[redacted]

UNCLASSIFIED

7/26/60

JUL 26 1960

TX-43, 3.2
T-16822
Project No. 13.734.00

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
1st Review Date: 5/29/98
Authority: ADD
Name: R B Craner
2nd Review Date: 6-4-98
Authority: ADD
Name: W Layne
Classification Retained
Classification Changed to: U
Contains No DOE Classified Information
Contains UCAIT
Comments: Declassify

TO: DISTRIBUTION

Re: Corrections of Report on Static Test of TX-43 Clamp Joint.

PROGRAM 04380 CATEGORY 30233 ORG. 000 DATE 6054

The results and the tables of the report on the Static Test of TX-43 Clamp Joint, T-16822, Project No. 13.734.00, issued June 14, 1960, should be corrected to read as follows:

Results

Strain gage readings are given in Tables I and II; calculated stresses in Tables III and IV.

In Test No. 1 failure occurred while increasing the load from 110 percent to 120 percent design limit, and consisted of fracture of the four bolts joining the clamp sections. Figure 6 (of the original report) shows two of these bolts after failure. The highest stress obtained at 110 percent design limit load was 119,630 psi compression in the longitudinal direction at strain gage No. 19 (see Figure 4 of original report).

In Test No. 2 failure occurred with an axial load of 150 percent design limit combined with 125 percent moment loads. As in Test No. 1, failure consisted of fracture of the clamp bolts. The highest stress determined at 140 percent axial load combined with 125 percent moment loads (last complete set of readings obtained before failure) was 62,490 psi compression in the longitudinal direction at strain gage No. 19 (see Figure 4 of original report).

W. M. Sigmon

W. M. SIGMON - 1612-1

SANDIA SYSTEMATIC DECLASSIFICATION REVIEW
DOWNGRADING OR DECLASSIFICATION STAMP
CLASSIFICATION CHANGED TO: U
AUTHORITY: W C Layne
Emelda Selph 6/17/98
PERSON CHANGING MARKING & DATE
RECORD ID: 98SN2294
W C Layne 6/18/98
PERSON VERIFYING MARKING & DATE
DATED: 6/04/98

1613 Project Engineer: H. W. NUNEZ - 1613-3

Approved by: R. S. HOOPER - 1613-3

WMS:1612-1:ms

Enc: Tables I-IV

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CENTRAL RECORD FILE

TX-43
3-2

[redacted]

1943

[redacted] UNCLASSIFIED

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Copy to:
L. A. Dunn, 1222
Attn: F. W. Millikin
G. R. Norris, Jr.
D. M. Bruce, 1282
J. H. Wiesen, 1442
D. Williams, Jr., 1613
J. R. Harrison, 5523
R. K. Smeltzer, 3421-3

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1944

STRAINS - WING
STATIC TEST OF
TEST
BIAXI

	PERCENT LIMIT LOAD	LOADS, POUNDS P_1	LOADS, POUNDS P_2 & P_3 EACH	1		2		3		4		5		6		
				STRAIN GAGE												
				1	2	3	4	5	6	7	8	9	10	11	12	13
1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	10	11,000	2740	60	0	4	-1	-12	-10	5	9	7	0	25	7	28
3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	10	11,000	2740	25	-11	-3	-4	-6	-6	-4	-7	3	0	0	0	0
5	50	55,000	14,700	222	-67	100	-81	-81	-106	-104	-152	94	-84	200	-68	-55
6	60	66,000	17,640	266	-96	122	-115	-113	-169	-121	-221	145	-120	265	-104	-137
7	70	77,000	20,580	320	-123	151	-169	-119	-232	-128	-278	189	-160	325	-137	-268
8	80	88,000	23,520	396	-142	178	-229	-129	-299	-124	-367	244	-194	404	-171	-410
9	10	11,000	2740	5	-58	-12	-56	10	10	83	-48	22	-19	-5	-6	37
10	0	0	0	-13	-17	-30	-35	0	38	70	0	0	-5	-11	0	17
11	80	88,000	23,520	412	-150	203	-228	-146	-291	-99	-400	252	-197	438	-149	-409
12	90	99,000	26,460	500	-100	240	-190	-60	-288	-20	-350	310	-160	510	-100	-490
13	100	110,000	29,400	550	-120	290	-231	-70	-348	-20	-430	360	-200	600	-140	-640
14	10	11,000	2740	30	-92	6	-105	24	22	149	-66	40	-31	0	0	35
15	100	110,000	29,400	540	-150	300	-230	-80	-360	0	-470	380	-220	620	-130	-660
16	110	121,000	32,340	614	-170	350	-260	-80	-420	0	-510	430	-240	690	-180	-821
17																
18																
19																
20				(-) SIGN INDICATES A COMPRESSIVE STRAIN												
21				NO SIGN INDICATES A TENSILE STRAIN												
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																
34																
35																
36																
37																

ABLE 1
[illegible] PER INCH
OF TX-43 CLAMP JOINT
[illegible] 1
[illegible] NO.

PROJECT T-16822

UNCLASSIFIED

7		8		9		10		11		12		13		14	
AGE ELEMENT NO.															
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28	-59	54	-17	-21	-6	0	-22	0	0	0	0	14	-35	32	-14
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	-2	-23	-27	-5	-25	7	7	1	0	0	0	51	6
-55	-50	-82	-70	-70	-706	-750	-228	77	-11	117	-9	88	-179	332	-116
-157	-13	-238	-40	-48	-950	-1410	-266	38	0	105	0	101	-178	341	-117
-268	31	-376	0	13	-1260	-1780	-238	-18	2	4	3	97	-130	294	-90
-410	70	-562	47	99	-1470	-2170	-232	-133	31	126	0	27	-90	220	-53
37	-59	42	-88	-106	38	128	-86	0	59	-50	-49	-102	41	-198	6
17	-38	25	-78	-102	72	171	-91	9	-49	-51	-52	-107	75	-271	23
-409	155	-573	111	156	-1500	-2240	-189	—	102	-139	23	-69	-86	112	-51
-490	190	-700	140	250	-1790	-2630	-90	—	130	-210	30	0	0	80	0
-640	250	-900	180	310	-2090	-3080	-90	—	180	-360	40	-61	0	40	20
35	-38	33	-58	-70	-16	0	-80	—	-43	-45	-43	-168	155	-305	120
-660	320	-950	230	340	-2110	-3150	-80	—	190	-430	40	161	0	-53	20
-820	350	-1140	260	380	-2420	-3640	-100	—	210	-610	40	-135	44	-66	55

AIN

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UNCLASSIFIED

STRAINS
STATIC TE

	PER CENT LIMIT LOAD	LOADS POUNDS P_1	LOADS POUNDS P_2 & P_3 EACH	1		2		3		4		7		8	
				STRAIN											
				1	2	3	4	5	6	7	8	13	14	15	16
1	10	11,000	2940	50	-10	40	-10	-20	-30	10	-10	10	-10	10	-10
2	50	55,000	14.700	260	-70	180	-60	-30	-140	20	-120	80	-50	80	-70
3	60	66,000	17,640	330	-110	210	-90	-50	-170	-40	-170	80	-90	80	-80
4	70	77,000	20,580	400	-150	240	-110	-70	-240	-20	-230	40	-150	70	-90
5	80	88,000	23,520	460	-190	280	-130	-80	-280	-10	-300	-20	-130	30	-60
6	10	11,000	2,940	50	-40	40	-50	20	-100	140	-110	60	-50	40	-50
7	0	0	0	0	-10	10	-40	20	-60	90	-70	40	-40	30	-40
8	80	88,000	23,520	470	-210	300	-140	-90	-300	-20	-340	-30	-130	20	-70
9	90	99,000	26,460	510	-260	320	-180	-130	-400	-70	-410	-150	-50	-90	-10
10	100	110,000	29,400	550	-270	360	-230	-120	-470	-80	-490	-290	30	-160	40
11	10	11,000	2,940	70	-100	60	-100	40	-70	140	-100	130	-20	70	-70
12	100	110,000	29,400	580	-310	370	-230	-130	-490	-120	-520	-310	70	-190	70
13	110	121,000	32,340	630	-370	410	-270	-140	-550	-130	-590	-460	120	-260	120
14	0	0	0	20	-120	10	-100	20	-10	110	-50	160	-60	100	-100
15															
16	0	0	0	30	-80	20	-110	10	-20	130	-60	290	-40	90	-150
17	10	11,000	2,940	70	-100	60	-110	30	-20	130	-60	310	-70	110	-170
18	80	88,000	23,520	510	-300	280	-230	-100	-400	-10	-440	-60	-70	-120	-840
19	90	99,000	26,460	540	-310	320	-240	-70	-420	10	-470	-160	0	-200	-80
20	100	110,000	29,400	590	-340	370	-290	-100	-520	-70	-540	-330	50	-280	-10
21	110	121,000	32,340	640	-370	410	-310	-120	-580	-60	-610	-470	140	-370	30
22	120	132,000	35,280	720	-410	460	-350	-120	-670	-80	-710	-630	210	-440	140
23	125	137,500	36,750	750	-430	480	-360	-110	-720	-60	-760	-780	220	-470	180
24	10	11,000	2,940	60	-150	30	-130	40	30	160	-20	290	-190	130	-230
25	0	0	0	20	-120	0	-110	40	60	140	20	280	-180	120	-220
26	125	137,500	36,750	750	-430	500	-360	-80	-730	-30	-760	-790	210	-470	-160
27	130*	143,000	38,220	770	-480	510	-370	-100	-750	-100	-780	-820	220	-480	170
28	140*	154,000	38,750	750	-420	550	-380	-60	-780	10	-820	-1000	230	-500	200
29	150*	165,000	38,750	810	-530	590	-450	-55	-830	40	-900	-1170	240	-540	260
30															
31															
32				* NOT CONSIDERED IN LIMIT LOAD P_1 CASE, P_2											
33															
34				(-) SIGN INDICATES A COMPRESSIVE											
35				NO SIGN INDICATES A TENSILE											
36															
37															

TABLE II

PROJECT T-1682

UNCLASSIFIED

'S - MICROINCHES PER INCH
EST OF TX-43 CLAMP JOINT
TEST NO. 2
BIAXIAL NO.

	9		10		11		12		13		14	
	GAGE ELEMENT NO.											
	17	18	19	20	21	22	23	24	25	26	27	28
0	20	-20	20	-30	20	10	20	0	20	-10	40	-20
0	-220	-40	-470	-220	100	-10	80	-40	80	-100	230	-140
0	-390	30	-770	-200	80	-30	90	-60	90	-120	260	-170
0	-530	140	1010	-170	10	-60	60	-60	80	-130	300	-180
0	-670	250	1180	-140	-120	-70	-30	-50	80	-130	270	-180
0	200	0	270	40	-70	-30	10	30	-30	30	20	10
0	170	40	210	60	-80	-30	0	30	-40	50	-60	20
0	-670	260	1210	-140	-140	-70	-80	-50	0	-140	210	-160
0	-840	350	-1360	-140	-310	-60	-230	-60	-10	-130	190	-170
2	-950	450	-1470	-100	-470	-20	-400	-50	0	-70	160	-140
0	230	-100	380	-70	20	-20	0	0	-110	120	-120	60
0	-970	500	-1500	-60	-490	20	-440	-30	-120	-60	70	-100
0	-1080	610	-1600	0	-630	50	-640	-20	-70	-10	50	-80
00	220	-150	350	-120	10	-60	-40	-60	-240	290	-310	200
50	160	-130	280	-110	50	-60	60	-20	-230	270	-340	100
70	170	-140	260	-150	70	-70	80	-30	-210	260	-300	90
340	340	-136	-140	-230	-10	-190	-20	-230	50	-150	-70	520
00	-940	440	-1470	-110	-400	10	-340	-30	-220	40	-130	-60
0	-1120	530	-1570	-30	-540	40	-480	-10	-220	20	-120	-100
0	-1130	650	-1690	50	-710	80	-650	0	-210	10	-160	-110
40	-1240	760	-1840	130	-940	110	-903	0	-200	50	-110	-100
00	-1260	800	-1890	150	-1160	120	-1060	-10	-160	30	-120	-90
230	250	-270	310	-240	80	-150	50	-100	-250	260	-330	110
220	250	-260	320	-220	90	-140	60	-90	-260	260	-400	120
60	-1360	810	-1930	190	-1270	170	-1040	30	-130	120	-190	-60
70	-1260	810	-1940	200	-1210	170	-1170	10	-130	130	-170	-50
00	-1380	830	-2020	190	-1510	170	-1460	-10	-120	140	-190	-50
60	-1300	840	-2100	200	-2150		FAIL USE					
P2	AND P3						AT 125		PER CENT.			
E	STRAIN											
	STRAIN											

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SC 3060-A (10-60)

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TABLE III
PRINCIPAL STRESSE
STATIC TEST OF TX-43 C
TEST NO. 1
BIAXIAL NO.

PER CENT LIMIT LOAD	1		2		3		4		5		6		7	
	STRAIN GAGE ELE													
	1+2		3+4		5+6		7+8		9+10		11+12		13+14	
	SR	Sc	SR	Sc	SR	Sc	SR	Sc	SL	Sc	SL	Sc	SL	Sc
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	690	230	20	-70	-180	-160	100	130	80	30	320	180	280	-1620
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	360	10	-50	-60	-90	-90	-70	-100	40	10	-	-	-	-
50	2310	70	850	-560	-1340	-1530	-1780	-2150	770	-610	2060	-30	-2330	-2220
60	2740	-70	970	-870	-1950	-2380	-2250	-3050	1220	-840	2670	-200	-5250	-2100
70	3230	-200	1100	-1380	-2260	-3140	-2540	-3700	1580	-1130	3240	-350	-8400	-1860
80	4040	-140	1190	-1970	-2630	-3950	-2830	-4720	2080	-1320	4020	-440	-12390	-1460
10	-160	-650	-350	-690	150	150	780	-240	180	-140	-80	-90	640	-1500
0	-220	-250	-480	-520	140	440	810	270	-20	-60	-130	-40	150	-1060
80	4200	-170	1480	-1860	-2800	-3920	-2670	-5000	2240	-1300	4520	0	-11680	600
90	5400	740	2050	-1280	-1760	-3470	-1560	-4120	2980	-670	5520	780	-13920	940
100	5870	590	2480	-1560	-2100	-4200	-1870	-5050	3400	-940	6410	660	-18170	1290
10	0	-950	-410	-1250	360	350	1470	-200	340	-210	-	-	730	-8[illegible]
100	5680	320	2600	-1520	-2300	-4470	-1790	-5440	3560	-1100	6680	860	-18070	3350
110	6410	350	2980	-1910	-2520	-5160	-1940	-5900	3980	-1370	7300	540	-22960	2620

SR IS THE STRESS IN THE RADIAL DIRE
SL IS THE STRESS IN THE LONGITUDINA
SC IS THE STRESS IN THE CIRCUMFERE

(-) SIGN INDICATES A COMPRESSIVE S
NO SIGN INDICATES A TENSILE STR

UNCLASSIFIED

SES - PSI
13 CLAMP JOINT
1
No.

UNCLASSIFIED

7	8		9		10		11		12		13		14	
ELEMENT No.														
14	15+16		17+18		19+20		21+22		23+24		25+26		27+28	
Sc	SL	Sc	SL	Sc	SL	Sc	SL	Sc	SL	Sc	SL	Sc	SL	Sc
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-1620	1580	20	-770	-490	-240	-220	-	-	-	-	120	-920	890	-140
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
-	-20	-60	-1040	-1130	-430	-870	300	300	30	10	-	-	1680	620
-2220	-3420	-3160	-9840	-23740	-33380	-17600	2290	470	3710	960	1120	-4870	9470	-570
-2100	-8180	-3850	-11740	-31460	-48770	-23770	1240	410	3420	1120	1540	-4720	9750	-520
-1860	-12250	-4030	-13070	-40900	-60520	-26820	-560	-130	160	140	1550	-3320	8510	-100
-1460	-17800	-4490	-12520	-46820	-73160	-30800	-4000	-420	4100	1350	170	-2270	6500	380
-1500	590	-2360	-3040	100	3250	-1430	630	1920	-2150	-2130	-2860	350	-6240	-1670
-1060	-20	-2270	-2560	1250	4600	-1130	-230	-1500	-2220	-2240	-2700	1380	-8410	-1820
600	-17640	-2580	-10990	-47180	-74980	-30150	-	-	-4280	-740	-3000	-3380	3080	-570
940	-21300	-2940	-11030	-55620	-86620	-31100	-	-	-6520	-1270	-	-	2550	750
1290	-27380	-3780	-12290	-64750	-101280	-35920	-	-	-11300	-2550	-1940	-570	1460	1010
-860	450	-1540	-2470	-1340	-860	-2610	-	-	-1930	-1880	-3890	3350	-8580	950
3350	-28480	-2680	-11530	-65080	-103450	-36350	-	-	-13580	-3300	5120	1510	-1660	90
2620	-34340	-3740	-13550	-74750	-119630	-42250	-	-	-19440	-5230	-3880	130	-1580	1130

RECTION.
NAL (OR AXIAL) DIRECTION.
ERENTIAL DIRECTION.

E STRESS.
STRESS.

UNCLASSIFIED

1947

UNCLASSIFIED

STATIC TEST OF T[illegible]
TEST [illegible]
[illegible]

PER CENT LIMIT LOAD	1		2		3		4		7		8		
	STRAIN GAGE [illegible]												
	1 & 2		3 & 4		5 & 6		7 & 8		13 & 14		15 & 16		17 [illegible]
	SR	SC	SR	SC	SR	SC	SR	SC	SL	SC	SL	SC	SL
10	540	80	420	40	-340	-420	80	-80	220	-220	220	-[illegible]	430
50	2740	180	1850	-10	-880	-1730	-220	-1310	2080	-840	1890	-[illegible]	-7380
60	3400	-20	2090	-240	-1220	-2160	-1110	-2120	1700	-2110	1790	-1790	-12[illegible]
70	4060	-210	2360	-360	-1720	-3040	-1110	-2740	-[illegible]	-4400	1380	-2210	-15550
80	4600	-450	2740	-440	-1990	-3540	-1260	-3510	-1860	-4320	390	-1630	-18[illegible]
10	430	-270	270	-430	-150	-1080	1200	-740	1440	-1030	800	-1220	6[illegible]
0	-40	-120	-40	-420	0	-620	780	-470	900	-900	580	-990	5780
80	4640	-640	2940	-480	-2180	-3810	-1520	-4010	-2180	-4420	-20	-2040	-18880
90	4910	-1070	3020	-860	-3030	-5120	-2370	-5010	-5240	-3000	-2960	-1160	-23440
100	5260	-1260	3290	-1290	-3180	-5890	-2760	-5860	-8950	-1770	-4[illegible]	-230	-26000
10	430	-890	310	-930	200	-660	1240	-620	3950	590	1570	-1570	6380
100	5530	-1380	3400	-1250	-3370	-6160	-3370	-6470	-9210	-690	-5390	440	-26160
110	5880	-1880	3720	-1560	-3710	-6900	-3750	-7320	-13510	-510	-7140	1370	-28630
0	-220	-1310	-260	-1120	190	-40	1080	-160	4530	-400	2240	-2240	5590
0	40	-810	-190	-1200	40	-190	1280	-200	8850	1450	1450	-3930	3870
10	430	-890	280	-1040	270	-120	1280	-200	9210	690	1900	-4380	4090
80	4760	-1530	2360	-1600	-2680	-5010	-1790	-5130	-2570	-2790	-11720	-27860	0540
90	5070	-1530	2790	-1560	-2410	-5120	-1670	-5400	-5090	-1500	-7120	-4430	-25780
100	5530	-1690	3180	-1950	-3140	-6400	-2860	-6610	-10030	-1510	-9000	-2950	-27790
110	6000	-1840	3560	-2030	-3600	-7170	-3020	-7280	-13640	[illegible]	-11490	-2520	-29850
120	6730	-2120	3990	-2300	-3940	-8210	-3630	-8520	-18710	570	-12180	320	-32310
125	6960	-2350	4180	-2340	-4050	-8860	-3590	-9020	-22750	-330	-13260	1310	-32570
10	120	-1510	-150	-1390	580	500	1780	380	7470	-3310	1970	-6100	5420
0	-220	-1310	-420	-1270	690	850	1700	760	7220	-3100	1750	-5870	5510
125	6960	-2350	4410	-2260	-3700	-8750	-3240	-8910	-23160	-740	-13450	670	-32570
130	7160	-2390	4490	-2340	-4010	-9060	-4160	-9520	-25620	-1180	-13680	900	-32480
140	7160	-2700	4920	-2300	-3660	-9250	-3000	-9450	-29660	-2080	-14030	1660	-32930
150	7350	-3050	5110	-2960	-3740	-9790	-2960	-10260	-34970	-3360	-14740	3200	-33470

SR IS THE STRESS IN THE RADIAL DIRECTION
SL IS THE STRESS IN THE LONGITUDINAL (OR
SC IS THE STRESS IN THE CIRCUMFERENTIA

(-) SIGN INDICATES A COMPRESSIVE ST
NO SIGN INDICATES A TENSILE STRESS.

UNCLASSIFIED

PROJECT T-1622

T-38 CLAMP JOINT

No. 2

GAGE NO.

9		10		11		12		13		14	
ELEMENT NO.											
17-18		19-20		21-22		23-24		25-26		27-28	
Sa	Sc	Sa	Sc	Sa	Sc	Sa	Sc	Sa	Sc	Sa	Sc
410	-450	360	-770	730	510	640	190	540	-30	1080	-260
2980	-3340	17020	-11420	3090	620	2170	-520	1440	-2490	6000	-2290
12130	-2710	26380	-13600	3260	-200	2800	-1060	1790	-2970	6680	-2960
1650	-590	30640	4090	-250	-1820	1840	-1340	1820	-3380	7850	-2910
1870	1660	36230	6640	-4480	-3360	-1420	1870	1820	-3380	6900	-3190
6360	1880	8990	3810	-2610	-1410	600	1050	-670	670	730	510
5780	2870	7250	3880	-2830	-1710	-280	960	-800	1220	-1720	90
2880	1980	37190	6920	-5110	-3510	-3020	-2340	-1320	-4960	5180	-3620
9440	3240	-44680	-17240	-10430	-4830	-7880	-4070	-1540	-9230	4460	-3420
26000	5390	-47720	-17000	-15140	-5060	-13200	-5350	-660	-2230	5780	-2950
1380	-1030	11490	1340	450	-450	-	-	-2370	2780	-3250	780
26160	6790	-48300	-16010	-15400	-3990	-14280	-5090	-4330	-3040	1290	-2520
28630	9260	-51230	-15140	-19280	-4330	-19600	-6370	-2960	-1160	840	-2080
6590	-2710	10010	-530	-250	-1820	-1840	-2280	-7910	6970	-7980	3450
7870	-2630	7880	-870	1030	-1440	1720	-70	-4780	6430	-9880	-10
16090	-2860	6860	-2330	1570	-1570	2260	-200	-4240	6300	-8700	40
9540	-1130	-6800	-9270	-2100	-6140	-2800	-7510	180	-4300	2660	15890
25780	5160	-47810	-17320	-12630	-3440	-11100	-4150	-6620	-800	-7890	-3770
27790	7180	-56240	-15710	-16810	-3800	-15370	-4820	-6810	-1450	-4760	-4310
29850	10660	-53310	-14300	-21840	-4130	-20680	-6110	-6590	-4410	-4220	-4440
32310	12530	-56370	-12880	-28880	-5310	-28640	-8460	-5890	-290	-4440	-4220
32570	13610	-58720	-13000	-35780	-7090	-34460	-10470	-4880	1170	-4660	-3980
6420	-6240	7610	-4720	1170	-4020	650	-2710	-5510	5920	-11380	-170
5510	-5220	-	-	1550	-3410	1060	-2300	-5830	5830	-11600	60
32570	13610	-59630	-12100	-32460	-4650	-32810	-8820	-3010	2600	-3750	-2850
32480	12930	-72930	-45400	-36900	-5970	-37140	-10680	-2910	2910	-6520	-3380
32930	14380	-62490	-12940	-76450	-8790	-46550	-14040	-2500	3330	-6520	-3380
35470	14510	-64940	-13380	-	-	-	-	-	-	-	-

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(OR AXIAL) DIRECTION.

VTIAL DIRECTION.

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