivity.
STRAIN_SENT_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
STRAIN_SENT_FMT	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
STRAIN_SENT_SET	INT	Set identification for user file in strain sensitivity
STRAIN_SENT_THRS	INT	Threshold value for strain sensitivity
VECTOR_SENT	INT	Set identification for print, post, punch for vector sensitivity.
VECTOR_SENT_MODE	INT	Vector sensitivity
		1 PRINT
		2 PLOT/POST
		4 PUNCH
VECTOR_SENT_FMT	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
VECTOR_SENT_SET	INT	Set identification for user file in vector sensitivity
VECTOR_SENT_THRES	INT	Threshold value for vector sensitivity

ATTRIBUTE	TYPE	DEFINITION
SORT_TYPE	INT	OUTPUT SORT REQUEST
		1 SORT1
		2 SORT2
KEEP	INT	Keep set (A-SET)
OMIT	INT	OMIT SET
RIGID	INT	RIGID ELEMENT SET
SUPPORT	INT	SUPPORT SET
ANALYSIS_TYPE	INT	Analysis type flag for subcase command
AUTOOMIT_SID	INT	Autoomit sid for bulk data
STATIC_CASE	INT	Static analysis case id for buckling case or modes analysis case id for modal dynamics
FREQ_SENT	INT	Set identification for print, post, punch for frequency sensitivity.
FREQ_SENT_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
FREQ_SENT_FMT	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
FREQ_SENT_SET	INT	Set identification for user file in frequency sensitivity
FREQ_SENT_THRES	INT	Threshold value for frequency sensitivity
MESH_ERROR	INT	Set id for mesh error request
MESH_ERROR_OUTPUT	INT	Output device for mesh error request
MESH_ERROR_PER	INT	Percentile value for mesh error request
MESH_ERROR_STDV	INT	Number of stand. dev. value for mesh error request
MESH_ERROR_THRES	INT	Threshold value for mesh error request
MESH_ERROR_STRES	INT	Stress component for mesh error calculations
MESH_ERROR_FIBER	INT	Fiber component for mesh error calculations
GPSTRAIN	INT	Grid point strains output set
		-1 ALL
		-2 ALLFIELDS
		0 NONE
		>0 (10*SID+1 FIELD) (10*SID+2 GRID)

ATTRIBUTE	TYPE	DEFINITION
GPSTRAIN_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
GPSTRAIN_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
STRAIN_EVAL	INT	Strain evaluation flag
		1 GRID POINT
		2 INTEGRATION POINT
		4 PRINCIPAL
		8 VON MISES
ELEM_COORD	INT	Element coordinate system flag
		1 UAI
		2 MSC
EKE	INT	Element kinetic energy set.
EKE_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
EKE_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
EKE_THRES	INT	Element kinetic energy print threshold
SET_REQUEST	INT	Set request for ic command ('DSET' OR 'HSET')
SET_ID	INT	Set id for tic data generated and written to bulk
SHOCK_LOAD_ID	INT	Shock load set identification
SHOCK_PCOMB	INT	Shock pcomb rule ('ABS' OR 'SRSS')
SHOCK_MCOMB	INT	Shock mcomb rule ('ABS', 'NRC', 'NRL', 'SRSS' OR 'CQC')
SHOCK_CLOSE_ROOT	INT	Shock close roots rule ('GROUP', 'PERCENT' OR 'DOUBLESUM')
SHOCK_ROOT_VALUE	INT	Shock close root value
SHOCK_HFREQ	INT	Shock hfreq processing request, logical (YES OR NO)
MPFACTOR	INT	MPFACTOR output set id for SHOCK
MPFACTOR_DEVICE	INT	MPFACTOR output device code

ATTRIBUTE	TYPE	DEFINITION
AUTOMATIC_INIT	INT	Automatic initial conditions flag for ic command
RIGID_BODY_MODES	INT	Number of rigid body modes for IC command
GPKE	INT	Grid point kinetic energy
GPKE_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
GPKE_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
GPKE_THRES	INT	Grid point kinetic energy print threshold
PACOUST	INT	Acoustic pressure
PACOUSTS_MODE	INT	Output media selection
		1 PRINT
		2 PLOT/POST
		4 PUNCH
PACOUST_FMT	INT	Format of output
		1 REAL
		2 REAL/IMAG
		3 MAG/PHASE
OPT_FLAG	CHAR (4)	Optimization flag for "MIN"imization or "MAX"imization
OBJ_FUNCT_SEL	INT	Objective function selection
		-4 NONE
		-3 MASS
		-2 VOLUME
		-1 WEIGHT
0 NO SELECTION APPEARS IN THE INPUT STREAM		
MODEL_DESIGN	INT	Model design constraint set identification (others are at the design constraint set attribute)
MAXIMUN_ITER	INT	Maximum number of iterations
CONV_LIMIT	RSP	Convergence limit on objective function movement
MAX_CONST	RSP	Maximum constraint value for constraint feasibility
MIN_CONST_VALUE	RSP	Minimum constraint value for active constraint status

ATTRIBUTE	TYPE	DEFINITION		
MAX_CONST_VALUE	INT	Maximum number of constraints to retain as active		
FORCE_CONST	INT	Force option flag 1 - 256=CORNER		
POST_OPTION	INT	Post processing option BIT		
		01 BIT for any post request present		
		02 BIT for PDA post request		
		03 BIT for SDRC post request		
		04 BIT for PDA3 post request		
		17 Last/ALL iteration (ON = LAST)		
		18 Don't output eigenvalue summary		
		19 Don't output composite failure indices		
		20 Don't output composite ply strains		
		21 Don't output composite ply stresses		
		22 Don't output element stresses		
		23 Don't output spc forces		
		24 Don't output element strain energy		
		25 Don't output linear element strains		
		26 Don't output grid point stresses		
		27 Don't output element kinetic energy		
		28 Don't output grid point force balance		
		29 Don't output element forces and heat fluxes		
		30 Don't output displacements and grid point temperature		
		31 Don't convert disp to basic		
		32 Don't output model geometry		
		POST_LUNIT	CHAR (8)	Post processing logical unit
		SYMM_TYPE	INT	Aero/Flutter symmetry type
		HRDMACH_SET	INT	MACH Set Type
				1 CASE
				2 BULK
		HRDMACH_ID	INT	Mach identification

ATTRIBUTE	TYPE	DEFINITION
HRDFREQ_SET	INT	Reduced frequency Set Type
		1 CASE
		2 BULK
HRDFREQ_ID	INT	Reduced frequency identification.
SPEED	INT	Flutter air speed
		1 TRUE
		2 EQUIV
FLSOLVE	INT	Flutter FLSOLVE ID for control parameters.
DENS_SET	INT	Density list Type
		1 CASE
		2 BULK
DENS_ID	INT	Density identification
VELO_SET	INT	Velocity list Type
		1 CASE
		2 BULK
VELO_ID	INT	Velocity identification
FREQ_SET	INT	Frequency list Type
		1 CASE
		2 BULK
FREQ_ID	INT	Frequency identification
MACH_SET	INT	MACH list Type
		1 CASE
		2 BULK
MACH_ID	INT	MACH identification
SUBMACH_SET	INT	SUBMACH list Type
		1 CASE
		2 BULK
SUBMACH_ID	INT	SUBMACH identification
SUBFREQ_SET	INT	SUBFREQ list Type
SUBFREQ_ID	INT	SUBFREQ identification
SUBMODE_SET	INT	SUBMODE list Type
		1 CASE
		2 BULK
SBMODE_ID	INT	SUBMODE identification
NFROOTS	INT	Number of flutter Roots
		-1 ALL
		N Number of Roots

ATTRIBUTE	TYPE	DEFINITION	
MTCHPT	INT	Match point request	
		-2	NO
		-1	YES
		N	ATMOS Set
FLTPLT	INT	Flutter Plot request	
		1	NONE
		2	SUMMARY
		3	DETAIL
FLTPRT	INT	Flutter Print request	
		1	NONE
		2	SUMMARY
		3	DETAIL
FREQ_CORR_SET	INT	ATR Frequency correlation set identification.	
EIGN_CORR_SET	INT	ATR Eigenvector correlation set identification.	
MOD_RESP_SET	INT	ATR Modal frequency response correlation set identification.	
BM_FORCE	INT	Equivalent beam force output set	
BM_FORCE_MODE	INT	Equivalent beam force output media selection	
		1	PRINT
		4	PUNCH
BM_FORCE_FMT	INT	Equivalent beam force output format selection	
		1	REAL
		-N	SORT2
BMGP_STRESS	INT	Grid point stresses output set due to BMFORCE	
		-2	ALLFIELDS
		>0	10*SID+1 FIELD
BMGP_STRESS_MODE	INT	Grid point stress output media due to bmforce	
		0	NOPRINT
BMGP_STRESS_FMT	INT	Grid point stress format due to bmforce	
		1	REAL
BMST_EVAL_FLAG	INT	Stress evaluation flag due to BMFORCE	
		1	GRID POINT
		4	PRINCIPAL

ATTRIBUTE	TYPE	DEFINITION	
THRESHOLD	INT	Threshold processing option	
		000	Off
		001	BIT for print and summary request
		008	BIT for punch request
		016	BIT for EPS processing
		032	BIT for KEEP processing
		128	BIT for MASS processing
		256	BIT for NONE
		512	BIT for present
THRES_EPS	RSP	Threshold offset for EPS, default of 0.0.	
THRES_MASSX	RSP	Threshold offset for MASSX, default of 0.0.	
THRES_KEEPPZ	RSP	Threshold offset for KEEPPZ, default of 0.0	
THRES_TYPE	INT	Threshold error checking type	
		1	ABSOLUTE
		2	PERCENT
THRES_MXITR	INT	The Threshold's maximum of iterations.	
THRES_TID	INT	Threshold table id, TABLED1, used for error checking.	
THRES_TOLER	RSP	Threshold tolerance used in error checking.	

ENTITY: DSFACT

ENTITY TYPE: Relation

DESCRIPTION: Defines scale factors for applied loads and stiffness matrices for Differential Stiffness analysis.

DATA BLOCKS USED: EPT

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
B	RSP	Scale factor.

ENTITY: FREQ

ENTITY TYPE: Relation

DESCRIPTION: Explicit set of frequencies.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
FREQID	INT	Frequency set identification number.
FREQ	RSP	Frequency values.

ENTITY: FREQ1

ENTITY TYPE: Relation

DESCRIPTION: Set of frequencies.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
FREQID	INT	Frequency set identification number.
FL	RSP	First and lowest frequency in set.
DF	RSP	Frequency increment.
NDF	INT	Number of frequency increments.

ENTITY: FREQ2

DESCRIPTION: Set of frequencies.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
FREQID	INT	Frequency set identification number.
FL	RSP	Lower and upper frequencies.
FU	RSP	
NF	INT	Number of logarithmic increments.

ENTITY: FREQ3

ENTITY TYPE: Relation

DESCRIPTION: Set of frequencies, taken from the computed modal frequencies, used in the solution of modal frequency response problems by specification of a range of either frequencies or mode numbers that reference the eigenvalue analysis performed. Also, additional frequencies may be generated between the computed modal frequencies (and zero) using an increment parameter and parameters controlling the type of spacing between increments.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
FREQID	INT	Frequency set identification number.
NL	INT	Lower and upper mode numbers.
NU	INT	
FL	RSP	Lower and upper frequencies.
FU	RSP	
NINC	INT	Number of frequency increments between modal frequencies.
TYPE	CHAR (4)	Type of interpolation to use when computing incremental frequencies. (LOG , LINEAR)
FACTOR	RSP	Interpolation factor to use when computing incremental frequencies.
ZERO	RSP	Defines a non-zero floating point number used in the frequency interpolation algorithm when the first mode frequency is otherwise 0.0.

ENTITY: NLSOLVE

ENTITY TYPE: Relation

DESCRIPTION: Algorithm and control data used in nonlinear analysis.

DATA BLOCKS USED: GEOM3

ATTRIBUTE	TYPE	DEFINITION
NLSID	INT	Nonlinear solution control identification number.
SMETH	CHAR (8)	Stiffness update method (SEC , TAN).
IMETH	CHAR (8)	Unbalanced force iteration method (AUTO , FIX , SEMI).
PMETH	CHAR (8)	External load incrementation method (AUTO , FIX , SEMI).
CONV	CHAR (8)	Overall convergence criteria (E , P , U).
TENDIV	INT	Tentatively divergent processing parameter.
MAXK	INT	Maximum number of stiffness updates for any nonlinear STEP.
MAXP	INT	Maximum number of unbalanced force iterations to be performed before a stiffness update.
PINC	INT	PMETH=FIX , The number of load increments. PMETH=AUTO , The first load increment is determined by the total load divided by PINC. PMETH=SEMI , The first load increment is determined by the total load divided by PINC.
MAXPINC	INT	Maximum number of load increments. Only used when PMETH=AUTO or SEMI.
UDIV	RSP (3)	Displacement norm change rate which indicates the solution is tentatively divergent.
LAMDA	RSP (3)	Solution convergence rate signifying that the solution is tentatively divergent.
UMAX	RSP (2)	Maximum absolute value of deflection which denotes divergence.
CRITERIA	CHAR (4)	Overall criteria.
EPMAX	RSP	Load error which the load increment size is reduced. Only used with PMETH=AUTO
ETAS	RSP	Percentage of the yield to be processed in one sub-increment.
EPSE	RSP	Strain energy convergence criterion tolerance value.
EPSP	RSP	Load error convergence criterion tolerance value.
EPSU	RSP	Displacement error convergence criterion tolerance value.

ENTITY: PARAM

ENTITY TYPE: Relation

DESCRIPTION: Parameter control values.

DATA BLOCKS USED: IFFFILE

ATTRIBUTE	TYPE	DEFINITION
NAME	CHAR (8)	Parameter name.
INTVAL	INT	Integer parameter value.
RELVAL	RSP	Real parameter value.
CHRVAL	CHAR (8)	Character string parameter value.
CSPVAL	RSP (2)	Complex single precision parameter value.

ENTITY: TSTEP

ENTITY TYPE: Relation

DESCRIPTION: Time step intervals at which the solution is generated in transient response analyses.

DATA BLOCKS USED: DYNAMICS

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
N	INT	Number of time steps.
DT	RSP	Time increment.
NO	INT	Output Increment.

AXISYMMETRIC MODELING DATA

ENTITY: AXIC

ENTITY TYPE: Relation

DESCRIPTION: Highest harmonic number for an axisymmetric harmonic analysis.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
H	INT	Highest harmonic number defined for the problem.

ENTITY: RINGAX

ENTITY TYPE: Relation

DESCRIPTION: Defines a ring for an axisymmetric harmonic model.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
RID	INT	Ring identification number.
R	RSP	Ring radius.
Z	RSP	Ring axial location.
PSPC	INT	Permanent single-point constraints.

ENTITY: SECTAX

ENTITY TYPE: Relation

DESCRIPTION: Defines a sector of a model containing CONEAX, TRAPAX or TRIAAX elements.

DATA BLOCKS USED: AXIC

ATTRIBUTE	TYPE	DEFINITION
ID	INT	Sector identification number.
RID	INT	Ring identification number defined by a RINGAX Bulk Data entry.
R	RSP	Effective radius.
F1	RSP	Azimuthal limits of the sector in degrees.

DESIGN CONSTRAINTS

ENTITY: DCDYNRG

ENTITY TYPE: Relation

DESCRIPTION: Dynamic response constraint on the combined amplitudes of one or more degrees of freedom in the model. Either the average amplitude over a range of frequencies or the amplitude at each analysis frequency may be constrained.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DCSID	INT	Design constraint set identification number.
DCNAME	CHAR (8)	Constraint name for output labelling.
TYPE	CHAR (8)	Specifies the response to be constrained. (DISP, VELO, ACCE)
FORM	CHAR (8)	Form of the constraint. May be AVG to constrain the average amplitude across the entire frequency range, or PEAK to request that the response be constrained at each frequency. (AVG, PEAK)
LLIM	RSP	Specifies the lower limit of the constraint value.
ULIM	RSP	Specifies the upper limit of the constraint value.
L RANGE	RSP	Specifies the lower frequency limit (Hz) for which the constraint is evaluated.
U RANGE	RSP	Specifies the upper frequency limit (Hz) for which the constraint is evaluated.
GID	INT	GRID point identification number.
COMP	CHAR (8)	Single component at which the response is constrained.
VAL	RSP	Combinatorial factor to assemble the constrained response.

ENTITY: DCELEM

ENTITY TYPE: Relation

DESCRIPTION: Element response constraint, Re , on stress, Rs, strain, Re or force, Rp.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Design constraint set identification number.
DCNAME	CHAR (8)	Constraint name for output labelling.
RTYPE	CHAR (8)	Indicates the response type being constrained. (STRESS, STRAIN, FORCE)
COMP	CHAR (8)	Response component subject to the constraint.
LLIM	RSP	The value of a lower limit response.
ULIM	RSP	The value of a lower limit response.
EID	INT	Element identification number to which the constraint applies.

ENTITY: DCFREQ

ENTITY TYPE: Relation

DESCRIPTION: Design constraint on a cyclic frequency, f.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DCSID	INT	Design constraint set identification number.
DCNAME	CHAR (8)	Constraint name for output labelling.
UPLW	CHAR (4)	Selects either an UPPER or LOWER bound for the specified MODE.
LIM	RSP	The value of selected frequency limit (Hz).
MODE	INT	Mode number to which the constraint applies.

ENTITY: DCGRID

ENTITY TYPE: Relation

DESCRIPTION: GRID point response constraint, Rg.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Design constraint set identification number.
DCNAME	CHAR (8)	Constraint name for output labelling.
RTYPE	CHAR (8)	Indicates the response type being constrained. (DISP)
COMP	CHAR (8)	Response component subject to the constraint.
LLIM	RSP	The value of a lower limit response.
ULIM	RSP	The value of an upper limit response.
GID	INT	GRID point identification numbers to which the constraint applies.

ENTITY: DCGRIDM

ENTITY TYPE: Relation

DESCRIPTION: Defines a response constraint, Rg., for a linear combination of GRID point response components.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DCSID	INT	Design constraint set identification number.
DCNAME	CHAR (8)	Constraint name for output labelling.
TYPE	CHAR (8)	Constraint type.
LLIM	RSP	The value of a lower limit response.
ULIM	RSP	The value of an upper limit response.
GID	INT	GRID point identification numbers to which the constraint applies.
COMP	CHAR (8)	Single constrained response component.
COEF	RSP	Coefficient of constrained response component.

ENTITY: DCMODE

ENTITY TYPE: Relation

DESCRIPTION: Requests for eigenvector sensitivity to be computed for selected modes.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DCSID	INT	Design constraint set identification number.
DCNAME	CHAR (8)	Constraint name for output labelling.
MODE	INT	Mode identification number.

ENTITY: DCMODEL

ENTITY TYPE: Relation

DESCRIPTION: Discipline- and CASE-independent model constraints in Multidisciplinary Design Optimization.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DCSID	INT	Design constraint set identification number.
DCNAME	CHAR (8)	Constraint name for output labelling.
TYPE	CHAR (8)	Specifies the model characteristic to be constrained. (WEIGHT , MASS , VOLUME)
LLIM	RSP	Specifies the lower limit of the model constraint value.
ULIM	RSP	Specifies the upper limit of the model constraint value.

ENTITY: DCMODR

ENTITY TYPE: Relation

DESCRIPTION: Eigenvector constraint by specifying the required shape as coefficients at some number of GRID points and components in the model. Either the RMS error or each specified modal displacement may be constrained.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DCSID	INT	Design constraint set identification number.
DCNAME	CHAR (8)	Constraint name for output labelling.
MODEID	INT	Mode identification number.
FORM	CHAR (8)	Form of the constraint. May be RMS to constrain the RMS error between the computed and input mode shape, or COMP to request that each component in the input mode shape be constrained. (RMS , COMP)
LIMIT	RSP	Specifies the maximum error between the computed and input mode shape.
NORM	CHAR (8)	Normalization in which the required eigenvector terms (VALi) are input. (MASS , MAX , POINT)
GIDN	INT	GRID or SCALAR point identification number used if NORM is POINT.
COMPN	CHAR (4)	Single degree of freedom of GIDN if NORM is POINT.
GID	INT	GRID point identification number.
COMP	CHAR (8)	Single degree of freedom at which the desired mode shape is measured.
VAL	RSP	The modal deformation at (GID, COMP) for the desired mode shape.

DESIGN VARIABLES

ENTITY: DVGRID

ENTITY TYPE: Relation

DESCRIPTION: Physical design variable as a GRID point coordinate and its upper and lower bounds during Multidisciplinary Design Optimization.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DVNAME	CHAR (8)	Physical design variable name.
GID	INT	GRID point identification number.
LBOUND	RSP	Specifies the lower bound on the GRID point coordinate.
UBOUND	RSP	Specifies the upper bound on the GRID point coordinate.
COORD	CHAR (8)	Selects the coordinate of the GRID point which is the physical design variable.

ENTITY: DVGRIDS

ENTITY TYPE: Relation

DESCRIPTION: Linking of physical design variables which are GRID point coordinates and the upper and lower bounds on coordinates used during Multidisciplinary Design Optimization.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DVNAME	CHAR (8)	Mathematical design variable name.
GID	INT	GRID point identification number.
LB	RSP	Lower bound on the selected GID coordinate.
UBI	RSP	Upper bound on the selected GID coordinate.
COORD	CHAR (8)	Coordinate of the GID which is the physical design variable.

ENTITY: DVLINK

ENTITY TYPE: Relation

DESCRIPTION: Mathematical design variable, vm , as a linear relationship among physical design variables, vp , of the form $(vp = vp^{**}inv + T*vm)$.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DVNAME	CHAR (8)	Mathematical design variable name.
VINIT	RSP	Initial value of the mathematical design variable.
PINV	RSP	Invariant portion of the physical design variable PNAME.
C	RSP	Coefficient linking the ith physical design variable with the mathematical design variable.
PNAME	CHAR (8)	Name of the ith physical design variable being linked to the mathematical variable.

ENTITY: DVMATH

ENTITY TYPE: Relation

DESCRIPTION: Initial value and bounds for a mathematical design variable defined by DVLINK data.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DVNAME	CHAR (8)	Mathematical design variable name.
FNAME	CHAR (8)	Specifies the name of a mathematical variable defined by a DVLINK Bulk Data entry.
VINIT	RSP	Initial value of the mathematical variable.
VMIN	RSP	Specifies the lower bound for the mathematical variable.
VMAX	RSP	Specifies the upper bound for the mathematical variable.
COV	RSP	Covariance value.

ENTITY: DVPROP

ENTITY TYPE: Relation

DESCRIPTION: Physical design variable as an element property, element connection or material property.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DVNAME	CHAR (8)	Physical design variable name.
PTYPE	CHAR (8)	Selects an element property type, element connection type, or a material type from which the design variable is selected.
PRPID	INT	Specifies the identification number of the connection, property, or material Bulk Data entry from which the design variable is selected.
LBOUND	RSP	Specifies the lower bound on the selected property PSYM.
UBOUND	RSP	Specifies the upper bound on the selected property PSYM.
PSYM	CHAR (8)	Specifies a symbol for the connection, property, or material Bulk Data entry defining the design variable.

ENTITY: DVPROPS

ENTITY TYPE: Relation

DESCRIPTION: Linking relationships between physical design variables such as an element properties, element connections or material properties.

DATA BLOCKS USED: GEOM5

ATTRIBUTE	TYPE	DEFINITION
DVNAME	CHAR (8)	Mathematical design variable name.
PTYPE	CHAR (8)	Selects an element property type, element connection type, or a material type from which the design variable is selected.
PRPID	INT	Specifies the identification number of the connection, property, or material Bulk Data entry from which the design variable is selected.
LB	RSP	Specifies the lower bound on the selected property PSYM.
UB	RSP	Specifies the upper bound on the selected property PSYM.
PSYM	CHAR (8)	Specifies a symbol for the connection, property, or material Bulk Data entry defining the physical design variable.

AERODYNAMICS

ENTITY: AEFAC

ENTITY TYPE: Relation

DESCRIPTION: Division points to define cordwise or spanwise DLM or CPM aerodynamics element distributions.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
DIV_PNT	RSP	Division points in fractions of total span or total cord.

ENTITY: AREFS

ENTITY TYPE: Relation

DESCRIPTION: Aerodynamic reference parameters.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
ACID	INT	AERO coordinate system identification.
RCID	INT	Static Aero Reference coordinate system identification.
CBAR	RSP	Wing reference chord.
B	RSP	Wing Reference span.
S	RSP	Wing Reference area.

ENTITY: AEUNITS

ENTITY TYPE: Relation

DESCRIPTION: Conversion factors for aeroelastic and analysis parameters.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
VFAC	RSP	Conversion factor on air velocity, for Flutter and Dynamic Aeroelastic Response.
VUNITS	CHAR (8)	Identifier label on units of air velocity, for Flutter and Dynamic Aeroelastic Response.
WGFAC	RSP	Conversion factor on gust velocity.
WUNITS	CHAR (8)	Identifier label on units of gust velocity.
LFAC	RSP	Conversion factor on scale of turbulence defined on GPSD.
LUNITS	CHAR (8)	Identifier label on scale of turbulence.
NZFAC	RSP	Conversion factor on rigid body accelerations in Static Aeroelastic Response.
NZUNITS	CHAR (8)	Identifier label on rigid body accelerations in Static Aeroelastic Response.

ENTITY: ATMOS

ENTITY TYPE: Relation

DESCRIPTION: Density ratio list and a relation between Mach number, density ratio and airspeed to represent a standard atmosphere model.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
GROUP	INT	Group identifier of a series of points that define a complete atmosphere.
DENS_REF	RSP	Reference fluid density
LABEL	CHAR (8)	Identifier of Density/Altitude line.
DENS	RSP	Density ratio for current Density/altitude line.
VELM1	RSP	Velocity at Mach=1.0 for current Density Ratio.

ENTITY: ATMOSBD

ENTITY TYPE: Relation

DESCRIPTION: Density ratio list and a relation between Mach number, density ratio and airspeed to represent an atmosphere model consistent with 'Blowdown' type wind tunnels.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
GROUP	INT	Group identifier of a series of points that define a complete atmosphere.
LABEL	CHAR (8)	Identifier of Mach line.
MACH	RSP	Mach number for current Mach line.
VEL	RSP	Velocity at Density=1.0 for current Mach number.

ENTITY: AERO1_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Aerodynamic panel and mesh definition to generate the DLM or CPM aerodynamic element distribution.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Identification label.
IGROUPID	INT	Identification number of an interference group.
CID	INT	Identification number of coordinate system for locating X, Y and Z.
SPAN_TYPE	CHAR (8)	Span type EQUAL or SET.
NSPAN	INT	Number of equally spaced spanwise divisions.
SSID	INT	Identification number of coordinate system for locating X, Y and Z.
CHORD_TYPE	CHAR (8)	Chord type EQUAL or SET.
NCHORD	INT	Number of equally spaced chordwise divisions. for locating X, Y and Z.
CSID	INT	Identification number of an AEFAC Bulk Data entry containing a list of chordwise divisions.
IGID	INT	Identification number of an interference group.
X1	RSP	Coordinates of the leading edge root of the panel.
CROOT	RSP	Coordinate length of the panel's edge root.
X2	RSP	Coordinates of the leading edge tip of the panel.
CTIP	RSP	Coordinate length of the panel's edge tip.

ENTITY: FLFACT

ENTITY TYPE: Relation

DESCRIPTION: Explicit set of factors for the K or PK-SWEEP flutter methods of so

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
FACT	RSP	Factor for flutter analysis.

ENTITY: FLFREQ

ENTITY TYPE: Relation

DESCRIPTION: Explicit set of reduced frequencies for the K or PK-SWEEP flutter m of solution.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
KFREQ	RSP	Reduced frequencies for flutter analysis.

ENTITY: FLFREQ1

ENTITY TYPE: Relation

DESCRIPTION: Reduced frequencies for the K or PK-SWEEP flutter methods of soluti by the specification of two frequencies and the number of frequency increments between them.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
KID	INT	Reduced frequency set identification number.
K1	RSP	First reduced frequency in the set.
K2	RSP	Second reduced frequency in the set.
KNUM	INT	Number of reduced frequency increments.

ENTITY: FLSOLVE

ENTITY TYPE: Relation

DESCRIPTION: Non-default selections for the K and PK flutter solutions. CPM aerodynamics element distributions.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
FID	INT	Set identification number.
IMETHOD	CHAR (8)	Choice of method for Generalized Aerodynamic Force interpolation (LAGRANGE or CUBIC).
VCUT	RSP	Cutoff for max flutter speed crossings.
GCUT	RSP	Offset to damping curve.
GOFF	RSP	Threshold of damping curve to ignore lightly (un)damped modes.
EPS	RSP	Convergence criteria for PK-ITER method of flutter solution.
OMRX	RSP	Jump resolution for numbered of flutter branches.
RBDOF	INT	List of rigid body degrees of freedom.

ENTITY: FLVEL

ENTITY TYPE: Relation

DESCRIPTION: Explicit set of velocities for the PK method flutter solution. of solution.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
VEL	RSP	Velocities to be used in the PK flutter analysis velocity loop.

ENTITY: SET1

ENTITY TYPE: Relation

DESCRIPTION: Defines a set of structural grid point.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
GID	INT	Grid point identification number.

ENTITY: SET2

ENTITY TYPE: Relation

DESCRIPTION: Aerodynamic data

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
SID	INT	Set identification number.
AMEID	INT	Aero macro element identification.
LSDPNT	RSP	Lower span division point.
USDPT	RSP	Upper span division point.
LCDPNT	RSP	Lower chord division point.
UCDPNT	RSP	Upper chord division point.
TZ	RSP	Top Z coordinate.
BZ	RSP	Bottom Z coordinate.

ENTITY: SPLINE1_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Surface spline for interpolating out-of-plane motion of a structural grid to an aerodynamic grid for aeroelastic problems.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Spline identification number.
CAERO	INT	Identification label of a panel whose aero boxes are interpolated using this spline.
BOX1	INT	First and last box whose motions are interpolated using this spline.
SETG	INT	Identification of the structural grid point set to which the spline is attached.
DZ	RSP	Linear attachment flexibility.
METHOD	CHAR (8)	Method for interpreting the spline. (HADES , APPA)

ENTITY: SPLINE2_GEOM

ENTITY TYPE: Relation

DESCRIPTION: Surface spline for interpolating out-of-plane motion of a structural grid to an aerodynamic grid for aeroelastic problems.

DATA BLOCKS USED: AEROTAB

ATTRIBUTE	TYPE	DEFINITION
EID	INT	Spline identification number.
CAERO	INT	Identification label of a panel whose aero boxes are interpolated using this spline.
BOX1	INT	First and last box whose motions are interpolated using this spline.
SETG	INT	Identification of the structural grid point set to which the spline is attached.
DZ	RSP	Linear attachment flexibility.
TZ	RSP	Torsional flexibility.
CID	INT	Coordinate identification.
XZ	RSP	X Rotational attachment flexibility.
YZ	RSP	Y Rotational attachment flexibility.

SOLUTION SUMMARY

ENTITY: GRID_RESULTS

ENTITY TYPE: Relation

DESCRIPTION: Data Recovery Summary for Grid Results.

DATA BLOCKS USED: OUGV1, OUGV2, OPG1, OPG2, OQG1, OQF2, OGPFB1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
DISC	CHAR (20)	Analysis Type Statics Real Eigenvalue Frequency Transient Buckling Complex Eigenvalue Nonlinear
DATA_TYPE	CHAR (8)	Data Type PHYSICAL MODAL
NVECT	INT	Number of Grid Point solution vectors recovered for this subcase.
GPFORCE	CHAR (8)	Grid Point Force Flag (REAL, COMPLEX)
NENT_GPFORCE	INT	Number of Grid Points recovered for Grid Point Force.
GPSSRF	CHAR (8)	Grid Point Surface Stress Flag (REAL, COMPLEX)
NENT_GPSSRF	INT	Number of Grid Points recovered for Grid Point Surface Stress.
GPSVOL	CHAR (8)	Grid Point Volume Stress Flag (REAL, COMPLEX)
NENT_GPSVOL	INT	Number of Grid Points recovered for Grid Point Volume Stress.
GPSDIS	CHAR (8)	Grid Point Stress at Discontinuous Points Flag (REAL, COMPLEX)
NENT_GPSDIS	INT	Number of Grid Points recovered for Grid Point Stress at Discontinuous Points.
DISP	CHAR (8)	Displacement Flag (REAL, COMPLEX)
NENT_DISP	INT	Number of Grid Points recovered for Displacement.
VELO	CHAR (8)	Velocity Flag (REAL, COMPLEX)
NENT_VELO	INT	Number of Grid Points recovered for Velocity.
ACCEL	CHAR (8)	Acceleration Flag (REAL, COMPLEX)
NENT_ACCEL	INT	Number of Grid Points recovered for Acceleration.

ATTRIBUTE	TYPE	DEFINITION
GPFSPC	CHAR (8)	Grid Point Force of single point Constraint Flag (REAL, COMPLEX)
NENT_GPFSPC	INT	Number of Grid Points recovered for Grid Point Force of single point constraints.
GPFMPC	CHAR (8)	Grid Point Force of multi point Constraint Flag (REAL, COMPLEX)
NENT_GPFMPC	INT	Number of Grid Points recovered for Grid Point Force of multi point constraints.
LOAD	CHAR (8)	Load Flag (REAL, COMPLEX)
NENT_LOAD	INT	Number of Grid Points recovered for Load.
PRESS	CHAR (8)	Pressure Flag (REAL, COMPLEX)
NENT_PRESS	INT	Number of Grid Points recovered for pressure.
GPFASPC	CHAR (8)	Auto Grid Point Force of single point Constraint Flag (REAL, COMPLEX)
NENT_GPFASPC	INT	Number of Grid Points recovered for the Auto Grid Point Force of single point constraints.
ELEM_GPFORCE	CHAR (8)	Element-oriented Grid Point Force Flag (REAL, COMPLEX)
NENT_EFORCE	INT	Number of Element-oriented Grid Point force data recovered.
ELEMSUM_GPFORCE	CHAR (8)	Element-oriented Grid Point Force Flag (REAL, COMPLEX)
NENT_SUMEFORCE	INT	Number of Element-oriented Grid Point force data recovered.
GPKEN	CHAR (8)	Grid Point Kenetic Energy Flag (REAL, COMPLEX)
NENT_GPKEN	INT	Number of Grid Points recovered for Kenetic Energy.
GPUSRF	CHAR (8)	Grid Point Surface Strain Flag (REAL, COMPLEX)
NENT_GPUSRF	INT	Number of Grid Points recovered for Grid Point Surface Strains.
GPUVOL	CHAR (8)	Grid Point Volume Strain Flag (REAL, COMPLEX)
NENT_GPUVOL	INT	Number of Grid Points recovered for Grid Point Volume Strain.
GPUDIS	CHAR (8)	Grid Point Strain at Discontinuous Points Flag (REAL, COMPLEX)
NENT_GPUDIS	INT	Number of Grid Points recovered for Grid Point Strain at Discontinuous Points.

ENTITY: ELEMENT_RESULTS

ENTITY TYPE: Relation

DESCRIPTION: Data Recovery Summary for Element Results.

DATA BLOCKS USED: OES1, OES2, OEF1, OEF2 OESC1, OESC2, ORNGY1, OESNL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
DISC	CHAR (20)	Analysis Type Statics Real Eigenvalue Frequency Transient Buckling Complex Eigenvalue Nonlinear
NVECT	INT	Number of solution vectors recovered for this subcase.
STRESS	CHAR (8)	Stress Flag (REAL, COMPLEX)
STRAIN	CHAR (8)	Strain Flag (REAL, COMPLEX)
FORCE	CHAR (8)	Force Flag (REAL, COMPLEX)
NLSTRESS	CHAR (8)	Nonlinear Stress Flag (REAL, COMPLEX)
NLSTRAIN	CHAR (8)	Nonlinear Strain Flag (REAL, COMPLEX)
NLFORCE	CHAR (8)	Nonlinear Force Flag (REAL, COMPLEX)
UENERGY	CHAR (8)	Element Strain Energy Density Flag (REAL, COMPLEX)
KENERGY	CHAR (8)	Element Kinetic Energy Density Flag (REAL, COMPLEX)
PLY_STRESS	CHAR (8)	Ply Stress Flag (REAL, COMPLEX)
PLY_STRAIN	CHAR (8)	Ply Strain Flag (REAL, COMPLEX)
BMST_FORCE	CHAR (8)	Beam Force Flag (REAL, COMPLEX)
MESH_ERROR	CHAR (8)	Mesh Error Flag (REAL, COMPLEX)
FLUX	CHAR (8)	Temperature gradient and flux Flag (REAL, COMPLEX)

ENTITY: EIGEN_SUMMARY

ENTITY TYPE: Relation

DESCRIPTION: Real Eigenvalue Summary.

DATA BLOCKS USED: XOL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode Number
LAMA	RSP	Eigenvalue Real
OMEGA	RSP	Angular Frequency
FREQ	RSP	Cyclic Frequency
GM	RSP	Generalized mass
GK	RSP	Generalized Stiffness

ENTITY: CEIGEN_SUMMARY

ENTITY TYPE: Relation

DESCRIPTION: Complex Eigenvalue Summary.

DATA BLOCKS USED: XOL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode Number
LAMAR	RSP	Eigenvalue Real
LAMAI	RSP	Eigenvalue Imaginary
NATURAL	RSP	Natural Frequency
DAMP	RSP	Frequency Damped
DECAY	RSP	Damping Coefficient

ENTITY: FREQ_SUMMARY

ENTITY TYPE: Relation

DESCRIPTION: Frequency Summary.

DATA BLOCKS USED: XOL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
INDEX	INT	Frequency index
FREQ	RSP	Frequency

ENTITY: TIME_SUMMARY

ENTITY TYPE: Relation

DESCRIPTION: Time Summary.

DATA BLOCKS USED: XOL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
INDEX	INT	Time index
TIME	RSP	Time step

ENTITY: PLY_STRESS_SUMMARY

ENTITY TYPE: Relation

DESCRIPTION: Summary of Laminated composite Stress Data Recovery for elements.

DATA BLOCKS USED: OES1L

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
ETYPE	CHAR (8)	Element Type
NPLY	INT	Number of ply
MPLY	INT	Critical Ply
FTHEORY	CHAR (8)	Failure theory (HILL, HOFF, TSAI-WU, STRESS, STRAIN)
MFIDX	RSP	Maximum failure index of laminate
MFFLG	INT	Maximum failure flag

ENTITY: PLY_STRAIN_SUMMARY

ENTITY TYPE: Relation

DESCRIPTION: Summary of Laminated composite Strain Data Recovery for elements.

DATA BLOCKS USED: OES1AL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
ETYPE	CHAR (8)	Element Type
NPLY	INT	Number of ply
MPLY	INT	Critical Ply
FTHEORY	CHAR (8)	Failure theory (HILL, HOFF, TSAI-WU, STRESS, STRAIN)
MFIDX	RSP	Maximum failure index of laminate
MFFLG	INT	Maximum failure flag

ENTITY: HSET

ENTITY TYPE: Relation

DESCRIPTION: H-Set Summary of Modal Degrees of Freedom.

DATA BLOCKS USED: LAMA, CLAMA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case ID
HSET	INT	H-Set DOF Index Number
PTYPE	CHAR (8)	Point Type describing the degree of freedom MODE , Normal Mode RESFLEX , Residual Flexibility Vector EXTRA , Extra Point
IDENT	INT	Identification number MODE , Mode Index Number RESFLEX , Static Load CASEID that generated the vector EXTRA , Extra Point External Identification number
SOURCE	INT	A Secondary Identification number describing the source of the degree of freedom MODE , Normal modes CASEID of the associated modes case RESFLEX , Case Control SID from the RESFLEX command EXTRA , NULL
OMEGA	RSP	Radian frequency
MASS	RSP	Generalized mass
STIFF	RSP	Generalized stiffness

ENTITY: UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Element Summary.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ENAME	CHAR (8)	Element Name
UENGTOT	RSP	Total strain energy of all elements
SUBTOT	RSP	Subtotal of strain energy for this element
PCTENG	RSP	Percent of total energy for this element

ENTITY: KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Element Summary.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ENAME	CHAR (8)	Element Name
KENGTOT	RSP	Total kinetic energy of all elements
SUBTOT	RSP	Subtotal of kinetic energy for this element
PCTENG	RSP	Percent of total energy for this element

ENTITY: ANALYSIS_SUMMARY

ENTITY TYPE: Relation

DESCRIPTION: Subcase definitions

DATA BLOCKS USED:

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
DISC	CHAR (20)	Analysis Type Statics Real Eigenvalue Frequency Transient Buckling Complex Eigenvalue Nonlinear
TITLE	CHAR (64)	Subcase title
SUBTITLE	CHAR (64)	Subcase subtitle
LABEL	CHAR (64)	Subcase label

ENTITY: MESH_ERROR

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Element Summary.

DATA BLOCKS USED: OMESH1 OMESH2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element identification
ENAME	CHAR (8)	Element Name
AREA	RSP	Area for 2-D Elements
VOLUME	RSP	Volume for 3-D Elements
NORM_ERROR	RSP	Normalized element error
ELEM_ERROR	RSP	Element error
PRED_STRESS	RSP	Predicted element stress normalized

GRID POINT WEIGHT SUMMARY

ENTITY: GPW_MASS

ENTITY TYPE: Matrix

DESCRIPTION: Rigid body mass matrix at reference point in the basic coordinate system

MATRIX SCHEMA:

```

MODE   RMU
SHAPE  RECTANGULAR
NUMT   RSP
    
```

NOTES:

1. Defines the 6x6 mass matrix of the the entire structure with respect to the reference point defined in the GPW_CG entity

ENTITY: GPW_BPTRANS

ENTITY TYPE: Matrix

DESCRIPTION: Transformation matrix, from basic to the principal mass system

MATRIX SCHEMA:

```

MODE   RMU
SHAPE  RECTANGULAR
NUMT   RSP
    
```

NOTES:

1. Transformation from the BASIC coordinate system to the set of principal axes, call the S-system, for the 3 by 3 scalar mass partition of the GPW_RBODY_MASS entity

ENTITY: GPW_CG

ENTITY TYPE: Relation

DESCRIPTION: The GPW_CG relation contains the current values of three distinct mass systems, one in each of the three directions of the S-system.

DATA BLOCKS USED: OGPWG

ATTRIBUTE	TYPE	DEFINITION
GID	INT	Reference point
AXIS	CHAR (4)	Direction mass axis system
MASS	RSP	The mass associated with the specified direction.
XCG	RSP	The X, Y and Z distances from the reference point to the center of mass for each of the three mass systems

ENTITY: GPW_INERTIA

ENTITY TYPE: Matrix

DESCRIPTION: Inertia Matrix in the Principal Mass system

MATRIX SCHEMA:

```

MODE   RMU
SHAPE  RECTANGULAR
NUMT   RSP
    
```

NOTES:

1. This is the 3 by 3 mass moment of the inertia partition, I(S), with respect to the center of gravity in the S system. The matrix is not necessarily a diagonal matrix because the determination of the S system does not involve second moments. The values of the inertia at the center of gravity are found from the values at the reference point by employing the parallel axes theorem.

ENTITY: GPW_MOMENTS**ENTITY TYPE:** Matrix**DESCRIPTION:** Principal Moments of Inertia mass system**MATRIX SCHEMA:**

MODE RMU
 SHAPE DIAGONAL
 NUMT RSP

NOTES:

1. The principal moment of inertia at the center of gravity are given in matrix form with reference to the Q system of axes. The Q system is obtained from an eigenvalue analysis of the I(S) matrix.

ENTITY: GPW_PPTRANS**ENTITY TYPE:** Matrix**DESCRIPTION:** Transformation matrix, Principal Inertia to Principal Mass**MATRIX SCHEMA:**

MODE RMU
 SHAPE RECTANGULAR
 NUMT RSP

NOTES:

1. This is the coordinate transformation matrix between the S and the Q systems.

GRID SOLUTION RESULTS

ENTITY: GPFORCE

ENTITY TYPE: Relation

DESCRIPTION: Grid point forces.

DATA BLOCKS USED: OGPFB1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Load Point Identification
EID	INT	Element Identification
ETYPE	CHAR (8)	Element Type
FTYPE	CHAR (8)	Force type (APP-LOAD, F-OFF-SPC, *TOTALS)
FT1	RSP	Force Direction 1
FT2	RSP	Force Direction 2
FT3	RSP	Force Direction 3
MR1	RSP	Moment Direction 1
MR2	RSP	Moment Direction 2
MR3	RSP	Moment Direction 3

ENTITY: ELEM_GPFORCE

ENTITY TYPE: Relation

DESCRIPTION: Element Oriented Grid Point Forces.

DATA BLOCKS USED: OELOF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Load Point Identification
EID	INT	Element Identification
ETYPE	CHAR (8)	Element Type
GID1	INT	Reference Load point identification 1
F1	RSP	Force along the edge from the load point to reference point 1
M1	RSP	Moment about the edge from the load point to reference point 1
GID2	INT	Reference Load point identification 2
F2	RSP	Force along the edge from the load point to reference point 2
M2	RSP	Moment about the edge from the load point to reference point 2
KLOAD	RSP	Kick Load.

ENTITY: ELEM_SUM_GPFORCE

ENTITY TYPE: Relation

DESCRIPTION: Summation of element-oriented grid point forces on adjacent elements.

DATA BLOCKS USED: OELOP1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Load Point Identification
GID1	INT	Reference Load point identification
SUM_FORCE	RSP	Summation of the force along the edge from the load point to the reference point.

ENTITY: GPSSRF

ENTITY TYPE: Relation

DESCRIPTION: Grid point stress surface for two-dimensional stress data

DATA BLOCKS USED: OGPS1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Point Identification
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
SIGX	RSP	Normal Stress in the X Direction
SIGY	RSP	Normal Stress in the Y Direction
TAUXY	RSP	Shear Stress in the XY Plane
ANG	RSP	Principal angle
PMAX	RSP	Principal angle about direction 1
PMIN	RSP	Principal angle about direction 2
TMAX	RSP	Shear Max
VM	RSP	von Mises

ENTITY: GPSVOL

ENTITY TYPE: Relation

DESCRIPTION: Grid point stress volume for three-dimensional stress data

DATA BLOCKS USED: OGPS1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Point Identification
SIGX	RSP	Normal Stress in the X Direction
SIGY	RSP	Normal Stress in the Y Direction
SIGZ	RSP	Normal Stress in the Z Direction
TAUXY	RSP	Shear Stress in the XY Plane
TAUYZ	RSP	Shear Stress in the YZ Plane
TAUZX	RSP	Shear Stress in the ZX Plane
MEAN	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VM	RSP	von Mises
P1	RSP	Principal Stress in the 1 Direction
P2	RSP	Principal Stress in the 2 Direction
P3	RSP	Principal Stress in the 3 Direction
DC1	RSP (3)	Direction Cosine for X, Y, Z in the 1 Direction
DC2	RSP (3)	Direction Cosine for X, Y, Z in the 2 Direction
DC3	RSP (3)	Direction Cosine for X, Y, Z in the 3 Direction

ENTITY: GPUSRF

ENTITY TYPE: Relation

DESCRIPTION: Grid point strain surface for two-dimensional strain data

DATA BLOCKS USED: OGPS1A

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Point Identification
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
SIGX	RSP	Normal Strain in the X Direction
SIGY	RSP	Normal Stress in the Y Direction
TAUXY	RSP	Shear Strain in the XY Plane
ANG	RSP	Principal angle
PMAX	RSP	Principal angle about direction 1
PMIN	RSP	Principal angle about direction 2
TMAX	RSP	Shear Max
VM	RSP	von Mises

ENTITY: GPUVOL

ENTITY TYPE: Relation

DESCRIPTION: Grid point strain volume for three-dimensional strain data

DATA BLOCKS USED: OGPS1A

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Point Identification
SIGX	RSP	Normal Strain in the X Direction
SIGY	RSP	Normal Strain in the Y Direction
SIGZ	RSP	Normal Strain in the Z Direction
TAUXY	RSP	Shear Strain in the XY Plane
TAUYZ	RSP	Shear Strain in the YZ Plane
TAUZX	RSP	Shear Strain in the ZX Plane
MEAN	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Strain
VM	RSP	von Mises
P1	RSP	Principal Strain in the 1 Direction
P2	RSP	Principal Strain in the 2 Direction
P3	RSP	Principal Strain in the 3 Direction
DC1	RSP (3)	Direction Cosine for X, Y, Z in the 1 Direction
DC2	RSP (3)	Direction Cosine for X, Y, Z in the 2 Direction
DC3	RSP (3)	Direction Cosine for X, Y, Z in the 3 Direction

ENTITY: GPSDIS

ENTITY TYPE: Relation

DESCRIPTION: Grid point stresses at discontinuous points in two-dimensional fields.

DATA BLOCKS USED: OGPSX1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Point Identification
EID	INT	Element Identification
ETYPE	CHAR (8)	Element Type
PSN	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SIGX	RSP	Normal Stress in the X Direction
SIGY	RSP	Normal Stress in the Y Direction
TAUXY	RSP	Shear Stress in the XY Plane
ANG	RSP	Principal Angle
P1	RSP	Principal Stress in the 1 Direction
P2	RSP	Principal Stress in the 2 Direction
TAUMAX	RSP	Shear Maximum
VM	RSP	von Mises

ENTITY: GPUDIS

ENTITY TYPE: Relation

DESCRIPTION: Grid point strains at discontinuous points in two-dimensional fields.

DATA BLOCKS USED: OGPSX1A

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Point Identification
EID	INT	Element Identification
ETYPE	CHAR (8)	Element Type
PSN	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SIGX	RSP	Normal Strain in the X Direction
SIGY	RSP	Normal Strain in the Y Direction
TAUXY	RSP	Shear Strain in the XY Plane
ANG	RSP	Principal Angle
P1	RSP	Principal Strain in the 1 Direction
P2	RSP	Principal Strain in the 2 Direction
TAUMAX	RSP	Shear Maximum
VM	RSP	von Mises

ENTITY: DISP

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Displacement

DATA BLOCKS USED: OUGV1, OUGV2, OUGV1, OUPVC1, OPHIG, OCPHIP OUBGV1, OUPV1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR (8)	Point Type (GRID, SCALAR, EXTRA, MODAL, TEMP)
DT1R	RSP	Translation in Direction 1 Real
DT1I	RSP	Translation in Direction 1 Imaginary
DT2R	RSP	Translation in Direction 2 Real
DT2I	RSP	Translation in Direction 2 Imaginary
DT3R	RSP	Translation in Direction 3 Real
DT3I	RSP	Translation in Direction 3 Imaginary
DR1R	RSP	Rotation in Direction 1 Real
DR1I	RSP	Rotation in Direction 1 Imaginary
DR2R	RSP	Rotation in Direction 2 Real
DR2I	RSP	Rotation in Direction 2 Imaginary
DR3R	RSP	Rotation in Direction 3 Real
DR3I	RSP	Rotation in Direction 3 Imaginary

ENTITY: VELO

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Velocity

DATA BLOCKS USED: OUPV1, OUPV2, OUPVC1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR (8)	Point Type (GRID, SCALAR, EXTRA, MODAL)
VT1R	RSP	Translational Velocity in Direction 1 Real
VT1I	RSP	Translational Velocity in Direction 1 Imaginary
VT2R	RSP	Translational Velocity in Direction 2 Real
VT2I	RSP	Translational Velocity in Direction 2 Imaginary
VT3R	RSP	Translational Velocity in Direction 3 Real
VT3I	RSP	Translational Velocity in Direction 3 Imaginary
VR1R	RSP	Rotational Velocity in Direction 1 Real
VR1I	RSP	Rotational Velocity in Direction 1 Imaginary
VR2R	RSP	Rotational Velocity in Direction 2 Real
VR2I	RSP	Rotational Velocity in Direction 2 Imaginary
VR3R	RSP	Rotational Velocity in Direction 3 Real
VR3I	RSP	Rotational Velocity in Direction 3 Imaginary

ENTITY: ACCEL

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Acceleration

DATA BLOCKS USED: OUPV1, OUPV2, OUPVC1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR (8)	Point Type (GRID, SCALAR, EXTRA, MODAL)
AT1R	RSP	Translational Acceleration in Direction 1 Real
AT1I	RSP	Translational Acceleration in Direction 1 Imaginary
AT2R	RSP	Translational Acceleration in Direction 2 Real
AT2I	RSP	Translational Acceleration in Direction 2 Imaginary
AT3R	RSP	Translational Acceleration in Direction 3 Real
AT3I	RSP	Translational Acceleration in Direction 3 Imaginary
AR1R	RSP	Rotational Acceleration in Direction 1 Real
AR1I	RSP	Rotational Acceleration in Direction 1 Imaginary
AR2R	RSP	Rotational Acceleration in Direction 2 Real
AR2I	RSP	Rotational Acceleration in Direction 2 Imaginary
AR3R	RSP	Rotational Acceleration in Direction 3 Real
AR3I	RSP	Rotational Acceleration in Direction 3 Imaginary

ENTITY: GPFSPC

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Forces of single-point constraint

DATA BLOCKS USED: OQG1, OQG2, OQBG1, OBQG1, OQP1, OQPC1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR (8)	Point Type (GRID, SCALAR)
SFT1R	RSP	Translational constraint in Direction 1 Real
SFT1I	RSP	Translational constraint in Direction 1 Imaginary
SFT2R	RSP	Translational constraint in Direction 2 Real
SFT2I	RSP	Translational constraint in Direction 2 Imaginary
SFT3R	RSP	Translational constraint in Direction 3 Real
SFT3I	RSP	Translational constraint in Direction 3 Imaginary
SFR1R	RSP	Rotational constraint in Direction 1 Real
SFR1I	RSP	Rotational constraint in Direction 1 Imaginary
SFR2R	RSP	Rotational constraint in Direction 2 Real
SFR2I	RSP	Rotational constraint in Direction 2 Imaginary
SFR3R	RSP	Rotational constraint in Direction 3 Real
SFR3I	RSP	Rotational constraint in Direction 3 Imaginary

ENTITY: GPFASPC

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Forces of auto single-point constraint

DATA BLOCKS USED: OQG1A, OQG2A

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR(8)	Point Type (GRID, SCALAR)
SFT1R	RSP	Translational constraint in Direction 1 Real
SFT1I	RSP	Translational constraint in Direction 1 Imaginary
SFT2R	RSP	Translational constraint in Direction 2 Real
SFT2I	RSP	Translational constraint in Direction 2 Imaginary
SFT3R	RSP	Translational constraint in Direction 3 Real
SFT3I	RSP	Translational constraint in Direction 3 Imaginary
SFR1R	RSP	Rotational constraint in Direction 1 Real
SFR1I	RSP	Rotational constraint in Direction 1 Imaginary
SFR2R	RSP	Rotational constraint in Direction 2 Real
SFR2I	RSP	Rotational constraint in Direction 2 Imaginary
SFR3R	RSP	Rotational constraint in Direction 3 Real
SFR3I	RSP	Rotational constraint in Direction 3 Imaginary

ENTITY: GPFMPC

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Forces of multi-point constraint

DATA BLOCKS USED: OQMG1, OQMG2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR(8)	Point Type (GRID, SCALAR)
MFT1R	RSP	Translational constraint in Direction 1 Real
MFT1I	RSP	Translational constraint in Direction 1 Imaginary
MFT2R	RSP	Translational constraint in Direction 2 Real
MFT2I	RSP	Translational constraint in Direction 2 Imaginary
MFT3R	RSP	Translational constraint in Direction 3 Real
MFT3I	RSP	Translational constraint in Direction 3 Imaginary
MFR1R	RSP	Rotational constraint in Direction 1 Real
MFR1I	RSP	Rotational constraint in Direction 1 Imaginary
MFR2R	RSP	Rotational constraint in Direction 2 Real
MFR2I	RSP	Rotational constraint in Direction 2 Imaginary
MFR3R	RSP	Rotational constraint in Direction 3 Real
MFR3I	RSP	Rotational constraint in Direction 3 Imaginary

ENTITY: LOAD

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Loads

DATA BLOCKS USED: OPG1, OPG2, OPP1, OPPC1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR(8)	Point Type (GRID, SCALAR)
PT1R	RSP	Translational Load in Direction 1 Real
PT1I	RSP	Translational Load in Direction 1 Imaginary
PT2R	RSP	Translational Load in Direction 2 Real
PT2I	RSP	Translational Load in Direction 2 Imaginary
PT3R	RSP	Translational Load in Direction 3 Real
PT3I	RSP	Translational Load in Direction 3 Imaginary
PR1R	RSP	Rotational Load in Direction 1 Real
PR1I	RSP	Rotational Load in Direction 1 Imaginary
PR2R	RSP	Rotational Load in Direction 2 Real
PR2I	RSP	Rotational Load in Direction 2 Imaginary
PR3R	RSP	Rotational Load in Direction 3 Real
PR3I	RSP	Rotational Load in Direction 3 Imaginary

ENTITY: PRESS

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Pressures

DATA BLOCKS USED: OPHIPR, OCPHIPR

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR(8)	Point Type (GRID, SCALAR)
PR	RSP	Pressure Value Real
PI	RSP	Pressure Value Imaginary
PRMSR	RSP	Sound Pressure Level Real
PRMSI	RSP	Sound Pressure Level Imaginary
DBR	RSP	Sound Pressure Level in Decibels Real
DBI	RSP	Sound Pressure Level in Decibels Imaginary
DBAR	RSP	Equivalent A-WEIGHTED Sound Level Real
DBAI	RSP	Equivalent A-WEIGHTED Sound Level Imaginary
COMBDBAR	RSP	Combine of Equivalent A-WEIGHTED Sound Level Real
COMBDBAI	RSP	Combine of Equivalent A-WEIGHTED Sound Level Imaginary

ENTITY: GPKEN

ENTITY TYPE: Relation

DESCRIPTION: Grid Point Kinetic Energy

DATA BLOCKS USED: OGPKEN ,
OGPKEN1 , OGPKEN2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
GID	INT	Grid Identification
PTYPE	CHAR(8)	Point Type (GRID , SCALAR , EXTRA , MODAL , TEMP)
KT1R	RSP	Translation in Direction 1 Real
KT1I	RSP	Translation in Direction 1 Imaginary
KT2R	RSP	Translation in Direction 2 Real
KT2I	RSP	Translation in Direction 2 Imaginary
KT3R	RSP	Translation in Direction 3 Real
KT3I	RSP	Translation in Direction 3 Imaginary
KR1R	RSP	Rotation in Direction 1 Real
KR1I	RSP	Rotation in Direction 1 Imaginary
KR2R	RSP	Rotation in Direction 2 Real
KR2I	RSP	Rotation in Direction 2 Imaginary
KR3R	RSP	Rotation in Direction 3 Real
KR3I	RSP	Rotation in Direction 3 Imaginary

LINEAR ELEMENT SOLUTION RESULTS

STRESSES

ENTITY: AXIF2_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the AXIF2 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RSR	RSP	Radial Stress Real
RSI	RSP	Radial Stress Imaginary
ASR	RSP	Axial Stress Real
ASI	RSP	Axial Stress Imaginary
TSR	RSP	Tangential edge Real
TSI	RSP	Tangential edge Imaginary
CSR	RSP	Circumferential edge Real
CSI	RSP	Circumferential edge Imaginary

ENTITY: AXIF3_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the AXIF3 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RSR	RSP	Radial axis Real
RSI	RSP	Radial axis Imaginary
CSR	RSP	Circumferential Stress Real
CSI	RSP	Circumferential Stress Imaginary
ASR	RSP	Axial Stress Real
ASI	RSP	Axial Stress Imaginary
TS1R	RSP	Tangential Edge 1 Stress Real
TS1I	RSP	Tangential Edge 1 Stress Imaginary
CS1R	RSP	Circumferential Edge 1 Stress Real
CS1I	RSP	Circumferential Edge 1 Stress Imaginary
TS2R	RSP	Tangential Edge 2 Stress Real
TS2I	RSP	Tangential Edge 2 Stress Imaginary
CS2R	RSP	Circumferential Edge 2 Stress Real
CS2I	RSP	Circumferential Edge 2 Stress Imaginary
TS3R	RSP	Tangential Edge 3 Stress Real
TS3I	RSP	Tangential Edge 3 Stress Imaginary
CS3R	RSP	Circumferential Edge 3 Stress Real
CS3I	RSP	Circumferential Edge 3 Stress Imaginary

ENTITY: AXIF4_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the AXIF4 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RSR	RSP	Radial axis Real
RSI	RSP	Radial axis Imaginary
CSR	RSP	Circumferential Stress Real
CSI	RSP	Circumferential Stress Imaginary
ASR	RSP	Axial Stress Real
ASI	RSP	Axial Stress Imaginary
TS1R	RSP	Tangential Edge 1 Stress Real
TS1I	RSP	Tangential Edge 1 Stress Imaginary
CS1R	RSP	Circumferential Edge 1 Stress Real
CS1I	RSP	Circumferential Edge 1 Stress Imaginary
TS2R	RSP	Tangential Edge 2 Stress Real
TS2I	RSP	Tangential Edge 2 Stress Imaginary
CS2R	RSP	Circumferential Edge 2 Stress Real
CS2I	RSP	Circumferential Edge 2 Stress Imaginary
TS3R	RSP	Tangential Edge 3 Stress Real
TS3I	RSP	Tangential Edge 3 Stress Imaginary
CS3R	RSP	Circumferential Edge 3 Stress Real
CS3I	RSP	Circumferential Edge 3 Stress Imaginary
TS4R	RSP	Tangential Edge 4 Stress Real
TS4I	RSP	Tangential Edge 4 Stress Imaginary
CS4R	RSP	Circumferential Edge 4 Stress Real
CS4I	RSP	Circumferential Edge 4 Stress Imaginary

ENTITY: BAR_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the BAR element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR(1)	Stress Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
SX1R	RSP	Stress Recovery Point 1 Real.
SX1I	RSP	Stress Recovery Point 1 Imaginary.
SX2R	RSP	Stress Recovery Point 2 Real.
SX2I	RSP	Stress Recovery Point 2 Imaginary.
SX3R	RSP	Stress Recovery Point 3 Real.
SX3I	RSP	Stress Recovery Point 3 Imaginary.
SX4R	RSP	Stress Recovery Point 4 Real.
SX4I	RSP	Stress Recovery Point 4 Imaginary.
SMAX	RSP	Maximum Stress
SMIN	RSP	Minimum Stress
TMS	RSP	Tensile Margin of Safety
CMS	RSP	Compressive Margin of Safety

ENTITY: BEAM_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the BEAM element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
TIME	RSP	Time Step Value	
FREQ	RSP	Frequency Value	
MODE	INT	Mode index	
EID	INT	Element Identification	
GID	INT	Grid ID	
SNUM	INT	Station Number	
		1	End A
		2-10	Intermediate Stations
		11	End B
SDL	RSP	Station Distance/Length	
SX1R	RSP	Longitudinal Stress at Point 1 Real.	
SX1I	RSP	Longitudinal Stress at Point 1 Imaginary.	
SX2R	RSP	Longitudinal Stress at Point 2 Real.	
SX2I	RSP	Longitudinal Stress at Point 2 Imaginary.	
SX3R	RSP	Longitudinal Stress at Point 3 Real.	
SX3I	RSP	Longitudinal Stress at Point 3 Imaginary.	
SX4R	RSP	Longitudinal Stress at Point 4 Real.	
SX4I	RSP	Longitudinal Stress at Point 4 Imaginary.	
SMX	RSP	Maximum Stress	
SMN	RSP	Minimum Stress	
TMS	RSP	Tensile Margin of Safety	
CMS	RSP	Compressive Margin of Safety	

ENTITY: CONROD_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the CONROD element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
ASR	RSP	Axial Stress Real
ASI	RSP	Axial Stress Imaginary
AMS	RSP	Axial Margin of Safety
TSR	RSP	Torsional Stress Real
TSI	RSP	Torsional Stress Imaginary
TMS	RSP	Torsional Margin of Safety

ENTITY: ELAS1_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the ELAS1 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SR	RSP	Stress Real.
SI	RSP	Stress Imaginary.

ENTITY: ELAS2_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the ELAS2 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SR	RSP	Stress Real.
SI	RSP	Stress Imaginary.

ENTITY: ELAS3_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the ELAS3 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SR	RSP	Stress Real.
SI	RSP	Stress Imaginary.

ENTITY: ELAS4_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the ELAS4 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SR	RSP	Stress Real.
SI	RSP	Stress Imaginary.

ENTITY: HEXA_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the HEXA element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Stress X Real
SXI	RSP	Normal Stress X Imaginary
TXYR	RSP	Shear Stress XY Real
TXYI	RSP	Shear Stress XY Imaginary
PA	RSP	First Principal Stress
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Stress
SYR	RSP	Normal Stress Y Real
SYI	RSP	Normal Stress Y Imaginary
TYZR	RSP	Shear Stress YZ Real
TYZI	RSP	Shear Stress YZ Imaginary
PB	RSP	Second Principal Stress
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Stress Z Real
SZI	RSP	Normal Stress Z Imaginary
TZXR	RSP	Shear Stress ZX Real
TZXI	RSP	Shear Stress ZX Imaginary
PC	RSP	Third Principal Stress
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: PENTA_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the PENTA element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Stress X Real
SXI	RSP	Normal Stress X Imaginary
TXYR	RSP	Shear Stress XY Real
TXYI	RSP	Shear Stress XY Imaginary
PA	RSP	First Principal Stress
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Stress
SYR	RSP	Normal Stress Y Real
SYI	RSP	Normal Stress Y Imaginary
TYZR	RSP	Shear Stress YZ Real
TYZI	RSP	Shear Stress YZ Imaginary
PB	RSP	Second Principal Stress
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Stress Z Real
SZI	RSP	Normal Stress Z Imaginary
TZXR	RSP	Shear Stress ZX Real
TZXI	RSP	Shear Stress ZX Imaginary
PC	RSP	Third Principal Stress
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: PILE_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the PILE element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR(1)	Stress Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
SX1R	RSP	Stress Recovery Point 1 Real.
SX1I	RSP	Stress Recovery Point 1 Imaginary.
SX2R	RSP	Stress Recovery Point 2 Real.
SX2I	RSP	Stress Recovery Point 2 Imaginary.
SX3R	RSP	Stress Recovery Point 3 Real.
SX3I	RSP	Stress Recovery Point 3 Imaginary.
SX4R	RSP	Stress Recovery Point 4 Real.
SX4I	RSP	Stress Recovery Point 4 Imaginary.
SMAX	RSP	Maximum Stress
SMIN	RSP	Minimum Stress
TMS	RSP	Tensile Margin of Safety
CMS	RSP	Compressive Margin of Safety

ENTITY: PIPE_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the PIPE element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
PSN	CHAR(1)	Stress Recovery Position
		A End A
		B End B
BSP1R	RSP	Bending Stress Recover Point 1 Real
BSP1I	RSP	Bending Stress Recover Point 1 Imaginary
BSP2R	RSP	Bending Stress Recover Point 2 Real
BSP2I	RSP	Bending Stress Recover Point 2 Imaginary
BSP3R	RSP	Bending Stress Recover Point 3 Real
BSP3I	RSP	Bending Stress Recover Point 3 Imaginary
BSP4R	RSP	Bending Stress Recover Point 4 Real
BSP4I	RSP	Bending Stress Recover Point 4 Imaginary
ASR	RSP	Axial Stress Real
ASI	RSP	Axial Stress Imaginary
SMAX	RSP	Maximum Stress

ENTITY: QUAD4_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Stress Real
SXI	RSP	Normal X Stress Imaginary
SYR	RSP	Normal Y Stress Real
SYI	RSP	Normal Y Stress Imaginary
TXYR	RSP	Shear Stress XY Real
TXYI	RSP	Shear Stress XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minior Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: QUADR_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the QUADR element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Stress Real
SXI	RSP	Normal X Stress Imaginary
SYR	RSP	Normal Y Stress Real
SYI	RSP	Normal Y Stress Imaginary
TXYR	RSP	Shear Stress XY Real
TXYI	RSP	Shear Stress XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minior Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: QUAD8_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the QUAD8 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Stress Real
SXI	RSP	Normal X Stress Imaginary
SYR	RSP	Normal Y Stress Real
SYI	RSP	Normal Y Stress Imaginary
TXYR	RSP	Shear XY Real
TXYI	RSP	Shear XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minor Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: ROD_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the ROD element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
ASR	RSP	Axial Stress Real
ASI	RSP	Axial Stress Imaginary
AMS	RSP	Axial Margin of Safety
TSR	RSP	Torsional Stress Real
TSI	RSP	Torsional Stress Imaginary
TMS	RSP	Torsional Margin of Safety

ENTITY: SHEAR_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the SHEAR element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
TMAXR	RSP	Max Shear Real
TMAXI	RSP	Max Shear Imaginary
TAR	RSP	Average Shear Real
TAI	RSP	Average Shear Imaginary
MS	RSP	Margin of Safety

ENTITY: TETRA_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TETRA element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Stress X Real
SXI	RSP	Normal Stress X Imaginary
TXYR	RSP	Shear Stress XY Real
TXYI	RSP	Shear Stress XY Imaginary
PA	RSP	First Principal Stress
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Stress
SYR	RSP	Normal Stress Y Real
SYI	RSP	Normal Stress Y Imaginary
TYZR	RSP	Shear Stress YZ Real
TYZI	RSP	Shear Stress YZ Imaginary
PB	RSP	Second Principal Stress
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Stress Z Real
SZI	RSP	Normal Stress Z Imaginary
TZXR	RSP	Shear Stress ZX Real
TZXI	RSP	Shear Stress ZX Imaginary
PC	RSP	Third Principal Stress
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: TORDRG_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TORDRG element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
TMS1	RSP	Tangential Membrane Stress at Point 1
CMS1	RSP	Circumferential Membrane Stress at Point 1
TFS1	RSP	Tangential Flexural Stress at Point 1
CFS1	RSP	Circumferential Flexural Stress at Point 1
TF1	RSP	Shear Stress at Point 1
TMS2	RSP	Tangential Membrane Stress at Point 2
CMS2	RSP	Circumferential Membrane Stress at Point 2
TFS2	RSP	Tangential Flexural Stress at Point 2
CFS2	RSP	Circumferential Flexural Stress at Point 2
TF2	RSP	Shear Stress at Point 2
TMS3	RSP	Tangential Membrane Stress at Point 3
CMS3	RSP	Circumferential Membrane Stress at Point 3
TFS3	RSP	Tangential Flexural Stress at Point 3
CFS3	RSP	Circumferential Flexural Stress at Point 3
TF3	RSP	Shear Stress at Point 3

ENTITY: TRAPAX_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRAPAX element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
HA	RSP	Harmonic angle
RS1	RSP	Radial Stress - r at Point 1
AS1	RSP	Axial Stress - z at Point 1
CS1	RSP	Circumferential Stress at Point 1
TZR1	RSP	Shear Stress ZR at Point 1
TRT1	RSP	Shear Stress R THETA at Point 1
TTZ1	RSP	Shear Stress THETA Z at Point 1
RS2	RSP	Radial Stress - r at Point 2
AS2	RSP	Axial Stress - z at Point 2
CS2	RSP	Circumferential Stress at Point 2
TZR2	RSP	Shear Stress ZR at Point 2
TRT2	RSP	Shear Stress R THETA at Point 2
TTZ2	RSP	Shear Stress THETA Z at Point 2
RS3	RSP	Radial Stress - r at Point 3
AS3	RSP	Axial Stress - z at Point 3
CS3	RSP	Circumferential Stress at Point 3
TZR3	RSP	Shear Stress ZR at Point 3
TRT3	RSP	Shear Stress R THETA at Point 3
TTZ3	RSP	Shear Stress THETA Z at Point 3
RS4	RSP	Radial Stress - r at Point 4
AS4	RSP	Axial Stress - z at Point 4
CS4	RSP	Circumferential Stress at Point 4
TZR4	RSP	Shear Stress ZR at Point 4
TRT4	RSP	Shear Stress R THETA at Point 4
TTZ4	RSP	Shear Stress THETA Z at Point 4
RS5	RSP	Radial Stress - r at Point 5
AS5	RSP	Axial Stress - z at Point 5
CS5	RSP	Circumferential Stress at Point 5
TZR5	RSP	Shear Stress ZR at Point 5
TRT5	RSP	Shear Stress R THETA at Point 5
TTZ5	RSP	Shear Stress THETA Z at Point 5

ENTITY: TRAPRG_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRAPRG element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RS1	RSP	Radial Stress - r at Point 1
CS1	RSP	Circumferential Stress at Point 1
AS1	RSP	Axial Stress - z at Point 1
TZR1	RSP	Shear Stress - zr at Point 1
RS2	RSP	Radial Stress - r at Point 2
CS2	RSP	Circumferential Stress at Point 2
AS2	RSP	Axial Stress - z at Point 2
TZR2	RSP	Shear Stress - zr at Point 2
RS3	RSP	Radial Stress - r at Point 3
CS3	RSP	Circumferential Stress at Point 3
AS3	RSP	Axial Stress - z at Point 3
TZR3	RSP	Shear Stress - zr at Point 3
RS4	RSP	Radial Stress - r at Point 4
CS4	RSP	Circumferential Stress at Point 4
AS4	RSP	Axial Stress - z at Point 4
TZR4	RSP	Shear Stress - zr at Point 4
RS5	RSP	Radial Stress - r at Point 5
CS5	RSP	Circumferential Stress at Point 5
AS5	RSP	Axial Stress - z at Point 5
TZR5	RSP	Shear Stress - zr at Point 5

ENTITY: TRIA3_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Stress Real
SXI	RSP	Normal X Stress Imaginary
SYR	RSP	Normal Y Stress Real
SYI	RSP	Normal Y Stress Imaginary
TXYR	RSP	Shear Stress XY Real
TXYI	RSP	Shear Stress XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minior Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: TRIAR_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRIAR element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Stress Real
SXI	RSP	Normal X Stress Imaginary
SYR	RSP	Normal Y Stress Real
SYI	RSP	Normal Y Stress Imaginary
TXYR	RSP	Shear Stress XY Real
TXYI	RSP	Shear Stress XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minior Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: TRIA6_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRIA6 element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Stress Real
SXI	RSP	Normal X Stress Imaginary
SYR	RSP	Normal Y Stress Real
SYI	RSP	Normal Y Stress Imaginary
TXYR	RSP	Shear XY Real
TXYI	RSP	Shear XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minor Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: TRIAAX_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRIAAX element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
H	RSP	Harmonic or Point Angle
RS	RSP	Radial Stress
AS	RSP	Axial Stress
CS	RSP	Circumferential Stress
TZR	RSP	Shear Stress ZR
TRT	RSP	Shear Stress R THETA
TZT	RSP	Shear Stress Z THETA

ENTITY: TRIARG_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRI-ARG element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RS	RSP	Radial Stress
CS	RSP	Circumferential Stress
AS	RSP	Axial Stress
TZR	RSP	Shear Stress ZR

ENTITY: TUBE_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TUBE element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
ASR	RSP	Axial Stress Real
ASI	RSP	Axial Stress Imaginary
AMS	RSP	Axial Margin of Safety
TSR	RSP	Torsional Stress Real
TSI	RSP	Torsional Stress Imaginary
TMS	RSP	Torsional Margin of Safety

ENTITY: TWIST_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TWIST element.

DATA BLOCKS USED: OES1, OES2, OESC1, OESC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
TMAXR	RSP	Maximum Shear Real
TMAXI	RSP	Maximum Shear Imaginary
TAR	RSP	Average Shear Real
TAI	RSP	Average Shear Imaginary
MS	RSP	Margin of Safety

STRAINS

ENTITY: AXIF2_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the AXIF2 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RSR	RSP	Radial Strain Real
RSI	RSP	Radial Strain Imaginary
ASR	RSP	Axial Strain Real
ASI	RSP	Axial Strain Imaginary
TSR	RSP	Tangential edge Real
TSI	RSP	Tangential edge Imaginary
CSR	RSP	Circumferential edge Real
CSI	RSP	Circumferential edge Imaginary

ENTITY: AXIF3_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the AXIF3 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RSR	RSP	Radial axis Real
RSI	RSP	Radial axis Imaginary
CSR	RSP	Circumferential Strain Real
CSI	RSP	Circumferential Strain Imaginary
ASR	RSP	Axial Strain Real
ASI	RSP	Axial Strain Imaginary
TS1R	RSP	Tangential Edge 1 Strain Real
TS1I	RSP	Tangential Edge 1 Strain Imaginary
CS1R	RSP	Circumferential Edge 1 Strain Real
CS1I	RSP	Circumferential Edge 1 Strain Imaginary
TS2R	RSP	Tangential Edge 2 Strain Real
TS2I	RSP	Tangential Edge 2 Strain Imaginary
CS2R	RSP	Circumferential Edge 2 Strain Real
CS2I	RSP	Circumferential Edge 2 Strain Imaginary
TS3R	RSP	Tangential Edge 3 Strain Real
TS3I	RSP	Tangential Edge 3 Strain Imaginary
CS3R	RSP	Circumferential Edge 3 Strain Real
CS3I	RSP	Circumferential Edge 3 Strain Imaginary

ENTITY: AXIF4_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the AXIF4 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RSR	RSP	Radial axis Real
RSI	RSP	Radial axis Imaginary
CSR	RSP	Circumferential Strain Real
CSI	RSP	Circumferential Strain Imaginary
ASR	RSP	Axial Strain Real
ASI	RSP	Axial Strain Imaginary
TS1R	RSP	Tangential Edge 1 Strain Real
TS1I	RSP	Tangential Edge 1 Strain Imaginary
CS1R	RSP	Circumferential Edge 1 Strain Real
CS1I	RSP	Circumferential Edge 1 Strain Imaginary
TS2R	RSP	Tangential Edge 2 Strain Real
TS2I	RSP	Tangential Edge 2 Strain Imaginary
CS2R	RSP	Circumferential Edge 2 Strain Real
CS2I	RSP	Circumferential Edge 2 Strain Imaginary
TS3R	RSP	Tangential Edge 3 Strain Real
TS3I	RSP	Tangential Edge 3 Strain Imaginary
CS3R	RSP	Circumferential Edge 3 Strain Real
CS3I	RSP	Circumferential Edge 3 Strain Imaginary
TS4R	RSP	Tangential Edge 4 Strain Real
TS4I	RSP	Tangential Edge 4 Strain Imaginary
CS4R	RSP	Circumferential Edge 4 Strain Real
CS4I	RSP	Circumferential Edge 4 Strain Imaginary

ENTITY: BAR_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the BAR element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR(1)	Strain Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
SX1R	RSP	Strain Recovery Point 1 Real.
SX1I	RSP	Strain Recovery Point 1 Imaginary.
SX2R	RSP	Strain Recovery Point 2 Real.
SX2I	RSP	Strain Recovery Point 2 Imaginary.
SX3R	RSP	Strain Recovery Point 3 Real.
SX3I	RSP	Strain Recovery Point 3 Imaginary.
SX4R	RSP	Strain Recovery Point 4 Real.
SX4I	RSP	Strain Recovery Point 4 Imaginary.
SMAX	RSP	Maximum Strain
SMIN	RSP	Minimum SStrain
TMS	RSP	Tensile Margin of Safety
CMS	RSP	Compressive Margin of Safety

ENTITY: BEAM_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the BEAM element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
TIME	RSP	Time Step Value	
FREQ	RSP	Frequency Value	
MODE	INT	Mode index	
EID	INT	Element Identification	
GID	INT	Grid ID at Station Number "SNUM"	
SNUM	INT	Station Number	
		1	End A
		2-10	Intermediate Stations
		11	End B
SDL	RSP	Station Distance/Length	
SX1R	RSP	Longitudinal Strain at Point 1 Real.	
SX1I	RSP	Longitudinal Strain at Point 1 Imaginary.	
SX2R	RSP	Longitudinal Strain at Point 2 Real.	
SX2I	RSP	Longitudinal Strain at Point 2 Imaginary.	
SX3R	RSP	Longitudinal Strain at Point 3 Real.	
SX3I	RSP	Longitudinal Strain at Point 3 Imaginary.	
SX4R	RSP	Longitudinal Strain at Point 4 Real.	
SX4I	RSP	Longitudinal Strain at Point 4 Imaginary.	
SMX	RSP	Maximum Strain	
SMN	RSP	Minimum Strain	
TMS	RSP	Tensile Margin of Safety	
CMS	RSP	Compressive Margin of Safety	

ENTITY: CONROD_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the CONROD element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
ASR	RSP	Axial Strain Real
ASI	RSP	Axial Strain Imaginary
AMS	RSP	Axial Margin of Safety
TSR	RSP	Torsional Strain Real
TSI	RSP	Torsional Strain Imaginary
TMS	RSP	Torsional Margin of Safety

ENTITY: ELAS1_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the ELAS1 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SR	RSP	Strain Real.
SI	RSP	Strain Imaginary.

ENTITY: ELAS2_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the ELAS2 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SR	RSP	Strain Real.
SI	RSP	Strain Imaginary.

ENTITY: ELAS3_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the ELAS3 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SR	RSP	Strain Real.
SI	RSP	Strain Imaginary.

ENTITY: ELAS4_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the ELAS4 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SR	RSP	Strain Real.
SI	RSP	Strain Imaginary.

ENTITY: HEXA_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the HEXA element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Strain X Real
SXI	RSP	Normal Strain X Imaginary
TXYR	RSP	Shear Strain XY Real
TXYI	RSP	Shear Strain XY Imaginary
PA	RSP	First Principal Strain
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Strain
VONMISES	RSP	von Mises Strain
SYR	RSP	Normal Strain Y Real
SYI	RSP	Normal Strain Y Imaginary
TYZR	RSP	Shear Strain YZ Real
TYZI	RSP	Shear Strain YZ Imaginary
PB	RSP	Second Principal Strain
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Strain Z Real
SZI	RSP	Normal Strain Z Imaginary
TZXR	RSP	Shear Strain ZX Real
TZXI	RSP	Shear Strain ZX Imaginary
PC	RSP	Third Principal Strain
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: PENTA_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the PENTA element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Strain X Real
SXI	RSP	Normal Strain X Imaginary
TXYR	RSP	Shear Strain XY Real
TXYI	RSP	Shear Strain XY Imaginary
PA	RSP	First Principal Strain
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Strain
VONMISES	RSP	von Mises Strain
SYR	RSP	Normal Strain Y Real
SYI	RSP	Normal Strain Y Imaginary
TYZR	RSP	Shear Strain YZ Real
TYZI	RSP	Shear Strain YZ Imaginary
PB	RSP	Second Principal Strain
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Strain Z Real
SZI	RSP	Normal Strain Z Imaginary
TZXR	RSP	Shear Strain ZX Real
TZXI	RSP	Shear Strain ZX Imaginary
PC	RSP	Third Principal Strain
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: PILE_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the PILE element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR(1)	Strain Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
SX1R	RSP	Strain Recovery Point 1 Real.
SX1I	RSP	Strain Recovery Point 1 Imaginary.
SX2R	RSP	Strain Recovery Point 2 Real.
SX2I	RSP	Strain Recovery Point 2 Imaginary.
SX3R	RSP	Strain Recovery Point 3 Real.
SX3I	RSP	Strain Recovery Point 3 Imaginary.
SX4R	RSP	Strain Recovery Point 4 Real.
SX4I	RSP	Strain Recovery Point 4 Imaginary.
SMAX	RSP	Maximum Strain
SMIN	RSP	Minimum Strain
TMS	RSP	Tensile Margin of Safety
CMS	RSP	Compressive Margin of Safety

ENTITY: PIPE_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the PIPE element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
PSN	CHAR(1)	Strain Recovery Position
		A End A
		B End B
BSP1R	RSP	Bending Strain Recover Point 1 Real
BSP1I	RSP	Bending Strain Recover Point 1 Imaginary
BSP2R	RSP	Bending Strain Recover Point 2 Real
BSP2I	RSP	Bending Strain Recover Point 2 Imaginary
BSP3R	RSP	Bending Strain Recover Point 3 Real
BSP3I	RSP	Bending Strain Recover Point 3 Imaginary
BSP4R	RSP	Bending Strain Recover Point 4 Real
BSP4I	RSP	Bending Strain Recover Point 4 Imaginary
ASR	RSP	Axial Strain eal
ASI	RSP	Axial Strain maginary
SMAX	RSP	Maximum Strain

ENTITY: QUAD4_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Strain Real
SXI	RSP	Normal X Strain Imaginary
SYR	RSP	Normal Y Strain Real
SYI	RSP	Normal Y Strain Imaginary
TXYR	RSP	Shear Strain XY Real
TXYI	RSP	Shear Strain XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minior Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: QUADR_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the QUADR element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Strain Real
SXI	RSP	Normal X Strain Imaginary
SYR	RSP	Normal Y Strain Real
SYI	RSP	Normal Y Strain Imaginary
TXYR	RSP	Shear Strain XY Real
TXYI	RSP	Shear Strain XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minior Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: QUAD8_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the QUAD8 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Strain Real
SXI	RSP	Normal X Strain Imaginary
SYR	RSP	Normal Y Strain Real
SYI	RSP	Normal Y Strain Imaginary
TXYR	RSP	Shear XY Real
TXYI	RSP	Shear XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minor Principal
TMAX	RSP	Max Shear
VMS	RSP	von Mises

ENTITY: ROD_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the ROD element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
ASR	RSP	Axial Strain Real
ASI	RSP	Axial Strain Imaginary
AMS	RSP	Axial Margin of Safety
TSR	RSP	Torsional Strain Real
TSI	RSP	Torsional Strain Imaginary
TMS	RSP	Torsional Margin of Safety

ENTITY: SHEAR_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the SHEAR element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
TMAXR	RSP	Max Shear Real
TMAXI	RSP	Max Shear Imaginary
TAR	RSP	Average Shear Real
TAI	RSP	Average Shear Imaginary
MS	RSP	Margin of Safety

ENTITY: TETRA_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TETRA element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Strain X Real
SXI	RSP	Normal Strain X Imaginary
TXYR	RSP	Shear Strain XY Real
TXYI	RSP	Shear Strain XY Imaginary
PA	RSP	First Principal Strain
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Strain
VONMISES	RSP	von Mises Strain
SYR	RSP	Normal Strain Y Real
SYI	RSP	Normal Strain Y Imaginary
TYZR	RSP	Shear Strain YZ Real
TYZI	RSP	Shear Strain YZ Imaginary
PB	RSP	Second Principal Strain
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Strain Z Real
SZI	RSP	Normal Strain Z Imaginary
TZXR	RSP	Shear Strain ZX Real
TZXI	RSP	Shear Strain ZX Imaginary
PC	RSP	Third Principal Strain
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: TORDRG_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TORDRG element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
TMS1	RSP	Tangential Membrane Strain at Point 1
CMS1	RSP	Circumferential Membrane Strain at Point 1
TFS1	RSP	Tangential Flexural Strain at Point 1
CFS1	RSP	Circumferential Flexural Strain at Point 1
TF1	RSP	Shear Force at Point 1
TMS2	RSP	Tangential Membrane Strain at Point 2
CMS2	RSP	Circumferential Membrane Strain at Point 2
TFS2	RSP	Tangential Flexural Strain at Point 2
CFS2	RSP	Circumferential Flexural Strain at Point 2
TF2	RSP	Shear Force at Point 2
TMS3	RSP	Tangential Membrane Strain at Point 3
CMS3	RSP	Circumferential Membrane Strain at Point 3
TFS3	RSP	Tangential Flexural Strain at Point 3
CFS3	RSP	Circumferential Flexural Strain at Point 3
TF3	RSP	Shear Force at Point 3

ENTITY: TRAPAX_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRAPAX element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
HA	RSP	Harmonic angle
RS1	RSP	Radial Strain - r at Point 1
AS1	RSP	Axial Strain - z at Point 1
CS1	RSP	Circumferential Strain at Point 1
TZR1	RSP	Shear Strain ZR at Point 1
TRT1	RSP	Shear Strain R THETA at Point 1
TTZ1	RSP	Shear Strain THETA Z at Point 1
RS2	RSP	Radial Strain - r at Point 2
AS2	RSP	Axial Strain - z at Point 2
CS2	RSP	Circumferential Strain at Point 2
TZR2	RSP	Shear Strain ZR at Point 2
TRT2	RSP	Shear Strain R THETA at Point 2
TTZ2	RSP	Shear Strain THETA Z at Point 2
RS3	RSP	Radial Strain - r at Point 3
AS3	RSP	Axial Strain - z at Point 3
CS3	RSP	Circumferential Strain at Point 3
TZR3	RSP	Shear Strain ZR at Point 3
TRT3	RSP	Shear Strain R THETA at Point 3
TTZ3	RSP	Shear Strain THETA Z at Point 3
RS4	RSP	Radial Strain - r at Point 4
AS4	RSP	Axial Strain - z at Point 4
CS4	RSP	Circumferential Strain at Point 4
TZR4	RSP	Shear Strain ZR at Point 4
TRT4	RSP	Shear Strain R THETA at Point 4
TTZ4	RSP	Shear Strain THETA Z at Point 4
RS5	RSP	Radial Strain - r at Point 5
AS5	RSP	Axial Strain - z at Point 5
CS5	RSP	Circumferential Strain at Point 5
TZR5	RSP	Shear Strain ZR at Point 5
TRT5	RSP	Shear Strain R THETA at Point 5
TTZ5	RSP	Shear Strain THETA Z at Point 5

ENTITY: TRAPRG_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRAPRG element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RS1	RSP	Radial Strain - r at Point 1
CS1	RSP	Circumferential Strain at Point 1
AS1	RSP	Axial Strain - z at Point 1
TZR1	RSP	Shear Strain - zr at Point 1
RS2	RSP	Radial Strain - r at Point 2
CS2	RSP	Circumferential Strain at Point 2
AS2	RSP	Axial Strain - z at Point 2
TZR2	RSP	Shear Strain - zr at Point 2
RS3	RSP	Radial Strain - r at Point 3
CS3	RSP	Circumferential Strain at Point 3
AS3	RSP	Axial Strain - z at Point 3
TZR3	RSP	Shear Strain - zr at Point 3
RS4	RSP	Radial Strain - r at Point 4
CS4	RSP	Circumferential Strain at Point 4
AS4	RSP	Axial Strain - z at Point 4
TZR4	RSP	Shear Strain - zr at Point 4
RS5	RSP	Radial Strain - r at Point 5
CS5	RSP	Circumferential Strain at Point 5
AS5	RSP	Axial Strain - z at Point 5
TZR5	RSP	Shear Strain - zr at Point 5

ENTITY: TRIA3_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Strain Real
SXI	RSP	Normal X Strain Imaginary
SYR	RSP	Normal Y Strain Real
SYI	RSP	Normal Y Strain Imaginary
TXYR	RSP	Shear Strain XY Real
TXYI	RSP	Shear Strain XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minior Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: TRIAR_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRIAR element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Strain Real
SXI	RSP	Normal X Strain Imaginary
SYR	RSP	Normal Y Strain Real
SYI	RSP	Normal Y Strain Imaginary
TXYR	RSP	Shear Strain XY Real
TXYI	RSP	Shear Strain XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minior Principal
TMAX	RSP	Maximum Shear
VMS	RSP	von Mises

ENTITY: TRIA6_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRIA6 element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Strain Recovery Point (CENTER , CORNER)
FIBER	CHAR (2)	Fiber
		z1 TOP
		z2 BOTTOM
FDIST	RSP	Fiber Distance
SXR	RSP	Normal X Strain Real
SXI	RSP	Normal X Strain Imaginary
SYR	RSP	Normal Y Strain Real
SYI	RSP	Normal Y Strain Imaginary
TXYR	RSP	Shear XY Real
TXYI	RSP	Shear XY Imaginary
TA	RSP	Shear Angle
PMJ	RSP	Major Principal
PMN	RSP	Minor Principal
TMAX	RSP	Max Shear
VMS	RSP	von Mises

ENTITY: TRIAAX_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRIAAX element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
H	RSP	Harmonic or Point Angle
RS	RSP	Radial Strain
AS	RSP	Axial Strain
CS	RSP	Circumferential Strain
TZR	RSP	Shear Strain ZR
TRT	RSP	Shear Strain R THETA
TZT	RSP	Shear Strain Z THETA

ENTITY: TRIARG_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRIARG element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
RS	RSP	Radial Strain
CS	RSP	Circumferential Strain
AS	RSP	Axial Strain
TZR	RSP	Shear Strain ZR

ENTITY: TUBE_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TUBE element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
ASR	RSP	Axial Strain Real
ASI	RSP	Axial Strain Imaginary
AMS	RSP	Axial Margin of Safety
TSR	RSP	Torsional Strain Real
TSI	RSP	Torsional Strain Imaginary
TMS	RSP	Torsional Margin of Safety

ENTITY: TWIST_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TWIST element.

DATA BLOCKS USED: OES1A, OES2A, OES1CA, OES2CA

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
TMAXR	RSP	Maximum Shear Real
TMAXI	RSP	Maximum Shear Imaginary
TAR	RSP	Average Shear Real
TAI	RSP	Average Shear Imaginary
MS	RSP	Margin of Safety

FORCES

ENTITY: BAR_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the BAR element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode Index
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR(1)	Force Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
M1R	RSP	Bending Moment Plane 1 Real
M1I	RSP	Bending Moment Plane 1 Imaginary
M2R	RSP	Bending Moment Plane 2 Real
M2I	RSP	Bending Moment Plane 2 Imaginary
V1R	RSP	Web Shear Plane 1 Real
V1I	RSP	Web Shear Plane 1 Imaginary
V2R	RSP	Web Shear Plane 2 Real
V2I	RSP	Web Shear Plane 2 Imaginary
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
TR	RSP	Torque Real
TI	RSP	Torque Imaginary

ENTITY: BEAM_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the BEAM element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
SNUM	INT	Station Number
		1 End A
		2-10 Intermediate Stations
		11 End B
SD	RSP	Station Distance per Length
M1R	RSP	Bending Moment Plane 1 Real
M1I	RSP	Bending Moment Plane 1 Imaginary
M2R	RSP	Bending Moment Plane 2 Real
M2I	RSP	Bending Moment Plane 2 Imaginary
V1R	RSP	Web Shear Plane 1 Real
V1I	RSP	Web Shear Plane 1 Imaginary
V2R	RSP	Web Shear Plane 2 Real
V2I	RSP	Web Shear Plane 2 Imaginary
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
TTR	RSP	Total Torque Real
TTI	RSP	Total Torque Imaginary
WTR	RSP	Warping Torque Real
WTI	RSP	Warping Torque Imaginary

ENTITY: BMST_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the equivalent beam of a set of solid elements.

DATA BLOCKS USED: OBMF1, OBMF2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
SNUM	INT	Station Number 1 through N.
SD	RSP	Station Distance per Length
M1R	RSP	Bending Moment Plane 1 Real
M1I	RSP	Bending Moment Plane 1 Imaginary
M2R	RSP	Bending Moment Plane 2 Real
M2I	RSP	Bending Moment Plane 2 Imaginary
V1R	RSP	Web Shear Plane 1 Real
V1I	RSP	Web Shear Plane 1 Imaginary
V2R	RSP	Web Shear Plane 2 Real
V2I	RSP	Web Shear Plane 2 Imaginary
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
TTR	RSP	Total Torque Real
TTI	RSP	Total Torque Imaginary

ENTITY: CONROD_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the CONROD element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
TR	RSP	Torque Real
TI	RSP	Torque Imaginary

ENTITY: DAMP1_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the DAMP1 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
FR	RSP	Force Real
FI	RSP	Force Imaginary

ENTITY: DAMP2_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the DAMP2 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
FR	RSP	Force Real
FI	RSP	Force Imaginary

ENTITY: DAMP3_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the DAMP3 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
FR	RSP	Force Real
FI	RSP	Force Imaginary

ENTITY: DAMP4_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the DAMP4 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
FR	RSP	Force Real
FI	RSP	Force Imaginary

ENTITY: ELAS1_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the ELAS1 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
FR	RSP	Force Real.
FI	RSP	Force Imaginary.

ENTITY: ELAS2_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the ELAS2 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
FR	RSP	Force Real.
FI	RSP	Force Imaginary.

ENTITY: ELAS3_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the ELAS3 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
FR	RSP	Force Real.
FI	RSP	Force Imaginary.

ENTITY: ELAS4_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the ELAS4 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
FR	RSP	Force Real.
FI	RSP	Force Imaginary.

ENTITY: GAP_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the GAP element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
AFX	RSP	Axial Force X Direction
SFY	RSP	Shear Force Y Direction
SFZ	RSP	Shear Force Z Direction
U	RSP	Axial Displacement
V	RSP	Shear Displacement V
W	RSP	Shear Displacement W
SV	RSP	Slip in V Direction
SW	RSP	Slip in W Direction

ENTITY: PILE_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the PILE element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode Index
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR(1)	Force Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
M1R	RSP	Bending Moment Plane 1 Real
M1I	RSP	Bending Moment Plane 1 Imaginary
M2R	RSP	Bending Moment Plane 2 Real
M2I	RSP	Bending Moment Plane 2 Imaginary
V1R	RSP	Web Shear Plane 1 Real
V1I	RSP	Web Shear Plane 1 Imaginary
V2R	RSP	Web Shear Plane 2 Real
V2I	RSP	Web Shear Plane 2 Imaginary
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
TR	RSP	Torque Real
TI	RSP	Torque Imaginary

ENTITY: PIPE_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the PIPE element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
PSN	CHAR(1)	Force Recovery Position
		A End A
		B End B
MYMR	RSP	Bending Moment Y Real
MYMI	RSP	Bending Moment Y Imaginary
MZRR	RSP	Bending Moment Z Real
MZRI	RSP	Bending Moment Z Imaginary
TR	RSP	Torque Real
TI	RSP	Torque Imaginary
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
QYR	RSP	Shear Y Real
QYI	RSP	Shear Y Imaginary
QZR	RSP	Shear Z Real
QZI	RSP	Shear Z Imaginary

ENTITY: QUAD4_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force in the XY Plane Real
NXYI	RSP	Membrane Force in the XY Plane Imaginary
MXR	RSP	Bending X Force Real
MXI	RSP	Bending X Force Imaginary
MYR	RSP	Bending Y Force Real
MYI	RSP	Bending Y Force Imaginary
MXYR	RSP	Twist Moment in the XY Plane Real
MXYI	RSP	Twist Moment in the XY Plane Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: QUADR_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the QUADR element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force in the XY Plane Real
NXYI	RSP	Membrane Force in the XY Plane Imaginary
MXR	RSP	Bending X Force Real
MXI	RSP	Bending X Force Imaginary
MYR	RSP	Bending Y Force Real
MYI	RSP	Bending Y Force Imaginary
MXYR	RSP	Twist Moment in the XY Plane Real
MXYI	RSP	Twist Moment in the XY Plane Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: QUAD8_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the QUAD8 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Force Recovery Point (CENTER , CORNER)
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force XY Real
NXYI	RSP	Membrane Force XY Imaginary
MXR	RSP	Bending Moment X Force Real
MXI	RSP	Bending Moment X Force Imaginary
MYR	RSP	Bending Moment Y Force Real
MYI	RSP	Bending Moment Y Force Imaginary
MXYR	RSP	Twist Moment XY Real
MXYI	RSP	Twist Moment XY Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: ROD_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the ROD element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
RTR	RSP	Torque Real
RTI	RSP	Torque Imaginary

ENTITY: SHEAR_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the SHEAR element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
F41R	RSP	Force 4 to 1 Real
F41I	RSP	Force 4 to 1 Imaginary
F21R	RSP	Force 2 to 1 Real
F21I	RSP	Force 2 to 1 Imaginary
F12R	RSP	Force 1 to 2 Real
F12I	RSP	Force 1 to 2 Imaginary
F32R	RSP	Force 3 to 2 Real
F32I	RSP	Force 3 to 2 Imaginary
F23R	RSP	Force 2 to 3 Real
F23I	RSP	Force 2 to 3 Imaginary
F43R	RSP	Force 4 to 3 Real
F43I	RSP	Force 4 to 3 Imaginary
F34R	RSP	Force 3 to 4 Real
F34I	RSP	Force 3 to 4 Imaginary
F14R	RSP	Force 1 to 4 Real
F14I	RSP	Force 1 to 4 Imaginary
KF1R	RSP	Kick Force on 1 Real
KF1I	RSP	Kick Force on 1 Imaginary
Q12R	RSP	Shear 12 Real
Q12I	RSP	Shear 12 Imaginary
KF2R	RSP	Kick Force on 2 Real
KF2I	RSP	Kick Force on 2 Imaginary
Q23R	RSP	Shear 23 Real
Q23I	RSP	Shear 23 Imaginary
KF3R	RSP	Kick Force on 3 Real
KF3I	RSP	Kick Force on 3 Imaginary
T34R	RSP	Shear 34 Real
T34I	RSP	Shear 34 Imaginary
QF4R	RSP	Kick Force on 4 Real
QF4I	RSP	Kick Force on 4 Imaginary
T41R	RSP	Shear 41 Real
T41I	RSP	Shear 41 Imaginary

ENTITY: TRAPAX_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the TRAPAX element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
HA	RSP	Harmonic or point angle
RF1	RSP	Radial Force Point 1
CF1	RSP	Circumferential Force Point 1
P1	RSP	Axial Force Point 1
RF2	RSP	Radial Force Point 2
CF2	RSP	Circumferential Force Point 2
P2	RSP	Axial Force Point 2
RF3	RSP	Radial Force Point 3
CF3	RSP	Circumferential Force Point 3
P3	RSP	Axial Force Point 3
RF4	RSP	Radial Force Point 4
CF4	RSP	Circumferential Force Point 4
P4	RSP	Axial Force Point 4

ENTITY: TRIA3_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force XY Real
NXYI	RSP	Membrane Force XY Imaginary
MXR	RSP	Bending Moment X Force Real
MXI	RSP	Bending Moment X Force Imaginary
MYR	RSP	Bending Moment Y Force Real
MYI	RSP	Bending Moment Y Force Imaginary
MXZR	RSP	Twist Moment XZ Real
MXZI	RSP	Twist Moment XZ Imaginary
MYZR	RSP	Twist Moment YZ Real
MYZI	RSP	Twist Moment YZ Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: TRIAR_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the TRIAR element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force XY Real
NXYI	RSP	Membrane Force XY Imaginary
MXR	RSP	Bending Moment X Force Real
MXI	RSP	Bending Moment X Force Imaginary
MYR	RSP	Bending Moment Y Force Real
MYI	RSP	Bending Moment Y Force Imaginary
MXZR	RSP	Twist Moment XZ Real
MXZI	RSP	Twist Moment XZ Imaginary
MYZR	RSP	Twist Moment YZ Real
MYZI	RSP	Twist Moment YZ Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: TRIA6_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the TRIA6 element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
GID	INT	Grid ID
TERM	CHAR (8)	Force Recovery Point (CENTER, CORNER)
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force XY Real
NXYI	RSP	Membrane Force XY Imaginary
MXR	RSP	Bending Moment X Force Real
MXI	RSP	Bending Moment X Force Imaginary
MYR	RSP	Bending Moment Y Force Real
MYI	RSP	Bending Moment Y Force Imaginary
MXYR	RSP	Twist Moment XY Real
MXYI	RSP	Twist Moment XY Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: TRIAAX_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the TRIAAX element.

DATA BLOCKS USED: OEF1, OEF2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
HA	RSP	Harmonic or point angle
RF1	RSP	Radial Force at Point 1
CF1	RSP	Circumferential Force at Point 1
P1	RSP	Axial Force at Point 1
RF2	RSP	Radial Force at Point 2
CF2	RSP	Circumferential Force at Point 2
P2	RSP	Axial Force at Point 2
RF3	RSP	Radial Force at Point 3
CF3	RSP	Circumferential Force at Point 3
P3	RSP	Axial Force at Point 3

ENTITY: TUBE_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the TUBE element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
RTR	RSP	Torque Real
RTI	RSP	Torque Imaginary

ENTITY: TWIST_FORCE

ENTITY TYPE: Relation

DESCRIPTION: Force Data Recovery for the TWIST element.

DATA BLOCKS USED: OEF1, OEFC1, OEF2, OEFC2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
FREQ	RSP	Frequency Value
MODE	INT	Mode index
EID	INT	Element Identification
M13R	RSP	Moment 1 to 3 Real
M13I	RSP	Moment 1 to 3 Imaginary
M24R	RSP	Moment 2 to 4 Real
M24I	RSP	Moment 2 to 4 Imaginary

KINETIC ENERGY

ENTITY: AXIF2_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the AXIF2 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: AXIF3_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the AXIF3 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: AXIF4_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the AXIF4 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: BAR_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the BAR element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: BEAM_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the BEAM element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: CONROD_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the CONROD element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: ELAS1_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the ELAS1 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: ELAS2_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the ELAS2 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: ELAS3_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the ELAS3 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: ELAS4_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the ELAS4 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: HEXA_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the HEXA element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: MASS1_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the MASS1 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: MASS2_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the MASS2 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: MASS3_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the MASS3 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: MASS4_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the MASS4 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: PENTA_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the PENTA element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: PILE_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the PILE element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: PIPE_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the PIPE element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: QUAD4_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the QUAD4 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: QUADR_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the QUADR element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: QUAD8_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the QUAD8 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: ROD_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the ROD element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: SHEAR_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the SHEAR element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TETRA_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TETRA element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TORDRG_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TORDRG element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TRAPAX_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TRAPAX element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TRAPRG_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TRAPRG element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TRIA3_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TRIA3 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TRIAR_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TRIAR element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TRIA6_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TRIA6 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TRIAAX_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TRIAAX element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TRIARG_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TRIARG element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TUBE_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TUBE element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

ENTITY: TWIST_KENERGY

ENTITY TYPE: Relation

DESCRIPTION: Kinetic Energy Data Recovery for the TWIST element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Kinetic Energy set Identification
EID	INT	Element Identification
KENERGY	RSP	Element Kinetic energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Kinetic energy density

STRAIN ENERGY

ENTITY: AXIF2_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the AXIF2 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: AXIF3_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the AXIF3 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: AXIF4_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the AXIF4 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: BAR_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the BAR element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: BEAM_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the BEAM element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: CONROD_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the CONROD element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: ELAS1_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the ELAS1 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: ELAS2_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the ELAS2 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: ELAS3_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the ELAS3 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: ELAS4_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the ELAS4 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: HEXA_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the HEXA element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: MASS1_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the MASS1 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: MASS2_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the MASS2 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: MASS3_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the MASS3 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: MASS4_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the MASS4 element.

DATA BLOCKS USED: ONRGY2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: PENTA_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the PENTA element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: PILE_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the PILE element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: PIPE_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the PIPE element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: QUAD4_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the QUAD4 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: QUADR_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the QUADR element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: QUAD8_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the QUAD8 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: ROD_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the ROD element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: SHEAR_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the SHEAR element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TETRA_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TETRA element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TORDRG_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TORDRG element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TRAPAX_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TRAPAX element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TRAPRG_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TRAPRG element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TRIA3_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TRIA3 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TRIAR_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TRIAR element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TRIA6_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TRIA6 element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TRIAAX_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TRIAAX element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TRIARG_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TRIARG element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TUBE_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TUBE element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

ENTITY: TWIST_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Data Recovery for the TWIST element.

DATA BLOCKS USED: ONRGY1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
FREQ	RSP	Frequency Value
MODE	INT	Mode index
ESE	INT	Element Strain Energy set Identification
EID	INT	Element Identification
UENERGY	RSP	Element Strain energy
PENGY	RSP	Percent of total energy
UDEN	RSP	Element Strain energy density

FLUXES

ENTITY: BAR_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the BAR element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: BEAM_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the BEAM element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: CONROD_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the CONROD element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: DAMP1_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the DAMP1 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: DAMP2_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the DAMP2 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: DAMP3_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the DAMP3 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: DAMP4_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the DAMP4 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: ELAS1_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the ELAS1 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: ELAS2_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the ELAS2 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: ELAS3_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the ELAS3 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: ELAS4_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the ELAS4 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: GAP_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the GAP element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: HBDY_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the HBDY element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: PILE_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the PILE element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: PIPE_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the PIPE element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: QUAD4_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: QUADR_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the QUADR element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: QUAD8_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the QUAD8 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: ROD_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the ROD element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: SHEAR_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the SHEAR element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: TRAPAX_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the TRAPAX element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: TRIA3_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: TRIAR_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the TRIAR element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: TRIA6_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the TRIA6 element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: TRIAAX_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the TRIAAX element.

DATA BLOCKS USED: OEF1, OEF2

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: TUBE_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the TUBE element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

ENTITY: TWIST_FLUX

ENTITY TYPE: Relation

DESCRIPTION: Temperature Gradient and flux Data Recovery for the TWIST element.

DATA BLOCKS USED: OEF1

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
TIME	RSP	Time Step Value
EID	INT	Element Identification
XGRAD	RSP	X Gradient
YGRAD	RSP	Y Gradient
ZGRAD	RSP	Z Gradient
XFLUX	RSP	X Flux
YFLUX	RSP	Y Flux
ZFLUX	RSP	Z Flux

COMPOSITE ELEMENT SOLUTION RESULTS

COMPOSITE ELEMENT STRESSES

ENTITY: QUAD4_PLY_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OES1L

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Stress
SY	RSP	Normal Y Stress
TXY	RSP	Shear Stress in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Stress in XZ Plane
TYZ	RSP	Interlaminar Shear Stress in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: QUADR_PLY_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the QUADR element.

DATA BLOCKS USED: OES1L

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Stress
SY	RSP	Normal Y Stress
TXY	RSP	Shear Stress in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Stress in XZ Plane
TYZ	RSP	Interlaminar Shear Stress in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: QUAD8_PLY_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the QUAD8 element.

DATA BLOCKS USED: OES1L

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Stress
SY	RSP	Normal Y Stress
TXY	RSP	Shear Stress in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Stress in XZ Plane
TYZ	RSP	Interlaminar Shear Stress in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: TRIA3_PLY_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OES1L

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Stress
SY	RSP	Normal Y Stress
TXY	RSP	Shear Stress in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Stress in XZ Plane
TYZ	RSP	Interlaminar Shear Stress in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: TRIAR_PLY_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRIAR element.

DATA BLOCKS USED: OES1L

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Stress
SY	RSP	Normal Y Stress
TXY	RSP	Shear Stress in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Stress in XZ Plane
TYZ	RSP	Interlaminar Shear Stress in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: TRIA6_PLY_STRESS

ENTITY TYPE: Relation

DESCRIPTION: Stress Data Recovery for the TRIA6 element.

DATA BLOCKS USED: OES1L

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Stress
SY	RSP	Normal Y Stress
TXY	RSP	Shear Stress in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Stress in XZ Plane
TYZ	RSP	Interlaminar Shear Stress in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

COMPOSITE ELEMENT STRAINS

ENTITY: QUAD4_PLY_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OES1AL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Strain
SY	RSP	Normal Y Strain
TXY	RSP	Shear Strain in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Strain in XZ Plane
TYZ	RSP	Interlaminar Shear Strain in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: QUADR_PLY_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the QUADR element.

DATA BLOCKS USED: OES1AL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Strain
SY	RSP	Normal Y Strain
TXY	RSP	Shear Strain in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Strain in XZ Plane
TYZ	RSP	Interlaminar Shear Strain in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: QUAD8_PLY_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the QUAD8 element.

DATA BLOCKS USED: OES1AL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Strain
SY	RSP	Normal Y Strain
TXY	RSP	Shear Strain in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Strain in XZ Plane
TYZ	RSP	Interlaminar Shear Strain in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: TRIA3_PLY_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OES1AL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Strain
SY	RSP	Normal Y Strain
TXY	RSP	Shear Strain in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Strain in XZ Plane
TYZ	RSP	Interlaminar Shear Strain in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: TRIAR_PLY_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRIAR element.

DATA BLOCKS USED: OES1AL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Strain
SY	RSP	Normal Y Strain
TXY	RSP	Shear Strain in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Strain in XZ Plane
TYZ	RSP	Interlaminar Shear Strain in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

ENTITY: TRIA6_PLY_STRAIN

ENTITY TYPE: Relation

DESCRIPTION: Strain Data Recovery for the TRIA6 element.

DATA BLOCKS USED: OES1AL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
MODE	INT	Mode index
EID	INT	Element Identification
PLYID	INT	Critical Ply Identification
SX	RSP	Normal X Strain
SY	RSP	Normal Y Strain
TXY	RSP	Shear Strain in XY Plane
PFIDX	RSP	Ply failure index
PFFLG	INT	Ply failure flag
TXZ	RSP	Interlaminar Shear Strain in XZ Plane
TYZ	RSP	Interlaminar Shear Strain in YZ Plane
TBIDX	RSP	Shear Bonding Index
BFFLG	INT	Bonding failure flag

NONLINEAR ELEMENT SOLUTION RESULTS

NONLINEAR STRESSES

ENTITY: BAR_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the BAR element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid ID	
PSN	CHAR(1)	Stress Recovery Position	
		A	End A
		B	End B
SDL	RSP	Station Distance/Length	
SX1R	RSP	Stress Recovery Point 1 Real.	
SX2R	RSP	Stress Recovery Point 2 Real.	
SX3R	RSP	Stress Recovery Point 3 Real.	
SX4R	RSP	Stress Recovery Point 4 Real.	
SMAX	RSP	Maximum Stress	
SMIN	RSP	Minimum Stress	
TMS	RSP	Tensile Margin of Safety	
CMS	RSP	Compressive Margin of Safety	

ENTITY: BEAM_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the BEAM element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid ID at Station Number "SNUM"	
SNUM	INT	Station Number	
		1	End A
		2-10	Intermediate Stations
		11	End B
SDL	RSP	Station Distance/Length	
SX1R	RSP	Longitudinal Stress at Point 1 Real.	
SX2R	RSP	Longitudinal Stress at Point 2 Real.	
SX3R	RSP	Longitudinal Stress at Point 3 Real.	
SX4R	RSP	Longitudinal Stress at Point 4 Real.	
SMX	RSP	Maximum Stress	
SMN	RSP	Minimum Stress	
TMS	RSP	Tensile Margin of Safety	
CMS	RSP	Compressive Margin of Safety	

ENTITY: ELASNL_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the ELASNL element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
SR	RSP	Stress Real.

ENTITY: GAP_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the GAP element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
CPX	RSP	Component in X Direction
SHY	RSP	Shear in Y Direction
SHZ	RSP	Shear in Z Direction
AU	RSP	Axial Displacement U Direction
SHV	RSP	Shear in V Direction
SHW	RSP	Shear in W Direction
SLV	RSP	Slip in V Direction
SLP	RSP	Slip in P Direction

ENTITY: HEXA_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the HEXA element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Stress Recovery Point (CENTER , CORNER)
SXR	RSP	Normal Stress X Real
TTYR	RSP	Shear Stress XY Real
PA	RSP	First Principal Stress
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Stress
EFFECTIVE	RSP	Effective Stress
SYR	RSP	Normal Stress Y Real
TYZR	RSP	Shear Stress YZ Real
PB	RSP	Second Principal Stress
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Stress Z Real
TZXR	RSP	Shear Stress ZX Real
PC	RSP	Third Principal Stress
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: PENTA_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the PENTA element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Stress Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Stress X Real
TXYR	RSP	Shear Stress XY Real
PA	RSP	First Principal Stress
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Stress
EFFECTIVE	RSP	Effective Stress
SYR	RSP	Normal Stress Y Real
TYZR	RSP	Shear Stress YZ Real
PB	RSP	Second Principal Stress
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Stress Z Real
TZXR	RSP	Shear Stress ZX Real
PC	RSP	Third Principal Stress
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: PILE_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the PILE element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR (1)	Stress Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
SX1R	RSP	Stress Recovery Point 1 Real.
SX2R	RSP	Stress Recovery Point 2 Real.
SX3R	RSP	Stress Recovery Point 3 Real.
SX4R	RSP	Stress Recovery Point 4 Real.
SMAX	RSP	Maximum Stress
SMIN	RSP	Minimum Stress
TMS	RSP	Tensile Margin of Safety
CMS	RSP	Compressive Margin of Safety

ENTITY: QUAD4_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid ID	
TERM	CHAR (8)	Stress Recovery Point (CENTER , CORNER)	
FIBER	CHAR (2)	Fiber	
		z1	TOP
		z2	BOTTOM
FDIST	RSP	Fiber Distance	
SXR	RSP	Normal X Stress Real	
SYR	RSP	Normal Y Stress Real	
TXYR	RSP	Shear Stress XY Real	
TA	RSP	Shear Angle	
PMJ	RSP	Major Principal	
PMN	RSP	Minior Principal	
TMAX	RSP	Maximum Shear	
VMS	RSP	von Mises	
EFFECTIVE	RSP	Effective Strain	

ENTITY: QUADR_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the QUADR element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid ID	
TERM	CHAR (8)	Stress Recovery Point (CENTER , CORNER)	
FIBER	CHAR (2)	Fiber	
		z1	TOP
		z2	BOTTOM
FDIST	RSP	Fiber Distance	
SXR	RSP	Normal X Stress Real	
SYR	RSP	Normal Y Stress Real	
TXYR	RSP	Shear Stress XY Real	
TA	RSP	Shear Angle	
PMJ	RSP	Major Principal	
PMN	RSP	Minior Principal	
TMAX	RSP	Maximum Shear	
VMS	RSP	von Mises	
EFFECTIVE	RSP	Effective Strain	

ENTITY: ROD_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the ROD element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
ASR	RSP	Axial Stress Real
AMS	RSP	Axial Margin of Safety
TSR	RSP	Torsional Stress Real
TMS	RSP	Torsional Margin of Safety

ENTITY: TETRA_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the TETRA element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Stress Recovery Point (CENTER , CORNER)
SXR	RSP	Normal Stress X Real
TTYR	RSP	Shear Stress XY Real
PA	RSP	First Principal Stress
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Stress
EFFECTIVE	RSP	Effective Stress
SYR	RSP	Normal Stress Y Real
TYZR	RSP	Shear Stress YZ Real
PB	RSP	Second Principal Stress
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Stress Z Real
TZXR	RSP	Shear Stress ZX Real
PC	RSP	Third Principal Stress
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: TRIA3_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid Identification	
TERM	CHAR (8)	Stress Recovery Point (CENTER , CORNER)	
FIBER	CHAR (2)	Fiber	
		z1	TOP
		z2	BOTTOM
FDIST	RSP	Fiber Distance	
SXR	RSP	Normal X Stress Real	
SYR	RSP	Normal Y Stress Real	
TXYR	RSP	Shear Stress XY Real	
TA	RSP	Shear Angle	
PMJ	RSP	Major Principal	
PMN	RSP	Minior Principal	
TMAX	RSP	Maximum Shear	
VMS	RSP	von Mises	
EFFECTIVE	RSP	Effective Strain	

ENTITY: TRIAR_NLSTRESS

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Stress Data Recovery for the TRIAR element.

DATA BLOCKS USED: OES1NL, OES2NL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid Identification	
TERM	CHAR (8)	Stress Recovery Point (CENTER , CORNER)	
FIBER	CHAR (2)	Fiber	
		z1	TOP
		z2	BOTTOM
FDIST	RSP	Fiber Distance	
SXR	RSP	Normal X Stress Real	
SYR	RSP	Normal Y Stress Real	
TXYR	RSP	Shear Stress XY Real	
TA	RSP	Shear Angle	
PMJ	RSP	Major Principal	
PMN	RSP	Minior Principal	
TMAX	RSP	Maximum Shear	
VMS	RSP	von Mises	
EFFECTIVE	RSP	Effective Strain	

NONLINEAR STRAINS

ENTITY: BAR_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the BAR element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid ID	
PSN	CHAR(1)	Strain Recovery Position	
		A	End A
		B	End B
SDL	RSP	Station Distance/Length	
SX1R	RSP	Strain Recovery Point 1 Real.	
SX2R	RSP	Strain Recovery Point 2 Real.	
SX3R	RSP	Strain Recovery Point 3 Real.	
SX4R	RSP	Strain Recovery Point 4 Real.	
SMAX	RSP	Maximum Strain	
SMIN	RSP	Minimum Strain	
TMS	RSP	Tensile Margin of Safety	
CMS	RSP	Compressive Margin of Safety	

ENTITY: BEAM_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the BEAM element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid ID	
SNUM	INT	Station Number	
		1	End A
		2-10	Intermediate Stations
		11	End B
SDL	RSP	Station Distance/Length	
SX1R	RSP	Longitudinal Strain at Point 1 Real.	
SX2R	RSP	Longitudinal Strain at Point 2 Real.	
SX3R	RSP	Longitudinal Strain at Point 3 Real.	
SX4R	RSP	Longitudinal Strain at Point 4 Real.	
SMX	RSP	Maximum Strain	
SMN	RSP	Minimum Strain	
TMS	RSP	Tensile Margin of Safety	
CMS	RSP	Compressive Margin of Safety	

ENTITY: ELASNL_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the ELASNL element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
SR	RSP	Strain Real.

ENTITY: GAP_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the GAP element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
CPX	RSP	Component in X Direction
SHY	RSP	Shear in Y Direction
SHZ	RSP	Shear in Z Direction
AU	RSP	Axial Displacement U Direction
SHV	RSP	Shear in V Direction
SHW	RSP	Shear in W Direction
SLV	RSP	Slip in V Direction
SLP	RSP	Slip in P Direction

ENTITY: HEXA_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the HEXA element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Strain X Real
TXYR	RSP	Shear Strain XY Real
PA	RSP	First Principal Strain
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Strain
EFFECTIVE	RSP	Effective Strain
SYR	RSP	Normal Strain Y Real
TYZR	RSP	Shear Strain YZ Real
PB	RSP	Second Principal Strain
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Strain Z Real
TZXR	RSP	Shear Strain ZX Real
PC	RSP	Third Principal Strain
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: PENTA_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the PENTA element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Strain Recovery Point (CENTER , CORNER)
SXR	RSP	Normal Strain X Real
TXYR	RSP	Shear Strain XY Real
PA	RSP	First Principal Strain
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Strain
EFFECTIVE	RSP	Effective Strain
SYR	RSP	Normal Strain Y Real
TYZR	RSP	Shear Strain YZ Real
PB	RSP	Second Principal Strain
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Strain Z Real
TZXR	RSP	Shear Strain ZX Real
PC	RSP	Third Principal Strain
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: PILE_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the PILE element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR (1)	Strain Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
SX1R	RSP	Strain Recovery Point 1 Real.
SX2R	RSP	Strain Recovery Point 2 Real.
SX3R	RSP	Strain Recovery Point 3 Real.
SX4R	RSP	Strain Recovery Point 4 Real.
SMAX	RSP	Maximum Strain
SMIN	RSP	Minimum Strain
TMS	RSP	Tensile Margin of Safety
CMS	RSP	Compressive Margin of Safety

ENTITY: QUAD4_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid ID	
TERM	CHAR (8)	Strain Recovery Point (CENTER , CORNER)	
FIBER	CHAR (2)	Fiber	
		z1	TOP
		z2	BOTTOM
FDIST	RSP	Fiber Distance	
SXR	RSP	Normal X Strain Real	
SYR	RSP	Normal Y Strain Real	
TXYR	RSP	Shear Strain XY Real	
TA	RSP	Shear Angle	
PMJ	RSP	Major Principal	
PMN	RSP	Minior Principal	
TMAX	RSP	Maximum Shear	
VMS	RSP	von Mises	
EFFECTIVE	RSP	Effective Strain	

ENTITY: QUADR_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the QUADR element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid ID	
TERM	CHAR (8)	Strain Recovery Point (CENTER , CORNER)	
FIBER	CHAR (2)	Fiber	
		z1	TOP
		z2	BOTTOM
FDIST	RSP	Fiber Distance	
SXR	RSP	Normal X Strain Real	
SYR	RSP	Normal Y Strain Real	
TXYR	RSP	Shear Strain XY Real	
TA	RSP	Shear Angle	
PMJ	RSP	Major Principal	
PMN	RSP	Minior Principal	
TMAX	RSP	Maximum Shear	
VMS	RSP	von Mises	
EFFECTIVE	RSP	Effective Strain	

ENTITY: ROD_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the ROD element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
ASR	RSP	Axial Strain Real
ASI	RSP	Axial Strain Imaginary
AMS	RSP	Axial Margin of Safety
TSR	RSP	Torsional Strain Real
TSI	RSP	Torsional Strain Imaginary
TMS	RSP	Torsional Margin of Safety

ENTITY: TETRA_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the TETRA element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid Identification
TERM	CHAR (8)	Strain Recovery Point (CENTER, CORNER)
SXR	RSP	Normal Strain X Real
TXYR	RSP	Shear Strain XY Real
PA	RSP	First Principal Strain
PX	RSP (3)	Direction Cosines (A, B, C)
PR	RSP	Mean Pressure
OCT	RSP	Octahedral Shear Stress
VONMISES	RSP	von Mises Strain
EFFECTIVE	RSP	Effective Strain
SYR	RSP	Normal Strain Y Real
TYZR	RSP	Shear Strain YZ Real
PB	RSP	Second Principal Strain
PY	RSP (3)	Direction Cosines (A, B, C)
SZR	RSP	Normal Strain Z Real
TZXR	RSP	Shear Strain ZX Real
PC	RSP	Third Principal Strain
PZ	RSP (3)	Direction Cosines (A, B, C)

ENTITY: TRIA3_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid Identification	
TERM	CHAR (8)	Strain Recovery Point (CENTER , CORNER)	
FIBER	CHAR (2)	Fiber	
		z1	TOP
		z2	BOTTOM
FDIST	RSP	Fiber Distance	
SXR	RSP	Normal X Strain Real	
SYR	RSP	Normal Y Strain Real	
TXYR	RSP	Shear Strain XY Real	
TA	RSP	Shear Angle	
PMJ	RSP	Major Principal	
PMN	RSP	Minior Principal	
TMAX	RSP	Maximum Shear	
VMS	RSP	von Mises	
EFFECTIVE	RSP	Effective Strain	

ENTITY: TRIAR_NLSTRAIN

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Strain Data Recovery for the TRIAR element.

DATA BLOCKS USED: OES1ANL, OES2ANL

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case Identification	
LDSTP	INT	Load Step Identification	
LDINC	INT	Load Step Increment	
LDPER	RSP	Load Step Percent	
EID	INT	Element Identification	
GID	INT	Grid Identification	
TERM	CHAR (8)	Strain Recovery Point (CENTER , CORNER)	
FIBER	CHAR (2)	Fiber	
		z1	TOP
		z2	BOTTOM
FDIST	RSP	Fiber Distance	
SXR	RSP	Normal X Strain Real	
SYR	RSP	Normal Y Strain Real	
TXYR	RSP	Shear Strain XY Real	
TA	RSP	Shear Angle	
PMJ	RSP	Major Principal	
PMN	RSP	Minior Principal	
TMAX	RSP	Maximum Shear	
VMS	RSP	von Mises	
EFFECTIVE	RSP	Effective Strain	

NONLINEAR FORCES

ENTITY: BAR_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the BAR element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR(1)	Force Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
M1R	RSP	Bending Moment Plane 1 Real
M1I	RSP	Bending Moment Plane 1 Imaginary
M2R	RSP	Bending Moment Plane 2 Real
M2I	RSP	Bending Moment Plane 2 Imaginary
V1R	RSP	Web Shear Plane 1 Real
V1I	RSP	Web Shear Plane 1 Imaginary
V2R	RSP	Web Shear Plane 2 Real
V2I	RSP	Web Shear Plane 2 Imaginary
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
TR	RSP	Torque Real
TI	RSP	Torque Imaginary

ENTITY: BEAM_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the BEAM element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid ID
SNUM	INT	Station Number
		1 End A
		2-10 Intermediate Stations
		11 End B
SD	RSP	Station Distance per Length
M1R	RSP	Bending Moment Plane 1 Real
M1I	RSP	Bending Moment Plane 1 Imaginary
M2R	RSP	Bending Moment Plane 2 Real
M2I	RSP	Bending Moment Plane 2 Imaginary
V1R	RSP	Web Shear Plane 1 Real
V1I	RSP	Web Shear Plane 1 Imaginary
V2R	RSP	Web Shear Plane 2 Real
V2I	RSP	Web Shear Plane 2 Imaginary
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
TTR	RSP	Total Torque Real
TTI	RSP	Total Torque Imaginary
WTR	RSP	Warping Torque Real
WTI	RSP	Warping Torque Imaginary

ENTITY: ELASNL_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the ELASNL element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
FR	RSP	Force Real.
FI	RSP	Force Imaginary.

ENTITY: PILE_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the PILE element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
GID	INT	Grid ID
PSN	CHAR(1)	Force Recovery Position
		A End A
		B End B
SDL	RSP	Station Distance/Length
M1R	RSP	Bending Moment Plane 1 Real
M2R	RSP	Bending Moment Plane 2 Real
V1R	RSP	Web Shear Plane 1 Real
V2R	RSP	Web Shear Plane 2 Real
PR	RSP	Axial Force Real
TR	RSP	Torque Real

ENTITY: GAP_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the GAP element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
FX	RSP	Compressive Force X Direction
SFY	RSP	Shear Force Y Direction
SFZ	RSP	Shear Force Z Direction
U	RSP	Axial Displacement
V	RSP	Shear Displacement V
W	RSP	Shear Displacement W
SV	RSP	Slip in V Direction
SW	RSP	Slip in W Direction

ENTITY: QUAD4_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the QUAD4 element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force in the XY Plane Real
NXYI	RSP	Membrane Force in the XY Plane Imaginary
MXR	RSP	Bending X Force Real
MXI	RSP	Bending X Force Imaginary
MYR	RSP	Bending Y Force Real
MYI	RSP	Bending Y Force Imaginary
MXYR	RSP	Bending Force in the XY Plane Real
MXYI	RSP	Bending Force in the XY Plane Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: QUADR_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the QUADR element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force in the XY Plane Real
NXYI	RSP	Membrane Force in the XY Plane Imaginary
MXR	RSP	Bending X Force Real
MXI	RSP	Bending X Force Imaginary
MYR	RSP	Bending Y Force Real
MYI	RSP	Bending Y Force Imaginary
MXYR	RSP	Bending Force in the XY Plane Real
MXYI	RSP	Bending Force in the XY Plane Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: ROD_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the ROD element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
PR	RSP	Axial Force Real
PI	RSP	Axial Force Imaginary
RTR	RSP	Torque Real
RTI	RSP	Torque Imaginary

ENTITY: TRIA3_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the TRIA3 element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force XY Real
NXYI	RSP	Membrane Force XY Imaginary
MXR	RSP	Bending X Force Real
MXI	RSP	Bending X Force Imaginary
MYR	RSP	Bending Y Force Real
MYI	RSP	Bending Y Force Imaginary
MXYR	RSP	Bending Force XY Real
MXYI	RSP	Bending Force XY Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

ENTITY: TRIAR_NLFORCE

ENTITY TYPE: Relation

DESCRIPTION: Nonlinear Force Data Recovery for the TRIAR element.

DATA BLOCKS USED: OEF1NL, OEF2NL

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case Identification
LDSTP	INT	Load Step Identification
LDINC	INT	Load Step Increment
LDPER	RSP	Load Step Percent
EID	INT	Element Identification
NXR	RSP	Membrane X Force Real
NXI	RSP	Membrane X Force Imaginary
NYR	RSP	Membrane Y Force Real
NYI	RSP	Membrane Y Force Imaginary
NXYR	RSP	Membrane Force XY Real
NXYI	RSP	Membrane Force XY Imaginary
MXR	RSP	Bending X Force Real
MXI	RSP	Bending X Force Imaginary
MYR	RSP	Bending Y Force Real
MYI	RSP	Bending Y Force Imaginary
MXYR	RSP	Bending Force XY Real
MXYI	RSP	Bending Force XY Imaginary
TZXR	RSP	Transverse Shear ZX Real
TZXI	RSP	Transverse Shear ZX Imaginary
TYZR	RSP	Transverse Shear YZ Real
TYZI	RSP	Transverse Shear YZ Imaginary

MDO SOLUTION RESULTS

ENTITY: DVVEC

ENTITY TYPE: Matrix

DESCRIPTION: Vector of mathematical design variable values in numerical order of assigned identification number

MATRIX SCHEMA:

```

MODE   CMC
SHAPE  RECTANGULAR
NUMT   RMP
    
```

NOTES:

1. The matrix is subscripted by design iteration number
2. The relation MDVTABLE contains a tabular description of the design variables

ENTITY: MDVTABLE

ENTITY TYPE: Relation

DESCRIPTION: The MDVTABLE relation contains the current values of the mathematical design variables, the absolute lower and upper bounds on the math variables and the current (potentially move-limited) bounds on variables. It also indicates, following the first resizing step, if the variable reached a move-limited bound.

ATTRIBUTE	TYPE	DEFINITION	
DVINTID	INT	Internal identification number of the math variable	
DVNAME	CHAR (8)	Design variable name from DVPROP/DVPROPS or DVLINK	
DVTYPE	CHAR (4)	One of PROP, GEOM, LPRP, LGEO, LPG	
		PROP	A single property variable
		GEOM	A single geometry variable
		LPRP	A linked set of property variables
		LGEO	A linked set of geometry variables
LPG	A linked set of property and geometry variables		
VALUE	RSP	Current design variable value	
VINIT	RSP	Initial design variable value (as derived from Bulk Data)	
VMIN	RSP	Actual minimum value allowed for the variable	
VMAX	RSP	Actual maximum value allowed for the variable	
GLOBAL_MOVE	RSP	Current global move limit value as a fraction of the VALUE.	
LOCAL_MOVE	RSP	Current local move limit value as a multiplier to GLOBAL_MOVE	
LBOUND	RSP	Current iteration's minimum value allowed for the variable. Potentially greater than VMIN if move-limited.	
UBOUND	RSP	Current iteration's maximum value allowed for the variable. Potentially less than VMAX if move-limited.	
LBOUND_AGE	INT	Number of consecutive iterations the variable has hit an LBOUND that was not the VMIN value.	
UBOUND_AGE	INT	Number of consecutive iterations the variable has hit a UBOUND that was not the VMAX value.	

ENTITY: OPTIMHIST

ENTITY TYPE: Relation

DESCRIPTION: The OPTIMHIST relation summarizes the objective function value and constraint identification numbers and values for the current minimum and maximum constraint values at each design iteration.

ATTRIBUTE	TYPE	DEFINITION
ITERATION	INT	Current design iteration number.
OBJCONID	INT	CONID of the objective function.
OBJCONID2	INT	CONID2 of the objective function.
OBJVALUE	RSP	Current Objective Function Value.
AOBJVALUE	RSP	Predicted Objective Function Value or NULL.
POBJVALUE	RSP	Previous Objective Function Value or NULL.
MXCONID	INT	CONID of the constraint with the largest algebraic value.
MXCONID2	INT	CONID2 of the constraint with the largest algebraic value.
MXVALUE	RSP	Largest (most positive) constraint value.
MNCONID	INT	CONID of the constraint with the smallest algebraic value.
MNCONID2	INT	CONID2 of the constraint with the smallest algebraic value.
MNVALUE	RSP	Smallest (most negative) constraint value.
APXSTATUS	CHAR (16)	Status of the approximate problem convergence: one of CONVERGED or NOT CONVERGED
GLBSTATUS	CHAR (16)	Status of the global problem convergence: one of CONVERGED or NOT CONVERGED

ENTITY: PDVTABLE

ENTITY TYPE: Relation

DESCRIPTION: The PDVTABLE relation contains the current values of the physical design variables, the lower and upper bounds on the physical variables.

ATTRIBUTE	TYPE	DEFINITION
DVINTID	INT	Internal identification number of the physical variable
DVNAME	CHAR (8)	Design variable name from DVPROP
PTYPE	CHAR (8)	Property type in DVPROP
IPTYPE	INT	Integer number related to the PTYPE
PRPID	INT	Property ID in DVPROP
PSYMBOL	CHAR (8)	PSYM entry in DVPROP
IPSYM	INT	Integer number related to PSYMBOL
VALUE	RSP	Current physical design variable value
PINIT	RSP	Initial physical variable value
LBOUND	RSP	Lower bound on physical variable
UBOUND	RSP	Upper bound on physical variable
PHYNUM	INT	Row position in the physical variable vector

SENSITIVITY ANALYSIS RESULTS

ENTITY: DGRDCONA

ENTITY TYPE: Relation

DESCRIPTION: This relation contains one entry for every CASE/dcname that is constrained using DCDYNRG Bulk Data entries. Each DCDYNRG generates one entry for each constraint. Note that the number of entries does not correspond to the number of DCDYNRG entries since 1) MPC-like behavior of the RMS constraint generates only one constraint and 2) the unknown number of output time or frequency steps in the range R1 to R2 which, for PEAK constraints means more constraints than DCDYNRG entries.

ATTRIBUTE	TYPE	DEFINITION
CASEID	INT	CASE identification number
DESCONID	INT	Constraint set identification number
TYPECODE	INT	Constraint type code
		8 DYNRG
CONLABEL	CHAR (8)	User's constraint label
SPECIAL	INT	Flag indicating whether the constraint is
		-1 A Sensivity request without allowables
		0 The objective or part of the objective
		1 An ordinary constraint
FUNCTION	INT	Flag indicating whether the constraint is
		0 An ordinary constraint
		>0 Part of the User Function with ID FUNCTION
CONID	INT	Constraint identification number. CONID and CONID2 together form a unique identifier for each constraint.
CONID2	INT	Secondary constraint identification number.
CONNUMBR	INT	Non-unique ID from 1 to N for all constraints generated by the DC entries in the input deck.
SNSCOL0	INT	column of the corresponding sensitivity matrix where sens. data begins
NSNSCOLS	INT	number of columns of sensitivity matrix associated with the constraint
VALUE	RSP	Current constraint value (0.0 if sens. only)
LIMIT	RSP	Limit value for the constraint

ATTRIBUTE	TYPE	DEFINITION
CFORM	CHAR (4)	Constraint form
		AVG average response over frequency range R1, R2
		PEAK peak response constraint at particular frequency
CTYPE	CHAR (4)	Either GE or LE for lower or upper bound, respectively
TYPE	CHAR (4)	Response form
		DISP displacement response
		VELO velocity response
		ACCEL acceleration response
R1	RSP	Lower bound time or frequency range of interest (time in sec, freq in Hz)
R2	RSP	Upper bound time or frequency range of interest (time in sec, freq in Hz)
GID	INT	Grid identification number
COMP	CHAR (8)	Name of the component that is constrained e.g., T1, T2, T3, R1, R2 or R3
FACTOR	RSP	Real factor to be applied to the constraint in an MPC like manner
AGE	INT	Number of iterations for which the constraint has been retained in the active set without satisfying the screening criteria. (Zero or NULL if currently inactive or truly active)
FREQ	RSP	Frequency value of frequency in interest.
IFREQ	INT	Position in XOL of frequency in interest.
REALU	RSP	Real part of complex displacement.
IMAGU	RSP	Imaginary part of complex displacement.
TARGET	RSP	Target value for SSID type constraint

ENTITY: DSAGVAL

ENTITY TYPE: Matrix

DESCRIPTION: Vector of constraint values at the associated design iteration in the order that the constraints appear in the DSARESP relation.

MATRIX SCHEMA:

MODE CMC
 SHAPE RECTANGULAR
 NUMT RMP

NOTES:

1. The DSARESP relation contains descriptive data of each row of the DSAGVAL vector. It, in turn, contains the identifiers that are used in the associated xxxxCONA relation which has the full constraint description.
2. This entity is subscripted by design iteration.

ENTITY: DSARESP

ENTITY TYPE: Relation

DESCRIPTION: The DSARESP describes the objective and constraints and tells which row of the constraint vector DSAGVAL (and, therefore, column of the sensitivity matrix DSASENS) is associated with the constraint.

ATTRIBUTE	TYPE	DEFINITION	
CONID	INT	Constraint identification number. CONID and CONID2 together form a unique identifier for each constraint.	
CONID2	INT	Secondary constraint identification number.	
OBJFLG	INT	Objective function Flag	
		> 0	An ordinary constraint
		0	The objective
GROW	INT	Row position in the constraint vector	
SNSCOL	INT	Column position in the sensitivity matrix	
NCOL	INT	Number of columns associated with the sensitivity matrix	
LABEL	CHAR (8)	User's constraint label	
TYPECODE	INT	Constraint type code	

ENTITY: DSASENS

ENTITY TYPE: Matrix

DESCRIPTION: First order sensitivity data for the active constraints in the order described in DSARESP.

MATRIX SCHEMA:

MODE CMC
 SHAPE RECTANGULAR
 NUMT RMP

NOTES:

1. This matrix is subscripted by iteration number.

ENTITY: ELEMCONA

ENTITY TYPE: Relation

DESCRIPTION: This relation contains one element stress, force or strain constraint entry for every CASE/element/type/ component that is constrained using DCELEM Bulk Data entries. This relation contains the current value of the constraints.

ATTRIBUTE	TYPE	DEFINITION	
CASEID	INT	CASE identification number	
DESCONID	INT	Constraint set identification number	
TYPECODE	INT	Constraint type code	
		2	STRESS
		3	FORCE
		4	STRAIN
CONLABEL	CHAR (8)	User's constraint label	
SPECIAL	INT	Flag indicating whether the constraint is	
		-1	A Sensitivity request without allowables
		0	The objective or part of the objective
		1	An ordinary constraint
FUNCTION	INT	Flag indicating whether the constraint is	
		0	An ordinary constraint
		>0	Part of the User Function with ID FUNCTION
CONID	INT	Constraint identification number. CONID and CONID2 together form a unique identifier for each constraint.	
CONID2	INT	Secondary constraint identification number.	
CONNUMBR	INT	Non-unique ID from 1 to N for all constraints generated by the DC entries in the input deck.	
GOCOL	INT	Row in the pre-screened constraint vector that holds corresponding constraint value for Finite Difference sensitivity computation.	
SNSCOL0	INT	column of the corresponding sensitivity matrix where sens. data begins	
NSNSCOLS	INT	number of columns of sensitivity matrix associated with the constraint	
LIMIT	RSP	Limit value for the constraint	
CTYPE	CHAR (4)	Either GE or LE for lower or upper bound, respectively	
COMP	CHAR (8)	Name of the component that is constrained e.g., SIGX	
EID	INT	Element identification number	

ATTRIBUTE	TYPE	DEFINITION
ETYPE	INT	Element type number
LAYER	INT	Composite layer number (=0 if noncomposite)
VALUE	RSP	Current constraint value (0.0 if sens. only)
AGE	INT	Number of iterations for which the constraint has been retained in the active set without satisfying the screening criteria. (Zero or NULL if currently inactive or truly active)

ENTITY: EVCCONA

ENTITY TYPE: Relation

DESCRIPTION: This relation contains one entry for every CASE/mode/cform/[component] that is constrained using DCMODE or DCMODR Bulk Data entries. Each DCMODE generates one entry for each mode for which sensitivity is computed. Each DCMODR generates one entry per component whose value is constrained. For RMS constraints, one constraint is computed but each component has an entry containing the current displacement.

ATTRIBUTE	TYPE	DEFINITION
CASEID	INT	CASE identification number
DESCONID	INT	Constraint set identification number
TYPECODE	INT	Constraint type code
		6 MODE
		7 MODR
CONLABEL	CHAR (8)	User's constraint label
SPECIAL	INT	Flag indicating whether the constraint is
		-1 A Sensitivity request without allowables
		0 The objective or part of the objective
		1 An ordinary constraint
		-2 An SSID type constraint
FUNCTION	INT	Flag indicating whether the constraint is
		0 An ordinary constraint
		>0 Part of the User Function with ID FUNCTION
CONID	INT	Constraint identification number. CONID and CONID2 together form a unique identifier for each constraint.
CONID2	INT	Secondary constraint identification number.
CONNUMBR	INT	Non-unique ID from 1 to N for all constraints generated by the DC entries in the input deck.
SNSCOL0	INT	column of the corresponding sensitivity matrix where sens. data begins
NSNSCOLS	INT	number of columns of sensitivity matrix associated with the constraint
VALUE	RSP	Current constraint value (0.0 if sens. only)
LIMIT	RSP	Limit value for the constraint (=0.0 for MODE)
TARGET	RSP	Value of the eigenvector at GID/COMP that is the target of the constraint (=0.0 for MODE)

ATTRIBUTE	TYPE	DEFINITION
GID	INT	Grid identification number
COMP	CHAR (8)	Name of the component that is constrained e.g., T1, T2, T3, R1, R2 or R3 (=blank for MODE)
CFORM	CHAR (4)	Constraint form
		RMS ROOT MEAN SQUARE
		COMP component-by-component constraint
		blank if a MODE sensitivity request
INTID	INT	Internal ID of the displacement component
DISP	RSP	Current displacement for the constrained component.
NINTID	INT	Internal ID of the normalization displacement component (if NORM=POINT).
NDISP	RSP	Current displacement for the POINT normalization component (if NORM=POINT).
NORMVAL	RSP	Value used to renormalize the eigenvector for constraint evaluation
MODEID	INT	Mode identification number
LAMBDA	RSP	Current value of eigenvalue
GMASS	RSP	Current value of generalized mass
GSTIFF	RSP	Current value of generalized stiffness
NORM	CHAR (4)	Normalization of the input VALUE's. One of MAX, MASS or POINT
GNORM	INT	Grid identification number of the normalizing grid point if POINT normalization was used (otherwise 0)
CNORM	INT	Component identification number of the normalizing grid point if POINT normalization was used (otherwise 0)
AGE	INT	Number of iterations for which the constraint has been retained in the active set without satisfying the screening criteria. (Zero or NULL if currently inactive or truly active)

ENTITY: FREQCONA

ENTITY TYPE: Relation

DESCRIPTION: This relation contains one frequency constraint entry for every CASE/mode/ctype that is constrained using DCFREQ entries. Each DCFREQ generates one entry which is the current value of the constraint.

ATTRIBUTE	TYPE	DEFINITION
CASEID	INT	CASE identification number
DESCONID	INT	Constraint set identification number
TYPECODE	INT	Constraint type code
		5 FREQ
CONLABEL	CHAR (8)	User's constraint label
SPECIAL	INT	Flag indicating whether the constraint is
		-1 A Sensitivity request without allowables
		0 The objective or part of the objective
		1 An ordinary constraint
		-2 An SSID type constraint
FUNCTION	INT	Flag indicating whether the constraint is
		0 An ordinary constraint >0 Part of the User Function with ID FUNCTION
CONID	INT	Constraint identification number. CONID and CONID2 together form a unique identifier for each constraint.
CONID2	INT	Secondary constraint identification number.
CONNUMBR	INT	Non-unique ID from 1 to N for all constraints generated by the DC entries in the input deck.
SNSCOL0	INT	column of the corresponding sensitivity matrix where sens. data begins
NSNSCOLS	INT	number of columns of sensitivity matrix associated with the constraint
VALUE	RSP	Current constraint value
LIMIT	RSP	Limit value for the constraint
CTYPE	CHAR (4)	Either GE or LE for lower or upper bound, respectively
MODEID	INT	Mode identification number
LAMBDA	RSP	Current value of eigenvalue
GMASS	RSP	Current value of generalized mass
GSTIFF	RSP	Current value of generalized stiffness
AGE	INT	Number of iterations for which the constraint has been retained in the active set without satisfying the screening criteria. (Zero or NULL if currently inactive or truly active)
TARGET	RSP	Target value for SSID type constraint

ENTITY: GRIDCONA

ENTITY TYPE: Relation

DESCRIPTION: This relation contains one displacement constraint entry for every CASE/grid/type that is constrained using DCGRID or DCGRIDM entries. This relation contains the current value of each constraint.

ATTRIBUTE	TYPE	DEFINITION
CASEID	INT	CASE identification number
DESCONID	INT	Constraint set identification number
TYPECODE	INT	Constraint type code
		1 DISP
CONLABEL	CHAR (8)	User's constraint label
SPECIAL	INT	Flag indicating whether the constraint is
		-1 A Sensitivity request without allowables
		0 The objective or part of the objective
		1 An ordinary constraint
FUNCTION	INT	Flag indicating whether the constraint is
		0 An ordinary constraint
		>0 Part of the User Function with ID FUNCTION
CONID	INT	Constraint identification number. CONID and CONID2 together form a unique identifier for each constraint.
CONID2	INT	Secondary constraint identification number.
CONNUMBR	INT	Non-unique ID from 1 to N for all constraints generated by the DC entries in the input deck.
G0COL	INT	Row in the pre-screened constraint vector that holds corresponding constraint value for Finite Difference sensitivity computation.
SNSCOL0	INT	column of the corresponding sensitivity matrix where sens. data begins
NSNSCOLS	INT	number of columns of sensitivity matrix associated with the constraint
LIMIT	RSP	Limit value for the constraint
CTYPE	CHAR (4)	Either GE or LE for lower or upper bound, respectively
COMP	CHAR (8)	Name of the component that is constrained e.g., T1, T2, T3, R1, R2 or R3
FACTOR	RSP	Real factor to be applied to the constraint in an MPC like manner
GID	INT	Grid identification number
VALUE	RSP	Current constraint value (0.0 if sens. only)
AGE	INT	Number of iterations for which the constraint has been retained in the active set without satisfying the screening criteria. (Zero or NULL if currently inactive or truly active)

ENTITY: PROPCONA

ENTITY TYPE: Relation

DESCRIPTION: This relation contains one entry for every upper and lower bound on each physical variable whose upper and lower bounds need to be controlled by true constraints rather than side constraints. This happens when the physical variable appears on more than one DVLINK entry (reduced basis linking). Each entry contains the current value of the constraint.

ATTRIBUTE	TYPE	DEFINITION	
DESCONID	INT	Constraint set identification number (0 if not applicable)	
TYPECODE	INT	Constraint type code	
		10 PROPERTY	
CONLABEL	CHAR (8)	User's constraint label	
SPECIAL	INT	Flag indicating whether the constraint is	
		-1	A Sensitivity request without allowables
		0	The objective or part of the objective
		1	An ordinary constraint
FUNCTION	INT	Flag indicating whether the constraint is	
		0	An ordinary constraint
		>0	Part of the User Function with ID FUNCTION
CONID	INT	Constraint identification number. CONID and CONID2 together form a unique identifier for each constraint.	
CONID2	INT	Secondary constraint identification number.	
CONNUMBR	INT	Non-unique ID from 1 to N for all constraints generated by the DC entries in the input deck.	
SNSCOL0	INT	column of the corresponding sensitivity matrix where sens. data begins	
NSNSCOLS	INT	number of columns of sensitivity matrix associated with the constraint	
PHYNUM	INT	Physical Variable Position in the Physical Variable Vector	
PMIN	RSP	Physical Variable Lower Bound	
PMAX	RSP	Physical Variable Upper Bound	
CTYPE	CHAR (4)	Either GE or LE for lower or upper bound, respectively	
VALUE	RSP	Current constraint value (0.0 if sens. only)	
DVNAME	CHAR (8)	Physical design variable name from DVPROP/DVPROPS	

ATTRIBUTE	TYPE	DEFINITION
PTYPE	INT	Integer Property TYPE from DVPROP/DVPROPS
PRPID	INT	Property identification from DVPROP/DVPROPS
PSYM	INT	Integer Property SYM from DVPROP/DVPROPS
AGE	INT	Number of iterations for which the constraint has been retained in the active set without satisfying the screening criteria. (Zero or NULL if currently inactive or truly active)
GLOBAL_MOVE	RSP	Current global move limit value as a fraction of the PVALUE.
LOCAL_MOVE	RSP	Current local move limit value as a multiplier to GLOBAL_MOVE
BOUND	RSP	Current iteration's limit value allowed for the variable. Potentially not equal to LIMIT if move-limited.
BOUND_AGE	INT	Number of consecutive iterations the variable has hit the BOUND that was not the LIMIT value.
PVALUE	RSP	Current physical property value

ENTITY: WGHTCONA

ENTITY TYPE: Relation

DESCRIPTION: This relation contains one entry for every upper and lower bound on the model's mass, weight or volume.

ATTRIBUTE	TYPE	DEFINITION	
DESCONID	INT	Constraint set identification number (0 if not applicable)	
TYPECODE	INT	Constraint type code = 11 for WGT/VOL	
CONLABEL	CHAR (8)	User's constraint label	
SPECIAL	INT	Flag indicating whether the constraint is	
		-1	A Sensitivity request without allowables
		0	The objective or part of the objective
		1	An ordinary constraint
FUNCTION	INT	Flag indicating whether the constraint is	
		0	An ordinary constraint
		>0	Part of the User Function with ID FUNCTION
CONID	INT	Constraint identification number. CONID and CONID2 together form a unique identifier for each constraint.	
CONID2	INT	Secondary constraint identification number.	
CONNUMBR	INT	Non-unique ID from 1 to N for all constraints generated by the DC entries in the input deck.	
SNSCOL0	INT	column of the corresponding sensitivity matrix where sens. data begins	
NSNSCOLS	INT	number of columns of sensitivity matrix associated with the constraint	
LIMIT	RSP	Limit value for the constraint	
CTYPE	CHAR (4)	Either GE or LE for lower or upper bound, respectively	
TYPE	CHAR (8)	One of WEIGHT, MASS or VOLUME	
VALUE	RSP	Current constraint value (0.0 if sens. only)	
AGE	INT	Number of iterations for which the constraint has been retained in the active set without satisfying the screening criteria. (Zero or NULL if currently inactive or truly active)	

RANDOM RESPONSE RESULTS

ENTITY: AVE_PSD

ENTITY TYPE: Relation

DESCRIPTION: The Average power spectral density for Random analysis.

DATA BLOCKS USED: PSDF

ATTRIBUTE	TYPE	DEFINITION
ID	INT	Identification for a Grid Point or and element.
TYPE	CHAR (8)	Element or grid type
RES_TYPE	CHAR (8)	Response type
COMP	CHAR (8)	Component
NO	RSP	Number of zero crossings
RMS	RSP	Root mean square

ENTITY: FUNC_PSD

ENTITY TYPE: Relation

DESCRIPTION: This relation contains the Power spectral density function for Random analysis.

DATA BLOCKS USED: PSDF

ATTRIBUTE	TYPE	DEFINITION
ID	INT	Identification for a Grid Point or and element.
TYPE	CHAR (8)	Element or grid type
RES_TYPE	CHAR (8)	Response type
COMP	CHAR (8)	Component
FREQ	RSP	Frequency
AMP	RSP	Amplitude

ENTITY: AVE_AUTO

ENTITY TYPE: Relation

DESCRIPTION: The Average autocorrelation for Random analysis.

DATA BLOCKS USED: AUTO

ATTRIBUTE	TYPE	DEFINITION
ID	INT	Identification for a Grid Point or and element.
TYPE	CHAR (8)	Element or grid type
RES_TYPE	CHAR (8)	Response type
COMP	CHAR (8)	Component
NO	RSP	Number of zero crossings
RMS	RSP	Root mean square

ENTITY: FUNC_AUTO

ENTITY TYPE: Relation

DESCRIPTION: This relation contains the auto-correlation function for Random analysis.

DATA BLOCKS USED: AUTO

ATTRIBUTE	TYPE	DEFINITION
ID	INT	Identification for a Grid Point or and element.
TYPE	CHAR (8)	Element or grid type
RES_TYPE	CHAR (8)	Response type
COMP	CHAR (8)	Component
FREQ	RSP	Frequency
AMP	RSP	Amplitude

MODAL CHECKING DATA

ENTITY: TOTAL_EMASS_FRACTION

ENTITY TYPE: Relation

DESCRIPTION: Total Effective Mass/Weight Fraction in each rigid body degree-of-freedom represented by the set of normal modes computed in modal analysis.

ATTRIBUTE	TYPE	DEFINITION	
CASE	INT	Case identification of Modes Case	
FORM	CHAR (8)	Flag indicating whether	
		MASS	The masses and mass fractions are stored
		WEIGHT	The weights and weight fractions are stored
T1	RSP	Translational Fractions	
T2	RSP		
T3	RSP		
R1	RSP	Rotational Fractions	
R2	RSP		
R3	RSP		
T1VAL	RSP	Physical Translation Mass or Weight Values	
T2VAL	RSP		
T3VAL	RSP		
R1VAL	RSP	Physical Rotational Mass or Weight Values	
R2VAL	RSP		
R3VAL	RSP		
MT1VAL	RSP	Modal Translation Mass or Weight Values	
MT2VAL	RSP		
MT3VAL	RSP		
MR1VAL	RSP	Modal Rotational Mass or Weight Values	
MR2VAL	RSP		
MR3VAL	RSP		

ENTITY: MODAL_EMASS

ENTITY TYPE: Matrix

DESCRIPTION: Modal Effective Mass/Weight Matrix

MATRIX SCHEMA:

MODE CMC
 SHAPE SQUARE
 NUMT RMP

NOTES:

1. The matrix is subscripted by design iteration number and MODES CASE Identification
2. The matrix contains either mass or weight values depending on MEFFMASS option
3. The matrix size is 6x6.

ENTITY: ASET_MASS

ENTITY TYPE: Matrix

DESCRIPTION: Rigid Body Mass/Weight Matrix in the A-set

MATRIX SCHEMA:

MODE CMC
 SHAPE SQUARE
 NUMT RMP

NOTES:

1. The matrix is subscripted by design iteration number and MODES CASE Identification
2. The matrix contains either mass or weight values depending on MEFFMASS option
3. The matrix size is 6x6.

ENTITY: MODAL_EMASS_FRACTION

ENTITY TYPE: Relation

DESCRIPTION: The fraction of modal effective mass in each rigid body degree of freedom that is represented by each of the computed normal modes.

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case identification
MODE	INT	Mode index
FREQ	RSP	Normal mode frequency (HZ)
T1FRAC	RSP	Translational Fractions
T2FRAC	RSP	
T3FRAC	RSP	
R1FRAC	RSP	Rotational Fractions
R2FRAC	RSP	
R3FRAC	RSP	
T1SUM	RSP	Translational Sums. The sums represent the cumulative mass fraction for all modes with MODE indices less than or equal to the current mode index.
T2SUM	RSP	
T3SUM	RSP	
R1SUM	RSP	Rotational Sums
R2SUM	RSP	
R3SUM	RSP	

ENTITY: EMASS_PFACTORS

ENTITY TYPE: Relation

DESCRIPTION: The Participation Factors for each normal mode in representing the modal effective mass in each rigid body degree-of-freedom.

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case identification
MODE	INT	Mode index
FREQ	RSP	Normal mode frequency (HZ)
T1MPF	RSP	Translational Modal Participation Factors
T2MPF	RSP	
T3MPF	RSP	
R1MPF	RSP	Rotational Modal Participation Factors
R2MPF	RSP	
R3MPF	RSP	

ENTITY: TOTAL_UENERGY_FRACTION

ENTITY TYPE: Relation

DESCRIPTION: Strain Energy Fraction in each residual flexibility vector that is represented by the set of normal modes used in the modal dynamics analysis.

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case identification of the modal frequency or modal transient case.
STCASE	INT	Static Case identification of the residual flexibility vector.
TFRAC	RSP	Total Strain Energy Fraction
MOSNGY	RSP	Total Residual Vector Strain Energy represented by Modes
RVSNGY	RSP	Total Residual Vector Strain Energy

ENTITY: MODAL_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Modal Strain Energy

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case identification of the modal frequency or modal transient case.
STCASE	INT	Static Case identification of the residual flexibility vector.
MOSNGY	RSP	Total Modal Strain Energy

ENTITY: RES_UENERGY

ENTITY TYPE: Relation

DESCRIPTION: Residual Vector Strain Energy

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case identification of the modal frequency or modal transient case.
STCASE	INT	Static Case identification of the residual flexibility vector.
RVSNGY	RSP	Residual Vector Strain Energy

ENTITY: MODAL_UENERGY_FRACTION

ENTITY TYPE: Relation

DESCRIPTION: Modal Strain Energy Fraction

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case identification of the modal frequency or modal transient case.
MODE	INT	Mode index
FREQ	RSP	Normal mode frequency (HZ)
STCASE	INT	Static Case identification of the residual flexibility vector.
FRAC	RSP	Strain Energy Fraction for the residual vector
SUM_ENERGY	RSP	Sum for the Static Case. The sums represent the cumulative strain energy fraction for all modes with MODE indices less than or equal to the current mode index.

ENTITY: UENERGY_PFACTORS

ENTITY TYPE: Relation

DESCRIPTION: The Participation Factors of each normal mode used in the modal dynamic analysis in representing the strain energy in each residual flexibility vector.

ATTRIBUTE	TYPE	DEFINITION
CASE	INT	Case identification of the modal frequency or modal transient case.
MODE	INT	Mode index
FREQ	RSP	Normal mode Frequency (HZ)
STCASE	INT	Static Case identification of the residual flexibility vector.
MPFACT	RSP	Modal Participation Factor of the Mode in the representation of the residual flexibility vector.

FLUTTER

ENTITY: FLUT_VG

ENTITY TYPE: Relation

DESCRIPTION: The FLUT_VG relation contains the lined up roots from a PK flutter solution or the VG roots from a K flutter solution. In either case these data are used to plot what are commonly referred to as the V-f, V-g curves.

ATTRIBUTE	TYPE	DEFINITION
CONFIG	CHAR (8)	Configuration Identification
CASE	INT	Case Identification
SYM	INT	Aerodynamic Symmetry condition Identification.
MODE	INT	Mode Number
MACH	RSP	Mach number
RHO_LABEL	CHAR (8)	Density-altitude label
RHO	RSP	Density-altitude
VELO	RSP	True velocity
KEAS	RSP	Equivalent velocity
G	RSP	Required Damping
FREQ	RSP	Frequency Damped
KFREQ	RSP	Reduced frequency
NATURAL	RSP	Natural Frequency
ZETA	RSP	Ratio of critical Damping
LAMAR	RSP	Eigenvalue Real
LAMAI	RSP	Eigenvalue Imaginary

ENTITY: FLUT_VG_REAL

ENTITY TYPE: Relation

DESCRIPTION: Flutter Eigenvalue Summary, Real roots only from a PK flutter solution.

ATTRIBUTE	TYPE	DEFINITION
CONFIG	CHAR (8)	Configuration Identification
CASE	INT	Case Identification
SYM	INT	Aerodynamic Symmetry condition Identification.
MODE	INT	Mode Number
MACH	RSP	Mach number
RHO_LABEL	CHAR (8)	Density-altitude label
RHO	RSP	Density-altitude
VELO	RSP	True velocity
KEAS	RSP	Equivalent velocity
KFREQ	RSP	Reduced frequency
LAMAR	RSP	Eigenvalue Real

ENTITY: FLUT_CROSSINGS

ENTITY TYPE: Relation

DESCRIPTION: This relation contains the flutter speeds or crossings that have been identified at the various Mach and density/altitude conditions. These data are used to produce the Vf-Mach curves. (flutter speed versus Mach Number)

ATTRIBUTE	TYPE	DEFINITION
CONFIG	CHAR (8)	Configuration Identification
CASE	INT	Case Identification
SYM	INT	Aerodynamic Symmetry condition Identification.
MODE	INT	Mode Number
MACH	RSP	Mach number
RHO_LABEL	CHAR (8)	Density-altitude label
RHO	RSP	Density-altitude
VELO	RSP	Flutter speed in true velocity
KEAS	RSP	Flutter speed in equivalent velocity
FREQ	RSP	Flutter frequency.
KFREQ	RSP	Flutter reduced frequency
MACH_REQ	RSP	Mach required
G_REQ	RSP	Damping required
INDEX	INT	Crossing Index Identification Number

ENTITY: MATCH_POINT_CROSSINGS

ENTITY TYPE: Relation

DESCRIPTION: This relation contains the flutter speeds or crossings that have been identified at the various Mach and density/altitude conditions. These data are used to produce the Vf-Mach curves. (flutter speed versus Mach Number)

ATTRIBUTE	TYPE	DEFINITION
CONFIG	CHAR (16)	Configuration Identification
CASE	INT	Case Identification
SYM	CHAR (8)	Aerodynamic Symmetry condition Identification.
MODE	INT	Mode Number
MACH	RSP	Mach number
RHO_LABEL	CHAR (8)	Density-altitude label
RHO	RSP	density-altitude
VELO	RSP	Flutter speed in true velocity
KEAS	RSP	Flutter speed in equivalent velocity
FREQ	RSP	Flutter frequency.
KFREQ	RSP	Flutter reduced frequency
G_REQ	RSP	Damping required

ENTITY: FLUT_SWEEP

ENTITY TYPE: Relation

DESCRIPTION: Complex Flutter Eigenvalue Detailed print Summary. This relation contains all the roots from the PK flutter search algorithm. These data may be plotted as struc. freq. vs aero freq. to identify mode tracking and identification problems.

DATA BLOCKS USED: FLUTTER_SWEEP

ATTRIBUTE	TYPE	DEFINITION
CONFIG	CHAR (8)	Configuration Identification
CASE	INT	Case Identification
SYM	INT	Aerodynamic Symmetry condition Identification.
MODE	INT	Mode Number
MACH	RSP	Mach number
RHO_LABEL	CHAR (8)	Density-altitude label
RHO	RSP	Density-altitude
VELO	RSP	True velocity
KEAS	RSP	Equivalent velocity
AFREQ	RSP	Aerodynamic frequency
KFREQ	RSP	Reduced frequency
LAMAR	RSP	Eigenvalue Real
LAMAI	RSP	Eigenvalue Imaginary

ENTITY: AERO_TOC

ENTITY TYPE: Relation

DESCRIPTION: Aero table of contents

ATTRIBUTE	TYPE	DEFINITION
METHOD	CHAR (32)	Method
CONFIG	CHAR (32)	Configuration Identification
CONFIG_SUB	INT	Configuration Index
SYM	CHAR (12)	Aerodynamic Symmetry condition Identification.
SYM_SUB	INT	Symmetry Index
MACH	RSP	MACH value
MACH_SUB	INT	MACH Index
RED_FREQ	RSP	Reduced frequency
RED_SUB	INT	Reduced frequency Index

ENTITY: FLUT_COND

ENTITY TYPE: Relation

DESCRIPTION: Flutter Case Solution Conditions.

ATTRIBUTE	TYPE	DEFINITION
CONFIG	CHAR (8)	Configuration Identification
CASE	INT	Case Identification
SYM	INT	Aerodynamic Symmetry condition Identification.
MACH	RSP	MACH value.
VELO	RSP	Velocity in solution units.
RHO	RSP	Density value in solution units.
DENS	RSP	Density ratio value.
RHO_LABEL	CHAR (8)	Density altitude Atmosphere label.
VELO_M1	RSP	Velocity at Mach 1.0 at the current altitude.
RHO0	RSP	Reference fluid density.
CBAR	RSP	Reference chord.
VFAC	RSP	Conversion factor on air velocity, for Flutter and Dynamic Aeroelastic Response.

This page is intentionally blank.

INDEX

A

ACCEL	102
ACCEL1_LOAD	47
ACCEL_LOAD	47
ACSRCE	59
AFACT	87
AEREFS	87
Aerodynamics	87
AERO1_GEOM	88
AERO_TOC	205
AEUNITS	87
ANALYSIS_SUMMARY	94
Applied Loads	47
ASET	37
ASET1	37
ASET_MASS	200
ASETAX	37
ASETAX1	37
ATMOS	87
ATMOSBD	88
AVE_AUTO	198
AVE_PSD	198
AXIC	81
AXIF2_KENERGY	143
AXIF2_STRAIN	119
AXIF2_STRESS	106
AXIF2_UENERGY	152
AXIF3_KENERGY	143
AXIF3_STRAIN	119
AXIF3_STRESS	106
AXIF3_UENERGY	152
AXIF4_KENERGY	143
AXIF4_STRAIN	120
AXIF4_STRESS	107
AXIF4_UENERGY	152
Axisymmetric Modeling Data	81

B

BAR_FLUX	161
BAR_FORCE	132
BAR_GEOM	1
BAR_KENERGY	143
BAR_NLFORCE	184
BAR_NLSTRAIN	178
BAR_NLSTRESS	172
BAR_STRAIN	120
BAR_STRESS	107
BAR_UENERGY	152

BDYC	37
BDYS	37
BDYS1	38
BEAM_FLUX	161
BEAM_FORCE	132
BEAM_GEOM	1
BEAM_KENERGY	144
BEAM_NLFORCE	184
BEAM_NLSTRAIN	178
BEAM_NLSTRESS	172
BEAM_STRAIN	121
BEAM_STRESS	108
BEAM_UENERGY	153
BMST_FORCE	133
Boundary Constraints And Reductions	37
BUSH_GEOM	2

C

CASE_CONTROL	67
CEIGEN_SUMMARY	92
COMBINE_LOAD	47
Composite Element Solution Results	168
Composite Element Strains	170
Composite Element Stresses	168
CONCT	38
CONCT1	38
CONEAX_GEOM	3
CONM1_GEOM	2
CONM2_GEOM	3
CONROD_FLUX	161
CONROD_FORCE	133
CONROD_GEOM	3
CONROD_KENERGY	144
CONROD_STRAIN	121
CONROD_STRESS	108
CONROD_UENERGY	153
Coordinate Systems	36
CSTM_COORD	36

D

DAMP1_FLUX	161
DAMP1_FORCE	133
DAMP1_GEOM	4
DAMP2_FLUX	162
DAMP2_FORCE	134
DAMP2_GEOM	4
DAMP3_FLUX	162
DAMP3_FORCE	134

DAMP3_GEOM	4
DAMP4_FLUX	162
DAMP4_FORCE	134
DAMP4_GEOM	4
DAREA	59
DAREAS	59
DCDYNRG	82
DCELEM	82
DCFREQ	82
DCGRID	83
DCGRIDM	83
DCMODE	83
DCMODEL	83
DCMODR	84
DELAY	59
DELAYS	60
Design Constraints	82
Design Variables	85
DGRDCONA	191
Direct Input Tables	56
DISP	101
DLOAD	60
DLOAD1	60
DPHASE	60
DPHASES	60
DSAGVAL	192
DSARESP	192
DSASENS	192
DSFACT	78
DVGRID	85
DVGRIDS	85
DVLINK	85
DVMATH	85
DVPROP	86
DVPROPS	86
DVVEC	189
Dynamics Problem Definition	59
DYNRED	38

E

EIGB	61
EIGC	61
EIGEN_SUMMARY	92
EIGR	62
ELAS1_FLUX	162
ELAS1_FORCE	134
ELAS1_GEOM	4
ELAS1_KENERGY	144
ELAS1_STRAIN	121
ELAS1_STRESS	108
ELAS1_UENERGY	153
ELAS2_FLUX	163
ELAS2_FORCE	135

ELAS2_GEOM	4
ELAS2_KENERGY	144
ELAS2_STRAIN	122
ELAS2_STRESS	109
ELAS2_UENERGY	153
ELAS3_FLUX	163
ELAS3_FORCE	135
ELAS3_GEOM	5
ELAS3_KENERGY	145
ELAS3_STRAIN	122
ELAS3_STRESS	109
ELAS3_UENERGY	154
ELAS4_FLUX	163
ELAS4_FORCE	135
ELAS4_GEOM	5
ELAS4_KENERGY	145
ELAS4_STRAIN	122
ELAS4_STRESS	109
ELAS4_UENERGY	154
ELASNL_GEOM	5
ELASNL_NLFORCE	185
ELASNL_NLSTRAIN	179
ELASNL_NLSTRESS	173
ELEM_GPFORCE	97
ELEMCONA	193
Element Connections	1
Element Properties	21
ELEMENT_RESULTS	92
ELEMSUM_GPFORCE	97
EMASS_PFACTORS	201
EPOINT	62
EVCCONA	194

F

FLFACT	88
FLFREE_GEOM	35
FLFREQ	88
FLFREQ1	88
FLSOLVE	89
FLSTR_GEOM	5
FLUT_COND	205
FLUT_CROSSINGS	204
FLUT_SWEEP	205
FLUT_VG	203
FLUT_VG_REAL	203
Flutter	203
Fluxes	161
FLVEL	89
FORCE1_LOAD	48
FORCE2_LOAD	48
FORCE_LOAD	47
FORCEAX_LOAD	48
Forces	132

FREQ	78
FREQ1	79
FREQ2	79
FREQ3	79
FREQ_SUMMARY	92
FREQCONA	195
FSIDATA	56
FUNC_AUTO	198
FUNC_PSD	198

G

GAP_FLUX	163
GAP_FORCE	135
GAP_GEOM	5
GAP_NLFORCE	185
GAP_NLSTRAIN	179
GAP_NLSTRESS	173
GENEL_GEOM	3
General Problem Control Data	67
GPFASPC	103
GPFIELD	39
GPFMPC	103
GPFORCE	97
GPFSPC	102
GPKEN	105
GPSDIS	100
GPSSRF	98
GPSVOL	98
GPUDIS	100
GPUSRF	99
GPUVOL	99
GPW_BPTRANS	95
GPW_CG	95
GPW_INERTIA	95
GPW_MASS	95
GPW_MOMENTS	96
GPW_PPTRANS	96
GRAV_LOAD	48
GRID	35
Grid Point Data	35
Grid Point Weight Summary	95
Grid Solution Results	97
GRID_RESULTS	91
GRIDCONA	195
GTRAN	39

H

HACAB_GEOM	6
HACBR_GEOM	7
HBDY_FLUX	164
HBDY_GEOM	6

HEXA_GEOM	7
HEXA_KENERGY	145
HEXA_NLSTRAIN	179
HEXA_NLSTRESS	173
HEXA_STRAIN	123
HEXA_STRESS	110
HEXA_UENERGY	154
HSET	93

K

KENERGY	94
Kinetic Energy	143

L

Linear Element Solution Results	106
LOAD	104
LOADC_LOAD	49
LOADCYH_LOAD	49
LOADCYN_LOAD	49

M

MASS1_GEOM	8
MASS1_KENERGY	145
MASS1_UENERGY	154
MASS2_GEOM	8
MASS2_KENERGY	146
MASS2_UENERGY	155
MASS3_GEOM	8
MASS3_KENERGY	146
MASS3_UENERGY	155
MASS4_GEOM	8
MASS4_KENERGY	146
MASS4_UENERGY	155
MAT1	16
MAT1NL	16
MAT1NL1	16
MAT2	17
MAT3	17
MAT4	17
MAT5	18
MAT8	18
MAT9	19
MATCH_POINT_CROSSINGS	204
Material Properties	16
MATF	19
MATT1	19
MATT2	19
MATT3	19
MATT4	20
MATT5	20

MATT9	20
MDO Solution Results	189 - 190
MDVTABLE	189
MESH_ERROR	94
Modal Checking Data	199 - 202
MODAL_EMASS	199
MODAL_EMASS_FRACTION	200
MODAL_UENERGY	201
MODAL_UENERGY_FRACTION	201
Model Definition	1
MOMAX_LOAD	50
MOMENT1_LOAD	50
MOMENT2_LOAD	50
MOMENT_LOAD	49
MPC	39
MPCADD	39
MPCAX	40
MPCS	40

N

NLSOLVE	80
NOLIN1	62
NOLIN2	62
NOLIN3	63
NOLIN4	63
Nonlinear Element Solution Results	172
Nonlinear Forces	184
Nonlinear Strains	178
Nonlinear Stresses	172

O

OMIT	40
OMIT1	40
OMITAX	40
OPTIMHIST	190

P

PACABS	21
PACBAR	21
PARAM	80
PBAR	21
PBAR1	22
PBEAM	22
PBEAM1	26
PBUSH	26
PCOMP	27
PCOMP1	27
PCOMP2	28
PCONEAX	28

PDAMP	28
PDVTABLE	190
PELAS	29
PENTA_GEOM	8
PENTA_KENERGY	146
PENTA_NLSTRAIN	180
PENTA_NLSTRESS	174
PENTA_STRAIN	123
PENTA_STRESS	110
PENTA_UENERGY	155
PGAP	29
PHBDY	29
PILE_FLUX	164
PILE_FORCE	136
PILE_GEOM	9
PILE_KENERGY	147
PILE_NLFORCE	185
PILE_NLSTRAIN	180
PILE_NLSTRESS	174
PILE_STRAIN	124
PILE_STRESS	111
PILE_UENERGY	156
PIPE_FLUX	164
PIPE_FORCE	136
PIPE_GEOM	9
PIPE_KENERGY	147
PIPE_STRAIN	124
PIPE_STRESS	111
PIPE_UENERGY	156
PLOAD1_LOAD	51
PLOAD2_LOAD	51
PLOAD4_LOAD	51
PLOAD_LOAD	50
PLOTEL	9
PLY_STRAIN_SUMMARY	93
PLY_STRESS_SUMMARY	93
PMASS	29
POINTAX	41
PPILE	29
PPILE1	30
PPIPE	30
PRESAX	41
PRESPT	41
PRESS	104
PROD	30
PROPCONA	196
PSHEAR	31
PSHELL	31
PSOIL	32
PSOLID	32
PTORDRG	32
PTRAPAX	32
PTRIAAX	33
PTUBE	33

PTWIST	33
PVISC	33

Q

QBDY1_LOAD	51
QBDY2_LOAD	52
QHBDY_LOAD	52
QUAD4_FLUX	164
QUAD4_FORCE	137
QUAD4_GEOM	10
QUAD4_KENERGY	147
QUAD4_NLFORCE	186
QUAD4_NLSTRAIN	181
QUAD4_NLSTRESS	175
QUAD4_PLY_STRAIN	170
QUAD4_PLY_STRESS	168
QUAD4_STRAIN	125
QUAD4_STRESS	112
QUAD4_UENERGY	156
QUAD8_FLUX	165
QUAD8_FORCE	138
QUAD8_GEOM	11
QUAD8_KENERGY	148
QUAD8_PLY_STRAIN	170
QUAD8_PLY_STRESS	168
QUAD8_STRAIN	126
QUAD8_STRESS	113
QUAD8_UENERGY	157
QUADR_FLUX	165
QUADR_FORCE	137
QUADR_GEOM	10
QUADR_KENERGY	147
QUADR_NLFORCE	186
QUADR_NLSTRAIN	181
QUADR_NLSTRESS	175
QUADR_PLY_STRAIN	170
QUADR_PLY_STRESS	168
QUADR_STRAIN	125
QUADR_STRESS	112
QUADR_UENERGY	156
QVECT_LOAD	52
QVOL_LOAD	52

R

Random Response Results	198
RANDPS	63
RANDT1	63
RBAR	42
RBE1	42
RBE2	42
RBE3	42
RELES	43

RELES1	43
RES_UENERGY	201
RFORCE1_LOAD	53
RFORCE_LOAD	53
RINGAX	81
RINGFL	35
RLOAD1	64
RLOAD2	64
ROD_FLUX	165
ROD_FORCE	138
ROD_GEOM	11
ROD_KENERGY	148
ROD_NLFORCE	187
ROD_NLSTRAIN	182
ROD_NLSTRESS	176
ROD_STRAIN	126
ROD_STRESS	113
ROD_UENERGY	157
RROD	43
RSPLINE	43
RTRPLT	44

S

SECTAX	81
Sensitivity Analysis Results	191
SEQEP	64
SEQGP	35
SET1	89
SET2	89
SHEAR_FLUX	165
SHEAR_FORCE	139
SHEAR_GEOM	11
SHEAR_KENERGY	148
SHEAR_STRAIN	126
SHEAR_STRESS	113
SHEAR_UENERGY	157
SHOCK	64
SLOAD_LOAD	53
Solution Summary	91
SPC	44
SPC1	44
SPCADD	44
SPCAX	45
SPCD	45
SPCS	45
SPCS1	45
SPCSD	45
SPLINE1_GEOM	89
SPLINE2_GEOM	90
SPOINT	35
Strain Energy	152
Strains	119
Stresses	106

SUPAX 45
 SUPORT 46
 SUPORTS 46

T

TABDMP1 56
 TABDMP2 56
 TABLED1 56
 TABLED2 57
 TABLED3 57
 TABLED4 57
 TABLEM1 57
 TABLEM2 57
 TABLEM3 57
 TABLEM4 58
 TABLENL 58
 TABRND1 58
 TEMP_LOAD 54
 TEMPAX_LOAD 54
 TEMPD_LOAD 54
 TEMPP1_LOAD 54
 TEMPP2_LOAD 54
 TEMPP3_LOAD 55
 TEMPRB_LOAD 55
 TETRA_GEOM 12
 TETRA_KENERGY 148
 TETRA_NLSTRAIN 182
 TETRA_NLSTRESS 176
 TETRA_STRAIN 127
 TETRA_STRESS 114
 TETRA_UENERGY 157
 TF 65
 TIC 65
 TICRV 65
 TICS 65
 TICTV 66
 TIME_SUMMARY 93
 TLOAD1 66
 TLOAD2 66
 TORDRG_GEOM 12
 TORDRG_KENERGY 149
 TORDRG_STRAIN 127
 TORDRG_STRESS 114
 TORDRG_UENERGY 158
 TOTAL_EMASS_FRACTION 199
 TOTAL_UENERGY_FRACTION 201
 TRANS 46
 TRAPAX_FLUX 166
 TRAPAX_FORCE 139
 TRAPAX_GEOM 12
 TRAPAX_KENERGY 149
 TRAPAX_STRAIN 128
 TRAPAX_STRESS 115

TRAPAX_UENERGY 158
 TRAPRG_GEOM 12
 TRAPRG_KENERGY 149
 TRAPRG_STRAIN 128
 TRAPRG_STRESS 115
 TRAPRG_UENERGY 158
 TRIA3_FLUX 166
 TRIA3_FORCE 140
 TRIA3_GEOM 13
 TRIA3_KENERGY 149
 TRIA3_NLFORCE 187
 TRIA3_NLSTRAIN 183
 TRIA3_NLSTRESS 177
 TRIA3_PLY_STRAIN 170
 TRIA3_PLY_STRESS 169
 TRIA3_STRAIN 129
 TRIA3_STRESS 116
 TRIA3_UENERGY 158
 TRIA6_FLUX 166
 TRIA6_FORCE 141
 TRIA6_GEOM 14
 TRIA6_KENERGY 150
 TRIA6_PLY_STRAIN 171
 TRIA6_PLY_STRESS 169
 TRIA6_STRAIN 130
 TRIA6_STRESS 117
 TRIA6_UENERGY 159
 TRIAAX_FLUX 167
 TRIAAX_FORCE 141
 TRIAAX_GEOM 14
 TRIAAX_KENERGY 150
 TRIAAX_STRAIN 130
 TRIAAX_STRESS 117
 TRIAAX_UENERGY 159
 TRIAR_FLUX 166
 TRIAR_FORCE 140
 TRIAR_GEOM 13
 TRIAR_KENERGY 150
 TRIAR_NLFORCE 188
 TRIAR_NLSTRAIN 183
 TRIAR_NLSTRESS 177
 TRIAR_PLY_STRAIN 171
 TRIAR_PLY_STRESS 169
 TRIAR_STRAIN 129
 TRIAR_STRESS 116
 TRIAR_UENERGY 159
 TRIARG_GEOM 14
 TRIARG_KENERGY 150
 TRIARG_STRAIN 130
 TRIARG_STRESS 117
 TRIARG_UENERGY 159
 TSTEP 80
 TUBE_FLUX 167
 TUBE_FORCE 141
 TUBE_GEOM 15

UAI/NASTRAN eBase Schemata

TUBE_KENERGY	151
TUBE_STRAIN	131
TUBE_STRESS	118
TUBE_UENERGY	160
TWIST_FLUX	167
TWIST_FORCE	142
TWIST_GEOM	15
TWIST_KENERGY	151
TWIST_STRAIN	131
TWIST_STRESS	118
TWIST_UENERGY	160

U

UENERGY	94
UENERGY_PFACTORS	202

USET	46
USET1	46

V

VECLOAD	55
VELO	101
VIEW	33
VIEWOP	34
VISC_GEOM	15

W

WGHTCONA	197
--------------------	-----

This page is intentionally blank.