

**DETERMINACION DE LOS EFECTOS DE LAS INTERFERENCIAS OCLUSALES
SOBRE LOS CONDILOS Y SU CUANTIFICACION MEDIANTE
ANALISIS ESTRUCTURAL**

Tesis para el grado de Doctor en Medicina presentada por

DANIEL LLOMBART JAQUES

Licenciado en Medicina y Cirugía

Licenciado Médico-Estomatólogo

Barcelona 1990



Odontologia

ARCHIVO PIM371. Primer orden.

SPRINGS. Cargados por igual en 29 y 30.

LOAD. Cargado en eje"y".

R.C.DE PIM. CONTACTO 37. PRIMER ORDEN . (ARCHIVO PIM371)

SYSTEM

N=48 L=1

JOINT

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

: CONDILO IZQUIERDO
: CONDILO DERECHO

:
SPRINGS

29	K=10000,10000,10000,0,0,0	: APOYO ELASTICO (CONDILO IZQUIERDO)
30	K=10000,10000,10000,0,0,0	: APOYO ELASTICO (CONDILO DERECHO)
37	K=0,0,10000,0,0,0	: PIEZA DENTAL 37 COACCIONADA VERTICALMENTE

:
FRAME

NM=2					
1	A=1.0	J=.1	I=0.1,0.1	E=21000000	: PIEZAS DENTARIAS
2	A=3.0	J=.1	I=0.1,0.1	E=21000000	: ESTRUCTURA OSEA
1, 1, 31	M=1	LP=3,0			: PIEZAS DENTARIAS
2, 2, 32					

3, 3, 33
4, 4, 34
5, 5, 35
6, 6, 36
7, 7, 37
8, 8, 38
9, 11, 41
10, 12, 42
11, 13, 43
12, 14, 44
13, 15, 45
14, 16, 46
15, 17, 47
16, 18, 48
17, 30, 28
18, 28, 26
19, 26, 24
20, 24, 22
21, 22, 20
22, 20, 19
23, 19, 18
24, 18, 17
25, 17, 16
26, 16, 15
27, 15, 14
28, 14, 13
29, 13, 12
30, 12, 11
31, 11, 40
32, 40, 39
33, 39, 1
34, 1, 2
35, 2, 3
36, 3, 4
37, 4, 5
38, 5, 6
39, 6, 7
40, 7, 8
41, 8, 9
42, 9, 10
43, 10, 21
44, 21, 23
45, 23, 25
46, 25, 27
47, 27, 29

M=2

: ESTRUCTURA OSEA

LP=2, 0

:
LOADS

9 L=1 F= 1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO IZQUIERDO)
19 L=1 F= -1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO DERECHO)
37 L=1 F= 0, 10.80, 0, 0, 0, 0 : ACCION LONGITUDINAL

:
PLOT

VP=15,29 VH=11,22

:

SAP80 V84.04

***** ECHO OF SAP INPUT DATA *****

TOTAL NUMBER OF JOINTS = 48
TOTAL NUMBER OF LOAD CONDITIONS = 1

PRELIMINARY SCAN OF FRAME DATA

NM=2

SECTION	PROPERTY DATA			
1	A=1.0	J=.1	I=0.1,0.1	E=21000000 :
2	A=3.0	J=.1	I=0.1,0.1	E=21000000 :

FRAME	ELEMENT DATA		
1, 1, 31	M=1	LP=3,0	:
2, 2, 32			
3, 3, 33			
4, 4, 34			
5, 5, 35			
6, 6, 36			
7, 7, 37			
8, 8, 38			
9, 11, 41			
10,12, 42			
11,13, 43			
12,14, 44			
13,15, 45			
14,16, 46			
15,17, 47			
16,18, 48			
17,30, 28	M=2		:
18,28, 26			
19, 26, 24			
20, 24, 22			
21, 22, 20			
22, 20, 19			
23, 19, 18			
24, 18, 17			
25, 17, 16			
26, 16, 15			
27, 15, 14			
28, 14, 13			
29, 13, 12			
30, 12, 11		LP=2,0	
31, 11, 40			
32, 40, 39			
33, 39, 1			
34, 1, 2			
35, 2, 3			
36, 3, 4			
37, 4, 5			
38, 5, 6			

39, 6, 7
40, 7, 8
41, 8, 9
42, 9, 10
43, 10, 21
44, 21, 23
45, 23, 25
46, 25, 27
47, 27, 29
:

E Q U I L I B R I U M E Q U A T I O N N U M B E R S
(ONE EQUATION FOR EACH UNKNOWN DISPLACEMENT)

JOINT #	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	157	158	159	160	161	162
2	169	170	171	172	173	174
3	181	182	183	184	185	186
4	193	194	195	196	197	198
5	205	206	207	208	209	210
6	217	218	219	220	221	222
7	229	230	231	232	233	234
8	241	242	243	244	245	246
9	247	248	249	250	251	252
10	253	254	255	256	257	258
11	133	134	135	136	137	138
12	121	122	123	124	125	126
13	109	110	111	112	113	114
14	97	98	99	100	101	102
15	85	86	87	88	89	90
16	73	74	75	76	77	78
17	61	62	63	64	65	66
18	49	50	51	52	53	54
19	37	38	39	40	41	42
20	31	32	33	34	35	36
21	259	260	261	262	263	264
22	25	26	27	28	29	30
23	265	266	267	268	269	270
24	19	20	21	22	23	24
25	271	272	273	274	275	276
26	13	14	15	16	17	18
27	277	278	279	280	281	282
28	7	8	9	10	11	12
29	283	284	285	286	287	288
30	1	2	3	4	5	6
31	151	152	153	154	155	156
32	163	164	165	166	167	168
33	175	176	177	178	179	180
34	187	188	189	190	191	192
35	199	200	201	202	203	204
36	211	212	213	214	215	216
37	223	224	225	226	227	228
38	235	236	237	238	239	240
39	145	146	147	148	149	150
40	139	140	141	142	143	144
41	127	128	129	130	131	132
42	115	116	117	118	119	120
43	103	104	105	106	107	108
44	91	92	93	94	95	96

45	79	80	81	82	83	84
46	67	68	69	70	71	72
47	55	56	57	58	59	60
48	43	44	45	46	47	48

I N P U T J O I N T D A T A

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

:

GENERATED JOINT COORDINATES

JOINT #	X	Y	Z
1	-.400	8.000	.000
2	-1.000	8.000	.000
3	-1.600	7.800	.000
4	-2.200	7.400	.000
5	-2.400	6.600	.000
6	-2.600	5.800	.000
7	-2.800	5.000	.000
8	-3.100	4.000	.000
9	-3.400	3.000	.000
10	-3.900	2.000	.000
11	.400	8.000	.000
12	1.000	8.000	.000
13	1.600	7.800	.000
14	2.200	7.400	.000
15	2.400	6.600	.000
16	2.600	5.800	.000
17	2.800	5.000	.000
18	3.100	4.000	.000
19	3.400	3.000	.000
20	3.900	2.000	.000
21	-4.400	1.000	.000
22	4.400	1.000	.000
23	-4.550	.750	.500
24	4.550	.750	.500
25	-4.700	.500	1.000
26	4.700	.500	1.000
27	-4.850	.250	1.500
28	4.850	.250	1.500
29	-5.000	.000	2.000
30	5.000	.000	2.000
31	-.400	8.000	1.000
32	-1.000	8.000	1.000
33	-1.600	7.800	1.000
34	-2.200	7.400	1.000
35	-2.400	6.600	1.000
36	-2.600	5.800	1.000
37	-2.800	5.000	1.000
38	-3.100	4.000	1.000
39	-.200	8.000	.000
40	.200	8.000	.000
41	.400	8.000	1.000
42	1.000	8.000	1.000
43	1.600	7.800	1.000
44	2.200	7.400	1.000
45	2.400	6.600	1.000
46	2.600	5.800	1.000
47	2.800	5.000	1.000
48	3.100	4.000	1.000

SAP80 V85.02

*** ECHO OF FRAME INPUT DATA ***

NUMBER OF MEMBER PROPERTIES = 2
NUMBER OF DIFF. LOAD PATTERNS = 0

MEMBER PROPERTY NUMBER ----- = 1 SYMBOL= 1
AXIAL AREA, A ----- = 1.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

MEMBER PROPERTY NUMBER ----- = 2 SYMBOL= 2
AXIAL AREA, A ----- = 3.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

EL.	I	J	P1	P2	MAT	EI	EJ	RZ	RELEASES	MI	MJ	LOAD # / PATTERN #
1	1	31	3	0	1	.0	.0	.00	000000	0	0	1 / 0
2	2	32	3	0	1	.0	.0	.00	000000	0	0	0 / 0
3	3	33	3	0	1	.0	.0	.00	000000	0	0	0 / 0
4	4	34	3	0	1	.0	.0	.00	000000	0	0	0 / 0
5	5	35	3	0	1	.0	.0	.00	000000	0	0	0 / 0
6	6	36	3	0	1	.0	.0	.00	000000	0	0	0 / 0
7	7	37	3	0	1	.0	.0	.00	000000	0	0	0 / 0
8	8	38	3	0	1	.0	.0	.00	000000	0	0	0 / 0
9	11	41	3	0	1	.0	.0	.00	000000	0	0	0 / 0
10	12	42	3	0	1	.0	.0	.00	000000	0	0	0 / 0
11	13	43	3	0	1	.0	.0	.00	000000	0	0	0 / 0
12	14	44	3	0	1	.0	.0	.00	000000	0	0	0 / 0
13	15	45	3	0	1	.0	.0	.00	000000	0	0	0 / 0
14	16	46	3	0	1	.0	.0	.00	000000	0	0	0 / 0
15	17	47	3	0	1	.0	.0	.00	000000	0	0	0 / 0
16	18	48	3	0	1	.0	.0	.00	000000	0	0	0 / 0
17	30	28	3	0	2	.0	.0	.00	000000	0	0	0 / 0
18	28	26	3	0	2	.0	.0	.00	000000	0	0	0 / 0
19	26	24	3	0	2	.0	.0	.00	000000	0	0	0 / 0
20	24	22	3	0	2	.0	.0	.00	000000	0	0	0 / 0
21	22	20	3	0	2	.0	.0	.00	000000	0	0	0 / 0
22	20	19	3	0	2	.0	.0	.00	000000	0	0	0 / 0
23	19	18	3	0	2	.0	.0	.00	000000	0	0	0 / 0
24	18	17	3	0	2	.0	.0	.00	000000	0	0	0 / 0
25	17	16	3	0	2	.0	.0	.00	000000	0	0	0 / 0
26	16	15	3	0	2	.0	.0	.00	000000	0	0	0 / 0

R.C.DE PIM. CONTACTO 37. PRIMER ORDEN . (ARCHIVO PIM371)

PAGE

27	15	14	3	0	2	.0	.0	.00	000000	0	0	0
28	14	13	3	0	2	.0	.0	.00	000000	0	0	0
29	13	12	3	0	2	.0	.0	.00	000000	0	0	0
30	12	11	2	0	2	.0	.0	.00	000000	0	0	0
31	11	40	2	0	2	.0	.0	.00	000000	0	0	0
32	40	39	2	0	2	.0	.0	.00	000000	0	0	0
33	39	1	2	0	2	.0	.0	.00	000000	0	0	0
34	1	2	2	0	2	.0	.0	.00	000000	0	0	0
35	2	3	2	0	2	.0	.0	.00	000000	0	0	0
36	3	4	2	0	2	.0	.0	.00	000000	0	0	0
37	4	5	2	0	2	.0	.0	.00	000000	0	0	0
38	5	6	2	0	2	.0	.0	.00	000000	0	0	0
39	6	7	2	0	2	.0	.0	.00	000000	0	0	0
40	7	8	2	0	2	.0	.0	.00	000000	0	0	0
41	8	9	2	0	2	.0	.0	.00	000000	0	0	0
42	9	10	2	0	2	.0	.0	.00	000000	0	0	0
43	10	21	2	0	2	.0	.0	.00	000000	0	0	0
44	21	23	2	0	2	.0	.0	.00	000000	0	0	0
45	23	25	2	0	2	.0	.0	.00	000000	0	0	0
46	25	27	2	0	2	.0	.0	.00	000000	0	0	0
47	27	29	2	0	2	.0	.0	.00	000000	0	0	0

TOTAL WEIGHT OF MATERIALS= .000000
TOTAL MASS OF SYSTEM = .000000

R.C.DE PIM. CONTACTO 37. PRIMER ORDEN . (ARCHIVO PIM371)

PAGE

SAP80 V85.02

***** ASSEMBLY OF EQUATIONS *****

JOINT LOADS AND DISPLACEMENTS

NODE L#	F/U	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
9	1 F	.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00	.000E+00
19	1 F	-.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00	.000E+00
37	1 F	.000E+00	.108E+02	.000E+00	.000E+00	.000E+00	.000E+00

SPRING AND MASS DATA

JOINT	K/M	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
29	K	.100E+05	.100E+05	.100E+05	.000E+00	.000E+00	.000E+00
30	K	.100E+05	.100E+05	.100E+05	.000E+00	.000E+00	.000E+00
37	K	.000E+00	.000E+00	.100E+05	.000E+00	.000E+00	.000E+00

EVALUATION OF PROFILE OF STIFFNESS MATRIX

NUMBER OF EQUATIONS TO BE FORMED = 288
NUMBER OF EQUATIONS TO BE REDUCED = 288
NUMBER OF LOAD CONDITIONS = 1

FORMATION OF BLOCK IN STIFFNESS MATRIX

BLOCK NUMBER = 1 OF 1
LOWEST EQUATION NUMBER = 1
HIGHEST EQUATION NUMBER = 288
NUMBER OF TERMS IN BLOCK = 2700
LOWEST COUPLED BLOCK NUMBER = 1

FORM LOAD BLOCK NUMBER 1

SAP80 V85.02

* * * * * J O I N T D I S P L A C E M E N T S * * * * *

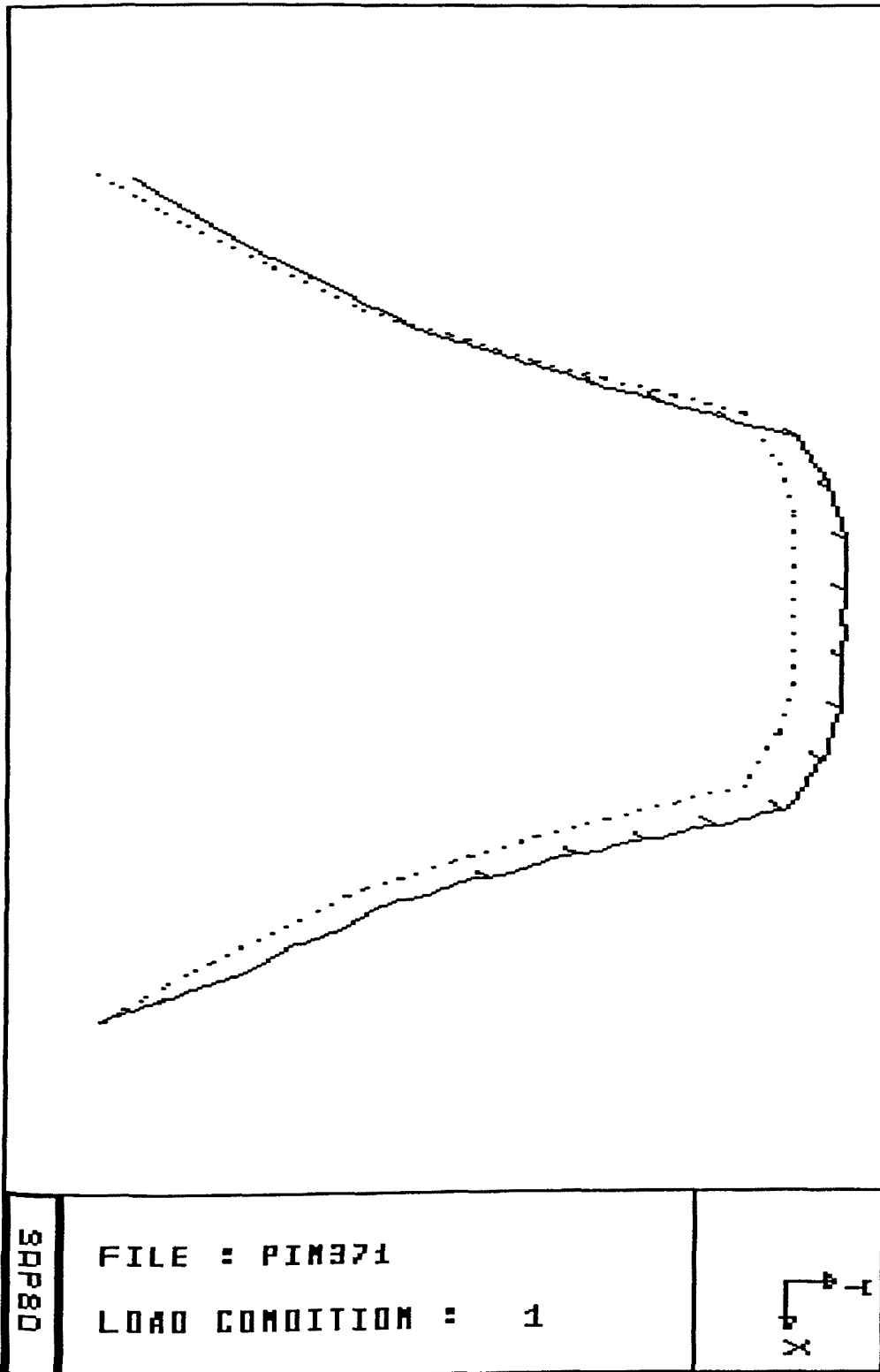
LOAD CONDITION 1 - DISPLACEMENTS "U" AND ROTATIONS "R"

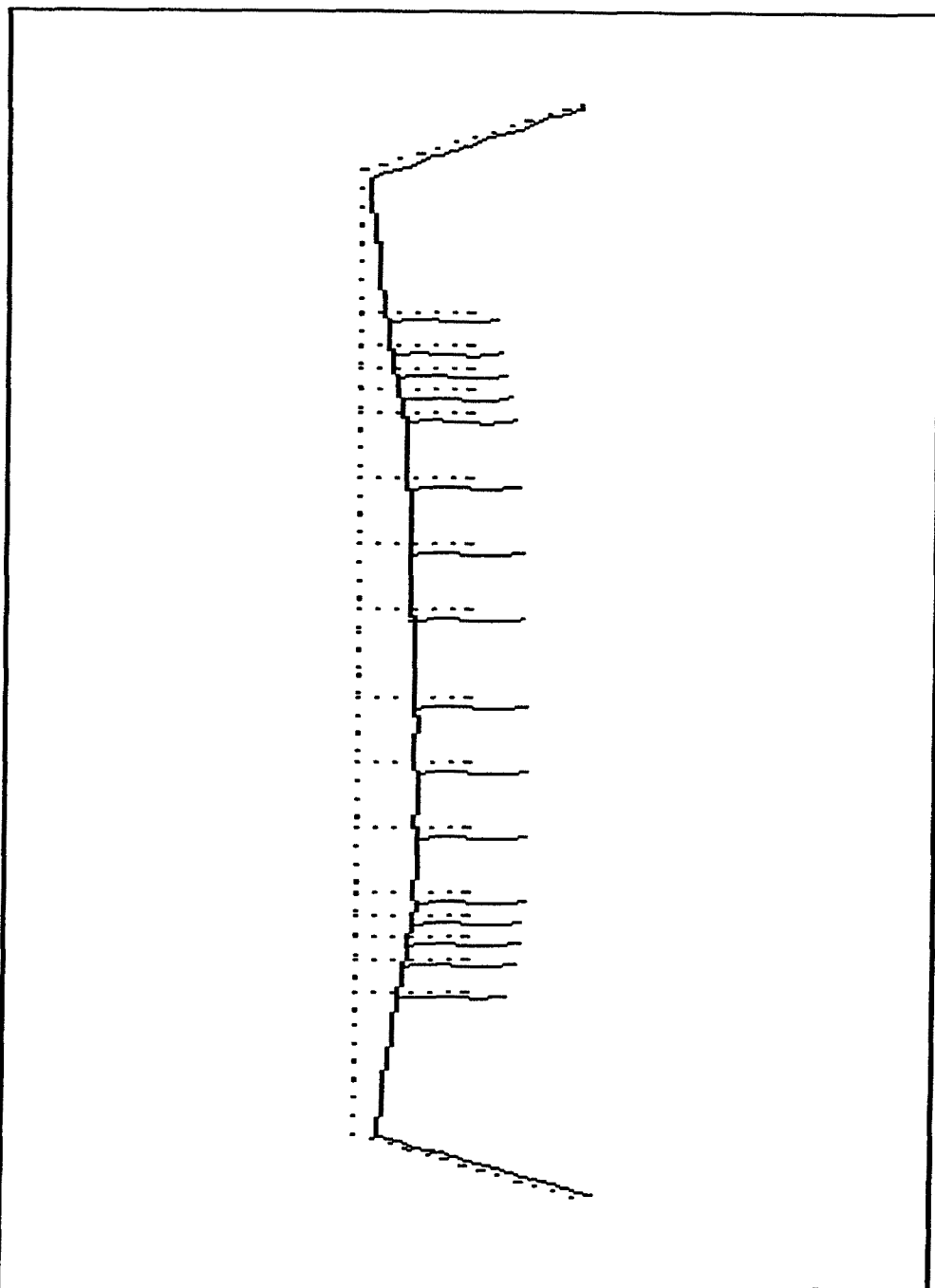
Table with 7 columns: JOINT, U(X), U(Y), U(Z), R(X), R(Y), R(Z). It lists displacement and rotation values for 48 joints.

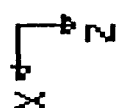
R E A C T I O N S A N D A P P L I E D F O R C E S

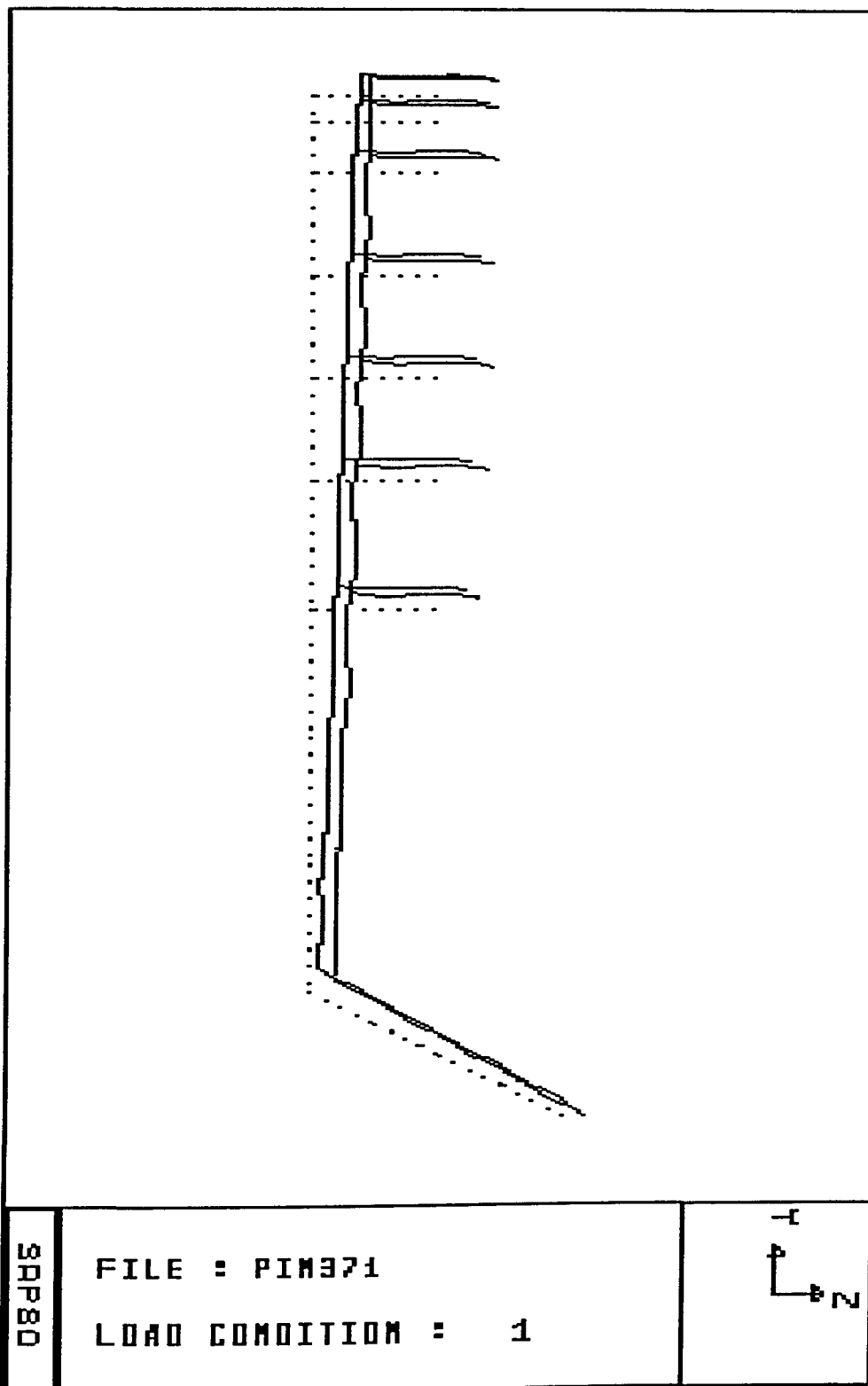
LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

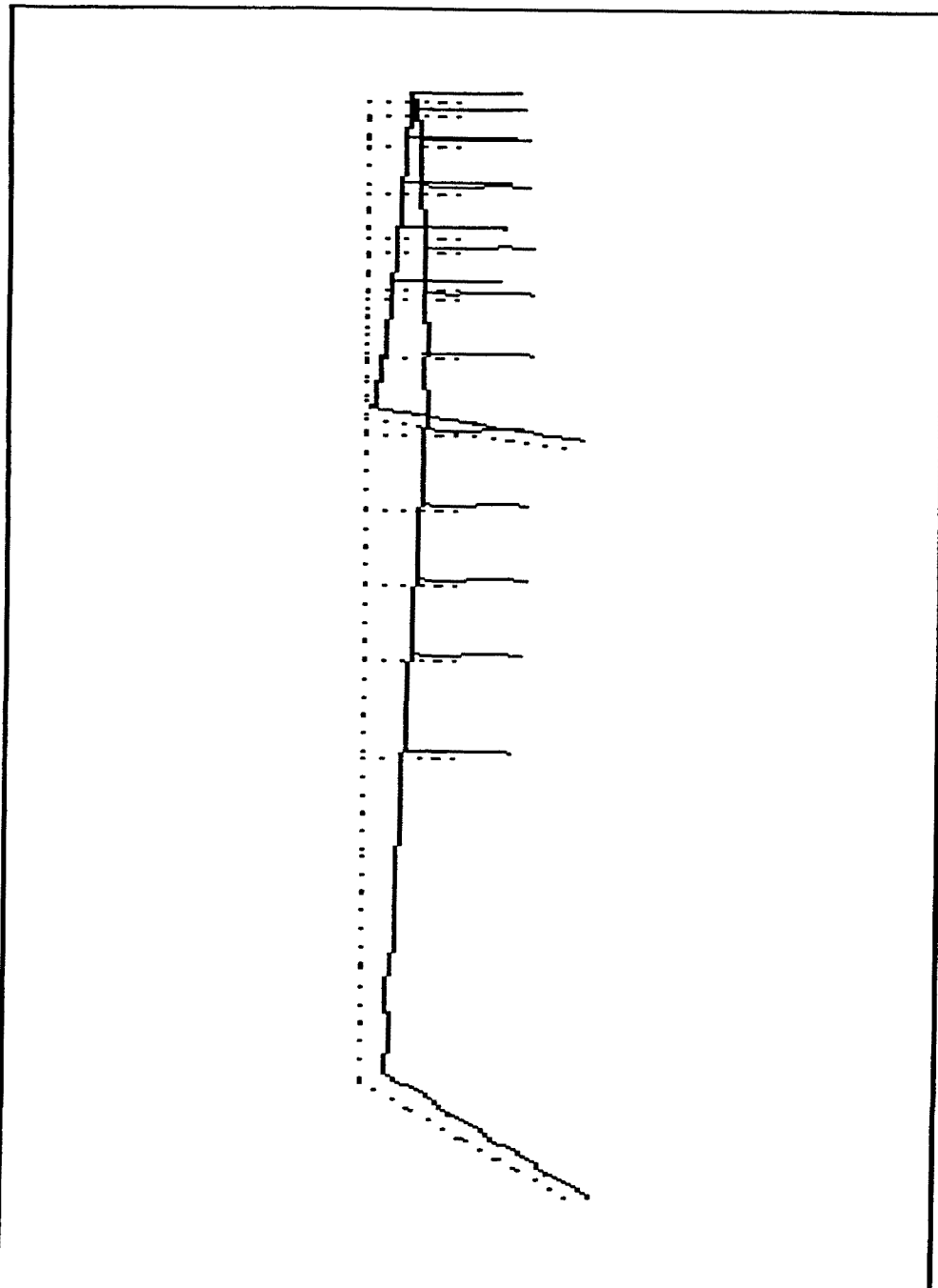
JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
1	.0000	.0000	.0000	.0000	.0000	.0000
2	.0000	.0000	.0000	.0000	.0000	.0000
3	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000
6	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000
8	.0000	.0000	.0000	.0000	.0000	.0000
9	1.5000	-1.5000	10.0000	.0000	.0000	.0000
10	.0000	.0000	.0000	.0000	.0000	.0000
11	.0000	.0000	.0000	.0000	.0000	.0000
12	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000
15	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000
17	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000
19	-1.5000	-1.5000	10.0000	.0000	.0000	.0000
20	.0000	.0000	.0000	.0000	.0000	.0000
21	.0000	.0000	.0000	.0000	.0000	.0000
22	.0000	.0000	.0000	.0000	.0000	.0000
23	.0000	.0000	.0000	.0000	.0000	.0000
24	.0000	.0000	.0000	.0000	.0000	.0000
25	.0000	.0000	.0000	.0000	.0000	.0000
26	.0000	.0000	.0000	.0000	.0000	.0000
27	.0000	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000
29	-1.0159	-6.9240	.1088	.0000	.0000	.0000
30	1.0159	-.8760	-7.1488	.0000	.0000	.0000
31	.0000	.0000	.0000	.0000	.0000	.0000
32	.0000	.0000	.0000	.0000	.0000	.0000
33	.0000	.0000	.0000	.0000	.0000	.0000
34	.0000	.0000	.0000	.0000	.0000	.0000
35	.0000	.0000	.0000	.0000	.0000	.0000
36	.0000	.0000	.0000	.0000	.0000	.0000
37	.0000	10.8000	-12.9600	.0000	.0000	.0000
38	.0000	.0000	.0000	.0000	.0000	.0000
39	.0000	.0000	.0000	.0000	.0000	.0000
40	.0000	.0000	.0000	.0000	.0000	.0000
41	.0000	.0000	.0000	.0000	.0000	.0000
42	.0000	.0000	.0000	.0000	.0000	.0000
43	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	.2081E-10	.4562E-10	-.1203E-08	.1635E-10	.5490E-09	-.1985E-11





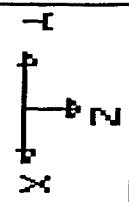
08P80	FILE : P1M371 LOAD CONDITION : 1	
-------	-------------------------------------	---------------------------------------------------------------------------------------





SRP80

FILE : PIM371
LOAD CONDITION : 1



ARCHIVO PIM372. Segundo orden.

Vistas las fuerzas desarrolladas, se cambian los Springs, dejando los valores disminuídos en el eje "y" y "z" en el nudo 29, y en el eje "y" en el nudo 30.

Se mantienen el resto de los valores.

R.C.DE PIM. CONTACTO 37. SEGUNDO ORDEN . (ARCHIVO PIM372)

SYSTEM

N=48 L=1

JOINT

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

: CONDILO IZQUIERDO
: CONDILO DERECHO

:
SPRINGS

29 K=10000,1000,1000,0,0,0 : APOYO ELASTICO (CONDILO IZQUIERDO)
30 K=10000,1000,10000,0,0,0 : APOYO ELASTICO (CONDILO DERECHO)
37 K=0,0,10000,0,0,0 : PIEZA DENTAL 37 COACCIONADA VERTICALMENTE

:

FRAME

NM=2

1 A=1.0 J=.1 I=0.1,0.1 E=21000000 : PIEZAS DENTARIAS
2 A=3.0 J=.1 I=0.1,0.1 E=21000000 : ESTRUCTURA OSEA
1, 1, 31 M=1 LP=3,0 : PIEZAS DENTARIAS
2, 2, 32

3, 3, 33
4, 4, 34
5, 5, 35
6, 6, 36
7, 7, 37
8, 8, 38
9, 11, 41
10, 12, 42
11, 13, 43
12, 14, 44
13, 15, 45
14, 16, 46
15, 17, 47
16, 18, 48
17, 30, 28
18, 28, 26
19, 26, 24
20, 24, 22
21, 22, 20
22, 20, 19
23, 19, 18
24, 18, 17
25, 17, 16
26, 16, 15
27, 15, 14
28, 14, 13
29, 13, 12
30, 12, 11
31, 11, 40
32, 40, 39
33, 39, 1
34, 1, 2
35, 2, 3
36, 3, 4
37, 4, 5
38, 5, 6
39, 6, 7
40, 7, 8
41, 8, 9
42, 9, 10
43, 10, 21
44, 21, 23
45, 23, 25
46, 25, 27
47, 27, 29
:

M=2

: ESTRUCTURA OSEA

LP=2,0

LOADS

9 L=1 F= 1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO IZQUIERDO)
19 L=1 F= -1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO DERECHO)
37 L=1 F= 0, 10.80, 0, 0, 0, 0 : ACCION LONGITUDINAL

PLOT

VP=15,29 VH=11,22

:

SAP80 V84.04

***** ECHO OF SAP INPUT DATA *****

TOTAL NUMBER OF JOINTS = 48
TOTAL NUMBER OF LOAD CONDITIONS = 1

PRELIMINARY SCAN OF FRAME DATA

NM=2

SECTION PROPERTY DATA
1 A=1.0 J=.1 I=0.1,0.1 E=21000000 :
2 A=3.0 J=.1 I=0.1,0.1 E=21000000 :

FRAME ELEMENT DATA
1, 1, 31 M=1 LP=3,0 :
2, 2, 32
3, 3, 33
4, 4, 34
5, 5, 35
6, 6, 36
7, 7, 37
8, 8, 38
9, 11, 41
10,12, 42
11,13, 43
12,14, 44
13,15, 45
14,16, 46
15,17, 47
16,18, 48
17,30, 28 M=2 :
18,28, 26
19, 26, 24
20, 24, 22
21, 22, 20
22, 20, 19
23, 19, 18
24, 18, 17
25, 17, 16
26, 16, 15
27, 15, 14
28, 14, 13
29, 13, 12
30, 12, 11 LP=2,0
31, 11, 40
32, 40, 39
33, 39, 1
34, 1, 2
35, 2, 3
36, 3, 4
37, 4, 5
38, 5, 6

39, 6, 7
40, 7, 8
41, 8, 9
42, 9, 10
43, 10, 21
44, 21, 23
45, 23, 25
46, 25, 27
47, 27, 29
:

E Q U I L I B R I U M E Q U A T I O N N U M B E R S
(ONE EQUATION FOR EACH UNKNOWN DISPLACEMENT)

JOINT #	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	157	158	159	160	161	162
2	169	170	171	172	173	174
3	181	182	183	184	185	186
4	193	194	195	196	197	198
5	205	206	207	208	209	210
6	217	218	219	220	221	222
7	229	230	231	232	233	234
8	241	242	243	244	245	246
9	247	248	249	250	251	252
10	253	254	255	256	257	258
11	133	134	135	136	137	138
12	121	122	123	124	125	126
13	109	110	111	112	113	114
14	97	98	99	100	101	102
15	85	86	87	88	89	90
16	73	74	75	76	77	78
17	61	62	63	64	65	66
18	49	50	51	52	53	54
19	37	38	39	40	41	42
20	31	32	33	34	35	36
21	259	260	261	262	263	264
22	25	26	27	28	29	30
23	265	266	267	268	269	270
24	19	20	21	22	23	24
25	271	272	273	274	275	276
26	13	14	15	16	17	18
27	277	278	279	280	281	282
28	7	8	9	10	11	12
29	283	284	285	286	287	288
30	1	2	3	4	5	6
31	151	152	153	154	155	156
32	163	164	165	166	167	168
33	175	176	177	178	179	180
34	187	188	189	190	191	192
35	199	200	201	202	203	204
36	211	212	213	214	215	216
37	223	224	225	226	227	228
38	235	236	237	238	239	240
39	145	146	147	148	149	150
40	139	140	141	142	143	144
41	127	128	129	130	131	132
42	115	116	117	118	119	120
43	103	104	105	106	107	108
44	91	92	93	94	95	96

45	79	80	81	82	83	84
46	67	68	69	70	71	72
47	55	56	57	58	59	60
48	43	44	45	46	47	48

I N P U T J O I N T D A T A

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

:
:

GENERATED JOINT COORDINATES

JOINT #	X	Y	Z
1	-.400	8.000	.000
2	-1.000	8.000	.000
3	-1.600	7.800	.000
4	-2.200	7.400	.000
5	-2.400	6.600	.000
6	-2.600	5.800	.000
7	-2.800	5.000	.000
8	-3.100	4.000	.000
9	-3.400	3.000	.000
10	-3.900	2.000	.000
11	.400	8.000	.000
12	1.000	8.000	.000
13	1.600	7.800	.000
14	2.200	7.400	.000
15	2.400	6.600	.000
16	2.600	5.800	.000
17	2.800	5.000	.000
18	3.100	4.000	.000
19	3.400	3.000	.000
20	3.900	2.000	.000
21	-4.400	1.000	.000
22	4.400	1.000	.000
23	-4.550	.750	.500
24	4.550	.750	.500
25	-4.700	.500	1.000
26	4.700	.500	1.000
27	-4.850	.250	1.500
28	4.850	.250	1.500
29	-5.000	.000	2.000
30	5.000	.000	2.000
31	-.400	8.000	1.000
32	-1.000	8.000	1.000
33	-1.600	7.800	1.000
34	-2.200	7.400	1.000
35	-2.400	6.600	1.000
36	-2.600	5.800	1.000
37	-2.800	5.000	1.000
38	-3.100	4.000	1.000
39	-.200	8.000	.000
40	.200	8.000	.000
41	.400	8.000	1.000
42	1.000	8.000	1.000
43	1.600	7.800	1.000
44	2.200	7.400	1.000
45	2.400	6.600	1.000
46	2.600	5.800	1.000
47	2.800	5.000	1.000
48	3.100	4.000	1.000

SAP80 V85.02

*** ECHO OF FRAME INPUT DATA ***

NUMBER OF MEMBER PROPERTIES = 2
NUMBER OF DIFF. LOAD PATTERNS = 0

MEMBER PROPERTY NUMBER ----- = 1 SYMBOL= 1
AXIAL AREA, A ----- = 1.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

MEMBER PROPERTY NUMBER ----- = 2 SYMBOL= 2
AXIAL AREA, A ----- = 3.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

EL.	I	J	P1	P2	MAT	EI	EJ	RZ	RELEASES	MI	MJ	LOAD # / PATTERN #
												1
1	1	31	3	0	1	.0	.0	.00	000000	0	0	0
2	2	32	3	0	1	.0	.0	.00	000000	0	0	0
3	3	33	3	0	1	.0	.0	.00	000000	0	0	0
4	4	34	3	0	1	.0	.0	.00	000000	0	0	0
5	5	35	3	0	1	.0	.0	.00	000000	0	0	0
6	6	36	3	0	1	.0	.0	.00	000000	0	0	0
7	7	37	3	0	1	.0	.0	.00	000000	0	0	0
8	8	38	3	0	1	.0	.0	.00	000000	0	0	0
9	11	41	3	0	1	.0	.0	.00	000000	0	0	0
10	12	42	3	0	1	.0	.0	.00	000000	0	0	0
11	13	43	3	0	1	.0	.0	.00	000000	0	0	0
12	14	44	3	0	1	.0	.0	.00	000000	0	0	0
13	15	45	3	0	1	.0	.0	.00	000000	0	0	0
14	16	46	3	0	1	.0	.0	.00	000000	0	0	0
15	17	47	3	0	1	.0	.0	.00	000000	0	0	0
16	18	48	3	0	1	.0	.0	.00	000000	0	0	0
17	30	28	3	0	2	.0	.0	.00	000000	0	0	0
18	28	26	3	0	2	.0	.0	.00	000000	0	0	0
19	26	24	3	0	2	.0	.0	.00	000000	0	0	0
20	24	22	3	0	2	.0	.0	.00	000000	0	0	0
21	22	20	3	0	2	.0	.0	.00	000000	0	0	0
22	20	19	3	0	2	.0	.0	.00	000000	0	0	0
23	19	18	3	0	2	.0	.0	.00	000000	0	0	0
24	18	17	3	0	2	.0	.0	.00	000000	0	0	0
25	17	16	3	0	2	.0	.0	.00	000000	0	0	0
26	16	15	3	0	2	.0	.0	.00	000000	0	0	0

R.C.DE PIM. CONTACTO 37. SEGUNDO ORDEN . (ARCHIVO PIM372)

PAGE

27	15	14	3	0	2	.0	.0	.00	000000	0	0	0
28	14	13	3	0	2	.0	.0	.00	000000	0	0	0
29	13	12	3	0	2	.0	.0	.00	000000	0	0	0
30	12	11	2	0	2	.0	.0	.00	000000	0	0	0
31	11	40	2	0	2	.0	.0	.00	000000	0	0	0
32	40	39	2	0	2	.0	.0	.00	000000	0	0	0
33	39	1	2	0	2	.0	.0	.00	000000	0	0	0
34	1	2	2	0	2	.0	.0	.00	000000	0	0	0
35	2	3	2	0	2	.0	.0	.00	000000	0	0	0
36	3	4	2	0	2	.0	.0	.00	000000	0	0	0
37	4	5	2	0	2	.0	.0	.00	000000	0	0	0
38	5	6	2	0	2	.0	.0	.00	000000	0	0	0
39	6	7	2	0	2	.0	.0	.00	000000	0	0	0
40	7	8	2	0	2	.0	.0	.00	000000	0	0	0
41	8	9	2	0	2	.0	.0	.00	000000	0	0	0
42	9	10	2	0	2	.0	.0	.00	000000	0	0	0
43	10	21	2	0	2	.0	.0	.00	000000	0	0	0
44	21	23	2	0	2	.0	.0	.00	000000	0	0	0
45	23	25	2	0	2	.0	.0	.00	000000	0	0	0
46	25	27	2	0	2	.0	.0	.00	000000	0	0	0
47	27	29	2	0	2	.0	.0	.00	000000	0	0	0

TOTAL WEIGHT OF MATERIALS= .000000
TOTAL MASS OF SYSTEM = .000000

SAP80 V85.02

***** ASSEMBLY OF EQUATIONS *****

JOINT LOADS AND DISPLACEMENTS

NODE	L#	F/U	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
9	1	F	.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00	.000E+00
19	1	F	-.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00	.000E+00
37	1	F	.000E+00	.108E+02	.000E+00	.000E+00	.000E+00	.000E+00

SPRING AND MASS DATA

JOINT	K/M	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
29	K	.100E+05	.100E+04	.100E+04	.000E+00	.000E+00	.000E+00
30	K	.100E+05	.100E+04	.100E+05	.000E+00	.000E+00	.000E+00
37	K	.000E+00	.000E+00	.100E+05	.000E+00	.000E+00	.000E+00

EVALUATION OF PROFILE OF STIFFNESS MATRIX

NUMBER OF EQUATIONS TO BE FORMED = 288
NUMBER OF EQUATIONS TO BE REDUCED = 288
NUMBER OF LOAD CONDITIONS = 1

FORMATION OF BLOCK IN STIFFNESS MATRIX

BLOCK NUMBER = 1 OF 1
LOWEST EQUATION NUMBER = 1
HIGHEST EQUATION NUMBER = 288
NUMBER OF TERMS IN BLOCK = 2700
LOWEST COUPLED BLOCK NUMBER = 1

FORM LOAD BLOCK NUMBER 1

SAP80 V85.02

***** JOINT DISPLACEMENTS *****

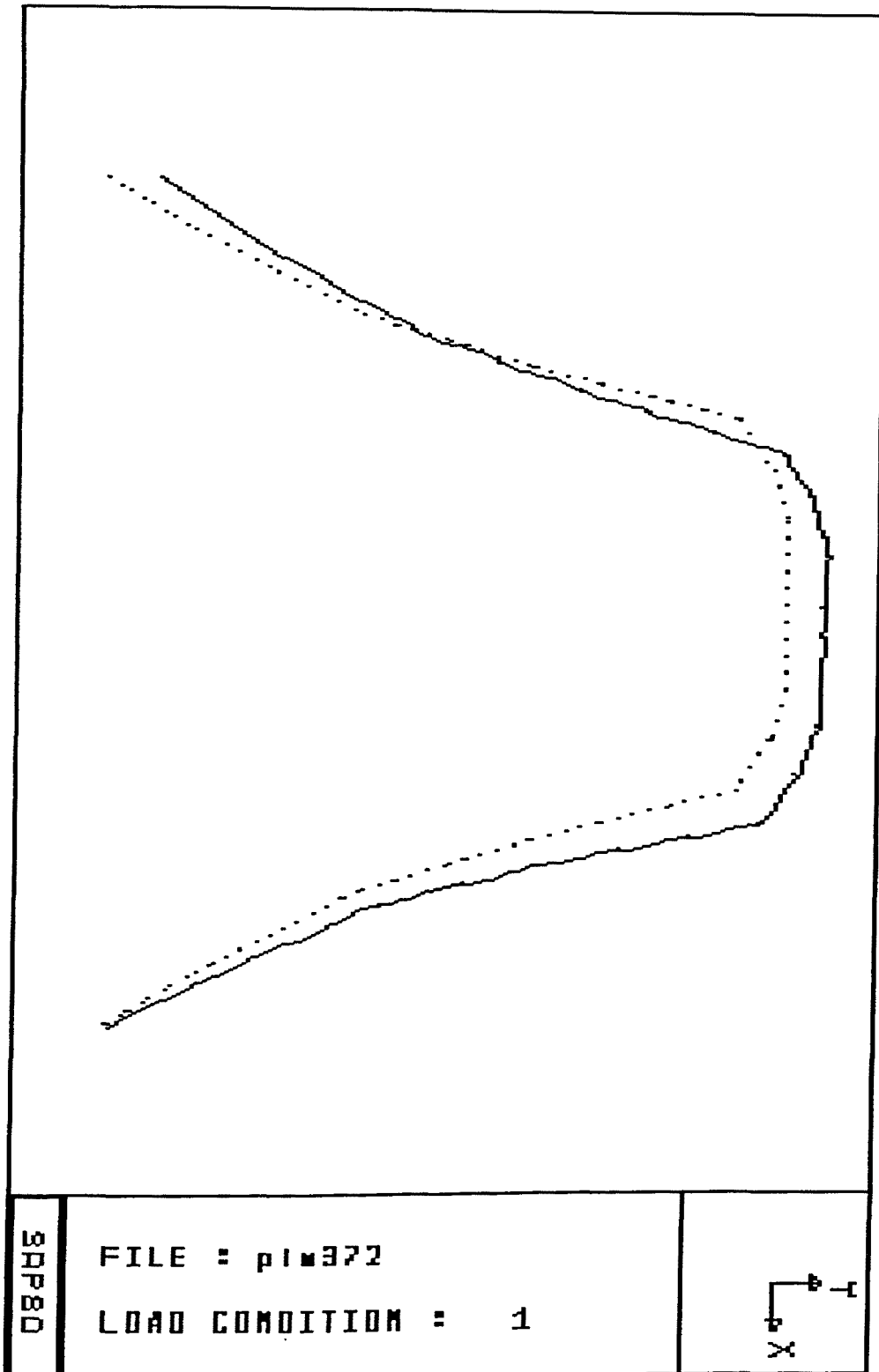
LOAD CONDITION 1 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	.4911E-02	.4760E-02	.2325E-02	.2402E-03	-.1582E-03	-.5946E-03
2	.4911E-02	.5116E-02	.2230E-02	.2336E-03	-.1587E-03	-.5916E-03
3	.4793E-02	.5470E-02	.2088E-02	.2268E-03	-.1600E-03	-.5881E-03
4	.4559E-02	.5821E-02	.1902E-02	.2199E-03	-.1618E-03	-.5835E-03
5	.4094E-02	.5938E-02	.1696E-02	.2152E-03	-.1608E-03	-.5781E-03
6	.3634E-02	.6053E-02	.1494E-02	.2097E-03	-.1596E-03	-.5726E-03
7	.3178E-02	.6167E-02	.1297E-02	.2032E-03	-.1581E-03	-.5671E-03
8	.2614E-02	.6336E-02	.1047E-02	.2029E-03	-.1552E-03	-.5609E-03
9	.2056E-02	.6503E-02	.7959E-03	.2076E-03	-.1537E-03	-.5561E-03
10	.1502E-02	.6780E-02	.5076E-03	.2165E-03	-.1514E-03	-.5525E-03
11	.4911E-02	.4283E-02	.2451E-02	.2491E-03	-.1567E-03	-.5980E-03
12	.4911E-02	.3923E-02	.2544E-02	.2557E-03	-.1551E-03	-.6001E-03
13	.4791E-02	.3563E-02	.2585E-02	.2614E-03	-.1538E-03	-.6018E-03
14	.4550E-02	.3201E-02	.2571E-02	.2664E-03	-.1517E-03	-.6032E-03
15	.4067E-02	.3081E-02	.2386E-02	.2699E-03	-.1432E-03	-.6043E-03
16	.3583E-02	.2960E-02	.2197E-02	.2743E-03	-.1346E-03	-.6052E-03
17	.3099E-02	.2838E-02	.2001E-02	.2797E-03	-.1257E-03	-.6056E-03
18	.2493E-02	.2657E-02	.1754E-02	.2877E-03	-.1149E-03	-.6057E-03
19	.1888E-02	.2475E-02	.1494E-02	.2971E-03	-.1037E-03	-.6052E-03
20	.1283E-02	.2173E-02	.1242E-02	.3069E-03	-.9617E-04	-.6044E-03
21	.9503E-03	.7056E-02	.2115E-03	.2254E-03	-.1491E-03	-.5502E-03
22	.6788E-03	.1871E-02	.9782E-03	.3129E-03	-.9058E-04	-.6040E-03
23	.7382E-03	.7024E-02	.1323E-03	.2288E-03	-.1496E-03	-.5494E-03
24	.4829E-03	.1623E-02	.9132E-03	.3150E-03	-.8906E-04	-.6039E-03
25	.5260E-03	.6992E-02	.5237E-04	.2311E-03	-.1499E-03	-.5489E-03
26	.2877E-03	.1374E-02	.8474E-03	.3166E-03	-.8797E-04	-.6038E-03
27	.3138E-03	.6958E-02	-.2809E-04	.2325E-03	-.1501E-03	-.5486E-03
28	.9295E-04	.1125E-02	.7813E-03	.3175E-03	-.8731E-04	-.6038E-03
29	.1016E-03	.6924E-02	-.1088E-03	.2330E-03	-.1502E-03	-.5485E-03
30	-.1016E-03	.8760E-03	.7149E-03	.3178E-03	-.8710E-04	-.6038E-03
31	.4753E-02	.4520E-02	.2325E-02	.2402E-03	-.1582E-03	-.5946E-03
32	.4753E-02	.4882E-02	.2230E-02	.2336E-03	-.1587E-03	-.5916E-03
33	.4633E-02	.5243E-02	.2088E-02	.2268E-03	-.1600E-03	-.5881E-03
34	.4397E-02	.5601E-02	.1902E-02	.2199E-03	-.1618E-03	-.5835E-03
35	.3934E-02	.5722E-02	.1696E-02	.2152E-03	-.1608E-03	-.5781E-03
36	.3475E-02	.5843E-02	.1494E-02	.2097E-03	-.1596E-03	-.5726E-03
37	.3020E-02	.5965E-02	.1296E-02	.2007E-03	-.1581E-03	-.5671E-03
38	.2459E-02	.6133E-02	.1047E-02	.2029E-03	-.1552E-03	-.5609E-03
39	.4911E-02	.4641E-02	.2356E-02	.2424E-03	-.1579E-03	-.5955E-03
40	.4911E-02	.4402E-02	.2419E-02	.2469E-03	-.1572E-03	-.5972E-03
41	.4755E-02	.4034E-02	.2451E-02	.2491E-03	-.1567E-03	-.5980E-03
42	.4756E-02	.3668E-02	.2544E-02	.2557E-03	-.1551E-03	-.6001E-03
43	.4637E-02	.3301E-02	.2585E-02	.2614E-03	-.1538E-03	-.6018E-03
44	.4398E-02	.2935E-02	.2571E-02	.2664E-03	-.1517E-03	-.6032E-03
45	.3924E-02	.2811E-02	.2386E-02	.2699E-03	-.1432E-03	-.6043E-03
46	.3449E-02	.2685E-02	.2197E-02	.2743E-03	-.1346E-03	-.6052E-03
47	.2973E-02	.2559E-02	.2001E-02	.2797E-03	-.1257E-03	-.6056E-03
48	.2378E-02	.2369E-02	.1754E-02	.2877E-03	-.1149E-03	-.6057E-03

R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

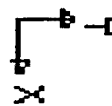
JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
1	.0000	.0000	.0000	.0000	.0000	.0000
2	.0000	.0000	.0000	.0000	.0000	.0000
3	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000
6	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000
8	.0000	.0000	.0000	.0000	.0000	.0000
9	1.5000	-1.5000	10.0000	.0000	.0000	.0000
10	.0000	.0000	.0000	.0000	.0000	.0000
11	.0000	.0000	.0000	.0000	.0000	.0000
12	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000
15	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000
17	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000
19	-1.5000	-1.5000	10.0000	.0000	.0000	.0000
20	.0000	.0000	.0000	.0000	.0000	.0000
21	.0000	.0000	.0000	.0000	.0000	.0000
22	.0000	.0000	.0000	.0000	.0000	.0000
23	.0000	.0000	.0000	.0000	.0000	.0000
24	.0000	.0000	.0000	.0000	.0000	.0000
25	.0000	.0000	.0000	.0000	.0000	.0000
26	.0000	.0000	.0000	.0000	.0000	.0000
27	.0000	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000
29	-1.0159	-6.9240	.1088	.0000	.0000	.0000
30	1.0159	-.8760	-7.1488	.0000	.0000	.0000
31	.0000	.0000	.0000	.0000	.0000	.0000
32	.0000	.0000	.0000	.0000	.0000	.0000
33	.0000	.0000	.0000	.0000	.0000	.0000
34	.0000	.0000	.0000	.0000	.0000	.0000
35	.0000	.0000	.0000	.0000	.0000	.0000
36	.0000	.0000	.0000	.0000	.0000	.0000
37	.0000	10.8000	-12.9600	.0000	.0000	.0000
38	.0000	.0000	.0000	.0000	.0000	.0000
39	.0000	.0000	.0000	.0000	.0000	.0000
40	.0000	.0000	.0000	.0000	.0000	.0000
41	.0000	.0000	.0000	.0000	.0000	.0000
42	.0000	.0000	.0000	.0000	.0000	.0000
43	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	.3186E-10	-.1630E-09	-.3038E-09	.1427E-09	.4127E-09	-.1003E-08

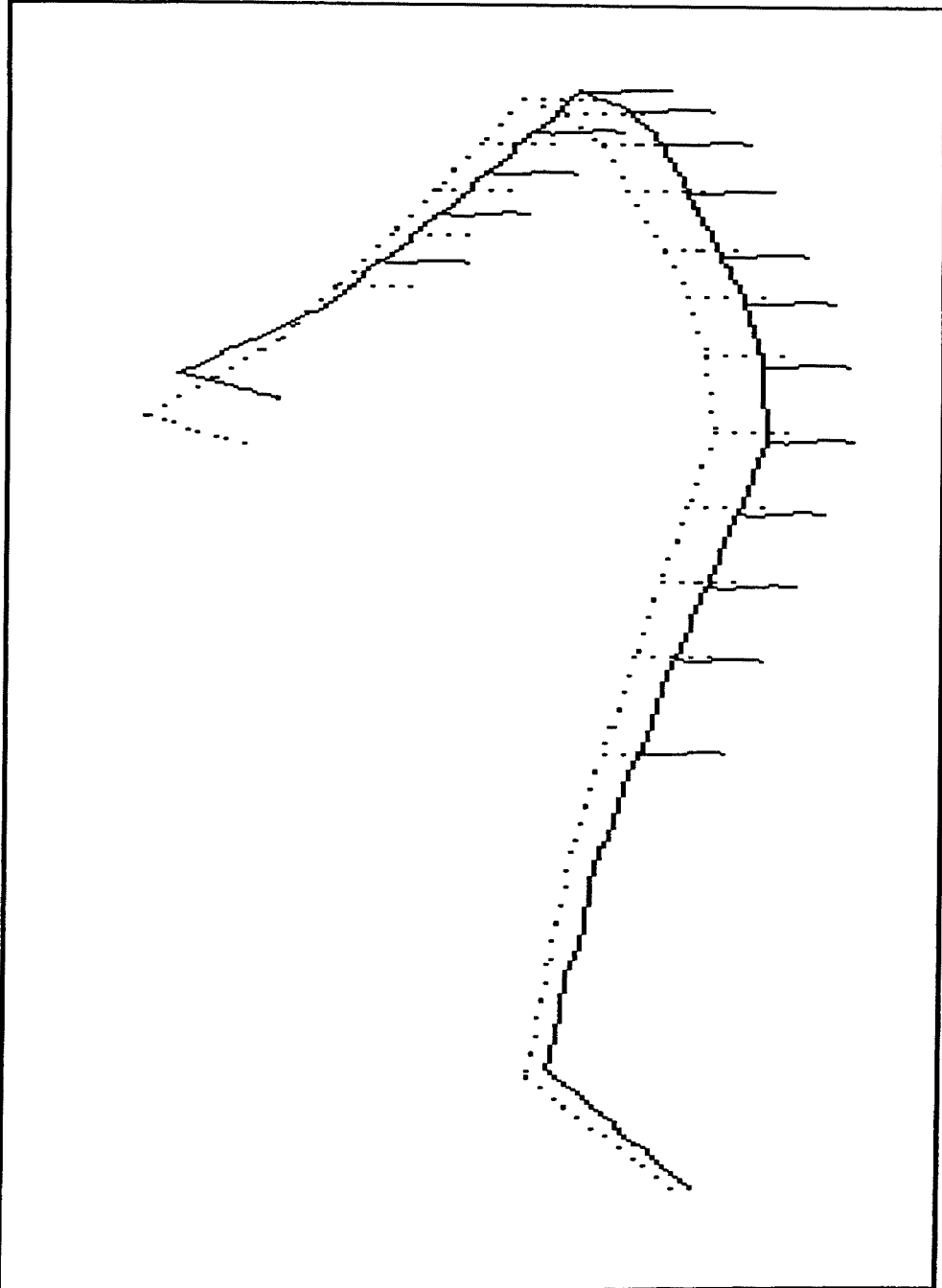


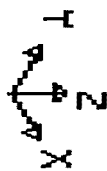
08P80

FILE : p1m372

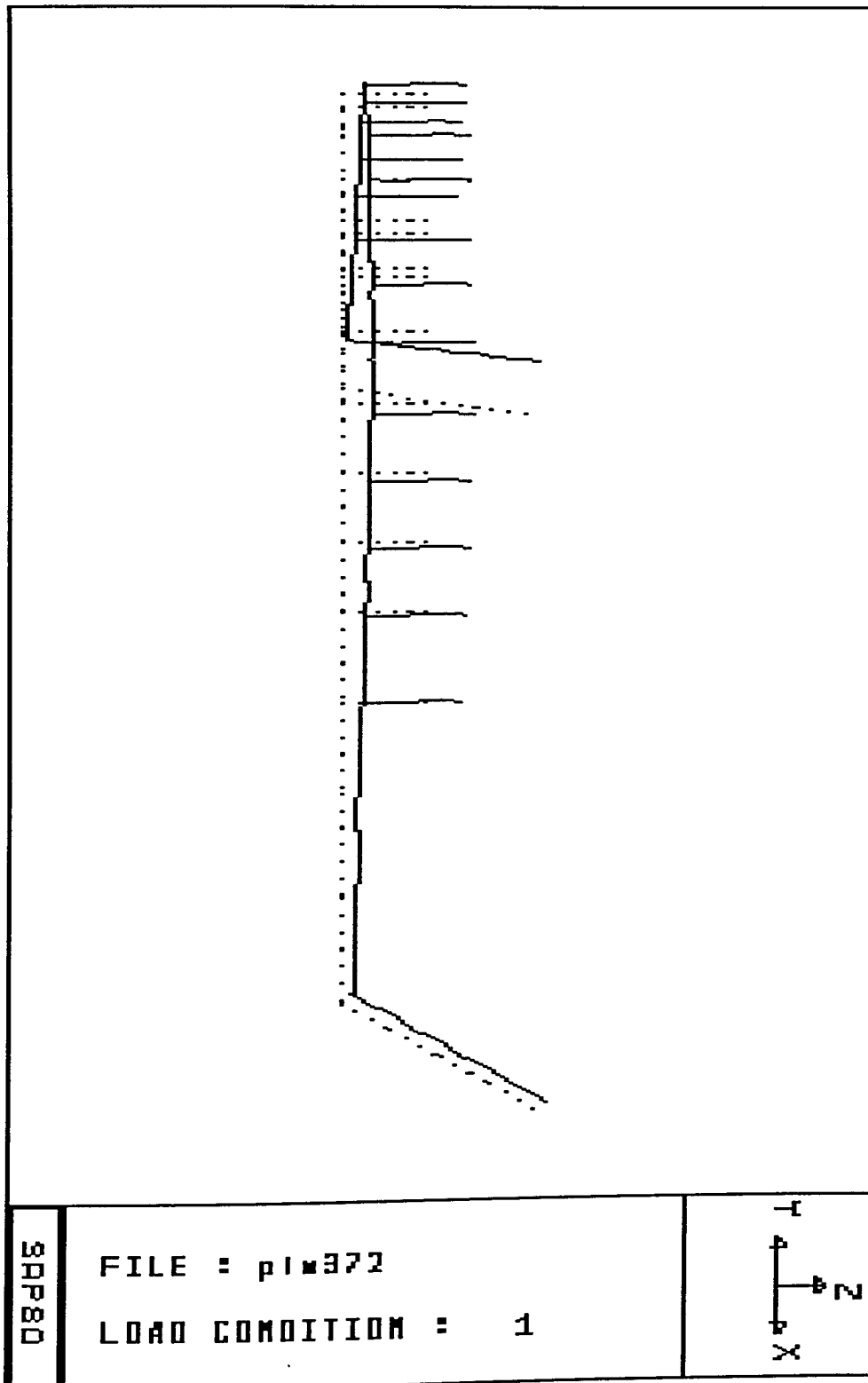
LOAD CONDITION : 1



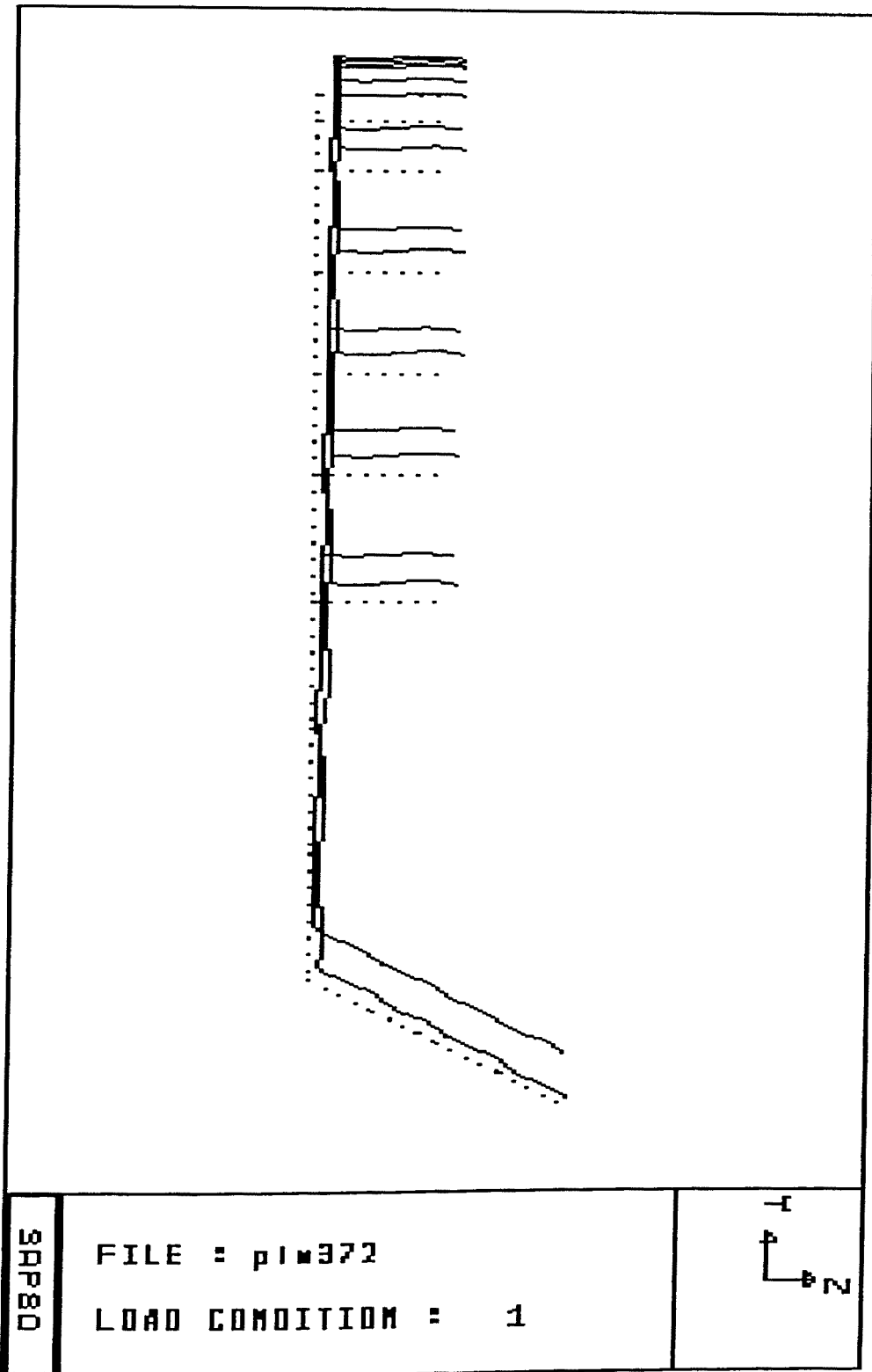


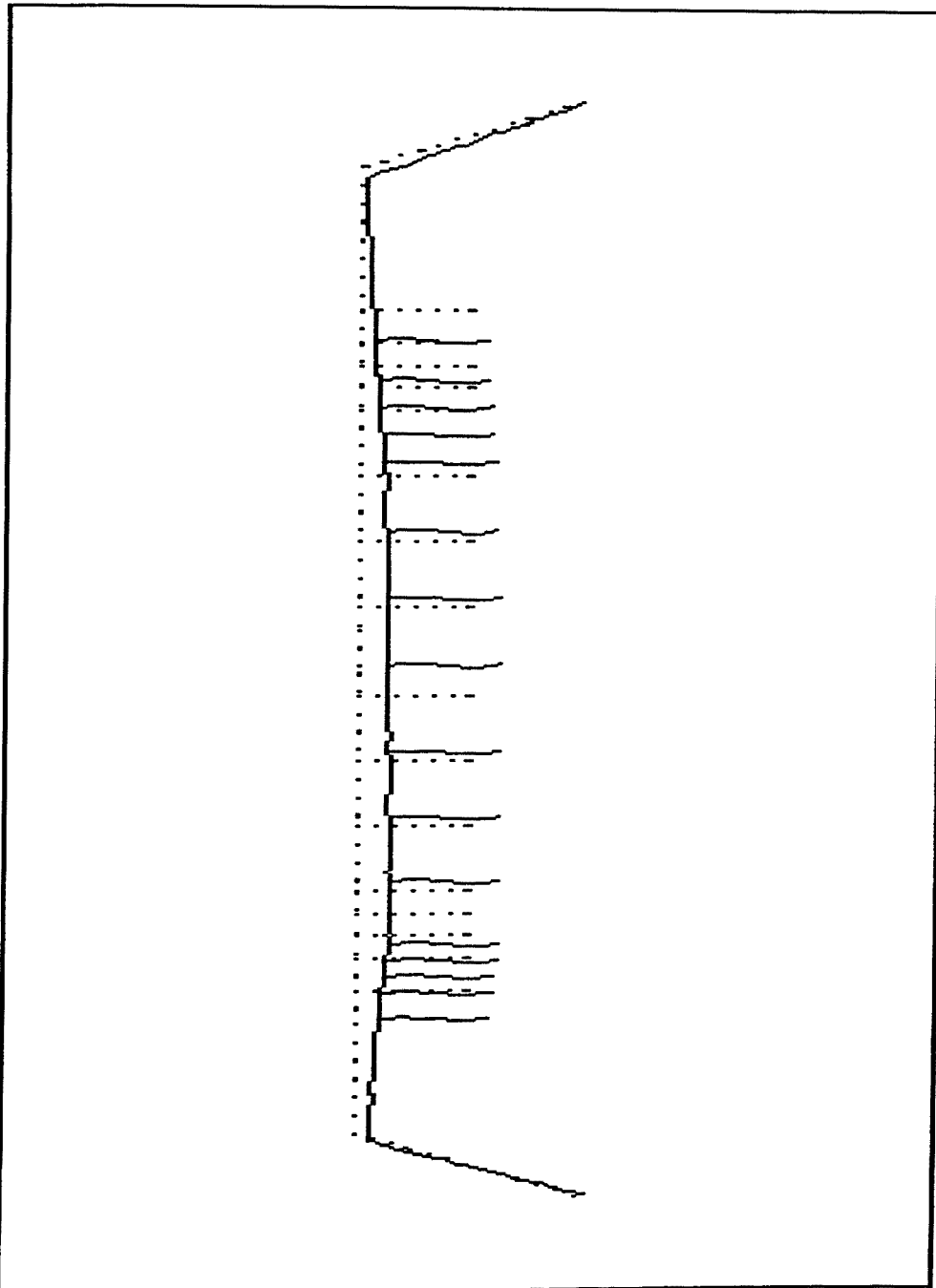
08P80	FILE : p1w372 LOAD CONDITION : 1	
-------	-------------------------------------	---------------------------------------------------------------------------------------

11702
11702
11702



112
111
110

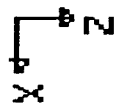




30P80

FILE : p1w372

LOAD CONDITION : 1

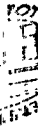


170
160
150
140
130
120
110
100
90
80
70
60
50
40
30
20
10
0

ARCHIVO T342. Segundo orden.

Todos los cálculos en la pieza 34, son de segundo orden, pues ya se ha determinado en los cálculos para la pieza 37, cuales son los Springs correspondientes.

Por tanto las cargas de todos estos archivos son las mismas que el segundo orden en 37, pero referidas a 34.



JOINT #	X	Y	Z
1	-.400	8.000	.000
2	-1.000	8.000	.000
3	-1.600	7.800	.000
4	-2.200	7.400	.000
5	-2.400	6.600	.000
6	-2.600	5.800	.000
7	-2.800	5.000	.000
8	-3.100	4.000	.000
9	-3.400	3.000	.000
10	-3.900	2.000	.000
11	.400	8.000	.000
12	1.000	8.000	.000
13	1.600	7.800	.000
14	2.200	7.400	.000
15	2.400	6.600	.000
16	2.600	5.800	.000
17	2.800	5.000	.000
18	3.100	4.000	.000
19	3.400	3.000	.000
20	3.900	2.000	.000
21	-4.400	1.000	.000
22	4.400	1.000	.000
23	-4.550	.750	.500
24	4.550	.750	.500
25	-4.700	.500	1.000
26	4.700	.500	1.000
27	-4.850	.250	1.500
28	4.850	.250	1.500
29	-5.000	.000	2.000
30	5.000	.000	2.000
31	-.400	8.000	1.000
32	-1.000	8.000	1.000
33	-1.600	7.800	1.000
34	-2.200	7.400	1.000
35	-2.400	6.600	1.000
36	-2.600	5.800	1.000
37	-2.800	5.000	1.000
38	-3.100	4.000	1.000
39	-.200	8.000	.000
40	.200	8.000	.000
41	.400	8.000	1.000
42	1.000	8.000	1.000
43	1.600	7.800	1.000
44	2.200	7.400	1.000
45	2.400	6.600	1.000
46	2.600	5.800	1.000
47	2.800	5.000	1.000
48	3.100	4.000	1.000

TRABAJO. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO T342)

SYSTEM

N=48 L=1

JOINT

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0

14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

: CONDILO IZQUIERDO
: CONDILO DERECHO

:
SPRINGS

29	K=1000,10000,10000,0,0,0	: APOYO ELASTICO (CONDILO IZQUIERDO)
30	K=10000,1000,10000,0,0,0	: APOYO ELASTICO (CONDILO DERECHO)
34	K=0,0,10000,0,0,0	: PIEZA DENTAL 34 COACCIONADA VERTICALMENTE

:
FRAME

NM=2					
1	A=1.0	J=.1	I=0.1,0.1	E=21000000	: PIEZAS DENTARIAS
2	A=3.0	J=.1	I=0.1,0.1	E=21000000	: ESTRUCTURA OSEA
1, 1, 31	M=1	LP=3,0			: PIEZAS DENTARIAS
2, 2, 32					
3, 3, 33					
4, 4, 34					
5, 5, 35					
6, 6, 36					
7, 7, 37					
8, 8, 38					
9, 11, 41					
10, 12, 42					
11, 13, 43					
12, 14, 44					
13, 15, 45					
14, 16, 46					
15, 17, 47					
16, 18, 48					
17, 30, 28	M=2				: ESTRUCTURA OSEA
18, 28, 26					
19, 26, 24					
20, 24, 22					
21, 22, 20					
22, 20, 19					

26, 16, 15
 27, 15, 14
 28, 14, 13
 29, 13, 12
 30, 12, 11
 31, 11, 40
 32, 40, 39
 33, 39, 1
 34, 1, 2
 35, 2, 3
 36, 3, 4
 37, 4, 5
 38, 5, 6
 39, 6, 7
 40, 7, 8
 41, 8, 9
 42, 9, 10
 43, 10, 21
 44, 21, 23
 45, 23, 25
 46, 25, 27
 47, 27, 29

LP=2,0

LOADS

9 L=1 F= 1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO IZQUIERDO)
 19 L=1 F= -1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO DERECHO)
 34 L=1 F=-10.80, 0, 0, 0, 0, 0 : ACCION TRANSVERSAL (TRABAJO)

PLOT

VP=15,29 VH=11,22

TRABAJO. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO T342)
 SAP80 V84.04

 ***** ECHO OF SAP INPUT DATA *****

TOTAL NUMBER OF JOINTS = 48
 TOTAL NUMBER OF LOAD CONDITIONS = 1

PRELIMINARY SCAN OF FRAME DATA

NM=2

SECTION	PROPERTY DATA			
1	A=1.0	J=.1	I=0.1,0.1	E=21000000 :
2	A=3.0	J=.1	I=0.1,0.1	E=21000000 :

FRAME ELEMENT DATA

1, 1, 31 M=1 LP=3,0 :
 2, 2, 32
 3, 3, 33
 4, 4, 34
 5, 5, 35
 6, 6, 36
 7, 7, 37
 8, 8, 38
 9, 11, 41
 10, 12, 42
 11, 13, 43
 12, 14, 44
 13, 15, 45
 14, 16, 46

18, 28, 26
19, 26, 24
20, 24, 22
21, 22, 20
22, 20, 19
23, 19, 18
24, 18, 17
25, 17, 16
26, 16, 15
27, 15, 14
28, 14, 13
29, 13, 12
30, 12, 11
31, 11, 40
32, 40, 39
33, 39, 1
34, 1, 2
35, 2, 3
36, 3, 4
37, 4, 5
38, 5, 6
39, 6, 7
40, 7, 8
41, 8, 9
42, 9, 10
43, 10, 21
44, 21, 23
45, 23, 25
46, 25, 27
47, 27, 29
:

LP=2, 0

E Q U I L I B R I U M E Q U A T I O N N U M B E R S
(ONE EQUATION FOR EACH UNKNOWN DISPLACEMENT)

JOINT #	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	157	158	159	160	161	162
2	169	170	171	172	173	174
3	181	182	183	184	185	186
4	193	194	195	196	197	198
5	205	206	207	208	209	210
6	217	218	219	220	221	222
7	229	230	231	232	233	234
8	241	242	243	244	245	246
9	247	248	249	250	251	252
10	253	254	255	256	257	258
11	133	134	135	136	137	138
12	121	122	123	124	125	126
13	109	110	111	112	113	114
14	97	98	99	100	101	102
15	85	86	87	88	89	90
16	73	74	75	76	77	78
17	61	62	63	64	65	66
18	49	50	51	52	53	54
19	37	38	39	40	41	42
20	31	32	33	34	35	36
21	259	260	261	262	263	264
22	25	26	27	28	29	30
23	265	266	267	268	269	270
24	19	20	21	22	23	24
25	271	272	273	274	275	276
26	13	14	15	16	17	18
27	277	278	279	280	281	282
28	7	8	9	10	11	12
29	283	284	285	286	287	288
30	1	2	3	4	5	6
31	151	152	153	154	155	156

35	199	200	201	202	²²⁷ 203	204
36	211	212	213	214	215	216
37	223	224	225	226	227	228
38	235	236	237	238	239	240
39	145	146	147	148	149	150
40	139	140	141	142	143	144
41	127	128	129	130	131	132
42	115	116	117	118	119	120
43	103	104	105	106	107	108
44	91	92	93	94	95	96
45	79	80	81	82	83	84
46	67	68	69	70	71	72
47	55	56	57	58	59	60
48	43	44	45	46	47	48

I N P U T J O I N T D A T A

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

:
:



JOINT #	X	Y	Z
1	-.400	8.000	.000
2	-1.000	8.000	.000
3	-1.600	7.800	.000
4	-2.200	7.400	.000
5	-2.400	6.600	.000
6	-2.600	5.800	.000
7	-2.800	5.000	.000
8	-3.100	4.000	.000
9	-3.400	3.000	.000
10	-3.900	2.000	.000
11	.400	8.000	.000
12	1.000	8.000	.000
13	1.600	7.800	.000
14	2.200	7.400	.000
15	2.400	6.600	.000
16	2.600	5.800	.000
17	2.800	5.000	.000
18	3.100	4.000	.000
19	3.400	3.000	.000
20	3.900	2.000	.000
21	-4.400	1.000	.000
22	4.400	1.000	.000
23	-4.550	.750	.500
24	4.550	.750	.500
25	-4.700	.500	1.000
26	4.700	.500	1.000
27	-4.850	.250	1.500
28	4.850	.250	1.500
29	-5.000	.000	2.000
30	5.000	.000	2.000
31	-.400	8.000	1.000
32	-1.000	8.000	1.000
33	-1.600	7.800	1.000
34	-2.200	7.400	1.000
35	-2.400	6.600	1.000
36	-2.600	5.800	1.000
37	-2.800	5.000	1.000
38	-3.100	4.000	1.000
39	-.200	8.000	.000
40	.200	8.000	.000
41	.400	8.000	1.000
42	1.000	8.000	1.000
43	1.600	7.800	1.000
44	2.200	7.400	1.000
45	2.400	6.600	1.000
46	2.600	5.800	1.000
47	2.800	5.000	1.000
48	3.100	4.000	1.000

TRABAJO. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO T342)
SAP80 V85.02

*** ECHO OF FRAME INPUT DATA ***

NUMBER OF MEMBER PROPERTIES = 2
NUMBER OF DIFF. LOAD PATTERNS = 0

MEMBER PROPERTY NUMBER ----- = 1 SYMBOL= 1
AXIAL AREA, A ----- = 1.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100

5. 11. 1982
5. 11. 1982

MEMBER PROPERTY NUMBER ----- = 2 SYMBOL= 2
AXIAL AREA, A ----- = 3.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

EL.	I	J	P1	P2	MAT	EI	EJ	RZ	RELEASES	MI	MJ	LOAD # / PATTERN
												1
1	1	31	3	0	1	.0	.0	.00	000000	0	0	0
2	2	32	3	0	1	.0	.0	.00	000000	0	0	0
3	3	33	3	0	1	.0	.0	.00	000000	0	0	0
4	4	34	3	0	1	.0	.0	.00	000000	0	0	0
5	5	35	3	0	1	.0	.0	.00	000000	0	0	0
6	6	36	3	0	1	.0	.0	.00	000000	0	0	0
7	7	37	3	0	1	.0	.0	.00	000000	0	0	0
8	8	38	3	0	1	.0	.0	.00	000000	0	0	0
9	11	41	3	0	1	.0	.0	.00	000000	0	0	0
10	12	42	3	0	1	.0	.0	.00	000000	0	0	0
11	13	43	3	0	1	.0	.0	.00	000000	0	0	0
12	14	44	3	0	1	.0	.0	.00	000000	0	0	0
13	15	45	3	0	1	.0	.0	.00	000000	0	0	0
14	16	46	3	0	1	.0	.0	.00	000000	0	0	0
15	17	47	3	0	1	.0	.0	.00	000000	0	0	0
16	18	48	3	0	1	.0	.0	.00	000000	0	0	0
17	30	28	3	0	2	.0	.0	.00	000000	0	0	0
18	28	26	3	0	2	.0	.0	.00	000000	0	0	0
19	26	24	3	0	2	.0	.0	.00	000000	0	0	0
20	24	22	3	0	2	.0	.0	.00	000000	0	0	0
21	22	20	3	0	2	.0	.0	.00	000000	0	0	0
22	20	19	3	0	2	.0	.0	.00	000000	0	0	0
23	19	18	3	0	2	.0	.0	.00	000000	0	0	0
24	18	17	3	0	2	.0	.0	.00	000000	0	0	0
25	17	16	3	0	2	.0	.0	.00	000000	0	0	0
26	16	15	3	0	2	.0	.0	.00	000000	0	0	0
27	15	14	3	0	2	.0	.0	.00	000000	0	0	0
28	14	13	3	0	2	.0	.0	.00	000000	0	0	0
29	13	12	3	0	2	.0	.0	.00	000000	0	0	0
30	12	11	2	0	2	.0	.0	.00	000000	0	0	0
31	11	40	2	0	2	.0	.0	.00	000000	0	0	0
32	40	39	2	0	2	.0	.0	.00	000000	0	0	0
33	39	1	2	0	2	.0	.0	.00	000000	0	0	0
34	1	2	2	0	2	.0	.0	.00	000000	0	0	0
35	2	3	2	0	2	.0	.0	.00	000000	0	0	0
36	3	4	2	0	2	.0	.0	.00	000000	0	0	0
37	4	5	2	0	2	.0	.0	.00	000000	0	0	0
38	5	6	2	0	2	.0	.0	.00	000000	0	0	0
39	6	7	2	0	2	.0	.0	.00	000000	0	0	0
40	7	8	2	0	2	.0	.0	.00	000000	0	0	0
41	8	9	2	0	2	.0	.0	.00	000000	0	0	0
42	9	10	2	0	2	.0	.0	.00	000000	0	0	0
43	10	21	2	0	2	.0	.0	.00	000000	0	0	0
44	21	23	2	0	2	.0	.0	.00	000000	0	0	0
45	23	25	2	0	2	.0	.0	.00	000000	0	0	0
46	25	27	2	0	2	.0	.0	.00	000000	0	0	0
47	27	29	2	0	2	.0	.0	.00	000000	0	0	0

TOTAL WEIGHT OF MATERIALS= .000000
TOTAL MASS OF SYSTEM = .000000

REVISTAS

J O I N T L O A D S A N D D I S P L A C E M E N T S

NODE L#	F/U	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
9	1 F	.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00	.000E+00
19	1 F	-.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00	.000E+00
34	1 F	-.108E+02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

S P R I N G A N D M A S S D A T A

JOINT	K/M	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
29	K	.100E+04	.100E+05	.100E+05	.000E+00	.000E+00	.000E+00
30	K	.100E+05	.100E+04	.100E+05	.000E+00	.000E+00	.000E+00
34	K	.000E+00	.000E+00	.100E+05	.000E+00	.000E+00	.000E+00

EVALUATION OF PROFILE OF STIFFNESS MATRIX

NUMBER OF EQUATIONS TO BE FORMED = 288
 NUMBER OF EQUATIONS TO BE REDUCED = 288
 NUMBER OF LOAD CONDITIONS = 1

FORMATION OF BLOCK IN STIFFNESS MATRIX

BLOCK NUMBER = 1 OF 1
 LOWEST EQUATION NUMBER = 1
 HIGHEST EQUATION NUMBER = 288
 NUMBER OF TERMS IN BLOCK = 2700
 LOWEST COUPLED BLOCK NUMBER = 1

FORM LOAD BLOCK NUMBER 1

TRABAJO. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO T342)

SAP80 V85.02

 ***** J O I N T D I S P L A C E M E N T S *****

LOAD CONDITION 1 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	-.7697E-02	.2334E-02	.1019E-02	.1460E-04	-.1569E-03	.7636E-03
2	-.7697E-02	.1877E-02	.9233E-03	.1225E-05	-.1613E-03	.7584E-03
3	-.7546E-02	.1424E-02	.8255E-03	-.1419E-04	-.1687E-03	.7545E-03
4	-.7244E-02	.9717E-03	.7301E-03	-.3109E-04	-.1796E-03	.7524E-03
5	-.6643E-02	.8215E-03	.7220E-03	-.3897E-04	-.1826E-03	.7514E-03
6	-.6042E-02	.6714E-03	.7190E-03	-.4554E-04	-.1860E-03	.7497E-03
7	-.5443E-02	.5218E-03	.7201E-03	-.5079E-04	-.1898E-03	.7476E-03
8	-.4697E-02	.2982E-03	.7158E-03	-.5584E-04	-.1953E-03	.7442E-03
9	-.3955E-02	.7562E-04	.7138E-03	-.5882E-04	-.2014E-03	.7402E-03
10	-.3217E-02	-.2933E-03	.6723E-03	-.6312E-04	-.2072E-03	.7363E-03
11	-.7697E-02	.2948E-02	.1142E-02	.3242E-04	-.1502E-03	.7727E-03
12	-.7697E-02	.3414E-02	.1230E-02	.4579E-04	-.1445E-03	.7812E-03
13	-.7539E-02	.3886E-02	.1305E-02	.5611E-04	-.1396E-03	.7913E-03
14	-.7220E-02	.4365E-02	.1363E-02	.6406E-04	-.1324E-03	.8038E-03
15	-.6572E-02	.4527E-02	.1334E-02	.6947E-04	-.1110E-03	.8176E-03
16	-.5913E-02	.4691E-02	.1296E-02	.7585E-04	-.8950E-04	.8298E-03
17	-.5244E-02	.4858E-02	.1248E-02	.8322E-04	-.6770E-04	.8404E-03
18	-.4398E-02	.5112E-02	.1176E-02	.9362E-04	-.4109E-04	.8517E-03
19	-.3542E-02	.5369E-02	.1085E-02	.1056E-03	-.1401E-04	.8606E-03
20	-.2677E-02	.5801E-02	.9741E-03	.1177E-03	.7927E-05	.8674E-03
21	-.2482E-02	-.6606E-03	.6342E-03	-.7053E-04	-.2114E-03	.7337E-03
22	-.1808E-02	.6235E-02	.8428E-03	.1262E-03	.2803E-04	.8713E-03

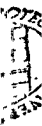
27	-.2249E-02	-.8783E-03	.5949E-03	-.7733E-04	-.2110E-03	.7319E-03
28	-.1101E-02	.6429E-02	.7279E-03	.1365E-03	.3908E-04	.8738E-03
29	-.2171E-02	-.9492E-03	.5826E-03	-.7778E-04	-.2109E-03	.7318E-03
30	-.8629E-03	.6492E-02	.6877E-03	.1372E-03	.3982E-04	.8739E-03
31	-.7854E-02	.2319E-02	.1019E-02	.1460E-04	-.1569E-03	.7636E-03
32	-.7858E-02	.1876E-02	.9233E-03	.1225E-05	-.1613E-03	.7584E-03
33	-.7714E-02	.1438E-02	.8255E-03	-.1419E-04	-.1687E-03	.7545E-03
34	-.7426E-02	.1003E-02	.7297E-03	-.3109E-04	-.1821E-03	.7524E-03
35	-.6826E-02	.8604E-03	.7220E-03	-.3897E-04	-.1826E-03	.7514E-03
36	-.6228E-02	.7170E-03	.7190E-03	-.4554E-04	-.1860E-03	.7497E-03
37	-.5633E-02	.5726E-03	.7201E-03	-.5079E-04	-.1898E-03	.7476E-03
38	-.4893E-02	.3540E-03	.7158E-03	-.5584E-04	-.1953E-03	.7442E-03
39	-.7697E-02	.2487E-02	.1050E-02	.1905E-04	-.1553E-03	.7657E-03
40	-.7697E-02	.2794E-02	.1111E-02	.2797E-04	-.1519E-03	.7702E-03
41	-.7847E-02	.2916E-02	.1142E-02	.3242E-04	-.1502E-03	.7727E-03
42	-.7841E-02	.3369E-02	.1230E-02	.4579E-04	-.1445E-03	.7812E-03
43	-.7679E-02	.3830E-02	.1305E-02	.5611E-04	-.1396E-03	.7913E-03
44	-.7353E-02	.4300E-02	.1363E-02	.6406E-04	-.1324E-03	.8038E-03
45	-.6683E-02	.4457E-02	.1334E-02	.6947E-04	-.1110E-03	.8176E-03
46	-.6002E-02	.4615E-02	.1296E-02	.7585E-04	-.8950E-04	.8298E-03
47	-.5312E-02	.4775E-02	.1248E-02	.8322E-04	-.6770E-04	.8404E-03
48	-.4439E-02	.5018E-02	.1176E-02	.9362E-04	-.4109E-04	.8517E-03

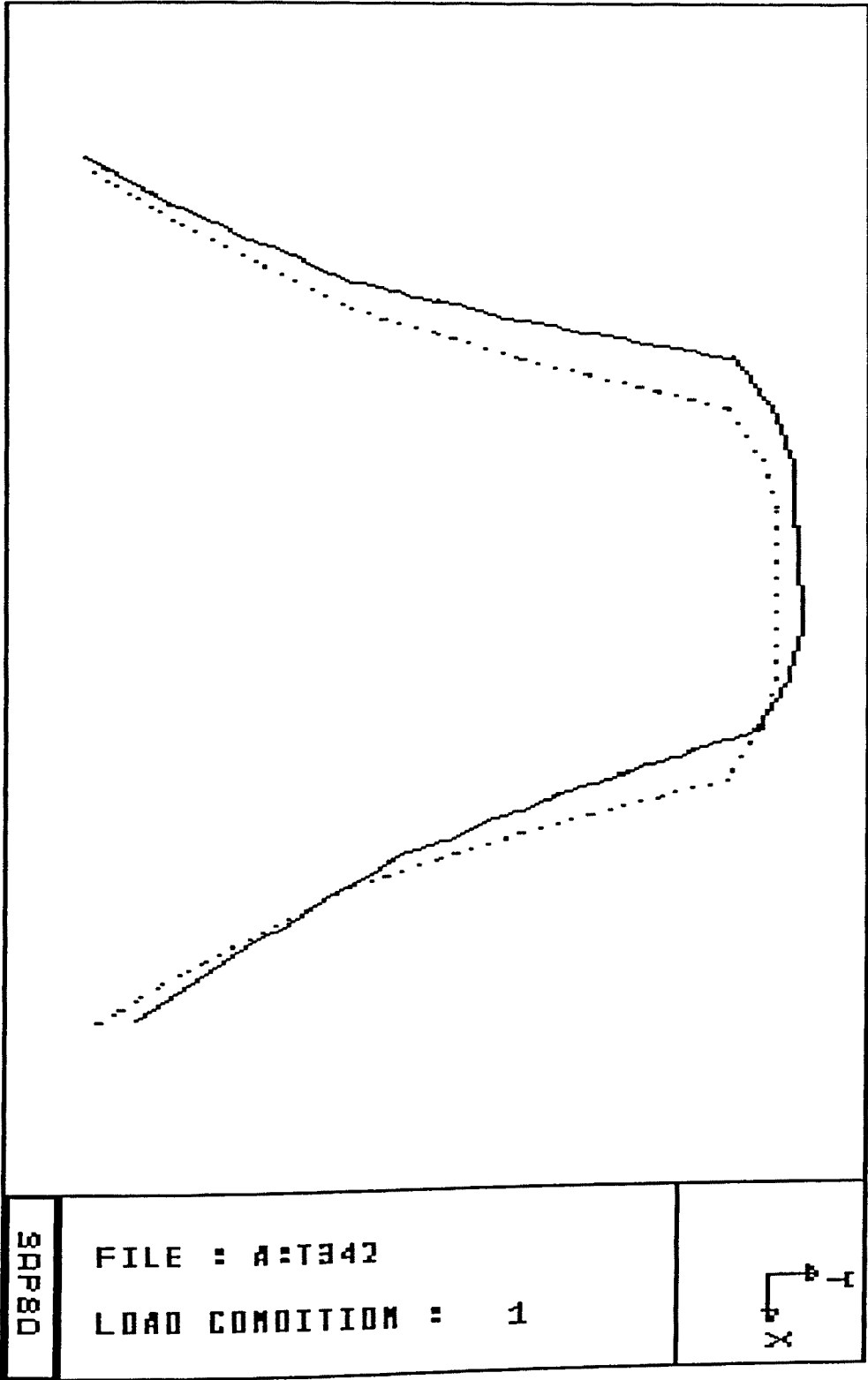
REACTIONS AND APPLIED FORCES

LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

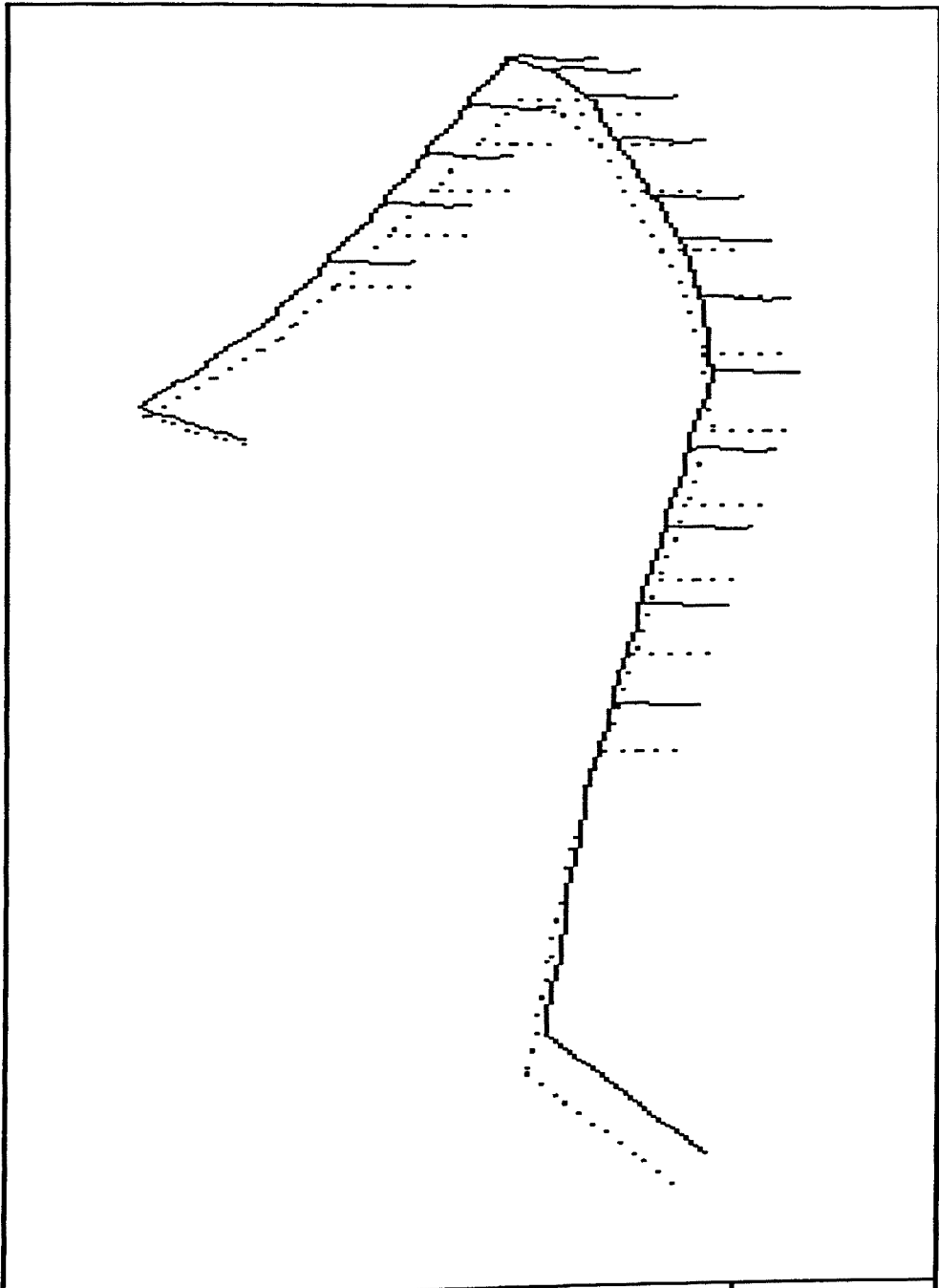
JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
1	.0000	.0000	.0000	.0000	.0000	.0000
2	.0000	.0000	.0000	.0000	.0000	.0000
3	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000
6	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000
8	.0000	.0000	.0000	.0000	.0000	.0000
9	1.5000	-1.5000	10.0000	.0000	.0000	.0000
10	.0000	.0000	.0000	.0000	.0000	.0000
11	.0000	.0000	.0000	.0000	.0000	.0000
12	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000
15	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000
17	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000
19	-1.5000	-1.5000	10.0000	.0000	.0000	.0000
20	.0000	.0000	.0000	.0000	.0000	.0000
21	.0000	.0000	.0000	.0000	.0000	.0000
22	.0000	.0000	.0000	.0000	.0000	.0000
23	.0000	.0000	.0000	.0000	.0000	.0000
24	.0000	.0000	.0000	.0000	.0000	.0000
25	.0000	.0000	.0000	.0000	.0000	.0000
26	.0000	.0000	.0000	.0000	.0000	.0000
27	.0000	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000
29	2.1715	9.4920	-5.8259	.0000	.0000	.0000
30	8.6285	-6.4920	-6.8768	.0000	.0000	.0000
31	.0000	.0000	.0000	.0000	.0000	.0000
32	.0000	.0000	.0000	.0000	.0000	.0000
33	.0000	.0000	.0000	.0000	.0000	.0000
34	-10.8000	.0000	-7.2973	.0000	.0000	.0000
35	.0000	.0000	.0000	.0000	.0000	.0000
36	.0000	.0000	.0000	.0000	.0000	.0000
37	.0000	.0000	.0000	.0000	.0000	.0000

41	.0000	.0000	.0000	.0000	.0000	.0000
42	.0000	.0000	.0000	.0000	.0000	.0000
43	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	-.8015E-11	.8321E-10	.9105E-10	.1784E-09	.8685E-10	.6084E-09





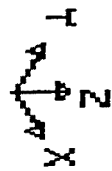
ACTIVE



99P80

FILE : A:T342

LOAD CONDITION : 1



REVISED

TRABAJO. CONTACTO 34. SEGUNDO ORDEN . MAYOR ANGULO (ARCHIVO T342A)
SYSTEM

N=48 L=1

JOINT

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

: CONDILO IZQUIERDO
: CONDILO DERECHO

:
SPRINGS

29	K=1000,10000,10000,0,0,0	: APOYO ELASTICO (CONDILO IZQUIERDO)
30	K=10000,1000,10000,0,0,0	: APOYO ELASTICO (CONDILO DERECHO)
34	K=0,0,10000,0,0,0	: PIEZA DENTAL 34 COACCIONADA VERTICALMENTE

:
FRAME

NM=2					
1	A=1.0	J=.1	I=0.1,0.1	E=21000000	: PIEZAS DENTARIAS
2	A=3.0	J=.1	I=0.1,0.1	E=21000000	: ESTRUCTURA OSEA
1, 1, 31		M=1	LP=3,0		: PIEZAS DENTARIAS
2, 2, 32					
3, 3, 33					
4, 4, 34					

8, 8, 38
 9, 11, 41
 10,12, 42
 11,13, 43
 12,14, 44
 13,15, 45
 14,16, 46
 15,17, 47
 16,18, 48
 17,30, 28
 18,28, 26
 19, 26, 24
 20, 24, 22
 21, 22, 20
 22, 20, 19
 23, 19, 18
 24, 18, 17
 25, 17, 16
 26, 16, 15
 27, 15, 14
 28, 14, 13
 29, 13, 12
 30, 12, 11
 31, 11, 40
 32, 40, 39
 33, 39, 1
 34, 1, 2
 35, 2, 3
 36, 3, 4
 37, 4, 5
 38, 5, 6
 39, 6, 7
 40, 7, 8
 41, 8, 9
 42, 9, 10
 43, 10, 21
 44, 21, 23
 45, 23, 25
 46, 25, 27
 47, 27, 29
 :

M=2

: ESTRUCTURA OSEA

LP=2,0

LOADS

9 L=1 F= 1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO IZQUIERDO)
 19 L=1 F= -1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO DERECHO)
 34 L=1 F=-21.60, 0, 0, 0, 0, 0 : ACCION TRANSVERSAL (TRABAJO)

PLOT

VP=15,29 VH=11,22

:
 TRABAJO. CONTACTO 34. SEGUNDO ORDEN . MAYOR ANGULO (ARCHIVO T342A)
 SAP80 V84.04

 * * * * * E C H O O F S A P I N P U T D A T A * * * * *
 * * * * *

TOTAL NUMBER OF JOINTS = 48
 TOTAL NUMBER OF LOAD CONDITIONS = 1

P R E L I M I N A R Y S C A N O F F R A M E D A T A

NM=2

S E C T I O N P R O P E R T Y D A T A

FRAME ELEMENT DATA
 1, 1, 31 M=1 LP=3,0 :
 2, 2, 32
 3, 3, 33
 4, 4, 34
 5, 5, 35
 6, 6, 36
 7, 7, 37
 8, 8, 38
 9, 11, 41
 10, 12, 42
 11, 13, 43
 12, 14, 44
 13, 15, 45
 14, 16, 46
 15, 17, 47
 16, 18, 48
 17, 30, 28 M=2 :
 18, 28, 26
 19, 26, 24
 20, 24, 22
 21, 22, 20
 22, 20, 19
 23, 19, 18
 24, 18, 17
 25, 17, 16
 26, 16, 15
 27, 15, 14
 28, 14, 13
 29, 13, 12
 30, 12, 11 LP=2, 0
 31, 11, 40
 32, 40, 39
 33, 39, 1
 34, 1, 2
 35, 2, 3
 36, 3, 4
 37, 4, 5
 38, 5, 6
 39, 6, 7
 40, 7, 8
 41, 8, 9
 42, 9, 10
 43, 10, 21
 44, 21, 23
 45, 23, 25
 46, 25, 27
 47, 27, 29
 :

EQUILIBRIUM EQUATION NUMBERS
 (ONE EQUATION FOR EACH UNKNOWN DISPLACEMENT)

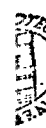
JOINT #	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	157	158	159	160	161	162
2	169	170	171	172	173	174
3	181	182	183	184	185	186
4	193	194	195	196	197	198
5	205	206	207	208	209	210
6	217	218	219	220	221	222
7	229	230	231	232	233	234
8	241	242	243	244	245	246
9	247	248	249	250	251	252
10	253	254	255	256	257	258
11	133	134	135	136	137	138
12	121	122	123	124	125	126
13	109	110	111	112	113	114

17	61	62	63	64	65	66
18	49	50	51	52	53	54
19	37	38	39	40	41	42
20	31	32	33	34	35	36
21	259	260	261	262	263	264
22	25	26	27	28	29	30
23	265	266	267	268	269	270
24	19	20	21	22	23	24
25	271	272	273	274	275	276
26	13	14	15	16	17	18
27	277	278	279	280	281	282
28	7	8	9	10	11	12
29	283	284	285	286	287	288
30	1	2	3	4	5	6
31	151	152	153	154	155	156
32	163	164	165	166	167	168
33	175	176	177	178	179	180
34	187	188	189	190	191	192
35	199	200	201	202	203	204
36	211	212	213	214	215	216
37	223	224	225	226	227	228
38	235	236	237	238	239	240
39	145	146	147	148	149	150
40	139	140	141	142	143	144
41	127	128	129	130	131	132
42	115	116	117	118	119	120
43	103	104	105	106	107	108
44	91	92	93	94	95	96
45	79	80	81	82	83	84
46	67	68	69	70	71	72
47	55	56	57	58	59	60
48	43	44	45	46	47	48

INPUT JOINT DATA

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1

:
:



35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1
:			

GENERATED JOINT COORDINATES

JOINT #	X	Y	Z
1	-.400	8.000	.000
2	-1.000	8.000	.000
3	-1.600	7.800	.000
4	-2.200	7.400	.000
5	-2.400	6.600	.000
6	-2.600	5.800	.000
7	-2.800	5.000	.000
8	-3.100	4.000	.000
9	-3.400	3.000	.000
10	-3.900	2.000	.000
11	.400	8.000	.000
12	1.000	8.000	.000
13	1.600	7.800	.000
14	2.200	7.400	.000
15	2.400	6.600	.000
16	2.600	5.800	.000
17	2.800	5.000	.000
18	3.100	4.000	.000
19	3.400	3.000	.000
20	3.900	2.000	.000
21	-4.400	1.000	.000
22	4.400	1.000	.000
23	-4.550	.750	.500
24	4.550	.750	.500
25	-4.700	.500	1.000
26	4.700	.500	1.000
27	-4.850	.250	1.500
28	4.850	.250	1.500
29	-5.000	.000	2.000
30	5.000	.000	2.000
31	-.400	8.000	1.000
32	-1.000	8.000	1.000
33	-1.600	7.800	1.000
34	-2.200	7.400	1.000
35	-2.400	6.600	1.000
36	-2.600	5.800	1.000
37	-2.800	5.000	1.000
38	-3.100	4.000	1.000
39	-.200	8.000	.000
40	.200	8.000	.000
41	.400	8.000	1.000
42	1.000	8.000	1.000
43	1.600	7.800	1.000
44	2.200	7.400	1.000
45	2.400	6.600	1.000
46	2.600	5.800	1.000
47	2.800	5.000	1.000
48	3.100	4.000	1.000

EX-117

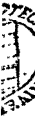
*** ECHO OF FRAME INPUT DATA ***

NUMBER OF MEMBER PROPERTIES = 2
NUMBER OF DIFF. LOAD PATTERNS = 0

MEMBER PROPERTY NUMBER ----- = 1 SYMBOL= 1
AXIAL AREA, A ----- = 1.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373(USED FOR TOR & SHEAR)

MEMBER PROPERTY NUMBER ----- = 2 SYMBOL= 2
AXIAL AREA, A ----- = 3.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373(USED FOR TOR & SHEAR)

Table with columns: EL., I, J, P1, P2, MAT, EI, EJ, RZ, RELEASES, MI, MJ, LOAD # / PATTERN. It lists member properties for 36 members.



41	8	9	2	0	2	.0	.0	.00	000000	0	0	0
42	9	10	2	0	2	.0	.0	.00	000000	0	0	0
43	10	21	2	0	2	.0	.0	.00	000000	0	0	0
44	21	23	2	0	2	.0	.0	.00	000000	0	0	0
45	23	25	2	0	2	.0	.0	.00	000000	0	0	0
46	25	27	2	0	2	.0	.0	.00	000000	0	0	0
47	27	29	2	0	2	.0	.0	.00	000000	0	0	0

TOTAL WEIGHT OF MATERIALS= .000000
TOTAL MASS OF SYSTEM = .000000

TRABAJO. CONTACTO 34. SEGUNDO ORDEN . MAYOR ANGULO (ARCHIVO T342A)
SAP80 V85.02

ASSEMBLY OF EQUATIONS *****

JOINT LOADS AND DISPLACEMENTS

NODE L#	F/U	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
9	1	F	.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00
19	1	F	-.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00
34	1	F	-.216E+02	.000E+00	.000E+00	.000E+00	.000E+00

SPRING AND MASS DATA

JOINT	K/M	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
29	K	.100E+04	.100E+05	.100E+05	.000E+00	.000E+00	.000E+00
30	K	.100E+05	.100E+04	.100E+05	.000E+00	.000E+00	.000E+00
34	K	.000E+00	.000E+00	.100E+05	.000E+00	.000E+00	.000E+00

EVALUATION OF PROFILE OF STIFFNESS MATRIX

NUMBER OF EQUATIONS TO BE FORMED = 288
NUMBER OF EQUATIONS TO BE REDUCED = 288
NUMBER OF LOAD CONDITIONS = 1

FORMATION OF BLOCK IN STIFFNESS MATRIX

BLOCK NUMBER = 1 OF 1
LOWEST EQUATION NUMBER = 1
HIGHEST EQUATION NUMBER = 288
NUMBER OF TERMS IN BLOCK = 2700
LOWEST COUPLED BLOCK NUMBER = 1

FORM LOAD BLOCK NUMBER 1
TRABAJO. CONTACTO 34. SEGUNDO ORDEN . MAYOR ANGULO (ARCHIVO T342A)
SAP80 V85.02

JOINT DISPLACEMENTS *****

LOAD CONDITION 1 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	-.016460	.005339	.001119	.000016	-.000211	.001642
2	-.016460	.004358	.000990	-.000003	-.000218	.001629
3	-.016135	.003383	.000859	-.000026	-.000231	.001620
4	-.015489	.002413	.000730	-.000051	-.000248	.001614

9	-.008441	.000493	.000764	-.000102	-.000270	.001587
10	-.006857	-.000299	.000736	-.000115	-.000277	.001580
11	-.016460	.006660	.001283	.000041	-.000199	.001662
12	-.016460	.007663	.001400	.000060	-.000190	.001681
13	-.016121	.008677	.001499	.000074	-.000182	.001702
14	-.015435	.009707	.001572	.000084	-.000169	.001729
15	-.014039	.010055	.001533	.000090	-.000135	.001758
16	-.012622	.010409	.001481	.000099	-.000100	.001784
17	-.011186	.010768	.001415	.000108	-.000065	.001806
18	-.009368	.011313	.001314	.000121	-.000022	.001828
19	-.007531	.011864	.001185	.000137	.000021	.001845
20	-.005678	.012790	.001020	.000153	.000058	.001858
21	-.005280	-.001087	.000718	-.000131	-.000282	.001576
22	-.003816	.013720	.000822	.000166	.000093	.001865
23	-.005027	-.001256	.000709	-.000138	-.000281	.001574
24	-.003301	.013915	.000765	.000174	.000102	.001867
25	-.004773	-.001422	.000702	-.000142	-.000280	.001573
26	-.002781	.014107	.000705	.000180	.000109	.001869
27	-.004520	-.001586	.000696	-.000145	-.000280	.001572
28	-.002258	.014296	.000643	.000184	.000113	.001870
29	-.004267	-.001748	.000691	-.000146	-.000280	.001572
30	-.001733	.014484	.000580	.000185	.000114	.001870
31	-.016671	.005323	.001119	.000016	-.000211	.001642
32	-.016679	.004361	.000990	-.000003	-.000218	.001629
33	-.016366	.003409	.000859	-.000026	-.000231	.001620
34	-.015741	.002464	.000730	-.000051	-.000254	.001614
35	-.014450	.002153	.000725	-.000062	-.000252	.001610
36	-.013167	.001842	.000728	-.000072	-.000255	.001606
37	-.011888	.001530	.000738	-.000082	-.000258	.001601
38	-.010295	.001062	.000747	-.000092	-.000264	.001594
39	-.016460	.005668	.001161	.000022	-.000208	.001646
40	-.016460	.006328	.001243	.000035	-.000202	.001656
41	-.016659	.006619	.001283	.000041	-.000199	.001662
42	-.016650	.007603	.001400	.000060	-.000190	.001681
43	-.016303	.008604	.001499	.000074	-.000182	.001702
44	-.015604	.009623	.001572	.000084	-.000169	.001729
45	-.014174	.009965	.001533	.000090	-.000135	.001758
46	-.012722	.010311	.001481	.000099	-.000100	.001784
47	-.011251	.010660	.001415	.000108	-.000065	.001806
48	-.009391	.011191	.001314	.000121	-.000022	.001828

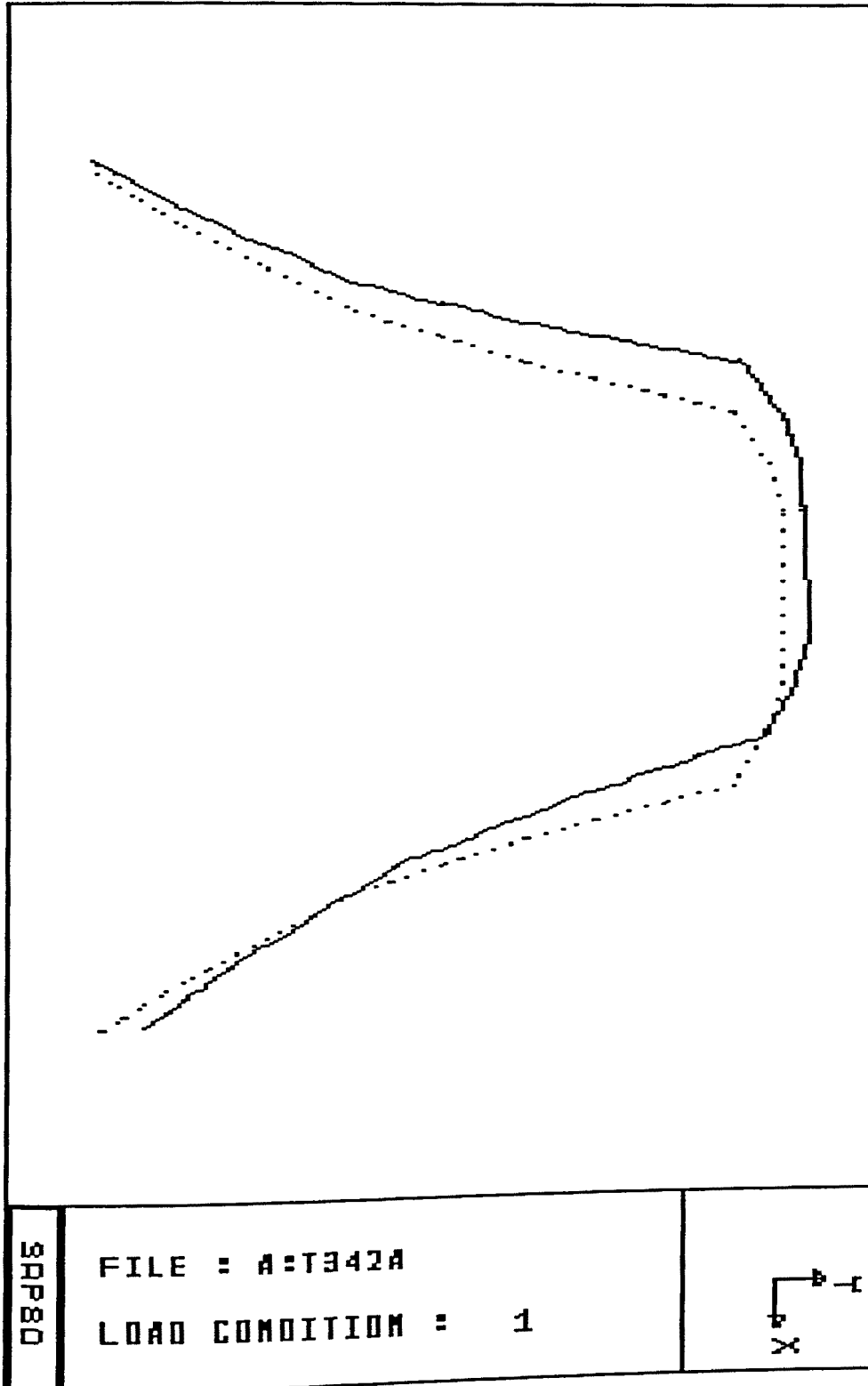
REACTIONS AND APPLIED FORCES

LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

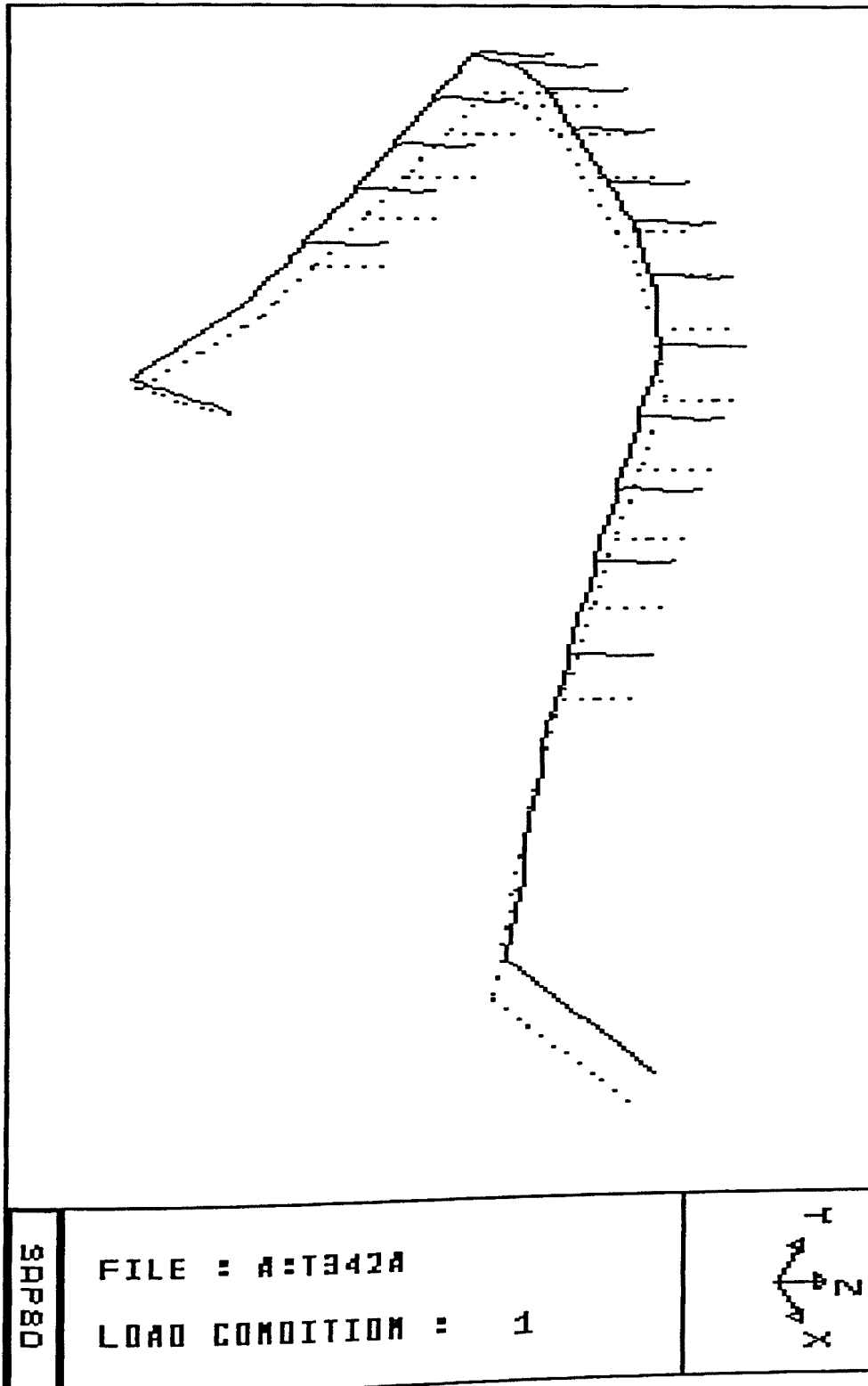
JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
1	.0000	.0000	.0000	.0000	.0000	.0000
2	.0000	.0000	.0000	.0000	.0000	.0000
3	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000
6	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000
8	.0000	.0000	.0000	.0000	.0000	.0000
9	1.5000	-1.5000	10.0000	.0000	.0000	.0000
10	.0000	.0000	.0000	.0000	.0000	.0000
11	.0000	.0000	.0000	.0000	.0000	.0000
12	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000
15	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000
17	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000

23	.0000	.0000	.0000	.0000	.0000	.0000
24	.0000	.0000	.0000	.0000	.0000	.0000
25	.0000	.0000	.0000	.0000	.0000	.0000
26	.0000	.0000	.0000	.0000	.0000	.0000
27	.0000	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000
29	4.2670	17.4840	-6.9059	.0000	.0000	.0000
30	17.3330	-14.4840	-5.7968	.0000	.0000	.0000
31	.0000	.0000	.0000	.0000	.0000	.0000
32	.0000	.0000	.0000	.0000	.0000	.0000
33	.0000	.0000	.0000	.0000	.0000	.0000
34	-21.6000	.0000	-7.2973	.0000	.0000	.0000
35	.0000	.0000	.0000	.0000	.0000	.0000
36	.0000	.0000	.0000	.0000	.0000	.0000
37	.0000	.0000	.0000	.0000	.0000	.0000
38	.0000	.0000	.0000	.0000	.0000	.0000
39	.0000	.0000	.0000	.0000	.0000	.0000
40	.0000	.0000	.0000	.0000	.0000	.0000
41	.0000	.0000	.0000	.0000	.0000	.0000
42	.0000	.0000	.0000	.0000	.0000	.0000
43	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	.5396E-09	.3124E-08	-.1171E-09	.1581E-09	.8359E-10	.1516E-08

10/11/78



FILE



NO TRABAJO. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO N342)
SYSTEM

N=48 L=1

JOINT

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

: CONDILO IZQUIERDO
: CONDILO DERECHO

:
SPRINGS

29	K=10000,1000,10000,0,0,0	: APOYO ELASTICO (CONDILO IZQUIERDO)
30	K=1000,10000,10000,0,0,0	: APOYO ELASTICO (CONDILO DERECHO)
34	K=0,0,10000,0,0,0	: PIEZA DENTAL 34 COACCIONADA VERTICALMENTE

:
FRAME

NM=2					
1	A=1.0	J=.1	I=0.1,0.1	E=21000000	: PIEZAS DENTARIAS
2	A=3.0	J=.1	I=0.1,0.1	E=21000000	: ESTRUCTURA OSEA
1, 1, 31		M=1	LP=3,0		: PIEZAS DENTARIAS
2, 2, 32					
3, 3, 33					
4, 4, 34					

8, 8, 38
 9, 11, 41
 10, 12, 42
 11, 13, 43
 12, 14, 44
 13, 15, 45
 14, 16, 46
 15, 17, 47
 16, 18, 48
 17, 30, 28
 18, 28, 26
 19, 26, 24
 20, 24, 22
 21, 22, 20
 22, 20, 19
 23, 19, 18
 24, 18, 17
 25, 17, 16
 26, 16, 15
 27, 15, 14
 28, 14, 13
 29, 13, 12
 30, 12, 11
 31, 11, 40
 32, 40, 39
 33, 39, 1
 34, 1, 2
 35, 2, 3
 36, 3, 4
 37, 4, 5
 38, 5, 6
 39, 6, 7
 40, 7, 8
 41, 8, 9
 42, 9, 10
 43, 10, 21
 44, 21, 23
 45, 23, 25
 46, 25, 27
 47, 27, 29
 :

M=2

: ESTRUCTURA OSEA

LP=2,0

LOADS

9 L=1 F= 1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO IZQUIERDO)
 19 L=1 F= -1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO DERECHO)
 34 L=1 F= 10.80, 0, 0, 0, 0 : ACCION TRANSVERSAL (NO TRABAJO)

PLOT

VP=15,29 VH=11,22

:
 NO TRABAJO. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO N342)
 SAP80 V84.04

 * * * * * E C H O O F S A P I N P U T D A T A * * * * *
 * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

TOTAL NUMBER OF JOINTS = 48
 TOTAL NUMBER OF LOAD CONDITIONS = 1

P R E L I M I N A R Y S C A N O F F R A M E D A T A

NM=2

S E C T I O N P R O P E R T Y D A T A


```

FRAME      ELEMENT DATA
1, 1, 31   M=1      LP=3,0   :
2, 2, 32
3, 3, 33
4, 4, 34
5, 5, 35
6, 6, 36
7, 7, 37
8, 8, 38
9, 11, 41
10,12, 42
11,13, 43
12,14, 44
13,15, 45
14,16, 46
15,17, 47
16,18, 48
17,30, 28   M=2      :
18,28, 26
19, 26, 24
20, 24, 22
21, 22, 20
22, 20, 19
23, 19, 18
24, 18, 17
25, 17, 16
26, 16, 15
27, 15, 14
28, 14, 13
29, 13, 12
30, 12, 11   LP=2,0
31, 11, 40
32, 40, 39
33, 39, 1
34, 1, 2
35, 2, 3
36, 3, 4
37, 4, 5
38, 5, 6
39, 6, 7
40, 7, 8
41, 8, 9
42, 9, 10
43, 10, 21
44, 21, 23
45, 23, 25
46, 25, 27
47, 27, 29
:
```

EQUILIBRIUM EQUATION NUMBERS
(ONE EQUATION FOR EACH UNKNOWN DISPLACEMENT)

JOINT #	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	157	158	159	160	161	162
2	169	170	171	172	173	174
3	181	182	183	184	185	186
4	193	194	195	196	197	198
5	205	206	207	208	209	210
6	217	218	219	220	221	222
7	229	230	231	232	233	234
8	241	242	243	244	245	246
9	247	248	249	250	251	252
10	253	254	255	256	257	258
11	133	134	135	136	137	138
12	121	122	123	124	125	126
13	109	110	111	112	113	114

17	61	62	63	64	65	66
18	49	50	51	52	53	54
19	37	38	39	40	41	42
20	31	32	33	34	35	36
21	259	260	261	262	263	264
22	25	26	27	28	29	30
23	265	266	267	268	269	270
24	19	20	21	22	23	24
25	271	272	273	274	275	276
26	13	14	15	16	17	18
27	277	278	279	280	281	282
28	7	8	9	10	11	12
29	283	284	285	286	287	288
30	1	2	3	4	5	6
31	151	152	153	154	155	156
32	163	164	165	166	167	168
33	175	176	177	178	179	180
34	187	188	189	190	191	192
35	199	200	201	202	203	204
36	211	212	213	214	215	216
37	223	224	225	226	227	228
38	235	236	237	238	239	240
39	145	146	147	148	149	150
40	139	140	141	142	143	144
41	127	128	129	130	131	132
42	115	116	117	118	119	120
43	103	104	105	106	107	108
44	91	92	93	94	95	96
45	79	80	81	82	83	84
46	67	68	69	70	71	72
47	55	56	57	58	59	60
48	43	44	45	46	47	48

INPUT JOINT DATA

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1

:
:



35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1
:			

GENERATED JOINT COORDINATES

JOINT #	X	Y	Z
1	-.400	8.000	.000
2	-1.000	8.000	.000
3	-1.600	7.800	.000
4	-2.200	7.400	.000
5	-2.400	6.600	.000
6	-2.600	5.800	.000
7	-2.800	5.000	.000
8	-3.100	4.000	.000
9	-3.400	3.000	.000
10	-3.900	2.000	.000
11	.400	8.000	.000
12	1.000	8.000	.000
13	1.600	7.800	.000
14	2.200	7.400	.000
15	2.400	6.600	.000
16	2.600	5.800	.000
17	2.800	5.000	.000
18	3.100	4.000	.000
19	3.400	3.000	.000
20	3.900	2.000	.000
21	-4.400	1.000	.000
22	4.400	1.000	.000
23	-4.550	.750	.500
24	4.550	.750	.500
25	-4.700	.500	1.000
26	4.700	.500	1.000
27	-4.850	.250	1.500
28	4.850	.250	1.500
29	-5.000	.000	2.000
30	5.000	.000	2.000
31	-.400	8.000	1.000
32	-1.000	8.000	1.000
33	-1.600	7.800	1.000
34	-2.200	7.400	1.000
35	-2.400	6.600	1.000
36	-2.600	5.800	1.000
37	-2.800	5.000	1.000
38	-3.100	4.000	1.000
39	-.200	8.000	.000
40	.200	8.000	.000
41	.400	8.000	1.000
42	1.000	8.000	1.000
43	1.600	7.800	1.000
44	2.200	7.400	1.000
45	2.400	6.600	1.000
46	2.600	5.800	1.000
47	2.800	5.000	1.000
48	3.100	4.000	1.000

 *** ECHO OF FRAME INPUT DATA ***

NUMBER OF MEMBER PROPERTIES = 2
 NUMBER OF DIFF. LOAD PATTERNS = 0

MEMBER PROPERTY NUMBER ----- = 1 SYMBOL= 1
 AXIAL AREA, A ----- = 1.000
 TORSIONAL MOMENT OF INERTIA, J = .100
 MOMENT OF INERTIA, I33 ----- = .100
 MOMENT OF INERTIA, I22 ----- = .100
 MODULUS OF ELASTICITY, E ----- = 21000000.000
 SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

MEMBER PROPERTY NUMBER ----- = 2 SYMBOL= 2
 AXIAL AREA, A ----- = 3.000
 TORSIONAL MOMENT OF INERTIA, J = .100
 MOMENT OF INERTIA, I33 ----- = .100
 MOMENT OF INERTIA, I22 ----- = .100
 MODULUS OF ELASTICITY, E ----- = 21000000.000
 SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

EL.	I	J	P1	P2	MAT	EI	EJ	RZ	RELEASES	MI	MJ	LOAD # / PATTERN
												1
1	1	31	3	0	1	.0	.0	.00	000000	0	0	0
2	2	32	3	0	1	.0	.0	.00	000000	0	0	0
3	3	33	3	0	1	.0	.0	.00	000000	0	0	0
4	4	34	3	0	1	.0	.0	.00	000000	0	0	0
5	5	35	3	0	1	.0	.0	.00	000000	0	0	0
6	6	36	3	0	1	.0	.0	.00	000000	0	0	0
7	7	37	3	0	1	.0	.0	.00	000000	0	0	0
8	8	38	3	0	1	.0	.0	.00	000000	0	0	0
9	11	41	3	0	1	.0	.0	.00	000000	0	0	0
10	12	42	3	0	1	.0	.0	.00	000000	0	0	0
11	13	43	3	0	1	.0	.0	.00	000000	0	0	0
12	14	44	3	0	1	.0	.0	.00	000000	0	0	0
13	15	45	3	0	1	.0	.0	.00	000000	0	0	0
14	16	46	3	0	1	.0	.0	.00	000000	0	0	0
15	17	47	3	0	1	.0	.0	.00	000000	0	0	0
16	18	48	3	0	1	.0	.0	.00	000000	0	0	0
17	30	28	3	0	2	.0	.0	.00	000000	0	0	0
18	28	26	3	0	2	.0	.0	.00	000000	0	0	0
19	26	24	3	0	2	.0	.0	.00	000000	0	0	0
20	24	22	3	0	2	.0	.0	.00	000000	0	0	0
21	22	20	3	0	2	.0	.0	.00	000000	0	0	0
22	20	19	3	0	2	.0	.0	.00	000000	0	0	0
23	19	18	3	0	2	.0	.0	.00	000000	0	0	0
24	18	17	3	0	2	.0	.0	.00	000000	0	0	0
25	17	16	3	0	2	.0	.0	.00	000000	0	0	0
26	16	15	3	0	2	.0	.0	.00	000000	0	0	0
27	15	14	3	0	2	.0	.0	.00	000000	0	0	0
28	14	13	3	0	2	.0	.0	.00	000000	0	0	0
29	13	12	3	0	2	.0	.0	.00	000000	0	0	0
30	12	11	2	0	2	.0	.0	.00	000000	0	0	0
31	11	40	2	0	2	.0	.0	.00	000000	0	0	0
32	40	39	2	0	2	.0	.0	.00	000000	0	0	0
33	39	1	2	0	2	.0	.0	.00	000000	0	0	0
34	1	2	2	0	2	.0	.0	.00	000000	0	0	0
35	2	3	2	0	2	.0	.0	.00	000000	0	0	0
36	3	4	2	0	2	.0	.0	.00	000000	0	0	0

41	8	9	2	0	2	.0	.0	.00	000000	0	0	0
42	9	10	2	0	2	.0	.0	.00	000000	0	0	0
43	10	21	2	0	2	.0	.0	.00	000000	0	0	0
44	21	23	2	0	2	.0	.0	.00	000000	0	0	0
45	23	25	2	0	2	.0	.0	.00	000000	0	0	0
46	25	27	2	0	2	.0	.0	.00	000000	0	0	0
47	27	29	2	0	2	.0	.0	.00	000000	0	0	0

TOTAL WEIGHT OF MATERIALS= .000000
TOTAL MASS OF SYSTEM = .000000

NO TRABAJO. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO N342)
SAP80 V85.02

ASSEMBLY OF EQUATIONS *****

JOINT LOADS AND DISPLACEMENTS

NODE	L#	F/U	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
9	1	F	.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00	.000E+00
19	1	F	-.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00	.000E+00
34	1	F	.108E+02	.000E+00	.000E+00	.000E+00	.000E+00	.000E+00

SPRING AND MASS DATA

JOINT	K/M	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
29	K	.100E+05	.100E+04	.100E+05	.000E+00	.000E+00	.000E+00
30	K	.100E+04	.100E+05	.100E+05	.000E+00	.000E+00	.000E+00
34	K	.000E+00	.000E+00	.100E+05	.000E+00	.000E+00	.000E+00

EVALUATION OF PROFILE OF STIFFNESS MATRIX

NUMBER OF EQUATIONS TO BE FORMED = 288
NUMBER OF EQUATIONS TO BE REDUCED = 288
NUMBER OF LOAD CONDITIONS = 1

FORMATION OF BLOCK IN STIFFNESS MATRIX

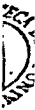
BLOCK NUMBER = 1 OF 1
LOWEST EQUATION NUMBER = 1
HIGHEST EQUATION NUMBER = 288
NUMBER OF TERMS IN BLOCK = 2700
LOWEST COUPLED BLOCK NUMBER = 1

FORM LOAD BLOCK NUMBER 1
NO TRABAJO. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO N342)
SAP80 V85.02

JOINT DISPLACEMENTS *****

LOAD CONDITION 1 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	.7693E-02	.2901E-02	.8220E-03	-.5574E-05	-.5171E-04	-.7325E-03
2	.7693E-02	.3343E-02	.7904E-03	-.8033E-05	-.5353E-04	-.7393E-03
3	.7544E-02	.3789E-02	.7595E-03	-.1137E-04	-.5604E-04	-.7481E-03
4	.7243E-02	.4241E-02	.7301E-03	-.1537E-04	-.5965E-04	-.7601E-03



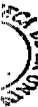
9	.3753E-02	.5194E-02	.6726E-03	-.7913E-05	-.1549E-03	-.8180E-03
10	.2932E-02	.5604E-02	.5940E-03	.1782E-07	-.1745E-03	-.8249E-03
11	.7693E-02	.2318E-02	.8623E-03	-.2296E-05	-.4903E-04	-.7255E-03
12	.7693E-02	.1884E-02	.8910E-03	.1633E-06	-.4682E-04	-.7219E-03
13	.7549E-02	.1452E-02	.9183E-03	.1468E-05	-.4442E-04	-.7194E-03
14	.7261E-02	.1021E-02	.9432E-03	.1893E-05	-.4081E-04	-.7179E-03
15	.6687E-02	.8774E-03	.9488E-03	.2360E-05	-.3233E-04	-.7165E-03
16	.6115E-02	.7344E-03	.9522E-03	.3130E-05	-.2378E-04	-.7146E-03
17	.5544E-02	.5918E-03	.9532E-03	.4203E-05	-.1515E-04	-.7123E-03
18	.4833E-02	.3787E-03	.9512E-03	.5800E-05	-.4489E-05	-.7087E-03
19	.4127E-02	.1669E-03	.9441E-03	.7876E-05	.6317E-05	-.7045E-03
20	.3424E-02	-.1842E-03	.9306E-03	.7666E-05	.1487E-04	-.7005E-03
21	.2104E-02	.6018E-02	.4989E-03	.5997E-05	-.1932E-03	-.8289E-03
22	.2725E-02	-.5335E-03	.9160E-03	.2645E-05	.2101E-04	-.6978E-03
23	.1799E-02	.6138E-02	.4675E-03	.1001E-04	-.1979E-03	-.8301E-03
24	.2561E-02	-.6388E-03	.9123E-03	.2464E-06	.2132E-04	-.6970E-03
25	.1492E-02	.6257E-02	.4347E-03	.1288E-04	-.2013E-03	-.8309E-03
26	.2398E-02	-.7429E-03	.9092E-03	-.1467E-05	.2154E-04	-.6963E-03
27	.1183E-02	.6375E-02	.4009E-03	.1460E-04	-.2033E-03	-.8314E-03
28	.2235E-02	-.8462E-03	.9063E-03	-.2495E-05	.2167E-04	-.6960E-03
29	.8729E-03	.6492E-02	.3666E-03	.1517E-04	-.2040E-03	-.8316E-03
30	.2071E-02	-.9492E-03	.9037E-03	-.2838E-05	.2172E-04	-.6958E-03
31	.7641E-02	.2907E-02	.8220E-03	-.5574E-05	-.5171E-04	-.7325E-03
32	.7639E-02	.3351E-02	.7904E-03	-.8033E-05	-.5353E-04	-.7393E-03
33	.7488E-02	.3800E-02	.7595E-03	-.1137E-04	-.5604E-04	-.7481E-03
34	.7185E-02	.4257E-02	.7297E-03	-.1537E-04	-.5708E-04	-.7601E-03
35	.6553E-02	.4413E-02	.7302E-03	-.1837E-04	-.7594E-04	-.7742E-03
36	.5912E-02	.4570E-02	.7285E-03	-.1938E-04	-.9273E-04	-.7866E-03
37	.5261E-02	.4727E-02	.7235E-03	-.1840E-04	-.1100E-03	-.7974E-03
38	.4435E-02	.4965E-02	.7041E-03	-.1473E-04	-.1320E-03	-.8089E-03
39	.7693E-02	.2755E-02	.8322E-03	-.4754E-05	-.5107E-04	-.7305E-03
40	.7693E-02	.2464E-02	.8524E-03	-.3115E-05	-.4972E-04	-.7271E-03
41	.7644E-02	.2321E-02	.8623E-03	-.2296E-05	-.4903E-04	-.7255E-03
42	.7646E-02	.1884E-02	.8910E-03	.1633E-06	-.4682E-04	-.7219E-03
43	.7504E-02	.1450E-02	.9183E-03	.1468E-05	-.4442E-04	-.7194E-03
44	.7220E-02	.1019E-02	.9432E-03	.1893E-05	-.4081E-04	-.7179E-03
45	.6655E-02	.8750E-03	.9488E-03	.2360E-05	-.3233E-04	-.7165E-03
46	.6091E-02	.7312E-03	.9522E-03	.3130E-05	-.2378E-04	-.7146E-03
47	.5529E-02	.5876E-03	.9532E-03	.4203E-05	-.1515E-04	-.7123E-03
48	.4829E-02	.3729E-03	.9512E-03	.5800E-05	-.4489E-05	-.7087E-03

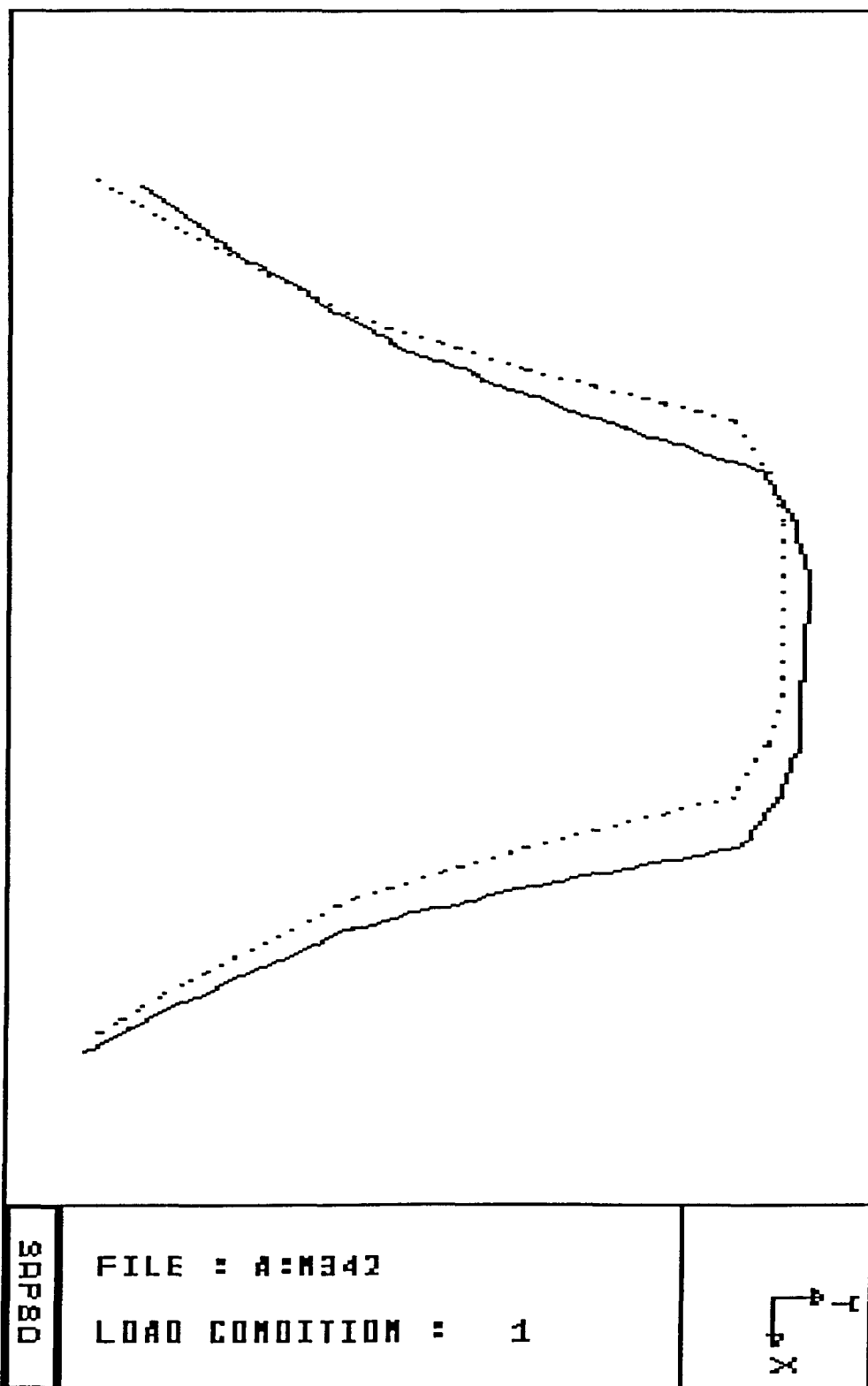
REACTIONS AND APPLIED FORCES

LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

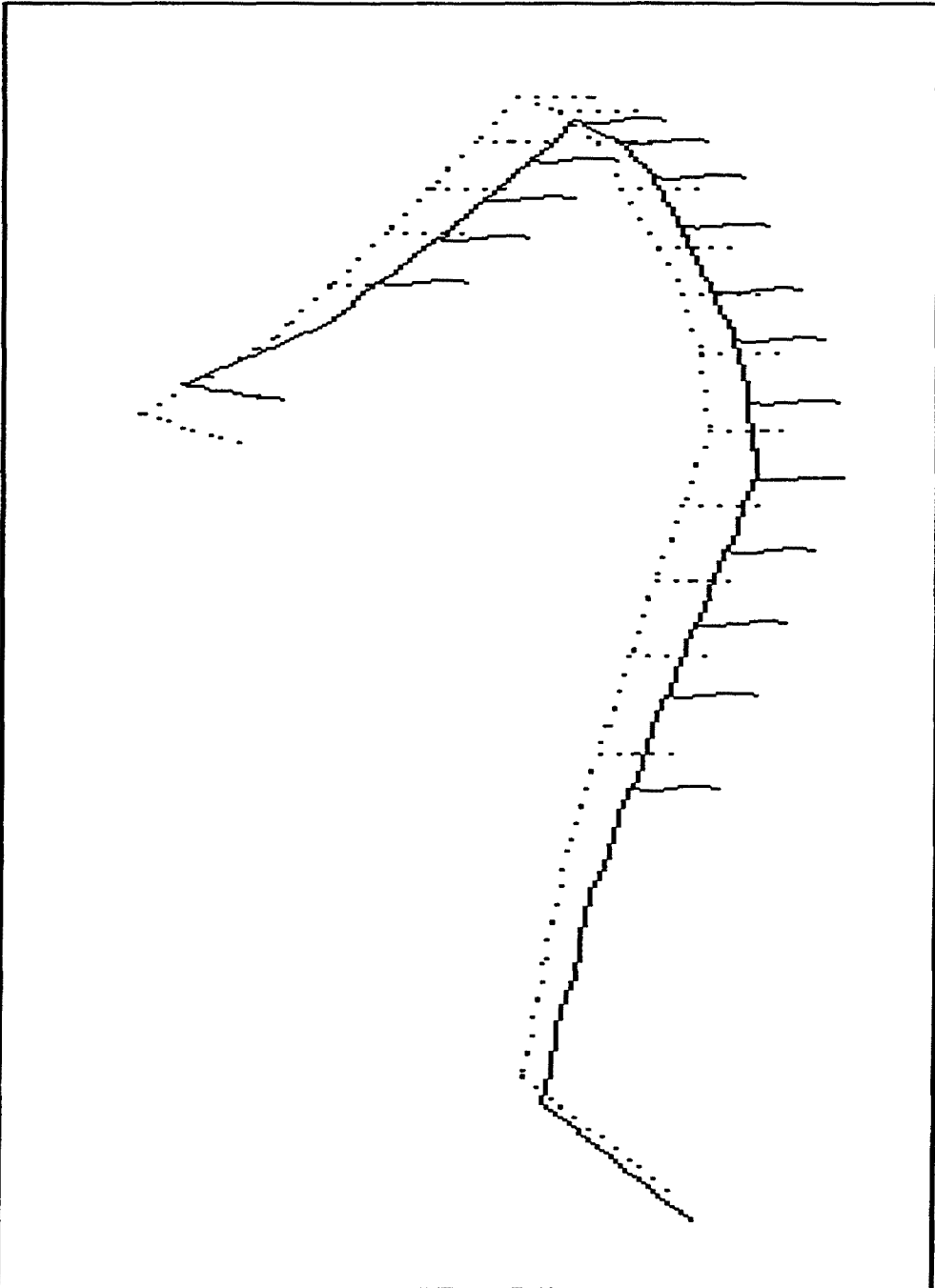
JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
1	.0000	.0000	.0000	.0000	.0000	.0000
2	.0000	.0000	.0000	.0000	.0000	.0000
3	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000
6	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000
8	.0000	.0000	.0000	.0000	.0000	.0000
9	1.5000	-1.5000	10.0000	.0000	.0000	.0000
10	.0000	.0000	.0000	.0000	.0000	.0000
11	.0000	.0000	.0000	.0000	.0000	.0000
12	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000
15	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000
17	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000

23	.0000	.0000	.0000	.0000	.0000	.0000
24	.0000	.0000	.0000	.0000	.0000	.0000
25	.0000	.0000	.0000	.0000	.0000	.0000
26	.0000	.0000	.0000	.0000	.0000	.0000
27	.0000	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000
29	-8.7286	-6.4920	-3.6659	.0000	.0000	.0000
30	-2.0714	9.4920	-9.0368	.0000	.0000	.0000
31	.0000	.0000	.0000	.0000	.0000	.0000
32	.0000	.0000	.0000	.0000	.0000	.0000
33	.0000	.0000	.0000	.0000	.0000	.0000
34	10.8000	.0000	-7.2973	.0000	.0000	.0000
35	.0000	.0000	.0000	.0000	.0000	.0000
36	.0000	.0000	.0000	.0000	.0000	.0000
37	.0000	.0000	.0000	.0000	.0000	.0000
38	.0000	.0000	.0000	.0000	.0000	.0000
39	.0000	.0000	.0000	.0000	.0000	.0000
40	.0000	.0000	.0000	.0000	.0000	.0000
41	.0000	.0000	.0000	.0000	.0000	.0000
42	.0000	.0000	.0000	.0000	.0000	.0000
43	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	.5287E-09	.5569E-09	-.3947E-09	.9311E-11	-.5814E-10	-.5794E-09





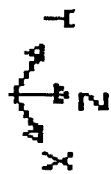
723
256



3RP80

FILE : A:M342

LOAD CONDITION : 1



REV. 1.0

NO TRABAJO. CONTACTO 34. SEGUNDO ORDEN . MAYOR ANGULO (ARCHIVO N342A)
SYSTEM

N=48 L=1

JOINT

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

: CONDILO IZQUIERDO
: CONDILO DERECHO

:
SPRINGS

29	K=10000,1000,10000,0,0,0	: APOYO ELASTICO (CONDILO IZQUIERDO)
30	K=1000,10000,10000,0,0,0	: APOYO ELASTICO (CONDILO DERECHO)
34	K=0,0,10000,0,0,0	: PIEZA DENTAL 34 COACCIONADA VERTICALMENTE

:
FRAME

NM=2					
1	A=1.0	J=.1	I=0.1,0.1	E=21000000	: PIEZAS DENTARIAS
2	A=3.0	J=.1	I=0.1,0.1	E=21000000	: ESTRUCTURA OSEA
1, 1, 31	M=1	LP=3,0			: PIEZAS DENTARIAS
2, 2, 32					
3, 3, 33					
4, 4, 34					

8, 8, 38
 9, 11, 41
 10, 12, 42
 11, 13, 43
 12, 14, 44
 13, 15, 45
 14, 16, 46
 15, 17, 47
 16, 18, 48
 17, 30, 28
 18, 28, 26
 19, 26, 24
 20, 24, 22
 21, 22, 20
 22, 20, 19
 23, 19, 18
 24, 18, 17
 25, 17, 16
 26, 16, 15
 27, 15, 14
 28, 14, 13
 29, 13, 12
 30, 12, 11
 31, 11, 40
 32, 40, 39
 33, 39, 1
 34, 1, 2
 35, 2, 3
 36, 3, 4
 37, 4, 5
 38, 5, 6
 39, 6, 7
 40, 7, 8
 41, 8, 9
 42, 9, 10
 43, 10, 21
 44, 21, 23
 45, 23, 25
 46, 25, 27
 47, 27, 29
 :

M=2

: ESTRUCTURA OSEA

LP=2, 0

LOADS

9 L=1 F= 1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO IZQUIERDO)
 19 L=1 F= -1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO DERECHO)
 34 L=1 F= 21.60, 0, 0, 0, 0, 0 : ACCION TRANSVERSAL (NO TRABAJO)

PLOT

VP=15,29 VH=11,22

NO TRABAJO. CONTACTO 34. SEGUNDO ORDEN . MAYOR ANGULO (ARCHIVO N342A)
 SAP80 V84.04

 ***** ECHO OF SAP INPUT DATA *****

TOTAL NUMBER OF JOINTS = 48
 TOTAL NUMBER OF LOAD CONDITIONS = 1

PRELIMINARY SCAN OF FRAME DATA

NM=2

SECTION PROPERTY DATA .

```

FRAME      ELEMENT DATA
1, 1, 31      M=1      LP=3,0      :
2, 2, 32
3, 3, 33
4, 4, 34
5, 5, 35
6, 6, 36
7, 7, 37
8, 8, 38
9, 11, 41
10,12, 42
11,13, 43
12,14, 44
13,15, 45
14,16, 46
15,17, 47
16,18, 48
17,30, 28      M=2      :
18,28, 26
19, 26, 24
20, 24, 22
21, 22, 20
22, 20, 19
23, 19, 18
24, 18, 17
25, 17, 16
26, 16, 15
27, 15, 14
28, 14, 13
29, 13, 12
30, 12, 11      LP=2,0
31, 11, 40
32, 40, 39
33, 39, 1
34, 1, 2
35, 2, 3
36, 3, 4
37, 4, 5
38, 5, 6
39, 6, 7
40, 7, 8
41, 8, 9
42, 9, 10
43, 10, 21
44, 21, 23
45, 23, 25
46, 25, 27
47, 27, 29
:
```

EQUILIBRIUM EQUATION NUMBERS
(ONE EQUATION FOR EACH UNKNOWN DISPLACEMENT)

JOINT #	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	157	158	159	160	161	162
2	169	170	171	172	173	174
3	181	182	183	184	185	186
4	193	194	195	196	197	198
5	205	206	207	208	209	210
6	217	218	219	220	221	222
7	229	230	231	232	233	234
8	241	242	243	244	245	246
9	247	248	249	250	251	252
10	253	254	255	256	257	258
11	133	134	135	136	137	138
12	121	122	123	124	125	126
13	109	110	111	112	113	114

17	61	62	63	64	65	66
18	49	50	51	52	53	54
19	37	38	39	40	41	42
20	31	32	33	34	35	36
21	259	260	261	262	263	264
22	25	26	27	28	29	30
23	265	266	267	268	269	270
24	19	20	21	22	23	24
25	271	272	273	274	275	276
26	13	14	15	16	17	18
27	277	278	279	280	281	282
28	7	8	9	10	11	12
29	283	284	285	286	287	288
30	1	2	3	4	5	6
31	151	152	153	154	155	156
32	163	164	165	166	167	168
33	175	176	177	178	179	180
34	187	188	189	190	191	192
35	199	200	201	202	203	204
36	211	212	213	214	215	216
37	223	224	225	226	227	228
38	235	236	237	238	239	240
39	145	146	147	148	149	150
40	139	140	141	142	143	144
41	127	128	129	130	131	132
42	115	116	117	118	119	120
43	103	104	105	106	107	108
44	91	92	93	94	95	96
45	79	80	81	82	83	84
46	67	68	69	70	71	72
47	55	56	57	58	59	60
48	43	44	45	46	47	48

I N P U T J O I N T D A T A

1	X=-0.4	Y= 8.0	Z= 0.0	
2	X=-1.0	Y= 8.0	Z= 0.0	
3	X=-1.6	Y= 7.8	Z= 0.0	
4	X=-2.2	Y= 7.4	Z= 0.0	
5	X=-2.4	Y= 6.6	Z= 0.0	
6	X=-2.6	Y= 5.8	Z= 0.0	
7	X=-2.8	Y= 5.0	Z= 0.0	
8	X=-3.1	Y= 4.0	Z= 0.0	
9	X=-3.4	Y= 3.0	Z= 0.0	
10	X=-3.9	Y= 2.0	Z= 0.0	
11	X= 0.4	Y= 8.0	Z= 0.0	
12	X= 1.0	Y= 8.0	Z= 0.0	
13	X= 1.6	Y= 7.8	Z= 0.0	
14	X= 2.2	Y= 7.4	Z= 0	
15	X= 2.4	Y= 6.6	Z= 0	
16	X= 2.6	Y= 5.8	Z= 0	
17	X= 2.8	Y= 5.0	Z= 0	
18	X= 3.1	Y= 4	Z= 0	
19	X= 3.4	Y= 3	Z= 0	
20	X= 3.9	Y= 2	Z= 0	
21	X=-4.4	Y= 1	Z= 0	
22	X= 4.4	Y= 1	Z= 0	
23	X=-4.55	Y= 0.75	Z= 0.5	
24	X= 4.55	Y= 0.75	Z= 0.5	
25	X=-4.7	Y= 0.5	Z= 1	
26	X= 4.7	Y= 0.5	Z= 1	
27	X=-4.85	Y= 0.25	Z= 1.5	
28	X= 4.85	Y= 0.25	Z= 1.5	
29	X=-5.0	Y= 0	Z= 2	:
30	X= 5	Y= 0	Z= 2	:
31	X=-0.4	Y= 8	Z= 1	

43

35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1
:			

GENERATED JOINT COORDINATES

JOINT #	X	Y	Z
1	-.400	8.000	.000
2	-1.000	8.000	.000
3	-1.600	7.800	.000
4	-2.200	7.400	.000
5	-2.400	6.600	.000
6	-2.600	5.800	.000
7	-2.800	5.000	.000
8	-3.100	4.000	.000
9	-3.400	3.000	.000
10	-3.900	2.000	.000
11	.400	8.000	.000
12	1.000	8.000	.000
13	1.600	7.800	.000
14	2.200	7.400	.000
15	2.400	6.600	.000
16	2.600	5.800	.000
17	2.800	5.000	.000
18	3.100	4.000	.000
19	3.400	3.000	.000
20	3.900	2.000	.000
21	-4.400	1.000	.000
22	4.400	1.000	.000
23	-4.550	.750	.500
24	4.550	.750	.500
25	-4.700	.500	1.000
26	4.700	.500	1.000
27	-4.850	.250	1.500
28	4.850	.250	1.500
29	-5.000	.000	2.000
30	5.000	.000	2.000
31	-.400	8.000	1.000
32	-1.000	8.000	1.000
33	-1.600	7.800	1.000
34	-2.200	7.400	1.000
35	-2.400	6.600	1.000
36	-2.600	5.800	1.000
37	-2.800	5.000	1.000
38	-3.100	4.000	1.000
39	-.200	8.000	.000
40	.200	8.000	.000
41	.400	8.000	1.000
42	1.000	8.000	1.000
43	1.600	7.800	1.000
44	2.200	7.400	1.000
45	2.400	6.600	1.000
46	2.600	5.800	1.000
47	2.800	5.000	1.000
48	3.100	4.000	1.000

44
45
46

*** ECHO OF FRAME INPUT DATA ***

NUMBER OF MEMBER PROPERTIES = 2
NUMBER OF DIFF. LOAD PATTERNS = 0

MEMBER PROPERTY NUMBER ----- = 1 SYMBOL= 1
AXIAL AREA, A ----- = 1.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

MEMBER PROPERTY NUMBER ----- = 2 SYMBOL= 2
AXIAL AREA, A ----- = 3.000
TORSIONAL MOMENT OF INERTIA, J = .100
MOMENT OF INERTIA, I33 ----- = .100
MOMENT OF INERTIA, I22 ----- = .100
MODULUS OF ELASTICITY, E ----- = 21000000.000
SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

EL.	I	J	P1	P2	MAT	EI	EJ	RZ	RELEASES	MI	MJ	LOAD # / PATTERN
												1
1	1	31	3	0	1	.0	.0	.00	000000	0	0	0
2	2	32	3	0	1	.0	.0	.00	000000	0	0	0
3	3	33	3	0	1	.0	.0	.00	000000	0	0	0
4	4	34	3	0	1	.0	.0	.00	000000	0	0	0
5	5	35	3	0	1	.0	.0	.00	000000	0	0	0
6	6	36	3	0	1	.0	.0	.00	000000	0	0	0
7	7	37	3	0	1	.0	.0	.00	000000	0	0	0
8	8	38	3	0	1	.0	.0	.00	000000	0	0	0
9	11	41	3	0	1	.0	.0	.00	000000	0	0	0
10	12	42	3	0	1	.0	.0	.00	000000	0	0	0
11	13	43	3	0	1	.0	.0	.00	000000	0	0	0
12	14	44	3	0	1	.0	.0	.00	000000	0	0	0
13	15	45	3	0	1	.0	.0	.00	000000	0	0	0
14	16	46	3	0	1	.0	.0	.00	000000	0	0	0
15	17	47	3	0	1	.0	.0	.00	000000	0	0	0
16	18	48	3	0	1	.0	.0	.00	000000	0	0	0
17	30	28	3	0	2	.0	.0	.00	000000	0	0	0
18	28	26	3	0	2	.0	.0	.00	000000	0	0	0
19	26	24	3	0	2	.0	.0	.00	000000	0	0	0
20	24	22	3	0	2	.0	.0	.00	000000	0	0	0
21	22	20	3	0	2	.0	.0	.00	000000	0	0	0
22	20	19	3	0	2	.0	.0	.00	000000	0	0	0
23	19	18	3	0	2	.0	.0	.00	000000	0	0	0
24	18	17	3	0	2	.0	.0	.00	000000	0	0	0
25	17	16	3	0	2	.0	.0	.00	000000	0	0	0
26	16	15	3	0	2	.0	.0	.00	000000	0	0	0
27	15	14	3	0	2	.0	.0	.00	000000	0	0	0
28	14	13	3	0	2	.0	.0	.00	000000	0	0	0
29	13	12	3	0	2	.0	.0	.00	000000	0	0	0
30	12	11	2	0	2	.0	.0	.00	000000	0	0	0
31	11	40	2	0	2	.0	.0	.00	000000	0	0	0
32	40	39	2	0	2	.0	.0	.00	000000	0	0	0
33	39	1	2	0	2	.0	.0	.00	000000	0	0	0
34	1	2	2	0	2	.0	.0	.00	000000	0	0	0
35	2	3	2	0	2	.0	.0	.00	000000	0	0	0
36	3	4	2	0	2	.0	.0	.00	000000	0	0	0

46

41	8	9	2	0	2	.0	.0	.00	000000	0	0	0
42	9	10	2	0	2	.0	.0	.00	000000	0	0	0
43	10	21	2	0	2	.0	.0	.00	000000	0	0	0
44	21	23	2	0	2	.0	.0	.00	000000	0	0	0
45	23	25	2	0	2	.0	.0	.00	000000	0	0	0
46	25	27	2	0	2	.0	.0	.00	000000	0	0	0
47	27	29	2	0	2	.0	.0	.00	000000	0	0	0

TOTAL WEIGHT OF MATERIALS= .000000
TOTAL MASS OF SYSTEM = .000000

NO TRABAJO. CONTACTO 34. SEGUNDO ORDEN . MAYOR ANGULO (ARCHIVO N342A)
SAP80 V85.02

* * * * * A S S E M B L Y O F E Q U A T I O N S * * * * *

J O I N T L O A D S A N D D I S P L A C E M E N T S

NODE L#	F/U	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
9	1	F	.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00
19	1	F	-.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00
34	1	F	.216E+02	.000E+00	.000E+00	.000E+00	.000E+00

S P R I N G A N D M A S S D A T A

JOINT	K/M	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
29	K	.100E+05	.100E+04	.100E+05	.000E+00	.000E+00	.000E+00
30	K	.100E+04	.100E+05	.100E+05	.000E+00	.000E+00	.000E+00
34	K	.000E+00	.000E+00	.100E+05	.000E+00	.000E+00	.000E+00

EVALUATION OF PROFILE OF STIFFNESS MATRIX

NUMBER OF EQUATIONS TO BE FORMED = 288
NUMBER OF EQUATIONS TO BE REDUCED = 288
NUMBER OF LOAD CONDITIONS = 1

FORMATION OF BLOCK IN STIFFNESS MATRIX

BLOCK NUMBER = 1 OF 1
LOWEST EQUATION NUMBER = 1
HIGHEST EQUATION NUMBER = 288
NUMBER OF TERMS IN BLOCK = 2700
LOWEST COUPLED BLOCK NUMBER = 1

FORM LOAD BLOCK NUMBER 1

NO TRABAJO. CONTACTO 34. SEGUNDO ORDEN . MAYOR ANGULO (ARCHIVO N342A)
SAP80 V85.02

* * * * * J O I N T D I S P L A C E M E N T S * * * * *

LOAD CONDITION 1 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	.016411	.006582	.000726	-.000025	.000000	-.001621
2	.016411	.007558	.000725	-.000022	-.000003	-.001636
3	.016082	.008546	.000726	-.000020	-.000005	-.001655
4	.015415	.009546	.000730	-.000019	-.000009	-.001681

			- 265 -			
9	.007718	.011647	.000682	.000000	-.000177	-.001799
10	.005911	.012550	.000579	.000012	-.000212	-.001812
11	.016411	.005292	.000725	-.000029	.000003	-.001605
12	.016411	.004332	.000722	-.000032	.000005	-.001596
13	.016092	.003377	.000725	-.000036	.000009	-.001589
14	.015458	.002425	.000733	-.000041	.000014	-.001584
15	.014192	.002109	.000764	-.000044	.000023	-.001580
16	.012930	.001793	.000794	-.000047	.000031	-.001575
17	.011672	.001479	.000826	-.000050	.000040	-.001570
18	.010106	.001010	.000864	-.000054	.000051	-.001562
19	.008547	.000542	.000904	-.000059	.000062	-.001555
20	.006996	-.000233	.000933	-.000067	.000072	-.001548
21	.004095	.013458	.000448	.000022	-.000246	-.001820
22	.005451	-.001005	.000969	-.000081	.000079	-.001543
23	.003514	.013718	.000404	.000030	-.000254	-.001822
24	.005105	-.001194	.000978	-.000087	.000079	-.001541
25	.002930	.013975	.000357	.000035	-.000261	-.001823
26	.004759	-.001380	.000988	-.000092	.000078	-.001540
27	.002342	.014230	.000308	.000038	-.000265	-.001824
28	.004413	-.001565	.001000	-.000094	.000078	-.001540
29	.001753	.014484	.000259	.000040	-.000266	-.001825
30	.004067	-.001748	.001012	-.000095	.000078	-.001539
31	.016411	.006606	.000726	-.000025	.000000	-.001621
32	.016408	.007580	.000725	-.000022	-.000003	-.001636
33	.016077	.008565	.000726	-.000020	-.000005	-.001655
34	.015410	.009565	.000730	-.000019	-.000004	-.001681
35	.014020	.009906	.000741	-.000021	-.000038	-.001711
36	.012610	.010250	.000747	-.000020	-.000068	-.001737
37	.011181	.010596	.000745	-.000017	-.000099	-.001759
38	.009372	.011120	.000724	-.000010	-.000137	-.001782
39	.016411	.006258	.000726	-.000026	.000000	-.001616
40	.016411	.005613	.000725	-.000028	.000002	-.001608
41	.016414	.005320	.000725	-.000029	.000003	-.001605
42	.016416	.004363	.000722	-.000032	.000005	-.001596
43	.016101	.003412	.000725	-.000036	.000009	-.001589
44	.015472	.002466	.000733	-.000041	.000014	-.001584
45	.014215	.002152	.000764	-.000044	.000023	-.001580
46	.012961	.001840	.000794	-.000047	.000031	-.001575
47	.011712	.001529	.000826	-.000050	.000040	-.001570
48	.010157	.001064	.000864	-.000054	.000051	-.001562

R E A C T I O N S A N D A P P L I E D F O R C E S

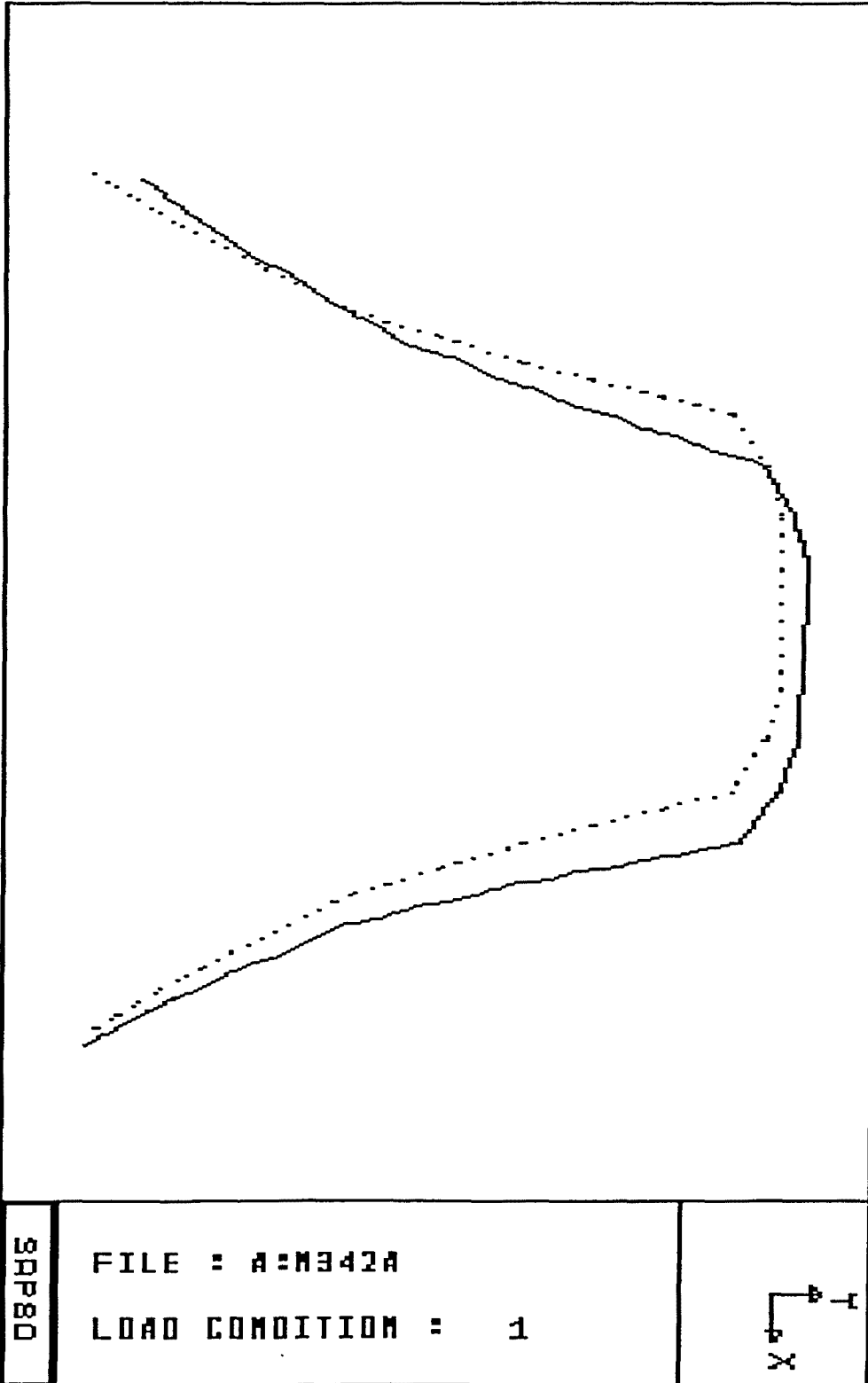
LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

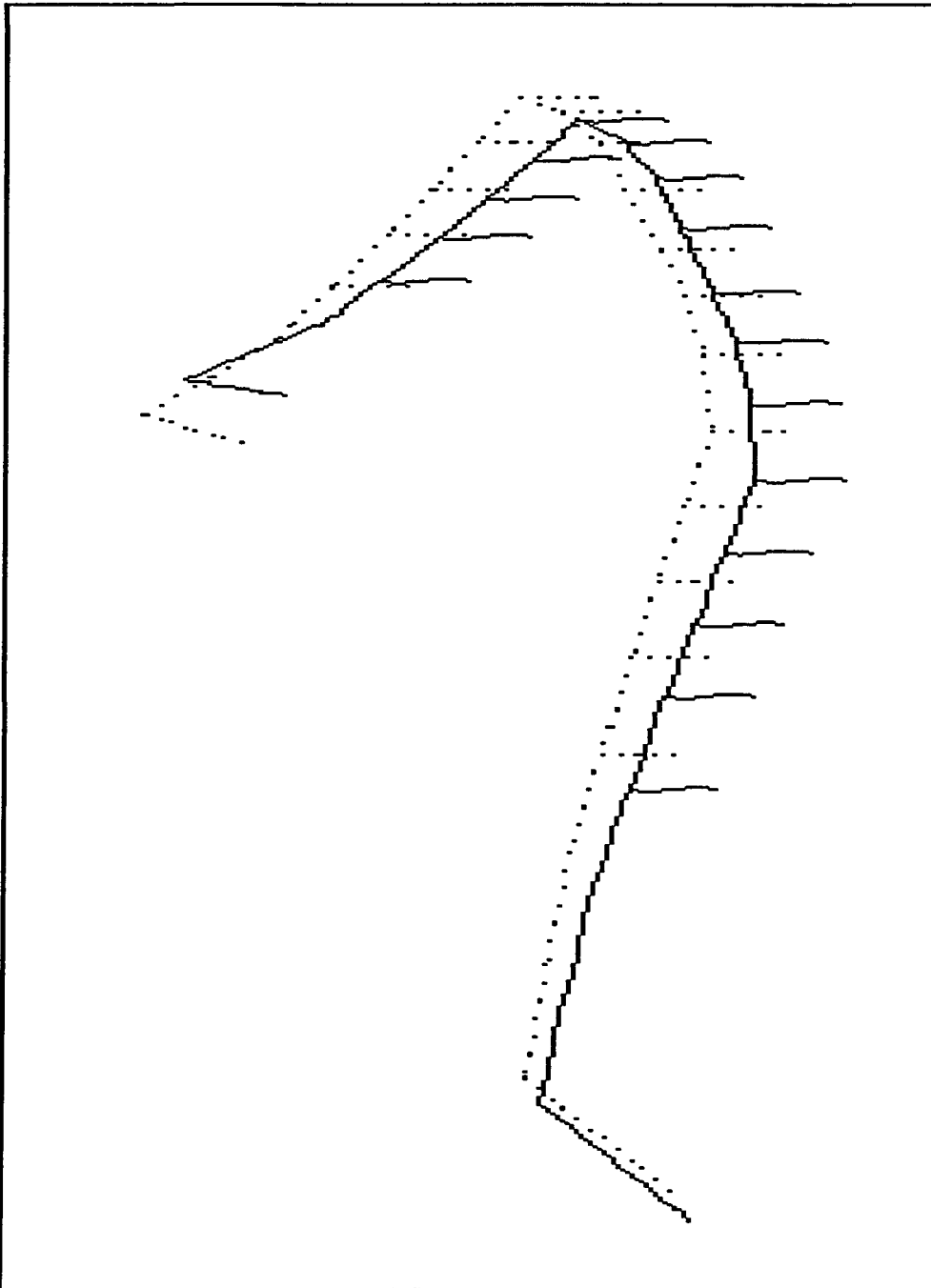
JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
1	.0000	.0000	.0000	.0000	.0000	.0000
2	.0000	.0000	.0000	.0000	.0000	.0000
3	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000
6	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000
8	.0000	.0000	.0000	.0000	.0000	.0000
9	1.5000	-1.5000	10.0000	.0000	.0000	.0000
10	.0000	.0000	.0000	.0000	.0000	.0000
11	.0000	.0000	.0000	.0000	.0000	.0000
12	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000
15	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000
17	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000


17-4-77

23	.0000	.0000	.0000	.0000	.0000	.0000
24	.0000	.0000	.0000	.0000	.0000	.0000
25	.0000	.0000	.0000	.0000	.0000	.0000
26	.0000	.0000	.0000	.0000	.0000	.0000
27	.0000	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000
29	-17.5332	-14.4840	-2.5859	.0000	.0000	.0000
30	-4.0668	17.4840	-10.1168	.0000	.0000	.0000
31	.0000	.0000	.0000	.0000	.0000	.0000
32	.0000	.0000	.0000	.0000	.0000	.0000
33	.0000	.0000	.0000	.0000	.0000	.0000
34	21.6000	.0000	-7.2973	.0000	.0000	.0000
35	.0000	.0000	.0000	.0000	.0000	.0000
36	.0000	.0000	.0000	.0000	.0000	.0000
37	.0000	.0000	.0000	.0000	.0000	.0000
38	.0000	.0000	.0000	.0000	.0000	.0000
39	.0000	.0000	.0000	.0000	.0000	.0000
40	.0000	.0000	.0000	.0000	.0000	.0000
41	.0000	.0000	.0000	.0000	.0000	.0000
42	.0000	.0000	.0000	.0000	.0000	.0000
43	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	-.4182E-10	.8335E-09	.8439E-10	.6006E-10	.8132E-10	-.4822E-09

APR 14 1971





SAP80	FILE : A:M342A LOAD CONDITION : 1	
-------	--------------------------------------	---------------------------------------------------------------------------------------

M342A

R.C.DE PIM. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO PIM342)

SYSTEM

N=48 L=1

JOINT

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1
32	X=-1	Y= 8	Z= 1
33	X=-1.6	Y= 7.8	Z= 1
34	X=-2.2	Y= 7.4	Z= 1
35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1

: CONDILO IZQUIERDO
: CONDILO DERECHO

:
SPRINGS

29	K=10000,1000,1000,0,0,0	: APOYO ELASTICO (CONDILO IZQUIERDO)
30	K=10000,1000,10000,0,0,0	: APOYO ELASTICO (CONDILO DERECHO)
34	K=0,0,10000,0,0,0	: PIEZA DENTAL 34 COACCIONADA VERTICALMENTE

:
FRAME

NM=2					
1	A=1.0	J=.1	I=0.1,0.1	E=21000000	: PIEZAS DENTARIAS
2	A=3.0	J=.1	I=0.1,0.1	E=21000000	: ESTRUCTURA OSEA
1, 1, 31	M=1		LP=3,0		: PIEZAS DENTARIAS
2, 2, 32					
3, 3, 33					
4, 4, 34					

ALFA

8, 8, 38
 9, 11, 41
 10, 12, 42
 11, 13, 43
 12, 14, 44
 13, 15, 45
 14, 16, 46
 15, 17, 47
 16, 18, 48
 17, 30, 28
 18, 28, 26
 19, 26, 24
 20, 24, 22
 21, 22, 20
 22, 20, 19
 23, 19, 18
 24, 18, 17
 25, 17, 16
 26, 16, 15
 27, 15, 14
 28, 14, 13
 29, 13, 12
 30, 12, 11
 31, 11, 40
 32, 40, 39
 33, 39, 1
 34, 1, 2
 35, 2, 3
 36, 3, 4
 37, 4, 5
 38, 5, 6
 39, 6, 7
 40, 7, 8
 41, 8, 9
 42, 9, 10
 43, 10, 21
 44, 21, 23
 45, 23, 25
 46, 25, 27
 47, 27, 29

M=2

: ESTRUCTURA OSEA

LP=2, 0

: LOADS

9 L=1 F= 1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO IZQUIERDO)
 19 L=1 F= -1.50, -1.50, 10, 0, 0, 0 : VECTOR DE FUERZA (LADO DERECHO)
 34 L=1 F= 0, 10.80, 0, 0, 0, 0 : ACCION LONGITUDINAL

: PLOT

VP=15,29 VH=11,22

:
 R.C.DE PIM. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO PIM342)
 SAP80 V84.04

 ***** ECHO OF SAP INPUT DATA *****

TOTAL NUMBER OF JOINTS = 48
 TOTAL NUMBER OF LOAD CONDITIONS = 1

P R E L I M I N A R Y S C A N O F F R A M E D A T A

NM=2

S E C T I O N P R O P E R T Y D A T A

FRAME ELEMENT DATA²⁷¹ -
 1, 1, 31 M=1 LP=3,0 :
 2, 2, 32
 3, 3, 33
 4, 4, 34
 5, 5, 35
 6, 6, 36
 7, 7, 37
 8, 8, 38
 9, 11, 41
 10, 12, 42
 11, 13, 43
 12, 14, 44
 13, 15, 45
 14, 16, 46
 15, 17, 47
 16, 18, 48
 17, 30, 28 M=2 :
 18, 28, 26
 19, 26, 24
 20, 24, 22
 21, 22, 20
 22, 20, 19
 23, 19, 18
 24, 18, 17
 25, 17, 16
 26, 16, 15
 27, 15, 14
 28, 14, 13
 29, 13, 12
 30, 12, 11 LP=2,0
 31, 11, 40
 32, 40, 39
 33, 39, 1
 34, 1, 2
 35, 2, 3
 36, 3, 4
 37, 4, 5
 38, 5, 6
 39, 6, 7
 40, 7, 8
 41, 8, 9
 42, 9, 10
 43, 10, 21
 44, 21, 23
 45, 23, 25
 46, 25, 27
 47, 27, 29
 :

EQUILIBRIUM EQUATION NUMBERS
 (ONE EQUATION FOR EACH UNKNOWN DISPLACEMENT)

JOINT #	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	157	158	159	160	161	162
2	169	170	171	172	173	174
3	181	182	183	184	185	186
4	193	194	195	196	197	198
5	205	206	207	208	209	210
6	217	218	219	220	221	222
7	229	230	231	232	233	234
8	241	242	243	244	245	246
9	247	248	249	250	251	252
10	253	254	255	256	257	258
11	133	134	135	136	137	138
12	121	122	123	124	125	126
13	109	110	111	112	113	114

17	61	62	63	64	65	66
18	49	50	51	52	53	54
19	37	38	39	40	41	42
20	31	32	33	34	35	36
21	259	260	261	262	263	264
22	25	26	27	28	29	30
23	265	266	267	268	269	270
24	19	20	21	22	23	24
25	271	272	273	274	275	276
26	13	14	15	16	17	18
27	277	278	279	280	281	282
28	7	8	9	10	11	12
29	283	284	285	286	287	288
30	1	2	3	4	5	6
31	151	152	153	154	155	156
32	163	164	165	166	167	168
33	175	176	177	178	179	180
34	187	188	189	190	191	192
35	199	200	201	202	203	204
36	211	212	213	214	215	216
37	223	224	225	226	227	228
38	235	236	237	238	239	240
39	145	146	147	148	149	150
40	139	140	141	142	143	144
41	127	128	129	130	131	132
42	115	116	117	118	119	120
43	103	104	105	106	107	108
44	91	92	93	94	95	96
45	79	80	81	82	83	84
46	67	68	69	70	71	72
47	55	56	57	58	59	60
48	43	44	45	46	47	48

I N P U T J O I N T D A T A

1	X=-0.4	Y= 8.0	Z= 0.0
2	X=-1.0	Y= 8.0	Z= 0.0
3	X=-1.6	Y= 7.8	Z= 0.0
4	X=-2.2	Y= 7.4	Z= 0.0
5	X=-2.4	Y= 6.6	Z= 0.0
6	X=-2.6	Y= 5.8	Z= 0.0
7	X=-2.8	Y= 5.0	Z= 0.0
8	X=-3.1	Y= 4.0	Z= 0.0
9	X=-3.4	Y= 3.0	Z= 0.0
10	X=-3.9	Y= 2.0	Z= 0.0
11	X= 0.4	Y= 8.0	Z= 0.0
12	X= 1.0	Y= 8.0	Z= 0.0
13	X= 1.6	Y= 7.8	Z= 0.0
14	X= 2.2	Y= 7.4	Z= 0
15	X= 2.4	Y= 6.6	Z= 0
16	X= 2.6	Y= 5.8	Z= 0
17	X= 2.8	Y= 5.0	Z= 0
18	X= 3.1	Y= 4	Z= 0
19	X= 3.4	Y= 3	Z= 0
20	X= 3.9	Y= 2	Z= 0
21	X=-4.4	Y= 1	Z= 0
22	X= 4.4	Y= 1	Z= 0
23	X=-4.55	Y= 0.75	Z= 0.5
24	X= 4.55	Y= 0.75	Z= 0.5
25	X=-4.7	Y= 0.5	Z= 1
26	X= 4.7	Y= 0.5	Z= 1
27	X=-4.85	Y= 0.25	Z= 1.5
28	X= 4.85	Y= 0.25	Z= 1.5
29	X=-5.0	Y= 0	Z= 2
30	X= 5	Y= 0	Z= 2
31	X=-0.4	Y= 8	Z= 1

:
:

U.S.A.

35	X=-2.4	Y= 6.6	Z= 1
36	X=-2.6	Y= 5.8	Z= 1
37	X=-2.8	Y= 5	Z= 1
38	X=-3.1	Y= 4	Z= 1
39	X=-0.2	Y= 8	Z= 0
40	X= 0.2	Y= 8	Z= 0
41	X= 0.4	Y= 8	Z= 1
42	X= 1	Y= 8	Z= 1
43	X= 1.6	Y= 7.8	Z= 1
44	X= 2.2	Y= 7.4	Z= 1
45	X= 2.4	Y= 6.6	Z= 1
46	X= 2.6	Y= 5.8	Z= 1
47	X= 2.8	Y= 5.0	Z= 1
48	X= 3.1	Y= 4.0	Z= 1
:			

GENERATED JOINT COORDINATES

JOINT #	X	Y	Z
1	-.400	8.000	.000
2	-1.000	8.000	.000
3	-1.600	7.800	.000
4	-2.200	7.400	.000
5	-2.400	6.600	.000
6	-2.600	5.800	.000
7	-2.800	5.000	.000
8	-3.100	4.000	.000
9	-3.400	3.000	.000
10	-3.900	2.000	.000
11	.400	8.000	.000
12	1.000	8.000	.000
13	1.600	7.800	.000
14	2.200	7.400	.000
15	2.400	6.600	.000
16	2.600	5.800	.000
17	2.800	5.000	.000
18	3.100	4.000	.000
19	3.400	3.000	.000
20	3.900	2.000	.000
21	-4.400	1.000	.000
22	4.400	1.000	.000
23	-4.550	.750	.500
24	4.550	.750	.500
25	-4.700	.500	1.000
26	4.700	.500	1.000
27	-4.850	.250	1.500
28	4.850	.250	1.500
29	-5.000	.000	2.000
30	5.000	.000	2.000
31	-.400	8.000	1.000
32	-1.000	8.000	1.000
33	-1.600	7.800	1.000
34	-2.200	7.400	1.000
35	-2.400	6.600	1.000
36	-2.600	5.800	1.000
37	-2.800	5.000	1.000
38	-3.100	4.000	1.000
39	-.200	8.000	.000
40	.200	8.000	.000
41	.400	8.000	1.000
42	1.000	8.000	1.000
43	1.600	7.800	1.000
44	2.200	7.400	1.000
45	2.400	6.600	1.000
46	2.600	5.800	1.000
47	2.800	5.000	1.000
48	3.100	4.000	1.000

 *** ECHO OF FRAME INPUT DATA ***

NUMBER OF MEMBER PROPERTIES = 2
 NUMBER OF DIFF. LOAD PATTERNS = 0

MEMBER PROPERTY NUMBER ----- = 1 SYMBOL= 1
 AXIAL AREA, A ----- = 1.000
 TORSIONAL MOMENT OF INERTIA, J = .100
 MOMENT OF INERTIA, I33 ----- = .100
 MOMENT OF INERTIA, I22 ----- = .100
 MODULUS OF ELASTICITY, E ----- = 21000000.000
 SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

MEMBER PROPERTY NUMBER ----- = 2 SYMBOL= 2
 AXIAL AREA, A ----- = 3.000
 TORSIONAL MOMENT OF INERTIA, J = .100
 MOMENT OF INERTIA, I33 ----- = .100
 MOMENT OF INERTIA, I22 ----- = .100
 MODULUS OF ELASTICITY, E ----- = 21000000.000
 SHEAR MODULUS, G ----- = 8076923.373 (USED FOR TOR & SHEAR)

EL.	I	J	P1	P2	MAT	EI	EJ	RZ	RELEASES	MI	MJ	LOAD # / PATTERN
												1
1	1	31	3	0	1	.0	.0	.00	000000	0	0	0
2	2	32	3	0	1	.0	.0	.00	000000	0	0	0
3	3	33	3	0	1	.0	.0	.00	000000	0	0	0
4	4	34	3	0	1	.0	.0	.00	000000	0	0	0
5	5	35	3	0	1	.0	.0	.00	000000	0	0	0
6	6	36	3	0	1	.0	.0	.00	000000	0	0	0
7	7	37	3	0	1	.0	.0	.00	000000	0	0	0
8	8	38	3	0	1	.0	.0	.00	000000	0	0	0
9	11	41	3	0	1	.0	.0	.00	000000	0	0	0
10	12	42	3	0	1	.0	.0	.00	000000	0	0	0
11	13	43	3	0	1	.0	.0	.00	000000	0	0	0
12	14	44	3	0	1	.0	.0	.00	000000	0	0	0
13	15	45	3	0	1	.0	.0	.00	000000	0	0	0
14	16	46	3	0	1	.0	.0	.00	000000	0	0	0
15	17	47	3	0	1	.0	.0	.00	000000	0	0	0
16	18	48	3	0	1	.0	.0	.00	000000	0	0	0
17	30	28	3	0	2	.0	.0	.00	000000	0	0	0
18	28	26	3	0	2	.0	.0	.00	000000	0	0	0
19	26	24	3	0	2	.0	.0	.00	000000	0	0	0
20	24	22	3	0	2	.0	.0	.00	000000	0	0	0
21	22	20	3	0	2	.0	.0	.00	000000	0	0	0
22	20	19	3	0	2	.0	.0	.00	000000	0	0	0
23	19	18	3	0	2	.0	.0	.00	000000	0	0	0
24	18	17	3	0	2	.0	.0	.00	000000	0	0	0
25	17	16	3	0	2	.0	.0	.00	000000	0	0	0
26	16	15	3	0	2	.0	.0	.00	000000	0	0	0
27	15	14	3	0	2	.0	.0	.00	000000	0	0	0
28	14	13	3	0	2	.0	.0	.00	000000	0	0	0
29	13	12	3	0	2	.0	.0	.00	000000	0	0	0
30	12	11	2	0	2	.0	.0	.00	000000	0	0	0
31	11	40	2	0	2	.0	.0	.00	000000	0	0	0
32	40	39	2	0	2	.0	.0	.00	000000	0	0	0
33	39	1	2	0	2	.0	.0	.00	000000	0	0	0
34	1	2	2	0	2	.0	.0	.00	000000	0	0	0
35	2	3	2	0	2	.0	.0	.00	000000	0	0	0
36	3	4	2	0	2	.0	.0	.00	000000	0	0	0

- 275 -

41	8	9	2	0	2	.0	.0	.00	000000	0	0	0
42	9	10	2	0	2	.0	.0	.00	000000	0	0	0
43	10	21	2	0	2	.0	.0	.00	000000	0	0	0
44	21	23	2	0	2	.0	.0	.00	000000	0	0	0
45	23	25	2	0	2	.0	.0	.00	000000	0	0	0
46	25	27	2	0	2	.0	.0	.00	000000	0	0	0
47	27	29	2	0	2	.0	.0	.00	000000	0	0	0

TOTAL WEIGHT OF MATERIALS= .000000
TOTAL MASS OF SYSTEM = .000000

R.C.DE PIM. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO PIM342)
SAP80 V85.02

* * * * * A S S E M B L Y O F E Q U A T I O N S * * * * *

J O I N T L O A D S A N D D I S P L A C E M E N T S

NODE L#	F/U	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
9	1	F	.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00
19	1	F	-.150E+01	-.150E+01	.100E+02	.000E+00	.000E+00
34	1	F	.000E+00	.108E+02	.000E+00	.000E+00	.000E+00

S P R I N G A N D M A S S D A T A

JOINT	K/M	X-DIR	Y-DIR	Z-DIR	XX	YY	ZZ
29	K	.100E+05	.100E+04	.100E+04	.000E+00	.000E+00	.000E+00
30	K	.100E+05	.100E+04	.100E+05	.000E+00	.000E+00	.000E+00
34	K	.000E+00	.000E+00	.100E+05	.000E+00	.000E+00	.000E+00

EVALUATION OF PROFILE OF STIFFNESS MATRIX

NUMBER OF EQUATIONS TO BE FORMED = 288
NUMBER OF EQUATIONS TO BE REDUCED = 288
NUMBER OF LOAD CONDITIONS = 1

FORMATION OF BLOCK IN STIFFNESS MATRIX

BLOCK NUMBER = 1 OF 1
LOWEST EQUATION NUMBER = 1
HIGHEST EQUATION NUMBER = 288
NUMBER OF TERMS IN BLOCK = 2700
LOWEST COUPLED BLOCK NUMBER = 1

FORM LOAD BLOCK NUMBER 1

R.C.DE PIM. CONTACTO 34. SEGUNDO ORDEN . (ARCHIVO PIM342)
SAP80 V85.02

* * * * * J O I N T D I S P L A C E M E N T S * * * * *

LOAD CONDITION 1 - DISPLACEMENTS "U" AND ROTATIONS "R"

JOINT	U(X)	U(Y)	U(Z)	R(X)	R(Y)	R(Z)
1	.3157E-02	.3713E-02	.2988E-03	-.2928E-03	.2189E-03	-.4653E-03
2	.3157E-02	.3991E-02	.4298E-03	-.3028E-03	.2177E-03	-.4613E-03
3	.3065E-02	.4266E-02	.6211E-03	-.3132E-03	.2148E-03	-.4566E-03
4	.2883E-02	.4538E-02	.8761E-03	-.3239E-03	.2106E-03	-.4506E-03

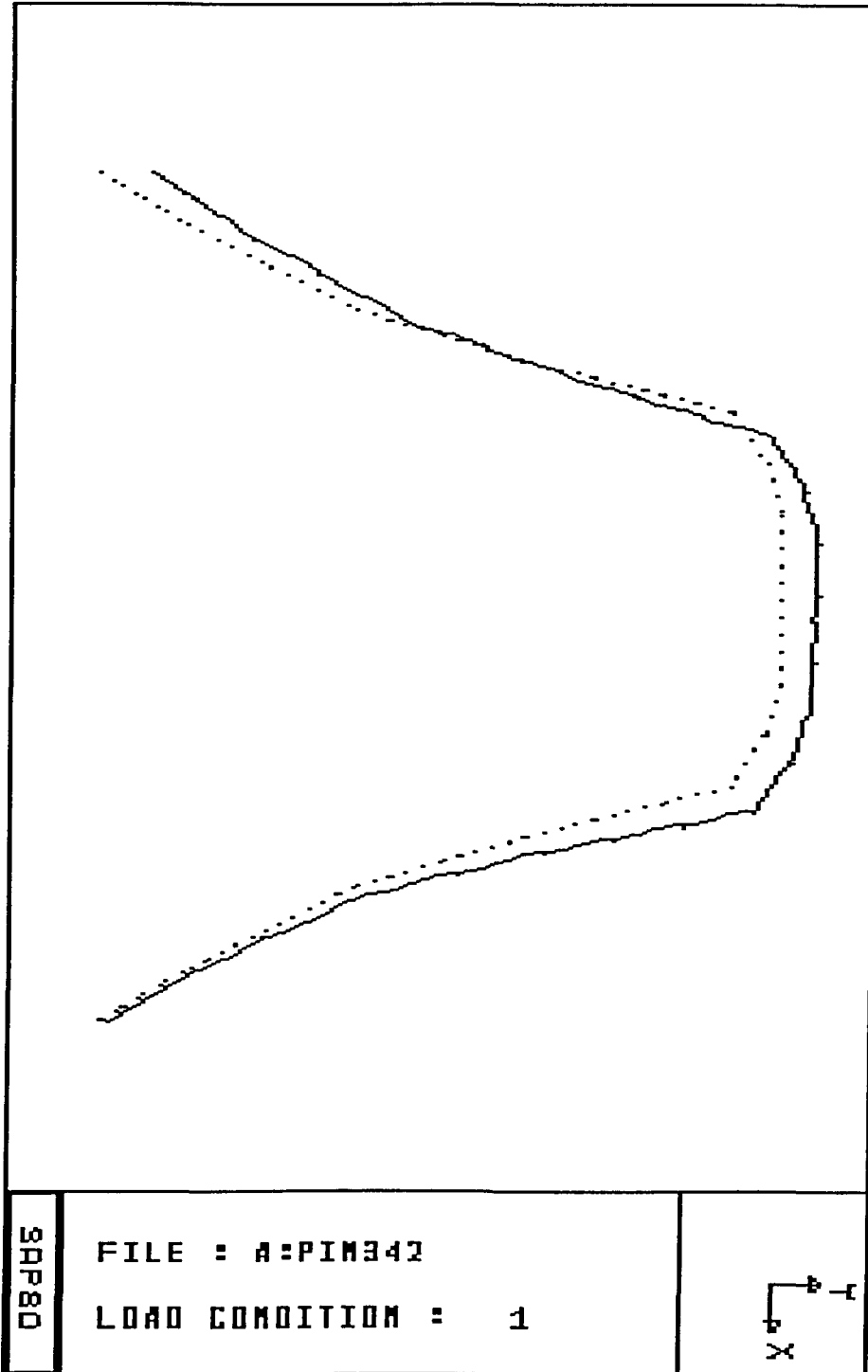
9	.9707E-03	.5059E-02	.2525E-02	-.3037E-03	.1979E-03	-.4228E-03
10	.5495E-03	.5269E-02	.2921E-02	-.2908E-03	.1967E-03	-.4197E-03
11	.3157E-02	.3339E-02	.1229E-03	-.2795E-03	.2211E-03	-.4698E-03
12	.3157E-02	.3056E-02	-.1041E-04	-.2695E-03	.2233E-03	-.4726E-03
13	.3062E-02	.2772E-02	-.9166E-04	-.2608E-03	.2244E-03	-.4750E-03
14	.2871E-02	.2486E-02	-.1240E-03	-.2530E-03	.2261E-03	-.4771E-03
15	.2489E-02	.2390E-02	.3023E-04	-.2479E-03	.2351E-03	-.4788E-03
16	.2105E-02	.2294E-02	.1783E-03	-.2420E-03	.2442E-03	-.4802E-03
17	.1721E-02	.2198E-02	.3195E-03	-.2353E-03	.2535E-03	-.4812E-03
18	.1239E-02	.2054E-02	.4724E-03	-.2258E-03	.2647E-03	-.4819E-03
19	.7573E-03	.1909E-02	.6117E-03	-.2150E-03	.2763E-03	-.4819E-03
20	.2757E-03	.1668E-02	.6807E-03	-.2038E-03	.2837E-03	-.4816E-03
21	.1309E-03	.5478E-02	.3304E-02	-.2798E-03	.1965E-03	-.4176E-03
22	-.2058E-03	.1427E-02	.7372E-03	-.1966E-03	.2891E-03	-.4814E-03
23	.1246E-03	.5680E-02	.3403E-02	-.2759E-03	.1955E-03	-.4170E-03
24	-.1812E-03	.1453E-02	.7425E-03	-.1940E-03	.2907E-03	-.4814E-03
25	.1179E-03	.5880E-02	.3501E-02	-.2731E-03	.1947E-03	-.4165E-03
26	-.1559E-03	.1477E-02	.7470E-03	-.1922E-03	.2919E-03	-.4814E-03
27	.1111E-03	.6078E-02	.3598E-02	-.2714E-03	.1943E-03	-.4162E-03
28	-.1301E-03	.1501E-02	.7510E-03	-.1911E-03	.2925E-03	-.4814E-03
29	.1041E-03	.6276E-02	.3695E-02	-.2709E-03	.1941E-03	-.4161E-03
30	-.1041E-03	.1524E-02	.7548E-03	-.1907E-03	.2928E-03	-.4814E-03
31	.3375E-02	.4006E-02	.2988E-03	-.2928E-03	.2189E-03	-.4653E-03
32	.3374E-02	.4294E-02	.4298E-03	-.3028E-03	.2177E-03	-.4613E-03
33	.3280E-02	.4579E-02	.6211E-03	-.3132E-03	.2148E-03	-.4566E-03
34	.3094E-02	.4864E-02	.8757E-03	-.3265E-03	.2106E-03	-.4506E-03
35	.2735E-02	.4952E-02	.1178E-02	-.3248E-03	.2093E-03	-.4438E-03
36	.2381E-02	.5039E-02	.1479E-02	-.3236E-03	.2075E-03	-.4377E-03
37	.2030E-02	.5123E-02	.1778E-02	-.3205E-03	.2052E-03	-.4324E-03
38	.1597E-02	.5245E-02	.2156E-02	-.3136E-03	.2020E-03	-.4269E-03
39	.3157E-02	.3620E-02	.2550E-03	-.2895E-03	.2194E-03	-.4665E-03
40	.3157E-02	.3433E-02	.1670E-03	-.2828E-03	.2205E-03	-.4688E-03
41	.3378E-02	.3618E-02	.1229E-03	-.2795E-03	.2211E-03	-.4698E-03
42	.3380E-02	.3325E-02	-.1041E-04	-.2695E-03	.2233E-03	-.4726E-03
43	.3286E-02	.3032E-02	-.9166E-04	-.2608E-03	.2244E-03	-.4750E-03
44	.3097E-02	.2739E-02	-.1240E-03	-.2530E-03	.2261E-03	-.4771E-03
45	.2724E-02	.2638E-02	.3023E-04	-.2479E-03	.2351E-03	-.4788E-03
46	.2350E-02	.2536E-02	.1783E-03	-.2420E-03	.2442E-03	-.4802E-03
47	.1974E-02	.2433E-02	.3195E-03	-.2353E-03	.2535E-03	-.4812E-03
48	.1504E-02	.2279E-02	.4724E-03	-.2258E-03	.2647E-03	-.4819E-03

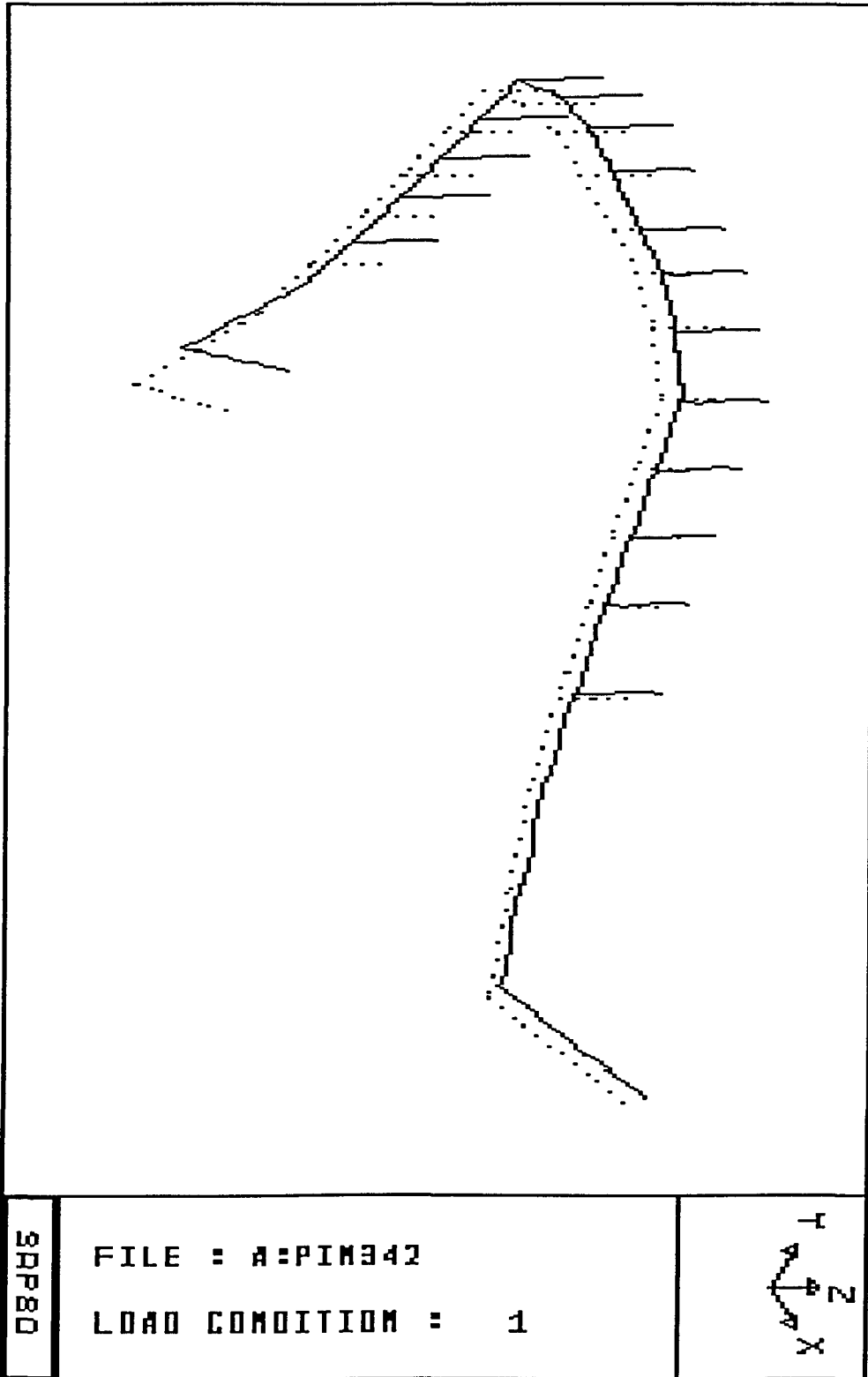
R E A C T I O N S A N D A P P L I E D F O R C E S

LOAD CONDITION 1 - FORCES "F" AND MOMENTS "M"

JOINT	F(X)	F(Y)	F(Z)	M(X)	M(Y)	M(Z)
1	.0000	.0000	.0000	.0000	.0000	.0000
2	.0000	.0000	.0000	.0000	.0000	.0000
3	.0000	.0000	.0000	.0000	.0000	.0000
4	.0000	.0000	.0000	.0000	.0000	.0000
5	.0000	.0000	.0000	.0000	.0000	.0000
6	.0000	.0000	.0000	.0000	.0000	.0000
7	.0000	.0000	.0000	.0000	.0000	.0000
8	.0000	.0000	.0000	.0000	.0000	.0000
9	1.5000	-1.5000	10.0000	.0000	.0000	.0000
10	.0000	.0000	.0000	.0000	.0000	.0000
11	.0000	.0000	.0000	.0000	.0000	.0000
12	.0000	.0000	.0000	.0000	.0000	.0000
13	.0000	.0000	.0000	.0000	.0000	.0000
14	.0000	.0000	.0000	.0000	.0000	.0000
15	.0000	.0000	.0000	.0000	.0000	.0000
16	.0000	.0000	.0000	.0000	.0000	.0000
17	.0000	.0000	.0000	.0000	.0000	.0000
18	.0000	.0000	.0000	.0000	.0000	.0000

23	.0000	.0000	.0000	.0000	.0000	.0000
24	.0000	.0000	.0000	.0000	.0000	.0000
25	.0000	.0000	.0000	.0000	.0000	.0000
26	.0000	.0000	.0000	.0000	.0000	.0000
27	.0000	.0000	.0000	.0000	.0000	.0000
28	.0000	.0000	.0000	.0000	.0000	.0000
29	-1.0414	-6.2760	-3.6951	.0000	.0000	.0000
30	1.0414	-1.5240	-7.5481	.0000	.0000	.0000
31	.0000	.0000	.0000	.0000	.0000	.0000
32	.0000	.0000	.0000	.0000	.0000	.0000
33	.0000	.0000	.0000	.0000	.0000	.0000
34	.0000	10.8000	-8.7568	.0000	.0000	.0000
35	.0000	.0000	.0000	.0000	.0000	.0000
36	.0000	.0000	.0000	.0000	.0000	.0000
37	.0000	.0000	.0000	.0000	.0000	.0000
38	.0000	.0000	.0000	.0000	.0000	.0000
39	.0000	.0000	.0000	.0000	.0000	.0000
40	.0000	.0000	.0000	.0000	.0000	.0000
41	.0000	.0000	.0000	.0000	.0000	.0000
42	.0000	.0000	.0000	.0000	.0000	.0000
43	.0000	.0000	.0000	.0000	.0000	.0000
44	.0000	.0000	.0000	.0000	.0000	.0000
45	.0000	.0000	.0000	.0000	.0000	.0000
46	.0000	.0000	.0000	.0000	.0000	.0000
47	.0000	.0000	.0000	.0000	.0000	.0000
48	.0000	.0000	.0000	.0000	.0000	.0000
TOTAL	-.1308E-10	-.3049E-09	-.4898E-10	.2444E-11	-.1390E-10	-.3856E-09





6. RESULTADOS

CONDILO DERECHO

PIEZA 34

	Fx	Fy	Fz	Dx	Dy	Dz
T	8.6285	-6.4920	-6.8768	-.8629E-03	.6492E-02	.6877E-03
TA	17.3330	-14.4840	-5.7968	-.001733	.014484	.000580
NT	-2.0714	9.4920	-9.0368	.2071E-02	-.9492E-03	.9037E-03
NTA	-40668	17.4840	-10.1168	.004067	-.001748	.001012
RC	1.0414	-1.5240	-7.5481	-.1041E-03	.1524E-02	.7548E-03
PIM						

Resultados correspondientes a las fuerzas (Fx, Fy, Fz) y desplazamientos (Dx, Dy, Dz) en el cóndilo derecho, durante las interferencias en la pieza 34 de trabajo, trabajo con mayor angulación, no trabajo, no trabajo con mayor angulación y de RC a PIM.

CONDILO IZQUIERDO

PIEZA 34

	Fx	Fy	Fz	Dx	Dy	Dz
T	2.1715	9.4920	-5.8259	.2171E-02	-.9492E-03	.5826E-03
TA	4.2670	17.4840	-6.9059	-.004267	-001748	.000691
NT	-87286	-6.4920	-3.6659	.8729E-03	.6492E-02	.3666E-03
NTA	-17.5332	-14.4840	-2.5859	.001753	.014484	.000259
RC	-1.0414	-6.2760	-3.6951	.1041E-03	.6276E-02	.3695E-02
PIM						

Resultados correspondientes a las fuerzas (Fx, Fy, Fz) y desplazamientos (Dx, Dy, Dz) en el cóndilo izquierdo, durante las interferencias en la pieza 34 de trabajo, trabajo con mayor angulación, no trabajo, no trabajo con mayor angulación y de RC a PIM.

CONDILO DERECHO

PIEZA 37

	Fx	Fy	Fz	Dx	Dy	Dz
PIM2	-.0789	1.500	-4.483	.7893E-05	-.1500E-03	.4448E-03
T	8.4022	-3.900	-6.5440	-.8402E-03	.3900E-02	.6544E-03
TA	16.8358	-9.300	-5.4640	-.001684	.009300	.000546
NT	-1.7557	6.900	-8.7040	.1756E-02	-.6900E-03	.8704E-03
NTA	-3.4801	12.300	-9.7840	.003480	-.001230	.000978
RC	1.0159	-.8760	-7.1488	-.1016E-03	.8760E-03	.7149E-03
PIM						

Resultados correspondientes a las fuerzas (Fx, Fy, Fz) y desplazamientos (Dx, Dy, Dz) en el cóndilo derecho, durante la máxima intercuspidación y con interferencias en la pieza 37 de trabajo, trabajo con mayor angulación, no trabajo, no trabajo con mayor angulación y de RC a PIM.

CONDILO IZQUIERDO

PIEZA 37

	Fx	Fy	Fz	Dx	Dy	Dz
PIM2	.0789	1.500	-4.4483	-.7893E-05	-.1500E-03	.4448E-03
T	2.3978	6.900	-2.6560	-.2398E-02	-.6900E-03	.2656E-03
TA	4.7642	12.300	-3.7360	-.004764	-.001230	.000374
NT	-9.0443	-3.900	-.4960	.9044E-03	.3900E-02	.4960E-04
NTA	-18.1199	-9300	.5840	.001812	.009300	-.000058
RC	-1.0159	-6.9240	.1088	.1016E-03	.6924E-02	-.108E-03
PIM						

Resultados correspondientes a las fuerzas (Fx, Fy, Fz) y desplazamientos (Dx, Dy, Dz) en el cóndilo izquierdo, durante la máxima intercuspidadación y con interferencias en la pieza 37 de trabajo, trabajo con mayor angulación, no trabajo, no trabajo con mayor angulación y de RC a PIM.

7. DISCUSSION

Una vez conocidos los valores numéricos de los desplazamientos y de las fuerzas de reacción, como lo importante es su interrelación y su comparación con los valores en máxima intercuspidadación, los colocamos en una hoja de cálculo electrónica para su procesamiento.

Para mejor comprensión y estudio, pedimos a la máquina que nos de la salida en forma de gráficos, pues de esta manera se realza el valor cualitativo de los resultados y puede hacerse mejor su comparación.

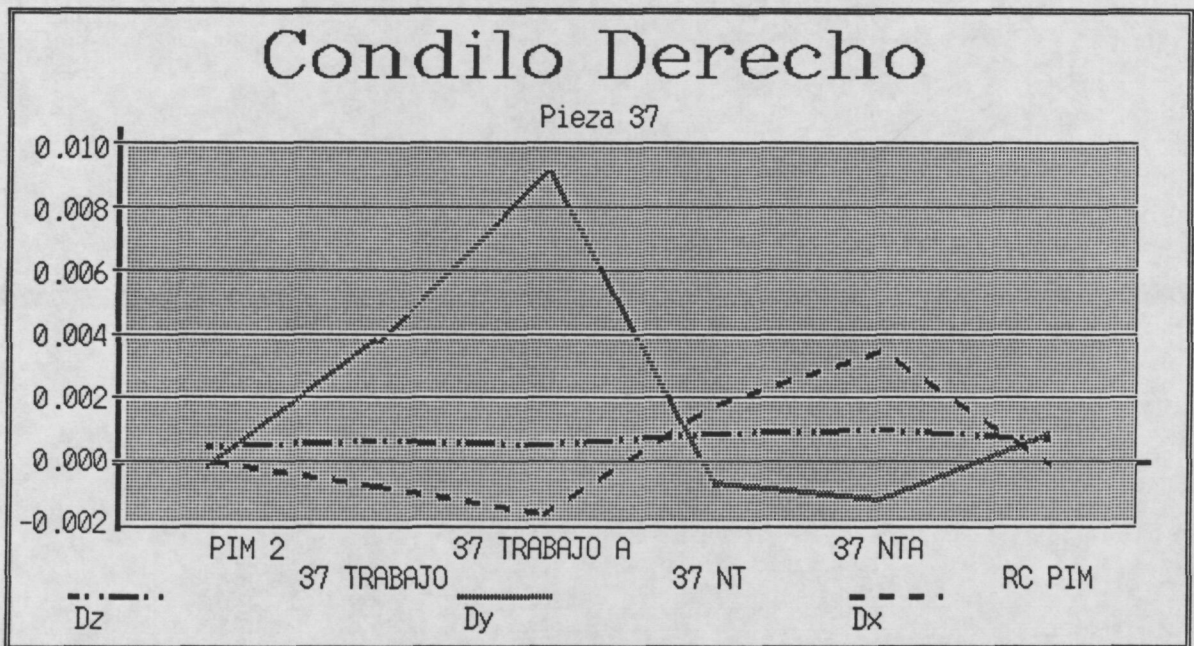


GRAFICO A

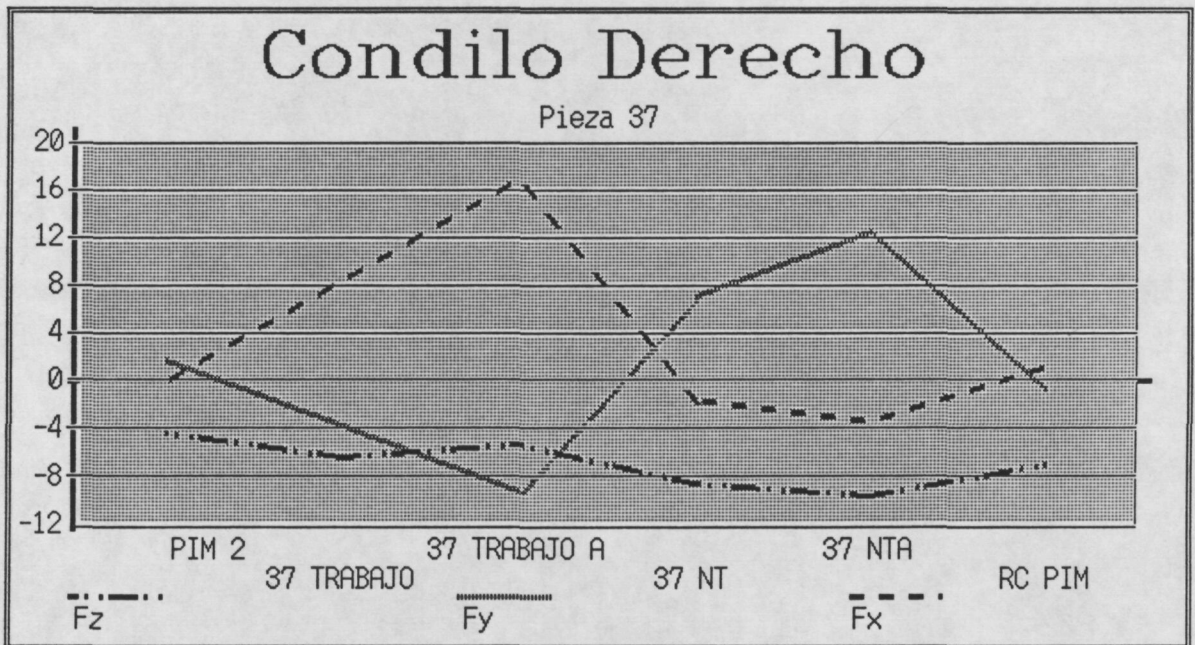


GRAFICO B

Condilo Derecho

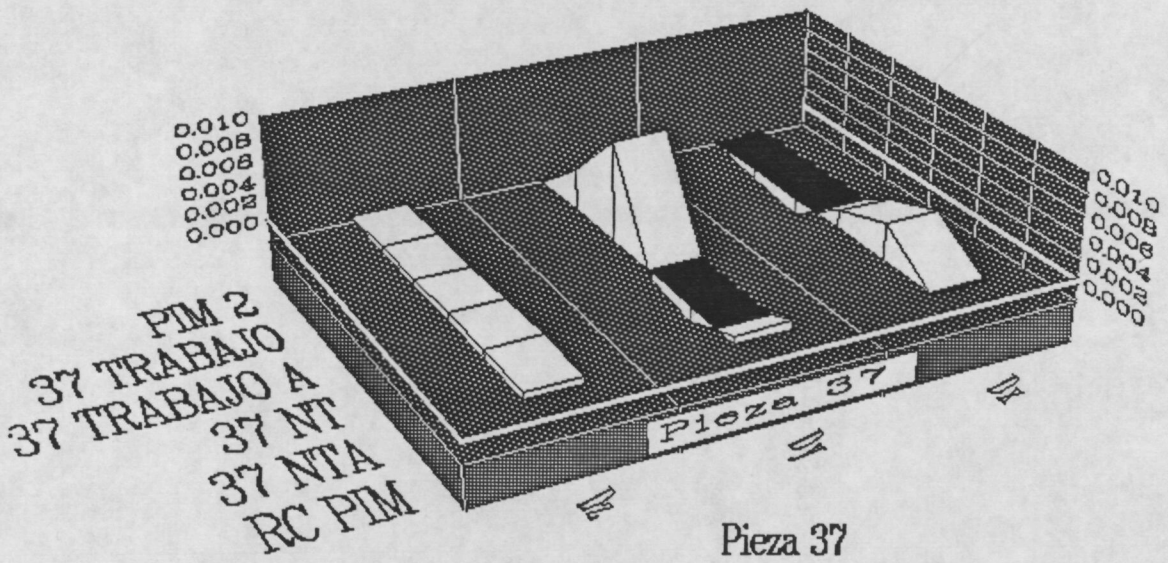


GRAFICO C

Condilo Derecho

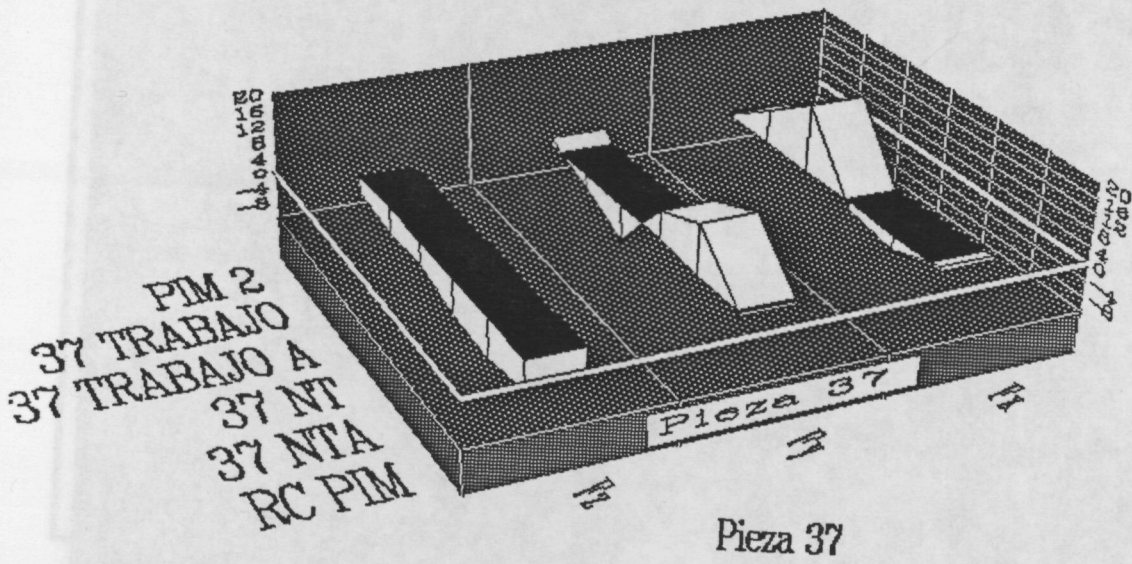


GRAFICO D

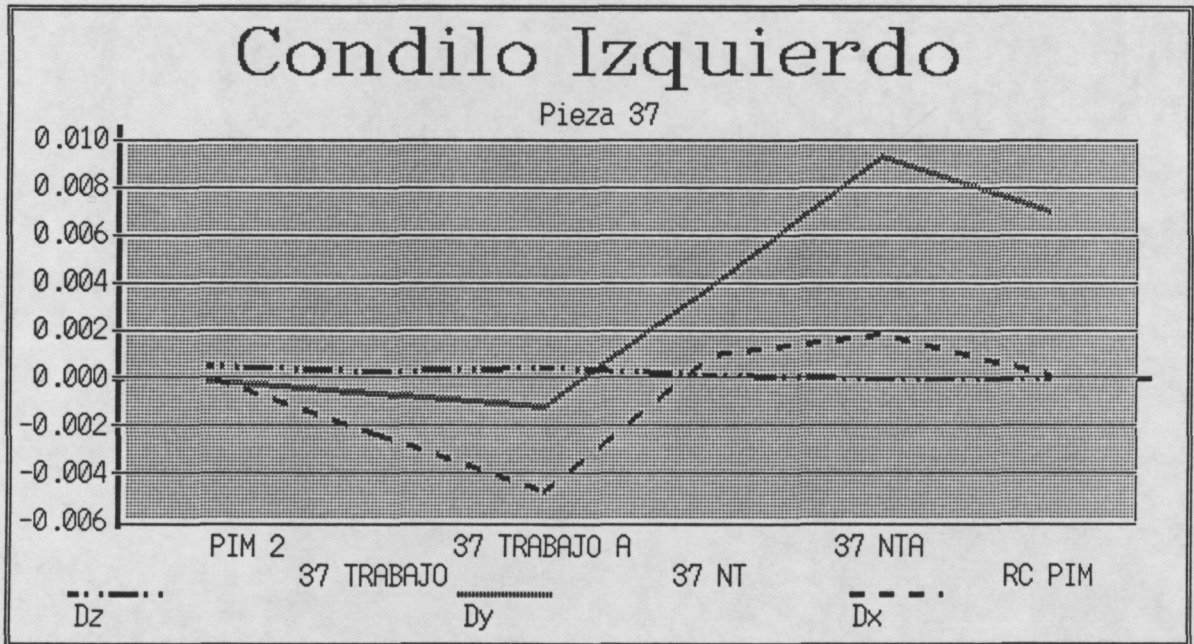


GRAFICO E

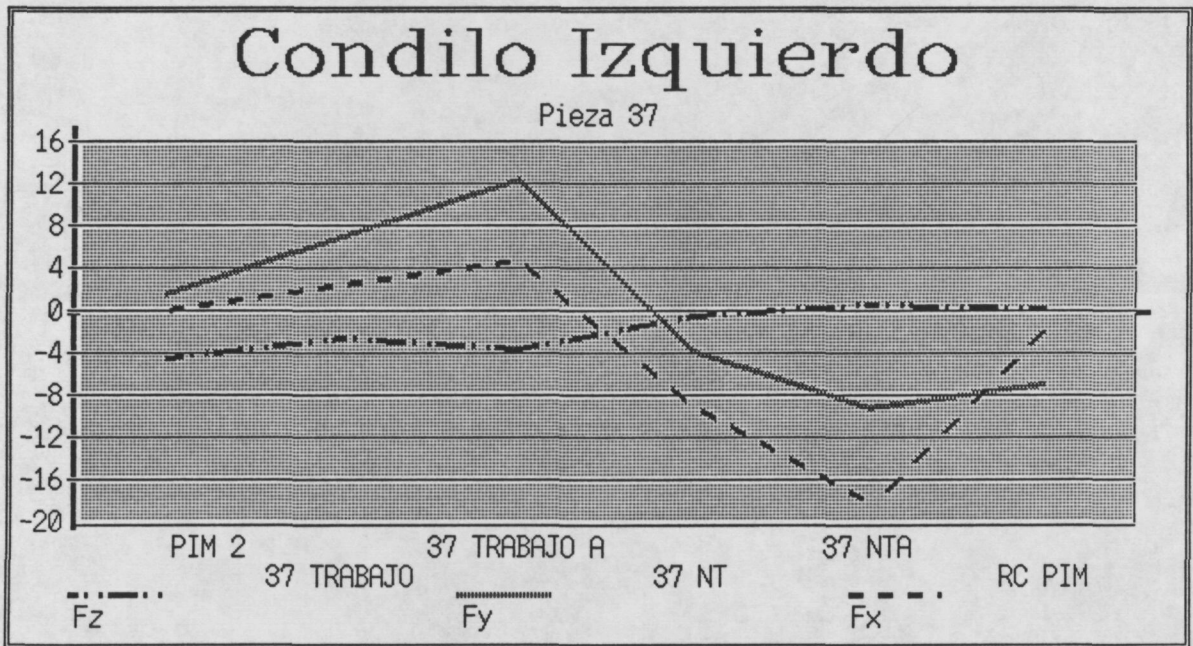


GRAFICO F

Condilo Izquierdo

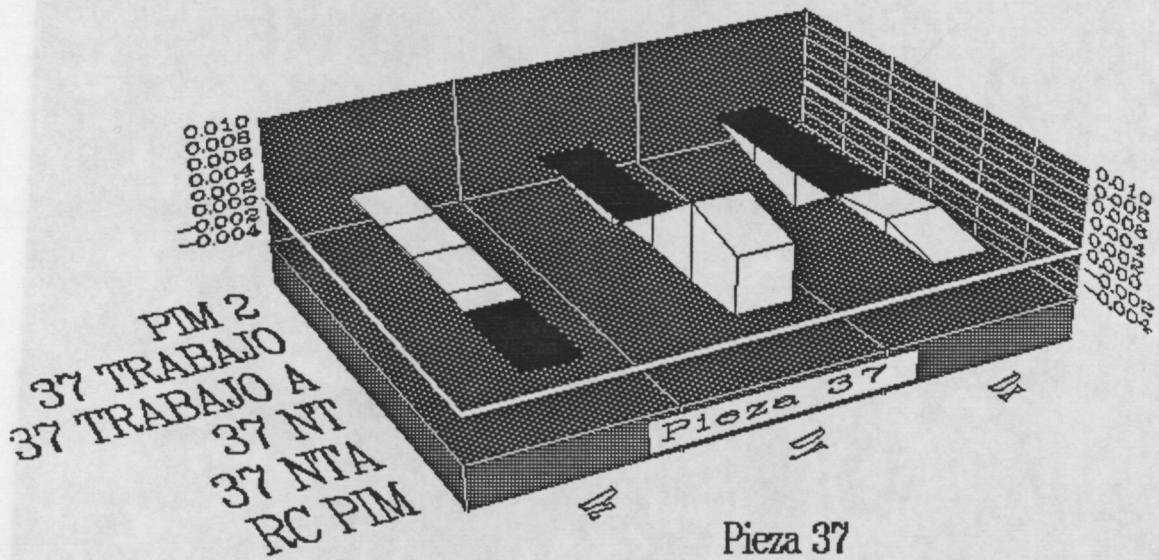


GRAFICO G