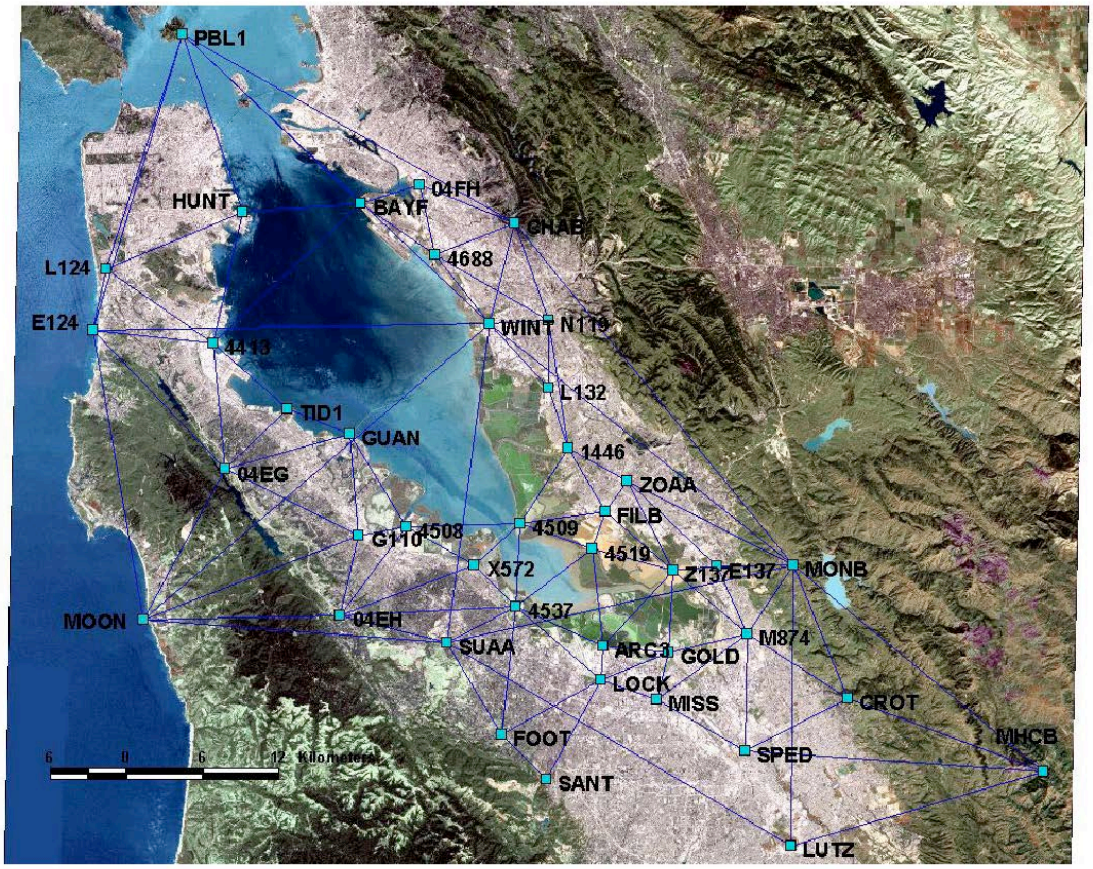
South San Francisco Bay Height Modernization Project

GPS-1881 and L-26522

ITRF2000/NAD83(CORS96) Epoch 2002.75

Final Report



California Spatial Reference Center
October 17, 2003

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Preface

The South San Francisco Bay Height Modernization Project is a combined horizontal and vertical control survey carried out by the California Spatial Reference Center (CSRC) as part of the Height Modernization Initiative of the National Geodetic Survey (NGS). The minimally constrained adjustment is found in Appendix A, and the full constrained adjustments are found in Appendix B (ITRF2000 Epoch 2002.75) and Appendix C (NAD83(CORS96) Epoch 2002.75).

The vertical project is addressed specifically in Section III of this report.

The full contents of both the horizontal and vertical project will be found on the accompanying CD.

This report includes by reference the Contractor's Report prepared by Johnson-Frank and Associates and located in the JFA directory on the accompanying CD.

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I.A. Project description

The South San Francisco Bay Height Modernization Project is an Order B GPS network [Hothem 1986] that qualifies as a 2-cm Height Modernization project according to NGS guidelines [Zilkoski et al 1997]. This project is being submitted to the National Geodetic Survey (NGS) as two projects – a horizontal control project and a vertical control project -- according to the "Blue Book" guidelines published by NGS [Challstrom 1994]. At the same time, the project is also being submitted to the California Spatial Reference Center (CSRC).

The South San Francisco Bay control network is located on both sides of the southern San Francisco Bay, California, extending from the Pacific Coast on the west to Mount Hamilton the east, and from Angel Island on the north to the southern limits of the City of San Jose on the south. The area of the network comprises about 1700 square miles.

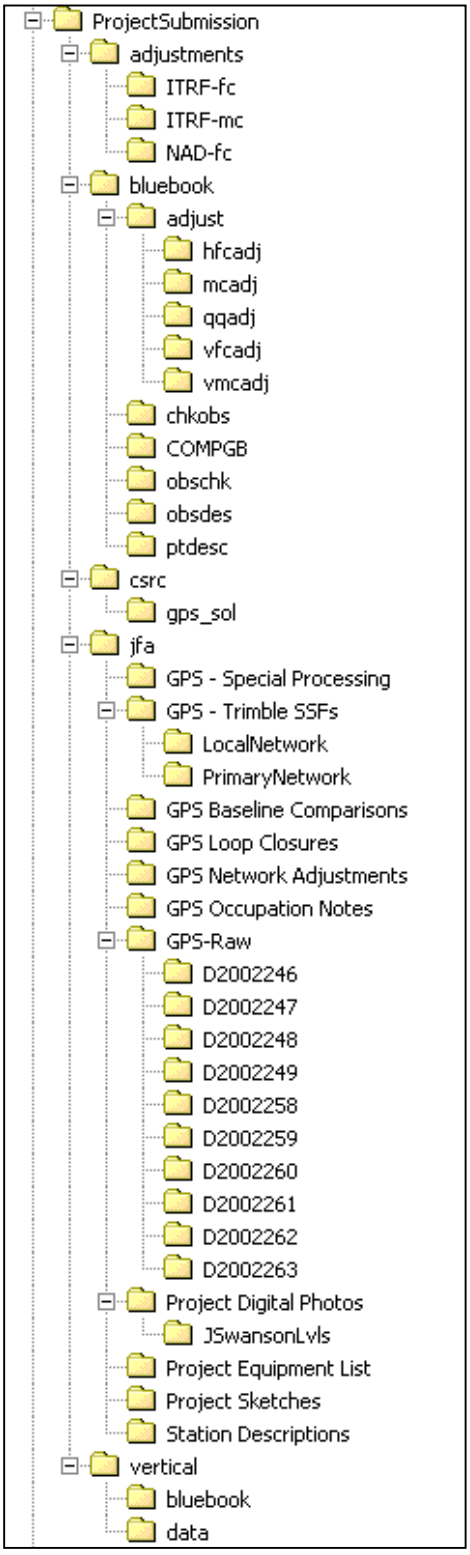
The California Spatial Reference Center's South San Francisco Bay project is the culmination of a process begun in 1996. In 1996 the National Geodetic Survey, in cooperation with several other agencies, including the Bay Conservation and Development Commission, the California Coastal Commission and the California State Lands Commission, performed the first demonstration project for Height Modernization. The project encompassed the central portion of the San Francisco Bay bounded by San Leandro to Berkeley on the east and Daly City to San Rafael on the west. Over the next several years the project was extended through the north Bay, San Pablo and Suisun Bays, and throughout the San Joaquin/Sacramento River Delta area.

In addition to developing a process to measure and monitor elevations of geodetic bench marks using GPS technology, the Bay projects incorporated numerous tidal bench marks. Interrelationships between the national geodetic datum (NAVD88) and local tidal datums (e.g., MLLW) were thus developed. This process accommodated those agencies whose responsibilities related to legal issues associated with tidal datums. It provided the basis for future vertical control activities associated with both tidal and geodetic datums.

This CSRC project completes the Height Modernization efforts for the overall Bay/Delta area. It was the first contract awarded by the newly formed CSRC. The successful contractor was Johnson-Frank & Associates, Inc. of Anaheim, California (JFA). The GPS observations and initial data reduction for the horizontal project, as well as the Second-order differential leveling [Philips 1975] for the vertical project, were undertaken by JFA during September of 2002. JFA completed the initial data reduction during the following month.

I.B. Submitted materials.

The material being submitted to NGS and CSRC is organized on a CD-ROM containing all of the text, binary data, and graphics files generated for this project. The CD is organized as follows:



ROOT: (this document)
- Network adjustments
  - Minimally constrained ITRF2000
  - Fully constrained ITRF2000
  - Fully constrained NAD83
- Bluebook (material submitted to NGS)
  - ADJUST
    - Horizontal minimal constraint
    - Horizontal constrained
    - Vertical minimally constrained
    - Vertical constrained
    - Relative accuracies
  - CHKOBS
  - COMPGB
  - OBSDES
  - CHKOBS
  - PTDESC (station descriptions)
- CSRC (material submitted to CSRC)
  - GPSSINEX
- JFA (material supplied by the contractor)
  - GPS processing
  - GPS baseline solutions
  - GPS baseline comparisons
  - GPS loop closures
  - StarNet network adjustments
  - Field data logs
  - GPS raw data files
  - Station photographs
  - Equipment list
  - Project sketches
- VERTICAL PROJECT
  - Vertical blue-book files
  - Leveling data

This report includes by reference the Final Report submitted by JFA, which may be found in the JFA directory on the CD. Where appropriate, referenced data files will be identified in this report by their locations on the CD.

II. Horizontal project

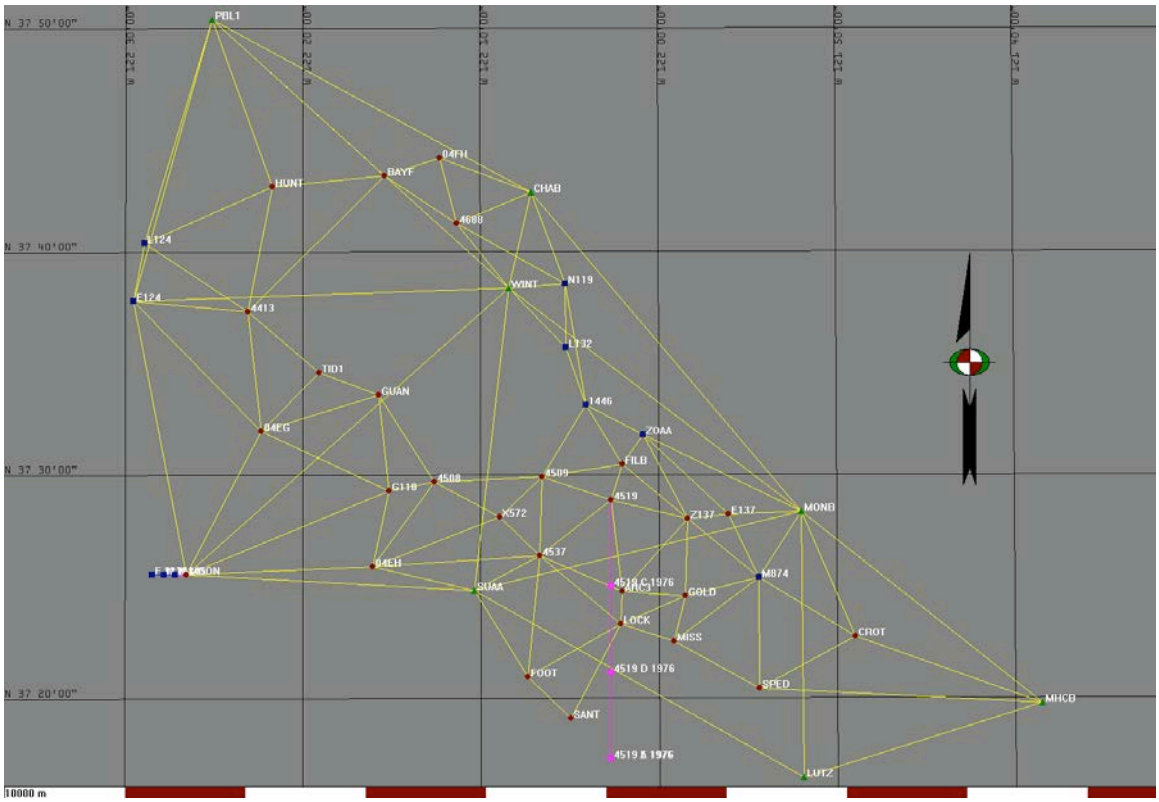


Figure 1: The South San Francisco Bay network

The horizontal network is shown (with constraints) in Figure 1. Stations marked by green triangles are horizontal constraints; stations marked with a blue square are vertical constraints; and the magenta lines show schematic leveling circuits to stations without precisely known horizontal coordinates.

Although the leveling circuits are described in Section III of this document, they were also included in the fully constrained 3-D (Section II.C.2) network adjustments.

II.A. Control monuments

There are 41 stations occupied by GPS in this network, as follows:

4-char	SSN	Designation	
4508	0001	941 4508 C TIDAL	
4509	0002	941 4509 H	(new)
4537	0003	941 4537 NO 4 RESET	(new)
4688	0004	941 4688 B TIDAL	
ARC3	0005	ARC 34	(new)
BAYF	0006	BAYFARM	(new)
FILB	0007	FILBERT	(new)
CROT	0008	CROTHERS	(new)
E124	0009	E 1241	
E137	0010	E 1371	
FOOT	0011	FOOTHILL	(new)
G110	0012	G 110 RESET	(new)
GUAN	0013	GUANO ISLAND RESET	
04EG	0014	HPGN D CA 04 EG	
04EH	0015	HPGN D CA 04 EH	
04FH	0016	HPGN D CA 04 FH	
SANT	0017	HPGN D CA SAN ANTONIO	
SPED	0018	HPGN D CA SAN PEDRO	
MISS	0019	HPGN D CA MISSION	
HUNT	0020	HUNTER WEST 1	
LOCK	0021	LOCKHEED	(new)
L124	0022	L 1241	
L132	0023	L 1326	
1446	0024	W 1446	
M874	0025	M 874	
MOON	0026	MOON 2	
N119	0027	N 1197	
4413	0028	SEAPLANE	(new)
GOLD	0029	SCVWD BM 290	(new)
TID1	0030	TIDAL 1	
X572	0031	X572 RESET	(new)
Z137	0032	Z 1370	
ZOAA	0033	ZOA A	
4519	0034	941 4519 B TIDAL	
CHAB	0035	CHABOT BARD CORS POINT	
MHCB	0036	MT HAMILTON BARD CORS POINT	
MONB	0037	MONUMENT PEAK MILPITAS	
PBL1	0038	POINT BLUNT 1 CORS ARP	
SUAA	0039	SUAA STANFORD CORS ARP	
WINT	0040	WINT WINTON POINT	
LUTZ	0041	LUTZ LUTZ GRM	

The last 7 stations in this list are CORS sites, whose horizontal coordinates were held fixed in the fully constrained adjustments. Stations 1446, E124, L124, L132, M874, N119 and ZOAA are First-order NAVD88 benchmarks whose orthometric heights were held fixed in the fully constrained adjustments.

Of the new monuments, all except LOCKHEED were constructed by JFA. LOCKHEED was constructed by the Santa Clara Valley Water District as a cooperating agency in this project.

In addition to these GPS-occupied stations, the following 5 benchmarks were included in the fully constrained combined adjustment:

```
N 245
4519 A 1976
4519 C 1976
4519 D 1976
4519 E 1976
```

Of these benchmarks, only N 245, a First-order NAVD88 bench mark in Half Moon Bay, was held fixed in the fully constrained adjustments. This station was used to transfer a precise elevation to station MOON 2 as part of the Height Modernization strategy. The remaining 4 monuments were leveled through, beginning at the GPS station 4519 B 1976, so that the GPS-derived orthometric elevation on 4519 B 1976 could be precisely transferred to the other 4519 monuments.

II.B. Unadjusted GPS vectors

There are 256 GPS vectors in this network, all of them processed by the Trimble proprietary software GPSurvey, Trimble Geomatics Office, and WAVE. Baselines were processed in single-baseline mode using precise ephemerides. The baseline processing strategy employed NAD83 coordinates as start points for solved vectors, creating a small but observable datum defect between the unadjusted vectors and the ITRF2000 constraints in the fully constrained adjustment discussed in Section II.C.2.4. below. Not all of the possible vectors were processed, only enough to provide the full strength of the vector geometry to the network. All GPS observations were made by dual-frequency receivers equipped with geodetic antennas, and all tripods employed in the survey were fixed-height tripods.

The complete set of raw GPS data files is found in the **JFA\GPS – Raw** directory in the accompanying CD. The occupations observed by JFA produced Trimble proprietary *.DAT data files, while the data files for the CORS sites are in RINEX format.

The complete set of baseline solution files, produced by the proprietary Trimble baseline processor GPSurvey\WAVE as *.SSF files, is found in the **JFA\GPS – Trimble SSF's** directory in the accompanying CD. In addition, the baseline solutions are found in the G-file (in the Bluebook subdirectory in the accompanying CD) and in SINEX files generated for this project and placed in the **CSRC\GPS_SOL** subdirectory on the accompanying CD.

The field data logs for all GPS occupations excepting the CORS sites is found in the **JFA\GPS Occupation Notes\Occupation Notes 9-06-03.tif** file in the accompanying CD.

II.B.1. List of vectors

A complete listing of solved baselines, complete with statistics, full covariance matrices, and quality assurance indicators, is found in text files in the **JFA\GPS – Special Processing** directory in the accompanying CD. These files also identify the elevation masks and data sampling rates used to compute the baselines.

II.B.2. List of vectors sorted by RMS

A complete list of solved baselines sorted by RMS values is found in XLS files in the **JFA\GPS Baseline Comparisons** directory in the accompanying CD. Two vectors in the secondary network component exceed 15 mm (they are 16 mm), and 4 vectors in the primary network component exceed 15 mm (the largest being 19 mm).

II.B.3. Delta ellipsoid height baseline comparisons

A complete list of repeat baselines with comparisons in delta ellipsoid height is found in the **JFA\GPS Baseline Comparisons** directory in the accompanying CD. The comparisons show that the baselines qualify this project as a 2-cm Height Modernization Project.

II.B.4. Loop closures

A complete list of GPS vector loop closures is found in the **JFA\GPS Loop Closures** directory in the accompanying CD. These loop closures are subdivided into a set for the Primary control network and another set for the Secondary control, and range in size from 1.5 Megabytes to 2 Megabytes.

II.B.5. GPS Equipment

The list of GPS receivers and antennas is found in the file **JFA\PROJECT EQUIPMENT LIST\EQUIPMENT_LIST.XLS**. All tripods used were fixed-height tripods.

II.C. Network adjustments

Johnson-Frank and Associates performed network adjustments of the SSFB project as compartmentalized into "Primary" and "Secondary" components, using the StarNet adjustment software. The results of these adjustments are found in the **JFA\GPS Network Adjustments** directory. The minimally constrained adjustments are performed separately for the Primary control and Secondary control components of the network. The total network fully constrained adjustment found there holds the latitude, longitude, and ellipsoid height coordinates fixed for 6 of the CORS stations (excluding SUAA). The constraints are identified as "CSRC 2000.35" and the geoid model used is GEOID99. Because the final adjustments of this network adopted a different set of constraints and a different geoid model, the JFA adjustment isn't examined any further in this report.

The adjustments described further in this report were carried out using laboratory software (which computes adjustments using both ellipsoidal and cartesian mathematical models) at Geodetic Solutions, the Trimble-proprietary software TRIMNET Plus, and the NGS software ADJUST.EXE. Given the same data, these programs produce results which agree at the sub-millimeter level. It's worth noting that comparing ADJUST.EXE results with results from other software requires modifying the Reference Frame codes in the G-file, because the unmodified codes result in an a priori transformation to GPS vectors computed pre-adjustment by ADJUST.EXE.

II.C.1. Minimally constrained adjustment

A minimally-constrained adjustment of the GPS network using inner constraints was undertaken for the purpose of accurately representing horizontal error ellipses and ellipsoid height errors (Figure 2). Next, a minimally-constrained adjustment of the network was undertaken holding fixed latitude and longitude and ellipsoid height of CORS station CHAB, for ease of comparison of adjusted values against published values. The results (adjusted coordinates in both geocentric and cartesian reference frames, and observations) are given in Appendix A.

The residuals, degrees of freedom, and standard error of unit weight were the same for both adjustments. The minimally-constrained network, containing 648 degrees of freedom and 256 GPS vectors., produced a standard error of unit weight of 6.6.

Network precisions for the minimally-constrained adjustment were computed by dividing the standard error of adjusted distances into the distances [Hothem 1986]. The lowest precision was one part in 1,495,115 in the baseline between GUAN and TID1, with a standard error of adjusted distance of 3.5 mm and a distance of 5.248 km. The highest precision was one part in 83,463,565 in the baseline MONB to WINT, with a standard error of adjusted distance of 0.4 mm and a distance of 30.488 km. This qualifies the network throughout as an Order B network.

Four outliers (vector components whose standardized residuals exceed a computed τ value [Pope 1976]) were identified by the adjustment. The largest of these was an adjusted distance of 4.7 km between WINT and N119, with a standardized residual 1.11 times the τ value, an absolute residual of 1.59 cm, and a standard error of adjusted distance of 1.5 mm. Because these 4 outliers do not disturb the rest of the network, they were left in the adjustment.

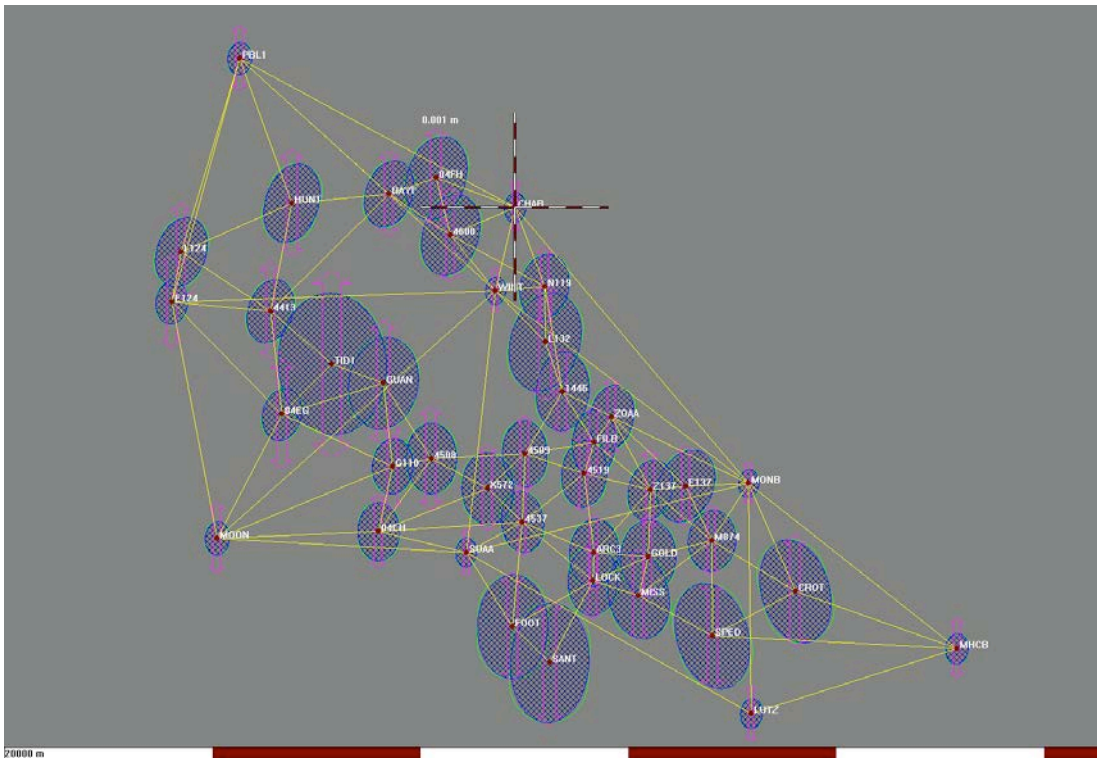


Figure 2: Inner constraints network adjustment, bar scale tick = 1 mm

The *a posteriori* standard errors for the adjusted ellipsoid heights are all sub-centimeter, verifying that this survey qualifies as a 2-cm Height Modernization Project [Zilkoski et al 1997]. The full set of adjusted coordinates and observations from the minimally-constrained adjustment without geoid heights will also be found in the accompanying CD, in the directory **ADJUSTMENTS\ITRF-MC**, in the files COORDS.LOG and OBSERVS.LOG. In this same directory the full set of relative errors (precisions) for all observed vectors will be found in the file COVAR.LOG.

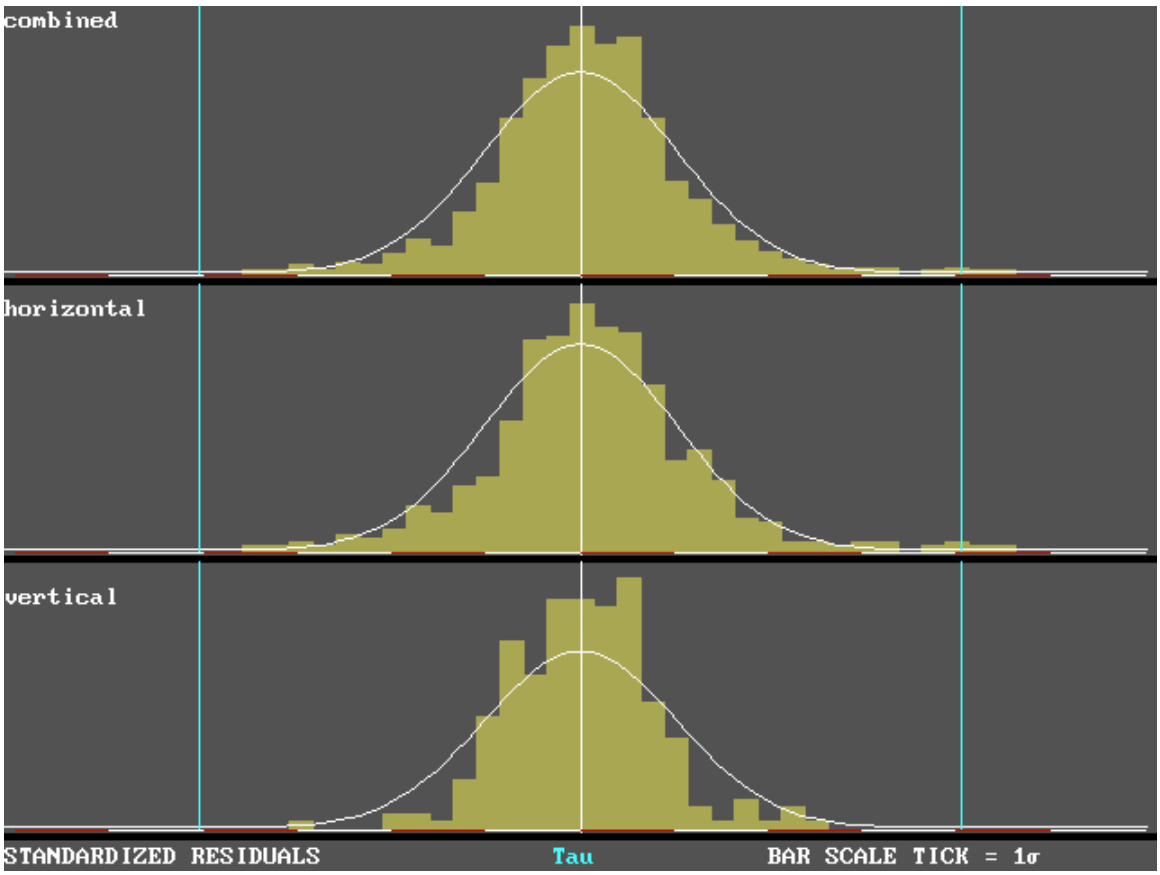


Figure 3: Histograms of standardized residuals, minimally constrained adjustment

The SINEX solution (polyhedron) for the minimally constrained adjustment is shown below in Figure 4. The file itself (SSFBHMP.SNX) is found in the **CSRC** subdirectory on the accompanying CD.

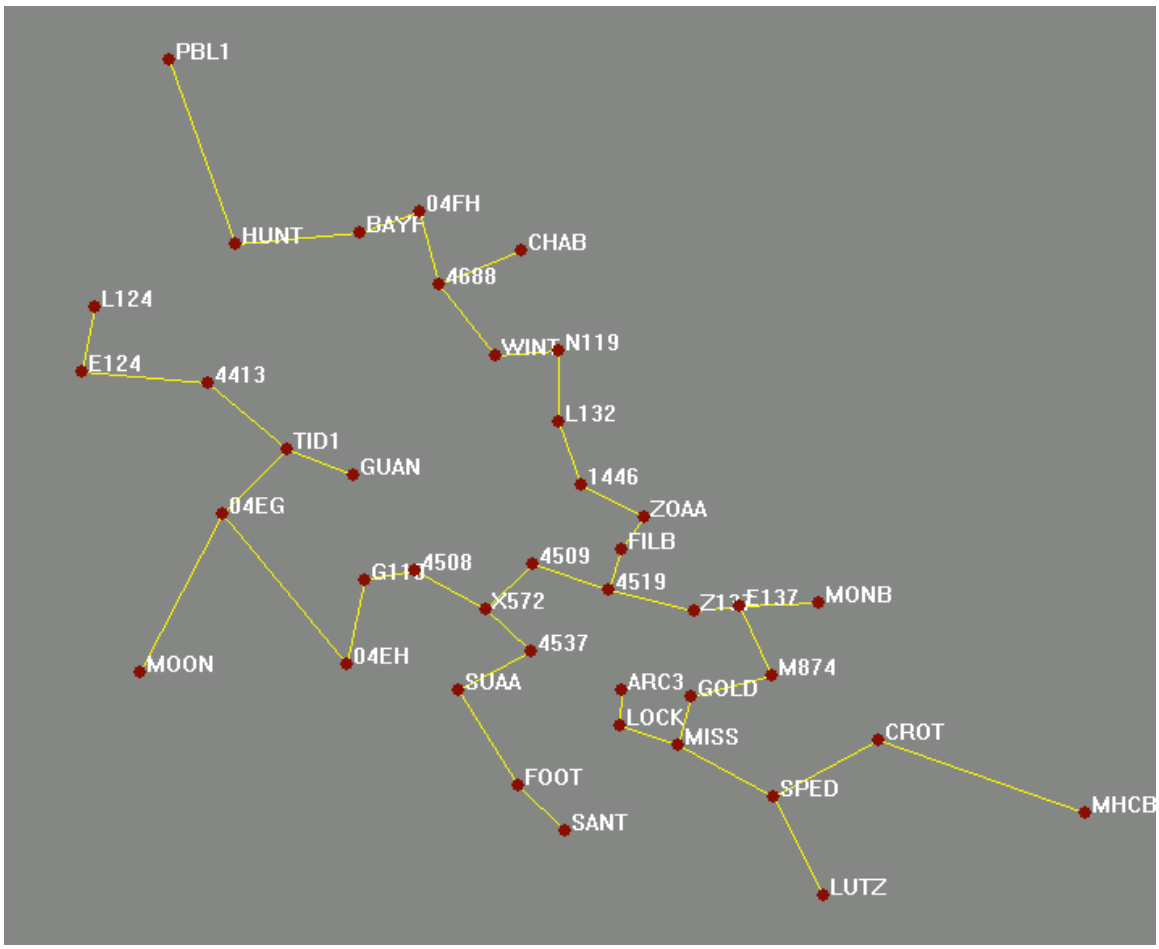


Figure 4: SINEX solution of minimally constrained adjustment

II.C.2. Fully constrained adjustments

For the fully-constrained adjustments, the horizontal coordinates of selected CORS sites, the NAVD88 orthometric heights of selected benchmarks, and a selected geoid model were employed. Ellipsoid heights were not held for vertical constraints.

II.C.2.1. Definition of datum epoch 2002.75

Because the observations in the network were collected during the month of September, 2002, the datum epoch chosen for both the ITRF2000 and NAD83(CORS96) fully-constrained adjustments is Epoch 2002.75.

II.C.2.2. Choice of horizontal constraints

Seven CORS sites located in the project area were chosen for horizontal constraints. Although not all of these sites are listed with NGS, because some of them are local to the BARD (Bay Area Regional Deformation) active array, but all of them are listed on the SOPAC web site. Using the SOPAC SECTOR utility, the ITRF2000 coordinates for these sites for Epoch 2002.75 were

obtained and were used for the ITRF fully-constrained adjustment. These coordinates were transformed to NAD83(CORS96) coordinates and held fixed for the NAD fully-constrained adjustment. Computation of velocities is described below in Section II.C.4., and the choice of geoid model is described below in Section II.C.3.

II.C.2.3. Choice of vertical constraints

The fixed height constraints in this project are all NAVD88 benchmarks, located along the Pacific coast and along both sides of San Francisco Bay. Along the Pacific Coast, no NAVD88 benchmarks were directly occupied because of satellite visibility obstructions. Instead, Second-order levels were run by JFA from NAVD88 bench marks F 1239, N 211, and N 245 to GPS station MOON 2. This leveling circuit, which had closures acceptable for blue-booking as a vertical control project, was adjusted as part of the fully-constrained adjustments. This leveling circuit is described further in Section III of this Report, which deals with the vertical blue-book project.

In the vicinity of San Francisco Bay, all of the bench marks used for vertical constraints (listed above in Section II.A.) were occupied by GPS. In addition to the GPS observations, however, a Second-order leveling circuit was run from GPS station 4519 (941 4519 B TIDAL) to the following local MLLW bench marks:

4519 A 1976
4519 C 1976
4519 D 1976
4519 E 1976

This level circuit was also adjusted as part of the fully constrained adjustments, and is included in the vertical blue-book project. This second leveling circuit will allow for the transfer of GPS-derived orthometric heights to the tidal stations.

In order to evaluate the possibility that local vertical deformation (subsidence/uplift) might render the bench marks unreliable as vertical constraints, the continuous time series data from the CORS sites (available from SOPAC) was examined for evidence of vertical deformation. An example of a continuous time series plot is shown below in Figure 4, with the vertical component being shown at the top. This CORS site (WINT), like the others, does not show a vertical velocity distinguishable from noise, and so for the fully constrained adjustments all of the NAVD88 bench marks were fixed. The final adjustment results, in conjunction with the geoid model (see Section II.C.3.) confirm that the bench marks provide reliable constraints. The fixed bench mark elevations are:

1446	9.841
E124	15.863
L124	123.18
L132	2.921
M874	4.805
MOON	22.252 (adjusted)
N119	22.731
ZOAA	13.124

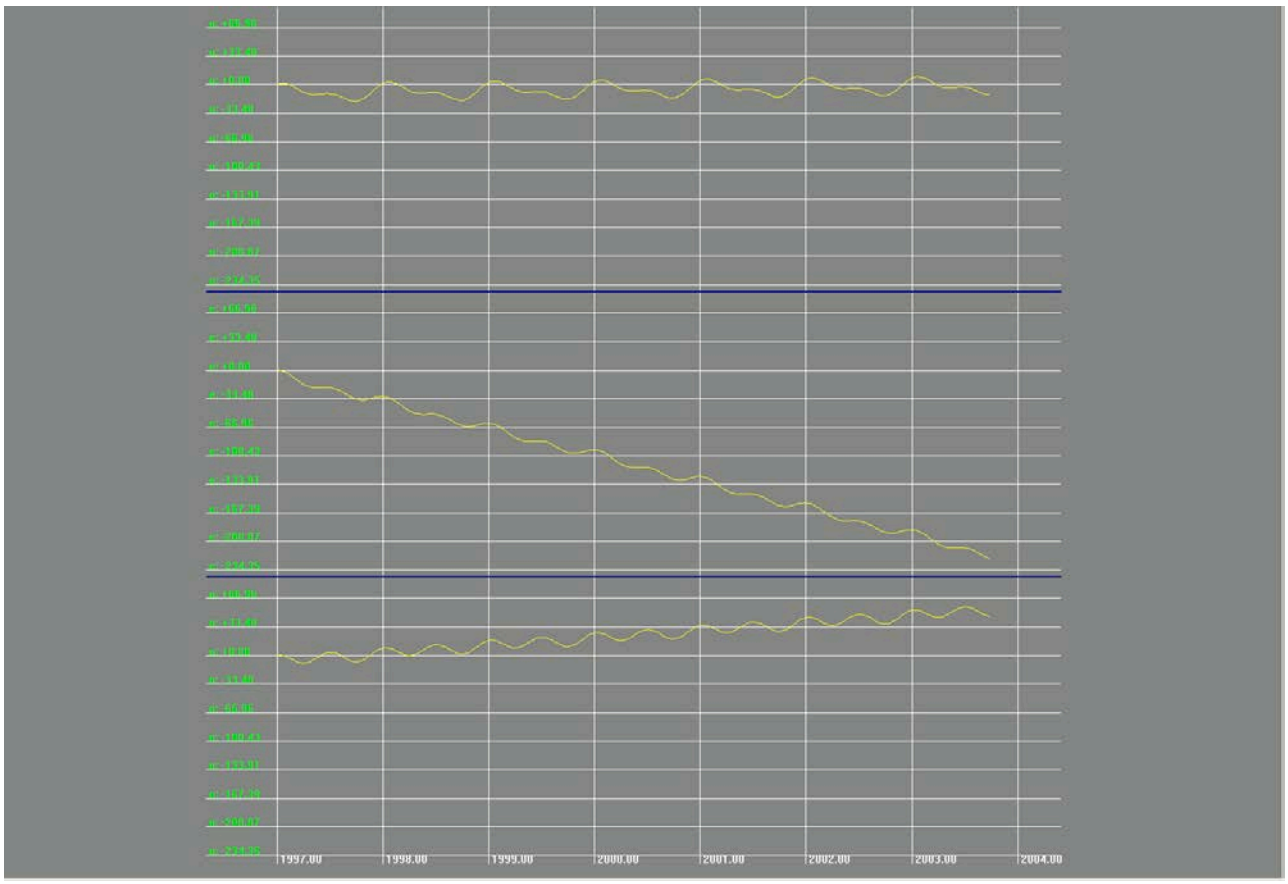


Figure 5: Continuous time series data for WINT, the UP component on top

The adjustment of the geoid model in the fully constrained adjustments is described in Section II.C.3. below.

II.C.2.4. Fully constrained ITRF2000 Epoch 2002.75

The following horizontal coordinates (cartesian and ellipsoidal) for the CORS sites were downloaded from SOPAC for horizontal constraints:

```
CHAB:      -2685744.9479   -4278240.7898      3881399.5246
           37-43-26.815093 -122-07-09.512167   213.9868

LUTZ       -2682295.4852   -4315123.6144      3842827.0298
           37-17-12.662563 -121-51-54.807878    94.9863

MHCB       -2664063.6748   -4323171.9879      3848361.4734
           37-20-29.517054 -121-38-33.277942  1261.7685

MONB       -2675632.2163   -4304129.3973      3860728.4981
           37-29-07.171948 -121-52-00.710808   750.3627

PBL1       -2703286.4853   -4256586.0678      3892573.4829
           37-51-10.994170 -122-25-08.206141    -8.0468
```

```
SUAA      -2700403.9994   -4292605.7222      3855137.3174
          37-25-36.861094 -122-10-23.836256    20.4162

WINT      -2689809.9869   -4281188.0002      3874973.4494
          37-39-09.514687 -122-08-26.039510   -28.7756
```

Only the horizontal coordinates in this list were held fixed.

The fully constrained adjustment resulted in the standard error of unit weight for the adjustment being inflated from 6.6 to 10.0. The horizontal misclosures could not be traced to any one, or any two, CORS sites, but rather appear to be distributed randomly among them. The vertical constraints did not result in any inflation of the standard error of unit weight, because the geoid model was robustly weighted to absorb vertical misclosures. A possible cause for at least some of the inflation in the standard error of unit weight may be the use of NAD83 coordinates as start points for solving the baselines. As a result of the fully-constrained adjustment, the GPS vectors were re-weighted by a factor of 10 so that the combined adjustment could be carried out with the geoid model and differential leveling, with the combined adjustment passing the chi-square test.

This inflation in the standard error of unit weight has the effect of reducing the relative errors (precisions) by a factor of 1.5. Thus, the minimum precision described above in Section II.C.1. is reduced from 1: 1,495,115 to 1:996,743, still precise enough to qualify for Order B status.

When datum transformation parameters were solved in this adjustment, it was found that deflections of the vertical in latitude and longitude were larger than would have been expected for IRTF2000 vectors, but were still at the 2-sigma noise level or less and therefore could not be measured with confidence, and so these parameters were turned off. However, the solved azimuth rotation of +0.031 arc seconds had an a posteriori standard error of only 0.002 arc-seconds, an order of magnitude less than the parameter itself, and so this rotation was left in the adjustment. The probable cause of the datum defect is the use of NAD83 coordinates instead of ITRF2000 coordinates to solve for the GPS baselines. The solved scale parameter of 0.999999774775 (σ = 0.000000009466) is also non-trivial, and is expected, as it represents a shift of about half a meter vertically between IRTF2000 and NAD83, which is the target datum for the geoid model.

As part of the robust weighting in the combined adjustment, the differential leveling observations had their nominal *a priori* errors scaled by 0.63 (producing *a posteriori* errors for unadjusted delta orthometric heights of [sqrt(distance/1000) * 1 mm], and the nominal errors for geoid heights were scaled by 0.36 to produce *a posteriori* errors for unadjusted geoid heights of 0.07 m (see Section II.C.3. below).

II.C.2.5. Fully constrained NAD83(CORS96) Epoch 2002.75

The ITRF2000 Epoch 2002.75 constraints listed above, when transformed to NAD83(CORS96) for the same epoch are:

```
CHAB      -2685744.2771   -4278242.0512      3881399.4838
          37-43-26.799923 -122-07-09.461583   214.5248

LUTZ      -2682294.8155   -4315124.8809      3842826.9938
          37-17-12.647445 -121-51-54.757644    95.5390

MHCB      -2664063.0057   -4323173.2547      3848361.4389
```

```
          37-20-29.501854 -121-38-33.227809  1262.3259

MONB      -2675631.5464   -4304130.6619      3860728.4609
          37-29-07.156772 -121-52-00.660481   750.9117

PBL1      -2703285.8136   -4256587.3269      3892573.4389
          37-51-10.979058 -122-25-08.155336    -7.5189

SUAA      -2700403.3288   -4292606.9862      3855137.2781
          37-25-36.846030 -122-10-23.785794    20.9583

WINT      -2689809.3161   -4281189.2622      3874973.4089
          37-39-09.499543 -122-08-25.988949   -28.2369
```

The transformation algorithm used to produce these constraints was developed by Tomas Soler of NGS, and is published on the NGS web site.

The weighting and adjustment results were essentially the same as for the IRTF2000 fully-constrained adjustment, with the exception of the transformation parameters. The azimuth rotation for this adjustment was +0.0082 arc seconds (σ = 0.002 arc seconds, again) and the scale was 0.999999865509 (same σ as the ITRF scale), which tends to support the hypothesis that the use of NAD83 coordinates during baseline processing is the source of the small, but observable, datum defect between the unadjusted vectors and the horizontal constraints.

II.C.3. Geoid model

Until July of 2002 the only realistic choice for a geoid model that could convert between ellipsoid heights and orthometric heights in the SSFB network was GEOID99. This model caused height misclosures between the NAVD88 bench marks and the GPS network component that raised questions about possible vertical deformation in the bench marks.

CSRC is fortunate to have been given the use of a brand-new test geoid model (called GEOID03 in this report for the sake of convenience, although that may not be the correct name for it) developed at NGS just in time for use in this project. This test model was developed following the analysis of the Tuolumne County GPS Network, another Height Modernization Project involving the CSRC, in the beginning of 2003. This geoid model produced a much better fit between the NAVD88 bench marks and the GPS component, and essentially negated the concerns about vertical deformation in the bench marks.

GEOID99 won't be discussed further in this analysis, except to produce a contour map of the differences between GEOID99 and GEOID03 (Figure 5). This image shows GEOID99 geoid heights subtracted from GEOID03 geoid heights.

To analyze the fit between this new geoid model, the bench marks, and the GPS vectors, GEOID03 was first introduced into the combined (and fully constrained) network adjustment as an uncorrelated model [Potterfield 1992]. By robustly weighting the geoid heights, the differences between the bench marks and the GPS-derived orthometric heights could be analyzed, and the geoid heights would not affect the adjustment of the GPS vectors. A list of the misclosures between the bench marks, geoid model, and GPS-observed ellipsoid heights is given

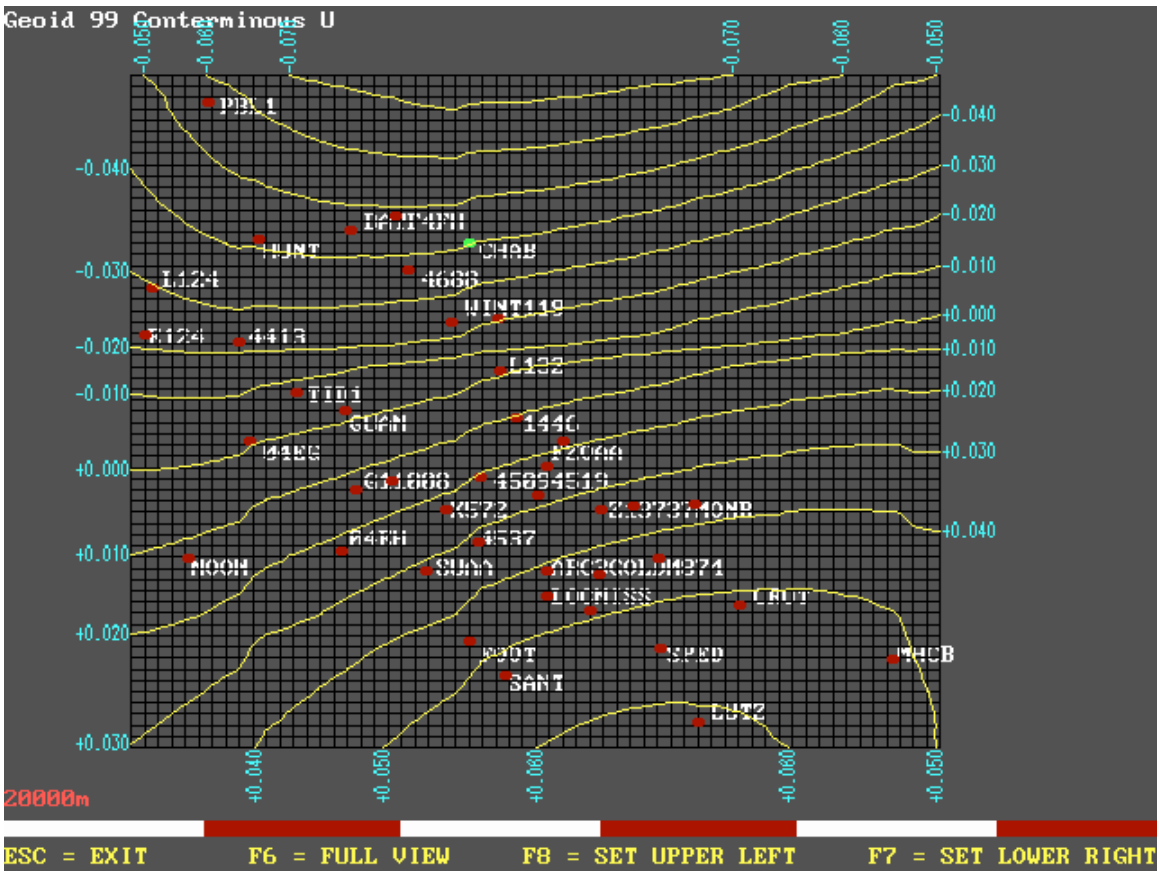


Figure 6: Difference between GEOID99 and GEOID03 (GEOID03 – GEOID99)

below (with the NAVD88 BM's shown in bold type):

04EG	-32.5132	-0.039483
04EH	-32.4451	-0.049443
04FH	-32.3913	+0.018410
1446	**-32.4254**	**-0.020803**
4413	-32.5699	-0.013738
4508	-32.5091	-0.034670
4509	-32.4835	-0.025220
4519	-32.4801	-0.014799
4537	-32.5205	-0.026047
4688	-32.4749	+0.013511
ARC3	-32.5384	-0.010803
BAYF	-32.4589	+0.011930
CHAB	-32.3137	+0.025325
CROT	-32.2231	+0.021053
E124	**-32.7644**	**-0.008160**
E137	-32.4246	+0.011539
FILB	-32.4505	-0.013899
FOOT	-32.4818	-0.029628
G110	-32.4874	-0.039810
GOLD	-32.5417	+0.003151
GUAN	-32.5331	-0.025302
HUNT	-32.4959	+0.003961
L124	**-32.7172**	**-0.005069**

L132	**-32.4119**	**-0.013567**
LOCK	-32.5561	-0.011523
LUTZ	-32.4488	+0.005406
M874	**-32.4702**	**+0.022084**
MHCB	-31.5185	+0.022287
MISS	-32.5652	-0.001237
MONB	-32.1436	+0.021717
MOON	**-32.9376**	**-0.080569**
N119	**-32.3778**	**+0.024891**
PBL1	-32.3907	+0.012523
SANT	-32.4849	-0.023357
SPED	-32.5345	+0.008994
SUAA	-32.5064	-0.036485
TID1	-32.5400	-0.024032
WINT	-32.4741	+0.009362
X572	-32.5126	-0.030758
Z137	-32.4767	+0.002600
ZOAA	**-32.4199**	**-0.010287**

As can be seen above, the agreement between the bench marks, the GPS ellipsoid heights, and the geoid model is quite good (2 cm or less for the most part) with the one exception of the height on MOON, which shows a misclosure of -8 cm. If this misclosure had been in the same range as the others, it would be difficult to argue for adjusting the geoid model as part of this Height Modernization Project. An investigation was undertaken to try to determine whether the misclosure on MOON was caused by defective bench marks, defective GPS vectors, or a defective geoid model.

The possibility of a defective bench mark at MOON was ruled out because, in fact, 3 First-order NAVD88 bench marks (1991) were used to transfer a precise orthometric height to MOON. Those bench marks were N 245, N 211, and F 1239. The elevation was transferred from N 245 to MOON, and the levels between N 245 to N 211 and F 1239 confirmed that the 3 BM's all were internally consistent.

If defective GPS vectors had produced a bad ellipsoid height on MOON, this would have been reflected in either much larger residuals throughout the combined adjustment or else a non-trivial set of deflections in the vertical in the datum transformation, and neither of these characteristics were found. So at this point the geoid model was introduced to the network as a correlated model, and a contour map of the residuals was produced as shown in Figure 6. This contour map shows that the residuals to GEOID03 are generally 2 cm or less with the exception of the residual at MOON (and interpolated in this southwestern corner of the network). The reason why GEOID03 might be in error at this station has two causes: first, when both GEOID99 and GEOID03 were produced at NGS, there were no GPS occupations on NAVD88 BM's near Half Moon Bay that could have been used to produce the "conversion surface" that converts the gravimetric geoid model to the final hybrid model; and secondly, the geoid right in this part of the network dives steeply down into the ocean, as is graphically illustrated in Figures 7 and 8.

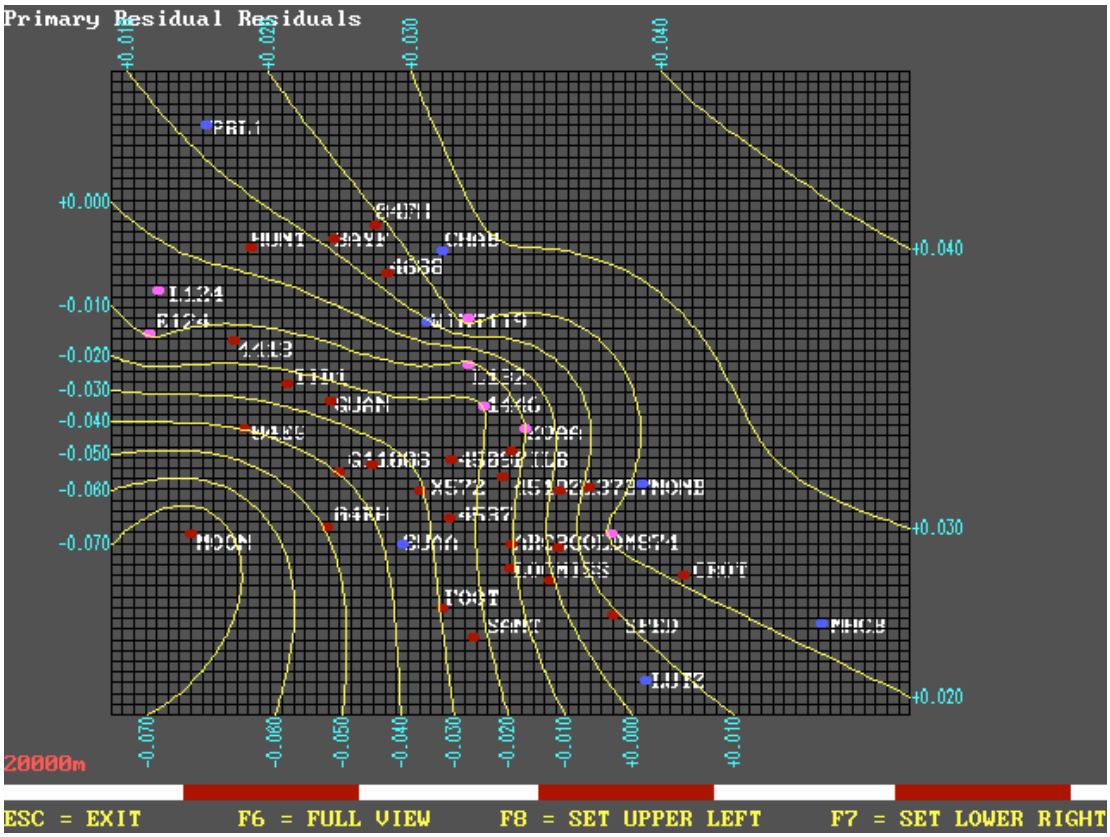


Figure 7: Residuals to GEOID03

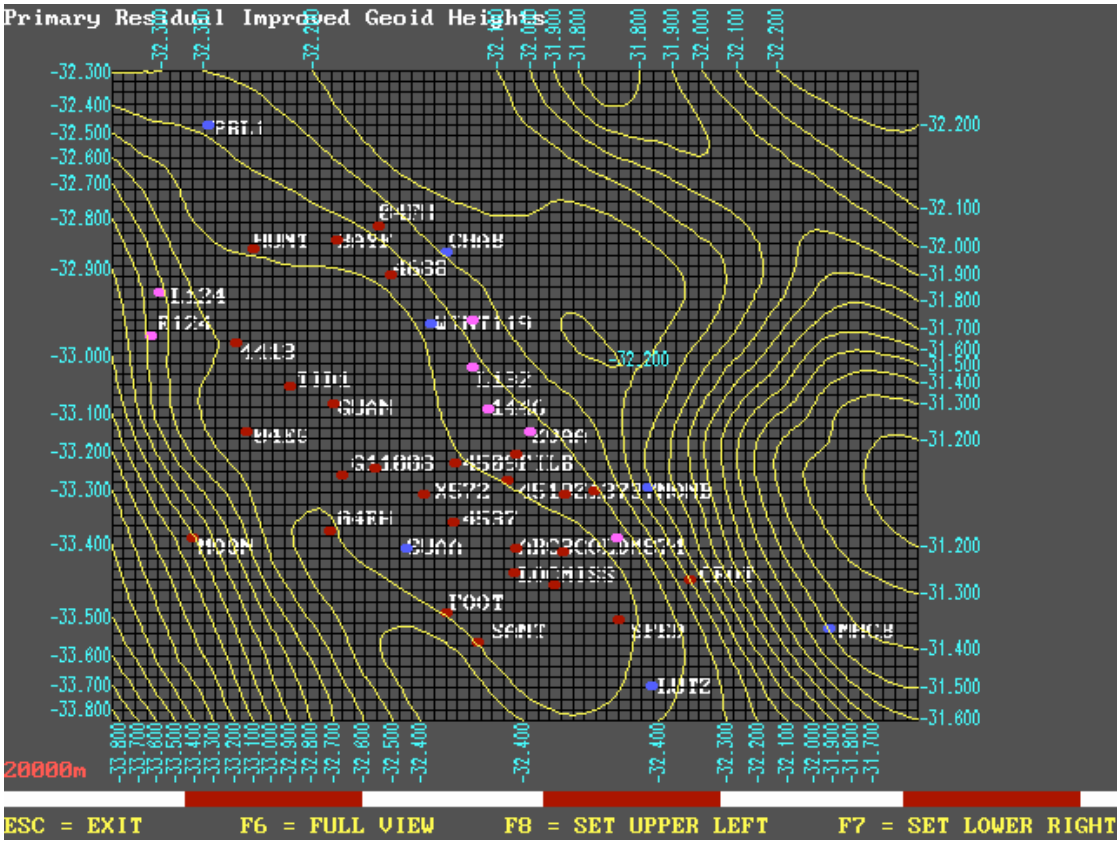


Figure 8: Contour map of GEOID03

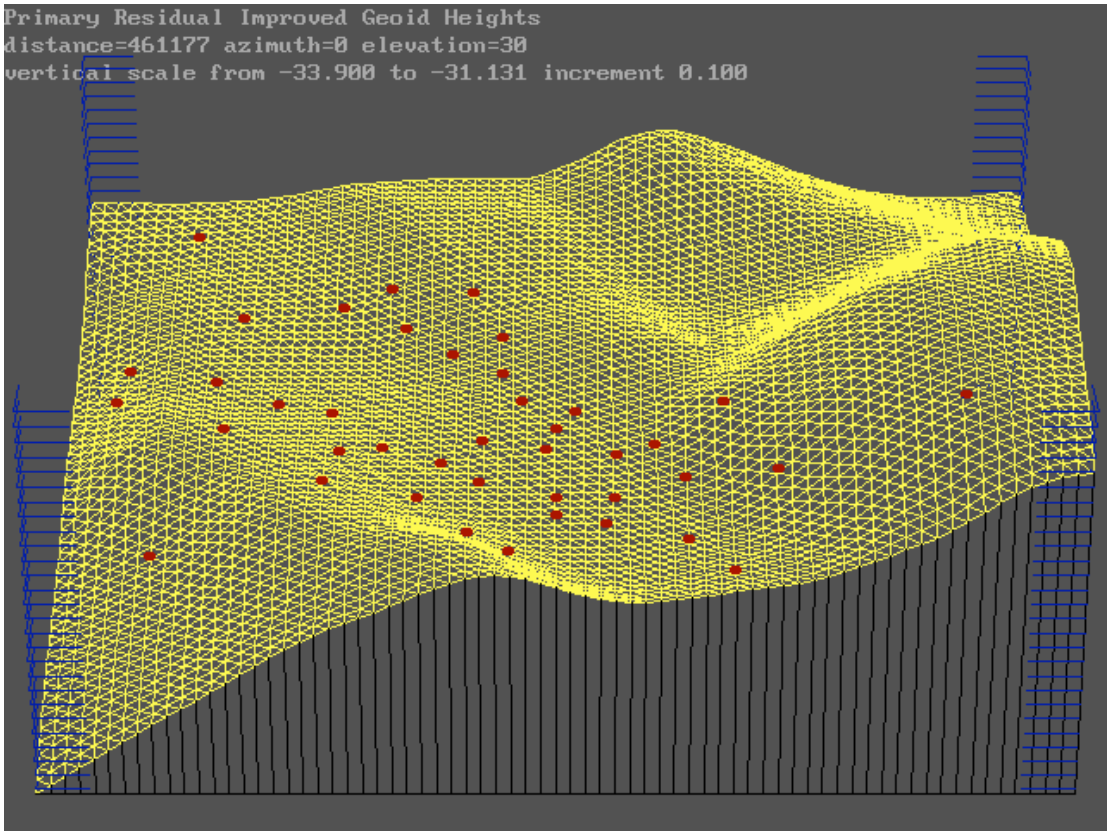


Figure 9: Wireframe model of GEOID03

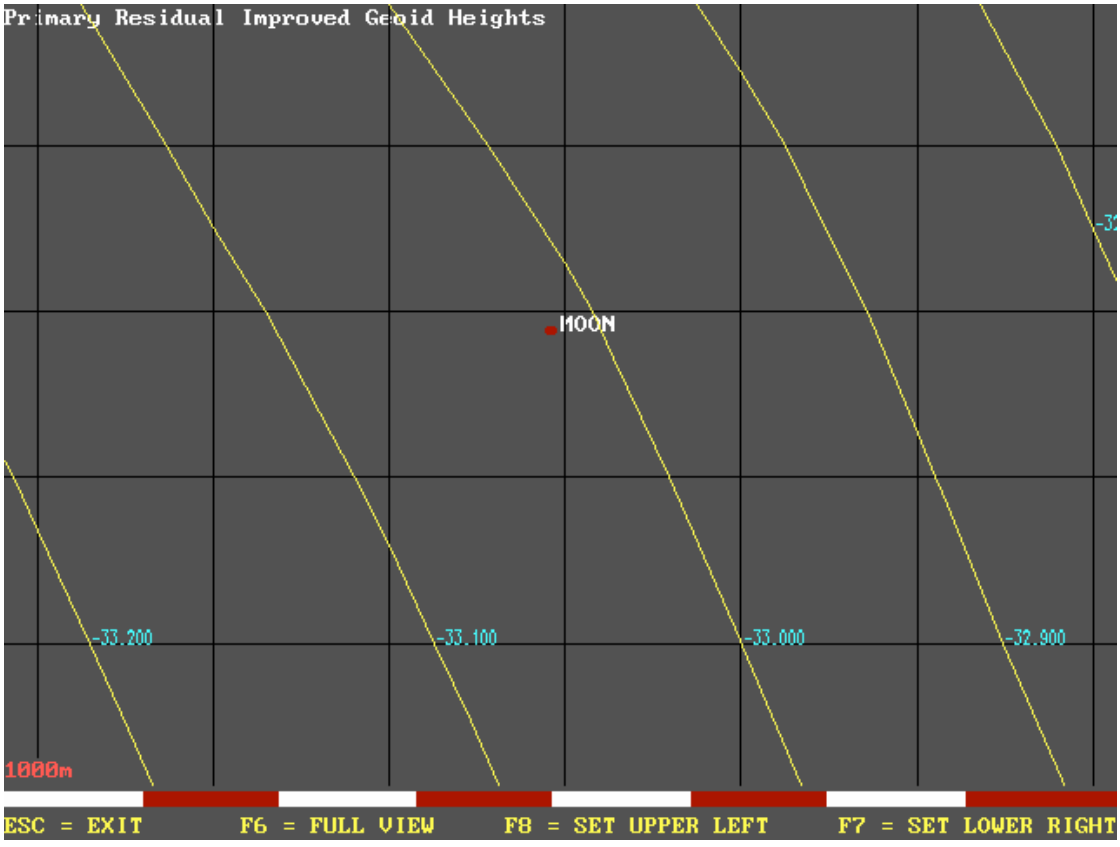


Figure 10: Magnified image of the geoid slope at MOON

Finally, Figure 9 is a magnified view of the geoid slope at station MOON. It can be seen here that the 0.10 contours are less than 2 km apart (measured at right angles to the slope). Since we're looking for an 8-cm residual to the geoid height, this could be produced by a horizontal offset of only slightly more than a kilometer to explain the geoid correction. Our conclusion is that the geoid slope at MOON as modeled by GEOID03 is in error, and should be corrected using the observations being blue-booked by this project.

II.C.4. Velocities

II.C.4.a. ITRF2000 Velocities

Because of the dynamic nature of California's geology, the publication of adjusted coordinates for the SSFB network must be accompanied by annual velocities. These were computed for the adjusted stations in the following manner.

The SOPAC SECTOR utility, using continuous time series data for each CORS site, also publishes a set of coefficients representing the annual velocities at each site, in all 3 dimensions. An example of a plot of these time series solutions is shown above in Figure 4. These solutions provide coefficients for annual trend, annual and semi-annual periodic movement, and offsets. In order to leverage these values for the non-CORS sites, the annual trend of the time series was extracted, with the following results (expressed in millimeters):

Station	N	E	UP
CHAB	5.21	-27.42	-0.55
LUTZ	10.66	-31.60	-1.90
MHCB	-1.91	-23.84	-1.27
MONB	3.59	-27.41	-1.78
PBL1	8.79	-34.60	-0.78
SUAA	13.21	-33.28	-0.07
WINT	8.90	-31.27	1.30

Next, the annual linear velocities at both the CORS sites and the non-CORS sites were predicted using the NGS velocity model HTDP. The linear velocities obtained from SECTOR and HTDP were differenced to produce a set of residuals to the HTDP estimates. The concept is that the CORS time series are more accurate than the velocity model, and so the velocity model estimates can be improved using these residuals.

In order to predict HTDP residuals at the non-CORS sites, a least squares collocation procedure was employed, using a correlation distance equal to the diagonal between the map corners and a linear autocorrelation function. These predicted residuals were then added to the HTDP predictions to produce the final set of annual velocities in ITRF2000 throughout the network. The results are shown below, with the HTDP predictions in parentheses and the computed velocities shown outside of parentheses:

Station	N vel	E vel	U vel
04EG	0.014931 (0.015440)	-0.037629 (-0.038180)	0.000401 (0.000000)
04EH	0.015611 (0.015650)	-0.035239 (-0.036590)	0.000201 (0.000000)
04FH	0.010188 (0.011070)	-0.032600 (-0.033070)	-0.000232 (0.000000)
1446	0.007253 (0.005560)	-0.031549 (-0.032220)	0.000132 (0.000000)

```
4413  0.013538 ( 0.014300) -0.036987 (-0.037030)  0.000279 ( 0.000000)
4508  0.013161 ( 0.012880) -0.035036 (-0.036170)  0.000381 ( 0.000000)
4509  0.009633 ( 0.008290) -0.033873 (-0.034850)  0.000065 ( 0.000000)
4519  0.008120 ( 0.005820) -0.033719 (-0.034490) -0.000442 ( 0.000000)
4537  0.011313 ( 0.010020) -0.033353 (-0.034640) -0.000240 ( 0.000000)
4688  0.010073 ( 0.010480) -0.032290 (-0.032910)  0.000298 ( 0.000000)
ARC3  0.010809 ( 0.008080) -0.032444 (-0.033320) -0.000814 ( 0.000000)
BAYF  0.013027 ( 0.013870) -0.035633 (-0.035780) -0.000054 ( 0.000000)
CHAB  0.005210 ( 0.006060) -0.027420 (-0.028740) -0.000550 ( 0.000000)
CROT  0.004193 (-0.000780) -0.028141 (-0.028320) -0.001758 ( 0.000000)
E124  0.013108 ( 0.014190) -0.037816 (-0.037540)  0.000139 ( 0.000000)
E137  0.005597 ( 0.001550) -0.030421 (-0.030590) -0.001303 ( 0.000000)
FILB  0.007066 ( 0.004730) -0.032834 (-0.033490) -0.000377 ( 0.000000)
FOOT  0.014766 ( 0.013110) -0.032250 (-0.033620) -0.000547 ( 0.000000)
G110  0.014706 ( 0.014690) -0.035590 (-0.036700)  0.000389 ( 0.000000)
GOLD  0.009570 ( 0.005870) -0.031548 (-0.032080) -0.001197 ( 0.000000)
GUAN  0.014471 ( 0.014500) -0.035865 (-0.036540)  0.000615 ( 0.000000)
HUNT  0.012154 ( 0.013170) -0.036092 (-0.035680) -0.000091 ( 0.000000)
L124  0.012095 ( 0.013260) -0.037003 (-0.036490)  0.000013 ( 0.000000)
L132  0.007131 ( 0.005850) -0.030514 (-0.031130)  0.000519 ( 0.000000)
LOCK  0.011905 ( 0.009090) -0.032051 (-0.032970) -0.000888 ( 0.000000)
M874  0.006672 ( 0.002090) -0.029628 (-0.029770) -0.001571 ( 0.000000)
MHCB -0.001910 (-0.005640) -0.023840 (-0.024570) -0.001270 ( 0.000000)
MISS  0.011481 ( 0.007810) -0.031337 (-0.031990) -0.001216 ( 0.000000)
MONB  0.003590 (-0.001410) -0.027410 (-0.027170) -0.001780 ( 0.000000)
MOON  0.016853 ( 0.017310) -0.039944 (-0.040730)  0.000286 ( 0.000000)
N119  0.005959 ( 0.005170) -0.028759 (-0.029450)  0.000496 ( 0.000000)
PBL1  0.008790 ( 0.010220) -0.034600 (-0.032940) -0.000780 ( 0.000000)
SANT  0.015534 ( 0.013050) -0.031453 (-0.032600) -0.000823 ( 0.000000)
SPED  0.009897 ( 0.005100) -0.030361 (-0.030740) -0.001656 ( 0.000000)
SUAA  0.013210 ( 0.013000) -0.033280 (-0.035060) -0.000070 ( 0.000000)
TID1  0.014293 ( 0.014660) -0.036549 (-0.037020)  0.000503 ( 0.000000)
WINT  0.008900 ( 0.008130) -0.031270 (-0.031690)  0.001300 ( 0.000000)
X572  0.011487 ( 0.010710) -0.034138 (-0.035420)  0.000081 ( 0.000000)
Z137  0.006831 ( 0.003350) -0.032098 (-0.032500) -0.001029 ( 0.000000)
ZOAA  0.005860 ( 0.003410) -0.031571 (-0.032120) -0.000411 ( 0.000000)
LUTZ  0.010660 ( 0.005130) -0.031600 (-0.031950) -0.001900 ( 0.000000)
```

The computed velocities are also included in the ITRF2000 Epoch 2002.75 fully constrained adjustment results in Appendix A.2. Figure 10 shows the relationships between the HTDP-predicted horizontal velocities and the horizontal velocities computed using the collocation procedure. Figure 11 illustrates the very small ITRF vertical velocities.

II.C.4.b. NAD83(CORS96) Velocities

The NAD83(CORS96) velocities were computed by transforming the ITRF velocities into the NAD83(CORS96) reference frame. To do this, the ITRF velocities (trends only) at the CORS sites were applied to the ITRF2000 Epoch 2002.75 coordinates to produce ITRF2000 coordinates for Epoch 1997.0. These coordinates were then transformed to NAD83(CORS96) Epoch 1997.0 using the method described in Section II.C.2.5. The NAD83 coordinate displacements over this 6+ year time frame were divided by the time interval to produce estimated annual velocities in

NAD83(CORS96) at the CORS sites. This conversion (in both ellipsoidal and cartesian coordinates) is given in the following table:

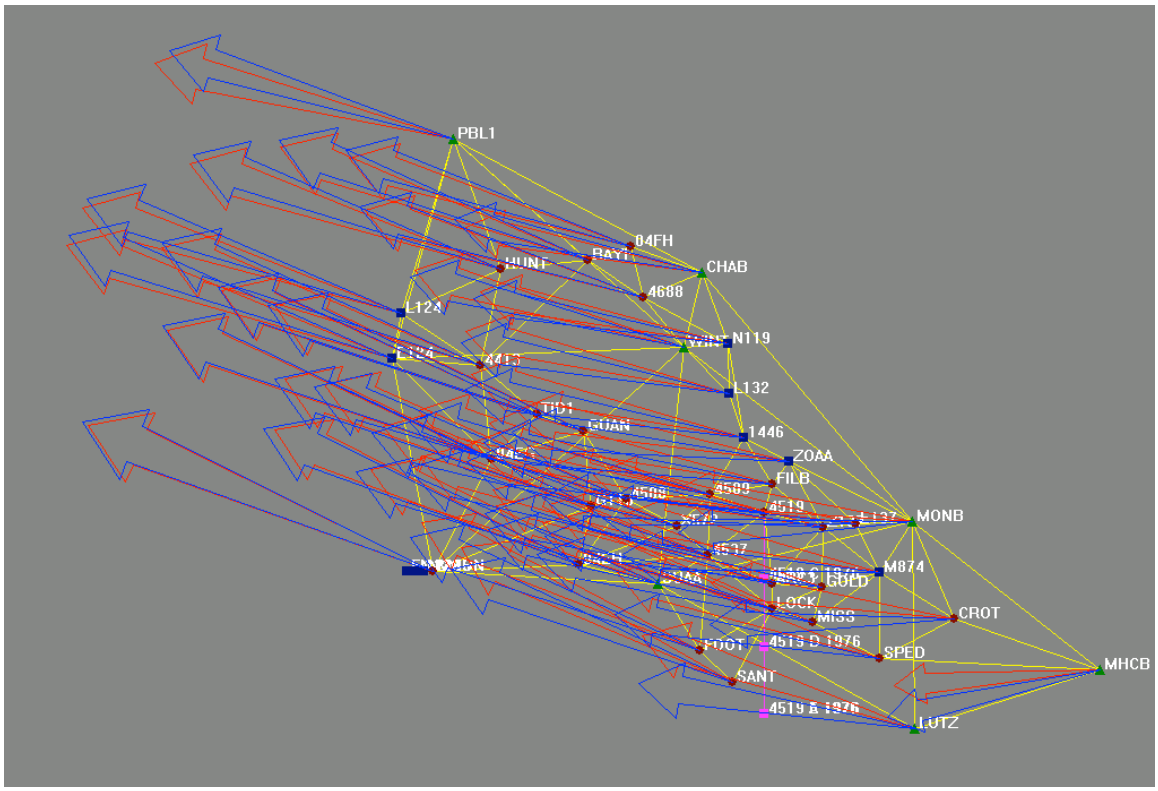


Figure 11: ITRF horizontal velocities (HTDP in blue)

NAD83(CORS96) velocities both XYZ and NEU:

```
CHAB:
   XYZ velocities=-0.004817 0.018330 0.014835
   NEU velocities=0.019666 -0.013826 -0.001177
LUTZ:
   XYZ velocities=-0.006278 0.024104 0.018365
   NEU velocities=0.025006 -0.018057 -0.002525
MHCB:
   XYZ velocities=-0.004017 0.013061 0.008696
   NEU velocities=0.012379 -0.010272 -0.001890
MONB:
   XYZ velocities=-0.004957 0.018191 0.012800
   NEU velocities=0.017966 -0.013814 -0.002393
PBL1:
   XYZ velocities=-0.009461 0.024278 0.017565
   NEU velocities=0.023333 -0.021002 -0.001399
SUAA:
   XYZ velocities=-0.007478 0.025217 0.021565
   NEU velocities=0.027678 -0.019758 -0.000682
WINT:
   XYZ velocities=-0.007670 0.021026 0.018904
   NEU velocities=0.023350 -0.017680 0.000683
```

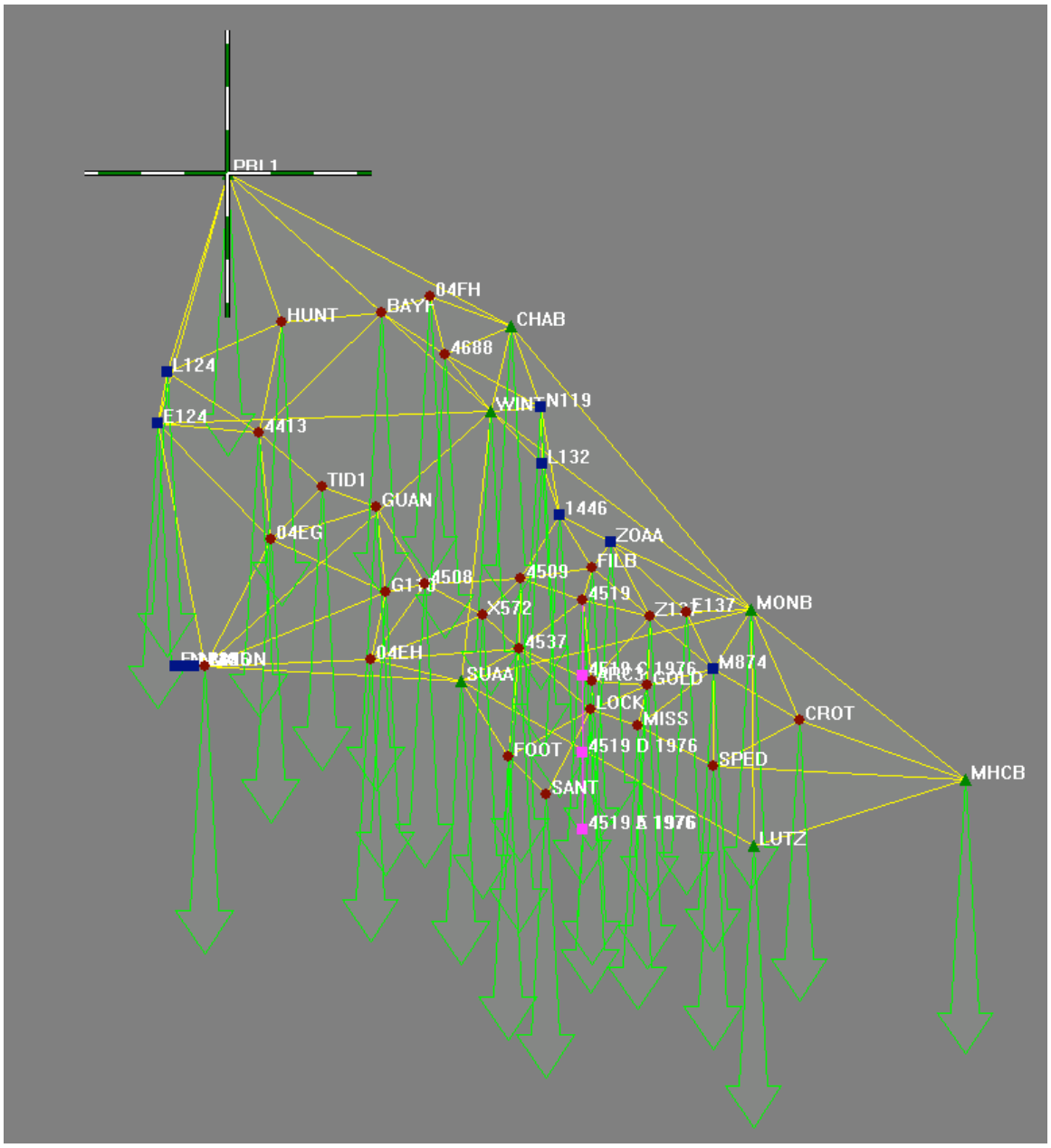


Figure 12: ITRF vertical velocities (each bar scale tick = 0.1 mm)

Using the collocation method used to predict ITRF velocities at non-CORS by leveraging CORS velocities against HTDP predictions, velocities were computed in NAD83(CORS96) for all of the network points.

The image of horizontal velocities compared against HTDP predictions for NAD83(CORS96) velocities, corresponding to Figure 10, are shown in Figure 12. The image of NAD83 vertical velocities corresponding to the ITRF vertical velocities shown in Figure 11 are shown in Figure 13. The table of NAD83 velocities (also given in Appendix A.3. with the fully constrained NAD83(CORS96) adjustment results) is given below, with HTDP predictions in parentheses:

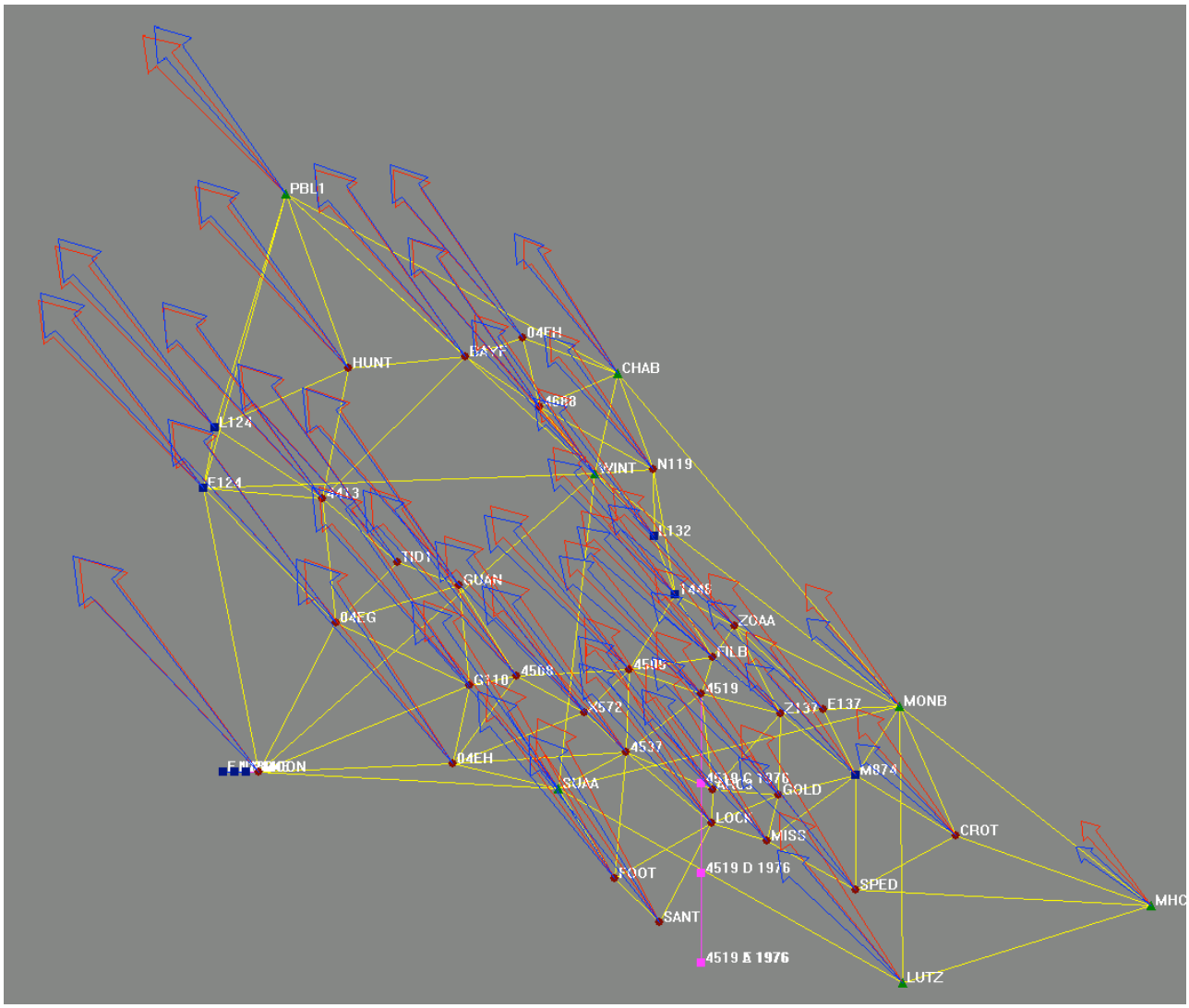


Figure 13: NAD83(CORS96) horizontal velocities (HTDP in blue)

Station	N vel		E vel		U vel	
04EG	0.029452	(0.029940)	-0.024096	(-0.024640)	-0.000169	(0.000000)
04EH	0.030094	(0.030110)	-0.021732	(-0.023070)	-0.000381	(0.000000)
04FH	0.024676	(0.025520)	-0.019006	(-0.019460)	-0.000857	(0.000000)
1446	0.021683	(0.019960)	-0.017966	(-0.018630)	-0.000495	(0.000000)
4413	0.028062	(0.028800)	-0.023432	(-0.023470)	-0.000309	(0.000000)
4508	0.027636	(0.027330)	-0.021486	(-0.022610)	-0.000232	(0.000000)
4509	0.024072	(0.022700)	-0.020323	(-0.021290)	-0.000564	(0.000000)
4519	0.022542	(0.020210)	-0.020148	(-0.020910)	-0.001073	(0.000000)
4537	0.025753	(0.024430)	-0.019815	(-0.021090)	-0.000865	(0.000000)
4688	0.024536	(0.024910)	-0.018702	(-0.019310)	-0.000328	(0.000000)
ARC3	0.025229	(0.022470)	-0.018903	(-0.019770)	-0.001442	(0.000000)
BAYF	0.027521	(0.028330)	-0.022045	(-0.022180)	-0.000681	(0.000000)
CHAB	0.019666	(0.020470)	-0.013826	(-0.015120)	-0.001177	(0.000000)
CROT	0.018538	(0.013530)	-0.014567	(-0.014740)	-0.002392	(0.000000)

E124	0.027659	(0.028720)	-0.024269	(-0.023990)	-0.000399	(0.000000)
E137	0.019987	(0.015900)	-0.016847	(-0.017010)	-0.001928	(0.000000)
FILB	0.021490	(0.019120)	-0.019251	(-0.019900)	-0.001007	(0.000000)
FOOT	0.029211	(0.027530)	-0.018732	(-0.020090)	-0.001145	(0.000000)
G110	0.029190	(0.029150)	-0.022061	(-0.023160)	-0.000212	(0.000000)
GOLD	0.023973	(0.020240)	-0.017994	(-0.018520)	-0.001828	(0.000000)
GUAN	0.028954	(0.028960)	-0.022311	(-0.022980)	0.000005	(0.000000)
HUNT	0.026684	(0.027670)	-0.022508	(-0.022090)	-0.000706	(0.000000)
L124	0.026648	(0.027790)	-0.023446	(-0.022930)	-0.000541	(0.000000)
L132	0.021559	(0.020250)	-0.016929	(-0.017540)	-0.000105	(0.000000)
LOCK	0.026324	(0.023480)	-0.018509	(-0.019420)	-0.001513	(0.000000)
M874	0.021050	(0.016430)	-0.016052	(-0.016190)	-0.002201	(0.000000)
MHCB	0.012379	(0.008610)	-0.010272	(-0.010980)	-0.001890	(0.000000)
MISS	0.025880	(0.022180)	-0.017792	(-0.018440)	-0.001844	(0.000000)
MONB	0.017966	(0.012920)	-0.013814	(-0.013570)	-0.002393	(0.000000)
MOON	0.031399	(0.031840)	-0.026451	(-0.027230)	-0.000211	(0.000000)
N119	0.020390	(0.019570)	-0.015168	(-0.015850)	-0.000125	(0.000000)
PBL1	0.023333	(0.024730)	-0.021002	(-0.019340)	-0.001399	(0.000000)
SANT	0.029956	(0.027450)	-0.017941	(-0.019080)	-0.001416	(0.000000)
SPED	0.024264	(0.019440)	-0.016803	(-0.017180)	-0.002289	(0.000000)
SUAA	0.027678	(0.027440)	-0.019758	(-0.021520)	-0.000682	(0.000000)
TID1	0.028796	(0.029140)	-0.023005	(-0.023470)	-0.000097	(0.000000)
WINT	0.023350	(0.022560)	-0.017680	(-0.018100)	0.000683	(0.000000)
X572	0.025935	(0.025130)	-0.020591	(-0.021860)	-0.000542	(0.000000)
Z137	0.021228	(0.017710)	-0.018524	(-0.018920)	-0.001659	(0.000000)
ZOAA	0.020275	(0.017790)	-0.017989	(-0.018530)	-0.001039	(0.000000)
LUTZ	0.025006	(0.019460)	-0.018057	(-0.018410)	-0.002525	(0.000000)

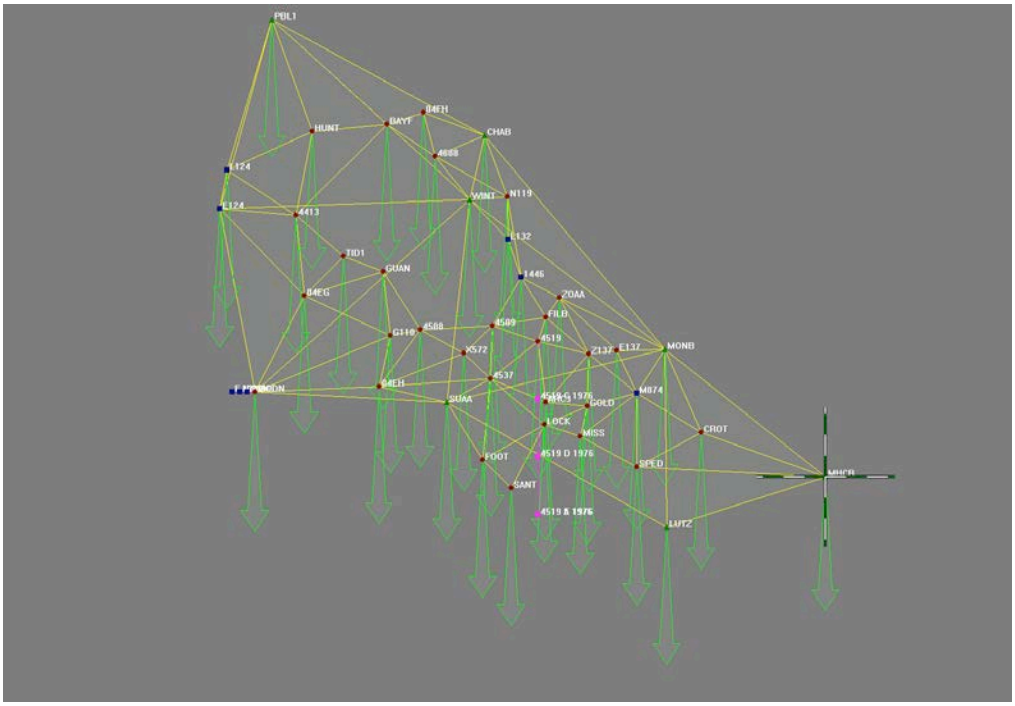


Figure 14: NAD83(CORS96) vertical velocities (bar scale tick - 0.3 mm)

III. Vertical project (Bluebook)

Two Second-order leveling circuits were observed for the Vertical Project portion of the South San Francisco Bay Height Modernization Project. The methods and equipment employed for these leveling circuits comply with NGS requirements [Philips 1975], including the use of double invar leveling rods and precise digital levels. The equipment list can be found in the file **JFA\PROJECT EQUIPMENT LIST\EQUIPMENT_LIST.XLS**.

The leveling observations may be found in the L-file (**VERTICAL\BLUEBOOK\SOBAYHM.HGZ**) and in the file **VERTICAL\DATA\FLDLEVELSABS.XLS**. The Level Rod calibration is documented in the file **VERTICAL\DATA\ROD_CAL.TIF**.

The methods, and the narrative describing the leveling procedures, is fully described in the JFA report **SOBAYREPORT-FINAL 3-05-03.DOC** in the directory JFA.

The point description file is found as **VERTICAL\SSFBVERT.DSC**.

All bench mark constraints used for the leveling were First-order NAVD88 benchmarks dated 1991. The first of the leveling circuits was carried out in the vicinity of Half Moon Bay for the purpose of transferring a precise orthometric height to the GPS station MOON 2. The second circuit was carried out among tidal benchmarks along San Francisco Bay, for the purpose of transferring GPS-derived orthometric heights to these MLLW bench marks.

III.A. Choice of fixed bench marks

For the first leveling circuit, 3 First-order benchmarks (F 1239, N 211, and N 245) were observed as part of a leveling circuit about 2 km in length to MOON 2.

For the second circuit, a Tidal Bench Mark 941 4688 B TIDAL was occupied by GPS in order to transfer to this bench mark a precise GPS-derived orthometric height. From this station, Second-order levels were carried to Tidal Bench Marks 4519 A 1976, 4519 C 1976, 4519 D 1976, and 4519 E 1976.

III.B. Adjustment of leveling observations

The level circuits were adjusted by vendor software from Zeizz-Jena, the manufacturer of the digital level, and also as part of the fully-constrained ITRF2000 and NAD83(CORS96) network adjustments described in Section II.C.2. of this report. The results were the same in both adjustments. The 2-km leveling circuit in Half Moon Bay received an adjustment of 2 mm. The leveling circuit among the tidal bench marks received a sub-millimeter adjustment.

IV. NGS requirements

IV.A. Blue book (horizontal project)

EXHIBIT A
PROJECT SUBMISSION CHECKLIST
GPS PROJECTS
Project Title: South San Francisco Bay Height Modernization Project
Accession Number: GPS-1881 and L-26522
Submitting Agency: California Spatial Reference Center (CSRC)
Observing Agency: CSRC and Johnson-Frank and Associates (JFA)
Receiver Type: Dual-frequency geodetic with geodetic antennas
PACKAGE CONTENTS
Project Report and Attachments Required For
(x) Project Report All Projects
(x) **Approved Reconnaissance** and Project Sketch All Projects
( ) Project Instructions or Contract Specifications All Projects
(x) Final Station List All Projects
( ) Station Visibility Diagrams All Projects
(x) Final Observing Schedule All Projects
(x) Observation Logs All Projects
( ) Equipment Failure Logs NGS Projects
(x) Loop Misclosures **Optional**
(x) Free Adjustment **with Analysis** All Projects
(x) Free Adjustment with Accuracies All Projects
(x) Constrained Horizontal Adjustment All Projects
(x) Constrained Vertical Adjustment (NAVD 88 Heights)All Projects
( ) Meteorological Instrument Comparison Logs If Specified
(x) Photographs of Views from Stations If Specified
(x) Photographs or Rubbings of Station Marks All Projects
(x) COMPGB Output (Validation program-B/G file) All Projects
(x) OBSDES Output (Validation program-D-file) All Projects
(x) OBSCHK Output (Validation program-D-file) All Projects
(x) CHKDESC Output (Validation program-D-file) All Projects
(x) ELLACC Output All Projects
(x) BBACCUR Output All Projects
Digitized Data Files ( ) Diskettes (x) Other: CD ROM
(x) Raw Phase Data (R-files) All Projects
(x) Base Line Vectors (G-file) All Projects
(x) Project and Station Occupation Data(Final B-file)All Projects
(x) Descriptions or Recovery Notes (D-file) All Projects
( ) Terrestrial Horizontal Observations (T-file) If Applicable
(x) Differential Leveling Observations (L-file) If Applicable
Comments - Enter on the reverse side of this form.
Org Code Name Date
Received by: _____
Reviewed by: _____
Reviewed by: _____

The critical data files **BBOOK** (B-file), **GFILE** (G-file), and **SERFIL** are found in the **BLUEBOOK\ADJUST** subdirectory, as well as in the various data-validation and adjustment subdirectories described below.

The L-file for the vertical project (SoBayHM.HGZ) is found in the directory **VERTICAL\BLUEBOOK** on the accompanying CD. The vertical project is discussed in Section III of this report.

The point description file (D-file) is **SSFBHZTL.DSC**, found in the subdirectory **BLUEBOOK\PTDESC** on the accompanying CD. The output from **WCHKDESC** is found in **SSFBHZTL.MSG** in the same directory, and the warning and error messages are explained in the file ERRORS.TXT in the same directory. All of the WCHKDESC warning messages were generated for stations whose point descriptions were downloaded from NGS data sheets. For this reason, no editing changes were made to these point descriptions. All of the error messages (setting and class codes) were generated for CORS sites not already in the NGS database. The setting codes and class codes these stations were set to "O" (for "other"), but no combination of codes could be found to make these messages go away. Because the "station" consists of a GPS receiver, and not a physical monument, these error messages were ignored.

COMPGB output is found in the subdirectory **BLUEBOOK\COMPGB** on the accompanying CD. COMPGB reported missing *25* records for 4 stations. These occupations do exist, but the Julian Day in the session identifier begins on the day previous to the combined occupations used to solve for the baseline.

OBSCHK output is found in the subdirectory **BLUEBOOK\OBSCHK** on the accompanying CD. No errors or warnings.

CHKOBS output is found in the subdirectory **BLUEBOOK\CHKOBS** on the accompanying CD. CHKOBS reported on 3 possible error conditions in the BBOOK:

- "DUPLICATED *27* RECORD IN DECK" : In several cases, station occupations at non-CORS stations were artificially split into two segments (sub-occupations) by the baseline processor to match occupations at other stations, including CORS sites. In every case, this error message was caused by one session ending at exactly the same time as the beginning of the next session (e.g., a session ending at midnight UTC, with the next session beginning at the same time). There is no actual time overlap between any occupations at any station.

- "INVALID HEIGHT OF ANTENNA" : This is a spurious message in which the zero antenna heights at the CORS stations are identified as errors.

OBSDES output is found in the subdirectory **BLUEBOOK\OBSDES** on the accompanying CD. OBSDES reported that station HUNT does not have a "special application code" in the point description file (SSFBHZTL.DSC). The point description for this station was created by downloading its NGS data sheet and converting it to a DSC description using WDDPROC. For this reason, no editing changes were made to this station.

ADJUST output is found in the **BLUEBOOK\ADJUST** subdirectory on the accompanying CD.

The first (minimally constrained horizontal) prescribed adjustment is found in the subdirectory **MCADJ**. Note that the B-file has already been loaded with geoid heights from the geoid model, and so this adjustment is identical to the minimally constrained vertical adjustment (**VCMADJ**). Note that because

this project is an Order B GPS survey, the program **MODGEE** was not run on the baseline covariance matrices, and hence the covariance matrices were not scaled.

The second (horizontally constrained horizontal) prescribed adjustment is found in the subdirectory **HFCADJ**.

The third (vertical minimally constrained) prescribed adjustment is found in the subdirectory **VMCADJ**. Note that the geoid heights in BBOOK were taken from the new NGS test geoid grid provided to CSRC by NGS, and not from GEOID99. This is described above in Section II.C.3.

The fourth (vertical fully constrained) prescribed adjustment is found in the subdirectory **VFCADJ** on the accompanying CD.

The fifth (relative accuracies) prescribed adjustment is found in the subdirectory **QQADJ** on the accompanying CD. Output from the data validation programs **ELLAC** (ELLAC.OUT) and **BBACCUR** (BBACCUR.OUT) is also found in this subdirectory.

IV.B. Height modernization

The requirements for 2-cm Height Modernization surveys as specified in the NGS document Memo 58 [Zilkoski et al 1997] were followed on this survey. The specifications include minimum occupation times for primary and secondary control stations, comparisons of repeat baselines for delta ellipsoid heights, and limits on RMS values generated by baseline processing. These comparisons and listings can be found in the **JFA** directory on the accompanying CD.

The GPS receivers, antennas, and tripods used on this survey all comply with Memo 58 requirements.

Adjustment results (see Section II of this document) also confirm the compliance of this project with Memo 58 requirements. The adjusted cartesian coordinates, as well as ellipsoidal coordinates, are included in the adjustment results supplied in the Appendices to this report. Those adjustment data not included directly in this report (because of their length) may be found in the **ADJUSTMENTS** directory on the accompanying CD. These data include adjusted observations, adjustment statistics, relative errors, adjusted coordinates, and standardized residuals sorted by magnitude. These adjustments were carried out by the Trimble commercial software TRIMNET Plus as well as by Geodetic Solutions laboratory software. The adjustments are given in three separate directories: the minimally constrained adjustment is in directory **ITRF-MC** (the results of which are identical with the minimally-constrained NAD83 adjustment so far as the adjustment of observations is concerned); **ITRF-FC**, containing the IRTF2000 fully-constrained adjustment; and **NAD-FC**, containing the results of the fully constrained NAD83(CORS96) adjustment.

Note that the geoid model used for the fully constrained adjustments is not GEOID99, but rather is the successor to GEOID99 still under development at NGS and referred to in this document as GEOID03.

V. CSRC Requirements

The CSRC is using the SSFB project as a development opportunity to stream the same station, observational, and adjustment data to the CSRC database as well as to NGS. The interface for transferring this data to the CSRC database is an XML file format still under development at CSRC. As part of this project, the field data logs were used to entire data directly into the CSRC database. This data was extracted from the database as an XML "Campaign" file, which was then synchronized with the NGS data files to produce a completed, and corrected, Campaign file. This updated XML file was returned to CSRC for the purpose of updating the CSRC database.

The data that were used to update the XML file were corrected session and station identifiers, corrected observation times, CORS site data, and adjusted coordinates.

In addition to the XML file, a SINEX solution for the minimally-constrained network adjustment (see Section II.C.1. in this document) was returned to CSRC, as well as SINEX files for each GPS solution (translated from the NGS G-file and Trimble *.SSF files). These files can be found in the directories **CSRC** and **CSRC\GPS_SOL**.

Synchronization of the NGS and CSRC data files was carried out at Geodetic Solutions, using new and existing laboratory software. The primary new software is called XML2BBK.EXE. This software corrects errors in the vendor-generated NGS data files, as well as errors in the original XML file (translated to that location from errors in the field data logs), and synchronizes the contents of both sets of data files so that they are the same.

VI. References

Challstrom, C., Federal Geodetic Control Subcommittee, "Input Formats and Specifications of the National Geodetic Survey Data Base", 1994.

Hothem, L., Federal Geodetic Control Committee, "Proposed Geometric Geodetic Survey Standards and Specifications for Geodetic Surveys Using GPS Relative Positioning Techniques", 1986.

Phillips, J., Federal Geodetic Control Committee, "Specifications To Support Classification, Standards of Accuracy, and General Specifications of Geodetic Control Surveys, 1975.

Pope, A., "The Statistics of Residuals and the Detection of Outliers", NOAA Technical Report NOS65 NGS1, 1976.

Potterfield, M., "Accurate Orthometric Heights from GPS: Combined Network Adjustments Using GPS, Differential Leveling, and Correlated Geoid Models", Proceedings of the ASPRS/ACSM/RT International Conference, Washington D.C., August 1992.

Zilkoski, D., D'Onofrio, J. and Frakes, S., NOAA Technical Memorandum NOS NGS-58: GUIDELINES FOR ESTABLISHING GPS-DERIVED ELLIPSOID HEIGHTS (STANDARDS: 2 CM AND 5 CM), VERSION 4.3 , 1997.

VII. Appendices

A. Minimally-constrained ITRF2000 Epoch 2002.75 adjustment

(Note: See the directory ADJUSTMENTS\ITRF-MC for adjustment results not listed here.)

A.1. Adjusted coordinates

```
              COORDINATE ADJUSTMENT SUMMARY
              NETWORK = South San Francisco Bay Height Modernization Project
              TIME = Thu Oct  9 16:03:19 2003


Datum = ITRF2000 Epoch 2002.75 minimally constrained
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
  1 fixed coordinates in y
  1 fixed coordinates in x
  1 fixed coordinates in H


POINT   NAME      OLD COORDS       ADJUST      NEW COORDS         1.00σ

   1 04EG
       N LAT=  37° 32' 45.673314" +0.000000"  37° 32' 45.673314"    0.001582m
       W LON= 122° 22' 22.732914" +0.000000" 122° 22' 22.732914"    0.001214m
      ELL HT=           160.2335m   +0.0000m           160.2335m    0.007346m
    ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

   2 04EH
       N LAT=  37° 26' 41.373508" +0.000000"  37° 26' 41.373508"    0.001823m
       W LON= 122° 16' 05.387989" +0.000000" 122° 16' 05.387989"    0.001311m
      ELL HT=           147.4437m   +0.0000m           147.4437m    0.005434m
    ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

   3 04FH
       N LAT=  37° 44' 59.772969" +0.000000"  37° 44' 59.772969"    0.002424m
       W LON= 122° 12' 18.168793" +0.000000" 122° 12' 18.168793"    0.001802m
      ELL HT=           -29.4475m   +0.0000m           -29.4475m    0.005811m
    ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

   4 1446
       N LAT=  37° 33' 56.092813" +0.000000"  37° 33' 56.092813"    0.002522m
       W LON= 122° 04' 05.961638" +0.000000" 122° 04' 05.961638"    0.001738m
      ELL HT=           -23.1749m   +0.0000m           -23.1749m    0.005959m
    ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

```
 5 4413
     N LAT=  37° 38' 06.898712" +0.000000"  37° 38' 06.898712"    0.001913m
     W LON= 122° 23' 08.223903" +0.000000" 122° 23' 08.223903"    0.001432m
    ELL HT=           -30.1533m   +0.0000m           -30.1533m    0.006264m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

 6 4508
     N LAT=  37° 30' 28.781474" +0.000000"  37° 30' 28.781474"    0.002222m
     W LON= 122° 12' 39.143052" +0.000000" 122° 12' 39.143052"    0.001593m
    ELL HT=           -29.5492m   +0.0000m           -29.5492m    0.007039m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

 7 4509
     N LAT=  37° 30' 42.743017" +0.000000"  37° 30' 42.743017"    0.002255m
     W LON= 122° 06' 34.278423" +0.000000" 122° 06' 34.278423"    0.001558m
    ELL HT=           -30.1279m   +0.0000m           -30.1279m    0.005712m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

 8 4519
     N LAT=  37° 29' 40.183372" +0.000000"  37° 29' 40.183372"    0.002323m
     W LON= 122° 02' 42.701212" +0.000000" 122° 02' 42.701212"    0.001603m
    ELL HT=           -30.1993m   +0.0000m           -30.1993m    0.005898m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

 9 4537
     N LAT=  37° 27' 10.725483" +0.000000"  37° 27' 10.725483"    0.002055m
     W LON= 122° 06' 44.154103" +0.000000" 122° 06' 44.154103"    0.001455m
    ELL HT=           -30.8696m   +0.0000m           -30.8696m    0.005321m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

10 4688
     N LAT=  37° 42' 03.106289" +0.000000"  37° 42' 03.106289"    0.002361m
     W LON= 122° 11' 22.212678" +0.000000" 122° 11' 22.212678"    0.001717m
    ELL HT=           -30.3719m   +0.0000m           -30.3719m    0.005509m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

11 ARC3
     N LAT=  37° 25' 34.590569" +0.000000"  37° 25' 34.590569"    0.002384m
     W LON= 122° 02' 05.580713" +0.000000" 122° 02' 05.580713"    0.001750m
    ELL HT=           -31.8346m   +0.0000m           -31.8346m    0.005819m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

12 BAYF
     N LAT=  37° 44' 10.723588" +0.000000"  37° 44' 10.723588"    0.001948m
     W LON= 122° 15' 23.630576" +0.000000" 122° 15' 23.630576"    0.001470m
    ELL HT=           -28.8025m   +0.0000m           -28.8025m    0.005249m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

13 CHAB
     N LAT=  37° 43' 26.815093" +0.000000"  37° 43' 26.815093"        FIXED
     W LON= 122° 07' 09.512167" +0.000000" 122° 07' 09.512167"        FIXED
    ELL HT=           213.9868m   +0.0000m           213.9868m        FIXED
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

```
14 CROT
     N LAT=  37° 23' 31.229193" +0.000000"  37° 23' 31.229193"    0.003072m
     W LON= 121° 49' 00.724513" +0.000000" 121° 49' 00.724513"    0.002122m
    ELL HT=           134.4182m   +0.0000m           134.4182m    0.007046m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

15 E124
     N LAT=  37° 38' 33.693909" +0.000000"  37° 38' 33.693909"    0.001189m
     W LON= 122° 29' 33.695169" +0.000000" 122° 29' 33.695169"    0.000880m
    ELL HT=           -17.4771m   +0.0000m           -17.4771m    0.005974m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

16 E137
     N LAT=  37° 29' 00.810475" +0.000000"  37° 29' 00.810475"    0.002344m
     W LON= 121° 56' 05.401722" +0.000000" 121° 56' 05.401722"    0.001868m
    ELL HT=           -23.4752m   +0.0000m           -23.4752m    0.005717m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

17 FILB
     N LAT=  37° 31' 16.212124" +0.000000"  37° 31' 16.212124"    0.002276m
     W LON= 122° 02' 03.996175" +0.000000" 122° 02' 03.996175"    0.001550m
    ELL HT=           -28.9525m   +0.0000m           -28.9525m    0.005545m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

18 FOOT
     N LAT=  37° 21' 45.674205" +0.000000"  37° 21' 45.674205"    0.003294m
     W LON= 122° 07' 23.837597" +0.000000" 122° 07' 23.837597"    0.002245m
    ELL HT=            55.9262m   +0.0000m            55.9262m    0.007385m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

19 G110
     N LAT=  37° 30' 04.670373" +0.000000"  37° 30' 04.670373"    0.001765m
     W LON= 122° 15' 10.623874" +0.000000" 122° 15' 10.623874"    0.001284m
    ELL HT=           -27.1413m   +0.0000m           -27.1413m    0.006202m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

20 GOLD
     N LAT=  37° 25' 20.784355" +0.000000"  37° 25' 20.784355"    0.002513m
     W LON= 121° 58' 34.172930" +0.000000" 121° 58' 34.172930"    0.001884m
    ELL HT=           -26.5411m   +0.0000m           -26.5411m    0.006104m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

21 GUAN
     N LAT=  37° 34' 22.348036" +0.000000"  37° 34' 22.348036"    0.002794m
     W LON= 122° 15' 46.199468" +0.000000" 122° 15' 46.199468"    0.002135m
    ELL HT=           -29.6809m   +0.0000m           -29.6809m    0.008258m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

22 HUNT
     N LAT=  37° 43' 41.961303" +0.000000"  37° 43' 41.961303"    0.002324m
     W LON= 122° 21' 43.752297" +0.000000" 122° 21' 43.752297"    0.001671m
    ELL HT=           -29.7323m   +0.0000m           -29.7323m    0.006672m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

```
23 L124
     N LAT=  37° 41' 09.444422" +0.000000"  37° 41' 09.444422"    0.002010m
     W LON= 122° 28' 56.464999" +0.000000" 122° 28' 56.464999"    0.001523m
    ELL HT=            89.8891m   +0.0000m            89.8891m    0.006177m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

24 L132
     N LAT=  37° 36' 29.268778" +0.000000"  37° 36' 29.268778"    0.002946m
     W LON= 122° 05' 13.593524" +0.000000" 122° 05' 13.593524"    0.002181m
    ELL HT=           -30.0765m   +0.0000m           -30.0765m    0.007223m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

25 LOCK
     N LAT=  37° 24' 07.309195" +0.000000"  37° 24' 07.309195"    0.002435m
     W LON= 122° 02' 10.649524" +0.000000" 122° 02' 10.649524"    0.001764m
    ELL HT=           -22.1322m   +0.0000m           -22.1322m    0.005935m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

26 LUTZ
     N LAT=  37° 17' 12.662622" +0.000000"  37° 17' 12.662622"    0.000612m
     W LON= 121° 51' 54.808339" +0.000000" 121° 51' 54.808339"    0.000470m
    ELL HT=            95.0033m   +0.0000m            95.0033m    0.003827m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

27 M874
     N LAT=  37° 26' 10.049855" +0.000000"  37° 26' 10.049855"    0.002025m
     W LON= 121° 54' 24.945477" +0.000000" 121° 54' 24.945477"    0.001572m
    ELL HT=           -28.2099m   +0.0000m           -28.2099m    0.005186m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

28 MHCB
     N LAT=  37° 20' 29.516981" +0.000000"  37° 20' 29.516981"    0.000640m
     W LON= 121° 38' 33.278527" +0.000000" 121° 38' 33.278527"    0.000492m
    ELL HT=          1261.7694m   +0.0000m          1261.7694m    0.003968m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

29 MISS
     N LAT=  37° 23' 20.188185" +0.000000"  37° 23' 20.188185"    0.002835m
     W LON= 121° 59' 11.945482" +0.000000" 121° 59' 11.945482"    0.002032m
    ELL HT=           -25.2489m   +0.0000m           -25.2489m    0.006451m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

30 MONB
     N LAT=  37° 29' 07.171870" +0.000000"  37° 29' 07.171870"    0.000483m
     W LON= 121° 52' 00.711056" +0.000000" 121° 52' 00.711056"    0.000371m
    ELL HT=           750.3623m   +0.0000m           750.3623m    0.003018m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

31 MOON
     N LAT=  37° 26' 20.323074" +0.000000"  37° 26' 20.323074"    0.000902m
     W LON= 122° 26' 34.702254" +0.000000" 122° 26' 34.702254"    0.000656m
    ELL HT=           -11.3357m   +0.0000m           -11.3357m    0.005013m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

```
32 N119
     N LAT=  37° 39' 20.944291" +0.000000"  37° 39' 20.944291"    0.001937m
     W LON= 122° 05' 15.624686" +0.000000" 122° 05' 15.624686"    0.001489m
    ELL HT=           -10.1885m   +0.0000m           -10.1885m    0.004786m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

33 PBL1
     N LAT=  37° 51' 10.994096" +0.000000"  37° 51' 10.994096"    0.000635m

     W LON= 122° 25' 08.205896" +0.000000" 122° 25' 08.205896"    0.000485m
    ELL HT=            -8.0489m   +0.0000m            -8.0489m    0.003822m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

34 SANT
     N LAT=  37° 19' 52.997862" +0.000000"  37° 19' 52.997862"    0.003770m
     W LON= 122° 04' 59.381330" +0.000000" 122° 04' 59.381330"    0.002505m
    ELL HT=            99.6137m   +0.0000m            99.6137m    0.008335m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

35 SPED
     N LAT=  37° 21' 14.048939" +0.000000"  37° 21' 14.048939"    0.003226m
     W LON= 121° 54' 25.238477" +0.000000" 121° 54' 25.238477"    0.002311m
    ELL HT=           -14.6685m   +0.0000m           -14.6685m    0.007098m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

36 SUAA
     N LAT=  37° 25' 36.861358" +0.000000"  37° 25' 36.861358"    0.000592m
     W LON= 122° 10' 23.836147" +0.000000" 122° 10' 23.836147"    0.000450m
    ELL HT=            20.4073m   +0.0000m            20.4073m    0.003603m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

37 TID1
     N LAT=  37° 35' 22.705394" +0.000000"  37° 35' 22.705394"    0.004219m
     W LON= 122° 19' 06.201318" +0.000000" 122° 19' 06.201318"    0.003229m
    ELL HT=           -28.3734m   +0.0000m           -28.3734m    0.011605m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

38 WINT
     N LAT=  37° 39' 09.514531" +0.000000"  37° 39' 09.514531"    0.000459m
     W LON= 122° 08' 26.039507" +0.000000" 122° 08' 26.039507"    0.000353m
    ELL HT=           -28.7679m   +0.0000m           -28.7679m    0.002811m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

39 X572
     N LAT=  37° 28' 54.551260" +0.000000"  37° 28' 54.551260"    0.002374m
     W LON= 122° 08' 59.148458" +0.000000" 122° 08' 59.148458"    0.001698m
    ELL HT=           -30.2884m   +0.0000m           -30.2884m    0.006150m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN

40 Z137
     N LAT=  37° 28' 48.391367" +0.000000"  37° 28' 48.391367"    0.002134m
     W LON= 121° 58' 25.242880" +0.000000" 121° 58' 25.242880"    0.001576m
    ELL HT=           -31.1052m   +0.0000m           -31.1052m    0.005827m
  ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

```
  41 ZOAA
       N LAT=  37° 32' 34.753005" +0.000000"  37° 32' 34.753005"    0.002185m
       W LON= 122° 00' 54.462348" +0.000000" 122° 00' 54.462348"    0.001540m
      ELL HT=           -19.8749m   +0.0000m           -19.8749m    0.005627m
    ORTHO HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
```

A.2. Adjusted observations

```
             OBSERVATION ADJUSTMENT SUMMARY
              NETWORK = South San Francisco Bay Height Modernization Project
              TIME = Thu Oct  9 16:03:20 2003


       OBSERVATION ADJUSTMENT (Tau = 3.97)


OBS#  BLK#/  TYPE      BACKSIGHT/       UDVC/     OBSERVED/     1.00σ/     TAU
      REF#             INSTRUMENT/      UDPG/     ADJUSTED/     1.00σ/
                       FORESIGHT        SBNT      RESIDUAL      1.00σ

    1     1 gpsaz                  -**-  -**-  298°05'48.9221"   0.2759"    0.15
          1                        ZOAA  -**-  298°05'49.0809"   0.0958"
                                   1446     1       +0.158782"   0.2587"

    2     1 gpsht                  -**-  -**-         -3.2962m   0.0166m    0.06
          1                        ZOAA  -**-         -3.3000m   0.0055m
                                   1446     1       -0.003815m   0.0156m

    3     1 gpsds                  -**-  -**-       5327.4323m   0.0050m    0.24
          1                        ZOAA  -**-       5327.4368m   0.0019m
                                   1446     1       +0.004436m   0.0047m

    4     2 gpsaz                  -**-  -**-  215°11'29.3010"   0.1567"    0.10
          1                        ZOAA  -**-  215°11'29.2507"   0.0955"
                                   FILB     1       -0.050311"   0.1242"

    5     2 gpsht                  -**-  -**-         -9.0825m   0.0070m    0.21
          1                        ZOAA  -**-         -9.0776m   0.0037m
                                   FILB     1       +0.004948m   0.0059m

    6     2 gpsds                  -**-  -**-       2962.7272m   0.0029m    0.03
          1                        ZOAA  -**-       2962.7275m   0.0016m
                                   FILB     1       +0.000261m   0.0024m

    7     3 gpsaz                  -**-  -**-  152°16'56.8709"   0.1021"    0.21
          1                        ZOAA  -**-  152°16'56.7920"   0.0406"
                                   Z137     1       -0.078875"   0.0936"
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8	3	gpsht	-**-	-**-	-11.2421m	0.0337m	0.09
	1		ZOAA	-**-	-11.2303m	0.0055m	
			Z137	1	+0.011850m	0.0332m	
9	3	gpsds	-**-	-**-	7882.3687m	0.0036m	0.11
	1		ZOAA	-**-	7882.3674m	0.0017m	
			Z137	1	-0.001317m	0.0031m	
10	4	gpsaz	-**-	-**-	17°47'52.7942"	0.1307"	0.22
	1		4519	-**-	17°47'52.7048"	0.0810"	
			FILB	1	-0.089424"	0.1026"	
11	4	gpsht	-**-	-**-	+1.2496m	0.0071m	0.12
	1		4519	-**-	+1.2468m	0.0039m	
			FILB	1	-0.002756m	0.0060m	
12	4	gpsds	-**-	-**-	3109.4151m	0.0031m	0.02
	1		4519	-**-	3109.4149m	0.0018m	
			FILB	1	-0.000162m	0.0026m	
13	5	gpsaz	-**-	-**-	288°45'02.8568"	0.2005"	0.22
	1		4519	-**-	288°45'02.6979"	0.0772"	
			4509	1	-0.158926"	0.1850"	
14	5	gpsht	-**-	-**-	+0.0754m	0.0133m	0.08
	1		4519	-**-	+0.0714m	0.0050m	
			4509	1	-0.004064m	0.0123m	
15	5	gpsds	-**-	-**-	6006.0059m	0.0037m	0.00
	1		4519	-**-	6006.0059m	0.0016m	
			4509	1	-0.000042m	0.0033m	
16	6	gpsaz	-**-	-**-	104°08'47.3739"	0.1357"	0.43
	1		4519	-**-	104°08'47.5804"	0.0614"	
			Z137	1	+0.206424"	0.1210"	
17	6	gpsht	-**-	-**-	-0.9244m	0.0323m	0.15
	1		4519	-**-	-0.9059m	0.0057m	
			Z137	1	+0.018522m	0.0318m	
18	6	gpsds	-**-	-**-	6523.3603m	0.0027m	0.31
	1		4519	-**-	6523.3575m	0.0013m	
			Z137	1	-0.002812m	0.0023m	
19	7	gpsaz	-**-	-**-	310°19'18.7078"	0.1908"	0.11
	1		Z137	-**-	310°19'18.7885"	0.0527"	
			FILB	1	+0.080724"	0.1834"	
20	7	gpsht	-**-	-**-	+2.1665m	0.0165m	0.22
	1		Z137	-**-	+2.1527m	0.0053m	
			FILB	1	-0.013768m	0.0156m	
21	7	gpsds	-**-	-**-	7045.4996m	0.0056m	0.05
	1		Z137	-**-	7045.4986m	0.0016m	
			FILB	1	-0.001048m	0.0053m	

22	8	gpsaz	-**-	-**-	129°33'24.6453"	0.2277"	0.09
	1		Z137	-**-	129°33'24.5649"	0.0587"	
			M874	1	-0.080411"	0.2200"	
23	8	gpsht	-**-	-**-	+2.8985m	0.0174m	0.05
	1		Z137	-**-	+2.8953m	0.0052m	
			M874	1	-0.003199m	0.0166m	
24	8	gpsds	-**-	-**-	7662.0132m	0.0055m	0.16
	1		Z137	-**-	7662.0098m	0.0018m	
			M874	1	-0.003333m	0.0052m	
25	9	gpsaz	-**-	-**-	181°57'53.2955"	0.2316"	0.04
	1		Z137	-**-	181°57'53.3341"	0.0593"	
			GOLD	1	+0.038625"	0.2239"	
26	9	gpsht	-**-	-**-	+4.5689m	0.0184m	0.07
	1		Z137	-**-	+4.5641m	0.0055m	
			GOLD	1	-0.004767m	0.0176m	
27	9	gpsds	-**-	-**-	6404.1756m	0.0078m	0.08
	1		Z137	-**-	6404.1780m	0.0024m	
			GOLD	1	+0.002477m	0.0075m	
28	10	gpsaz	-**-	-**-	328°44'05.6386"	0.1594"	0.23
	1		FILB	-**-	328°44'05.5053"	0.0687"	
			1446	1	-0.133304"	0.1439"	
29	10	gpsht	-**-	-**-	+5.7806m	0.0131m	0.06
	1		FILB	-**-	+5.7776m	0.0053m	
			1446	1	-0.003082m	0.0120m	
30	10	gpsds	-**-	-**-	5767.1958m	0.0052m	0.05
	1		FILB	-**-	5767.1967m	0.0024m	
			1446	1	+0.000971m	0.0047m	
31	11	gpsaz	-**-	-**-	261°11'11.1415"	0.1702"	0.19
	1		FILB	-**-	261°11'11.0254"	0.0711"	
			4509	1	-0.116100"	0.1547"	
32	11	gpsht	-**-	-**-	-1.1689m	0.0125m	0.14
	1		FILB	-**-	-1.1754m	0.0048m	
			4509	1	-0.006524m	0.0115m	
33	11	gpsds	-**-	-**-	6717.1055m	0.0035m	0.08
	1		FILB	-**-	6717.1044m	0.0015m	
			4509	1	-0.001011m	0.0032m	
34	12	gpsaz	-**-	-**-	274°41'56.6382"	0.2014"	0.05
	1		GOLD	-**-	274°41'56.6773"	0.0831"	
			ARC3	1	+0.039116"	0.1835"	
35	12	gpsht	-**-	-**-	-5.3001m	0.0113m	0.16
	1		GOLD	-**-	-5.2935m	0.0046m	
			ARC3	1	+0.006553m	0.0103m	

36	12	gpsds	-**-	-**-	5215.3607m	0.0045m	0.01
	1		GOLD	-**-	5215.3609m	0.0016m	
			ARC3	1	+0.000204m	0.0042m	
37	13	gpsaz	-**-	-**-	293°25'34.4046"	0.1955"	0.20
	1		ARC3	-**-	293°25'34.5516"	0.0657"	
			4537	1	+0.147012"	0.1841"	
38	13	gpsht	-**-	-**-	+0.9861m	0.0165m	0.34
	1		ARC3	-**-	+0.9649m	0.0054m	
			4537	1	-0.021143m	0.0156m	
39	13	gpsds	-**-	-**-	7461.8404m	0.0056m	0.09
	1		ARC3	-**-	7461.8422m	0.0019m	
			4537	1	+0.001830m	0.0053m	
40	14	gpsaz	-**-	-**-	182°39'09.7046"	0.1765"	0.44
	1		ARC3	-**-	182°39'09.4212"	0.0650"	
			LOCK	1	-0.283351"	0.1641"	
41	14	gpsht	-**-	-**-	+9.7009m	0.0069m	0.06
	1		ARC3	-**-	+9.7024m	0.0032m	
			LOCK	1	+0.001462m	0.0061m	
42	14	gpsds	-**-	-**-	2693.7099m	0.0031m	0.20
	1		ARC3	-**-	2693.7076m	0.0012m	
			LOCK	1	-0.002274m	0.0029m	
43	15	gpsaz	-**-	-**-	310°05'00.7781"	0.1368"	0.25
	1		LOCK	-**-	310°05'00.6545"	0.0518"	
			4537	1	-0.123686"	0.1266"	
44	15	gpsht	-**-	-**-	-8.7282m	0.0148m	0.17
	1		LOCK	-**-	-8.7374m	0.0055m	
			4537	1	-0.009199m	0.0137m	
45	15	gpsds	-**-	-**-	8785.9612m	0.0054m	0.18
	1		LOCK	-**-	8785.9647m	0.0021m	
			4537	1	+0.003498m	0.0050m	
46	16	gpsaz	-**-	-**-	207°55'05.2754"	0.0978"	0.57
	1		LOCK	-**-	207°55'05.4638"	0.0511"	
			SANT	1	+0.188432"	0.0835"	
47	16	gpsht	-**-	-**-	+121.7636m	0.0125m	0.42
	1		LOCK	-**-	+121.7459m	0.0065m	
			SANT	1	-0.017683m	0.0107m	
48	16	gpsds	-**-	-**-	8871.6521m	0.0060m	0.09
	1		LOCK	-**-	8871.6503m	0.0030m	
			SANT	1	-0.001755m	0.0052m	
49	17	gpsaz	-**-	-**-	240°29'06.4821"	0.1251"	0.01
	1		LOCK	-**-	240°29'06.4860"	0.0631"	
			FOOT	1	+0.003940"	0.1080"	

50	17	gpsht	-**-	-**-	+78.0675m	0.0129m	0.20
	1		LOCK	-**-	+78.0584m	0.0061m	
			FOOT	1	-0.009147m	0.0113m	
51	17	gpsds	-**-	-**-	8856.0503m	0.0053m	0.16
	1		LOCK	-**-	8856.0533m	0.0023m	
			FOOT	1	+0.002999m	0.0047m	
52	18	gpsaz	-**-	-**-	182°39'09.5894"	0.1189"	0.43
	1		ARC3	-**-	182°39'09.4212"	0.0650"	
			LOCK	1	-0.168150"	0.0996"	
53	18	gpsht	-**-	-**-	+9.6998m	0.0044m	0.21
	1		ARC3	-**-	+9.7024m	0.0032m	
			LOCK	1	+0.002550m	0.0031m	
54	18	gpsds	-**-	-**-	2693.7091m	0.0025m	0.18
	1		ARC3	-**-	2693.7076m	0.0012m	
			LOCK	1	-0.001493m	0.0021m	
55	19	gpsaz	-**-	-**-	108°16'23.9343"	0.2121"	0.06
	1		LOCK	-**-	108°16'23.9783"	0.1063"	
			MISS	1	+0.044063"	0.1835"	
56	19	gpsht	-**-	-**-	-3.1392m	0.0106m	0.62
	1		LOCK	-**-	-3.1166m	0.0053m	
			MISS	1	+0.022605m	0.0092m	
57	19	gpsds	-**-	-**-	4629.3742m	0.0043m	0.75
	1		LOCK	-**-	4629.3854m	0.0020m	
			MISS	1	+0.011247m	0.0038m	
58	20	gpsaz	-**-	-**-	274°41'56.8242"	0.3199"	0.12
	1		GOLD	-**-	274°41'56.6773"	0.0831"	
			ARC3	1	-0.146900"	0.3090"	
59	20	gpsht	-**-	-**-	-5.2780m	0.0157m	0.26
	1		GOLD	-**-	-5.2935m	0.0046m	
			ARC3	1	-0.015516m	0.0150m	
60	20	gpsds	-**-	-**-	5215.3625m	0.0059m	0.07
	1		GOLD	-**-	5215.3609m	0.0016m	
			ARC3	1	-0.001617m	0.0057m	
61	21	gpsaz	-**-	-**-	14°01'32.0193"	0.1578"	0.35
	1		MISS	-**-	14°01'32.1923"	0.0958"	
			GOLD	1	+0.172941"	0.1254"	
62	21	gpsht	-**-	-**-	-1.2948m	0.0076m	0.11
	1		MISS	-**-	-1.2922m	0.0047m	
			GOLD	1	+0.002597m	0.0060m	
63	21	gpsds	-**-	-**-	3832.1853m	0.0035m	0.15
	1		MISS	-**-	3832.1869m	0.0022m	
			GOLD	1	+0.001647m	0.0027m	

64	22	gpsaz	-**-	-**-	256°05'58.5247"	0.2395"	0.03
	1		M874	-**-	256°05'58.5542"	0.0746"	
			GOLD	1	+0.029446"	0.2276"	
65	22	gpsht	-**-	-**-	+1.6886m	0.0156m	0.34
	1		M874	-**-	+1.6688m	0.0051m	
			GOLD	1	-0.019782m	0.0148m	
66	22	gpsds	-**-	-**-	6312.8803m	0.0047m	0.03
	1		M874	-**-	6312.8797m	0.0018m	
			GOLD	1	-0.000573m	0.0043m	
67	23	gpsaz	-**-	-**-	211°25'50.3956"	0.1330"	0.35
	1		1446	-**-	211°25'50.2321"	0.0602"	
			4509	1	-0.163519"	0.1186"	
68	23	gpsht	-**-	-**-	-6.9508m	0.0141m	0.04
	1		1446	-**-	-6.9530m	0.0055m	
			4509	1	-0.002215m	0.0130m	
69	23	gpsds	-**-	-**-	6985.0667m	0.0060m	0.00
	1		1446	-**-	6985.0668m	0.0024m	
			4509	1	+0.000051m	0.0055m	
70	24	gpsaz	-**-	-**-	180°02'42.9605"	0.1235"	0.06
	1		M874	-**-	180°02'42.9883"	0.0526"	
			SPED	1	+0.027719"	0.1117"	
71	24	gpsht	-**-	-**-	+13.5508m	0.0159m	0.16
	1		M874	-**-	+13.5414m	0.0066m	
			SPED	1	-0.009396m	0.0145m	
72	24	gpsds	-**-	-**-	9125.4776m	0.0076m	0.30
	1		M874	-**-	9125.4694m	0.0032m	
			SPED	1	-0.008268m	0.0069m	
73	25	gpsaz	-**-	-**-	134°19'17.5637"	0.2590"	0.47
	1		FOOT	-**-	134°19'17.1386"	0.1226"	
			SANT	1	-0.425062"	0.2281"	
74	25	gpsht	-**-	-**-	+43.6821m	0.0140m	0.11
	1		FOOT	-**-	+43.6875m	0.0070m	
			SANT	1	+0.005413m	0.0121m	
75	25	gpsds	-**-	-**-	4970.6868m	0.0052m	0.17
	1		FOOT	-**-	4970.6897m	0.0027m	
			SANT	1	+0.002954m	0.0044m	
76	26	gpsaz	-**-	-**-	298°05'48.9240"	0.2901"	0.14
	1		ZOAA	-**-	298°05'49.0809"	0.0958"	
			1446	1	+0.156874"	0.2738"	
77	26	gpsht	-**-	-**-	-3.2902m	0.0142m	0.19
	1		ZOAA	-**-	-3.3000m	0.0055m	
			1446	1	-0.009794m	0.0130m	

78	26	gpsds	-**-	-**-	5327.4367m	0.0066m	0.00
	1		ZOAA	-**-	5327.4368m	0.0019m	
			1446	1	+0.000088m	0.0063m	
79	27	gpsaz	-**-	-**-	215°11'29.3370"	0.1932"	0.13
	1		ZOAA	-**-	215°11'29.2507"	0.0955"	
			FILB	1	-0.086350"	0.1680"	
80	27	gpsht	-**-	-**-	-9.0759m	0.0059m	0.09
	1		ZOAA	-**-	-9.0776m	0.0037m	
			FILB	1	-0.001615m	0.0045m	
81	27	gpsds	-**-	-**-	2962.7179m	0.0028m	1.06
	1		ZOAA	-**-	2962.7275m	0.0016m	
			FILB	1	+0.009536m	0.0023m	
82	28	gpsaz	-**-	-**-	152°16'56.9884"	0.0828"	0.69
	1		ZOAA	-**-	152°16'56.7920"	0.0406"	
			Z137	1	-0.196402"	0.0722"	
83	28	gpsht	-**-	-**-	-11.2233m	0.0324m	0.06
	1		ZOAA	-**-	-11.2303m	0.0055m	
			Z137	1	-0.006965m	0.0319m	
84	28	gpsds	-**-	-**-	7882.3678m	0.0038m	0.03
	1		ZOAA	-**-	7882.3674m	0.0017m	
			Z137	1	-0.000392m	0.0033m	
85	29	gpsaz	-**-	-**-	17°47'52.5947"	0.1716"	0.18
	1		4519	-**-	17°47'52.7048"	0.0810"	
			FILB	1	+0.110010"	0.1513"	
86	29	gpsht	-**-	-**-	+1.2472m	0.0065m	0.02
	1		4519	-**-	+1.2468m	0.0039m	
			FILB	1	-0.000406m	0.0052m	
87	29	gpsds	-**-	-**-	3109.4057m	0.0034m	0.79
	1		4519	-**-	3109.4149m	0.0018m	
			FILB	1	+0.009222m	0.0029m	
88	30	gpsaz	-**-	-**-	288°45'02.8487"	0.1914"	0.22
	1		4519	-**-	288°45'02.6979"	0.0772"	
			4509	1	-0.150782"	0.1752"	
89	30	gpsht	-**-	-**-	+0.0748m	0.0117m	0.08
	1		4519	-**-	+0.0714m	0.0050m	
			4509	1	-0.003400m	0.0106m	
90	30	gpsds	-**-	-**-	6006.0038m	0.0045m	0.12
	1		4519	-**-	6006.0059m	0.0016m	
			4509	1	+0.002079m	0.0042m	

91	31	gpsaz	-**-	-**-	104°08'47.5706"	0.1277"	0.02
	1		4519	-**-	104°08'47.5804"	0.0614"	
			Z137	1	+0.009806"	0.1120"	
92	31	gpsht	-**-	-**-	-0.9090m	0.0337m	0.02
	1		4519	-**-	-0.9059m	0.0057m	
			Z137	1	+0.003086m	0.0332m	
93	31	gpsds	-**-	-**-	6523.3548m	0.0029m	0.27
	1		4519	-**-	6523.3575m	0.0013m	
			Z137	1	+0.002700m	0.0026m	
94	32	gpsaz	-**-	-**-	310°19'18.9416"	0.1829"	0.22
	1		Z137	-**-	310°19'18.7885"	0.0527"	
			FILB	1	-0.153144"	0.1752"	
95	32	gpsht	-**-	-**-	+2.1577m	0.0140m	0.10
	1		Z137	-**-	+2.1527m	0.0053m	
			FILB	1	-0.004924m	0.0130m	
96	32	gpsds	-**-	-**-	7045.4989m	0.0069m	0.01
	1		Z137	-**-	7045.4986m	0.0016m	
			FILB	1	-0.000328m	0.0067m	
97	33	gpsaz	-**-	-**-	181°57'53.1721"	0.1464"	0.31
	1		Z137	-**-	181°57'53.3341"	0.0593"	
			GOLD	1	+0.162033"	0.1338"	
98	33	gpsht	-**-	-**-	+4.5727m	0.0135m	0.18
	1		Z137	-**-	+4.5641m	0.0055m	
			GOLD	1	-0.008605m	0.0124m	
99	33	gpsds	-**-	-**-	6404.1747m	0.0061m	0.15
	1		Z137	-**-	6404.1780m	0.0024m	
			GOLD	1	+0.003380m	0.0057m	
100	34	gpsaz	-**-	-**-	129°33'24.6158"	0.1597"	0.09
	1		Z137	-**-	129°33'24.5649"	0.0587"	
			M874	1	-0.050922"	0.1485"	
101	34	gpsht	-**-	-**-	+2.9013m	0.0131m	0.13
	1		Z137	-**-	+2.8953m	0.0052m	
			M874	1	-0.006000m	0.0120m	
102	34	gpsds	-**-	-**-	7662.0083m	0.0044m	0.10
	1		Z137	-**-	7662.0098m	0.0018m	
			M874	1	+0.001571m	0.0040m	
103	35	gpsaz	-**-	-**-	328°44'05.5297"	0.1827"	0.04
	1		FILB	-**-	328°44'05.5053"	0.0687"	
			1446	1	-0.024416"	0.1693"	
104	35	gpsht	-**-	-**-	+5.7788m	0.0131m	0.03
	1		FILB	-**-	+5.7776m	0.0053m	
			1446	1	-0.001290m	0.0120m	

105	35	gpsds	-**-	-**-	5767.1950m	0.0075m	0.06
	1		FILB	-**-	5767.1967m	0.0024m	
			1446	1	+0.001707m	0.0072m	
106	36	gpsaz	-**-	-**-	261°11'11.0908"	0.2181"	0.08
	1		FILB	-**-	261°11'11.0254"	0.0711"	
			4509	1	-0.065413"	0.2062"	
107	36	gpsht	-**-	-**-	-1.1776m	0.0123m	0.05
	1		FILB	-**-	-1.1754m	0.0048m	
			4509	1	+0.002127m	0.0114m	
108	36	gpsds	-**-	-**-	6717.1012m	0.0041m	0.21
	1		FILB	-**-	6717.1044m	0.0015m	
			4509	1	+0.003259m	0.0039m	
109	37	gpsaz	-**-	-**-	211°25'50.2189"	0.1606"	0.02
	1		1446	-**-	211°25'50.2321"	0.0602"	
			4509	1	+0.013224"	0.1488"	
110	37	gpsht	-**-	-**-	-6.9571m	0.0115m	0.10
	1		1446	-**-	-6.9530m	0.0055m	
			4509	1	+0.004077m	0.0101m	
111	37	gpsds	-**-	-**-	6985.0631m	0.0059m	0.17
	1		1446	-**-	6985.0668m	0.0024m	
			4509	1	+0.003669m	0.0054m	
112	38	gpsaz	-**-	-**-	256°05'58.5964"	0.2084"	0.05
	1		M874	-**-	256°05'58.5542"	0.0746"	
			GOLD	1	-0.042224"	0.1946"	
113	38	gpsht	-**-	-**-	+1.6721m	0.0151m	0.06
	1		M874	-**-	+1.6688m	0.0051m	
			GOLD	1	-0.003280m	0.0142m	
114	38	gpsds	-**-	-**-	6312.8713m	0.0057m	0.40
	1		M874	-**-	6312.8797m	0.0018m	
			GOLD	1	+0.008438m	0.0054m	
115	39	gpsaz	-**-	-**-	274°41'56.5465"	0.2879"	0.12
	1		GOLD	-**-	274°41'56.6773"	0.0831"	
			ARC3	1	+0.130825"	0.2757"	
116	39	gpsht	-**-	-**-	-5.2968m	0.0147m	0.06
	1		GOLD	-**-	-5.2935m	0.0046m	
			ARC3	1	+0.003256m	0.0139m	
117	39	gpsds	-**-	-**-	5215.3652m	0.0051m	0.22
	1		GOLD	-**-	5215.3609m	0.0016m	
			ARC3	1	-0.004311m	0.0049m	
118	40	gpsaz	-**-	-**-	293°25'34.6247"	0.3127"	0.06
	1		ARC3	-**-	293°25'34.5516"	0.0657"	
			4537	1	-0.073144"	0.3057"	

119	40	gpsht	-**-	-**-	+0.9914m	0.0243m	0.28
	1		ARC3	-**-	+0.9649m	0.0054m	
			4537	1	-0.026474m	0.0237m	
120	40	gpsds	-**-	-**-	7461.8436m	0.0101m	0.04
	1		ARC3	-**-	7461.8422m	0.0019m	
			4537	1	-0.001402m	0.0099m	
121	41	gpsaz	-**-	-**-	274°41'56.5277"	0.4003"	0.10
	1		GOLD	-**-	274°41'56.6773"	0.0831"	
			ARC3	1	+0.149671"	0.3915"	
122	41	gpsht	-**-	-**-	-5.2895m	0.0206m	0.05
	1		GOLD	-**-	-5.2935m	0.0046m	
			ARC3	1	-0.003990m	0.0201m	
123	41	gpsds	-**-	-**-	5215.3591m	0.0077m	0.06
	1		GOLD	-**-	5215.3609m	0.0016m	
			ARC3	1	+0.001745m	0.0076m	
124	42	gpsaz	-**-	-**-	182°39'09.1786"	0.1022"	0.78
	1		ARC3	-**-	182°39'09.4212"	0.0650"	
			LOCK	1	+0.242646"	0.0789"	
125	42	gpsht	-**-	-**-	+9.6807m	0.0168m	0.33
	1		ARC3	-**-	+9.7024m	0.0032m	
			LOCK	1	+0.021669m	0.0165m	
126	42	gpsds	-**-	-**-	2693.7056m	0.0019m	0.36
	1		ARC3	-**-	2693.7076m	0.0012m	
			LOCK	1	+0.002006m	0.0014m	
127	43	gpsaz	-**-	-**-	310°05'00.8566"	0.2386"	0.22
	1		LOCK	-**-	310°05'00.6545"	0.0518"	
			4537	1	-0.202113"	0.2329"	
128	43	gpsht	-**-	-**-	-8.7151m	0.0247m	0.23
	1		LOCK	-**-	-8.7374m	0.0055m	
			4537	1	-0.022319m	0.0241m	
129	43	gpsds	-**-	-**-	8785.9710m	0.0127m	0.13
	1		LOCK	-**-	8785.9647m	0.0021m	
			4537	1	-0.006285m	0.0125m	
130	44	gpsaz	-**-	-**-	240°29'06.6632"	0.1650"	0.29
	1		LOCK	-**-	240°29'06.4860"	0.0631"	
			FOOT	1	-0.177122"	0.1525"	
131	44	gpsht	-**-	-**-	+78.0564m	0.0155m	0.03
	1		LOCK	-**-	+78.0584m	0.0061m	
			FOOT	1	+0.001944m	0.0142m	
132	44	gpsds	-**-	-**-	8856.0509m	0.0053m	0.12
	1		LOCK	-**-	8856.0533m	0.0023m	
			FOOT	1	+0.002346m	0.0047m	

133	45	gpsaz	-**-	-**-	207°55'05.4776"	0.0804"	0.06
	1		LOCK	-**-	207°55'05.4638"	0.0511"	
			SANT	1	-0.013762"	0.0621"	
134	45	gpsht	-**-	-**-	+121.7514m	0.0102m	0.18
	1		LOCK	-**-	+121.7459m	0.0065m	
			SANT	1	-0.005533m	0.0079m	
135	45	gpsds	-**-	-**-	8871.6484m	0.0047m	0.13
	1		LOCK	-**-	8871.6503m	0.0030m	
			SANT	1	+0.001903m	0.0036m	
136	46	gpsaz	-**-	-**-	108°16'23.8800"	0.2836"	0.09
	1		LOCK	-**-	108°16'23.9783"	0.1063"	
			MISS	1	+0.098375"	0.2629"	
137	46	gpsht	-**-	-**-	-3.1216m	0.0137m	0.10
	1		LOCK	-**-	-3.1166m	0.0053m	
			MISS	1	+0.005003m	0.0127m	
138	46	gpsds	-**-	-**-	4629.3761m	0.0057m	0.44
	1		LOCK	-**-	4629.3854m	0.0020m	
			MISS	1	+0.009323m	0.0053m	
139	47	gpsaz	-**-	-**-	134°19'16.9519"	0.2198"	0.26
	1		FOOT	-**-	134°19'17.1386"	0.1226"	
			SANT	1	+0.186737"	0.1825"	
140	47	gpsht	-**-	-**-	+43.6725m	0.0131m	0.34
	1		FOOT	-**-	+43.6875m	0.0070m	
			SANT	1	+0.015011m	0.0111m	
141	47	gpsds	-**-	-**-	4970.6847m	0.0054m	0.28
	1		FOOT	-**-	4970.6897m	0.0027m	
			SANT	1	+0.005058m	0.0046m	
142	48	gpsaz	-**-	-**-	14°01'31.9233"	0.2101"	0.36
	1		MISS	-**-	14°01'32.1923"	0.0958"	
			GOLD	1	+0.268958"	0.1869"	
143	48	gpsht	-**-	-**-	-1.2814m	0.0104m	0.29
	1		MISS	-**-	-1.2922m	0.0047m	
			GOLD	1	-0.010829m	0.0093m	
144	48	gpsds	-**-	-**-	3832.1793m	0.0048m	0.44
	1		MISS	-**-	3832.1869m	0.0022m	
			GOLD	1	+0.007578m	0.0043m	
145	49	gpsaz	-**-	-**-	256°05'58.7292"	0.3586"	0.13
	1		M874	-**-	256°05'58.5542"	0.0746"	
			GOLD	1	-0.175028"	0.3508"	
146	49	gpsht	-**-	-**-	+1.6736m	0.0212m	0.06
	1		M874	-**-	+1.6688m	0.0051m	
			GOLD	1	-0.004818m	0.0206m	

147	49	gpsds	-**-	-**-	6312.8814m	0.0074m	0.06
	1		M874	-**-	6312.8797m	0.0018m	
			GOLD	1	-0.001640m	0.0072m	
148	50	gpsaz	-**-	-**-	180°02'43.0170"	0.1840"	0.04
	1		M874	-**-	180°02'42.9883"	0.0526"	
			SPED	1	-0.028763"	0.1763"	
149	50	gpsht	-**-	-**-	+13.5504m	0.0226m	0.11
	1		M874	-**-	+13.5414m	0.0066m	
			SPED	1	-0.009044m	0.0216m	
150	50	gpsds	-**-	-**-	9125.4694m	0.0107m	OPEN
	1		M874	-**-	9125.4694m	0.0032m	
			SPED	1	+0.000004m	0.0102m	
151	51	gpsaz	-**-	-**-	299°07'47.5452"	0.1490"	0.10
	1		N119	-**-	299°07'47.4911"	0.0551"	
			4688	1	-0.054056"	0.1385"	
152	51	gpsht	-**-	-**-	-20.1693m	0.0151m	0.26
	1		N119	-**-	-20.1834m	0.0062m	
			4688	1	-0.014146m	0.0137m	
153	51	gpsds	-**-	-**-	10280.4746m	0.0051m	0.02
	1		N119	-**-	10280.4750m	0.0020m	
			4688	1	+0.000429m	0.0047m	
154	52	gpsaz	-**-	-**-	179°27'38.6358"	0.2028"	0.06
	1		N119	-**-	179°27'38.5942"	0.0800"	
			L132	1	-0.041672"	0.1864"	
155	52	gpsht	-**-	-**-	-19.8871m	0.0139m	0.02
	1		N119	-**-	-19.8881m	0.0066m	
			L132	1	-0.000952m	0.0122m	
156	52	gpsds	-**-	-**-	5293.0593m	0.0065m	0.16
	1		N119	-**-	5293.0631m	0.0027m	
			L132	1	+0.003816m	0.0059m	
157	53	gpsaz	-**-	-**-	170°18'46.0911"	0.1021"	0.10
	1		N119	-**-	170°18'46.0555"	0.0395"	
			1446	1	-0.035541"	0.0941"	
158	53	gpsht	-**-	-**-	-12.9949m	0.0128m	0.19
	1		N119	-**-	-12.9864m	0.0059m	
			1446	1	+0.008421m	0.0114m	
159	53	gpsds	-**-	-**-	10159.9627m	0.0054m	0.20
	1		N119	-**-	10159.9664m	0.0025m	
			1446	1	+0.003775m	0.0048m	
160	54	gpsaz	-**-	-**-	160°38'04.8891"	0.2588"	0.02
	1		L132	-**-	160°38'04.9123"	0.1031"	
			1446	1	+0.023196"	0.2373"	

161	54	gpsht	-**-	-**-	+6.8923m	0.0149m	0.18
	1		L132	-**-	+6.9016m	0.0071m	
			1446	1	+0.009300m	0.0131m	
162	54	gpsds	-**-	-**-	5005.4658m	0.0062m	0.14
	1		L132	-**-	5005.4688m	0.0028m	
			1446	1	+0.003091m	0.0055m	
163	55	gpsaz	-**-	-**-	303°39'45.7000"	0.2181"	0.04
	1		4688	-**-	303°39'45.7326"	0.0734"	
			BAYF	1	+0.032518"	0.2054"	
164	55	gpsht	-**-	-**-	+1.5721m	0.0152m	0.05
	1		4688	-**-	+1.5693m	0.0058m	
			BAYF	1	-0.002772m	0.0140m	
165	55	gpsds	-**-	-**-	7102.0286m	0.0052m	0.44
	1		4688	-**-	7102.0202m	0.0018m	
			BAYF	1	-0.008406m	0.0048m	
166	56	gpsaz	-**-	-**-	251°35'44.3613"	0.1544"	0.73
	1		04FH	-**-	251°35'43.9919"	0.0872"	
			BAYF	1	-0.369383"	0.1273"	
167	56	gpsht	-**-	-**-	+0.6510m	0.0085m	0.23
	1		04FH	-**-	+0.6449m	0.0052m	
			BAYF	1	-0.006023m	0.0067m	
168	56	gpsds	-**-	-**-	4785.8078m	0.0036m	1.03
	1		04FH	-**-	4785.8203m	0.0019m	
			BAYF	1	+0.012508m	0.0030m	
169	57	gpsaz	-**-	-**-	27°29'54.2337"	0.0335"	0.03
	1		MOON	-**-	27°29'54.2375"	0.0166"	
			04EG	1	+0.003817"	0.0291"	
170	57	gpsht	-**-	-**-	+171.5628m	0.0255m	0.07
	1		MOON	-**-	+171.5692m	0.0068m	
			04EG	1	+0.006385m	0.0246m	
171	57	gpsds	-**-	-**-	13395.9497m	0.0028m	0.33
	1		MOON	-**-	13395.9529m	0.0015m	
			04EG	1	+0.003153m	0.0024m	
172	58	gpsaz	-**-	-**-	67°34'36.0072"	0.0373"	0.17
	1		MOON	-**-	67°34'36.0290"	0.0173"	
			G110	1	+0.021763"	0.0330"	
173	58	gpsht	-**-	-**-	-15.8106m	0.0268m	0.05
	1		MOON	-**-	-15.8056m	0.0052m	
			G110	1	+0.005033m	0.0263m	

174	58	gpsds	-**-	-**-	18176.7941m	0.0025m	0.10
	1		MOON	-**-	18176.7932m	0.0013m	
			G110	1	-0.000888m	0.0022m	
175	59	gpsaz	-**-	-**-	315°27'34.7827"	0.0743"	0.11
	1		04EG	-**-	315°27'34.7520"	0.0219"	
			E124	1	-0.030702"	0.0710"	
176	59	gpsht	-**-	-**-	-177.6965m	0.0468m	0.08
	1		04EG	-**-	-177.7106m	0.0077m	
			E124	1	-0.014037m	0.0462m	
177	59	gpsds	-**-	-**-	15063.0405m	0.0039m	0.17
	1		04EG	-**-	15063.0430m	0.0014m	
			E124	1	+0.002459m	0.0036m	
178	60	gpsaz	-**-	-**-	353°34'27.4042"	0.0509"	0.02
	1		04EG	-**-	353°34'27.4011"	0.0295"	
			4413	1	-0.003129"	0.0415"	
179	60	gpsht	-**-	-**-	-190.3696m	0.0280m	0.16
	1		04EG	-**-	-190.3867m	0.0080m	
			4413	1	-0.017169m	0.0269m	
180	60	gpsds	-**-	-**-	9966.1288m	0.0030m	0.11
	1		04EG	-**-	9966.1299m	0.0018m	
			4413	1	+0.001098m	0.0025m	
181	61	gpsaz	-**-	-**-	72°56'21.0544"	0.1108"	0.04
	1		04EG	-**-	72°56'21.0691"	0.0518"	
			GUAN	1	+0.014738"	0.0980"	
182	61	gpsht	-**-	-**-	-189.9199m	0.0127m	0.13
	1		04EG	-**-	-189.9143m	0.0070m	
			GUAN	1	+0.005530m	0.0106m	
183	61	gpsds	-**-	-**-	10178.3355m	0.0047m	0.02
	1		04EG	-**-	10178.3352m	0.0022m	
			GUAN	1	-0.000328m	0.0042m	
184	62	gpsaz	-**-	-**-	44°52'28.3345"	0.1994"	0.14
	1		04EG	-**-	44°52'28.4264"	0.1117"	
			TID1	1	+0.091901"	0.1652"	
185	62	gpsht	-**-	-**-	-188.6142m	0.0172m	0.14
	1		04EG	-**-	-188.6068m	0.0106m	
			TID1	1	+0.007377m	0.0135m	
186	62	gpsds	-**-	-**-	6833.6867m	0.0064m	0.03
	1		04EG	-**-	6833.6859m	0.0035m	
			TID1	1	-0.000733m	0.0053m	
187	63	gpsaz	-**-	-**-	115°02'03.6738"	0.0915"	0.12
	1		04EG	-**-	115°02'03.6324"	0.0332"	
			G110	1	-0.041389"	0.0852"	

188	63	gpsht	-**-	-**-	-187.3844m	0.0109m	0.27
	1		04EG	-**-	-187.3748m	0.0061m	
			G110	1	+0.009633m	0.0090m	
189	63	gpsds	-**-	-**-	11714.0307m	0.0036m	0.15
	1		04EG	-**-	11714.0287m	0.0014m	
			G110	1	-0.002047m	0.0034m	
190	64	gpsaz	-**-	-**-	11°19'22.0952"	0.0583"	0.36
	1		4413	-**-	11°19'22.1664"	0.0294"	
			HUNT	1	+0.071213"	0.0504"	
191	64	gpsht	-**-	-**-	+0.4286m	0.0108m	0.21
	1		4413	-**-	+0.4210m	0.0058m	
			HUNT	1	-0.007592m	0.0091m	
192	64	gpsds	-**-	-**-	10535.5251m	0.0054m	0.03
	1		4413	-**-	10535.5258m	0.0023m	
			HUNT	1	+0.000675m	0.0049m	
193	65	gpsaz	-**-	-**-	45°22'55.9706"	0.0356"	0.02
	1		4413	-**-	45°22'55.9683"	0.0204"	
			BAYF	1	-0.002289"	0.0291"	
194	65	gpsht	-**-	-**-	+1.3473m	0.0094m	0.11
	1		4413	-**-	+1.3507m	0.0056m	
			BAYF	1	+0.003392m	0.0075m	
195	65	gpsds	-**-	-**-	15981.2363m	0.0047m	0.06
	1		4413	-**-	15981.2373m	0.0021m	
			BAYF	1	+0.000995m	0.0042m	
196	66	gpsaz	-**-	-**-	130°26'15.2569"	0.2101"	0.04
	1		4413	-**-	130°26'15.2290"	0.0992"	
			TID1	1	-0.027967"	0.1852"	
197	66	gpsht	-**-	-**-	+1.7888m	0.0222m	0.12
	1		4413	-**-	+1.7799m	0.0115m	
			TID1	1	-0.008951m	0.0190m	
198	66	gpsds	-**-	-**-	7801.2008m	0.0082m	0.05
	1		4413	-**-	7801.1992m	0.0037m	
			TID1	1	-0.001558m	0.0073m	
199	67	gpsaz	-**-	-**-	10°45'21.5256"	0.1008"	0.49
	1		E124	-**-	10°45'21.6854"	0.0590"	
			L124	1	+0.159801"	0.0817"	
200	67	gpsht	-**-	-**-	+107.3654m	0.0071m	0.04
	1		E124	-**-	+107.3662m	0.0052m	
			L124	1	+0.000805m	0.0048m	
201	67	gpsds	-**-	-**-	4887.8004m	0.0034m	0.49
	1		E124	-**-	4887.8059m	0.0020m	
			L124	1	+0.005417m	0.0028m	

202	68	gpsaz	-**-	-**-	110°44'59.2614"	0.3106"	0.01
	1		TID1	-**-	110°44'59.2534"	0.1639"	
			GUAN	1	-0.008072"	0.2638"	
203	68	gpsht	-**-	-**-	-1.3152m	0.0202m	0.12
	1		TID1	-**-	-1.3075m	0.0111m	
			GUAN	1	+0.007716m	0.0169m	
204	68	gpsds	-**-	-**-	5248.2091m	0.0068m	0.01
	1		TID1	-**-	5248.2089m	0.0035m	
			GUAN	1	-0.000120m	0.0058m	
205	69	gpsaz	-**-	-**-	147°27'27.7496"	0.1733"	0.07
	1		GUAN	-**-	147°27'27.7947"	0.0603"	
			4508	1	+0.045118"	0.1624"	
206	69	gpsht	-**-	-**-	+0.1187m	0.0185m	0.19
	1		GUAN	-**-	+0.1316m	0.0078m	
			4508	1	+0.012912m	0.0168m	
207	69	gpsds	-**-	-**-	8540.4774m	0.0074m	0.13
	1		GUAN	-**-	8540.4738m	0.0026m	
			4508	1	-0.003610m	0.0069m	
208	70	gpsaz	-**-	-**-	173°43'22.7554"	0.0995"	0.00
	1		GUAN	-**-	173°43'22.7542"	0.0524"	
			G110	1	-0.001187"	0.0846"	
209	70	gpsht	-**-	-**-	+2.5370m	0.0111m	0.07
	1		GUAN	-**-	+2.5396m	0.0066m	
			G110	1	+0.002610m	0.0089m	
210	70	gpsds	-**-	-**-	7992.0528m	0.0050m	0.13
	1		GUAN	-**-	7992.0506m	0.0025m	
			G110	1	-0.002141m	0.0043m	
211	71	gpsaz	-**-	-**-	78°41'19.1112"	0.1398"	0.12
	1		G110	-**-	78°41'19.0622"	0.0941"	
			4508	1	-0.048983"	0.1033"	
212	71	gpsht	-**-	-**-	-2.4097m	0.0202m	0.02
	1		G110	-**-	-2.4080m	0.0057m	
			4508	1	+0.001751m	0.0194m	
213	71	gpsds	-**-	-**-	3794.0613m	0.0018m	1.02
	1		G110	-**-	3794.0664m	0.0013m	
			4508	1	+0.005062m	0.0013m	
214	72	gpsaz	-**-	-**-	192°07'19.0496"	0.1317"	0.14
	1		G110	-**-	192°07'19.1169"	0.0454"	
			04EH	1	+0.067348"	0.1236"	

215	72	gpsht	-**-	-**-	+174.5843m	0.0121m	0.02
	1		G110	-**-	+174.5850m	0.0053m	
			04EH	1	+0.000698m	0.0108m	
216	72	gpsds	-**-	-**-	6410.3854m	0.0050m	0.06
	1		G110	-**-	6410.3844m	0.0019m	
			04EH	1	-0.001009m	0.0046m	
217	73	gpsaz	-**-	-**-	87°13'08.5059"	0.2037"	0.21
	1		4508	-**-	87°13'08.6645"	0.0611"	
			4509	1	+0.158594"	0.1944"	
218	73	gpsht	-**-	-**-	-0.5884m	0.0181m	0.15
	1		4508	-**-	-0.5787m	0.0069m	
			4509	1	+0.009763m	0.0167m	
219	73	gpsds	-**-	-**-	8971.1688m	0.0059m	0.35
	1		4508	-**-	8971.1765m	0.0019m	
			4509	1	+0.007752m	0.0056m	
220	74	gpsaz	-**-	-**-	118°14'35.0419"	0.2279"	0.31
	1		4508	-**-	118°14'34.7857"	0.0846"	
			X572	1	-0.256263"	0.2116"	
221	74	gpsht	-**-	-**-	-0.7330m	0.0170m	0.10
	1		4508	-**-	-0.7391m	0.0069m	
			X572	1	-0.006143m	0.0155m	
222	74	gpsds	-**-	-**-	6135.3763m	0.0073m	0.12
	1		4508	-**-	6135.3796m	0.0022m	
			X572	1	+0.003305m	0.0070m	
223	75	gpsaz	-**-	-**-	215°52'37.2995"	0.1570"	0.11
	1		4508	-**-	215°52'37.2331"	0.0453"	
			04EH	1	-0.066369"	0.1504"	
224	75	gpsht	-**-	-**-	+176.9973m	0.0148m	0.08
	1		4508	-**-	+176.9929m	0.0062m	
			04EH	1	-0.004385m	0.0134m	
225	75	gpsds	-**-	-**-	8650.5697m	0.0054m	0.02
	1		4508	-**-	8650.5693m	0.0021m	
			04EH	1	-0.000398m	0.0050m	
226	76	gpsaz	-**-	-**-	46°50'25.9625"	0.2086"	0.14
	1		X572	-**-	46°50'26.0681"	0.0771"	
			4509	1	+0.105654"	0.1938"	
227	76	gpsht	-**-	-**-	+0.1602m	0.0118m	0.01
	1		X572	-**-	+0.1605m	0.0050m	
			4509	1	+0.000309m	0.0107m	
228	76	gpsds	-**-	-**-	4877.3773m	0.0037m	0.64
	1		X572	-**-	4877.3857m	0.0018m	
			4509	1	+0.008411m	0.0033m	

229	77	gpsaz	-**-	-**-	299°07'47.4337"	0.1226"	0.13
	1		N119	-**-	299°07'47.4911"	0.0551"	
			4688	1	+0.057448"	0.1095"	
230	77	gpsht	-**-	-**-	-20.1880m	0.0151m	0.08
	1		N119	-**-	-20.1834m	0.0062m	
			4688	1	+0.004610m	0.0138m	
231	77	gpsds	-**-	-**-	10280.4808m	0.0042m	0.39
	1		N119	-**-	10280.4750m	0.0020m	
			4688	1	-0.005733m	0.0037m	
232	78	gpsaz	-**-	-**-	170°18'46.1397"	0.0904"	0.26
	1		N119	-**-	170°18'46.0555"	0.0395"	
			1446	1	-0.084185"	0.0813"	
233	78	gpsht	-**-	-**-	-12.9872m	0.0148m	0.01
	1		N119	-**-	-12.9864m	0.0059m	
			1446	1	+0.000782m	0.0136m	
234	78	gpsds	-**-	-**-	10159.9665m	0.0057m	0.00
	1		N119	-**-	10159.9664m	0.0025m	
			1446	1	-0.000055m	0.0052m	
235	79	gpsaz	-**-	-**-	179°27'38.6427"	0.1247"	0.13
	1		N119	-**-	179°27'38.5942"	0.0800"	
			L132	1	-0.048531"	0.0956"	
236	79	gpsht	-**-	-**-	-19.8854m	0.0115m	0.07
	1		N119	-**-	-19.8881m	0.0066m	
			L132	1	-0.002684m	0.0095m	
237	79	gpsds	-**-	-**-	5293.0647m	0.0045m	0.11
	1		N119	-**-	5293.0631m	0.0027m	
			L132	1	-0.001601m	0.0035m	
238	80	gpsaz	-**-	-**-	160°38'04.9772"	0.1965"	0.10
	1		L132	-**-	160°38'04.9123"	0.1031"	
			1446	1	-0.064945"	0.1673"	
239	80	gpsht	-**-	-**-	+6.8950m	0.0148m	0.13
	1		L132	-**-	+6.9016m	0.0071m	
			1446	1	+0.006635m	0.0130m	
240	80	gpsds	-**-	-**-	5005.4675m	0.0054m	0.07
	1		L132	-**-	5005.4688m	0.0028m	
			1446	1	+0.001350m	0.0047m	
241	81	gpsaz	-**-	-**-	303°39'45.5553"	0.1578"	0.32
	1		4688	-**-	303°39'45.7326"	0.0734"	
			BAYF	1	+0.177240"	0.1397"	
242	81	gpsht	-**-	-**-	+1.5775m	0.0134m	0.17
	1		4688	-**-	+1.5693m	0.0058m	
			BAYF	1	-0.008188m	0.0121m	

243	81	gpsds	-**-	-**-	7102.0181m	0.0038m	0.16
	1		4688	-**-	7102.0202m	0.0018m	
			BAYF	1	+0.002102m	0.0034m	
244	82	gpsaz	-**-	-**-	251°35'43.8237"	0.1536"	0.34
	1		04FH	-**-	251°35'43.9919"	0.0872"	
			BAYF	1	+0.168271"	0.1264"	
245	82	gpsht	-**-	-**-	+0.6339m	0.0096m	0.35
	1		04FH	-**-	+0.6449m	0.0052m	
			BAYF	1	+0.011092m	0.0081m	
246	82	gpsds	-**-	-**-	4785.8206m	0.0030m	0.02
	1		04FH	-**-	4785.8203m	0.0019m	
			BAYF	1	-0.000230m	0.0024m	
247	83	gpsaz	-**-	-**-	27°29'54.2390"	0.0302"	0.01
	1		MOON	-**-	27°29'54.2375"	0.0166"	
			04EG	1	-0.001485"	0.0253"	
248	83	gpsht	-**-	-**-	+171.5503m	0.0218m	0.23
	1		MOON	-**-	+171.5692m	0.0068m	
			04EG	1	+0.018840m	0.0207m	
249	83	gpsds	-**-	-**-	13395.9535m	0.0027m	0.07
	1		MOON	-**-	13395.9529m	0.0015m	
			04EG	1	-0.000613m	0.0022m	
250	84	gpsaz	-**-	-**-	67°34'35.9897"	0.0689"	0.15
	1		MOON	-**-	67°34'36.0290"	0.0173"	
			G110	1	+0.039221"	0.0667"	
251	84	gpsht	-**-	-**-	-15.8105m	0.0174m	0.07
	1		MOON	-**-	-15.8056m	0.0052m	
			G110	1	+0.004887m	0.0166m	
252	84	gpsds	-**-	-**-	18176.7842m	0.0042m	0.56
	1		MOON	-**-	18176.7932m	0.0013m	
			G110	1	+0.009023m	0.0040m	
253	85	gpsaz	-**-	-**-	67°34'36.0519"	0.0419"	0.15
	1		MOON	-**-	67°34'36.0290"	0.0173"	
			G110	1	-0.022950"	0.0382"	
254	85	gpsht	-**-	-**-	-15.7993m	0.0111m	0.16
	1		MOON	-**-	-15.8056m	0.0052m	
			G110	1	-0.006340m	0.0098m	
255	85	gpsds	-**-	-**-	18176.7901m	0.0034m	0.25
	1		MOON	-**-	18176.7932m	0.0013m	
			G110	1	+0.003130m	0.0032m	
256	86	gpsaz	-**-	-**-	315°27'34.7639"	0.0894"	0.03
	1		04EG	-**-	315°27'34.7520"	0.0219"	
			E124	1	-0.011929"	0.0866"	

257	86	gpsht	-**-	-**-	-177.6954m	0.0194m	0.22
	1		04EG	-**-	-177.7106m	0.0077m	
			E124	1	-0.015174m	0.0177m	
258	86	gpsds	-**-	-**-	15063.0391m	0.0055m	0.18
	1		04EG	-**-	15063.0430m	0.0014m	
			E124	1	+0.003859m	0.0053m	
259	87	gpsaz	-**-	-**-	44°52'28.3833"	0.3652"	0.03
	1		04EG	-**-	44°52'28.4264"	0.1117"	
			TID1	1	+0.043096"	0.3478"	
260	87	gpsht	-**-	-**-	-188.6099m	0.0392m	0.02
	1		04EG	-**-	-188.6068m	0.0106m	
			TID1	1	+0.003039m	0.0377m	
261	87	gpsds	-**-	-**-	6833.6849m	0.0112m	0.02
	1		04EG	-**-	6833.6859m	0.0035m	
			TID1	1	+0.000992m	0.0106m	
262	88	gpsaz	-**-	-**-	115°02'03.6776"	0.1266"	0.09
	1		04EG	-**-	115°02'03.6324"	0.0332"	
			G110	1	-0.045249"	0.1221"	
263	88	gpsht	-**-	-**-	-187.3841m	0.0219m	0.11
	1		04EG	-**-	-187.3748m	0.0061m	
			G110	1	+0.009323m	0.0210m	
264	88	gpsds	-**-	-**-	11714.0208m	0.0060m	0.34
	1		04EG	-**-	11714.0287m	0.0014m	
			G110	1	+0.007849m	0.0058m	
265	89	gpsaz	-**-	-**-	353°34'27.3565"	0.0610"	0.21
	1		04EG	-**-	353°34'27.4011"	0.0295"	
			4413	1	+0.044523"	0.0535"	
266	89	gpsht	-**-	-**-	-190.3852m	0.0300m	0.01
	1		04EG	-**-	-190.3867m	0.0080m	
			4413	1	-0.001482m	0.0289m	
267	89	gpsds	-**-	-**-	9966.1301m	0.0035m	0.01
	1		04EG	-**-	9966.1299m	0.0018m	
			4413	1	-0.000121m	0.0030m	
268	90	gpsaz	-**-	-**-	72°56'21.0676"	0.1603"	0.00
	1		04EG	-**-	72°56'21.0691"	0.0518"	
			GUAN	1	+0.001451"	0.1517"	
269	90	gpsht	-**-	-**-	-189.9168m	0.0224m	0.03
	1		04EG	-**-	-189.9143m	0.0070m	
			GUAN	1	+0.002445m	0.0213m	
270	90	gpsds	-**-	-**-	10178.3317m	0.0054m	0.18
	1		04EG	-**-	10178.3352m	0.0022m	
			GUAN	1	+0.003492m	0.0049m	

271	91	gpsaz	-**-	-**-	11°19'22.2045"	0.0697"	0.15
	1		4413	-**-	11°19'22.1664"	0.0294"	
			HUNT	1	-0.038052"	0.0632"	
272	91	gpsht	-**-	-**-	+0.4248m	0.0147m	0.07
	1		4413	-**-	+0.4210m	0.0058m	
			HUNT	1	-0.003761m	0.0135m	
273	91	gpsds	-**-	-**-	10535.5228m	0.0045m	0.19
	1		4413	-**-	10535.5258m	0.0023m	
			HUNT	1	+0.002963m	0.0039m	
274	92	gpsaz	-**-	-**-	45°22'55.9544"	0.0544"	0.07
	1		4413	-**-	45°22'55.9683"	0.0204"	
			BAYF	1	+0.013858"	0.0504"	
275	92	gpsht	-**-	-**-	+1.3325m	0.0173m	0.28
	1		4413	-**-	+1.3507m	0.0056m	
			BAYF	1	+0.018230m	0.0164m	
276	92	gpsds	-**-	-**-	15981.2354m	0.0054m	0.10
	1		4413	-**-	15981.2373m	0.0021m	
			BAYF	1	+0.001920m	0.0049m	
277	93	gpsaz	-**-	-**-	130°26'15.2064"	0.3468"	0.02
	1		4413	-**-	130°26'15.2290"	0.0992"	
			TID1	1	+0.022596"	0.3323"	
278	93	gpsht	-**-	-**-	+1.7702m	0.0446m	0.06
	1		4413	-**-	+1.7799m	0.0115m	
			TID1	1	+0.009634m	0.0431m	
279	93	gpsds	-**-	-**-	7801.2039m	0.0135m	0.09
	1		4413	-**-	7801.1992m	0.0037m	
			TID1	1	-0.004690m	0.0129m	
280	94	gpsaz	-**-	-**-	10°45'21.7049"	0.1698"	0.03
	1		E124	-**-	10°45'21.6854"	0.0590"	
			L124	1	-0.019488"	0.1592"	
281	94	gpsht	-**-	-**-	+107.3713m	0.0172m	0.08
	1		E124	-**-	+107.3662m	0.0052m	
			L124	1	-0.005093m	0.0164m	
282	94	gpsds	-**-	-**-	4887.7998m	0.0052m	0.32
	1		E124	-**-	4887.8059m	0.0020m	
			L124	1	+0.006086m	0.0048m	
283	95	gpsaz	-**-	-**-	110°44'59.3481"	0.5407"	0.05
	1		TID1	-**-	110°44'59.2534"	0.1639"	
			GUAN	1	-0.094774"	0.5153"	
284	95	gpsht	-**-	-**-	-1.3065m	0.0421m	0.01
	1		TID1	-**-	-1.3075m	0.0111m	
			GUAN	1	-0.000967m	0.0406m	

285	95	gpsds	-**-	-**-	5248.2072m	0.0112m	0.04
	1		TID1	-**-	5248.2089m	0.0035m	
			GUAN	1	+0.001743m	0.0106m	
286	96	gpsaz	-**-	-**-	147°27'27.7557"	0.1841"	0.06
	1		GUAN	-**-	147°27'27.7947"	0.0603"	
			4508	1	+0.038962"	0.1739"	
287	96	gpsht	-**-	-**-	+0.1142m	0.0291m	0.16
	1		GUAN	-**-	+0.1316m	0.0078m	
			4508	1	+0.017453m	0.0280m	
288	96	gpsds	-**-	-**-	8540.4672m	0.0097m	0.18
	1		GUAN	-**-	8540.4738m	0.0026m	
			4508	1	+0.006568m	0.0094m	
289	97	gpsaz	-**-	-**-	173°43'22.8912"	0.1254"	0.30
	1		GUAN	-**-	173°43'22.7542"	0.0524"	
			G110	1	-0.137074"	0.1140"	
290	97	gpsht	-**-	-**-	+2.5319m	0.0210m	0.10
	1		GUAN	-**-	+2.5396m	0.0066m	
			G110	1	+0.007647m	0.0200m	
291	97	gpsds	-**-	-**-	7992.0477m	0.0075m	0.11
	1		GUAN	-**-	7992.0506m	0.0025m	
			G110	1	+0.002971m	0.0070m	
292	98	gpsaz	-**-	-**-	78°41'18.8040"	0.2508"	0.28
	1		G110	-**-	78°41'19.0622"	0.0941"	
			4508	1	+0.258239"	0.2325"	
293	98	gpsht	-**-	-**-	-2.4170m	0.0130m	0.20
	1		G110	-**-	-2.4080m	0.0057m	
			4508	1	+0.009071m	0.0117m	
294	98	gpsds	-**-	-**-	3794.0668m	0.0030m	0.04
	1		G110	-**-	3794.0664m	0.0013m	
			4508	1	-0.000427m	0.0028m	
295	99	gpsaz	-**-	-**-	192°07'19.0963"	0.0978"	0.06
	1		G110	-**-	192°07'19.1169"	0.0454"	
			04EH	1	+0.020593"	0.0867"	
296	99	gpsht	-**-	-**-	+174.5773m	0.0118m	0.18
	1		G110	-**-	+174.5850m	0.0053m	
			04EH	1	+0.007648m	0.0106m	
297	99	gpsds	-**-	-**-	6410.3841m	0.0045m	0.02
	1		G110	-**-	6410.3844m	0.0019m	
			04EH	1	+0.000343m	0.0041m	
298	100	gpsaz	-**-	-**-	215°52'37.4518"	0.1544"	0.37
	1		4508	-**-	215°52'37.2331"	0.0453"	
			04EH	1	-0.218743"	0.1476"	

299	100	gpsht	-**-	-**-	+176.9942m	0.0227m	0.01
	1		4508	-**-	+176.9929m	0.0062m	
			04EH	1	-0.001227m	0.0218m	
300	100	gpsds	-**-	-**-	8650.5754m	0.0083m	0.19
	1		4508	-**-	8650.5693m	0.0021m	
			04EH	1	-0.006137m	0.0080m	
301	101	gpsaz	-**-	-**-	78°41'19.3244"	0.3516"	0.20
	1		G110	-**-	78°41'19.0622"	0.0941"	
			4508	1	-0.262178"	0.3387"	
302	101	gpsht	-**-	-**-	-2.4112m	0.0179m	0.05
	1		G110	-**-	-2.4080m	0.0057m	
			4508	1	+0.003231m	0.0170m	
303	101	gpsds	-**-	-**-	3794.0722m	0.0052m	0.29
	1		G110	-**-	3794.0664m	0.0013m	
			4508	1	-0.005806m	0.0050m	
304	102	gpsaz	-**-	-**-	118°14'35.1117"	0.3390"	0.25
	1		4508	-**-	118°14'34.7857"	0.0846"	
			X572	1	-0.325970"	0.3283"	
305	102	gpsht	-**-	-**-	-0.7437m	0.0266m	0.04
	1		4508	-**-	-0.7391m	0.0069m	
			X572	1	+0.004525m	0.0257m	
306	102	gpsds	-**-	-**-	6135.3684m	0.0074m	0.40
	1		4508	-**-	6135.3796m	0.0022m	
			X572	1	+0.011145m	0.0071m	
307	103	gpsaz	-**-	-**-	87°13'08.8113"	0.1708"	0.23
	1		4508	-**-	87°13'08.6645"	0.0611"	
			4509	1	-0.146775"	0.1596"	
308	103	gpsht	-**-	-**-	-0.5962m	0.0196m	0.24
	1		4508	-**-	-0.5787m	0.0069m	
			4509	1	+0.017502m	0.0184m	
309	103	gpsds	-**-	-**-	8971.1735m	0.0054m	0.15
	1		4508	-**-	8971.1765m	0.0019m	
			4509	1	+0.003025m	0.0051m	
310	104	gpsaz	-**-	-**-	46°50'26.2366"	0.1133"	0.51
	1		X572	-**-	46°50'26.0681"	0.0771"	
			4509	1	-0.168524"	0.0830"	
311	104	gpsht	-**-	-**-	+0.1562m	0.0088m	0.15
	1		X572	-**-	+0.1605m	0.0050m	
			4509	1	+0.004295m	0.0073m	
312	104	gpsds	-**-	-**-	4877.3850m	0.0032m	0.06
	1		X572	-**-	4877.3857m	0.0018m	
			4509	1	+0.000688m	0.0027m	

313	105	gpsaz	-**-	-**-	275°01'42.3301"	0.2312"	0.09
	1		4413	-**-	275°01'42.2518"	0.0438"	
			E124	1	-0.078313"	0.2270"	
314	105	gpsht	-**-	-**-	+12.6719m	0.0196m	0.06
	1		4413	-**-	+12.6762m	0.0062m	
			E124	1	+0.004217m	0.0186m	
315	105	gpsds	-**-	-**-	9486.6424m	0.0064m	0.20
	1		4413	-**-	9486.6474m	0.0014m	
			E124	1	+0.005011m	0.0062m	
316	106	gpsaz	-**-	-**-	275°01'42.3047"	0.2196"	0.06
	1		4413	-**-	275°01'42.2518"	0.0438"	
			E124	1	-0.052924"	0.2151"	
317	106	gpsht	-**-	-**-	+12.6791m	0.0293m	0.03
	1		4413	-**-	+12.6762m	0.0062m	
			E124	1	-0.002923m	0.0287m	
318	106	gpsds	-**-	-**-	9486.6386m	0.0094m	0.24
	1		4413	-**-	9486.6474m	0.0014m	
			E124	1	+0.008872m	0.0093m	
319	107	gpsaz	-**-	-**-	123°22'12.7819"	0.1466"	0.10
	1		L124	-**-	123°22'12.8358"	0.0477"	
			4413	1	+0.053917"	0.1386"	
320	107	gpsht	-**-	-**-	-120.0428m	0.0130m	0.01
	1		L124	-**-	-120.0423m	0.0057m	
			4413	1	+0.000495m	0.0117m	
321	107	gpsds	-**-	-**-	10223.8280m	0.0041m	0.10
	1		L124	-**-	10223.8265m	0.0016m	
			4413	1	-0.001535m	0.0038m	
322	108	gpsaz	-**-	-**-	123°22'13.0009"	0.1478"	0.30
	1		L124	-**-	123°22'12.8358"	0.0477"	
			4413	1	-0.165100"	0.1399"	
323	108	gpsht	-**-	-**-	-120.0428m	0.0199m	0.01
	1		L124	-**-	-120.0423m	0.0057m	
			4413	1	+0.000418m	0.0191m	
324	108	gpsds	-**-	-**-	10223.8266m	0.0062m	0.00
	1		L124	-**-	10223.8265m	0.0016m	
			4413	1	-0.000105m	0.0060m	
325	109	gpsaz	-**-	-**-	232°11'08.0257"	0.2654"	0.03
	1		4519	-**-	232°11'08.0527"	0.0610"	
			4537	1	+0.027003"	0.2583"	
326	109	gpsht	-**-	-**-	-0.6774m	0.0185m	0.10
	1		4519	-**-	-0.6704m	0.0054m	
			4537	1	+0.006997m	0.0177m	

327	109	gpsds	-**-	-**-	7511.9340m	0.0083m	0.03
	1		4519	-**-	7511.9350m	0.0020m	
			4537	1	+0.000967m	0.0081m	
328	110	gpsaz	-**-	-**-	173°07'35.9084"	0.1467"	0.13
	1		4519	-**-	173°07'35.9793"	0.0490"	
			ARC3	1	+0.070893"	0.1383"	
329	110	gpsht	-**-	-**-	-1.6543m	0.0133m	0.40
	1		4519	-**-	-1.6353m	0.0055m	
			ARC3	1	+0.019037m	0.0121m	
330	110	gpsds	-**-	-**-	7626.2653m	0.0061m	0.15
	1		4519	-**-	7626.2685m	0.0024m	
			ARC3	1	+0.003241m	0.0056m	
331	111	gpsaz	-**-	-**-	173°07'35.9027"	0.1426"	0.14
	1		4519	-**-	173°07'35.9793"	0.0490"	
			ARC3	1	+0.076630"	0.1340"	
332	111	gpsht	-**-	-**-	-1.6371m	0.0129m	0.04
	1		4519	-**-	-1.6353m	0.0055m	
			ARC3	1	+0.001792m	0.0117m	
333	111	gpsds	-**-	-**-	7626.2667m	0.0068m	0.07
	1		4519	-**-	7626.2685m	0.0024m	
			ARC3	1	+0.001768m	0.0064m	
334	112	gpsaz	-**-	-**-	5°33'32.4976"	0.1795"	0.15
	1		FOOT	-**-	5°33'32.3928"	0.0467"	
			4537	1	-0.104773"	0.1734"	
335	112	gpsht	-**-	-**-	-86.7795m	0.0248m	0.17
	1		FOOT	-**-	-86.7958m	0.0070m	
			4537	1	-0.016282m	0.0238m	
336	112	gpsds	-**-	-**-	10068.5011m	0.0155m	0.07
	1		FOOT	-**-	10068.4966m	0.0033m	
			4537	1	-0.004487m	0.0151m	
337	113	gpsaz	-**-	-**-	5°33'32.4926"	0.1355"	0.20
	1		FOOT	-**-	5°33'32.3928"	0.0467"	
			4537	1	-0.099833"	0.1272"	
338	113	gpsht	-**-	-**-	-86.7920m	0.0183m	0.06
	1		FOOT	-**-	-86.7958m	0.0070m	
			4537	1	-0.003788m	0.0169m	
339	113	gpsds	-**-	-**-	10068.4967m	0.0078m	0.00
	1		FOOT	-**-	10068.4966m	0.0033m	
			4537	1	-0.000076m	0.0070m	
340	114	gpsaz	-**-	-**-	313°59'19.7053"	0.2385"	0.25
	1		4537	-**-	313°59'19.4870"	0.0816"	
			X572	1	-0.218318"	0.2242"	

341	114	gpsht	-**-	-**-	+0.5898m	0.0130m	0.18
	1		4537	-**-	+0.5813m	0.0049m	
			X572	1	-0.008516m	0.0120m	
342	114	gpsds	-**-	-**-	4609.7626m	0.0052m	0.34
	1		4537	-**-	4609.7691m	0.0019m	
			X572	1	+0.006531m	0.0049m	
343	115	gpsaz	-**-	-**-	313°59'19.4579"	0.3257"	0.02
	1		4537	-**-	313°59'19.4870"	0.0816"	
			X572	1	+0.029127"	0.3153"	
344	115	gpsht	-**-	-**-	+0.5986m	0.0168m	0.27
	1		4537	-**-	+0.5813m	0.0049m	
			X572	1	-0.017344m	0.0161m	
345	115	gpsds	-**-	-**-	4609.7605m	0.0098m	0.23
	1		4537	-**-	4609.7691m	0.0019m	
			X572	1	+0.008608m	0.0096m	
346	116	gpsaz	-**-	-**-	222°12'26.3136"	0.1047"	0.02
	1		Z137	-**-	222°12'26.3196"	0.0455"	
			ARC3	1	+0.005933"	0.0942"	
347	116	gpsht	-**-	-**-	-0.7355m	0.0113m	0.15
	1		Z137	-**-	-0.7294m	0.0051m	
			ARC3	1	+0.006145m	0.0101m	
348	116	gpsds	-**-	-**-	8063.8144m	0.0057m	0.01
	1		Z137	-**-	8063.8141m	0.0022m	
			ARC3	1	-0.000211m	0.0052m	
349	117	gpsaz	-**-	-**-	222°12'26.2956"	0.1258"	0.05
	1		Z137	-**-	222°12'26.3196"	0.0455"	
			ARC3	1	+0.023997"	0.1173"	
350	117	gpsht	-**-	-**-	-0.7139m	0.0127m	0.34
	1		Z137	-**-	-0.7294m	0.0051m	
			ARC3	1	-0.015492m	0.0116m	
351	117	gpsds	-**-	-**-	8063.8096m	0.0064m	0.19
	1		Z137	-**-	8063.8141m	0.0022m	
			ARC3	1	+0.004584m	0.0060m	
352	118	gpsaz	-**-	-**-	264°35'24.3530"	0.1669"	0.17
	1		BAYF	-**-	264°35'24.2476"	0.0529"	
			HUNT	1	-0.105377"	0.1583"	
353	118	gpsht	-**-	-**-	-0.9444m	0.0149m	0.27
	1		BAYF	-**-	-0.9297m	0.0062m	
			HUNT	1	+0.014706m	0.0135m	
354	118	gpsds	-**-	-**-	9349.9261m	0.0056m	0.15
	1		BAYF	-**-	9349.9291m	0.0018m	
			HUNT	1	+0.003065m	0.0053m	

355	119	gpsaz	-**-	-**-	264°35'24.2029"	0.1293"	0.10
	1		BAYF	-**-	264°35'24.2476"	0.0529"	
			HUNT	1	+0.044730"	0.1180"	
356	119	gpsht	-**-	-**-	-0.9224m	0.0218m	0.09
	1		BAYF	-**-	-0.9297m	0.0062m	
			HUNT	1	-0.007296m	0.0209m	
357	119	gpsds	-**-	-**-	9349.9237m	0.0047m	0.32
	1		BAYF	-**-	9349.9291m	0.0018m	
			HUNT	1	+0.005419m	0.0043m	
358	120	gpsaz	-**-	-**-	121°31'40.1596"	0.2169"	0.04
	1		M874	-**-	121°31'40.1252"	0.0620"	
			CROT	1	-0.034334"	0.2079"	
359	120	gpsht	-**-	-**-	+162.6426m	0.0226m	0.17
	1		M874	-**-	+162.6281m	0.0070m	
			CROT	1	-0.014483m	0.0215m	
360	120	gpsds	-**-	-**-	9356.2832m	0.0101m	0.09
	1		M874	-**-	9356.2867m	0.0029m	
			CROT	1	+0.003484m	0.0096m	
361	121	gpsaz	-**-	-**-	154°52'02.1081"	0.2425"	0.49
	1		E137	-**-	154°52'01.6670"	0.0802"	
			M874	1	-0.441173"	0.2289"	
362	121	gpsht	-**-	-**-	-4.7450m	0.0142m	0.20
	1		E137	-**-	-4.7347m	0.0053m	
			M874	1	+0.010243m	0.0132m	
363	121	gpsds	-**-	-**-	5814.6009m	0.0057m	0.14
	1		E137	-**-	5814.5979m	0.0022m	
			M874	1	-0.003025m	0.0053m	
364	122	gpsaz	-**-	-**-	154°52'01.9304"	0.1996"	0.36
	1		E137	-**-	154°52'01.6670"	0.0802"	
			M874	1	-0.263456"	0.1827"	
365	122	gpsht	-**-	-**-	-4.7127m	0.0126m	0.48
	1		E137	-**-	-4.7347m	0.0053m	
			M874	1	-0.021998m	0.0115m	
366	122	gpsds	-**-	-**-	5814.5953m	0.0057m	0.12
	1		E137	-**-	5814.5979m	0.0022m	
			M874	1	+0.002586m	0.0052m	
367	123	gpsaz	-**-	-**-	132°52'19.0139"	0.1305"	0.12
	1		ZOAA	-**-	132°52'18.9557"	0.0492"	
			E137	1	-0.058156"	0.1209"	
368	123	gpsht	-**-	-**-	-3.6087m	0.0125m	0.19
	1		ZOAA	-**-	-3.6003m	0.0054m	
			E137	1	+0.008460m	0.0113m	

369	123	gpsds	-**-	-**-	9690.1012m	0.0050m	0.08
	1		ZOAA	-**-	9690.0997m	0.0018m	
			E137	1	-0.001509m	0.0047m	
370	124	gpsaz	-**-	-**-	132°52'18.8896"	0.1321"	0.14
	1		ZOAA	-**-	132°52'18.9557"	0.0492"	
			E137	1	+0.066073"	0.1225"	
371	124	gpsht	-**-	-**-	-3.5859m	0.0123m	0.33
	1		ZOAA	-**-	-3.6003m	0.0054m	
			E137	1	-0.014317m	0.0111m	
372	124	gpsds	-**-	-**-	9690.1027m	0.0047m	0.18
	1		ZOAA	-**-	9690.0997m	0.0018m	
			E137	1	-0.003039m	0.0043m	
373	125	gpsaz	-**-	-**-	66°55'53.0487"	0.2363"	0.22
	1		LOCK	-**-	66°55'53.2425"	0.0756"	
			GOLD	1	+0.193817"	0.2238"	
374	125	gpsht	-**-	-**-	-4.4377m	0.0133m	0.58
	1		LOCK	-**-	-4.4088m	0.0048m	
			GOLD	1	+0.028860m	0.0124m	
375	125	gpsds	-**-	-**-	5785.3507m	0.0042m	0.55
	1		LOCK	-**-	5785.3424m	0.0017m	
			GOLD	1	-0.008311m	0.0038m	
376	126	gpsaz	-**-	-**-	66°02'21.1041"	0.1168"	0.29
	1		L124	-**-	66°02'20.9782"	0.0406"	
			HUNT	1	-0.125975"	0.1095"	
377	126	gpsht	-**-	-**-	-119.6246m	0.0206m	0.04
	1		L124	-**-	-119.6213m	0.0060m	
			HUNT	1	+0.003250m	0.0197m	
378	126	gpsds	-**-	-**-	11595.3566m	0.0072m	0.15
	1		L124	-**-	11595.3606m	0.0022m	
			HUNT	1	+0.004000m	0.0068m	
379	127	gpsaz	-**-	-**-	66°02'20.9384"	0.0996"	0.11
	1		L124	-**-	66°02'20.9782"	0.0406"	
			HUNT	1	+0.039774"	0.0909"	
380	127	gpsht	-**-	-**-	-119.6167m	0.0125m	0.11
	1		L124	-**-	-119.6213m	0.0060m	
			HUNT	1	-0.004602m	0.0110m	
381	127	gpsds	-**-	-**-	11595.3599m	0.0057m	0.03
	1		L124	-**-	11595.3606m	0.0022m	
			HUNT	1	+0.000720m	0.0052m	
382	128	gpsaz	-**-	-**-	289°59'45.6795"	0.0835"	0.12
	1		MHCB	-**-	289°59'45.6432"	0.0350"	
			CROT	1	-0.036205"	0.0759"	

383	128	gpsht	-**-	-**-	-1127.3637m	0.0156m	0.22
	1		MHCB	-**-	-1127.3512m	0.0065m	
			CROT	1	+0.012549m	0.0141m	
384	128	gpsds	-**-	-**-	16423.9725m	0.0057m	0.20
	1		MHCB	-**-	16423.9766m	0.0024m	
			CROT	1	+0.004041m	0.0052m	
385	129	gpsaz	-**-	-**-	156°51'08.0409"	0.0713"	0.20
	1		MONB	-**-	156°51'08.0902"	0.0369"	
			CROT	1	+0.049312"	0.0610"	
386	129	gpsht	-**-	-**-	-615.9544m	0.0127m	0.24
	1		MONB	-**-	-615.9441m	0.0064m	
			CROT	1	+0.010305m	0.0109m	
387	129	gpsds	-**-	-**-	11262.4382m	0.0059m	0.32
	1		MONB	-**-	11262.4316m	0.0031m	
			CROT	1	-0.006552m	0.0051m	
388	130	gpsaz	-**-	-**-	213°00'03.3748"	0.1838"	0.27
	1		MONB	-**-	213°00'03.5654"	0.0517"	
			M874	1	+0.190621"	0.1763"	
389	130	gpsht	-**-	-**-	-778.5756m	0.0141m	0.06
	1		MONB	-**-	-778.5722m	0.0044m	
			M874	1	+0.003451m	0.0134m	
390	130	gpsds	-**-	-**-	6510.1747m	0.0056m	0.18
	1		MONB	-**-	6510.1785m	0.0019m	
			M874	1	+0.003805m	0.0052m	
391	131	gpsaz	-**-	-**-	268°09'07.7054"	0.2060"	0.10
	1		MONB	-**-	268°09'07.6321"	0.0785"	
			E137	1	-0.073282"	0.1905"	
392	131	gpsht	-**-	-**-	-773.8468m	0.0122m	0.21
	1		MONB	-**-	-773.8375m	0.0050m	
			E137	1	+0.009334m	0.0111m	
393	131	gpsds	-**-	-**-	6014.6812m	0.0047m	0.49
	1		MONB	-**-	6014.6896m	0.0019m	
			E137	1	+0.008374m	0.0043m	
394	132	gpsaz	-**-	-**-	213°00'03.5739"	0.1342"	0.02
	1		MONB	-**-	213°00'03.5654"	0.0517"	
			M874	1	-0.008556"	0.1239"	
395	132	gpsht	-**-	-**-	-778.5638m	0.0115m	0.20
	1		MONB	-**-	-778.5722m	0.0044m	
			M874	1	-0.008348m	0.0107m	
396	132	gpsds	-**-	-**-	6510.1779m	0.0057m	0.03
	1		MONB	-**-	6510.1785m	0.0019m	
			M874	1	+0.000571m	0.0054m	

397	133	gpsaz	-**-	-**-	213°00'03.6814"	0.2313"	0.13
	1		MONB	-**-	213°00'03.5654"	0.0517"	
			M874	1	-0.116019"	0.2255"	
398	133	gpsht	-**-	-**-	-778.5640m	0.0171m	0.13
	1		MONB	-**-	-778.5722m	0.0044m	
			M874	1	-0.008203m	0.0165m	
399	133	gpsds	-**-	-**-	6510.1749m	0.0074m	0.12
	1		MONB	-**-	6510.1785m	0.0019m	
			M874	1	+0.003538m	0.0071m	
400	134	gpsaz	-**-	-**-	268°09'07.8029"	0.1901"	0.25
	1		MONB	-**-	268°09'07.6321"	0.0785"	
			E137	1	-0.170800"	0.1732"	
401	134	gpsht	-**-	-**-	-773.8040m	0.0121m	0.77
	1		MONB	-**-	-773.8375m	0.0050m	
			E137	1	-0.033442m	0.0110m	
402	134	gpsds	-**-	-**-	6014.6799m	0.0052m	0.50
	1		MONB	-**-	6014.6896m	0.0019m	
			E137	1	+0.009636m	0.0048m	
403	135	gpsaz	-**-	-**-	159°46'55.1461"	0.1783"	0.53
	1		CHAB	-**-	159°46'55.5122"	0.0418"	
			N119	1	+0.366085"	0.1733"	
404	135	gpsht	-**-	-**-	-224.1704m	0.0169m	0.08
	1		CHAB	-**-	-224.1753m	0.0048m	
			N119	1	-0.004872m	0.0162m	
405	135	gpsds	-**-	-**-	8077.6068m	0.0068m	0.04
	1		CHAB	-**-	8077.6058m	0.0018m	
			N119	1	-0.000954m	0.0066m	
406	136	gpsaz	-**-	-**-	321°07'27.2222"	0.2230"	0.20
	1		WINT	-**-	321°07'27.0534"	0.0662"	
			4688	1	-0.168749"	0.2129"	
407	136	gpsht	-**-	-**-	-1.6145m	0.0154m	0.18
	1		WINT	-**-	-1.6040m	0.0054m	
			4688	1	+0.010519m	0.0144m	
408	136	gpsds	-**-	-**-	6876.0675m	0.0060m	0.01
	1		WINT	-**-	6876.0676m	0.0019m	
			4688	1	+0.000116m	0.0057m	
409	137	gpsaz	-**-	-**-	247°23'11.2935"	0.2693"	0.12
	1		CHAB	-**-	247°23'11.4148"	0.0654"	
			4688	1	+0.121228"	0.2612"	
410	137	gpsht	-**-	-**-	-244.3369m	0.0204m	0.28
	1		CHAB	-**-	-244.3587m	0.0055m	
			4688	1	-0.021764m	0.0196m	

411	137	gpsds	-**-	-**-	6705.8533m	0.0091m	0.53
	1		CHAB	-**-	6705.8720m	0.0020m	
			4688	1	+0.018735m	0.0088m	
412	138	gpsaz	-**-	-**-	85°39'58.3594"	0.1913"	0.41
	1		WINT	-**-	85°39'58.6367"	0.0835"	
			N119	1	+0.277330"	0.1721"	
413	138	gpsht	-**-	-**-	+18.5755m	0.0091m	0.12
	1		WINT	-**-	+18.5794m	0.0045m	
			N119	1	+0.003882m	0.0080m	
414	138	gpsds	-**-	-**-	4680.7295m	0.0030m	0.45
	1		WINT	-**-	4680.7341m	0.0015m	
			N119	1	+0.004644m	0.0026m	
415	139	gpsaz	-**-	-**-	159°46'55.3725"	0.1107"	0.34
	1		CHAB	-**-	159°46'55.5122"	0.0418"	
			N119	1	+0.139654"	0.1025"	
416	139	gpsht	-**-	-**-	-224.1654m	0.0120m	0.23
	1		CHAB	-**-	-224.1753m	0.0048m	
			N119	1	-0.009891m	0.0110m	
417	139	gpsds	-**-	-**-	8077.6087m	0.0052m	0.15
	1		CHAB	-**-	8077.6058m	0.0018m	
			N119	1	-0.002827m	0.0049m	
418	140	gpsaz	-**-	-**-	321°07'27.0082"	0.1793"	0.07
	1		WINT	-**-	321°07'27.0534"	0.0662"	
			4688	1	+0.045222"	0.1666"	
419	140	gpsht	-**-	-**-	-1.6112m	0.0147m	0.13
	1		WINT	-**-	-1.6040m	0.0054m	
			4688	1	+0.007198m	0.0137m	
420	140	gpsds	-**-	-**-	6876.0690m	0.0055m	0.07
	1		WINT	-**-	6876.0676m	0.0019m	
			4688	1	-0.001433m	0.0051m	
421	141	gpsaz	-**-	-**-	247°23'11.3683"	0.2083"	0.06
	1		CHAB	-**-	247°23'11.4148"	0.0654"	
			4688	1	+0.046450"	0.1978"	
422	141	gpsht	-**-	-**-	-244.3467m	0.0158m	0.20
	1		CHAB	-**-	-244.3587m	0.0055m	
			4688	1	-0.011956m	0.0148m	
423	141	gpsds	-**-	-**-	6705.8733m	0.0058m	0.06
	1		CHAB	-**-	6705.8720m	0.0020m	
			4688	1	-0.001309m	0.0055m	
424	142	gpsaz	-**-	-**-	61°47'47.5824"	0.3269"	0.00
	1		SUAA	-**-	61°47'47.5779"	0.0651"	
			4537	1	-0.004493"	0.3204"	

425	142	gpsht	-**-	-**-	-51.2939m	0.0177m	0.25
	1		SUAA	-**-	-51.2769m	0.0046m	
			4537	1	+0.016980m	0.0172m	
426	142	gpsds	-**-	-**-	6126.7397m	0.0074m	0.25
	1		SUAA	-**-	6126.7470m	0.0015m	
			4537	1	+0.007236m	0.0073m	
427	143	gpsaz	-**-	-**-	61°47'47.5409"	0.5165"	0.02
	1		SUAA	-**-	61°47'47.5779"	0.0651"	
			4537	1	+0.037041"	0.5124"	
428	143	gpsht	-**-	-**-	-51.2845m	0.0244m	0.08
	1		SUAA	-**-	-51.2769m	0.0046m	
			4537	1	+0.007587m	0.0239m	
429	143	gpsds	-**-	-**-	6126.7451m	0.0079m	0.06
	1		SUAA	-**-	6126.7470m	0.0015m	
			4537	1	+0.001924m	0.0077m	
430	144	gpsaz	-**-	-**-	61°47'47.6821"	0.9852"	0.03
	1		SUAA	-**-	61°47'47.5779"	0.0651"	
			4537	1	-0.104234"	0.9830"	
431	144	gpsht	-**-	-**-	-51.2881m	0.0653m	0.04
	1		SUAA	-**-	-51.2769m	0.0046m	
			4537	1	+0.011154m	0.0651m	
432	144	gpsds	-**-	-**-	6126.7392m	0.0257m	0.08
	1		SUAA	-**-	6126.7470m	0.0015m	
			4537	1	+0.007806m	0.0256m	
433	145	gpsaz	-**-	-**-	61°47'47.7569"	0.2375"	0.20
	1		SUAA	-**-	61°47'47.5779"	0.0651"	
			4537	1	-0.178987"	0.2283"	
434	145	gpsht	-**-	-**-	-51.2709m	0.0165m	0.10
	1		SUAA	-**-	-51.2769m	0.0046m	
			4537	1	-0.006051m	0.0159m	
435	145	gpsds	-**-	-**-	6126.7403m	0.0061m	0.28
	1		SUAA	-**-	6126.7470m	0.0015m	
			4537	1	+0.006681m	0.0059m	
436	146	gpsaz	-**-	-**-	68°33'36.2806"	0.1098"	0.00
	1		04EH	-**-	68°33'36.2824"	0.0428"	
			X572	1	+0.001845"	0.1012"	
437	146	gpsht	-**-	-**-	-177.7311m	0.0128m	0.02
	1		04EH	-**-	-177.7321m	0.0057m	
			X572	1	-0.000974m	0.0115m	
438	146	gpsds	-**-	-**-	11250.6223m	0.0040m	0.17
	1		04EH	-**-	11250.6248m	0.0018m	
			X572	1	+0.002487m	0.0036m	

439	147	gpsaz	-**-	-**-	86°11'58.1845"	0.0870"	0.13
	1		04EH	-**-	86°11'58.2262"	0.0336"	
			4537	1	+0.041688"	0.0803"	
440	147	gpsht	-**-	-**-	-178.3211m	0.0136m	0.16
	1		04EH	-**-	-178.3133m	0.0053m	
			4537	1	+0.007823m	0.0125m	
441	147	gpsds	-**-	-**-	13824.4130m	0.0042m	0.11
	1		04EH	-**-	13824.4112m	0.0016m	
			4537	1	-0.001749m	0.0039m	
442	148	gpsaz	-**-	-**-	103°17'49.1111"	0.1293"	0.41
	1		04EH	-**-	103°17'49.3100"	0.0419"	
			SUAA	1	+0.198961"	0.1224"	
443	148	gpsht	-**-	-**-	-127.0374m	0.0121m	0.02
	1		04EH	-**-	-127.0364m	0.0047m	
			SUAA	1	+0.000971m	0.0112m	
444	148	gpsds	-**-	-**-	8628.9036m	0.0041m	0.62
	1		04EH	-**-	8628.9132m	0.0013m	
			SUAA	1	+0.009564m	0.0039m	
445	149	gpsaz	-**-	-**-	61°47'47.8082"	0.2193"	0.28
	1		SUAA	-**-	61°47'47.5779"	0.0651"	
			4537	1	-0.230284"	0.2094"	
446	149	gpsht	-**-	-**-	-51.2818m	0.0151m	0.09
	1		SUAA	-**-	-51.2769m	0.0046m	
			4537	1	+0.004881m	0.0144m	
447	149	gpsds	-**-	-**-	6126.7464m	0.0048m	0.03
	1		SUAA	-**-	6126.7470m	0.0015m	
			4537	1	+0.000565m	0.0045m	
448	150	gpsaz	-**-	-**-	313°59'19.2789"	0.1876"	0.31
	1		4537	-**-	313°59'19.4870"	0.0816"	
			X572	1	+0.208171"	0.1689"	
449	150	gpsht	-**-	-**-	+0.5798m	0.0120m	0.03
	1		4537	-**-	+0.5813m	0.0049m	
			X572	1	+0.001425m	0.0110m	
450	150	gpsds	-**-	-**-	4609.7539m	0.0050m	0.83
	1		4537	-**-	4609.7691m	0.0019m	
			X572	1	+0.015259m	0.0047m	
451	151	gpsaz	-**-	-**-	68°33'36.2459"	0.0999"	0.10
	1		04EH	-**-	68°33'36.2824"	0.0428"	
			X572	1	+0.036505"	0.0903"	
452	151	gpsht	-**-	-**-	-177.7421m	0.0152m	0.18
	1		04EH	-**-	-177.7321m	0.0057m	
			X572	1	+0.010057m	0.0141m	

453	151	gpsds	-**-	-**-	11250.6231m	0.0051m	0.09
	1		04EH	-**-	11250.6248m	0.0018m	
			X572	1	+0.001710m	0.0047m	
454	152	gpsaz	-**-	-**-	86°11'58.3403"	0.1166"	0.26
	1		04EH	-**-	86°11'58.2262"	0.0336"	
			4537	1	-0.114091"	0.1116"	
455	152	gpsht	-**-	-**-	-178.3175m	0.0219m	0.05
	1		04EH	-**-	-178.3133m	0.0053m	
			4537	1	+0.004185m	0.0212m	
456	152	gpsds	-**-	-**-	13824.4184m	0.0066m	0.28
	1		04EH	-**-	13824.4112m	0.0016m	
			4537	1	-0.007188m	0.0064m	
457	153	gpsaz	-**-	-**-	103°17'49.4094"	0.1034"	0.26
	1		04EH	-**-	103°17'49.3100"	0.0419"	
			SUAA	1	-0.099366"	0.0946"	
458	153	gpsht	-**-	-**-	-127.0405m	0.0109m	0.11
	1		04EH	-**-	-127.0364m	0.0047m	
			SUAA	1	+0.004136m	0.0099m	
459	153	gpsds	-**-	-**-	8628.9184m	0.0032m	0.46
	1		04EH	-**-	8628.9132m	0.0013m	
			SUAA	1	-0.005265m	0.0029m	
460	154	gpsaz	-**-	-**-	61°47'47.7110"	0.2535"	0.14
	1		SUAA	-**-	61°47'47.5779"	0.0651"	
			4537	1	-0.133123"	0.2450"	
461	154	gpsht	-**-	-**-	-51.2792m	0.0210m	0.03
	1		SUAA	-**-	-51.2769m	0.0046m	
			4537	1	+0.002278m	0.0205m	
462	154	gpsds	-**-	-**-	6126.7485m	0.0071m	0.06
	1		SUAA	-**-	6126.7470m	0.0015m	
			4537	1	-0.001525m	0.0070m	
463	155	gpsaz	-**-	-**-	313°59'19.2577"	0.2793"	0.22
	1		4537	-**-	313°59'19.4870"	0.0816"	
			X572	1	+0.229308"	0.2672"	
464	155	gpsht	-**-	-**-	+0.5888m	0.0166m	0.12
	1		4537	-**-	+0.5813m	0.0049m	
			X572	1	-0.007590m	0.0158m	
465	155	gpsds	-**-	-**-	4609.7782m	0.0056m	0.44
	1		4537	-**-	4609.7691m	0.0019m	
			X572	1	-0.009084m	0.0052m	
466	156	gpsaz	-**-	-**-	345°53'00.8743"	0.1517"	0.42
	1		4688	-**-	345°53'00.6598"	0.0794"	
			04FH	1	-0.214529"	0.1293"	

467	156	gpsht	-**-	-**-	+0.9186m	0.0134m	0.12
	1		4688	-**-	+0.9244m	0.0061m	
			04FH	1	+0.005850m	0.0119m	
468	156	gpsds	-**-	-**-	5616.5203m	0.0051m	0.19
	1		4688	-**-	5616.5169m	0.0025m	
			04FH	1	-0.003395m	0.0044m	
469	157	gpsaz	-**-	-**-	345°53'00.6842"	0.2310"	0.03
	1		4688	-**-	345°53'00.6598"	0.0794"	
			04FH	1	-0.024383"	0.2169"	
470	157	gpsht	-**-	-**-	+0.9377m	0.0146m	0.25
	1		4688	-**-	+0.9244m	0.0061m	
			04FH	1	-0.013253m	0.0132m	
471	157	gpsds	-**-	-**-	5616.5193m	0.0068m	0.10
	1		4688	-**-	5616.5169m	0.0025m	
			04FH	1	-0.002426m	0.0063m	
472	158	gpsaz	-**-	-**-	232°11'07.9442"	0.3308"	0.08
	1		4519	-**-	232°11'08.0527"	0.0610"	
			4537	1	+0.108446"	0.3251"	
473	158	gpsht	-**-	-**-	-0.6723m	0.0242m	0.02
	1		4519	-**-	-0.6704m	0.0054m	
			4537	1	+0.001939m	0.0236m	
474	158	gpsds	-**-	-**-	7511.9361m	0.0084m	0.04
	1		4519	-**-	7511.9350m	0.0020m	
			4537	1	-0.001189m	0.0082m	
475	159	gpsaz	-**-	-**-	61°47'47.4520"	0.4833"	0.07
	1		SUAA	-**-	61°47'47.5779"	0.0651"	
			4537	1	+0.125917"	0.4789"	
476	159	gpsht	-**-	-**-	-51.2750m	0.0269m	0.02
	1		SUAA	-**-	-51.2769m	0.0046m	
			4537	1	-0.001923m	0.0265m	
477	159	gpsds	-**-	-**-	6126.7473m	0.0077m	0.01
	1		SUAA	-**-	6126.7470m	0.0015m	
			4537	1	-0.000271m	0.0075m	
478	160	gpsaz	-**-	-**-	121°31'40.2029"	0.1334"	0.17
	1		M874	-**-	121°31'40.1252"	0.0620"	
			CROT	1	-0.077633"	0.1181"	
479	160	gpsht	-**-	-**-	+162.6335m	0.0182m	0.08
	1		M874	-**-	+162.6281m	0.0070m	
			CROT	1	-0.005396m	0.0168m	
480	160	gpsds	-**-	-**-	9356.2902m	0.0069m	0.14
	1		M874	-**-	9356.2867m	0.0029m	
			CROT	1	-0.003544m	0.0063m	

481	161	gpsaz	-**-	-**-	109°53'24.9279"	0.1169"	0.21
	1		CROT	-**-	109°53'24.8366"	0.0350"	
			MHCB	1	-0.091227"	0.1116"	
482	161	gpsht	-**-	-**-	+1127.3401m	0.0185m	0.16
	1		CROT	-**-	+1127.3512m	0.0065m	
			MHCB	1	+0.011058m	0.0173m	
483	161	gpsds	-**-	-**-	16423.9907m	0.0074m	0.51
	1		CROT	-**-	16423.9766m	0.0024m	
			MHCB	1	-0.014099m	0.0070m	
484	162	gpsaz	-**-	-**-	156°51'08.1098"	0.1022"	0.05
	1		MONB	-**-	156°51'08.0902"	0.0369"	
			CROT	1	-0.019560"	0.0953"	
485	162	gpsht	-**-	-**-	-615.9409m	0.0176m	0.05
	1		MONB	-**-	-615.9441m	0.0064m	
			CROT	1	-0.003219m	0.0164m	
486	162	gpsds	-**-	-**-	11262.4213m	0.0108m	0.25
	1		MONB	-**-	11262.4316m	0.0031m	
			CROT	1	+0.010325m	0.0103m	
487	163	gpsaz	-**-	-**-	242°07'05.7969"	0.2436"	0.09
	1		CROT	-**-	242°07'05.8739"	0.0876"	
			SPED	1	+0.076994"	0.2273"	
488	163	gpsht	-**-	-**-	-149.1020m	0.0308m	0.13
	1		CROT	-**-	-149.0867m	0.0079m	
			SPED	1	+0.015292m	0.0298m	
489	163	gpsds	-**-	-**-	9035.2728m	0.0126m	0.10
	1		CROT	-**-	9035.2776m	0.0027m	
			SPED	1	+0.004738m	0.0123m	
490	164	gpsaz	-**-	-**-	242°07'05.8255"	0.1922"	0.07
	1		CROT	-**-	242°07'05.8739"	0.0876"	
			SPED	1	+0.048366"	0.1711"	
491	164	gpsht	-**-	-**-	-149.0837m	0.0186m	0.04
	1		CROT	-**-	-149.0867m	0.0079m	
			SPED	1	-0.003011m	0.0169m	
492	164	gpsds	-**-	-**-	9035.2783m	0.0058m	0.04
	1		CROT	-**-	9035.2776m	0.0027m	
			SPED	1	-0.000770m	0.0052m	
493	165	gpsaz	-**-	-**-	66°55'52.7620"	0.4660"	0.26
	1		LOCK	-**-	66°55'53.2425"	0.0756"	
			GOLD	1	+0.480477"	0.4599"	
494	165	gpsht	-**-	-**-	-4.4255m	0.0316m	0.13
	1		LOCK	-**-	-4.4088m	0.0048m	
			GOLD	1	+0.016682m	0.0312m	

495	165	gpsds	-**-	-**-	5785.3524m	0.0113m	0.23
	1		LOCK	-**-	5785.3424m	0.0017m	
			GOLD	1	-0.010019m	0.0112m	
496	166	gpsaz	-**-	-**-	213°00'03.4769"	0.1407"	0.17
	1		MONB	-**-	213°00'03.5654"	0.0517"	
			M874	1	+0.088457"	0.1308"	
497	166	gpsht	-**-	-**-	-778.5565m	0.0114m	0.37
	1		MONB	-**-	-778.5722m	0.0044m	
			M874	1	-0.015689m	0.0106m	
498	166	gpsds	-**-	-**-	6510.1794m	0.0056m	0.04
	1		MONB	-**-	6510.1785m	0.0019m	
			M874	1	-0.000883m	0.0053m	
499	167	gpsaz	-**-	-**-	87°32'40.4725"	0.1527"	0.30
	1		MOON	-**-	87°32'40.6504"	0.0234"	
			04EH	1	+0.177910"	0.1509"	
500	167	gpsht	-**-	-**-	+158.7684m	0.0149m	0.20
	1		MOON	-**-	+158.7794m	0.0049m	
			04EH	1	+0.011026m	0.0141m	
501	167	gpsds	-**-	-**-	15483.1821m	0.0041m	0.00
	1		MOON	-**-	15483.1820m	0.0013m	
			04EH	1	-0.000051m	0.0039m	
502	168	gpsaz	-**-	-**-	87°32'40.7157"	0.0482"	0.39
	1		MOON	-**-	87°32'40.6504"	0.0234"	
			04EH	1	-0.065297"	0.0421"	
503	168	gpsht	-**-	-**-	+158.7869m	0.0101m	0.21
	1		MOON	-**-	+158.7794m	0.0049m	
			04EH	1	-0.007510m	0.0089m	
504	168	gpsds	-**-	-**-	15483.1813m	0.0029m	0.07
	1		MOON	-**-	15483.1820m	0.0013m	
			04EH	1	+0.000742m	0.0026m	
505	169	gpsaz	-**-	-**-	290°47'40.1031"	0.2778"	0.17
	1		CHAB	-**-	290°47'39.9257"	0.0636"	
			04FH	1	-0.177416"	0.2704"	
506	169	gpsht	-**-	-**-	-243.4268m	0.0296m	0.06
	1		CHAB	-**-	-243.4343m	0.0058m	
			04FH	1	-0.007455m	0.0291m	
507	169	gpsds	-**-	-**-	8082.5651m	0.0105m	0.13
	1		CHAB	-**-	8082.5704m	0.0017m	
			04FH	1	+0.005355m	0.0104m	
508	170	gpsaz	-**-	-**-	290°47'40.0784"	0.1268"	0.35
	1		CHAB	-**-	290°47'39.9257"	0.0636"	
			04FH	1	-0.152710"	0.1097"	

509	170	gpsht	-**-	-**-	-243.4391m	0.0109m	0.13
	1		CHAB	-**-	-243.4343m	0.0058m	
			04FH	1	+0.004848m	0.0093m	
510	170	gpsds	-**-	-**-	8082.5658m	0.0034m	0.39
	1		CHAB	-**-	8082.5704m	0.0017m	
			04FH	1	+0.004628m	0.0030m	
511	171	gpsaz	-**-	-**-	182°07'35.9329"	0.1907"	0.03
	1		4509	-**-	182°07'35.9581"	0.0474"	
			4537	1	+0.025200"	0.1847"	
512	171	gpsht	-**-	-**-	-0.7466m	0.0262m	0.05
	1		4509	-**-	-0.7417m	0.0048m	
			4537	1	+0.004877m	0.0258m	
513	171	gpsds	-**-	-**-	6540.9338m	0.0150m	0.13
	1		4509	-**-	6540.9260m	0.0022m	
			4537	1	-0.007861m	0.0148m	
514	172	gpsaz	-**-	-**-	182°07'36.1100"	0.2939"	0.13
	1		4509	-**-	182°07'35.9581"	0.0474"	
			4537	1	-0.151886"	0.2901"	
515	172	gpsht	-**-	-**-	-0.7543m	0.0216m	0.15
	1		4509	-**-	-0.7417m	0.0048m	
			4537	1	+0.012594m	0.0211m	
516	172	gpsds	-**-	-**-	6540.9319m	0.0115m	0.13
	1		4509	-**-	6540.9260m	0.0022m	
			4537	1	-0.005921m	0.0113m	
517	173	gpsaz	-**-	-**-	2°07'29.9261"	0.1503"	0.04
	1		4537	-**-	2°07'29.9486"	0.0474"	
			4509	1	+0.022442"	0.1426"	
518	173	gpsht	-**-	-**-	+0.7393m	0.0156m	0.04
	1		4537	-**-	+0.7417m	0.0048m	
			4509	1	+0.002476m	0.0149m	
519	173	gpsds	-**-	-**-	6540.9264m	0.0062m	0.02
	1		4537	-**-	6540.9260m	0.0022m	
			4509	1	-0.000398m	0.0058m	
520	174	gpsaz	-**-	-**-	2°07'30.1416"	0.1736"	0.29
	1		4537	-**-	2°07'29.9486"	0.0474"	
			4509	1	-0.193067"	0.1670"	
521	174	gpsht	-**-	-**-	+0.7463m	0.0225m	0.05
	1		4537	-**-	+0.7417m	0.0048m	
			4509	1	-0.004555m	0.0219m	
522	174	gpsds	-**-	-**-	6540.9255m	0.0069m	0.02
	1		4537	-**-	6540.9260m	0.0022m	
			4509	1	+0.000430m	0.0065m	

523	175	gpsaz	-**-	-**-	83°37'45.6015"	0.2355"	0.01
	1		Z137	-**-	83°37'45.6103"	0.1189"	
			E137	1	+0.008725"	0.2033"	
524	175	gpsht	-**-	-**-	+7.6357m	0.0098m	0.17
	1		Z137	-**-	+7.6300m	0.0048m	
			E137	1	-0.005698m	0.0085m	
525	175	gpsds	-**-	-**-	3456.9619m	0.0041m	0.27
	1		Z137	-**-	3456.9658m	0.0017m	
			E137	1	+0.003910m	0.0037m	
526	176	gpsaz	-**-	-**-	83°37'45.9714"	0.2206"	0.49
	1		Z137	-**-	83°37'45.6103"	0.1189"	
			E137	1	-0.361156"	0.1857"	
527	176	gpsht	-**-	-**-	+7.6148m	0.0084m	0.56
	1		Z137	-**-	+7.6300m	0.0048m	
			E137	1	+0.015221m	0.0069m	
528	176	gpsds	-**-	-**-	3456.9566m	0.0029m	0.97
	1		Z137	-**-	3456.9658m	0.0017m	
			E137	1	+0.009193m	0.0024m	
529	177	gpsaz	-**-	-**-	148°08'11.9009"	0.2162"	0.28
	1		SUAA	-**-	148°08'11.6698"	0.0633"	
			FOOT	1	-0.231031"	0.2067"	
530	177	gpsht	-**-	-**-	+35.5077m	0.0244m	0.12
	1		SUAA	-**-	+35.5189m	0.0069m	
			FOOT	1	+0.011138m	0.0235m	
531	177	gpsds	-**-	-**-	8390.5114m	0.0103m	0.04
	1		SUAA	-**-	8390.5130m	0.0030m	
			FOOT	1	+0.001633m	0.0098m	
532	178	gpsaz	-**-	-**-	148°08'11.7288"	0.1406"	0.12
	1		SUAA	-**-	148°08'11.6698"	0.0633"	
			FOOT	1	-0.059019"	0.1255"	
533	178	gpsht	-**-	-**-	+35.4889m	0.0146m	0.58
	1		SUAA	-**-	+35.5189m	0.0069m	
			FOOT	1	+0.029943m	0.0129m	
534	178	gpsds	-**-	-**-	8390.5104m	0.0071m	0.10
	1		SUAA	-**-	8390.5130m	0.0030m	
			FOOT	1	+0.002623m	0.0064m	
535	179	gpsaz	-**-	-**-	136°17'54.4914"	0.2293"	0.10
	1		WINT	-**-	136°17'54.5719"	0.0844"	
			L132	1	+0.080476"	0.2132"	
536	179	gpsht	-**-	-**-	-1.3163m	0.0202m	0.10
	1		WINT	-**-	-1.3086m	0.0069m	
			L132	1	+0.007639m	0.0189m	

537	179	gpsds	-**-	-**-	6831.8781m	0.0062m	0.05
	1		WINT	-**-	6831.8770m	0.0023m	
			L132	1	-0.001102m	0.0058m	
538	180	gpsaz	-**-	-**-	136°17'54.4891"	0.2679"	0.08
	1		WINT	-**-	136°17'54.5719"	0.0844"	
			L132	1	+0.082782"	0.2542"	
539	180	gpsht	-**-	-**-	-1.3416m	0.0202m	0.44
	1		WINT	-**-	-1.3086m	0.0069m	
			L132	1	+0.032986m	0.0190m	
540	180	gpsds	-**-	-**-	6831.8702m	0.0070m	0.26
	1		WINT	-**-	6831.8770m	0.0023m	
			L132	1	+0.006815m	0.0067m	
541	181	gpsaz	-**-	-**-	53°24'02.9027"	0.1676"	0.28
	1		MISS	-**-	53°24'03.0765"	0.0605"	
			M874	1	+0.173856"	0.1563"	
542	181	gpsht	-**-	-**-	-2.9883m	0.0146m	0.51
	1		MISS	-**-	-2.9610m	0.0055m	
			M874	1	+0.027293m	0.0135m	
543	181	gpsds	-**-	-**-	8788.2977m	0.0047m	0.27
	1		MISS	-**-	8788.2932m	0.0020m	
			M874	1	-0.004460m	0.0042m	
544	182	gpsaz	-**-	-**-	53°24'02.8719"	0.2072"	0.26
	1		MISS	-**-	53°24'03.0765"	0.0605"	
			M874	1	+0.204658"	0.1982"	
545	182	gpsht	-**-	-**-	-2.9646m	0.0179m	0.05
	1		MISS	-**-	-2.9610m	0.0055m	
			M874	1	+0.003588m	0.0170m	
546	182	gpsds	-**-	-**-	8788.2984m	0.0067m	0.20
	1		MISS	-**-	8788.2932m	0.0020m	
			M874	1	-0.005210m	0.0064m	
547	183	gpsaz	-**-	-**-	298°53'24.8299"	0.1337"	0.13
	1		SPED	-**-	298°53'24.8875"	0.0748"	
			MISS	1	+0.057617"	0.1108"	
548	183	gpsht	-**-	-**-	-10.5599m	0.0123m	0.50
	1		SPED	-**-	-10.5803m	0.0067m	
			MISS	1	-0.020461m	0.0104m	
549	183	gpsds	-**-	-**-	8055.1848m	0.0057m	0.08
	1		SPED	-**-	8055.1864m	0.0029m	
			MISS	1	+0.001646m	0.0049m	
550	184	gpsaz	-**-	-**-	118°50'30.6784"	0.2007"	0.25
	1		MISS	-**-	118°50'30.8622"	0.0748"	
			SPED	1	+0.183746"	0.1863"	

551	184	gpsht		-**-	-**-	+10.5861m	0.0150m	0.11
	1			MISS	-**-	+10.5803m	0.0067m	
				SPED	1	-0.005800m	0.0134m	
552	184	gpsds		-**-	-**-	8055.1791m	0.0066m	0.31
	1			MISS	-**-	8055.1864m	0.0029m	
				SPED	1	+0.007340m	0.0059m	
553	185	gpsaz		-**-	-**-	85°39'58.5821"	0.1704"	0.09
	1			WINT	-**-	85°39'58.6367"	0.0835"	
				N119	1	+0.054574"	0.1485"	
554	185	gpsht		-**-	-**-	+18.5630m	0.0103m	0.45
	1			WINT	-**-	+18.5794m	0.0045m	
				N119	1	+0.016444m	0.0093m	
555	185	gpsds		-**-	-**-	4680.7182m	0.0039m	1.11
	1			WINT	-**-	4680.7341m	0.0015m	
				N119	1	+0.015899m	0.0036m	
556	186	gpsaz		-**-	-**-	256°05'58.9680"	0.2908"	0.37
	1			M874	-**-	256°05'58.5542"	0.0746"	
				GOLD	1	-0.413799"	0.2810"	
557	186	gpsht		-**-	-**-	+1.6737m	0.0211m	0.06
	1			M874	-**-	+1.6688m	0.0051m	
				GOLD	1	-0.004911m	0.0205m	
558	186	gpsds		-**-	-**-	6312.8770m	0.0097m	0.07
	1			M874	-**-	6312.8797m	0.0018m	
				GOLD	1	+0.002743m	0.0095m	
559	187	gpsaz		-**-	-**-	115°58'40.8271"	0.1000"	0.13
	1			ZOAA	-**-	115°58'40.7762"	0.0303"	
				MONB	1	-0.050875"	0.0953"	
560	187	gpsht		-**-	-**-	+770.2278m	0.0156m	0.16
	1			ZOAA	-**-	+770.2372m	0.0051m	
				MONB	1	+0.009421m	0.0147m	
561	187	gpsds		-**-	-**-	14586.7012m	0.0036m	0.11
	1			ZOAA	-**-	14586.6998m	0.0015m	
				MONB	1	-0.001447m	0.0033m	
562	188	gpsaz		-**-	-**-	115°58'40.9152"	0.0855"	0.44
	1			ZOAA	-**-	115°58'40.7762"	0.0303"	
				MONB	1	-0.138978"	0.0799"	
563	188	gpsht		-**-	-**-	+770.2457m	0.0143m	0.16
	1			ZOAA	-**-	+770.2372m	0.0051m	
				MONB	1	-0.008447m	0.0134m	
564	188	gpsds		-**-	-**-	14586.6977m	0.0043m	0.13
	1			ZOAA	-**-	14586.6998m	0.0015m	
				MONB	1	+0.002054m	0.0040m	

565	189	gpsaz	-**-	-**-	93°16'23.3940"	0.0636"	0.11
	1		SPED	-**-	93°16'23.4188"	0.0278"	
			MHCB	1	+0.024792"	0.0572"	
566	189	gpsht	-**-	-**-	+1276.4382m	0.0146m	0.00
	1		SPED	-**-	+1276.4379m	0.0066m	
			MHCB	1	-0.000224m	0.0130m	
567	189	gpsds	-**-	-**-	23470.2085m	0.0052m	0.39
	1		SPED	-**-	23470.2157m	0.0023m	
			MHCB	1	+0.007266m	0.0046m	
568	190	gpsaz	-**-	-**-	93°16'23.4282"	0.0791"	0.03
	1		SPED	-**-	93°16'23.4188"	0.0278"	
			MHCB	1	-0.009408"	0.0740"	
569	190	gpsht	-**-	-**-	+1276.4114m	0.0167m	0.44
	1		SPED	-**-	+1276.4379m	0.0066m	
			MHCB	1	+0.026531m	0.0153m	
570	190	gpsds	-**-	-**-	23470.2263m	0.0065m	0.44
	1		SPED	-**-	23470.2157m	0.0023m	
			MHCB	1	-0.010569m	0.0060m	
571	191	gpsaz	-**-	-**-	132°07'34.7297"	0.0600"	0.21
	1		PBL1	-**-	132°07'34.7774"	0.0207"	
			BAYF	1	+0.047667"	0.0563"	
572	191	gpsht	-**-	-**-	-20.7479m	0.0111m	0.15
	1		PBL1	-**-	-20.7536m	0.0049m	
			BAYF	1	-0.005723m	0.0099m	
573	191	gpsds	-**-	-**-	19298.8522m	0.0033m	0.22
	1		PBL1	-**-	19298.8496m	0.0014m	
			BAYF	1	-0.002564m	0.0029m	
574	192	gpsaz	-**-	-**-	132°07'34.8035"	0.0635"	0.11
	1		PBL1	-**-	132°07'34.7774"	0.0207"	
			BAYF	1	-0.026135"	0.0600"	
575	192	gpsht	-**-	-**-	-20.7473m	0.0159m	0.11
	1		PBL1	-**-	-20.7536m	0.0049m	
			BAYF	1	-0.006386m	0.0152m	
576	192	gpsds	-**-	-**-	19298.8491m	0.0048m	0.03
	1		PBL1	-**-	19298.8496m	0.0014m	
			BAYF	1	+0.000565m	0.0046m	
577	193	gpsaz	-**-	-**-	160°06'58.0098"	0.0930"	0.14
	1		PBL1	-**-	160°06'58.0595"	0.0268"	
			HUNT	1	+0.049724"	0.0891"	
578	193	gpsht	-**-	-**-	-21.6811m	0.0158m	0.04
	1		PBL1	-**-	-21.6834m	0.0062m	
			HUNT	1	-0.002300m	0.0145m	

579	193	gpsds	-**-	-**-	14720.2860m	0.0063m	0.16
	1		PBL1	-**-	14720.2898m	0.0021m	
			HUNT	1	+0.003801m	0.0060m	
580	194	gpsaz	-**-	-**-	160°06'58.0127"	0.0729"	0.17
	1		PBL1	-**-	160°06'58.0595"	0.0268"	
			HUNT	1	+0.046863"	0.0678"	
581	194	gpsht	-**-	-**-	-21.7142m	0.0189m	0.43
	1		PBL1	-**-	-21.6834m	0.0062m	
			HUNT	1	+0.030826m	0.0179m	
582	194	gpsds	-**-	-**-	14720.2902m	0.0053m	0.02
	1		PBL1	-**-	14720.2898m	0.0021m	
			HUNT	1	-0.000397m	0.0049m	
583	195	gpsaz	-**-	-**-	196°46'56.5757"	0.0422"	0.17
	1		PBL1	-**-	196°46'56.6026"	0.0150"	
			L124	1	+0.026945"	0.0395"	
584	195	gpsht	-**-	-**-	+97.9390m	0.0123m	0.02
	1		PBL1	-**-	+97.9380m	0.0057m	
			L124	1	-0.001021m	0.0109m	
585	195	gpsds	-**-	-**-	19369.5436m	0.0060m	0.31
	1		PBL1	-**-	19369.5506m	0.0020m	
			L124	1	+0.006993m	0.0057m	
586	196	gpsaz	-**-	-**-	196°46'56.5725"	0.0442"	0.18
	1		PBL1	-**-	196°46'56.6026"	0.0150"	
			L124	1	+0.030125"	0.0416"	
587	196	gpsht	-**-	-**-	+97.9206m	0.0187m	0.25
	1		PBL1	-**-	+97.9380m	0.0057m	
			L124	1	+0.017337m	0.0178m	
588	196	gpsds	-**-	-**-	19369.5446m	0.0055m	0.30
	1		PBL1	-**-	19369.5506m	0.0020m	
			L124	1	+0.006030m	0.0051m	
589	197	gpsaz	-**-	-**-	132°07'34.7040"	0.0705"	0.27
	1		PBL1	-**-	132°07'34.7774"	0.0207"	
			BAYF	1	+0.073414"	0.0674"	
590	197	gpsht	-**-	-**-	-20.7376m	0.0136m	0.32
	1		PBL1	-**-	-20.7536m	0.0049m	
			BAYF	1	-0.016077m	0.0126m	
591	197	gpsds	-**-	-**-	19298.8495m	0.0048m	0.00
	1		PBL1	-**-	19298.8496m	0.0014m	
			BAYF	1	+0.000084m	0.0046m	
592	198	gpsaz	-**-	-**-	139°51'22.3337"	0.0056"	0.33
	1		CHAB	-**-	139°51'22.3270"	0.0025"	
			MONB	1	-0.006644"	0.0050"	

593	198	gpsht	-**-	-**-	+536.3692m	0.0070m	0.25
	1		CHAB	-**-	+536.3755m	0.0030m	
			MONB	1	+0.006284m	0.0063m	
594	198	gpsds	-**-	-**-	34631.0877m	0.0010m	0.03
	1		CHAB	-**-	34631.0876m	0.0004m	
			MONB	1	-0.000119m	0.0009m	
595	199	gpsaz	-**-	-**-	193°18'17.3487"	0.0219"	0.04
	1		CHAB	-**-	193°18'17.3519"	0.0091"	
			WINT	1	+0.003250"	0.0199"	
596	199	gpsht	-**-	-**-	-242.7609m	0.0073m	0.23
	1		CHAB	-**-	-242.7547m	0.0028m	
			WINT	1	+0.006202m	0.0068m	
597	199	gpsds	-**-	-**-	8151.3345m	0.0011m	0.06
	1		CHAB	-**-	8151.3343m	0.0005m	
			WINT	1	-0.000248m	0.0010m	
598	200	gpsaz	-**-	-**-	87°51'25.6943"	0.0268"	0.10
	1		E124	-**-	87°51'25.6845"	0.0075"	
			WINT	1	-0.009841"	0.0257"	
599	200	gpsht	-**-	-**-	-11.2873m	0.0259m	0.03
	1		E124	-**-	-11.2908m	0.0057m	
			WINT	1	-0.003497m	0.0253m	
600	200	gpsds	-**-	-**-	31095.1245m	0.0030m	0.21
	1		E124	-**-	31095.1269m	0.0008m	
			WINT	1	+0.002447m	0.0029m	
601	201	gpsaz	-**-	-**-	168°59'12.1007"	0.0227"	0.07
	1		E124	-**-	168°59'12.0950"	0.0079"	
			MOON	1	-0.005756"	0.0213"	
602	201	gpsht	-**-	-**-	+6.1323m	0.0210m	0.11
	1		E124	-**-	+6.1414m	0.0062m	
			MOON	1	+0.009064m	0.0201m	
603	201	gpsds	-**-	-**-	23032.8175m	0.0033m	0.06
	1		E124	-**-	23032.8182m	0.0011m	
			MOON	1	+0.000735m	0.0031m	
604	202	gpsaz	-**-	-**-	48°19'22.9268"	0.0108"	0.12
	1		MOON	-**-	48°19'22.9223"	0.0041"	
			WINT	1	-0.004578"	0.0100"	
605	202	gpsht	-**-	-**-	-17.4254m	0.0134m	0.14
	1		MOON	-**-	-17.4322m	0.0045m	
			WINT	1	-0.006816m	0.0126m	
606	202	gpsds	-**-	-**-	35728.6143m	0.0020m	0.01
	1		MOON	-**-	35728.6142m	0.0007m	
			WINT	1	-0.000098m	0.0018m	

607	203	gpsaz	-**-	-**-	93°07'51.8880"	0.0213"	0.15
	1		MOON	-**-	93°07'51.8763"	0.0073"	
			SUAA	1	-0.011718"	0.0200"	
608	203	gpsht	-**-	-**-	+31.7605m	0.0144m	0.32
	1		MOON	-**-	+31.7430m	0.0045m	
			SUAA	1	-0.017519m	0.0137m	
609	203	gpsds	-**-	-**-	23905.8966m	0.0016m	0.39
	1		MOON	-**-	23905.8989m	0.0006m	
			SUAA	1	+0.002329m	0.0015m	
610	204	gpsaz	-**-	-**-	186°35'39.0940"	0.0080"	0.22
	1		WINT	-**-	186°35'39.0876"	0.0030"	
			SUAA	1	-0.006426"	0.0075"	
611	204	gpsht	-**-	-**-	+49.1807m	0.0085m	0.17
	1		WINT	-**-	+49.1752m	0.0030m	
			SUAA	1	-0.005529m	0.0080m	
612	204	gpsds	-**-	-**-	25220.3915m	0.0013m	0.20
	1		WINT	-**-	25220.3924m	0.0005m	
			SUAA	1	+0.000961m	0.0012m	
613	205	gpsaz	-**-	-**-	127°26'27.0799"	0.0062"	0.04
	1		WINT	-**-	127°26'27.0790"	0.0026"	
			MONB	1	-0.000826"	0.0057"	
614	205	gpsht	-**-	-**-	+779.1342m	0.0064m	0.17
	1		WINT	-**-	+779.1302m	0.0026m	
			MONB	1	-0.004035m	0.0059m	
615	205	gpsds	-**-	-**-	30488.1063m	0.0008m	0.14
	1		WINT	-**-	30488.1067m	0.0004m	
			MONB	1	+0.000406m	0.0008m	
616	206	gpsaz	-**-	-**-	76°27'25.4557"	0.0086"	0.00
	1		SUAA	-**-	76°27'25.4558"	0.0033"	
			MONB	1	+0.000130"	0.0080"	
617	206	gpsht	-**-	-**-	+729.9584m	0.0076m	0.12
	1		SUAA	-**-	+729.9550m	0.0027m	
			MONB	1	-0.003376m	0.0071m	
618	206	gpsds	-**-	-**-	27876.0046m	0.0009m	0.08
	1		SUAA	-**-	27876.0043m	0.0003m	
			MONB	1	-0.000279m	0.0009m	
619	207	gpsaz	-**-	-**-	119°34'09.4924"	0.0082"	0.18
	1		SUAA	-**-	119°34'09.4979"	0.0031"	
			LUTZ	1	+0.005490"	0.0076"	
620	207	gpsht	-**-	-**-	+74.6007m	0.0084m	0.15
	1		SUAA	-**-	+74.5961m	0.0031m	
			LUTZ	1	-0.004649m	0.0078m	

621	207	gpsds	-**-	-**-	31408.5182m	0.0011m	0.26
	1		SUAA	-**-	31408.5172m	0.0004m	
			LUTZ	1	-0.000994m	0.0010m	
622	208	gpsaz	-**-	-**-	179°37'18.5244"	0.0069"	0.36
	1		MONB	-**-	179°37'18.5335"	0.0029"	
			LUTZ	1	+0.009104"	0.0063"	
623	208	gpsht	-**-	-**-	-655.3603m	0.0062m	0.06
	1		MONB	-**-	-655.3590m	0.0025m	
			LUTZ	1	+0.001297m	0.0057m	
624	208	gpsds	-**-	-**-	22028.1817m	0.0010m	0.08
	1		MONB	-**-	22028.1820m	0.0004m	
			LUTZ	1	+0.000267m	0.0009m	
625	209	gpsaz	-**-	-**-	128°43'20.9007"	0.0069"	0.39
	1		MONB	-**-	128°43'20.9101"	0.0032"	
			MHCB	1	+0.009408"	0.0061"	
626	209	gpsht	-**-	-**-	+511.4028m	0.0059m	0.21
	1		MONB	-**-	+511.4071m	0.0027m	
			MHCB	1	+0.004306m	0.0053m	
627	209	gpsds	-**-	-**-	25474.0829m	0.0008m	0.14
	1		MONB	-**-	25474.0825m	0.0004m	
			MHCB	1	-0.000373m	0.0007m	
628	210	gpsaz	-**-	-**-	72°50'25.0160"	0.0102"	0.06
	1		LUTZ	-**-	72°50'25.0139"	0.0045"	
			MHCB	1	-0.002096"	0.0091"	
629	210	gpsht	-**-	-**-	+1166.7632m	0.0067m	0.12
	1		LUTZ	-**-	+1166.7661m	0.0029m	
			MHCB	1	+0.002832m	0.0061m	
630	210	gpsds	-**-	-**-	20648.3293m	0.0008m	0.07
	1		LUTZ	-**-	20648.3291m	0.0004m	
			MHCB	1	-0.000217m	0.0007m	
631	211	gpsaz	-**-	-**-	193°18'17.3294"	0.0289"	0.21
	1		CHAB	-**-	193°18'17.3519"	0.0091"	
			WINT	1	+0.022467"	0.0274"	
632	211	gpsht	-**-	-**-	-242.7538m	0.0093m	0.03
	1		CHAB	-**-	-242.7547m	0.0028m	
			WINT	1	-0.000904m	0.0088m	
633	211	gpsds	-**-	-**-	8151.3332m	0.0014m	0.20
	1		CHAB	-**-	8151.3343m	0.0005m	
			WINT	1	+0.001047m	0.0013m	
634	212	gpsaz	-**-	-**-	139°51'22.3160"	0.0076"	0.39
	1		CHAB	-**-	139°51'22.3270"	0.0025"	
			MONB	1	+0.011054"	0.0072"	

635	212	gpsht	-**-	-**-	+536.3790m	0.0096m	0.10
	1		CHAB	-**-	+536.3755m	0.0030m	
			MONB	1	-0.003522m	0.0091m	
636	212	gpsds	-**-	-**-	34631.0880m	0.0014m	0.08
	1		CHAB	-**-	34631.0876m	0.0004m	
			MONB	1	-0.000434m	0.0013m	
637	213	gpsaz	-**-	-**-	127°26'27.0785"	0.0088"	0.02
	1		WINT	-**-	127°26'27.0790"	0.0026"	
			MONB	1	+0.000540"	0.0084"	
638	213	gpsht	-**-	-**-	+779.1388m	0.0091m	0.25
	1		WINT	-**-	+779.1302m	0.0026m	
			MONB	1	-0.008566m	0.0087m	
639	213	gpsds	-**-	-**-	30488.1082m	0.0013m	0.31
	1		WINT	-**-	30488.1067m	0.0004m	
			MONB	1	-0.001503m	0.0012m	
640	214	gpsaz	-**-	-**-	186°35'39.0765"	0.0099"	0.30
	1		WINT	-**-	186°35'39.0876"	0.0030"	
			SUAA	1	+0.011034"	0.0094"	
641	214	gpsht	-**-	-**-	+49.1764m	0.0101m	0.03
	1		WINT	-**-	+49.1752m	0.0030m	
			SUAA	1	-0.001226m	0.0096m	
642	214	gpsds	-**-	-**-	25220.3959m	0.0016m	0.57
	1		WINT	-**-	25220.3924m	0.0005m	
			SUAA	1	-0.003425m	0.0015m	
643	215	gpsaz	-**-	-**-	48°19'22.9228"	0.0105"	0.01
	1		MOON	-**-	48°19'22.9223"	0.0041"	
			WINT	1	-0.000520"	0.0097"	
644	215	gpsht	-**-	-**-	-17.4364m	0.0131m	0.09
	1		MOON	-**-	-17.4322m	0.0045m	
			WINT	1	+0.004249m	0.0123m	
645	215	gpsds	-**-	-**-	35728.6173m	0.0018m	0.47
	1		MOON	-**-	35728.6142m	0.0007m	
			WINT	1	-0.003104m	0.0017m	
646	216	gpsaz	-**-	-**-	93°07'51.8959"	0.0198"	0.27
	1		MOON	-**-	93°07'51.8763"	0.0073"	
			SUAA	1	-0.019643"	0.0184"	
647	216	gpsht	-**-	-**-	+31.7510m	0.0143m	0.15
	1		MOON	-**-	+31.7430m	0.0045m	
			SUAA	1	-0.007996m	0.0136m	
648	216	gpsds	-**-	-**-	23905.9000m	0.0016m	0.18
	1		MOON	-**-	23905.8989m	0.0006m	
			SUAA	1	-0.001094m	0.0015m	

649	217	gpsaz	-**-	-**-	168°59'12.0615"	0.0224"	0.40
	1		E124	-**-	168°59'12.0950"	0.0079"	
			MOON	1	+0.033430"	0.0210"	
650	217	gpsht	-**-	-**-	+6.1562m	0.0208m	0.19
	1		E124	-**-	+6.1414m	0.0062m	
			MOON	1	-0.014802m	0.0199m	
651	217	gpsds	-**-	-**-	23032.8203m	0.0034m	0.17
	1		E124	-**-	23032.8182m	0.0011m	
			MOON	1	-0.002106m	0.0032m	
652	218	gpsaz	-**-	-**-	87°51'25.6784"	0.0262"	0.06
	1		E124	-**-	87°51'25.6845"	0.0075"	
			WINT	1	+0.006073"	0.0251"	
653	218	gpsht	-**-	-**-	-11.2761m	0.0238m	0.16
	1		E124	-**-	-11.2908m	0.0057m	
			WINT	1	-0.014715m	0.0231m	
654	218	gpsds	-**-	-**-	31095.1331m	0.0028m	0.58
	1		E124	-**-	31095.1269m	0.0008m	
			WINT	1	-0.006222m	0.0027m	
655	219	gpsaz	-**-	-**-	76°27'25.4358"	0.0113"	0.47
	1		SUAA	-**-	76°27'25.4558"	0.0033"	
			MONB	1	+0.020038"	0.0108"	
656	219	gpsht	-**-	-**-	+729.9599m	0.0097m	0.13
	1		SUAA	-**-	+729.9550m	0.0027m	
			MONB	1	-0.004854m	0.0093m	
657	219	gpsds	-**-	-**-	27876.0050m	0.0012m	0.16
	1		SUAA	-**-	27876.0043m	0.0003m	
			MONB	1	-0.000706m	0.0011m	
658	220	gpsaz	-**-	-**-	119°34'09.4863"	0.0105"	0.29
	1		SUAA	-**-	119°34'09.4979"	0.0031"	
			LUTZ	1	+0.011568"	0.0100"	
659	220	gpsht	-**-	-**-	+74.5999m	0.0109m	0.09
	1		SUAA	-**-	+74.5961m	0.0031m	
			LUTZ	1	-0.003892m	0.0105m	
660	220	gpsds	-**-	-**-	31408.5173m	0.0014m	0.02
	1		SUAA	-**-	31408.5172m	0.0004m	
			LUTZ	1	-0.000093m	0.0014m	
661	221	gpsaz	-**-	-**-	179°37'18.5242"	0.0092"	0.27
	1		MONB	-**-	179°37'18.5335"	0.0029"	
			LUTZ	1	+0.009288"	0.0087"	
662	221	gpsht	-**-	-**-	-655.3627m	0.0079m	0.12
	1		MONB	-**-	-655.3590m	0.0025m	
			LUTZ	1	+0.003703m	0.0075m	

663	221	gpsds	-**-	-**-	22028.1828m	0.0013m	0.17
	1		MONB	-**-	22028.1820m	0.0004m	
			LUTZ	1	-0.000823m	0.0012m	
664	222	gpsaz	-**-	-**-	72°50'25.0246"	0.0135"	0.21
	1		LUTZ	-**-	72°50'25.0139"	0.0045"	
			MHCB	1	-0.010730"	0.0127"	
665	222	gpsht	-**-	-**-	+1166.7709m	0.0088m	0.15
	1		LUTZ	-**-	+1166.7661m	0.0029m	
			MHCB	1	-0.004823m	0.0083m	
666	222	gpsds	-**-	-**-	20648.3295m	0.0011m	0.08
	1		LUTZ	-**-	20648.3291m	0.0004m	
			MHCB	1	-0.000340m	0.0010m	
667	223	gpsaz	-**-	-**-	128°43'20.9133"	0.0089"	0.10
	1		MONB	-**-	128°43'20.9101"	0.0032"	
			MHCB	1	-0.003240"	0.0083"	
668	223	gpsht	-**-	-**-	+511.4069m	0.0077m	0.01
	1		MONB	-**-	+511.4071m	0.0027m	
			MHCB	1	+0.000174m	0.0072m	
669	223	gpsds	-**-	-**-	25474.0851m	0.0011m	0.65
	1		MONB	-**-	25474.0825m	0.0004m	
			MHCB	1	-0.002576m	0.0010m	
670	224	gpsaz	-**-	-**-	193°18'17.3982"	0.0250"	0.50
	1		CHAB	-**-	193°18'17.3519"	0.0091"	
			WINT	1	-0.046292"	0.0232"	
671	224	gpsht	-**-	-**-	-242.7481m	0.0082m	0.22
	1		CHAB	-**-	-242.7547m	0.0028m	
			WINT	1	-0.006628m	0.0077m	
672	224	gpsds	-**-	-**-	8151.3347m	0.0012m	0.09
	1		CHAB	-**-	8151.3343m	0.0005m	
			WINT	1	-0.000412m	0.0012m	
673	225	gpsaz	-**-	-**-	87°51'25.6707"	0.0204"	0.18
	1		E124	-**-	87°51'25.6845"	0.0075"	
			WINT	1	+0.013753"	0.0190"	
674	225	gpsht	-**-	-**-	-11.2738m	0.0197m	0.23
	1		E124	-**-	-11.2908m	0.0057m	
			WINT	1	-0.016982m	0.0189m	
675	225	gpsds	-**-	-**-	31095.1247m	0.0023m	0.27
	1		E124	-**-	31095.1269m	0.0008m	
			WINT	1	+0.002265m	0.0022m	
676	226	gpsaz	-**-	-**-	48°19'22.9105"	0.0100"	0.33
	1		MOON	-**-	48°19'22.9223"	0.0041"	
			WINT	1	+0.011744"	0.0091"	

677	226	gpsht	-**-	-**-	-17.4336m	0.0125m	0.03
	1		MOON	-**-	-17.4322m	0.0045m	
			WINT	1	+0.001431m	0.0116m	
678	226	gpsds	-**-	-**-	35728.6153m	0.0016m	0.18
	1		MOON	-**-	35728.6142m	0.0007m	
			WINT	1	-0.001052m	0.0015m	
679	227	gpsaz	-**-	-**-	93°07'51.8701"	0.0192"	0.09
	1		MOON	-**-	93°07'51.8763"	0.0073"	
			SUAA	1	+0.006175"	0.0178"	
680	227	gpsht	-**-	-**-	+31.7440m	0.0141m	0.02
	1		MOON	-**-	+31.7430m	0.0045m	
			SUAA	1	-0.001058m	0.0134m	
681	227	gpsds	-**-	-**-	23905.8997m	0.0016m	0.13
	1		MOON	-**-	23905.8989m	0.0006m	
			SUAA	1	-0.000774m	0.0015m	
682	228	gpsaz	-**-	-**-	186°35'39.0811"	0.0088"	0.20
	1		WINT	-**-	186°35'39.0876"	0.0030"	
			SUAA	1	+0.006458"	0.0083"	
683	228	gpsht	-**-	-**-	+49.1723m	0.0091m	0.08
	1		WINT	-**-	+49.1752m	0.0030m	
			SUAA	1	+0.002858m	0.0086m	
684	228	gpsds	-**-	-**-	25220.3915m	0.0014m	0.18
	1		WINT	-**-	25220.3924m	0.0005m	
			SUAA	1	+0.000979m	0.0013m	
685	229	gpsaz	-**-	-**-	76°27'25.4656"	0.0088"	0.30
	1		SUAA	-**-	76°27'25.4558"	0.0033"	
			MONB	1	-0.009786"	0.0082"	
686	229	gpsht	-**-	-**-	+729.9618m	0.0077m	0.23
	1		SUAA	-**-	+729.9550m	0.0027m	
			MONB	1	-0.006756m	0.0072m	
687	229	gpsds	-**-	-**-	27876.0042m	0.0010m	0.01
	1		SUAA	-**-	27876.0043m	0.0003m	
			MONB	1	+0.000048m	0.0009m	
688	230	gpsaz	-**-	-**-	119°34'09.4999"	0.0083"	0.07
	1		SUAA	-**-	119°34'09.4979"	0.0031"	
			LUTZ	1	-0.002029"	0.0077"	
689	230	gpsht	-**-	-**-	+74.6019m	0.0084m	0.19
	1		SUAA	-**-	+74.5961m	0.0031m	
			LUTZ	1	-0.005863m	0.0078m	
690	230	gpsds	-**-	-**-	31408.5176m	0.0011m	0.11
	1		SUAA	-**-	31408.5172m	0.0004m	
			LUTZ	1	-0.000423m	0.0010m	

691	231	gpsaz	-**-	-**-	179°37'18.5336"	0.0074"	0.00
	1		MONB	-**-	179°37'18.5335"	0.0029"	
			LUTZ	1	-0.000042"	0.0068"	
692	231	gpsht	-**-	-**-	-655.3612m	0.0065m	0.10
	1		MONB	-**-	-655.3590m	0.0025m	
			LUTZ	1	+0.002257m	0.0059m	
693	231	gpsds	-**-	-**-	22028.1815m	0.0010m	0.14
	1		MONB	-**-	22028.1820m	0.0004m	
			LUTZ	1	+0.000520m	0.0009m	
694	232	gpsaz	-**-	-**-	72°50'25.0067"	0.0109"	0.18
	1		LUTZ	-**-	72°50'25.0139"	0.0045"	
			MHCB	1	+0.007262"	0.0099"	
695	232	gpsht	-**-	-**-	+1166.7657m	0.0072m	0.01
	1		LUTZ	-**-	+1166.7661m	0.0029m	
			MHCB	1	+0.000357m	0.0066m	
696	232	gpsds	-**-	-**-	20648.3300m	0.0009m	0.27
	1		LUTZ	-**-	20648.3291m	0.0004m	
			MHCB	1	-0.000872m	0.0008m	
697	233	gpsaz	-**-	-**-	128°43'20.8981"	0.0071"	0.47
	1		MONB	-**-	128°43'20.9101"	0.0032"	
			MHCB	1	+0.011949"	0.0063"	
698	233	gpsht	-**-	-**-	+511.4034m	0.0061m	0.17
	1		MONB	-**-	+511.4071m	0.0027m	
			MHCB	1	+0.003743m	0.0055m	
699	233	gpsds	-**-	-**-	25474.0816m	0.0008m	0.32
	1		MONB	-**-	25474.0825m	0.0004m	
			MHCB	1	+0.000904m	0.0007m	
700	234	gpsaz	-**-	-**-	127°26'27.0774"	0.0081"	0.05
	1		WINT	-**-	127°26'27.0790"	0.0026"	
			MONB	1	+0.001628"	0.0077"	
701	234	gpsht	-**-	-**-	+779.1326m	0.0083m	0.08
	1		WINT	-**-	+779.1302m	0.0026m	
			MONB	1	-0.002447m	0.0079m	
702	234	gpsds	-**-	-**-	30488.1080m	0.0011m	0.33
	1		WINT	-**-	30488.1067m	0.0004m	
			MONB	1	-0.001336m	0.0010m	
703	235	gpsaz	-**-	-**-	139°51'22.3356"	0.0066"	0.35
	1		CHAB	-**-	139°51'22.3270"	0.0025"	
			MONB	1	-0.008568"	0.0062"	
704	235	gpsht	-**-	-**-	+536.3833m	0.0083m	0.25
	1		CHAB	-**-	+536.3755m	0.0030m	
			MONB	1	-0.007764m	0.0077m	

705	235	gpsds	-**-	-**-	34631.0884m	0.0012m	0.20
	1		CHAB	-**-	34631.0876m	0.0004m	
			MONB	1	-0.000841m	0.0011m	
706	236	gpsaz	-**-	-**-	168°59'12.1039"	0.0182"	0.14
	1		E124	-**-	168°59'12.0950"	0.0079"	
			MOON	1	-0.008905"	0.0164"	
707	236	gpsht	-**-	-**-	+6.1570m	0.0173m	0.24
	1		E124	-**-	+6.1414m	0.0062m	
			MOON	1	-0.015583m	0.0161m	
708	236	gpsds	-**-	-**-	23032.8168m	0.0027m	0.15
	1		E124	-**-	23032.8182m	0.0011m	
			MOON	1	+0.001424m	0.0024m	
709	237	gpsaz	-**-	-**-	193°18'17.3413"	0.0291"	0.10
	1		CHAB	-**-	193°18'17.3519"	0.0091"	
			WINT	1	+0.010553"	0.0276"	
710	237	gpsht	-**-	-**-	-242.7570m	0.0091m	0.07
	1		CHAB	-**-	-242.7547m	0.0028m	
			WINT	1	+0.002276m	0.0086m	
711	237	gpsds	-**-	-**-	8151.3340m	0.0014m	0.05
	1		CHAB	-**-	8151.3343m	0.0005m	
			WINT	1	+0.000248m	0.0013m	
712	238	gpsaz	-**-	-**-	186°35'39.0948"	0.0093"	0.21
	1		WINT	-**-	186°35'39.0876"	0.0030"	
			SUAA	1	-0.007282"	0.0088"	
713	238	gpsht	-**-	-**-	+49.1791m	0.0093m	0.11
	1		WINT	-**-	+49.1752m	0.0030m	
			SUAA	1	-0.003878m	0.0089m	
714	238	gpsds	-**-	-**-	25220.3907m	0.0015m	0.31
	1		WINT	-**-	25220.3924m	0.0005m	
			SUAA	1	+0.001756m	0.0014m	
715	239	gpsaz	-**-	-**-	76°27'25.4506"	0.0125"	0.11
	1		SUAA	-**-	76°27'25.4558"	0.0033"	
			MONB	1	+0.005181"	0.0121"	
716	239	gpsht	-**-	-**-	+729.9642m	0.0103m	0.23
	1		SUAA	-**-	+729.9550m	0.0027m	
			MONB	1	-0.009161m	0.0099m	
717	239	gpsds	-**-	-**-	27876.0035m	0.0013m	0.17
	1		SUAA	-**-	27876.0043m	0.0003m	
			MONB	1	+0.000815m	0.0012m	
718	240	gpsaz	-**-	-**-	119°34'09.5135"	0.0099"	0.42
	1		SUAA	-**-	119°34'09.4979"	0.0031"	
			LUTZ	1	-0.015689"	0.0094"	

719	240	gpsht	-**-	-**-	+74.5957m	0.0100m	0.01
	1		SUAA	-**-	+74.5961m	0.0031m	
			LUTZ	1	+0.000393m	0.0095m	
720	240	gpsds	-**-	-**-	31408.5157m	0.0014m	0.30
	1		SUAA	-**-	31408.5172m	0.0004m	
			LUTZ	1	+0.001529m	0.0013m	
721	241	gpsaz	-**-	-**-	359°37'22.1399"	0.0091"	0.65
	1		LUTZ	-**-	359°37'22.1176"	0.0029"	
			MONB	1	-0.022301"	0.0086"	
722	241	gpsht	-**-	-**-	+655.3558m	0.0079m	0.11
	1		LUTZ	-**-	+655.3590m	0.0025m	
			MONB	1	+0.003150m	0.0075m	
723	241	gpsds	-**-	-**-	22028.1825m	0.0013m	0.10
	1		LUTZ	-**-	22028.1820m	0.0004m	
			MONB	1	-0.000490m	0.0012m	
724	242	gpsaz	-**-	-**-	72°50'25.0174"	0.0136"	0.07
	1		LUTZ	-**-	72°50'25.0139"	0.0045"	
			MHCB	1	-0.003525"	0.0128"	
725	242	gpsht	-**-	-**-	+1166.7728m	0.0085m	0.21
	1		LUTZ	-**-	+1166.7661m	0.0029m	
			MHCB	1	-0.006725m	0.0080m	
726	242	gpsds	-**-	-**-	20648.3277m	0.0010m	0.37
	1		LUTZ	-**-	20648.3291m	0.0004m	
			MHCB	1	+0.001430m	0.0010m	
727	243	gpsaz	-**-	-**-	128°43'20.9402"	0.0093"	0.87
	1		MONB	-**-	128°43'20.9101"	0.0032"	
			MHCB	1	-0.030062"	0.0087"	
728	243	gpsht	-**-	-**-	+511.4210m	0.0081m	0.46
	1		MONB	-**-	+511.4071m	0.0027m	
			MHCB	1	-0.013915m	0.0076m	
729	243	gpsds	-**-	-**-	25474.0795m	0.0012m	0.71
	1		MONB	-**-	25474.0825m	0.0004m	
			MHCB	1	+0.003047m	0.0011m	
730	244	gpsaz	-**-	-**-	127°26'27.0702"	0.0076"	0.32
	1		WINT	-**-	127°26'27.0790"	0.0026"	
			MONB	1	+0.008869"	0.0071"	
731	244	gpsht	-**-	-**-	+779.1267m	0.0079m	0.12
	1		WINT	-**-	+779.1302m	0.0026m	
			MONB	1	+0.003450m	0.0075m	
732	244	gpsds	-**-	-**-	30488.1054m	0.0011m	0.31
	1		WINT	-**-	30488.1067m	0.0004m	
			MONB	1	+0.001276m	0.0011m	

733	245	gpsaz	-**-	-**-	139°51'22.3201"	0.0069"	0.27
	1		CHAB	-**-	139°51'22.3270"	0.0025"	
			MONB	1	+0.006879"	0.0064"	
734	245	gpsht	-**-	-**-	+536.3667m	0.0089m	0.27
	1		CHAB	-**-	+536.3755m	0.0030m	
			MONB	1	+0.008812m	0.0084m	
735	245	gpsds	-**-	-**-	34631.0871m	0.0013m	0.11
	1		CHAB	-**-	34631.0876m	0.0004m	
			MONB	1	+0.000519m	0.0012m	
736	246	gpsaz	-**-	-**-	118°22'33.7127"	0.0109"	0.13
	1		PBL1	-**-	118°22'33.7076"	0.0041"	
			CHAB	1	-0.005130"	0.0101"	
737	246	gpsht	-**-	-**-	+222.0347m	0.0108m	0.03
	1		PBL1	-**-	+222.0357m	0.0038m	
			CHAB	1	+0.001027m	0.0101m	
738	246	gpsds	-**-	-**-	30023.5360m	0.0014m	0.12
	1		PBL1	-**-	30023.5366m	0.0005m	
			CHAB	1	+0.000594m	0.0013m	
739	247	gpsaz	-**-	-**-	132°06'49.1812"	0.0086"	0.21
	1		PBL1	-**-	132°06'49.1748"	0.0035"	
			WINT	1	-0.006436"	0.0079"	
740	247	gpsht	-**-	-**-	-20.7119m	0.0098m	0.20
	1		PBL1	-**-	-20.7190m	0.0037m	
			WINT	1	-0.007120m	0.0091m	
741	247	gpsds	-**-	-**-	33115.5619m	0.0013m	0.07
	1		PBL1	-**-	33115.5622m	0.0005m	
			WINT	1	+0.000325m	0.0012m	
742	248	gpsaz	-**-	-**-	195°34'41.6363"	0.0270"	0.10
	1		PBL1	-**-	195°34'41.6260"	0.0075"	
			E124	1	-0.010306"	0.0259"	
743	248	gpsht	-**-	-**-	-9.4246m	0.0277m	0.03
	1		PBL1	-**-	-9.4282m	0.0057m	
			E124	1	-0.003597m	0.0272m	
744	248	gpsds	-**-	-**-	24236.0986m	0.0045m	0.08
	1		PBL1	-**-	24236.1001m	0.0012m	
			E124	1	+0.001460m	0.0044m	
745	249	gpsaz	-**-	-**-	132°06'49.1997"	0.0110"	0.60
	1		PBL1	-**-	132°06'49.1748"	0.0035"	
			WINT	1	-0.024892"	0.0104"	
746	249	gpsht	-**-	-**-	-20.7254m	0.0129m	0.13
	1		PBL1	-**-	-20.7190m	0.0037m	
			WINT	1	+0.006448m	0.0123m	

747	249	gpsds	-**-	-**-	33115.5596m	0.0018m	0.38
	1		PBL1	-**-	33115.5622m	0.0005m	
			WINT	1	+0.002593m	0.0017m	
748	250	gpsaz	-**-	-**-	118°22'33.7397"	0.0131"	0.65
	1		PBL1	-**-	118°22'33.7076"	0.0041"	
			CHAB	1	-0.032130"	0.0124"	
749	250	gpsht	-**-	-**-	+222.0330m	0.0132m	0.05
	1		PBL1	-**-	+222.0357m	0.0038m	
			CHAB	1	+0.002717m	0.0127m	
750	250	gpsds	-**-	-**-	30023.5337m	0.0017m	0.44
	1		PBL1	-**-	30023.5366m	0.0005m	
			CHAB	1	+0.002914m	0.0017m	
751	251	gpsaz	-**-	-**-	195°34'41.7178"	0.0283"	0.85
	1		PBL1	-**-	195°34'41.6260"	0.0075"	
			E124	1	-0.091750"	0.0273"	
752	251	gpsht	-**-	-**-	-9.4270m	0.0272m	0.01
	1		PBL1	-**-	-9.4282m	0.0057m	
			E124	1	-0.001183m	0.0266m	
753	251	gpsds	-**-	-**-	24236.1060m	0.0044m	0.35
	1		PBL1	-**-	24236.1001m	0.0012m	
			E124	1	-0.005962m	0.0043m	
754	252	gpsaz	-**-	-**-	195°34'41.6188"	0.0206"	0.09
	1		PBL1	-**-	195°34'41.6260"	0.0075"	
			E124	1	+0.007220"	0.0192"	
755	252	gpsht	-**-	-**-	-9.4464m	0.0199m	0.24
	1		PBL1	-**-	-9.4282m	0.0057m	
			E124	1	+0.018229m	0.0190m	
756	252	gpsds	-**-	-**-	24236.0996m	0.0031m	0.04
	1		PBL1	-**-	24236.1001m	0.0012m	
			E124	1	+0.000455m	0.0028m	
757	253	gpsaz	-**-	-**-	118°22'33.6893"	0.0109"	0.46
	1		PBL1	-**-	118°22'33.7076"	0.0041"	
			CHAB	1	+0.018276"	0.0100"	
758	253	gpsht	-**-	-**-	+222.0314m	0.0108m	0.11
	1		PBL1	-**-	+222.0357m	0.0038m	
			CHAB	1	+0.004249m	0.0101m	
759	253	gpsds	-**-	-**-	30023.5404m	0.0014m	0.75
	1		PBL1	-**-	30023.5366m	0.0005m	
			CHAB	1	-0.003781m	0.0013m	
760	254	gpsaz	-**-	-**-	132°06'49.1652"	0.0090"	0.29
	1		PBL1	-**-	132°06'49.1748"	0.0035"	
			WINT	1	+0.009614"	0.0083"	

761	254	gpsht	-**-	-**-	-20.7215m	0.0103m	0.07
	1		PBL1	-**-	-20.7190m	0.0037m	
			WINT	1	+0.002540m	0.0096m	
762	254	gpsds	-**-	-**-	33115.5637m	0.0014m	0.29
	1		PBL1	-**-	33115.5622m	0.0005m	
			WINT	1	-0.001449m	0.0013m	
763	255	gpsaz	-**-	-**-	132°06'49.1633"	0.0093"	0.33
	1		PBL1	-**-	132°06'49.1748"	0.0035"	
			WINT	1	+0.011437"	0.0086"	
764	255	gpsht	-**-	-**-	-20.7201m	0.0109m	0.03
	1		PBL1	-**-	-20.7190m	0.0037m	
			WINT	1	+0.001141m	0.0102m	
765	255	gpsds	-**-	-**-	33115.5615m	0.0016m	0.12
	1		PBL1	-**-	33115.5622m	0.0005m	
			WINT	1	+0.000676m	0.0015m	
766	256	gpsaz	-**-	-**-	118°22'33.6956"	0.0116"	0.28
	1		PBL1	-**-	118°22'33.7076"	0.0041"	
			CHAB	1	+0.012001"	0.0108"	
767	256	gpsht	-**-	-**-	+222.0352m	0.0117m	0.01
	1		PBL1	-**-	+222.0357m	0.0038m	
			CHAB	1	+0.000512m	0.0111m	
768	256	gpsds	-**-	-**-	30023.5375m	0.0016m	0.16
	1		PBL1	-**-	30023.5366m	0.0005m	
			CHAB	1	-0.000934m	0.0015m	

B. Fully constrained ITRF2000 Epoch 2002.75 (velocities appended)

(Note: see the directory ADJUSTMENTS\ITRF-FC for adjustment results not listed here.)

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              COORDINATE ADJUSTMENT SUMMARY
              NETWORK = South San Francisco Bay Height Modernization Project
              TIME = Tue Oct  7 23:50:10 2003


Datum = ITRF2000 Epoch 2002.75
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
  7 fixed coordinates in y
  7 fixed coordinates in x
  8 fixed coordinates in h


POINT   NAME      OLD COORDS       ADJUST      NEW COORDS         1.00σ

   1 04EG
       N LAT=  37° 32' 45.673174" +0.000000"  37° 32' 45.673174"    0.002324m
       W LON= 122° 22' 22.733084" +0.000000" 122° 22' 22.733084"    0.001785m
     ELL HT=           160.8027m   +0.0000m           160.8027m    0.059232m
    ORTHO HT=           193.3554m   +0.0000m           193.3554m    0.028507m
    GEOID HT=           -32.5527m   +0.0000m           -32.5527m    0.066552m
    Cartesian X=-2711100.4622 Y=-4276466.8997 Z= 3865713.0370

   2 04EH
       N LAT=  37° 26' 41.373297" +0.000000"  37° 26' 41.373297"    0.002678m
       W LON= 122° 16' 05.388085" +0.000000" 122° 16' 05.388085"    0.001919m
     ELL HT=           148.0125m   +0.0000m           148.0125m    0.058816m
    ORTHO HT=           180.5070m   +0.0000m           180.5070m    0.031269m
    GEOID HT=           -32.4945m   +0.0000m           -32.4945m    0.067194m
    Cartesian X=-2706917.0047 Y=-4287191.6571 Z= 3856794.1334

   3 04FH
       N LAT=  37° 44' 59.773031" +0.000000"  37° 44' 59.773031"    0.003656m
       W LON= 122° 12' 18.168880" +0.000000" 122° 12' 18.168880"    0.002718m
     ELL HT=           -28.8787m   +0.0000m           -28.8787m    0.059056m
    ORTHO HT=             3.4942m   +0.0000m             3.4942m    0.033997m
    GEOID HT=           -32.3729m   +0.0000m           -32.3729m    0.064052m
    Cartesian X=-2691106.7214 Y=-4272570.2712 Z= 3883517.4154

   4 1446
       N LAT=  37° 33' 56.092825" +0.000000"  37° 33' 56.092825"    0.003780m
       W LON= 122° 04' 05.961602" +0.000000" 122° 04' 05.961602"    0.002600m
     ELL HT=           -22.6052m   +0.0000m           -22.6052m    0.059054m
    ORTHO HT=             9.8410m   +0.0000m             9.8410m        FIXED
    GEOID HT=           -32.4462m   +0.0000m           -32.4462m    0.059054m
    Cartesian X=-2687543.1978 Y=-4289577.4771 Z= 3867322.3759
```

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 5 4413
     N LAT=  37° 38' 06.898633" +0.000000"  37° 38' 06.898633"    0.002841m
     W LON= 122° 23' 08.224090" +0.000000" 122° 23' 08.224090"    0.002124m
    ELL HT=           -29.5838m   +0.0000m           -29.5838m    0.058925m
  ORTHO HT=             2.9998m   +0.0000m             2.9998m    0.026341m
  GEOID HT=           -32.5836m   +0.0000m           -32.5836m    0.065390m
  Cartesian X=-2708726.9332 Y=-4270639.8086 Z= 3873444.3647

 6 4508
     N LAT=  37° 30' 28.781358" +0.000000"  37° 30' 28.781358"    0.003308m
     W LON= 122° 12' 39.143116" +0.000000" 122° 12' 39.143116"    0.002365m
    ELL HT=           -28.9802m   +0.0000m           -28.9802m    0.059197m
  ORTHO HT=             3.5636m   +0.0000m             3.5636m    0.030536m
  GEOID HT=           -32.5437m   +0.0000m           -32.5437m    0.067399m
  Cartesian X=-2700280.2177 Y=-4286168.1382 Z= 3862250.3756

 7 4509
     N LAT=  37° 30' 42.742947" +0.000000"  37° 30' 42.742947"    0.003360m
     W LON= 122° 06' 34.278420" +0.000000" 122° 06' 34.278420"    0.002312m
    ELL HT=           -29.5585m   +0.0000m           -29.5585m    0.058927m
  ORTHO HT=             2.9502m   +0.0000m             2.9502m    0.024272m
  GEOID HT=           -32.5087m   +0.0000m           -32.5087m    0.064472m
  Cartesian X=-2692554.5799 Y=-4290715.6066 Z= 3862591.4618

 8 4519
     N LAT=  37° 29' 40.183334" +0.000000"  37° 29' 40.183334"    0.003465m
     W LON= 122° 02' 42.701142" +0.000000" 122° 02' 42.701142"    0.002381m
    ELL HT=           -29.6304m   +0.0000m           -29.6304m    0.058949m
  ORTHO HT=             2.8645m   +0.0000m             2.8645m    0.022181m
  GEOID HT=           -32.4949m   +0.0000m           -32.4949m    0.063240m
  Cartesian X=-2688358.6030 Y=-4294731.1174 Z= 3861061.3521

 9 4519 A 1976
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=             2.8422m   +0.0000m             2.8422m    0.022183m
  Cartesian coordinates unknown

10 4519 C 1976
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=             2.7651m   +0.0000m             2.7651m    0.022183m
  Cartesian coordinates unknown

11 4519 D 1976
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=             2.9554m   +0.0000m             2.9554m    0.022184m
  Cartesian coordinates unknown
```

```
12 4519 E 1976
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=             3.1265m   +0.0000m             3.1265m    0.022186m
  Cartesian coordinates unknown

13 4537
     N LAT=  37° 27' 10.725339" +0.000000"  37° 27' 10.725339"    0.003038m
     W LON= 122° 06' 44.154095" +0.000000" 122° 06' 44.154095"    0.002140m
    ELL HT=           -30.3003m   +0.0000m           -30.3003m    0.058826m
  ORTHO HT=             2.2462m   +0.0000m             2.2462m    0.029619m
  GEOID HT=           -32.5465m   +0.0000m           -32.5465m    0.066250m
  Cartesian X=-2694874.0644 Y=-4293955.1747 Z= 3857404.1189

14 4688
     N LAT=  37° 42' 03.106352" +0.000000"  37° 42' 03.106352"    0.003558m
     W LON= 122° 11' 22.212732" +0.000000" 122° 11' 22.212732"    0.002586m
    ELL HT=           -29.8039m   +0.0000m           -29.8039m    0.058980m
  ORTHO HT=             2.6575m   +0.0000m             2.6575m    0.029055m
  GEOID HT=           -32.4614m   +0.0000m           -32.4614m    0.064000m
  Cartesian X=-2691722.5872 Y=-4276120.0280 Z= 3879208.7139

15 ARC3
     N LAT=  37° 25' 34.590474" +0.000000"  37° 25' 34.590474"    0.003555m
     W LON= 122° 02' 05.580599" +0.000000" 122° 02' 05.580599"    0.002604m
    ELL HT=           -31.2660m   +0.0000m           -31.2660m    0.058874m
  ORTHO HT=             1.2832m   +0.0000m             1.2832m    0.028040m
  GEOID HT=           -32.5492m   +0.0000m           -32.5492m    0.064731m
  Cartesian X=-2690027.6587 Y=-4299117.5911 Z= 3855050.3172

16 BAYF
     N LAT=  37° 44' 10.723636" +0.000000"  37° 44' 10.723636"    0.002897m
     W LON= 122° 15' 23.630685" +0.000000" 122° 15' 23.630685"    0.002184m
    ELL HT=           -28.2339m   +0.0000m           -28.2339m    0.058853m
  ORTHO HT=             4.2131m   +0.0000m             4.2130m    0.033170m
  GEOID HT=           -32.4470m   +0.0000m           -32.4470m    0.064850m
  Cartesian X=-2695441.6043 Y=-4270932.0936 Z= 3882321.9902

17 CHAB
     N LAT=  37° 43' 26.815093" +0.000000"  37° 43' 26.815093"        FIXED
     W LON= 122° 07' 09.512167" +0.000000" 122° 07' 09.512167"        FIXED
    ELL HT=           214.5569m   +0.0000m           214.5569m    0.058586m
  ORTHO HT=           246.8453m   +0.0000m           246.8453m    0.027877m
  GEOID HT=           -32.2884m   +0.0000m           -32.2884m    0.061851m
  Cartesian X=-2685745.1877 Y=-4278241.1717 Z= 3881399.8734

18 CROT
     N LAT=  37° 23' 31.229213" +0.000000"  37° 23' 31.229213"    0.004603m
     W LON= 121° 49' 00.724144" +0.000000" 121° 49' 00.724144"    0.003170m
    ELL HT=           134.9853m   +0.0000m           134.9853m    0.059231m
  ORTHO HT=           167.1873m   +0.0000m           167.1873m    0.032609m
  GEOID HT=           -32.2020m   +0.0000m           -32.2020m    0.058820m
  Cartesian X=-2674937.3838 Y=-4311397.7204 Z= 3852130.3924
```

```
19 E124
     N LAT=  37° 38' 33.693822" +0.000000"  37° 38' 33.693822"    0.001701m
     W LON= 122° 29' 33.695449" +0.000000" 122° 29' 33.695449"    0.001260m
    ELL HT=           -16.9096m   +0.0000m           -16.9096m    0.058761m
  ORTHO HT=            15.8630m   +0.0000m            15.8630m        FIXED
  GEOID HT=           -32.7726m   +0.0000m           -32.7726m    0.058761m
  Cartesian X=-2716437.6305 Y=-4265153.1856 Z= 3874106.2761

20 E137
     N LAT=  37° 29' 00.810497" +0.000000"  37° 29' 00.810497"    0.003493m
     W LON= 121° 56' 05.401541" +0.000000" 121° 56' 05.401541"    0.002789m
    ELL HT=           -22.9074m   +0.0000m           -22.9074m    0.058861m
  ORTHO HT=            9.5057m   +0.0000m            9.5057m    0.020580m
  GEOID HT=           -32.4131m   +0.0000m           -32.4131m    0.061391m
  Cartesian X=-2680474.8610 Y=-4300532.8384 Z= 3860102.2929

22 FILB
     N LAT=  37° 31' 16.212116" +0.000000"  37° 31' 16.212116"    0.003394m
     W LON= 122° 02' 03.996107" +0.000000" 122° 02' 03.996107"    0.002300m
    ELL HT=           -28.3836m   +0.0000m           -28.3836m    0.058879m
  ORTHO HT=            4.0809m   +0.0000m            4.0809m    0.016455m
  GEOID HT=           -32.4644m   +0.0000m           -32.4644m    0.061360m
  Cartesian X=-2686597.0456 Y=-4293708.2444 Z= 3863410.6128

23 FOOT
     N LAT=  37° 21' 45.673987" +0.000000"  37° 21' 45.673987"    0.004950m
     W LON= 122° 07' 23.837542" +0.000000" 122° 07' 23.837542"    0.003365m
    ELL HT=            56.4954m   +0.0000m            56.4954m    0.059314m
  ORTHO HT=            89.0068m   +0.0000m            89.0068m    0.036878m
  GEOID HT=           -32.5114m   +0.0000m           -32.5114m    0.066718m
  Cartesian X=-2698973.8666 Y=-4298650.6975 Z= 3849496.7625

24 G110
     N LAT=  37° 30' 04.670239" +0.000000"  37° 30' 04.670239"    0.002599m
     W LON= 122° 15' 10.623959" +0.000000" 122° 15' 10.623959"    0.001884m
    ELL HT=           -26.5723m   +0.0000m           -26.5723m    0.058951m
  ORTHO HT=            5.9550m   +0.0000m            5.9550m    0.030615m
  GEOID HT=           -32.5272m   +0.0000m           -32.5273m    0.067737m
  Cartesian X=-2703669.7835 Y=-4284568.2449 Z= 3861662.1497

25 GOLD
     N LAT=  37° 25' 20.784298" +0.000000"  37° 25' 20.784298"    0.003754m
     W LON= 121° 58' 34.172752" +0.000000" 121° 58' 34.172752"    0.002812m
    ELL HT=           -25.9731m   +0.0000m           -25.9731m    0.058893m
  ORTHO HT=            6.5655m   +0.0000m            6.5655m    0.023716m
  GEOID HT=           -32.5386m   +0.0000m           -32.5386m    0.062648m
  Cartesian X=-2685759.1393 Y=-4302095.4152 Z= 3854715.5144

26 GUAN
     N LAT=  37° 34' 22.347959" +0.000000"  37° 34' 22.347959"    0.004194m
     W LON= 122° 15' 46.199591" +0.000000" 122° 15' 46.199591"    0.003203m
    ELL HT=           -29.1118m   +0.0000m           -29.1118m    0.059525m
  ORTHO HT=            3.4466m   +0.0000m            3.4466m    0.031022m
  GEOID HT=           -32.5584m   +0.0000m           -32.5584m    0.067574m
  Cartesian X=-2701823.9495 Y=-4280007.2732 Z= 3867959.9887
```

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27 HUNT
     N LAT=  37° 43' 41.961309" +0.000000"  37° 43' 41.961309"    0.003463m
     W LON= 122° 21' 43.752490" +0.000000" 122° 21' 43.752490"    0.002483m
    ELL HT=           -29.1634m   +0.0000m           -29.1634m    0.059034m
  ORTHO HT=             3.3285m   +0.0000m             3.3285m    0.030490m
  GEOID HT=           -32.4920m   +0.0000m           -32.4920m    0.064049m
  Cartesian X=-2703597.9334 Y=-4266415.2300 Z= 3881620.0974

28 L124
     N LAT=  37° 41' 09.444356" +0.000000"  37° 41' 09.444356"    0.002974m
     W LON= 122° 28' 56.465268" +0.000000" 122° 28' 56.465268"    0.002253m
    ELL HT=            90.4577m   +0.0000m            90.4577m    0.058692m
  ORTHO HT=           123.1800m   +0.0000m           123.1800m        FIXED
  GEOID HT=           -32.7223m   +0.0000m           -32.7223m    0.058692m
  Cartesian X=-2714137.6380 Y=-4263240.0145 Z= 3877973.0922

29 L132
     N LAT=  37° 36' 29.268849" +0.000000"  37° 36' 29.268849"    0.004438m
     W LON= 122° 05' 13.593483" +0.000000" 122° 05' 13.593483"    0.003284m
    ELL HT=           -29.5045m   +0.0000m           -29.5045m    0.059310m
  ORTHO HT=             2.9210m   +0.0000m             2.9210m        FIXED
  GEOID HT=           -32.4255m   +0.0000m           -32.4255m    0.059310m
  Cartesian X=-2687416.5044 Y=-4286250.9147 Z= 3871060.3577

30 LOCK
     N LAT=  37° 24' 07.309078" +0.000000"  37° 24' 07.309078"    0.003634m
     W LON= 122° 02' 10.649396" +0.000000" 122° 02' 10.649396"    0.002626m
    ELL HT=           -21.5635m   +0.0000m           -21.5635m    0.058901m
  ORTHO HT=            11.0041m   +0.0000m            11.0041m    0.030114m
  GEOID HT=           -32.5676m   +0.0000m           -32.5676m    0.064912m
  Cartesian X=-2691004.6161 Y=-4300443.9098 Z= 3852918.9958

31 LUTZ
     N LAT=  37° 17' 12.662563" +0.000000"  37° 17' 12.662563"        FIXED
     W LON= 121° 51' 54.807878" +0.000000" 121° 51' 54.807878"        FIXED
    ELL HT=            95.5704m   +0.0000m            95.5704m    0.058624m
  ORTHO HT=           128.0139m   +0.0000m           128.0139m    0.041258m
  GEOID HT=           -32.4434m   +0.0000m           -32.4434m    0.060987m
  Cartesian X=-2682295.7305 Y=-4315124.0091 Z= 3842827.3837

32 M874
     N LAT=  37° 26' 10.049858" +0.000000"  37° 26' 10.049858"    0.002995m
     W LON= 121° 54' 24.945234" +0.000000" 121° 54' 24.945234"    0.002325m
    ELL HT=           -27.6431m   +0.0000m           -27.6431m    0.058561m
  ORTHO HT=             4.8050m   +0.0000m             4.8050m        FIXED
  GEOID HT=           -32.4481m   +0.0000m           -32.4481m    0.058561m
  Cartesian X=-2680070.4022 Y=-4304552.6858 Z= 3855920.6001

33 MHCB
     N LAT=  37° 20' 29.517054" +0.000000"  37° 20' 29.517054"        FIXED
     W LON= 121° 38' 33.277942" +0.000000" 121° 38' 33.277942"        FIXED
    ELL HT=          1262.3363m   +0.0000m          1262.3363m    0.058642m
  ORTHO HT=          1293.8325m   +0.0000m          1293.8325m    0.051547m
  GEOID HT=           -31.4962m   +0.0000m           -31.4962m    0.058948m
  Cartesian X=-2664063.9116 Y=-4323172.3722 Z= 3848361.8178
```

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34 MISS
     N LAT=  37° 23' 20.188098" +0.000000"  37° 23' 20.188098"    0.004249m
     W LON= 121° 59' 11.945285" +0.000000" 121° 59' 11.945285"    0.003040m
    ELL HT=           -24.6810m   +0.0000m           -24.6810m    0.058981m
  ORTHO HT=             7.8854m   +0.0000m             7.8854m    0.028348m
  GEOID HT=           -32.5664m   +0.0000m           -32.5664m    0.063235m
  Cartesian X=-2687743.8100 Y=-4303519.9250 Z= 3851762.9899

35 MONB
     N LAT=  37° 29' 07.171948" +0.000000"  37° 29' 07.171948"        FIXED
     W LON= 121° 52' 00.710808" +0.000000" 121° 52' 00.710808"        FIXED
    ELL HT=           750.9295m   +0.0000m           750.9295m    0.058529m
  ORTHO HT=           783.0514m   +0.0000m           783.0514m    0.024455m
  GEOID HT=           -32.1219m   +0.0000m           -32.1219m    0.060177m
  Cartesian X=-2675632.4538 Y=-4304129.7793 Z= 3860728.8430

36 MOON
     N LAT=  37° 26' 20.322824" +0.000000"  37° 26' 20.322824"    0.001223m
     W LON= 122° 26' 34.702441" +0.000000" 122° 26' 34.702441"    0.000898m
    ELL HT=           -10.7664m   +0.0000m           -10.7664m    0.058641m
  ORTHO HT=            22.2518m   +0.0000m            22.2518m    0.000981m
  GEOID HT=           -33.0182m   +0.0000m           -33.0182m    0.058646m
  Cartesian X=-2720128.6486 Y=-4279139.4894 Z= 3856182.3311

38 N 245
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=            28.7390m   +0.0000m            28.7390m        FIXED
  Cartesian coordinates unknown

39 N119
     N LAT=  37° 39' 20.944395" +0.000000"  37° 39' 20.944395"    0.002898m
     W LON= 122° 05' 15.624658" +0.000000" 122° 05' 15.624658"    0.002231m
    ELL HT=            -9.6219m   +0.0000m            -9.6219m    0.058751m
  ORTHO HT=            22.7310m   +0.0000m            22.7310m        FIXED
  GEOID HT=           -32.3529m   +0.0000m           -32.3529m    0.058751m
  Cartesian X=-2685750.3327 Y=-4283499.7572 Z= 3875264.1361

40 PBL1
     N LAT=  37° 51' 10.994170" +0.000000"  37° 51' 10.994170"        FIXED
     W LON= 122° 25' 08.206141" +0.000000" 122° 25' 08.206141"        FIXED
    ELL HT=            -7.4804m   +0.0000m            -7.4804m    0.058641m
  ORTHO HT=            24.8977m   +0.0000m            24.8977m    0.042036m
  GEOID HT=           -32.3781m   +0.0000m           -32.3781m    0.062025m
  Cartesian X=-2703286.7250 Y=-4256586.4453 Z= 3892573.8304

41 SANT
     N LAT=  37° 19' 52.997654" +0.000000"  37° 19' 52.997654"    0.005683m
     W LON= 122° 04' 59.381204" +0.000000" 122° 04' 59.381204"    0.003769m
    ELL HT=           100.1825m   +0.0000m           100.1825m    0.059582m
  ORTHO HT=           132.6907m   +0.0000m           132.6907m    0.038805m
  GEOID HT=           -32.5082m   +0.0000m           -32.5082m    0.065952m
  Cartesian X=-2697100.4142 Y=-4302354.7574 Z= 3846761.7309
```

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42 SPED
     N LAT=  37° 21' 14.048881" +0.000000"  37° 21' 14.048881"    0.004841m
     W LON= 121° 54' 25.238162" +0.000000" 121° 54' 25.238162"    0.003463m
    ELL HT=           -14.1013m   +0.0000m           -14.1013m    0.059188m
  ORTHO HT=            18.4243m   +0.0000m            18.4243m    0.031367m
  GEOID HT=           -32.5255m   +0.0000m           -32.5255m    0.060773m
  Cartesian X=-2683011.3505 Y=-4309262.6040 Z= 3848678.9607

43 SUAA
     N LAT=  37° 25' 36.861094" +0.000000"  37° 25' 36.861094"        FIXED
     W LON= 122° 10' 23.836256" +0.000000" 122° 10' 23.836256"        FIXED
    ELL HT=            20.9776m   +0.0000m            20.9776m    0.058573m
  ORTHO HT=            53.5205m   +0.0000m            53.5205m    0.032496m
  GEOID HT=           -32.5429m   +0.0000m           -32.5429m    0.067364m
  Cartesian X=-2700404.2368 Y=-4292606.0996 Z= 3855137.6586

44 TID1
     N LAT=  37° 35' 22.705310" +0.000000"  37° 35' 22.705310"    0.006375m
     W LON= 122° 19' 06.201467" +0.000000" 122° 19' 06.201467"    0.004880m
    ELL HT=           -27.8041m   +0.0000m           -27.8041m    0.060784m
  ORTHO HT=             4.7599m   +0.0000m             4.7599m    0.033191m
  GEOID HT=           -32.5640m   +0.0000m           -32.5640m    0.067444m
  Cartesian X=-2705366.5465 Y=-4276427.2685 Z= 3869435.4646

45 WINT
     N LAT=  37° 39' 09.514687" +0.000000"  37° 39' 09.514687"        FIXED
     W LON= 122° 08' 26.039510" +0.000000" 122° 08' 26.039510"        FIXED
    ELL HT=           -28.2018m   +0.0000m           -28.2018m    0.058532m
  ORTHO HT=             4.2630m   +0.0000m             4.2630m    0.020358m
  GEOID HT=           -32.4648m   +0.0000m           -32.4648m    0.062262m
  Cartesian X=-2689810.2286 Y=-4281188.3849 Z= 3874973.7999

46 X572
     N LAT=  37° 28' 54.551137" +0.000000"  37° 28' 54.551137"    0.003540m
     W LON= 122° 08' 59.148480" +0.000000" 122° 08' 59.148480"    0.002525m
    ELL HT=           -29.7191m   +0.0000m           -29.7191m    0.059008m
  ORTHO HT=             2.8243m   +0.0000m             2.8243m    0.029392m
  GEOID HT=           -32.5434m   +0.0000m           -32.5434m    0.066554m
  Cartesian X=-2696647.8671 Y=-4290542.3690 Z= 3859945.0165

47 Z137
     N LAT=  37° 28' 48.391359" +0.000000"  37° 28' 48.391359"    0.003170m
     W LON= 121° 58' 25.242736" +0.000000" 121° 58' 25.242736"    0.002338m
    ELL HT=           -30.5371m   +0.0000m           -30.5371m    0.058866m
  ORTHO HT=             1.9370m   +0.0000m             1.9370m    0.021132m
  GEOID HT=           -32.4741m   +0.0000m           -32.4741m    0.062280m
  Cartesian X=-2683510.0395 Y=-4298907.0728 Z= 3859793.8203

48 ZOAA
     N LAT=  37° 32' 34.753032" +0.000000"  37° 32' 34.753032"    0.003251m
     W LON= 122° 00' 54.462277" +0.000000" 122° 00' 54.462277"    0.002283m
    ELL HT=           -19.3062m   +0.0000m           -19.3062m    0.058878m
  ORTHO HT=            13.1240m   +0.0000m            13.1240m        FIXED
  GEOID HT=           -32.4302m   +0.0000m           -32.4302m    0.058878m
  Cartesian X=-2684371.2292 Y=-4293369.0069 Z= 3865336.3426
```

COMPUTED VELOCITIES

Station	N vel	E vel	U vel
04EG	0.014931	-0.037629	0.000401
04EH	0.015611	-0.035239	0.000201
04FH	0.010188	-0.032600	-0.000232
1446	0.007253	-0.031549	0.000132
4413	0.013538	-0.036987	0.000279
4508	0.013161	-0.035036	0.000381
4509	0.009633	-0.033873	0.000065
4519	0.008120	-0.033719	-0.000442
4537	0.011313	-0.033353	-0.000240
4688	0.010073	-0.032290	0.000298
ARC3	0.010809	-0.032444	-0.000814
BAYF	0.013027	-0.035633	-0.000054
CHAB	0.005210	-0.027420	-0.000550
CROT	0.004193	-0.028141	-0.001758
E124	0.013108	-0.037816	0.000139
E137	0.005597	-0.030421	-0.001303
FILB	0.007066	-0.032834	-0.000377
FOOT	0.014766	-0.032250	-0.000547
G110	0.014706	-0.035590	0.000389
GOLD	0.009570	-0.031548	-0.001197
GUAN	0.014471	-0.035865	0.000615
HUNT	0.012154	-0.036092	-0.000091
L124	0.012095	-0.037003	0.000013
L132	0.007131	-0.030514	0.000519
LOCK	0.011905	-0.032051	-0.000888
M874	0.006672	-0.029628	-0.001571
MHCB	-0.001910	-0.023840	-0.001270
MISS	0.011481	-0.031337	-0.001216
MONB	0.003590	-0.027410	-0.001780
MOON	0.016853	-0.039944	0.000286
N119	0.005959	-0.028759	0.000496
PBL1	0.008790	-0.034600	-0.000780
SANT	0.015534	-0.031453	-0.000823
SPED	0.009897	-0.030361	-0.001656
SUAA	0.013210	-0.033280	-0.000070
TID1	0.014293	-0.036549	0.000503
WINT	0.008900	-0.031270	0.001300
X572	0.011487	-0.034138	0.000081
Z137	0.006831	-0.032098	-0.001029
ZOAA	0.005860	-0.031571	-0.000411
LUTZ	0.010660	-0.031600	-0.001900

C. Fully constrained NAD83(CORS96) Epoch 2002.75 (velocities appended)

(Note: see the directory ADJUSTMENTS\NAD-FC for adjustment results not listed here.)

```
              COORDINATE ADJUSTMENT SUMMARY
              NETWORK = South San Francisco Bay Height Modernization Project
              TIME = Tue Oct  7 23:51:02 2003


Datum = NAD83(CORS96) Epoch 2002.75
Coordinate System = Geographic
Zone = Global

Network Adjustment Constraints:
  7 fixed coordinates in y
  7 fixed coordinates in x
  8 fixed coordinates in h


POINT   NAME      OLD COORDS       ADJUST      NEW COORDS         1.00σ

   1 04EG
       N LAT=  37° 32' 45.658139" +0.000000"  37° 32' 45.658139"    0.002330m
       W LON= 122° 22' 22.682456" +0.000000" 122° 22' 22.682456"    0.001790m
      ELL HT=           160.8027m   +0.0000m           160.8026m    0.059365m
    ORTHO HT=           193.3554m   +0.0000m           193.3554m    0.028572m
    GEOID HT=           -32.5527m   +0.0000m           -32.5527m    0.066702m
    Cartesian X=-2711099.5637 Y=-4276467.8037 Z= 3865712.6694

   2 04EH
       N LAT=  37° 26' 41.358260" +0.000000"  37° 26' 41.358260"    0.002685m
       W LON= 122° 16' 05.337563" +0.000000" 122° 16' 05.337563"    0.001924m
      ELL HT=           148.0126m   +0.0000m           148.0126m    0.058948m
    ORTHO HT=           180.5070m   +0.0000m           180.5070m    0.031340m
    GEOID HT=           -32.4945m   +0.0000m           -32.4945m    0.067344m
    Cartesian X=-2706916.1051 Y=-4287192.5586 Z= 3856793.7654

   3 04FH
       N LAT=  37° 44' 59.757880" +0.000000"  37° 44' 59.757880"    0.003666m
       W LON= 122° 12' 18.118239" +0.000000" 122° 12' 18.118239"    0.002725m
      ELL HT=           -28.8788m   +0.0000m           -28.8788m    0.059189m
    ORTHO HT=             3.4942m   +0.0000m             3.4942m    0.034074m
    GEOID HT=           -32.3729m   +0.0000m           -32.3729m    0.064196m
    Cartesian X=-2691105.8248 Y=-4272571.1739 Z= 3883517.0459

   4 1446
       N LAT=  37° 33' 56.077687" +0.000000"  37° 33' 56.077687"    0.003790m
       W LON= 122° 04' 05.911126" +0.000000" 122° 04' 05.911126"    0.002606m
      ELL HT=           -22.6052m   +0.0000m           -22.6052m    0.059186m
    ORTHO HT=             9.8410m   +0.0000m             9.8410m        FIXED
    GEOID HT=           -32.4462m   +0.0000m           -32.4462m    0.059186m
    Cartesian X=-2687542.2991 Y=-4289578.3759 Z= 3867322.0059
```

```
 5 4413
     N LAT=  37° 38' 06.883575" +0.000000"  37° 38' 06.883575"    0.002848m
     W LON= 122° 23' 08.173411" +0.000000" 122° 23' 08.173411"    0.002129m
    ELL HT=           -29.5839m   +0.0000m           -29.5839m    0.059058m
  ORTHO HT=             2.9998m   +0.0000m             2.9998m    0.026401m
  GEOID HT=           -32.5837m   +0.0000m           -32.5837m    0.065537m
  Cartesian X=-2708726.0357 Y=-4270640.7135 Z= 3873443.9970

 6 4508
     N LAT=  37° 30' 28.766283" +0.000000"  37° 30' 28.766283"    0.003317m
     W LON= 122° 12' 39.092592" +0.000000" 122° 12' 39.092592"    0.002371m
    ELL HT=           -28.9801m   +0.0000m           -28.9801m    0.059330m
  ORTHO HT=             3.5636m   +0.0000m             3.5636m    0.030606m
  GEOID HT=           -32.5437m   +0.0000m           -32.5437m    0.067550m
  Cartesian X=-2700279.3187 Y=-4286169.0391 Z= 3862250.0070

 7 4509
     N LAT=  37° 30' 42.727838" +0.000000"  37° 30' 42.727838"    0.003369m
     W LON= 122° 06' 34.227949" +0.000000" 122° 06' 34.227949"    0.002317m
    ELL HT=           -29.5585m   +0.0000m           -29.5585m    0.059059m
  ORTHO HT=             2.9502m   +0.0000m             2.9502m    0.024327m
  GEOID HT=           -32.5087m   +0.0000m           -32.5087m    0.064616m
  Cartesian X=-2692553.6808 Y=-4290716.5057 Z= 3862591.0923

 8 4519
     N LAT=  37° 29' 40.168211" +0.000000"  37° 29' 40.168211"    0.003474m
     W LON= 122° 02' 42.650714" +0.000000" 122° 02' 42.650714"    0.002387m
    ELL HT=           -29.6304m   +0.0000m           -29.6304m    0.059081m
  ORTHO HT=             2.8645m   +0.0000m             2.8645m    0.022231m
  GEOID HT=           -32.4949m   +0.0000m           -32.4949m    0.063381m
  Cartesian X=-2688357.7036 Y=-4294732.0152 Z= 3861060.9821

 9 4519 A 1976
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=             2.8422m   +0.0000m             2.8422m    0.022233m
  Cartesian coordinates unknown

10 4519 C 1976
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=             2.7651m   +0.0000m             2.7651m    0.022233m
  Cartesian coordinates unknown

11 4519 D 1976
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=             2.9554m   +0.0000m             2.9554m    0.022235m
  Cartesian coordinates unknown
```

```
12 4519 E 1976
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=             3.1265m   +0.0000m             3.1265m    0.022236m
  Cartesian coordinates unknown

13 4537
     N LAT=  37° 27' 10.710250" +0.000000"  37° 27' 10.710250"    0.003046m
     W LON= 122° 06' 44.103653" +0.000000" 122° 06' 44.103653"    0.002145m
    ELL HT=           -30.3003m   +0.0000m           -30.3003m    0.058958m
  ORTHO HT=             2.2462m   +0.0000m             2.2462m    0.029686m
  GEOID HT=           -32.5465m   +0.0000m           -32.5465m    0.066398m
  Cartesian X=-2694873.1647 Y=-4293956.0734 Z= 3857403.7496

14 4688
     N LAT=  37° 42' 03.091211" +0.000000"  37° 42' 03.091211"    0.003568m
     W LON= 122° 11' 22.162123" +0.000000" 122° 11' 22.162123"    0.002593m
    ELL HT=           -29.8039m   +0.0000m           -29.8039m    0.059113m
  ORTHO HT=             2.6575m   +0.0000m             2.6575m    0.029121m
  GEOID HT=           -32.4614m   +0.0000m           -32.4614m    0.064144m
  Cartesian X=-2691721.6901 Y=-4276120.9300 Z= 3879208.3446

15 ARC3
     N LAT=  37° 25' 34.575369" +0.000000"  37° 25' 34.575369"    0.003564m
     W LON= 122° 02' 05.530212" +0.000000" 122° 02' 05.530212"    0.002611m
    ELL HT=           -31.2660m   +0.0000m           -31.2660m    0.059006m
  ORTHO HT=             1.2832m   +0.0000m             1.2832m    0.028104m
  GEOID HT=           -32.5492m   +0.0000m           -32.5492m    0.064876m
  Cartesian X=-2690026.7586 Y=-4299118.4882 Z= 3855049.9474

16 BAYF
     N LAT=  37° 44' 10.708507" +0.000000"  37° 44' 10.708507"    0.002905m
     W LON= 122° 15' 23.580023" +0.000000" 122° 15' 23.580023"    0.002190m
    ELL HT=           -28.2340m   +0.0000m           -28.2340m    0.058985m
  ORTHO HT=             4.2130m   +0.0000m             4.2130m    0.033245m
  GEOID HT=           -32.4470m   +0.0000m           -32.4470m    0.064995m
  Cartesian X=-2695440.7076 Y=-4270932.9970 Z= 3882321.6213

17 CHAB
     N LAT=  37° 43' 26.799923" +0.000000"  37° 43' 26.799923"        FIXED
     W LON= 122° 07' 09.461583" +0.000000" 122° 07' 09.461583"        FIXED
    ELL HT=           214.5568m   +0.0000m           214.5568m    0.058718m
  ORTHO HT=           246.8453m   +0.0000m           246.8453m    0.027940m
  GEOID HT=           -32.2885m   +0.0000m           -32.2885m    0.061990m
  Cartesian X=-2685744.2906 Y=-4278242.0727 Z= 3881399.5034

18 CROT
     N LAT=  37° 23' 31.214052" +0.000000"  37° 23' 31.214052"    0.004615m
     W LON= 121° 49' 00.673892" +0.000000" 121° 49' 00.673892"    0.003178m
    ELL HT=           134.9854m   +0.0000m           134.9854m    0.059365m
  ORTHO HT=           167.1874m   +0.0000m           167.1874m    0.032683m
  GEOID HT=           -32.2020m   +0.0000m           -32.2020m    0.058952m
  Cartesian X=-2674936.4831 Y=-4311398.6133 Z= 3852130.0211
```

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19 E124
     N LAT=  37° 38' 33.678795" +0.000000"  37° 38' 33.678795"    0.001705m
     W LON= 122° 29' 33.644709" +0.000000" 122° 29' 33.644709"    0.001263m
    ELL HT=           -16.9096m   +0.0000m           -16.9096m    0.058892m
  ORTHO HT=            15.8630m   +0.0000m            15.8630m        FIXED
  GEOID HT=           -32.7726m   +0.0000m           -32.7726m    0.058892m
  Cartesian X=-2716436.7333 Y=-4265154.0925 Z= 3874105.9093

20 E137
     N LAT=  37° 29' 00.795343" +0.000000"  37° 29' 00.795343"    0.003502m
     W LON= 121° 56' 05.351178" +0.000000" 121° 56' 05.351178"    0.002796m
    ELL HT=           -22.9073m   +0.0000m           -22.9073m    0.058993m
  ORTHO HT=             9.5057m   +0.0000m             9.5057m    0.020627m
  GEOID HT=           -32.4130m   +0.0000m           -32.4130m    0.061529m
  Cartesian X=-2680473.9614 Y=-4300533.7343 Z= 3860101.9222

22 FILB
     N LAT=  37° 31' 16.196981" +0.000000"  37° 31' 16.196981"    0.003403m
     W LON= 122° 02' 03.945672" +0.000000" 122° 02' 03.945672"    0.002306m
    ELL HT=           -28.3835m   +0.0000m           -28.3836m    0.059011m
  ORTHO HT=             4.0809m   +0.0000m             4.0809m    0.016492m
  GEOID HT=           -32.4644m   +0.0000m           -32.4644m    0.061498m
  Cartesian X=-2686596.1464 Y=-4293709.1423 Z= 3863410.2427

23 FOOT
     N LAT=  37° 21' 45.658930" +0.000000"  37° 21' 45.658930"    0.004963m
     W LON= 122° 07' 23.787140" +0.000000" 122° 07' 23.787140"    0.003374m
    ELL HT=            56.4954m   +0.0000m            56.4954m    0.059447m
  ORTHO HT=            89.0068m   +0.0000m            89.0068m    0.036961m
  GEOID HT=           -32.5114m   +0.0000m           -32.5114m    0.066868m
  Cartesian X=-2698972.9660 Y=-4298651.5956 Z= 3849496.3936

24 G110
     N LAT=  37° 30' 04.655179" +0.000000"  37° 30' 04.655179"    0.002605m
     W LON= 122° 15' 10.573417" +0.000000" 122° 15' 10.573417"    0.001889m
    ELL HT=           -26.5722m   +0.0000m           -26.5722m    0.059084m
  ORTHO HT=             5.9550m   +0.0000m             5.9550m    0.030685m
  GEOID HT=           -32.5272m   +0.0000m           -32.5272m    0.067889m
  Cartesian X=-2703668.8845 Y=-4284569.1465 Z= 3861661.7814

25 GOLD
     N LAT=  37° 25' 20.769176" +0.000000"  37° 25' 20.769176"    0.003764m
     W LON= 121° 58' 34.122398" +0.000000" 121° 58' 34.122398"    0.002819m
    ELL HT=           -25.9731m   +0.0000m           -25.9731m    0.059025m
  ORTHO HT=             6.5655m   +0.0000m             6.5655m    0.023770m
  GEOID HT=           -32.5385m   +0.0000m           -32.5385m    0.062789m
  Cartesian X=-2685758.2390 Y=-4302096.3112 Z= 3854715.1441

26 GUAN
     N LAT=  37° 34' 22.332880" +0.000000"  37° 34' 22.332880"    0.004204m
     W LON= 122° 15' 46.149008" +0.000000" 122° 15' 46.149008"    0.003212m
    ELL HT=           -29.1118m   +0.0000m           -29.1118m    0.059659m
  ORTHO HT=             3.4466m   +0.0000m             3.4466m    0.031093m
  GEOID HT=           -32.5584m   +0.0000m           -32.5584m    0.067725m
  Cartesian X=-2701823.0512 Y=-4280008.1755 Z= 3867959.6202
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27 HUNT
     N LAT=  37° 43' 41.946215" +0.000000"  37° 43' 41.946215"    0.003472m
     W LON= 122° 21' 43.701777" +0.000000" 122° 21' 43.701777"    0.002490m
    ELL HT=           -29.1635m   +0.0000m           -29.1635m    0.059166m
  ORTHO HT=             3.3285m   +0.0000m             3.3285m    0.030559m
  GEOID HT=           -32.4920m   +0.0000m           -32.4920m    0.064192m
  Cartesian X=-2703597.0369 Y=-4266416.1352 Z= 3881619.7292

28 L124
     N LAT=  37° 41' 09.429314" +0.000000"  37° 41' 09.429314"    0.002982m
     W LON= 122° 28' 56.414513" +0.000000" 122° 28' 56.414513"    0.002258m
    ELL HT=            90.4576m   +0.0000m            90.4576m    0.058824m
  ORTHO HT=           123.1800m   +0.0000m           123.1800m        FIXED
  GEOID HT=           -32.7224m   +0.0000m           -32.7224m    0.058824m
  Cartesian X=-2714136.7412 Y=-4263240.9215 Z= 3877972.7252

29 L132
     N LAT=  37° 36' 29.253703" +0.000000"  37° 36' 29.253703"    0.004450m
     W LON= 122° 05' 13.542975" +0.000000" 122° 05' 13.542975"    0.003293m
    ELL HT=           -29.5045m   +0.0000m           -29.5045m    0.059443m
  ORTHO HT=             2.9210m   +0.0000m             2.9210m        FIXED
  GEOID HT=           -32.4255m   +0.0000m           -32.4255m    0.059443m
  Cartesian X=-2687415.6062 Y=-4286251.8142 Z= 3871059.9878

30 LOCK
     N LAT=  37° 24' 07.293981" +0.000000"  37° 24' 07.293981"    0.003643m
     W LON= 122° 02' 10.599020" +0.000000" 122° 02' 10.599020"    0.002633m
    ELL HT=           -21.5635m   +0.0000m           -21.5635m    0.059033m
  ORTHO HT=            11.0041m   +0.0000m            11.0041m    0.030182m
  GEOID HT=           -32.5676m   +0.0000m           -32.5676m    0.065058m
  Cartesian X=-2691003.7157 Y=-4300444.8067 Z= 3852918.6261

31 LUTZ
     N LAT=  37° 17' 12.647445" +0.000000"  37° 17' 12.647445"        FIXED
     W LON= 121° 51' 54.757644" +0.000000" 121° 51' 54.757644"        FIXED
    ELL HT=            95.5706m   +0.0000m            95.5706m    0.058755m
  ORTHO HT=           128.0140m   +0.0000m           128.0140m    0.041351m
  GEOID HT=           -32.4434m   +0.0000m           -32.4434m    0.061123m
  Cartesian X=-2682294.8288 Y=-4315124.9023 Z= 3842827.0130

32 M874
     N LAT=  37° 26' 10.034710" +0.000000"  37° 26' 10.034710"    0.003003m
     W LON= 121° 54' 24.894910" +0.000000" 121° 54' 24.894910"    0.002331m
    ELL HT=           -27.6431m   +0.0000m           -27.6431m    0.058692m
  ORTHO HT=             4.8050m   +0.0000m             4.8050m        FIXED
  GEOID HT=           -32.4481m   +0.0000m           -32.4481m    0.058692m
  Cartesian X=-2680069.5020 Y=-4304553.5806 Z= 3855920.2293

33 MHCB
     N LAT=  37° 20' 29.501854" +0.000000"  37° 20' 29.501854"        FIXED
     W LON= 121° 38' 33.227809" +0.000000" 121° 38' 33.227809"        FIXED
    ELL HT=          1262.3365m   +0.0000m          1262.3365m    0.058774m
  ORTHO HT=          1293.8326m   +0.0000m          1293.8326m    0.051663m
  GEOID HT=           -31.4961m   +0.0000m           -31.4961m    0.059080m
  Cartesian X=-2664063.0101 Y=-4323173.2619 Z= 3848361.4453
```

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34 MISS
     N LAT=  37° 23' 20.172990" +0.000000"  37° 23' 20.172990"    0.004260m
     W LON= 121° 59' 11.894942" +0.000000" 121° 59' 11.894942"    0.003048m
    ELL HT=           -24.6810m   +0.0000m           -24.6810m    0.059113m
  ORTHO HT=             7.8854m   +0.0000m             7.8854m    0.028412m
  GEOID HT=           -32.5664m   +0.0000m           -32.5664m    0.063377m
  Cartesian X=-2687742.9094 Y=-4303520.8208 Z= 3851762.6198

35 MONB
     N LAT=  37° 29' 07.156772" +0.000000"  37° 29' 07.156772"        FIXED
     W LON= 121° 52' 00.660481" +0.000000" 121° 52' 00.660481"        FIXED
    ELL HT=           750.9296m   +0.0000m           750.9296m    0.058660m
  ORTHO HT=           783.0515m   +0.0000m           783.0515m    0.024510m
  GEOID HT=           -32.1219m   +0.0000m           -32.1219m    0.060312m
  Cartesian X=-2675631.5540 Y=-4304130.6740 Z= 3860728.4718

36 MOON
     N LAT=  37° 26' 20.307844" +0.000000"  37° 26' 20.307844"    0.001226m
     W LON= 122° 26' 34.651829" +0.000000" 122° 26' 34.651829"    0.000900m
    ELL HT=           -10.7664m   +0.0000m           -10.7664m    0.058773m
  ORTHO HT=            22.2518m   +0.0000m            22.2518m    0.000983m
  GEOID HT=           -33.0181m   +0.0000m           -33.0181m    0.058777m
  Cartesian X=-2720127.7492 Y=-4279140.3938 Z= 3856181.9644

38 N 245
     N LAT=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
     E LON=   0° 00' 00.000000" +0.000000"   0° 00' 00.000000"    NOT KNOWN
    ELL HT=             0.0000m   +0.0000m             0.0000m    NOT KNOWN
  ORTHO HT=            28.7390m   +0.0000m            28.7390m        FIXED
  Cartesian coordinates unknown

39 N119
     N LAT=  37° 39' 20.929234" +0.000000"  37° 39' 20.929234"    0.002905m
     W LON= 122° 05' 15.574125" +0.000000" 122° 05' 15.574125"    0.002236m
    ELL HT=            -9.6219m   +0.0000m            -9.6219m    0.058883m
  ORTHO HT=            22.7310m   +0.0000m            22.7310m        FIXED
  GEOID HT=           -32.3529m   +0.0000m           -32.3529m    0.058883m
  Cartesian X=-2685749.4349 Y=-4283500.6571 Z= 3875263.7660

40 PBL1
     N LAT=  37° 51' 10.979058" +0.000000"  37° 51' 10.979058"        FIXED
     W LON= 122° 25' 08.155336" +0.000000" 122° 25' 08.155336"        FIXED
    ELL HT=            -7.4806m   +0.0000m            -7.4806m    0.058772m
  ORTHO HT=            24.8976m   +0.0000m            24.8976m    0.042131m
  GEOID HT=           -32.3782m   +0.0000m           -32.3782m    0.062164m
  Cartesian X=-2703285.8298 Y=-4256587.3524 Z= 3892573.4624

41 SANT
     N LAT=  37° 19' 52.982595" +0.000000"  37° 19' 52.982595"    0.005698m
     W LON= 122° 04' 59.330838" +0.000000" 122° 04' 59.330838"    0.003779m
    ELL HT=           100.1826m   +0.0000m           100.1826m    0.059716m
  ORTHO HT=           132.6907m   +0.0000m           132.6907m    0.038893m
  GEOID HT=           -32.5082m   +0.0000m           -32.5082m    0.066100m
  Cartesian X=-2697099.5133 Y=-4302355.6546 Z= 3846761.3618
```

```
42 SPED
     N LAT=  37° 21' 14.033760" +0.000000"  37° 21' 14.033760"    0.004854m
     W LON= 121° 54' 25.187881" +0.000000" 121° 54' 25.187881"    0.003472m
    ELL HT=           -14.1012m   +0.0000m           -14.1012m    0.059321m
  ORTHO HT=            18.4243m   +0.0000m            18.4243m    0.031439m
  GEOID HT=           -32.5255m   +0.0000m           -32.5255m    0.060909m
  Cartesian X=-2683010.4496 Y=-4309263.4982 Z= 3848678.5902

43 SUAA
     N LAT=  37° 25' 36.846030" +0.000000"  37° 25' 36.846030"        FIXED
     W LON= 122° 10' 23.785794" +0.000000" 122° 10' 23.785794"        FIXED
    ELL HT=            20.9777m   +0.0000m            20.9777m    0.058704m
  ORTHO HT=            53.5206m   +0.0000m            53.5206m    0.032569m
  GEOID HT=           -32.5429m   +0.0000m           -32.5429m    0.067515m
  Cartesian X=-2700403.3370 Y=-4292606.9992 Z= 3855137.2899

44 TID1
     N LAT=  37° 35' 22.690244" +0.000000"  37° 35' 22.690244"    0.006392m
     W LON= 122° 19' 06.150846" +0.000000" 122° 19' 06.150846"    0.004893m
    ELL HT=           -27.8042m   +0.0000m           -27.8042m    0.060921m
  ORTHO HT=             4.7599m   +0.0000m             4.7599m    0.033268m
  GEOID HT=           -32.5640m   +0.0000m           -32.5640m    0.067595m
  Cartesian X=-2705365.6484 Y=-4276428.1718 Z= 3869435.0965

45 WINT
     N LAT=  37° 39' 09.499543" +0.000000"  37° 39' 09.499543"        FIXED
     W LON= 122° 08' 25.988949" +0.000000" 122° 08' 25.988949"        FIXED
    ELL HT=           -28.2018m   +0.0000m           -28.2018m    0.058663m
  ORTHO HT=             4.2630m   +0.0000m             4.2630m    0.020404m
  GEOID HT=           -32.4648m   +0.0000m           -32.4648m    0.062402m
  Cartesian X=-2689809.3309 Y=-4281189.2857 Z= 3874973.4303

46 X572
     N LAT=  37° 28' 54.536050" +0.000000"  37° 28' 54.536050"    0.003549m
     W LON= 122° 08' 59.098003" +0.000000" 122° 08' 59.098003"    0.002532m
    ELL HT=           -29.7190m   +0.0000m           -29.7190m    0.059141m
  ORTHO HT=             2.8243m   +0.0000m             2.8244m    0.029459m
  GEOID HT=           -32.5434m   +0.0000m           -32.5434m    0.066704m
  Cartesian X=-2696646.9678 Y=-4290543.2686 Z= 3859944.6475

47 Z137
     N LAT=  37° 28' 48.376218" +0.000000"  37° 28' 48.376218"    0.003178m
     W LON= 121° 58' 25.192354" +0.000000" 121° 58' 25.192354"    0.002344m
    ELL HT=           -30.5371m   +0.0000m           -30.5371m    0.058998m
  ORTHO HT=             1.9370m   +0.0000m             1.9370m    0.021180m
  GEOID HT=           -32.4741m   +0.0000m           -32.4741m    0.062419m
  Cartesian X=-2683509.1399 Y=-4298907.9693 Z= 3859793.4499

48 ZOAA
     N LAT=  37° 32' 34.737884" +0.000000"  37° 32' 34.737884"    0.003259m
     W LON= 122° 00' 54.411842" +0.000000" 122° 00' 54.411842"    0.002289m

    ELL HT=           -19.3062m   +0.0000m           -19.3062m    0.059010m
  ORTHO HT=            13.1240m   +0.0000m            13.1240m        FIXED
  GEOID HT=           -32.4302m   +0.0000m           -32.4302m    0.059010m
  Cartesian X=-2684370.3302 Y=-4293369.9045 Z= 3865335.9723
```

COMPUTED VELOCITIES

Station	N vel	E vel	U vel
04EG	0.029452	-0.024096	-0.000169
04EH	0.030094	-0.021732	-0.000381
04FH	0.024676	-0.019006	-0.000857
1446	0.021683	-0.017966	-0.000495
4413	0.028062	-0.023432	-0.000309
4508	0.027636	-0.021486	-0.000232
4509	0.024072	-0.020323	-0.000564
4519	0.022542	-0.020148	-0.001073
4537	0.025753	-0.019815	-0.000865
4688	0.024536	-0.018702	-0.000328
ARC3	0.025229	-0.018903	-0.001442
BAYF	0.027521	-0.022045	-0.000681
CHAB	0.019666	-0.013826	-0.001177
CROT	0.018538	-0.014567	-0.002392
E124	0.027659	-0.024269	-0.000399
E137	0.019987	-0.016847	-0.001928
FILB	0.021490	-0.019251	-0.001007
FOOT	0.029211	-0.018732	-0.001145
G110	0.029190	-0.022061	-0.000212
GOLD	0.023973	-0.017994	-0.001828
GUAN	0.028954	-0.022311	0.000005
HUNT	0.026684	-0.022508	-0.000706
L124	0.026648	-0.023446	-0.000541
L132	0.021559	-0.016929	-0.000105
LOCK	0.026324	-0.018509	-0.001513
M874	0.021050	-0.016052	-0.002201
MHCB	0.012379	-0.010272	-0.001890
MISS	0.025880	-0.017792	-0.001844
MONB	0.017966	-0.013814	-0.002393
MOON	0.031399	-0.026451	-0.000211
N119	0.020390	-0.015168	-0.000125
PBL1	0.023333	-0.021002	-0.001399
SANT	0.029956	-0.017941	-0.001416
SPED	0.024264	-0.016803	-0.002289
SUAA	0.027678	-0.019758	-0.000682
TID1	0.028796	-0.023005	-0.000097
WINT	0.023350	-0.017680	0.000683
X572	0.025935	-0.020591	-0.000542
Z137	0.021228	-0.018524	-0.001659
ZOAA	0.020275	-0.017989	-0.001039
LUTZ	0.025006	-0.018057	-0.002525

D. Listing of sessions by station:

```
Station: 4508
     261-6
     262-6
     262-7
Station: 4509
     260-A
     260-1
     261-6
     262-6
Station: 4537
     260-A
     259-B
     260-1
     260-4
     261-6
     262-6
Station: 4688
     261-5
     262-5
Station: ARC3
     259-3
     259-4
     260-3
Station: BAYF
     261-5
     262-A
     262-5
     262-8
Station: FILB
     260-A
     260-1
Station: CROT
     259-3
     260-3
Station: E124
     262-A
     262-8
     246-0
     247-0
     248-0
Station: E137
     260-A
     260-2
Station: FOOT
     259-4
     260-4
Station: G110
     261-6
     262-6
     262-7
Station: GUAN
     261-7
     262-7
```

```
Station: 04EG
     261-7
     262-7
Station: 04EH
     261-6
     262-6
Station: 04FH
     261-5
     262-5
Station: SANT
     259-4
     260-4
Station: SPED
     259-3
     260-3
Station: MISS
     259-3
     260-3
Station: HUNT
     262-A
     262-8
Station: LOCK
     259-3
     260-3
Station: L124
     262-A
     262-8
Station: L132
     261-5
     262-5
Station: 1446
     260-A
     260-1
     261-5
     262-5
Station: M874
     260-A
     259-3
     260-2
     260-3
Station: MOON
     261-6
     262-6
     246-0
     247-0
     248-0
Station: N119
     261-5
     262-5
Station: 4413
     261-7
     262-7
Station: GOLD
     260-A
     259-3
     260-2
     260-3
```

```
Station: TID1
     261-7
     262-7
Station: X572
     259-4
     260-4
     261-6
     262-6
Station: Z137
     260-A
     260-2
Station: ZOAA
     260-A
     260-2
Station: 4519
     260-2
     260-1
Station: CHAB
     261-0
     262-0
     246-0
     247-0
     248-0
     249-0
Station: MHCB
     259-0
     260-0
     246-0
     247-0
     248-0
     249-0
Station: MONB
     259-0
     260-0
     246-0
     247-0
     248-0
     249-0
Station: PBL1
     261-0
     262-0
     246-0
     247-0
     248-0
     249-0
Station: SUAA
     259-0
     260-0
     261-0
     262-0
     246-0
     247-0
     248-0
     249-0
Station: WINT
     261-0
     262-0
```

```
     246-0
     247-0
     248-0
     249-0
Station: LUTZ
     246-0
     247-0
     248-0
     249-0
```

E. Listing of stations by session:

```
Session 246-0:
     MOON
     SUAA
     MHCB
     LUTZ
     WINT
     E124
     PBL1
     MONB
     CHAB
Session 247-0:
     MOON
     SUAA
     LUTZ
     MHCB
     MONB
     WINT
     CHAB
     E124
     PBL1
Session 248-0:
     SUAA
     LUTZ
     MHCB
     MONB
     MOON
     E124
     CHAB
     WINT
     PBL1
Session 249-0:
     SUAA
     LUTZ
     MHCB
     MONB
     WINT
     CHAB
     PBL1
Session 259-0:
     MONB
     SUAA
     MHCB
Session 259-3:
     ARC3
     GOLD
     LOCK
     CROT
     M874
     MISS
     SPED
Session 259-4:
     SANT
     X572
```

```
     ARC3
     FOOT
Session 259-B:
     4537
Session 260-0:
     SUAA
     MONB
     MHCB
Session 260-1:
     FILB
     1446
     4519
     4537
     4509
Session 260-2:
     4519
     GOLD
     M874
     E137
     Z137
     ZOAA
Session 260-3:
     ARC3
     CROT
     GOLD
     LOCK
     M874
     MISS
     SPED
Session 260-4:
     SANT
     X572
     4537
     FOOT
Session 260-A:
     FILB
     4537
     4509
     1446
     E137
     Z137
     GOLD
     M874
     ZOAA
Session 261-0:
     SUAA
     CHAB
     WINT
     PBL1
Session 261-5:
     1446
     4688
     04FH
     L132
     N119
     BAYF
Session 261-6:
```

```
     G110
     4508
     X572
     04EH
     MOON
     4509
     4537
Session 261-7:
     04EG
     TID1
     GUAN
     4413
Session 262-0:
     SUAA
     CHAB
     WINT
     PBL1
Session 262-5:
     1446
     N119
     4688
     04FH
     L132
     BAYF
Session 262-6:
     G110
     4508
     X572
     04EH
     MOON
     4509
     4537
Session 262-7:
     04EG
     TID1
     GUAN
     4508
     G110
     4413
Session 262-8:
     E124
     BAYF
     HUNT
     L124
Session 262-A:
     E124
     BAYF
     HUNT
     L124
```