TOWILL | Surveying, Mapping and GIS Services

GROUND CONTROL and HYDROGRAPHIC SURVEY REPORT

Napa River Salt Marsh Restoration Project

Phase 2 – Topographic and Hydrographic Surveys

Contract No.: DACW07-98-D-0001

Towill, Inc. File No. 5921-002

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1. INTRODUCTION

Napa River Salt Marsh Restoration Project, Phase 2, involved detailed topographic and hydrographic surveys to collect terrain data suitable for performing numeric modeling for hydraulic analysis and design. This required a series of precise terrestrial surveys to act as a control network, to support data acquisition in the ponds, sloughs and levee areas. The control network was designed to distribute accurate horizontal and vertical control points throughout the study area for future use. The project scope of work called for surveying existing points on the Cullinan Ranch as well as referencing University of California, Davis Extension (UCD), data collection stations.

To meet the project criteria for accurate elevation data needed to create a valid hydraulic model, precise levels using a self-reading electronic level were performed around the boundaries of the project. The physical layout of the project area, with many sloughs and channels as well as vegetation atop the levee network, made it impossible to run direct levels to control points within the interior of the project area. Therefore, the perimeter level network served as the basis for precise GPS vertical surveys to extend the network throughout the project area, including the interior regions. The North American Vertical Datum of 1988 (NAVD88) was chosen as the datum for vertical surveys.

Horizontal control was tied to the California State Plane Coordinate System, Zone 2 (CCS83 (1992), Zone 2) using High Precision Geodetic Network (HPGN) stations as the basis for the survey.

Hydrographic surveys were performed using precise, survey grade recording fathometers, in conjunction with sub-meter accuracy GPS positioning.

2. RECONNISSANCE

Existing horizontal and vertical control information was obtained from the National Geodetic Survey (NGS) on monuments within and near the project site. The County of Napa records were researched and elevation data was obtained on a precise level circuit that bordered the northerly boundary of the project.

Existing NGS bench marks were searched for along the Southern Pacific Railroad on the northerly project boundary. Two bench marks east of the Brazos Draw Bridge were found to be disturbed. The bench mark listed on the Brazos Bridge was searched for and was not found. It appears that construction may have destroyed or covered the disk. NGS bench marks west of the Brazos Bridge have been destroyed by railroad construction. A Napa County deep rod monument was located along the railroad right-of-way west of the bridge and was incorporated in the survey.

Existing bench marks along Highway 37 bordering the southern boundary of the project area were searched for and a total of five were recovered for use in the survey.

A level route was chosen which started at the Highway 37 Bridge over the Napa River, continued west along Highway 37 to the entrance of the Skaggs Island Naval Reservation. From there the route progressed north through the reservation and along Skaggs Island Road, across the bridge at Hudeman Slough and then across farm land and levees to the Brazos Bridge.

Three HPGN stations were searched for and recovered. They are located in three different quadrants, in relation to the survey site, providing strong geometry for the horizontal survey.

During the reconnaissance phase three existing monuments were recovered at the Cullinan Ranch site.

3. MONUMENTATION

New monuments were established throughout the project area. A new, more permanent point was established near each of the UCD data collection stations that could be found. The remaining points were set to provide a means of obtaining water level data at regular intervals throughout the survey area as well as being used to control topographic and hydrographic survey positioning.

Twenty-six new monuments were set for project control. The monuments were either a 6 foot long, 3/4-inch steel rebar, with a 2 1/2-inch Towill, Inc. aluminum cap, or a Towill, Inc. 1 1/8-inch brass disk set in concrete. Stations monumented using rebar are referenced by two, steel T-bar fence posts. Additionally, six existing monuments were located and incorporated for use in the survey.

An additional thirteen points were set to control high flight mapping. These points are monumented by a Survey Spike or a 5/8-inch steel rebar and are considered semi-permanent.

4. HORIZONTAL CONTROL

Horizontal control was tied to the California Coordinate System, NAD83 (1992), Zone 2, using Trimble Navigation model 4000 and 4700, Dual Frequency GPS receivers. Control

stations were tied in a network design with all stations being connected to adjacent points. Fast static sessions lasting a minimum of 20 minutes, with most lasting at least 30 minutes, were used to survey control stations. GPS vectors were measured to three HPGN stations with sessions that lasted a minimum of twenty minutes. Twelve stations having NAVD88 elevation values determined from the leveling effort, were incorporated into the GPS network. A network map is included as an attachment to this report. A field sketch was made of most new stations and the sketches appear as an attachment to this report.

A Department of the Interior bench mark, stamped BM 150, was found on Skaggs Island and was included in the horizontal survey. It is not known if the Department of the Interior established horizontal coordinates on this point but if they did, the values could be used to transform data acquired by the Department of the Interior. This data could act as a possible supplement to data collected during the Napa Salt Marsh survey.

5. HORIZONTAL SURVEY ADJUSTMENT RESULTS

A total of 40 stations and 60 baselines were included in the least squares adjustment. Trimble Navigation, GPSurvey, Version 2.30 was used for baseline reduction and TRIMNET Plus, Version 92.11c was used for the least squares adjustment. The network adjustment statistics shows the survey passes the Chi-Square Test at the 95% confidence level. The adjustment statistics show the survey has an accuracy classification of Order II, Class I or higher. After a minimally constrained adjustment was performed to test the internal integrity of the survey, it was constrained to three High Precision Geodetic Network (HPGN) stations. The stations were, HPGN D CA 04 KH, HPGN D CA 04 JF and HPGN D CA 04 KF.

After the survey was adjusted it was found that bench mark P 1393 has published horizontal coordinates, with a First Order horizontal classification. Towill's adjusted values differ by 0.15 meter in northing and 0.12 meter in easting from the published values for P 1393. These differences are much larger than would be expected given the methods, equipment and control stations used in the survey. A direct measurement between the closest HPGN station, HPGN D CA 04 JF, and station P 1393, reaffirmed the results of the Towill survey. In addition, a minimally constrained adjustment holding only station HPGN D CA 04 JF results in differences from published values at station HPGN D CA 04 KH of 0.04 meter in northing and 0.02 meter in easting and at station HPGN D CA 04 KF, differences of 0.01 meter in northing and 0.01 meter in easting. This minimally constrained adjustment validated Towill's survey and no further examination of the coordinate difference at P 1393 was undertaken. The coordinate values for station P 1393 listed in this report are those derived from the Towill, Inc. adjustment. NGS published coordinates for P 1393 can be found in the NGS Data Sheet section of this report.

NGS data sheets are included in the NGS Data Sheet section of this report for all horizontal control stations, with published values, used during this survey effort.

6. VERTICAL CONTROL

The purpose of the primary level loop was to establish a reliable network of vertical control stations that could be used for topographic and hydrographic surveys of ponds, sloughs and marsh lines. Precise measurement of the water level surface is mandatory to obtain a good hydraulic model that will reflect the actual dynamics of water movement in the sloughs. Existing bench marks, other than those along Highway 37, had not been resurveyed for many years and the project area is prone to settlement. This was reflected in the results of the least squares level run adjustment on those stations.

The primary level circuit was completed between March 29, and April 27, 1999. An electronic level, a LEICA NA 3000, was used exclusively for the survey. This level is classified as a Second Order level by the NGS. Second Order methods were used throughout the survey. This included the use of bar code rods and turning plates. Site distances and observing conditions were maintained to Second Order standards. Levels were run in both directions or looped between points with fixed elevations. Final survey results meet Second Order accuracy standards.

The level runs covered a distance of 55 kilometers. Elevations were established for 61points of which 25 are considered permanent. In addition to new points set by Towill, Inc., elevations were established on two NGS tidal bench marks. NGS BM 5438D 1986 (Elev. 0.093m) and NGS BM 5415D 1979 (Elev. 0.634m) thus providing direct correlation between NGS tidal values at these stations and the Napa Salt Marsh survey.

Two Department of the Interior bench marks were found along the route and were included in the survey. It appears the Department of Interior had recently completed a survey that included some of the sloughs in the project area. If the information can be obtained from the Department of the Interior the elevations of BM 150, 0.820m and BM 153, 2.548m can be used to transform the data from that project to the datum used for the Napa Salt Marsh survey.

7. VERTICAL CONTROL ADJUSTMENT RESULTS

Level runs were adjusted using Starplus Software Inc.'s STAR-LEV adjustment program (Version 1.27), a least squares adjustment program. The initial adjustment was minimally constrained to test the internal integrity of the level circuits. Once the level runs were verified, differential elevations between existing bench marks were examined. This examination revealed that some of the existing bench marks had moved. The elevation differentials between bench marks that moved were greater than the expected error in Towill's survey, given procedures, equipment used and adjustment results.

The final adjustment held three bench marks, all of which are located along Highway 37. These monuments were included in an NGS level survey that was adjusted in 1991. Bench mark P 1393 (Elev. 2.283m, NAVD88) is a 3D deep rod monument set along Hwy 37 near the Skaggs Island turn-off. Q 1393 (Elev. 3.240m, NAVD88) is an NGS brass disk set in the abutment of the Highway 37 overpass to Mare Island, north gate. N 1393

(Elev. 3.865m, NAVD88) is an NGS brass disk set in a bridge abutment at the Highway 37 crossing of Sonoma Creek. P 1393 and N1393 have a stability rating of "A", most reliable and expected to hold. Bench mark Q 1393 has a stability rating of "B", probably hold position/elevation well. Other bench marks included in the survey have a stability rating of "C", may hold but of type commonly subject to surface motion.

The published elevations for NGS bench mark K 466 Reset 1969, N 466 and 47_1, are superseded by new values:

K 466 Reset 1969	2.674m (record)	2.610m (new)	diff. = -0.064m
N 466	1.615m (record)	1.580m (new)	diff. = -0.035m
47_1	0.564m (record)	0.678m (new)	diff. = 0.114m

NGS data sheets are included in the NGS Data Sheet section of this report for all bench marks having published values, used during this survey effort.

8. HYDROGRAPHIC SURVEY IN SLOUGHS, CREEKS and RIVER

Survey lines in the sloughs and creeks were spaced at nominal 300 meter intervals. Phillip Williams and Associates furnished the locations of lines to be surveyed. The line end points were entered into a computer to serve as the basis for the survey. The survey was completed using a Coastal Oceanographics, Hypack, hydrographic survey software package. The software provides online navigation using input from the OMNI satellite differential broadcast signal, in conjunction with the GPS satellites, or from a pre-positioned base station broadcasting differential corrections. Both positioning methods were used during the survey and are sub-meter accuracy systems. Depths were recorded using an Odem Echotrac DF3200 fathometer. The unit is a survey grade precision fathometer capable of accuracies of plus or minus 3cm at 33 meters of depth. Depths are recorded 10 times per second along the surveyed line. The fathometer was calibrated on site using velocity of sound measurements and was bar checked at 1.5 meter intervals to the maximum depth of the area to be surveyed. An Odem Digibar was used to determine the velocity of sound.

Temporary tide stations were established throughout the area and these were supplemented as needed to provide reference marks at nominal 1.6 kilometer intervals. Tide stations were established using differential levels if a control point was nearby or by GPS methods if leveling was not feasible. Tides were recorded at a maximum of 30 minute intervals. Tides for surveyed lines were taken at stations that bracketed the individual line. This effectively created a slope so the correct tide value would be applied at the actual location of the surveyed line. Given the equipment and techniques used for the survey it would be expected that individual depths would be accurate to plus or minus 5 centimeters. This is well within the project specifications of 10 centimeter accuracy for depths.

Hydrographic surveys in the sloughs and creeks were restricted to times when the tide level was plus 1 meter or higher, MLLW. This restriction was imposed to provide

adequate coverage in the slough and creek channels, even though this severely limited the hours available on any given day, as well as the number of days that could be utilized during any month.

The Napa River was surveyed from the Mare Island Causeway to the Brazos Railroad Bridge. The same equipment and methods were used, the only difference was a line spacing of 1000 meters for the river.

9. HYDROGRAPHIC SURVEYS IN PONDS

Phillip Williams and Associates furnished the locations of lines to be surveyed. Pond surveys employed the same software and hardware as the slough surveys. The equipment was mounted on a variety of survey vessels. For most of the survey there was very little water in the ponds. Some ponds were surveyed with an eight wheel drive amphibious vehicle. This worked well when there was more than 0.3 meters of water available for entry and the pond had high spots. The vehicle could enter and leave with 0.3 meters of water and once in the pond it could travel over most terrain even that which was above the water level. Initially the water depth allowed the use of a shallow water boat with a short shaft motor. This combination could operate in water that was at least 0.3 meters deep. Many of the ponds had high areas that were too shallow for the motor. A new motor was purchased that could operate in water that was only 0.1 meter deep. As the ponds continued to dry up many islands appeared and it was no longer possible to survey them by boat, even using the new engine. The ponds themselves are criss-crossed with interior sloughs that still contained water. This made walking the ponds impossible. The remaining channels are sediment laden and attempting a crossing resulted in sinking over a mans head while submerging equipment in very salty water. Distances from shore were to far to maintain survey accuracy using traditional survey methods, with a man walking carrying only a glass retro-prism. In general, many methods were used and many other methods were tried during the pond surveys. The continually changing conditions and pond configurations made the survey a challenging effort.

Pond 1A was an exception. This pond was small and narrow enough to survey with a total station from the shore. A canoe was used to navigate the shallow water and measurements were taken with a total station.

When the water depth was greater than 0.6 meter depths were recorded by the survey program. In shallower areas the depth was measured and recorded by hand.

10. MARSH LINES

Phillip Williams and Associates furnished the locations of lines to be surveyed. Marsh lines were surveyed using traditional total station methods as well as GPS real-time survey techniques. Due to the numerous hidden channels total stations were used for the most part. Marsh lines extended from the slough banks, over the levees to the ponds edge.

Many of the marsh lines were surveyed while tidal waters covered the survey area. In addition, the high reeds and heavy vegetation made it all but impossible to detect water channels in the marsh area. This would result in the surveyor going hip deep or, as happened on more than one occasion, over his head in the water. It was not possible to waterproof the electronic equipment used in real-time GPS surveying to deal with this condition. A variety of methods were used to cross the larger channels encountered while walking along the marsh lines, including inner tubes, small inflatable boats, aluminum ladders and chest waders. The ladders were used because the channels have a vertical bank, making it impossible to enter and leave the channels when the water level was low.

A control point was established on each marsh line using GPS survey methods. This provided an elevation and starting coordinate for the survey line. An existing control point was used as a backsight and the surveyor was visually guided along the line to be surveyed. Measurements were taken from the control point as the surveyor walked the line. Data were recorded electronically in a data collector.

11. UCD REFERENCE MARKS

New control points were established near existing UCD reference marks in the project area. A field sketch was made for each new station to help in recovery. The UCD reference marks were then tied directly to the new survey. This effectively established precise horizontal and vertical coordinates on the old reference marks as well as their more permanent replacements.

UCD reference mark CANS was destroyed and could not be tied to the new coordinate system. A new control point, Station 400, was set near the old CANS location and can be used to reference any new UCD surveys in the vicinity.

UCD stations M5 and CAR were not surveyed. It was decided during the initial planning stages for contract negotiations that these stations were too far from the project area to be included.

UCD Station Buchli does not have an original reference mark. A new point, 1005, was set in the vicinity and can be used as a reference station for any future surveys. The same is true for UCD reference mark Napa. A new station, 1012, was set near the original equipment location to be used for future surveys.

12. CULLINAN RANCH SURVEY

Three existing control points on Cullinan Ranch were resurveyed. The stations were CULL 2, CULL 4 and CULL 104. A check between the two surveys revealed a high degree of correlation on the surveyed points. It appears that translating and rotating the old coordinates using these three points would produce very satisfactory results.

13. HORIZONTAL and VERTICAL COORDINATES for SURVEYED POINTS

Towill, Inc.

Napa River Salt Marsh Restoration Project - Phase 2 - Topographic and Hydrographic Surveys

Contract No.: DACDW07-98-D-000, Towill, Inc. File No. 5921-002

Station	Geographic NAD83		CCS83(1992), Zone 2		NAVD88	CCS83(1992), Zone 2		NAVD88	Order/Type	Description	Monument
	Latitude	Longitude	Northing(ft)	Easting(ft)	Elev.(ft)	Northing(m)	Easting(m)	Elev.(m)			Record
1	38°07'05.77010"	122°17'14.69360"	1805022.169	6478972.860	9.283	550171.857	1974794.877	2.829	2nd Levels	Survey Spike	DA1959
12	38°08'55.89054"	122°22'50.43528"	1816260.850	6452186.832	9.72	553597.414	1966630.480	2.96	3rd GPS	Survey Spike	DA1959
13	38°11'11.16552"	122°25'11.01893"	1829994.974	6441019.319	8.85	557783.584	1963226.615	2.70	3rd GPS	Rebar & Cap	DA1959
141	38°10'53.90474"	122°22'10.43614"	1828186.227	6455430.771	10.24	557232.276	1967619.234	3.12	3rd GPS	Rebar & Cap	DA1959
150	38°10'54.34923"	122°22'54.18579"	1828245.632	6451937.553	2.690			0.820	2nd Levels	Dept. of Interior	None
153					8.360			2.548	2nd Levels	Dept. of Interior	None
353	38°09'07.91935"	122°21'52.92361"	1817458.871	6456786.120	8.416	553962.572	1968032.345	2.565	2nd Levels	Rebar & Cap	DA1959
400	38°09'16.25728"	122°20'40.93932"	1818279.911	6462539.626	10.086	554212.825	1969786.018	3.074	2nd Levels	Rebar & Cap	DA1959
529	38°07'37.21110"	122°18'00.41767"	1808214.644	6475329.061	9.572	551144.926	1973684.245	2.918	2nd Levels	Rebar & Cap	DA1959
1001	38°08'28.36398"	122°18'25.39703"	1813396.077	6473350.419	9.66	552724.230	1973081.154	2.95	3rd GPS	Rebar & Cap	DA1959
1002	38°10'57.51818"	122°20'07.03266"	1828513.557	6465285.894	10.83	557332.047	1970623.082	3.30	3rd GPS	Rebar & Cap	DA1959
1003	38°11'29.12915"	122°23'32.94900"	1831777.216	6448857.514	8.522	558326.812	1965615.701	2.598	2nd Levels	Rebar & Cap	DA1959
1004	38°12'30.05324"	122°19'56.16885"	1837871.399	6466187.584	8.837	560184.323	1970897.917	2.694	2nd Levels	Rebar & Cap	DA1959
1005	38°11'35.69981"	122°19'51.89813"	1832371.658	6466508.443	8.996	558507.998	1970995.715	2.742	2nd Levels	Rebar & Cap	DA1959

General Survey Notes:

Elevations are based on NGS bench mark N 1393, P 1393 and Q 1393.

Horizontal coordinates are based on NGS published values for HPGN D CA 04 JF, HPGN D CA 04 KF and HPGN D CA 04 KH.

Order/Type - Order of accuracy and how the elevation was determined. Either differential levels or GPS.

Monument Record - Refers to the type of monument record sheet available, if any. DA 1959 is a U.S. Government form used by the Corps of Engineers.

Data Sheet is an NGS published data sheet.

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	Latitude	Longitude	Northing(ft)	Easting(ft)	Elev.(ft)	Northing(m)	Easting(m)	Elev.(m)			Record
1006	38°12'32.13700"	122°18'35.29966"	1838059.394	6472643.315	6.964	560241.624	1972865.628	2.123	2nd Levels	Rebar & Cap	DA1959
1007	38°11'34.56129"	122°18'52.19748"	1832239.553	6471274.378	10.894	558467.733	1972448.375	3.320	2nd Levels	Rebar & Cap	DA1959
1008	38°11'15.24955"	122°24'47.07170"	1830399.361	6442933.252	10.27	557906.841	1963809.983	3.13	3rd GPS	Rebar & Cap	DA1959
1012	38°09'31.73287"	122°22'50.08903"	1819886.623	6452229.677	13.864	554702.552	1966643.539	4.226	2nd Levels	1 1/8" Brass Disk	DA1959
1013	38°12'16.74186"	122°22'32.19745"	1836573.304	6453727.767	11.667	559788.663	1967100.158	3.556	2nd Levels	1 1/8" Brass Disk	DA1959
1014	38°12'22.48248"	122°21'10.97048"	1837128.041	6460213.916	12.752	559957.747	1969077.140	3.887	2nd Levels	Rebar & Cap	DA1959
1016	38°09'18.85115"	122°24'11.96859"	1818611.689	6445683.739	12.500	554313.951	1964648.333	3.810	2nd Levels	Rebar & Cap	DA1959
1018	38°07'20.19065"	122°18'46.16259"	1806505.135	6471667.611	2.254	550623.866	1972568.233	0.687	2nd Levels	Rebar & Cap	DA1959
1021	38°08'48.36354"	122°20'03.42344"	1815446.918	6465526.026	10.49	553349.327	1970696.274	3.20	3rd GPS	Rebar & Cap	DA1959
1022	38°09'13.45849"	122°18'14.23672"	1817954.957	6474257.332	12.02	554113.779	1973357.582	3.66	3rd GPS	Rebar & Cap	DA1959
1023	38°10'21.58930"	122°17'55.12609"	1824842.174	6475806.563	11.93	556213.007	1973829.788	3.64	3rd GPS	Rebar & Cap	DA1959
1024	38°10'08.36885"	122°19'11.87578"	1823525.624	6469672.610	11.92	555811.722	1971960.155	3.63	3rd GPS	Rebar & Cap	DA1959
1025	38°10'06.92157"	122°20'52.47819"	1823408.737	6461637.520	10.92	555776.095	1969511.055	3.33	3rd GPS	Rebar & Cap	DA1959
1027	38°11'29.25314"	122°21'25.20588"	1831747.702	6459056.456	9.82	558317.816	1968724.345	2.99	3rd GPS	Rebar & Cap	DA1959
1028	38°11'16.52876"	122°25'23.96523"	1830542.323	6439988.157	12.53	557950.416	1962912.316	3.82	3rd GPS	Rebar & Cap	DA1959

General Survey Notes:

Elevations are based on NGS bench mark N 1393, P 1393 and Q 1393.

Horizontal coordinates are based on NGS published values for HPGN D CA 04 JF, HPGN D CA 04 KF and HPGN D CA 04 KH.

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Station	Geographic NAD83		CCS83(1992), Zone 2		NAVD88	CCS83(1992), Zone 2		NAVD88	Order/Type	Description	Monument
	Latitude	Longitude	Northing(ft)	Easting(ft)	Elev.(ft)	Northing(m)	Easting(m)	Elev.(m)			Record
1029	38°12'35.74789"	122°24'48.18474"	1838543.103	6442881.425	12.15	560389.059	1963794.186	3.70	3rd GPS	Rebar & Cap	DA1959
47_1					2.225			0.678	2nd Levels	3D Rod	Data Sheet
CULL 2	38°07'37.55448"	122°18'00.35733"	1808249.366	6475333.998	8.909	551155.509	1973685.750	2.715	2nd Levels	Dept. of Interior	None
CULL 4	38°08'06.20349"	122°20'40.50223"	1811192.965	6462547.670	8.249	552052.720	1969788.469	2.514	2nd Levels	Rebar & Cap	DA1959
CULL 104	38°08'21.34716"	122°19'10.51057"	1812698.664	6469743.569	8.969	552511.658	1971981.784	2.734	2nd Levels	Dept. of Interior	None
HPGN D 04 JF	38°09'03.10687"	122°26'55.37911"	1817080.160	6432622.780		553847.140	1960667.345			Caltrans 3D Rod	Data Sheet
HPGN D 04 KF	38°14'42.82280"	122°28'03.82490"	1851473.830	6427331.940		564330.352	1959054.693			Caltrans 3D Rod	Data Sheet
HPGN D 04 KH	38°09'17.24405"	122°15'12.45095"	1818293.380	6488779.690		554216.931	1977784.005			Caltrans 3D Rod	Data Sheet
K 466 Reset					8.562			2.610	2nd Levels	USC&GS Disk	Data Sheet
N 466					5.184			1.580	2nd Levels	USC&GS Disk	Data Sheet
N 1393					12.680			3.865	1st Levels	NGS Brass Disk	Data Sheet
P 1393	38°08'56.40322"	122°22'49.34954"	1816312.351	6452273.786	7.490	553613.112	1966656.983	2.283	1st Levels	NGS 3D Rod	Data Sheet
Q 1393					10.630			3.240	1st Levels	NGS Brass Disk	Data Sheet
5415D 1979					2.081			0.634	2nd Levels	NGS 3D Rod	Data Sheet
5438D 1986					0.304			0.093	2nd Levels	NGS 3D Rod	Data Sheet

General Survey Notes:

Elevations are based on NGS bench mark N 1393, P 1393 and Q 1393.

Horizontal coordinates are based on NGS published values for HPGN D CA 04 JF, HPGN D CA 04 KF and HPGN D CA 04 KH.

Order/Type - Order of accuracy and how the elevation was determined. Either differential levels or GPS.

Monument Record - Refers to the type of monument record sheet available, if any. DA 1959 is a U.S. Government form used by the Corps of Engineers.

Data Sheet is an NGS published data sheet.

14. HORIZONTAL and VERTICAL COORDINATES for UCD REFERENCE STATION

Towill, inc.

Napa Salt Marsh Restoration Project – Phase 2 – Topographic and Hydrographic Surveys
UCD Reference Stations

		CCS83 (1992), ZONE 2 - NAVD88				
		Northing (m)	Easting (m)	Elev. (m)	Latitude	Longitude
Towill Sta.:	1001	552724.230	1973081.154	2.95	38-08-28.36398	122-18-25.39703
UCD Ref. Mark:	PIPE	552731.142	1973082.781	2.48	38-08-28.58833	122-18-25.33118
diff.		-6.912	-1.627	0.47		
Towill Sta.:	1006	560241.624	1972865.628	2.123	38-12-32.13700	122-18-35.29966
UCD Ref. Mark:	M14	N/A	N/A	2.647	38-12-31.820	122-18-23.000
diff.				-0.524		
Towill Sta.:	1013	559788.662	1967100.157	3.556	38-12-16.74187	122-22-32.19745
UCD Ref. Mark:	HUDE	559854.699	1967168.543	3.253	38-12-18.89265	122-22-29.39802
diff.		-66.037	-68.386	0.303		
Towill Sta.:	1016	554313.951	1964648.333	3.826	38-09-18.85115	122-24-11.96859
UCD Ref. Mark:	PABLO 13	554362.730	1964349.933	3.244	38-09-20.38994	122-24-24.23332
diff.		-48.779	298.4	0.582		
Towill Sta.:	1016	554313.951	1964648.333	3.826	38-09-18.85115	122-24-11.96859
UCD Ref. Mark:	PABLO 14	554360.744	1964374.771	3.132	38-09-20.32914	122-24-23.21282
diff.		-46.793	273.562	0.694		
Towill Sta.:	1022	554113.779	1973357.581	3.66	38-09-13.45849	122-18-14.23672
UCD Ref. Mark:	CHINA	554130.257	1973315.733	2.80	38-09-13.98834	122-18-15.95775
diff.		-16.478	41.848	0.86		
Towill Sta.:	1028	557950.416	1962912.316	3.82	38-11-16.52876	122-25-23.96523
UCD Ref. Mark:	SOCR	557943.102	1962903.640	2.56	38-11-16.29024	122-25-24.32034
diff.		7.314	8.676	1.26		
Towill Sta.:	1029	560389.058	1963794.186	3.70	38-12-35.74789	122-24-48.18475
UCD Ref. Mark:	TNS	560393.690	1963790.653	3.83	38-12-35.89757	122-24-48.33084
diff.		-4.632	3.533	-0.13		
Towill Sta.:	529	551144.925	1973684.245	2.918	38-07-37.21110	122-18-00.41767
UCD Ref. Mark:	DUTCH	551323.685	1973473.128	2.987	38-07-42.98571	122-18-09.10966
diff.		-178.760	211.117	-0.069		
Towill Sta.:	CULL 2	551155.508	1973685.749	2.715	38-07-37.55448	122-18-00.35733
UCD Ref. Mark:	DUTCH	551323.685	1973473.128	2.987	38-07-42.98571	122-18-09.10966
diff.		-168.177	212.621	-0.272		
Towill Sta.:	N/A	N/A	N/A	3.956	N/A	N/A
UCD Ref. Mark:	MIC	549387.269	1975925.467	3.956	38-06-40.43860	122-16-28.18486
diff.	N/A	N/A	N/A	0.00	N/A	N/A

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

```
# Raw Data Input File
# NA3000 Version 2.04
# Copyright STARPLUS SOFTWARE, INC. 1995

# Raw Field File: C:\5921-02\LEVELS\NAPA330A.RAW
# Date Processed: 04-06-99 07:53:11

E  P1393       7.49 !
E  Q1393      10.63 !
E  K466RESET   8.77 *
E  N466        5.30 *
E   47_1       1.85 *
E  N1393      12.68 !

#  Elevation Difference Records
#  Stations                              Diff    Dist  Descriptor
V  1006-11000(New_1)                     1.0995   274
V  11000(New_1)-1006                    -1.0999   274
V  1006-12000(New_12)                    5.7725  4116
V  12000(New_12)-25                     -8.2872  4458
V  25-1005                               4.5478  4567
V  1005-39                              -0.0151   106
V  39-1005                               0.0143   107
V  1005-25                              -4.5511  4595
V  25-1004                               4.3904  1525
V  1004-64                              -2.8100   181
V  64-1004                               2.8108   181
V  1004-75                              -1.6101  3419
V  75-1014                               5.5246  4540
V  1014-94                              -0.7583   233
V  94-1014                               0.7594   233
#  NEW LOOP
V  1006-96                               3.0886   135
V  96-1006                              -3.0880   135
V  1006-102                             -3.7188  1722
V  102-5415D                            -1.1642  5148
V  5415D-1007                            8.8135   708
V  1007-119                             -2.8976    52
V  119-1007                              2.8959    52
# NA3000 Version 2.04
# Copyright STARPLUS SOFTWARE, INC. 1995

# Raw Field File: C:\5921-02\LEVELS\NAPA331.RAW
# Date Processed: 04-06-99 08:45:58

#  Elevation Difference Records
#  Stations                              Diff    Dist  Descriptor
#  SIDE LOOP
V  1014-1015                            -3.21     650
#  REGULAR RUN
V  1015-203                             -0.6679   833
V  203-216                              -4.6752  5059
V  216-5438D                            -3.8979  1777
V  5438D-224                             2.4222   432
V  224-1013                              8.9374   853
V  1013-232                             -1.0820  1549
V  232-239                              -3.4110  2489
V  239-1010                              0.8145   747
```

```
V  1010-1009                          -3.7770  2162
V  1009-153                            4.1587  1364
V  153-1003                            0.1638   683
V  1003-153                           -0.1631   616
V  153-1009                           -4.1552  1358
V  1009-150                           -1.5045  5448
V  150-1011                            0.7377  4085
V  1011-298                            1.6727  3383
V  298-299                             9.8664   270
V  299-1012                           -1.1086  1375
V  1012-P1393                         -6.3655  3591
V  P1393-333                           4.0950  3862
V  333-K466RESET                      -3.0226  1579
V  K466RESET-353                      -0.1464  3879
V  353-354                            -0.2665   153
V  354-353                             0.2652   153
V  Q1393-360(Real_1)                  -1.3476   676
V  360(Real_1)-Q1393                   1.3465   695
# NA3000 Version 2.04
# Copyright STARPLUS SOFTWARE, INC. 1995

# Raw Field File: C:\5921-02\LEVELS\NAPA401.RAW
# Date Processed: 04-06-99 09:20:25

#  Elevation Difference Records
#  Stations                             Diff    Dist  Descriptor
V  400-401                            -1.2385   124
V  401-400                             1.2382   124
V  400-411                            -1.5700  4384
V  411-418                             1.6182  2868
V  418-424                             1.3005  1104
V  466-467                             3.1953    95
V  467-478                            -1.0781  4044
V  478-424                             0.8098  1237
V  424-485                            -0.4877   864
V  485-418                            -0.8088   163
V  418-411                            -1.6277  2881
V  411-400                             1.5759  4406
V  400-401                            -1.2405   121
V  418-CULL4                          -1.887    100
# NA3000 Version 2.04
# Copyright STARPLUS SOFTWARE, INC. 1995

# Raw Field File: C:\5921-02\LEVELS\NAPA402.RAW
# Date Processed: 04-06-99 10:58:38

#  Elevation Difference Records
#  Stations                             Diff    Dist  Descriptor
V  510-519                             1.4595  3458
V  519-528                             2.2261  2672
V  528-529                             0.7018    36
V  529-528                            -0.7016    37
V  528-519                            -2.2325  2680
V  519-N466                           -1.4573  3366
V  N466-551                            7.7000   128
V  551-558                            -0.2111  2272
V  558-566                            -0.8927  1269
V  566-573                             0.6084  2923
V  573-418                            -2.2517  3567
```

```
#  SIDE LOOP
V  N466-1018                          -2.9300   100
#  DATA FROM 4/5/99
#  INPUT DIFFERENTIALS FROM FIELD NOTES ONLY
#V  1006-TBM100                        5.1310    500
#V  TBM100-47_1                       -9.8750    500
#  FROM CHIP BY PHONE 4/16
#
#
V  1016-N1393                            0.1800    150
#  FROM CHIP BY PHONE 4/19
V  Q1393-N466                          -5.4270   7500
V  Q1393-N466                          -5.4659   7500
V  1006-47_1                           -4.7390   1000
# NA3000 Version 2.04
# Copyright STARPLUS SOFTWARE, INC. 1995

# Raw Field File: C:\5921-02\LEVELS\NAPA426.RAW
# Date Processed: 04-29-99 09:03:12

#  Elevation Difference Records
#  Stations                            Diff    Dist  Descriptor
V  1006-11000(New_1)                    1.1060   276
V  11000(New_1)-1006                   -1.1067   276
V  1006-12000(New_12)                   5.7881  4155
V  12000(New_12)-25                    -8.3090  4432
V  25-1004                              4.3908  1580
V  1004-64                             -2.8188   183
V  64-1004                              2.8188   183
V  1004-42                             -2.1879  3417
V  42-1014                              6.1034  4521
V  1014-94                             -0.7630   232
# NA3000 Version 2.04
# Copyright STARPLUS SOFTWARE, INC. 1995

# Raw Field File: C:\5921-02\LEVELS\NAPA427.RAW
# Date Processed: 04-29-99 09:04:50

#  Elevation Difference Records
#  Stations                            Diff    Dist  Descriptor
V  P1393-1012                           6.3827  3789
V  1012-299                             1.0996   968
V  299-298                             -9.8710   276
V  298-1011                            -1.6673  3380
V  1011-150                            -0.7392  3989
V  150-1009                             1.5185  5373
V  1009-1010                            3.7766  2182
V  1010-232                             2.6085  3104
V  232-1013                             1.0891  1572
V  1013-5438D                         -11.3647  1287
V  5438D-216                            3.8894  1504
V  216-1015                             5.3448  5898
```

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

```
                    STAR*LEV Adjustment Program
                 Copyright 1990 STARPLUS SOFTWARE, INC.
                    Licensed for Use by TOWILL, INC.
                          Serial Number 10478

                         STAR*LEV Version 1.27
                  Run Date : Tue Apr 17 17:48:12 2001



                              Summary of Files Used

     Input Data File                              : newnapa.dat
     Output Listing (This File)                   : newnapa.lst
     Adjusted Elevations                          : newnapa.pts
     Project Options                              : newnapa.prj
     Error Log                                    : newnapa.err


                           Summary of Options Used

     Type of Run was Adjustment and Error Propagation

     Print Input Data File                        : No
     Print Summary of All Input Observations      : Yes

     Default Standard Error for Elevations        : FIXED
     Section Length Units                         : Feet
     Default Std Error for Diff in Elevations     : 0.020000 Feet/Mile


           Network has 3 fixed elevation stations

                Summary of All Unadjusted Input Observations
                ============================================

                  Number of Stations with Elevations = 64

  Station               Elevation    Std Error    Description

  P1393                   7.49000        FIXED
  Q1393                  10.63000        FIXED
  K466RESET               8.77000            *
  N466                    5.30000            *
  47_1                    1.85000            *
  N1393                  12.68000        FIXED
  1006                    6.58900            *
  11000(New_1)            7.69500            *
  12000(New_12)          12.37710            *
  25                      4.06810            *
  1005                    8.61590            *
  39                      8.60080            *
  1004                    8.45890            *
  64                      5.64010            *
  75                      6.84880            *
  1014                   12.37440            *
  94                     11.61140            *
  96                      9.67760            *
```

102	2.87020	*
5415D	1.70600	*
1007	10.51950	*
119	7.62190	*
1015	9.53980	*
203	8.87190	*
216	4.19500	*
5438D	0.30560	*
224	2.72780	*
1013	11.67030	*
232	10.58120	*
239	7.17020	*
1010	7.97270	*
1009	4.19610	*
153	8.35480	*
1003	8.51860	*
150	2.67760	*
1011	3.41680	*
298	5.08410	*
299	14.95510	*
1012	13.85550	*
333	11.58500	*
353	8.62360	*
354	8.35710	*
360(Real_1)	9.28240	*
400	10.21060	*
401	8.97010	*
411	8.63470	*
418	10.25290	*
424	11.55340	*
466	8.62640	*
467	11.82170	*
478	10.74360	*
485	11.06570	*
CULL4	8.36590	*
510	5.29780	*
519	6.75730	*
528	8.98340	*
529	9.68520	*
551	13.00000	*
558	12.78890	*
566	11.89620	*
573	12.50460	*
1018	2.37000	*
1016	12.50000	*
42	6.27100	*

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

Number of Differences in Elevation = 101

At	To	Elev Diff	Length Feet	StdErr
1006	11000(New_1)	1.09950	274.00	0.00456
11000(New_1)	1006	-1.09990	274.00	0.00456
1006	12000(New_12)	5.77250	4116.00	0.01766
12000(New_12)	25	-8.28720	4458.00	0.01838
25	1005	4.54780	4567.00	0.01860
1005	39	-0.01510	106.00	0.00283
39	1005	0.01430	107.00	0.00285
1005	25	-4.55110	4595.00	0.01866
25	1004	4.39040	1525.00	0.01075
1004	64	-2.81000	181.00	0.00370
64	1004	2.81080	181.00	0.00370
1004	75	-1.61010	3419.00	0.01609
75	1014	5.52460	4540.00	0.01855
1014	94	-0.75830	233.00	0.00420
94	1014	0.75940	233.00	0.00420
1006	96	3.08860	135.00	0.00320
96	1006	-3.08800	135.00	0.00320
1006	102	-3.71880	1722.00	0.01142
102	5415D	-1.16420	5148.00	0.01975
5415D	1007	8.81350	708.00	0.00732
1007	119	-2.89760	52.00	0.00198
119	1007	2.89590	52.00	0.00198
1014	1015	-3.21000	650.00	0.00702
1015	203	-0.66790	833.00	0.00794
203	216	-4.67520	5059.00	0.01958
216	5438D	-3.89790	1777.00	0.01160
5438D	224	2.42220	432.00	0.00572
224	1013	8.93740	853.00	0.00804
1013	232	-1.08200	1549.00	0.01083
232	239	-3.41100	2489.00	0.01373
239	1010	0.81450	747.00	0.00752
1010	1009	-3.77700	2162.00	0.01280
1009	153	4.15870	1364.00	0.01017
153	1003	0.16380	683.00	0.00719
1003	153	-0.16310	616.00	0.00683
153	1009	-4.15520	1358.00	0.01014
1009	150	-1.50450	5448.00	0.02032
150	1011	0.73770	4085.00	0.01759
1011	298	1.67270	3383.00	0.01601
298	299	9.86640	270.00	0.00452
299	1012	-1.10860	1375.00	0.01021
1012	P1393	-6.36550	3591.00	0.01649
P1393	333	4.09500	3862.00	0.01710
333	K466RESET	-3.02260	1579.00	0.01094
K466RESET	353	-0.14640	3879.00	0.01714
353	354	-0.26650	153.00	0.00340
354	353	0.26520	153.00	0.00340
Q1393	360(Real_1)	-1.34760	676.00	0.00716
360(Real_1)	Q1393	1.34650	695.00	0.00726
400	401	-1.23850	124.00	0.00306
401	400	1.23820	124.00	0.00306
400	411	-1.57000	4384.00	0.01822
411	418	1.61820	2868.00	0.01474
418	424	1.30050	1104.00	0.00915

466	467	3.19530	95.00	0.00268
467	478	-1.07810	4044.00	0.01750
478	424	0.80980	1237.00	0.00968
424	485	-0.48770	864.00	0.00809
485	418	-0.80880	163.00	0.00351
418	411	-1.62770	2881.00	0.01477
411	400	1.57590	4406.00	0.01827
400	401	-1.24050	121.00	0.00303
418	CULL4	-1.88700	100.00	0.00275
510	519	1.45950	3458.00	0.01619
519	528	2.22610	2672.00	0.01423
528	529	0.70180	36.00	0.00165
529	528	-0.70160	37.00	0.00167
528	519	-2.23250	2680.00	0.01425
519	N466	-1.45730	3366.00	0.01597
N466	551	7.70000	128.00	0.00311
551	558	-0.21110	2272.00	0.01312
558	566	-0.89270	1269.00	0.00980
566	573	0.60840	2923.00	0.01488
573	418	-2.25170	3567.00	0.01644
N466	1018	-2.93000	100.00	0.00275
1016	N1393	0.18000	150.00	0.00337
Q1393	N466	-5.42700	7500.00	0.02384
Q1393	N466	-5.46590	7500.00	0.02384
1006	47_1	-4.73900	1000.00	0.00870
1006	11000(New_1)	1.10600	276.00	0.00457
11000(New_1)	1006	-1.10670	276.00	0.00457
1006	12000(New_12)	5.78810	4155.00	0.01774
12000(New_12)	25	-8.30900	4432.00	0.01832
25	1004	4.39080	1580.00	0.01094
1004	64	-2.81880	183.00	0.00372
64	1004	2.81880	183.00	0.00372
1004	42	-2.18790	3417.00	0.01609
42	1014	6.10340	4521.00	0.01851
1014	94	-0.76300	232.00	0.00419
P1393	1012	6.38270	3789.00	0.01694
1012	299	1.09960	968.00	0.00856
299	298	-9.87100	276.00	0.00457
298	1011	-1.66730	3380.00	0.01600
1011	150	-0.73920	3989.00	0.01738
150	1009	1.51850	5373.00	0.02018
1009	1010	3.77660	2182.00	0.01286
1010	232	2.60850	3104.00	0.01533
232	1013	1.08910	1572.00	0.01091
1013	5438D	-11.36470	1287.00	0.00987
5438D	216	3.88940	1504.00	0.01067
216	1015	5.34480	5898.00	0.02114

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

Adjustment Results
==========

Updated Elevations and Changes from Initial Estimates

Station	Elevation	Change	Description
P1393	7.49000	0.00000	
Q1393	10.63000	-0.00000	
K466RESET	8.56240	-0.20760	
N466	5.18355	-0.11645	
47_1	2.22492	0.37492	
N1393	12.68000	0.00000	
1006	6.96392	0.37492	
11000(New_1)	8.06694	0.37194	
12000(New_12)	12.74419	0.36709	
25	4.44605	0.37795	
1005	8.99550	0.37960	
39	8.98080	0.38000	
1004	8.83665	0.37775	
64	6.02207	0.38197	
75	7.22677	0.37797	
1014	12.75165	0.37725	
94	11.99141	0.38001	
96	10.05222	0.37462	
102	3.24512	0.37492	
5415D	2.08092	0.37492	
1007	10.89442	0.37492	
119	7.99767	0.37577	
1015	9.54165	0.00185	
203	8.87363	0.00173	
216	4.19770	0.00270	
5438D	0.30441	-0.00119	
224	2.72746	-0.00034	
1013	11.66655	-0.00375	
232	10.58103	-0.00017	
239	7.16532	-0.00488	
1010	7.97840	0.00570	
1009	4.20160	0.00550	
153	8.35855	0.00375	
1003	8.52198	0.00338	
150	2.69006	0.01246	
1011	3.42851	0.01171	
298	5.09851	0.01441	
299	14.96719	0.01209	
1012	13.86387	0.00837	
333	11.58500	-0.00000	
353	8.41600	-0.20760	
354	8.15015	-0.20695	
360(Real_1)	9.28294	0.00054	
400	10.08645	-0.12415	
401	8.84737	-0.12273	
411	8.51351	-0.12119	
418	10.13645	-0.11645	
424	11.43488	-0.11852	
466	8.50788	-0.11852	
467	11.70318	-0.11852	

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

```
478                  10.62508     -0.11852
485                  10.94556     -0.12014
CULL4                 8.24945     -0.11645
510                   5.18135     -0.11645
519                   6.64085     -0.11645
528                   8.87015     -0.11325
529                   9.57185     -0.11335
551                  12.88355     -0.11645
558                  12.67245     -0.11645
566                  11.77975     -0.11645
573                  12.38815     -0.11645
1018                  2.25355     -0.11645
1016                 12.50000     -0.00000
42                    6.64854      0.37754
```

Statistical Summary

Number of Observations = 101
Number of Unknowns = 61
Degrees of Freedom = 40

Data Type	Count	Weighted Residuals	Error Factor
Stations	64	0.00	0.00
Diff Elev	101	14.52	0.60
Total	165	14.52	0.60

Adjustment passes the Chi Square test at 5% level

Adjusted Elevation Difference Observations and Residuals

At	To	Adjusted Obs	Residual	StdErr	StdRes
1006	11000(New_1)	1.10301	0.00351	0.00456	0.8
11000(New_1)	1006	-1.10301	-0.00311	0.00456	0.7
1006	12000(New_12)	5.78026	0.00776	0.01766	0.4
12000(New_12)	25	-8.29813	-0.01093	0.01838	0.6
25	1005	4.54944	0.00164	0.01860	0.1
1005	39	-0.01470	0.00040	0.00283	0.1
39	1005	0.01470	0.00040	0.00285	0.1
1005	25	-4.54944	0.00166	0.01866	0.1
25	1004	4.39060	0.00020	0.01075	0.0
1004	64	-2.81458	-0.00458	0.00370	1.2
64	1004	2.81458	0.00378	0.00370	1.0
1004	75	-1.60988	0.00022	0.01609	0.0
75	1014	5.52489	0.00029	0.01855	0.0
1014	94	-0.76024	-0.00194	0.00420	0.5
94	1014	0.76024	0.00084	0.00420	0.2
1006	96	3.08830	-0.00030	0.00320	0.1
96	1006	-3.08830	-0.00030	0.00320	0.1
1006	102	-3.71880	-0.00000	0.01142	0.0
102	5415D	-1.16420	-0.00000	0.01975	0.0
5415D	1007	8.81350	-0.00000	0.00732	0.0
1007	119	-2.89675	0.00085	0.00198	0.4
119	1007	2.89675	0.00085	0.00198	0.4
1014	1015	-3.21000	-0.00000	0.00702	0.0
1015	203	-0.66802	-0.00012	0.00794	0.0
203	216	-4.67593	-0.00073	0.01958	0.0
216	5438D	-3.89330	0.00460	0.01160	0.4
5438D	224	2.42306	0.00086	0.00572	0.1
224	1013	8.93909	0.00169	0.00804	0.2
1013	232	-1.08552	-0.00352	0.01083	0.3
232	239	-3.41571	-0.00471	0.01373	0.3
239	1010	0.81309	-0.00141	0.00752	0.2
1010	1009	-3.77680	0.00020	0.01280	0.0
1009	153	4.15695	-0.00175	0.01017	0.2

153	1003	0.16343	-0.00037	0.00719	0.1
1003	153	-0.16343	-0.00033	0.00683	0.0
153	1009	-4.15695	-0.00175	0.01014	0.2
1009	150	-1.51155	-0.00705	0.02032	0.3
150	1011	0.73846	0.00076	0.01759	0.0
1011	298	1.67000	-0.00270	0.01601	0.2
298	299	9.86867	0.00227	0.00452	0.5
299	1012	-1.10332	0.00528	0.01021	0.5
1012	P1393	-6.37387	-0.00837	0.01649	0.5
P1393	333	4.09500	-0.00000	0.01710	0.0
333	K466RESET	-3.02260	-0.00000	0.01094	0.0
K466RESET	353	-0.14640	0.00000	0.01714	0.0
353	354	-0.26585	0.00065	0.00340	0.2
354	353	0.26585	0.00065	0.00340	0.2
Q1393	360(Real_1)	-1.34706	0.00054	0.00716	0.1
360(Real_1)	Q1393	1.34706	0.00056	0.00726	0.1
400	401	-1.23908	-0.00058	0.00306	0.2
401	400	1.23908	0.00088	0.00306	0.3
400	411	-1.57294	-0.00294	0.01822	0.2
411	418	1.62294	0.00474	0.01474	0.3
418	424	1.29843	-0.00207	0.00915	0.2
466	467	3.19530	-0.00000	0.00268	0.0
467	478	-1.07810	0.00000	0.01750	0.0
478	424	0.80980	-0.00000	0.00968	0.0
424	485	-0.48932	-0.00162	0.00809	0.2
485	418	-0.80911	-0.00031	0.00351	0.1
418	411	-1.62294	0.00476	0.01477	0.3
411	400	1.57294	-0.00296	0.01827	0.2
400	401	-1.23908	0.00142	0.00303	0.5
418	CULL4	-1.88700	-0.00000	0.00275	0.0
510	519	1.45950	0.00000	0.01619	0.0
519	528	2.22930	0.00320	0.01423	0.2
528	529	0.70170	-0.00010	0.00165	0.1
529	528	-0.70170	-0.00010	0.00167	0.1
528	519	-2.22930	0.00320	0.01425	0.2
519	N466	-1.45730	0.00000	0.01597	0.0
N466	551	7.70000	0.00000	0.00311	0.0
551	558	-0.21110	-0.00000	0.01312	0.0
558	566	-0.89270	0.00000	0.00980	0.0
566	573	0.60840	-0.00000	0.01488	0.0
573	418	-2.25170	0.00000	0.01644	0.0
N466	1018	-2.93000	0.00000	0.00275	0.0
1016	N1393	0.18000	-0.00000	0.00337	0.0
Q1393	N466	-5.44645	-0.01945	0.02384	0.8
Q1393	N466	-5.44645	0.01945	0.02384	0.8
1006	47_1	-4.73900	0.00000	0.00870	0.0
1006	11000(New_1)	1.10301	-0.00299	0.00457	0.7
11000(New_1)	1006	-1.10301	0.00369	0.00457	0.8
1006	12000(New_12)	5.78026	-0.00784	0.01774	0.4
12000(New_12)	25	-8.29813	0.01087	0.01832	0.6
25	1004	4.39060	-0.00020	0.01094	0.0
1004	64	-2.81458	0.00422	0.00372	1.1
64	1004	2.81458	-0.00422	0.00372	1.1
1004	42	-2.18811	-0.00021	0.01609	0.0
42	1014	6.10312	-0.00028	0.01851	0.0
1014	94	-0.76024	0.00276	0.00419	0.7
P1393	1012	6.37387	-0.00883	0.01694	0.5
1012	299	1.10332	0.00372	0.00856	0.4
299	298	-9.86867	0.00233	0.00457	0.5

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

298	1011	-1.67000	-0.00270	0.01600	0.2
1011	150	-0.73846	0.00074	0.01738	0.0
150	1009	1.51155	-0.00695	0.02018	0.3
1009	1010	3.77680	0.00020	0.01286	0.0
1010	232	2.60262	-0.00588	0.01533	0.4
232	1013	1.08552	-0.00358	0.01091	0.3
1013	5438D	-11.36215	0.00255	0.00987	0.3
5438D	216	3.89330	0.00390	0.01067	0.4
216	1015	5.34395	-0.00085	0.02114	0.0

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

Error Propagation
==========

Station Elevation Standard Deviations

Station	Elevation	StdDev	Description
P1393	7.49000	0.00000	
Q1393	10.63000	0.00000	
K466RESET	8.56240	0.02030	
N466	5.18355	0.01685	
47_1	2.22492	0.04565	
N1393	12.68000	0.00000	
1006	6.96392	0.04481	
11000(New_1)	8.06694	0.04487	
12000(New_12)	12.74419	0.04303	
25	4.44605	0.04103	
1005	8.99550	0.04309	
39	8.98080	0.04314	
1004	8.83665	0.04030	
64	6.02207	0.04035	
75	7.22677	0.03961	
1014	12.75165	0.03638	
94	11.99141	0.03646	
96	10.05222	0.04487	
102	3.24512	0.04625	
5415D	2.08092	0.05029	
1007	10.89442	0.05082	
119	7.99767	0.05084	
1015	9.54165	0.03569	
203	8.87363	0.03563	
216	4.19770	0.03242	
5438D	0.30441	0.03145	
224	2.72746	0.03136	
1013	11.66655	0.03067	
232	10.58103	0.02969	
239	7.16532	0.02848	
1010	7.97840	0.02759	
1009	4.20160	0.02606	
153	8.35855	0.02703	
1003	8.52198	0.02748	
150	2.69006	0.02177	
1011	3.42851	0.01792	
298	5.09851	0.01389	
299	14.96719	0.01352	
1012	13.86387	0.01182	
333	11.58500	0.01710	
353	8.41600	0.02657	
354	8.15015	0.02668	
360(Real_1)	9.28294	0.00510	
400	10.08645	0.03646	
401	8.84737	0.03650	
411	8.51351	0.03410	
418	10.13645	0.03246	
424	11.43488	0.03308	
466	8.50788	0.03875	
467	11.70318	0.03865	
478	10.62508	0.03446	

```
485                    10.94556      0.03264
CULL4                   8.24945      0.03258
510                     5.18135      0.02830
519                     6.64085      0.02322
528                     8.87015      0.02531
529                     9.57185      0.02533
551                    12.88355      0.01714
558                    12.67245      0.02158
566                    11.77975      0.02371
573                    12.38815      0.02799
1018                    2.25355      0.01708
1016                   12.50000      0.00337
42                      6.64854      0.03960


                  Elapsed time = 00:00:00
```

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

Final Adjusted Elevations

25	4.44605
39	8.98080
42	6.64854
64	6.02207
75	7.22677
94	11.99141
96	10.05222
102	3.24512
119	7.99767
150	2.69006
153	8.35855
203	8.87363
216	4.19770
224	2.72746
232	10.58103
239	7.16532
298	5.09851
299	14.96719
333	11.58500
353	8.41600
354	8.15015
400	10.08645
401	8.84737
411	8.51351
418	10.13645
424	11.43488
466	8.50788
467	11.70318
478	10.62508
485	10.94556
510	5.18135
519	6.64085
528	8.87015
529	9.57185
551	12.88355
558	12.67245
566	11.77975
573	12.38815
1003	8.52198
1004	8.83665
1005	8.99550
1006	6.96392
1007	10.89442
1009	4.20160
1010	7.97840
1011	3.42851
1012	13.86387
1013	11.66655
1014	12.75165
1015	9.54165
1016	12.50000
1018	2.25355
47_1	2.22492
CULL4	8.24945
K466RESET	8.56240
N466	5.18355

15. STAR-LEV, PRIMARY LEVEL SURVEY ADJUSTMENT FILES – U.S. Survey Foot

```
N1393                12.68000
P1393                 7.49000
Q1393                10.63000
360(Real_1)           9.28294
5415D                 2.08092
5438D                 0.30441
11000(New_1)          8.06694
12000(New_12)        12.74419
```

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

ADJUSTMENT STATISTICS SUMMARY
NETWORK = Napasalt
TIME = Tue Apr 17 08:18:02 2001

ADJUSTMENT SUMMARY

Network Reference Factor = 0.99
Chi-Square Test (à = 95%) = PASS
Degrees of Freedom = 81.00

GPS OBSERVATIONS
Reference Factor = 1.00
r = 80.01

GPS Solution	1	Reference Factor =	2.86	r =	1.21
GPS Solution	2	Reference Factor =	0.77	r =	0.57
GPS Solution	3	Reference Factor =	1.46	r =	1.29
GPS Solution	4	Reference Factor =	0.43	r =	1.73
GPS Solution	5	Reference Factor =	1.04	r =	1.30
GPS Solution	6	Reference Factor =	0.65	r =	0.58
GPS Solution	7	Reference Factor =	0.43	r =	0.61
GPS Solution	8	Reference Factor =	0.44	r =	0.64
GPS Solution	9	Reference Factor =	1.00	r =	0.00
GPS Solution	10	Reference Factor =	0.44	r =	1.25
GPS Solution	11	Reference Factor =	0.98	r =	2.47
GPS Solution	12	Reference Factor =	0.47	r =	0.54
GPS Solution	13	Reference Factor =	1.17	r =	0.91
GPS Solution	14	Reference Factor =	0.65	r =	0.18
GPS Solution	15	Reference Factor =	0.71	r =	0.76
GPS Solution	16	Reference Factor =	0.45	r =	1.37
GPS Solution	17	Reference Factor =	1.00	r =	0.00
GPS Solution	18	Reference Factor =	0.99	r =	0.45
GPS Solution	19	Reference Factor =	1.14	r =	0.72
GPS Solution	20	Reference Factor =	0.41	r =	1.24
GPS Solution	21	Reference Factor =	0.76	r =	0.62
GPS Solution	22	Reference Factor =	0.95	r =	1.84
GPS Solution	23	Reference Factor =	0.42	r =	0.67
GPS Solution	24	Reference Factor =	1.28	r =	1.34
GPS Solution	25	Reference Factor =	0.20	r =	1.73
GPS Solution	26	Reference Factor =	1.71	r =	0.60
GPS Solution	27	Reference Factor =	1.66	r =	0.40
GPS Solution	28	Reference Factor =	1.65	r =	0.60
GPS Solution	29	Reference Factor =	1.44	r =	1.26
GPS Solution	30	Reference Factor =	0.89	r =	0.97
GPS Solution	31	Reference Factor =	1.45	r =	2.00
GPS Solution	32	Reference Factor =	0.54	r =	1.14
GPS Solution	33	Reference Factor =	0.95	r =	1.35
GPS Solution	34	Reference Factor =	1.30	r =	1.09
GPS Solution	35	Reference Factor =	1.12	r =	0.53
GPS Solution	36	Reference Factor =	0.41	r =	1.31
GPS Solution	37	Reference Factor =	0.48	r =	0.94
GPS Solution	38	Reference Factor =	0.34	r =	1.30
GPS Solution	39	Reference Factor =	0.83	r =	1.43
GPS Solution	40	Reference Factor =	0.39	r =	1.48
GPS Solution	41	Reference Factor =	0.90	r =	1.44

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

```
GPS Solution   42 Reference Factor =    0.88   r =  1.95
GPS Solution   43 Reference Factor =    0.39   r =  1.67
GPS Solution   44 Reference Factor =    0.75   r =  1.15
GPS Solution   45 Reference Factor =    3.02   r =  1.00
GPS Solution   46 Reference Factor =    1.52   r =  0.81
GPS Solution   47 Reference Factor =    0.32   r =  1.71
GPS Solution   48 Reference Factor =    1.14   r =  1.02
GPS Solution   49 Reference Factor =    0.48   r =  0.83
GPS Solution   50 Reference Factor =    0.93   r =  1.00
GPS Solution   51 Reference Factor =    1.31   r =  1.94
GPS Solution   52 Reference Factor =    1.21   r =  2.07
GPS Solution   53 Reference Factor =    0.72   r =  2.14
GPS Solution   54 Reference Factor =    0.97   r =  2.27
GPS Solution   55 Reference Factor =    0.70   r =  1.12
GPS Solution   56 Reference Factor =    0.57   r =  1.54
GPS Solution   57 Reference Factor =    0.57   r =  1.42
GPS Solution   58 Reference Factor =    0.61   r =  1.75
GPS Solution   59 Reference Factor =    0.54   r =  0.75
GPS Solution   60 Reference Factor =    0.86   r =  1.69
GPS Solution   61 Reference Factor =    0.67   r =  2.41
GPS Solution   62 Reference Factor =    1.13   r =  0.91
GPS Solution   63 Reference Factor =    0.94   r =  2.01
GPS Solution   64 Reference Factor =    0.50   r =  2.69
GPS Solution   65 Reference Factor =    0.67   r =  2.30


                    GEOID MODEL
                        Reference Factor = 0.08
                                       r = 0.99

      Geoid Heights:  Reference Factor =    0.08   r =  0.99
Delta Geoid Heights:  Reference Factor =    1.00   r =  0.00


                          WEIGHTING STRATEGIES:

     GPS OBSERVATIONS:
          Scalar Weighting Strategy:
Alternative Scalar Set  Applied Globally =  5.28


          No summation weighting strategy was used

          Station Error Strategy:
H.I. error = 0.0300
Tribrach error = 0.0000

     GEOID MODEL:
          No scalar weighting strategy was used

          No summation weighting strategy was used

Results of adjusted Geoid model:
   Noise in vertical GPS observations: 0.00319763
              Variance of geoid model: 0.08013270
```

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

SUMMARY OF COVARIANCES
NETWORK = Napasalt
TIME = Tue Apr 17 08:18:04 2001

Definition of precision (E x S)ý = Cý + Pý:
   Horizontal:
      Precision (P) expressed as: ratio
      Propagated linear error (E): U.S.
         (standard error of adjusted horizontal distance)
      Scalar (S) on propagated linear error: 1.0000
      Constant error term (C): 0.0000
   3-Dimensional:
      Precision (P) expressed as: ratio
      Propagated linear error (E): U.S.
         (standard error of adjusted slope distance)
      Scalar (S) on propagated linear error: 1.0000
      Constant error term (C): 0.0000
      Using orthometric height errors

FROM/ TO	AZIMUTH/ DELTA H	1.00å	DISTANCE/ DELTA h	1.00å	HOR PREC/ 3-D PREC
1	281ø28'30"	0.19"	7454.250f	0.0063f	1: 1179957
1018	-7.1956f	0.1166f	-7.1068f	0.4397f	1: 1179957
1	5ø19'06"	0.22"	8265.022f	0.0100f	1: 830410
1020	+1.3114f	0.0980f	+1.0991f	0.6071f	1: 830410
1	36ø27'46"	0.16"	16501.483f	0.0139f	1: 1189310
HPGN 04 KH	+24.1534f	0.2180f	+23.6150f	0.6690f	1: 1189310
10	59ø53'35"	0.34"	3291.165f	0.0063f	1: 520944
1003	+4.1203f	0.0593f	+4.0938f	0.5563f	1: 520944
10	275ø04'15"	0.65"	3089.197f	0.0069f	1: 445488
1008	+5.9139f	0.0624f	+5.8738f	0.5934f	1: 445488
10	107ø36'15"	0.23"	6218.409f	0.0047f	1: 1328523
BM 150	-1.8343f	0.0961f	-1.7366f	0.5388f	1: 1328523
1001	91ø17'44"	0.22"	6390.140f	0.0059f	1: 1090885
1020	+0.9045f	0.1022f	+0.7977f	0.5590f	1: 1090885
1001	284ø41'14"	0.30"	8088.700f	0.0095f	1: 850500
1021	+0.8000f	0.1242f	+0.8240f	0.4999f	1: 850500
1001	11ø15'04"	0.60"	4648.212f	0.0122f	1: 379638
1022	+2.4811f	0.0700f	+2.3546f	0.5222f	1: 379638
1001	159ø05'58"	0.23"	5546.375f	0.0080f	1: 695904
529	-0.1598f	0.0712f	-0.0630f	0.5457f	1: 695904
1002	17ø34'56"	0.43"	4047.169f	0.0071f	1: 566038
1005	-1.7703f	0.0606f	-1.8808f	0.4677f	1: 566038
1002	138ø40'10"	0.29"	6642.496f	0.0077f	1: 861583
1024	+0.9913f	0.0907f	+1.0887f	0.4675f	1: 861583

1002	297ø26'13"	0.18"	7018.945f	0.0073f	1: 955032
1027	-0.9281f	0.1028f	-1.0080f	0.4638f	1: 955032
1003	45ø26'23"	0.18"	6835.337f	0.0069f	1: 990194
1013	+3.3270f	0.0989f	+3.1811f	0.3821f	1: 990194
1003	118ø38'52"	0.16"	7490.188f	0.0044f	1: 1712883
141	+1.6180f	0.1065f	+1.7543f	0.5088f	1: 1712883
1003	138ø54'25"	0.29"	4686.014f	0.0050f	1: 939203
BM 150	-5.9546f	0.0654f	-5.8305f	0.5223f	1: 939203
1004	176ø39'40"	0.22"	5509.093f	0.0058f	1: 948297
1005	-0.0480f	0.0649f	+0.1158f	0.4887f	1: 948297
1004	88ø19'55"	0.25"	6458.468f	0.0072f	1: 897102
1006	-1.8212f	0.1007f	-1.8703f	0.3546f	1: 897102
1004	264ø03'08"	0.16"	12527.254f	0.0088f	1: 1426143
1013	+2.8186f	0.1897f	+2.8323f	0.3546f	1: 1426143
1004	262ø54'24"	0.37"	6019.742f	0.0095f	1: 631481
1014	+3.8806f	0.0992f	+3.9093f	0.4962f	1: 631481
1006	193ø14'11"	0.23"	5978.673f	0.0069f	1: 871098
1007	+3.7101f	0.0766f	+3.8877f	0.3567f	1: 871098
1006	140ø46'22"	0.09"	25516.228f	0.0129f	1: 1973249
HPGN 04 KH	+25.8103f	0.3085f	+26.0118f	0.5041f	1: 1973249
1007	148ø30'19"	0.14"	8675.363f	0.0077f	1: 1133479
1023	+0.9516f	0.1039f	+1.0825f	0.5175f	1: 1133479
1008	258ø04'11"	0.67"	1956.186f	0.0062f	1: 313463
13	-1.3981f	0.0492f	-1.4127f	0.6275f	1: 313463
1012	357ø59'55"	0.20"	8364.111f	0.0122f	1: 684182
BM 150	-10.9911f	0.1008f	-11.2318f	0.5062f	1: 684182
1012	179ø17'35"	0.40"	3574.545f	0.0107f	1: 333475
P 1393	-6.5037f	0.0603f	-6.3969f	0.3598f	1: 333475
1013	85ø06'42"	0.29"	6509.828f	0.0079f	1: 827510
1014	+1.0620f	0.1051f	+1.0770f	0.3470f	1: 827510
1013	280ø17'36"	0.13"	11023.758f	0.0060f	1: 1832983
1029	+0.5840f	0.1657f	+0.4822f	0.4491f	1: 1832983
1013	168ø31'19"	0.12"	8558.229f	0.0061f	1: 1408081
141	-1.7090f	0.0942f	-1.4268f	0.3360f	1: 1408081
1014	192ø08'27"	0.27"	5503.432f	0.0065f	1: 849459
1027	-3.0864f	0.0754f	-2.9207f	0.4794f	1: 849459
1016	267ø42'51"	0.24"	5417.742f	0.0066f	1: 819036
9	-7.6635f	0.0915f	-7.7457f	0.6264f	1: 819036
1016	109ø14'04"	0.26"	6979.661f	0.0074f	1: 940518
P 1393	-5.1872f	0.1084f	-5.0615f	0.4141f	1: 940518

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

1018	64ø58'21"	0.35"	4040.871f	0.0074f	1: 542727
529	+7.4426f	0.0716f	+7.3451f	0.4007f	1: 542727
1018	342ø44'33"	0.20"	6485.502f	0.0058f	1: 1118448
CULL 104	+6.8442f	0.0783f	+6.7035f	0.3545f	1: 1118448
1018	297ø12'15"	0.17"	10254.223f	0.0083f	1: 1242434
CULL 4	+6.0341f	0.1444f	+5.9921f	0.3481f	1: 1242434
1020	341ø15'34"	0.16"	12239.469f	0.0113f	1: 1081179
1023	+1.6934f	0.1370f	+1.4743f	0.5619f	1: 1081179
1021	313ø29'24"	0.39"	4116.362f	0.0071f	1: 575830
400	-0.3793f	0.0651f	-0.4276f	0.4679f	1: 575830
1022	320ø32'43"	0.31"	7214.708f	0.0116f	1: 622513
1024	-0.0100f	0.0965f	-0.0971f	0.4984f	1: 622513
1023	257ø53'10"	0.20"	6273.650f	0.0062f	1: 1014029
1024	-0.1268f	0.1007f	-0.0146f	0.5035f	1: 1014029
1024	269ø10'00"	0.29"	8035.941f	0.0100f	1: 804876
1025	-1.0597f	0.1287f	-1.0019f	0.4635f	1: 804876
1025	342ø48'06"	0.16"	8729.274f	0.0089f	1: 977210
1027	-0.8597f	0.1007f	-1.0948f	0.4598f	1: 977210
1025	307ø35'11"	0.15"	7832.505f	0.0077f	1: 1021992
141	-0.5444f	0.1065f	-0.6779f	0.4635f	1: 1021992
1025	219ø11'35"	0.22"	7677.043f	0.0062f	1: 1240548
353	-2.6800f	0.1065f	-2.5072f	0.4659f	1: 1240548
1027	225ø30'43"	0.25"	5082.293f	0.0043f	1: 1185154
141	+0.3153f	0.0759f	+0.4169f	0.4715f	1: 1185154
1028	19ø52'52"	0.14"	8507.848f	0.0065f	1: 1310105
1029	-0.1885f	0.1051f	-0.3792f	0.6456f	1: 1310105
1028	117ø57'35"	1.37"	1167.427f	0.0058f	1: 202846
13	-3.7039f	0.0419f	-3.6753f	0.6482f	1: 202846
1028	98ø40'29"	0.09"	15621.316f	0.0060f	1: 2592142
141	-2.4815f	0.2326f	-2.2882f	0.5726f	1: 2592142
1029	129ø31'57"	0.08"	16271.170f	0.0060f	1: 2733315
141	-2.2930f	0.2112f	-1.9090f	0.5609f	1: 2733315
1029	309ø44'47"	0.10"	20223.506f	0.0085f	1: 2370294
HPGN 04 KF	+21.8476f	0.2658f	+21.3784f	0.7988f	1: 2370294
12	59ø21'45"	13.10"	101.060f	0.0095f	1: 10687
P 1393	-2.2317f	0.0468f	-2.2257f	0.3692f	1: 10687
13	213ø01'47"	0.09"	15404.361f	0.0093f	1: 1657018
HPGN04JF	+15.5344f	0.1995f	+15.7148f	0.7211f	1: 1657018
141	172ø47'57"	0.11"	10812.638f	0.0067f	1: 1612856

353	-2.1356f	0.1181f	-1.8293f	0.4775f	1: 1612856
141	270ø58'27"	0.41"	3493.723f	0.0055f	1: 640947
BM 150	-7.5725f	0.0619f	-7.5847f	0.4896f	1: 640947
353	81ø52'43"	0.33"	5811.794f	0.0073f	1: 797810
400	+1.6894f	0.0963f	+1.6480f	0.4706f	1: 797810
353	255ø44'37"	0.35"	4655.714f	0.0069f	1: 670593
P 1393	-0.9495f	0.0784f	-0.9205f	0.3393f	1: 670593
400	179ø56'06"	0.40"	7086.951f	0.0158f	1: 447964
CULL 4	-1.9891f	0.0941f	-1.8124f	0.4770f	1: 447964
529	8ø05'30"	26.00"	35.070f	0.0044f	1: 7959
CULL 2	-0.7048f	0.0432f	-0.7057f	0.5682f	1: 7959
9	260ø14'24"	0.21"	7759.839f	0.0081f	1: 958249
HPGN04JF	+19.8734f	0.1247f	+19.7617f	0.7319f	1: 958249
CULL 104	258ø10'54"	0.23"	7351.740f	0.0082f	1: 901582
CULL 4	-0.8100f	0.1163f	-0.7114f	0.4969f	1: 901582
CULL 4	294ø41'08"	0.66"	6153.486f	0.0146f	1: 422107
K 466 RESET	+0.3200f	0.1051f	+0.2865f	0.4949f	1: 422107
K 466 RESET	298ø33'56"	0.44"	5331.775f	0.0065f	1: 823311
P 1393	-0.9698f	0.0848f	-1.0426f	0.3518f	1: 823311

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

OBSERVATION ADJUSTMENT SUMMARY
NETWORK = Napasalt
TIME = Tue Apr 17 08:18:04 2001

OBSERVATION ADJUSTMENT (Tau = 3.58)

GPS Parameter Group 1 GPS Observations

Azimuth rotation = +0.2446 seconds	1.00å = 0.0577 seconds
Deflection in latitude = +0.8752 seconds	1.00å = 2.2106 seconds
Deflection in longitude = -0.5557 seconds	1.00å = 3.0929 seconds
Network scale = 1.000001733989	1.00å = 0.000000270787

OBS#	BLK#/ REF#	TYPE	BACKSIGHT/ INSTRUMENT/ FORESIGHT	UDVC/ UDPG/ SBNT	OBSERVED/ ADJUSTED/ RESIDUAL	1.00å/ 1.00å/ 1.00å	TAU
1	-**-	hgoid	-**-	-**-	-104.8253f	0.2831f	OPEN
	1		1	-**-	-104.8253f	0.2831f	
			-**-	1	+0.000000f	0.0000f	
2	-**-	hgoid	-**-	-**-	-104.3206f	0.2831f	OPEN
	2		10	-**-	-104.3206f	0.2831f	
			-**-	1	+0.000000f	0.0000f	
3	-**-	hgoid	-**-	-**-	-104.7198f	0.2831f	OPEN
	3		1001	-**-	-104.7198f	0.2831f	
			-**-	1	+0.000000f	0.0000f	
4	-**-	hgoid	-**-	-**-	-104.4088f	0.2831f	OPEN
	4		1002	-**-	-104.4088f	0.2831f	
			-**-	1	+0.000000f	0.0000f	
5	-**-	hgoid	-**-	-**-	-104.2942f	0.2831f	OPEN
	5		1003	-**-	-104.2942f	0.2831f	
			-**-	1	+0.000000f	0.0000f	
6	-**-	hgoid	-**-	-**-	-104.1345f	0.2831f	OPEN
	6		1004	-**-	-104.1345f	0.2831f	
			-**-	1	+0.000000f	0.0000f	
7	-**-	hgoid	-**-	-**-	-104.2983f	0.2831f	OPEN
	7		1005	-**-	-104.2983f	0.2831f	
			-**-	1	+0.000000f	0.0000f	
8	-**-	hgoid	-**-	-**-	-104.0755f	0.2831f	0.02
	8		1006	-**-	-104.0854f	0.2602f	
			-**-	1	-0.009881f	0.1116f	
9	-**-	hgoid	-**-	-**-	-104.2630f	0.2831f	OPEN
	9		1007	-**-	-104.2630f	0.2831f	
			-**-	1	+0.000000f	0.0000f	
10	-**-	hgoid	-**-	-**-	-104.2805f	0.2831f	OPEN
	10		1008	-**-	-104.2805f	0.2831f	
			-**-	1	+0.000000f	0.0000f	

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11  -**- hgoid                  -**-  -**-       -104.6590f   0.2831f    OPEN
      11                       1012  -**-       -104.6590f   0.2831f
                               -**-     1       +0.000000f   0.0000f

12  -**- hgoid                  -**-  -**-       -104.1684f   0.2831f    0.03
      12                       1013  -**-       -104.1482f   0.2261f
                               -**-     1       +0.020199f   0.1703f

13  -**- hgoid                  -**-  -**-       -104.1632f   0.2831f    OPEN
      13                       1014  -**-       -104.1632f   0.2831f
                               -**-     1       +0.000000f   0.0000f

14  -**- hgoid                  -**-  -**-       -104.6402f   0.2831f    OPEN
      14                       1016  -**-       -104.6402f   0.2831f
                               -**-     1       +0.000000f   0.0000f

15  -**- hgoid                  -**-  -**-       -104.9106f   0.2831f    0.01
      15                       1018  -**-       -104.9141f   0.2631f
                               -**-     1       -0.003470f   0.1045f

16  -**- hgoid                  -**-  -**-       -104.6130f   0.2831f    OPEN
      16                       1020  -**-       -104.6130f   0.2831f
                               -**-     1       +0.000000f   0.0000f

17  -**- hgoid                  -**-  -**-       -104.7438f   0.2831f    OPEN
      17                       1021  -**-       -104.7438f   0.2831f
                               -**-     1       +0.000000f   0.0000f

18  -**- hgoid                  -**-  -**-       -104.5932f   0.2831f    OPEN
      18                       1022  -**-       -104.5932f   0.2831f
                               -**-     1       +0.000000f   0.0000f

19  -**- hgoid                  -**-  -**-       -104.3940f   0.2831f    OPEN
      19                       1023  -**-       -104.3940f   0.2831f
                               -**-     1       +0.000000f   0.0000f

20  -**- hgoid                  -**-  -**-       -104.5062f   0.2831f    OPEN
      20                       1024  -**-       -104.5062f   0.2831f
                               -**-     1       +0.000000f   0.0000f

21  -**- hgoid                  -**-  -**-       -104.5640f   0.2831f    OPEN
      21                       1025  -**-       -104.5640f   0.2831f
                               -**-     1       +0.000000f   0.0000f

22  -**- hgoid                  -**-  -**-       -104.3289f   0.2831f    OPEN
      22                       1027  -**-       -104.3289f   0.2831f
                               -**-     1       +0.000000f   0.0000f

23  -**- hgoid                  -**-  -**-       -104.2372f   0.2831f    OPEN
      23                       1028  -**-       -104.2372f   0.2831f
                               -**-     1       +0.000000f   0.0000f

24  -**- hgoid                  -**-  -**-       -104.0465f   0.2831f    OPEN
      24                       1029  -**-       -104.0465f   0.2831f
                               -**-     1       +0.000000f   0.0000f

25  -**- hgoid                  -**-  -**-       -104.7598f   0.2831f    OPEN
      25                         12  -**-       -104.7598f   0.2831f
```

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                                -**-      1       +0.000000f   0.0000f

26  -**- hgoid                  -**-    -**-      -104.2658f   0.2831f    OPEN
      26                          13    -**-      -104.2658f   0.2831f
                                -**-      1       +0.000000f   0.0000f

27  -**- hgoid                  -**-    -**-      -104.4305f   0.2831f    OPEN
      27                         141    -**-      -104.4305f   0.2831f
                                -**-      1       +0.000000f   0.0000f

28  -**- hgoid                  -**-    -**-      -104.7368f   0.2831f    OPEN
      28                         353    -**-      -104.7368f   0.2831f
                                -**-      1       +0.000000f   0.0000f

29  -**- hgoid                  -**-    -**-      -104.6955f   0.2831f    OPEN
      29                         400    -**-      -104.6955f   0.2831f
                                -**-      1       +0.000000f   0.0000f

30  -**- hgoid                  -**-    -**-      -104.8166f   0.2831f    OPEN
      30                         529    -**-      -104.8166f   0.2831f
                                -**-      1       +0.000000f   0.0000f

31  -**- hgoid                  -**-    -**-      -104.5580f   0.2831f    OPEN
      31                           9    -**-      -104.5580f   0.2831f
                                -**-      1       +0.000000f   0.0000f

32  -**- hgoid                  -**-    -**-      -104.4183f   0.2831f    OPEN
      32                      BM 150    -**-      -104.4183f   0.2831f
                                -**-      1       +0.000000f   0.0000f

33  -**- hgoid                  -**-    -**-      -104.7734f   0.2831f    OPEN
      33                    CULL 104    -**-      -104.7734f   0.2831f
                                -**-      1       +0.000000f   0.0000f

34  -**- hgoid                  -**-    -**-      -104.8157f   0.2831f    OPEN
      34                      CULL 2    -**-      -104.8157f   0.2831f
                                -**-      1       +0.000000f   0.0000f

35  -**- hgoid                  -**-    -**-      -104.8721f   0.2831f    OPEN
      35                      CULL 4    -**-      -104.8721f   0.2831f
                                -**-      1       +0.000000f   0.0000f

36  -**- hgoid                  -**-    -**-      -103.5773f   0.2831f    OPEN
      36                  HPGN 04 KF    -**-      -103.5773f   0.2831f
                                -**-      1       +0.000000f   0.0000f

37  -**- hgoid                  -**-    -**-      -104.2869f   0.2831f    OPEN
      37                  HPGN 04 KH    -**-      -104.2869f   0.2831f
                                -**-      1       +0.000000f   0.0000f

38  -**- hgoid                  -**-    -**-      -104.4463f   0.2831f    OPEN
      38                    HPGN04JF    -**-      -104.4463f   0.2831f
                                -**-      1       +0.000000f   0.0000f

39  -**- hgoid                  -**-    -**-      -104.8386f   0.2831f    OPEN
      39                 K 466 RESET    -**-      -104.8386f   0.2831f
                                -**-      1       +0.000000f   0.0000f

40  -**- hgoid                  -**-    -**-      -104.7590f   0.2831f    0.01
```

	40		P 1393	-**-	-104.7658f	0.2312f	
			-**-	1	-0.006848f	0.1633f	
41	1	gpsaz	-**-	-**-	320ø46'22.7860"	0.1478"	0.84
	1	HPGN 04 KH	-**-	-**-	320ø46'22.4780"	0.1062"	
			1006	1	-0.308011"	0.1028"	
42	1	gpsht	-**-	-**-	-25.7917f	0.0628f	0.17
	1	HPGN 04 KH	-**-	-**-	-25.7700f	0.0511f	
			1006	1	+0.021629f	0.0365f	
43	1	gpsds	-**-	-**-	25516.3238f	0.0188f	1.17
	1	HPGN 04 KH	-**-	-**-	25516.2722f	0.0142f	
			1006	1	-0.051652f	0.0123f	
44	2	gpsaz	-**-	-**-	193ø14'11.4727"	0.2426"	0.12
	1		1006	-**-	193ø14'11.4304"	0.2229"	
			1007	1	-0.042271"	0.0958"	
45	2	gpsht	-**-	-**-	+3.6628f	0.0459f	0.22
	1		1006	-**-	+3.6819f	0.0392f	
			1007	1	+0.019131f	0.0239f	
46	2	gpsds	-**-	-**-	5978.6803f	0.0072f	0.31
	1		1006	-**-	5978.6835f	0.0066f	
			1007	1	+0.003195f	0.0029f	
47	3	gpsaz	-**-	-**-	268ø19'55.9153"	0.3368"	0.62
	1		1006	-**-	268ø19'55.4079"	0.2488"	
			1004	1	-0.507470"	0.2270"	
48	3	gpsht	-**-	-**-	+1.8236f	0.0502f	0.16
	1		1006	-**-	+1.8031f	0.0343f	
			1004	1	-0.020477f	0.0367f	
49	3	gpsds	-**-	-**-	6458.4892f	0.0098f	0.44
	1		1006	-**-	6458.4790f	0.0073f	
			1004	1	-0.010209f	0.0064f	
50	4	gpsaz	-**-	-**-	176ø39'40.2021"	0.3750"	0.03
	1		1004	-**-	176ø39'40.2328"	0.2070"	
			1005	1	+0.030690"	0.3127"	
51	4	gpsht	-**-	-**-	-0.0579f	0.0487f	0.09
	1		1004	-**-	-0.0702f	0.0285f	
			1005	1	-0.012271f	0.0395f	
52	4	gpsds	-**-	-**-	5509.1071f	0.0099f	0.16
	1		1004	-**-	5509.1024f	0.0056f	
			1005	1	-0.004703f	0.0082f	
53	5	gpsaz	-**-	-**-	138ø40'10.7472"	0.4862"	0.29
	1		1002	-**-	138ø40'10.3517"	0.2956"	
			1024	1	-0.395536"	0.3861"	
54	5	gpsht	-**-	-**-	+1.0470f	0.0591f	0.46
	1		1002	-**-	+0.9822f	0.0440f	

			1024	1	-0.064783f	0.0395f	
55	5	gpsds	-**-	-**-	6642.5078f	0.0092f	0.03
	1		1002	-**-	6642.5073f	0.0076f	
			1024	1	-0.000463f	0.0052f	
56	6	gpsaz	-**-	-**-	281ø28'30.6692"	0.2107"	0.04
	1		1	-**-	281ø28'30.6573"	0.1902"	
			1018	1	-0.011869"	0.0906"	
57	6	gpsht	-**-	-**-	-7.2128f	0.0448f	0.05
	1		1	-**-	-7.2089f	0.0388f	
			1018	1	+0.003833f	0.0226f	
58	6	gpsds	-**-	-**-	7454.2662f	0.0069f	0.28
	1		1	-**-	7454.2632f	0.0062f	
			1018	1	-0.003000f	0.0030f	
59	7	gpsaz	-**-	-**-	342ø44'32.8677"	0.2052"	0.09
	1		1018	-**-	342ø44'32.8936"	0.1879"	
			CULL 104	1	+0.025834"	0.0825"	
60	7	gpsht	-**-	-**-	+6.8535f	0.0442f	0.13
	1		1018	-**-	+6.8654f	0.0364f	
			CULL 104	1	+0.011811f	0.0251f	
61	7	gpsds	-**-	-**-	6485.5144f	0.0060f	0.12
	1		1018	-**-	6485.5135f	0.0055f	
			CULL 104	1	-0.000944f	0.0022f	
62	8	gpsaz	-**-	-**-	64ø58'20.8460"	0.3731"	0.15
	1		1018	-**-	64ø58'20.9266"	0.3423"	
			529	1	+0.080569"	0.1485"	
63	8	gpsht	-**-	-**-	+7.4689f	0.0454f	0.11
	1		1018	-**-	+7.4599f	0.0392f	
			529	1	-0.008952f	0.0228f	
64	8	gpsds	-**-	-**-	4040.8796f	0.0083f	0.13
	1		1018	-**-	4040.8778f	0.0073f	
			529	1	-0.001821f	0.0040f	
65	9	gpsaz	-**-	-**-	8ø05'30.1588"	25.9996"	OPEN
	1		529	-**-	8ø05'30.1588"	25.9996"	
			CULL 2	1	+0.000000"	0.0000"	
66	9	gpsht	-**-	-**-	-0.7045f	0.0432f	OPEN
	1		529	-**-	-0.7045f	0.0432f	
			CULL 2	1	+0.000000f	0.0000f	
67	9	gpsds	-**-	-**-	35.0703f	0.0044f	OPEN
	1		529	-**-	35.0703f	0.0044f	
			CULL 2	1	+0.000000f	0.0000f	
68	10	gpsaz	-**-	-**-	258ø10'54.5108"	0.3072"	0.13
	1		CULL 104	-**-	258ø10'54.4184"	0.2282"	
			CULL 4	1	-0.092474"	0.2056"	
69	10	gpsht	-**-	-**-	-0.8503f	0.0476f	0.14

	1		CULL 104	-**-	-0.8357f	0.0377f	
			CULL 4	1	+0.014527f	0.0291f	
70	10	gpsds	-**-	-**-	7351.7563f	0.0106f	0.12
	1		CULL 104	-**-	7351.7532f	0.0080f	
			CULL 4	1	-0.003077f	0.0070f	
71	11	gpsaz	-**-	-**-	359ø56'04.2161"	1.3206"	0.43
	1		CULL 4	-**-	359ø56'06.1355"	0.3999"	
			400	1	+1.919397"	1.2586"	
72	11	gpsht	-**-	-**-	+2.0365f	0.1140f	0.05
	1		CULL 4	-**-	+2.0192f	0.0593f	
			400	1	-0.017316f	0.0974f	
73	11	gpsds	-**-	-**-	7086.9395f	0.0554f	0.12
	1		CULL 4	-**-	7086.9629f	0.0158f	
			400	1	+0.023421f	0.0531f	
74	12	gpsaz	-**-	-**-	261ø52'43.0328"	0.3770"	0.13
	1		400	-**-	261ø52'43.1177"	0.3334"	
			353	1	+0.084924"	0.1761"	
75	12	gpsht	-**-	-**-	-1.7092f	0.0507f	0.01
	1		400	-**-	-1.7083f	0.0436f	
			353	1	+0.000893f	0.0259f	
76	12	gpsds	-**-	-**-	5811.8032f	0.0080f	0.06
	1		400	-**-	5811.8039f	0.0073f	
			353	1	+0.000710f	0.0034f	
77	13	gpsaz	-**-	-**-	255ø44'37.7552"	0.4245"	0.47
	1		353	-**-	255ø44'37.3438"	0.3473"	
			P 1393	1	-0.411468"	0.2441"	
78	13	gpsht	-**-	-**-	-0.9867f	0.0504f	0.19
	1		353	-**-	-0.9665f	0.0403f	
			P 1393	1	+0.020202f	0.0302f	
79	13	gpsds	-**-	-**-	4655.7131f	0.0085f	0.49
	1		353	-**-	4655.7216f	0.0070f	
			P 1393	1	+0.008502f	0.0048f	
80	14	gpsaz	-**-	-**-	118ø33'56.3226"	0.4469"	0.19
	1		P 1393	-**-	118ø33'56.3847"	0.4376"	
			K 466 RESET	1	+0.062158"	0.0903"	
81	14	gpsht	-**-	-**-	+0.9737f	0.0485f	0.03
	1		P 1393	-**-	+0.9719f	0.0455f	
			K 466 RESET	1	-0.001852f	0.0168f	
82	14	gpsds	-**-	-**-	5331.7859f	0.0064f	0.40
	1		P 1393	-**-	5331.7844f	0.0063f	
			K 466 RESET	1	-0.001514f	0.0011f	
83	15	gpsaz	-**-	-**-	359ø17'34.7707"	0.4515"	0.27
	1		P 1393	-**-	359ø17'34.9879"	0.3910"	
			1012	1	+0.217197"	0.2259"	

84	15	gpsht	-**-	-**-	+6.5393f	0.0566f	0.19
	1		P 1393	-**-	+6.5188f	0.0475f	
			1012	1	-0.020500f	0.0307f	
85	15	gpsds	-**-	-**-	3574.5438f	0.0125f	0.31
	1		P 1393	-**-	3574.5508f	0.0107f	
			1012	1	+0.007002f	0.0064f	
86	16	gpsaz	-**-	-**-	297ø12'14.7987"	0.2210"	0.13
	1		1018	-**-	297ø12'14.8674"	0.1628"	
			CULL 4	1	+0.068722"	0.1495"	
87	16	gpsht	-**-	-**-	+6.0264f	0.0478f	0.03
	1		1018	-**-	+6.0294f	0.0360f	
			CULL 4	1	+0.003020f	0.0315f	
88	16	gpsds	-**-	-**-	10254.2451f	0.0110f	0.17
	1		1018	-**-	10254.2404f	0.0079f	
			CULL 4	1	-0.004712f	0.0077f	
89	17	gpsaz	-**-	-**-	239ø21'45.2593"	13.0994"	OPEN
	1		P 1393	-**-	239ø21'45.2593"	13.0994"	
			12	1	+0.000000"	0.0000"	
90	17	gpsht	-**-	-**-	+2.2314f	0.0467f	OPEN
	1		P 1393	-**-	+2.2314f	0.0467f	
			12	1	+0.000000f	0.0000f	
91	17	gpsds	-**-	-**-	101.0604f	0.0095f	OPEN
	1		P 1393	-**-	101.0604f	0.0095f	
			12	1	+0.000000f	0.0000f	
92	18	gpsaz	-**-	-**-	133ø29'24.1642"	0.4162"	0.08
	1		400	-**-	133ø29'24.1226"	0.3906"	
			1021	1	-0.041616"	0.1436"	
93	18	gpsht	-**-	-**-	+0.3702f	0.0459f	0.07
	1		400	-**-	+0.3755f	0.0409f	
			1021	1	+0.005339f	0.0208f	
94	18	gpsds	-**-	-**-	4116.3640f	0.0076f	0.50
	1		400	-**-	4116.3688f	0.0072f	
			1021	1	+0.004792f	0.0027f	
95	19	gpsaz	-**-	-**-	91ø17'43.5800"	0.2391"	0.51
	1		1001	-**-	91ø17'43.7777"	0.2130"	
			1020	1	+0.197702"	0.1085"	
96	19	gpsht	-**-	-**-	+0.9286f	0.0450f	0.08
	1		1001	-**-	+0.9214f	0.0369f	
			1020	1	-0.007187f	0.0258f	
97	19	gpsds	-**-	-**-	6390.1485f	0.0063f	0.31
	1		1001	-**-	6390.1515f	0.0057f	
			1020	1	+0.003046f	0.0027f	
98	20	gpsaz	-**-	-**-	341ø15'33.8282"	0.1996"	0.07
	1		1020	-**-	341ø15'33.7949"	0.1547"	
			1023	1	-0.033314"	0.1262"	

99	20	gpsht	-**-	-**-	+1.7370f	0.0522f	0.04
	1		1020	-**-	+1.7320f	0.0417f	
			1023	1	-0.005019f	0.0315f	
100	20	gpsds	-**-	-**-	12239.4963f	0.0151f	0.17
	1		1020	-**-	12239.4900f	0.0109f	
			1023	1	-0.006349f	0.0104f	
101	21	gpsaz	-**-	-**-	257ø53'10.7259"	0.2146"	0.38
	1		1023	-**-	257ø53'10.6134"	0.1976"	
			1024	1	-0.112478"	0.0836"	
102	21	gpsht	-**-	-**-	-0.1620f	0.0449f	0.15
	1		1023	-**-	-0.1488f	0.0375f	
			1024	1	+0.013146f	0.0246f	
103	21	gpsds	-**-	-**-	6273.6603f	0.0068f	0.01
	1		1023	-**-	6273.6605f	0.0061f	
			1024	1	+0.000139f	0.0029f	
104	22	gpsaz	-**-	-**-	264ø03'08.4548"	0.3056"	0.18
	1		1004	-**-	264ø03'08.2918"	0.1662"	
			1013	1	-0.163037"	0.2564"	
105	22	gpsht	-**-	-**-	+2.7280f	0.0610f	0.31
	1		1004	-**-	+2.7795f	0.0396f	
			1013	1	+0.051424f	0.0464f	
106	22	gpsds	-**-	-**-	12527.2974f	0.0181f	0.39
	1		1004	-**-	12527.2756f	0.0091f	
			1013	1	-0.021773f	0.0157f	
107	23	gpsaz	-**-	-**-	159ø05'58.6955"	0.2440"	0.05
	1		1001	-**-	159ø05'58.6765"	0.2239"	
			529	1	-0.019031"	0.0972"	
108	23	gpsht	-**-	-**-	-0.1854f	0.0474f	0.10
	1		1001	-**-	-0.1762f	0.0404f	
			529	1	+0.009118f	0.0248f	
109	23	gpsds	-**-	-**-	5546.3871f	0.0092f	0.13
	1		1001	-**-	5546.3848f	0.0079f	
			529	1	-0.002249f	0.0047f	
110	24	gpsaz	-**-	-**-	185ø19'06.2411"	0.2842"	0.43
	1		1020	-**-	185ø19'05.9436"	0.2090"	
			1	1	-0.297453"	0.1926"	
111	24	gpsht	-**-	-**-	-1.3432f	0.0519f	0.04
	1		1020	-**-	-1.3481f	0.0411f	
			1	1	-0.004905f	0.0317f	
112	24	gpsds	-**-	-**-	8265.0204f	0.0139f	0.45
	1		1020	-**-	8265.0363f	0.0097f	
			1	1	+0.015914f	0.0100f	
113	25	gpsaz	-**-	-**-	328ø30'19.1981"	0.1800"	0.01
	1		1023	-**-	328ø30'19.2009"	0.1306"	

				1007	1	+0.002772"	0.1239"	
114	25	gpsht		-**-	-**-	-0.9207f	0.0503f	0.08
	1			1023	-**-	-0.9323f	0.0317f	
				1007	1	-0.011676f	0.0391f	
115	25	gpsds		-**-	-**-	8675.3760f	0.0124f	0.05
	1			1023	-**-	8675.3779f	0.0071f	
				1007	1	+0.001905f	0.0101f	
116	26	gpsaz		-**-	-**-	289ø14'04.5765"	0.2870"	0.82
	1		P	1393	-**-	289ø14'04.1952"	0.2559"	
				1016	1	-0.381294"	0.1298"	
117	26	gpsht		-**-	-**-	+5.1773f	0.0462f	0.03
	1		P	1393	-**-	+5.1792f	0.0421f	
				1016	1	+0.001909f	0.0191f	
118	26	gpsds		-**-	-**-	6979.6690f	0.0086f	0.28
	1		P	1393	-**-	6979.6732f	0.0074f	
				1016	1	+0.004259f	0.0042f	
119	27	gpsaz		-**-	-**-	267ø42'51.9197"	0.2545"	0.81
	1			1016	-**-	267ø42'51.6749"	0.2401"	
				9	1	-0.244795"	0.0844"	
120	27	gpsht		-**-	-**-	-7.6841f	0.0446f	0.08
	1			1016	-**-	-7.6789f	0.0409f	
				9	1	+0.005180f	0.0176f	
121	27	gpsds		-**-	-**-	5417.7459f	0.0071f	0.56
	1			1016	-**-	5417.7513f	0.0066f	
				9	1	+0.005366f	0.0027f	
122	28	gpsaz		-**-	-**-	260ø14'24.6006"	0.2343"	0.67
	1			9	-**-	260ø14'24.3505"	0.2094"	
				HPGN04JF	1	-0.250188"	0.1052"	
123	28	gpsht		-**-	-**-	+19.8424f	0.0462f	0.07
	1			9	-**-	+19.8472f	0.0421f	
				HPGN04JF	1	+0.004791f	0.0190f	
124	28	gpsds		-**-	-**-	7759.8450f	0.0092f	0.51
	1			9	-**-	7759.8529f	0.0081f	
				HPGN04JF	1	+0.007958f	0.0044f	
125	29	gpsaz		-**-	-**-	118ø38'52.6486"	0.1922"	0.12
	1			1003	-**-	118ø38'52.6986"	0.1534"	
				141	1	+0.050013"	0.1158"	
126	29	gpsht		-**-	-**-	+1.6534f	0.0455f	0.27
	1			1003	-**-	+1.6208f	0.0304f	
				141	1	-0.032638f	0.0339f	
127	29	gpsds		-**-	-**-	7490.1935f	0.0049f	0.68
	1			1003	-**-	7490.2008f	0.0039f	
				141	1	+0.007286f	0.0030f	
128	30	gpsaz		-**-	-**-	45ø30'42.8589"	0.2856"	0.15

	1		141	-**-	45ø30'42.9400"	0.2439"	
			1027	1	+0.081119"	0.1488"	
129	30	gpsht	-**-	-**-	-0.2547f	0.0449f	0.32
	1		141	-**-	-0.2902f	0.0326f	
			1027	1	-0.035564f	0.0308f	
130	30	gpsds	-**-	-**-	5082.3003f	0.0047f	0.14
	1		141	-**-	5082.3014f	0.0041f	
			1027	1	+0.001125f	0.0023f	
131	31	gpsaz	-**-	-**-	270ø58'28.3849"	0.7466"	0.36
	1		141	-**-	270ø58'27.5919"	0.4118"	
			BM 150	1	-0.792945"	0.6227"	
132	31	gpsht	-**-	-**-	-7.5598f	0.0535f	0.15
	1		141	-**-	-7.5816f	0.0338f	
			BM 150	1	-0.021760f	0.0415f	
133	31	gpsds	-**-	-**-	3493.7422f	0.0105f	0.39
	1		141	-**-	3493.7295f	0.0054f	
			BM 150	1	-0.012664f	0.0091f	
134	32	gpsaz	-**-	-**-	287ø36'15.0884"	0.2809"	0.13
	1		BM 150	-**-	287ø36'15.0095"	0.2244"	
			10	1	-0.078918"	0.1690"	
135	32	gpsht	-**-	-**-	+1.8275f	0.0473f	0.01
	1		BM 150	-**-	+1.8263f	0.0355f	
			10	1	-0.001136f	0.0312f	
136	32	gpsds	-**-	-**-	6218.4219f	0.0054f	0.22
	1		BM 150	-**-	6218.4194f	0.0044f	
			10	1	-0.002518f	0.0032f	
137	33	gpsaz	-**-	-**-	59ø53'35.0929"	0.4531"	0.09
	1		10	-**-	59ø53'35.1906"	0.3361"	
			1003	1	+0.097714"	0.3038"	
138	33	gpsht	-**-	-**-	+4.1598f	0.0485f	0.21
	1		10	-**-	+4.1352f	0.0355f	
			1003	1	-0.024660f	0.0330f	
139	33	gpsds	-**-	-**-	3291.1631f	0.0085f	0.37
	1		10	-**-	3291.1706f	0.0063f	
			1003	1	+0.007552f	0.0057f	
140	34	gpsaz	-**-	-**-	275ø04'16.3355"	0.8967"	0.50
	1		10	-**-	275ø04'15.2514"	0.6564"	
			1008	1	-1.084092"	0.6109"	
141	34	gpsht	-**-	-**-	+5.8724f	0.0514f	0.33
	1		10	-**-	+5.9069f	0.0424f	
			1008	1	+0.034460f	0.0291f	
142	34	gpsds	-**-	-**-	3089.1926f	0.0092f	0.47
	1		10	-**-	3089.2026f	0.0070f	
			1008	1	+0.010015f	0.0060f	

143	35	gpsaz	-**-	-**-	258ø04'11.5038"	0.7242"	0.43
	1		1008	-**-	258ø04'11.0820"	0.6693"	
			13	1	-0.421809"	0.2766"	
144	35	gpsht	-**-	-**-	-1.4191f	0.0448f	0.19
	1		1008	-**-	-1.4048f	0.0394f	
			13	1	+0.014320f	0.0212f	
145	35	gpsds	-**-	-**-	1956.1846f	0.0069f	0.51
	1		1008	-**-	1956.1898f	0.0062f	
			13	1	+0.005209f	0.0028f	
146	36	gpsaz	-**-	-**-	278ø40'29.4125"	0.0968"	0.21
	1		141	-**-	278ø40'29.4579"	0.0756"	
			1028	1	+0.045381"	0.0605"	
147	36	gpsht	-**-	-**-	+2.4519f	0.0449f	0.02
	1		141	-**-	+2.4497f	0.0326f	
			1028	1	-0.002176f	0.0309f	
148	36	gpsds	-**-	-**-	15621.3434f	0.0064f	0.01
	1		141	-**-	15621.3433f	0.0048f	
			1028	1	-0.000132f	0.0043f	
149	37	gpsaz	-**-	-**-	117ø57'35.1908"	1.7116"	0.00
	1		1028	-**-	117ø57'35.1812"	1.3686"	
			13	1	-0.009627"	1.0279"	
150	37	gpsht	-**-	-**-	-3.6905f	0.0463f	0.14
	1		1028	-**-	-3.7032f	0.0386f	
			13	1	-0.012708f	0.0256f	
151	37	gpsds	-**-	-**-	1167.4317f	0.0072f	0.15
	1		1028	-**-	1167.4293f	0.0057f	
			13	1	-0.002423f	0.0044f	
152	38	gpsaz	-**-	-**-	309ø31'57.5313"	0.0761"	0.16
	1		141	-**-	309ø31'57.5581"	0.0598"	
			1029	1	+0.026782"	0.0470"	
153	38	gpsht	-**-	-**-	+2.3038f	0.0443f	0.01
	1		141	-**-	+2.3030f	0.0305f	
			1029	1	-0.000870f	0.0321f	
154	38	gpsds	-**-	-**-	16271.1987f	0.0059f	0.05
	1		141	-**-	16271.1980f	0.0046f	
			1029	1	-0.000652f	0.0037f	
155	39	gpsaz	-**-	-**-	172ø47'56.9445"	0.1363"	0.35
	1		141	-**-	172ø47'57.0612"	0.0988"	
			353	1	+0.116770"	0.0940"	
156	39	gpsht	-**-	-**-	-2.1910f	0.0470f	0.12
	1		141	-**-	-2.1772f	0.0329f	
			353	1	+0.013824f	0.0335f	
157	39	gpsds	-**-	-**-	10812.6519f	0.0085f	0.21
	1		141	-**-	10812.6563f	0.0063f	
			353	1	+0.004418f	0.0057f	

158	40	gpsaz	-**-	-**-	127ø35'11.2679"	0.1846"	0.15
	1		141	-**-	127ø35'11.2010"	0.1379"	
			1025	1	-0.066888"	0.1227"	
159	40	gpsht	-**-	-**-	+0.5295f	0.0488f	0.09
	1		141	-**-	+0.5411f	0.0330f	
			1025	1	+0.011688f	0.0359f	
160	40	gpsds	-**-	-**-	7832.5174f	0.0106f	0.04
	1		141	-**-	7832.5185f	0.0075f	
			1025	1	+0.001096f	0.0074f	
161	41	gpsaz	-**-	-**-	219ø11'35.7517"	0.3162"	0.40
	1		1025	-**-	219ø11'35.4199"	0.2142"	
			353	1	-0.331802"	0.2326"	
162	41	gpsht	-**-	-**-	-2.7097f	0.0502f	0.07
	1		1025	-**-	-2.7181f	0.0362f	
			353	1	-0.008476f	0.0348f	
163	41	gpsds	-**-	-**-	7677.0563f	0.0077f	0.02
	1		1025	-**-	7677.0566f	0.0059f	
			353	1	+0.000310f	0.0050f	
164	42	gpsaz	-**-	-**-	45ø26'22.9664"	0.2861"	0.22
	1		1003	-**-	45ø26'22.7869"	0.1778"	
			1013	1	-0.179492"	0.2242"	
165	42	gpsht	-**-	-**-	+3.3449f	0.0543f	0.11
	1		1003	-**-	+3.3607f	0.0351f	
			1013	1	+0.015769f	0.0414f	
166	42	gpsds	-**-	-**-	6835.3325f	0.0138f	0.37
	1		1003	-**-	6835.3484f	0.0067f	
			1013	1	+0.015953f	0.0121f	
167	43	gpsaz	-**-	-**-	348ø31'19.7499"	0.1533"	0.02
	1		141	-**-	348ø31'19.7403"	0.1091"	
			1013	1	-0.009623"	0.1077"	
168	43	gpsht	-**-	-**-	+1.7319f	0.0454f	0.06
	1		141	-**-	+1.7401f	0.0286f	
			1013	1	+0.008200f	0.0353f	
169	43	gpsds	-**-	-**-	8558.2477f	0.0086f	0.17
	1		141	-**-	8558.2437f	0.0056f	
			1013	1	-0.003967f	0.0065f	
170	44	gpsaz	-**-	-**-	177ø59'54.6335"	0.2394"	0.28
	1		BM 150	-**-	177ø59'54.7809"	0.1894"	
			1012	1	+0.147326"	0.1464"	
171	44	gpsht	-**-	-**-	+10.9234f	0.0642f	0.23
	1		BM 150	-**-	+10.9566f	0.0495f	
			1012	1	+0.033219f	0.0409f	
172	44	gpsds	-**-	-**-	8364.1130f	0.0171f	0.29
	1		BM 150	-**-	8364.1257f	0.0121f	

				1012	1	+0.012687f	0.0121f	
173	45	gpsaz		-**-	-**-	309ø44'46.9689"	0.1719"	0.91
	1			1029	-**-	309ø44'47.3539"	0.1246"	
			HPGN 04 KF		1	+0.384996"	0.1185"	
174	45	gpsht		-**-	-**-	+21.8892f	0.0567f	0.86
	1			1029	-**-	+21.8603f	0.0559f	
			HPGN 04 KF		1	-0.028895f	0.0094f	
175	45	gpsds		-**-	-**-	20223.5695f	0.0163f	0.66
	1			1029	-**-	20223.5411f	0.0109f	
			HPGN 04 KF		1	-0.028423f	0.0121f	
176	46	gpsaz		-**-	-**-	213ø01'47.5550"	0.0947"	0.36
	1			13	-**-	213ø01'47.6138"	0.0827"	
			HPGN04JF		1	+0.058842"	0.0463"	
177	46	gpsht		-**-	-**-	+15.4488f	0.0475f	0.11
	1			13	-**-	+15.4571f	0.0429f	
			HPGN04JF		1	+0.008308f	0.0204f	
178	46	gpsds		-**-	-**-	15404.3722f	0.0124f	0.54
	1			13	-**-	15404.3873f	0.0096f	
			HPGN04JF		1	+0.015117f	0.0078f	
179	47	gpsaz		-**-	-**-	148ø30'19.1756"	0.2250"	0.04
	1			1007	-**-	148ø30'19.2013"	0.1306"	
				1023	1	+0.025664"	0.1832"	
180	47	gpsht		-**-	-**-	+0.9231f	0.0476f	0.08
	1			1007	-**-	+0.9327f	0.0317f	
				1023	1	+0.009559f	0.0355f	
181	47	gpsds		-**-	-**-	8675.3747f	0.0101f	0.13
	1			1007	-**-	8675.3779f	0.0071f	
				1023	1	+0.003212f	0.0071f	
182	48	gpsaz		-**-	-**-	12ø08'27.3496"	0.3038"	0.10
	1			1027	-**-	12ø08'27.4043"	0.2627"	
				1014	1	+0.054759"	0.1527"	
183	48	gpsht		-**-	-**-	+3.1893f	0.0692f	0.41
	1			1027	-**-	+3.1124f	0.0445f	
				1014	1	-0.076821f	0.0530f	
184	48	gpsds		-**-	-**-	5503.4414f	0.0071f	0.03
	1			1027	-**-	5503.4411f	0.0063f	
				1014	1	-0.000344f	0.0032f	
185	49	gpsaz		-**-	-**-	117ø26'13.6931"	0.1977"	0.24
	1			1027	-**-	117ø26'13.6113"	0.1735"	
				1002	1	-0.081727"	0.0947"	
186	49	gpsht		-**-	-**-	+0.9286f	0.0471f	0.03
	1			1027	-**-	+0.9315f	0.0382f	
				1002	1	+0.002901f	0.0276f	
187	49	gpsds		-**-	-**-	7018.9597f	0.0087f	0.13

```
        1                          1027  -**-       7018.9576f   0.0074f
                                   1002     1       -0.002108f   0.0046f

188     50 gpsaz                   -**-  -**-   17ø34'56.6216"   0.5314"    0.14
        1                          1002  -**-   17ø34'56.4619"   0.4277"
                                   1005     1       -0.159634"   0.3153"

189     50 gpsht                   -**-  -**-         -1.7912f   0.0496f    0.38
        1                          1002  -**-         -1.7505f   0.0396f
                                   1005     1       +0.040709f   0.0298f

190     50 gpsds                   -**-  -**-       4047.1729f   0.0086f    0.16
        1                          1002  -**-       4047.1757f   0.0071f
                                   1005     1       +0.002810f   0.0049f

191     51 gpsaz                   -**-  -**-  265ø06'42.7911"   0.5684"    0.46
        1                          1014  -**-  265ø06'41.9734"   0.2845"
                                   1013     1       -0.817633"   0.4921"

192     51 gpsht                   -**-  -**-         -1.0460f   0.0617f    0.22
        1                          1014  -**-         -1.0818f   0.0412f
                                   1013     1       -0.035808f   0.0460f

193     51 gpsds                   -**-  -**-       6509.8338f   0.0152f    0.12
        1                          1014  -**-       6509.8396f   0.0078f
                                   1013     1       +0.005769f   0.0131f

194     52 gpsaz                   -**-  -**-   82ø54'24.7434"   0.8394"    0.24
        1                          1014  -**-   82ø54'24.0865"   0.3715"
                                   1004     1       -0.656845"   0.7527"

195     52 gpsht                   -**-  -**-         -3.8817f   0.0708f    0.10
        1                          1014  -**-         -3.8611f   0.0442f
                                   1004     1       +0.020616f   0.0554f

196     52 gpsds                   -**-  -**-       6019.7344f   0.0237f    0.23
        1                          1014  -**-       6019.7520f   0.0097f
                                   1004     1       +0.017584f   0.0216f

197     53 gpsaz                   -**-  -**-  162ø48'06.7098"   0.3855"    0.17
        1                          1027  -**-  162ø48'06.4953"   0.1521"
                                   1025     1       -0.214482"   0.3543"

198     53 gpsht                   -**-  -**-         +0.8196f   0.0606f    0.07
        1                          1027  -**-         +0.8315f   0.0372f
                                   1025     1       +0.011952f   0.0478f

199     53 gpsds                   -**-  -**-       8729.2666f   0.0217f    0.32
        1                          1027  -**-       8729.2893f   0.0086f
                                   1025     1       +0.022648f   0.0199f

200     54 gpsaz                   -**-  -**-  114ø41'06.5263"   1.8804"    0.21
        1                K 466 RESET  -**-  114ø41'07.8725"   0.6677"
                              CULL 4     1       +1.346231"   1.7578"

201     54 gpsht                   -**-  -**-         -0.3336f   0.1070f    0.06
        1                K 466 RESET  -**-         -0.3155f   0.0690f
                              CULL 4     1       +0.018076f   0.0818f
```

```
202    54 gpsds                    -**-  -**-       6153.5450f   0.0359f    0.41
        1                 K 466 RESET  -**-       6153.4967f   0.0149f
                               CULL 4     1       -0.048300f   0.0326f

203    55 gpsaz                    -**-  -**-  216ø27'45.9808"   0.2287"    0.24
        1                  HPGN 04 KH  -**-  216ø27'46.1092"   0.1736"
                                    1     1      +0.128447"   0.1490"

204    55 gpsht                    -**-  -**-        -24.2437f   0.0591f    0.07
        1                  HPGN 04 KH  -**-        -24.2360f   0.0497f
                                    1     1       +0.007723f   0.0320f

205    55 gpsds                    -**-  -**-      16501.5208f   0.0181f    0.23
        1                  HPGN 04 KH  -**-      16501.5113f   0.0139f
                                    1     1       -0.009468f   0.0116f

206    56 gpsaz                    -**-  -**-   19ø52'52.3845"   0.1908"    0.13
        1                       1028  -**-   19ø52'52.4510"   0.1290"
                                1029     1      +0.066518"   0.1406"

207    56 gpsht                    -**-  -**-         -0.1542f   0.0464f    0.07
        1                       1028  -**-         -0.1466f   0.0346f
                                1029     1       +0.007547f   0.0310f

208    56 gpsds                    -**-  -**-       8507.8573f   0.0094f    0.20
        1                       1028  -**-       8507.8625f   0.0063f
                                1029     1       +0.005160f   0.0070f

209    57 gpsaz                    -**-  -**-   11ø15'04.5735"   0.9215"    0.07
        1                       1001  -**-   11ø15'04.3995"   0.6006"
                                1022     1      -0.174090"   0.6989"

210    57 gpsht                    -**-  -**-         +2.4962f   0.0604f    0.05
        1                       1001  -**-         +2.5030f   0.0481f
                                1022     1       +0.006894f   0.0365f

211    57 gpsds                    -**-  -**-       4648.2090f   0.0169f    0.26
        1                       1001  -**-       4648.2200f   0.0122f
                                1022     1       +0.010968f   0.0117f

212    58 gpsaz                    -**-  -**-  100ø17'36.1143"   0.2003"    0.15
        1                       1029  -**-  100ø17'36.0290"   0.1222"
                                1013     1      -0.085257"   0.1587"

213    58 gpsht                    -**-  -**-         -0.5754f   0.0475f    0.11
        1                       1029  -**-         -0.5627f   0.0337f
                                1013     1       +0.012693f   0.0335f

214    58 gpsds                    -**-  -**-      11023.7837f   0.0091f    0.25
        1                       1029  -**-      11023.7773f   0.0055f
                                1013     1       -0.006414f   0.0072f

215    59 gpsaz                    -**-  -**-  320ø32'43.0089"   0.3516"    0.14
        1                       1022  -**-  320ø32'43.0975"   0.3055"
                                1024     1      +0.088576"   0.1741"

216    59 gpsht                    -**-  -**-         -0.0043f   0.0517f    0.06
        1                       1022  -**-         +0.0013f   0.0442f
                                1024     1       +0.005603f   0.0267f
```

217	59	gpsds	-**-	-**-	7214.7157f	0.0131f	0.19
	1		1022	-**-	7214.7202f	0.0115f	
			1024	1	+0.004455f	0.0064f	
218	60	gpsaz	-**-	-**-	318ø54'25.0999"	0.4402"	0.25
	1		BM 150	-**-	318ø54'25.3969"	0.2835"	
			1003	1	+0.296938"	0.3368"	
219	60	gpsht	-**-	-**-	+5.9889f	0.0495f	0.21
	1		BM 150	-**-	+5.9613f	0.0325f	
			1003	1	-0.027569f	0.0373f	
220	60	gpsds	-**-	-**-	4686.0267f	0.0073f	0.23
	1		BM 150	-**-	4686.0221f	0.0048f	
			1003	1	-0.004565f	0.0055f	
221	61	gpsaz	-**-	-**-	269ø10'00.0466"	0.9264"	0.04
	1		1024	-**-	269ø09'59.9126"	0.2940"	
			1025	1	-0.133988"	0.8786"	
222	61	gpsht	-**-	-**-	-0.9983f	0.1269f	0.20
	1		1024	-**-	-1.0818f	0.0519f	
			1025	1	-0.083531f	0.1158f	
223	61	gpsds	-**-	-**-	8035.9689f	0.0287f	0.15
	1		1024	-**-	8035.9544f	0.0102f	
			1025	1	-0.014464f	0.0269f	
224	62	gpsaz	-**-	-**-	284ø41'14.4925"	0.3619"	0.15
	1		1001	-**-	284ø41'14.6009"	0.2981"	
			1021	1	+0.108342"	0.2051"	
225	62	gpsht	-**-	-**-	+0.7948f	0.0516f	0.08
	1		1001	-**-	+0.7877f	0.0445f	
			1021	1	-0.007166f	0.0263f	
226	62	gpsds	-**-	-**-	8088.7021f	0.0119f	0.50
	1		1001	-**-	8088.7145f	0.0097f	
			1021	1	+0.012380f	0.0069f	
227	63	gpsaz	-**-	-**-	356ø39'39.7695"	0.5074"	0.28
	1		1005	-**-	356ø39'40.2326"	0.2070"	
			1004	1	+0.463102"	0.4633"	
228	63	gpsht	-**-	-**-	+0.0292f	0.0515f	0.27
	1		1005	-**-	+0.0706f	0.0285f	
			1004	1	+0.041318f	0.0429f	
229	63	gpsds	-**-	-**-	5509.0864f	0.0136f	0.36
	1		1005	-**-	5509.1024f	0.0056f	
			1004	1	+0.015976f	0.0124f	
230	64	gpsaz	-**-	-**-	176ø39'40.2979"	0.9594"	0.02
	1		1004	-**-	176ø39'40.2328"	0.2070"	
			1005	1	-0.065138"	0.9368"	
231	64	gpsht	-**-	-**-	-0.0496f	0.0806f	0.08
	1		1004	-**-	-0.0702f	0.0285f	

			1005	1	-0.020638f	0.0754f	
232	64	gpsds	-**-	-**-	5509.0829f	0.0238f	0.24
	1		1004	-**-	5509.1024f	0.0056f	
			1005	1	+0.019462f	0.0231f	
233	65	gpsaz	-**-	-**-	88ø19'55.0548"	0.5777"	0.19
	1		1004	-**-	88ø19'55.4081"	0.2488"	
			1006	1	+0.353328"	0.5214"	
234	65	gpsht	-**-	-**-	-1.7677f	0.0673f	0.17
	1		1004	-**-	-1.8027f	0.0343f	
			1006	1	-0.035011f	0.0579f	
235	65	gpsds	-**-	-**-	6458.4606f	0.0198f	0.28
	1		1004	-**-	6458.4790f	0.0073f	
			1006	1	+0.018381f	0.0184f	

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

CLOSURES LOG
NETWORK = Napasalt
TIME = Tue Apr 17 08:18:01 2001

OBS#	TYPE	BACKSIGHT	INSTRUMENT	FORESIGHT	CLOSURE	TRANSFORM
1	hgoid		1		0.000000f	0.000000f
2	hgoid		10		0.000000f	0.000000f
3	hgoid		1001		0.000000f	0.000000f
4	hgoid		1002		0.000000f	0.000000f
5	hgoid		1003		0.000000f	0.000000f
6	hgoid		1004		0.000000f	0.000000f
7	hgoid		1005		0.000000f	0.000000f
8	hgoid		1006		-0.009881f	0.000000f
9	hgoid		1007		0.000000f	0.000000f
10	hgoid		1008		0.000000f	0.000000f
11	hgoid		1012		0.000000f	0.000000f
12	hgoid		1013		0.020199f	0.000000f
13	hgoid		1014		0.000000f	0.000000f
14	hgoid		1016		0.000000f	0.000000f
15	hgoid		1018		-0.003470f	0.000000f
16	hgoid		1020		0.000000f	0.000000f
17	hgoid		1021		0.000000f	0.000000f
18	hgoid		1022		0.000000f	0.000000f
19	hgoid		1023		0.000000f	0.000000f
20	hgoid		1024		0.000000f	0.000000f
21	hgoid		1025		0.000000f	0.000000f
22	hgoid		1027		0.000000f	0.000000f
23	hgoid		1028		0.000000f	0.000000f
24	hgoid		1029		0.000000f	0.000000f
25	hgoid		12		0.000000f	0.000000f
26	hgoid		13		0.000000f	0.000000f
27	hgoid		141		0.000000f	0.000000f
28	hgoid		353		0.000000f	0.000000f
29	hgoid		400		0.000000f	0.000000f
30	hgoid		529		0.000000f	0.000000f
31	hgoid		9		0.000000f	0.000000f
32	hgoid		BM 150		0.000000f	0.000000f
33	hgoid		CULL 104		0.000000f	0.000000f
34	hgoid		CULL 2		0.000000f	0.000000f
35	hgoid		CULL 4		0.000000f	0.000000f
36	hgoid		HPGN 04 KF		0.000000f	0.000000f
37	hgoid		HPGN 04 KH		0.000000f	0.000000f
38	hgoid		HPGN04JF		0.000000f	0.000000f
39	hgoid		K 466 RESET		0.000000f	0.000000f
40	hgoid		P 1393		-0.006848f	0.000000f
41	gpsaz		HPGN 04 KH	1006	-0.308011"	-0.244017"
42	gpsht		HPGN 04 KH	1006	0.021629f	-0.040254f
43	gpsds		HPGN 04 KH	1006	-0.051652f	-0.044219f
44	gpsaz		1006	1007	-0.042271"	-0.244667"
45	gpsht		1006	1007	0.019131f	0.028184f
46	gpsds		1006	1007	0.003195f	-0.010371f
47	gpsaz		1006	1004	-0.507470"	-0.244486"
48	gpsht		1006	1004	-0.020477f	0.018113f
49	gpsds		1006	1004	-0.010209f	-0.011201f
50	gpsaz		1004	1005	0.030690"	-0.244698"
51	gpsht		1004	1005	-0.012271f	0.022245f
52	gpsds		1004	1005	-0.004703f	-0.009555f

53	gpsaz	1002	1024	-0.395536"	-0.244776"
54	gpsht	1002	1024	-0.064783f	0.009066f
55	gpsds	1002	1024	-0.000463f	-0.011519f
56	gpsaz	1	1018	-0.011869"	-0.244446"
57	gpsht	1	1018	0.003833f	0.013317f
58	gpsds	1	1018	-0.003000f	-0.012927f
59	gpsaz	1018	CULL 104	0.025834"	-0.244495"
60	gpsht	1018	CULL 104	0.011811f	-0.021178f
61	gpsds	1018	CULL 104	-0.000944f	-0.011242f
62	gpsaz	1018	529	0.080569"	-0.244672"
63	gpsht	1018	529	-0.008952f	-0.017320f
64	gpsds	1018	529	-0.001821f	-0.007005f
65	gpsaz	529	CULL 2	0.000004"	-0.244618"
66	gpsht	529	CULL 2	0.000000f	-0.000327f
67	gpsds	529	CULL 2	0.000000f	-0.000061f
68	gpsaz	CULL 104	CULL 4	-0.092474"	-0.244488"
69	gpsht	CULL 104	CULL 4	0.014527f	0.025696f
70	gpsds	CULL 104	CULL 4	-0.003077f	-0.012752f
71	gpsaz	CULL 4	400	1.919398"	-0.244523"
72	gpsht	CULL 4	400	-0.017316f	-0.030142f
73	gpsds	CULL 4	400	0.023421f	-0.012283f
74	gpsaz	400	353	0.084924"	-0.244509"
75	gpsht	400	353	0.000893f	0.018898f
76	gpsds	400	353	0.000710f	-0.010080f
77	gpsaz	353	P 1393	-0.411469"	-0.244539"
78	gpsht	353	P 1393	0.020202f	0.016915f
79	gpsds	353	P 1393	0.008502f	-0.008074f
80	gpsaz	P 1393	K 466 RESET	0.062158"	-0.244750"
81	gpsht	P 1393	K 466 RESET	-0.001852f	-0.002077f
82	gpsds	P 1393	K 466 RESET	-0.001514f	-0.009245f
83	gpsaz	P 1393	1012	0.217197"	-0.244569"
84	gpsht	P 1393	1012	-0.020500f	-0.015164f
85	gpsds	P 1393	1012	0.007002f	-0.006197f
86	gpsaz	1018	CULL 4	0.068722"	-0.244365"
87	gpsht	1018	CULL 4	0.003020f	0.004682f
88	gpsds	1018	CULL 4	-0.004712f	-0.017781f
89	gpsaz	P 1393	12	0.000000"	-0.244617"
90	gpsht	P 1393	12	0.000000f	0.000289f
91	gpsds	P 1393	12	0.000000f	-0.000175f
92	gpsaz	400	1021	-0.041616"	-0.244718"
93	gpsht	400	1021	0.005339f	0.003734f
94	gpsds	400	1021	0.004792f	-0.007138f
95	gpsaz	1001	1020	0.197702"	-0.244753"
96	gpsht	1001	1020	-0.007187f	-0.016854f
97	gpsds	1001	1020	0.003046f	-0.011077f
98	gpsaz	1020	1023	-0.033313"	-0.244381"
99	gpsht	1020	1023	-0.005019f	-0.038602f
100	gpsds	1020	1023	-0.006349f	-0.021211f
101	gpsaz	1023	1024	-0.112477"	-0.244508"
102	gpsht	1023	1024	0.013146f	0.022022f
103	gpsds	1023	1024	0.000139f	-0.010881f
104	gpsaz	1004	1013	-0.163037"	-0.244376"
105	gpsht	1004	1013	0.051424f	0.039087f
106	gpsds	1004	1013	-0.021773f	-0.021733f
107	gpsaz	1001	529	-0.019031"	-0.244729"
108	gpsht	1001	529	0.009118f	0.016413f
109	gpsds	1001	529	-0.002249f	-0.009619f
110	gpsaz	1020	1	-0.297453"	-0.244712"
111	gpsht	1020	1	-0.004905f	0.036753f

112	gpsds		1020	1	0.015914f	-0.014338f
113	gpsaz		1023	1007	0.002772"	-0.244424"
114	gpsht		1023	1007	-0.011676f	-0.019214f
115	gpsds		1023	1007	0.001905f	-0.015038f
116	gpsaz	P	1393	1016	-0.381293"	-0.244450"
117	gpsht	P	1393	1016	0.001909f	0.007978f
118	gpsds	P	1393	1016	0.004259f	-0.012103f
119	gpsaz		1016	9	-0.244795"	-0.244508"
120	gpsht		1016	9	0.005180f	0.015425f
121	gpsds		1016	9	0.005366f	-0.009396f
122	gpsaz		9	HPGN04JF	-0.250188"	-0.244476"
123	gpsht		9	HPGN04JF	0.004791f	0.026176f
124	gpsds		9	HPGN04JF	0.007958f	-0.013460f
125	gpsaz		1003	141	0.050013"	-0.244803"
126	gpsht		1003	141	-0.032638f	-0.002799f
127	gpsds		1003	141	0.007286f	-0.012987f
128	gpsaz		141	1027	0.081119"	-0.244646"
129	gpsht		141	1027	-0.035564f	-0.025067f
130	gpsds		141	1027	0.001125f	-0.008809f
131	gpsaz		141	BM 150	-0.792945"	-0.244545"
132	gpsht		141	BM 150	-0.021760f	0.009042f
133	gpsds		141	BM 150	-0.012664f	-0.006059f
134	gpsaz	BM	150	10	-0.078918"	-0.244469"
135	gpsht	BM	150	10	-0.001136f	0.007939f
136	gpsds	BM	150	10	-0.002518f	-0.010783f
137	gpsaz		10	1003	0.097715"	-0.244655"
138	gpsht		10	1003	-0.024660f	-0.014875f
139	gpsds		10	1003	0.007552f	-0.005705f
140	gpsaz		10	1008	-1.084092"	-0.244550"
141	gpsht		10	1008	0.034460f	0.007028f
142	gpsds		10	1008	0.010015f	-0.005357f
143	gpsaz		1008	13	-0.421809"	-0.244584"
144	gpsht		1008	13	0.014320f	0.006738f
145	gpsds		1008	13	0.005209f	-0.003392f
146	gpsaz		141	1028	0.045381"	-0.244265"
147	gpsht		141	1028	-0.002176f	0.031727f
148	gpsds		141	1028	-0.000132f	-0.027098f
149	gpsaz		1028	13	-0.009628"	-0.244647"
150	gpsht		1028	13	-0.012708f	-0.000648f
151	gpsds		1028	13	-0.002423f	-0.002024f
152	gpsaz		141	1029	0.026782"	-0.244218"
153	gpsht		141	1029	-0.000870f	-0.009978f
154	gpsds		141	1029	-0.000652f	-0.028209f
155	gpsaz		141	353	0.116770"	-0.244790"
156	gpsht		141	353	0.013824f	0.041552f
157	gpsds		141	353	0.004418f	-0.018759f
158	gpsaz		141	1025	-0.066887"	-0.244811"
159	gpsht		141	1025	0.011688f	0.003227f
160	gpsds		141	1025	0.001096f	-0.013582f
161	gpsaz		1025	353	-0.331802"	-0.244596"
162	gpsht		1025	353	-0.008476f	0.038162f
163	gpsds		1025	353	0.000310f	-0.013318f
164	gpsaz		1003	1013	-0.179492"	-0.244656"
165	gpsht		1003	1013	0.015769f	-0.033665f
166	gpsds		1003	1013	0.015953f	-0.011847f
167	gpsaz		141	1013	-0.009623"	-0.244470"
168	gpsht		141	1013	0.008200f	-0.031041f
169	gpsds		141	1013	-0.003967f	-0.014833f
170	gpsaz	BM	150	1012	0.147326"	-0.244736"

```
171 gpsht                    BM 150          1012    0.033219f  0.034420f
172 gpsds                    BM 150          1012    0.012687f -0.014510f
173 gpsaz                      1029     HPGN 04 KF    0.384996" -0.244121"
174 gpsht                      1029     HPGN 04 KF   -0.028895f -0.012657f
175 gpsds                      1029     HPGN 04 KF   -0.028423f -0.035060f
176 gpsaz                        13       HPGN04JF    0.058842" -0.244616"
177 gpsht                        13       HPGN04JF    0.008308f  0.077272f
178 gpsds                        13       HPGN04JF    0.015117f -0.026738f
179 gpsaz                      1007          1023    0.025663" -0.244812"
180 gpsht                      1007          1023    0.009559f  0.018879f
181 gpsds                      1007          1023    0.003212f -0.015046f
182 gpsaz                      1027          1014    0.054759" -0.244570"
183 gpsht                      1027          1014   -0.076821f -0.026069f
184 gpsds                      1027          1014   -0.000344f -0.009539f
185 gpsaz                      1027          1002   -0.081728" -0.244791"
186 gpsht                      1027          1002    0.002901f -0.003361f
187 gpsds                      1027          1002   -0.002108f -0.012170f
188 gpsaz                      1002          1005   -0.159634" -0.244592"
189 gpsht                      1002          1005    0.040709f -0.019810f
190 gpsds                      1002          1005    0.002810f -0.007016f
191 gpsaz                      1014          1013   -0.817633" -0.244490"
192 gpsht                      1014          1013   -0.035808f  0.019766f
193 gpsds                      1014          1013    0.005769f -0.011291f
194 gpsaz                      1014          1004   -0.656845" -0.244733"
195 gpsht                      1014          1004    0.020616f -0.019504f
196 gpsds                      1014          1004    0.017584f -0.010435f
197 gpsaz                      1027          1025   -0.214482" -0.244784"
198 gpsht                      1027          1025    0.011952f  0.028132f
199 gpsds                      1027          1025    0.022648f -0.015142f
200 gpsaz                K 466 RESET       CULL 4    1.346232" -0.244769"
201 gpsht                K 466 RESET       CULL 4    0.018076f -0.004449f
202 gpsds                K 466 RESET       CULL 4   -0.048300f -0.010669f
203 gpsaz                 HPGN 04 KH            1    0.128447" -0.244590"
204 gpsht                 HPGN 04 KH            1    0.007723f  0.082567f
205 gpsds                 HPGN 04 KH            1   -0.009468f -0.028645f
206 gpsaz                      1028          1029    0.066518" -0.244571"
207 gpsht                      1028          1029    0.007547f -0.041861f
208 gpsds                      1028          1029    0.005160f -0.014744f
209 gpsaz                      1001          1022   -0.174090" -0.244576"
210 gpsht                      1001          1022    0.006894f -0.021919f
211 gpsds                      1001          1022    0.010968f -0.008057f
212 gpsaz                      1029          1013   -0.085256" -0.244870"
213 gpsht                      1029          1013    0.012693f -0.021259f
214 gpsds                      1029          1013   -0.006414f -0.019109f
215 gpsaz                      1022          1024    0.088576" -0.244448"
216 gpsht                      1022          1024    0.005603f -0.011333f
217 gpsds                      1022          1024    0.004455f -0.012508f
218 gpsaz                    BM 150          1003    0.296937" -0.244507"
219 gpsht                    BM 150          1003   -0.027569f -0.006760f
220 gpsds                    BM 150          1003   -0.004565f -0.008124f
221 gpsaz                      1024          1025   -0.133988" -0.244452"
222 gpsht                      1024          1025   -0.083531f  0.022095f
223 gpsds                      1024          1025   -0.014464f -0.013938f
224 gpsaz                      1001          1021    0.108342" -0.244428"
225 gpsht                      1001          1021   -0.007166f  0.012341f
226 gpsds                      1001          1021    0.012380f -0.014027f
227 gpsaz                      1005          1004    0.463102" -0.244538"
228 gpsht                      1005          1004    0.041318f -0.022579f
229 gpsds                      1005          1004    0.015976f -0.009549f
```

```
230 gpsaz                          1004           1005   -0.065138" -0.244698"
231 gpsht                          1004           1005   -0.020638f  0.022245f
232 gpsds                          1004           1005    0.019462f -0.009555f
233 gpsaz                          1004           1006    0.353328" -0.244750"
234 gpsht                          1004           1006   -0.035011f -0.018457f
235 gpsds                          1004           1006    0.018381f -0.011196f
```

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

COORDINATE ADJUSTMENT SUMMARY
NETWORK = Napasalt
TIME = Tue Apr 17 08:18:02 2001

Datum = NAD-83
Coordinate System = User-Defined Lambert
Zone = CA Zone 2

Network Adjustment Constraints:
3 fixed coordinates in y
3 fixed coordinates in x
4 fixed coordinates in h

POINT	NAME		OLD COORDS	ADJUST	NEW COORDS	1.00å
1	1					
		Y=	1805022.1697	+0.0000	1805022.1697	0.014743f
		X=	6478972.8604	+0.0000	6478972.8604	0.012096f
		ELL HT=	-95.4645	+0.0000	-95.4645	0.336487f
		ORTHO HT=	9.3608	+0.0000	9.3608	0.439723f
		GEOID HT=	-104.8253	+0.0000	-104.8253	0.283077f
2	10					
		Y=	1830126.3159	+0.0000	1830126.3159	0.010489f
		X=	6446010.3588	+0.0000	6446010.3588	0.008822f
		ELL HT=	-99.9289	+0.0000	-99.9289	0.288757f
		ORTHO HT=	4.3917	+0.0000	4.3917	0.404368f
		GEOID HT=	-104.3206	+0.0000	-104.3206	0.283077f
3	1001					
		Y=	1813396.0779	+0.0000	1813396.0779	0.013784f
		X=	6473350.4194	+0.0000	6473350.4194	0.011487f
		ELL HT=	-95.0576	+0.0000	-95.0577	0.239030f
		ORTHO HT=	9.6621	+0.0000	9.6621	0.370497f
		GEOID HT=	-104.7198	+0.0000	-104.7198	0.283077f
4	1002					
		Y=	1828513.5572	+0.0000	1828513.5572	0.011922f
		X=	6465285.8944	+0.0000	6465285.8944	0.010288f
		ELL HT=	-93.5778	+0.0000	-93.5778	0.159704f
		ORTHO HT=	10.8309	+0.0000	10.8309	0.325020f
		GEOID HT=	-104.4088	+0.0000	-104.4088	0.283077f
5	1003					
		Y=	1831777.2163	+0.0000	1831777.2163	0.009816f
		X=	6448857.5143	+0.0000	6448857.5143	0.008496f
		ELL HT=	-95.8086	+0.0000	-95.8086	0.256627f
		ORTHO HT=	8.4855	+0.0000	8.4855	0.382086f
		GEOID HT=	-104.2942	+0.0000	-104.2942	0.283077f
6	1004					
		Y=	1837871.4000	+0.0000	1837871.4000	0.012608f
		X=	6466187.5845	+0.0000	6466187.5845	0.011445f
		ELL HT=	-95.3002	+0.0000	-95.3002	0.213627f
		ORTHO HT=	8.8343	+0.0000	8.8343	0.354640f
		GEOID HT=	-104.1345	+0.0000	-104.1345	0.283077f

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

```
 7 1005
         Y=    1832371.6588     +0.0000        1832371.6588    0.012807f
         X=    6466508.4433     +0.0000        6466508.4433    0.011397f
    ELL HT=        -95.3482     +0.0000            -95.3482    0.181524f
  ORTHO HT=          8.9501     +0.0000              8.9501    0.336279f
  GEOID HT=       -104.2983     +0.0000           -104.2983    0.283077f

 8 1006
         Y=    1838059.3941     +0.0000        1838059.3941    0.012916f
         X=    6472643.3157     +0.0000        6472643.3157    0.011319f
    ELL HT=        -97.1214     +0.0000            -97.1214    0.260151f
  ORTHO HT=          6.9640     +0.0000              6.9640        FIXED
  GEOID HT=       -104.0854     +0.0000           -104.0854    0.260151f

 9 1007
         Y=    1832239.5535     +0.0000        1832239.5535    0.012895f
         X=    6471274.3787     +0.0000        6471274.3787    0.011310f
    ELL HT=        -93.4113     +0.0000            -93.4113    0.217014f
  ORTHO HT=         10.8517     +0.0000             10.8517    0.356690f
  GEOID HT=       -104.2630     +0.0000           -104.2630    0.283077f

10 1008
         Y=    1830399.3616     +0.0000        1830399.3616    0.010528f
         X=    6442933.2521     +0.0000        6442933.2521    0.008900f
    ELL HT=        -94.0150     +0.0000            -94.0150    0.329392f
  ORTHO HT=         10.2655     +0.0000             10.2655    0.434318f
  GEOID HT=       -104.2805     +0.0000           -104.2805    0.283077f

11 1012
         Y=    1819886.6239     +0.0000        1819886.6239    0.013828f
         X=    6452229.6780     +0.0000        6452229.6780    0.009920f
    ELL HT=        -90.7721     +0.0000            -90.7721    0.222057f
  ORTHO HT=         13.8869     +0.0000             13.8869    0.359781f
  GEOID HT=       -104.6590     +0.0000           -104.6590    0.283077f

12 1013
         Y=    1836573.3042     +0.0000        1836573.3042    0.010373f
         X=    6453727.7676     +0.0000        6453727.7676    0.009431f
    ELL HT=        -92.4816     +0.0000            -92.4816    0.226103f
  ORTHO HT=         11.6666     +0.0000             11.6666        FIXED
  GEOID HT=       -104.1482     +0.0000           -104.1482    0.226103f

13 1014
         Y=    1837128.0415     +0.0000        1837128.0415    0.012306f
         X=    6460213.9167     +0.0000        6460213.9167    0.011485f
    ELL HT=        -91.4196     +0.0000            -91.4196    0.200701f
  ORTHO HT=         12.7436     +0.0000             12.7436    0.347007f
  GEOID HT=       -104.1632     +0.0000           -104.1632    0.283077f

14 1016
         Y=    1818611.6897     +0.0000        1818611.6897    0.009627f
         X=    6445683.7394     +0.0000        6445683.7394    0.009034f
    ELL HT=        -92.0886     +0.0000            -92.0886    0.302277f
  ORTHO HT=         12.5515     +0.0000             12.5515    0.414130f
  GEOID HT=       -104.6402     +0.0000           -104.6402    0.283077f

15 1018
         Y=    1806505.1354     +0.0000        1806505.1354    0.014489f
         X=    6471667.6116     +0.0000        6471667.6116    0.012267f
```

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

ELL HT=	-102.6601	+0.0000	-102.6601	0.263063f
ORTHO HT=	2.2540	+0.0000	2.2540	FIXED
GEOID HT=	-104.9141	+0.0000	-104.9141	0.263063f

16 1020

Y=	1813251.6127	+0.0000	1813251.6127	0.014645f
X=	6479738.9266	+0.0000	6479738.9266	0.012114f
ELL HT=	-94.1531	+0.0000	-94.1531	0.308268f
ORTHO HT=	10.4599	+0.0000	10.4599	0.418523f
GEOID HT=	-104.6130	+0.0000	-104.6130	0.283077f

17 1021

Y=	1815446.9185	+0.0000	1815446.9185	0.014597f
X=	6465526.0263	+0.0000	6465526.0263	0.011680f
ELL HT=	-94.2577	+0.0000	-94.2577	0.180269f
ORTHO HT=	10.4862	+0.0000	10.4862	0.335603f
GEOID HT=	-104.7438	+0.0000	-104.7438	0.283077f

18 1022

Y=	1817954.9574	+0.0000	1817954.9574	0.015820f
X=	6474257.3324	+0.0000	6474257.3324	0.015430f
ELL HT=	-92.5765	+0.0000	-92.5765	0.235254f
ORTHO HT=	12.0167	+0.0000	12.0167	0.368072f
GEOID HT=	-104.5932	+0.0000	-104.5932	0.283077f

19 1023

Y=	1824842.1742	+0.0000	1824842.1742	0.013182f
X=	6475806.5635	+0.0000	6475806.5635	0.011403f
ELL HT=	-92.4598	+0.0000	-92.4598	0.245912f
ORTHO HT=	11.9342	+0.0000	11.9342	0.374974f
GEOID HT=	-104.3940	+0.0000	-104.3940	0.283077f

20 1024

Y=	1823525.6248	+0.0000	1823525.6248	0.012689f
X=	6469672.6107	+0.0000	6469672.6107	0.011095f
ELL HT=	-92.5865	+0.0000	-92.5865	0.181097f
ORTHO HT=	11.9196	+0.0000	11.9196	0.336049f
GEOID HT=	-104.5062	+0.0000	-104.5062	0.283077f

21 1025

Y=	1823408.7379	+0.0000	1823408.7379	0.011623f
X=	6461637.5204	+0.0000	6461637.5204	0.009965f
ELL HT=	-93.6463	+0.0000	-93.6463	0.147633f
ORTHO HT=	10.9177	+0.0000	10.9177	0.319262f
GEOID HT=	-104.5640	+0.0000	-104.5640	0.283077f

22 1027

Y=	1831747.7029	+0.0000	1831747.7029	0.010568f
X=	6459056.4564	+0.0000	6459056.4564	0.009355f
ELL HT=	-94.5060	+0.0000	-94.5060	0.171213f
ORTHO HT=	9.8229	+0.0000	9.8229	0.330827f
GEOID HT=	-104.3289	+0.0000	-104.3289	0.283077f

23 1028

Y=	1830542.3237	+0.0000	1830542.3237	0.009214f
X=	6439988.1576	+0.0000	6439988.1576	0.007920f
ELL HT=	-91.7092	+0.0000	-91.7092	0.367277f
ORTHO HT=	12.5280	+0.0000	12.5280	0.463708f
GEOID HT=	-104.2372	+0.0000	-104.2372	0.283077f

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

```
24 1029
         Y=    1838543.1032     +0.0000        1838543.1032    0.009352f
         X=    6442881.4255     +0.0000        6442881.4255    0.008659f
    ELL HT=        -91.8977     +0.0000            -91.8977    0.348702f
  ORTHO HT=         12.1488     +0.0000             12.1488    0.449139f
  GEOID HT=       -104.0465     +0.0000           -104.0465    0.283077f

25 12
         Y=    1816260.8506     +0.0000        1816260.8506    0.013643f
         X=    6452186.8327     +0.0000        6452186.8327    0.011740f
    ELL HT=        -95.0441     +0.0000            -95.0441    0.237011f
  ORTHO HT=          9.7157     +0.0000              9.7157    0.369198f
  GEOID HT=       -104.7598     +0.0000           -104.7598    0.283077f

26 13
         Y=    1829994.9748     +0.0000        1829994.9748    0.008703f
         X=    6441019.3199     +0.0000        6441019.3199    0.007485f
    ELL HT=        -95.4131     +0.0000            -95.4131    0.353510f
  ORTHO HT=          8.8528     +0.0000              8.8528    0.452882f
  GEOID HT=       -104.2658     +0.0000           -104.2658    0.283077f

27 141
         Y=    1828186.2273     +0.0000        1828186.2273    0.009290f
         X=    6455430.7717     +0.0000        6455430.7717    0.007950f
    ELL HT=        -94.1907     +0.0000            -94.1907    0.180943f
  ORTHO HT=         10.2398     +0.0000             10.2398    0.335966f
  GEOID HT=       -104.4305     +0.0000           -104.4305    0.283077f

28 353
         Y=    1817458.8716     +0.0000        1817458.8716    0.010544f
         X=    6456786.1201     +0.0000        6456786.1201    0.008578f
    ELL HT=        -96.3263     +0.0000            -96.3263    0.187138f
  ORTHO HT=          8.4105     +0.0000              8.4105    0.339342f
  GEOID HT=       -104.7368     +0.0000           -104.7368    0.283077f

29 400
         Y=    1818279.9119     +0.0000        1818279.9119    0.013566f
         X=    6462539.6268     +0.0000        6462539.6268    0.010544f
    ELL HT=        -94.6369     +0.0000            -94.6369    0.161903f
  ORTHO HT=         10.0585     +0.0000             10.0585    0.326106f
  GEOID HT=       -104.6955     +0.0000           -104.6955    0.283077f

30 529
         Y=    1808214.6444     +0.0000        1808214.6444    0.014860f
         X=    6475329.0615     +0.0000        6475329.0615    0.012624f
    ELL HT=        -95.2175     +0.0000            -95.2175    0.283531f
  ORTHO HT=          9.5991     +0.0000              9.5991    0.400653f
  GEOID HT=       -104.8166     +0.0000           -104.8166    0.283077f

31 9
         Y=    1818395.6158     +0.0000        1818395.6158    0.008154f
         X=    6440270.3080     +0.0000        6440270.3080    0.007854f
    ELL HT=        -99.7521     +0.0000            -99.7521    0.375139f
  ORTHO HT=          4.8059     +0.0000              4.8059    0.469960f
  GEOID HT=       -104.5580     +0.0000           -104.5580    0.283077f

32 BM 150
         Y=    1828245.6321     +0.0000        1828245.6321    0.010632f
```

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

X=	6451937.5533	+0.0000	6451937.5533	0.008849f
ELL HT=	-101.7632	+0.0000	-101.7632	0.216111f
ORTHO HT=	2.6551	+0.0000	2.6551	0.356141f
GEOID HT=	-104.4183	+0.0000	-104.4183	0.283077f

33 CULL 104

Y=	1812698.6643	+0.0000	1812698.6643	0.014933f
X=	6469743.5693	+0.0000	6469743.5693	0.012972f
ELL HT=	-95.8159	+0.0000	-95.8159	0.213417f
ORTHO HT=	8.9575	+0.0000	8.9575	0.354513f
GEOID HT=	-104.7734	+0.0000	-104.7734	0.283077f

34 CULL 2

Y=	1808249.3655	+0.0000	1808249.3655	0.015476f
X=	6475333.9979	+0.0000	6475333.9979	0.013397f
ELL HT=	-95.9223	+0.0000	-95.9223	0.286658f
ORTHO HT=	8.8934	+0.0000	8.8934	0.402871f
GEOID HT=	-104.8157	+0.0000	-104.8157	0.283077f

35 CULL 4

Y=	1811192.9659	+0.0000	1811192.9659	0.015548f
X=	6462547.6705	+0.0000	6462547.6705	0.013538f
ELL HT=	-96.6260	+0.0000	-96.6260	0.202667f
ORTHO HT=	8.2461	+0.0000	8.2461	0.348147f
GEOID HT=	-104.8721	+0.0000	-104.8721	0.283077f

36 HPGN 04 KF

Y=	1851473.8300	+0.0000	1851473.8300	FIXED
X=	6427331.9400	+0.0000	6427331.9400	FIXED
ELL HT=	-70.0501	+0.0000	-70.0501	0.596876f
ORTHO HT=	33.5272	+0.0000	33.5272	0.660601f
GEOID HT=	-103.5773	+0.0000	-103.5773	0.283077f

37 HPGN 04 KH

Y=	1818293.3800	+0.0000	1818293.3800	FIXED
X=	6488779.6900	+0.0000	6488779.6900	FIXED
ELL HT=	-71.3111	+0.0000	-71.3111	0.417150f
ORTHO HT=	32.9758	+0.0000	32.9758	0.504130f
GEOID HT=	-104.2869	+0.0000	-104.2869	0.283077f

38 HPGN04JF

Y=	1817080.1600	+0.0000	1817080.1600	FIXED
X=	6432622.7800	+0.0000	6432622.7800	FIXED
ELL HT=	-79.8787	+0.0000	-79.8787	0.484502f
ORTHO HT=	24.5676	+0.0000	24.5676	0.561137f
GEOID HT=	-104.4463	+0.0000	-104.4463	0.283077f

39 K 466 RESET

Y=	1813762.8855	+0.0000	1813762.8855	0.015040f
X=	6456956.5254	+0.0000	6456956.5254	0.012147f
ELL HT=	-96.3060	+0.0000	-96.3060	0.208818f
ORTHO HT=	8.5326	+0.0000	8.5326	0.351764f
GEOID HT=	-104.8386	+0.0000	-104.8386	0.283077f

40 P 1393

Y=	1816312.3514	+0.0000	1816312.3514	0.010701f
X=	6452273.7859	+0.0000	6452273.7859	0.008890f
ELL HT=	-97.2758	+0.0000	-97.2758	0.231226f
ORTHO HT=	7.4900	+0.0000	7.4900	FIXED

16. TRIMBLE GPSURVEY NETWORK ADJUSTMENT RESULTS

```
GEOID HT=       -104.7658     +0.0000           -104.7658    0.231226f
```

17. NGS DATA SHEETS

The NGS Data Sheet

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.30
Starting Datasheet Retrieval...
1        National Geodetic Survey,   Retrieval Date = NOVEMBER 22, 2000
 JT1577 ***********************************************************************
 JT1577  DESIGNATION -  47 1
 JT1577  PID         -  JT1577
 JT1577  STATE/COUNTY-  CA/NAPA
 JT1577  USGS QUAD   -  CUTTINGS WHARF (1981)
 JT1577
 JT1577                          *CURRENT SURVEY CONTROL
 JT1577  ______________________________________________________________________
 JT1577* NAD 83(1986)-  38 12 38.     (N)    122 18 44.     (W)     SCALED
 JT1577* NAVD 88     -         0.56   (+/-2cm)       1.8    (feet)  VERTCON
 JT1577  ______________________________________________________________________
 JT1577  GEOID HEIGHT-         -31.76  (meters)                      GEOID99
 JT1577
 JT1577  VERT ORDER  -  FIRST     CLASS I (See Below)
 JT1577
 JT1577.The horizontal coordinates were scaled from a topographic map and have
 JT1577.an estimated accuracy of +/- 6 seconds.
 JT1577
 JT1577.The NAVD 88 height was computed by applying the VERTCON shift value to
 JT1577.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)
 JT1577.The vertical order pertains to the superseded datum.
 JT1577
 JT1577.The geoid height was determined by GEOID99.
 JT1577
 JT1577;                     North         East    Units  Estimated Accuracy
 JT1577;SPC CA 2     -   560,420.    1,972,660.      MT  (+/- 180 meters Scaled)
 JT1577
 JT1577                           SUPERSEDED SURVEY CONTROL
 JT1577
 JT1577  NGVD 29     -        -0.153  (m)           -0.50   (f) ADJ UNCH    1 1
 JT1577
 JT1577.Superseded values are not recommended for survey control.
 JT1577.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JT1577.See file dsdata.txt to determine how the superseded data were derived.
 JT1577_MARKER: DD = SURVEY DISK
 JT1577_SETTING: 46 = COPPER-CLAD STEEL ROD W/O SLEEVE (10 FT.+)
 JT1577_STAMPING: 47 1
 JT1577_MAGNETIC: I = MARKER IS A STEEL ROD
 JT1577_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 JT1577
 JT1577  HISTORY     - Date     Condition        Recov. By
 JT1577  HISTORY     - 1972     MONUMENTED       CA2330
 JT1577                          STATION DESCRIPTION
JT1577'DESCRIBED BY CITY OF NAPA CALIFORNIA 1972
 JT1577'0.3 MI (0.5 KM) WEST ALONG THE SOUTHERN PACIFIC COMPANY RAILROAD FROM
 JT1577'THE CENTER OF THE BRAZOS DRAWBRIDGE OVER THE NAPA RIVER, 923 FT
 JT1577'(281.3 M) WEST OF CENTERLINE OF MILTON ROAD, 28 FT (8.5 M) NORTH OF
 JT1577'CENTERLINE OF RAILS, 3.5 FT (1.1 M) WEST OF 2 INCH PIPE WITNESS POST,
 JT1577'4.5 FT (1.4 M) BELOW TOP OF RAILS, 0.9 FT (0.3 M) BELOW TOP OF 10
 JT1577'INCH DIAMETER MONUMENT BOX SET FLUSH WITH THE GROUND, WITH THE WORD
 JT1577'MONUMENT CAST IN THE COVER, AND SET ON TOP OF A 5/8-INCH COPPER-CLAD
 JT1577'STEEL ROD DRIVEN TO REFUSAL AT 75 FT.
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17. NGS DATA SHEETS

The NGS Data Sheet

DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.40

1 National Geodetic Survey, Retrieval Date = MARCH 30, 2001

JT9613 ***

JT9613 DESIGNATION - HPGN D CA 04 JF

JT9613 PID - JT9613

JT9613 STATE/COUNTY- CA/SONOMA

JT9613 USGS QUAD - SEARS POINT (1968)

JT9613

JT9613 *CURRENT SURVEY CONTROL

JT9613 _____

JT9613* NAD 83(1992)- 38 09 03.10690(N) 122 26 55.37911(W) ADJUSTED

JT9613* NAVD 88 - 7.44 (meters) 24.4 (feet) LEVELING

JT9613 _____

JT9613 EPOCH DATE - 1991.35

JT9613 X - -2,694,571.131 (meters) COMP

JT9613 Y - -4,237,995.540 (meters) COMP

JT9613 Z - 3,918,610.913 (meters) COMP

JT9613 LAPLACE CORR- -3.72 (seconds) DEFLEC99

JT9613 ELLIP HEIGHT- -24.42 (meters) GPS OBS

JT9613 GEOID HEIGHT- -31.88 (meters) GEOID99

JT9613

JT9613 HORZ ORDER - FIRST

JT9613 VERT ORDER - THIRD ?

JT9613 ELLP ORDER - FIFTH CLASS II

JT9613

JT9613.The horizontal coordinates were established by GPS observations

JT9613.and adjusted by the National Geodetic Survey in August 1994.

JT9613.The horizontal coordinates are valid at the epoch date displayed above.

JT9613.The epoch date for horizontal control is a decimal equivalence

JT9613.of Year/Month/Day.

JT9613

JT9613.The orthometric height was determined by differential leveling.

JT9613.The vertical network tie was performed by a horz. field party for horz.

JT9613.obs reductions. Reset procedures were used to establish the elevation.

JT9613

JT9613.The X, Y, and Z were computed from the position and the ellipsoidal ht.

JT9613

JT9613.The Laplace correction was computed from DEFLEC99 derived deflections.
JT9613
JT9613.The ellipsoidal height was determined by GPS observations
JT9613.and is referenced to NAD 83.
JT9613
JT9613.The geoid height was determined by GEOID99.
JT9613
JT9613; North East Units Scale Converg.
JT9613;SPC CA 2 - 1,817,080.16 6,432,622.78 sFT 1.00004637 -0 16 58.4
JT9613;SPC CA 3 - 2,247,356.26 6,001,336.31 sFT 0.99995346 -1 11 35.0
JT9613;SPC CA 2 - 553,847.141 1,960,667.345 MT 1.00004637 -0 16 58.4
JT9613;SPC CA 3 - 684,995.559 1,829,210.966 MT 0.99995346 -1 11 35.0
JT9613;UTM 10 - 4,222,697.350 548,302.081 MT 0.99962873 +0 20 26.0
JT9613
JT9613 SUPERSEDED SURVEY CONTROL
JT9613
JT9613.No superseded survey control is available for this station.
JT9613
JT9613_MARKER: DD = SURVEY DISK
JT9613_SETTING: 50 = ALUMINUM ALLOY ROD W/O SLEEVE (10 FT.+)
JT9613_STAMPING: CA-HPGN-DENSIFICATION STA. 04-JF 1993
JT9613_PROJECTION: FLUSH
JT9613_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
JT9613_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
JT9613_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
JT9613+SATELLITE: SATELLITE OBSERVATIONS - 1993
JT9613_ROD/PIPE-DEPTH: 7.01 meters
JT9613
JT9613 HISTORY - Date Condition Recov. By
JT9613 HISTORY - 1993 MONUMENTED CADT
JT9613
JT9613 STATION DESCRIPTION
JT9613
JT9613'DESCRIBED BY CALTRANS 1993
JT9613'THE STATION IS LOCATED AT SEARS POINT, AT THE JUNCTION OF STATE
JT9613'HIGHWAYS 37 AND 121, ABOUT 11 MI (17.7 KM) WEST-NORTHWEST OF THE CITY
JT9613'OF VALLEJO AND ABOUT 10 MI (16.1 KM) SOUTH OF THE CITY OF SONOMA.
JT9613'$

JT9613'TO REACH THE STATION FROM THE JUNCTION OF U.S. HIGHWAY 101 AND STATE
JT9613'HIGHWAY 37 IN THE CITY OF NOVATO, GO EAST ON STATE HIGHWAY 37 FOR 7.3
JT9613'MI (11.7 KM) TO THE JUNCTION OF STATE HIGHWAY 121 AND THE STATION ON
JT9613'THE RIGHT.
JT9613'$
JT9613'THE STATION IS A SURVEY DISK ENCASED IN PVC PIPE WITH ACCESS COVER SET
JT9613'IN CONCRETE FLUSH WITH THE GROUND, 399.6 FT (121.8 M) SOUTHWEST OF
JT9613'THE WEST RAIL OF THE NORTHWESTERN PACIFIC RAILROAD, 382.1 FT
JT9613'(116.5 M) SOUTHWEST OF NGS BENCHMARK M 1393 1987, ABOUT 220 FT
JT9613'(67.1 M) SOUTHEAST OF THE JUNCTION OF STATE HIGHWAYS 37 AND 121,
JT9613'121.9 FT (37.2 M) SOUTHWEST OF LIGHT POLE NO. 03921 LOCATED ON THE
JT9613'SHOULDER OF WEST BOUND HIGHWAY 37 AT POST MILE 3.89, 112.6 FT
JT9613'(34.3 M) SOUTHEAST OF LIGHT POLE NO. 03861, 15.8 FT (4.8 M) SOUTH OF
JT9613'A 6 FT (1.8 M) HIGH CHAIN LINK RIGHT-OF-WAY FENCE, 13.3 FT (4.1 M)
JT9613'NORTH OF A PAVED DRIVEWAY WHICH RUNS PARALLEL WITH STATE HIGHWAY 37
JT9613'AND 2.5 FT (0.8 M) WEST OF A CARSONITE WITNESS POST. THE DISK IS 0.3
JT9613'FT (9.1 CM) BELOW THE ACCESS COVER.
JT9613'$
JT9613'THIS STATION WAS OCCUPIED AS PART OF A CALIFORNIA HPGN DENSIFICATION
JT9613'SURVEY IN 1993.

17. NGS DATA SHEETS

The NGS Data Sheet

DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.40

1 National Geodetic Survey, Retrieval Date = MARCH 30, 2001

JT9616 ***

JT9616 DESIGNATION - HPGN D CA 04 KF

JT9616 PID - JT9616

JT9616 STATE/COUNTY- CA/SONOMA

JT9616 USGS QUAD - SEARS POINT (1968)

JT9616

JT9616 *CURRENT SURVEY CONTROL

JT9616 _____

JT9616* NAD 83(1992)- 38 14 42.82276(N) 122 28 03.82491(W) ADJUSTED

JT9616* NAVD 88 - 10.33 (+/-2cm) 33.9 (feet) VERTCON

JT9616 _____

JT9616 EPOCH DATE - 1991.35

JT9616 X - -2,692,501.437 (meters) COMP

JT9616 Y - -4,231,638.362 (meters) COMP

JT9616 Z - 3,926,844.540 (meters) COMP

JT9616 LAPLACE CORR- -1.26 (seconds) DEFLEC99

JT9616 ELLIP HEIGHT- -21.34 (meters) GPS OBS

JT9616 GEOID HEIGHT- -31.61 (meters) GEOID99

JT9616

JT9616 HORZ ORDER - FIRST

JT9616 VERT ORDER - THIRD ? (See Below)

JT9616 ELLP ORDER - FIFTH CLASS II

JT9616

JT9616.The horizontal coordinates were established by GPS observations

JT9616.and adjusted by the National Geodetic Survey in August 1994.

JT9616.The horizontal coordinates are valid at the epoch date displayed above.

JT9616.The epoch date for horizontal control is a decimal equivalence

JT9616.of Year/Month/Day.

JT9616

JT9616.The NAVD 88 height was computed by applying the VERTCON shift value to

JT9616.the NGVD 29 height (displayed under SUPERSEDED SURVEY CONTROL.)

JT9616.The vertical order pertains to the superseded datum.

JT9616

JT9616.The X, Y, and Z were computed from the position and the ellipsoidal ht.

JT9616

JT9616.The Laplace correction was computed from DEFLEC99 derived deflections.
JT9616
JT9616.The ellipsoidal height was determined by GPS observations
JT9616.and is referenced to NAD 83.
JT9616
JT9616.The geoid height was determined by GEOID99.
JT9616
JT9616; North East Units Scale Converg.
JT9616;SPC CA 2 - 1,851,473.83 6,427,331.94 sFT 1.00002114 -0 17 41.6
JT9616;SPC CA 2 - 564,330.351 1,959,054.693 MT 1.00002114 -0 17 41.6
JT9616;UTM 10 - 4,233,158.130 546,576.071 MT 0.99962672 +0 19 46.2
JT9616
JT9616 SUPERSEDED SURVEY CONTROL
JT9616
JT9616 NGVD 29 - 9.52 (m) 31.2 (f) LEVELING 3
JT9616
JT9616.Superseded values are not recommended for survey control.
JT9616.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
JT9616.See file dsdata.txt to determine how the superseded data were derived.
JT9616
JT9616_MARKER: DD = SURVEY DISK
JT9616_SETTING: 50 = ALUMINUM ALLOY ROD W/O SLEEVE (10 FT.+)
JT9616_STAMPING: CA-HPGN-DENSIFICATION STA. 04-KF 1993
JT9616_PROJECTION: FLUSH
JT9616_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET
JT9616_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
JT9616_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
JT9616+SATELLITE: SATELLITE OBSERVATIONS - October 04, 1995
JT9616_ROD/PIPE-DEPTH: 3.7 meters
JT9616
JT9616 HISTORY - Date Condition Recov. By
JT9616 HISTORY - 1993 MONUMENTED CA-097
JT9616 HISTORY - 19951004 GOOD CADT
JT9616
JT9616 STATION DESCRIPTION
JT9616
JT9616'DESCRIBED BY SONOMA COUNTY CALIFORNIA 1993
JT9616'THE STATION IS LOCATED ON STATE HIGHWAY 116, ABOUT 9 MI (14.5 KM) EAST

JT9616'OF THE CITY OF PETALUMA AND ABOUT 3.5 MI (5.6 KM) SOUTH OF THE CITY
JT9616'OF SONOMA.
JT9616'$
JT9616'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAYS 116 AND 121,
JT9616'ABOUT 4 MI (6.4 KM) SOUTH OF THE CITY OF SONOMA, GO NORTHWEST ON
JT9616'STATE HIGHWAY 116 FOR 0.6 MI (1.0 KM) TO A SIDE ROAD LEFT, EAST
JT9616'BONNESS ROAD. CONTINUE NORTHWEST ON HIGHWAY 116 FOR ABOUT 475 FT
JT9616'(144.8 M) TO A GRAVEL DRIVEWAY AND THE STATION ON THE RIGHT.
JT9616'$
JT9616'THE STATION IS A SURVEY DISK ENCASED IN PVC PIPE WITH ACCESS COVER SET
JT9616'IN CONCRETE FLUSH WITH THE GROUND, ABOUT 475 FT (144.8 M) NORTHWEST
JT9616'OF THE CENTERLINE OF EAST BONNESS ROAD, 78.3 FT (23.9 M) NORTHEAST OF
JT9616'CALL BOX SN-116-458, ABOUT 42 FT (12.8 M) EAST OF A GRAVEL DRIVEWAY
JT9616'WHICH ENTERS THE NORTH EDGE OF A VINEYARD, 40.4 FT (12.3 M) NORTHEAST
JT9616'OF THE CENTERLINE OF STATE HIGHWAY 116 AND 1.6 FT (0.5 M) SOUTH OF A
JT9616'5 STRAND BARBED WIRE RIGHT-OF-WAY FENCE. THE DISK IS 0.2 FT (6.1 CM)
JT9616'BELOW THE ACCESS COVER.
JT9616'$
JT9616'THIS STATION WAS OCCUPIED AS PART OF A CALIFORNIA HPGN DENSIFICATION
JT9616'SURVEY IN 1993. THE STATION IS LOCATED WITHIN THE CALIFORNIA
JT9616'DEPARTMENT OF TRANSPORTATION (CALTRANS) HIGHWAY RIGHT-OF-WAY. USERS
JT9616'MUST OBTAIN AN ENCROACHMENT PERMIT FROM CALTRANS BEFORE USING THE
JT9616'STATION. TO OBTAIN AN ENCROACHMENT PERMIT, CONTACT THE DISTRICT
JT9616'PERMITS OFFICE IN OAKLAND AT (510) 286-4434.
JT9616
JT9616 STATION RECOVERY (1995)
JT9616
JT9616'RECOVERY NOTE BY CALTRANS 1995 (ADD)
JT9616'THE STATION WAS RECOVERED. A REVISED DESCRIPTION FOLLOWS. THE
JT9616'STATION IS LOCATED ON THE NORTHEAST SIDE OF STATE HIGHWAY 116, ABOUT 9
JT9616'MI (14.5 KM) EAST OF THE CITY OF PETALUMA AND ABOUT 3.5 MI (5.6 KM)
JT9616'SOUTH OF THE CITY OF SONOMA. TO REACH THE STATION FROM THE JUNCTION
JT9616'OF STATE HIGHWAYS 116 AND 121, ABOUT 4 MI (6.4 KM) SOUTH OF THE CITY
JT9616'OF SONOMA, GO NORTHWEST ON STATE HIGHWAY 116 FOR 0.7 MI (1.1 KM) TO A
JT9616'VINEYARD ROAD ON THE RIGHT AND THE STATION ON THE RIGHT AT POST MILE
JT9616'45.8. THE STATION IS ABOUT 0.1 MI (0.2 KM) SOUTHEAST OF THE
JT9616'INTERSECTION OF HIGHWAY 116 AND EAST BONNESS ROAD. THE STATION IS A
JT9616'SURVEY DISK ENCASED IN PVC PIPE WITH ACCESS COVER SET IN CONCRETE

JT9616'FLUSH WITH THE GROUND, 78.3 FT (23.9 M) NORTHEAST OF AND ACROSS THE
JT9616'ROAD FROM CALL BOX SN-116-458, 40.4 FT (12.3 M) NORTHEAST OF THE
JT9616'CENTERLINE OF STATE HIGHWAY 116, 3.6 FT (1.1 M) SOUTH OF THE SOUTHEAST
JT9616'GATE POST OF A GATE ACROSS THE VINEYARD ROAD AND 1.6 FT (0.5 M)
JT9616'SOUTHWEST OF A 5 STRAND BARBED WIRE RIGHT-OF-WAY FENCE. THE DISK IS
JT9616'0.2 FT (0.1 M) BELOW THE ACCESS COVER.

*** retrieval complete.
Elapsed Time = 00:00:03

17. NGS DATA SHEETS

The NGS Data Sheet

DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.40

1 National Geodetic Survey, Retrieval Date = MARCH 30, 2001

JT9617 ***

JT9617 DESIGNATION - HPGN D CA 04 KH

JT9617 PID - JT9617

JT9617 STATE/COUNTY- CA/SOLANO

JT9617 USGS QUAD - CUTTINGS WHARF (1981)

JT9617

JT9617 *CURRENT SURVEY CONTROL

JT9617 _____

JT9617* NAD 83(1992)- 38 09 17.24406(N) 122 15 12.45092(W) ADJUSTED

JT9617* NAVD 88 - 10.1 (meters) 33. (feet) GPS OBS

JT9617 _____

JT9617 EPOCH DATE - 1991.35

JT9617 X - -2,679,970.297 (meters) COMP

JT9617 Y - -4,246,927.769 (meters) COMP

JT9617 Z - 3,918,955.333 (meters) COMP

JT9617 LAPLACE CORR- 3.77 (seconds) DEFLEC99

JT9617 ELLIP HEIGHT- -21.75 (meters) GPS OBS

JT9617 GEOID HEIGHT- -31.84 (meters) GEOID99

JT9617

JT9617 HORZ ORDER - FIRST

JT9617 ELLP ORDER - FIFTH CLASS II

JT9617

JT9617.The horizontal coordinates were established by GPS observations

JT9617.and adjusted by the National Geodetic Survey in August 1994.

JT9617.The horizontal coordinates are valid at the epoch date displayed above.

JT9617.The epoch date for horizontal control is a decimal equivalence

JT9617.of Year/Month/Day.

JT9617

JT9617.The orthometric height was determined by GPS observations and a

JT9617.high-resolution geoid model.

JT9617

JT9617.The X, Y, and Z were computed from the position and the ellipsoidal ht.

JT9617

JT9617.The Laplace correction was computed from DEFLEC99 derived deflections.

JT9617

JT9617.The ellipsoidal height was determined by GPS observations

JT9617.and is referenced to NAD 83.

JT9617

JT9617.The geoid height was determined by GEOID99.

JT9617

JT9617; North East Units Scale Converg.

JT9617;SPC CA 2 - 1,818,293.38 6,488,779.69 sFT 1.00004527 -0 09 35.3

JT9617;SPC CA 2 - 554,216.931 1,977,784.006 MT 1.00004527 -0 09 35.3

JT9617;UTM 10 - 4,223,252.776 565,406.775 MT 0.99965269 +0 27 40.4

JT9617

JT9617 SUPERSEDED SURVEY CONTROL

JT9617

JT9617.No superseded survey control is available for this station.

JT9617

JT9617_MARKER: DD = SURVEY DISK

JT9617_SETTING: 50 = ALUMINUM ALLOY ROD W/O SLEEVE (10 FT.+)

JT9617_STAMPING: CA-HPGN-DENSIFICATION STA. 04-KH 1993

JT9617_PROJECTION: FLUSH

JT9617_MAGNETIC: M = MARKER EQUIPPED WITH BAR MAGNET

JT9617_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL

JT9617_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR

JT9617+SATELLITE: SATELLITE OBSERVATIONS - May 14, 1996

JT9617_ROD/PIPE-DEPTH: 3.35 meters

JT9617

JT9617 HISTORY - Date Condition Recov. By

JT9617 HISTORY - 1993 MONUMENTED CADT

JT9617 HISTORY - 19931027 GOOD CADT

JT9617 HISTORY - 19960514 GOOD CADT

JT9617

JT9617 STATION DESCRIPTION

JT9617

JT9617'DESCRIBED BY CALTRANS 1993

JT9617'THE STATION IS LOCATED ON STATE HIGHWAY 29 IN THE CITY OF VALLEJO NEAR

JT9617'THE NAPA/SOLANO COUNTY LINE.

JT9617'$

JT9617'TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAY 29 (SONOMA

JT9617'BLVD.) AND STATE HIGHWAY 37 (MARINE WORLD PARKWAY) IN THE CITY OF

JT9617'VALLEJO, GO NORTH ON STATE HIGHWAY 29 FOR 1.05 MI (1.69 KM) TO THE

JT9617'INTERSECTION OF MINI DRIVE. CONTINUE NORTH ON STATE HIGHWAY 29 FOR
JT9617'ABOUT 350 FT (106.7 M) TO THE STATION ON THE RIGHT AT POST MILE 5.92.
JT9617'$
JT9617'THE STATION IS A SURVEY DISK ENCASED IN PVC PIPE WITH ACCESS COVER SET
JT9617'IN CONCRETE FLUSH WITH THE GROUND, 192.1 FT (58.6 M) WEST OF THE WEST
JT9617'RAIL OF THE SOUTHERN PACIFIC RAILROAD, 190.0 FT (57.9 M) SOUTH OF
JT9617'POST MILE MARKERS SOL-29-PM-5.95 AND NAP-29-PM-0.00, 62.3 FT
JT9617'(19.0 M) EAST OF THE CENTERLINE OF STATE HIGHWAY 29, 23.4 FT (7.1 M)
JT9617'NORTH OF THE END OF A CONCRETE SIDEWALK AND 11.3 FT (3.4 M) EAST OF AN
JT9617'ASPHALT CURB ALONG NORTH BOUND STATE HIGHWAY 29. THE DISK IS 0.2 FT
JT9617'(6.1 CM) BELOW THE ACCESS COVER.
JT9617'$
JT9617'THIS STATION WAS OCCUPIED AS PART OF A CALIFORNIA HPGN DENSIFICATION
JT9617'SURVEY IN 1993. THE STATION IS LOCATED WITHIN THE CALIFORNIA
JT9617'DEPARTMENT OF TRANSPORTATION (CALTRANS) HIGHWAY RIGHT-OF-WAY. USERS
JT9617'MUST OBTAIN AN ENCROACHMENT PERMIT FROM CALTRANS BEFORE USING THE
JT9617'STATION. TO OBTAIN AN ENCROACHMENT PERMIT, CONTACT THE DISTRICT
JT9617'PERMITS OFFICE IN OAKLAND AT (510) 286-4434.
JT9617
JT9617 STATION RECOVERY (1993)
JT9617
JT9617'RECOVERY NOTE BY CALTRANS 1993 (DAN)
JT9617'THE STATION WAS RECOVERED AS DESCRIBED.
JT9617
JT9617 STATION RECOVERY (1996)
JT9617
JT9617'RECOVERY NOTE BY CALTRANS 1996 (JDD)
JT9617'RECOVERED AS DESCRIBED.

*** retrieval complete.
Elapsed Time = 00:00:03

17. NGS DATA SHEETS

The NGS Data Sheet

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DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.30
Starting Datasheet Retrieval...
1        National Geodetic Survey,   Retrieval Date = NOVEMBER 22, 2000
 JT0292 ***********************************************************************
 JT0292  DESIGNATION -  K 466 RESET
 JT0292  PID         -  JT0292
 JT0292  STATE/COUNTY-  CA/SOLANO
 JT0292  USGS QUAD   -  CUTTINGS WHARF (1981)
 JT0292
 JT0292                         *CURRENT SURVEY CONTROL
 JT0292  ______________________________________________________________________
 JT0292* NAD 83(1986)-  38 08 31.     (N)    122 21 49.     (W)     SCALED
 JT0292* NAVD 88     -         2.674  (meters)       8.77   (feet)  ADJUSTED
 JT0292  ______________________________________________________________________
 JT0292  GEOID HEIGHT-         -32.01  (meters)                      GEOID99
 JT0292  DYNAMIC HT  -           2.672 (meters)       8.77  (feet)  COMP
 JT0292  MODELED GRAV-     979,970.9   (mgal)                        NAVD 88
 JT0292
 JT0292  VERT ORDER  -  FIRST     CLASS II
 JT0292
 JT0292.The horizontal coordinates were scaled from a topographic map and have
 JT0292.an estimated accuracy of +/- 6 seconds.
 JT0292
 JT0292.The orthometric height was determined by differential leveling
 JT0292.and adjusted by the National Geodetic Survey in June 1991.
 JT0292
 JT0292.The geoid height was determined by GEOID99.
 JT0292
 JT0292.The dynamic height is computed by dividing the NAVD 88
 JT0292.geopotential number by the normal gravity value computed on the
 JT0292.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JT0292.degrees latitude (g = 980.6199 gals.).
 JT0292
 JT0292.The modeled gravity was interpolated from observed gravity values.
 JT0292
 JT0292;                    North         East    Units  Estimated Accuracy
 JT0292;SPC CA 2     -   552,820.    1,968,120.      MT  (+/- 180 meters Scaled)
 JT0292
 JT0292                           SUPERSEDED SURVEY CONTROL
 JT0292
 JT0292  NGVD 29     -         2.05   (m)            6.7    (f) RESET       3
 JT0292
 JT0292.Superseded values are not recommended for survey control.
 JT0292.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JT0292.See file dsdata.txt to determine how the superseded data were derived.
 JT0292
 JT0292_MARKER: DB = BENCH MARK DISK
 JT0292_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 JT0292_STAMPING: K 466 RESET 1969
 JT0292_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 JT0292+STABILITY: SURFACE MOTION
 JT0292
 JT0292  HISTORY     - Date     Condition        Recov. By
 JT0292  HISTORY     - 1969     MONUMENTED       CGS
 JT0292  HISTORY     - 1987     GOOD             NGS
 JT0292
 JT0292                           STATION DESCRIPTION
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JT0292
JT0292'DESCRIBED BY COAST AND GEODETIC SURVEY 1969
JT0292'4.6 MI W FROM MARE ISLAND.
JT0292'4.6 MILES WEST ALONG STATE HIGHWAY 37 FROM THE NORTH ENTRANCE
JT0292'TO THE MARE ISLAND NAVAL SHIPYARD, AT THE T-JUNCTION OF A PRIVATE
JT0292'GRAVELED ROAD LEADING NORTH, 71 FEET SOUTHEAST OF THE CENTER OF
JT0292'A BOARD GATE, 48.0 FEET NORTH OF THE CENTERLINE OF THE HIGHWAY,
JT0292'23 FEET EAST OF THE CENTERLINE OF THE PRIVATE ROAD, 3.5 FEET
JT0292'EAST OF A FENCE CORNER POST, 1.2 FEET SOUTHEAST OF A PICKET FENCE,
JT0292'1.5 FEET NORTHEAST OF A METAL WITNESS POST, ABOUT 2-1/2 FEET
JT0292'LOWER THAN THE HIGHWAY, AND SET IN THE TOP OF A CONCRETE POST
JT0292'FLUSH WITH THE GROUND.
JT0292
JT0292                          STATION RECOVERY (1987)
JT0292
JT0292'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1987
JT0292'RECOVERED IN GOOD CONDITION.  A NEW TO REACH FOLLOWS.  14.5 KM
JT0292'(9.00 MI) WESTERLY ALONG STATE HIGHWAY 37 FROM THE JUNCTION OF
JT0292'INTERSTATE HIGHWAY 80 IN VALLEJO.  CHANGE--3.5 FEET EAST OF A FENCE
JT0292'CORNER POST, AND 1.2 FEET SOUTHEAST OF A PICKET FENCE, TO 1.3 M
JT0292'(4.3 FT) EAST OF A FENCE CORNER, AND 0.75 M (2.5 FT) SOUTHEAST OF A
JT0292'FENCE.

*** retrieval complete.
Elapsed Time = 00:00:01
```

17. NGS DATA SHEETS

The NGS Data Sheet

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DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.30
Starting Datasheet Retrieval...
1        National Geodetic Survey,   Retrieval Date = NOVEMBER 22, 2000
 JT0297 ***********************************************************************
 JT0297  DESIGNATION -  N 466
 JT0297  PID         -  JT0297
 JT0297  STATE/COUNTY-  CA/SOLANO
 JT0297  USGS QUAD   -  MARE ISLAND (1980)
 JT0297
 JT0297                          *CURRENT SURVEY CONTROL
 JT0297  ______________________________________________________________________
 JT0297* NAD 83(1986)-  38 07 19.     (N)    122 18 46.     (W)     SCALED
 JT0297* NAVD 88     -         1.615  (meters)       5.30   (feet)  ADJUSTED
 JT0297  ______________________________________________________________________
 JT0297  GEOID HEIGHT-         -32.03  (meters)                      GEOID99
 JT0297  DYNAMIC HT  -           1.614 (meters)       5.30  (feet)  COMP
 JT0297  MODELED GRAV-     979,973.6   (mgal)                        NAVD 88
 JT0297
 JT0297  VERT ORDER  -  FIRST     CLASS II
 JT0297
 JT0297.The horizontal coordinates were scaled from a topographic map and have
 JT0297.an estimated accuracy of +/- 6 seconds.
 JT0297
 JT0297.The orthometric height was determined by differential leveling
 JT0297.and adjusted by the National Geodetic Survey in June 1991.
 JT0297
 JT0297.The geoid height was determined by GEOID99.
 JT0297
 JT0297.The dynamic height is computed by dividing the NAVD 88
 JT0297.geopotential number by the normal gravity value computed on the
 JT0297.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JT0297.degrees latitude (g = 980.6199 gals.).
 JT0297
 JT0297.The modeled gravity was interpolated from observed gravity values.
 JT0297
 JT0297;                    North         East    Units  Estimated Accuracy
 JT0297;SPC CA 2     -   550,590.    1,972,570.      MT  (+/- 180 meters Scaled)
 JT0297
 JT0297                          SUPERSEDED SURVEY CONTROL
 JT0297
 JT0297  NGVD 29     -         1.210  (m)            3.97   (f) ADJ UNCH    1 2
 JT0297
 JT0297.Superseded values are not recommended for survey control.
 JT0297.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JT0297.See file dsdata.txt to determine how the superseded data were derived.
 JT0297
 JT0297_MARKER: DB = BENCH MARK DISK
 JT0297_SETTING: 7 = SET IN TOP OF CONCRETE MONUMENT
 JT0297_STAMPING: N 466 1950
 JT0297_STABILITY: C = MAY HOLD, BUT OF TYPE COMMONLY SUBJECT TO
 JT0297+STABILITY: SURFACE MOTION
 JT0297
 JT0297  HISTORY     - Date     Condition        Recov. By
 JT0297  HISTORY     - 1950     MONUMENTED       CGS
 JT0297  HISTORY     - 1961     GOOD             NGS
 JT0297  HISTORY     - 1987     GOOD             NGS
 JT0297
```

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JT0297                          STATION DESCRIPTION
JT0297
JT0297'DESCRIBED BY COAST AND GEODETIC SURVEY 1950
JT0297'1.5 MI W FROM MARE ISLAND.
JT0297'1.5 MILES WEST ALONG STATE HIGHWAY 48 FROM THE NORTH ENTRANCE
JT0297'TO THE MARE ISLAND NAVAL SHIPYARD, AT A T JUNCTION OF A RANCH ROAD
JT0297'LEADING NORTH, IN LINE WITH THE NORTHEAST EDGE OF A CANAL, 73.5
JT0297'FEET NORTHEAST OF THE CENTER LINE OF THE HIGHWAY, 12.0 FEET
JT0297'SOUTHEAST OF THE CENTER LINE OF THE RANCH ROAD, 6.5 FEET SOUTHWEST
JT0297'OF A BOARD FENCE, 1.8 FEET NORTHEAST OF A WITNESS POST, ABOUT 6.0
JT0297'FEET LOWER THAN THE HIGHWAY, AND SET IN THE TOP OF A CONCRETE
JT0297'POST PROJECTING 0.5 FOOT ABOVE THE GROUND.
JT0297
JT0297                          STATION RECOVERY (1961)
JT0297
JT0297'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1961
JT0297'RECOVERED IN GOOD CONDITION.
JT0297
JT0297                          STATION RECOVERY (1987)
JT0297
JT0297'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1987
JT0297'RECOVERED IN GOOD CONDITION.  A NEW TO REACH FOLLOWS.  9.5 KM
JT0297'(5.90 MI) WESTERLY ALONG STATE HIGHWAY 37 FROM THE JUNCTION OF
JT0297'INTERSTATE HIGHWAY 80 IN VALLEJO.  DELETE--6.5 FEET SOUTHWEST OF A
JT0297'BOARD FENCE, 1.8 FEET NORTHEAST OF A WITNESS POST, AND 0.5 FOOT ABOVE
JT0297'THE GROUND.  ADD--5.9 M (19.4 FT) SOUTHWEST OF A FENCE, AND FLUSH
JT0297'WITH THE GROUND.

*** retrieval complete.
Elapsed Time = 00:00:02
```

The NGS Data Sheet

DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.41

1 National Geodetic Survey, Retrieval Date = APRIL 17, 2001

JT9542 ***

JT9542 DESIGNATION - N 1393

JT9542 PID - JT9542

JT9542 STATE/COUNTY- CA/SOLANO

JT9542 USGS QUAD - SEARS POINT (1968)

JT9542

JT9542 *CURRENT SURVEY CONTROL

JT9542 _____

JT9542* NAD 83(1986)- 38 09 20. (N) 122 24 20. (W) SCALED

JT9542* NAVD 88 - 3.865 (meters) 12.68 (feet) ADJUSTED

JT9542 _____

JT9542 GEOID HEIGHT- -31.94 (meters) GEOID99

JT9542 DYNAMIC HT - 3.862 (meters) 12.67 (feet) COMP

JT9542 MODELED GRAV- 979,980.5 (mgal) NAVD 88

JT9542

JT9542 VERT ORDER - FIRST CLASS II

JT9542

JT9542.The horizontal coordinates were scaled from a topographic map and have

JT9542.an estimated accuracy of +/- 6 seconds.

JT9542

JT9542.The orthometric height was determined by differential leveling

JT9542.and adjusted by the National Geodetic Survey in June 1991.

JT9542

JT9542.The geoid height was determined by GEOID99.

JT9542

JT9542.The dynamic height is computed by dividing the NAVD 88

JT9542.geopotential number by the normal gravity value computed on the

JT9542.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45

JT9542.degrees latitude (g = 980.6199 gals.).

JT9542

JT9542.The modeled gravity was interpolated from observed gravity values.

JT9542

JT9542; North East Units Estimated Accuracy

JT9542;SPC CA 2 - 554,350. 1,964,450. MT (+/- 180 meters Scaled)

JT9542

JT9542 SUPERSEDED SURVEY CONTROL

JT9542

JT9542.No superseded survey control is available for this station.

JT9542

JT9542_MARKER: DB = BENCH MARK DISK

JT9542_SETTING: 38 = ABUTMENT

JT9542_STAMPING: N 1393 1987

JT9542_STABILITY: A = MOST RELIABLE AND EXPECTED TO HOLD

JT9542+STABILITY: POSITION/ELEVATION WELL

JT9542

JT9542 HISTORY - Date Condition Recov. By

JT9542 HISTORY - 1987 MONUMENTED NGS

JT9542

JT9542 STATION DESCRIPTION

JT9542

JT9542'DESCRIBED BY NATIONAL GEODETIC SURVEY 1987

JT9542'18.4 KM (11.45 MI) WEST FROM VALLEJO.

JT9542'18.4 KM (11.45 MI) WESTERLY ALONG STATE HIGHWAY 37 FROM THE JUNCTION

JT9542'OF INTERSTATE HIGHWAY 80 IN VALLEJO, SET VERTICALLY IN THE SOUTH FACE

JT9542'OF THE EAST CONCRETE ABUTMENT OF A HIGHWAY BRIDGE SPANNING SONOMA

JT9542'CREEK, 5.2 M (17.1 FT) SOUTH OF THE CENTERLINE OF THE HIGHWAY, 4.1 M

JT9542'(13.5 FT) WEST OF THE EAST END OF THE BRIDGE.

JT9542'THE MARK IS 0.3 M BELOW THE HIGHWAY.

*** retrieval complete.

Elapsed Time = 00:00:03

17. NGS DATA SHEETS

The NGS Data Sheet

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.30
Starting Datasheet Retrieval...
1        National Geodetic Survey,   Retrieval Date = NOVEMBER 22, 2000
 JT9541 ***********************************************************************
 JT9541  DESIGNATION -  P 1393
 JT9541  PID         -  JT9541
 JT9541  STATE/COUNTY-  CA/SOLANO
 JT9541  USGS QUAD   -  SEARS POINT (1968)
 JT9541
 JT9541                        *CURRENT SURVEY CONTROL
 JT9541  ______________________________________________________________________
 JT9541* NAD 83(1992)-  38 08 56.40845(N)    122 22 49.35510(W)     ADJUSTED
 JT9541* NAVD 88     -         2.24   (meters)       7.3    (feet)  GPS OBS
 JT9541  ______________________________________________________________________
 JT9541  EPOCH DATE  -        1997.30
 JT9541  X          -  -2,689,580.361 (meters)                     COMP
 JT9541  Y          -  -4,241,310.652 (meters)                     COMP
 JT9541  Z          -   3,918,445.161 (meters)                     COMP
 JT9541  LAPLACE CORR-          -0.95  (seconds)                   DEFLEC99
 JT9541  ELLIP HEIGHT-         -29.82  (meters)                    GPS OBS
 JT9541  GEOID HEIGHT-         -31.98  (meters)                    GEOID99
 JT9541
 JT9541  HORZ ORDER  -  FIRST
 JT9541  ELLP ORDER  -  FOURTH    CLASS I
 JT9541
 JT9541.The horizontal coordinates were established by GPS observations
 JT9541.and adjusted by the National Geodetic Survey in July 1998.
 JT9541.The horizontal coordinates are valid at the epoch date displayed above.
 JT9541.The epoch date for horizontal control is a decimal equivalence
 JT9541.of Year/Month/Day.
 JT9541
 JT9541.The orthometric height was determined by GPS observations and a
 JT9541.high-resolution geoid model using precise GPS observation and
 JT9541.processing techniques.
 JT9541
 JT9541.The X, Y, and Z were computed from the position and the ellipsoidal ht.
 JT9541
 JT9541.The Laplace correction was computed from DEFLEC99 derived deflections.
 JT9541
 JT9541.The ellipsoidal height was determined by GPS observations
 JT9541.and is referenced to NAD 83.
 JT9541
 JT9541.The geoid height was determined by GEOID99.
 JT9541
 JT9541;                    North         East     Units   Scale      Converg.
 JT9541;SPC CA 2     - 1,816,312.88  6,452,273.35   sFT  1.00004689 -0 14 23.3
 JT9541;SPC CA 2     -   553,613.274 1,966,656.849   MT  1.00004689 -0 14 23.3
 JT9541;UTM  10      - 4,222,528.692   554,291.292   MT  0.99963630 +0 22 57.9
 JT9541
 JT9541                          SUPERSEDED SURVEY CONTROL
 JT9541
 JT9541  NAD 83(1992)-  38 08 56.40812(N)    122 22 49.35499(W) AD(1997.30) 1
 JT9541  ELLIP HT    -         -29.74  (m)                      GP(       ) 3 1
 JT9541
 JT9541.Superseded values are not recommended for survey control.
 JT9541.NGS no longer adjusts projects to the NAD 27 or NGVD 29 datums.
 JT9541.See file dsdata.txt to determine how the superseded data were derived.
```

17. NGS DATA SHEETS

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JT9541
JT9541_MARKER: I = METAL ROD
JT9541_SETTING: 49 = STAINLESS STEEL ROD W/O SLEEVE (10 FT.+)
JT9541_STAMPING: P 1393 1987
JT9541_PROJECTION: FLUSH
JT9541_MAGNETIC: N = NO MAGNETIC MATERIAL
JT9541_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
JT9541_SATELLITE: THE SITE LOCATION WAS REPORTED AS SUITABLE FOR
JT9541+SATELLITE: SATELLITE OBSERVATIONS - February 19, 1997
JT9541_ROD/PIPE-DEPTH: 28.0 meters
JT9541
JT9541  HISTORY     - Date     Condition        Recov. By
JT9541  HISTORY     - 1987     MONUMENTED       NGS
JT9541  HISTORY     - 19970219 GOOD             NGS
JT9541
JT9541                          STATION DESCRIPTION
JT9541
JT9541'DESCRIBED BY NATIONAL GEODETIC SURVEY 1987
JT9541'16.1 KM (10.00 MI) WEST FROM VALLEJO.
JT9541'16.1 KM (10.00 MI) WESTERLY ALONG STATE HIGHWAY 37 FROM THE JUNCTION
JT9541'OF INTERSTATE HIGHWAY 80 IN VALLEJO, 38.8 M (127.3 FT) NORTHEAST OF
JT9541'THE CENTERLINE OF THE HIGHWAY, 18.7 M (61.4 FT) EAST OF THE
JT9541'CENTERLINE OF A PAVED ROAD LEADING NORTH TO SKAGGS ISLAND.
JT9541'NOTE--ACCESS TO DATUM POINT IS HAD THROUGH A 5-INCH LOGO CAP.
JT9541'THE MARK IS 0.3 METERS  W FROM  A WITNESS POST
JT9541'THE MARK IS ABOVE LEVEL WITH THE ROAD.
JT9541
JT9541                          STATION RECOVERY (1997)
JT9541
JT9541'RECOVERY NOTE BY NATIONAL GEODETIC SURVEY 1997 (JDD)
JT9541'THE STATION WAS RECOVERED.  IT IS ABOUT 8 MI (12.9 KM) WEST OF VALLEJO
JT9541'ALONG STATE HIGHWAY 37.  TO REACH THE STATION FROM THE INTERSECTION OF
JT9541'INTERSTATE HIGHWAY 80 AND STATE HIGHWAY 37 ABOUT 2 MI (3.2 KM)
JT9541'NORTHWEST OF VALLEJO GO WEST ON HIGHWAY 37 FOR 10.0 MI (16.1 KM) TO A
JT9541'PAVED SIDE ROAD RIGHT, A ROAD LEADING TO SKAGGS ISLAND.  THERE IS A
JT9541'FLASHING TRAFFIC SIGNAL AT THE INTERSECTION.  TURN RIGHT AND GO NORTH
JT9541'ON THE PAVED ROAD FOR ABOUT 100 FT (30.5 M) TO THE STATION ON THE
JT9541'RIGHT.  THE STATION IS 127.3 FT (38.8 M) NORTH OF THE CENTERLINE OF
JT9541'HIGHWAY 37, 105.3 FT (32.1 M) EAST OF AND ACROSS THE PAVED ROAD FROM A
JT9541'STOP SIGN, 80.7 FT (24.6 M) SOUTHEAST OF A SIGN READING NOT A THROUGH
JT9541'ROAD, AND 61.4 EAST OF THE CENTERLINE OF THE PAVED ROAD. VEGETATION
JT9541'AND THE CARSONITE WITNESS POST HAVE BEEN CLEARED TO GROUND LEVEL.
JT9541'NOTE - A ROD ADAPTOR WILL BE REQUIRED IF USING A FIXED HEIGHT POLE FOR
JT9541'GPS OBSERVATIONS.

*** retrieval complete.
Elapsed Time = 00:00:02
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17. NGS DATA SHEETS

The NGS Data Sheet

```
DATABASE = Sybase ,PROGRAM = datasheet, VERSION = 6.30
Starting Datasheet Retrieval...
1        National Geodetic Survey,   Retrieval Date = NOVEMBER 22, 2000
 JT9540 ***********************************************************************
 JT9540  DESIGNATION -  Q 1393
 JT9540  PID         -  JT9540
 JT9540  STATE/COUNTY-  CA/SOLANO
 JT9540  USGS QUAD   -  MARE ISLAND (1980)
 JT9540
 JT9540                         *CURRENT SURVEY CONTROL
 JT9540  ______________________________________________________________________
 JT9540* NAD 83(1986)-  38 06 59.     (N)    122 17 16.     (W)     SCALED
 JT9540* NAVD 88     -         3.240  (meters)      10.63   (feet)  ADJUSTED
 JT9540  ______________________________________________________________________
 JT9540  GEOID HEIGHT-         -32.01  (meters)                      GEOID99
 JT9540  DYNAMIC HT  -           3.237 (meters)      10.62  (feet)  COMP
 JT9540  MODELED GRAV-     979,979.0   (mgal)                        NAVD 88
 JT9540
 JT9540  VERT ORDER  -  FIRST     CLASS II
 JT9540
 JT9540.The horizontal coordinates were scaled from a topographic map and have
 JT9540.an estimated accuracy of +/- 6 seconds.
 JT9540
 JT9540.The orthometric height was determined by differential leveling
 JT9540.and adjusted by the National Geodetic Survey in June 1991.
 JT9540
 JT9540.The geoid height was determined by GEOID99.
 JT9540
 JT9540.The dynamic height is computed by dividing the NAVD 88
 JT9540.geopotential number by the normal gravity value computed on the
 JT9540.Geodetic Reference System of 1980 (GRS 80) ellipsoid at 45
 JT9540.degrees latitude (g = 980.6199 gals.).
 JT9540
 JT9540.The modeled gravity was interpolated from observed gravity values.
 JT9540
 JT9540;                     North         East    Units  Estimated Accuracy
 JT9540;SPC CA 2     -   549,960.    1,974,760.      MT  (+/- 180 meters Scaled)
 JT9540
 JT9540                          SUPERSEDED SURVEY CONTROL
 JT9540
 JT9540.No superseded survey control is available for this station.
 JT9540
 JT9540_MARKER: DB = BENCH MARK DISK
 JT9540_SETTING: 38 = PIER
 JT9540_STAMPING: Q 1393 1987
 JT9540_STABILITY: B = PROBABLY HOLD POSITION/ELEVATION WELL
 JT9540
 JT9540  HISTORY     - Date     Condition        Recov. By
 JT9540  HISTORY     - 1987     MONUMENTED       NGS
 JT9540
 JT9540                          STATION DESCRIPTION
 JT9540
 JT9540'DESCRIBED BY NATIONAL GEODETIC SURVEY 1987
 JT9540'7.2 KM (4.45 MI) WEST FROM VALLEJO.
 JT9540'7.2 KM (4.45 MI) WESTERLY ALONG STATE HIGHWAY 37 FROM THE JUNCTION OF
 JT9540'INTERSTATE 80 IN VALLEJO, SET VERTICALLY IN THE SOUTH FACE OF THE
 JT9540'MOST SOUTHERLY 1 OF 3 COLUMNS OF THE SECOND PIER WEST OF THE EAST
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JT9540'ABUTMENT OF A HIGHWAY OVERPASS OF A ROAD LEADING SOUTH TO MARE
JT9540'ISLAND, 289.6 M (950.1 FT) SOUTH OF THE CENTER OF THE EASTBOUND LANES
JT9540'OF THE HIGHWAY, AND 8.0 M (26.2 FT) NORTH OF THE CENTER OF A PAVED
JT9540'ROAD LEADING EAST INTO THE NORTH GATE OF THE MARE ISLAND NAVAL
JT9540'SHIPYARD.
JT9540'THE MARK IS 1.4 M ABOVE THE GROUND.

*** retrieval complete.
Elapsed Time = 00:00:02
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18. ATTACHMENTS

a. GPS Network Map

GPS Network Map

18. ATTACHMENTS

b. Overview Site Map

Overview Site Map

18. ATTACHMENTS

c. FORM DA1959 MONUMENT RECORD SHEETS

Form DA1959 Monument Record Sheets