FINAL REPORT

(Preliminary)

This report consist of a narrative detailing all aspects of the LiDAR flight, fieldwork and office data processing procedures.

LiDAR Flight Report

A Cessna 208B Grand Caravan, N704MD, was mobilized from Folsom Field, Vinemont, AL to Watsonville Municipal Airport, Watsonville, CA on 02 April 2006. This aircraft was outfitted with an Optech ALTM 3100 LIDAR system (04SEN155).

Mission planning for the project determined that 3 areas consisting of 121 lines including three control lines, would be needed to successfully cover the specified area for lidar collection. Area would be flown at 120-knot ground speed, 1000 meters above ground level. Areas B & C would be flown at 120-knot ground speed and 2400 meters above ground level. The combined areas would take approximately thirty-six hours to complete.

Six GPS base stations were located within the project area and two stations located within close proximity to the project area were used to support the precise positioning of the ALTM's sensor head during the entire duration of each flight. The base stations were Leica System 500 units operated by Optimal Geomatics, Inc.

The actual local flight times and duration of flights were controlled by fuel consumption of the aircraft, safety of flight operations in the particular airspace and during times when the GPS constellation was most favorable, producing the highest number of satellites visible in the best geometric configuration relative to the GPS receivers onboard the aircraft as well as at the master stations on the ground. A standard of flying with no less than 7 satellites visible and a PDOP (position dilution of precision) of less than 3.0 were adopted.

The LiDAR survey was completed in twelve flights. Data collection for the first flight started on 06 April2006 around 02h30 UTC and ended around 03h50 UTC. Lines fifty-eight, forty-four and forty-three were collected during this flight. The second flight began on 07 April 2006 around 20h30 UTC and ended around 03h30 UTC. Lines forty-two through sixty-nine were collected during this flight. The third flight began on 08 April 2006 around 19h00 UTC and ended around 1h30 UTC. During this flight lines one through sixteen were collected. The fourth flight began on 09 April 2006 around 02h00 UTC and ended around 08h50 UTC. During this flight lines seventeen through thirty were collected. The fifth flight began on 09 April 2006 around 17h50 UTC and ended around 19h50. During this flight lines thirty-one and thirty-two were collected. The sixth flight began on 10 April 2006 around 4h00 UTC and ended around 7h10 UTC. Lines thirty-three through forty except line thirty-six were collected during this flight. The seventh flight began on 11 April 2006 around 23h30 UTC and ended around 02h20 UTC. During this flight lines thirty-six through thirty-seven were collected and also line thirteen and fifteen were collected. The eighth flight began on 18 April 2006 around 23h40 UTC and ended around 03h00 UTC. During this flight lines one through six were collected. The ninth flight began on 19 April 2006 around 2h30 UTC and ended around 7h20 UTC. During this flight acquisition began on the second area of the project. Lines one through fifteen were collected. The tenth flight began on 20 April 2006 around 00h10 UTC and ended around 5h30 UTC. This flight began acquisition on the third area of the project. Lines nineteen through thirty-seven were collected during this flight. This concluded the initial acquisition.

During in-office data processing issues were identified with some of the collected data files. As such, a Cessna 208B Grand Caravan, N704MD, was remobilized to Watsonville Municipal Airport, Watsonville, CA on 29 April 2006. This aircraft was outfitted with an Optech ALTM 3100 LIDAR system (04SEN155).

The eleventh flight began on 30 April 2006 around 20h30 UTC and ended around 3h15 UTC. During this flight lines nineteen through thirty-seven, along with lines thirty-nine and sixteen were flown during this flight. The twelfth flight began on 01 May 2006 around 20h00 UTC and ended around 21h40 UTC, collecting lines one, three and sixteen.

This completed the LiDAR data collection for the project and the ground crews were instructed to continue with their remaining work in and around the project area.

Appendix A: Base Station Locations

Base Station	Latitude	Longitude	Ellipsoid Height (m)
B1458	37 03 48.11847 N	121 47 44.54976 W	802.526
Bell	37 02 18.85844 N	121 18 40.02770 W	93.15
FELIPE	36 57 40.53870 N	121 23 55.48456 W	102.96
G1080	37 04 19.05656 N	121 36 08.64107 W	48.864
GAP	37 15 28.92799 N	122 07 15.79604 W	771.14
M874	37 26 10.03019 N	121 54 24.89053 W	-27.688
MHCB	37 20 29.49798 N	121 38 33.22352 W	1262.313
MHCB-B	37 20 23.29339 N	121 39 17.38053 W	1034.378
MOON2	37 26 20.30416 N	122 26 34.64751 W	-10.706
P222	37 32 21.23910 N	122 04 59.68777 W	54.029
P242	36 57 14.13119 N	121 27 47.39778 W	15.343
ppt1	37 11 13.48453 N	122 23 23.76733 W	8.386
U1447	37 02 39.48184 N	121 17 21.80119 W	88.397
WVI	36 56 11.71499 N	121 47 28.03085 W	13.404
X572	37 28 54.53102 N	122 08 59.09319 W	-29.744
zoa1	37 32 34.96926 N	122 00 57.34253 W	-3.124

Appendix B: Flight Logs

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : T. ROBBINS
Pilot(s) : K. HILL
Aircraft : N704MD
Airport : WVI
Mission : SANTA CLARA CO.
Wheels Up : 11:44

Weather

Date : April 07, 2006
Julian Day : 097
Temperature : 16 C
Visibility : 10
Clouds : CLEAR BELOW 12000
Precipitation : NONE
Wind Dir : 250
Wind Speed : 09
Pressure : 3010

Statistics

Laser Time : 02:44:27

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
22:50:21	22:50:35	1	984	133.00	1.5	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
22:51:18	22:52:17	1	1003	133.00	1.5	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
22:54:40	22:55:49	1	990	133.00	1.7	9	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
22:58:18	22:59:05	1	982	133.00	1.7	9	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
23:06:58	23:07:12	43	1325	313.00	1.7	9	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
23:07:36	23:09:30	43	1355	313.00	1.7	9	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
23:11:46	23:21:37	45	1267	313.00	1.7	9	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
23:23:58	23:33:29	46	1013	133.00	2.1	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
23:36:15	23:45:44	47	1242	313.00	2.1	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
23:48:49	23:58:34	48	996	133.00	2.1	7	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:00:42	00:01:00	49	1278	313.00	2.1	7	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln

00:03:31 00:12:24 49 1286 313.00 2.1 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:14:45 00:24:25 50 977 133.00 2.0 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:26:37 00:34:27 51 1285 313.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:40:27 00:48:47 52 1007 133.00 1.9 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:51:01 00:58:51 53 1280 313.00 2.0 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:01:18 01:08:25 54 1000 133.00 2.0 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:10:38 01:16:45 55 1293 313.00 2.0 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:19:39 01:26:08 56 959 133.00 2.4 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:28:06 01:33:12 57 1288 313.00 1.6 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:35:56 01:41:16 58 983 133.00 1.7 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:43:57 01:48:31 59 1295 313.00 1.7 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:50:51 01:53:51 60 992 133.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:56:24 01:58:16 61 1295 313.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:00:33 02:02:20 62 1096 133.00 2.4 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:04:34 02:05:57 63 1139 313.00 2.1 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:08:29 02:09:37 64 1187 133.00 2.2 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:11:36 02:12:24 65 1227 313.00 2.2 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:15:24 02:16:05 66 1289 133.00 2.2 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:19:59 02:20:29 66 1449 313.00 2.3 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:32:12 02:41:20 42 986 133.00 2.3 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:43:50 02:44:17 41 1292 313.00 2.2 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:47:15 03:03:27 41 1273 313.00 2.2 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
03:05:57 03:13:45 42 999 133.00 1.6 9 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln

---

Comments

02:36:49 GMT : We started the laser on line 42 about half way, going to the SE.
03:14:18 GMT : NW half of line 42 complete
03:14:18 GMT :

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : T. ROBBINS
Pilot(s) : M. THORNE
Aircraft : N704MD
Airport : WVI
Mission : SANTA CLARA CO.
Wheels Up : ???

Weather

Date : April 08, 2006
Julian Day : 098
Temperature : 15 C
Visibility : 10
Clouds : FEW 2700
Precipitation : NONE
Wind Dir : 220
Wind Speed : 06
Pressure : 3016

Statistics

Laser Time : 04:21:25

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
19:18:02	19:18:11	1	1013	133.00	1.7	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
19:19:31	19:20:40	1	984	133.00	1.7	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
19:24:06	19:24:47	1	1008	133.00	1.7	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
19:26:46	19:27:27	1	999	133.00	1.7	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
19:37:51	19:44:12	1	1403	313.00	1.6	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
19:46:53	19:54:05	2	1231	133.00	1.4	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
19:57:12	20:04:21	2	1390	313.00	1.4	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
20:07:15	20:15:42	3	1254	133.00	1.4	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
20:18:05	20:26:47	4	1390	313.00	1.5	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
20:29:09	20:38:06	5	1204	133.00	1.3	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
20:49:01	20:49:10	6	1243	133.00	1.8	9	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
20:52:44	21:14:18	6	1229	133.00	1.8	9	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
21:16:52	21:38:07	7	1221	313.00	1.7	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
21:40:48	22:02:41	8	1160	133.00	1.8	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln

22:05:34 22:26:39 9 1196 313.00 1.7 10 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
22:30:18 22:52:02 10 1095 133.00 1.4 10 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
22:55:00 23:15:53 11 1183 313.00 1.7 9 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
23:19:04 23:40:35 12 1076 133.00 2.1 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
23:43:11 00:04:00 13 1130 313.00 2.1 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:07:09 00:28:19 14 1096 133.00 2.0 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:31:44 00:52:43 15 1094 313.00 1.9 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:55:45 01:16:33 16 1105 133.00 2.0 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln

---

Comments

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : J Kelley
Pilot(s) : K hill
Aircraft : N704MD
Airport : WVI
Mission : JD099F01
Wheels Up : 7:05 PAC

Weather

Date : April 09, 2006
Julian Day : 099
Temperature : 12
Visibility : 10
Clouds : clear
Precipitation : none
Wind Dir : 25
Wind Speed : 5
Pressure : 3011

Statistics

Laser Time : 05:28:59

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
02:12:36	02:13:38	1	886	133.00	2.3	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:16:36	02:17:29	1	994	133.00	2.3	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:19:39	02:20:38	1	970	133.00	2.3	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:27:29	02:50:29	17	1140	313.00	2.3	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln

02:53:16 03:15:55 18 1026 133.00 1.7 9 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
03:20:00 03:43:50 19 1026 313.00 2.3 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
03:46:03 04:09:32 20 1006 133.00 1.6 9 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
04:11:57 04:35:41 21 1007 313.00 2.8 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
04:38:20 05:01:05 22 1019 133.00 1.8 9 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
05:08:59 05:32:14 23 1021 313.00 1.9 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
05:34:39 05:56:54 24 1004 133.00 1.7 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
05:59:15 06:23:05 25 1023 313.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:25:25 06:48:12 26 1010 133.00 2.0 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:51:16 07:16:32 27 995 313.00 2.0 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
07:18:57 07:41:26 28 1015 133.00 2.1 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
07:43:03 08:07:06 29 1014 313.00 1.7 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
08:09:35 08:33:16 30 983 133.00 1.4 10 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln

---

Comments

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : T. ROBBINS
Pilot(s) : M. THORNE
Aircraft : N704MD
Airport : WVI
Mission : SANTA CLARA CO.
Wheels Up : ???

Weather

Date : April 09, 2006
Julian Day : 099
Temperature : 14 C
Visibility : 10
Clouds : CLEAR
Precipitation : NONE
Wind Dir : CALM
Wind Speed : CALM
Pressure : 3003

Statistics

Laser Time : 00:26:33

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
18:05:41	18:06:49	1	1000	133.00	1.5	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
18:09:12	18:09:58	1	1019	133.00	1.5	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
18:11:42	18:12:13	1	1022	133.00	1.5	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
18:22:37	18:22:46	31	1037	313.00	1.5	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
18:24:07	18:47:01	31	1027	313.00	1.4	11	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
18:51:20	19:01:00	32	1002	133.00	1.7	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
19:22:28	19:37:05	32	1036	133.00	1.7	10	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln

---

Comments

19:24:05 GMT : Picking up line 32 half way. We had to turn off of it before because of traffic.

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : J Kelley
Pilot(s) : K Hill
Aircraft : N704MD
Airport : WVI
Mission : JD100F01
Wheels Up : 9:00 Z

Weather

Date : April 10, 2006
Julian Day : 100
Temperature : 11
Visibility : ???
Clouds : Scatered 4000
Precipitation : some
Wind Dir : Calm
Wind Speed : ???
Pressure : 2999

Statistics

Laser Time : 00:28:06

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
04:15:30	04:16:44	1	996	133.00	1.8	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln

04:18:41 04:19:48 1 908 133.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
04:22:23 04:23:08 1 974 133.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
04:32:12 04:53:13 33 1024 313.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
04:53:24 04:56:48 33 980 313.00 2.0 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
04:59:06 05:21:27 34 964 133.00 2.0 7 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
05:21:39 05:22:25 34 1042 133.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
05:28:25 05:49:25 38 1137 313.00 1.7 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
05:52:10 05:52:45 38 894 133.00 1.7 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
05:53:25 05:55:57 39 993 133.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:00:23 06:16:14 39 997 133.00 1.8 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:17:32 06:21:19 34 1081 133.00 2.0 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:24:44 06:46:01 35 1016 313.00 2.0 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:46:16 06:46:42 35 963 313.00 2.0 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:48:38 06:49:06 40 977 133.00 2.0 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:51:47 06:52:56 40 929 133.00 1.9 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
06:53:06 06:55:25 40 977 133.00 1.9 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln
07:00:12 07:00:52 33 980 313.00 1.9 8 70.0 35.0 20.0 C:/PROJECTS/Santa Clara Co/midd1500_new.pln

---

Comments

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : J Kelley
Pilot(s) : K hill
Aircraft : N704MD
Airport : WVI
Mission : JD101F01
Wheels Up : 12:40 z

Weather

Date : April 11, 2006
Julian Day : 101
Temperature : 14
Visibility : 10
Clouds : few 2300
Precipitation : none
Wind Dir :
Wind Speed :
Pressure : 2988

Statistics

Laser Time : 00:54:41

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
23:49:15	00:10:45	36	1163	313.00	2.1	7	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:14:52	00:18:41	36	949	313.00	1.8	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:21:42	00:44:27	37	966	133.00	1.8	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
00:50:43	01:07:21	40	1188	313.00	2.0	7	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:09:35	01:11:14	33	956	133.00	2.3	7	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:14:12	01:19:10	35	962	313.00	1.6	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:23:14	01:42:37	13	990	133.00	1.7	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:42:45	01:45:31	13	1157	133.00	1.8	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:53:17	01:54:00	13	921	133.00	2.2	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
01:57:17	01:57:53	13	977	133.00	2.2	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:00:29	02:01:11	13	981	133.00	2.3	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln
02:04:49	02:05:28	13	974	133.00	2.3	8	70.0	35.0	20.0	C:/PROJECTS/Santa Clara Co/midd1500_new.pln

---

Comments

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : T. ROBBINS
Pilot(s) : M. THORNE
Aircraft : N704MD
Airport : WVI
Mission : SANTA CLARA CO.
Wheels Up : 23:45

Weather

Date : April 18, 2006
Julian Day : 108
Temperature : 16 C
Visibility : 10
Clouds : CLEAR
Precipitation : NONE
Wind Dir : 260
Wind Speed : 03
Pressure : 3010

Statistics

Laser Time : 01:28:28

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
23:55:02	23:55:22	1	2485	131.00	1.9	7	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
23:59:04	23:59:37	1	2518	131.00	1.9	7	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
00:01:53	00:02:48	1	2518	131.00	2.0	7	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
00:04:50	00:05:40	1	2551	131.00	2.0	7	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
00:11:41	00:12:11	1	2513	311.00	2.0	7	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
00:13:15	00:25:21	1	2524	311.00	2.0	7	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
00:29:59	00:42:24	2	3079	131.00	2.7	6	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
00:48:28	01:06:47	3	2579	311.00	1.7	8	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
01:10:27	01:27:52	4	3194	131.00	2.3	7	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
01:55:08	02:02:47	5	3169	311.00	2.2	8	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
02:12:22	02:12:59	6	3147	131.00	1.7	9	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
02:13:15	02:13:35	6	3170	131.00	1.7	9	50.0	21.0	20.0	C:/Projects/Santa_Clara_Co 060069/west1500_new.pln

02:13:51 02:14:05 6 3146 131.00 1.7 9 50.0 21.0 20.0 C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
02:19:21 02:19:34 6 3127 131.00 1.6 9 50.0 21.0 20.0 C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
02:20:02 02:20:13 6 3117 131.00 1.6 9 50.0 21.0 20.0 C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
02:20:58 02:21:15 6 3163 131.00 1.6 9 50.0 21.0 20.0 C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
02:23:22 02:23:43 6 3138 131.00 1.6 9 50.0 21.0 20.0 C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
02:23:50 02:24:10 6 3158 131.00 1.6 9 50.0 21.0 20.0 C:/Projects/Santa_Clara_Co 060069/west1500_new.pln
02:26:01 02:42:31 6 3160 311.00 1.6 9 50.0 21.0 20.0 C:/Projects/Santa_Clara_Co 060069/west1500_new.pln

---

Comments

02:14:59 GMT : Eye safety shutoff keeps going off.
03:13:21 GMT : Eye safety keeps shuting off the laser for no apparent reason.

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : T. ROBBINS
Pilot(s) : M. THORNE
Aircraft : N704MD
Airport : WVI
Mission : SANTA CLARA CO.
Wheels Up : ???

Weather

Date : April 19, 2006
Julian Day : 109
Temperature : 17 C
Visibility : 10
Clouds : CLEAR
Precipitation : NONE
Wind Dir : 140
Wind Speed : 05
Pressure : 2993

Statistics

Laser Time : 02:55:04

Start Stop Strip Alt(m) Hdg PDOP SVs PRF Freq Angle Plan

02:42:44 02:43:52 1 2579 131.00 1.7 9 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co 060069/west1500_new2.pln
02:45:47 02:46:57 1 2546 131.00 1.7 9 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co 060069/west1500_new2.pln

02:48:54 02:49:28 1 2566 131.00 1.7 9 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
02:55:13 03:07:02 1 2592 311.00 1.6 9 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
03:11:55 03:24:16 2 3237 131.00 1.9 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
03:31:18 03:49:52 3 2638 311.00 1.8 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
03:54:02 04:13:09 4 3249 131.00 1.8 9 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
04:33:02 04:40:52 5 3031 311.00 1.8 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
04:44:27 05:04:03 6 2852 131.00 1.7 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
05:07:43 05:25:46 7 2581 311.00 1.7 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
05:29:51 05:47:49 8 2670 131.00 1.9 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
05:51:30 06:06:57 9 2594 311.00 2.0 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
06:14:22 06:22:54 10 2557 131.00 1.9 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
06:26:34 06:33:03 11 2560 311.00 1.8 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
06:37:16 06:42:53 12 2645 131.00 2.1 7 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
06:45:45 06:50:26 13 2591 311.00 1.8 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
06:53:22 06:57:17 14 2597 131.00 1.7 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln
07:00:14 07:03:37 15 2588 311.00 1.7 8 50.0 21.0 21.0 C:/Projects/Santa_Clara_Co
060069/west1500_new2.pln

Comments

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : B. Miller
Pilot(s) : K. Hill
Aircraft : N704MD
Airport : WVI
Mission : JD110F02
Wheels Up : 16:20
Flight Length :
HOBBS Start :
HOBBS End :

Weather

Date : April 20, 2006
Julian Day : 110
Temperature : 13
Visibility : 10
Clouds : High Broken
Precipitation : None
Wind Dir : Calm
Wind Speed : Calm
Pressure : 2993

Statistics

Laser Time : 04:51:20

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
16:33:45	16:34:32	1	2469	324.00	1.6	11	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
16:37:27	16:38:30	1	2434	324.00	1.6	11	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
16:42:12	16:43:04	1	2434	324.00	1.6	11	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
16:49:19	16:51:18	1	2552	324.00	1.8	10	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
16:53:09	16:57:02	2	2573	144.00	1.9	10	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
16:59:23	17:03:37	3	2694	324.00	1.9	10	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
17:05:50	17:16:38	4	2659	144.00	1.9	10	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
17:18:35	17:27:43	5	2585	324.00	1.5	11	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
17:31:34	17:35:56	5	2744	324.00	1.5	11	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
17:38:23	17:57:46	6	2563	144.00	1.5	11	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
18:00:46	18:18:46	7	2439	324.00	2.1	9	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln

18:21:12 18:42:27 8 2758 144.00 1.7 10 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
18:47:12 19:04:32 9 2456 324.00 1.6 10 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
19:06:40 19:23:30 10 2774 144.00 1.4 11 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
19:28:27 19:34:41 10 2820 144.00 1.5 10 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
19:36:43 19:55:21 11 2556 324.00 1.2 12 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
19:58:14 20:19:58 12 2919 144.00 1.7 9 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
20:22:47 20:41:00 13 2622 324.00 1.7 10 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
20:44:21 21:04:23 14 2918 144.00 1.8 10 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
21:07:40 21:25:36 15 2741 324.00 1.8 10 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
21:28:58 21:49:35 16 3076 144.00 1.9 9 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
21:51:35 22:09:20 17 2850 324.00 1.5 10 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
22:11:19 22:32:56 18 3183 144.00 1.7 9 50.0 22.0 18.0 C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln

---

Comments

17:30:12 GMT : Forced to deviate off course due to trafic on line 5. Circling down to start line 5 at point of deviation to complete line.

Flight Log

Project Number: 060069
S/N : 04SEN155
Operator : T. ROBBINS
Pilot(s) : M. THORNE
Aircraft : N704MD
Airport : WVI
Mission : SANTA CLARA CO.
Wheels Up : ???

Weather

Date : April 20, 2006
Julian Day : 110
Temperature : 18 C
Visibility : 10
Clouds : CLEAR
Precipitation : NONE
Wind Dir : 160
Wind Speed : 08
Pressure : 2998

Statistics

Laser Time : 03:36:28

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
00:12:13	00:12:59	19	2566	144.00	2.0	7	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
00:16:02	00:16:52	19	2541	144.00	2.0	7	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
00:19:11	00:19:42	19	2538	144.00	2.7	6	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
00:32:12	00:49:07	19	2742	324.00	1.6	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
00:53:59	01:14:25	20	3153	144.00	1.8	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
01:18:17	01:33:53	21	2866	324.00	2.2	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
01:36:52	01:54:33	22	3196	144.00	2.3	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
01:58:02	02:12:40	23	2849	324.00	2.1	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
02:16:22	02:33:09	24	3042	144.00	1.6	9	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
02:36:08	02:50:16	25	2831	324.00	1.7	9	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
02:54:20	03:10:44	26	3047	144.00	1.6	9	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
03:18:46	03:32:28	27	2858	324.00	1.8	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
03:36:27	03:50:56	28	3057	144.00	1.8	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
03:54:13	04:06:34	29	2867	324.00	1.8	9	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
04:10:11	04:23:48	30	3220	144.00	2.0	7	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
04:26:47	04:38:46	31	2882	324.00	1.8	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
04:43:01	04:48:08	32	3177	144.00	1.7	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
04:51:23	04:55:36	33	3239	324.00	1.7	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
04:58:54	05:03:27	34	3255	144.00	1.5	9	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
05:07:09	05:08:18	35	3264	324.00	1.7	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
05:10:59	05:12:10	36	3206	144.00	1.8	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln
05:15:07	05:15:57	37	3232	324.00	1.8	8	50.0	22.0	18.0	C:/Projects/Santa_Clara_Co 060069/Area B 2400 meters.pln

---
Comments

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : T. ROBBINS
Pilot(s) : K. HILL
Aircraft : N704MD
Airport : WVI
Mission : SANTA CLARA CO.
Wheels Up : ???

Weather

Date : April 30, 2006
Julian Day : 120
Temperature : 19 C
Visibility : 10
Clouds : CLEAR
Precipitation : NONE
Wind Dir : 200
Wind Speed : 07
Pressure : 2998

Statistics

Laser Time : 04:07:46

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
20:40:19	20:40:28	16	2414	144.00	1.8	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
20:40:55	20:41:40	16	2417	144.00	1.8	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
20:44:45	20:45:54	16	2395	144.00	1.7	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
20:48:45	20:49:32	16	2408	144.00	1.7	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
21:05:39	21:05:55	37	3157	324.00	1.5	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
21:06:54	21:07:48	37	2826	324.00	1.5	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
21:09:38	21:10:26	37	2982	144.00	1.5	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
21:12:00	21:13:03	36	2988	324.00	1.5	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
21:14:38	21:15:58	35	3124	144.00	1.5	10	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
21:29:05	21:33:07	34	3013	144.00	1.7	9	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
21:34:56	21:40:00	33	2957	324.00	1.7	9	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
21:41:53	21:46:56	32	3186	144.00	2.1	8	50.0	22.0	18.0	C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln

21:54:40 22:08:03 31 3248 144.00 2.2 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
22:10:09 22:25:12 30 2851 324.00 2.8 6 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
22:27:30 22:42:08 29 3362 144.00 2.0 7 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
22:44:07 22:59:35 28 2867 324.00 1.9 7 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
23:15:00 23:21:49 27 2881 144.00 1.7 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
23:25:10 23:25:33 16 2768 324.00 1.8 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
23:28:14 23:49:12 16 2790 324.00 1.8 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
23:52:20 00:11:29 19 2797 144.00 1.6 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
00:14:26 00:35:12 20 2967 324.00 1.8 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
00:37:15 00:54:32 21 3336 144.00 2.2 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
00:57:55 01:16:53 22 2721 324.00 2.3 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
01:18:54 01:35:11 23 3287 144.00 1.7 9 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
01:39:13 01:56:55 24 2675 324.00 1.6 9 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
01:58:51 02:14:11 25 3168 144.00 1.7 9 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
02:16:38 02:33:11 26 2816 324.00 1.6 9 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
02:40:55 02:42:01 27 2926 144.00 2.8 7 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
02:46:38 02:54:51 39 2969 235.01 1.8 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln
02:57:04 03:06:05 39 2604 55.01 1.8 8 50.0 22.0 18.0 C:/PROJECTS/Santa Clara Co/Area B 2400 meters.pln

---

Comments

Flight Log

Project Number: 060079
S/N : 04SEN155
Operator : B Miller
Pilot(s) : M Thorne
Aircraft : N704MD
Airport : WVI
Mission : JD121F02
Wheels Up : 20:00
Flight Length : 1:30

Weather

Date : May 01, 2006
Julian Day : 121
Temperature : 18c
Visibility : 10
Clouds : None
Precipitation : None
Wind Dir : 190
Wind Speed : 06
Pressure : 2995

Statistics

Laser Time : 00:30:44

Start	Stop	Strip	Alt(m)	Hdg	PDOP	SVs	PRF	Freq	Angle	Plan
20:18:56	20:20:27	1	2493	32.20	1.8	10	50.0	21.0	21.0	C:/PROJECTS/Santa Clara Co/CalPlan/CalPlan_WVI_west1500_new2.PLN
20:23:33	20:24:20	2	2423	212.20	1.8	10	50.0	21.0	21.0	C:/PROJECTS/Santa Clara Co/CalPlan/CalPlan_WVI_west1500_new2.PLN
20:26:55	20:27:40	3	2423	314.64	1.8	10	50.0	21.0	21.0	C:/PROJECTS/Santa Clara Co/CalPlan/CalPlan_WVI_west1500_new2.PLN
20:35:58	20:55:38	3	2712	311.00	1.8	10	50.0	21.0	21.0	C:/PROJECTS/Santa Clara Co/west1500_new2.pln
21:06:47	21:10:50	16	2785	224.88	1.5	10	50.0	21.0	21.0	C:/PROJECTS/Santa Clara Co/west1500_new2.pln
21:19:46	21:24:04	1	3129	131.11	1.7	9	50.0	21.0	21.0	C:/PROJECTS/Santa Clara Co/Area_C.pln

---

Comments

FIELDWORK

Introduction

A geodetic control survey was conducted for the purpose of providing field measured coordinates and elevations for airborne GPS base station positions for the 2006 aerial LiDAR survey. Additionally, these locations will be used as base positions for checkpoints to validate the final LiDAR surface. The survey was performed only to verify the published coordinates of the each of the base station locations. No new monumentation or control points were established during this survey.

Discussions between the City of San Jose, the County of Santa Clara, the Santa Clara Water District and the contractors led to the decision to continue the use of the horizontal reference frame from the 2001 Geodetic Survey. NAD83 (epoch 1997.0) was used as reference during the 2001 survey. The elevations from the 2001 survey were based upon established ellipsoid heights. While these elevations are adequate for orthophotography, they are not suitable for a LiDAR survey following established FEMA guidelines. The elevations of these points used in the 2006 survey would be upgraded so that the LiDAR survey would be referenced to existing NAVD88 vertical control.

Applicable Standards

The following standards apply to this geodetic control survey:

Geospatial Positioning Accuracy Standards
Part 1: Reporting Methodology (FGDC-STD-007.1-1998)
Part 2: Standards for Geodetic Networks (FGDC-STD-007.2-1998)

NOAA Technical Memorandum NOS NGS-58, Guidelines for Establishing GPS Derived Ellipsoid Heights (Standards: 2 cm and 5 cm)

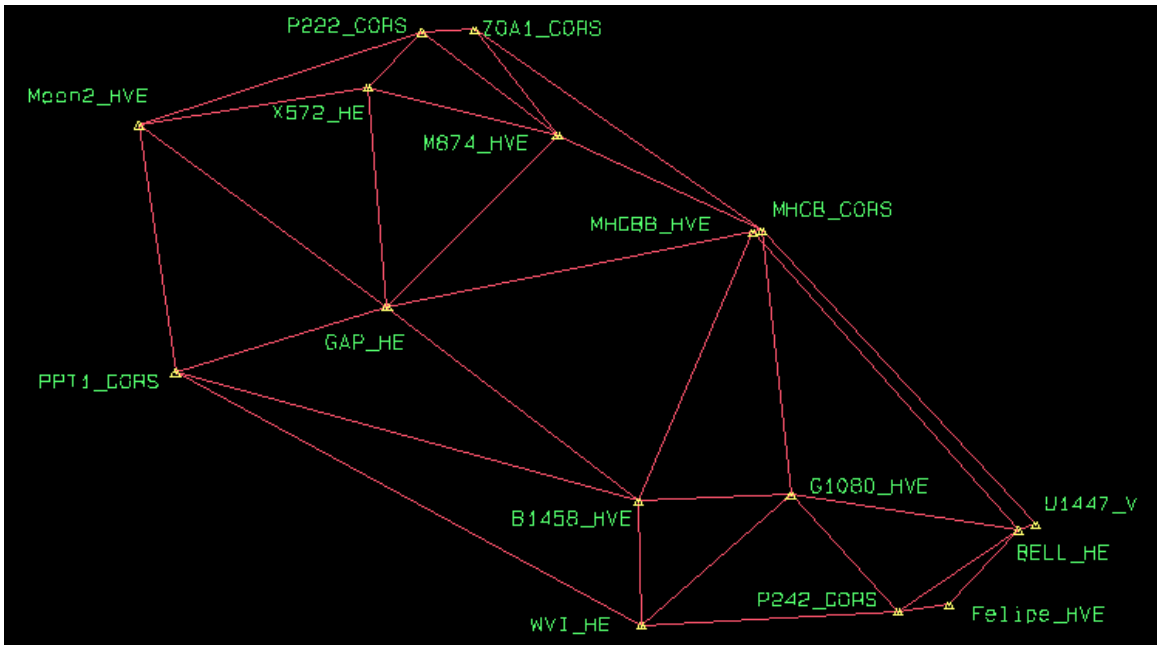
DRAFT NOAA Technical document, Guidelines for Establishing GPS-derived Orthometric Heights (Standards: 2 cm and 5 cm)

Project Control

Sixteen NGS/CORS stations were utilized within the 2006 network. The NGS datasheets for all of these points can be found in Appendix A. Five of these points, marked by asterisks, were part of the 2001 survey. These points were all held fixed horizontally in the 2006 survey, and two, MHCB and PPT1 were held fixed in the 2001 survey. Seven points were held vertically in the 2006 adjustment, five 1st Order, Class 1 points and two 2nd Order points. B 1458 was also a part of the control network conducted in 2001. However, no final coordinate of this point could be found in the 2001 control report, and therefore, the horizontal coordinate was not held in any adjustment. The following table lists the control points contained in the 2006 network:

PID	Designation	Latitude	Longitude	Ortho Ht	Ellipsoid Ht	Geoid Ht	O-G Ht
GU4271	ARP 1976 WVI	36-56-11.71717	121-47-28.03375		13.37	-33.23	
AF9702	MT Hamilton Bard (CORS)*	37-20-29.50149	121-38-33.22769		1262.36	-31.54	
DH7211	P242 (CORS)	36-57-14.13653	121-27-47.40219		15.33	-32.84	
DG6890	X572 Reset	37-28-54.53609	122-08-59.09786		-29.7	-32.51	
AI8013	MHCB B	37-20-23.29601	122-39-17.38316	1065.965	1034.4	-31.59	1034.375
HS2851	M 874*	37-26-10.03474	121-54-24.89490	4.805	-27.62	-32.47	-27.665
GU2656	Felipe AZ MK	36-57-40.54079	121-23-55.48706	135.665	102.94	-32.7	102.965
HS2738	G 1080	37-04-19.05729	121-36-08.64242	81.308	48.82	-32.46	48.848
HS5135	U 1447			120.691			
HS5267	B 1458	37-03-48.11238	121-47-44.54381	834.984	802.58	-32.46	802.524
DH9021	P222 (CORS)	37-32-21.24412	122-04-59.69157		54.01	-32.46	
DE6354	ZOA1 (CORS)	37-32-34.97376	122-00-57.34671		-3.42	-32.43	
AF9554	PPT1 (CORS)*	37-11-13.48846	122-23-23.77127		8.37	-33.38	
AA1864	BELL*	37-02-18.85621	121-18-40.02582		93.23	-32.32	
AA1870	GAP*	37-15-28.92078	122-07-15.78973		771.12	-32.33	
HT1455	Moon 2	37-26-20.30784	122-26-34.65158	22.251	-10.75	-32.94	-10.689

A graphical representation of all the control points is shown:



Data Collection

Baselines between all points were collected between April 8 and April 26, 2006. All observations conducted at monuments were made with dual-frequency GPS receivers, either Leica System 500 or Ashtech Z-XII, and geodetic grade antennas. Each CORS station has its own published receiver type. Session lengths were based upon the distance between points. Some baselines were collected during LiDAR acquisition, and therefore, much longer than typically required.

In all, two hundred eighty-nine (289) baselines were collected. These include baselines collected between existing CORS sites, as well as baselines collected during LiDAR acquisition. This methodology provided mush redundancy within the network. Many baselines that were collected were very short in timeframe due the length of each ABGPS session.

Data Processing and Analysis

Four adjustments were made during the network development. Each adjustment reports final baseline RMSE and residual values at the control points.

The network development involved performing a minimally constrained adjustment, holding a single horizontal and vertical (ellipsoid) control point. The point selected for this adjustment was Mt Hamilton Bard (CORS) due to its commonality between the 2001 and 2006 surveys. This single point constrained adjustment allowed for blunders and errors to appear within the network. These errors were analyzed and the baselines were rejected. Most rejections were due to too short of observation time for the lengths of the baselines. Additional baselines were rejected if they had high residuals against other, redundant baselines. In total one hundred sixty-three (163) baselines were kept in the final minimally constrained adjustment. This complete adjustment can be found in Appendix B.

The second adjustment performed constrained the five horizontal control points from the 2001 survey and a single vertical (ellipsoid) point. This adjustment provided horizontal checks between the control points and is shown in Appendix C. No baselines were rejected during this adjustment. As predicted, due to crustal motion in the project

area, the control point coordinates have shifted slightly since the 2001 survey. In the following except from Appendix C, about 11 cm of difference can be seen between control points in this survey.

****
CONTROL POINT RESIDUALS
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
Bell	0.0112	-0.0220	
GAP	-0.0195	0.0095	
M874	0.0054	-0.0015	
MHCB	0.0397	-0.0487	1.1985
ppt1	-0.0375	0.0623	
RMS	0.0265	0.0369	1.1985

The third adjustment made holding a single horizon point and the seven vertical (orthometric) points. This adjustment provided the vertical integrity of the network. No baselines were rejected during this adjustment, validating the horizontal adjustment previously performed. Typically, however, additional baselines would be rejected during the vertical adjustment. This adjustment is shown in Appendix D.

Following NOAA DRAFT guidelines for establishing orthometric elevation using GPS, the horizontal coordinates from the second adjustment and the vertical elevations from the third adjustment would produce the final three-dimensional coordinates for the network. In order to check these coordinates and to produce a single, final network, a fourth adjustment was performed holding the five horizontal and seven vertical points. The results of this adjustment show that each point changed by less than one (1) centimeter in all directions, verifying the previous adjustments. The results of this adjustment will be used as the final coordinates for base station positions for the LiDAR survey. The results of this adjustment are shown in Appendix E.

Final Coordinates

The final geodetic coordinates resulting from this survey are listed below:

Station	Latitude (+/-D M S)	Longitude (+/-D M S)	H-Ell (m)	H-MSL (m)
B1458	37 03 48.11847	-121 47 44.54976	802.526	834.986
Bell	37 02 18.85844	-121 18 40.02770	93.150	125.474
FELIPE	36 57 40.53870	-121 23 55.48456	102.960	135.660
G1080	37 04 19.05656	-121 36 08.64107	48.864	81.323
GAP	37 15 28.92799	-122 07 15.79604	771.140	803.468
M874	37 26 10.03019	-121 54 24.89053	-27.688	4.808
MHCB	37 20 29.49798	-121 38 33.22352	1262.313	1293.850
MHCB-B	37 20 23.29339	-121 39 17.38053	1034.378	1065.964
MOON2	37 26 20.30416	-122 26 34.64751	-10.706	22.231
P222	37 32 21.23910	-122 04 59.68777	54.029	86.487
P242	36 57 14.13119	-121 27 47.39778	15.343	48.179
ppt1	37 11 13.48453	-122 23 23.76733	8.386	41.766
U1447	37 02 39.48184	-121 17 21.80119	88.397	120.692
WVI	36 56 11.71499	-121 47 28.03085	13.404	46.629
X572	37 28 54.53102	-122 08 59.09319	-29.744	2.786
zoa1	37 32 34.96926	-122 00 57.34253	-3.124	29.304

Final Accuracy Statement

No new control monuments or temporary points were established during this survey. The results of the survey show that some relative movement between monuments has occurred during the past five years. The results of the network adjustments show that these geodetic control data meet the 5-centimeter local and network accuracy standard for the horizontal coordinate values and the 2-centimeter centimeter local and network accuracy standard for the vertical (orthometric) coordinate values.

Mark W. Brooks
Manager of Operations
Optimal Geomatics, Inc.

Appendix A

Control Point Datasheets

DATASHEETS

```
The NGS Data SheetSee file  dsdata.txt for more information about the
datasheet.DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 7.36
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
 GU4271 ***********************************************************************
 GU4271  SACS        -  This is a Secondary Airport Control Station.
 GU4271  DESIGNATION -  ARP 1976 WVI
 GU4271  PID         -  GU4271
 GU4271  STATE/COUNTY-  CA/SANTA CRUZ
 GU4271  USGS QUAD   -  WATSONVILLE WEST (1995)
 GU4271
 GU4271                         *CURRENT SURVEY CONTROL
 GU4271  ______________________________________________________________________
 GU4271* NAD 83(1998)-  36 56 11.71717(N)    121 47 28.03375(W)     ADJUSTED
 GU4271* NAVD 88     -        46.70   (meters)     153.2    (feet)  GPS OBS
 GU4271  ______________________________________________________________________
 GU4271  EPOCH DATE  -        2002.00
 GU4271  X           -  -2,689,034.320 (meters)                     COMP
 GU4271  Y           -  -4,338,469.521 (meters)                     COMP
 GU4271  Z           -   3,811,778.642 (meters)                     COMP
 GU4271  LAPLACE CORR-           3.03  (seconds)                    DEFLEC99
 GU4271  ELLIP HEIGHT-          13.37  (meters)          (10/18/04) GPS OBS
 GU4271  GEOID HEIGHT-         -33.23  (meters)                     GEOID03
 GU4271
 GU4271  HORZ ORDER  -  FIRST
 GU4271  ELLP ORDER  -  FOURTH    CLASS I
 GU4271
 GU4271.This mark is at Watsonville Municipal Airport (WVI)
 GU4271
 GU4271.The horizontal coordinates were established by GPS observations
 GU4271.and adjusted by the MOUNTAIN SURVEYING in October 2004..
 GU4271.This is a SPECIAL STATUS position.  See SPECIAL STATUS under the
 GU4271.DATUM ITEM on the data sheet items page.
 GU4271.The horizontal coordinates are valid at the epoch date displayed above.
 GU4271.The epoch date for horizontal control is a decimal equivalence
 GU4271.of Year/Month/Day.
 GU4271
 GU4271.The orthometric height was determined by GPS observations and a
 GU4271.high-resolution geoid model.
 GU4271
 GU4271.GPS derived orthometric heights for airport stations designated as
 GU4271.PACS or SACS are published to 2 decimal places.  This maintains
 GU4271.centimeter relative accuracy between the PACS and SACS.  It does
 GU4271.not indicate centimeter accuracy relative to other marks which are
 GU4271.part of the NAVD 88 network.
 GU4271
 GU4271.Photographs are available for this station.
 GU4271
 GU4271.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 GU4271
 GU4271.The Laplace correction was computed from DEFLEC99 derived deflections.
 GU4271
 GU4271.The ellipsoidal height was determined by GPS observations
 GU4271.and is referenced to NAD 83.
 GU4271
 GU4271.The geoid height was determined by GEOID03.
 GU4271
 GU4271;                    North         East     Units Scale Factor Converg.
```

```
GU4271;SPC CA 3     -   549,247.135 1,884,980.106   MT  1.00002942   -0 47 25.7
GU4271;SPC CA 3     - 1,801,988.31  6,184,305.56   sFT  1.00002942   -0 47 25.7
GU4271;SPC CA 4     -   681,514.020 1,751,397.623   MT  0.99995542   -1 39 54.5
GU4271;SPC CA 4     - 2,235,933.91  5,746,043.70   sFT  0.99995542   -1 39 54.5
GU4271;UTM  10      - 4,088,520.443   607,652.840   MT  0.99974277   +0 43 35.5
GU4271
GU4271!             -  Elev Factor  x  Scale Factor =   Combined Factor
GU4271!SPC CA 3     -   0.99999790  x   1.00002942  =   1.00002732
GU4271!SPC CA 4     -   0.99999790  x   0.99995542  =   0.99995332
GU4271!UTM  10      -   0.99999790  x   0.99974277  =   0.99974067
GU4271
GU4271:                Primary Azimuth Mark                    Grid Az
GU4271:SPC CA 3     -  FAA WVI A                                207 24 50.7
GU4271:SPC CA 4     -  FAA WVI A                                208 17 19.5
GU4271:UTM  10      -  FAA WVI A                                205 53 49.5
GU4271
GU4271|---------------------------------------------------------------------|
GU4271| PID    Reference Object                    Distance      Geod. Az  |
GU4271|                                                          dddmmss.s |
GU4271| GU4280 FAA WVI A                          APPROX. 0.6 KM 2063725.0 |
GU4271|---------------------------------------------------------------------|
GU4271
GU4271                          SUPERSEDED SURVEY CONTROL
GU4271
GU4271  NAD 83(1992)-  36 56 11.70576(N)    121 47 28.02096(W) AD(1991.35) 3
GU4271  NAD 83(1992)-  36 56 11.70621(N)    121 47 28.02121(W) AD(1991.35) 3
GU4271  ELLIP H (11/17/92)   13.42   (m)                       GP(1991.35) 5 1
GU4271  NAD 83(1986)-  36 56 11.70640(N)    121 47 28.01915(W) AD(1984.00) 3
GU4271  NGVD 29 (10/13/92)   45.9    (m)          151.     (f) GPS OBS
GU4271
GU4271.Superseded values are not recommended for survey control.
GU4271.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GU4271.See file dsdata.txt to determine how the superseded data were derived.
GU4271
GU4271_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFF0765388520(NAD 83)
GU4271_MARKER: DD = SURVEY DISK
GU4271_SETTING: 35 = SET IN A MAT FOUNDATION OR CONCRETE SLAB OTHER THAN
GU4271+WITH SETTING: PAVEMENT
GU4271_SP_SET: CONCRETE PAD
GU4271_STAMPING: ARP WVI 1976
GU4271_MARK LOGO: NOS
GU4271_MAGNETIC: N = NO MAGNETIC MATERIAL
GU4271_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GU4271+STABILITY: SURFACE MOTION
GU4271_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GU4271+SATELLITE: SATELLITE OBSERVATIONS - January 21, 2005
GU4271
GU4271  HISTORY     - Date     Condition        Report By
GU4271  HISTORY     - 1976     MONUMENTED       NOS
GU4271  HISTORY     - 19880615 GOOD             NGS
GU4271  HISTORY     - 19920601 GOOD             NGS
GU4271  HISTORY     - 20040322 GOOD             MSAM
GU4271  HISTORY     - 20050121 GOOD             NGS
GU4271
GU4271                          STATION DESCRIPTION
GU4271
GU4271'DESCRIBED BY NATIONAL GEODETIC SURVEY 1988
GU4271'THE STATION IS LOCATED INSIDE THE SEGMENTED CIRCLE AROUND THE WINDSOCK
GU4271'AND WIND-T.  IT IS 23.7 FT (7.2 M) SOUTHWEST OF THE WINDSOCK AND 21.9
GU4271'FT (6.7 M) SOUTH OF THE WIND-T.  A STANDARD NOS DISK STAMPED ARP WVI
GU4271'1976 SET IN A DRILL HOLE IN THE NORTH CORNER OF A 5 FT (1.5 M) X 5 FT
```

GU4271'(1.5 M) CONCRETE SLAB. NOTE, THE MARK HAS BEEN RESTAMPED WVI 1979.
GU4271
GU4271   STATION RECOVERY (1992)
GU4271
GU4271'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
GU4271'STATION IS LOCATED IN THE NORTHWEST SECTION OF WATSONVILLE, AT THE
GU4271'WATSONVILLE MUNICIPAL AIRPORT, ALONG RUNWAY 2-20, IN THE SEGMENTED
GU4271'CIRCLE. OWNERSHIP--CITY OF WATSONVILLE, 250 MAIN STREET,
GU4271'WATSONVILLE, CA 95076. OPERATIONS SUPERVISOR IS SHARON REEDER, PHONE
GU4271'408-728-6075. NOTE--GATE CARD IS NECESSARY FOR GATE ACCESS.
GU4271'TO REACH FROM THE OVERPASS AT THE JUNCTION OF STATE HIGHWAY 1 AND
GU4271'AIRPORT BOULEVARD, ABOUT 5 KM (3.1 MI) NORTHWEST OF WATSONVILLE, GO
GU4271'NORTHEAST ON AIRPORT BOULEVARD FOR 1.02 KM (0.63 MI) TO A PAVED ROAD
GU4271'LEFT. TURN LEFT, NORTH, ON AVIATION WAY FOR 0.41 KM (0.25 MI) TO THE
GU4271'TERMINAL BUILDING ON THE LEFT (CHECK IN BEFORE GOING ON AIRPORT,
GU4271'ACCESS GATE IS 0.09 KM (0.06 MI) EAST OF TERMINAL BUILDING). FROM
GU4271'ACCESS GATE, WORK WAY AROUND AIRCRAFT FOR 0.10 KM (0.06 MI) TO THE
GU4271'FIELD SIDE OF THE TERMINAL BUILDING, THEN GO NORTHWEST ON APRON THEN
GU4271'TAXI FOR 0.17 KM (0.11 MI) TO THE PARALLEL TAXI. TURN LEFT,
GU4271'SOUTHWEST, ON TAXI FOR 0.92 KM (0.57 MI) TO ITS END AT RUNWAY 2. PASS
GU4271'AROUND RUNWAY END, THEN NORTHEAST ALONGSIDE RUNWAY FOR 0.99 KM
GU4271'(0.62 MI) TO THE SEGMENTED CIRCLE AND STATION ON THE LEFT.
GU4271'STATION MARK IS SET IN A DRILL HOLE IN A 1.4 M (4.6 FT) SQUARE
GU4271'CONCRETE PAD PROJECTING 15 CM. IT IS 73.8 M (242.1 FT) NORTHWEST
GU4271'FROM THE RUNWAY EDGE, 54.0 M (177.2 FT) SOUTH-SOUTHEAST FROM THE
GU4271'CENTER OF A TAXI, 6.7 M (22.0 FT) SOUTH FROM THE SPINDLE ON THE WIND
GU4271'TEE, 6.5 M (21.3 FT) WEST-SOUTHWEST FROM THE SOUTHWEST CORNER OF THE
GU4271'WINDSOCK BASE AND 3.5 M (11.5 FT) NORTH FROM A CARSONITE WITNESS
GU4271'POST.
GU4271
GU4271   STATION RECOVERY (2004)
GU4271
GU4271'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 2004 (DJK)
GU4271'DESCRIBED BY MOUNTAIN SURVEYING AND MAPPING INC 2004 (DJK) THE STATION
GU4271'IS LOCATED IN THE NORTHWEST SECTION OF WATSONVILLE, AT THE WATSONVILLE
GU4271'MUNICIPAL AIRPORT, AT THE REAR VASI FOR RUNWAY 2. THE AIRPORT IS
GU4271'UNCONTROLLED PERMISSION TO ENTER MUST BE OBTAINED FROM THE AIRPORT
GU4271'MANAGER MR. DON FRENCH AT 100 AVIATION WAY WATSONVILLE, CA 95076.
GU4271'TELEPHONE--831-728-6075 OWNERSHIP--CITY OF WATSONVILLE
GU4271'
GU4271'TO REACH THE STATION FROM THE OVERPASS AT THE JUNCTION OF STATE
GU4271'HIGHWAY 1 AND AIRPORT BLVD (ABOUT 5 KM (3.1 MI) NORTHWEST OF
GU4271'WATSONVILLE), GO NORTHEAST ON AIRPORT BLVD FOR 1.0KM (0.6 MI) TO
GU4271'AVIATION WAY. TURN LEFT (NORTH) ON AVIATION WAY FOR .50 KM (0.3 MI)
GU4271'TO THE ACCESS GATE. TURN LEFT (NORTH) THROUGH THE ACCESS GATE AND
GU4271'ONTO THE AIRCRAFT APRON HEADING NORTHWEST ACROSS THE APRON FOR .24 KM
GU4271'(0.15 MI) TO TAXIWAY 2/20. TURN LEFT (SOUTHWEST) ON THE TAXIWAY FOR
GU4271'.80 KM (0.5 MI) TO THE END OF THE TAXIWAY AND RUNWAY 20 TO A
GU4271'MAINTENANCE ROAD. FOLLOW THE MAINTENANCE ROAD ALONG THE SOUTHWEST END
GU4271'OF RUNWAY 20 TO THE NORTH SIDE OF THE RUNWAY. GO NORTHEAST ALONG THE
GU4271'SIDE AND OFF OF RUNWAY 2/20 FOR 1.0 KM (0.6 MI) TO THE ABANDONDED
GU4271'TXIWAY C. TURN LEFT (WEST) ON THE OLD TAXIWAY C FOR 61.0 M (200') TO
GU4271'A ACCESS ROAD TO THE SEGMENTED CIRCLE. TURN LEFT (SOUTHWEST) ON THE
GU4271'ACCESS ROAD FOR 61.0 M (200') TO THE OUTER EDGE OF THE SEGMENTED
GU4271'CIRCLE AND THE STATION ON THE RIGHT.
GU4271'
GU4271'THE MARK IS A NGS BRASS DISK SET IN THE TOP OF A CONCRETE PAD ON THE
GU4271'NORTHEAST CORNER OF THE PAD. IT IS 22.2 M (73.0 FT) SOUTH OF THE
GU4271'CENTERLINE EDGE OF A GRAVEL ACCESS ROAD TO THE SEGMENTED CIRCLE, 7.5 M
GU4271'(24.6 FT) SOUTHWEST OF THE WINDSOCK POST, 7.0 M (23.0 FT) SOUTH OF
GU4271'THE WIND INDICATOR POST, AND 1.5M (4.9 FT) EAST OF A FIBERGLASS

```
 GU4271'WITNESS  POST.  THIS STATION IS DESIGNATED AS A SECONDARY AIRPORT
 GU4271'CONTROL STATION.
 GU4271
 GU4271                          STATION RECOVERY (2005)
 GU4271
 GU4271'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2005 (RGB)
 GU4271'RECOVERED AS DESCRIBED.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
 AF9702 ***********************************************************************
 AF9702  CORS         -  This is a GPS Continuously Operating Reference Station.
 AF9702  DESIGNATION  -  MT HAMILTON BARD CORS ARP
 AF9702  CORS_ID      -  MHCB
 AF9702  PID          -  AF9702
 AF9702  STATE/COUNTY-  CA/SANTA CLARA
 AF9702  USGS QUAD    -  LICK OBSERVATORY (1973)
 AF9702
 AF9702                         *CURRENT SURVEY CONTROL
 AF9702  ______________________________________________________________________
 AF9702* NAD 83(CORS)-  37 20 29.50149(N)    121 38 33.22769(W)     ADJUSTED
 AF9702* NAVD 88     -
 AF9702  ______________________________________________________________________
 AF9702  EPOCH DATE  -        2002.00
 AF9702  X           -  -2,664,063.021 (meters)                     COMP
 AF9702  Y           -  -4,323,173.285 (meters)                     COMP
 AF9702  Z           -   3,848,361.451 (meters)                     COMP
 AF9702  ELLIP HEIGHT-        1262.36  (meters)          (03/??/02) GPS OBS
 AF9702  GEOID HEIGHT-         -31.54  (meters)                     GEOID03
 AF9702
 AF9702  HORZ ORDER  -  SPECIAL (CORS)
 AF9702  ELLP ORDER  -  SPECIAL (CORS)
 AF9702
 AF9702.ITRF positions are available for this station.
 AF9702.The coordinates were established by GPS observations
 AF9702.and adjusted by the National Geodetic Survey in March 2002..
 AF9702.The coordinates are valid at the epoch date displayed above.
 AF9702.The epoch date for horizontal control is a decimal equivalence
 AF9702.of Year/Month/Day.
 AF9702
 AF9702
 AF9702.The PID for the CORS L1 Phase Center is AJ7941.
 AF9702
 AF9702.The XYZ, and position/ellipsoidal ht. are equivalent.
 AF9702
 AF9702.The ellipsoidal height was determined by GPS observations
 AF9702.and is referenced to NAD 83.
 AF9702
 AF9702.The geoid height was determined by GEOID03.
 AF9702
 AF9702;                    North         East     Units Scale Factor Converg.
 AF9702;SPC CA 3     -   594,011.515 1,898,762.325   MT  0.99995457   -0 41 58.2
 AF9702;SPC CA 3     - 1,948,852.78  6,229,522.73   sFT  0.99995457   -0 41 58.2
 AF9702
 AF9702!             -  Elev Factor  x  Scale Factor =   Combined Factor
 AF9702!SPC CA 3     -   0.99980194  x   0.99995457  =   0.99975652
 AF9702
 AF9702                         SUPERSEDED SURVEY CONTROL
 AF9702
 AF9702  NAD 83(CORS)-  37 20 29.49949(N)    121 38 33.22523(W) AD(1997.00) c
 AF9702  ELLIP H (07/??/98) 1262.41   (m)                       GP(1997.00) c c
 AF9702
 AF9702.Superseded values are not recommended for survey control.
```

```
 AF9702.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 AF9702.See file dsdata.txt to determine how the superseded data were derived.
 AF9702
 AF9702_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFG2024033624(NAD 83)
 AF9702_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
 AF9702
 AF9702                          STATION DESCRIPTION
 AF9702
 AF9702'DESCRIBED BY NATIONAL GEODETIC SURVEY 2002
 AF9702'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
 AF9702'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
 AF9702'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
 AF9702'   FTP CORS.NGS.NOAA.GOV: CORS/COORD  AND  CORS/STATION_LOG
 AF9702'   HTTP://WWW.NGS.NOAA.GOV  UNDER PRODUCTS AND SERVICES.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
 DH7211 ***********************************************************************
 DH7211  CORS         -  This is a GPS Continuously Operating Reference Station.
 DH7211  DESIGNATION -  FRAZIERAIRCN2004 CORS ARP
 DH7211  CORS_ID      -  P242
 DH7211  PID          -  DH7211
 DH7211  STATE/COUNTY-  CA/SAN BENITO
 DH7211  USGS QUAD    -  SAN FELIPE (1971)
 DH7211
 DH7211                         *CURRENT SURVEY CONTROL
 DH7211  ______________________________________________________________________
 DH7211* NAD 83(CORS)-  36 57 14.13653(N)    121 27 47.40219(W)      ADJUSTED
 DH7211* NAVD 88     -
 DH7211  ______________________________________________________________________
 DH7211  EPOCH DATE  -        2002.00
 DH7211  X           -  -2,663,554.760 (meters)                     COMP
 DH7211  Y           -  -4,352,804.867 (meters)                     COMP
 DH7211  Z           -   3,813,317.657 (meters)                     COMP
 DH7211  ELLIP HEIGHT-          15.33  (meters)          (12/??/05) GPS OBS
 DH7211  GEOID HEIGHT-         -32.84  (meters)                     GEOID03
 DH7211
 DH7211  HORZ ORDER  -  SPECIAL (CORS)
 DH7211  ELLP ORDER  -  SPECIAL (CORS)
 DH7211
 DH7211.ITRF positions are available for this station.
 DH7211.The coordinates were established by GPS observations
 DH7211.and adjusted by the National Geodetic Survey in December 2005..
 DH7211.The coordinates are valid at the epoch date displayed above.
 DH7211.The epoch date for horizontal control is a decimal equivalence
 DH7211.of Year/Month/Day.
 DH7211
 DH7211
 DH7211.The PID for the CORS L1 Phase Center is DH7212.
 DH7211
 DH7211.The XYZ, and position/ellipsoidal ht. are equivalent.
 DH7211
 DH7211.The ellipsoidal height was determined by GPS observations
 DH7211.and is referenced to NAD 83.
 DH7211
 DH7211.The geoid height was determined by GEOID03.
 DH7211
 DH7211;                    North         East     Units Scale Factor Converg.
 DH7211;SPC CA 4     -   682,638.432 1,780,650.607   MT  0.99995711   -1 28 10.2
 DH7211;SPC CA 4     - 2,239,622.92  5,842,017.87   sFT  0.99995711   -1 28 10.2
 DH7211
 DH7211!             -  Elev Factor  x  Scale Factor =   Combined Factor
 DH7211!SPC CA 4     -   0.99999759  x   0.99995711  =   0.99995470
```

```
DH7211
DH7211                          SUPERSEDED SURVEY CONTROL
DH7211
DH7211.No superseded survey control is available for this station.
DH7211
DH7211_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFF3682890865(NAD 83)
DH7211_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DH7211
DH7211                          STATION DESCRIPTION
DH7211
DH7211'DESCRIBED BY NATIONAL GEODETIC SURVEY 2005
DH7211'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DH7211'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH7211'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH7211'   FTP CORS.NGS.NOAA.GOV: CORS/COORD  AND  CORS/STATION_LOG
DH7211'   HTTP://WWW.NGS.NOAA.GOV  UNDER PRODUCTS AND SERVICES.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
DG6890 ***********************************************************************
DG6890  HT_MOD      -  This is a Height Modernization Survey Station.
DG6890  DESIGNATION -  X572 RESET
DG6890  PID         -  DG6890
DG6890  STATE/COUNTY-  CA/SAN MATEO
DG6890  USGS QUAD   -  PALO ALTO (1997)
DG6890
DG6890                        *CURRENT SURVEY CONTROL
DG6890  ______________________________________________________________________
DG6890* NAD 83(1998)-  37 28 54.53609(N)    122 08 59.09786(W)     ADJUSTED
DG6890* NAVD 88     -         2.82   (meters)       9.3    (feet)  GPS OBS
DG6890  ______________________________________________________________________
DG6890  EPOCH DATE  -        2002.75
DG6890  X           -  -2,696,646.972 (meters)                     COMP
DG6890  Y           -  -4,290,543.283 (meters)                     COMP
DG6890  Z           -   3,859,944.660 (meters)                     COMP
DG6890  LAPLACE CORR-          -0.10  (seconds)                    DEFLEC99
DG6890  ELLIP HEIGHT-         -29.70  (meters)          (08/23/04) GPS OBS
DG6890  GEOID HEIGHT-         -32.51  (meters)
DG6890
DG6890  HORZ ORDER  -  B
DG6890  ELLP ORDER  -  FOURTH    CLASS I
DG6890
DG6890.The horizontal coordinates were established by GPS observations
DG6890.and adjusted by the CALIF SPA REF CEN in August 2004..
DG6890.This is a SPECIAL STATUS position.  See SPECIAL STATUS under the
DG6890.DATUM ITEM on the data sheet items page.
DG6890.The horizontal coordinates are valid at the epoch date displayed above.
DG6890.The epoch date for horizontal control is a decimal equivalence
DG6890.of Year/Month/Day.
DG6890
DG6890.The orthometric height was determined by GPS observations and a
DG6890.high-resolution geoid model using precise GPS observation and
DG6890.processing techniques.
DG6890
DG6890.The X, Y, and Z were computed from the position and the ellipsoidal ht.
DG6890
DG6890.The Laplace correction was computed from DEFLEC99 derived deflections.
DG6890
DG6890.The ellipsoidal height was determined by GPS observations
DG6890.and is referenced to NAD 83.
DG6890
DG6890
DG6890;                   North         East     Units Scale Factor Converg.
```

```
DG6890;SPC CA 3     -   610,248.543 1,854,101.095   MT  0.99994016   -1 00 36.1
DG6890;SPC CA 3     - 2,002,123.76  6,082,996.68   sFT  0.99994016   -1 00 36.1
DG6890;UTM  10      - 4,148,663.339   575,172.657   MT  0.99966961   +0 31 02.7
DG6890
DG6890!             -  Elev Factor  x  Scale Factor =   Combined Factor
DG6890!SPC CA 3     -   1.00000466  x   0.99994016  =   0.99994482
DG6890!UTM  10      -   1.00000466  x   0.99966961  =   0.99967427
DG6890
DG6890                          SUPERSEDED SURVEY CONTROL
DG6890
DG6890.No superseded survey control is available for this station.
DG6890
DG6890_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEG7517348663(NAD 83)
DG6890_MARKER: DV = VERTICAL CONTROL DISK
DG6890_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
DG6890_STAMPING: NONE
DG6890_PROJECTION: FLUSH
DG6890_MAGNETIC: N = NO MAGNETIC MATERIAL
DG6890_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
DG6890+STABILITY: SURFACE MOTION
DG6890_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
DG6890+SATELLITE: SATELLITE OBSERVATIONS - September , 2002
DG6890
DG6890  HISTORY     - Date     Condition        Report By
DG6890  HISTORY     - UNK      MONUMENTED       CADT
DG6890  HISTORY     - 200209   GOOD             JOHFRA
DG6890
DG6890                           STATION DESCRIPTION
DG6890
DG6890'DESCRIBED BY JOHNSON-FRANK 2002 (RAF)
DG6890'THE STATION IS 4.2 KM ( 2.6 MI) NORTHEAST OF MENLO PARK, CA.   THE
DG6890'STATION IS IN A PAVED BIKE TRAIL IN THE SOUTHEAST QUADRANT OF THE
DG6890'INTERSECTION OF  WILLOW RD/HWY 84/DUMBARTON BRIDGE APPROACH AND
DG6890'BAYFRONT EXPRESSWAY, IN EAST PALO  ALTO. THE AREA WAS UNDER
DG6890'CONSTRUCTION AS OF SEPTEMBER, 2002, BUT IT APPEARS THAT THE TRAIL  AND
DG6890'MONUMENT WILL SURVIVE.
DG6890'
DG6890'FROM THE INTERSECTION OF HWY 101 AND WILLOW/HWY 84, DRIVE NORTHERLY ON
DG6890'WILLOW (HWY  84) FOR ABOUT 0.95 MI, ABOUT 200 FT SHORT OF WHERE
DG6890'BAYFRONT EXPRESSWAY APPROACHES  FROM THE LEFT AND HWY 84 TURNS
DG6890'EASTERLY AND BECOMES THE DUMBARTON BRIDGE APPROACH. THE BIKE TRAIL
DG6890'RUNS ALONG THE SOUTHERLY SIDE OF HWY 84 BRIDGE APPROACH AND THE
DG6890'SOUTHEASTERLY SIDE OF WILLOW/HIGHWAY 84 AND IS ABOUT 15 M (50 FT)
DG6890'SOUTHEASTERLY OF THE  EDGE OF PAVEMENT OF THE ROADWAY.  IT IS JUST
DG6890'SOUTHEAST OF A CONSTRUCTION CHAIN LINK  FENCE WHICH IS PROBABLY
DG6890'TEMPORARY.   THE MARK IS ABOUT 8 M (26 FT) NORTHEASTERLY ALONG THE OLD
DG6890'BIKE TRAIL FROM ITS  INTERSECTION WITH A NEWLY CONSTRUCTED BIKE TRAIL
DG6890'RUNNING ALONG THE EAST SIDE OF  WILLOW RD FROM ABOUT 61 M (200 FT)
DG6890'SOUTHERLY OF THE  WILLOW/BAYFRONT INTERSECTION.  STATION CAN BE
DG6890'ACCESSED ALONG THE NEW BIKE TRAIL WITH A  VEHICLE FROM WILLOW BY
DG6890'BEARING RIGHT OF THE FENCING OFF WILLOW JUST BEFORE THE  BEGINNING OF
DG6890'THE TURN FROM WILLOW TO THE BRIDGE APPROACH. THE MARK IS PROTECTED BY
DG6890'A 0.25 M (10 IN) DIAMETER MONUMENT WELL COVER, STAMPED  'MONUMENT
DG6890'CHRISP'.
DG6890'
DG6890'AS OF 2001 (BEFORE THE FENCE WAS ERECTED), THE MARK WAS 22.0 M NE OF
DG6890'THE TRAFFIC SIGNAL  POLE ON THE SE CORNER OF WILLOW/BAYFRONT EXPWY),
DG6890'17.2 M E OF THE FOG LINE OF WILLOW RD,  ABOUT 8 M FROM THE CENTERLINE
DG6890'OF HWY 84/BRIDGE APPROACH (WAY TOO BUSY TO MEASURE),  AND 13.5 M NE OF
DG6890'THE TRAFFIC CAMERA-MOUNT POLE.  IT IS 1.0 M W OF THE BIKE PATH PAINTED
DG6890'CENTERLINE.
```

```
 DG6890'
 DG6890'THE MARK IS A 6.4 CM (2.5 IN) BRASS CAP SET ON A CONCRETE  POST IN A
 DG6890'WELL IN THE BIKE TRAIL.  THE CAP HAS A PUNCH MARK SOUTH OF CENTER, AND
 DG6890'HAD  STAMPINGS AT ONE TIME, BUT HAS BEEN SCRAPED, SO THAT THEY ARE NOW
 DG6890'UNREADABLE.  MARK IS 17 CM (0.5 FT) BELOW THE SURFACE.  IF CONDITIONS
 DG6890'ARE WET, A  SPONGE/RAG WILL BE NEEDED TO ELIMINATE STANDING  WATER.
 DG6890'
 DG6890'THIS STATION WAS OBSERVED AS PART OF THE SOUTH SAN FRANCISCO BAY
 DG6890'HEIGHT MODERNIZATION  PROJECT.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
 AI8013 ***********************************************************************
 AI8013  DESIGNATION -  MHCB B
 AI8013  PID         -  AI8013
 AI8013  STATE/COUNTY-  CA/SANTA CLARA
 AI8013  USGS QUAD   -  LICK OBSERVATORY (1973)
 AI8013
 AI8013                        *CURRENT SURVEY CONTROL
 AI8013  ______________________________________________________________________
 AI8013* NAD 83(1998)-  37 20 23.29601(N)    121 39 17.38316(W)     ADJUSTED
 AI8013* NAVD 88     -      1065.965  (meters)    3497.25   (feet)  ADJUSTED
 AI8013  ______________________________________________________________________
 AI8013  EPOCH DATE  -        1998.50
 AI8013  X           -  -2,664,954.223 (meters)                     COMP
 AI8013  Y           -  -4,322,547.404 (meters)                     COMP
 AI8013  Z           -   3,848,071.055 (meters)                     COMP
 AI8013  LAPLACE CORR-           8.72  (seconds)                    DEFLEC99
 AI8013  ELLIP HEIGHT-        1034.40  (meters)          (01/02/01) GPS OBS
 AI8013  GEOID HEIGHT-         -31.59  (meters)                     GEOID03
 AI8013  DYNAMIC HT  -        1065.002 (meters)    3494.09  (feet)  COMP
 AI8013  MODELED GRAV-     979,688.8   (mgal)                       NAVD 88
 AI8013
 AI8013  HORZ ORDER  -  B
 AI8013  VERT ORDER  -  FIRST     CLASS II
 AI8013  ELLP ORDER  -  THIRD     CLASS I
 AI8013
 AI8013.This is a reference station for the MT HAMILTON BARD
 AI8013.National Continuously Operating Reference Station (MHCB).
 AI8013
 AI8013.The horizontal coordinates were established by GPS observations
 AI8013.and adjusted by the National Geodetic Survey in January 2001..
 AI8013.This is a SPECIAL STATUS position.  See SPECIAL STATUS under the
 AI8013.DATUM ITEM on the data sheet items page.
 AI8013.The horizontal coordinates are valid at the epoch date displayed above.
 AI8013.The epoch date for horizontal control is a decimal equivalence
 AI8013.of Year/Month/Day.
 AI8013
 AI8013.The orthometric height was determined by differential leveling
 AI8013.and adjusted by the National Geodetic Survey in July 2002..
 AI8013.No vertical observational check was made to the station.
 AI8013
 AI8013.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AI8013
 AI8013.The Laplace correction was computed from DEFLEC99 derived deflections.
 AI8013
 AI8013.The ellipsoidal height was determined by GPS observations
 AI8013.and is referenced to NAD 83.
 AI8013
 AI8013.The geoid height was determined by GEOID03.
 AI8013
 AI8013.The dynamic height is computed by dividing the NAVD 88
 AI8013.geopotential number by the normal gravity value computed on the
```

```
AI8013.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
AI8013.degrees latitude (g = 980.6199 gals.).
AI8013
AI8013.The modeled gravity was interpolated from observed gravity values.
AI8013
AI8013;                    North         East     Units Scale Factor Converg.
AI8013;SPC CA 3     -   593,833.570 1,897,673.233   MT  0.99995478   -0 42 25.3
AI8013;SPC CA 3     - 1,948,268.97  6,225,949.60   sFT  0.99995478   -0 42 25.3
AI8013;UTM  10      - 4,133,417.557   619,156.259   MT  0.99977489   +0 48 57.6
AI8013
AI8013!             -  Elev Factor  x  Scale Factor =   Combined Factor
AI8013!SPC CA 3     -   0.99983770  x   0.99995478  =   0.99979249
AI8013!UTM  10      -   0.99983770  x   0.99977489  =   0.99961263
AI8013
AI8013                          SUPERSEDED SURVEY CONTROL
AI8013
AI8013  NAVD 88 (01/02/01) 1065.96   (m)          3497.2    (f) LEVELING    3
AI8013
AI8013.Superseded values are not recommended for survey control.
AI8013.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
AI8013.See file dsdata.txt to determine how the superseded data were derived.
AI8013
AI8013_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFG1915633418(NAD 83)
AI8013_MARKER: F = FLANGE-ENCASED ROD
AI8013_SETTING: 15 = METAL ROD DRIVEN INTO GROUND. SEE TEXT FOR ADDITIONAL
AI8013+WITH SETTING: INFORMATION.
AI8013_STAMPING: MHCB B 2000
AI8013_MARK LOGO: NGS
AI8013_PROJECTION: FLUSH
AI8013_MAGNETIC: I = MARKER IS A STEEL ROD
AI8013_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AI8013_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AI8013+SATELLITE: SATELLITE OBSERVATIONS - 2000
AI8013_ROD/PIPE-DEPTH: 2.5  meters
AI8013_SLEEVE-DEPTH  : 0.9 meters
AI8013
AI8013  HISTORY     - Date     Condition        Report By
AI8013  HISTORY     - 2000     MONUMENTED       NGS
AI8013
AI8013                          STATION DESCRIPTION
AI8013
AI8013'DESCRIBED BY NATIONAL GEODETIC SURVEY 2000 (GAS)
AI8013'2.3 KM (1.40 MI) NORTHEASTERLY ALONG ALUM ROCK AVENUE FROM THE
AI8013'JUNCTION OF INTERSTATE HIGHWAY 680 IN SAN JOSE, THENCE 26.6 KM (16.50
AI8013'MI) EASTERLY ALONG STATE HIGHWAY 130, 22.7 M (74.5 FT) SOUTH OF THE
AI8013'NORTH END OF A HIGHWAY TURNOUT, 18.2 M (59.7 FT) WEST OF THE EAST END
AI8013'OF A HIGHWAY TURNOUT, 17.2 M (56.4 FT) SOUTHWEST OF THE HIGHWAY
AI8013'CENTERLINE, 1.0 M (3.3 FT) ABOVE THE LEVEL OF THE HIGHWAY, AND 0.8 M
AI8013'(2.6 FT) EAST OF A WITNESS POST.  NOTE--ACCESS TO THE DATUM POINT IS
AI8013'THROUGH A 5-INCH LOGO CAP.  THE SLEEVE DEPTH DOES NOT MEET THE
AI8013'SPECIFICATIONS FOR A CLASS A MARK.  THE ROD WAS DRIVEN TO REFUSAL AND
AI8013'ANCHORED.  THE MONUMENT IS ON THE HIGHWAY RIGHT-OF-WAY.  THIS IS A
AI8013'CORS SITE REFERENCE STATION.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
HS2851 ***********************************************************************
HS2851  CBN         -  This is a Cooperative Base Network Control Station.
HS2851  DESIGNATION -  M 874
HS2851  PID         -  HS2851
HS2851  STATE/COUNTY-  CA/SANTA CLARA
HS2851  USGS QUAD   -  MILPITAS (1980)
HS2851
```

```
HS2851                          *CURRENT SURVEY CONTROL
HS2851  ______________________________________________________________________
HS2851* NAD 83(1998)-  37 26 10.03474(N)    121 54 24.89490(W)     ADJUSTED
HS2851* NAVD 88     -         4.805  (meters)      15.76   (feet)  ADJUSTED
HS2851  ______________________________________________________________________
HS2851  EPOCH DATE  -        2002.75
HS2851  X           -  -2,680,069.511 (meters)                     COMP
HS2851  Y           -  -4,304,553.596 (meters)                     COMP
HS2851  Z           -   3,855,920.244 (meters)                     COMP
HS2851  LAPLACE CORR-           3.91  (seconds)                    DEFLEC99
HS2851  ELLIP HEIGHT-         -27.62  (meters)          (08/23/04) GPS OBS
HS2851  GEOID HEIGHT-         -32.47  (meters)
HS2851  DYNAMIC HT  -           4.802 (meters)      15.75  (feet)  COMP
HS2851  MODELED GRAV-     979,894.9   (mgal)                       NAVD 88
HS2851
HS2851  HORZ ORDER  -  B
HS2851  VERT ORDER  -  FIRST     CLASS I
HS2851  ELLP ORDER  -  FOURTH    CLASS I
HS2851
HS2851.ITRF positions are available for this station.
HS2851.The horizontal coordinates were established by GPS observations
HS2851.and adjusted by the CALIF SPA REF CEN in August 2004..
HS2851.This is a SPECIAL STATUS position.  See SPECIAL STATUS under the
HS2851.DATUM ITEM on the data sheet items page.
HS2851.The horizontal coordinates are valid at the epoch date displayed above.
HS2851.The epoch date for horizontal control is a decimal equivalence
HS2851.of Year/Month/Day.
HS2851
HS2851.The orthometric height was determined by differential leveling
HS2851.and adjusted by the National Geodetic Survey in June 1991..
HS2851
HS2851.Photographs are available for this station.
HS2851
HS2851.The X, Y, and Z were computed from the position and the ellipsoidal ht.
HS2851
HS2851.The Laplace correction was computed from DEFLEC99 derived deflections.
HS2851
HS2851.The ellipsoidal height was determined by GPS observations
HS2851.and is referenced to NAD 83.
HS2851
HS2851
HS2851.The dynamic height is computed by dividing the NAVD 88
HS2851.geopotential number by the normal gravity value computed on the
HS2851.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
HS2851.degrees latitude (g = 980.6199 gals.).
HS2851
HS2851.The modeled gravity was interpolated from observed gravity values.
HS2851
HS2851;                    North         East     Units Scale Factor Converg.
HS2851;SPC CA 3     -   604,827.195 1,875,498.629   MT  0.99994420   -0 51 40.9
HS2851;SPC CA 3     - 1,984,337.22  6,153,198.42   sFT  0.99994420   -0 51 40.9
HS2851;UTM  10      - 4,143,815.213   596,701.635   MT  0.99971519   +0 39 52.2
HS2851
HS2851!             -  Elev Factor  x  Scale Factor =   Combined Factor
HS2851!SPC CA 3     -   1.00000433  x   0.99994420  =   0.99994853
HS2851!UTM  10      -   1.00000433  x   0.99971519  =   0.99971952
HS2851
HS2851                          SUPERSEDED SURVEY CONTROL
HS2851
HS2851  NAD 83(1998)-  37 26 10.03161(N)    121 54 24.89228(W) AD(1998.50) A
HS2851  ELLIP H (04/06/00)  -27.70   (m)                       GP(1998.50) 3 1
```

```
HS2851  NAVD 88 (04/02/03)    4.80   (m)           15.7    (f) LEVELING    3
HS2851  NGVD 29 (10/21/93)    3.967  (m)           13.02   (f) ADJUSTED    1 1
HS2851
HS2851.Superseded values are not recommended for survey control.
HS2851.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
HS2851.See file dsdata.txt to determine how the superseded data were derived.
HS2851
HS2851_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEG9670243815(NAD 83)
HS2851_MARKER: DB = BENCH MARK DISK
HS2851_SETTING: 32 = SET IN A RETAINING WALL OR CONCRETE LEDGE
HS2851_SP_SET: CULVERT HEADWALL FOR BRIDGE
HS2851_STAMPING: M 874 1954
HS2851_MARK LOGO: CGS
HS2851_PROJECTION: FLUSH
HS2851_MAGNETIC: N = NO MAGNETIC MATERIAL
HS2851_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
HS2851+STABILITY: SURFACE MOTION
HS2851_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
HS2851+SATELLITE: SATELLITE OBSERVATIONS - March 14, 2003
HS2851
HS2851  HISTORY     - Date     Condition        Report By
HS2851  HISTORY     - 1954     MONUMENTED       CGS
HS2851  HISTORY     - 1960     GOOD             NGS
HS2851  HISTORY     - 1969     GOOD             NGS
HS2851  HISTORY     - 1983     GOOD             NGS
HS2851  HISTORY     - 19881101 GOOD             NGS
HS2851  HISTORY     - 19980715 GOOD             CA-085
HS2851  HISTORY     - 20010306 GOOD             NGS
HS2851  HISTORY     - 20010313 GOOD             NGS
HS2851  HISTORY     - 200209   GOOD             JOHFRA
HS2851  HISTORY     - 20030314 GOOD             NGS
HS2851
HS2851                          STATION DESCRIPTION
HS2851
HS2851'DESCRIBED BY NATIONAL GEODETIC SURVEY 1960
HS2851'0.2 MI N FROM MILPITAS.
HS2851'0.2 MILE NORTH ALONG THE SOUTHERN PACIFIC COMPANY RAILROAD
HS2851'TRACK FROM THE CITY HALL AT MILPITAS, ABOUT 2-1/2 POLES NORTH OF
HS2851'MILEPOLE 40, ABOUT 11 RAILS NORTH OF THE CROSSING OF MAIN
HS2851'STREET, AT QUADRUPLE 60-INCH CORRUGATED-METAL PIPE CULVERT
HS2851'A-91+50 UNDER THE STREET, IN THE TOP OF THE NORTH END OF THE
HS2851'WEST CONCRETE HEADWALL, 66.4 FEET EAST OF THE EAST RAIL, 23.1
HS2851'FEET WEST OF THE CENTERLINE OF THE STREET, AND ABOUT 1/2 FOOT
HS2851'HIGHER THAN THE STREET.
HS2851
HS2851                          STATION RECOVERY (1969)
HS2851
HS2851'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1969
HS2851'RECOVERED IN GOOD CONDITION.
HS2851
HS2851                          STATION RECOVERY (1983)
HS2851
HS2851'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1983
HS2851'RECOVERED IN GOOD CONDITION.
HS2851
HS2851                          STATION RECOVERY (1988)
HS2851
HS2851'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1988
HS2851'RECOVERED IN GOOD CONDITION WITH THE FOLLOWING EXCEPTIONS. CHANGE--THE
HS2851'CITY HALL TO THE MILPITAS SENIOR CENTER, AND NORTH OF THE CROSSING OF
HS2851'MAIN STREET, TO NORTH OF THE CROSSING OF RAILROAD COURT.
```

```
HS2851
HS2851                          STATION RECOVERY (1998)
HS2851
HS2851'RECOVERY NOTE BY SANTA CLARA COUNTY CALIFORNIA 1998 (MDM)
HS2851'RECOVERED AS DESCRIBED.
HS2851
HS2851                          STATION RECOVERY (2001)
HS2851
HS2851'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2001 (KRN)
HS2851'THE STATION IS LOCATED IN MILPITAS CALIFORNIA, ABOUT 0.2 MILES NORTH
HS2851'OF STATE HIGHWAY 237, ALONG THE SOUTHERN PACIFIC RAILROAD.
HS2851'
HS2851'TO REACH THE STATION FROM THE EAST BOUND LANES OF STATE HIGHWAY
HS2851'237, (CALAVEGRAS BLVD)  AND MAIN STREET IN MILPITAS CALIFORNIA, TAKE
HS2851'THE MAIN STREET EXIT FOR 0.05 MILES TO MAIN STREET.  TURN LEFT ONTO
HS2851'MAIN STREET GOING NORTH , FOR 0.2 MILES TO RAILROAD COURT STREET
HS2851'ON THE RIGHT.  TURN RIGHT ONTO RAILROAD CT FOR 0.15 MILES TO THE
HS2851'STATION ON THE LEFT.
HS2851'
HS2851'THE STATION IS A U.S.G.S. BENCH MARK DISK SET INTO THE TOP OF A 50.6
HS2851'FT
HS2851'BY 0.7 FT HEADWALL WITH 4 CULVERTS.
HS2851'THE STATION IS 93.5 FT NORTH-NORTHWEST OF A POWER POLE.  70.3 FT
HS2851'NORTHWEST OF THE NORTHWEST END OF A BRIDGE.  67.0 FT
HS2851'EAST-NORTHEAST OF THE EAST RAIL OF A RAILROAD.  14.2 FT SOUTHEAST
HS2851'OF THE NORTH-NORTHEAST END OF A GUARD RAIL.  0.9 FT
HS2851'SOUTH-SOUTHEAST OF NORTH-NORTHWWEST END OF A HEADWALL. FLUSH
HS2851'WITH THE TOP OF THE HEADWALL.
HS2851'
HS2851
HS2851                          STATION RECOVERY (2001)
HS2851
HS2851'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2001 (KRN)
HS2851'RECOVERED AS DESCRIBED.
HS2851'
HS2851'
HS2851
HS2851                          STATION RECOVERY (2002)
HS2851
HS2851'RECOVERY NOTE BY JOHNSON-FRANK 2002 (RAF)
HS2851'THE DESCRIPTION IS ADEQUATE, EXCEPT THE STREET IS 'CALAVERAS' AND THE
HS2851'DISK IS NOT A USGS  DISK BUT WAS INSTALLED BY USCGS AS PREVIOUSLY
HS2851'INDICATED. FROM THE INTERSECTION OF INTERSTATE 880 AND CALAVERAS
HS2851'BLVD/HWY 237, EXIT 237 EASTBOUND.  DRIVE 0.5 MI TO ABEL ST AND TURN
HS2851'LEFT(NORTH).  DRIVE NORTH FOR  0.5 KM (0.3 MI) ON ABEL TO WELLER, TURN
HS2851'RIGHT AND GO EAST 0.5 KM (0.3 MI) ON WELLER TO  RAILROAD COURT/MAIN,
HS2851'TURN LEFT AND GO NORTH AND NORTHEAST ON MAIN/RAILROAD COURT  0.6 KM
HS2851'(0.4 MI), CROSSING RAILROAD TRACKS AND CONTINUING NORTH FOR 0.1 MI ON
HS2851'RAILROAD  COURT TO THE BRIDGE AND THE STATION ON THE LEFT.
HS2851'
HS2851'THE MARK IS NOW 0.3 M BELOW THE LEVEL OF PAVEMENT, NOT 0.5 FT HIGHER.
HS2851'IT IS ABOUT 150 FT S  OF THE END OF THE ROAD, 26.0 M N OF THE CENTER
HS2851'OF THE BRIDGE OVER THE EASTERN TRIBUTARY  TO COYOTE CREEK, 5.6 M W OF
HS2851'THE CENTERLINE OF RAILROAD COURT, 4.3 M S OF THE N END OF THE  METAL
HS2851'GUARD RAIL, AND 0.2 M S OF THE N END OF THE CONCRETE HEADWALL. THIS
HS2851'STATION WAS OBSERVED AS PART OF THE SOUTH SAN FRANCISCO BAY HEIGHT
HS2851'MODERNIZATION  PROJECT.
HS2851
HS2851                          STATION RECOVERY (2003)
HS2851
HS2851'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 2003 (AJL)
```

```
 HS2851'RECOVERED AS DESCRIBED.
 HS2851'
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
 GU2656 ***********************************************************************
 GU2656  CBN         -  This is a Cooperative Base Network Control Station.
 GU2656  DESIGNATION -  FELIPE AZ MK
 GU2656  PID         -  GU2656
 GU2656  STATE/COUNTY-  CA/SANTA CLARA
 GU2656  USGS QUAD   -  SAN FELIPE (1971)
 GU2656
 GU2656                          *CURRENT SURVEY CONTROL
 GU2656  ______________________________________________________________________
 GU2656* NAD 83(1998)-  36 57 40.54079(N)    121 23 55.48706(W)      ADJUSTED
 GU2656* NAVD 88     -       135.665  (meters)     445.09   (feet)  ADJUSTED
 GU2656  ______________________________________________________________________
 GU2656  EPOCH DATE  -        1998.50
 GU2656  X           -  -2,658,440.486 (meters)                      COMP
 GU2656  Y           -  -4,355,438.941 (meters)                      COMP
 GU2656  Z           -   3,814,020.757 (meters)                      COMP
 GU2656  LAPLACE CORR-           3.47  (seconds)                     DEFLEC99
 GU2656  ELLIP HEIGHT-         102.94  (meters)          (04/06/00) GPS OBS
 GU2656  GEOID HEIGHT-         -32.70  (meters)                     GEOID03
 GU2656  DYNAMIC HT  -         135.558 (meters)     444.74  (feet)  COMP
 GU2656  MODELED GRAV-     979,843.9   (mgal)                       NAVD 88
 GU2656
 GU2656  HORZ ORDER  -  A
 GU2656  VERT ORDER  -  FIRST     CLASS I
 GU2656  ELLP ORDER  -  THIRD     CLASS I
 GU2656
 GU2656.ITRF positions are available for this station.
 GU2656.The horizontal coordinates were established by GPS observations
 GU2656.and adjusted by the National Geodetic Survey in April 2000..
 GU2656.This is a SPECIAL STATUS position.  See SPECIAL STATUS under the
 GU2656.DATUM ITEM on the data sheet items page.
 GU2656.The horizontal coordinates are valid at the epoch date displayed above.
 GU2656.The epoch date for horizontal control is a decimal equivalence
 GU2656.of Year/Month/Day.
 GU2656
 GU2656.The orthometric height was determined by differential leveling
 GU2656.and adjusted by the National Geodetic Survey in June 1991..
 GU2656
 GU2656.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 GU2656
 GU2656.The Laplace correction was computed from DEFLEC99 derived deflections.
 GU2656
 GU2656.The ellipsoidal height was determined by GPS observations
 GU2656.and is referenced to NAD 83.
 GU2656
 GU2656.The geoid height was determined by GEOID03.
 GU2656
 GU2656.The dynamic height is computed by dividing the NAVD 88
 GU2656.geopotential number by the normal gravity value computed on the
 GU2656.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 GU2656.degrees latitude (g = 980.6199 gals.).
 GU2656
 GU2656.The modeled gravity was interpolated from observed gravity values.
 GU2656
 GU2656;                    North         East     Units Scale Factor Converg.
 GU2656;SPC CA 3     -   551,576.265 1,919,959.867   MT  1.00002345   -0 33 00.9
 GU2656;SPC CA 3     - 1,809,629.80  6,299,068.33   sFT  1.00002345   -0 33 00.9
 GU2656;SPC CA 4     -   683,306.895 1,786,406.517   MT  0.99995785   -1 25 51.8
```

```
GU2656;SPC CA 4     - 2,241,816.04  5,860,902.05   sFT  0.99995785   -1 25 51.8
GU2656;UTM  10      - 4,091,772.862   642,550.681   MT  0.99985034   +0 57 46.6
GU2656
GU2656!             -  Elev Factor  x  Scale Factor =   Combined Factor
GU2656!SPC CA 3     -   0.99998385  x   1.00002345  =   1.00000730
GU2656!SPC CA 4     -   0.99998385  x   0.99995785  =   0.99994170
GU2656!UTM  10      -   0.99998385  x   0.99985034  =   0.99983419
GU2656
GU2656                          SUPERSEDED SURVEY CONTROL
GU2656
GU2656  ELLIP H (11/17/92)  102.97   (m)                       GP(       ) 5 1
GU2656  NAD 83(1992)-  36 57 40.53740(N)    121 23 55.48206(W) AD(1991.35) B
GU2656  ELLIP H (05/15/92)  102.97   (m)                       GP(1991.35) 4 2
GU2656  NAD 83(1986)-  36 57 40.54034(N)    121 23 55.48079(W) AD(1984.00) 3
GU2656  NAD 27      -  36 57 40.73358(N)    121 23 51.72782(W) AD(       ) 3
GU2656  NAVD 88 (05/15/92)  135.67   (m)          445.1    (f) LEVELING    3
GU2656  NGVD 29 (??/??/??)  134.783  (m)          442.20   (f) ADJUSTED    1 1
GU2656
GU2656.Superseded values are not recommended for survey control.
GU2656.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
GU2656.See file dsdata.txt to determine how the superseded data were derived.
GU2656
GU2656_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFF4255191773(NAD 83)
GU2656_MARKER: DZ = AZIMUTH MARK DISK
GU2656_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
GU2656_SP_SET: CONCRETE POST
GU2656_STAMPING: FELIPE 1962
GU2656_MARK LOGO: CGS
GU2656_PROJECTION: FLUSH
GU2656_MAGNETIC: N = NO MAGNETIC MATERIAL
GU2656_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
GU2656+STABILITY: SURFACE MOTION
GU2656_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
GU2656+SATELLITE: SATELLITE OBSERVATIONS - June 10, 2003
GU2656
GU2656  HISTORY     - Date     Condition        Report By
GU2656  HISTORY     - 1962     MONUMENTED       CGS
GU2656  HISTORY     - 1972     GOOD             NGS
GU2656  HISTORY     - 19881019 GOOD             NGS
GU2656  HISTORY     - 19910515 GOOD             NGS
GU2656  HISTORY     - 19920609 GOOD             NGS
GU2656  HISTORY     - 19921024 GOOD             CA-085
GU2656  HISTORY     - 19930511 GOOD             CADT
GU2656  HISTORY     - 19930511 GOOD             CADT
GU2656  HISTORY     - 19940209 GOOD             NGS
GU2656  HISTORY     - 19980708 GOOD             CADT
GU2656  HISTORY     - 20030610 GOOD             CADPR
GU2656
GU2656                          STATION DESCRIPTION
GU2656
GU2656'DESCRIBED BY COAST AND GEODETIC SURVEY 1962 (RDM)
GU2656'THE AZIMUTH MARK IS ON THE WESTERLY SIDE OF STATE HIGHWAY 152 ABOUT
GU2656'8.3 MILES NORTH OF HOLLISTER.
GU2656'
GU2656'TO REACH THE AZIMUTH MARK FROM THE U. S. POST OFFICE IN HOLLISTER,
GU2656'GO WEST ON FIFTH STREET FOR 0.05 MILE TO THE JUNCTION WITH SAN
GU2656'BENITO STREET AND STATE HIGHWAY 156.  TURN RIGHT ON HIGHWAY 156 AND
GU2656'GO NORTHERLY FOR 3.65 MILES TO A FORK AND A SIGN GILROY 15
GU2656'MILES.  TAKE THE LEFT FORK, SAN FELIPE ROAD, AND CONTINUE
GU2656'NORTHERLY FOR 2.7 MILES TO A CROSSROAD AT DUNNVILLE.  CONTINUE
GU2656'STRAIGHT AHEAD, NORTHERLY, ON SAN FELIPE ROAD FOR 2.1 MILES
```

GU2656'TO THE SAN FELIPE MOBILE SERVICE STATION ON THE LEFT AND THE
GU2656'INTERSECTION OF STATE HIGHWAY 152. TURN RIGHT ON HIGHWAY 152
GU2656'AND GO EASTERLY FOR 1.3 MILES TO THE TOP OF THE GRADE, A PULLOUT
GU2656'AREA ON THE LEFT AND THE AZIMUTH MARK ON THE RIGHT.
GU2656'
GU2656'A POSITION ON THE AZIMUTH MARK WAS ESTABLISHED ON THIS DATE.
GU2656'
GU2656'THE AZIMUTH MARK IS A STANDARD DISK, STAMPED FELIPE 1962, SET
GU2656'IN THE TOP OF A 12 INCH SQUARE CONCRETE POST PROJECTING 4
GU2656'INCHES. IT IS 39 FEET SOUTHEAST OF THE CENTERLINE OF STATE
GU2656'HIGHWAY 152, 2.2 FEET SOUTHEAST OF A WITNESS POST AND 1 FOOT WEST
GU2656'OF A WIRE FENCE.
GU2656
GU2656   STATION RECOVERY (1972)
GU2656
GU2656'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1972
GU2656'10.8 MI E FROM GILROY.
GU2656'10.85 MILES EAST ALONG STATE HIGHWAY 152 FROM U.S. HIGHWAY 101
GU2656'UNDERPASS AT GILROY, AT THE NORTHEAST END OF AN ASPHALT TURNOUT,
GU2656'AT THE SUMMIT OF A HILL, 149 FEET NORTHEAST OF THE NORTHEAST
GU2656'END OF A STEEL GATE, 38 FEET SOUTHEAST OF THE CENTER LINE OF
GU2656'THE HIGHWAY, 1.0 FEET NORTHWEST OF A FENCE, 2.3 FEET EAST OF
GU2656'A WITNESS POST, 5 1/2 FEET HIGHER THAN THE HIGHWAY AND SET IN
GU2656'THE TOP OF A CONCRETE POST PROJECTING 0.4 OF A FOOT.
GU2656
GU2656   STATION RECOVERY (1988)
GU2656
GU2656'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1988
GU2656'RECOVERED IN GOOD CONDITION WITH THE FOLLOWING EXCEPTIONS. ADD--47.8
GU2656'M (156.8 FT) EAST OF THE CENTER OF A STEEL GATE, 12.0 M (39.4 FT)
GU2656'SOUTH OF THE CENTERLINE OF THE HIGHWAY, AND 0.6 M (2.0 FT) EAST OF A
GU2656'WITNESS POST.
GU2656
GU2656   STATION RECOVERY (1991)
GU2656
GU2656'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
GU2656'THE STATION IS LOCATED ABOUT 8.3 MI (13.4 KM) NORTH OF HOLLISTER.
GU2656'TO REACH THE STATION FROM THE POST OFFICE IN HOLLISTER, GO WEST ON
GU2656'FIFTH STREET FOR 0.05 MI (0.08 KM) TO SAN BENITO STREET AND STATE
GU2656'HIGHWAY 156. TURN RIGHT ON HIGHWAY 156 AND GO NORTHERLY FOR 3.65 MI
GU2656'(5.87 KM) TO A FORK AND SIGN, GILROY 15 MILES. TAKE THE LEFT FORK,
GU2656'SAN FELIPE ROAD FOR 2.7 MI (4.3 KM) TO A CROSSROAD AT DUNNVILLE.
GU2656'CONTINUE AHEAD, NORTHERLY, ON SAN FELIPE ROAD FOR 2.1 MI (3.4 KM) TO
GU2656'THE SAN FELIPE SERVICE STATION ON THE LEFT AND THE JUNCTION OF STATE
GU2656'HIGHWAY 152. TURN RIGHT ON HIGHWAY 152 AND GO EASTERLY FOR 1.3 MI
GU2656'(2.1 KM) TO THE TOP OF THE GRADE, A PULLOUT AREA ON THE LEFT AND THE
GU2656'STATION ON THE RIGHT.
GU2656'THE STATION IS A STANDARD DISK SET IN THE TOP OF A 12 INCH SQUARE
GU2656'CONCRETE POST PROJECTING 4 INCHES. LOCATED 39 FT (11.9 M) SOUTHEAST
GU2656'OF THE CENTERLINE OF HIGHWAY 152, 2.2 FT (0.7 M) SOUTHEAST OF A
GU2656'WITNESS POST AND 1 FT (0.3 M) WEST OF A WIRE FENCE.
GU2656
GU2656   STATION RECOVERY (1992)
GU2656
GU2656'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1992
GU2656'STATION IS LOCATED ABOUT 14 KM (8.7 MI) EAST OF GILROY, 12 KM
GU2656'(7.5 MI) NORTH OF HOLLISTER, 1.5 KM (0.9 MI) WEST OF (BY ROAD) THE
GU2656'JUNCTION OF STATE HIGHWAYS 152 AND 156, ALONG HIGHWAY 152, AT THE TOP
GU2656'OF A LONG GRADE, AT A PAVED EASTBOUND TURNOUT, ON RIGHT-OF-WAY.
GU2656'OWNERSHIP--CALIFORNIA DEPARTMENT OF TRANSPORTATION.
GU2656'TO REACH FROM THE JUNCTION OF STATE HIGHWAYS 101 AND 152 EAST IN

GU2656'GILROY, GO EAST ON HIGHWAY 152 FOR 15.43 KM (9.59 MI) TO A PAVED ROAD
GU2656'RIGHT (SAN FELIPE ROAD). CONTINUE AHEAD FOR 3.75 KM (2.33 MI) TO TOP
GU2656'OF GRADE AND STATION ON THE RIGHT AT EAST END OF TURNOUT.
GU2656'STATION MARK IS SET IN THE TOP OF A 30-CM SQUARE CONCRETE POST
GU2656'PROJECTING 10 CM ON ITS NORTHWEST SIDE. IT IS 12.1 M (39.7 FT)
GU2656'SOUTHEAST OF AND 1 M (3.3 FT) HIGHER THAN THE HIGHWAY CENTER, 0.2 M
GU2656'(0.7 FT) NORTHWEST OF A FIBERGLASS WITNESS POST AND A STEEL POST IN
GU2656'THE FENCE LINE, 0.7 M (2.3 FT) EAST OF A METAL WITNESS POST, 44.8 M
GU2656'(147.0 FT) NORTHEAST OF THE NORTHEAST GATE POST AT A FIELD ENTRANCE
GU2656'AND 40.5 M (132.9 FT) NORTHEAST OF THE NORTHWEST END OF A LARGE
GU2656'BILLBOARD FOR CASA DE FRUITA.
GU2656
GU2656 STATION RECOVERY (1992)
GU2656
GU2656'RECOVERY NOTE BY SANTA CLARA COUNTY CALIFORNIA 1992 (JLP)
GU2656'THE STATION WAS RECOVERED AS DESCRIBED.
GU2656
GU2656 STATION RECOVERY (1993)
GU2656
GU2656'RECOVERY NOTE BY CALTRANS 1993
GU2656'RECOVERED IN GOOD CONDITION.
GU2656
GU2656 STATION RECOVERY (1993)
GU2656
GU2656'RECOVERY NOTE BY CALTRANS 1993
GU2656'THE RECOVERY WAS ADEQUATE EXCEPT FOR THE FOLLOWING REVISIONS.
GU2656'$
GU2656'THE STATION IS LOCATED AT STATE HIGHWAY 152 POST MILE 21.10. A PAVED
GU2656'SHOULDER ADJACENT TO THE STATION PROVIDES ADEQUATE PARKING.
GU2656'$
GU2656'THE STATION IS 1.0 FT (0.3 M) NORTH OF A 6 STRAND BARBED WIRE R/W
GU2656'FENCE.
GU2656
GU2656 STATION RECOVERY (1994)
GU2656
GU2656'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1994 (AJL)
GU2656'THE STATION IS LOCATED ABOUT 14 KM (8.7 MI) EAST OF GILROY, 12 KM (7.5
GU2656'MI) NORTH OF HOLLISTER, 1.5 KM (0.9 MI) WEST OF THE JUNCTION OF STATE
GU2656'HIGHWAYS 152 AND 156, AND ALONG HWY 152 AT A PAVED EASTBOUND TURNOUT.
GU2656'OWNERSHIP--CALIFORNIA DEPARTMENT OF TRANSPORTATION. TO REACH FROM THE
GU2656'JUNCTION OF STATE HIGHWAY 152 AND US HIGHWAY 101, IN GILROY, GO EAST
GU2656'ON HIGHWAY 152 FOR 15.4 KM (9.6 MI) TO A PAVED ROAD RIGHT (SAN FELIPE
GU2656'ROAD). CONTINUE EAST ON HWY 152 FOR 2.25 KM (1.40 MI) TO TOP OF GRADE
GU2656'AND STATION ON THE RIGHT AT EAST END OF TURNOUT. STATION MARK IS A
GU2656'STANDARD CGS AZIMUTH MARK DISK SET IN THE TOP OF A 30 CM SQUARE
GU2656'CONCRETE POST PROJECTING 10 CM ON ITS NORTHWEST SIDE. IT IS 12.1 M
GU2656'(39.7 FT) SOUTHEAST OF, AND 1 M (3.3 FT) HIGHER THAN, THE HIGHWAY
GU2656'CENTER, 44.8 M (147.0 FT) NORTHEAST OF THE NORTHEAST GATE POST AT A
GU2656'FIELD ENTRANCE, 40.5 M (132.9 FT) NORTHEAST OF THE NORTHWEST END OF A
GU2656'LARGE BILLBOARD, 0.7 M (2.3 FT) EAST OF A METAL WITNESS POST, AND 0.2
GU2656'M (0.7 FT) NORTHWEST OF A FIBERGLASS WITNESS POST AND STEEL POST IN
GU2656'THE FENCE LINE.
GU2656
GU2656 STATION RECOVERY (1998)
GU2656
GU2656'RECOVERY NOTE BY CALTRANS 1998 (REH)
GU2656'RECOVERED AS DESCRIBED.
GU2656
GU2656 STATION RECOVERY (2003)
GU2656
GU2656'RECOVERY NOTE BY CA DEPT PARKS REC 2003 (DBK)

```
 GU2656'RECOVERED IN GOOD CONDITION.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
 HS2738 ***********************************************************************
 HS2738  CBN         -  This is a Cooperative Base Network Control Station.
 HS2738  DESIGNATION -  G 1080
 HS2738  PID         -  HS2738
 HS2738  STATE/COUNTY-  CA/SANTA CLARA
 HS2738  USGS QUAD   -  GILROY (1993)
 HS2738
 HS2738                         *CURRENT SURVEY CONTROL
 HS2738  ______________________________________________________________________
 HS2738* NAD 83(1998)-  37 04 19.05729(N)    121 36 08.64242(W)     ADJUSTED
 HS2738* NAVD 88     -        81.308  (meters)     266.76   (feet)  ADJUSTED
 HS2738  ______________________________________________________________________
 HS2738  EPOCH DATE  -        1998.50
 HS2738  X           -  -2,670,006.319 (meters)                     COMP
 HS2738  Y           -  -4,339,625.900 (meters)                     COMP
 HS2738  Z           -   3,823,797.505 (meters)                     COMP
 HS2738  LAPLACE CORR-           0.04  (seconds)                    DEFLEC99
 HS2738  ELLIP HEIGHT-          48.82  (meters)          (04/06/00) GPS OBS
 HS2738  GEOID HEIGHT-         -32.46  (meters)                     GEOID03
 HS2738  DYNAMIC HT  -          81.247 (meters)     266.56  (feet)  COMP
 HS2738  MODELED GRAV-     979,886.6   (mgal)                       NAVD 88
 HS2738
 HS2738  HORZ ORDER  -  A
 HS2738  VERT ORDER  -  FIRST     CLASS I
 HS2738  ELLP ORDER  -  THIRD     CLASS I
 HS2738
 HS2738.ITRF positions are available for this station.
 HS2738.The horizontal coordinates were established by GPS observations
 HS2738.and adjusted by the National Geodetic Survey in April 2000..
 HS2738.This is a SPECIAL STATUS position.  See SPECIAL STATUS under the
 HS2738.DATUM ITEM on the data sheet items page.
 HS2738.The horizontal coordinates are valid at the epoch date displayed above.
 HS2738.The epoch date for horizontal control is a decimal equivalence
 HS2738.of Year/Month/Day.
 HS2738
 HS2738.The orthometric height was determined by differential leveling
 HS2738.and adjusted by the National Geodetic Survey in February 1993..
 HS2738
 HS2738.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 HS2738
 HS2738.The Laplace correction was computed from DEFLEC99 derived deflections.
 HS2738
 HS2738.The ellipsoidal height was determined by GPS observations
 HS2738.and is referenced to NAD 83.
 HS2738
 HS2738.The geoid height was determined by GEOID03.
 HS2738
 HS2738.The dynamic height is computed by dividing the NAVD 88
 HS2738.geopotential number by the normal gravity value computed on the
 HS2738.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 HS2738.degrees latitude (g = 980.6199 gals.).
 HS2738
 HS2738.The modeled gravity was interpolated from observed gravity values.
 HS2738
 HS2738;                    North         East     Units Scale Factor Converg.
 HS2738;SPC CA 3     -   564,054.610 1,901,968.397   MT  0.99999891   -0 40 29.7
 HS2738;SPC CA 3     - 1,850,569.17  6,240,041.32   sFT  0.99999891   -0 40 29.7
 HS2738;UTM  10      - 4,103,768.746   624,239.006   MT  0.99979015   +0 50 33.4
 HS2738
```

```
HS2738!             -  Elev Factor  x  Scale Factor =   Combined Factor
HS2738!SPC CA 3     -   0.99999234  x   0.99999891  =   0.99999125
HS2738!UTM  10      -   0.99999234  x   0.99979015  =   0.99978249
HS2738
HS2738                          SUPERSEDED SURVEY CONTROL
HS2738
HS2738  NAD 83(1992)-  37 04 19.05107(N)    121 36 08.63862(W) AD(1991.35) 2
HS2738  ELLIP H (03/08/94)   48.67   (m)                        GP(1991.35) 4 1
HS2738  NAD 83(1986)-  37 04 19.04988(N)    121 36 08.63356(W) AD(1984.00) 2
HS2738  NAVD 88 (06/15/91)   81.317  (m)          266.79   (f) UNKNOWN     1 1
HS2738  NGVD 29 (10/21/93)   80.454  (m)          263.96   (f) ADJUSTED    1 1
HS2738
HS2738.Superseded values are not recommended for survey control.
HS2738.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
HS2738.See file dsdata.txt to determine how the superseded data were derived.
HS2738
HS2738_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFG2423903769(NAD 83)
HS2738_MARKER: DB = BENCH MARK DISK
HS2738_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
HS2738_SP_SET: CONCRETE POST
HS2738_STAMPING: G 1080 1967
HS2738_MARK LOGO: CGS
HS2738_PROJECTION: FLUSH
HS2738_MAGNETIC: N = NO MAGNETIC MATERIAL
HS2738_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
HS2738+STABILITY: SURFACE MOTION
HS2738_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
HS2738+SATELLITE: SATELLITE OBSERVATIONS - March 22, 2004
HS2738
HS2738  HISTORY     - Date     Condition        Report By
HS2738  HISTORY     - 1967     MONUMENTED       CGS
HS2738  HISTORY     - 1969     GOOD             NGS
HS2738  HISTORY     - 19881207 GOOD             NGS
HS2738  HISTORY     - 19890609 GOOD
HS2738  HISTORY     - 19900202 GOOD             NGS
HS2738  HISTORY     - 19980715 GOOD             CA-085
HS2738  HISTORY     - 20040322 GOOD             MSAM
HS2738  HISTORY     - 20040421 GOOD             USPSQD
HS2738
HS2738                          STATION DESCRIPTION
HS2738
HS2738'DESCRIBED BY COAST AND GEODETIC SURVEY 1967
HS2738'5 MI NW FROM GILROY.
HS2738'5.0 MILES NORTHWEST ALONG THE SOUTHERN PACIFIC COMPANY RAILROAD
HS2738'FROM THE STATION AT GILROY, 5.05 MILES SOUTHEAST OF MORGAN HILL,
HS2738'0.2 MILE NORTHWEST OF MILEPOLE 76, 42.0 FEET SOUTHWEST OF THE
HS2738'SOUTHWEST RAIL, 43 FEET NORTHEAST OF THE CENTER LINE OF THE
HS2738'NORTHEAST LANES OF U.S. HIGHWAY 101, 9.7 FEET NORTHWEST OF THE
HS2738'NORTHWEST ONE OF THREE VERTICAL RAILROAD TIES, 1.3 FEET SOUTHEAST
HS2738'OF A WITNESS POST, ABOUT 4 FEET LOWER THAN THE TRACK, AND SET
HS2738'IN THE TOP OF A CONCRETE POST PROJECTING 0.5 FOOT ABOVE THE
HS2738'GROUND.
HS2738
HS2738                          STATION RECOVERY (1969)
HS2738
HS2738'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1969
HS2738'RECOVERED IN GOOD CONDITION.
HS2738
HS2738                          STATION RECOVERY (1988)
HS2738
HS2738'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1988
```

```
HS2738'RECOVERED IN GOOD CONDITION WITH THE FOLLOWING EXCEPTIONS. DELETE--9.7
HS2738'FEET NORTHWEST OF THE NORTHWEST ONE OF THREE VERTICAL RAILROAD TIES.
HS2738'NOTE--U.S. HIGHWAY 101 IS NOW MONTEREY ROAD.
HS2738
HS2738                          STATION RECOVERY (1989)
HS2738
HS2738'RECOVERED 1989
HS2738'RECOVERED IN GOOD CONDITION.
HS2738
HS2738                          STATION RECOVERY (1990)
HS2738
HS2738'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1990
HS2738'RECOVERED IN GOOD CONDITION.
HS2738
HS2738                          STATION RECOVERY (1998)
HS2738
HS2738'RECOVERY NOTE BY SANTA CLARA COUNTY CALIFORNIA 1998 (MDM)
HS2738'RECOVERED AS DESCRIBED.
HS2738
HS2738                          STATION RECOVERY (2004)
HS2738
HS2738'RECOVERY NOTE BY MOUNTAIN SURVEYING AND MAPPING INC 2004 (DJK)
HS2738'RECOVERY NOTE MSAM 2004 (DJK)
HS2738'
HS2738'RECOVERED AS DESCRIBED
HS2738
HS2738                          STATION RECOVERY (2004)
HS2738
HS2738'RECOVERY NOTE BY US POWER SQUADRON 2004 (BJG)
HS2738'.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
HS5135 ***********************************************************************
HS5135  DESIGNATION -  U 1447
HS5135  PID         -  HS5135
HS5135  STATE/COUNTY-  CA/SANTA CLARA
HS5135  USGS QUAD   -  PACHECO PEAK (1978)
HS5135
HS5135                         *CURRENT SURVEY CONTROL
HS5135  ______________________________________________________________________
HS5135* NAD 83(1986)-  37 02 41.     (N)    121 17 22.     (W)     SCALED
HS5135* NAVD 88     -       120.691  (meters)     395.97   (feet)  ADJUSTED
HS5135  ______________________________________________________________________
HS5135  GEOID HEIGHT-         -32.30  (meters)                      GEOID03
HS5135  DYNAMIC HT  -         120.596 (meters)     395.66  (feet)  COMP
HS5135  MODELED GRAV-     979,845.0   (mgal)                        NAVD 88
HS5135
HS5135  VERT ORDER  -  FIRST     CLASS II
HS5135
HS5135.The horizontal coordinates were scaled from a topographic map and have
HS5135.an estimated accuracy of +/- 6 seconds.
HS5135
HS5135.The orthometric height was determined by differential leveling
HS5135.and adjusted by the National Geodetic Survey in June 1991..
HS5135
HS5135.The geoid height was determined by GEOID03.
HS5135
HS5135.The dynamic height is computed by dividing the NAVD 88
HS5135.geopotential number by the normal gravity value computed on the
HS5135.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
HS5135.degrees latitude (g = 980.6199 gals.).
HS5135
```

```
HS5135.The modeled gravity was interpolated from observed gravity values.
HS5135
HS5135;                    North         East     Units  Estimated Accuracy
HS5135;SPC CA 3     -   560,750.    1,929,770.      MT  (+/- 180 meters Scaled)
HS5135
HS5135                          SUPERSEDED SURVEY CONTROL
HS5135
HS5135.No superseded survey control is available for this station.
HS5135
HS5135_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFG521012(NAD 83)
HS5135_MARKER: DV = VERTICAL CONTROL DISK
HS5135_SETTING: 38 = SET IN THE ABUTMENT OR PIER OF A LARGE BRIDGE
HS5135_SP_SET: ABUTMENT
HS5135_STAMPING: U 1447 1988
HS5135_MARK LOGO: NGS
HS5135_MAGNETIC: N = NO MAGNETIC MATERIAL
HS5135_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
HS5135_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
HS5135+SATELLITE: SATELLITE OBSERVATIONS - 1988
HS5135
HS5135  HISTORY     - Date     Condition        Report By
HS5135  HISTORY     - 1988     MONUMENTED       NGS
HS5135
HS5135                          STATION DESCRIPTION
HS5135
HS5135'DESCRIBED BY NATIONAL GEODETIC SURVEY 1988
HS5135'32.3 KM (20.05 MI) EASTERLY ALONG STATE HIGHWAY 152 FROM THE JUNCTION
HS5135'OF U.S. HIGHWAY 101 IN GILROY, IN TOP OF AND 0.25 M (0.8 FT) NORTH OF
HS5135'THE SOUTH END OF THE WEST CONCRETE ABUTMENT OF A HIGHWAY BRDIGE
HS5135'SPANNING PACHECO CREEK, 7.1 M (23.3 FT) NORTHWEST OF THE CENTERLINE OF
HS5135'THE WESTBOUND LANES OF THE HIGHWAY, AND LEVEL WITH THE HIGHWAY.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
HS5267 ***********************************************************************
HS5267  DESIGNATION -  B 1458
HS5267  PID         -  HS5267
HS5267  STATE/COUNTY-  CA/SANTA CRUZ
HS5267  USGS QUAD   -  LOMA PRIETA (1996)
HS5267
HS5267                          *CURRENT SURVEY CONTROL
HS5267  ______________________________________________________________________
HS5267* NAD 83(1992)-  37 03 48.11238(N)    121 47 44.54381(W)     ADJUSTED
HS5267* NAVD 88     -       834.984  (meters)    2739.44   (feet)  ADJUSTED
HS5267  ______________________________________________________________________
HS5267  EPOCH DATE  -        1991.35
HS5267  X           -  -2,685,252.115 (meters)                     COMP
HS5267  Y           -  -4,331,593.016 (meters)                     COMP
HS5267  Z           -   3,823,490.606 (meters)                     COMP
HS5267  LAPLACE CORR-           1.03  (seconds)                    DEFLEC99
HS5267  ELLIP HEIGHT-         802.58  (meters)          (09/30/94) GPS OBS
HS5267  GEOID HEIGHT-         -32.46  (meters)                     GEOID03
HS5267  DYNAMIC HT  -         834.271 (meters)    2737.10  (feet)  COMP
HS5267  MODELED GRAV-     979,746.4   (mgal)                       NAVD 88
HS5267
HS5267  HORZ ORDER  -  FIRST
HS5267  VERT ORDER  -  FIRST     CLASS II
HS5267  ELLP ORDER  -  FOURTH    CLASS II
HS5267
HS5267.The horizontal coordinates were established by GPS observations
HS5267.and adjusted by the National Geodetic Survey in September 1994..
HS5267.The horizontal coordinates are valid at the epoch date displayed above.
HS5267.The epoch date for horizontal control is a decimal equivalence
```

```
HS5267.of Year/Month/Day.
HS5267
HS5267.The orthometric height was determined by differential leveling
HS5267.and adjusted by the National Geodetic Survey in February 1993..
HS5267
HS5267.The X, Y, and Z were computed from the position and the ellipsoidal ht.
HS5267
HS5267.The Laplace correction was computed from DEFLEC99 derived deflections.
HS5267
HS5267.The ellipsoidal height was determined by GPS observations
HS5267.and is referenced to NAD 83.
HS5267
HS5267.The geoid height was determined by GEOID03.
HS5267
HS5267.The dynamic height is computed by dividing the NAVD 88
HS5267.geopotential number by the normal gravity value computed on the
HS5267.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
HS5267.degrees latitude (g = 980.6199 gals.).
HS5267
HS5267.The modeled gravity was interpolated from observed gravity values.
HS5267
HS5267;                    North         East     Units Scale Factor Converg.
HS5267;SPC CA 3     -   563,320.991 1,884,766.365   MT  1.00000068   -0 47 35.8
HS5267;SPC CA 3     - 1,848,162.28  6,183,604.32   sFT  1.00000068   -0 47 35.8
HS5267;UTM  10      - 4,102,579.862   607,066.485   MT  0.99974121   +0 43 33.2
HS5267
HS5267!             -  Elev Factor  x  Scale Factor =   Combined Factor
HS5267!SPC CA 3     -   0.99987407  x   1.00000068  =   0.99987475
HS5267!UTM  10      -   0.99987407  x   0.99974121  =   0.99961531
HS5267
HS5267                          SUPERSEDED SURVEY CONTROL
HS5267
HS5267  NAVD 88 (09/30/94)  834.98   (m)          2739.4    (f) LEVELING    3
HS5267  NGVD 29 (10/21/93)  834.120  (m)          2736.61   (f) ADJUSTED    1 2
HS5267
HS5267.Superseded values are not recommended for survey control.
HS5267.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
HS5267.See file dsdata.txt to determine how the superseded data were derived.
HS5267
HS5267_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFG0706602580(NAD 83)
HS5267_MARKER: DV = VERTICAL CONTROL DISK
HS5267_SETTING: 66 = SET IN ROCK OUTCROP
HS5267_SP_SET: IN A DRILL HOLE IN BEDROCK
HS5267_STAMPING: B 1458 1990
HS5267_MARK LOGO: NGS
HS5267_MAGNETIC: N = NO MAGNETIC MATERIAL
HS5267_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD
HS5267+STABILITY: POSITION/ELEVATION WELL
HS5267_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
HS5267+SATELLITE: SATELLITE OBSERVATIONS - April 22, 2003
HS5267
HS5267  HISTORY     - Date     Condition        Report By
HS5267  HISTORY     - 1990     MONUMENTED       NGS
HS5267  HISTORY     - 19920309 GOOD             CA-085
HS5267  HISTORY     - 19940630 GOOD             CADT
HS5267  HISTORY     - 20030422 GOOD             CADT
HS5267
HS5267                          STATION DESCRIPTION
HS5267
HS5267'DESCRIBED BY NATIONAL GEODETIC SURVEY 1990
HS5267'13.4 KM (8.33 MI) NORTHERLY ALONG STATE HIGHWAY 152 FROM ITS JUNCTION
```

HS5267'WITH MAIN STREET IN WATSONVILLE, THENCE 3.4 KM (2.11 MI) NORTHERLY
HS5267'ALONG POLE LINE ROAD, THENCE 10.8 KM (6.71 MI) NORTHWESTERLY ALONG
HS5267'SUMMIT ROAD, NEAR THE CENTER OF A 3 BY 16-FOOT AREA OF OUTCROPPING
HS5267'BEDROCK, 24.0 M (78.74 FT) SOUTHEAST OF THE CENTER OF THE ROAD, 2.8 M
HS5267'(9.19 FT) WEST OF THE CENTER OF A SIDE ROAD, 0.6 M (1.97 FT) ABOVE
HS5267'THE LEVEL OF THE SIDE ROAD, AND 0.5 M (1.64 FT) SOUTH OF A WITNESS
HS5267'POST.
HS5267
HS5267 STATION RECOVERY (1992)
HS5267
HS5267'RECOVERY NOTE BY SANTA CLARA COUNTY CALIFORNIA 1992 (JLP)
HS5267'THE STATION WAS RECOVERED. A COMPLETE NEW DESCRIPTION FOLLOWS.
HS5267'
HS5267'THE STATION IS LOCATED IN THE SANTA CRUZ MOUNTAINS NEAR THE SANTA
HS5267'CLARA/SANTA CRUZ COUNTY LINE, ABOUT 15 MI (24.1 KM) SOUTHEAST OF THE
HS5267'TOWN OF LOS GATOS, ABOUT 13 MI (20.9 KM) NORTHWEST OF THE CITY OF
HS5267'GILROY, AND ABOUT 13 MI (20.9 KM) NORTHWEST OF THE CITY OF SANTA
HS5267'CRUZ.
HS5267'
HS5267'TO REACH THE STATION FROM THE INTERSECTION OF U.S. HIGHWAY 101 AND
HS5267'LEAVESLEY ROAD (STATE HIGHWAY 152) IN THE CITY OF GILROY, GO SOUTHWEST
HS5267'ON LEAVESLEY ROAD (HIGHWAY 152) FOR 0.5 MI (0.8 KM) TO THE
HS5267'INTERSECTION WITH MONTEREY STREET. TURN LEFT AND GO SOUTH ON MONTEREY
HS5267'STREET (HIGHWAY 152) FOR 0.35 MI (0.56 KM) TO A SIDE ROAD RIGHT, FIRST
HS5267'STREET. TURN RIGHT AND GO WEST ON FIRST STREET (HIGHWAY 152) FOR 1.5
HS5267'MI (2.4 KM) TO THE INTERSECTION WITH SANTA TERESA BOULEVARD. CONTINUE
HS5267'WEST ON HIGHWAY 152 (HECKER PASS HIGHWAY) FOR 2.9 MI (4.7 KM) TO A
HS5267'SIDE ROAD RIGHT, WATSONVILLE ROAD (COUNTY ROAD G8). CONTINUE WEST ON
HS5267'HIGHWAY 152 FOR 4.9 MI (7.9 KM) TO A SIDE ROAD RIGHT, POLE LINE ROAD.
HS5267'TURN RIGHT AND GO NORTHERLY ON POLE LINE ROAD, THROUGH MT. MADONNA
HS5267'COUNTY PARK, FOR 2.1 MI (3.4 KM) TO THE INTERSECTION WITH MT. MADONNA
HS5267'AND SUMMIT ROADS. CONTINUE NORTHWESTERLY ON SUMMIT ROAD TO A METAL
HS5267'GATE ACROSS THE ROAD. PASS THROUGH THE GATE AND CONTINUE NORTHWESTERLY
HS5267'ON SUMMIT ROAD (NOW A DIRT AND GRAVEL ROAD) FOR 3.3 MI (5.3 KM) TO A
HS5267'PRIVATE SIDE ROAD LEFT SIGNED WITH A 2-FT BY 2-FT WOOD SIGN AS LYON
HS5267'MTN. TURN LEFT AND GO SOUTHEAST ON THE SIDE ROAD FOR ABOUT 75 FT (22.9
HS5267'M) TO THE STATION ON THE RIGHT IN A ROCK OUTCROP.
HS5267'
HS5267'THE STATION IS A STANDARD VERTICAL CONTROL DISK SET IN A ROCK OUTCROP,
HS5267'78.5 FT (23.9 M) SOUTHEAST OF THE CENTER OF SUMMIT ROAD, 61 FT (18.6
HS5267'M) SOUTHEAST OF A FIBERGLASS POST AT THE SOUTHWEST CORNER OF SUMMIT
HS5267'ROAD AND THE SIDE ROAD, 11 FT (3.4 M) SOUTHWEST OF THE CENTER OF THE
HS5267'SIDE ROAD, 2.0 FT (0.6 M) WEST OF A FIBERGLASS WITNESS POST AND ABOUT
HS5267'2 FT (0.6 M) HIGHER THAN THE SIDE ROAD.
HS5267'
HS5267'THIS STATION WAS OCCUPIED AS PART OF A CALIFORNIA HIGH PRECISION
HS5267'GEODETIC NETWORK (HPGN) DENSIFICATION SURVEY.
HS5267
HS5267 STATION RECOVERY (1994)
HS5267
HS5267'RECOVERY NOTE BY CALTRANS 1994 (DAN)
HS5267'RECOVERED AS DESCRIBED.
HS5267
HS5267 STATION RECOVERY (2003)
HS5267
HS5267'RECOVERY NOTE BY CALTRANS 2003
HS5267'RECOVERED IN GOOD CONDITION.
1 National Geodetic Survey, Retrieval Date = MAY 26, 2006
DH9021 **
DH9021 CORS - This is a GPS Continuously Operating Reference Station.
DH9021 DESIGNATION - COYOTHILLSCN2004 CORS ARP

```
DH9021  CORS_ID     -  P222
DH9021  PID         -  DH9021
DH9021  STATE/COUNTY-  CA/ALAMEDA
DH9021  USGS QUAD   -  NEWARK (1997)
DH9021
DH9021                         *CURRENT SURVEY CONTROL
DH9021  ______________________________________________________________________
DH9021* NAD 83(CORS)-  37 32 21.24412(N)    122 04 59.69157(W)     ADJUSTED
DH9021* NAVD 88     -
DH9021  ______________________________________________________________________
DH9021  EPOCH DATE  -        2002.00
DH9021  X           -  -2,689,639.409 (meters)                     COMP
DH9021  Y           -  -4,290,438.783 (meters)                     COMP
DH9021  Z           -   3,865,050.783 (meters)                     COMP
DH9021  ELLIP HEIGHT-          54.01  (meters)          (03/??/06) GPS OBS
DH9021  GEOID HEIGHT-         -32.46  (meters)                     GEOID03
DH9021
DH9021  HORZ ORDER  -  SPECIAL (CORS)
DH9021  ELLP ORDER  -  SPECIAL (CORS)
DH9021
DH9021.ITRF positions are available for this station.
DH9021.The coordinates were established by GPS observations
DH9021.and adjusted by the National Geodetic Survey in March 2006..
DH9021.The coordinates are valid at the epoch date displayed above.
DH9021.The epoch date for horizontal control is a decimal equivalence
DH9021.of Year/Month/Day.
DH9021
DH9021
DH9021.The PID for the CORS L1 Phase Center is DH9022.
DH9021
DH9021.The XYZ, and position/ellipsoidal ht. are equivalent.
DH9021
DH9021.The ellipsoidal height was determined by GPS observations
DH9021.and is referenced to NAD 83.
DH9021
DH9021.The geoid height was determined by GEOID03.
DH9021
DH9021;                    North         East     Units Scale Factor Converg.
DH9021;SPC CA 3     -   616,518.414 1,860,089.539   MT  0.99993598   -0 58 09.5
DH9021;SPC CA 3     - 2,022,694.16  6,102,643.76   sFT  0.99993598   -0 58 09.5
DH9021
DH9021!             -  Elev Factor  x  Scale Factor =   Combined Factor
DH9021!SPC CA 3     -   0.99999152  x   0.99993598  =   0.99992751
DH9021
DH9021                         SUPERSEDED SURVEY CONTROL
DH9021
DH9021.No superseded survey control is available for this station.
DH9021
DH9021_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEG8099055089(NAD 83)
DH9021_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DH9021
DH9021                         STATION DESCRIPTION
DH9021
DH9021'DESCRIBED BY NATIONAL GEODETIC SURVEY 2006
DH9021'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DH9021'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DH9021'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DH9021'   FTP CORS.NGS.NOAA.GOV: CORS/COORD  AND  CORS/STATION_LOG
DH9021'   HTTP://WWW.NGS.NOAA.GOV  UNDER PRODUCTS AND SERVICES.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
DE6354 ***********************************************************************
```

```
DE6354  CORS         -  This is a GPS Continuously Operating Reference Station.
DE6354  DESIGNATION  -  OAKLAND 1 CORS ARP
DE6354  CORS_ID      -  ZOA1
DE6354  PID          -  DE6354
DE6354  STATE/COUNTY-  CA/ALAMEDA
DE6354  USGS QUAD    -  NEWARK (1997)
DE6354
DE6354                          *CURRENT SURVEY CONTROL
DE6354  ______________________________________________________________________
DE6354* NAD 83(CORS)-  37 32 34.97376(N)     122 00 57.34671(W)      ADJUSTED
DE6354* NAVD 88     -
DE6354  ______________________________________________________________________
DE6354  EPOCH DATE  -        2002.00
DE6354  X           -  -2,684,435.747 (meters)                      COMP
DE6354  Y           -  -4,293,338.632 (meters)                      COMP
DE6354  Z           -   3,865,351.419 (meters)                      COMP
DE6354  ELLIP HEIGHT-          -3.42  (meters)          (08/??/02) GPS OBS
DE6354  GEOID HEIGHT-         -32.43  (meters)                      GEOID03
DE6354
DE6354  HORZ ORDER  -  SPECIAL (CORS)
DE6354  ELLP ORDER  -  SPECIAL (CORS)
DE6354
DE6354.ITRF positions are available for this station.
DE6354.The coordinates were established by GPS observations
DE6354.and adjusted by the National Geodetic Survey in August 2002..
DE6354.The coordinates are valid at the epoch date displayed above.
DE6354.The epoch date for horizontal control is a decimal equivalence
DE6354.of Year/Month/Day.
DE6354
DE6354
DE6354.The PID for the CORS L1 Phase Center is DF8955.
DE6354
DE6354.The XYZ, and position/ellipsoidal ht. are equivalent.
DE6354
DE6354.The ellipsoidal height was determined by GPS observations
DE6354.and is referenced to NAD 83.
DE6354
DE6354.The geoid height was determined by GEOID03.
DE6354
DE6354;                    North         East     Units Scale Factor Converg.
DE6354;SPC CA 3     -   616,843.114 1,866,044.708   MT  0.99993574   -0 55 41.2
DE6354;SPC CA 3     - 2,023,759.45  6,122,181.68   sFT  0.99993574   -0 55 41.2
DE6354
DE6354!             -  Elev Factor  x  Scale Factor =   Combined Factor
DE6354!SPC CA 3     -   1.00000054  x   0.99993574  =   0.99993628
DE6354
DE6354                          SUPERSEDED SURVEY CONTROL
DE6354
DE6354.No superseded survey control is available for this station.
DE6354
DE6354_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEG8693355572(NAD 83)
DE6354_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
DE6354
DE6354                          STATION DESCRIPTION
DE6354
DE6354'DESCRIBED BY NATIONAL GEODETIC SURVEY 2002
DE6354'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
DE6354'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
DE6354'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
DE6354'   FTP CORS.NGS.NOAA.GOV: CORS/COORD  AND  CORS/STATION_LOG
DE6354'   HTTP://WWW.NGS.NOAA.GOV  UNDER PRODUCTS AND SERVICES.
```

```
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
 AF9554 ***********************************************************************
 AF9554  CORS         -  This is a GPS Continuously Operating Reference Station.
 AF9554  DESIGNATION -  PIGEON POINT 1 CORS ARP
 AF9554  CORS_ID      -  PPT1
 AF9554  PID          -  AF9554
 AF9554  STATE/COUNTY-  CA/SAN MATEO
 AF9554  USGS QUAD    -  PIGEON POINT (1991)
 AF9554
 AF9554                          *CURRENT SURVEY CONTROL
 AF9554  ______________________________________________________________________
 AF9554* NAD 83(CORS)-  37 11 13.48846(N)    122 23 23.77127(W)      ADJUSTED
 AF9554* NAVD 88      -        41.8    (meters)     137.     (feet)  GPS OBS
 AF9554  ______________________________________________________________________
 AF9554  EPOCH DATE   -        2002.00
 AF9554  X            -  -2,725,252.429 (meters)                     COMP
 AF9554  Y            -  -4,295,978.337 (meters)                     COMP
 AF9554  Z            -   3,833,959.093 (meters)                     COMP
 AF9554  ELLIP HEIGHT-           8.37  (meters)          (03/??/02) GPS OBS
 AF9554  GEOID HEIGHT-         -33.38  (meters)                     GEOID03
 AF9554
 AF9554  HORZ ORDER   -  SPECIAL (CORS)
 AF9554  ELLP ORDER   -  SPECIAL (CORS)
 AF9554
 AF9554.ITRF positions are available for this station.
 AF9554.The coordinates were established by GPS observations
 AF9554.and adjusted by the National Geodetic Survey in March 2002..
 AF9554.The coordinates are valid at the epoch date displayed above.
 AF9554.The epoch date for horizontal control is a decimal equivalence
 AF9554.of Year/Month/Day.
 AF9554
 AF9554.The orthometric height was determined by GPS observations and a
 AF9554.high-resolution geoid model.
 AF9554
 AF9554.The PID for the CORS L1 Phase Center is AJ7893.
 AF9554
 AF9554.The XYZ, and position/ellipsoidal ht. are equivalent.
 AF9554
 AF9554.The ellipsoidal height was determined by GPS observations
 AF9554.and is referenced to NAD 83.
 AF9554
 AF9554.The geoid height was determined by GEOID03.
 AF9554
 AF9554;                    North         East     Units Scale Factor Converg.
 AF9554;SPC CA 3      -   577,947.444 1,832,201.856   MT  0.99997730   -1 09 25.5
 AF9554;SPC CA 3      - 1,896,149.24  6,011,148.92   sFT  0.99997730   -1 09 25.5
 AF9554
 AF9554!              -  Elev Factor  x  Scale Factor =   Combined Factor
 AF9554!SPC CA 3      -   0.99999869  x   0.99997730  =   0.99997599
 AF9554
 AF9554                          SUPERSEDED SURVEY CONTROL
 AF9554
 AF9554  NAD 83(CORS)-  37 11 13.48254(N)    122 23 23.76560(W) AD(1997.00) c
 AF9554  ELLIP H (07/??/00)    8.37   (m)                      GP(1997.00) c c
 AF9554  NAD 83(CORS)-  37 11 13.48128(N)    122 23 23.76429(W) AD(1996.00) c
 AF9554  NAD 83(CORS)-  37 11 13.48250(N)    122 23 23.76527(W) AD(1997.00) c
 AF9554  ELLIP H (04/??/96)    8.40   (m)                      GP(1997.00) c c
 AF9554  ELLIP H (04/??/96)    8.40   (m)                      GP(1996.00) c c
 AF9554
 AF9554.Superseded values are not recommended for survey control.
 AF9554.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
```

```
 AF9554.See file dsdata.txt to determine how the superseded data were derived.
 AF9554
 AF9554_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEG5414815800(NAD 83)
 AF9554_MARKER: STATION IS THE ANTENNA REFERENCE POINT OF THE GPS ANTENNA
 AF9554
 AF9554                          STATION DESCRIPTION
 AF9554
 AF9554'DESCRIBED BY NATIONAL GEODETIC SURVEY 2002
 AF9554'STATION IS A GPS CORS.  LATEST INFORMATION INCLUDING POSITIONS AND
 AF9554'VELOCITIES ARE AVAILABLE IN THE COORDINATE AND LOG FILES ACCESSIBLE
 AF9554'BY ANONYMOUS FTP OR THE WORLDWIDE WEB.
 AF9554'   FTP CORS.NGS.NOAA.GOV: CORS/COORD  AND  CORS/STATION_LOG
 AF9554'   HTTP://WWW.NGS.NOAA.GOV  UNDER PRODUCTS AND SERVICES.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
 AA1864 ***********************************************************************
 AA1864  DESIGNATION -  HPGN D CA BELL
 AA1864  PID         -  AA1864
 AA1864  STATE/COUNTY-  CA/SANTA CLARA
 AA1864  USGS QUAD   -  PACHECO PEAK (1978)
 AA1864
 AA1864                        *CURRENT SURVEY CONTROL
 AA1864  ______________________________________________________________________
 AA1864* NAD 83(1992)-  37 02 18.85621(N)    121 18 40.02582(W)     ADJUSTED
 AA1864* NAVD 88     -       125.6    (meters)     412.     (feet)  GPS OBS
 AA1864  ______________________________________________________________________
 AA1864  EPOCH DATE  -        1991.35
 AA1864  X           -  -2,649,088.782 (meters)                     COMP
 AA1864  Y           -  -4,355,081.611 (meters)                     COMP
 AA1864  Z           -   3,820,867.051 (meters)                     COMP
 AA1864  LAPLACE CORR-           0.95  (seconds)                    DEFLEC99
 AA1864  ELLIP HEIGHT-          93.23  (meters)          (09/30/94) GPS OBS
 AA1864  GEOID HEIGHT-         -32.32  (meters)                     GEOID03
 AA1864
 AA1864  HORZ ORDER  -  FIRST
 AA1864  ELLP ORDER  -  FOURTH    CLASS II
 AA1864
 AA1864.The horizontal coordinates were established by GPS observations
 AA1864.and adjusted by the National Geodetic Survey in September 1994..
 AA1864.The horizontal coordinates are valid at the epoch date displayed above.
 AA1864.The epoch date for horizontal control is a decimal equivalence
 AA1864.of Year/Month/Day.
 AA1864
 AA1864.The orthometric height was determined by GPS observations and a
 AA1864.high-resolution geoid model.
 AA1864
 AA1864.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 AA1864
 AA1864.The Laplace correction was computed from DEFLEC99 derived deflections.
 AA1864
 AA1864.The ellipsoidal height was determined by GPS observations
 AA1864.and is referenced to NAD 83.
 AA1864
 AA1864.The geoid height was determined by GEOID03.
 AA1864
 AA1864;                    North         East     Units Scale Factor Converg.
 AA1864;SPC CA 3     -   560,084.439 1,927,837.967   MT  1.00000592   -0 29 47.7
 AA1864;SPC CA 3     - 1,837,543.70  6,324,915.06   sFT  1.00000592   -0 29 47.7
 AA1864;UTM  10      - 4,100,484.853   650,200.139   MT  0.99987792   +1 01 03.0
 AA1864
 AA1864!             -  Elev Factor  x  Scale Factor =   Combined Factor
 AA1864!SPC CA 3     -   0.99998537  x   1.00000592  =   0.99999129
```

```
AA1864!UTM  10      -   0.99998537  x   0.99987792  =   0.99986329
AA1864
AA1864                          SUPERSEDED SURVEY CONTROL
AA1864
AA1864.No superseded survey control is available for this station.
AA1864
AA1864_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SFG5020000485(NAD 83)
AA1864_MARKER: DD = SURVEY DISK
AA1864_SETTING: 50 = ALUMINUM ALLOY ROD W/O SLEEVE (10 FT.+)
AA1864_STAMPING: BELL HPGN-D 1992
AA1864_MARK LOGO: CA-085
AA1864_PROJECTION: FLUSH
AA1864_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
AA1864_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AA1864_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
AA1864+SATELLITE: SATELLITE OBSERVATIONS - June 10, 2003
AA1864_ROD/PIPE-DEPTH: 1.7  meters
AA1864
AA1864  HISTORY     - Date     Condition        Report By
AA1864  HISTORY     - 1992     MONUMENTED       CA-085
AA1864  HISTORY     - 20030610 GOOD             CADPR
AA1864
AA1864                           STATION DESCRIPTION
AA1864
AA1864'DESCRIBED BY SANTA CLARA COUNTY CALIFORNIA 1992 (JLP)
AA1864'THE STATION IS LOCATED NEAR THE BELL STATION ROAD HOUSE, ABOUT 14 MI
AA1864'(22.5 KM) EAST OF THE CITY OF GILROY AND ABOUT 13 MI (20.9 KM)
AA1864'NORTHEAST OF THE CITY OF HOLLISTER.
AA1864'
AA1864'TO REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 101 AND STATE
AA1864'HIGHWAY 152 (EAST) IN THE CITY OF GILROY, GO EAST ON STATE HIGHWAY 152
AA1864'FOR 11.9 MI (19.2 KM) TO THE JUNCTION OF STATE HIGHWAY 156. CONTINUE
AA1864'EAST ON STATE HIGHWAY 152 FOR 6.15 MI (9.90 KM) TO THE HIGHWAY BRIDGE
AA1864'(NO. 37-30) OVER CEDAR CREEK. CONTINUE EAST ON HIGHWAY 152 FOR 0.7 MI
AA1864'(1.1 KM) TO AN ACCESS ROAD ON THE LEFT (NORTH) SIDE OF THE HIGHWAY AT
AA1864'POST MILE 28.83. (THE ACCESS ROAD IS ABOUT 400 FT (121.9 M) WEST OF
AA1864'BELL STATION ROAD HOUSE.) TURN LEFT AND GO NORTH ON THE ACCESS ROAD
AA1864'FOR ABOUT 330 FT (100.6 M) TO A SIDE ROAD RIGHT AND THE END OF
AA1864'PAVEMENT. CONTINUE NORTHERLY ON A WELL GRADED DIRT/GRAVEL ROAD FOR
AA1864'ABOUT 0.1 MI (0.2 KM) TO THE STATION ON THE LEFT (NORTHWEST) SIDE OF
AA1864'THE ROAD.
AA1864'
AA1864'THE STATION IS A 2.5 INCH SANTA CLARA COUNTY SURVEYOR ALUMINUM DISK
AA1864'INSIDE A 6 INCH ALUMINUM ACCESS COVER FLUSH WITH THE GROUND, ABOUT 300
AA1864'FT (91.4 M) SOUTHEAST OF A STEEL WATER TANK, ABOUT 100 FT (30.5 M)
AA1864'SOUTHWEST OF A DEEP GULLY, 53.5 FT (16.3 M) NORTH OF THE CENTERLINE OF
AA1864'THE DIRT/GRAVEL ROAD, 2.6 FT (0.8 M) SOUTHEAST OF A BARBED WIRE FENCE,
AA1864'2.6 FT (0.8 M) SOUTHEAST OF A FIBERGLASS WITNESS POST, AND ABOUT 6 FT
AA1864'(1.8 M) HIGHER THAN THE ROAD. THE DISK IS 0.25 FT (0.08 M) BELOW THE
AA1864'ACCESS COVER AND THE ROD IS DRIVEN TO REFUSAL AT A DEPTH OF 5.6 FT
AA1864'(1.7 M) .
AA1864'
AA1864'THIS STATION WAS OCCUPIED AS PART OF A CALIFORNIA HIGH PRECISION
AA1864'GEODETIC NETWORK (HPGN) DENSIFICATION SURVEY.
AA1864
AA1864                           STATION RECOVERY (2003)
AA1864
AA1864'RECOVERY NOTE BY CA DEPT PARKS REC 2003 (DBK)
AA1864'RECOVERED IN GOOD CONDITION.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
AA1870 ***********************************************************************
```

```
AA1870  DESIGNATION -  HPGN D CA GAP
AA1870  PID         -  AA1870
AA1870  STATE/COUNTY-  CA/SANTA CLARA
AA1870  USGS QUAD   -  CUPERTINO (1991)
AA1870
AA1870                        *CURRENT SURVEY CONTROL
AA1870  ______________________________________________________________________
AA1870* NAD 83(1992)-  37 15 28.92078(N)    122 07 15.78973(W)     ADJUSTED
AA1870* NAVD 88     -       803.4    (meters)    2636.     (feet)  GPS OBS
AA1870  ______________________________________________________________________
AA1870  EPOCH DATE  -        1991.35
AA1870  X           -  -2,702,851.906 (meters)                     COMP
AA1870  Y           -  -4,305,200.234 (meters)                     COMP
AA1870  Z           -   3,840,691.306 (meters)                     COMP
AA1870  LAPLACE CORR-           1.37  (seconds)                    DEFLEC99
AA1870  ELLIP HEIGHT-         771.12  (meters)          (09/30/94) GPS OBS
AA1870  GEOID HEIGHT-         -32.33  (meters)                     GEOID03
AA1870
AA1870  HORZ ORDER  -  FIRST
AA1870  ELLP ORDER  -  FOURTH    CLASS II
AA1870
AA1870.The horizontal coordinates were established by GPS observations
AA1870.and adjusted by the National Geodetic Survey in September 1994..
AA1870.The horizontal coordinates are valid at the epoch date displayed above.
AA1870.The epoch date for horizontal control is a decimal equivalence
AA1870.of Year/Month/Day.
AA1870
AA1870.The orthometric height was determined by GPS observations and a
AA1870.high-resolution geoid model.
AA1870
AA1870.The X, Y, and Z were computed from the position and the ellipsoidal ht.
AA1870
AA1870.The Laplace correction was computed from DEFLEC99 derived deflections.
AA1870
AA1870.The ellipsoidal height was determined by GPS observations
AA1870.and is referenced to NAD 83.
AA1870
AA1870.The geoid height was determined by GEOID03.
AA1870
AA1870;                    North         East     Units Scale Factor Converg.
AA1870;SPC CA 3     -   585,372.760 1,856,208.524   MT  0.99996596   -0 59 32.9
AA1870;SPC CA 3     - 1,920,510.46  6,089,910.80   sFT  0.99996596   -0 59 32.9
AA1870;UTM  10      - 4,123,859.440   577,941.037   MT  0.99967483   +0 31 55.7
AA1870
AA1870!             -  Elev Factor  x  Scale Factor =   Combined Factor
AA1870!SPC CA 3     -   0.99987900  x   0.99996596  =   0.99984497
AA1870!UTM  10      -   0.99987900  x   0.99967483  =   0.99955387
AA1870
AA1870                         SUPERSEDED SURVEY CONTROL
AA1870
AA1870.No superseded survey control is available for this station.
AA1870
AA1870_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEG7794123859(NAD 83)
AA1870_MARKER: DD = SURVEY DISK
AA1870_SETTING: 50 = ALUMINUM ALLOY ROD W/O SLEEVE (10 FT.+)
AA1870_STAMPING: GAP HPGN-D 1992
AA1870_MARK LOGO: CA-085
AA1870_PROJECTION: RECESSED 8 CENTIMETERS
AA1870_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
AA1870_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
AA1870_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
```

```
AA1870+SATELLITE: SATELLITE OBSERVATIONS - July 01, 1994
AA1870_ROD/PIPE-DEPTH: 6.4  meters
AA1870
AA1870  HISTORY     - Date     Condition        Report By
AA1870  HISTORY     - 1992     MONUMENTED       CA-085
AA1870  HISTORY     - 19940701 GOOD             CADT
AA1870
AA1870                          STATION DESCRIPTION
AA1870
AA1870'DESCRIBED BY SANTA CLARA COUNTY CALIFORNIA 1992 (JLP)
AA1870'THE STATION IS LOCATED IN THE PARKING LOT OF THE VISTA POINT AT THE
AA1870'SARATOGA GAP, NEAR THE INTERSECTION OF STATE HIGHWAYS 9 AND 35
AA1870'(SKYLINE BOULEVARD), ABOUT 9 MI (14.5 KM) SOUTH-SOUTHWEST OF THE CITY
AA1870'OF SUNNYVALE AND ABOUT 5 MI (8.0 KM) WEST OF THE CITY OF SARATOGA.
AA1870'
AA1870'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAYS 9 AND 35
AA1870'(SKYLINE BOULEVARD), GO SOUTHEASTERLY ON STATE HIGHWAY 35 (SKYLINE
AA1870'BOULEVARD) FOR ABOUT 375 FT (114.3 M) TO THE ENTRANCE OF THE PARKING
AA1870'LOT FOR THE VISTA POINT ON THE LEFT. TURN LEFT INTO THE PARKING AND GO
AA1870'NORTH ABOUT 110 FT (33.5 M) TO THE STATION ON THE LEFT IN THE PARKING
AA1870'LOT.
AA1870'
AA1870'THE STATION IS A 2.5 INCH SANTA CLARA COUNTY SURVEYOR ALUMINUM DISK
AA1870'INSIDE A 6 INCH ALUMINUM ACCESS COVER FLUSH WITH THE PAVEMENT OF THE
AA1870'PARKING LOT, 315 FT (96.0 M) SOUTHEAST OF THE INTERSECTION OF STATE
AA1870'HIGHWAYS 9 AND 35, 165.9 FT (50.6 M) SOUTHEAST OF A POWER POLE ON THE
AA1870'EAST SIDE OF HIGHWAY 9, 70.4 FT (21.5 M) NORTHEAST OF THE CENTERLINE
AA1870'OF HIGHWAY 35, 38.4 FT (11.7 M) NORTHEAST OF A EMERGENCY CALL BOX ON
AA1870'THE NORTH SIDE OF HIGHWAY 35, 30.5 FT (9.3 M) SOUTHERLY OF THE SOUTH
AA1870'CORNER OF THE SOUTHWEST CONCRETE PICNIC BENCH, AND 6.0 FT (1.8 M)
AA1870'NORTHWEST OF A 2 INCH SANTA CLARA COUNTY DISK STAMPED 43, SET IN
AA1870'CONCRETE 0.8 FT (0.2 M) BELOW THE PAVEMENT IN A MONUMENT BOX. THE DISK
AA1870'IS 0.25 FT (0.08 M) BELOW THE ACCESS COVER AND THE ROD IS DRIVEN TO
AA1870'REFUSAL AT A DEPTH OF 20.9 FT (6.4 M) .
AA1870'
AA1870'THIS STATION WAS OCCUPIED AS PART OF A CALIFORNIA HIGH PRECISION
AA1870'GEODETIC NETWORK (HPGN) Ddensification SURVEY.
AA1870
AA1870                          STATION RECOVERY (1994)
AA1870
AA1870'RECOVERY NOTE BY CALTRANS 1994 (DAN)
AA1870'RECOVERED AS DESCRIBED.
1        National Geodetic Survey,   Retrieval Date = MAY 26, 2006
HT1455 ***********************************************************************
HT1455  DESIGNATION -  MOON 2
HT1455  PID         -  HT1455
HT1455  STATE/COUNTY-  CA/SAN MATEO
HT1455  USGS QUAD   -  HALF MOON BAY (1997)
HT1455
HT1455                          *CURRENT SURVEY CONTROL
HT1455  ______________________________________________________________________
HT1455* NAD 83(1998)-  37 26 20.30784(N)    122 26 34.65158(W)     ADJUSTED
HT1455* NAVD 88     -        22.251  (meters)      73.00   (feet)  ADJUSTED
HT1455  ______________________________________________________________________
HT1455  EPOCH DATE  -        2002.75
HT1455  X           -  -2,720,127.751 (meters)                     COMP
HT1455  Y           -  -4,279,140.408 (meters)                     COMP
HT1455  Z           -   3,856,181.974 (meters)                     COMP
HT1455  LAPLACE CORR-           6.91  (seconds)                    DEFLEC99
HT1455  ELLIP HEIGHT-         -10.75  (meters)          (08/23/04) GPS OBS
HT1455  GEOID HEIGHT-         -32.94  (meters)
```

```
HT1455  DYNAMIC HT  -          22.236 (meters)      72.95  (feet)  COMP
HT1455  MODELED GRAV-     979,947.8   (mgal)                       NAVD 88
HT1455
HT1455  HORZ ORDER  -  B
HT1455  VERT ORDER  -  SECOND    CLASS II
HT1455  ELLP ORDER  -  FOURTH    CLASS I
HT1455
HT1455.The horizontal coordinates were established by GPS observations
HT1455.and adjusted by the CALIF SPA REF CEN in August 2004..
HT1455.This is a SPECIAL STATUS position.  See SPECIAL STATUS under the
HT1455.DATUM ITEM on the data sheet items page.
HT1455.The horizontal coordinates are valid at the epoch date displayed above.
HT1455.The epoch date for horizontal control is a decimal equivalence
HT1455.of Year/Month/Day.
HT1455
HT1455.The orthometric height was determined by differential leveling
HT1455.and adjusted by the National Geodetic Survey in August 2004..
HT1455.No vertical observational check was made to the station.
HT1455
HT1455.The X, Y, and Z were computed from the position and the ellipsoidal ht.
HT1455
HT1455.The Laplace correction was computed from DEFLEC99 derived deflections.
HT1455
HT1455.The ellipsoidal height was determined by GPS observations
HT1455.and is referenced to NAD 83.
HT1455
HT1455
HT1455.The dynamic height is computed by dividing the NAVD 88
HT1455.geopotential number by the normal gravity value computed on the
HT1455.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
HT1455.degrees latitude (g = 980.6199 gals.).
HT1455
HT1455.The modeled gravity was interpolated from observed gravity values.
HT1455
HT1455;                    North         East     Units Scale Factor Converg.
HT1455;SPC CA 3     -   605,992.789 1,828,075.277   MT  0.99994393   -1 11 22.3
HT1455;SPC CA 3     - 1,988,161.34  5,997,610.30   sFT  0.99994393   -1 11 22.3
HT1455;UTM  10      - 4,143,716.659   549,277.162   MT  0.99962991   +0 20 19.1
HT1455
HT1455!             -  Elev Factor  x  Scale Factor =   Combined Factor
HT1455!SPC CA 3     -   1.00000169  x   0.99994393  =   0.99994562
HT1455!UTM  10      -   1.00000169  x   0.99962991  =   0.99963160
HT1455
HT1455:                Primary Azimuth Mark                     Grid Az
HT1455:SPC CA 3     -  HALF MOON BAY SCARPER PK RADAR           009 01 54.6
HT1455:UTM  10      -  HALF MOON BAY SCARPER PK RADAR           007 30 13.2
HT1455
HT1455|-----------------------------------------------------------------------|
HT1455| PID    Reference Object                      Distance      Geod. Az  |
HT1455|                                                            dddmmss.s |
HT1455| HT2772 HALF MOON BAY SCARPER PK RADAR      APPROX.10.1 KM 0075032.3 |
HT1455| HT3360 HALF MOON BAY HIGH SCHOOL FP        APPROX. 2.9 KM 0185239.8 |
HT1455| HT3370 HALF MOON BAY CATH CH CROSS         APPROX. 3.1 KM 0195839.4 |
HT1455| HT3373 HALF MOON BAY S MUN STANDPIPE       APPROX. 4.2 KM 0240236.4 |
HT1455| DB2619 MOON 2 RM 2                          34.343 METERS 02930     |
HT1455| AE4754 MOON 2 RM 3                          18.700 METERS 07547     |
HT1455| HT3358 WESTERLY OIL DERRICK                APPROX. 3.0 KM 1442758.9 |
HT1455| HT3365 RADIO BALL ON HSE S STA MOON 2      APPROX. 0.8 KM 1555850.5 |
HT1455| HT3367 GATEPOST ON CLIFF S STA MOON 2      APPROX. 0.7 KM 1782809.8 |
HT1455| HT1456 MOON 2 RM 1                          28.867 METERS 32157     |
HT1455| HT1435 PILLAR POINT 2                      APPROX. 8.2 KM 3231021.1 |
```

```
HT1455| HT3368 HALF MOON BAY E BRKWTR LT           APPROX. 7.3 KM 3285225.8 |
HT1455| HT3363 MIRAMER DOCK BANNER                 APPROX. 6.0 KM 3442944.8 |
HT1455|--------------------------------------------------------------------|
HT1455
HT1455                          SUPERSEDED SURVEY CONTROL
HT1455
HT1455  NAD 83(1992)-  37 26 20.29455(N)    122 26 34.63873(W) AD(1991.35) B
HT1455  ELLIP H (05/15/92)  -10.68   (m)                       GP(1991.35) 4 2
HT1455  NAD 83(1986)-  37 26 20.28290(N)    122 26 34.63017(W) AD(1984.00) 1
HT1455  NAD 27      -  37 26 20.49300(N)    122 26 30.71900(W) AD(       ) 1
HT1455  NAVD 88 (05/15/92)   22.27   (m)           73.1    (f) LEVELING    3
HT1455  NGVD 29 (??/??/92)   21.398  (m)           70.20   (f) ADJ UNCH    2 0
HT1455
HT1455.Superseded values are not recommended for survey control.
HT1455.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
HT1455.See file dsdata.txt to determine how the superseded data were derived.
HT1455
HT1455_U.S. NATIONAL GRID SPATIAL ADDRESS: 10SEG4927743717(NAD 83)
HT1455_MARKER: DD = SURVEY DISK
HT1455_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
HT1455_SP_SET: CONCRETE POST
HT1455_STAMPING: MOON 2 1931
HT1455_MARK LOGO: CGS
HT1455_MAGNETIC: N = NO MAGNETIC MATERIAL
HT1455_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
HT1455+STABILITY: SURFACE MOTION
HT1455_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
HT1455+SATELLITE: SATELLITE OBSERVATIONS - September 19, 2002
HT1455
HT1455  HISTORY     - Date     Condition        Report By
HT1455  HISTORY     - 1931     MONUMENTED       CGS
HT1455  HISTORY     - 1932     GOOD             CGS
HT1455  HISTORY     - 1934     GOOD             CGS
HT1455  HISTORY     - 1958     GOOD             CGS
HT1455  HISTORY     - 1958     GOOD             NGS
HT1455  HISTORY     - 1962     GOOD             CGS
HT1455  HISTORY     - 1964     GOOD             CGS
HT1455  HISTORY     - 1969     GOOD             CGS
HT1455  HISTORY     - 1970     GOOD             CA-081
HT1455  HISTORY     - 1970     GOOD             NGS
HT1455  HISTORY     - 1971     GOOD             DMA
HT1455  HISTORY     - 1983     GOOD             USPSQD
HT1455  HISTORY     - 1983     GOOD             NOS
HT1455  HISTORY     - 1986     GOOD             USPSQD
HT1455  HISTORY     - 19910516 GOOD             NGS
HT1455  HISTORY     - 19940113 GOOD             NGS
HT1455  HISTORY     - 19940705 GOOD             CADT
HT1455  HISTORY     - 19960715 GOOD             NGS
HT1455  HISTORY     - 200209   GOOD             JOHFRA
HT1455  HISTORY     - 20020919 GOOD             JOHFRA
HT1455
HT1455                          STATION DESCRIPTION
HT1455
HT1455'DESCRIBED BY COAST AND GEODETIC SURVEY 1931 (CDM)
HT1455'LOCATED IN A FIELD TWO MILES S OF HALFMOON BAY, ABOUT 25
HT1455'METERS FROM THE BLUFF LINE AND ABOUT THE SAME DISTANCE FROM
HT1455'THE LINE OF THE STREET RUNNING TO THE STATION.
HT1455'
HT1455'SURFACE, UNDERGROUND, AND REFERENCE MARKS ARE STANDARD BRONZE
HT1455'DISKS SET IN CONCRETE.
HT1455'
```

HT1455'TO REACH THE STATION FROM THE INTERSECTION OF THE COAST
HT1455'ROAD AND THE SAN MATEO ROAD N OF HALFMOON BAY, RUN S ALONG
HT1455'THE COAST ROAD 1.8 MILES, THEN TURN RIGHT AND CONTINUE TO
HT1455'THE BEACH. THE STATION IS ABOUT 25 METERS S OF THIS ROAD
HT1455'WHEN ABOUT 25 METERS FROM THE BEACH.
HT1455
HT1455   STATION RECOVERY (1932)
HT1455
HT1455'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1932 (FLP)
HT1455'STATION RECOVERED AS DESCRIBED. DESCRIPTION ADEQUATE.
HT1455
HT1455   STATION RECOVERY (1934)
HT1455
HT1455'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1934 (FHH)
HT1455'THIS STATION IS LOCATED BETWEEN THE W END OF A CULTIVATED
HT1455'FIELD AND THE TOP OF THE BLUFF, 25 METERS E OF THE BLUFF
HT1455'AND ABOUT 28 METERS S OF THE CENTER LINE OF THE DIRT ROAD TO
HT1455'THE BLUFF AT THIS POINT.
HT1455'
HT1455'THE STATION MARK PROJECTS ABOUT 3 INCHES, AND HAS NOT BEEN
HT1455'DISTURBED.
HT1455'
HT1455'REFERENCE MARK NO. 2 HAD BEEN UPROOTED AND THROWN OUT OF
HT1455'THE CULTIVATED FIELD. IT WAS NOT REPLACED. REFERENCE MARK
HT1455'NO. 1 WAS FOUND IN GOOD CONDITION. THE DISTANCE FROM THE
HT1455'CENTER TO THE REFERENCE MARK (28.451 METERS) WAS CHECKED.
HT1455'
HT1455'TO REACH THE STATION FROM HALFMOON BAY, GO S ABOUT 1.5 MILES
HT1455'TO J.E. ALVES MAIL BOX AT A HOUSE SURROUNDED BY DENSE CEDAR
HT1455'TREES. TURN RIGHT ON A DIRT ROAD AND GO TO THE BLUFF AND THE
HT1455'STATION. A ROW OF EUCALYPTUS TREES PARALLELS THE DIRT ROAD
HT1455'PART OF THE DISTANCE.
HT1455
HT1455   STATION RECOVERY (1958)
HT1455
HT1455'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1958 (JCM)
HT1455'THE STATION MARK WAS FOUND IN GOOD CONDITION. REFERENCE
HT1455'MARK 1 WAS FOUND IN GOOD CONDITION ALTHOUGH TILTED SLIGHTLY
HT1455'TO THE S. REFERENCE MARK 2 COULD NOT BE FOUND SO REFERENCE
HT1455'MARK 3 WAS SET. A COMPLETE DESCRIPTION FOLLOWS--
HT1455'
HT1455'THE STATION IS LOCATED NEAR THE EDGE OF THE BLUFF OVERLOOKING
HT1455'THE PACIFIC OCEAN, ABOUT 1-3/4 MI. (AIRLINE) S-SW OF THE
HT1455'CENTER OF THE TOWN OF HALF MOON BAY, 4 MI. S-SE OF THE
HT1455'VILLAGE OF MIRAMAR, AND 7/8 MI. W OF STATE HIGHWAY 1.
HT1455'
HT1455'TO REACH THE STATION FROM THE POST OFFICE IN HALF MOON BAY,
HT1455'GO S ON MAIN STREET FOR 1.0 MI. TO AN INTERSECTION. CONTINUE
HT1455'S ON STATE HIGHWAY 1 FOR 0.6 MI. TO A SIDE ROAD ON THE RIGHT.
HT1455'TURN RIGHT ONTO REDONDO BEACH DRIVE AND GO W 0.8 MI. TO
HT1455'THE END OF THE ROAD AND THE STATION ON THE LEFT.
HT1455'
HT1455'THE STATION MARK IS A STANDARD DISK, STAMPED MOON 2 1931,
HT1455'SET IN THE TOP OF A 14-IN. SQUARE CONCRETE POST THAT PROJECTS
HT1455'1 IN. ABOVE THE GROUND. IT IS 136 FT. S-SW OF A GUYED TELEPHONE
HT1455'POLE, 106 FT. S OF THE CENTERLINE OF REDONDO BEACH DRIVE,
HT1455'ABOUT 80 FT. NE OF THE EDGE OF THE BLUFF, 33 FT. W OF THE
HT1455'CENTERLINE OF A DRIVEWAY, AND 2.9 FT. E OF A WITNESS POST.
HT1455'
HT1455'REFERENCE MARK 1 IS A STANDARD DISK, STAMPED MOON 2 NO 1
HT1455'1931, SET IN THE TOP OF A 12-IN. SQUARE CONCRETE POST THAT

HT1455'IS FLUSH WITH THE GROUND. IT IS 40 FT. S OF A FENCE LINE,
HT1455'25 FT. S OF THE CENTERLINE OF REDONDO BEACH DRIVE, AND ABOUT
HT1455'THE SAME ELEVATION AS THE STATION.
HT1455'
HT1455'REFERENCE MARK 3 IS A STANDARD DISK, STAMPED MOON 2 NO 3
HT1455'1931, BRAZED TO THE TOP OF A 2-IN. IRON PIPE THAT PROJECTS
HT1455'7 IN. ABOVE THE GROUND. IT IS 1 FT. W OF A FENCE LINE, 29
HT1455'FT. E OF THE CENTERLINE OF A DRIVEWAY, AND ABOUT 1 FT. HIGHER
HT1455'THAN THE STATION.
HT1455'
HT1455'HEIGHT OF TRIPOD - 1 METER.
HT1455
HT1455   STATION RECOVERY (1958)
HT1455
HT1455'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1958
HT1455'AT HALF MOON BAY.
HT1455'REACHED FROM THE POST OFFICE AT HALF MOON BAY, BY GOING SOUTH ON
HT1455'MAIN STREET AND STATE HIGHWAY NO. 1 FOR 1.6 MILES TO A T-ROAD,
HT1455'TURN RIGHT, GO WEST ALONG THE NORTH SIDE OF A LARGE ROW OF TREES
HT1455'FOR 0.8 MILE TO JUST BEFORE REACHING THE BLUFF. STATION IS 170
HT1455'FEET EAST OF THE BLUFF, 108 FEET SOUTH OF THE ROAD LEADING
HT1455'TO THE BEACH, 34 FEET WEST OF A GRAVELED ROAD, 62 FEET WEST OF A
HT1455'FENCE LINE, 136 FEET SOUTH WEST OF A CORNER POWER POLE NO. 7-2 16.
HT1455'A STANDARD DISK SET IN TOP OF A SQUARE OF CONCRETE, 14 INCHS
HT1455'SQUARE AND ABOUT FLUSH WITH THE GROUND.
HT1455
HT1455   STATION RECOVERY (1962)
HT1455
HT1455'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1962 (WRH)
HT1455'THE STATION MARK, REFERENCE MARK NUMBER 1 AND REFERENCE MARK
HT1455'NUMBER 3 WAS FOUND IN GOOD CONDITION. A COMPLETE DESCRIPTION
HT1455'FOLLOWS.
HT1455'
HT1455'THE STATION IS LOCATED NEAR THE EDGE OF THE BLUFF OVERLOOKING
HT1455'THE PACIFIC OCEAN, ABOUT 2.0 MILES SOUTHWEST OF THE TOWN
HT1455'OF HALF MOON BAY AND 1.0 MILE WEST OF STATE HIGHWAY 1.
HT1455'
HT1455'TO REACH THE STATION FROM THE POST OFFICE IN THE TOWN OF
HT1455'HALF MOON BAY, GO WEST ON KELLEY AV. FOR 0.2 MILE TO STATE
HT1455'HIGHWAY 1, TURN LEFT ON STATE HIGHWAY 1 AND GO SOUTH FOR
HT1455'1.65 MILES TO A T-ROAD RIGHT, TURN RIGHT AND GO WEST ON A
HT1455'GRAVEL ROAD FOR 0.9 MILE TO A DIRT ROAD LEFT, LEADING INTO
HT1455'A FARM HOUSE, AND THE STATION ABOUT 100 FEET TO THE SOUTHWEST.
HT1455'
HT1455'THE STATION MARK, A STANDARD DISK, STAMPED MOON 2 1931, SET
HT1455'IN THE TOP OF A 12-INCH SQUARE CONCRETE BLOCK PROJECTING
HT1455'4-INCHES ABOVE THE GROUND. IT IS 195 FEET EAST OF THE BLUFF
HT1455'OVERLOOKING THE PACIFIC OCEAN, 105 FEET SOUTH OF THE EAST-WEST
HT1455'ROAD, 60 FEET SOUTHEAST OF THE WEST EDGE OF A PARKING LOT
HT1455'AND 30 FEET WEST OF THE DIRT ROAD.
HT1455'
HT1455'REFERENCE MARK NUMBER 1, A STANDARD DISK, STAMPED MOON 2
HT1455'NO 1 1931, SET IN THE TOP OF A 12-INCH SQUARE CONCRETE BLOCK
HT1455'FLUSH WITH THE GROUND. IT IS 24 FEET SOUTH OF THE CENTERLINE
HT1455'OF THE GRAVEL ROAD AND ON THE EAST EDGE OF THE PARKING LOT.
HT1455'
HT1455'REFERENCE MARK NUMBER 3, A STANDARD DISK, STAMPED MOON 2
HT1455'NO 3 1931, WELDED TO THE TOP OF A 2-INCH ROUND PIPE PROJECTING
HT1455'6-INCHES ABOVE THE GROUND. IT IS 29 FEET EAST OF THE DIRT
HT1455'ROAD AND 1 FOOT WEST OF A NORTH-SOUTH FENCELINE.
HT1455'

HT1455'HEIGHT OF LIGHT ABOVE STATION MARK 1.5 METERS.
HT1455
HT1455 STATION RECOVERY (1964)
HT1455
HT1455'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1964 (PAS)
HT1455'STATION WAS RECOVERED AS DESCRIBED BY W.R.H. IN 1962 WITH
HT1455'THE FOLLOWING EXCEPTION--REFERENCE MARK 1 IS NOW TILTED SLIGHTLY.
HT1455
HT1455 STATION RECOVERY (1969)
HT1455
HT1455'RECOVERY NOTE BY COAST AND GEODETIC SURVEY 1969 (LS)
HT1455'THE STATION MARK AND REFERENCE MARKS 1 AND 3 WERE RECOVERED
HT1455'IN GOOD CONDITION AND THE PREVIOUS DESCRIPTIONS ARE ADEQUATE.
HT1455
HT1455 STATION RECOVERY (1970)
HT1455
HT1455'RECOVERY NOTE BY SAN MATEO COUNTY CALIFORNIA 1970 (JEM)
HT1455'MOON II-GOOD
HT1455'
HT1455'R.M. 1--GOOD
HT1455'
HT1455'R.M. 2-GOOD
HT1455
HT1455 STATION RECOVERY (1970)
HT1455
HT1455'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1970 (LS)
HT1455'THE STATION MARK AND REFERENCE MARKS 1 AND 3 WERE RECOVERED
HT1455'IN GOOD CONDITION AND THE PREVIOUS DESCRIPTIONS ARE ADEQUATE.
HT1455'
HT1455'AIRLINE DISTANCE AND DIRECTION FROM NEAREST TOWN--2 MILES
HT1455'SOUTHWEST OF HALF MOON BAY
HT1455
HT1455 STATION RECOVERY (1971)
HT1455
HT1455'RECOVERY NOTE BY DEFENSE MAP AGENCY 1971 (JB)
HT1455'RECOVERED AS DESCRIBED BY WALTER R. HELM IN 1962. THE GRAVEL ROAD
HT1455'LEADING TO THE STATION FROM STATE HIGHWAY 1 IS NOW NAMED REDONDO
HT1455'BEACH DR.
HT1455
HT1455 STATION RECOVERY (1983)
HT1455
HT1455'RECOVERY NOTE BY US POWER SQUADRON 1983
HT1455'RECOVERED IN GOOD CONDITION.
HT1455
HT1455 STATION RECOVERY (1983)
HT1455
HT1455'RECOVERY NOTE BY NATIONAL OCEAN SERVICE 1983 (RBM)
HT1455'THE STATION AND REFERENCE MARK 1 WERE RECOVERED IN GOOD CONDITION THE
HT1455'DISK OF REFERENCE MARK 3 IS MISSING BUT THE PIPE STILL REMAINS. THE
HT1455'DISTANCE AND DIRECTION WAS MEASURED TO THE CENTER OF THE TOP OF THE
HT1455'CORRODED PIPE. REFERENCE MARK 1 WAS FOUND TO BE ABOUT 6 INCHES BELOW
HT1455'THE SURFACE OF THE GROUND.
HT1455'DESCRIBED BY S. A. FEHER
HT1455
HT1455 STATION RECOVERY (1986)
HT1455
HT1455'RECOVERY NOTE BY US POWER SQUADRON 1986 (RJS)
HT1455'RECOVERED IN GOOD CONDITION.
HT1455
HT1455 STATION RECOVERY (1991)
HT1455

HT1455'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1991
HT1455'THE STATION IS LOCATED NEAR THE EDGE OF A BLUFF OVERLOOKING THE
HT1455'PACIFIC OCEAN, ABOUT 2.0 MI (3.2 KM) SOUTHWEST OF HALF MOON BAY AND
HT1455'1.0 MI (1.6 KM) WEST OF STATE HIGHWAY 1.
HT1455'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAYS 1 AND 92 IN
HT1455'HALF MOON BAY, GO SOUTHERLY ON HIGHWAY 1 FOR 2.0 MI (3.2 KM) TO
HT1455'REDONDO BEACH ROAD ON THE RIGHT. TURN RIGHT AND GO WEST FOR 0.9 MI
HT1455'(1.4 KM) TO A GRAVEL ROAD LEFT, LEADING TO STRAWBERRY RANCH
HT1455'CONFERENCE CENTER AND THE STATION ABOUT 100 FT (30.5 M) TO THE
HT1455'SOUTHWEST.
HT1455'THE STATION IS A STANDARD DISK SET IN TOP OF A 12 INCH SQUARE BLOCK OF
HT1455'CONCRETE FLUSH WITH THE GROUND. LOCATED 144 FT (43.9 M) EAST OF A
HT1455'BLUFF OVERLOOKING THE PACIFIC OCEAN, 106 FT (32.3 M) SOUTH OF THE
HT1455'CENTERLINE OF REDONDO BEACH ROAD AND 34 FT (10.4 M) WEST OF THE
HT1455'CENTERLINE OF THE GRAVEL DRIVE.
HT1455'REFERENCE MARK NUMBER 1 IS A STANDARD DISK, STAMPED MONN 2 1931 SET IN
HT1455'THE TOP OF A 12 INCH SQUARE CONCRETE BLOCK, 10 INCHES BELOW THE
HT1455'GROUND SURFACE. LOCATED 79 FT (24.1 M) SOUTHWEST OF THE INTERSECTION
HT1455'OF REDONDO BEACH ROAD AND THE GRAVEL ROAD AND 22 FT (6.7 M) SOUTH OF
HT1455'THE CENTERLINE OF REDONDO BEACH ROAD.
HT1455
HT1455   STATION RECOVERY (1994)
HT1455
HT1455'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1994 (AJL)
HT1455'THE STATION IS LOCATED ABOUT 3 KM (1.9 MI) SOUTHWEST OF HALF MOON BAY,
HT1455'2 KM (1.2 MI) WEST OF STATE HIGHWAY 1, AND NEAR THE EDGE OF A BLUFF
HT1455'OVERLOOKING THE PACIFIC OCEAN. OWNERSHIP--UNKNOWN. NOTE-GATE ON
HT1455'REDONDO BEACH ROAD BEFORE REACHING STATION THAT IS LOCKED AT SUNSET.
HT1455'CONTACT THE HALF MOON BAY POLICE DEPARTMENT PRIOR TO OCCUPATION SO
HT1455'THAT THE GATE CAN BE LEFT OPEN OR UNLOCKED WHEN NEEDED. PHONE
HT1455'415-726-8286. TO REACH FROM THE JUNCTION OF STATE HIGHWAYS 1 AND 92 IN
HT1455'HALF MOON BAY, GO SOUTHERLY ON HIGHWAY 1 FOR 3.2 KM (2.0 MI) TO
HT1455'REDONDO BEACH ROAD ON THE RIGHT. TURN RIGHT, WEST, ON REDONDO BEACH
HT1455'ROAD FOR 1.4 KM (0.9 MI) TO A GRAVEL ROAD LEFT, LEADING TO STRAWBERRY
HT1455'RANCH CONFERENCE CENTER, AND THE STATION TO THE SOUTHWEST. STATION
HT1455'MARK IS A STANDARD CGS DISK SET IN THE TOP OF A 30 CM SQUARE CONCRETE
HT1455'POST FLUSH WITH THE GROUND. IT IS 32.3 M (106.0 FT) SOUTH OF, AND
HT1455'LEVEL WITH, THE CENTER OF REDONDO BEACH ROAD, 43.9 M (144.0 FT) EAST
HT1455'OF A BLUFF OVERLOOKING THE PACIFIC OCEAN, AND 10.4 M (34.1 FT) WEST OF
HT1455'THE CENTER OF THE GRAVEL DRIVE.
HT1455
HT1455   STATION RECOVERY (1994)
HT1455
HT1455'RECOVERY NOTE BY CALTRANS 1994 (DAN)
HT1455'RECOVERED AS DESCRIBED.
HT1455
HT1455   STATION RECOVERY (1996)
HT1455
HT1455'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1996 (JGF)
HT1455'RECOVERED AS DESCRIBED AT THE SOUTH END OF AN ISLAND OF GRASS BETWEEN
HT1455'THE ROAD AND PARKING AREA.
HT1455
HT1455   STATION RECOVERY (2002)
HT1455
HT1455'RECOVERY NOTE BY JOHNSON-FRANK 2002 (RAF)
HT1455'RECOVERED AS DESCRIBED WITH ADDITIONAL COMMENTS. THE MONUMENT IS ABOUT
HT1455'10M WEST OF THE PAVED ROAD LEADING TO THE CONFERENCE CENTER, ABOUT
HT1455'30M NORTH OF THE WHITE PAINTED WOODEN HALF FENCE MARKING THE START OF
HT1455'THE CENTER'S PROPERTY, AND COULD BE HIDDEN BY THICK GRASS AT THE
HT1455'SOUTHEAST END OF THE PATCH. THIS STATION WAS OBSERVED AS PART OF THE
HT1455'SOUTH SAN FRANCISCO BAY HEIGHT MODERNIZATION PROJECT.

```
HT1455
HT1455                          STATION RECOVERY (2002)
HT1455
HT1455'RECOVERY NOTE BY JOHNSON-FRANK 2002 (RAF)
HT1455'RECOVERED AS DESCRIBED WITH ADDITIONAL COMMENTS. THE MONUMENT IS ABOUT
HT1455'10M WEST OF THE PAVED ROAD LEADING TO THE CONFERENCE  CENTER, ABOUT
HT1455'30M NORTH OF THE WHITE PAINTED WOODEN HALF FENCE MARKING THE  START OF
HT1455'THE CENTER'S PROPERTY, AND COULD BE HIDDEN BY THICK GRASS AT THE
HT1455'SOUTHEAST END OF THE PATCH. THIS STATION WAS OBSERVED AS PART OF THE
HT1455'SOUTH SAN FRANCISCO BAY HEIGHT MODERNIZATION  PROJECT.
```

Appendix B

SINGLE POINT ADJUSTMENT

```
              ************************************************
              * NETWORK - WEIGHTED GPS NETWORK ADJUSTMENT      *
              *                                                *
              * (c) Copyright Waypoint Consulting Inc., (2003) *
              *                                                *
              * VERSION: 7.01                                  *
              *                                                *
              * FILE: C:\Project\060079_SantaClara\Static\Static
Processing\SantaClara.net
              ************************************************

DATE(m/d/y): Mon.   5/01/06   TIME: 17:14:26



*****************************************************************

  DATUM:             'NAD83'
  SCALE_FACTOR:      1.0000
  CONFIDENCE LEVEL: 90.00 %   (Scale factor is 2.1461)


*****************************************************************
    INPUT CONTROL/CHECK POINTS
*****************************************************************

STA_ID     TYPE    -- LATITUDE --  -- LONGITUDE --  ELLHGT -   HZ-SD   V-SD
G1080      CHK-3D  37 04 19.05729 -121 36 08.64242     48.848
B1458      CHK-3D  37 03 48.11238 -121 47 44.54381    802.524
Bell       CHK-HZ  37 02 18.85919 -121 18 40.02823
FELIPE     CHK-VT                                     102.965
GAP        CHK-HZ  37 15 28.92770 -122 07 15.79521
M874       CHK-HZ  37 26 10.03023 -121 54 24.89082
MHCB       GCP-3D  37 20 29.49949 -121 38 33.22523   1262.360 0.00010 0.00500
MHCB-B     CHK-3D  37 20 23.29601 -121 39 17.38316   1034.378
MOON2      CHK-VT                                     -10.686
P222       CHK-HZ  37 32 21.24412 -122 04 59.69157
P242       CHK-HZ  36 57 14.13653 -121 27 47.40219
ppt1       CHK-HZ  37 11 13.48254 -122 23 23.76560
U1447      CHK-VT                                      88.396
WVI        CHK-HZ  36 56 11.71717 -121 47 28.03375
X572       CHK-HZ  37 28 54.53609 -122 08 59.09786
zoa1       CHK-HZ  37 32 34.97376 -122 00 57.34671



*****************************************************************
    INPUT VECTORS
*****************************************************************

SESSION NAME           VECTOR(m)    ------ Covariance (m) [unscaled] ------
                        DX/DY/DZ           standard deviations in brackets
```

```
B1458 to GAP (1)      -17599.8222  2.0441e-007 (0.0005)
                      26392.8072  1.9497e-007 5.5985e-007 (0.0007)
                      17200.7795  -2.0917e-008 -2.5174e-007 6.4359e-007
(0.0008)

B1458 to GAP (2)      -17599.8111  1.0349e-007 (0.0003)
                      26392.7945  1.0804e-007 2.6670e-007 (0.0005)
                      17200.7587  -4.8408e-008 -1.1309e-007 1.3557e-007
(0.0004)

B1458 to P222 (2)     -4387.2033  2.8696e-006 (0.0017)
                      41153.9210  2.8354e-006 5.7401e-006 (0.0024)
                      41559.9235  -1.7407e-006 -2.8393e-006 5.8638e-006
(0.0024)

B1458 to P222 (3)     -4387.2157  9.7318e-007 (0.0010)
                      41153.8914  9.2849e-007 2.1830e-006 (0.0015)
                      41559.9347  -4.9223e-007 -1.1973e-006 1.8924e-006
(0.0014)

B1458 to P242 (1)     21697.4642  3.0873e-006 (0.0018)
                      -21212.1762  2.5728e-006 7.5301e-006 (0.0027)
                      -10173.2269  -2.0139e-006 -3.4218e-006 4.4489e-006
(0.0021)

B1458 to P242 (2)     21697.4578  1.3593e-006 (0.0012)
                      -21212.1742  1.3404e-006 2.7089e-006 (0.0016)
                      -10173.2223  -8.2733e-007 -1.3435e-006 2.7801e-006
(0.0017)

B1458 to P242 (3)     21697.4341  7.7072e-007 (0.0009)
                      -21212.2162  7.9543e-007 1.9597e-006 (0.0014)
                      -10173.1987  -4.4272e-007 -9.8595e-007 1.5231e-006
(0.0012)

B1458 to P242 (4)     21697.4450  4.6079e-007 (0.0007)
                      -21212.2044  4.3895e-007 1.0298e-006 (0.0010)
                      -10173.2037  -2.3437e-007 -5.6665e-007 8.9589e-007
(0.0009)

B1458 to ppt1 (4)     -40000.2001  1.7721e-006 (0.0013)
                      35614.4172  1.4561e-006 3.5316e-006 (0.0019)
                      10468.2849  -3.5343e-007 -1.3385e-006 2.7317e-006
(0.0017)

B1458 to WVI (1)      -3782.1549  9.0251e-007 (0.0010)
                      -6876.8442  5.5193e-007 2.2877e-006 (0.0015)
                      -11712.0969  -3.2007e-007 -3.3199e-008 1.5006e-006
(0.0012)

B1458 to WVI (2)      -3782.1335  1.7739e-008 (0.0001)
                      -6876.8091  1.6612e-008 3.7226e-008 (0.0002)
                      -11712.1156  -9.2775e-009 -2.0648e-008 3.2660e-008
(0.0002)
```

```
Bell to FELIPE (1)     -9351.6800  7.1730e-008 (0.0003)
                        -357.4207  5.2607e-008 2.4630e-007 (0.0005)
                       -6846.3272  -2.7856e-008 -1.4057e-007 1.5894e-007
(0.0004)

Bell to P242 (1)       -14465.9552  1.4538e-006 (0.0012)
                        2276.6090  1.0723e-006 5.0333e-006 (0.0022)
                       -7549.4533  -5.6501e-007 -2.8820e-006 3.2594e-006
(0.0018)

FELIPE to P222 (1)     -31198.9448  3.2897e-006 (0.0018)
                       65000.1331  3.0478e-006 6.7443e-006 (0.0026)
                       51030.0106  -2.1720e-006 -3.2827e-006 4.8938e-006
(0.0022)

FELIPE to P242 (1)     -5114.2774  5.0135e-007 (0.0007)
                        2634.0289  4.5352e-007 8.2108e-007 (0.0009)
                        -703.1273  -3.3221e-007 -3.9528e-007 5.3460e-007
(0.0007)

FELIPE to U1447 (1)    11204.4254  9.8896e-008 (0.0003)
                        -316.3220  7.5497e-008 2.0149e-007 (0.0004)
                        7350.9816  -5.9923e-008 -5.7711e-008 1.2118e-007
(0.0003)

G1080 to B1458 (1)     -15245.8708  4.4564e-007 (0.0007)
                        8033.1399  4.6401e-007 1.2542e-006 (0.0011)
                        -306.7044  -3.2715e-007 -6.2307e-007 8.8052e-007
(0.0009)

G1080 to Bell (1)      20917.5513  1.5081e-007 (0.0004)
                       -15455.6267  1.2422e-007 3.4392e-007 (0.0006)
                       -2930.5223  -8.6451e-008 -2.0087e-007 2.5192e-007
(0.0005)

G1080 to FELIPE (1)    11565.8697  4.6090e-008 (0.0002)
                       -15813.0576  3.9277e-008 1.2897e-007 (0.0004)
                       -9776.8401  -2.3070e-008 -6.1369e-008 8.7894e-008
(0.0003)

G1080 to M874 (1)      -10063.1339  3.8871e-007 (0.0006)
                       35072.2615  4.5461e-007 8.8975e-007 (0.0009)
                       32122.6296  -2.2798e-007 -3.9855e-007 5.9899e-007
(0.0008)

G1080 to P222 (2)      -19633.0836  1.7487e-006 (0.0013)
                       49187.0337  1.7194e-006 3.4620e-006 (0.0019)
                       41253.2165  -1.0465e-006 -1.5252e-006 2.6378e-006
(0.0016)

G1080 to P222 (3)      -19633.0846  6.4598e-007 (0.0008)
                       49187.0424  5.9976e-007 1.2674e-006 (0.0011)
                       41253.2003  -3.8316e-007 -6.0376e-007 9.8518e-007
(0.0010)
```

```
G1080 to P222 (5)     -19633.0702  1.5291e-006 (0.0012)
                      49187.0864  1.3081e-006 3.1542e-006 (0.0018)
                      41253.1654  -9.3619e-007 -1.3945e-006 2.2769e-006
(0.0015)

G1080 to P242 (2)      6451.5908  6.0216e-007 (0.0008)
                      -13179.0456  6.5059e-007 1.3166e-006 (0.0011)
                      -10479.9421  -2.4039e-007 -5.2323e-007 9.8803e-007
(0.0010)

G1080 to P242 (3)      6451.5947  1.4583e-006 (0.0012)
                      -13179.0400  1.6281e-006 3.4631e-006 (0.0019)
                      -10479.9531  -7.5182e-007 -1.2889e-006 1.8113e-006
(0.0013)

G1080 to P242 (6)      6451.5878  1.7297e-006 (0.0013)
                      -13179.0319  1.2157e-006 2.4321e-006 (0.0016)
                      -10479.9666  -1.0118e-006 -1.5815e-006 2.5852e-006
(0.0016)

G1080 to P242 (8)      6451.5850  9.5095e-007 (0.0010)
                      -13179.0442  9.6230e-007 2.2139e-006 (0.0015)
                      -10479.9538  -2.1906e-007 -9.4764e-007 1.4007e-006
(0.0012)

G1080 to P242 (9)      6451.5835  7.3183e-007 (0.0009)
                      -13179.0422  7.1057e-007 1.2790e-006 (0.0011)
                      -10479.9412  -4.2726e-007 -5.7671e-007 9.6532e-007
(0.0010)

G1080 to ppt1 (3)     -55246.0578  2.2983e-006 (0.0015)
                      43647.5739  2.5036e-006 5.0743e-006 (0.0023)
                      10161.5477  -1.1192e-006 -1.6845e-006 2.5827e-006
(0.0016)

G1080 to ppt1 (4)     -55246.0791  2.3459e-007 (0.0005)
                      43647.5494  2.1904e-007 4.8183e-007 (0.0007)
                      10161.5601  -1.3698e-007 -2.2805e-007 3.7998e-007
(0.0006)

G1080 to ppt1 (5)     -55246.0611  1.0539e-006 (0.0010)
                      43647.5675  8.9020e-007 2.4106e-006 (0.0016)
                      10161.5371  -7.1828e-007 -1.2504e-006 2.2745e-006
(0.0015)

G1080 to ppt1 (8)     -55246.0951  3.1064e-006 (0.0018)
                      43647.5401  2.1126e-006 6.3139e-006 (0.0025)
                      10161.5702  5.6899e-007 -2.6002e-006 5.3689e-006
(0.0023)

G1080 to ppt1 (9)     -55246.0929  1.1495e-006 (0.0011)
                      43647.5362  1.1243e-006 2.0370e-006 (0.0014)
                      10161.5789  -6.5816e-007 -9.0977e-007 1.5073e-006
(0.0012)
```

```
G1080 to U1447 (1)     22770.2917  2.0428e-007 (0.0005)
                       -16129.3858  1.5595e-007 4.1620e-007 (0.0006)
                       -2425.8518  -1.2378e-007 -1.1921e-007 2.5032e-007
(0.0005)

G1080 to X572 (3)      -26640.5753  1.9768e-007 (0.0004)
                       49082.5994  1.6925e-007 4.5328e-007 (0.0007)
                       36147.0009  -1.3408e-007 -2.3448e-007 4.2070e-007
(0.0006)

G1080 to X572 (4)      -26640.6047  5.5797e-007 (0.0007)
                       49082.5872  3.8024e-007 1.1345e-006 (0.0011)
                       36147.0284  1.0156e-007 -4.6567e-007 9.6178e-007
(0.0010)

G1080 to X572 (5)      -26640.6012  2.8952e-007 (0.0005)
                       49082.5569  2.8154e-007 5.2855e-007 (0.0007)
                       36147.0523  -1.6972e-007 -2.3588e-007 4.0290e-007
(0.0006)

G1080 to zoa1 (1)      -14429.5186  4.6500e-007 (0.0007)
                       46287.0099  4.6495e-007 9.6800e-007 (0.0010)
                       41554.0168  -1.8582e-007 -4.1763e-007 8.6661e-007
(0.0009)

G1080 to zoa1 (2)      -14429.5144  5.2715e-007 (0.0007)
                       46287.0189  5.1548e-007 9.2827e-007 (0.0010)
                       41554.0123  -2.7664e-007 -3.3676e-007 5.1851e-007
(0.0007)

G1080 to zoa1 (5)      -14429.5307  1.9702e-007 (0.0004)
                       46286.9948  1.9265e-007 3.4861e-007 (0.0006)
                       41554.0285  -1.1257e-007 -1.5531e-007 2.5762e-007
(0.0005)

GAP to M874 (1)        22782.5229  2.2569e-007 (0.0005)
                         646.3001  2.6192e-007 5.7043e-007 (0.0008)
                       15228.6172  -1.5395e-007 -2.7917e-007 2.8460e-007
(0.0005)

GAP to MOON2 (1)       -17275.7250  2.1989e-007 (0.0005)
                       26059.5149  1.8907e-007 3.2462e-007 (0.0006)
                       15490.3904  -1.2366e-007 -1.3994e-007 2.8730e-007
(0.0005)

GAP to P222 (2)        13212.6185  2.6552e-006 (0.0016)
                       14761.1112  2.2266e-006 3.7865e-006 (0.0019)
                       24359.1562  -1.5488e-006 -1.7506e-006 3.3236e-006
(0.0018)

GAP to P222 (3)        13212.5871  1.0323e-006 (0.0010)
                       14761.1053  8.8535e-007 1.8005e-006 (0.0013)
                       24359.1664  -6.2172e-007 -1.0846e-006 1.7647e-006
(0.0013)
```

```
GAP to P222 (5)        13212.5913  2.4554e-006 (0.0016)
                       14761.1094  2.2371e-006 4.1764e-006 (0.0020)
                       24359.1739  -1.1260e-006 -1.5591e-006 3.2355e-006
(0.0018)

GAP to P222 (6)        13212.5953  7.2579e-007 (0.0009)
                       14761.0971  5.9560e-007 1.0647e-006 (0.0010)
                       24359.1756  -2.7958e-007 -5.4952e-007 1.0890e-006
(0.0010)

GAP to P242 (3)        39297.2690  2.7262e-006 (0.0017)
                       -47604.9577  2.3424e-006 4.7574e-006 (0.0022)
                       -27374.0005  -1.6494e-006 -2.8670e-006 4.6612e-006
(0.0022)

GAP to P242 (4)        39297.2551  3.5277e-006 (0.0019)
                       -47605.0073  3.0524e-006 5.2210e-006 (0.0023)
                       -27373.9568  -1.2513e-006 -2.4973e-006 4.0441e-006
(0.0020)

GAP to ppt1 (1)        -22400.3960  7.4052e-007 (0.0009)
                        9221.6035  6.2419e-007 8.6447e-007 (0.0009)
                       -6732.4680  -5.7497e-007 -5.1629e-007 9.9802e-007
(0.0010)

GAP to ppt1 (2)        -22400.4146  1.5826e-006 (0.0013)
                        9221.5869  8.2526e-007 2.2534e-006 (0.0015)
                       -6732.4555  -4.8473e-008 -1.3924e-006 3.8705e-006
(0.0020)

GAP to ppt1 (4)        -22400.4185  1.1507e-006 (0.0011)
                        9221.5939  1.2112e-006 2.1920e-006 (0.0015)
                       -6732.4624  -8.0650e-007 -1.1741e-006 1.4679e-006
(0.0012)

GAP to ppt1 (6)        -22400.3941  1.1636e-006 (0.0011)
                        9221.6150  9.9331e-007 1.6096e-006 (0.0013)
                       -6732.4629  -4.1332e-007 -5.9284e-007 8.8833e-007
(0.0009)

GAP to WVI (1)         13817.6800  1.8488e-007 (0.0004)
                       -33269.5834  1.5961e-007 3.2645e-007 (0.0006)
                       -28912.8946  -1.0060e-007 -1.7574e-007 3.0412e-007
(0.0006)

GAP to WVI (2)         13817.6768  1.6885e-006 (0.0013)
                       -33269.6092  1.1756e-006 1.1950e-006 (0.0011)
                       -28912.8605  -6.3906e-007 -5.5607e-007 5.6682e-007
(0.0008)

GAP to X572 (1)         6205.0949  2.3465e-007 (0.0005)
                       14656.6621  1.9503e-007 3.4540e-007 (0.0006)
                       19252.9742  -1.7644e-007 -2.3849e-007 2.8795e-007
(0.0005)
```

```
GAP to X572 (2)          6205.1001  2.0520e-007 (0.0005)
                        14656.6838  1.9978e-007 3.8036e-007 (0.0006)
                        19252.9770  -1.0723e-007 -1.6397e-007 2.2199e-007
(0.0005)

M874 to MOON2 (1)      -40058.2712  2.9836e-007 (0.0005)
                        25413.1685  2.8110e-007 4.8017e-007 (0.0007)
                          261.7969  -1.9130e-007 -2.2747e-007 3.8382e-007
(0.0006)

M874 to P222 (1)        -9569.9395  2.0068e-006 (0.0014)
                        14114.7940  1.8551e-006 3.0736e-006 (0.0018)
                         9130.5700  -1.1838e-006 -1.3842e-006 2.9362e-006
(0.0017)

M874 to P222 (2)        -9569.9443  6.1306e-007 (0.0008)
                        14114.7719  4.7105e-007 9.5805e-007 (0.0010)
                         9130.5672  -3.9422e-007 -5.2099e-007 6.8417e-007
(0.0008)

M874 to P242 (2)        16514.7289  1.3367e-006 (0.0012)
                       -48251.2931  1.2565e-006 2.5856e-006 (0.0016)
                       -42602.5853  -7.9482e-007 -1.1596e-006 1.9669e-006
(0.0014)

M874 to ppt1 (2)        -45182.9459  2.1464e-006 (0.0015)
                         8575.2955  1.9823e-006 3.2899e-006 (0.0018)
                       -21961.0812  -1.2644e-006 -1.4789e-006 3.1433e-006
(0.0018)

M874 to X572 (1)        -16577.4301  3.0816e-007 (0.0006)
                        14010.3608  2.6803e-007 4.6160e-007 (0.0007)
                         4024.3600  -1.9739e-007 -2.4136e-007 2.3637e-007
(0.0005)

M874 to zoa1 (1)         -4366.3864  1.0587e-007 (0.0003)
                        11214.7476  9.7664e-008 1.6191e-007 (0.0004)
                         9431.3896  -6.2249e-008 -7.2538e-008 1.5439e-007
(0.0004)

MHCB to B1458 (3)       -21189.2425  8.1452e-007 (0.0009)
                        -8419.4234  8.2891e-007 2.0280e-006 (0.0014)
                       -24870.5254  -4.6461e-007 -1.0336e-006 1.6046e-006
(0.0013)

MHCB to B1458 (4)       -21189.2327  4.8797e-007 (0.0007)
                        -8419.4021  4.6523e-007 1.0934e-006 (0.0010)
                       -24870.5454  -2.4768e-007 -6.0202e-007 9.5404e-007
(0.0010)

MHCB to G1080 (1)        -5943.3522  3.3424e-006 (0.0018)
                       -16452.5265  2.6177e-006 4.2008e-006 (0.0020)
                       -24563.8427  -2.4432e-006 -2.1716e-006 3.9705e-006
(0.0020)
```

```
MHCB to G1080 (3)      -5943.3739  5.5623e-007 (0.0007)
                       -16452.5682  5.0965e-007 1.2452e-006 (0.0011)
                       -24563.7942  -3.7479e-007 -6.0244e-007 9.6707e-007
(0.0010)

MHCB to GAP (3)        -38789.0356  1.5010e-006 (0.0012)
                       17973.3833  1.2870e-006 2.6200e-006 (0.0016)
                       -7669.7742  -9.0626e-007 -1.5817e-006 2.5764e-006
(0.0016)

MHCB to M874 (1)       -16006.4957  3.1280e-006 (0.0018)
                       18619.7139  3.3765e-006 5.3843e-006 (0.0023)
                        7558.8065  -9.5798e-008 -6.5417e-007 2.7574e-006
(0.0017)

MHCB to M874 (2)       -16006.5256  1.8802e-006 (0.0014)
                       18619.6727  2.2269e-006 4.5690e-006 (0.0021)
                        7558.8407  -2.7378e-007 -1.5082e-006 3.2295e-006
(0.0018)

MHCB to M874 (3)       -16006.5273  3.7316e-007 (0.0006)
                       18619.6797  3.3247e-007 7.4926e-007 (0.0009)
                        7558.8599  -2.2417e-007 -3.1800e-007 5.2306e-007
(0.0007)

MHCB to MHCB-B (1)      -891.2241  1.0133e-007 (0.0003)
                         625.9490  8.7914e-008 1.6990e-007 (0.0004)
                        -290.3547  -5.4240e-008 -8.0104e-008 1.1320e-007
(0.0003)

MHCB to MHCB-B (2)      -891.2257  1.8018e-007 (0.0004)
                         625.9469  1.7205e-007 2.9707e-007 (0.0005)
                        -290.3525  -8.1010e-008 -1.1305e-007 1.9222e-007
(0.0004)

MHCB to MHCB-B (3)      -891.2282  5.5881e-007 (0.0007)
                         625.9472  5.8827e-007 1.0458e-006 (0.0010)
                        -290.3385  -2.2664e-007 -3.1831e-007 5.2019e-007
(0.0007)

MHCB to MOON2 (1)      -56064.7884  2.2326e-006 (0.0015)
                       44032.8564  2.2319e-006 4.2744e-006 (0.0021)
                        7820.6484  -1.2614e-006 -1.7794e-006 3.1914e-006
(0.0018)

MHCB to P222 (10)      -25576.4528  2.1682e-006 (0.0015)
                       32734.4886  2.2169e-006 5.0673e-006 (0.0023)
                       16689.3778  -8.7067e-007 -2.5688e-006 4.8510e-006
(0.0022)

MHCB to P222 (3)       -25576.4406  1.9935e-007 (0.0004)
                       32734.5075  1.7392e-007 3.8060e-007 (0.0006)
                       16689.3788  -1.1707e-007 -1.8978e-007 3.0624e-007
(0.0006)
```

```
MHCB to P222 (4)      -25576.4745  2.3873e-006 (0.0015)
                      32734.4678  2.4015e-006 5.9068e-006 (0.0024)
                      16689.4003  -9.0117e-007 -2.9100e-006 5.3622e-006
(0.0023)

MHCB to P222 (6)      -25576.4594  7.1458e-007 (0.0008)
                      32734.4751  6.1198e-007 1.5550e-006 (0.0012)
                      16689.4104  -4.5209e-007 -7.5656e-007 1.2344e-006
(0.0011)

MHCB to P222 (9)      -25576.4557  8.5497e-007 (0.0009)
                      32734.4761  7.8543e-007 1.5740e-006 (0.0013)
                      16689.4055  -5.0857e-007 -6.9927e-007 1.3198e-006
(0.0011)

MHCB to P242 (10)       508.2253  3.1758e-006 (0.0018)
                      -29631.5904  2.9094e-006 6.3817e-006 (0.0025)
                      -35043.7589  -1.3941e-006 -2.3306e-006 4.2829e-006
(0.0021)

MHCB to P242 (2)        508.2210  1.9738e-006 (0.0014)
                      -29631.5923  2.0508e-006 4.3380e-006 (0.0021)
                      -35043.7556  -8.7217e-007 -2.2468e-006 4.2351e-006
(0.0021)

MHCB to P242 (4)        508.2073  2.7057e-006 (0.0016)
                      -29631.6232  2.2303e-006 5.5325e-006 (0.0024)
                      -35043.7313  -1.1578e-006 -3.3485e-006 5.0058e-006
(0.0022)

MHCB to P242 (6)        508.2116  3.3723e-006 (0.0018)
                      -29631.6169  3.0216e-006 6.9419e-006 (0.0026)
                      -35043.7402  -1.4560e-006 -2.5192e-006 4.5270e-006
(0.0021)

MHCB to P242 (8)        508.2162  1.3287e-006 (0.0012)
                      -29631.6060  1.2433e-006 2.5995e-006 (0.0016)
                      -35043.7525  -7.8406e-007 -1.1439e-006 2.3728e-006
(0.0015)

MHCB to ppt1 (1)      -61189.4412  3.8125e-007 (0.0006)
                      27195.0050  3.3032e-007 7.2477e-007 (0.0009)
                      -14402.2521  -2.2412e-007 -3.7110e-007 5.9557e-007
(0.0008)

MHCB to ppt1 (10)     -61189.4607  3.3574e-006 (0.0018)
                      27194.9737  3.1207e-006 5.9426e-006 (0.0024)
                      -14402.2235  -1.6093e-006 -2.5146e-006 4.2180e-006
(0.0021)

MHCB to ppt1 (11)     -61189.4437  3.9334e-007 (0.0006)
                      27195.0031  3.4787e-007 7.2560e-007 (0.0009)
                      -14402.2473  -2.2313e-007 -3.5833e-007 5.7023e-007
(0.0008)
```

```
MHCB to ppt1 (2)      -61189.4399  3.6439e-007 (0.0006)
                      27195.0081  3.1788e-007 6.9609e-007 (0.0008)
                      -14402.2558  -2.1251e-007 -3.4504e-007 5.4943e-007
(0.0007)

MHCB to ppt1 (3)      -61189.4298  4.0366e-007 (0.0006)
                      27195.0244  3.5773e-007 7.4727e-007 (0.0009)
                      -14402.2693  -2.3359e-007 -3.7175e-007 5.6694e-007
(0.0008)

MHCB to ppt1 (4)      -61189.4477  3.6886e-007 (0.0006)
                      27195.0019  3.2438e-007 7.0635e-007 (0.0008)
                      -14402.2461  -2.1873e-007 -3.5955e-007 5.7343e-007
(0.0008)

MHCB to ppt1 (6)      -61189.4528  1.2669e-006 (0.0011)
                      27194.9906  1.0932e-006 3.0684e-006 (0.0018)
                      -14402.2376  -8.2418e-007 -1.4047e-006 2.3187e-006
(0.0015)

MHCB to U1447 (1)     16826.9137  7.2554e-007 (0.0009)
                      -32581.9614  7.3062e-007 2.0662e-006 (0.0014)
                      -26989.6341  -5.3896e-007 -9.8412e-007 1.2966e-006
(0.0011)

MHCB to WVI (2)       -24971.3601  5.7555e-007 (0.0008)
                      -15296.2059  5.2663e-007 1.2254e-006 (0.0011)
                      -36582.6703  -3.7219e-007 -6.1161e-007 8.9442e-007
(0.0009)

MHCB to WVI (3)       -24971.3583  7.5389e-007 (0.0009)
                      -15296.1988  6.9877e-007 1.3708e-006 (0.0012)
                      -36582.6720  -4.1086e-007 -6.5963e-007 1.1236e-006
(0.0011)

MHCB to X572 (3)      -32583.9630  9.6674e-007 (0.0010)
                      32630.0297  1.1170e-006 2.4701e-006 (0.0016)
                      11583.2300  -5.6487e-007 -1.0109e-006 1.1475e-006
(0.0011)

MHCB-B to P222 (1)    -24685.2006  6.8931e-007 (0.0008)
                      32108.5780  5.9502e-007 1.1243e-006 (0.0011)
                      16979.7072  -3.6842e-007 -5.2675e-007 7.3931e-007
(0.0009)

MHCB-B to P242 (2)     1399.4658  2.2626e-006 (0.0015)
                      -30257.5171  2.0322e-006 3.3115e-006 (0.0018)
                      -34753.4357  -1.5176e-006 -1.4288e-006 2.6892e-006
(0.0016)

MHCB-B to ppt1 (1)    -60298.2000  4.0954e-007 (0.0006)
                      26569.0841  3.5996e-007 6.8396e-007 (0.0008)
                      -14111.9352  -2.1883e-007 -3.1677e-007 4.3590e-007
(0.0007)
```

```
MHCB-B to ppt1 (3)    -60298.2131  2.1941e-006 (0.0015)
                      26569.0679  2.3404e-006 4.1595e-006 (0.0020)
                      -14111.9212  -8.7621e-007 -1.2316e-006 1.9980e-006
(0.0014)

MHCB-B to U1447 (1)   17718.1586  9.4808e-007 (0.0010)
                      -33207.8665  1.0048e-006 1.6655e-006 (0.0013)
                      -26699.3157  -5.6559e-007 -6.6621e-007 5.8092e-007
(0.0008)

MHCB-B to WVI (1)     -24080.1055  3.0183e-007 (0.0005)
                      -15922.1052  1.7484e-007 2.5562e-007 (0.0005)
                      -36292.3613  -6.0762e-008 -1.4866e-007 2.4507e-007
(0.0005)

MOON2 to P222 (1)     30488.3180  2.0236e-006 (0.0014)
                      -11298.4043  1.7568e-006 2.5991e-006 (0.0016)
                       8868.7807  -7.1835e-007 -8.8226e-007 1.5843e-006
(0.0013)

MOON2 to X572 (1)     23480.8280  8.0864e-008 (0.0003)
                      -11402.8287  7.0707e-008 1.1256e-007 (0.0003)
                       3762.5834  -5.9687e-008 -5.5398e-008 1.0980e-007
(0.0003)

P222 to P242 (1)      26084.6650  5.0270e-007 (0.0007)
                      -62366.0945  4.4528e-007 9.6841e-007 (0.0010)
                      -51733.1411  -2.9281e-007 -4.7568e-007 7.5218e-007
(0.0009)

P222 to P242 (10)     26084.6605  1.8709e-006 (0.0014)
                      -62366.1049  1.6145e-006 3.0676e-006 (0.0018)
                      -51733.1398  -8.8005e-007 -1.4016e-006 2.5888e-006
(0.0016)

P222 to P242 (2)      26084.6803  5.1555e-007 (0.0007)
                      -62366.0673  4.4560e-007 9.8300e-007 (0.0010)
                      -51733.1583  -3.0812e-007 -4.9934e-007 8.0723e-007
(0.0009)

P222 to P242 (3)      26084.6675  4.9129e-007 (0.0007)
                      -62366.0838  4.3031e-007 9.4099e-007 (0.0010)
                      -51733.1491  -2.8963e-007 -4.6707e-007 7.5053e-007
(0.0009)

P222 to P242 (4)      26084.6522  4.9503e-007 (0.0007)
                      -62366.1207  4.3414e-007 9.5573e-007 (0.0010)
                      -51733.1257  -2.9123e-007 -4.7381e-007 7.5379e-007
(0.0009)

P222 to P242 (5)      26084.6517  5.1953e-007 (0.0007)
                      -62366.1184  4.6306e-007 9.9714e-007 (0.0010)
                      -51733.1256  -3.0965e-007 -5.0909e-007 7.9978e-007
(0.0009)
```

```
P222 to P242 (7)      26084.6729  1.6997e-006 (0.0013)
                      -62366.0794  1.5879e-006 3.3187e-006 (0.0018)
                      -51733.1598  -1.0060e-006 -1.4811e-006 2.5326e-006
(0.0016)

P222 to P242 (8)      26084.6678  7.5508e-007 (0.0009)
                      -62366.0874  6.4810e-007 1.4137e-006 (0.0012)
                      -51733.1533  -4.3000e-007 -6.6347e-007 1.1282e-006
(0.0011)

P222 to P242 (9)      26084.6721  2.7737e-006 (0.0017)
                      -62366.0841  2.4188e-006 6.1737e-006 (0.0025)
                      -51733.1513  -1.7567e-006 -3.3494e-006 5.0707e-006
(0.0023)

P222 to ppt1 (1)      -35613.0016  2.1892e-007 (0.0005)
                      -5539.4961  1.9131e-007 4.1391e-007 (0.0006)
                      -31091.6343  -1.2804e-007 -2.0449e-007 3.3258e-007
(0.0006)

P222 to ppt1 (10)     -35613.0164  1.2206e-006 (0.0011)
                      -5539.5208  1.0626e-006 2.6954e-006 (0.0016)
                      -31091.6118  -7.7439e-007 -1.4642e-006 2.2156e-006
(0.0015)

P222 to ppt1 (2)      -35612.9966  2.2977e-007 (0.0005)
                      -5539.4920  1.9783e-007 4.3182e-007 (0.0007)
                      -31091.6331  -1.3679e-007 -2.1944e-007 3.5555e-007
(0.0006)

P222 to ppt1 (3)      -35612.9945  2.1873e-007 (0.0005)
                      -5539.4839  1.9090e-007 4.1551e-007 (0.0006)
                      -31091.6448  -1.2809e-007 -2.0706e-007 3.3257e-007
(0.0006)

P222 to ppt1 (8)      -35612.9929  3.3399e-007 (0.0006)
                      -5539.4869  2.8774e-007 6.1663e-007 (0.0008)
                      -31091.6454  -1.8768e-007 -2.8695e-007 4.9141e-007
(0.0007)

P222 to U1447 (1)     42403.3709  1.8714e-006 (0.0014)
                      -65316.4347  1.8845e-006 5.3295e-006 (0.0023)
                      -43679.0408  -1.3902e-006 -2.5384e-006 3.3444e-006
(0.0018)

P222 to U1447 (2)     42403.3507  3.3895e-006 (0.0018)
                      -65316.4654  3.8117e-006 9.7463e-006 (0.0031)
                      -43679.0208  -2.3028e-006 -4.4271e-006 6.3686e-006
(0.0025)

P222 to U1447 (3)     42403.3659  9.9025e-006 (0.0031)
                      -65316.4542  1.1273e-005 2.4490e-005 (0.0049)
                      -43679.0232  -7.1278e-006 -1.0807e-005 1.2488e-005
(0.0035)
```

```
P222 to WVI (1)          605.0903  1.3041e-006 (0.0011)
                      -48030.6949  1.1719e-006 2.7634e-006 (0.0017)
                      -53272.0617  -8.2235e-007 -1.3241e-006 2.0351e-006
(0.0014)

P222 to WVI (2)          605.0963  1.0311e-006 (0.0010)
                      -48030.6828  9.4329e-007 2.1953e-006 (0.0015)
                      -53272.0744  -6.6554e-007 -1.0930e-006 1.5936e-006
(0.0013)

P222 to WVI (3)          605.0845  1.3550e-006 (0.0012)
                      -48030.6951  1.2557e-006 2.4555e-006 (0.0016)
                      -53272.0566  -7.4279e-007 -1.1741e-006 1.9644e-006
(0.0014)

P222 to X572 (1)       -7007.5217  9.3667e-007 (0.0010)
                        -104.4702  1.0557e-006 2.3499e-006 (0.0015)
                       -5106.1477  -4.0921e-007 -7.5279e-007 1.1162e-006
(0.0011)

P222 to X572 (2)       -7007.5259  8.4180e-008 (0.0003)
                        -104.4753  7.5510e-008 1.6110e-007 (0.0004)
                       -5106.1568  -4.8833e-008 -7.3993e-008 1.2322e-007
(0.0004)

P222 to X572 (4)       -7007.5291  3.1290e-007 (0.0006)
                        -104.4889  2.9019e-007 7.4338e-007 (0.0009)
                       -5106.1507  -2.0799e-007 -4.0112e-007 6.0819e-007
(0.0008)

P222 to X572 (5)       -7007.5291  2.6948e-007 (0.0005)
                        -104.4723  2.5017e-007 4.9743e-007 (0.0007)
                       -5106.1539  -1.4271e-007 -2.2421e-007 4.2433e-007
(0.0007)

P222 to zoa1 (1)        5203.5599  4.9127e-007 (0.0007)
                       -2900.0380  4.5461e-007 8.4581e-007 (0.0009)
                         300.8173  -2.2117e-007 -3.0766e-007 5.8842e-007
(0.0008)

P222 to zoa1 (2)        5203.5593  1.4770e-007 (0.0004)
                       -2900.0381  1.3377e-007 2.7804e-007 (0.0005)
                         300.8185  -9.1032e-008 -1.2639e-007 2.2796e-007
(0.0005)

P222 to zoa1 (3)        5203.5567  1.5542e-007 (0.0004)
                       -2900.0370  1.3549e-007 3.3706e-007 (0.0006)
                         300.8182  -1.0830e-007 -1.7257e-007 3.0639e-007
(0.0006)

P222 to zoa1 (4)        5203.5571  2.7955e-007 (0.0005)
                       -2900.0414  1.9028e-007 4.5760e-007 (0.0007)
                         300.8260  -1.1776e-007 -2.6393e-007 4.2794e-007
(0.0007)
```

```
P242 to ppt1 (1)      -61697.6637  5.3532e-007 (0.0007)
                      56826.6030  4.7305e-007 1.0183e-006 (0.0010)
                      20641.5057  -3.1075e-007 -5.0501e-007 7.9006e-007
(0.0009)

P242 to ppt1 (10)     -61697.6648  1.1674e-006 (0.0011)
                      56826.6030  1.0804e-006 2.2070e-006 (0.0015)
                      20641.5106  -6.5910e-007 -9.7396e-007 1.6561e-006
(0.0013)

P242 to ppt1 (11)     -61697.6710  1.8301e-006 (0.0014)
                      56826.6032  1.6028e-006 3.1052e-006 (0.0018)
                      20641.5164  -9.2516e-007 -1.4504e-006 2.5159e-006
(0.0016)

P242 to ppt1 (2)      -61697.6765  5.4558e-007 (0.0007)
                      56826.5758  4.7540e-007 1.0384e-006 (0.0010)
                      20641.5237  -3.1968e-007 -5.1844e-007 8.2156e-007
(0.0009)

P242 to ppt1 (3)      -61697.6614  5.1206e-007 (0.0007)
                      56826.6018  4.5358e-007 9.8724e-007 (0.0010)
                      20641.5030  -3.0391e-007 -4.8995e-007 7.7530e-007
(0.0009)

P242 to ppt1 (5)      -61697.6550  5.3216e-007 (0.0007)
                      56826.6247  4.6656e-007 1.0157e-006 (0.0010)
                      20641.4865  -3.0790e-007 -5.1606e-007 8.4228e-007
(0.0009)

P242 to ppt1 (6)      -61697.6657  1.7970e-006 (0.0013)
                      56826.6071  1.7109e-006 3.5323e-006 (0.0019)
                      20641.5023  -1.0891e-006 -1.6154e-006 2.6501e-006
(0.0016)

P242 to ppt1 (8)      -61697.6686  8.7749e-007 (0.0009)
                      56826.5999  7.5349e-007 1.5971e-006 (0.0013)
                      20641.5074  -4.6098e-007 -7.2574e-007 1.2101e-006
(0.0011)

P242 to U1447 (1)     16318.7017  1.2001e-006 (0.0011)
                      -2950.3509  1.2159e-006 4.0804e-006 (0.0020)
                       8054.1133  -7.1893e-007 -2.3617e-006 2.3523e-006
(0.0015)

P242 to U1447 (2)     16318.6940  1.0880e-006 (0.0010)
                      -2950.3555  1.3390e-006 2.6965e-006 (0.0016)
                       8054.1113  -6.7823e-007 -1.0751e-006 1.3574e-006
(0.0012)

P242 to U1447 (3)     16318.6985  1.5026e-006 (0.0012)
                      -2950.3554  1.7094e-006 3.7043e-006 (0.0019)
                       8054.1140  -1.0842e-006 -1.6437e-006 1.8958e-006
(0.0014)
```

```
P242 to WVI (1)       -25479.5922  4.2220e-007 (0.0006)
                      14335.3708  3.7960e-007 8.9445e-007 (0.0009)
                      -1538.9011  -2.6611e-007 -4.2852e-007 6.5769e-007
(0.0008)

P242 to WVI (2)       -25479.5793  3.3319e-007 (0.0006)
                      14335.3924  3.0486e-007 7.0938e-007 (0.0008)
                      -1538.9161  -2.1545e-007 -3.5402e-007 5.1765e-007
(0.0007)

P242 to X572 (2)      -33092.1988  8.9565e-007 (0.0009)
                      62261.6094  8.0674e-007 1.6721e-006 (0.0013)
                      46626.9969  -5.0971e-007 -7.6101e-007 1.2368e-006
(0.0011)

P242 to zoa1 (1)      -20881.1141  2.9826e-006 (0.0017)
                      59466.0408  2.7416e-006 5.8324e-006 (0.0024)
                      52033.9794  -1.8034e-006 -2.2363e-006 3.7885e-006
(0.0019)

P242 to zoa1 (3)      -20881.1190  1.7140e-006 (0.0013)
                      59466.0397  1.4955e-006 3.7633e-006 (0.0019)
                      52033.9773  -1.1142e-006 -1.8506e-006 3.1511e-006
(0.0018)

P242 to zoa1 (4)      -20881.1136  2.9372e-006 (0.0017)
                      59466.0431  2.5299e-006 6.0640e-006 (0.0025)
                      52033.9765  -1.7299e-006 -3.3454e-006 5.4304e-006
(0.0023)

ppt1 to WVI (1)       36218.0957  3.3808e-007 (0.0006)
                      -42491.1878  3.0553e-007 7.2065e-007 (0.0008)
                      -22180.4383  -2.1301e-007 -3.4354e-007 5.2436e-007
(0.0007)

ppt1 to WVI (2)       36218.0906  2.6734e-007 (0.0005)
                      -42491.1919  2.4759e-007 5.8496e-007 (0.0008)
                      -22180.4310  -1.7330e-007 -2.8759e-007 4.1366e-007
(0.0006)

ppt1 to WVI (4)       36218.0798  5.6622e-007 (0.0008)
                      -42491.2199  5.9312e-007 1.2107e-006 (0.0011)
                      -22180.4161  -3.0586e-007 -4.7279e-007 7.7379e-007
(0.0009)

ppt1 to X572 (1)      28605.4649  1.0756e-006 (0.0010)
                       5435.0161  1.2124e-006 2.6956e-006 (0.0016)
                      25985.4882  -4.7063e-007 -8.6327e-007 1.2776e-006
(0.0011)

ppt1 to X572 (3)      28605.4888  6.0080e-007 (0.0008)
                       5435.0355  6.2549e-007 1.3733e-006 (0.0012)
                      25985.4662  -2.5545e-007 -7.2091e-007 1.3596e-006
(0.0012)
```

```
ppt1 to X572 (4)      28605.4813  3.1094e-007 (0.0006)
                       5435.0294  2.8870e-007 5.7299e-007 (0.0008)
                      25985.4704  -1.6422e-007 -2.5783e-007 4.8706e-007
(0.0007)

ppt1 to X572 (6)      28605.4918  1.0251e-006 (0.0010)
                       5435.0226  9.6013e-007 1.7869e-006 (0.0013)
                      25985.4723  -7.4519e-007 -6.6031e-007 1.4770e-006
(0.0012)

ppt1 to zoa1 (1)      40816.5584  2.1141e-006 (0.0015)
                       2639.4485  2.4511e-006 4.7139e-006 (0.0022)
                      31392.4675  -9.4109e-007 -1.6049e-006 2.3299e-006
(0.0015)

ppt1 to zoa1 (2)      40816.5510  9.6739e-007 (0.0010)
                       2639.4458  8.8245e-007 1.6363e-006 (0.0013)
                      31392.4565  -3.8219e-007 -5.9802e-007 1.2523e-006
(0.0011)

ppt1 to zoa1 (3)      40816.5405  3.0083e-007 (0.0005)
                       2639.4313  2.6881e-007 6.7691e-007 (0.0008)
                      31392.4670  -2.0060e-007 -3.2832e-007 5.5532e-007
(0.0007)

ppt1 to zoa1 (5)      40816.5767  1.5739e-006 (0.0013)
                       2639.4681  1.7990e-006 4.4633e-006 (0.0021)
                      31392.4391  -1.1960e-006 -7.0395e-007 2.5187e-006
(0.0016)

X572 to zoa1 (1)      12211.0804  8.1008e-008 (0.0003)
                      -2795.5726  9.0803e-008 2.0181e-007 (0.0004)
                       5406.9681  -3.3824e-008 -6.3581e-008 1.0428e-007
(0.0003)

X572 to zoa1 (2)      12211.0802  5.3154e-008 (0.0002)
                      -2795.5698  4.2978e-008 1.2392e-007 (0.0004)
                       5406.9810  -2.1350e-008 -2.6559e-008 5.7228e-008
(0.0002)

X572 to zoa1 (3)      12211.0849  2.7274e-008 (0.0002)
                      -2795.5531  2.5419e-008 6.4807e-008 (0.0003)
                       5406.9727  -1.8194e-008 -3.5854e-008 6.1730e-008
(0.0002)

X572 to zoa1 (4)      12211.0670  5.2991e-008 (0.0002)
                      -2795.5684  4.9187e-008 8.8312e-008 (0.0003)
                       5406.9823  -2.9002e-008 -3.8712e-008 6.7595e-008
(0.0003)
```

****

OUTPUT VECTOR RESIDUALS (East, North, Height - Local Level)

****

SESSION NAME	-- RE --	-- RN --	-- RH --		- PPM -	DIST -	STD -
	(m)	(m)	(m)			(km)	(m)
B1458 to GAP (1)	0.0166	-0.0171	0.0114	$	0.732	36.1	0.0012
B1458 to GAP (2)	0.0005	0.0024	0.0200	$	0.558	36.1	0.0007
B1458 to P222 (2)	0.0013	-0.0095	0.0284	$	0.511	58.7	0.0038
B1458 to P222 (3)	-0.0038	0.0008	-0.0035		0.090	58.7	0.0022
B1458 to P242 (1)	-0.0031	-0.0023	0.0294	$	0.928	32.0	0.0039
B1458 to P242 (2)	0.0034	-0.0050	0.0254	$	0.814	32.0	0.0026
B1458 to P242 (3)	0.0015	0.0052	-0.0273	$	0.871	32.0	0.0021
B1458 to P242 (4)	-0.0016	-0.0003	-0.0117	$	0.369	32.0	0.0015
B1458 to ppt1 (4)	-0.0059	-0.0030	0.0252	$	0.477	54.6	0.0028
B1458 to WVI (1)	-0.0014	0.0087	-0.0495	$	3.564	14.1	0.0022
B1458 to WVI (2)	-0.0010	-0.0011	-0.0054	$	0.400	14.1	0.0003
Bell to FELIPE (1)	0.0027	0.0013	0.0070	$	0.659	11.6	0.0007
Bell to P242 (1)	0.0052	0.0029	0.0231	$	1.445	16.5	0.0031
FELIPE to P222 (1)	0.0119	0.0029	0.0266	$	0.331	88.3	0.0039
FELIPE to P242 (1)	0.0038	0.0037	0.0153	$	2.791	5.8	0.0014
FELIPE to U1447 (1)	-0.0006	0.0018	0.0063	$	0.488	13.4	0.0006
G1080 to B1458 (1)	0.0036	-0.0177	-0.0351	$	2.288	17.2	0.0016
G1080 to Bell (1)	0.0027	0.0021	0.0118	$	0.468	26.2	0.0009
G1080 to FELIPE (1)	0.0015	0.0016	0.0055	$	0.271	21.9	0.0005
G1080 to M874 (1)	-0.0023	0.0020	0.0185	$	0.386	48.6	0.0014
G1080 to P222 (2)	-0.0014	-0.0079	-0.0277	$	0.429	67.1	0.0028
G1080 to P222 (3)	0.0040	0.0009	-0.0122	$	0.192	67.1	0.0017
G1080 to P222 (5)	0.0150	0.0013	0.0446	$	0.701	67.1	0.0026
G1080 to P242 (2)	-0.0022	-0.0058	-0.0066	$	0.502	18.0	0.0017

G1080 to P242 (3)	-0.0026	-0.0011	0.0055		0.342	18.0
0.0026						
G1080 to P242 (6)	0.0075	0.0077	0.0162	$	1.080	18.0
0.0026						
G1080 to P242 (8)	0.0035	0.0047	-0.0010		0.327	18.0
0.0021						
G1080 to P242 (9)	0.0058	-0.0059	-0.0078	$	0.635	18.0
0.0017						
G1080 to ppt1 (3)	-0.0046	-0.0072	0.0267	$	0.394	71.1
0.0032						
G1080 to ppt1 (4)	0.0005	0.0022	-0.0064	$	0.095	71.1
0.0010						
G1080 to ppt1 (5)	-0.0052	0.0055	0.0274	$	0.399	71.1
0.0024						
G1080 to ppt1 (8)	0.0091	0.0041	-0.0255	$	0.385	71.1
0.0038						
G1080 to ppt1 (9)	0.0052	-0.0016	-0.0325	$	0.462	71.1
0.0022						
G1080 to U1447 (1)	0.0006	0.0023	0.0021	$	0.114	28.0
0.0009						
G1080 to X572 (3)	-0.0070	0.0076	0.0402	$	0.624	66.5
0.0010						
G1080 to X572 (4)	0.0115	0.0014	0.0029	$	0.180	66.5
0.0016						
G1080 to X572 (5)	-0.0074	-0.0032	-0.0305	$	0.475	66.5
0.0011						
G1080 to zoa1 (1)	-0.0014	-0.0021	-0.0052	$	0.090	63.9
0.0015						
G1080 to zoa1 (2)	-0.0001	-0.0046	0.0054	$	0.111	63.9
0.0014						
G1080 to zoa1 (5)	0.0009	0.0002	-0.0276	$	0.432	63.9
0.0009						
GAP to M874 (1)	0.0008	0.0058	-0.0204	$	0.776	27.4
0.0010						
GAP to MOON2 (1)	0.0036	-0.0066	0.0361	$	1.057	34.9
0.0009						
GAP to P222 (2)	-0.0163	-0.0006	0.0079	$	0.578	31.4
0.0031						
GAP to P222 (3)	0.0071	0.0044	-0.0156	$	0.565	31.4
0.0021						
GAP to P222 (5)	0.0057	-0.0050	-0.0156	$	0.553	31.4
0.0031						
GAP to P222 (6)	-0.0042	-0.0013	-0.0232	$	0.752	31.4
0.0017						
GAP to P242 (3)	0.0086	0.0024	0.0247	$	0.388	67.5
0.0035						
GAP to P242 (4)	-0.0057	-0.0026	-0.0413	$	0.618	67.5
0.0036						
GAP to ppt1 (1)	-0.0108	0.0020	-0.0142	$	0.714	25.1
0.0016						
GAP to ppt1 (2)	-0.0039	0.0065	-0.0409	$	1.653	25.1
0.0028						
GAP to ppt1 (4)	0.0031	0.0098	-0.0337	$	1.399	25.1
0.0022						

GAP to ppt1 (6)	-0.0062	-0.0086	-0.0088 $	0.548	25.1	0.0019
GAP to WVI (1)	0.0071	0.0016	0.0015 $	0.160	46.2	0.0009
GAP to WVI (2)	-0.0039	-0.0114	-0.0378 $	0.859	46.2	0.0019
GAP to X572 (1)	-0.0025	0.0058	0.0317 $	1.296	25.0	0.0009
GAP to X572 (2)	0.0046	-0.0092	0.0469 $	1.922	25.0	0.0009
M874 to MOON2 (1)	-0.0020	0.0001	0.0010	0.047	47.4	0.0011
M874 to P222 (1)	0.0037	-0.0109	-0.0169 $	1.058	19.3	0.0028
M874 to P222 (2)	-0.0040	0.0043	-0.0321 $	1.688	19.3	0.0015
M874 to P242 (2)	0.0038	-0.0055	-0.0057 $	0.132	66.5	0.0024
M874 to ppt1 (2)	0.0072	0.0059	-0.0130 $	0.313	51.0	0.0029
M874 to X572 (1)	-0.0022	-0.0010	0.0487 $	2.207	22.1	0.0010
M874 to zoa1 (1)	0.0018	-0.0050	-0.0264 $	1.762	15.3	0.0006
MHCB to B1458 (3)	-0.0005	-0.0006	-0.0421 $	1.247	33.7	0.0021
MHCB to B1458 (4)	0.0024	0.0012	-0.0115 $	0.351	33.7	0.0016
MHCB to G1080 (1)	-0.0014	0.0091	0.0392 $	1.335	30.2	0.0034
MHCB to G1080 (3)	-0.0048	-0.0012	-0.0275 $	0.925	30.2	0.0017
MHCB to GAP (3)	-0.0090	-0.0042	-0.0018 $	0.232	43.4	0.0026
MHCB to M874 (1)	-0.0065	0.0094	0.0276 $	1.163	25.7	0.0034
MHCB to M874 (2)	-0.0028	0.0130	-0.0335 $	1.403	25.7	0.0031
MHCB to M874 (3)	0.0023	-0.0053	-0.0411 $	1.617	25.7	0.0013
MHCB to MHCB-B (1)	-0.0007	0.0014	0.0224 $	19.912	1.1	0.0006
MHCB to MHCB-B (2)	-0.0004	0.0012	0.0190 $	16.895	1.1	0.0008
MHCB to MHCB-B (3)	0.0019	-0.0093	0.0096 $	11.968	1.1	0.0015
MHCB to MOON2 (1)	-0.0040	-0.0060	-0.0252 $	0.365	71.7	0.0031
MHCB to P222 (10)	0.0019	0.0130	-0.0104 $	0.375	44.8	0.0035
MHCB to P222 (3)	0.0015	-0.0015	0.0068 $	0.159	44.8	0.0009
MHCB to P222 (4)	0.0094	0.0129	-0.0472 $	1.113	44.8	0.0037

MHCB to P222 (6)	0.0003	-0.0038	-0.0421 $	0.945	44.8	0.0019
MHCB to P222 (9)	-0.0023	-0.0016	-0.0370 $	0.829	44.8	0.0019
MHCB to P242 (10)	-0.0019	-0.0036	-0.0011	0.092	45.9	0.0037
MHCB to P242 (2)	0.0008	-0.0039	-0.0061	0.159	45.9	0.0032
MHCB to P242 (4)	-0.0037	-0.0031	-0.0474 $	1.038	45.9	0.0036
MHCB to P242 (6)	-0.0040	-0.0006	-0.0360 $	0.790	45.9	0.0039
MHCB to P242 (8)	-0.0023	0.0021	-0.0192 $	0.425	45.9	0.0025
MHCB to ppt1 (1)	-0.0019	-0.0006	-0.0018	0.039	68.5	0.0013
MHCB to ppt1 (10)	-0.0019	-0.0010	-0.0485 $	0.709	68.5	0.0037
MHCB to ppt1 (11)	-0.0008	-0.0026	-0.0071 $	0.110	68.5	0.0013
MHCB to ppt1 (2)	-0.0014	0.0003	0.0030	0.049	68.5	0.0013
MHCB to ppt1 (3)	-0.0013	-0.0005	0.0265 $	0.387	68.5	0.0013
MHCB to ppt1 (4)	0.0020	-0.0017	-0.0103 $	0.155	68.5	0.0013
MHCB to ppt1 (6)	0.0003	-0.0010	-0.0252 $	0.369	68.5	0.0026
MHCB to U1447 (1)	-0.0046	-0.0032	-0.0393 $	0.872	45.5	0.0020
MHCB to WVI (2)	-0.0011	0.0029	-0.0052 $	0.129	46.9	0.0016
MHCB to WVI (3)	0.0011	0.0001	0.0014	0.038	46.9	0.0018
MHCB to X572 (3)	-0.0009	-0.0069	-0.0082 $	0.226	47.5	0.0021
MHCB-B to P222 (1)	-0.0011	0.0029	0.0202 $	0.466	43.9	0.0016
MHCB-B to P242 (2)	-0.0035	0.0033	0.0177 $	0.398	46.1	0.0029
MHCB-B to ppt1 (1)	-0.0009	0.0081	0.0250 $	0.390	67.4	0.0012
MHCB-B to ppt1 (3)	0.0016	0.0095	-0.0000 $	0.143	67.4	0.0029
MHCB-B to U1447 (1)	0.0013	-0.0050	-0.0012	0.115	46.1	0.0018
MHCB-B to WVI (1)	-0.0003	0.0027	0.0466 $	1.006	46.4	0.0009
MOON2 to P222 (1)	0.0013	0.0028	-0.0485 $	1.441	33.7	0.0025
MOON2 to X572 (1)	-0.0001	-0.0022	0.0156 $	0.596	26.4	0.0006
P222 to P242 (1)	-0.0008	-0.0009	-0.0038	0.047	85.1	0.0015

P222 to P242 (10)	-0.0025	0.0048	-0.0135 $	0.171	85.1	0.0027
P222 to P242 (2)	0.0005	-0.0061	0.0314 $	0.376	85.1	0.0015
P222 to P242 (3)	0.0028	-0.0009	0.0093 $	0.114	85.1	0.0015
P222 to P242 (4)	-0.0037	0.0043	-0.0362 $	0.431	85.1	0.0015
P222 to P242 (5)	-0.0021	0.0032	-0.0350 $	0.413	85.1	0.0015
P222 to P242 (7)	0.0004	0.0036	0.0210 $	0.250	85.1	0.0027
P222 to P242 (8)	0.0006	0.0042	0.0096 $	0.123	85.1	0.0018
P222 to P242 (9)	-0.0014	-0.0005	0.0124 $	0.146	85.1	0.0037
P222 to ppt1 (1)	0.0008	0.0006	-0.0027	0.060	47.6	0.0010
P222 to ppt1 (10)	0.0002	0.0002	-0.0392 $	0.823	47.6	0.0025
P222 to ppt1 (2)	-0.0012	-0.0041	0.0015 $	0.095	47.6	0.0010
P222 to ppt1 (3)	0.0013	0.0004	0.0149 $	0.314	47.6	0.0010
P222 to ppt1 (8)	-0.0016	0.0019	0.0139 $	0.297	47.6	0.0012
P222 to U1447 (1)	-0.0023	-0.0025	0.0009	0.039	89.3	0.0032
P222 to U1447 (2)	-0.0013	0.0039	-0.0404 $	0.455	89.3	0.0044
P222 to U1447 (3)	-0.0083	-0.0048	-0.0251 $	0.301	89.3	0.0068
P222 to WVI (1)	-0.0012	0.0017	0.0122 $	0.173	71.7	0.0025
P222 to WVI (2)	0.0001	0.0038	0.0307 $	0.431	71.7	0.0022
P222 to WVI (3)	0.0037	-0.0003	0.0066 $	0.105	71.7	0.0024
P222 to X572 (1)	0.0010	-0.0105	-0.0103 $	1.700	8.7	0.0021
P222 to X572 (2)	0.0018	0.0007	-0.0100 $	1.173	8.7	0.0006
P222 to X572 (4)	-0.0027	0.0039	-0.0241 $	2.837	8.7	0.0013
P222 to X572 (5)	0.0061	-0.0021	-0.0111 $	1.479	8.7	0.0011
P222 to zoa1 (1)	-0.0031	0.0012	0.0005	0.557	6.0	0.0014
P222 to zoa1 (2)	-0.0027	0.0004	-0.0006 $	0.464	6.0	0.0008
P222 to zoa1 (3)	0.0001	0.0010	-0.0008	0.219	6.0	0.0009
P222 to zoa1 (4)	-0.0026	-0.0031	-0.0083 $	1.553	6.0	0.0011

P242 to ppt1 (1)	0.0016	-0.0008	0.0061 $	0.074	86.4	0.0015
P242 to ppt1 (10)	0.0025	-0.0044	0.0027	0.066	86.4	0.0022
P242 to ppt1 (11)	0.0079	-0.0072	-0.0033 $	0.129	86.4	0.0027
P242 to ppt1 (2)	-0.0018	0.0028	-0.0285 $	0.333	86.4	0.0016
P242 to ppt1 (3)	-0.0010	0.0012	0.0079 $	0.094	86.4	0.0015
P242 to ppt1 (5)	0.0057	0.0006	0.0361 $	0.423	86.4	0.0015
P242 to ppt1 (6)	0.0054	0.0004	0.0101 $	0.133	86.4	0.0028
P242 to ppt1 (8)	0.0042	0.0009	0.0010	0.051	86.4	0.0019
P242 to U1447 (1)	-0.0036	-0.0050	-0.0121 $	0.739	18.4	0.0028
P242 to U1447 (2)	0.0006	0.0014	-0.0173 $	0.941	18.4	0.0023
P242 to U1447 (3)	-0.0032	-0.0023	-0.0170 $	0.944	18.4	0.0027
P242 to WVI (1)	-0.0006	0.0075	-0.0225 $	0.811	29.3	0.0014
P242 to WVI (2)	-0.0003	0.0043	0.0066 $	0.269	29.3	0.0012
P242 to X572 (2)	0.0042	-0.0009	-0.0237 $	0.285	84.5	0.0020
P242 to zoa1 (1)	-0.0030	-0.0036	-0.0230 $	0.287	81.7	0.0036
P242 to zoa1 (3)	0.0007	0.0002	-0.0245 $	0.300	81.7	0.0029
P242 to zoa1 (4)	-0.0021	-0.0027	-0.0194 $	0.241	81.7	0.0038
ppt1 to WVI (1)	0.0006	0.0031	0.0306 $	0.512	60.1	0.0013
ppt1 to WVI (2)	0.0028	0.0010	0.0213 $	0.357	60.1	0.0011
ppt1 to WVI (4)	-0.0030	0.0068	-0.0112 $	0.224	60.1	0.0016
ppt1 to X572 (1)	0.0076	-0.0025	-0.0215 $	0.588	39.0	0.0022
ppt1 to X572 (3)	-0.0023	-0.0027	0.0150 $	0.395	39.0	0.0018
ppt1 to X572 (4)	0.0008	-0.0005	0.0051 $	0.134	39.0	0.0012
ppt1 to X572 (6)	-0.0117	-0.0019	0.0039 $	0.319	39.0	0.0021
ppt1 to zoa1 (1)	-0.0065	-0.0062	-0.0143 $	0.327	51.6	0.0030
ppt1 to zoa1 (2)	-0.0016	0.0064	-0.0126 $	0.276	51.6	0.0020
ppt1 to zoa1 (3)	-0.0004	0.0089	-0.0332 $	0.666	51.6	0.0012

ppt1 to zoa1 (5)	-0.0115	0.0004	0.0238	$	0.513	51.6
0.0029						
X572 to zoa1 (1)	-0.0056	0.0120	0.0051	$	1.041	13.6
0.0006						
X572 to zoa1 (2)	-0.0039	0.0004	-0.0010	$	0.298	13.6
0.0005						
X572 to zoa1 (3)	0.0010	-0.0031	0.0174	$	1.294	13.6
0.0004						
X572 to zoa1 (4)	0.0080	0.0030	-0.0063	$	0.779	13.6
0.0005						
RMS	0.0046	0.0051	0.0233			

$ - This session is flagged as a 3-sigma outlier

****
CHECK POINT RESIDUALS (East, North, Height - Local Level)
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
G1080	-0.0329	0.0582	0.0363
B1458	-0.2281	0.3032	0.0607
Bell	-0.0024	-0.0379	
FELIPE			-0.0149
GAP	-0.1177	0.1383	
M874	-0.0638	0.1082	
MHCB-B	0.0060	0.0002	0.0321
MOON2			0.0243
P222	0.0155	-0.0398	
P242	0.0326	-0.0536	
ppt1	-0.1394	0.2231	
U1447			0.0269
WVI	-0.0082	0.0476	
X572	0.0357	-0.0416	
zoa1	0.0257	-0.0255	
RMS	0.0884	0.1247	0.0355

****
CONTROL POINT RESIDUALS (ADJUSTMENT MADE)
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
MHCB	-0.0000	-0.0000	0.0000
RMS	0.0000	0.0000	0.0000

```
*****************************************************************
    OUTPUT STATION COORDINATES (LAT/LONG/HT)
*****************************************************************

STA_ID      -- LATITUDE --  -- LONGITUDE -- - ELLHGT -
G1080       37 04 19.05917 -121 36 08.64375    48.8844
B1458       37 03 48.12221 -121 47 44.55304   802.5842
Bell        37 02 18.85796 -121 18 40.02833    93.2014
FELIPE      36 57 40.54042 -121 23 55.48674   102.9502
GAP         37 15 28.93218 -122 07 15.79999   771.1821
M874        37 26 10.03374 -121 54 24.89341   -27.5991
MHCB        37 20 29.49949 -121 38 33.22523  1262.3600
MHCB-B      37 20 23.29601 -121 39 17.38291  1034.4103
MOON2       37 26 20.30791 -122 26 34.65082   -10.6616
P222        37 32 21.24283 -122 04 59.69094    54.0633
P242        36 57 14.13479 -121 27 47.40087    15.3713
ppt1        37 11 13.48977 -122 23 23.77125     8.4078
U1447       37 02 39.48415 -121 17 21.80371    88.4231
WVI         36 56 11.71871 -121 47 28.03408    13.4535
X572        37 28 54.53474 -122 08 59.09641   -29.7098
zoa1        37 32 34.97293 -122 00 57.34566    -3.0862


*****************************************************************
    OUTPUT VARIANCE/COVARIANCE
*****************************************************************
                                                 2
STA_ID      SE/SN/SUP  --------- CX matrix (m )-----------
            (90.00 %)  (not scaled by confidence level)
               (m)          (ECEF, XYZ cartesian)
G1080          0.0004  4.3984e-006
               0.0005  7.0932e-006 1.1541e-005
               0.0108  -6.3458e-006 -1.0297e-005 9.2641e-006

B1458          0.0004  4.3981e-006
               0.0004  7.0918e-006 1.1539e-005
               0.0108  -6.3440e-006 -1.0300e-005 9.2672e-006

Bell           0.0006  4.4523e-006
               0.0006  7.1357e-006 1.1689e-005
               0.0108  -6.3726e-006 -1.0381e-005 9.3638e-006

FELIPE         0.0004  4.4209e-006
               0.0005  7.1125e-006 1.1596e-005
               0.0108  -6.3588e-006 -1.0321e-005 9.2965e-006

GAP            0.0004  4.4018e-006
               0.0004  7.0950e-006 1.1540e-005
               0.0108  -6.3468e-006 -1.0299e-005 9.2653e-006

M874           0.0004  4.4108e-006
               0.0005  7.1054e-006 1.1559e-005
               0.0108  -6.3534e-006 -1.0306e-005 9.2750e-006
```

```
MHCB            0.0002  4.3574e-006
                0.0002  7.0548e-006 1.1458e-005
                0.0107  -6.3223e-006 -1.0260e-005 9.2043e-006

MHCB-B          0.0003  4.3971e-006
                0.0004  7.0900e-006 1.1522e-005
                0.0108  -6.3421e-006 -1.0288e-005 9.2469e-006

MOON2           0.0004  4.4318e-006
                0.0006  7.1218e-006 1.1581e-005
                0.0108  -6.3687e-006 -1.0317e-005 9.3059e-006

P222            0.0003  4.3873e-006
                0.0004  7.0818e-006 1.1516e-005
                0.0108  -6.3393e-006 -1.0287e-005 9.2485e-006

P242            0.0004  4.3968e-006
                0.0004  7.0908e-006 1.1535e-005
                0.0108  -6.3447e-006 -1.0296e-005 9.2624e-006

ppt1            0.0003  4.3849e-006
                0.0004  7.0796e-006 1.1511e-005
                0.0107  -6.3379e-006 -1.0285e-005 9.2443e-006

U1447           0.0005  4.4370e-006
                0.0006  7.1286e-006 1.1628e-005
                0.0108  -6.3706e-006 -1.0327e-005 9.3045e-006

WVI             0.0004  4.3960e-006
                0.0004  7.0888e-006 1.1529e-005
                0.0108  -6.3429e-006 -1.0295e-005 9.2600e-006

X572            0.0003  4.3914e-006
                0.0004  7.0861e-006 1.1524e-005
                0.0108  -6.3416e-006 -1.0290e-005 9.2532e-006

zoa1            0.0003  4.3929e-006
                0.0004  7.0874e-006 1.1527e-005
                0.0108  -6.3424e-006 -1.0291e-005 9.2561e-006



************************************************************
    VARIANCE FACTOR = 181.5011

    Note: Values < 1.0 indicate statistics are pessimistic, while
          values > 1.0 indicate optimistic statistics. Entering this
          value as the network adjustment scale factor will bring
          variance factor to one.
************************************************************
```

Appendix C

HORIZONTAL ADJUSTMENT

```
              ************************************************
              * NETWORK - WEIGHTED GPS NETWORK ADJUSTMENT      *
              *                                                *
              * (c) Copyright Waypoint Consulting Inc., (2003) *
              *                                                *
              * VERSION: 7.01                                  *
              *                                                *
              * FILE: C:\Project\060079_SantaClara\Static\Static
Processing\SantaClara.net
              ************************************************

DATE(m/d/y): Mon.   5/01/06   TIME: 17:16:07



*****************************************************************

  DATUM:             'NAD83'
  SCALE_FACTOR:      1.0000
  CONFIDENCE LEVEL: 90.00 %   (Scale factor is 2.1461)


*****************************************************************
    INPUT CONTROL/CHECK POINTS
*****************************************************************

STA_ID     TYPE    -- LATITUDE --  -- LONGITUDE --  ELLHGT -   HZ-SD   V-SD
G1080      CHK-3D  37 04 19.05729 -121 36 08.64242     48.848
B1458      CHK-3D  37 03 48.11238 -121 47 44.54381    802.524
Bell       GCP-HZ  37 02 18.85919 -121 18 40.02823            0.00010
FELIPE     CHK-VT                                     102.965
GAP        GCP-HZ  37 15 28.92770 -122 07 15.79521            0.00010
M874       GCP-HZ  37 26 10.03023 -121 54 24.89082            0.00010
MHCB       GCP-3D  37 20 29.49949 -121 38 33.22523   1262.360 0.00010 0.00500
MHCB-B     CHK-3D  37 20 23.29601 -121 39 17.38316   1034.378
MOON2      CHK-VT                                     -10.686
P222       CHK-HZ  37 32 21.24412 -122 04 59.69157
P242       CHK-HZ  36 57 14.13653 -121 27 47.40219
ppt1       GCP-HZ  37 11 13.48254 -122 23 23.76560            0.00010
U1447      CHK-VT                                      88.396
WVI        CHK-HZ  36 56 11.71717 -121 47 28.03375
X572       CHK-HZ  37 28 54.53609 -122 08 59.09786
zoa1       CHK-HZ  37 32 34.97376 -122 00 57.34671



*****************************************************************
    INPUT VECTORS
*****************************************************************

SESSION NAME           VECTOR(m)    ------ Covariance (m) [unscaled] ------
                        DX/DY/DZ           standard deviations in brackets
```

```
B1458 to GAP (1)      -17599.8222  2.0441e-007 (0.0005)
                      26392.8072  1.9497e-007 5.5985e-007 (0.0007)
                      17200.7795  -2.0917e-008 -2.5174e-007 6.4359e-007
(0.0008)

B1458 to GAP (2)      -17599.8111  1.0349e-007 (0.0003)
                      26392.7945  1.0804e-007 2.6670e-007 (0.0005)
                      17200.7587  -4.8408e-008 -1.1309e-007 1.3557e-007
(0.0004)

B1458 to P222 (2)     -4387.2033  2.8696e-006 (0.0017)
                      41153.9210  2.8354e-006 5.7401e-006 (0.0024)
                      41559.9235  -1.7407e-006 -2.8393e-006 5.8638e-006
(0.0024)

B1458 to P222 (3)     -4387.2157  9.7318e-007 (0.0010)
                      41153.8914  9.2849e-007 2.1830e-006 (0.0015)
                      41559.9347  -4.9223e-007 -1.1973e-006 1.8924e-006
(0.0014)

B1458 to P242 (1)     21697.4642  3.0873e-006 (0.0018)
                      -21212.1762  2.5728e-006 7.5301e-006 (0.0027)
                      -10173.2269  -2.0139e-006 -3.4218e-006 4.4489e-006
(0.0021)

B1458 to P242 (2)     21697.4578  1.3593e-006 (0.0012)
                      -21212.1742  1.3404e-006 2.7089e-006 (0.0016)
                      -10173.2223  -8.2733e-007 -1.3435e-006 2.7801e-006
(0.0017)

B1458 to P242 (3)     21697.4341  7.7072e-007 (0.0009)
                      -21212.2162  7.9543e-007 1.9597e-006 (0.0014)
                      -10173.1987  -4.4272e-007 -9.8595e-007 1.5231e-006
(0.0012)

B1458 to P242 (4)     21697.4450  4.6079e-007 (0.0007)
                      -21212.2044  4.3895e-007 1.0298e-006 (0.0010)
                      -10173.2037  -2.3437e-007 -5.6665e-007 8.9589e-007
(0.0009)

B1458 to ppt1 (4)     -40000.2001  1.7721e-006 (0.0013)
                      35614.4172  1.4561e-006 3.5316e-006 (0.0019)
                      10468.2849  -3.5343e-007 -1.3385e-006 2.7317e-006
(0.0017)

B1458 to WVI (1)      -3782.1549  9.0251e-007 (0.0010)
                      -6876.8442  5.5193e-007 2.2877e-006 (0.0015)
                      -11712.0969  -3.2007e-007 -3.3199e-008 1.5006e-006
(0.0012)

B1458 to WVI (2)      -3782.1335  1.7739e-008 (0.0001)
                      -6876.8091  1.6612e-008 3.7226e-008 (0.0002)
                      -11712.1156  -9.2775e-009 -2.0648e-008 3.2660e-008
(0.0002)
```

```
Bell to FELIPE (1)     -9351.6800  7.1730e-008 (0.0003)
                        -357.4207  5.2607e-008 2.4630e-007 (0.0005)
                       -6846.3272  -2.7856e-008 -1.4057e-007 1.5894e-007
(0.0004)

Bell to P242 (1)       -14465.9552  1.4538e-006 (0.0012)
                        2276.6090  1.0723e-006 5.0333e-006 (0.0022)
                       -7549.4533  -5.6501e-007 -2.8820e-006 3.2594e-006
(0.0018)

FELIPE to P222 (1)     -31198.9448  3.2897e-006 (0.0018)
                       65000.1331  3.0478e-006 6.7443e-006 (0.0026)
                       51030.0106  -2.1720e-006 -3.2827e-006 4.8938e-006
(0.0022)

FELIPE to P242 (1)     -5114.2774  5.0135e-007 (0.0007)
                        2634.0289  4.5352e-007 8.2108e-007 (0.0009)
                        -703.1273  -3.3221e-007 -3.9528e-007 5.3460e-007
(0.0007)

FELIPE to U1447 (1)    11204.4254  9.8896e-008 (0.0003)
                        -316.3220  7.5497e-008 2.0149e-007 (0.0004)
                        7350.9816  -5.9923e-008 -5.7711e-008 1.2118e-007
(0.0003)

G1080 to B1458 (1)     -15245.8708  4.4564e-007 (0.0007)
                        8033.1399  4.6401e-007 1.2542e-006 (0.0011)
                        -306.7044  -3.2715e-007 -6.2307e-007 8.8052e-007
(0.0009)

G1080 to Bell (1)      20917.5513  1.5081e-007 (0.0004)
                       -15455.6267  1.2422e-007 3.4392e-007 (0.0006)
                       -2930.5223  -8.6451e-008 -2.0087e-007 2.5192e-007
(0.0005)

G1080 to FELIPE (1)    11565.8697  4.6090e-008 (0.0002)
                       -15813.0576  3.9277e-008 1.2897e-007 (0.0004)
                       -9776.8401  -2.3070e-008 -6.1369e-008 8.7894e-008
(0.0003)

G1080 to M874 (1)      -10063.1339  3.8871e-007 (0.0006)
                       35072.2615  4.5461e-007 8.8975e-007 (0.0009)
                       32122.6296  -2.2798e-007 -3.9855e-007 5.9899e-007
(0.0008)

G1080 to P222 (2)      -19633.0836  1.7487e-006 (0.0013)
                       49187.0337  1.7194e-006 3.4620e-006 (0.0019)
                       41253.2165  -1.0465e-006 -1.5252e-006 2.6378e-006
(0.0016)

G1080 to P222 (3)      -19633.0846  6.4598e-007 (0.0008)
                       49187.0424  5.9976e-007 1.2674e-006 (0.0011)
                       41253.2003  -3.8316e-007 -6.0376e-007 9.8518e-007
(0.0010)
```

```
G1080 to P222 (5)     -19633.0702  1.5291e-006 (0.0012)
                      49187.0864  1.3081e-006 3.1542e-006 (0.0018)
                      41253.1654  -9.3619e-007 -1.3945e-006 2.2769e-006
(0.0015)

G1080 to P242 (2)      6451.5908  6.0216e-007 (0.0008)
                      -13179.0456  6.5059e-007 1.3166e-006 (0.0011)
                      -10479.9421  -2.4039e-007 -5.2323e-007 9.8803e-007
(0.0010)

G1080 to P242 (3)      6451.5947  1.4583e-006 (0.0012)
                      -13179.0400  1.6281e-006 3.4631e-006 (0.0019)
                      -10479.9531  -7.5182e-007 -1.2889e-006 1.8113e-006
(0.0013)

G1080 to P242 (6)      6451.5878  1.7297e-006 (0.0013)
                      -13179.0319  1.2157e-006 2.4321e-006 (0.0016)
                      -10479.9666  -1.0118e-006 -1.5815e-006 2.5852e-006
(0.0016)

G1080 to P242 (8)      6451.5850  9.5095e-007 (0.0010)
                      -13179.0442  9.6230e-007 2.2139e-006 (0.0015)
                      -10479.9538  -2.1906e-007 -9.4764e-007 1.4007e-006
(0.0012)

G1080 to P242 (9)      6451.5835  7.3183e-007 (0.0009)
                      -13179.0422  7.1057e-007 1.2790e-006 (0.0011)
                      -10479.9412  -4.2726e-007 -5.7671e-007 9.6532e-007
(0.0010)

G1080 to ppt1 (3)     -55246.0578  2.2983e-006 (0.0015)
                      43647.5739  2.5036e-006 5.0743e-006 (0.0023)
                      10161.5477  -1.1192e-006 -1.6845e-006 2.5827e-006
(0.0016)

G1080 to ppt1 (4)     -55246.0791  2.3459e-007 (0.0005)
                      43647.5494  2.1904e-007 4.8183e-007 (0.0007)
                      10161.5601  -1.3698e-007 -2.2805e-007 3.7998e-007
(0.0006)

G1080 to ppt1 (5)     -55246.0611  1.0539e-006 (0.0010)
                      43647.5675  8.9020e-007 2.4106e-006 (0.0016)
                      10161.5371  -7.1828e-007 -1.2504e-006 2.2745e-006
(0.0015)

G1080 to ppt1 (8)     -55246.0951  3.1064e-006 (0.0018)
                      43647.5401  2.1126e-006 6.3139e-006 (0.0025)
                      10161.5702  5.6899e-007 -2.6002e-006 5.3689e-006
(0.0023)

G1080 to ppt1 (9)     -55246.0929  1.1495e-006 (0.0011)
                      43647.5362  1.1243e-006 2.0370e-006 (0.0014)
                      10161.5789  -6.5816e-007 -9.0977e-007 1.5073e-006
(0.0012)
```

```
G1080 to U1447 (1)     22770.2917  2.0428e-007 (0.0005)
                       -16129.3858  1.5595e-007 4.1620e-007 (0.0006)
                       -2425.8518  -1.2378e-007 -1.1921e-007 2.5032e-007
(0.0005)

G1080 to X572 (3)      -26640.5753  1.9768e-007 (0.0004)
                       49082.5994  1.6925e-007 4.5328e-007 (0.0007)
                       36147.0009  -1.3408e-007 -2.3448e-007 4.2070e-007
(0.0006)

G1080 to X572 (4)      -26640.6047  5.5797e-007 (0.0007)
                       49082.5872  3.8024e-007 1.1345e-006 (0.0011)
                       36147.0284  1.0156e-007 -4.6567e-007 9.6178e-007
(0.0010)

G1080 to X572 (5)      -26640.6012  2.8952e-007 (0.0005)
                       49082.5569  2.8154e-007 5.2855e-007 (0.0007)
                       36147.0523  -1.6972e-007 -2.3588e-007 4.0290e-007
(0.0006)

G1080 to zoa1 (1)      -14429.5186  4.6500e-007 (0.0007)
                       46287.0099  4.6495e-007 9.6800e-007 (0.0010)
                       41554.0168  -1.8582e-007 -4.1763e-007 8.6661e-007
(0.0009)

G1080 to zoa1 (2)      -14429.5144  5.2715e-007 (0.0007)
                       46287.0189  5.1548e-007 9.2827e-007 (0.0010)
                       41554.0123  -2.7664e-007 -3.3676e-007 5.1851e-007
(0.0007)

G1080 to zoa1 (5)      -14429.5307  1.9702e-007 (0.0004)
                       46286.9948  1.9265e-007 3.4861e-007 (0.0006)
                       41554.0285  -1.1257e-007 -1.5531e-007 2.5762e-007
(0.0005)

GAP to M874 (1)        22782.5229  2.2569e-007 (0.0005)
                         646.3001  2.6192e-007 5.7043e-007 (0.0008)
                       15228.6172  -1.5395e-007 -2.7917e-007 2.8460e-007
(0.0005)

GAP to MOON2 (1)       -17275.7250  2.1989e-007 (0.0005)
                       26059.5149  1.8907e-007 3.2462e-007 (0.0006)
                       15490.3904  -1.2366e-007 -1.3994e-007 2.8730e-007
(0.0005)

GAP to P222 (2)        13212.6185  2.6552e-006 (0.0016)
                       14761.1112  2.2266e-006 3.7865e-006 (0.0019)
                       24359.1562  -1.5488e-006 -1.7506e-006 3.3236e-006
(0.0018)

GAP to P222 (3)        13212.5871  1.0323e-006 (0.0010)
                       14761.1053  8.8535e-007 1.8005e-006 (0.0013)
                       24359.1664  -6.2172e-007 -1.0846e-006 1.7647e-006
(0.0013)
```

```
GAP to P222 (5)        13212.5913  2.4554e-006 (0.0016)
                       14761.1094  2.2371e-006 4.1764e-006 (0.0020)
                       24359.1739  -1.1260e-006 -1.5591e-006 3.2355e-006
(0.0018)

GAP to P222 (6)        13212.5953  7.2579e-007 (0.0009)
                       14761.0971  5.9560e-007 1.0647e-006 (0.0010)
                       24359.1756  -2.7958e-007 -5.4952e-007 1.0890e-006
(0.0010)

GAP to P242 (3)        39297.2690  2.7262e-006 (0.0017)
                       -47604.9577  2.3424e-006 4.7574e-006 (0.0022)
                       -27374.0005  -1.6494e-006 -2.8670e-006 4.6612e-006
(0.0022)

GAP to P242 (4)        39297.2551  3.5277e-006 (0.0019)
                       -47605.0073  3.0524e-006 5.2210e-006 (0.0023)
                       -27373.9568  -1.2513e-006 -2.4973e-006 4.0441e-006
(0.0020)

GAP to ppt1 (1)        -22400.3960  7.4052e-007 (0.0009)
                        9221.6035  6.2419e-007 8.6447e-007 (0.0009)
                       -6732.4680  -5.7497e-007 -5.1629e-007 9.9802e-007
(0.0010)

GAP to ppt1 (2)        -22400.4146  1.5826e-006 (0.0013)
                        9221.5869  8.2526e-007 2.2534e-006 (0.0015)
                       -6732.4555  -4.8473e-008 -1.3924e-006 3.8705e-006
(0.0020)

GAP to ppt1 (4)        -22400.4185  1.1507e-006 (0.0011)
                        9221.5939  1.2112e-006 2.1920e-006 (0.0015)
                       -6732.4624  -8.0650e-007 -1.1741e-006 1.4679e-006
(0.0012)

GAP to ppt1 (6)        -22400.3941  1.1636e-006 (0.0011)
                        9221.6150  9.9331e-007 1.6096e-006 (0.0013)
                       -6732.4629  -4.1332e-007 -5.9284e-007 8.8833e-007
(0.0009)

GAP to WVI (1)         13817.6800  1.8488e-007 (0.0004)
                       -33269.5834  1.5961e-007 3.2645e-007 (0.0006)
                       -28912.8946  -1.0060e-007 -1.7574e-007 3.0412e-007
(0.0006)

GAP to WVI (2)         13817.6768  1.6885e-006 (0.0013)
                       -33269.6092  1.1756e-006 1.1950e-006 (0.0011)
                       -28912.8605  -6.3906e-007 -5.5607e-007 5.6682e-007
(0.0008)

GAP to X572 (1)         6205.0949  2.3465e-007 (0.0005)
                       14656.6621  1.9503e-007 3.4540e-007 (0.0006)
                       19252.9742  -1.7644e-007 -2.3849e-007 2.8795e-007
(0.0005)
```

```
GAP to X572 (2)          6205.1001  2.0520e-007 (0.0005)
                        14656.6838  1.9978e-007 3.8036e-007 (0.0006)
                        19252.9770  -1.0723e-007 -1.6397e-007 2.2199e-007
(0.0005)

M874 to MOON2 (1)      -40058.2712  2.9836e-007 (0.0005)
                        25413.1685  2.8110e-007 4.8017e-007 (0.0007)
                          261.7969  -1.9130e-007 -2.2747e-007 3.8382e-007
(0.0006)

M874 to P222 (1)        -9569.9395  2.0068e-006 (0.0014)
                        14114.7940  1.8551e-006 3.0736e-006 (0.0018)
                         9130.5700  -1.1838e-006 -1.3842e-006 2.9362e-006
(0.0017)

M874 to P222 (2)        -9569.9443  6.1306e-007 (0.0008)
                        14114.7719  4.7105e-007 9.5805e-007 (0.0010)
                         9130.5672  -3.9422e-007 -5.2099e-007 6.8417e-007
(0.0008)

M874 to P242 (2)        16514.7289  1.3367e-006 (0.0012)
                       -48251.2931  1.2565e-006 2.5856e-006 (0.0016)
                       -42602.5853  -7.9482e-007 -1.1596e-006 1.9669e-006
(0.0014)

M874 to ppt1 (2)        -45182.9459  2.1464e-006 (0.0015)
                         8575.2955  1.9823e-006 3.2899e-006 (0.0018)
                       -21961.0812  -1.2644e-006 -1.4789e-006 3.1433e-006
(0.0018)

M874 to X572 (1)        -16577.4301  3.0816e-007 (0.0006)
                        14010.3608  2.6803e-007 4.6160e-007 (0.0007)
                         4024.3600  -1.9739e-007 -2.4136e-007 2.3637e-007
(0.0005)

M874 to zoa1 (1)         -4366.3864  1.0587e-007 (0.0003)
                        11214.7476  9.7664e-008 1.6191e-007 (0.0004)
                         9431.3896  -6.2249e-008 -7.2538e-008 1.5439e-007
(0.0004)

MHCB to B1458 (3)       -21189.2425  8.1452e-007 (0.0009)
                        -8419.4234  8.2891e-007 2.0280e-006 (0.0014)
                       -24870.5254  -4.6461e-007 -1.0336e-006 1.6046e-006
(0.0013)

MHCB to B1458 (4)       -21189.2327  4.8797e-007 (0.0007)
                        -8419.4021  4.6523e-007 1.0934e-006 (0.0010)
                       -24870.5454  -2.4768e-007 -6.0202e-007 9.5404e-007
(0.0010)

MHCB to G1080 (1)        -5943.3522  3.3424e-006 (0.0018)
                       -16452.5265  2.6177e-006 4.2008e-006 (0.0020)
                       -24563.8427  -2.4432e-006 -2.1716e-006 3.9705e-006
(0.0020)
```

```
MHCB to G1080 (3)      -5943.3739  5.5623e-007 (0.0007)
                       -16452.5682  5.0965e-007 1.2452e-006 (0.0011)
                       -24563.7942  -3.7479e-007 -6.0244e-007 9.6707e-007
(0.0010)

MHCB to GAP (3)        -38789.0356  1.5010e-006 (0.0012)
                       17973.3833  1.2870e-006 2.6200e-006 (0.0016)
                       -7669.7742  -9.0626e-007 -1.5817e-006 2.5764e-006
(0.0016)

MHCB to M874 (1)       -16006.4957  3.1280e-006 (0.0018)
                       18619.7139  3.3765e-006 5.3843e-006 (0.0023)
                        7558.8065  -9.5798e-008 -6.5417e-007 2.7574e-006
(0.0017)

MHCB to M874 (2)       -16006.5256  1.8802e-006 (0.0014)
                       18619.6727  2.2269e-006 4.5690e-006 (0.0021)
                        7558.8407  -2.7378e-007 -1.5082e-006 3.2295e-006
(0.0018)

MHCB to M874 (3)       -16006.5273  3.7316e-007 (0.0006)
                       18619.6797  3.3247e-007 7.4926e-007 (0.0009)
                        7558.8599  -2.2417e-007 -3.1800e-007 5.2306e-007
(0.0007)

MHCB to MHCB-B (1)      -891.2241  1.0133e-007 (0.0003)
                         625.9490  8.7914e-008 1.6990e-007 (0.0004)
                        -290.3547  -5.4240e-008 -8.0104e-008 1.1320e-007
(0.0003)

MHCB to MHCB-B (2)      -891.2257  1.8018e-007 (0.0004)
                         625.9469  1.7205e-007 2.9707e-007 (0.0005)
                        -290.3525  -8.1010e-008 -1.1305e-007 1.9222e-007
(0.0004)

MHCB to MHCB-B (3)      -891.2282  5.5881e-007 (0.0007)
                         625.9472  5.8827e-007 1.0458e-006 (0.0010)
                        -290.3385  -2.2664e-007 -3.1831e-007 5.2019e-007
(0.0007)

MHCB to MOON2 (1)      -56064.7884  2.2326e-006 (0.0015)
                       44032.8564  2.2319e-006 4.2744e-006 (0.0021)
                        7820.6484  -1.2614e-006 -1.7794e-006 3.1914e-006
(0.0018)

MHCB to P222 (10)      -25576.4528  2.1682e-006 (0.0015)
                       32734.4886  2.2169e-006 5.0673e-006 (0.0023)
                       16689.3778  -8.7067e-007 -2.5688e-006 4.8510e-006
(0.0022)

MHCB to P222 (3)       -25576.4406  1.9935e-007 (0.0004)
                       32734.5075  1.7392e-007 3.8060e-007 (0.0006)
                       16689.3788  -1.1707e-007 -1.8978e-007 3.0624e-007
(0.0006)
```

```
MHCB to P222 (4)      -25576.4745  2.3873e-006 (0.0015)
                      32734.4678  2.4015e-006 5.9068e-006 (0.0024)
                      16689.4003  -9.0117e-007 -2.9100e-006 5.3622e-006
(0.0023)

MHCB to P222 (6)      -25576.4594  7.1458e-007 (0.0008)
                      32734.4751  6.1198e-007 1.5550e-006 (0.0012)
                      16689.4104  -4.5209e-007 -7.5656e-007 1.2344e-006
(0.0011)

MHCB to P222 (9)      -25576.4557  8.5497e-007 (0.0009)
                      32734.4761  7.8543e-007 1.5740e-006 (0.0013)
                      16689.4055  -5.0857e-007 -6.9927e-007 1.3198e-006
(0.0011)

MHCB to P242 (10)       508.2253  3.1758e-006 (0.0018)
                      -29631.5904  2.9094e-006 6.3817e-006 (0.0025)
                      -35043.7589  -1.3941e-006 -2.3306e-006 4.2829e-006
(0.0021)

MHCB to P242 (2)        508.2210  1.9738e-006 (0.0014)
                      -29631.5923  2.0508e-006 4.3380e-006 (0.0021)
                      -35043.7556  -8.7217e-007 -2.2468e-006 4.2351e-006
(0.0021)

MHCB to P242 (4)        508.2073  2.7057e-006 (0.0016)
                      -29631.6232  2.2303e-006 5.5325e-006 (0.0024)
                      -35043.7313  -1.1578e-006 -3.3485e-006 5.0058e-006
(0.0022)

MHCB to P242 (6)        508.2116  3.3723e-006 (0.0018)
                      -29631.6169  3.0216e-006 6.9419e-006 (0.0026)
                      -35043.7402  -1.4560e-006 -2.5192e-006 4.5270e-006
(0.0021)

MHCB to P242 (8)        508.2162  1.3287e-006 (0.0012)
                      -29631.6060  1.2433e-006 2.5995e-006 (0.0016)
                      -35043.7525  -7.8406e-007 -1.1439e-006 2.3728e-006
(0.0015)

MHCB to ppt1 (1)      -61189.4412  3.8125e-007 (0.0006)
                      27195.0050  3.3032e-007 7.2477e-007 (0.0009)
                      -14402.2521  -2.2412e-007 -3.7110e-007 5.9557e-007
(0.0008)

MHCB to ppt1 (10)     -61189.4607  3.3574e-006 (0.0018)
                      27194.9737  3.1207e-006 5.9426e-006 (0.0024)
                      -14402.2235  -1.6093e-006 -2.5146e-006 4.2180e-006
(0.0021)

MHCB to ppt1 (11)     -61189.4437  3.9334e-007 (0.0006)
                      27195.0031  3.4787e-007 7.2560e-007 (0.0009)
                      -14402.2473  -2.2313e-007 -3.5833e-007 5.7023e-007
(0.0008)
```

```
MHCB to ppt1 (2)      -61189.4399  3.6439e-007 (0.0006)
                      27195.0081  3.1788e-007 6.9609e-007 (0.0008)
                      -14402.2558  -2.1251e-007 -3.4504e-007 5.4943e-007
(0.0007)

MHCB to ppt1 (3)      -61189.4298  4.0366e-007 (0.0006)
                      27195.0244  3.5773e-007 7.4727e-007 (0.0009)
                      -14402.2693  -2.3359e-007 -3.7175e-007 5.6694e-007
(0.0008)

MHCB to ppt1 (4)      -61189.4477  3.6886e-007 (0.0006)
                      27195.0019  3.2438e-007 7.0635e-007 (0.0008)
                      -14402.2461  -2.1873e-007 -3.5955e-007 5.7343e-007
(0.0008)

MHCB to ppt1 (6)      -61189.4528  1.2669e-006 (0.0011)
                      27194.9906  1.0932e-006 3.0684e-006 (0.0018)
                      -14402.2376  -8.2418e-007 -1.4047e-006 2.3187e-006
(0.0015)

MHCB to U1447 (1)     16826.9137  7.2554e-007 (0.0009)
                      -32581.9614  7.3062e-007 2.0662e-006 (0.0014)
                      -26989.6341  -5.3896e-007 -9.8412e-007 1.2966e-006
(0.0011)

MHCB to WVI (2)       -24971.3601  5.7555e-007 (0.0008)
                      -15296.2059  5.2663e-007 1.2254e-006 (0.0011)
                      -36582.6703  -3.7219e-007 -6.1161e-007 8.9442e-007
(0.0009)

MHCB to WVI (3)       -24971.3583  7.5389e-007 (0.0009)
                      -15296.1988  6.9877e-007 1.3708e-006 (0.0012)
                      -36582.6720  -4.1086e-007 -6.5963e-007 1.1236e-006
(0.0011)

MHCB to X572 (3)      -32583.9630  9.6674e-007 (0.0010)
                      32630.0297  1.1170e-006 2.4701e-006 (0.0016)
                      11583.2300  -5.6487e-007 -1.0109e-006 1.1475e-006
(0.0011)

MHCB-B to P222 (1)    -24685.2006  6.8931e-007 (0.0008)
                      32108.5780  5.9502e-007 1.1243e-006 (0.0011)
                      16979.7072  -3.6842e-007 -5.2675e-007 7.3931e-007
(0.0009)

MHCB-B to P242 (2)     1399.4658  2.2626e-006 (0.0015)
                      -30257.5171  2.0322e-006 3.3115e-006 (0.0018)
                      -34753.4357  -1.5176e-006 -1.4288e-006 2.6892e-006
(0.0016)

MHCB-B to ppt1 (1)    -60298.2000  4.0954e-007 (0.0006)
                      26569.0841  3.5996e-007 6.8396e-007 (0.0008)
                      -14111.9352  -2.1883e-007 -3.1677e-007 4.3590e-007
(0.0007)
```

```
MHCB-B to ppt1 (3)    -60298.2131  2.1941e-006 (0.0015)
                      26569.0679  2.3404e-006 4.1595e-006 (0.0020)
                      -14111.9212  -8.7621e-007 -1.2316e-006 1.9980e-006
(0.0014)

MHCB-B to U1447 (1)   17718.1586  9.4808e-007 (0.0010)
                      -33207.8665  1.0048e-006 1.6655e-006 (0.0013)
                      -26699.3157  -5.6559e-007 -6.6621e-007 5.8092e-007
(0.0008)

MHCB-B to WVI (1)     -24080.1055  3.0183e-007 (0.0005)
                      -15922.1052  1.7484e-007 2.5562e-007 (0.0005)
                      -36292.3613  -6.0762e-008 -1.4866e-007 2.4507e-007
(0.0005)

MOON2 to P222 (1)     30488.3180  2.0236e-006 (0.0014)
                      -11298.4043  1.7568e-006 2.5991e-006 (0.0016)
                       8868.7807  -7.1835e-007 -8.8226e-007 1.5843e-006
(0.0013)

MOON2 to X572 (1)     23480.8280  8.0864e-008 (0.0003)
                      -11402.8287  7.0707e-008 1.1256e-007 (0.0003)
                       3762.5834  -5.9687e-008 -5.5398e-008 1.0980e-007
(0.0003)

P222 to P242 (1)      26084.6650  5.0270e-007 (0.0007)
                      -62366.0945  4.4528e-007 9.6841e-007 (0.0010)
                      -51733.1411  -2.9281e-007 -4.7568e-007 7.5218e-007
(0.0009)

P222 to P242 (10)     26084.6605  1.8709e-006 (0.0014)
                      -62366.1049  1.6145e-006 3.0676e-006 (0.0018)
                      -51733.1398  -8.8005e-007 -1.4016e-006 2.5888e-006
(0.0016)

P222 to P242 (2)      26084.6803  5.1555e-007 (0.0007)
                      -62366.0673  4.4560e-007 9.8300e-007 (0.0010)
                      -51733.1583  -3.0812e-007 -4.9934e-007 8.0723e-007
(0.0009)

P222 to P242 (3)      26084.6675  4.9129e-007 (0.0007)
                      -62366.0838  4.3031e-007 9.4099e-007 (0.0010)
                      -51733.1491  -2.8963e-007 -4.6707e-007 7.5053e-007
(0.0009)

P222 to P242 (4)      26084.6522  4.9503e-007 (0.0007)
                      -62366.1207  4.3414e-007 9.5573e-007 (0.0010)
                      -51733.1257  -2.9123e-007 -4.7381e-007 7.5379e-007
(0.0009)

P222 to P242 (5)      26084.6517  5.1953e-007 (0.0007)
                      -62366.1184  4.6306e-007 9.9714e-007 (0.0010)
                      -51733.1256  -3.0965e-007 -5.0909e-007 7.9978e-007
(0.0009)
```

```
P222 to P242 (7)      26084.6729  1.6997e-006 (0.0013)
                      -62366.0794  1.5879e-006 3.3187e-006 (0.0018)
                      -51733.1598  -1.0060e-006 -1.4811e-006 2.5326e-006
(0.0016)

P222 to P242 (8)      26084.6678  7.5508e-007 (0.0009)
                      -62366.0874  6.4810e-007 1.4137e-006 (0.0012)
                      -51733.1533  -4.3000e-007 -6.6347e-007 1.1282e-006
(0.0011)

P222 to P242 (9)      26084.6721  2.7737e-006 (0.0017)
                      -62366.0841  2.4188e-006 6.1737e-006 (0.0025)
                      -51733.1513  -1.7567e-006 -3.3494e-006 5.0707e-006
(0.0023)

P222 to ppt1 (1)      -35613.0016  2.1892e-007 (0.0005)
                      -5539.4961  1.9131e-007 4.1391e-007 (0.0006)
                      -31091.6343  -1.2804e-007 -2.0449e-007 3.3258e-007
(0.0006)

P222 to ppt1 (10)     -35613.0164  1.2206e-006 (0.0011)
                      -5539.5208  1.0626e-006 2.6954e-006 (0.0016)
                      -31091.6118  -7.7439e-007 -1.4642e-006 2.2156e-006
(0.0015)

P222 to ppt1 (2)      -35612.9966  2.2977e-007 (0.0005)
                      -5539.4920  1.9783e-007 4.3182e-007 (0.0007)
                      -31091.6331  -1.3679e-007 -2.1944e-007 3.5555e-007
(0.0006)

P222 to ppt1 (3)      -35612.9945  2.1873e-007 (0.0005)
                      -5539.4839  1.9090e-007 4.1551e-007 (0.0006)
                      -31091.6448  -1.2809e-007 -2.0706e-007 3.3257e-007
(0.0006)

P222 to ppt1 (8)      -35612.9929  3.3399e-007 (0.0006)
                      -5539.4869  2.8774e-007 6.1663e-007 (0.0008)
                      -31091.6454  -1.8768e-007 -2.8695e-007 4.9141e-007
(0.0007)

P222 to U1447 (1)     42403.3709  1.8714e-006 (0.0014)
                      -65316.4347  1.8845e-006 5.3295e-006 (0.0023)
                      -43679.0408  -1.3902e-006 -2.5384e-006 3.3444e-006
(0.0018)

P222 to U1447 (2)     42403.3507  3.3895e-006 (0.0018)
                      -65316.4654  3.8117e-006 9.7463e-006 (0.0031)
                      -43679.0208  -2.3028e-006 -4.4271e-006 6.3686e-006
(0.0025)

P222 to U1447 (3)     42403.3659  9.9025e-006 (0.0031)
                      -65316.4542  1.1273e-005 2.4490e-005 (0.0049)
                      -43679.0232  -7.1278e-006 -1.0807e-005 1.2488e-005
(0.0035)
```

```
P222 to WVI (1)          605.0903  1.3041e-006 (0.0011)
                      -48030.6949  1.1719e-006 2.7634e-006 (0.0017)
                      -53272.0617  -8.2235e-007 -1.3241e-006 2.0351e-006
(0.0014)

P222 to WVI (2)          605.0963  1.0311e-006 (0.0010)
                      -48030.6828  9.4329e-007 2.1953e-006 (0.0015)
                      -53272.0744  -6.6554e-007 -1.0930e-006 1.5936e-006
(0.0013)

P222 to WVI (3)          605.0845  1.3550e-006 (0.0012)
                      -48030.6951  1.2557e-006 2.4555e-006 (0.0016)
                      -53272.0566  -7.4279e-007 -1.1741e-006 1.9644e-006
(0.0014)

P222 to X572 (1)       -7007.5217  9.3667e-007 (0.0010)
                        -104.4702  1.0557e-006 2.3499e-006 (0.0015)
                       -5106.1477  -4.0921e-007 -7.5279e-007 1.1162e-006
(0.0011)

P222 to X572 (2)       -7007.5259  8.4180e-008 (0.0003)
                        -104.4753  7.5510e-008 1.6110e-007 (0.0004)
                       -5106.1568  -4.8833e-008 -7.3993e-008 1.2322e-007
(0.0004)

P222 to X572 (4)       -7007.5291  3.1290e-007 (0.0006)
                        -104.4889  2.9019e-007 7.4338e-007 (0.0009)
                       -5106.1507  -2.0799e-007 -4.0112e-007 6.0819e-007
(0.0008)

P222 to X572 (5)       -7007.5291  2.6948e-007 (0.0005)
                        -104.4723  2.5017e-007 4.9743e-007 (0.0007)
                       -5106.1539  -1.4271e-007 -2.2421e-007 4.2433e-007
(0.0007)

P222 to zoa1 (1)        5203.5599  4.9127e-007 (0.0007)
                       -2900.0380  4.5461e-007 8.4581e-007 (0.0009)
                         300.8173  -2.2117e-007 -3.0766e-007 5.8842e-007
(0.0008)

P222 to zoa1 (2)        5203.5593  1.4770e-007 (0.0004)
                       -2900.0381  1.3377e-007 2.7804e-007 (0.0005)
                         300.8185  -9.1032e-008 -1.2639e-007 2.2796e-007
(0.0005)

P222 to zoa1 (3)        5203.5567  1.5542e-007 (0.0004)
                       -2900.0370  1.3549e-007 3.3706e-007 (0.0006)
                         300.8182  -1.0830e-007 -1.7257e-007 3.0639e-007
(0.0006)

P222 to zoa1 (4)        5203.5571  2.7955e-007 (0.0005)
                       -2900.0414  1.9028e-007 4.5760e-007 (0.0007)
                         300.8260  -1.1776e-007 -2.6393e-007 4.2794e-007
(0.0007)
```

```
P242 to ppt1 (1)      -61697.6637  5.3532e-007 (0.0007)
                      56826.6030  4.7305e-007 1.0183e-006 (0.0010)
                      20641.5057  -3.1075e-007 -5.0501e-007 7.9006e-007
(0.0009)

P242 to ppt1 (10)     -61697.6648  1.1674e-006 (0.0011)
                      56826.6030  1.0804e-006 2.2070e-006 (0.0015)
                      20641.5106  -6.5910e-007 -9.7396e-007 1.6561e-006
(0.0013)

P242 to ppt1 (11)     -61697.6710  1.8301e-006 (0.0014)
                      56826.6032  1.6028e-006 3.1052e-006 (0.0018)
                      20641.5164  -9.2516e-007 -1.4504e-006 2.5159e-006
(0.0016)

P242 to ppt1 (2)      -61697.6765  5.4558e-007 (0.0007)
                      56826.5758  4.7540e-007 1.0384e-006 (0.0010)
                      20641.5237  -3.1968e-007 -5.1844e-007 8.2156e-007
(0.0009)

P242 to ppt1 (3)      -61697.6614  5.1206e-007 (0.0007)
                      56826.6018  4.5358e-007 9.8724e-007 (0.0010)
                      20641.5030  -3.0391e-007 -4.8995e-007 7.7530e-007
(0.0009)

P242 to ppt1 (5)      -61697.6550  5.3216e-007 (0.0007)
                      56826.6247  4.6656e-007 1.0157e-006 (0.0010)
                      20641.4865  -3.0790e-007 -5.1606e-007 8.4228e-007
(0.0009)

P242 to ppt1 (6)      -61697.6657  1.7970e-006 (0.0013)
                      56826.6071  1.7109e-006 3.5323e-006 (0.0019)
                      20641.5023  -1.0891e-006 -1.6154e-006 2.6501e-006
(0.0016)

P242 to ppt1 (8)      -61697.6686  8.7749e-007 (0.0009)
                      56826.5999  7.5349e-007 1.5971e-006 (0.0013)
                      20641.5074  -4.6098e-007 -7.2574e-007 1.2101e-006
(0.0011)

P242 to U1447 (1)     16318.7017  1.2001e-006 (0.0011)
                      -2950.3509  1.2159e-006 4.0804e-006 (0.0020)
                       8054.1133  -7.1893e-007 -2.3617e-006 2.3523e-006
(0.0015)

P242 to U1447 (2)     16318.6940  1.0880e-006 (0.0010)
                      -2950.3555  1.3390e-006 2.6965e-006 (0.0016)
                       8054.1113  -6.7823e-007 -1.0751e-006 1.3574e-006
(0.0012)

P242 to U1447 (3)     16318.6985  1.5026e-006 (0.0012)
                      -2950.3554  1.7094e-006 3.7043e-006 (0.0019)
                       8054.1140  -1.0842e-006 -1.6437e-006 1.8958e-006
(0.0014)
```

```
P242 to WVI (1)       -25479.5922  4.2220e-007 (0.0006)
                      14335.3708  3.7960e-007 8.9445e-007 (0.0009)
                      -1538.9011  -2.6611e-007 -4.2852e-007 6.5769e-007
(0.0008)

P242 to WVI (2)       -25479.5793  3.3319e-007 (0.0006)
                      14335.3924  3.0486e-007 7.0938e-007 (0.0008)
                      -1538.9161  -2.1545e-007 -3.5402e-007 5.1765e-007
(0.0007)

P242 to X572 (2)      -33092.1988  8.9565e-007 (0.0009)
                      62261.6094  8.0674e-007 1.6721e-006 (0.0013)
                      46626.9969  -5.0971e-007 -7.6101e-007 1.2368e-006
(0.0011)

P242 to zoa1 (1)      -20881.1141  2.9826e-006 (0.0017)
                      59466.0408  2.7416e-006 5.8324e-006 (0.0024)
                      52033.9794  -1.8034e-006 -2.2363e-006 3.7885e-006
(0.0019)

P242 to zoa1 (3)      -20881.1190  1.7140e-006 (0.0013)
                      59466.0397  1.4955e-006 3.7633e-006 (0.0019)
                      52033.9773  -1.1142e-006 -1.8506e-006 3.1511e-006
(0.0018)

P242 to zoa1 (4)      -20881.1136  2.9372e-006 (0.0017)
                      59466.0431  2.5299e-006 6.0640e-006 (0.0025)
                      52033.9765  -1.7299e-006 -3.3454e-006 5.4304e-006
(0.0023)

ppt1 to WVI (1)       36218.0957  3.3808e-007 (0.0006)
                      -42491.1878  3.0553e-007 7.2065e-007 (0.0008)
                      -22180.4383  -2.1301e-007 -3.4354e-007 5.2436e-007
(0.0007)

ppt1 to WVI (2)       36218.0906  2.6734e-007 (0.0005)
                      -42491.1919  2.4759e-007 5.8496e-007 (0.0008)
                      -22180.4310  -1.7330e-007 -2.8759e-007 4.1366e-007
(0.0006)

ppt1 to WVI (4)       36218.0798  5.6622e-007 (0.0008)
                      -42491.2199  5.9312e-007 1.2107e-006 (0.0011)
                      -22180.4161  -3.0586e-007 -4.7279e-007 7.7379e-007
(0.0009)

ppt1 to X572 (1)      28605.4649  1.0756e-006 (0.0010)
                       5435.0161  1.2124e-006 2.6956e-006 (0.0016)
                      25985.4882  -4.7063e-007 -8.6327e-007 1.2776e-006
(0.0011)

ppt1 to X572 (3)      28605.4888  6.0080e-007 (0.0008)
                       5435.0355  6.2549e-007 1.3733e-006 (0.0012)
                      25985.4662  -2.5545e-007 -7.2091e-007 1.3596e-006
(0.0012)
```

```
ppt1 to X572 (4)      28605.4813  3.1094e-007 (0.0006)
                       5435.0294  2.8870e-007 5.7299e-007 (0.0008)
                      25985.4704  -1.6422e-007 -2.5783e-007 4.8706e-007
(0.0007)

ppt1 to X572 (6)      28605.4918  1.0251e-006 (0.0010)
                       5435.0226  9.6013e-007 1.7869e-006 (0.0013)
                      25985.4723  -7.4519e-007 -6.6031e-007 1.4770e-006
(0.0012)

ppt1 to zoa1 (1)      40816.5584  2.1141e-006 (0.0015)
                       2639.4485  2.4511e-006 4.7139e-006 (0.0022)
                      31392.4675  -9.4109e-007 -1.6049e-006 2.3299e-006
(0.0015)

ppt1 to zoa1 (2)      40816.5510  9.6739e-007 (0.0010)
                       2639.4458  8.8245e-007 1.6363e-006 (0.0013)
                      31392.4565  -3.8219e-007 -5.9802e-007 1.2523e-006
(0.0011)

ppt1 to zoa1 (3)      40816.5405  3.0083e-007 (0.0005)
                       2639.4313  2.6881e-007 6.7691e-007 (0.0008)
                      31392.4670  -2.0060e-007 -3.2832e-007 5.5532e-007
(0.0007)

ppt1 to zoa1 (5)      40816.5767  1.5739e-006 (0.0013)
                       2639.4681  1.7990e-006 4.4633e-006 (0.0021)
                      31392.4391  -1.1960e-006 -7.0395e-007 2.5187e-006
(0.0016)

X572 to zoa1 (1)      12211.0804  8.1008e-008 (0.0003)
                      -2795.5726  9.0803e-008 2.0181e-007 (0.0004)
                       5406.9681  -3.3824e-008 -6.3581e-008 1.0428e-007
(0.0003)

X572 to zoa1 (2)      12211.0802  5.3154e-008 (0.0002)
                      -2795.5698  4.2978e-008 1.2392e-007 (0.0004)
                       5406.9810  -2.1350e-008 -2.6559e-008 5.7228e-008
(0.0002)

X572 to zoa1 (3)      12211.0849  2.7274e-008 (0.0002)
                      -2795.5531  2.5419e-008 6.4807e-008 (0.0003)
                       5406.9727  -1.8194e-008 -3.5854e-008 6.1730e-008
(0.0002)

X572 to zoa1 (4)      12211.0670  5.2991e-008 (0.0002)
                      -2795.5684  4.9187e-008 8.8312e-008 (0.0003)
                       5406.9823  -2.9002e-008 -3.8712e-008 6.7595e-008
(0.0003)
```

****

OUTPUT VECTOR RESIDUALS (East, North, Height - Local Level)

****

SESSION NAME	-- RE --	-- RN --	-- RH --		- PPM -	DIST -	STD -
	(m)	(m)	(m)			(km)	(m)
B1458 to GAP (1)	0.0320	-0.0334	0.0215	$	1.414	36.1	0.0012
B1458 to GAP (2)	0.0159	-0.0139	0.0301	$	1.019	36.1	0.0007
B1458 to P222 (2)	-0.0008	-0.0119	0.0338	$	0.612	58.7	0.0038
B1458 to P222 (3)	-0.0060	-0.0017	0.0019		0.110	58.7	0.0022
B1458 to P242 (1)	-0.0066	-0.0007	0.0343	$	1.093	32.0	0.0039
B1458 to P242 (2)	-0.0001	-0.0034	0.0302	$	0.951	32.0	0.0026
B1458 to P242 (3)	-0.0020	0.0068	-0.0224	$	0.735	32.0	0.0021
B1458 to P242 (4)	-0.0051	0.0013	-0.0068	$	0.269	32.0	0.0015
B1458 to ppt1 (4)	0.0082	-0.0532	0.0417	$	1.248	54.6	0.0028
B1458 to WVI (1)	-0.0025	0.0081	-0.0488	$	3.517	14.1	0.0022
B1458 to WVI (2)	-0.0022	-0.0017	-0.0048	$	0.393	14.1	0.0003
Bell to FELIPE (1)	0.0323	-0.0623	0.0441	$	7.148	11.6	0.0007
Bell to P242 (1)	0.0563	-0.1198	0.0819	$	9.448	16.5	0.0031
FELIPE to P222 (1)	0.0350	-0.0602	0.0485	$	0.961	88.3	0.0039
FELIPE to P242 (1)	0.0254	-0.0553	0.0371	$	12.298	5.8	0.0014
FELIPE to U1447 (1)	0.0077	-0.0183	0.0117	$	1.716	13.4	0.0006
G1080 to B1458 (1)	0.0149	-0.0486	-0.0297	$	3.417	17.2	0.0016
G1080 to Bell (1)	-0.0409	0.0955	-0.0367	$	4.208	26.2	0.0009
G1080 to FELIPE (1)	-0.0124	0.0313	-0.0059	$	1.563	21.9	0.0005
G1080 to M874 (1)	-0.0007	-0.0222	0.0276	$	0.728	48.6	0.0014
G1080 to P222 (2)	0.0078	-0.0413	-0.0171	$	0.675	67.1	0.0028
G1080 to P222 (3)	0.0132	-0.0325	-0.0016	$	0.524	67.1	0.0017
G1080 to P222 (5)	0.0242	-0.0321	0.0552	$	1.017	67.1	0.0026
G1080 to P242 (2)	0.0056	-0.0352	0.0037	$	1.985	18.0	0.0017

G1080 to P242 (3)	0.0052	-0.0304	0.0158	$	1.922	18.0
0.0026						
G1080 to P242 (6)	0.0153	-0.0217	0.0265	$	2.079	18.0
0.0026						
G1080 to P242 (8)	0.0112	-0.0247	0.0093	$	1.589	18.0
0.0021						
G1080 to P242 (9)	0.0136	-0.0353	0.0024	$	2.100	18.0
0.0017						
G1080 to ppt1 (3)	0.0208	-0.0883	0.0485	$	1.446	71.1
0.0032						
G1080 to ppt1 (4)	0.0259	-0.0788	0.0155	$	1.186	71.1
0.0010						
G1080 to ppt1 (5)	0.0203	-0.0755	0.0492	$	1.299	71.1
0.0024						
G1080 to ppt1 (8)	0.0345	-0.0770	-0.0037	$	1.187	71.1
0.0038						
G1080 to ppt1 (9)	0.0306	-0.0826	-0.0106	$	1.247	71.1
0.0022						
G1080 to U1447 (1)	-0.0049	0.0120	-0.0039	$	0.483	28.0
0.0009						
G1080 to X572 (3)	0.0034	-0.0252	0.0514	$	0.862	66.5
0.0010						
G1080 to X572 (4)	0.0219	-0.0314	0.0141	$	0.614	66.5
0.0016						
G1080 to X572 (5)	0.0029	-0.0360	-0.0193	$	0.616	66.5
0.0011						
G1080 to zoa1 (1)	0.0073	-0.0336	0.0049	$	0.544	63.9
0.0015						
G1080 to zoa1 (2)	0.0086	-0.0360	0.0155	$	0.629	63.9
0.0014						
G1080 to zoa1 (5)	0.0097	-0.0312	-0.0175	$	0.581	63.9
0.0009						
GAP to M874 (1)	-0.0244	0.0287	-0.0266	$	1.682	27.4
0.0010						
GAP to MOON2 (1)	-0.0117	0.0072	0.0327	$	1.017	34.9
0.0009						
GAP to P222 (2)	-0.0339	0.0132	0.0033	$	1.164	31.4
0.0031						
GAP to P222 (3)	-0.0104	0.0183	-0.0202	$	0.928	31.4
0.0021						
GAP to P222 (5)	-0.0119	0.0088	-0.0202	$	0.796	31.4
0.0031						
GAP to P222 (6)	-0.0217	0.0126	-0.0278	$	1.193	31.4
0.0017						
GAP to P242 (3)	-0.0102	0.0203	0.0194	$	0.443	67.5
0.0035						
GAP to P242 (4)	-0.0245	0.0153	-0.0465	$	0.811	67.5
0.0036						
GAP to ppt1 (1)	-0.0121	-0.0319	-0.0078	$	1.392	25.1
0.0016						
GAP to ppt1 (2)	-0.0052	-0.0274	-0.0344	$	1.761	25.1
0.0028						
GAP to ppt1 (4)	0.0018	-0.0241	-0.0272	$	1.448	25.1
0.0022						

GAP to ppt1 (6)	-0.0075	-0.0425	-0.0023 $	1.719	25.1	0.0019
GAP to WVI (1)	-0.0095	0.0172	-0.0079 $	0.459	46.2	0.0009
GAP to WVI (2)	-0.0204	0.0043	-0.0473 $	1.119	46.2	0.0019
GAP to X572 (1)	-0.0189	0.0203	0.0278 $	1.571	25.0	0.0009
GAP to X572 (2)	-0.0118	0.0053	0.0429 $	1.796	25.0	0.0009
M874 to MOON2 (1)	0.0079	-0.0090	0.0037 $	0.264	47.4	0.0011
M874 to P222 (1)	0.0113	-0.0200	-0.0154 $	1.430	19.3	0.0028
M874 to P222 (2)	0.0036	-0.0048	-0.0306 $	1.612	19.3	0.0015
M874 to P242 (2)	0.0101	-0.0106	-0.0046 $	0.231	66.5	0.0024
M874 to ppt1 (2)	0.0311	-0.0509	-0.0005 $	1.171	51.0	0.0029
M874 to X572 (1)	0.0066	-0.0096	0.0508 $	2.361	22.1	0.0010
M874 to zoa1 (1)	0.0089	-0.0122	-0.0254 $	1.934	15.3	0.0006
MHCB to B1458 (3)	0.0339	-0.0665	-0.0257 $	2.339	33.7	0.0021
MHCB to B1458 (4)	0.0368	-0.0646	0.0049 $	2.209	33.7	0.0016
MHCB to G1080 (1)	0.0217	-0.0259	0.0504 $	2.011	30.2	0.0034
MHCB to G1080 (3)	0.0183	-0.0361	-0.0163 $	1.447	30.2	0.0017
MHCB to GAP (3)	0.0410	-0.0864	0.0245 $	2.273	43.4	0.0026
MHCB to M874 (1)	0.0183	-0.0499	0.0476 $	2.778	25.7	0.0034
MHCB to M874 (2)	0.0220	-0.0462	-0.0135 $	2.059	25.7	0.0031
MHCB to M874 (3)	0.0271	-0.0646	-0.0211 $	2.847	25.7	0.0013
MHCB to MHCB-B (1)	0.0142	-0.0323	0.0358 $	44.580	1.1	0.0006
MHCB to MHCB-B (2)	0.0145	-0.0325	0.0324 $	42.677	1.1	0.0008
MHCB to MHCB-B (3)	0.0168	-0.0430	0.0230 $	45.767	1.1	0.0015
MHCB to MOON2 (1)	0.0309	-0.0743	-0.0025 $	1.122	71.7	0.0031
MHCB to P222 (10)	0.0343	-0.0553	0.0110 $	1.476	44.8	0.0035
MHCB to P222 (3)	0.0339	-0.0698	0.0283 $	1.846	44.8	0.0009
MHCB to P222 (4)	0.0418	-0.0555	-0.0258 $	1.655	44.8	0.0037

MHCB to P222 (6)	0.0328	-0.0721	-0.0206	$ 1.829	44.8	0.0019
MHCB to P222 (9)	0.0302	-0.0700	-0.0155	$ 1.737	44.8	0.0019
MHCB to P242 (10)	0.0289	-0.0680	0.0204	$ 1.670	45.9	0.0037
MHCB to P242 (2)	0.0316	-0.0683	0.0154	$ 1.673	45.9	0.0032
MHCB to P242 (4)	0.0271	-0.0674	-0.0259	$ 1.681	45.9	0.0036
MHCB to P242 (6)	0.0268	-0.0649	-0.0146	$ 1.563	45.9	0.0039
MHCB to P242 (8)	0.0285	-0.0622	0.0022	$ 1.492	45.9	0.0025
MHCB to ppt1 (1)	0.0469	-0.1166	0.0308	$ 1.889	68.5	0.0013
MHCB to ppt1 (10)	0.0468	-0.1170	-0.0159	$ 1.854	68.5	0.0037
MHCB to ppt1 (11)	0.0480	-0.1186	0.0256	$ 1.904	68.5	0.0013
MHCB to ppt1 (2)	0.0474	-0.1156	0.0357	$ 1.897	68.5	0.0013
MHCB to ppt1 (3)	0.0475	-0.1165	0.0591	$ 2.029	68.5	0.0013
MHCB to ppt1 (4)	0.0507	-0.1177	0.0223	$ 1.899	68.5	0.0013
MHCB to ppt1 (6)	0.0491	-0.1170	0.0074	$ 1.855	68.5	0.0026
MHCB to U1447 (1)	0.0130	-0.0286	-0.0341	$ 1.017	45.5	0.0020
MHCB to WVI (2)	0.0322	-0.0635	0.0120	$ 1.541	46.9	0.0016
MHCB to WVI (3)	0.0344	-0.0664	0.0186	$ 1.644	46.9	0.0018
MHCB to X572 (3)	0.0327	-0.0747	0.0139	$ 1.739	47.5	0.0021
MHCB-B to P222 (1)	0.0164	-0.0318	0.0284	$ 1.040	43.9	0.0016
MHCB-B to P242 (2)	0.0125	-0.0273	0.0256	$ 0.856	46.1	0.0029
MHCB-B to ppt1 (1)	0.0327	-0.0742	0.0443	$ 1.371	67.4	0.0012
MHCB-B to ppt1 (3)	0.0352	-0.0728	0.0193	$ 1.233	67.4	0.0029
MHCB-B to U1447 (1)	0.0040	0.0034	-0.0095	$ 0.235	46.1	0.0018
MHCB-B to WVI (1)	0.0181	-0.0301	0.0502	$ 1.322	46.4	0.0009
MOON2 to P222 (1)	-0.0010	0.0027	-0.0496	$ 1.475	33.7	0.0025
MOON2 to X572 (1)	-0.0013	-0.0016	0.0150	$ 0.574	26.4	0.0006
P222 to P242 (1)	-0.0022	0.0031	-0.0043	$ 0.067	85.1	0.0015

P222 to P242 (10)	-0.0038	0.0088	-0.0140	$ 0.199	85.1	0.0027
P222 to P242 (2)	-0.0008	-0.0021	0.0309	$ 0.364	85.1	0.0015
P222 to P242 (3)	0.0014	0.0031	0.0088	$ 0.111	85.1	0.0015
P222 to P242 (4)	-0.0050	0.0083	-0.0367	$ 0.446	85.1	0.0015
P222 to P242 (5)	-0.0034	0.0073	-0.0355	$ 0.427	85.1	0.0015
P222 to P242 (7)	-0.0009	0.0076	0.0205	$ 0.257	85.1	0.0027
P222 to P242 (8)	-0.0007	0.0082	0.0091	$ 0.144	85.1	0.0018
P222 to P242 (9)	-0.0027	0.0036	0.0119	$ 0.149	85.1	0.0037
P222 to ppt1 (1)	0.0171	-0.0471	0.0082	$ 1.067	47.6	0.0010
P222 to ppt1 (10)	0.0165	-0.0475	-0.0283	$ 1.212	47.6	0.0025
P222 to ppt1 (2)	0.0151	-0.0518	0.0123	$ 1.163	47.6	0.0010
P222 to ppt1 (3)	0.0176	-0.0473	0.0258	$ 1.191	47.6	0.0010
P222 to ppt1 (8)	0.0147	-0.0458	0.0248	$ 1.137	47.6	0.0012
P222 to U1447 (1)	-0.0170	0.0406	-0.0157	$ 0.523	89.3	0.0032
P222 to U1447 (2)	-0.0159	0.0470	-0.0571	$ 0.847	89.3	0.0044
P222 to U1447 (3)	-0.0230	0.0383	-0.0417	$ 0.684	89.3	0.0068
P222 to WVI (1)	-0.0002	0.0036	0.0074	$ 0.115	71.7	0.0025
P222 to WVI (2)	0.0011	0.0056	0.0259	$ 0.370	71.7	0.0022
P222 to WVI (3)	0.0047	0.0015	0.0018	0.073	71.7	0.0024
P222 to X572 (1)	0.0021	-0.0099	-0.0097	$ 1.618	8.7	0.0021
P222 to X572 (2)	0.0030	0.0013	-0.0094	$ 1.144	8.7	0.0006
P222 to X572 (4)	-0.0016	0.0045	-0.0235	$ 2.768	8.7	0.0013
P222 to X572 (5)	0.0073	-0.0015	-0.0105	$ 1.481	8.7	0.0011
P222 to zoa1 (1)	-0.0036	0.0031	-0.0001	$ 0.789	6.0	0.0014
P222 to zoa1 (2)	-0.0031	0.0024	-0.0011	$ 0.685	6.0	0.0008
P222 to zoa1 (3)	-0.0004	0.0029	-0.0014	$ 0.544	6.0	0.0009
P222 to zoa1 (4)	-0.0030	-0.0012	-0.0089	$ 1.585	6.0	0.0011

P242 to ppt1 (1)	0.0191	-0.0526	0.0178 $	0.679	86.4	0.0015
P242 to ppt1 (10)	0.0200	-0.0561	0.0144 $	0.710	86.4	0.0022
P242 to ppt1 (11)	0.0253	-0.0589	0.0085 $	0.749	86.4	0.0027
P242 to ppt1 (2)	0.0156	-0.0490	-0.0168 $	0.626	86.4	0.0016
P242 to ppt1 (3)	0.0165	-0.0505	0.0197 $	0.656	86.4	0.0015
P242 to ppt1 (5)	0.0231	-0.0511	0.0478 $	0.853	86.4	0.0015
P242 to ppt1 (6)	0.0229	-0.0513	0.0218 $	0.698	86.4	0.0028
P242 to ppt1 (8)	0.0216	-0.0508	0.0127 $	0.656	86.4	0.0019
P242 to U1447 (1)	-0.0167	0.0340	-0.0285 $	2.572	18.4	0.0028
P242 to U1447 (2)	-0.0125	0.0404	-0.0337 $	2.930	18.4	0.0023
P242 to U1447 (3)	-0.0163	0.0367	-0.0333 $	2.832	18.4	0.0027
P242 to WVI (1)	0.0018	0.0053	-0.0268 $	0.935	29.3	0.0014
P242 to WVI (2)	0.0020	0.0021	0.0023	0.128	29.3	0.0012
P242 to X572 (2)	0.0067	-0.0043	-0.0226 $	0.284	84.5	0.0020
P242 to zoa1 (1)	-0.0021	-0.0058	-0.0230 $	0.291	81.7	0.0036
P242 to zoa1 (3)	0.0015	-0.0020	-0.0245 $	0.302	81.7	0.0029
P242 to zoa1 (4)	-0.0013	-0.0048	-0.0194 $	0.245	81.7	0.0038
ppt1 to WVI (1)	-0.0146	0.0526	0.0146 $	0.941	60.1	0.0013
ppt1 to WVI (2)	-0.0124	0.0505	0.0053 $	0.870	60.1	0.0011
ppt1 to WVI (4)	-0.0182	0.0564	-0.0272 $	1.085	60.1	0.0016
ppt1 to X572 (1)	-0.0076	0.0458	-0.0318 $	1.442	39.0	0.0022
ppt1 to X572 (3)	-0.0174	0.0456	0.0047 $	1.257	39.0	0.0018
ppt1 to X572 (4)	-0.0144	0.0478	-0.0052 $	1.285	39.0	0.0012
ppt1 to X572 (6)	-0.0268	0.0464	-0.0064 $	1.384	39.0	0.0021
ppt1 to zoa1 (1)	-0.0232	0.0435	-0.0257 $	1.079	51.6	0.0030
ppt1 to zoa1 (2)	-0.0184	0.0560	-0.0240 $	1.235	51.6	0.0020
ppt1 to zoa1 (3)	-0.0172	0.0585	-0.0446 $	1.465	51.6	0.0012

ppt1 to zoa1 (5)	-0.0282	0.0501	0.0124	$	1.141	51.6
0.0029						
X572 to zoa1 (1)	-0.0073	0.0133	0.0040	$	1.151	13.6
0.0006						
X572 to zoa1 (2)	-0.0056	0.0018	-0.0021	$	0.455	13.6
0.0005						
X572 to zoa1 (3)	-0.0007	-0.0018	0.0162	$	1.197	13.6
0.0004						
X572 to zoa1 (4)	0.0064	0.0043	-0.0075	$	0.786	13.6
0.0005						
RMS	0.0211	0.0479	0.0267			

$ - This session is flagged as a 3-sigma outlier

****
CHECK POINT RESIDUALS (East, North, Height - Local Level)
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
G1080	0.0293	-0.0198	1.2463
B1458	-0.1512	0.1946	1.2758
FELIPE			1.1840
MHCB-B	0.0609	-0.0822	1.2440
MOON2			1.2445
P222	0.0954	-0.1608	
P242	0.1000	-0.1585	
U1447			1.2311
WVI	0.0675	-0.0589	
X572	0.1180	-0.1607	
zoa1	0.1040	-0.1447	
RMS	0.0973	0.1352	1.2379

****
CONTROL POINT RESIDUALS (ADJUSTMENT MADE)
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
Bell	0.0112	-0.0220	
GAP	-0.0195	0.0095	
M874	0.0054	-0.0015	
MHCB	0.0397	-0.0487	1.1985
ppt1	-0.0375	0.0623	
RMS	0.0265	0.0369	1.1985

```
*****************************************************************
    OUTPUT STATION COORDINATES (LAT/LONG/HT)
*****************************************************************

STA_ID      -- LATITUDE --  -- LONGITUDE -- - ELLHGT -
G1080       37 04 19.05664 -121 36 08.64124    50.0944
B1458       37 03 48.11869 -121 47 44.54993   803.7994
Bell        37 02 18.85847 -121 18 40.02778    94.3632
FELIPE      36 57 40.53892 -121 23 55.48493   104.1490
GAP         37 15 28.92801 -122 07 15.79600   772.4066
M874        37 26 10.03018 -121 54 24.89060   -26.3809
MHCB        37 20 29.49791 -121 38 33.22362  1263.5585
MHCB-B      37 20 23.29334 -121 39 17.38069  1035.6221
MOON2       37 26 20.30407 -122 26 34.64721    -9.4413
P222        37 32 21.23890 -122 04 59.68768    55.2826
P242        36 57 14.13139 -121 27 47.39815    16.5919
ppt1        37 11 13.48456 -122 23 23.76712     9.6384
U1447       37 02 39.48195 -121 17 21.80164    89.6273
WVI         36 56 11.71526 -121 47 28.03102    14.6695
X572        37 28 54.53087 -122 08 59.09306   -28.4898
zoa1        37 32 34.96906 -122 00 57.34248    -1.8674


*****************************************************************
    OUTPUT VARIANCE/COVARIANCE
*****************************************************************
                                              2
STA_ID      SE/SN/SUP  --------- CX matrix (m )-----------
            (90.00 %)  (not scaled by confidence level)
               (m)          (ECEF, XYZ cartesian)
G1080          0.0002  3.8976e-006
               0.0003  6.2431e-006 1.0040e-005
               0.0101  -5.5793e-006 -8.9618e-006 8.0306e-006

B1458          0.0003  3.9145e-006
               0.0003  6.2433e-006 1.0006e-005
               0.0101  -5.5928e-006 -8.9533e-006 8.0491e-006

Bell           0.0002  3.8751e-006
               0.0002  6.3328e-006 1.0380e-005
               0.0102  -5.6055e-006 -9.1809e-006 8.1353e-006

FELIPE         0.0003  3.9020e-006
               0.0004  6.2649e-006 1.0137e-005
               0.0101  -5.5786e-006 -9.0047e-006 8.0482e-006

GAP            0.0002  3.9180e-006
               0.0002  6.2467e-006 9.9804e-006
               0.0100  -5.6063e-006 -8.9521e-006 8.0419e-006

M874           0.0002  3.8769e-006
               0.0002  6.2079e-006 9.9630e-006
               0.0100  -5.5878e-006 -8.9620e-006 8.0747e-006
```

```
MHCB            0.0002  3.8431e-006
                0.0002  6.1795e-006 9.9574e-006
                0.0100  -5.5427e-006 -8.9260e-006 8.0137e-006

MHCB-B          0.0003  3.8946e-006
                0.0004  6.2230e-006 1.0006e-005
                0.0100  -5.5711e-006 -8.9467e-006 8.0440e-006

MOON2           0.0003  3.9365e-006
                0.0004  6.2610e-006 1.0030e-005
                0.0101  -5.6145e-006 -8.9702e-006 8.0928e-006

P222            0.0002  3.8997e-006
                0.0003  6.2285e-006 9.9795e-006
                0.0100  -5.5847e-006 -8.9398e-006 8.0319e-006

P242            0.0003  3.9094e-006
                0.0003  6.2412e-006 1.0009e-005
                0.0100  -5.5880e-006 -8.9501e-006 8.0389e-006

ppt1            0.0002  3.9254e-006
                0.0002  6.2462e-006 9.9573e-006
                0.0100  -5.6025e-006 -8.9265e-006 8.0136e-006

U1447           0.0004  3.9326e-006
                0.0005  6.2781e-006 1.0142e-005
                0.0101  -5.6016e-006 -8.9997e-006 8.0792e-006

WVI             0.0002  3.9137e-006
                0.0003  6.2409e-006 9.9972e-006
                0.0100  -5.5915e-006 -8.9475e-006 8.0415e-006

X572            0.0002  3.8999e-006
                0.0002  6.2299e-006 9.9820e-006
                0.0100  -5.5876e-006 -8.9448e-006 8.0376e-006

zoa1            0.0002  3.9002e-006
                0.0003  6.2310e-006 9.9868e-006
                0.0100  -5.5871e-006 -8.9460e-006 8.0400e-006



************************************************************
    VARIANCE FACTOR = 2723.4979

    Note: Values < 1.0 indicate statistics are pessimistic, while
          values > 1.0 indicate optimistic statistics. Entering this
          value as the network adjustment scale factor will bring
          variance factor to one.
************************************************************
```

Appendix D

VERTICAL ADJUSTMENT

```
               ************************************************
               * NETWORK - WEIGHTED GPS NETWORK ADJUSTMENT      *
               *                                                *
               * (c) Copyright Waypoint Consulting Inc., (2003) *
               *                                                *
               * VERSION: 7.01                                  *
               *                                                *
               * FILE: C:\Project\060079_SantaClara\Static\Static
Processing\SantaClara.net
               ************************************************

DATE(m/d/y): Mon.   5/01/06   TIME: 22:39:56



*****************************************************************

  DATUM:             'NAD83'
  SCALE_FACTOR:      1.0000
  CONFIDENCE LEVEL: 90.00 %   (Scale factor is 2.1461)


*****************************************************************
    INPUT CONTROL/CHECK POINTS
*****************************************************************

STA_ID     TYPE    -- LATITUDE --  -- LONGITUDE --  ELLHGT -   HZ-SD   V-SD
B1458      GCP-VT                                    802.524          0.00010
Bell       CHK-HZ  37 02 18.85919 -121 18 40.02823
FELIPE     GCP-VT                                    102.965          0.00010
G1080      GCP-VT                                     48.848          0.00500
GAP        CHK-HZ  37 15 28.92770 -122 07 15.79521
M874       GCP-VT                                    -27.691          0.00010
MHCB       GCP-3D  37 20 29.49949 -121 38 33.22523   1262.360 0.00010 2.00000
MHCB-B     GCP-VT                                   1034.378          0.00010
MOON2      GCP-VT                                    -10.686          0.00500
P222       CHK-HZ  37 32 21.24412 -122 04 59.69157
P242       CHK-HZ  36 57 14.13653 -121 27 47.40219
ppt1       CHK-HZ  37 11 13.48254 -122 23 23.76560
U1447      GCP-VT                                     88.396          0.00010
WVI        CHK-HZ  36 56 11.71717 -121 47 28.03375
X572       CHK-HZ  37 28 54.53609 -122 08 59.09786
zoa1       CHK-HZ  37 32 34.97376 -122 00 57.34671



*****************************************************************
    INPUT VECTORS
*****************************************************************

SESSION NAME           VECTOR(m)    ------ Covariance (m) [unscaled] ------
                        DX/DY/DZ           standard deviations in brackets
```

```
B1458 to GAP (1)      -17599.8222  2.0441e-007 (0.0005)
                      26392.8072  1.9497e-007 5.5985e-007 (0.0007)
                      17200.7795  -2.0917e-008 -2.5174e-007 6.4359e-007
(0.0008)

B1458 to GAP (2)      -17599.8111  1.0349e-007 (0.0003)
                      26392.7945  1.0804e-007 2.6670e-007 (0.0005)
                      17200.7587  -4.8408e-008 -1.1309e-007 1.3557e-007
(0.0004)

B1458 to P222 (2)     -4387.2033  2.8696e-006 (0.0017)
                      41153.9210  2.8354e-006 5.7401e-006 (0.0024)
                      41559.9235  -1.7407e-006 -2.8393e-006 5.8638e-006
(0.0024)

B1458 to P222 (3)     -4387.2157  9.7318e-007 (0.0010)
                      41153.8914  9.2849e-007 2.1830e-006 (0.0015)
                      41559.9347  -4.9223e-007 -1.1973e-006 1.8924e-006
(0.0014)

B1458 to P242 (1)     21697.4642  3.0873e-006 (0.0018)
                      -21212.1762  2.5728e-006 7.5301e-006 (0.0027)
                      -10173.2269  -2.0139e-006 -3.4218e-006 4.4489e-006
(0.0021)

B1458 to P242 (2)     21697.4578  1.3593e-006 (0.0012)
                      -21212.1742  1.3404e-006 2.7089e-006 (0.0016)
                      -10173.2223  -8.2733e-007 -1.3435e-006 2.7801e-006
(0.0017)

B1458 to P242 (3)     21697.4341  7.7072e-007 (0.0009)
                      -21212.2162  7.9543e-007 1.9597e-006 (0.0014)
                      -10173.1987  -4.4272e-007 -9.8595e-007 1.5231e-006
(0.0012)

B1458 to P242 (4)     21697.4450  4.6079e-007 (0.0007)
                      -21212.2044  4.3895e-007 1.0298e-006 (0.0010)
                      -10173.2037  -2.3437e-007 -5.6665e-007 8.9589e-007
(0.0009)

B1458 to ppt1 (4)     -40000.2001  1.7721e-006 (0.0013)
                      35614.4172  1.4561e-006 3.5316e-006 (0.0019)
                      10468.2849  -3.5343e-007 -1.3385e-006 2.7317e-006
(0.0017)

B1458 to WVI (1)      -3782.1549  9.0251e-007 (0.0010)
                      -6876.8442  5.5193e-007 2.2877e-006 (0.0015)
                      -11712.0969  -3.2007e-007 -3.3199e-008 1.5006e-006
(0.0012)

B1458 to WVI (2)      -3782.1335  1.7739e-008 (0.0001)
                      -6876.8091  1.6612e-008 3.7226e-008 (0.0002)
                      -11712.1156  -9.2775e-009 -2.0648e-008 3.2660e-008
(0.0002)
```

```
Bell to FELIPE (1)     -9351.6800  7.1730e-008 (0.0003)
                        -357.4207  5.2607e-008 2.4630e-007 (0.0005)
                       -6846.3272  -2.7856e-008 -1.4057e-007 1.5894e-007
(0.0004)

Bell to G1080 (1)      -20917.5523  1.5071e-007 (0.0004)
                       15455.6249  1.2416e-007 3.4419e-007 (0.0006)
                        2930.5240  -8.6305e-008 -2.0097e-007 2.5191e-007
(0.0005)

Bell to P242 (1)       -14465.9552  1.4538e-006 (0.0012)
                        2276.6090  1.0723e-006 5.0333e-006 (0.0022)
                       -7549.4533  -5.6501e-007 -2.8820e-006 3.2594e-006
(0.0018)

FELIPE to G1080 (1)    -11565.8709  4.6071e-008 (0.0002)
                       15813.0557  3.9249e-008 1.2901e-007 (0.0004)
                        9776.8417  -2.3027e-008 -6.1358e-008 8.7867e-008
(0.0003)

FELIPE to P222 (1)     -31198.9448  3.2897e-006 (0.0018)
                       65000.1331  3.0478e-006 6.7443e-006 (0.0026)
                       51030.0106  -2.1720e-006 -3.2827e-006 4.8938e-006
(0.0022)

FELIPE to P242 (1)     -5114.2774  5.0135e-007 (0.0007)
                        2634.0289  4.5352e-007 8.2108e-007 (0.0009)
                        -703.1273  -3.3221e-007 -3.9528e-007 5.3460e-007
(0.0007)

FELIPE to U1447 (1)    11204.4254  9.8896e-008 (0.0003)
                        -316.3220  7.5497e-008 2.0149e-007 (0.0004)
                        7350.9816  -5.9923e-008 -5.7711e-008 1.2118e-007
(0.0003)

G1080 to M874 (1)      -10063.1339  3.8871e-007 (0.0006)
                       35072.2615  4.5461e-007 8.8975e-007 (0.0009)
                       32122.6296  -2.2798e-007 -3.9855e-007 5.9899e-007
(0.0008)

G1080 to P222 (2)      -19633.0836  1.7487e-006 (0.0013)
                       49187.0337  1.7194e-006 3.4620e-006 (0.0019)
                       41253.2165  -1.0465e-006 -1.5252e-006 2.6378e-006
(0.0016)

G1080 to P222 (3)      -19633.0846  6.4598e-007 (0.0008)
                       49187.0424  5.9976e-007 1.2674e-006 (0.0011)
                       41253.2003  -3.8316e-007 -6.0376e-007 9.8518e-007
(0.0010)

G1080 to P222 (5)      -19633.0702  1.5291e-006 (0.0012)
                       49187.0864  1.3081e-006 3.1542e-006 (0.0018)
                       41253.1654  -9.3619e-007 -1.3945e-006 2.2769e-006
(0.0015)
```

```
G1080 to P242 (2)      6451.5908  6.0216e-007 (0.0008)
                     -13179.0456  6.5059e-007 1.3166e-006 (0.0011)
                     -10479.9421  -2.4039e-007 -5.2323e-007 9.8803e-007
(0.0010)

G1080 to P242 (3)      6451.5947  1.4583e-006 (0.0012)
                     -13179.0400  1.6281e-006 3.4631e-006 (0.0019)
                     -10479.9531  -7.5182e-007 -1.2889e-006 1.8113e-006
(0.0013)

G1080 to P242 (6)      6451.5878  1.7297e-006 (0.0013)
                     -13179.0319  1.2157e-006 2.4321e-006 (0.0016)
                     -10479.9666  -1.0118e-006 -1.5815e-006 2.5852e-006
(0.0016)

G1080 to P242 (8)      6451.5850  9.5095e-007 (0.0010)
                     -13179.0442  9.6230e-007 2.2139e-006 (0.0015)
                     -10479.9538  -2.1906e-007 -9.4764e-007 1.4007e-006
(0.0012)

G1080 to P242 (9)      6451.5835  7.3183e-007 (0.0009)
                     -13179.0422  7.1057e-007 1.2790e-006 (0.0011)
                     -10479.9412  -4.2726e-007 -5.7671e-007 9.6532e-007
(0.0010)

G1080 to ppt1 (3)     -55246.0578  2.2983e-006 (0.0015)
                      43647.5739  2.5036e-006 5.0743e-006 (0.0023)
                      10161.5477  -1.1192e-006 -1.6845e-006 2.5827e-006
(0.0016)

G1080 to ppt1 (4)     -55246.0791  2.3459e-007 (0.0005)
                      43647.5494  2.1904e-007 4.8183e-007 (0.0007)
                      10161.5601  -1.3698e-007 -2.2805e-007 3.7998e-007
(0.0006)

G1080 to ppt1 (5)     -55246.0611  1.0539e-006 (0.0010)
                      43647.5675  8.9020e-007 2.4106e-006 (0.0016)
                      10161.5371  -7.1828e-007 -1.2504e-006 2.2745e-006
(0.0015)

G1080 to ppt1 (8)     -55246.0951  3.1064e-006 (0.0018)
                      43647.5401  2.1126e-006 6.3139e-006 (0.0025)
                      10161.5702  5.6899e-007 -2.6002e-006 5.3689e-006
(0.0023)

G1080 to ppt1 (9)     -55246.0929  1.1495e-006 (0.0011)
                      43647.5362  1.1243e-006 2.0370e-006 (0.0014)
                      10161.5789  -6.5816e-007 -9.0977e-007 1.5073e-006
(0.0012)

G1080 to U1447 (1)    22770.2917  2.0428e-007 (0.0005)
                     -16129.3858  1.5595e-007 4.1620e-007 (0.0006)
                      -2425.8518  -1.2378e-007 -1.1921e-007 2.5032e-007
(0.0005)
```

```
G1080 to X572 (3)      -26640.5753  1.9768e-007 (0.0004)
                       49082.5994  1.6925e-007 4.5328e-007 (0.0007)
                       36147.0009  -1.3408e-007 -2.3448e-007 4.2070e-007
(0.0006)

G1080 to X572 (4)      -26640.6047  5.5797e-007 (0.0007)
                       49082.5872  3.8024e-007 1.1345e-006 (0.0011)
                       36147.0284  1.0156e-007 -4.6567e-007 9.6178e-007
(0.0010)

G1080 to X572 (5)      -26640.6012  2.8952e-007 (0.0005)
                       49082.5569  2.8154e-007 5.2855e-007 (0.0007)
                       36147.0523  -1.6972e-007 -2.3588e-007 4.0290e-007
(0.0006)

G1080 to zoa1 (1)      -14429.5186  4.6500e-007 (0.0007)
                       46287.0099  4.6495e-007 9.6800e-007 (0.0010)
                       41554.0168  -1.8582e-007 -4.1763e-007 8.6661e-007
(0.0009)

G1080 to zoa1 (2)      -14429.5144  5.2715e-007 (0.0007)
                       46287.0189  5.1548e-007 9.2827e-007 (0.0010)
                       41554.0123  -2.7664e-007 -3.3676e-007 5.1851e-007
(0.0007)

G1080 to zoa1 (5)      -14429.5307  1.9702e-007 (0.0004)
                       46286.9948  1.9265e-007 3.4861e-007 (0.0006)
                       41554.0285  -1.1257e-007 -1.5531e-007 2.5762e-007
(0.0005)

GAP to M874 (1)        22782.5229  2.2569e-007 (0.0005)
                         646.3001  2.6192e-007 5.7043e-007 (0.0008)
                       15228.6172  -1.5395e-007 -2.7917e-007 2.8460e-007
(0.0005)

GAP to MOON2 (1)       -17275.7250  2.1989e-007 (0.0005)
                       26059.5149  1.8907e-007 3.2462e-007 (0.0006)
                       15490.3904  -1.2366e-007 -1.3994e-007 2.8730e-007
(0.0005)

GAP to P222 (2)        13212.6185  2.6552e-006 (0.0016)
                       14761.1112  2.2266e-006 3.7865e-006 (0.0019)
                       24359.1562  -1.5488e-006 -1.7506e-006 3.3236e-006
(0.0018)

GAP to P222 (3)        13212.5871  1.0323e-006 (0.0010)
                       14761.1053  8.8535e-007 1.8005e-006 (0.0013)
                       24359.1664  -6.2172e-007 -1.0846e-006 1.7647e-006
(0.0013)

GAP to P222 (5)        13212.5913  2.4554e-006 (0.0016)
                       14761.1094  2.2371e-006 4.1764e-006 (0.0020)
                       24359.1739  -1.1260e-006 -1.5591e-006 3.2355e-006
(0.0018)
```

```
GAP to P222 (6)        13212.5953  7.2579e-007 (0.0009)
                       14761.0971  5.9560e-007 1.0647e-006 (0.0010)
                       24359.1756  -2.7958e-007 -5.4952e-007 1.0890e-006
(0.0010)

GAP to P242 (3)        39297.2690  2.7262e-006 (0.0017)
                       -47604.9577  2.3424e-006 4.7574e-006 (0.0022)
                       -27374.0005  -1.6494e-006 -2.8670e-006 4.6612e-006
(0.0022)

GAP to P242 (4)        39297.2551  3.5277e-006 (0.0019)
                       -47605.0073  3.0524e-006 5.2210e-006 (0.0023)
                       -27373.9568  -1.2513e-006 -2.4973e-006 4.0441e-006
(0.0020)

GAP to ppt1 (1)        -22400.3960  7.4052e-007 (0.0009)
                        9221.6035  6.2419e-007 8.6447e-007 (0.0009)
                       -6732.4680  -5.7497e-007 -5.1629e-007 9.9802e-007
(0.0010)

GAP to ppt1 (2)        -22400.4146  1.5826e-006 (0.0013)
                        9221.5869  8.2526e-007 2.2534e-006 (0.0015)
                       -6732.4555  -4.8473e-008 -1.3924e-006 3.8705e-006
(0.0020)

GAP to ppt1 (4)        -22400.4185  1.1507e-006 (0.0011)
                        9221.5939  1.2112e-006 2.1920e-006 (0.0015)
                       -6732.4624  -8.0650e-007 -1.1741e-006 1.4679e-006
(0.0012)

GAP to ppt1 (6)        -22400.3941  1.1636e-006 (0.0011)
                        9221.6150  9.9331e-007 1.6096e-006 (0.0013)
                       -6732.4629  -4.1332e-007 -5.9284e-007 8.8833e-007
(0.0009)

GAP to WVI (1)         13817.6800  1.8488e-007 (0.0004)
                       -33269.5834  1.5961e-007 3.2645e-007 (0.0006)
                       -28912.8946  -1.0060e-007 -1.7574e-007 3.0412e-007
(0.0006)

GAP to WVI (2)         13817.6768  1.6885e-006 (0.0013)
                       -33269.6092  1.1756e-006 1.1950e-006 (0.0011)
                       -28912.8605  -6.3906e-007 -5.5607e-007 5.6682e-007
(0.0008)

GAP to X572 (1)         6205.0949  2.3465e-007 (0.0005)
                       14656.6621  1.9503e-007 3.4540e-007 (0.0006)
                       19252.9742  -1.7644e-007 -2.3849e-007 2.8795e-007
(0.0005)

GAP to X572 (2)         6205.1001  2.0520e-007 (0.0005)
                       14656.6838  1.9978e-007 3.8036e-007 (0.0006)
                       19252.9770  -1.0723e-007 -1.6397e-007 2.2199e-007
(0.0005)
```

```
M874 to MOON2 (1)      -40058.2712  2.9836e-007 (0.0005)
                       25413.1685  2.8110e-007 4.8017e-007 (0.0007)
                         261.7969  -1.9130e-007 -2.2747e-007 3.8382e-007
(0.0006)

M874 to P222 (1)       -9569.9395  2.0068e-006 (0.0014)
                       14114.7940  1.8551e-006 3.0736e-006 (0.0018)
                        9130.5700  -1.1838e-006 -1.3842e-006 2.9362e-006
(0.0017)

M874 to P222 (2)       -9569.9443  6.1306e-007 (0.0008)
                       14114.7719  4.7105e-007 9.5805e-007 (0.0010)
                        9130.5672  -3.9422e-007 -5.2099e-007 6.8417e-007
(0.0008)

M874 to P242 (2)       16514.7289  1.3367e-006 (0.0012)
                       -48251.2931  1.2565e-006 2.5856e-006 (0.0016)
                       -42602.5853  -7.9482e-007 -1.1596e-006 1.9669e-006
(0.0014)

M874 to ppt1 (2)       -45182.9459  2.1464e-006 (0.0015)
                        8575.2955  1.9823e-006 3.2899e-006 (0.0018)
                       -21961.0812  -1.2644e-006 -1.4789e-006 3.1433e-006
(0.0018)

M874 to zoa1 (1)       -4366.3864  1.0587e-007 (0.0003)
                       11214.7476  9.7664e-008 1.6191e-007 (0.0004)
                        9431.3896  -6.2249e-008 -7.2538e-008 1.5439e-007
(0.0004)

MHCB to GAP (1)        -38789.0566  8.9694e-006 (0.0030)
                       17973.3864  7.6141e-006 1.3582e-005 (0.0037)
                       -7669.7744  -5.4344e-006 -5.7131e-006 9.0055e-006
(0.0030)

MHCB to B1458 (2)      -21189.2433  3.2750e-006 (0.0018)
                       -8419.4173  2.7302e-006 8.0263e-006 (0.0028)
                       -24870.5480  -2.1365e-006 -3.6445e-006 4.7408e-006
(0.0022)

MHCB to B1458 (4)      -21189.2327  4.8797e-007 (0.0007)
                       -8419.4021  4.6523e-007 1.0934e-006 (0.0010)
                       -24870.5454  -2.4768e-007 -6.0202e-007 9.5404e-007
(0.0010)

MHCB to FELIPE (1)      5622.4990  7.9113e-006 (0.0028)
                       -32265.6410  8.8128e-006 2.0000e-005 (0.0045)
                       -34340.6131  -4.2544e-006 -5.3288e-006 5.8963e-006
(0.0024)

MHCB to G1080 (1)      -5943.3522  3.3424e-006 (0.0018)
                       -16452.5265  2.6177e-006 4.2008e-006 (0.0020)
                       -24563.8427  -2.4432e-006 -2.1716e-006 3.9705e-006
(0.0020)
```

```
MHCB to G1080 (2)      -5943.3961  3.1108e-006 (0.0018)
                       -16452.5896  2.5967e-006 5.1641e-006 (0.0023)
                       -24563.7917  -1.9323e-006 -2.3424e-006 4.7128e-006
(0.0022)

MHCB to G1080 (3)      -5943.3739  5.5623e-007 (0.0007)
                       -16452.5682  5.0965e-007 1.2452e-006 (0.0011)
                       -24563.7942  -3.7479e-007 -6.0244e-007 9.6707e-007
(0.0010)

MHCB to GAP (3)        -38789.0356  1.5010e-006 (0.0012)
                       17973.3833  1.2870e-006 2.6200e-006 (0.0016)
                       -7669.7742  -9.0626e-007 -1.5817e-006 2.5764e-006
(0.0016)

MHCB to GAP (6)        -38789.0481  6.9758e-006 (0.0026)
                       17973.3880  5.9584e-006 9.6532e-006 (0.0031)
                       -7669.7804  -2.4835e-006 -3.5540e-006 5.3258e-006
(0.0023)

MHCB to M874 (1)       -16006.4957  3.1280e-006 (0.0018)
                       18619.7139  3.3765e-006 5.3843e-006 (0.0023)
                        7558.8065  -9.5798e-008 -6.5417e-007 2.7574e-006
(0.0017)

MHCB to MHCB-B (1)      -891.2241  1.0133e-007 (0.0003)
                         625.9490  8.7914e-008 1.6990e-007 (0.0004)
                        -290.3547  -5.4240e-008 -8.0104e-008 1.1320e-007
(0.0003)

MHCB to MHCB-B (2)      -891.2257  1.8018e-007 (0.0004)
                         625.9469  1.7205e-007 2.9707e-007 (0.0005)
                        -290.3525  -8.1010e-008 -1.1305e-007 1.9222e-007
(0.0004)

MHCB to MHCB-B (3)      -891.2282  5.5881e-007 (0.0007)
                         625.9472  5.8827e-007 1.0458e-006 (0.0010)
                        -290.3385  -2.2664e-007 -3.1831e-007 5.2019e-007
(0.0007)

MHCB to MOON2 (1)      -56064.7884  2.2326e-006 (0.0015)
                       44032.8564  2.2319e-006 4.2744e-006 (0.0021)
                        7820.6484  -1.2614e-006 -1.7794e-006 3.1914e-006
(0.0018)

MHCB to P222 (10)      -25576.4528  2.1682e-006 (0.0015)
                       32734.4886  2.2169e-006 5.0673e-006 (0.0023)
                       16689.3778  -8.7067e-007 -2.5688e-006 4.8510e-006
(0.0022)

MHCB to P222 (3)       -25576.4406  1.9935e-007 (0.0004)
                       32734.5075  1.7392e-007 3.8060e-007 (0.0006)
                       16689.3788  -1.1707e-007 -1.8978e-007 3.0624e-007
(0.0006)
```

```
MHCB to P222 (4)      -25576.4745  2.3873e-006 (0.0015)
                      32734.4678  2.4015e-006 5.9068e-006 (0.0024)
                      16689.4003  -9.0117e-007 -2.9100e-006 5.3622e-006
(0.0023)

MHCB to P222 (6)      -25576.4594  7.1458e-007 (0.0008)
                      32734.4751  6.1198e-007 1.5550e-006 (0.0012)
                      16689.4104  -4.5209e-007 -7.5656e-007 1.2344e-006
(0.0011)

MHCB to P222 (9)      -25576.4557  8.5497e-007 (0.0009)
                      32734.4761  7.8543e-007 1.5740e-006 (0.0013)
                      16689.4055  -5.0857e-007 -6.9927e-007 1.3198e-006
(0.0011)

MHCB to P242 (10)       508.2253  3.1758e-006 (0.0018)
                      -29631.5904  2.9094e-006 6.3817e-006 (0.0025)
                      -35043.7589  -1.3941e-006 -2.3306e-006 4.2829e-006
(0.0021)

MHCB to P242 (2)        508.2210  1.9738e-006 (0.0014)
                      -29631.5923  2.0508e-006 4.3380e-006 (0.0021)
                      -35043.7556  -8.7217e-007 -2.2468e-006 4.2351e-006
(0.0021)

MHCB to P242 (4)        508.2073  2.7057e-006 (0.0016)
                      -29631.6232  2.2303e-006 5.5325e-006 (0.0024)
                      -35043.7313  -1.1578e-006 -3.3485e-006 5.0058e-006
(0.0022)

MHCB to P242 (6)        508.2116  3.3723e-006 (0.0018)
                      -29631.6169  3.0216e-006 6.9419e-006 (0.0026)
                      -35043.7402  -1.4560e-006 -2.5192e-006 4.5270e-006
(0.0021)

MHCB to P242 (8)        508.2162  1.3287e-006 (0.0012)
                      -29631.6060  1.2433e-006 2.5995e-006 (0.0016)
                      -35043.7525  -7.8406e-007 -1.1439e-006 2.3728e-006
(0.0015)

MHCB to ppt1 (1)      -61189.4412  3.8125e-007 (0.0006)
                      27195.0050  3.3032e-007 7.2477e-007 (0.0009)
                      -14402.2521  -2.2412e-007 -3.7110e-007 5.9557e-007
(0.0008)

MHCB to ppt1 (10)     -61189.4607  3.3574e-006 (0.0018)
                      27194.9737  3.1207e-006 5.9426e-006 (0.0024)
                      -14402.2235  -1.6093e-006 -2.5146e-006 4.2180e-006
(0.0021)

MHCB to ppt1 (11)     -61189.4437  3.9334e-007 (0.0006)
                      27195.0031  3.4787e-007 7.2560e-007 (0.0009)
                      -14402.2473  -2.2313e-007 -3.5833e-007 5.7023e-007
(0.0008)
```

```
MHCB to ppt1 (2)      -61189.4399  3.6439e-007 (0.0006)
                      27195.0081  3.1788e-007 6.9609e-007 (0.0008)
                      -14402.2558  -2.1251e-007 -3.4504e-007 5.4943e-007
(0.0007)

MHCB to ppt1 (3)      -61189.4298  4.0366e-007 (0.0006)
                      27195.0244  3.5773e-007 7.4727e-007 (0.0009)
                      -14402.2693  -2.3359e-007 -3.7175e-007 5.6694e-007
(0.0008)

MHCB to ppt1 (4)      -61189.4477  3.6886e-007 (0.0006)
                      27195.0019  3.2438e-007 7.0635e-007 (0.0008)
                      -14402.2461  -2.1873e-007 -3.5955e-007 5.7343e-007
(0.0008)

MHCB to ppt1 (6)      -61189.4528  1.2669e-006 (0.0011)
                      27194.9906  1.0932e-006 3.0684e-006 (0.0018)
                      -14402.2376  -8.2418e-007 -1.4047e-006 2.3187e-006
(0.0015)

MHCB to U1447 (1)     16826.9137  7.2554e-007 (0.0009)
                      -32581.9614  7.3062e-007 2.0662e-006 (0.0014)
                      -26989.6341  -5.3896e-007 -9.8412e-007 1.2966e-006
(0.0011)

MHCB to WVI (2)       -24971.3601  5.7555e-007 (0.0008)
                      -15296.2059  5.2663e-007 1.2254e-006 (0.0011)
                      -36582.6703  -3.7219e-007 -6.1161e-007 8.9442e-007
(0.0009)

MHCB to WVI (3)       -24971.3583  7.5389e-007 (0.0009)
                      -15296.1988  6.9877e-007 1.3708e-006 (0.0012)
                      -36582.6720  -4.1086e-007 -6.5963e-007 1.1236e-006
(0.0011)

MHCB to X572 (3)      -32583.9630  9.6674e-007 (0.0010)
                      32630.0297  1.1170e-006 2.4701e-006 (0.0016)
                      11583.2300  -5.6487e-007 -1.0109e-006 1.1475e-006
(0.0011)

MHCB-B to P222 (1)    -24685.2006  6.8931e-007 (0.0008)
                      32108.5780  5.9502e-007 1.1243e-006 (0.0011)
                      16979.7072  -3.6842e-007 -5.2675e-007 7.3931e-007
(0.0009)

MHCB-B to P242 (2)     1399.4658  2.2626e-006 (0.0015)
                      -30257.5171  2.0322e-006 3.3115e-006 (0.0018)
                      -34753.4357  -1.5176e-006 -1.4288e-006 2.6892e-006
(0.0016)

MHCB-B to ppt1 (1)    -60298.2000  4.0954e-007 (0.0006)
                      26569.0841  3.5996e-007 6.8396e-007 (0.0008)
                      -14111.9352  -2.1883e-007 -3.1677e-007 4.3590e-007
(0.0007)
```

```
MHCB-B to ppt1 (3)    -60298.2131  2.1941e-006 (0.0015)
                      26569.0679  2.3404e-006 4.1595e-006 (0.0020)
                      -14111.9212  -8.7621e-007 -1.2316e-006 1.9980e-006
(0.0014)

MHCB-B to U1447 (1)   17718.1586  9.4808e-007 (0.0010)
                      -33207.8665  1.0048e-006 1.6655e-006 (0.0013)
                      -26699.3157  -5.6559e-007 -6.6621e-007 5.8092e-007
(0.0008)

MHCB-B to WVI (1)     -24080.1055  3.0183e-007 (0.0005)
                      -15922.1052  1.7484e-007 2.5562e-007 (0.0005)
                      -36292.3613  -6.0762e-008 -1.4866e-007 2.4507e-007
(0.0005)

MOON2 to P222 (1)     30488.3180  2.0236e-006 (0.0014)
                      -11298.4043  1.7568e-006 2.5991e-006 (0.0016)
                       8868.7807  -7.1835e-007 -8.8226e-007 1.5843e-006
(0.0013)

MOON2 to X572 (1)     23480.8280  8.0864e-008 (0.0003)
                      -11402.8287  7.0707e-008 1.1256e-007 (0.0003)
                       3762.5834  -5.9687e-008 -5.5398e-008 1.0980e-007
(0.0003)

P222 to P242 (1)      26084.6650  5.0270e-007 (0.0007)
                      -62366.0945  4.4528e-007 9.6841e-007 (0.0010)
                      -51733.1411  -2.9281e-007 -4.7568e-007 7.5218e-007
(0.0009)

P222 to P242 (10)     26084.6605  1.8709e-006 (0.0014)
                      -62366.1049  1.6145e-006 3.0676e-006 (0.0018)
                      -51733.1398  -8.8005e-007 -1.4016e-006 2.5888e-006
(0.0016)

P222 to P242 (2)      26084.6803  5.1555e-007 (0.0007)
                      -62366.0673  4.4560e-007 9.8300e-007 (0.0010)
                      -51733.1583  -3.0812e-007 -4.9934e-007 8.0723e-007
(0.0009)

P222 to P242 (3)      26084.6675  4.9129e-007 (0.0007)
                      -62366.0838  4.3031e-007 9.4099e-007 (0.0010)
                      -51733.1491  -2.8963e-007 -4.6707e-007 7.5053e-007
(0.0009)

P222 to P242 (4)      26084.6522  4.9503e-007 (0.0007)
                      -62366.1207  4.3414e-007 9.5573e-007 (0.0010)
                      -51733.1257  -2.9123e-007 -4.7381e-007 7.5379e-007
(0.0009)

P222 to P242 (5)      26084.6517  5.1953e-007 (0.0007)
                      -62366.1184  4.6306e-007 9.9714e-007 (0.0010)
                      -51733.1256  -3.0965e-007 -5.0909e-007 7.9978e-007
(0.0009)
```

```
P222 to P242 (7)      26084.6729  1.6997e-006 (0.0013)
                      -62366.0794  1.5879e-006 3.3187e-006 (0.0018)
                      -51733.1598  -1.0060e-006 -1.4811e-006 2.5326e-006
(0.0016)

P222 to P242 (8)      26084.6678  7.5508e-007 (0.0009)
                      -62366.0874  6.4810e-007 1.4137e-006 (0.0012)
                      -51733.1533  -4.3000e-007 -6.6347e-007 1.1282e-006
(0.0011)

P222 to P242 (9)      26084.6721  2.7737e-006 (0.0017)
                      -62366.0841  2.4188e-006 6.1737e-006 (0.0025)
                      -51733.1513  -1.7567e-006 -3.3494e-006 5.0707e-006
(0.0023)

P222 to ppt1 (1)      -35613.0016  2.1892e-007 (0.0005)
                      -5539.4961  1.9131e-007 4.1391e-007 (0.0006)
                      -31091.6343  -1.2804e-007 -2.0449e-007 3.3258e-007
(0.0006)

P222 to ppt1 (10)     -35613.0164  1.2206e-006 (0.0011)
                      -5539.5208  1.0626e-006 2.6954e-006 (0.0016)
                      -31091.6118  -7.7439e-007 -1.4642e-006 2.2156e-006
(0.0015)

P222 to ppt1 (2)      -35612.9966  2.2977e-007 (0.0005)
                      -5539.4920  1.9783e-007 4.3182e-007 (0.0007)
                      -31091.6331  -1.3679e-007 -2.1944e-007 3.5555e-007
(0.0006)

P222 to ppt1 (3)      -35612.9945  2.1873e-007 (0.0005)
                      -5539.4839  1.9090e-007 4.1551e-007 (0.0006)
                      -31091.6448  -1.2809e-007 -2.0706e-007 3.3257e-007
(0.0006)

P222 to ppt1 (8)      -35612.9929  3.3399e-007 (0.0006)
                      -5539.4869  2.8774e-007 6.1663e-007 (0.0008)
                      -31091.6454  -1.8768e-007 -2.8695e-007 4.9141e-007
(0.0007)

P222 to U1447 (1)     42403.3709  1.8714e-006 (0.0014)
                      -65316.4347  1.8845e-006 5.3295e-006 (0.0023)
                      -43679.0408  -1.3902e-006 -2.5384e-006 3.3444e-006
(0.0018)

P222 to U1447 (2)     42403.3507  3.3895e-006 (0.0018)
                      -65316.4654  3.8117e-006 9.7463e-006 (0.0031)
                      -43679.0208  -2.3028e-006 -4.4271e-006 6.3686e-006
(0.0025)

P222 to U1447 (3)     42403.3659  9.9025e-006 (0.0031)
                      -65316.4542  1.1273e-005 2.4490e-005 (0.0049)
                      -43679.0232  -7.1278e-006 -1.0807e-005 1.2488e-005
(0.0035)
```

```
P222 to WVI (1)          605.0903  1.3041e-006 (0.0011)
                      -48030.6949  1.1719e-006 2.7634e-006 (0.0017)
                      -53272.0617  -8.2235e-007 -1.3241e-006 2.0351e-006
(0.0014)

P222 to WVI (2)          605.0963  1.0311e-006 (0.0010)
                      -48030.6828  9.4329e-007 2.1953e-006 (0.0015)
                      -53272.0744  -6.6554e-007 -1.0930e-006 1.5936e-006
(0.0013)

P222 to WVI (3)          605.0845  1.3550e-006 (0.0012)
                      -48030.6951  1.2557e-006 2.4555e-006 (0.0016)
                      -53272.0566  -7.4279e-007 -1.1741e-006 1.9644e-006
(0.0014)

P222 to X572 (1)       -7007.5217  9.3667e-007 (0.0010)
                        -104.4702  1.0557e-006 2.3499e-006 (0.0015)
                       -5106.1477  -4.0921e-007 -7.5279e-007 1.1162e-006
(0.0011)

P222 to X572 (2)       -7007.5259  8.4180e-008 (0.0003)
                        -104.4753  7.5510e-008 1.6110e-007 (0.0004)
                       -5106.1568  -4.8833e-008 -7.3993e-008 1.2322e-007
(0.0004)

P222 to X572 (4)       -7007.5291  3.1290e-007 (0.0006)
                        -104.4889  2.9019e-007 7.4338e-007 (0.0009)
                       -5106.1507  -2.0799e-007 -4.0112e-007 6.0819e-007
(0.0008)

P222 to X572 (5)       -7007.5291  2.6948e-007 (0.0005)
                        -104.4723  2.5017e-007 4.9743e-007 (0.0007)
                       -5106.1539  -1.4271e-007 -2.2421e-007 4.2433e-007
(0.0007)

P222 to zoa1 (1)        5203.5599  4.9127e-007 (0.0007)
                       -2900.0380  4.5461e-007 8.4581e-007 (0.0009)
                         300.8173  -2.2117e-007 -3.0766e-007 5.8842e-007
(0.0008)

P222 to zoa1 (2)        5203.5593  1.4770e-007 (0.0004)
                       -2900.0381  1.3377e-007 2.7804e-007 (0.0005)
                         300.8185  -9.1032e-008 -1.2639e-007 2.2796e-007
(0.0005)

P222 to zoa1 (3)        5203.5567  1.5542e-007 (0.0004)
                       -2900.0370  1.3549e-007 3.3706e-007 (0.0006)
                         300.8182  -1.0830e-007 -1.7257e-007 3.0639e-007
(0.0006)

P222 to zoa1 (4)        5203.5571  2.7955e-007 (0.0005)
                       -2900.0414  1.9028e-007 4.5760e-007 (0.0007)
                         300.8260  -1.1776e-007 -2.6393e-007 4.2794e-007
(0.0007)
```

```
P242 to ppt1 (1)      -61697.6637  5.3532e-007 (0.0007)
                      56826.6030  4.7305e-007 1.0183e-006 (0.0010)
                      20641.5057  -3.1075e-007 -5.0501e-007 7.9006e-007
(0.0009)

P242 to ppt1 (10)     -61697.6648  1.1674e-006 (0.0011)
                      56826.6030  1.0804e-006 2.2070e-006 (0.0015)
                      20641.5106  -6.5910e-007 -9.7396e-007 1.6561e-006
(0.0013)

P242 to ppt1 (11)     -61697.6710  1.8301e-006 (0.0014)
                      56826.6032  1.6028e-006 3.1052e-006 (0.0018)
                      20641.5164  -9.2516e-007 -1.4504e-006 2.5159e-006
(0.0016)

P242 to ppt1 (2)      -61697.6765  5.4558e-007 (0.0007)
                      56826.5758  4.7540e-007 1.0384e-006 (0.0010)
                      20641.5237  -3.1968e-007 -5.1844e-007 8.2156e-007
(0.0009)

P242 to ppt1 (3)      -61697.6614  5.1206e-007 (0.0007)
                      56826.6018  4.5358e-007 9.8724e-007 (0.0010)
                      20641.5030  -3.0391e-007 -4.8995e-007 7.7530e-007
(0.0009)

P242 to ppt1 (5)      -61697.6550  5.3216e-007 (0.0007)
                      56826.6247  4.6656e-007 1.0157e-006 (0.0010)
                      20641.4865  -3.0790e-007 -5.1606e-007 8.4228e-007
(0.0009)

P242 to ppt1 (6)      -61697.6657  1.7970e-006 (0.0013)
                      56826.6071  1.7109e-006 3.5323e-006 (0.0019)
                      20641.5023  -1.0891e-006 -1.6154e-006 2.6501e-006
(0.0016)

P242 to ppt1 (8)      -61697.6686  8.7749e-007 (0.0009)
                      56826.5999  7.5349e-007 1.5971e-006 (0.0013)
                      20641.5074  -4.6098e-007 -7.2574e-007 1.2101e-006
(0.0011)

P242 to U1447 (1)     16318.7017  1.2001e-006 (0.0011)
                      -2950.3509  1.2159e-006 4.0804e-006 (0.0020)
                       8054.1133  -7.1893e-007 -2.3617e-006 2.3523e-006
(0.0015)

P242 to U1447 (2)     16318.6940  1.0880e-006 (0.0010)
                      -2950.3555  1.3390e-006 2.6965e-006 (0.0016)
                       8054.1113  -6.7823e-007 -1.0751e-006 1.3574e-006
(0.0012)

P242 to U1447 (3)     16318.6985  1.5026e-006 (0.0012)
                      -2950.3554  1.7094e-006 3.7043e-006 (0.0019)
                       8054.1140  -1.0842e-006 -1.6437e-006 1.8958e-006
(0.0014)
```

```
P242 to WVI (1)       -25479.5922  4.2220e-007 (0.0006)
                      14335.3708  3.7960e-007 8.9445e-007 (0.0009)
                      -1538.9011  -2.6611e-007 -4.2852e-007 6.5769e-007
(0.0008)

P242 to WVI (2)       -25479.5793  3.3319e-007 (0.0006)
                      14335.3924  3.0486e-007 7.0938e-007 (0.0008)
                      -1538.9161  -2.1545e-007 -3.5402e-007 5.1765e-007
(0.0007)

P242 to X572 (2)      -33092.1988  8.9565e-007 (0.0009)
                      62261.6094  8.0674e-007 1.6721e-006 (0.0013)
                      46626.9969  -5.0971e-007 -7.6101e-007 1.2368e-006
(0.0011)

P242 to zoa1 (1)      -20881.1141  2.9826e-006 (0.0017)
                      59466.0408  2.7416e-006 5.8324e-006 (0.0024)
                      52033.9794  -1.8034e-006 -2.2363e-006 3.7885e-006
(0.0019)

P242 to zoa1 (3)      -20881.1190  1.7140e-006 (0.0013)
                      59466.0397  1.4955e-006 3.7633e-006 (0.0019)
                      52033.9773  -1.1142e-006 -1.8506e-006 3.1511e-006
(0.0018)

P242 to zoa1 (4)      -20881.1136  2.9372e-006 (0.0017)
                      59466.0431  2.5299e-006 6.0640e-006 (0.0025)
                      52033.9765  -1.7299e-006 -3.3454e-006 5.4304e-006
(0.0023)

ppt1 to WVI (1)       36218.0957  3.3808e-007 (0.0006)
                      -42491.1878  3.0553e-007 7.2065e-007 (0.0008)
                      -22180.4383  -2.1301e-007 -3.4354e-007 5.2436e-007
(0.0007)

ppt1 to WVI (2)       36218.0906  2.6734e-007 (0.0005)
                      -42491.1919  2.4759e-007 5.8496e-007 (0.0008)
                      -22180.4310  -1.7330e-007 -2.8759e-007 4.1366e-007
(0.0006)

ppt1 to WVI (4)       36218.0798  5.6622e-007 (0.0008)
                      -42491.2199  5.9312e-007 1.2107e-006 (0.0011)
                      -22180.4161  -3.0586e-007 -4.7279e-007 7.7379e-007
(0.0009)

ppt1 to X572 (1)      28605.4649  1.0756e-006 (0.0010)
                       5435.0161  1.2124e-006 2.6956e-006 (0.0016)
                      25985.4882  -4.7063e-007 -8.6327e-007 1.2776e-006
(0.0011)

ppt1 to X572 (3)      28605.4888  6.0080e-007 (0.0008)
                       5435.0355  6.2549e-007 1.3733e-006 (0.0012)
                      25985.4662  -2.5545e-007 -7.2091e-007 1.3596e-006
(0.0012)
```

```
ppt1 to X572 (4)      28605.4813  3.1094e-007 (0.0006)
                       5435.0294  2.8870e-007 5.7299e-007 (0.0008)
                      25985.4704  -1.6422e-007 -2.5783e-007 4.8706e-007
(0.0007)

ppt1 to X572 (6)      28605.4918  1.0251e-006 (0.0010)
                       5435.0226  9.6013e-007 1.7869e-006 (0.0013)
                      25985.4723  -7.4519e-007 -6.6031e-007 1.4770e-006
(0.0012)

ppt1 to zoa1 (1)      40816.5584  2.1141e-006 (0.0015)
                       2639.4485  2.4511e-006 4.7139e-006 (0.0022)
                      31392.4675  -9.4109e-007 -1.6049e-006 2.3299e-006
(0.0015)

ppt1 to zoa1 (2)      40816.5510  9.6739e-007 (0.0010)
                       2639.4458  8.8245e-007 1.6363e-006 (0.0013)
                      31392.4565  -3.8219e-007 -5.9802e-007 1.2523e-006
(0.0011)

ppt1 to zoa1 (3)      40816.5405  3.0083e-007 (0.0005)
                       2639.4313  2.6881e-007 6.7691e-007 (0.0008)
                      31392.4670  -2.0060e-007 -3.2832e-007 5.5532e-007
(0.0007)

ppt1 to zoa1 (5)      40816.5767  1.5739e-006 (0.0013)
                       2639.4681  1.7990e-006 4.4633e-006 (0.0021)
                      31392.4391  -1.1960e-006 -7.0395e-007 2.5187e-006
(0.0016)

X572 to zoa1 (1)      12211.0804  8.1008e-008 (0.0003)
                      -2795.5726  9.0803e-008 2.0181e-007 (0.0004)
                       5406.9681  -3.3824e-008 -6.3581e-008 1.0428e-007
(0.0003)

X572 to zoa1 (2)      12211.0802  5.3154e-008 (0.0002)
                      -2795.5698  4.2978e-008 1.2392e-007 (0.0004)
                       5406.9810  -2.1350e-008 -2.6559e-008 5.7228e-008
(0.0002)

X572 to zoa1 (3)      12211.0849  2.7274e-008 (0.0002)
                      -2795.5531  2.5419e-008 6.4807e-008 (0.0003)
                       5406.9727  -1.8194e-008 -3.5854e-008 6.1730e-008
(0.0002)

X572 to zoa1 (4)      12211.0670  5.2991e-008 (0.0002)
                      -2795.5684  4.9187e-008 8.8312e-008 (0.0003)
                       5406.9823  -2.9002e-008 -3.8712e-008 6.7595e-008
(0.0003)
```

****

OUTPUT VECTOR RESIDUALS (East, North, Height - Local Level)

****

SESSION NAME	-- RE --	-- RN --	-- RH --		- PPM -	DIST -	STD -
	(m)	(m)	(m)			(km)	(m)
B1458 to GAP (1)	0.0173	-0.0169	0.0175	$	0.827	36.1	0.0012
B1458 to GAP (2)	0.0012	0.0026	0.0261	$	0.729	36.1	0.0007
B1458 to P222 (2)	0.0013	-0.0087	0.0443	$	0.770	58.7	0.0038
B1458 to P222 (3)	-0.0039	0.0015	0.0123	$	0.222	58.7	0.0022
B1458 to P242 (1)	-0.0028	-0.0016	0.0490	$	1.536	32.0	0.0039
B1458 to P242 (2)	0.0037	-0.0042	0.0450	$	1.415	32.0	0.0026
B1458 to P242 (3)	0.0018	0.0059	-0.0077	$	0.310	32.0	0.0021
B1458 to P242 (4)	-0.0013	0.0005	0.0079	$	0.250	32.0	0.0015
B1458 to ppt1 (4)	-0.0059	-0.0024	0.0427	$	0.791	54.6	0.0028
B1458 to WVI (1)	-0.0010	0.0091	-0.0428	$	3.102	14.1	0.0022
B1458 to WVI (2)	-0.0007	-0.0007	0.0013	$	0.114	14.1	0.0003
Bell to FELIPE (1)	0.0049	0.0003	0.0220	$	1.946	11.6	0.0007
Bell to G1080 (1)	-0.0035	-0.0006	-0.0339	$	1.302	26.2	0.0009
Bell to P242 (1)	0.0052	0.0056	-0.0120	$	0.866	16.5	0.0031
FELIPE to G1080 (1)	-0.0045	0.0010	-0.0427	$	1.961	21.9	0.0005
FELIPE to P222 (1)	0.0090	0.0069	-0.0272	$	0.334	88.3	0.0039
FELIPE to P242 (1)	0.0017	0.0074	-0.0348	$	6.149	5.8	0.0014
FELIPE to U1447 (1)	-0.0017	0.0052	-0.0300	$	2.275	13.4	0.0006
G1080 to M874 (1)	-0.0003	0.0033	-0.0469	$	0.967	48.6	0.0014
G1080 to P222 (2)	-0.0011	-0.0066	-0.0471	$	0.708	67.1	0.0028
G1080 to P222 (3)	0.0043	0.0022	-0.0317	$	0.477	67.1	0.0017
G1080 to P222 (5)	0.0153	0.0026	0.0252	$	0.440	67.1	0.0026
G1080 to P242 (2)	-0.0014	-0.0047	-0.0223	$	1.264	18.0	0.0017
G1080 to P242 (3)	-0.0017	0.0000	-0.0102	$	0.574	18.0	0.0026

G1080 to P242 (6)	0.0083	0.0088	0.0006 $	0.674	18.0	0.0026
G1080 to P242 (8)	0.0043	0.0058	-0.0167 $	1.009	18.0	0.0021
G1080 to P242 (9)	0.0067	-0.0048	-0.0235 $	1.382	18.0	0.0017
G1080 to ppt1 (3)	-0.0043	-0.0061	0.0089 $	0.164	71.1	0.0032
G1080 to ppt1 (4)	0.0007	0.0034	-0.0241 $	0.342	71.1	0.0010
G1080 to ppt1 (5)	-0.0049	0.0067	0.0096 $	0.178	71.1	0.0024
G1080 to ppt1 (8)	0.0093	0.0052	-0.0433 $	0.627	71.1	0.0038
G1080 to ppt1 (9)	0.0054	-0.0004	-0.0502 $	0.710	71.1	0.0022
G1080 to U1447 (1)	0.0025	0.0031	0.0003 $	0.144	28.0	0.0009
G1080 to X572 (3)	-0.0069	0.0093	0.0211 $	0.362	66.5	0.0010
G1080 to X572 (4)	0.0116	0.0030	-0.0162 $	0.303	66.5	0.0016
G1080 to X572 (5)	-0.0073	-0.0015	-0.0496 $	0.754	66.5	0.0011
G1080 to zoa1 (1)	-0.0014	-0.0005	-0.0266 $	0.417	63.9	0.0015
G1080 to zoa1 (2)	-0.0002	-0.0029	-0.0160 $	0.254	63.9	0.0014
G1080 to zoa1 (5)	0.0009	0.0019	-0.0490 $	0.767	63.9	0.0009
GAP to M874 (1)	0.0015	0.0064	-0.0567 $	2.082	27.4	0.0010
GAP to MOON2 (1)	0.0035	-0.0062	0.0373 $	1.088	34.9	0.0009
GAP to P222 (2)	-0.0171	-0.0002	0.0176 $	0.781	31.4	0.0031
GAP to P222 (3)	0.0064	0.0049	-0.0059 $	0.318	31.4	0.0021
GAP to P222 (5)	0.0050	-0.0045	-0.0059	0.284	31.4	0.0031
GAP to P222 (6)	-0.0049	-0.0008	-0.0135 $	0.457	31.4	0.0017
GAP to P242 (3)	0.0083	0.0029	0.0381 $	0.579	67.5	0.0035
GAP to P242 (4)	-0.0060	-0.0021	-0.0278 $	0.423	67.5	0.0036
GAP to ppt1 (1)	-0.0114	0.0024	-0.0028 $	0.478	25.1	0.0016
GAP to ppt1 (2)	-0.0046	0.0069	-0.0294 $	1.217	25.1	0.0028
GAP to ppt1 (4)	0.0024	0.0102	-0.0222 $	0.978	25.1	0.0022
GAP to ppt1 (6)	-0.0069	-0.0082	0.0026 $	0.440	25.1	0.0019

GAP to WVI (1)	0.0067	0.0017	0.0021	$ 0.157	46.2	0.0009
GAP to WVI (2)	-0.0042	-0.0112	-0.0373	$ 0.847	46.2	0.0019
GAP to X572 (1)	-0.0034	0.0067	0.0418	$ 1.701	25.0	0.0009
GAP to X572 (2)	0.0037	-0.0083	0.0570	$ 2.310	25.0	0.0009
M874 to MOON2 (1)	-0.0029	-0.0001	0.0384	$ 0.812	47.4	0.0011
M874 to P222 (1)	0.0022	-0.0111	0.0291	$ 1.612	19.3	0.0028
M874 to P222 (2)	-0.0055	0.0041	0.0138	$ 0.800	19.3	0.0015
M874 to P242 (2)	0.0026	-0.0056	0.0440	$ 0.669	66.5	0.0024
M874 to ppt1 (2)	0.0058	0.0057	0.0347	$ 0.699	51.0	0.0029
M874 to zoa1 (1)	-0.0000	-0.0049	0.0176	$ 1.194	15.3	0.0006
MHCB to GAP (1)	0.0112	0.0004	-0.0244	$ 0.618	43.4	0.0056
MHCB to B1458 (2)	0.0034	0.0135	-0.0468	$ 1.447	33.7	0.0040
MHCB to B1458 (4)	0.0023	0.0003	-0.0336	$ 0.999	33.7	0.0016
MHCB to FELIPE (1)	-0.0114	-0.0138	0.0039	$ 0.385	47.5	0.0058
MHCB to G1080 (1)	-0.0019	0.0076	0.0524	$ 1.757	30.2	0.0034
MHCB to G1080 (2)	0.0025	0.0134	-0.0396	$ 1.387	30.2	0.0036
MHCB to G1080 (3)	-0.0053	-0.0027	-0.0143	$ 0.512	30.2	0.0017
MHCB to GAP (3)	-0.0083	-0.0049	-0.0178	$ 0.466	43.4	0.0026
MHCB to GAP (6)	0.0048	0.0016	-0.0162	$ 0.390	43.4	0.0047
MHCB to M874 (1)	-0.0049	0.0093	-0.0246	$ 1.041	25.7	0.0034
MHCB to MHCB-B (1)	-0.0009	0.0009	0.0266	$ 23.597	1.1	0.0006
MHCB to MHCB-B (2)	-0.0006	0.0007	0.0232	$ 20.580	1.1	0.0008
MHCB to MHCB-B (3)	0.0017	-0.0098	0.0138	$ 15.093	1.1	0.0015
MHCB to MOON2 (1)	-0.0036	-0.0062	-0.0400	$ 0.566	71.7	0.0031
MHCB to P222 (10)	0.0018	0.0128	-0.0167	$ 0.472	44.8	0.0035
MHCB to P222 (3)	0.0014	-0.0016	0.0006	0.049	44.8	0.0009
MHCB to P222 (4)	0.0092	0.0127	-0.0535	$ 1.245	44.8	0.0037

MHCB to P222 (6)	0.0002	-0.0039	-0.0484 $	1.084	44.8	0.0019
MHCB to P222 (9)	-0.0024	-0.0018	-0.0432 $	0.968	44.8	0.0019
MHCB to P242 (10)	-0.0015	-0.0039	-0.0036	0.120	45.9	0.0037
MHCB to P242 (2)	0.0012	-0.0042	-0.0086	0.210	45.9	0.0032
MHCB to P242 (4)	-0.0033	-0.0034	-0.0499 $	1.092	45.9	0.0036
MHCB to P242 (6)	-0.0037	-0.0009	-0.0385 $	0.843	45.9	0.0039
MHCB to P242 (8)	-0.0019	0.0018	-0.0217 $	0.477	45.9	0.0025
MHCB to ppt1 (1)	-0.0020	-0.0009	-0.0064 $	0.099	68.5	0.0013
MHCB to ppt1 (10)	-0.0020	-0.0013	-0.0531 $	0.776	68.5	0.0037
MHCB to ppt1 (11)	-0.0009	-0.0029	-0.0116 $	0.175	68.5	0.0013
MHCB to ppt1 (2)	-0.0015	0.0000	-0.0015	0.031	68.5	0.0013
MHCB to ppt1 (3)	-0.0014	-0.0008	0.0219 $	0.321	68.5	0.0013
MHCB to ppt1 (4)	0.0019	-0.0020	-0.0149 $	0.221	68.5	0.0013
MHCB to ppt1 (6)	0.0002	-0.0013	-0.0298 $	0.435	68.5	0.0026
MHCB to U1447 (1)	-0.0031	-0.0039	-0.0280 $	0.624	45.5	0.0020
MHCB to WVI (2)	-0.0008	0.0023	-0.0205 $	0.442	46.9	0.0016
MHCB to WVI (3)	0.0014	-0.0006	-0.0140 $	0.300	46.9	0.0018
MHCB to X572 (3)	-0.0012	-0.0067	-0.0141 $	0.330	47.5	0.0021
MHCB-B to P222 (1)	-0.0010	0.0032	0.0098 $	0.236	43.9	0.0016
MHCB-B to P242 (2)	-0.0029	0.0036	0.0110 $	0.259	46.1	0.0029
MHCB-B to ppt1 (1)	-0.0009	0.0084	0.0162 $	0.271	67.4	0.0012
MHCB-B to ppt1 (3)	0.0017	0.0097	-0.0088 $	0.196	67.4	0.0029
MHCB-B to U1447 (1)	0.0030	-0.0051	0.0059 $	0.182	46.1	0.0018
MHCB-B to WVI (1)	0.0002	0.0026	0.0270 $	0.585	46.4	0.0009
MOON2 to P222 (1)	0.0007	0.0028	-0.0399 $	1.188	33.7	0.0025
MOON2 to X572 (1)	-0.0009	-0.0018	0.0244 $	0.930	26.4	0.0006
P222 to P242 (1)	-0.0004	-0.0010	-0.0000	0.013	85.1	0.0015

P222 to P242 (10)	-0.0020	0.0047	-0.0098 $	0.129	85.1	0.0027
P222 to P242 (2)	0.0010	-0.0062	0.0352 $	0.420	85.1	0.0015
P222 to P242 (3)	0.0032	-0.0010	0.0130 $	0.158	85.1	0.0015
P222 to P242 (4)	-0.0032	0.0042	-0.0325 $	0.387	85.1	0.0015
P222 to P242 (5)	-0.0016	0.0031	-0.0312 $	0.369	85.1	0.0015
P222 to P242 (7)	0.0008	0.0035	0.0247 $	0.293	85.1	0.0027
P222 to P242 (8)	0.0010	0.0041	0.0133 $	0.164	85.1	0.0018
P222 to P242 (9)	-0.0009	-0.0006	0.0161 $	0.189	85.1	0.0037
P222 to ppt1 (1)	0.0009	0.0005	-0.0010	0.030	47.6	0.0010
P222 to ppt1 (10)	0.0002	0.0001	-0.0375 $	0.788	47.6	0.0025
P222 to ppt1 (2)	-0.0012	-0.0042	0.0031 $	0.113	47.6	0.0010
P222 to ppt1 (3)	0.0014	0.0002	0.0166 $	0.349	47.6	0.0010
P222 to ppt1 (8)	-0.0015	0.0018	0.0156 $	0.331	47.6	0.0012
P222 to U1447 (1)	-0.0008	-0.0030	0.0185 $	0.209	89.3	0.0032
P222 to U1447 (2)	0.0003	0.0034	-0.0229 $	0.259	89.3	0.0044
P222 to U1447 (3)	-0.0067	-0.0053	-0.0075	0.128	89.3	0.0068
P222 to WVI (1)	-0.0008	0.0013	0.0031	0.048	71.7	0.0025
P222 to WVI (2)	0.0005	0.0034	0.0215 $	0.304	71.7	0.0022
P222 to WVI (3)	0.0041	-0.0007	-0.0026	0.068	71.7	0.0024
P222 to X572 (1)	0.0008	-0.0101	-0.0100 $	1.642	8.7	0.0021
P222 to X572 (2)	0.0016	0.0011	-0.0096 $	1.135	8.7	0.0006
P222 to X572 (4)	-0.0029	0.0043	-0.0238 $	2.808	8.7	0.0013
P222 to X572 (5)	0.0059	-0.0017	-0.0107 $	1.429	8.7	0.0011
P222 to zoa1 (1)	-0.0034	0.0015	-0.0015	0.670	6.0	0.0014
P222 to zoa1 (2)	-0.0030	0.0008	-0.0025 $	0.668	6.0	0.0008
P222 to zoa1 (3)	-0.0002	0.0013	-0.0028 $	0.520	6.0	0.0009
P222 to zoa1 (4)	-0.0029	-0.0028	-0.0103 $	1.852	6.0	0.0011

P242 to ppt1 (1)	0.0012	-0.0009	0.0040	0.050	86.4	0.0015
P242 to ppt1 (10)	0.0021	-0.0045	0.0006	0.057	86.4	0.0022
P242 to ppt1 (11)	0.0075	-0.0072	-0.0053 $	0.135	86.4	0.0027
P242 to ppt1 (2)	-0.0023	0.0027	-0.0306 $	0.357	86.4	0.0016
P242 to ppt1 (3)	-0.0014	0.0012	0.0059 $	0.071	86.4	0.0015
P242 to ppt1 (5)	0.0053	0.0006	0.0340 $	0.398	86.4	0.0015
P242 to ppt1 (6)	0.0050	0.0003	0.0080 $	0.109	86.4	0.0028
P242 to ppt1 (8)	0.0038	0.0009	-0.0011	0.046	86.4	0.0019
P242 to U1447 (1)	-0.0025	-0.0053	0.0017	0.334	18.4	0.0028
P242 to U1447 (2)	0.0017	0.0010	-0.0034	0.216	18.4	0.0023
P242 to U1447 (3)	-0.0021	-0.0026	-0.0031	0.249	18.4	0.0027
P242 to WVI (1)	-0.0006	0.0071	-0.0354 $	1.234	29.3	0.0014
P242 to WVI (2)	-0.0003	0.0040	-0.0063 $	0.255	29.3	0.0012
P242 to X572 (2)	0.0035	-0.0004	-0.0271 $	0.324	84.5	0.0020
P242 to zoa1 (1)	-0.0037	-0.0032	-0.0287 $	0.356	81.7	0.0036
P242 to zoa1 (3)	-0.0001	0.0006	-0.0302 $	0.369	81.7	0.0029
P242 to zoa1 (4)	-0.0029	-0.0023	-0.0251 $	0.310	81.7	0.0038
ppt1 to WVI (1)	0.0010	0.0028	0.0198 $	0.333	60.1	0.0013
ppt1 to WVI (2)	0.0031	0.0007	0.0104 $	0.182	60.1	0.0011
ppt1 to WVI (4)	-0.0026	0.0065	-0.0220 $	0.385	60.1	0.0016
ppt1 to X572 (1)	0.0074	-0.0020	-0.0229 $	0.617	39.0	0.0022
ppt1 to X572 (3)	-0.0025	-0.0022	0.0137 $	0.361	39.0	0.0018
ppt1 to X572 (4)	0.0006	-0.0000	0.0038 $	0.099	39.0	0.0012
ppt1 to X572 (6)	-0.0119	-0.0014	0.0026 $	0.314	39.0	0.0021
ppt1 to zoa1 (1)	-0.0068	-0.0057	-0.0179 $	0.388	51.6	0.0030
ppt1 to zoa1 (2)	-0.0020	0.0068	-0.0162 $	0.344	51.6	0.0020
ppt1 to zoa1 (3)	-0.0008	0.0093	-0.0368 $	0.737	51.6	0.0012

ppt1 to zoa1 (5)	-0.0118	0.0009	0.0202	$	0.454	51.6
0.0029						
X572 to zoa1 (1)	-0.0057	0.0120	0.0028	$	0.995	13.6
0.0006						
X572 to zoa1 (2)	-0.0041	0.0004	-0.0033	$	0.383	13.6
0.0005						
X572 to zoa1 (3)	0.0008	-0.0031	0.0151	$	1.129	13.6
0.0004						
X572 to zoa1 (4)	0.0079	0.0029	-0.0086	$	0.883	13.6
0.0005						
RMS	0.0048	0.0052	0.0261			

$ - This session is flagged as a 3-sigma outlier

****
CHECK POINT RESIDUALS (East, North, Height - Local Level)
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
Bell	-0.0020	-0.0411	
GAP	-0.1173	0.1375	
P222	0.0151	-0.0399	
P242	0.0331	-0.0542	
ppt1	-0.1399	0.2226	
WVI	-0.0079	0.0467	
X572	0.0351	-0.0414	
zoa1	0.0251	-0.0253	
RMS	0.0676	0.0995	0.0000

****
CONTROL POINT RESIDUALS (ADJUSTMENT MADE)
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
B1458			0.0015
FELIPE			-0.0043
G1080			0.0124
M874			0.0025
MHCB	0.0000	-0.0000	-0.0371
MHCB-B			-0.0008
MOON2			-0.0276
U1447			0.0011
RMS	0.0000	0.0000	0.0170

```
*****************************************************************
    OUTPUT STATION COORDINATES (LAT/LONG/HT)
*****************************************************************

STA_ID      -- LATITUDE --  -- LONGITUDE -- - ELLHGT -
B1458       37 03 48.12217 -121 47 44.55304   802.5250
Bell        37 02 18.85785 -121 18 40.02831    93.1969
FELIPE      36 57 40.54028 -121 23 55.48663   102.9607
G1080       37 04 19.05912 -121 36 08.64377    48.8606
GAP         37 15 28.93216 -122 07 15.79997   771.1291
M874        37 26 10.03374 -121 54 24.89336   -27.6884
MHCB        37 20 29.49949 -121 38 33.22523  1262.3229
MHCB-B      37 20 23.29600 -121 39 17.38292  1034.3773
MOON2       37 26 20.30791 -122 26 34.65082   -10.7134
P222        37 32 21.24282 -122 04 59.69095    54.0200
P242        36 57 14.13477 -121 27 47.40085    15.3318
ppt1        37 11 13.48976 -122 23 23.77127     8.3661
U1447       37 02 39.48412 -121 17 21.80365    88.3974
WVI         36 56 11.71868 -121 47 28.03407    13.4010
X572        37 28 54.53475 -122 08 59.09643   -29.7527
zoa1        37 32 34.97294 -122 00 57.34569    -3.1315


*****************************************************************
    OUTPUT VARIANCE/COVARIANCE
*****************************************************************
                                              2
STA_ID      SE/SN/SUP  --------- CX matrix (m )-----------
            (90.00 %)  (not scaled by confidence level)
               (m)          (ECEF, XYZ cartesian)
B1458          0.0004  2.8841e-008
               0.0005  -2.8536e-009 2.3856e-008
               0.0002  1.0512e-008 1.4052e-008 3.2006e-008

Bell           0.0006  7.7243e-008
               0.0006  3.4145e-008 1.6485e-007
               0.0010  -1.5391e-008 -6.3213e-008 1.2771e-007

FELIPE         0.0004  3.7038e-008
               0.0005  -7.2052e-009 3.4116e-008
               0.0002  1.1141e-008 2.2384e-008 4.1425e-008

G1080          0.0004  3.5904e-008
               0.0005  1.2387e-008 5.1143e-008
               0.0005  -3.8840e-009 -5.7705e-009 4.7822e-008

GAP            0.0004  4.1931e-008
               0.0005  1.8978e-008 5.8575e-008
               0.0006  -7.4019e-009 -1.2707e-008 5.1172e-008

M874           0.0004  3.4484e-008
               0.0005  -3.1057e-009 3.1931e-008
               0.0002  1.3158e-008 2.2331e-008 4.2370e-008
```

```
MHCB            0.0002  2.0336e-008
                0.0002  1.6777e-008 3.7230e-008
                0.0006  -1.5045e-008 -2.4419e-008 3.1897e-008

MHCB-B          0.0003  2.4166e-008
                0.0004  -1.8726e-009 2.0088e-008
                0.0002  7.2206e-009 1.0416e-008 2.5039e-008

MOON2           0.0004  7.3109e-008
                0.0006  4.6797e-008 1.0135e-007
                0.0009  -3.0523e-008 -3.1610e-008 9.4487e-008

P222            0.0003  3.2542e-008
                0.0004  1.3738e-008 4.6510e-008
                0.0005  -7.0945e-009 -1.1260e-008 4.3531e-008

P242            0.0004  4.0014e-008
                0.0004  1.9741e-008 6.0730e-008
                0.0006  -9.9766e-009 -1.6349e-008 5.3816e-008

ppt1            0.0003  3.1685e-008
                0.0004  1.4446e-008 4.6059e-008
                0.0005  -8.0587e-009 -1.2770e-008 4.2080e-008

U1447           0.0005  3.9844e-008
                0.0006  -9.9225e-009 4.0999e-008
                0.0002  8.9952e-009 2.7925e-008 4.5487e-008

WVI             0.0004  3.3862e-008
                0.0004  8.1781e-009 3.9442e-008
                0.0005  -2.0280e-010 -2.3674e-009 4.1251e-008

X572            0.0003  3.4790e-008
                0.0004  1.4295e-008 4.9170e-008
                0.0005  -6.2778e-009 -9.4904e-009 4.5356e-008

zoa1            0.0004  3.5693e-008
                0.0004  1.4527e-008 5.0172e-008
                0.0005  -6.3163e-009 -9.0655e-009 4.6842e-008



************************************************************
    VARIANCE FACTOR = 237.1744

    Note: Values < 1.0 indicate statistics are pessimistic, while
          values > 1.0 indicate optimistic statistics. Entering this
          value as the network adjustment scale factor will bring
          variance factor to one.
************************************************************
```

Appendix E

FINAL ADJUSTMENT

```
              ************************************************
              * NETWORK - WEIGHTED GPS NETWORK ADJUSTMENT      *
              *                                                *
              * (c) Copyright Waypoint Consulting Inc., (2003) *
              *                                                *
              * VERSION: 7.01                                  *
              *                                                *
              * FILE: C:\Project\060079_SantaClara\Static\Static
Processing\HorVer test.net
              ************************************************

DATE(m/d/y): Mon.   5/01/06   TIME: 22:47:27



*****************************************************************

  DATUM:             'NAD83'
  SCALE_FACTOR:      1.0000
  CONFIDENCE LEVEL: 90.00 %   (Scale factor is 2.1461)


*****************************************************************
    INPUT CONTROL/CHECK POINTS
*****************************************************************

STA_ID     TYPE    -- LATITUDE --  -- LONGITUDE --  ELLHGT -   HZ-SD   V-SD
B1458      GCP-VT                                    802.524          0.00010
Bell       GCP-HZ  37 02 18.85919 -121 18 40.02823           0.00010
FELIPE     GCP-VT                                    102.965          0.00010
G1080      GCP-VT                                     48.848          0.00500
GAP        GCP-HZ  37 15 28.92770 -122 07 15.79521           0.00010
M874       GCP-3D  37 26 10.03023 -121 54 24.89082    -27.691 0.00010 0.00010
MHCB       GCP-3D  37 20 29.49949 -121 38 33.22523   1262.360 0.00010 2.00000
MHCB-B     GCP-VT                                   1034.378          0.00010
MOON2      GCP-VT                                    -10.686          0.00500
P222       CHK-HZ  37 32 21.24412 -122 04 59.69157
P242       CHK-HZ  36 57 14.13653 -121 27 47.40219
ppt1       GCP-HZ  37 11 13.48254 -122 23 23.76560           0.00010
U1447      GCP-VT                                     88.396          0.00010
WVI        CHK-HZ  36 56 11.71717 -121 47 28.03375
X572       CHK-HZ  37 28 54.53609 -122 08 59.09786
zoa1       CHK-HZ  37 32 34.97376 -122 00 57.34671


*****************************************************************
    INPUT VECTORS
*****************************************************************

SESSION NAME           VECTOR(m)    ------ Covariance (m) [unscaled] ------
                        DX/DY/DZ           standard deviations in brackets
```

```
B1458 to GAP (1)      -17599.8222  2.0441e-007 (0.0005)
                      26392.8072  1.9497e-007 5.5985e-007 (0.0007)
                      17200.7795  -2.0917e-008 -2.5174e-007 6.4359e-007
(0.0008)

B1458 to GAP (2)      -17599.8111  1.0349e-007 (0.0003)
                      26392.7945  1.0804e-007 2.6670e-007 (0.0005)
                      17200.7587  -4.8408e-008 -1.1309e-007 1.3557e-007
(0.0004)

B1458 to P222 (2)     -4387.2033  2.8696e-006 (0.0017)
                      41153.9210  2.8354e-006 5.7401e-006 (0.0024)
                      41559.9235  -1.7407e-006 -2.8393e-006 5.8638e-006
(0.0024)

B1458 to P222 (3)     -4387.2157  9.7318e-007 (0.0010)
                      41153.8914  9.2849e-007 2.1830e-006 (0.0015)
                      41559.9347  -4.9223e-007 -1.1973e-006 1.8924e-006
(0.0014)

B1458 to P242 (1)     21697.4642  3.0873e-006 (0.0018)
                      -21212.1762  2.5728e-006 7.5301e-006 (0.0027)
                      -10173.2269  -2.0139e-006 -3.4218e-006 4.4489e-006
(0.0021)

B1458 to P242 (2)     21697.4578  1.3593e-006 (0.0012)
                      -21212.1742  1.3404e-006 2.7089e-006 (0.0016)
                      -10173.2223  -8.2733e-007 -1.3435e-006 2.7801e-006
(0.0017)

B1458 to P242 (3)     21697.4341  7.7072e-007 (0.0009)
                      -21212.2162  7.9543e-007 1.9597e-006 (0.0014)
                      -10173.1987  -4.4272e-007 -9.8595e-007 1.5231e-006
(0.0012)

B1458 to P242 (4)     21697.4450  4.6079e-007 (0.0007)
                      -21212.2044  4.3895e-007 1.0298e-006 (0.0010)
                      -10173.2037  -2.3437e-007 -5.6665e-007 8.9589e-007
(0.0009)

B1458 to ppt1 (4)     -40000.2001  1.7721e-006 (0.0013)
                      35614.4172  1.4561e-006 3.5316e-006 (0.0019)
                      10468.2849  -3.5343e-007 -1.3385e-006 2.7317e-006
(0.0017)

B1458 to WVI (1)      -3782.1549  9.0251e-007 (0.0010)
                      -6876.8442  5.5193e-007 2.2877e-006 (0.0015)
                      -11712.0969  -3.2007e-007 -3.3199e-008 1.5006e-006
(0.0012)

B1458 to WVI (2)      -3782.1335  1.7739e-008 (0.0001)
                      -6876.8091  1.6612e-008 3.7226e-008 (0.0002)
                      -11712.1156  -9.2775e-009 -2.0648e-008 3.2660e-008
(0.0002)
```

```
Bell to FELIPE (1)     -9351.6800  7.1730e-008 (0.0003)
                        -357.4207  5.2607e-008 2.4630e-007 (0.0005)
                       -6846.3272  -2.7856e-008 -1.4057e-007 1.5894e-007
(0.0004)

Bell to G1080 (1)      -20917.5523  1.5071e-007 (0.0004)
                       15455.6249  1.2416e-007 3.4419e-007 (0.0006)
                        2930.5240  -8.6305e-008 -2.0097e-007 2.5191e-007
(0.0005)

Bell to P242 (1)       -14465.9552  1.4538e-006 (0.0012)
                        2276.6090  1.0723e-006 5.0333e-006 (0.0022)
                       -7549.4533  -5.6501e-007 -2.8820e-006 3.2594e-006
(0.0018)

FELIPE to G1080 (1)    -11565.8709  4.6071e-008 (0.0002)
                       15813.0557  3.9249e-008 1.2901e-007 (0.0004)
                        9776.8417  -2.3027e-008 -6.1358e-008 8.7867e-008
(0.0003)

FELIPE to P222 (1)     -31198.9448  3.2897e-006 (0.0018)
                       65000.1331  3.0478e-006 6.7443e-006 (0.0026)
                       51030.0106  -2.1720e-006 -3.2827e-006 4.8938e-006
(0.0022)

FELIPE to P242 (1)     -5114.2774  5.0135e-007 (0.0007)
                        2634.0289  4.5352e-007 8.2108e-007 (0.0009)
                        -703.1273  -3.3221e-007 -3.9528e-007 5.3460e-007
(0.0007)

FELIPE to U1447 (1)    11204.4254  9.8896e-008 (0.0003)
                        -316.3220  7.5497e-008 2.0149e-007 (0.0004)
                        7350.9816  -5.9923e-008 -5.7711e-008 1.2118e-007
(0.0003)

G1080 to P222 (2)      -19633.0836  1.7487e-006 (0.0013)
                       49187.0337  1.7194e-006 3.4620e-006 (0.0019)
                       41253.2165  -1.0465e-006 -1.5252e-006 2.6378e-006
(0.0016)

G1080 to P222 (3)      -19633.0846  6.4598e-007 (0.0008)
                       49187.0424  5.9976e-007 1.2674e-006 (0.0011)
                       41253.2003  -3.8316e-007 -6.0376e-007 9.8518e-007
(0.0010)

G1080 to P222 (5)      -19633.0702  1.5291e-006 (0.0012)
                       49187.0864  1.3081e-006 3.1542e-006 (0.0018)
                       41253.1654  -9.3619e-007 -1.3945e-006 2.2769e-006
(0.0015)

G1080 to P242 (2)       6451.5908  6.0216e-007 (0.0008)
                       -13179.0456  6.5059e-007 1.3166e-006 (0.0011)
                       -10479.9421  -2.4039e-007 -5.2323e-007 9.8803e-007
(0.0010)
```

```
G1080 to P242 (3)      6451.5947  1.4583e-006 (0.0012)
                     -13179.0400  1.6281e-006 3.4631e-006 (0.0019)
                     -10479.9531  -7.5182e-007 -1.2889e-006 1.8113e-006
(0.0013)

G1080 to P242 (6)      6451.5878  1.7297e-006 (0.0013)
                     -13179.0319  1.2157e-006 2.4321e-006 (0.0016)
                     -10479.9666  -1.0118e-006 -1.5815e-006 2.5852e-006
(0.0016)

G1080 to P242 (8)      6451.5850  9.5095e-007 (0.0010)
                     -13179.0442  9.6230e-007 2.2139e-006 (0.0015)
                     -10479.9538  -2.1906e-007 -9.4764e-007 1.4007e-006
(0.0012)

G1080 to P242 (9)      6451.5835  7.3183e-007 (0.0009)
                     -13179.0422  7.1057e-007 1.2790e-006 (0.0011)
                     -10479.9412  -4.2726e-007 -5.7671e-007 9.6532e-007
(0.0010)

G1080 to ppt1 (3)     -55246.0578  2.2983e-006 (0.0015)
                      43647.5739  2.5036e-006 5.0743e-006 (0.0023)
                      10161.5477  -1.1192e-006 -1.6845e-006 2.5827e-006
(0.0016)

G1080 to ppt1 (4)     -55246.0791  2.3459e-007 (0.0005)
                      43647.5494  2.1904e-007 4.8183e-007 (0.0007)
                      10161.5601  -1.3698e-007 -2.2805e-007 3.7998e-007
(0.0006)

G1080 to ppt1 (5)     -55246.0611  1.0539e-006 (0.0010)
                      43647.5675  8.9020e-007 2.4106e-006 (0.0016)
                      10161.5371  -7.1828e-007 -1.2504e-006 2.2745e-006
(0.0015)

G1080 to ppt1 (8)     -55246.0951  3.1064e-006 (0.0018)
                      43647.5401  2.1126e-006 6.3139e-006 (0.0025)
                      10161.5702  5.6899e-007 -2.6002e-006 5.3689e-006
(0.0023)

G1080 to ppt1 (9)     -55246.0929  1.1495e-006 (0.0011)
                      43647.5362  1.1243e-006 2.0370e-006 (0.0014)
                      10161.5789  -6.5816e-007 -9.0977e-007 1.5073e-006
(0.0012)

G1080 to U1447 (1)    22770.2917  2.0428e-007 (0.0005)
                     -16129.3858  1.5595e-007 4.1620e-007 (0.0006)
                     -2425.8518  -1.2378e-007 -1.1921e-007 2.5032e-007
(0.0005)

G1080 to X572 (3)     -26640.5753  1.9768e-007 (0.0004)
                      49082.5994  1.6925e-007 4.5328e-007 (0.0007)
                      36147.0009  -1.3408e-007 -2.3448e-007 4.2070e-007
(0.0006)
```

```
G1080 to X572 (4)      -26640.6047  5.5797e-007 (0.0007)
                       49082.5872  3.8024e-007 1.1345e-006 (0.0011)
                       36147.0284  1.0156e-007 -4.6567e-007 9.6178e-007
(0.0010)

G1080 to X572 (5)      -26640.6012  2.8952e-007 (0.0005)
                       49082.5569  2.8154e-007 5.2855e-007 (0.0007)
                       36147.0523  -1.6972e-007 -2.3588e-007 4.0290e-007
(0.0006)

G1080 to zoa1 (1)      -14429.5186  4.6500e-007 (0.0007)
                       46287.0099  4.6495e-007 9.6800e-007 (0.0010)
                       41554.0168  -1.8582e-007 -4.1763e-007 8.6661e-007
(0.0009)

G1080 to zoa1 (2)      -14429.5144  5.2715e-007 (0.0007)
                       46287.0189  5.1548e-007 9.2827e-007 (0.0010)
                       41554.0123  -2.7664e-007 -3.3676e-007 5.1851e-007
(0.0007)

G1080 to zoa1 (5)      -14429.5307  1.9702e-007 (0.0004)
                       46286.9948  1.9265e-007 3.4861e-007 (0.0006)
                       41554.0285  -1.1257e-007 -1.5531e-007 2.5762e-007
(0.0005)

GAP to MOON2 (1)       -17275.7250  2.1989e-007 (0.0005)
                       26059.5149  1.8907e-007 3.2462e-007 (0.0006)
                       15490.3904  -1.2366e-007 -1.3994e-007 2.8730e-007
(0.0005)

GAP to P222 (2)        13212.6185  2.6552e-006 (0.0016)
                       14761.1112  2.2266e-006 3.7865e-006 (0.0019)
                       24359.1562  -1.5488e-006 -1.7506e-006 3.3236e-006
(0.0018)

GAP to P222 (3)        13212.5871  1.0323e-006 (0.0010)
                       14761.1053  8.8535e-007 1.8005e-006 (0.0013)
                       24359.1664  -6.2172e-007 -1.0846e-006 1.7647e-006
(0.0013)

GAP to P222 (5)        13212.5913  2.4554e-006 (0.0016)
                       14761.1094  2.2371e-006 4.1764e-006 (0.0020)
                       24359.1739  -1.1260e-006 -1.5591e-006 3.2355e-006
(0.0018)

GAP to P222 (6)        13212.5953  7.2579e-007 (0.0009)
                       14761.0971  5.9560e-007 1.0647e-006 (0.0010)
                       24359.1756  -2.7958e-007 -5.4952e-007 1.0890e-006
(0.0010)

GAP to P242 (3)        39297.2690  2.7262e-006 (0.0017)
                       -47604.9577  2.3424e-006 4.7574e-006 (0.0022)
                       -27374.0005  -1.6494e-006 -2.8670e-006 4.6612e-006
(0.0022)
```

```
GAP to P242 (4)        39297.2551  3.5277e-006 (0.0019)
                      -47605.0073  3.0524e-006 5.2210e-006 (0.0023)
                      -27373.9568  -1.2513e-006 -2.4973e-006 4.0441e-006
(0.0020)

GAP to ppt1 (1)        -22400.3960  7.4052e-007 (0.0009)
                        9221.6035  6.2419e-007 8.6447e-007 (0.0009)
                       -6732.4680  -5.7497e-007 -5.1629e-007 9.9802e-007
(0.0010)

GAP to ppt1 (2)        -22400.4146  1.5826e-006 (0.0013)
                        9221.5869  8.2526e-007 2.2534e-006 (0.0015)
                       -6732.4555  -4.8473e-008 -1.3924e-006 3.8705e-006
(0.0020)

GAP to ppt1 (4)        -22400.4185  1.1507e-006 (0.0011)
                        9221.5939  1.2112e-006 2.1920e-006 (0.0015)
                       -6732.4624  -8.0650e-007 -1.1741e-006 1.4679e-006
(0.0012)

GAP to ppt1 (6)        -22400.3941  1.1636e-006 (0.0011)
                        9221.6150  9.9331e-007 1.6096e-006 (0.0013)
                       -6732.4629  -4.1332e-007 -5.9284e-007 8.8833e-007
(0.0009)

GAP to WVI (1)         13817.6800  1.8488e-007 (0.0004)
                      -33269.5834  1.5961e-007 3.2645e-007 (0.0006)
                      -28912.8946  -1.0060e-007 -1.7574e-007 3.0412e-007
(0.0006)

GAP to WVI (2)         13817.6768  1.6885e-006 (0.0013)
                      -33269.6092  1.1756e-006 1.1950e-006 (0.0011)
                      -28912.8605  -6.3906e-007 -5.5607e-007 5.6682e-007
(0.0008)

GAP to X572 (1)         6205.0949  2.3465e-007 (0.0005)
                       14656.6621  1.9503e-007 3.4540e-007 (0.0006)
                       19252.9742  -1.7644e-007 -2.3849e-007 2.8795e-007
(0.0005)

GAP to X572 (2)         6205.1001  2.0520e-007 (0.0005)
                       14656.6838  1.9978e-007 3.8036e-007 (0.0006)
                       19252.9770  -1.0723e-007 -1.6397e-007 2.2199e-007
(0.0005)

M874 to GAP (1)        -22782.5240  2.2522e-007 (0.0005)
                         -646.3017  2.6148e-007 5.7042e-007 (0.0008)
                       -15228.6158  -1.5389e-007 -2.7954e-007 2.8502e-007
(0.0005)

M874 to G1080 (1)      10063.1327  3.8939e-007 (0.0006)
                      -35072.2634  4.5492e-007 8.8926e-007 (0.0009)
                      -32122.6277  -2.2886e-007 -3.9928e-007 5.9989e-007
(0.0008)
```

```
M874 to MOON2 (1)      -40058.2712  2.9836e-007 (0.0005)
                       25413.1685  2.8110e-007 4.8017e-007 (0.0007)
                         261.7969  -1.9130e-007 -2.2747e-007 3.8382e-007
(0.0006)

M874 to P222 (1)       -9569.9395  2.0068e-006 (0.0014)
                       14114.7940  1.8551e-006 3.0736e-006 (0.0018)
                        9130.5700  -1.1838e-006 -1.3842e-006 2.9362e-006
(0.0017)

M874 to P222 (2)       -9569.9443  6.1306e-007 (0.0008)
                       14114.7719  4.7105e-007 9.5805e-007 (0.0010)
                        9130.5672  -3.9422e-007 -5.2099e-007 6.8417e-007
(0.0008)

M874 to P242 (2)       16514.7289  1.3367e-006 (0.0012)
                       -48251.2931  1.2565e-006 2.5856e-006 (0.0016)
                       -42602.5853  -7.9482e-007 -1.1596e-006 1.9669e-006
(0.0014)

M874 to ppt1 (2)       -45182.9459  2.1464e-006 (0.0015)
                        8575.2955  1.9823e-006 3.2899e-006 (0.0018)
                       -21961.0812  -1.2644e-006 -1.4789e-006 3.1433e-006
(0.0018)

M874 to zoa1 (1)       -4366.3864  1.0587e-007 (0.0003)
                       11214.7476  9.7664e-008 1.6191e-007 (0.0004)
                        9431.3896  -6.2249e-008 -7.2538e-008 1.5439e-007
(0.0004)

MHCB to GAP (1)        -38789.0566  8.9694e-006 (0.0030)
                       17973.3864  7.6141e-006 1.3582e-005 (0.0037)
                       -7669.7744  -5.4344e-006 -5.7131e-006 9.0055e-006
(0.0030)

MHCB to B1458 (2)      -21189.2433  3.2750e-006 (0.0018)
                       -8419.4173  2.7302e-006 8.0263e-006 (0.0028)
                       -24870.5480  -2.1365e-006 -3.6445e-006 4.7408e-006
(0.0022)

MHCB to B1458 (4)      -21189.2327  4.8797e-007 (0.0007)
                       -8419.4021  4.6523e-007 1.0934e-006 (0.0010)
                       -24870.5454  -2.4768e-007 -6.0202e-007 9.5404e-007
(0.0010)

MHCB to FELIPE (1)      5622.4990  7.9113e-006 (0.0028)
                       -32265.6410  8.8128e-006 2.0000e-005 (0.0045)
                       -34340.6131  -4.2544e-006 -5.3288e-006 5.8963e-006
(0.0024)

MHCB to G1080 (1)      -5943.3522  3.3424e-006 (0.0018)
                       -16452.5265  2.6177e-006 4.2008e-006 (0.0020)
                       -24563.8427  -2.4432e-006 -2.1716e-006 3.9705e-006
(0.0020)
```

```
MHCB to G1080 (2)      -5943.3961  3.1108e-006 (0.0018)
                       -16452.5896  2.5967e-006 5.1641e-006 (0.0023)
                       -24563.7917  -1.9323e-006 -2.3424e-006 4.7128e-006
(0.0022)

MHCB to G1080 (3)      -5943.3739  5.5623e-007 (0.0007)
                       -16452.5682  5.0965e-007 1.2452e-006 (0.0011)
                       -24563.7942  -3.7479e-007 -6.0244e-007 9.6707e-007
(0.0010)

MHCB to GAP (3)        -38789.0356  1.5010e-006 (0.0012)
                       17973.3833  1.2870e-006 2.6200e-006 (0.0016)
                       -7669.7742  -9.0626e-007 -1.5817e-006 2.5764e-006
(0.0016)

MHCB to GAP (6)        -38789.0481  6.9758e-006 (0.0026)
                       17973.3880  5.9584e-006 9.6532e-006 (0.0031)
                       -7669.7804  -2.4835e-006 -3.5540e-006 5.3258e-006
(0.0023)

MHCB to M874 (1)       -16006.4957  3.1280e-006 (0.0018)
                       18619.7139  3.3765e-006 5.3843e-006 (0.0023)
                        7558.8065  -9.5798e-008 -6.5417e-007 2.7574e-006
(0.0017)

MHCB to MHCB-B (1)      -891.2241  1.0133e-007 (0.0003)
                         625.9490  8.7914e-008 1.6990e-007 (0.0004)
                        -290.3547  -5.4240e-008 -8.0104e-008 1.1320e-007
(0.0003)

MHCB to MHCB-B (2)      -891.2257  1.8018e-007 (0.0004)
                         625.9469  1.7205e-007 2.9707e-007 (0.0005)
                        -290.3525  -8.1010e-008 -1.1305e-007 1.9222e-007
(0.0004)

MHCB to MHCB-B (3)      -891.2282  5.5881e-007 (0.0007)
                         625.9472  5.8827e-007 1.0458e-006 (0.0010)
                        -290.3385  -2.2664e-007 -3.1831e-007 5.2019e-007
(0.0007)

MHCB to MOON2 (1)      -56064.7884  2.2326e-006 (0.0015)
                       44032.8564  2.2319e-006 4.2744e-006 (0.0021)
                        7820.6484  -1.2614e-006 -1.7794e-006 3.1914e-006
(0.0018)

MHCB to P222 (10)      -25576.4528  2.1682e-006 (0.0015)
                       32734.4886  2.2169e-006 5.0673e-006 (0.0023)
                       16689.3778  -8.7067e-007 -2.5688e-006 4.8510e-006
(0.0022)

MHCB to P222 (3)       -25576.4406  1.9935e-007 (0.0004)
                       32734.5075  1.7392e-007 3.8060e-007 (0.0006)
                       16689.3788  -1.1707e-007 -1.8978e-007 3.0624e-007
(0.0006)
```

```
MHCB to P222 (4)      -25576.4745  2.3873e-006 (0.0015)
                      32734.4678  2.4015e-006 5.9068e-006 (0.0024)
                      16689.4003  -9.0117e-007 -2.9100e-006 5.3622e-006
(0.0023)

MHCB to P222 (6)      -25576.4594  7.1458e-007 (0.0008)
                      32734.4751  6.1198e-007 1.5550e-006 (0.0012)
                      16689.4104  -4.5209e-007 -7.5656e-007 1.2344e-006
(0.0011)

MHCB to P222 (9)      -25576.4557  8.5497e-007 (0.0009)
                      32734.4761  7.8543e-007 1.5740e-006 (0.0013)
                      16689.4055  -5.0857e-007 -6.9927e-007 1.3198e-006
(0.0011)

MHCB to P242 (10)       508.2253  3.1758e-006 (0.0018)
                      -29631.5904  2.9094e-006 6.3817e-006 (0.0025)
                      -35043.7589  -1.3941e-006 -2.3306e-006 4.2829e-006
(0.0021)

MHCB to P242 (2)        508.2210  1.9738e-006 (0.0014)
                      -29631.5923  2.0508e-006 4.3380e-006 (0.0021)
                      -35043.7556  -8.7217e-007 -2.2468e-006 4.2351e-006
(0.0021)

MHCB to P242 (4)        508.2073  2.7057e-006 (0.0016)
                      -29631.6232  2.2303e-006 5.5325e-006 (0.0024)
                      -35043.7313  -1.1578e-006 -3.3485e-006 5.0058e-006
(0.0022)

MHCB to P242 (6)        508.2116  3.3723e-006 (0.0018)
                      -29631.6169  3.0216e-006 6.9419e-006 (0.0026)
                      -35043.7402  -1.4560e-006 -2.5192e-006 4.5270e-006
(0.0021)

MHCB to P242 (8)        508.2162  1.3287e-006 (0.0012)
                      -29631.6060  1.2433e-006 2.5995e-006 (0.0016)
                      -35043.7525  -7.8406e-007 -1.1439e-006 2.3728e-006
(0.0015)

MHCB to ppt1 (1)      -61189.4412  3.8125e-007 (0.0006)
                      27195.0050  3.3032e-007 7.2477e-007 (0.0009)
                      -14402.2521  -2.2412e-007 -3.7110e-007 5.9557e-007
(0.0008)

MHCB to ppt1 (10)     -61189.4607  3.3574e-006 (0.0018)
                      27194.9737  3.1207e-006 5.9426e-006 (0.0024)
                      -14402.2235  -1.6093e-006 -2.5146e-006 4.2180e-006
(0.0021)

MHCB to ppt1 (11)     -61189.4437  3.9334e-007 (0.0006)
                      27195.0031  3.4787e-007 7.2560e-007 (0.0009)
                      -14402.2473  -2.2313e-007 -3.5833e-007 5.7023e-007
(0.0008)
```

```
MHCB to ppt1 (2)      -61189.4399  3.6439e-007 (0.0006)
                      27195.0081  3.1788e-007 6.9609e-007 (0.0008)
                      -14402.2558  -2.1251e-007 -3.4504e-007 5.4943e-007
(0.0007)

MHCB to ppt1 (3)      -61189.4298  4.0366e-007 (0.0006)
                      27195.0244  3.5773e-007 7.4727e-007 (0.0009)
                      -14402.2693  -2.3359e-007 -3.7175e-007 5.6694e-007
(0.0008)

MHCB to ppt1 (4)      -61189.4477  3.6886e-007 (0.0006)
                      27195.0019  3.2438e-007 7.0635e-007 (0.0008)
                      -14402.2461  -2.1873e-007 -3.5955e-007 5.7343e-007
(0.0008)

MHCB to ppt1 (6)      -61189.4528  1.2669e-006 (0.0011)
                      27194.9906  1.0932e-006 3.0684e-006 (0.0018)
                      -14402.2376  -8.2418e-007 -1.4047e-006 2.3187e-006
(0.0015)

MHCB to U1447 (1)     16826.9137  7.2554e-007 (0.0009)
                      -32581.9614  7.3062e-007 2.0662e-006 (0.0014)
                      -26989.6341  -5.3896e-007 -9.8412e-007 1.2966e-006
(0.0011)

MHCB to WVI (2)       -24971.3601  5.7555e-007 (0.0008)
                      -15296.2059  5.2663e-007 1.2254e-006 (0.0011)
                      -36582.6703  -3.7219e-007 -6.1161e-007 8.9442e-007
(0.0009)

MHCB to WVI (3)       -24971.3583  7.5389e-007 (0.0009)
                      -15296.1988  6.9877e-007 1.3708e-006 (0.0012)
                      -36582.6720  -4.1086e-007 -6.5963e-007 1.1236e-006
(0.0011)

MHCB to X572 (3)      -32583.9630  9.6674e-007 (0.0010)
                      32630.0297  1.1170e-006 2.4701e-006 (0.0016)
                      11583.2300  -5.6487e-007 -1.0109e-006 1.1475e-006
(0.0011)

MHCB-B to P222 (1)    -24685.2006  6.8931e-007 (0.0008)
                      32108.5780  5.9502e-007 1.1243e-006 (0.0011)
                      16979.7072  -3.6842e-007 -5.2675e-007 7.3931e-007
(0.0009)

MHCB-B to P242 (2)     1399.4658  2.2626e-006 (0.0015)
                      -30257.5171  2.0322e-006 3.3115e-006 (0.0018)
                      -34753.4357  -1.5176e-006 -1.4288e-006 2.6892e-006
(0.0016)

MHCB-B to ppt1 (1)    -60298.2000  4.0954e-007 (0.0006)
                      26569.0841  3.5996e-007 6.8396e-007 (0.0008)
                      -14111.9352  -2.1883e-007 -3.1677e-007 4.3590e-007
(0.0007)
```

```
MHCB-B to ppt1 (3)    -60298.2131  2.1941e-006 (0.0015)
                      26569.0679  2.3404e-006 4.1595e-006 (0.0020)
                      -14111.9212  -8.7621e-007 -1.2316e-006 1.9980e-006
(0.0014)

MHCB-B to U1447 (1)   17718.1586  9.4808e-007 (0.0010)
                      -33207.8665  1.0048e-006 1.6655e-006 (0.0013)
                      -26699.3157  -5.6559e-007 -6.6621e-007 5.8092e-007
(0.0008)

MHCB-B to WVI (1)     -24080.1055  3.0183e-007 (0.0005)
                      -15922.1052  1.7484e-007 2.5562e-007 (0.0005)
                      -36292.3613  -6.0762e-008 -1.4866e-007 2.4507e-007
(0.0005)

MOON2 to P222 (1)     30488.3180  2.0236e-006 (0.0014)
                      -11298.4043  1.7568e-006 2.5991e-006 (0.0016)
                       8868.7807  -7.1835e-007 -8.8226e-007 1.5843e-006
(0.0013)

MOON2 to X572 (1)     23480.8280  8.0864e-008 (0.0003)
                      -11402.8287  7.0707e-008 1.1256e-007 (0.0003)
                       3762.5834  -5.9687e-008 -5.5398e-008 1.0980e-007
(0.0003)

P222 to P242 (1)      26084.6650  5.0270e-007 (0.0007)
                      -62366.0945  4.4528e-007 9.6841e-007 (0.0010)
                      -51733.1411  -2.9281e-007 -4.7568e-007 7.5218e-007
(0.0009)

P222 to P242 (10)     26084.6605  1.8709e-006 (0.0014)
                      -62366.1049  1.6145e-006 3.0676e-006 (0.0018)
                      -51733.1398  -8.8005e-007 -1.4016e-006 2.5888e-006
(0.0016)

P222 to P242 (2)      26084.6803  5.1555e-007 (0.0007)
                      -62366.0673  4.4560e-007 9.8300e-007 (0.0010)
                      -51733.1583  -3.0812e-007 -4.9934e-007 8.0723e-007
(0.0009)

P222 to P242 (3)      26084.6675  4.9129e-007 (0.0007)
                      -62366.0838  4.3031e-007 9.4099e-007 (0.0010)
                      -51733.1491  -2.8963e-007 -4.6707e-007 7.5053e-007
(0.0009)

P222 to P242 (4)      26084.6522  4.9503e-007 (0.0007)
                      -62366.1207  4.3414e-007 9.5573e-007 (0.0010)
                      -51733.1257  -2.9123e-007 -4.7381e-007 7.5379e-007
(0.0009)

P222 to P242 (5)      26084.6517  5.1953e-007 (0.0007)
                      -62366.1184  4.6306e-007 9.9714e-007 (0.0010)
                      -51733.1256  -3.0965e-007 -5.0909e-007 7.9978e-007
(0.0009)
```

```
P222 to P242 (7)      26084.6729  1.6997e-006 (0.0013)
                      -62366.0794  1.5879e-006 3.3187e-006 (0.0018)
                      -51733.1598  -1.0060e-006 -1.4811e-006 2.5326e-006
(0.0016)

P222 to P242 (8)      26084.6678  7.5508e-007 (0.0009)
                      -62366.0874  6.4810e-007 1.4137e-006 (0.0012)
                      -51733.1533  -4.3000e-007 -6.6347e-007 1.1282e-006
(0.0011)

P222 to P242 (9)      26084.6721  2.7737e-006 (0.0017)
                      -62366.0841  2.4188e-006 6.1737e-006 (0.0025)
                      -51733.1513  -1.7567e-006 -3.3494e-006 5.0707e-006
(0.0023)

P222 to ppt1 (1)      -35613.0016  2.1892e-007 (0.0005)
                      -5539.4961  1.9131e-007 4.1391e-007 (0.0006)
                      -31091.6343  -1.2804e-007 -2.0449e-007 3.3258e-007
(0.0006)

P222 to ppt1 (10)     -35613.0164  1.2206e-006 (0.0011)
                      -5539.5208  1.0626e-006 2.6954e-006 (0.0016)
                      -31091.6118  -7.7439e-007 -1.4642e-006 2.2156e-006
(0.0015)

P222 to ppt1 (2)      -35612.9966  2.2977e-007 (0.0005)
                      -5539.4920  1.9783e-007 4.3182e-007 (0.0007)
                      -31091.6331  -1.3679e-007 -2.1944e-007 3.5555e-007
(0.0006)

P222 to ppt1 (3)      -35612.9945  2.1873e-007 (0.0005)
                      -5539.4839  1.9090e-007 4.1551e-007 (0.0006)
                      -31091.6448  -1.2809e-007 -2.0706e-007 3.3257e-007
(0.0006)

P222 to ppt1 (8)      -35612.9929  3.3399e-007 (0.0006)
                      -5539.4869  2.8774e-007 6.1663e-007 (0.0008)
                      -31091.6454  -1.8768e-007 -2.8695e-007 4.9141e-007
(0.0007)

P222 to U1447 (1)     42403.3709  1.8714e-006 (0.0014)
                      -65316.4347  1.8845e-006 5.3295e-006 (0.0023)
                      -43679.0408  -1.3902e-006 -2.5384e-006 3.3444e-006
(0.0018)

P222 to U1447 (2)     42403.3507  3.3895e-006 (0.0018)
                      -65316.4654  3.8117e-006 9.7463e-006 (0.0031)
                      -43679.0208  -2.3028e-006 -4.4271e-006 6.3686e-006
(0.0025)

P222 to U1447 (3)     42403.3659  9.9025e-006 (0.0031)
                      -65316.4542  1.1273e-005 2.4490e-005 (0.0049)
                      -43679.0232  -7.1278e-006 -1.0807e-005 1.2488e-005
(0.0035)
```

```
P222 to WVI (1)          605.0903  1.3041e-006 (0.0011)
                      -48030.6949  1.1719e-006 2.7634e-006 (0.0017)
                      -53272.0617  -8.2235e-007 -1.3241e-006 2.0351e-006
(0.0014)

P222 to WVI (2)          605.0963  1.0311e-006 (0.0010)
                      -48030.6828  9.4329e-007 2.1953e-006 (0.0015)
                      -53272.0744  -6.6554e-007 -1.0930e-006 1.5936e-006
(0.0013)

P222 to WVI (3)          605.0845  1.3550e-006 (0.0012)
                      -48030.6951  1.2557e-006 2.4555e-006 (0.0016)
                      -53272.0566  -7.4279e-007 -1.1741e-006 1.9644e-006
(0.0014)

P222 to X572 (1)       -7007.5217  9.3667e-007 (0.0010)
                        -104.4702  1.0557e-006 2.3499e-006 (0.0015)
                       -5106.1477  -4.0921e-007 -7.5279e-007 1.1162e-006
(0.0011)

P222 to X572 (2)       -7007.5259  8.4180e-008 (0.0003)
                        -104.4753  7.5510e-008 1.6110e-007 (0.0004)
                       -5106.1568  -4.8833e-008 -7.3993e-008 1.2322e-007
(0.0004)

P222 to X572 (4)       -7007.5291  3.1290e-007 (0.0006)
                        -104.4889  2.9019e-007 7.4338e-007 (0.0009)
                       -5106.1507  -2.0799e-007 -4.0112e-007 6.0819e-007
(0.0008)

P222 to X572 (5)       -7007.5291  2.6948e-007 (0.0005)
                        -104.4723  2.5017e-007 4.9743e-007 (0.0007)
                       -5106.1539  -1.4271e-007 -2.2421e-007 4.2433e-007
(0.0007)

P222 to zoa1 (1)        5203.5599  4.9127e-007 (0.0007)
                       -2900.0380  4.5461e-007 8.4581e-007 (0.0009)
                         300.8173  -2.2117e-007 -3.0766e-007 5.8842e-007
(0.0008)

P222 to zoa1 (2)        5203.5593  1.4770e-007 (0.0004)
                       -2900.0381  1.3377e-007 2.7804e-007 (0.0005)
                         300.8185  -9.1032e-008 -1.2639e-007 2.2796e-007
(0.0005)

P222 to zoa1 (3)        5203.5567  1.5542e-007 (0.0004)
                       -2900.0370  1.3549e-007 3.3706e-007 (0.0006)
                         300.8182  -1.0830e-007 -1.7257e-007 3.0639e-007
(0.0006)

P222 to zoa1 (4)        5203.5571  2.7955e-007 (0.0005)
                       -2900.0414  1.9028e-007 4.5760e-007 (0.0007)
                         300.8260  -1.1776e-007 -2.6393e-007 4.2794e-007
(0.0007)
```

```
P242 to ppt1 (1)      -61697.6637  5.3532e-007 (0.0007)
                      56826.6030  4.7305e-007 1.0183e-006 (0.0010)
                      20641.5057  -3.1075e-007 -5.0501e-007 7.9006e-007
(0.0009)

P242 to ppt1 (10)     -61697.6648  1.1674e-006 (0.0011)
                      56826.6030  1.0804e-006 2.2070e-006 (0.0015)
                      20641.5106  -6.5910e-007 -9.7396e-007 1.6561e-006
(0.0013)

P242 to ppt1 (11)     -61697.6710  1.8301e-006 (0.0014)
                      56826.6032  1.6028e-006 3.1052e-006 (0.0018)
                      20641.5164  -9.2516e-007 -1.4504e-006 2.5159e-006
(0.0016)

P242 to ppt1 (2)      -61697.6765  5.4558e-007 (0.0007)
                      56826.5758  4.7540e-007 1.0384e-006 (0.0010)
                      20641.5237  -3.1968e-007 -5.1844e-007 8.2156e-007
(0.0009)

P242 to ppt1 (3)      -61697.6614  5.1206e-007 (0.0007)
                      56826.6018  4.5358e-007 9.8724e-007 (0.0010)
                      20641.5030  -3.0391e-007 -4.8995e-007 7.7530e-007
(0.0009)

P242 to ppt1 (5)      -61697.6550  5.3216e-007 (0.0007)
                      56826.6247  4.6656e-007 1.0157e-006 (0.0010)
                      20641.4865  -3.0790e-007 -5.1606e-007 8.4228e-007
(0.0009)

P242 to ppt1 (6)      -61697.6657  1.7970e-006 (0.0013)
                      56826.6071  1.7109e-006 3.5323e-006 (0.0019)
                      20641.5023  -1.0891e-006 -1.6154e-006 2.6501e-006
(0.0016)

P242 to ppt1 (8)      -61697.6686  8.7749e-007 (0.0009)
                      56826.5999  7.5349e-007 1.5971e-006 (0.0013)
                      20641.5074  -4.6098e-007 -7.2574e-007 1.2101e-006
(0.0011)

P242 to U1447 (1)     16318.7017  1.2001e-006 (0.0011)
                      -2950.3509  1.2159e-006 4.0804e-006 (0.0020)
                       8054.1133  -7.1893e-007 -2.3617e-006 2.3523e-006
(0.0015)

P242 to U1447 (2)     16318.6940  1.0880e-006 (0.0010)
                      -2950.3555  1.3390e-006 2.6965e-006 (0.0016)
                       8054.1113  -6.7823e-007 -1.0751e-006 1.3574e-006
(0.0012)

P242 to U1447 (3)     16318.6985  1.5026e-006 (0.0012)
                      -2950.3554  1.7094e-006 3.7043e-006 (0.0019)
                       8054.1140  -1.0842e-006 -1.6437e-006 1.8958e-006
(0.0014)
```

```
P242 to WVI (1)       -25479.5922  4.2220e-007 (0.0006)
                      14335.3708  3.7960e-007 8.9445e-007 (0.0009)
                      -1538.9011  -2.6611e-007 -4.2852e-007 6.5769e-007
(0.0008)

P242 to WVI (2)       -25479.5793  3.3319e-007 (0.0006)
                      14335.3924  3.0486e-007 7.0938e-007 (0.0008)
                      -1538.9161  -2.1545e-007 -3.5402e-007 5.1765e-007
(0.0007)

P242 to X572 (2)      -33092.1988  8.9565e-007 (0.0009)
                      62261.6094  8.0674e-007 1.6721e-006 (0.0013)
                      46626.9969  -5.0971e-007 -7.6101e-007 1.2368e-006
(0.0011)

P242 to zoa1 (1)      -20881.1141  2.9826e-006 (0.0017)
                      59466.0408  2.7416e-006 5.8324e-006 (0.0024)
                      52033.9794  -1.8034e-006 -2.2363e-006 3.7885e-006
(0.0019)

P242 to zoa1 (3)      -20881.1190  1.7140e-006 (0.0013)
                      59466.0397  1.4955e-006 3.7633e-006 (0.0019)
                      52033.9773  -1.1142e-006 -1.8506e-006 3.1511e-006
(0.0018)

P242 to zoa1 (4)      -20881.1136  2.9372e-006 (0.0017)
                      59466.0431  2.5299e-006 6.0640e-006 (0.0025)
                      52033.9765  -1.7299e-006 -3.3454e-006 5.4304e-006
(0.0023)

ppt1 to WVI (1)       36218.0957  3.3808e-007 (0.0006)
                      -42491.1878  3.0553e-007 7.2065e-007 (0.0008)
                      -22180.4383  -2.1301e-007 -3.4354e-007 5.2436e-007
(0.0007)

ppt1 to WVI (2)       36218.0906  2.6734e-007 (0.0005)
                      -42491.1919  2.4759e-007 5.8496e-007 (0.0008)
                      -22180.4310  -1.7330e-007 -2.8759e-007 4.1366e-007
(0.0006)

ppt1 to WVI (4)       36218.0798  5.6622e-007 (0.0008)
                      -42491.2199  5.9312e-007 1.2107e-006 (0.0011)
                      -22180.4161  -3.0586e-007 -4.7279e-007 7.7379e-007
(0.0009)

ppt1 to X572 (1)      28605.4649  1.0756e-006 (0.0010)
                       5435.0161  1.2124e-006 2.6956e-006 (0.0016)
                      25985.4882  -4.7063e-007 -8.6327e-007 1.2776e-006
(0.0011)

ppt1 to X572 (3)      28605.4888  6.0080e-007 (0.0008)
                       5435.0355  6.2549e-007 1.3733e-006 (0.0012)
                      25985.4662  -2.5545e-007 -7.2091e-007 1.3596e-006
(0.0012)
```

```
ppt1 to X572 (4)      28605.4813  3.1094e-007 (0.0006)
                       5435.0294  2.8870e-007 5.7299e-007 (0.0008)
                      25985.4704  -1.6422e-007 -2.5783e-007 4.8706e-007
(0.0007)

ppt1 to X572 (6)      28605.4918  1.0251e-006 (0.0010)
                       5435.0226  9.6013e-007 1.7869e-006 (0.0013)
                      25985.4723  -7.4519e-007 -6.6031e-007 1.4770e-006
(0.0012)

ppt1 to zoa1 (1)      40816.5584  2.1141e-006 (0.0015)
                       2639.4485  2.4511e-006 4.7139e-006 (0.0022)
                      31392.4675  -9.4109e-007 -1.6049e-006 2.3299e-006
(0.0015)

ppt1 to zoa1 (2)      40816.5510  9.6739e-007 (0.0010)
                       2639.4458  8.8245e-007 1.6363e-006 (0.0013)
                      31392.4565  -3.8219e-007 -5.9802e-007 1.2523e-006
(0.0011)

ppt1 to zoa1 (3)      40816.5405  3.0083e-007 (0.0005)
                       2639.4313  2.6881e-007 6.7691e-007 (0.0008)
                      31392.4670  -2.0060e-007 -3.2832e-007 5.5532e-007
(0.0007)

ppt1 to zoa1 (5)      40816.5767  1.5739e-006 (0.0013)
                       2639.4681  1.7990e-006 4.4633e-006 (0.0021)
                      31392.4391  -1.1960e-006 -7.0395e-007 2.5187e-006
(0.0016)

X572 to zoa1 (1)      12211.0804  8.1008e-008 (0.0003)
                      -2795.5726  9.0803e-008 2.0181e-007 (0.0004)
                       5406.9681  -3.3824e-008 -6.3581e-008 1.0428e-007
(0.0003)

X572 to zoa1 (2)      12211.0802  5.3154e-008 (0.0002)
                      -2795.5698  4.2978e-008 1.2392e-007 (0.0004)
                       5406.9810  -2.1350e-008 -2.6559e-008 5.7228e-008
(0.0002)

X572 to zoa1 (3)      12211.0849  2.7274e-008 (0.0002)
                      -2795.5531  2.5419e-008 6.4807e-008 (0.0003)
                       5406.9727  -1.8194e-008 -3.5854e-008 6.1730e-008
(0.0002)

X572 to zoa1 (4)      12211.0670  5.2991e-008 (0.0002)
                      -2795.5684  4.9187e-008 8.8312e-008 (0.0003)
                       5406.9823  -2.9002e-008 -3.8712e-008 6.7595e-008
(0.0003)
```

****

OUTPUT VECTOR RESIDUALS (East, North, Height - Local Level)

****

SESSION NAME	-- RE --	-- RN --	-- RH --		- PPM -	DIST -	STD -
	(m)	(m)	(m)			(km)	(m)
B1458 to GAP (1)	0.0327	-0.0315	0.0291	$	1.494	36.1	0.0012
B1458 to GAP (2)	0.0166	-0.0120	0.0377	$	1.189	36.1	0.0007
B1458 to P222 (2)	-0.0019	-0.0097	0.0537	$	0.931	58.7	0.0038
B1458 to P222 (3)	-0.0071	0.0005	0.0218	$	0.390	58.7	0.0022
B1458 to P242 (1)	-0.0075	0.0023	0.0588	$	1.853	32.0	0.0039
B1458 to P242 (2)	-0.0010	-0.0004	0.0547	$	1.709	32.0	0.0026
B1458 to P242 (3)	-0.0028	0.0098	0.0020	$	0.325	32.0	0.0021
B1458 to P242 (4)	-0.0059	0.0043	0.0176	$	0.597	32.0	0.0015
B1458 to ppt1 (4)	0.0093	-0.0501	0.0635	$	1.492	54.6	0.0028
B1458 to WVI (1)	-0.0024	0.0095	-0.0408	$	2.975	14.1	0.0022
B1458 to WVI (2)	-0.0020	-0.0004	0.0032	$	0.272	14.1	0.0003
Bell to FELIPE (1)	0.0411	-0.0664	0.0683	$	8.948	11.6	0.0007
Bell to G1080 (1)	0.0479	-0.0978	0.0164	$	4.207	26.2	0.0009
Bell to P242 (1)	0.0661	-0.1229	0.0459	$	8.919	16.5	0.0031
FELIPE to G1080 (1)	0.0106	-0.0294	-0.0386	$	2.269	21.9	0.0005
FELIPE to P222 (1)	0.0354	-0.0596	-0.0163	$	0.806	88.3	0.0039
FELIPE to P242 (1)	0.0264	-0.0544	-0.0231	$	11.168	5.8	0.0014
FELIPE to U1447 (1)	0.0079	-0.0165	-0.0291	$	2.567	13.4	0.0006
G1080 to P222 (2)	0.0101	-0.0426	-0.0401	$	0.885	67.1	0.0028
G1080 to P222 (3)	0.0155	-0.0339	-0.0247	$	0.666	67.1	0.0017
G1080 to P222 (5)	0.0265	-0.0334	0.0321	$	0.796	67.1	0.0026
G1080 to P242 (2)	0.0083	-0.0360	-0.0148	$	2.206	18.0	0.0017
G1080 to P242 (3)	0.0079	-0.0313	-0.0027	$	1.795	18.0	0.0026
G1080 to P242 (6)	0.0180	-0.0225	0.0081	$	1.658	18.0	0.0026

G1080 to P242 (8)	0.0139	-0.0255	-0.0092 $	1.691	18.0	0.0021
G1080 to P242 (9)	0.0163	-0.0361	-0.0160 $	2.370	18.0	0.0017
G1080 to ppt1 (3)	0.0253	-0.0889	0.0274 $	1.355	71.1	0.0032
G1080 to ppt1 (4)	0.0303	-0.0794	-0.0057 $	1.198	71.1	0.0010
G1080 to ppt1 (5)	0.0247	-0.0762	0.0280 $	1.193	71.1	0.0024
G1080 to ppt1 (8)	0.0390	-0.0776	-0.0248 $	1.270	71.1	0.0038
G1080 to ppt1 (9)	0.0351	-0.0833	-0.0318 $	1.346	71.1	0.0022
G1080 to U1447 (1)	-0.0030	0.0119	-0.0030 $	0.452	28.0	0.0009
G1080 to X572 (3)	0.0056	-0.0269	0.0284 $	0.594	66.5	0.0010
G1080 to X572 (4)	0.0242	-0.0331	-0.0089 $	0.631	66.5	0.0016
G1080 to X572 (5)	0.0052	-0.0377	-0.0423 $	0.855	66.5	0.0011
G1080 to zoa1 (1)	0.0092	-0.0350	-0.0207 $	0.653	63.9	0.0015
G1080 to zoa1 (2)	0.0104	-0.0375	-0.0101 $	0.629	63.9	0.0014
G1080 to zoa1 (5)	0.0115	-0.0327	-0.0431 $	0.866	63.9	0.0009
GAP to MOON2 (1)	-0.0127	0.0065	0.0348 $	1.078	34.9	0.0009
GAP to P222 (2)	-0.0357	0.0135	0.0156 $	1.313	31.4	0.0031
GAP to P222 (3)	-0.0122	0.0186	-0.0079 $	0.752	31.4	0.0021
GAP to P222 (5)	-0.0136	0.0092	-0.0079 $	0.580	31.4	0.0031
GAP to P222 (6)	-0.0235	0.0129	-0.0155 $	0.987	31.4	0.0017
GAP to P242 (3)	-0.0117	0.0214	0.0363 $	0.647	67.5	0.0035
GAP to P242 (4)	-0.0260	0.0164	-0.0297 $	0.632	67.5	0.0036
GAP to ppt1 (1)	-0.0116	-0.0307	0.0064 $	1.331	25.1	0.0016
GAP to ppt1 (2)	-0.0047	-0.0262	-0.0202 $	1.329	25.1	0.0028
GAP to ppt1 (4)	0.0023	-0.0229	-0.0130 $	1.052	25.1	0.0022
GAP to ppt1 (6)	-0.0070	-0.0413	0.0119 $	1.733	25.1	0.0019
GAP to WVI (1)	-0.0100	0.0167	-0.0075 $	0.451	46.2	0.0009
GAP to WVI (2)	-0.0209	0.0037	-0.0468 $	1.114	46.2	0.0019

GAP to X572 (1)	-0.0207	0.0203	0.0401	$	1.982	25.0
0.0009						
GAP to X572 (2)	-0.0136	0.0053	0.0553	$	2.289	25.0
0.0009						
M874 to GAP (1)	0.0257	-0.0254	0.0648	$	2.705	27.4
0.0010						
M874 to G1080 (1)	-0.0025	0.0271	0.0454	$	1.088	48.6
0.0014						
M874 to MOON2 (1)	0.0081	-0.0065	0.0463	$	1.000	47.4
0.0011						
M874 to P222 (1)	0.0107	-0.0165	0.0375	$	2.187	19.3
0.0028						
M874 to P222 (2)	0.0030	-0.0013	0.0223	$	1.163	19.3
0.0015						
M874 to P242 (2)	0.0096	-0.0062	0.0528	$	0.813	66.5
0.0024						
M874 to ppt1 (2)	0.0328	-0.0465	0.0543	$	1.543	51.0
0.0029						
M874 to zoa1 (1)	0.0079	-0.0087	0.0249	$	1.803	15.3
0.0006						
MHCB to GAP (1)	0.0655	-0.0819	-0.0034	$	2.415	43.4
0.0056						
MHCB to B1458 (2)	0.0422	-0.0541	-0.0371	$	2.311	33.7
0.0040						
MHCB to B1458 (4)	0.0412	-0.0673	-0.0239	$	2.444	33.7
0.0016						
MHCB to FELIPE (1)	-0.0021	-0.0158	0.0120	$	0.421	47.5
0.0058						
MHCB to G1080 (1)	0.0226	-0.0248	0.0645	$	2.412	30.2
0.0034						
MHCB to G1080 (2)	0.0269	-0.0191	-0.0274	$	1.422	30.2
0.0036						
MHCB to G1080 (3)	0.0192	-0.0351	-0.0021	$	1.329	30.2
0.0017						
MHCB to GAP (3)	0.0460	-0.0872	0.0033	$	2.271	43.4
0.0026						
MHCB to GAP (6)	0.0591	-0.0806	0.0049	$	2.305	43.4
0.0047						
MHCB to M874 (1)	0.0223	-0.0538	-0.0141	$	2.334	25.7
0.0034						
MHCB to MHCB-B (1)	0.0159	-0.0328	0.0364	$	45.674	1.1
0.0006						
MHCB to MHCB-B (2)	0.0162	-0.0330	0.0330	$	43.792	1.1
0.0008						
MHCB to MHCB-B (3)	0.0185	-0.0435	0.0236	$	46.867	1.1
0.0015						
MHCB to MOON2 (1)	0.0348	-0.0757	-0.0217	$	1.200	71.7
0.0031						
MHCB to P222 (10)	0.0376	-0.0557	0.0021	$	1.501	44.8
0.0035						
MHCB to P222 (3)	0.0372	-0.0702	0.0193	$	1.826	44.8
0.0009						
MHCB to P222 (4)	0.0450	-0.0559	-0.0347	$	1.780	44.8
0.0037						

MHCB to P222 (6)	0.0360	-0.0725	-0.0296	$	1.925	44.8
0.0019						
MHCB to P222 (9)	0.0334	-0.0703	-0.0245	$	1.823	44.8
0.0019						
MHCB to P242 (10)	0.0325	-0.0677	0.0161	$	1.674	45.9
0.0037						
MHCB to P242 (2)	0.0352	-0.0680	0.0110	$	1.686	45.9
0.0032						
MHCB to P242 (4)	0.0307	-0.0672	-0.0303	$	1.739	45.9
0.0036						
MHCB to P242 (6)	0.0304	-0.0647	-0.0189	$	1.611	45.9
0.0039						
MHCB to P242 (8)	0.0321	-0.0620	-0.0021	$	1.521	45.9
0.0025						
MHCB to ppt1 (1)	0.0523	-0.1161	0.0238	$	1.892	68.5
0.0013						
MHCB to ppt1 (10)	0.0522	-0.1166	-0.0229	$	1.895	68.5
0.0037						
MHCB to ppt1 (11)	0.0534	-0.1181	0.0186	$	1.912	68.5
0.0013						
MHCB to ppt1 (2)	0.0528	-0.1152	0.0287	$	1.897	68.5
0.0013						
MHCB to ppt1 (3)	0.0529	-0.1161	0.0521	$	2.012	68.5
0.0013						
MHCB to ppt1 (4)	0.0562	-0.1172	0.0153	$	1.911	68.5
0.0013						
MHCB to ppt1 (6)	0.0545	-0.1166	0.0004	$	1.879	68.5
0.0026						
MHCB to U1447 (1)	0.0157	-0.0276	-0.0190	$	0.813	45.5
0.0020						
MHCB to WVI (2)	0.0367	-0.0649	-0.0088	$	1.603	46.9
0.0016						
MHCB to WVI (3)	0.0389	-0.0678	-0.0022	$	1.669	46.9
0.0018						
MHCB to X572 (3)	0.0359	-0.0753	0.0050	$	1.759	47.5
0.0021						
MHCB-B to P222 (1)	0.0179	-0.0316	0.0189	$	0.933	43.9
0.0016						
MHCB-B to P242 (2)	0.0144	-0.0266	0.0207	$	0.794	46.1
0.0029						
MHCB-B to ppt1 (1)	0.0364	-0.0732	0.0367	$	1.330	67.4
0.0012						
MHCB-B to ppt1 (3)	0.0390	-0.0719	0.0116	$	1.225	67.4
0.0029						
MHCB-B to U1447 (1)	0.0051	0.0049	0.0050	$	0.187	46.1
0.0018						
MHCB-B to WVI (1)	0.0209	-0.0310	0.0289	$	1.019	46.4
0.0009						
MOON2 to P222 (1)	-0.0017	0.0038	-0.0394	$	1.176	33.7
0.0025						
MOON2 to X572 (1)	-0.0020	-0.0009	0.0253	$	0.962	26.4
0.0006						
P222 to P242 (1)	-0.0018	0.0037	0.0003		0.049	85.1
0.0015						

P222 to P242 (10)	-0.0035	0.0095	-0.0094 $	0.162	85.1	0.0027
P222 to P242 (2)	-0.0005	-0.0014	0.0355 $	0.418	85.1	0.0015
P222 to P242 (3)	0.0018	0.0038	0.0134 $	0.164	85.1	0.0015
P222 to P242 (4)	-0.0047	0.0090	-0.0321 $	0.396	85.1	0.0015
P222 to P242 (5)	-0.0031	0.0079	-0.0309 $	0.376	85.1	0.0015
P222 to P242 (7)	-0.0006	0.0083	0.0251 $	0.310	85.1	0.0027
P222 to P242 (8)	-0.0004	0.0088	0.0136 $	0.191	85.1	0.0018
P222 to P242 (9)	-0.0024	0.0042	0.0164 $	0.201	85.1	0.0037
P222 to ppt1 (1)	0.0193	-0.0463	0.0101 $	1.076	47.6	0.0010
P222 to ppt1 (10)	0.0187	-0.0467	-0.0263 $	1.193	47.6	0.0025
P222 to ppt1 (2)	0.0173	-0.0510	0.0143 $	1.170	47.6	0.0010
P222 to ppt1 (3)	0.0198	-0.0465	0.0277 $	1.212	47.6	0.0010
P222 to ppt1 (8)	0.0169	-0.0450	0.0267 $	1.156	47.6	0.0012
P222 to U1447 (1)	-0.0174	0.0419	0.0083 $	0.517	89.3	0.0032
P222 to U1447 (2)	-0.0164	0.0483	-0.0331 $	0.681	89.3	0.0044
P222 to U1447 (3)	-0.0234	0.0396	-0.0177 $	0.552	89.3	0.0068
P222 to WVI (1)	0.0010	0.0026	-0.0044	0.073	71.7	0.0025
P222 to WVI (2)	0.0024	0.0047	0.0141 $	0.210	71.7	0.0022
P222 to WVI (3)	0.0059	0.0006	-0.0100 $	0.162	71.7	0.0024
P222 to X572 (1)	0.0021	-0.0102	-0.0097 $	1.638	8.7	0.0021
P222 to X572 (2)	0.0029	0.0010	-0.0093 $	1.133	8.7	0.0006
P222 to X572 (4)	-0.0016	0.0042	-0.0235 $	2.755	8.7	0.0013
P222 to X572 (5)	0.0072	-0.0018	-0.0104 $	1.478	8.7	0.0011
P222 to zoa1 (1)	-0.0040	0.0030	-0.0026 $	0.946	6.0	0.0014
P222 to zoa1 (2)	-0.0036	0.0023	-0.0036 $	0.937	6.0	0.0008
P222 to zoa1 (3)	-0.0008	0.0029	-0.0039 $	0.819	6.0	0.0009
P222 to zoa1 (4)	-0.0035	-0.0012	-0.0114 $	2.004	6.0	0.0011

P242 to ppt1 (1)	0.0209	-0.0524	0.0152	$	0.677	86.4
0.0015						
P242 to ppt1 (10)	0.0218	-0.0560	0.0117	$	0.709	86.4
0.0022						
P242 to ppt1 (11)	0.0272	-0.0587	0.0058	$	0.752	86.4
0.0027						
P242 to ppt1 (2)	0.0175	-0.0488	-0.0195	$	0.641	86.4
0.0016						
P242 to ppt1 (3)	0.0183	-0.0504	0.0170	$	0.651	86.4
0.0015						
P242 to ppt1 (5)	0.0250	-0.0510	0.0451	$	0.840	86.4
0.0015						
P242 to ppt1 (6)	0.0247	-0.0512	0.0192	$	0.694	86.4
0.0028						
P242 to ppt1 (8)	0.0235	-0.0506	0.0100	$	0.657	86.4
0.0019						
P242 to U1447 (1)	-0.0176	0.0348	-0.0091	$	2.171	18.4
0.0028						
P242 to U1447 (2)	-0.0134	0.0412	-0.0143	$	2.471	18.4
0.0023						
P242 to U1447 (3)	-0.0171	0.0375	-0.0139	$	2.361	18.4
0.0027						
P242 to WVI (1)	0.0027	0.0036	-0.0432	$	1.484	29.3
0.0014						
P242 to WVI (2)	0.0030	0.0004	-0.0141	$	0.493	29.3
0.0012						
P242 to X572 (2)	0.0063	-0.0053	-0.0271	$	0.336	84.5
0.0020						
P242 to zoa1 (1)	-0.0029	-0.0064	-0.0301	$	0.378	81.7
0.0036						
P242 to zoa1 (3)	0.0007	-0.0026	-0.0316	$	0.388	81.7
0.0029						
P242 to zoa1 (4)	-0.0020	-0.0055	-0.0265	$	0.332	81.7
0.0038						
ppt1 to WVI (1)	-0.0156	0.0508	0.0009	$	0.884	60.1
0.0013						
ppt1 to WVI (2)	-0.0134	0.0487	-0.0085	$	0.852	60.1
0.0011						
ppt1 to WVI (4)	-0.0192	0.0545	-0.0409	$	1.179	60.1
0.0016						
ppt1 to X572 (1)	-0.0098	0.0447	-0.0337	$	1.456	39.0
0.0022						
ppt1 to X572 (3)	-0.0197	0.0445	0.0028	$	1.248	39.0
0.0018						
ppt1 to X572 (4)	-0.0166	0.0467	-0.0070	$	1.282	39.0
0.0012						
ppt1 to X572 (6)	-0.0291	0.0453	-0.0083	$	1.396	39.0
0.0021						
ppt1 to zoa1 (1)	-0.0259	0.0426	-0.0302	$	1.130	51.6
0.0030						
ppt1 to zoa1 (2)	-0.0210	0.0552	-0.0285	$	1.271	51.6
0.0020						
ppt1 to zoa1 (3)	-0.0199	0.0576	-0.0490	$	1.518	51.6
0.0012						

ppt1 to zoa1 (5)	-0.0309	0.0492	0.0080	$	1.138	51.6
0.0029						
X572 to zoa1 (1)	-0.0077	0.0136	0.0014	$	1.149	13.6
0.0006						
X572 to zoa1 (2)	-0.0060	0.0020	-0.0047	$	0.576	13.6
0.0005						
X572 to zoa1 (3)	-0.0011	-0.0015	0.0137	$	1.010	13.6
0.0004						
X572 to zoa1 (4)	0.0059	0.0046	-0.0100	$	0.918	13.6
0.0005						
RMS	0.0244	0.0481	0.0272			

$ - This session is flagged as a 3-sigma outlier

****
CHECK POINT RESIDUALS (East, North, Height - Local Level)
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
P222	0.0934	-0.1547	
P242	0.1091	-0.1646	
WVI	0.0719	-0.0670	
X572	0.1148	-0.1562	
zoa1	0.1027	-0.1386	
RMS	0.0995	0.1408	0.0000

****
CONTROL POINT RESIDUALS (ADJUSTMENT MADE)
****

STA. NAME	-- RE -- (m)	-- RN -- (m)	-- RH -- (m)
B1458			0.0020
Bell	0.0131	-0.0231	
FELIPE			-0.0052
G1080			0.0154
GAP	-0.0204	0.0091	
M874	0.0071	-0.0013	0.0031
MHCB	0.0422	-0.0466	-0.0466
MHCB-B			-0.0005
MOON2			-0.0196
ppt1	-0.0426	0.0614	
U1447			0.0011
RMS	0.0291	0.0362	0.0188

```
*****************************************************************
    OUTPUT STATION COORDINATES (LAT/LONG/HT)
*****************************************************************

STA_ID      -- LATITUDE --  -- LONGITUDE -- - ELLHGT -
B1458       37 03 48.11847 -121 47 44.54976   802.5255
Bell        37 02 18.85844 -121 18 40.02770    93.1498
FELIPE      36 57 40.53870 -121 23 55.48456   102.9599
G1080       37 04 19.05656 -121 36 08.64107    48.8635
GAP         37 15 28.92799 -122 07 15.79604   771.1403
M874        37 26 10.03019 -121 54 24.89053   -27.6878
MHCB        37 20 29.49798 -121 38 33.22352  1262.3134
MHCB-B      37 20 23.29339 -121 39 17.38053  1034.3777
MOON2       37 26 20.30416 -122 26 34.64751   -10.7055
P222        37 32 21.23910 -122 04 59.68777    54.0286
P242        36 57 14.13119 -121 27 47.39778    15.3426
ppt1        37 11 13.48453 -122 23 23.76733     8.3864
U1447       37 02 39.48184 -121 17 21.80119    88.3974
WVI         36 56 11.71499 -121 47 28.03085    13.4037
X572        37 28 54.53102 -122 08 59.09319   -29.7437
zoa1        37 32 34.96926 -122 00 57.34253    -3.1239


*****************************************************************
    OUTPUT VARIANCE/COVARIANCE
*****************************************************************
                                                 2
STA_ID      SE/SN/SUP  --------- CX matrix (m )-----------
            (90.00 %)  (not scaled by confidence level)
               (m)          (ECEF, XYZ cartesian)
B1458          0.0003  1.5013e-008
               0.0003  4.9424e-010 1.4203e-008
               0.0002  4.6736e-009 5.4778e-009 1.8265e-008

Bell           0.0002  3.8592e-008
               0.0002  5.3146e-008 1.0184e-007
               0.0010  -4.5601e-008 -8.0364e-008 7.7838e-008

FELIPE         0.0003  1.9546e-008
               0.0004  -2.7311e-009 1.8193e-008
               0.0002  4.2015e-009 7.6555e-009 2.0249e-008

G1080          0.0002  2.1055e-008
               0.0003  1.6223e-008 3.8573e-008
               0.0005  -1.0143e-008 -1.6829e-008 3.1060e-008

GAP            0.0002  1.9398e-008
               0.0002  2.1222e-008 3.9434e-008
               0.0006  -1.7674e-008 -2.7991e-008 3.0755e-008

M874           0.0002  7.3897e-009
               0.0002  1.0506e-009 8.3655e-009
               0.0002  -4.4230e-010 -5.5005e-010 8.3572e-009
```

```
MHCB            0.0002  1.7457e-008
                0.0002  1.8454e-008 3.5801e-008
                0.0006  -1.5555e-008 -2.5122e-008 2.8723e-008

MHCB-B          0.0003  1.8100e-008
                0.0003  6.2260e-011 1.5472e-008
                0.0002  5.0714e-009 6.5499e-009 1.9106e-008

MOON2           0.0003  5.7189e-008
                0.0004  5.0652e-008 8.8103e-008
                0.0009  -3.7754e-008 -4.2811e-008 7.7056e-008

P222            0.0002  1.9929e-008
                0.0003  1.7358e-008 3.6322e-008
                0.0005  -1.2608e-008 -1.9549e-008 2.9957e-008

P242            0.0002  2.7129e-008
                0.0003  2.3248e-008 5.0670e-008
                0.0006  -1.5422e-008 -2.4903e-008 4.0065e-008

ppt1            0.0002  1.6445e-008
                0.0002  1.7643e-008 3.2947e-008
                0.0005  -1.4890e-008 -2.3332e-008 2.6561e-008

U1447           0.0004  2.6551e-008
                0.0005  -6.4629e-009 3.0614e-008
                0.0002  3.7544e-009 1.8565e-008 3.1315e-008

WVI             0.0002  2.0635e-008
                0.0003  1.1429e-008 3.0304e-008
                0.0005  -5.7191e-009 -1.0380e-008 2.8327e-008

X572            0.0002  2.0440e-008
                0.0003  1.8169e-008 3.7003e-008
                0.0005  -1.2865e-008 -1.9286e-008 2.9688e-008

zoa1            0.0002  2.1248e-008
                0.0003  1.8625e-008 3.7872e-008
                0.0005  -1.2900e-008 -1.8861e-008 3.1018e-008



*************************************************************
    VARIANCE FACTOR = 3013.5205

    Note: Values < 1.0 indicate statistics are pessimistic, while
          values > 1.0 indicate optimistic statistics. Entering this
          value as the network adjustment scale factor will bring
          variance factor to one.
*************************************************************
```

DATA PROCESSING PROCEDURES

Preliminary Data Processing Procedures

Data collection of the survey area resulted in a total of 150 flightlines, including one control line, covering the project area. The ranges files, flight logs, raw air and ground GPS files were then taken to the office for data processing using REALM, a LiDAR processing software package from Optech. Processing began by downloading these files into a REALM database.

For redundancy and accuracy purposes, the airborne GPS data were processed from two base stations using POSGPS from Applanix, Inc. The agreement between a minimum of two solutions checked or combined between a minimum of two stations was better than 10 cm in each of X, Y, and Z. These trajectories were used in the processing of the inertial data. The inertial data were processed using POSProc from Applanix, Inc. This software produces an SBET ("smooth best estimate of trajectory") using the GPS trajectory from POSGPS and the roll, pitch and heading information recorded by the POS (Position Orientation System).

REALM uses the SBET to generate a set of data points for each laser return in the LAS file format. Each data point is assigned an echo value so it can be segregated based on the first and last pulse information. This project's data were processed in strip form, meaning each flight line was processed independently. Processing the lines individually provides the data analyst with the ability to QC the overlap between lines.
The sensor calibration parameters derived for the Pilot Area flights were as follows:

JD096F02:	**JD110F02:**
AltmSerialNo= 04SEN155;	AltmSerialNo= 04SEN155;
ImuType= LN200A1;	ImuType= LN200A1;
ImuRate= 200;	ImuRate= 200;
ScannerScale= 1.0063;	ScannerScale= 1.00525;
ScannerOffset= 0.000;	ScannerOffset= 0.000;
FirstPulseRange= -2.41;	FirstPulseRange= -2.41;
SecondPulseRange= -2.41;	SecondPulseRange= -2.41;
ThirdPulseRange= -2.41;	ThirdPulseRange= -2.41;
LastPulseRange= -2.41;	LastPulseRange= -2.41;
IMURoll= 0.0074;	IMURoll= 0.0084;
IMUPitch= 0.1634;	IMUPitch= 0.1528;
IMUHeading= -0.3021;	IMUHeading= 0.000;
UserToImuEx= 0.000;	UserToImuEx= 0.000;
UserToImuEy= -0.025;	UserToImuEy= -0.025;
UserToImuEz= 0.000;	UserToImuEz= 0.000;
UserToImuDx= -0.090;	UserToImuDx= -0.090;
UserToImuDy= -0.008;	UserToImuDy= -0.008;
UserToImuDz= -0.096;	UserToImuDz= -0.096;
UserToRefDx= -0.051;	UserToRefDx= -0.051;
UserToRefDy= -0.030;	UserToRefDy= -0.030;
UserToRefDz= -0.488;	UserToRefDz= -0.488;
TimeLag= 0.000164;	TimeLag= 0.000164;
IntensityGainFor3070=20	IntensityGainFor3070= 20;

Each strip was then imported into a project using TerraScan (Terrasolid, Ltd.) and the project management tool GeoCue (GeoCue Corp.). By creating a project the various flightlines are combined while breaking the dataset as a whole into manageable pieces. This process also converts the dataset from geographic coordinates to the State Plane Coordinate System (NAD83), California III. The ellipsoid height values were converted to NAVD88 orthometric values using Geoid03, provided by NGS.

Individual lines were then checked against adjacent lines to ensure a cohesive dataset. The data from each line were then combined and a classification routine was then run to determine the initial surface model. This initial surface model was then reduced using Optimal Geomatics' proprietary methods to create the final bare-earth dataset. A Triangular Irregular Network (TIN) was generated using the final surface data. Contours were then created from the TIN.

The bareearth data were then checked against the validation points across the project area. The results of these checks showed the DEM fitting the validation points well (see LiDAR DEM Quality Control Report for results).

Stereo pairs were generated from the LiDAR intensity data using Geocue and LiDAR1CuePac (GeoCue Corp.). LiDARgrammetry was then utilized to collect breaklines where necessary along hydro features to support the contour generation. These breaklines were collected as a 3D element in the MicroStation (Bentley Systems, Inc.) environment utilizing ISSD (Z/I Imaging).

The breaklines, top of bank (TOB), contour files were delivered in MicroStation v8, AutoCAD 2004 and ESRI formats. The LiDAR point data were delivered in LAS and ASCII formats. LiDAR orthos were delivered in TIF/TFW format.