NOAA Technical Memorandum NOS NGS-36

Goldstone Validation Survey - Phases II and III

National Geodetic Survey
Rockville, Md. 20852
July 1982

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UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
~~NATIONAL OCEAN SURVEY~~ CHARTING AND GEODETIC SERVICES
Rockville, Md. 20852

January 4, 1983

ERRATA

for

NOAA Technical Memorandum NOS NGS-36

"Goldstone Validation Survey - Phases II and III"

July 1982

The following corrections should be made to Appendix B, "Input and Output of Program HAVAGO," as the result of a recently identified field survey error associated with Station ARIES 2 1978:

Page 38, line number 754
Change latitude from 0.4710 to -0.4710
Change longitude from -0.3540 to 0.3540

Page 42, line identified as "107 ARIES 2 1978"
Change latitude (seconds) from 29.13890 to 29.10833
Change longitude (seconds) from 08.39618 to 08.42424

Page 61, line number 754
Change latitude from 0.4710 to -0.4710
Change longitude from -0.3540 to 0.3540

Page 63, line number 826

Change latitude observed (seconds) from 29.14 to 29.11
Change latitude adjusted (seconds) from 25.29 to 25.47

Page 63, line number 827
Change longitude observed (seconds) from 08.40 to 08.42
Change longitude adjusted (seconds) from 14.01 to 14.36

Page 66, line identified as "Station 107 ARIES 2 1978"

Change Cartesian coordinates (last five digits in each column) from

87.297	57.518	46.762	95.567	10.028	23.142
to					
88.176	57.686	45.995	96.446	10.196	22.375

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Goldstone Validation Survey - Phases II and III

James E. Pettey
William E. Carter

National Geodetic Survey
Rockville, Md. 20852
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CONTENTS

Abstract 1

Introduction 1

Description of the phase II survey network 2

Network adjustment 8

Conclusions 9

References 9

Appendix A. Leveling and gravity adjustment 11

Appendix B. Input and output of program HAVAGO. 19

Appendix C. Plan view of Goldstone phase I survey network. 78

TABLE

1. Components of VLBI and SLR vector base lines in an equatorial reference 9

FIGURES

1. Plan view of Goldstone phase II survey network 2

2. Plan view of Goldstone phase III survey network 3

3. Schematic of Venus VLBI reference point 3

4. Plan view of the preliminary Mojave site survey 4

5. Schematic of Mojave VLBI reference point 4

6. Route of first-order leveling connecting the Goldstone complex to the North American Vertical Datum..... 6

7. Route of first-order leveling connecting the VLBI sites within the Goldstone complex..... 7

8. Sketch of Goldstone phase I survey network 78

GOLDSTONE VALIDATION SURVEY - PHASES II and III

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ABSTRACT. A special purpose three-dimensional geodetic survey of the Goldstone Deep Space Network complex, near Barstow, Calif., was conducted in three phases. This report covers the second and third phases. The observing program included astronomic positions and azimuths, zenith distances, electromagnetic distance measurements, Doppler satellite positioning, and a variety of ancillary measurements. Particular care was taken in designing the survey to ensure that the vectors between points within a particular site were determined to better than 1 cm, and that the vectors between the two most distant sites, stations Mars and Venus, were determined to about 10 cm. The descriptive information details the methods used in the collection, reduction, and analysis of the survey data, tabulations of the observational data, and numerical and interpretive results of the analysis.

INTRODUCTION

This report contains descriptive information and numerical results of phases II and III of a high-accuracy, three-dimensional, geodetic survey of the National Aeronautics and Space Administration (NASA)/California Institute of Technology's Jet Propulsion Laboratory (JPL) Goldstone Deep Space Network complex, located near Barstow, Calif. The surveys were performed as part of a continuing cooperative program by the National Ocean Survey/National Geodetic Survey (NOS/NGS) and NASA to validate and compare advanced geodetic surveying systems, i.e., Satellite Laser Ranging (SLR), Lunar Laser Ranging Experiment (LURE), Very Long Baseline Interferometry (VLBI) and satellite Doppler observations. The surveys performed in the summers of 1979 and 1981 were jointly funded by NASA, JPL, and NGS.

Phase I of the Goldstone survey focused on the Mars site, and determined the vectors between significant reference points and survey monuments in the immediate vicinity of the Mars antenna. The results were reported in Carter and Pettey (1978).

The purpose of phase II was to determine the vectors between the Mars site and several other sites throughout the Goldstone complex. Initially, the sites to be included were Pioneer, Echo, Venus, Apollo, and Mojave. However, during the planning stages, the NASA/JPL project manager, Kenneth L. Bartos, notified NGS that the Apollo and Mojave sites should be eliminated from the survey, and the primary purpose should be to determine the MARS-VENUS vector as accurately as possible. Phase II also included a leveling survey, conducted in conjunction with the Southern California Releveling Project (SCARP), to determine accurately the height of the Goldstone complex and the relative heights of specific points within the complex.

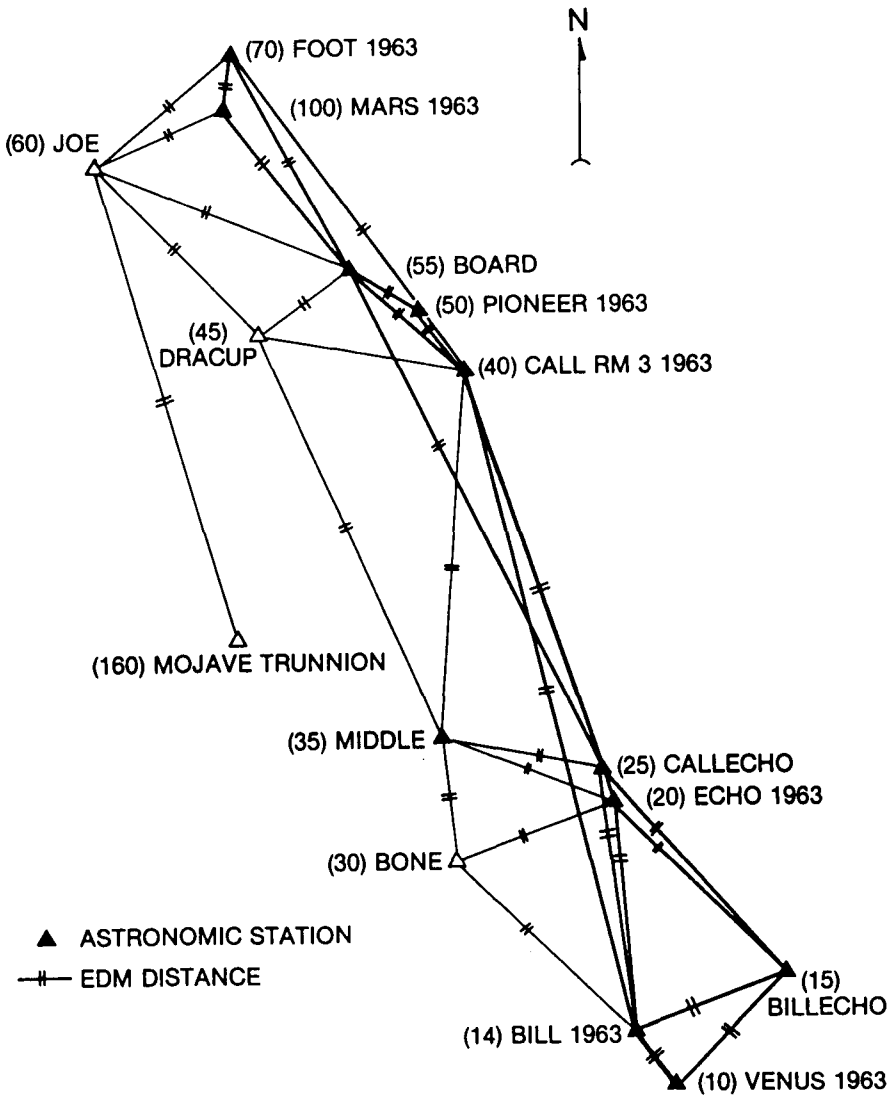

Figure 1.--Plan view of Goldstone phase II survey network.

Phase III focused on the Venus site, and was analogous to the Mars phase I survey. During the field work for phase III, it was decided that the Mojave antenna would be developed under the NASA Crustal Dynamics Project. It will eventually be operated by NGS as part of the National Crustal Motion Network (NCMN). Therefore, the survey team did a preliminary site survey and tie to the phase II network.

For convenience, the results of all three phases are integrated into one least-squares adjustment. This report contains all of the numerical information required to relate the space system's measurements within a particular site to the subcentimeter level and between sites at about the 10-centimeter level. For completeness, the plan view of the phase I survey network is included as appendix C.

DESCRIPTION OF THE PHASE II SURVEY NETWORK

Figure 1 shows a plan view of the phase II survey network. The network was designed with the primary goal of determining the MARS-VENUS vector as accu-

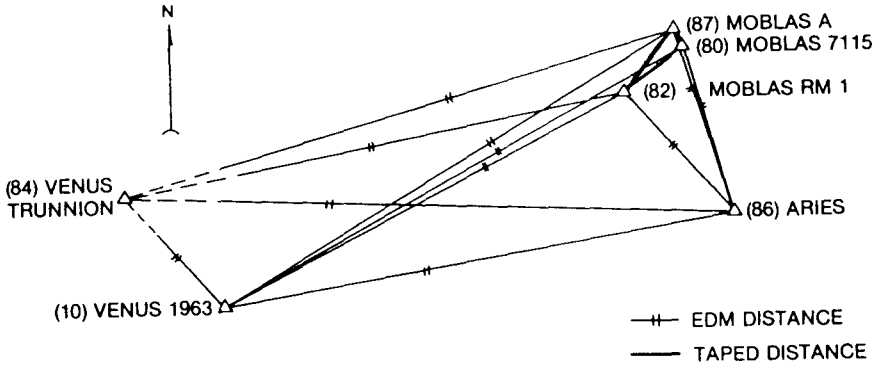

Figure 2.--Plan view of Goldstone phase III survey network.

rately as current technology and reasonable cost constraints would permit. The secondary goal was to improve the geodetic control within the overall Goldstone complex. The subnetwork, shown in bold lines, is particularly significant because it effectively controls the accuracy of the intersite vectors.

Figure 2 shows a plan view of the phase III survey network. This survey scheme was designed to determine the vectors between the Venus antenna VLBI reference point, and stations VENUS 1963, MOBLAS 7115, MOBLAS 7115 RM 1, and ARIES 6-9-91 9MTR.

Figure 3 is a schematic of the Venus antenna, showing the locations of the Venus VLBI reference point, and station VENUS TRUNNION, the nearest monumented survey point.

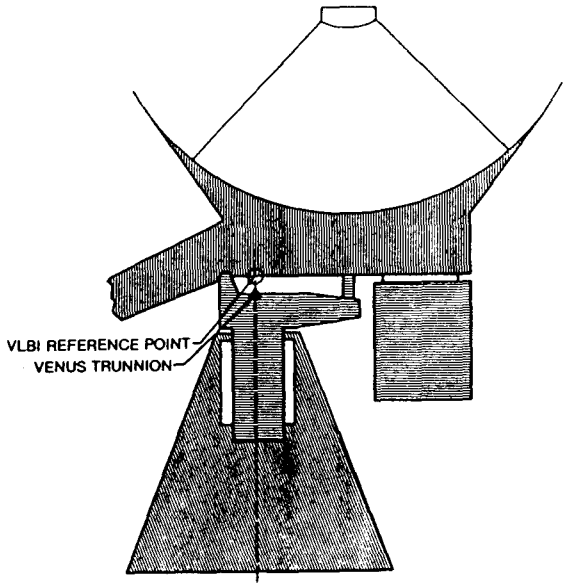

Figure 3.--Schematic of Venus VLBI reference point.

Figure 4 depicts a plan view of the preliminary Mojave site survey and tie to the phase II network. Figure 5 is a schematic of the Mojavo antenna, showing the location of the Mojave VLBI reference point which is the point defined by the intersection of the Z (zenith) and X axis.

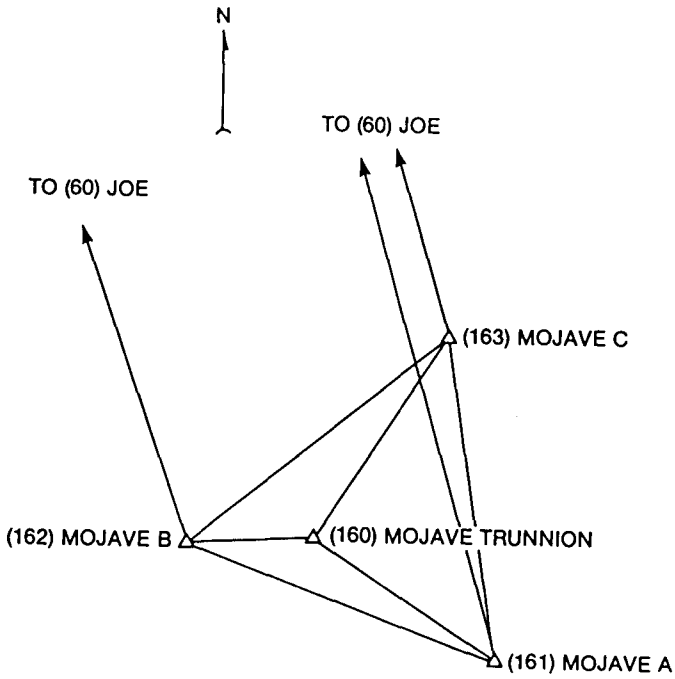

Figure 4.--Plan view of the preliminary Mojave site survey.

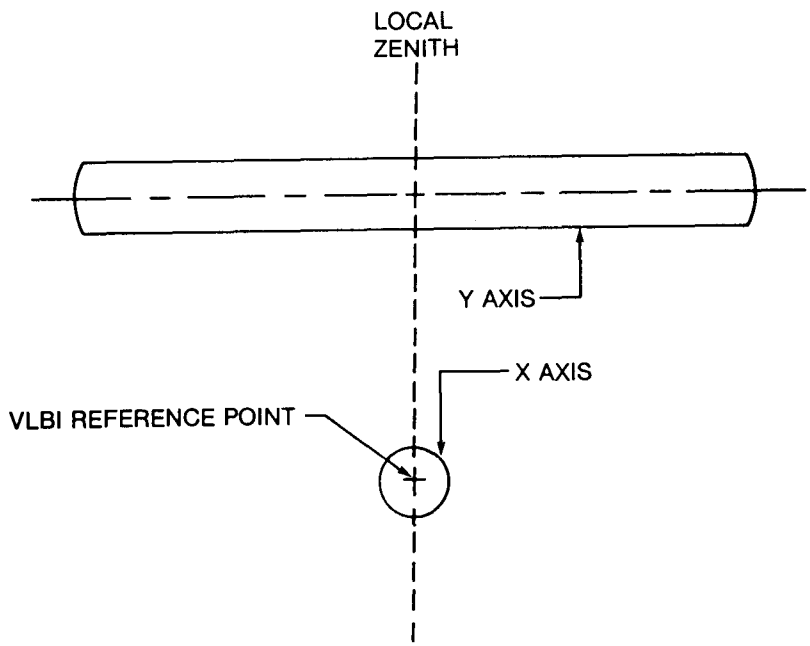

Figure 5.--Schematic of Mojave VLBI reference point.

Operational Program

To attain the highest possible accuracy, redundancy and multiplicity of measurements were employed. Instruments of various types from different manufacturers were used to minimize systematic instrumental errors, and, wherever practical, measurements were made by more than one observer to minimize personal biases and to identify blunders. The observing periods were also scheduled to minimize the effects of time-dependent atmospheric anomolies.

Astronomic Observations

The stations at which astronomic positions and azimuths were determined (see fig. 1) were selected to achieve the highest-accuracy measurements of the vector between the Mars and Venus sites. All of the astronomic observations were reduced using star positions from the Fourth Fundamental catalogue (FK4) (Fricke et al. 1963). The longitude determinations were made by the meridian transit method (Hoskinson and Duerksen 1947), the latitude by the absolute zenith distance method, after Sterneck (Müller 1973), and the azimuths by the direction method (Hoskinson and Duerksen 1947) using Ursae Minoris (Polaris) at any hour angle. The reduced observations were referenced to the Conventional International Origin (CIO) and to the Origin of Longitude, using polar coordinates and time information published by the Bureau International de l'Heure (1968 system) (BIH 1969).

The uncertainties assigned to the astronomic quantities were based on Analysis of Variance (ANOVA) studies reported in Pettey and Carter (1978). An extraordinary attempt was made to reduce the effects of errors which tend to be systematic over the period of a few days, usually associated with astronomic latitude and longitude determinations, e.g., atmosphere refraction, instrumental imperfections, and short-term observer bias. The observing programs, which are normally performed on two or more consecutive nights, were instead done on two separate visits. The second round of observations was made only after completion of one visit to all of the stations. Approximately 1 month elapsed between visits. The only exception to this procedure was at station BILL, where the difficulty of access dictated that the work be done in one visit. With the procedures that were employed, the astronomic latitudes and longitudes are very unlikely to cause errors in the station-to-station vector larger than 1 to 2 parts in 10^6, which would amount to about 3 to 5 cm for the MARS-VENUS vector. The azimuth uncertainties are less well known and potentially larger (Carter and Pettey 1978), but experience leads us to believe that the azimuthal component of the MARS-VENUS base line is unlikely to be worse than about 3 to 5 parts in 10^6, or about 7 to 12 cm.

Zenith Distance Observations

Zenith distance measurements were made during many of the Electromagnetic Distance Measurement (EDM) observing periods to determine the coefficient of refraction, as discussed in Carter and Vincenty (1978: appendix C). In addition, zenith distances were also observed throughout the primary network specifically to determine the vertical components of the interstation vectors. The quality of the zenith distance observations was significantly worse than we had hoped to attain, and indeed have attained in other three-dimensional surveys. A large percentage of the observations had to be rejected because of obvious but unrecoverable blunders. The zenith distance observations retained do not contribute much to the final solution; i.e., the vertical components of the vectors are primarily derived from the leveling data.

Distance Measurements

An extensive EDM program was executed during these surveys. To minimize scale bias, measurements were made during daylight and darkness, from both ends of many lines, and with a selection of different instruments. Several of the short lines in the site surveys were also taped. Based on experience, we estimate that any scale bias is probably less than 1 to 2 parts in 10^6, or about 3 to 5 cm for the longest vectors.

Leveling

Leveling surveys were conducted for two purposes: to determine the orthometric height of the Goldstone complex relative to bench mark No. 941 0660 TIDAL 8, located in San Pedro, Calif., and to obtain the differences in heights between the various points of interest within the complex.

The leveling field work was accomplished in conjunction with the Southern California Releveling Project (SCARP), which was a joint NGS-U.S. Geological Survey project to study crustal dynamics particularly in the vicinity of the so-called Palmdale Bulge. Extraordinary procedures were followed in the SCARP survey to achieve the highest possible accuracy; the tie between the Goldstone complex and bench mark 941 0660 TIDAL 8 is as accurate as the state of-the-art permits. Figure 6 shows the route of the most direct line of leveling to the complex, and figure 7 details the leveling lines within the complex. Appendix A contains the results of the least-squares adjustment of the leveling observations.

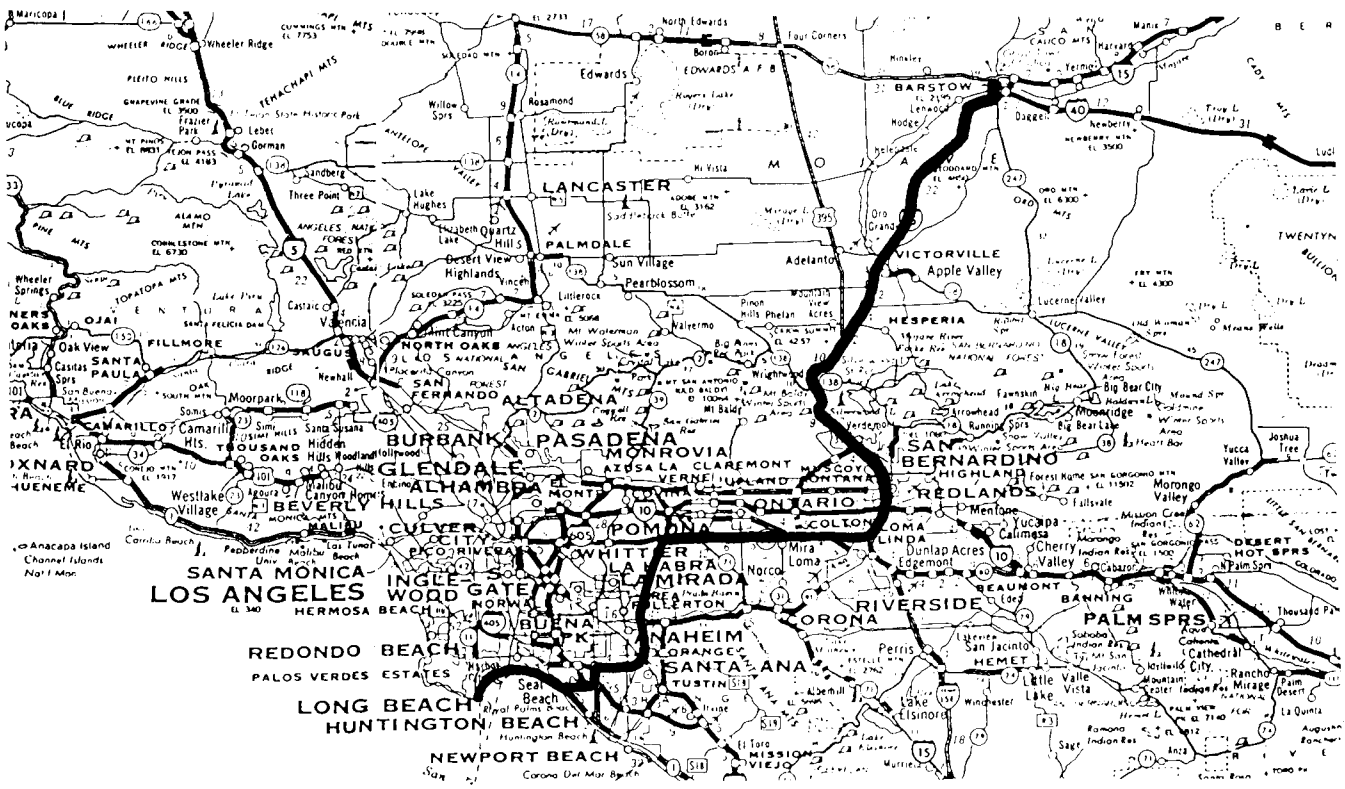

Figure 6.--Route of first-order leveling connecting the Goldstone complex to the North American Vertical Datum.

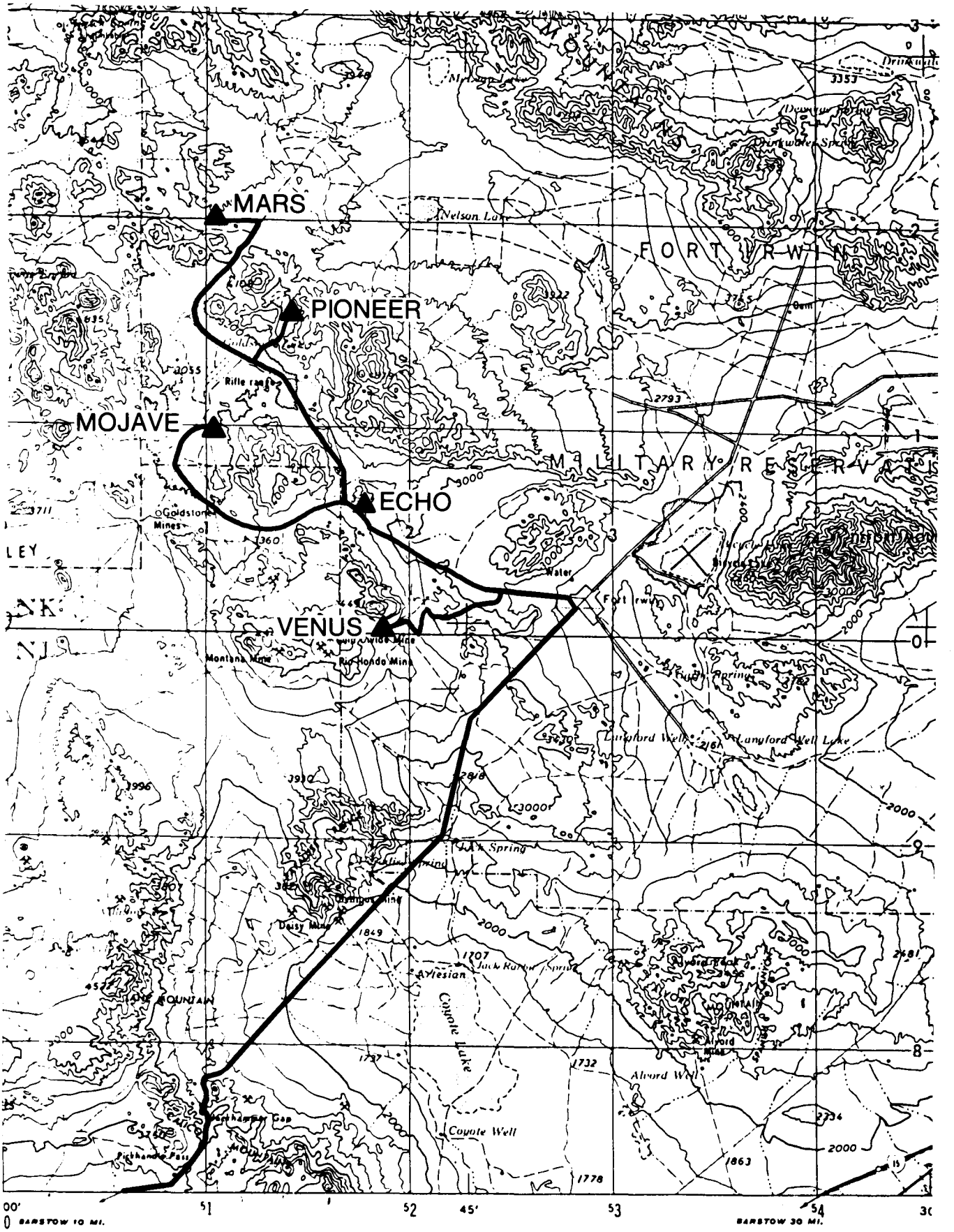

Figure 7.--Route of first-order leveling connecting the VLBI sites within the Goldstone complex.

Leveling does not directly yield geometric quantities, but rather "geopotential height differences." These can only be converted to geometric quantities to the extent that the gravitational field is accurately known within the survey area. The transformation from geopotential heights to orthometric heights was particularly important in this survey because the zenith distance measurements were weak. We believe that the geop synthesized by astro-gravimetric leveling should have an accuracy of about 5 to 10 cm over the extent of the Goldstone complex. The full amount of this error would enter directly into the vertical components of the longest vectors, most notably the MARS-VENUS vector.

Gravity

Just as with the leveling, the gravity observations were accomplished in conjunction with the SCARP project. The most stringent precautions were taken to ensure the accuracy of the measurements, including special calibration of the gravimeters, the simultaneous use of two or more units, full ladder sequence of observations, and frequent ties between a selected set of stations during the progression of the survey by helicopter. Appendix A contains the results of the least-squares adjustment of the gravity observations used in the Goldstone survey.

Satellite Doppler Observations

The NGS has made satellite Doppler observations at both the Mars and Venus sites. The differences between the X, Y, Z Cartesian coordinates of station MARS (1963) (as computed from the NAD 1927 horizontal position, the orthometric height determined during this survey, and a geoidal separation of -19.222 meters) and the NSWC 97-2 Doppler coordinates were used to relate the Goldstone network to the geocenter. The Doppler station designation is 51212 and the position was derived from observations of 371 satellite passes collected during January 1978, using program DOPPLR (NGS-02 version dated February 1976). The North American Datum 1927 and transformed coordinates are tabulated on page 47 of appendix B, under the heading "Adjusted Cartesian Coordinates."

NETWORK ADJUSTMENT

After the various types of observations had been individually preprocessed (i.e., corrections added, statistical tests applied, outliers rejected, and least-squares adjustments performed when appropriate) all of the survey data (including data from phases I, II, and III) were adjusted using NGS program HAVAGO (Vincenty 1979).

The complete input and output portions of the "final adjustment" (i.e., the adjustment using what we judged to be the best available data set) are reproduced in appendix B. The reader should be able to find the important information concerning a particular station or vector without difficulty by referring to the self explanatory labels provided in the HAVAGO printouts. The standard errors stated in appendix B are formal values, and users of the data should be aware of the possibility that systematic errors may further degrade the accuracy, as we have previously described.

The base line components which are of particular interest were extracted from appendix B and are shown in table 1. The VLBI vectors are with respect to axis intersection, and the SLR vector is with respect to station monuments.

Table 1.--Components of VLBI and SLR vector base lines in an equatorial reference

VECTOR	ΔX m	S.E. m	ΔY m	S.E. m	ΔZ m	S.E. m	S m
MARS VLBI - VENUS VLBI	-2492.02	±0.03	14135.45	± 0.03	16095.49	± 0.02	2156.85
VENUS VLBI - MOJAVE VLBI	-5042.05	±0.13	-8720.76	± 0.25	-7514.06	± 0.19	12567.22
MOJAVE VLBI - MARS VLBI	-2550.02	±0.13	-5414.69	± 0.25	-8581.44	± 0.19	10462.43
SLR 7085 - SLR 7115	-2532.52	±0.03	14016.62	± 0.03	15901.40	± 0.02	21347.93

CONCLUSIONS

The Goldstone survey is the most extensive and complex high-accuracy, three-dimensional geodetic survey ever performed by NGS. Throughout the project, beginning with the design of the network, to writing the observational specifications, making the observations, reducing and analyzing the data, and ending with the preparation of the report, we have made every attempt to minimize systematic errors. Our goal was to attain the highest possible accuracy, not simply small formal standard errors. We believe that the results represent very nearly the best that can be achieved with present available terrestrial techniques, commensurate with reasonable costs. The vectors between points in any particular site are almost certainly accurate to better than 1 cm, while the vectors between points in the Mars and Venus sites (the most distant sites in the survey) are estimated to be accurate to about 10 cm.

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Vincenty, T., 1979: The HAVAGO three-dimensional adjustment program. NOAA Technical Memorandum NOS NGS-17, 18 pp. National Geodetic Information Center, NGS/NOS, Rockville, MD 20852.

APPENDIX A.--LEVELING AND GRAVITY ADJUSTMENT

This appendix contains the results of the least-squares adjustment of the leveling and the gravity observations. Station 941 0660 TIDAL 8 was fixed at an elevation of 3.3645 m. Heights are given in geopotential units and in meters.

ADJUSTED ORTHOMETRIC HEIGHTS

NAME	DIST	GRAVITY	GPU	ELEV
941 0660 TIDAL 8	0.0	0.97963650	3.2960	3.3645
941 0660 TIDAL 10	1.0	0.97963587	2.6894	2.7453
WILMINGTON C 8 D C OF LA	2.4	0.97961851	2.9901	3.0523
F 970	3.6	0.97962633	4.0442	4.1283
24 00490 C OF LA	4.4	0.97962589	3.8535	3.9336
24 01406 C OF LA	5.2	0.97962119	5.6152	5.7320
24 01475 C OF LA	6.3	0.97962076	4.8064	4.9064
941 0686 TIDAL 58 1968	6.7	0.97961683	3.2065	3.2732
B 1296	8.2	0.97960969	11.7670	12.0119
24 03790 C OF LA	8.8	0.97961090	9.7194	9.9217
Z 50 RESET 1945	9.8	0.97961092	19.8604	20.2738
Y 780	10.8	0.97960884	14.2521	14.5488
21 06769 C OF LA	11.7	0.97960659	20.7022	21.1332
21 06949 C OF LA	12.6	0.97961006	6.5675	6.7042
21 07055 C OF LA	13.4	0.97960937	7.3312	7.4838
D 1296	14.6	0.97960629	12.3928	12.6508
5 46 B LA CO	15.5	0.97960749	12.4458	12.7049
5 80 LA CO	16.6	0.97960535	10.2410	10.4542
J 615	17.5	0.97960339	10.7095	10.9325
K 970	18.2	0.97960392	11.1105	11.3418
5 42 LA CO	19.0	0.97960081	5.5810	5.6972
5 40 B LA CO	20.0	0.97959188	6.5079	6.6435
L 970	21.1	0.97959103	8.0447	8.2123
D 167	21.8	0.97958652	9.1658	9.3568
8 57 LA CO	23.5	0.97958209	9.3415	9.5362
8 55 B LA CO	24.6	0.97958070	16.9543	17.3077
Z 779	25.8	0.97957839	13.0354	13.3072
A 780 = 8 50 LA CO	26.7	0.97957389	29.0636	29.6696
S 1313	27.4	0.97957350	31.0513	31.6988
R 1313	28.6	0.97957568	26.1582	26.7036
8 45 A LA CO	29.9	0.97957922	20.6436	21.0739
H 98	30.6	0.97957969	17.2068	17.5655
8 41 B LA CO	31.5	0.97957823	22.8931	23.3704
W 1329	32.4	0.97958002	13.9896	14.2812
8 39 C LA CO	33.6	0.97957958	3.9244	4.0062
X 1329	34.8	0.97957849	7.6998	7.8603
8 36 A LA CO	35.7	0.97957851	6.7934	6.9350
8 35 A LA CO	36.5	0.97957739	7.4863	7.6424
U 1329	37.4	0.97957477	6.3405	6.4727
A 779	38.5	0.97957318	6.4298	6.5639
073 02202 LA CO	39.0	0.97957209	11.6372	11.8799
V 1329	40.2	0.97957190	7.0604	7.2076
1 A 129 74 0 CO	41.6	0.97957099	11.6014	11.8433
CC 12 USE	43.3	0.97956689	12.5881	12.8507
108 03425 LACFCD	44.9	0.97956680	13.7682	14.0554
1 A 96 68 0 CO	46.6	0.97956561	12.3171	12.5740
CC 26 USE	47.2	0.97956529	15.8394	16.1698
1 H 129 70 0 CO	49.0	0.97956686	15.8071	16.1368
P 778 RESET 1965	49.8	0.97956790	15.6027	15.9281
1 A 92 68 0 CO	50.4	0.97956813	17.3066	17.6676
1 A 91 68 0 CO	51.5	0.97956789	18.7778	19.1695
1 A 90 68 0 CO	52.9	0.97956871	20.6752	21.1064

S 778	54.2	0.97956925	26.7780	27.3365
2 C 66 68 0 CO	55.6	0.97956826	36.2196	36.9751
2 C 50 64 0 CO	56.3	0.97956619	44.4670	45.3946
2 C 67 68 0 CO	57.1	0.97956270	58.0492	59.2603
2 C 69 68 0 CO	58.2	0.97956299	58.7351	59.9605
2 C 70 68 0 CO	59.3	0.97956206	65.1068	66.4652
V 779 RESET 1958	60.6	0.97955722	82.9409	84.6718
T 779	61.8	0.97955775	80.7331	82.4179
S 51 RESET 1968	62.6	0.97955793	83.3534	85.0929
2 C 71 68 0 CO	63.8	0.97955502	96.2434	98.2522
2 C 72 68 0 CO	64.2	0.97955493	97.3039	99.3348
2 C 73 68 0 CO	65.1	0.97955242	110.7773	113.0897
2 C 74 68 0 CO	66.7	0.97954892	126.6273	129.2710
2 C 75 68 0 CO	67.5	0.97955103	121.5570	124.0946
P 351	68.6	0.97955366	116.3725	118.8016
U 350	69.6	0.97955136	129.0993	131.7943
HORSE	70.5	0.97954992	136.7801	139.6357
W 348	71.7	0.97954774	158.3775	161.6843
67 11 A LA CO	72.7	0.97954853	177.3691	181.0723
V 347	73.6	0.97954763	186.7410	190.6400
67 8 B LA CO	74.9	0.97954475	200.2020	204.3827
67 6 A LA CO	75.9	0.97953801	217.0799	221.6146
67 4 A LA CO	76.9	0.97953169	249.7896	255.0092
67 2 A LA CO	78.1	0.97953818	220.2245	224.8248
44 4 A LA CO	79.2	0.97954465	173.5054	177.1286
M 1329	80.1	0.97954455	164.4777	167.9124
OCF 18 MWDSC	81.1	0.97954419	167.8156	171.3201
11 96 LA CO	81.7	0.97954389	171.8361	175.4246
L 1329	82.6	0.97954210	181.6437	185.4374
J 1329	83.3	0.97953927	191.6645	195.6680
H 1329	84.8	0.97953749	201.5842	205.7953
11 90 A LA CO	86.0	0.97953732	209.8249	214.2082
G 1329	87.0	0.97954014	217.6224	222.1679
11 86 LA CO	88.4	0.97953859	234.4117	239.3083
11 85 LA CO	89.0	0.97953742	238.2882	243.2661
11 84 A LA CO	90.2	0.97953500	245.8668	251.0036
11 83 A LA CO	91.3	0.97953058	253.8760	259.1813
Q 36 RESET 1967 USGS	91.8	0.97952999	256.3081	261.6644
11 79 A LA CO	92.9	0.97928490	261.3926	266.9219
11 78 A LA CO	93.8	0.97952503	264.1877	269.7100
11 77 A LA CO	94.5	0.97952256	268.2895	273.8982
F 1329	95.7	0.97952119	275.8909	281.6589
E 1329	97.2	0.97951686	301.3363	307.6377
D 1329	98.9	0.97950999	338.9730	346.0639
700 42 SB CO	99.9	0.97950671	353.4344	360.8290
700 41 SB CO	100.9	0.97950309	358.9686	366.4803
K 1327	102.7	0.97949999	365.4093	373.0570
700 39 SB CO	103.5	0.97950052	364.0729	371.6924
700 38 SB CO	104.4	0.97950009	363.4818	371.0891
700 37 SB CO	105.3	0.97950087	359.3459	366.8663
700 36 RESET 1973 SB CO	106.2	0.97950415	352.2097	359.5796
700 34 RESET 1973 SB CO	107.3	0.97950775	339.6743	346.7806
CUC 121 SB CO	108.4	0.97951036	332.1707	339.1191
700 32 RESET 1973 SB CO	109.0	0.97951255	327.2567	334.1016
J 1327	109.8	0.97951219	329.6550	336.5502

700 30 RESET 1973 SB CO	110.7	0.97951195	331.3845	338.3159
700 29 SB CO	111.4	0.97951245	332.8707	339.8330
700 28 RESET 1973 SB CO	112.3	0.97951417	334.2712	341.2622
700 26 SB CO	114.0	0.97951489	334.2617	341.2523
700 24 SB CO	115.4	0.97951747	337.2245	344.2761
700 23 SB CO	116.3	0.97951819	335.8406	342.8631
700 21 RESET 1973 SB CO	117.8	0.97951775	338.4501	345.5273
700 20 SB CO	118.5	0.97951713	342.0106	349.1624
V 1306	119.6	0.97951588	349.2365	356.5399
700 17 SB CO	120.8	0.97951419	355.2346	362.6641
700 15 SB CO	122.4	0.97951124	365.9512	373.6059
700 14 SB CO	123.3	0.97950943	368.7302	376.4437
700 13 SB CO	124.1	0.97950859	372.7113	380.5085
700 10 SB CO	126.5	0.97950932	372.6024	380.3970
U 1306	127.3	0.97950989	370.5473	378.2987
700 8 SB CO	128.2	0.97950960	369.3294	377.0554
700 7 SB CO	129.0	0.97950561	365.4147	373.0603
700 6 RESET 1973 SB CO	129.8	0.97950192	361.4917	369.0567
700 5 RESET 1973 SB CO	130.6	0.97950219	358.9691	366.4812
700 4 SB CO	131.5	0.97950126	355.5483	362.9891
700 3 SB CO	132.3	0.97949116	350.3245	357.6597
700 2 SB CO	133.3	0.97948949	347.8867	355.1714
RIALTO F	134.4	0.97948934	335.2712	342.2918
RIALTO C	135.4	0.97948159	329.5541	336.4577
W 1306	136.8	0.97948099	323.0203	329.7872
X 471	137.3	0.97948153	320.8689	327.5906
U 471 RESET 1957	138.6	0.97948139	325.2104	332.0231
T 471	139.4	0.97948089	331.5976	338.5442
A 41 RESET 1957	140.5	0.97947876	341.6734	348.8319
T 1306	141.7	0.97947599	357.0783	364.5605
Z 39	143.5	0.97947160	389.1758	397.3324
703 6 SB CO	144.3	0.97946997	404.0758	412.5454
S 1306	145.2	0.97946719	420.7283	429.5481
B 40	146.8	0.97946181	451.9280	461.4044
B 471	148.1	0.97945729	477.9065	487.9299
D 40	149.4	0.97945266	505.6456	516.2532
R 1306	150.1	0.97944975	523.1149	534.0906
703 11 RESET 1973 SB CO	151.4	0.97944653	547.7447	559.2390
F 40	152.3	0.97944329	565.2649	577.1288
D 471	154.1	0.97943674	603.6863	616.3607
J 40	155.7	0.97943209	633.8478	647.1585
Q 1306	156.9	0.97942632	660.0379	673.9026
K 40	157.6	0.97942391	670.4678	684.5532
703 16 SB CO	158.3	0.97942039	684.8542	699.2444
L 40 RESET 1939	159.0	0.97941780	700.5806	715.3031
E 471	160.6	0.97941504	732.0360	747.4216
N 40	161.7	0.97941086	754.8286	770.6966
O 40	163.0	0.97941047	776.8781	793.2099
CUT	163.9	0.97940292	798.4191	815.2100
C 357	165.0	0.97940010	807.1432	824.1200
B 358	166.0	0.97939755	819.5599	836.8000
A 359	167.1	0.97939443	836.2198	853.8131
W 359	168.1	0.97939096	853.4082	871.3662
N 395	168.7	0.97938959	864.9528	883.1550
V 360	169.9	0.97938591	889.0096	907.7215
B 361	170.8	0.97938237	911.7505	930.9444

F 361	172.0	0.97937630	943.5748	963.4446
T 40	173.0	0.97937295	957.5127	977.6793
703 23 RESET 1973 SB CO	174.3	0.97936565	993.7434	1014.6807
N 1290	175.9	0.97935566	1039.3943	1061.3042
703 24 A SB CO	176.9	0.97935039	1065.6177	1088.0863
Q 1290	177.5	0.97934688	1083.2929	1106.1381
P 1290	178.6	0.97933878	1114.1067	1137.6111
R 1290	179.4	0.97933767	1121.9076	1145.5779
151 DOR USGS	180.6	0.97933735	1126.7818	1150.5553
150 DOR USGS	182.3	0.97933227	1139.8567	1163.9121
N 709	183.1	0.97933427	1126.8912	1150.6706
M 2	183.9	0.97933759	1113.8685	1137.3693
152 DOR USGS	185.5	0.97934101	1090.6948	1113.7028
703 30 SB CO	186.6	0.97934178	1076.1785	1098.8794
M 1306	187.3	0.97934389	1066.2590	1088.7483
703 31 SB CO	188.0	0.97934564	1057.4295	1079.7306
C 41	188.9	0.97934507	1040.9143	1062.8678
D 41	190.2	0.97934789	1023.9592	1045.5521
L 1306	191.1	0.97934819	1020.8992	1042.4272
E 41	192.1	0.97934738	1017.6171	1039.0768
703 34 SB CO	193.2	0.97935019	1003.4728	1024.6312
703 35 SB CO	194.6	0.97935282	992.3283	1013.2490
703 36 SB CO	195.8	0.97935579	985.4625	1006.2354
H 41	196.6	0.97935929	972.8052	993.3078
J 41	198.2	0.97936404	953.6458	973.7399
HESPERIA AZ MK	199.4	0.97936782	941.5831	961.4193
K 41 RESET 1973	200.2	0.97937019	932.8084	952.4574
703 39 SB CO	201.1	0.97937281	924.0675	943.5299
L 41	202.1	0.97937564	913.3513	932.5853
J 1306	203.4	0.97938285	893.8952	912.7127
703 40 SB CO	204.3	0.97938595	882.5904	901.1671
G 708	205.9	0.97939291	863.2303	881.3933
F 708	206.9	0.97939829	846.1060	863.9039
P 41	208.1	0.97940298	832.2504	849.7528
P 2	209.6	0.97940839	820.1677	837.4113
Q 41	211.0	0.97941433	813.8519	830.9577
Q 2	212.2	0.97941498	812.3069	829.3797
E 534	213.3	0.97941696	806.3702	823.3166
S 41 RESET 1952	214.2	0.97941775	804.6914	821.6018
T 41	215.3	0.97942149	801.1140	817.9461
K 752	216.5	0.97942059	803.6898	820.5768
J 752	217.8	0.97942117	800.0426	816.8525
W 41	219.5	0.97942629	796.4824	813.2132
K 534 RESET 1969	220.7	0.97942648	793.4079	810.0740
X 41	221.8	0.97942501	785.4578	801.9581
Y 41 RESET 1942	223.3	0.97942689	780.7860	797.1866
Z 41	224.3	0.97942878	774.2030	790.4638
A 42	225.4	0.97943217	769.6579	785.8205
L 534	226.2	0.97943369	769.1002	785.2499
B 42	227.2	0.97943589	766.0094	782.0924
C 42 RESET 1942	228.0	0.97943764	761.5890	777.5778
703 55 SB CO	229.0	0.97943979	759.8329	775.7832
D 42 RESET 1946	229.8	0.97944129	755.7758	771.6397
54 FMK USGS	230.9	0.97944268	754.9073	770.7519
51 FMK USGS	232.6	0.97944514	748.9537	764.6714

R 1304	233.7	0.97944722	744.0400	759.6530
G 42	234.9	0.97944985	740.6155	756.1546
J 534	235.7	0.97945224	735.7630	751.1984
R 1153	236.9	0.97945499	732.1927	747.5511
P 1153	237.9	0.97945697	726.0157	741.2431
J 42 RESET 1947	238.6	0.97945669	725.3748	740.5889
K 42 RESET 1936	240.3	0.97945749	719.3075	734.3938
L 42	241.3	0.97945676	723.0424	738.2076
Q 1304	242.2	0.97945271	727.3926	742.6521
N 42	243.9	0.97945709	720.4525	735.5631
P 1304	244.8	0.97945974	716.4245	731.4486
A 3	246.4	0.97946413	709.3759	724.2490
Q 42 RESET 1946	248.4	0.97946859	700.6701	715.3574
M 534	249.6	0.97947386	697.0621	711.6699
B 3	250.5	0.97947595	695.8011	710.3810
R 42	252.1	0.97947741	685.4865	699.8492
N 534	253.7	0.97947939	678.7448	692.9649
T 42	255.4	0.97948263	681.3093	695.5808
U 42	256.8	0.97948149	674.3395	688.4658
M 1304	257.8	0.97948219	674.7094	688.8429
W 42	259.9	0.97948279	667.6398	681.6248
X 42	261.9	0.97948533	664.1151	678.0245
Y 42	263.5	0.97948569	668.3260	682.3234
Z 42	265.1	0.97948761	667.0967	681.0670
A 43	267.1	0.97949006	660.2005	674.0247
B 43 RESET 1946	268.7	0.97949396	652.9639	666.6339
Q 534	269.9	0.97949249	646.7037	660.2437
P 534	271.1	0.97949522	636.3346	649.6556
K 1304	271.9	0.97949536	632.8544	646.1025
R 1247	272.9	0.97949605	633.4224	646.6819
F 43	273.2	0.97949699	628.7036	641.8637
A 687	273.8	0.97949749	628.1948	641.3440
B 687	275.0	0.97950561	633.9716	647.2363
C 687	276.6	0.97950129	679.0692	693.2806
A 1297	278.2	0.97948693	737.9547	753.4094
E 687	279.7	0.97947919	792.6735	809.2806
B 1297	281.2	0.97946786	829.9700	847.3683
G 687	283.1	0.97946999	797.7159	814.4363
C 1297	284.9	0.97946815	793.2521	809.8804
J 687	286.4	0.97945759	820.6499	837.8616
K 687	288.0	0.97944923	870.8958	889.1689
L 687	289.7	0.97943439	942.3577	962.1448
D 1297	291.1	0.97942267	1009.6877	1030.9009
E 1297	292.8	0.97940209	1122.3516	1145.9559
F 1297	293.9	0.97939371	1172.7597	1197.4344
P 687	295.3	0.97940242	1136.5320	1160.4341
H 1297	296.9	0.97941189	1100.2968	1123.4260
J 1297	298.5	0.97941514	1088.4541	1111.3307
K 1297	300.1	0.97942459	1041.3456	1063.2218
T 687	301.7	0.97943483	1004.6392	1025.7336
U 687	303.3	0.97943779	985.3549	1006.0413
L 1297	305.0	0.97943596	1002.1064	1023.1464
M 1297	306.5	0.97944299	964.9816	985.2351
J 688	308.2	0.97945266	940.8952	960.6337
N 1297	309.8	0.97945979	928.3140	947.7816

P 1297	311.4	0.97946633	907.6906	926.7196
Q 1297	313.1	0.97946619	900.5603	919.4399
R 1297	314.2	0.97946614	897.1748	915.9835
S 1297	315.6	0.97946659	896.0785	914.8638
C 964	317.9	0.97945614	913.7940	932.9606
V 1297	319.7	0.97945139	922.8461	942.2071
D 964	320.6	0.97945215	923.1352	942.5016
W 1297	322.2	0.97944685	936.2031	955.8488
X 1297	323.9	0.97944239	963.3337	983.5532
Y 1297	325.5	0.97944694	957.0378	977.1206
83 WFM USGS	326.9	0.97944649	968.4532	988.7760
F 964	328.2	0.97945285	954.2450	974.2633
82 WFM USGS	329.4	0.97946039	928.8127	948.2902
G 964	331.1	0.97945534	950.8619	970.8068
H 964	331.7	0.97945683	958.0194	978.1129
81 WFM USGS	333.1	0.97945529	973.1685	993.5813
J 964	334.7	0.97944332	1011.0834	1032.3041
K 964	336.0	0.97943171	1038.5004	1060.3091
80 WFM USGS	336.7	0.97943039	1045.1747	1067.1250
L 964	337.7	0.97943345	1029.6734	1051.2949
79 WFM USGS	339.5	0.97944069	989.7127	1010.4876
M 964	341.2	0.97944658	950.0271	969.9632
J 1304	342.7	0.97945799	887.5013	906.1147
P 964	344.3	0.97945435	904.8101	923.7900
N 964	345.9	0.97944279	957.4264	977.5215
VENUS AZ MK	347.5	0.97942968	1032.5563	1054.2424
VENUS RM 1	348.1	0.97942375	1061.4979	1083.7984
VENUS	348.1	0.97942366	1061.9677	1084.2782
VENUS RM 2	348.1	0.97942361	1062.1814	1084.4964
ECHO AZ MK	339.9	0.97943865	997.3688	1018.3066
ECHO RM 1	340.4	0.97944719	956.9666	977.0477
ECHO	340.4	0.97944712	957.3097	977.3980
ECHO RM 2	340.4	0.97944703	957.7728	977.8710
D 965	340.4	0.97944290	980.7063	1001.2899
JPL 120 USE	340.8	0.97944321	980.0150	1000.5838
Q 964	341.7	0.97944203	979.2567	999.8108
JPL 124 USE	343.0	0.97943482	1008.4372	1029.6113
1 WR USGS	343.5	0.97943399	1014.2344	1035.5311
JPL 143 USE	344.4	0.97944165	978.4299	998.9670
R 964	345.3	0.97944538	963.4492	983.6681
JPL 129 USE	346.5	0.97944956	947.4334	967.3121
PB 1015 USGS	347.0	0.97945089	943.2373	963.0266
S 964	347.2	0.97945144	940.7092	960.4450
JPL 132 USE	348.4	0.97945329	926.8970	946.3412
T 964	348.9	0.97945238	924.9308	944.3346
C 965	350.5	0.97943419	1014.2630	1035.5601
B 965	351.6	0.97943396	1016.9587	1038.3127
PIONEER RM 2	352.7	0.97943539	1003.3868	1024.4543
PIONEER	352.7	0.97943535	1003.5675	1024.6388
PIONEER RM 1	352.7	0.97943535	1003.5842	1024.6559
U 964	350.3	0.97945532	903.6624	922.6173
V 964	351.9	0.97944945	902.5561	921.4933
1 WR 1947 USGS	353.7	0.97944829	916.4316	935.6610
W 964	355.5	0.97944359	943.8683	963.6781
2 WR USGS	357.0	0.97943399	986.1771	1006.8847

X 964	357.9	0.97943799	967.1538	987.4579
18 WR USGS	359.5	0.97943852	956.0070	976.0766
MARS RM 2	360.5	0.97943079	996.3622	1017.2870
MARS	360.5	0.97943099	995.5467	1016.4542
MARS RM 1	360.6	0.97943080	996.2833	1017.2064
ARIES RM 1	361.1	0.97943460	976.9035	997.4158
ARIES	361.1	0.97943460	976.9101	997.4225

APPENDIX B.--INPUT AND OUTPUT OF PROGRAM HAVAGO

The input and output sections of program HAVAGO (version 82.03.05) are reproduced in this section. The results are based on the best available data. It should be noted that in the output section observed zenith distances have been reduced to the monumented points (marks).

STATION DATA

STATION NUMBER	GEODETIC LAT. / ASTRONOMIC LAT.	GEODETIC LON. / ASTRONOMIC LON.	GEOD.HT.	GEOD. / ASTR.	ST. ERRORS (M) ST. / ERRORS		STATION NAME X / Y	CODES Z
100	35 25 39.84438	116 53 19.22922	997.078	0.001	0.001	0.001	MARS 1963	1 1 1
100	35 25 34.50	116 53 24.88		0.40	0.40			
10	35 14 50.10577	116 47 36.73419	1064.170	0.0	0.0	0.0	VENUS 1963	0 0 0
10	35 14 47.15	116 47 36.18		0.40	0.40			
14	35 15 25.96558	116 48 1.91096	1342.570	0.0	0.0	0.0	BILL 1963	0 0 0
14	35 15 24.15	116 48 2.15		0.40	0.40			
15	35 16 5.54681	116 46 2.17273	962.970	0.0	0.0	0.0	BILLECHO	0 0 0
15	35 16 3.48	116 46 3.91		0.40	0.40			
20	35 17 58.25219	116 48 18.44430	958.320	0.0	0.0	0.0	ECHO 1963	0 0 0
20	35 17 55.05	116 48 19.03		0.40	0.40			
25	35 18 17.26948	116 48 27.41243	1065.870	0.0	0.0	0.0	CALLECHO	0 0 0
25	35 18 14.12	116 48 29.13		0.40	0.40			
30	35 17 19.06289	116 50 23.91541	1186.600	0.0	0.0	0.0	BONE	0 0 0
30	35 17 16.49	116 50 27.23		0.50	0.50			
35	35 18 42.15916	116 50 34.78512	1200.100	0.0	0.0	0.0	MIDDLE	0 0 0
35	35 18 40.25	116 50 38.00		0.40	0.40			
40	35 22 41.95571	116 50 13.62162	1186.670	0.0	0.0	0.0	CALL 1963 RM 3	0 0 0
40	35 22 40.35	116 50 20.96		0.40	0.40			
45	35 23 10.24399	116 52 58.32820	1090.870	0.0	0.0	0.0	DRACUP	0 0 0
45	35 23 9.01	116 53 5.31		0.50	0.50			
50	35 23 20.99730	116 50 51.27780	1005.560	0.0	0.0	0.0	PIONEER 1963	0 0 0
50	35 23 19.70	116 50 58.30		0.40	0.40			
55	35 23 51.65578	116 51 44.12505	1231.070	0.0	0.0	0.0	BOARD	0 0 0
55	35 23 49.46	116 51 50.87		0.40	0.40			
60	35 25 4.51969	116 55 2.13975	1113.070	0.0	0.0	0.0	JOE	0 0 0
60	35 25 1.34	116 55 6.86		0.50	0.50			
70	35 26 15.70240	116 53 14.62690	1114.070	0.0	0.0	0.0	FOOT 1963	0 0 0
70	35 26 10.57	116 53 20.02		0.40	0.40			
80	35 14 54.00733	116 47 27.95471	1049.220	0.0	0.0	0.0	MOBLAS 7115	0 0 0
80	0 0 0.0	0 0 0.0		10.00	15.00			
82	35 14 53.36141	116 47 29.15908	1051.210	0.0	0.0	0.0	MOBLAS 7115 RM1-DOP(51266)	0 0 0
82	0 0 0.0	0 0 0.0		10.00	15.00			
83	35 14 54.00841	116 47 27.95508	1053.390	0.0	0.0	0.0	MOBLAS 7115 REF PT (ML0307)	0 0 0
83	0 0 0.0	0 0 0.0		10.00	15.00			

STATION DATA

STATION NUMBER	GEODETIC LAT. / ASTRONOMIC LAT.	GEODETIC LON. / ASTRONOMIC LON.	GEOD.HT.	GEOD. ST. ERRORS (M) ASTR. ST. ERRORS		STATION NAME X Y Z	CODES
85	35 14 51.82100	116 47 38.63020	1074.470	0.0	0.0 0.0	VENUS VLBI REF. POINT	0 0 0
85	0 0 0.0	0 0 0.0		10.00	15.00		
101	35 25 29.12409	116 53 8.41089	978.344	0.0	0.0 0.0	ARIES 1976	0 0 0
101	0 0 0.0	0 0 0.0		10.00	15.00		
102	35 25 28.09509	116 53 7.95832	976.124	0.0	0.0 0.0	GOLDSTONE VAL. (MOBLAS 7085)	0 0 0
102	35 25 24.21	116 53 13.70		0.30	0.40		
103	35 25 31.52376	116 53 20.68160	977.624	0.0	0.0 0.0	MARS CONTROL	0 0 0
103	35 25 27.36	116 53 26.26		0.30	0.40		
104	35 25 33.36662	116 53 19.35292	979.107	0.0	0.0 0.0	MARS COLLIMATION	0 0 0
104	0 0 0.0	0 0 0.0		10.00	15.00		
105	35 25 33.36647	116 53 19.35285	1012.915	0.0	0.0 0.0	MARS VLBI REF. POINT	0 0 0
105	0 0 0.0	0 0 0.0		10.00	15.00		
106	35 25 28.09409	116 53 7.95832	980.124	0.0	0.0 0.0	MOBLAS 7085 REF PT (ML0106)	0 0 0
106	0 0 0.0	0 0 0.0		10.00	15.00		
107	35 25 29.13900	116 53 8.39600	978.000	0.0	0.0 0.0	ARIES 2 1978	0 0 0
107	0 0 0.0	0 0 0.0		10.00	15.00		
201	35 25 28.86173	116 53 5.72211	977.669	0.0	0.0 0.0	GOLDSTONE VAL. RM1 DOP(51212)	0 0 0
201	0 0 0.0	0 0 0.0		10.00	15.00		
202	35 25 26.13457	116 53 8.27115	973.051	0.0	0.0 0.0	GOLDSTONE VALIDATION RM 2	0 0 0
202	0 0 0.0	0 0 0.0		10.00	15.00		
203	35 25 29.29485	116 53 9.87719	978.448	0.0	0.0 0.0	GOLDSTONE VALIDATION RM 3	0 0 0
203	0 0 0.0	0 0 0.0		10.00	15.00		
84	35 14 51.82195	116 47 38.63017	1074.538	0.0	0.0 0.0	VENUS TRUNNION	0 0 0
84	0 0 0.0	0 0 0.0		10.00	15.00		
86	35 14 51.38617	116 47 27.13457	1052.045	0.0	0.0 0.0	ARIES 6-9-81 9 MTR.	0 0 0
86	0 0 0.0	0 0 0.0		10.00	15.00		
87	35 14 54.37166	116 47 28.01518	1049.306	0.0	0.0 0.0	MOBLAS STA 7115 A	0 0 0
87	0 0 0.0	0 0 0.0		10.00	15.00		
160	35 19 53.98696	116 53 12.44354	918.309	0.0	0.0 0.0	MOJAVE TRUNNION	0 0 0
160	35 19 52.72	116 53 18.80		0.50	0.50		
161	35 19 53.39265	116 53 11.35631	915.094	0.0	0.0 0.0	MOJAVE A	0 0 0
161	0 0 0.0	0 0 0.0		10.00	15.00		
162	35 19 53.96384	116 53 13.20900	914.299	0.0	0.0 0.0	MOJAVE B	0 0 0
162	0 0 0.0	0 0 0.0		10.00	15.00		

STATION DATA

STATION NUMBER	GEODETIC LAT. / ASTRONOMIC LAT.	GEODETIC LON. / ASTRONOMIC LON.	GEOD.HT.	GEOD. ST. ERRORS (M) ASTR. ST. ERRORS			STATION NAME X Y Z	CODES
163	35 19 54.99392	116 53 11.68036	915.930	0.0	0.0	0.0	MOJAVE C	0 0 0
163	0 0 0.0	0 0 0.0		10.00	15.00			
156	35 19 1.88891	116 54 28.16746	929.203	0.0	0.0	0.0	82 WFM USGS	0 0 0
156	0 0 0.0	0 0 0.0		10.00	15.00			
255	35 19 53.98696	116 53 12.44354	921.491	0.0	0.0	0.0	MOJAVE VLBI REF. POINT	0 0 0
255	0 0 0.0	0 0 0.0		10.00	15.00			
301	35 25 29.19000	116 53 8.19700	978.200	0.0	0.0	0.0	ARIES RM 1 1976 DOP(51201)	0 0 0
301	0 0 0.0	0 0 0.0		10.00	15.00			
302	35 25 28.92100	116 53 8.44200	978.200	0.0	0.0	0.0	ARIES RM 2 1976 DOP(51228)	0 0 0
302	0 0 0.0	0 0 0.0		10.00	15.00			

DIRECTIONS

	FROM	TO	LIST	OBSERVED	MM	SEC.	
1	10	15	1	0 0 0.0	1.0	1.0	
2	10	14	1	284 16 33.06	1.0	1.0	
3	10	14	2	0 0 0.0	1.0	1.0	
4	10	15	2	75 43 28.12	1.0	1.0	
5	10	14	3	0 0 0.0	1.0	1.0	
6	10	15	3	75 43 25.34	1.0	1.0	
7	10	15	4	0 0 0.0	1.0	1.0	
8	10	14	4	284 16 33.74	1.0	1.0	
9	10	14	5	0 0 0.0	1.0	1.0	
10	10	15	5	75 43 28.71	1.0	1.0	
11	10	15	6	0 0 0.0	1.0	1.0	
12	10	14	6	284 16 30.94	1.0	1.0	
13	14	20	4	0 0 0.0	1.0	1.0	
14	14	15	4	73 7 36.33	1.0	1.0	
15	14	30	4	319 15 31.46	1.0	1.0	
16	15	10	1	0 0 0.0	1.0	1.0	
17	15	14	1	22 15 21.61	1.0	1.0	
18	15	20	1	89 27 11.61	1.0	1.0	
19	15	25	1	92 5 27.89	1.0	1.0	
20	15	10	3	0 0 0.0	1.0	1.0	
21	15	14	3	22 15 21.10	1.0	1.0	
22	15	20	3	89 27 10.28	1.0	1.0	
23	15	25	3	92 5 26.89	1.0	1.0	
24	15	10	4	0 0 0.0	1.0	1.0	
25	15	14	4	22 15 21.81	1.0	1.0	
26	15	20	4	89 27 11.41	1.0	1.0	
27	15	25	4	92 5 27.72	1.0	1.0	
28	20	15	1	0 0 0.0	1.0	1.0	
29	20	14	1	39 40 34.51	1.0	1.0	
30	20	30	1	113 55 16.63	1.0	1.0	
31	20	35	1	156 13 23.10	1.0	1.0	
32	20	25	1	203 37 54.82	1.0	1.0	
33	20	15	4	0 0 0.0	1.0	1.0	
34	20	14	4	39 40 35.06	1.0	1.0	
35	20	30	4	113 55 17.22	1.0	1.0	
36	20	35	4	156 13 24.79	1.0	1.0	
37	20	25	4	203 37 53.34	1.0	1.0	
38	20	15	5	0 0 0.0	1.0	1.0	
39	20	30	5	113 55 17.94	1.0	1.0	
40	20	35	5	156 13 24.48	1.0	1.0	
41	20	25	5	203 37 52.91	1.0	1.0	
42	25	15	4	0 0 0.0	1.0	1.0	
-42	25	20	4	20 59 30.96	1.0	1.0	*
43	25	14	4	35 10 0.39	1.0	1.0	
44	25	55	4	196 24 39.14	1.0	1.0	
45	25	40	4	203 56 10.18	1.0	1.0	
46	30	35	1	0 0 0.0	1.0	1.0	
47	30	20	1	75 15 22.94	1.0	1.0	
48	30	14	1	140 16 9.41	1.0	1.0	
49	30	35	2	0 0 0.0	1.0	1.0	
50	30	20	2	75 15 19.42	1.0	1.0	

DIRECTIONS

	FROM	TO	LIST	OBSERVED	MM	SEC.
51	30	14	2	140 16 9.01	1.0	1.0
52	30	35	3	0 0 0.0	1.0	1.0
53	30	20	3	75 15 19.41	1.0	1.0
54	30	14	3	140 16 13.00	1.0	1.0
55	35	45	1	0 0 0.0	1.0	1.0
56	35	40	1	27 48 37.16	1.0	1.0
57	35	25	1	127 4 25.35	1.0	1.0
58	35	20	1	135 6 42.63	1.0	1.0
59	35	30	1	197 33 14.34	1.0	1.0
60	35	45	4	0 0 0.0	1.0	1.0
61	35	40	4	27 48 37.20	1.0	1.0
62	35	25	4	127 4 23.71	1.0	1.0
63	35	20	4	135 6 41.98	1.0	1.0
64	35	30	4	197 33 12.06	1.0	1.0
65	35	45	5	0 0 0.0	1.0	1.0
66	35	25	5	127 4 24.66	1.0	1.0
67	35	30	5	197 33 13.34	1.0	1.0
68	40	25	2	0 0 0.0	1.0	1.0
69	40	35	2	22 20 52.47	1.0	1.0
70	40	50	2	159 54 24.80	1.0	1.0
71	40	25	4	0 0 0.0	1.0	1.0
72	40	35	4	22 20 50.91	1.0	1.0
73	40	50	4	159 54 23.98	1.0	1.0
74	40	25	5	0 0 0.0	1.0	1.0
75	40	35	5	22 20 50.46	1.0	1.0
76	40	50	5	159 54 23.39	1.0	1.0
77	45	60	1	0 0 0.0	1.0	1.0
78	45	55	1	97 17 10.62	1.0	1.0
79	45	40	1	143 23 51.74	1.0	1.0
80	45	35	1	197 52 4.58	1.0	1.0
81	45	60	3	0 0 0.0	1.0	1.0
82	45	55	3	97 17 9.49	1.0	1.0
83	45	40	3	143 23 51.14	1.0	1.0
84	45	35	3	197 52 4.75	1.0	1.0
85	50	40	1	0 0 0.0	1.0	1.0
86	50	55	1	163 37 43.17	1.0	1.0
87	50	40	2	0 0 0.0	1.0	1.0
88	50	55	2	163 37 43.73	1.0	1.0
89	50	55	3	0 0 0.0	1.0	1.0
90	50	40	3	196 22 16.36	1.0	1.0
91	55	60	1	0 0 0.0	1.0	1.0
92	55	100	1	30 2 58.26	1.0	1.0
93	55	70	1	38 34 20.86	1.0	1.0
94	55	50	1	191 5 37.01	1.0	1.0
95	55	40	1	199 1 0.47	1.0	1.0
96	55	25	1	220 2 2.65	1.0	1.0
97	55	45	1	301 30 48.48	1.0	1.0
98	55	60	4	0 0 0.0	1.0	1.0
99	55	100	4	30 2 57.77	1.0	1.0
100	55	70	4	38 34 21.55	1.0	1.0

DIRECTIONS

	FROM	TO	LIST	OBSERVED	MM	SEC.
101	55	50	4	191 5 37.71	1.0	1.0
102	55	40	4	199 0 58.89	1.0	1.0
103	55	25	4	220 2 0.39	1.0	1.0
104	55	45	4	301 30 50.78	1.0	1.0
105	55	60	5	0 0 0.0	1.0	1.0
106	55	100	5	30 2 57.23	1.0	1.0
107	55	40	5	199 0 59.88	1.0	1.0
108	55	25	5	220 2 1.17	1.0	1.0
109	55	45	5	301 30 50.61	1.0	1.0
110	60	70	1	0 0 0.0	1.0	1.0
111	60	100	1	16 13 6.48	1.0	1.0
112	60	55	1	63 9 43.40	1.0	1.0
113	60	45	1	87 23 24.97	1.0	1.0
114	60	70	4	0 0 0.0	1.0	1.0
115	60	100	4	16 13 5.80	1.0	1.0
116	60	55	4	63 9 42.40	1.0	1.0
117	60	45	4	87 23 23.25	1.0	1.0
118	100	55	1	0 0 0.0	1.0	1.0
119	100	60	1	103 0 25.10	1.0	1.0
120	100	70	1	221 44 50.50	1.0	1.0
121	100	55	3	0 0 0.0	1.0	1.0
122	100	60	3	103 0 24.69	1.0	1.0
123	100	70	3	221 44 48.51	1.0	1.0
124	100	70	4	0 0 0.0	1.0	1.0
125	100	55	4	138 15 7.61	1.0	1.0
126	100	60	4	241 15 36.09	1.0	1.0
127	70	40	5	0 0 0.0	1.0	1.0
128	70	55	5	7 31 24.30	1.0	1.0
129	70	60	5	85 47 20.66	1.0	1.0
130	101	103	1	0 0 0.0	1.0	1.0
131	101	100	1	37 0 16.73	1.0	1.0
132	101	102	1	236 45 44.28	1.0	1.0
133	102	103	1	0 0 0.0	1.0	1.0
134	102	100	1	33 38 13.65	1.0	1.0
135	102	101	1	51 58 37.00	1.0	1.0
136	102	103	2	0 0 0.0	1.0	1.0
137	102	100	2	33 38 13.19	1.0	1.0
138	102	101	2	51 58 36.29	1.0	1.0
139	102	103	3	0 0 0.0	1.0	1.0
140	102	104	3	11 15 6.31	1.0	1.0
141	102	100	3	33 38 13.14	1.0	1.0
142	103	100	1	0 0 0.0	1.0	1.0
143	103	101	1	95 18 28.91	1.0	1.0
144	103	102	1	100 5 35.84	1.0	1.0
145	104	102	1	0 0 0.0	1.0	1.0
146	104	103	1	91 4 28.49	1.0	1.0
147	103	100	2	0 0 0.0	1.0	1.0
148	103	104	2	22 25 16.21	1.0	1.0
149	103	102	2	100 5 38.84	1.0	1.0
150	102	103	4	0 0 0.0	1.0	1.0

DIRECTIONS

	FROM	TO	LIST	OBSERVED	MM	SEC.			
151	102	203	4	19 7 45.90	1.0	1.0			
152	102	201	4	139 3 23.40	1.0	1.0			
153	102	202	4	259 14 12.90	1.0	1.0			
154	100	70	5	0 0 0.0	1.0	1.0	G-10741	1/31/76	
155	100	301	5	133 43 2.20	1.0	1.0	G-10741	1/31/76	
156	100	101	5	134 26 35.82	1.0	1.0	G-10741	1/31/76	
157	100	70	6	0 0 0.0	1.0	1.0	G-10741	1/31/76	
158	100	101	6	134 26 33.99	1.0	1.0	G-10741	1/31/76	
159	101	100	2	0 0 0.0	1.0	1.0	G-10741	1/31/76	
160	101	70	2	33 19 25.88	1.0	1.0	G-10741	1/31/76	
161	101	100	3	0 0 0.0	2.0	4.0	G-10741	1/31/76	
162	101	301	3	108 48 37.10	2.0	4.0	G-10741	1/31/76	
163	101	302	3	226 56 43.10	2.0	4.0	G-10741	1/31/76	
164	86	10	1	0 0 0.0	1.0	1.0	810616	123	8
165	86	84	1	11 52 56.34	1.0	1.0	810616	123	8
166	86	82	1	59 10 18.48	1.0	1.0	810616	123	8
167	86	80	1	84 50 48.34	1.0	1.0	810616	123	8
168	86	87	1	85 37 9.26	1.0	1.0	810616	123	8
169	82	15	1	0 0 0.0	1.0	1.0	810622	123	8
170	82	80	1	12 10 41.91	1.0	1.0	810622	123	8
171	82	86	1	95 16 11.36	1.0	1.0	810622	123	8
172	82	10	1	197 41 4.34	1.0	1.0	810622	123	8
173	82	87	1	358 14 25.81	1.0	1.0	810622	123	8
174	80	86	1	0 0 0.0	1.0	1.0	810615	123	8
175	80	82	1	71 13 50.18	1.0	1.0	810615	123	8
176	80	10	1	75 56 50.04	1.0	1.0	810615	123	8
177	80	84	1	90 22 49.15	1.0	1.0	810615	123	8
178	80	87	1	186 28 2.45	1.0	1.0	810615	123	8
179	10	15	7	0 0 0.0	1.0	1.0	810619	123	16
180	10	87	7	13 23 55.46	1.0	1.0	810619	123	8
181	10	80	7	15 45 46.21	1.0	1.0	810619	123	8
182	10	82	7	16 33 20.08	1.0	1.0	810619	123	8
183	10	86	7	34 58 6.54	1.0	1.0	810619	123	8
184	10	84	7	272 1 52.86	1.0	1.0	810619	123	8
185	10	14	7	284 16 33.22	1.0	1.0	810619	123	16
186	82	15	2	0 0 0.0	1.0	1.0	810623	123	8
187	82	86	2	95 16 10.20	1.0	1.0	810623	123	8
188	82	84	2	214 7 40.99	1.0	1.0	810623	123	8
189	87	15	1	0 0 0.0	1.0	1.0	810623	123	8
190	87	86	1	121 41 34.12	1.0	1.0	810623	123	8
191	87	80	1	127 23 33.69	1.0	1.0	810623	123	8
192	87	82	1	178 13 1.06	1.0	1.0	810623	123	8
193	87	10	1	194 30 9.89	1.0	1.0	810623	123	8
194	87	84	1	208 59 45.33	1.0	1.0	810623	123	8
195	162	60	1	0 0 0.0	1.0	1.0	810702	123	8
196	162	163	1	66 35 25.20	1.0	1.0	810702	123	8
197	162	161	1	126 38 8.98	1.0	1.0	810702	123	8
198	162	163	2	0 0 0.0	1.0	1.0	810703	123	8
199	162	160	2	37 19 22.69	1.0	1.0	810703	123	8
200	162	161	2	60 2 40.05	1.0	1.0	810703	123	8

DIRECTIONS

	FROM	TO	LIST	OBSERVED	MM	SEC.			
201	163	60	1	0 0 0.0	1.0	1.0	810702	123	8
202	163	161	1	186 52 0.81	1.0	1.0	810702	123	8
203	163	160	1	228 7 42.50	1.0	1.0	810702	123	8
204	163	156	1	246 1 18.42	1.0	1.0	810702	123	8
205	163	162	1	246 51 17.04	1.0	1.0	810702	123	8
206	160	162	1	0 0 0.0	1.0	1.0	810703	123	9
207	160	163	1	123 56 59.34	1.0	1.0	810703	123	9
208	160	161	1	215 48 9.83	1.0	1.0	810703	123	7
209	60	100	5	0 0 0.0	1.0	1.0	810630	123	8
210	60	45	5	71 10 21.54	1.0	1.0	810630	123	8
211	60	163	5	96 27 24.08	1.0	1.0	810630	123	8
212	60	161	5	96 29 28.09	1.0	1.0	810630	123	8
213	60	162	5	96 43 15.71	1.0	1.0	810630	123	8
214	161	60	1	0 0 0.0	1.0	1.0	810703	123	8
215	161	163	1	6 49 57.70	1.0	1.0	810703	123	8
216	161	162	1	306 51 55.54	1.0	1.0	810703	123	8
217	161	160	1	319 56 56.36	1.0	1.0	810703	123	8
218	201	100	1	0 0 0.0	2.0	4.0	3/81 T-3 4 POS.		
219	201	102	1	292 28 2.90	2.0	4.0	3/81 T-3 4 POS.		
220	201	302	1	316 43 47.70	2.0	4.0	3/81 T-3 4 POS.		
221	201	101	1	322 0 5.80	2.0	4.0	3/81 T-3 4 POS.		
222	201	301	1	324 25 12.50	2.0	4.0	3/81 T-3 4 POS.		
223	102	100	5	0 0 0.0	2.0	4.0	3/81 T-3 4 POS.		
224	102	302	5	12 29 15.90	2.0	4.0	3/81 T-3 4 POS.		
225	102	101	5	18 20 26.10	2.0	4.0	3/81 T-3 4 POS.		
226	102	301	5	28 0 58.00	2.0	4.0	3/81 T-3 4 POS.		
227	102	201	5	105 25 16.60	2.0	4.0	3/81 T-3 4 POS.		
228	302	100	1	0 0 0.0	2.0	4.0	3/81 T-3 4 POS.		
229	302	101	1	46 19 11.80	2.0	4.0	3/81 T-3 4 POS.		
230	302	301	1	75 42 10.40	2.0	4.0	3/81 T-3 4 POS.		
231	302	201	1	130 29 27.80	2.0	4.0	3/81 T-3 4 POS.		
232	302	102	1	193 17 43.10	2.0	4.0	3/81 T-3 4 POS.		
233	301	100	1	0 0 0.0	2.0	4.0	3/81 T-3 4 POS.		
234	301	201	1	139 30 47.70	2.0	4.0	3/81 T-3 4 POS.		
235	301	102	1	210 9 14.30	2.0	4.0	3/81 T-3 4 POS.		
236	301	302	1	257 2 11.00	2.0	4.0	3/81 T-3 4 POS.		
237	301	101	1	289 30 57.40	2.0	4.0	3/81 T-3 4 POS.		
238	301	100	2	0 0 0.0	2.0	4.0	G-10741 1/31/76		
239	301	101	2	289 31 40.60	2.0	4.0	G-10741 1/31/76		
240	101	100	2	0 0 0.0	2.0	4.0	3/81 T-3 4 POS.		
241	101	301	2	108 47 44.80	2.0	4.0	3/81 T-3 4 POS.		
242	101	201	2	136 22 7.50	2.0	4.0	3/81 T-3 4 POS.		
243	101	102	2	199 45 26.20	2.0	4.0	3/81 T-3 4 POS.		
244	101	302	2	226 55 23.30	2.0	4.0	3/81 T-3 4 POS.		

ASTRONOMIC AZIMUTHS

	FROM	TO	OBSERVED	MM	SEC.	
245	14	10	150 3 33.19	1.0	1.5	790517 DAB 74722
246	14	10	150 3 37.65	1.0	1.5	790529 GEN 41152
247	14	15	68 2 21.57	1.0	1.5	790517 DAB 74722
248	14	15	68 2 25.76	1.0	1.5	790529 GEN 41152
249	14	20	354 54 44.04	1.0	1.5	
250	14	20	354 54 48.80	1.0	1.5	
251	14	20	354 54 48.11	1.0	1.5	
252	14	25	353 2 28.85	1.0	1.5	790517 DAB 74722
253	14	25	353 2 32.92	1.0	1.5	790529 GEN 41152
254	14	25	353 2 31.17	1.0	1.5	790608 CFS 74724
255	14	30	314 10 16.92	1.0	1.5	790517 DAB 74722
256	14	30	314 10 19.30	1.0	1.5	790529 GEN 41152
257	14	40	346 6 7.82	1.0	1.5	790517 DAB 74722
258	14	40	346 6 11.54	1.0	1.5	790529 GEN 41152
259	25	14	173 2 17.22	1.0	1.5	790521 GEN 74724
260	25	14	173 2 14.37	1.0	1.5	790514 DAB 18593
261	25	15	137 52 16.24	1.0	1.5	
262	25	15	137 52 14.35	1.0	1.5	
263	25	20	158 51 52.62	1.0	1.5	790521 GEN 74724
264	25	35	283 25 5.05	1.0	1.5	790521 GEN 74724
265	25	40	341 48 26.95	1.0	1.5	790521 GEN 74724
266	25	55	334 16 55.45	1.0	1.5	790521 GEN 74724
267	40	14	166 4 52.39	1.0	1.5	790522 DAB 74722
268	40	14	166 4 51.37	1.0	1.5	790524 WRO 74724
269	40	25	161 47 22.05	1.0	1.5	
270	40	25	161 47 21.03	1.0	1.5	
271	40	35	184 8 14.43	1.0	1.5	790522 DAB 74722
272	40	35	184 8 12.78	1.0	1.5	790524 WRO 74724
273	40	45	281 51 21.61	1.0	1.5	790522 DAB 74722
274	40	45	281 51 20.05	1.0	1.5	790524 WRO 74724
275	40	55	313 14 48.78	1.0	1.5	790522 DAB 74722
276	40	55	313 14 48.19	1.0	1.5	790524 WRO 74724
277	40	70	325 16 44.72	1.0	1.5	790522 DAB 74722
278	40	70	325 16 43.94	1.0	1.5	790524 WRO 74724
279	70	40	145 15 1.37	1.0	1.5	
280	70	40	145 14 59.47	1.0	1.5	
281	70	55	152 46 27.72	1.0	1.5	790430 GEN 53089
282	70	55	152 46 24.15	1.0	1.5	790516 WRO 74722
283	70	60	231 2 24.35	1.0	1.5	790430 GEN 53069
284	70	60	231 2 20.31	1.0	1.5	790516 WRO 74722
285	70	100	185 59 54.07	1.0	1.5	790430 GEN 53089
286	70	100	185 59 51.77	1.0	1.5	790516 WRO 74722
287	100	101	140 26 20.80	1.0	1.5	
288	100	101	140 26 23.18	1.0	1.5	
289	100	101	140 26 23.06	1.0	1.5	
290	100	101	140 26 25.32	1.0	1.5	
291	100	102	141 51 28.05	1.0	1.5	
292	100	102	141 51 29.17	1.0	1.5	
293	100	102	141 51 28.32	1.0	1.5	
294	100	102	141 51 30.96	1.0	1.5	

ASTRONOMIC AZIMUTHS

	FROM	TO	OBSERVED	MM	SEC.	
295	100	103	188 7 36.51	1.0	1.5	
296	100	103	188 7 36.45	1.0	1.5	
297	100	103	188 7 36.22	1.0	1.5	
298	100	103	188 7 37.99	1.0	1.5	
299	102	100	321 51 39.32	1.0	1.5	
-299	102	100	321 51 40.47	0.0	0.0	*
300	102	100	321 51 37.08	1.0	1.5	
301	102	100	321 51 34.22	1.0	1.5	
302	102	103	288 13 22.06	1.0	1.5	
303	102	103	288 13 22.36	1.0	1.5	
304	102	103	288 13 18.07	1.0	1.5	
305	102	103	288 13 20.97	1.0	1.5	
306	103	100	8 7 32.02	1.0	1.5	
307	103	100	8 7 33.35	1.0	1.5	
308	103	100	8 7 31.41	1.0	1.5	
309	103	100	8 7 33.55	1.0	1.5	
310	103	101	103 26 5.34	1.0	1.5	
311	103	102	108 13 13.94	1.0	1.5	
312	103	102	108 13 13.98	1.0	1.5	
313	103	102	108 13 12.95	1.0	1.5	
314	103	102	108 13 13.08	1.0	1.5	

RECIPROCAL VERTICAL ANGLES

	FROM	TO	OBSERVED	MM	SEC.	H.I.	H.T.	OBSERVED	MM	SEC.	H.I.	H.T.
316	10	14	77 43 16.20	5.0	3.5	1.672	2.047	102 20 33.90	5.0	3.0	2.047	0.403
318	10	15	91 45 11.90	5.0	3.5	1.672	2.465	88 16 44.50	5.0	3.5	2.465	0.764
320	10	14	77 43 29.60	5.0	5.0	1.666	1.873	102 20 33.20	5.0	3.5	2.048	0.406
322	10	15	91 46 38.80	5.0	3.5	1.666	0.985	88 16 42.30	5.0	5.0	2.467	1.150
324	14	15	96 39 54.80	5.0	3.5	2.048	0.985	83 23 15.00	5.0	3.5	2.470	1.873
326	15	20	90 2 39.50	5.0	3.5	2.470	4.451	90 0 9.70	5.0	3.5	5.112	1.899
328	14	30	91 49 39.80	5.0	3.5	2.044	-0.020	88 14 4.70	5.0	3.5	1.731	1.856
330	20	30	86 13 29.40	5.0	3.5	5.111	1.360	93 48 33.00	5.0	3.5	1.731	4.896
332	30	35	89 32 45.40	5.0	3.5	1.731	8.065	90 29 6.70	5.0	3.5	8.297	1.521
334	14	20	94 39 0.70	5.0	3.5	2.068	4.458	85 23 40.40	5.0	3.0	4.979	1.870
336	20	25	80 33 25.70	5.0	3.5	4.979	1.994	99 30 4.40	5.0	3.5	2.023	4.344
338	20	35	86 12 41.80	5.0	3.5	4.979	8.074	93 49 48.00	5.0	3.5	8.269	4.450
340	25	35	87 31 13.10	5.0	3.0	2.048	10.866	92 27 57.90	5.0	3.5	8.219	1.851
342	35	40	90 10 56.00	5.0	3.5	8.219	3.008	89 51 28.60	5.0	3.5	3.494	10.986
344	35	45	90 46 32.00	5.0	3.5	8.219	1.839	89 16 46.80	5.0	3.5	2.031	10.836
346	55	100	93 23 5.70	5.0	3.5	8.455	1.280	86 37 7.40	5.0	3.5	1.676	10.929
348	60	100	92 22 37.20	5.0	3.5	1.585	1.756	87 38 29.60	5.0	3.5	1.676	1.371
350	70	100	96 4 19.60	5.0	3.0	1.737	1.304	83 58 3.00	5.0	3.5	1.676	1.554
352	45	60	89 44 51.60	5.0	3.5	2.031	1.016	90 17 51.30	5.0	3.5	1.543	1.848
354	55	60	91 19 47.20	5.0	3.5	8.402	1.161	88 41 23.00	5.0	3.5	1.543	11.105
356	60	70	90 0 0.80	5.0	3.5	1.543	1.536	90 3 1.60	5.0	3.5	1.736	0.412
358	25	55	89 10 8.40	5.0	3.5	2.035	10.929	90 54 38.70	5.0	3.5	8.402	1.820
360	40	55	89 2 38.00	5.0	3.5	3.495	11.083	90 56 10.00	5.0	3.5	8.402	3.285
362	45	55	86 13 19.20	5.0	3.5	2.041	10.928	93 44 12.40	5.0	3.5	8.402	1.836
364	55	70	91 26 22.50	5.0	3.5	8.402	1.537	88 34 8.50	5.0	3.5	1.736	10.928
366	55	100	93 22 53.00	5.0	2.5	8.402	1.496	86 36 53.40	5.0	2.5	1.696	11.086
368	40	50	96 49 23.80	5.0	3.5	3.495	1.245	83 12 42.40	5.0	3.5	1.628	3.295
370	50	55	81 47 32.30	5.0	3.5	1.628	11.177	98 8 31.70	5.0	3.5	8.406	1.249
372	14	40	90 42 5.80	5.0	3.5	2.062	1.530	89 25 0.60	5.0	3.5	3.493	1.862
374	40	25	90 51 3.90	5.0	3.5	3.493	1.762	89 13 50.80	5.0	3.5	2.024	1.685
376	40	55	89 2 36.60	5.0	3.5	3.493	11.175	90 58 0.80	5.0	3.5	8.404	1.530
378	40	70	90 33 23.60	5.0	3.5	3.493	1.529	89 31 16.80	5.0	3.5	1.746	1.530
380	14	25	93 0 9.80	5.0	3.5	2.052	1.620	87 3 17.20	5.0	3.5	2.010	0.918
382	40	25	90 51 2.40	5.0	3.5	3.524	1.611	89 13 2.80	5.0	3.5	2.010	3.313
384	25	55	89 9 58.00	5.0	3.5	2.010	11.172	90 54 35.40	5.0	3.5	8.404	1.455
386	14	40	90 42 10.20	5.0	3.5	2.052	1.540	89 25 1.30	5.0	3.5	3.492	1.860
388	40	45	91 19 46.80	5.0	3.5	3.492	1.823	88 43 52.80	5.0	3.5	2.028	1.713
390	40	70	90 33 24.80	5.0	3.5	3.492	1.537	89 31 10.00	5.0	3.5	1.747	1.540
392	40	70	90 33 33.60	5.0	3.5	3.501	1.533	89 30 31.00	5.0	3.5	1.735	3.303
394	55	70	91 26 36.60	5.0	3.0	8.407	1.124	88 34 13.40	5.0	3.5	1.735	11.087
396	14	25	93 0 10.80	5.0	3.5	2.058	1.625	87 2 43.60	5.0	3.5	2.013	1.842
398	15	25	88 57 14.40	5.0	3.5	2.478	1.277	91 5 43.60	5.0	3.5	2.013	2.266

GROUPED VERTICAL ANGLES

	FROM	TO	LIST	OBSERVED	MM	SEC.	H.I.	H.T.	K1	K2			
399	15	25	2	88 57 15.70	5.0	5.0	2.470	0.522	0.0	0.0	C1626790413		
400	15	25	2	88 57 18.60	5.0	5.0	2.470	0.522	0.0	0.0	C1744790413		
-400	25	15	2	90 50 19.60	0.0	0.0	2.033	1.389	0.0	0.0	C1623790413		*
-400	25	15	2	90 50 17.30	0.0	0.0	2.033	1.389	0.0	0.0	C1740790413		*
401	80	10	2	86 37 54.40	5.0	5.0	1.782	1.684	0.0	0.0	8106151705	123 8	
402	80	84	2	85 5 43.80	5.0	5.0	1.782	1.317	0.0	0.0	8106151710	123 8	
403	80	87	2	90 10 1.40	5.0	5.0	1.782	1.630	0.0	0.0	8106151715	123 9	
404	80	86	2	88 9 46.90	5.0	5.0	1.782	1.601	0.0	0.0	8106151655	123 9	
405	80	82	2	86 41 31.50	5.0	5.0	1.782	1.728	0.0	0.0	8106151700	123 8	
406	86	10	1	87 10 3.90	5.0	5.0	1.637	1.685	0.0	0.0	810616 30	123 8	
407	86	84	1	85 50 14.40	5.0	5.0	1.637	1.315	0.0	0.0	810616 20	123 8	
408	86	82	1	90 26 14.00	5.0	5.0	1.637	1.728	0.0	0.0	810616 35	123 8	
409	86	80	1	91 53 14.30	5.0	5.0	1.637	1.746	0.0	0.0	810616 40	123 7	
410	86	87	1	91 39 34.70	5.0	5.0	1.637	1.631	0.0	0.0	810616 45	123 8	
411	10	15	2	91 45 16.80	5.0	5.0	1.722	2.274	0.0	0.0	810619 238	123 8	
412	10	87	2	93 19 45.80	5.0	5.0	1.722	1.635	0.0	0.0	810619 242	123	
413	10	80	2	93 23 13.40	5.0	5.0	1.722	1.746	0.0	0.0	810619 246	123 8	
414	10	82	2	93 23 17.40	5.0	5.0	1.722	1.728	0.0	0.0	810619 250	123 8	
415	10	86	2	92 50 50.10	5.0	5.0	1.722	1.601	0.0	0.0	810619 254	123 8	
416	10	84	2	82 49 53.30	5.0	5.0	1.722	1.318	0.0	0.0	810619 258	123	
417	10	14	2	77 43 18.30	5.0	5.0	1.722	2.038	0.0	0.0	810619 302	123 8	
418	82	15	1	91 38 14.90	5.0	5.0	1.760	2.273	0.0	0.0	8106222020	123 7	
419	82	80	1	93 25 24.20	5.0	5.0	1.760	1.747	0.0	0.0	8106222025	123 8	
420	82	86	1	89 36 54.80	5.0	5.0	1.760	1.601	0.0	0.0	8106222030	123 8	
421	82	10	1	86 37 59.00	5.0	5.0	1.760	1.685	0.0	0.0	8106222035	123 8	
422	82	87	1	92 55 46.60	5.0	5.0	1.760	1.631	0.0	0.0	8106222040	123 8	
423	87	15	2	91 37 18.40	5.0	5.0	1.668	2.268	0.0	0.0	8106231930	123 8	
424	87	86	2	88 23 1.20	5.0	5.0	1.668	1.600	0.0	0.0	8106231905	123 8	
425	87	80	2	90 12 21.90	5.0	5.0	1.668	1.745	0.0	0.0	8106231910	123 8	
426	87	82	2	87 10 11.20	5.0	5.0	1.668	1.726	0.0	0.0	8106231915	123 8	
427	87	10	2	86 41 13.60	5.0	5.0	1.668	1.684	0.0	0.0	8106231920	123 8	
428	87	84	2	85 7 11.70	5.0	5.0	1.668	1.317	0.0	0.0	8106231925	123 8	
429	15	10	2	88 16 41.80	5.0	5.0	2.463	1.450	0.0	0.0	8106231040	142 3	
430	82	84	2	84 54 42.90	5.0	5.0	1.764	1.317	0.0	0.0	8106231730	123 8	
431	60	100	1	92 23 12.20	5.0	5.0	1.544	1.583	0.0	0.0	8106301435	123 3	
432	60	45	1	90 17 45.60	5.0	5.0	1.544	1.855	0.0	0.0	8106301437	123 3	
433	60	163	1	91 11 6.20	5.0	5.0	1.544	1.442	0.0	0.0	8106301830	123 8	
434	60	161	1	91 10 42.90	5.0	5.0	1.544	1.449	0.0	0.0	8106301835	123 8	
435	60	162	1	91 11 12.40	5.0	5.0	1.544	1.418	0.0	0.0	8106301840	123 8	
436	162	60	2	88 53 38.60	5.0	5.0	1.628	1.393	0.0	0.0	8107021540	123 8	
437	162	163	2	89 19 43.60	5.0	5.0	1.628	1.588	0.0	0.0	8107021545	123 9	
438	162	60	2	88 53 41.50	5.0	5.0	1.628	1.393	0.0	0.0	8107021626	123 3	
439	162	160	2	80 22 3.10	5.0	5.0	1.628	0.905	0.0	0.0	8107021550	123 10	
440	162	161	2	89 8 24.00	5.0	5.0	1.628	1.588	0.0	0.0	8107021555	123 8	
441	163	160	2	85 50 45.20	5.0	5.0	1.628	0.905	0.0	0.0	8107022215	123 8	
442	163	156	2	89 41 21.90	5.0	5.0	1.628	1.670	0.0	0.0	8107022220	123 8	
-442	163	60	2	88 53 21.10	0.0	0.0	1.628	1.393	0.0	0.0	8107022225	123 7	*
443	163	161	2	89 51 23.20	5.0	5.0	1.628	1.588	0.0	0.0	8107022230	123 9	
444	163	162	2	90 46 3.30	5.0	5.0	1.628	1.588	0.0	0.0	8107022235	123 10	
445	163	156	2	89 41 6.70	5.0	5.0	1.628	1.670	0.0	0.0	8107022359	123 3	
446	161	60	1	88 54 6.80	5.0	5.0	1.632	1.393	0.0	0.0	8107031825	123 8	
447	161	163	1	90 14 21.40	5.0	5.0	1.632	1.588	0.0	0.0	8107031830	123 8	
448	161	162	1	90 57 44.40	5.0	5.0	1.632	1.588	0.0	0.0	8107031835	123 8	

GROUPED VERTICAL ANGLES

	FROM	TO	LIST	OBSERVED	MM	SEC.	H.I.	H.T.	K1	K2		
449	161	160	1	85 41 22.50	5.0	5.0	1.632	0.905	0.0	0.0	8107031840 123 8	
450	162	156	1	89 39 41.90	5.0	5.0	1.628	1.670	0.0	0.0	810703 25 123 3	
451	160	162	1	99 43 15.40	5.0	5.0	0.892	1.588	0.0	0.0	8107031947 123 3	
452	160	163	1	94 12 1.40	5.0	5.0	0.892	1.588	0.0	0.0	8107031952 123 3	
453	160	161	1	94 21 54.10	5.0	5.0	0.892	1.588	0.0	0.0	8107031958 123 3	
454	100	101	2	92 32 39.90	5.0	1.0	1.723	1.696	0.0	0.0		
455	100	103	2	94 6 11.10	5.0	1.0	1.723	2.885	0.0	0.0		
456	100	101	2	92 33 46.60	5.0	1.0	1.723	1.564	0.0	0.0		
457	100	102	2	92 19 0.80	5.0	1.0	1.723	3.331	0.0	0.0		
458	100	101	2	92 33 46.20	5.0	1.0	1.714	1.564	0.0	0.0		
459	100	102	2	92 19 26.40	5.0	1.0	1.714	3.287	0.0	0.0		
460	100	103	2	94 6 15.40	5.0	1.0	1.714	2.875	0.0	0.0		
-460	101	103	2	89 55 56.70	5.0	1.0	1.826	2.875	0.0	0.0		*
-460	101	100	2	87 30 18.10	5.0	1.0	1.826	1.451	0.0	0.0		*
461	102	100	2	87 44 18.80	5.0	1.0	3.534	1.484	0.0	0.0		
462	102	103	2	90 1 47.80	5.0	1.0	3.534	2.866	0.0	0.0		
463	102	100	2	87 44 30.40	5.0	1.0	3.545	1.449	0.0	0.0		
464	102	103	2	90 1 36.20	5.0	1.0	3.545	2.875	0.0	0.0		
465	102	100	2	87 44 37.50	5.0	1.0	3.545	1.443	0.0	0.0		
466	102	103	2	90 1 44.50	5.0	1.0	3.545	2.875	0.0	0.0		
467	102	100	2	87 44 42.80	5.0	1.0	3.548	1.443	0.0	0.0		
468	102	103	2	90 1 48.60	5.0	1.0	3.548	2.875	0.0	0.0		
469	102	104	2	90 3 12.60	5.0	1.0	3.548	0.256	0.0	0.0		
470	103	100	2	86 0 32.00	5.0	1.0	3.129	1.470	0.0	0.0		
471	103	102	2	90 3 41.80	5.0	1.0	3.129	3.271	0.0	0.0		
472	103	100	2	86 0 52.20	5.0	1.0	3.142	1.449	0.0	0.0		
473	103	101	2	90 9 15.90	5.0	1.0	3.142	1.564	0.0	0.0		
474	103	102	2	90 3 35.50	5.0	1.0	3.142	3.288	0.0	0.0		
475	103	100	2	86 0 59.20	5.0	1.0	3.149	1.445	0.0	0.0		
476	103	101	2	90 9 20.60	5.0	1.0	3.149	1.566	0.0	0.0		
477	103	102	2	90 3 41.60	5.0	1.0	3.149	3.289	0.0	0.0		
478	103	100	2	86 1 2.70	5.0	1.0	3.149	1.443	0.0	0.0		
479	103	102	2	90 3 50.10	5.0	1.0	3.149	3.278	0.0	0.0		
480	103	104	2	90 21 6.50	5.0	1.0	3.149	0.256	0.0	0.0		
481	104	102	2	89 59 47.90	5.0	1.0	0.275	3.287	0.0	0.0		
482	104	103	2	89 54 2.70	5.0	1.0	0.275	2.875	0.0	0.0		

ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	MM	PPM	H.I.	H.T.	
483	10	14	1305.4310	10.0	1.00	1.587	1.998	102979 1 513 80117
484	10	14	1305.4390	10.0	1.00	1.582	1.998	103979 21 507 225
485	10	15	3336.6190	10.0	1.00	1.582	2.355	103979 22 507 225
486	10	15	3336.6300	10.0	1.00	1.582	2.355	103979 27 507 225
487	15	14	3285.7280	10.0	1.00	2.384	1.998	103979 9 513 80117
488	20	14	4727.8840	10.0	1.00	4.894	1.937	109979 43 513 80117
489	25	14	5326.5220	10.0	1.00	1.932	1.948	130979 144 513 80117
490	25	14	5326.5320	10.0	1.00	1.932	1.948	130979 145 513 80117
491	30	14	5006.2990	10.0	1.00	1.643	1.935	108979 31 513 80117
492	40	14	13845.5630	10.0	1.00	3.412	1.948	135979 157 507 225
493	40	14	13845.5610	10.0	1.00	3.413	1.907	129979 131 513 80117
494	15	20	4891.8080	10.0	1.00	2.384	5.005	103979 10 513 80117
495	15	25	5474.3510	10.0	1.00	2.384	1.918	103979 11 513 80117
496	25	15	5474.3520	10.0	1.00	1.927	2.226	137979 177 507 225
497	20	25	637.0800	10.0	1.00	4.894	1.996	109979 45 513 80117
498	20	25	637.0800	5.0	10.00	4.911	2.004	109979 55 661 1037
499	30	20	3400.5950	10.0	1.00	1.643	4.893	108979 30 513 80117
500	20	35	3709.5380	10.0	1.00	4.894	8.074	109979 44 513 80117
501	35	25	3311.6140	10.0	1.00	8.125	1.830	110979 60 513 80117
502	40	25	8589.0460	10.0	1.00	3.413	1.919	129979 130 513 80117
503	25	40	8589.0460	10.0	1.00	1.932	3.384	130979 147 513 80117
504	55	25	11442.9790	10.0	1.00	8.320	1.915	123979 101 513 80117
505	55	25	11442.9750	10.0	1.00	8.320	1.915	123979 114 513 80117
506	30	35	2576.1040	10.0	1.00	1.643	8.075	108979 29 513 80117
507	35	40	7410.6820	10.0	1.00	8.125	3.359	110979 59 513 80117
508	35	45	9024.2040	10.0	1.00	8.125	1.930	110979 58 513 80117
509	40	45	4249.4860	10.0	1.00	3.412	1.815	135979 158 507 225
510	50	40	1544.4310	5.0	10.00	1.561	3.570	124979 124 661 1037
511	55	40	3136.5000	10.0	1.00	8.320	3.390	123979 100 513 80117
512	40	55	3136.5090	10.0	1.00	3.413	8.185	129979 132 513 80117
513	40	70	8017.4330	10.0	1.00	3.412	1.627	135979 159 507 225
514	70	40	8017.4530	10.0	1.00	1.653	3.392	136979 169 513 80117
515	55	45	2271.4010	10.0	1.00	8.320	1.832	123979 102 513 80117
516	60	45	4708.6640	10.0	1.00	1.466	1.919	122979 90 513 80117
517	50	55	1651.2870	5.0	10.00	1.561	8.296	124979 127 661 1037
518	60	55	5480.1200	10.0	1.00	1.466	8.247	122979 89 513 80117
519	100	55	4115.6660	10.0	1.00	1.591	8.245	115979 76 513 80117
520	55	100	4115.6750	10.0	1.00	8.320	1.481	123979 103 513 80117
521	55	100	4115.6780	10.0	1.00	8.320	1.481	123979 120 513 80117
522	55	70	4994.4640	10.0	1.00	8.320	1.636	123979 117 513 80117
523	70	55	4994.4680	10.0	1.00	1.653	8.194	136979 175 513 80117
524	100	60	2818.0470	10.0	1.00	1.591	1.351	115979 77 513 80117
525	60	70	3488.8660	10.0	1.00	1.466	1.636	122979 88 513 80117
526	100	70	1117.5590	5.0	10.00	1.608	1.652	114979 70 661 1037
527	100	70	1117.5590	10.0	1.00	1.591	1.675	115979 85 513 80117
-527	10	80	252.5260	0.0	0.0	0.0	0.0	GSFC 1979 REPORT *
528	10	82	216.6540	5.0	10.00	1.271	1.240	15035DMAHTC 1/25/80
529	103	100	259.7082	1.5	2.00	3.252	1.540	
530	103	101	318.3092	1.5	2.00	3.252	1.668	
531	103	104	65.9581	1.5	2.00	3.252	0.300	
532	102	100	460.8339	1.5	2.00	3.655	1.608	

ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	MM	PPM	H.I.	H.T.	
533	102	101	33.7216	1.5	2.00	3.655	1.685	
534	102	103	337.9663	1.5	2.00	3.655	2.982	
535	102	104	330.2310	1.5	2.00	3.655	0.300	
536	102	104	330.2285	1.5	2.00	3.655	0.234	
537	103	104	65.9576	1.5	2.00	3.252	0.280	
538	103	104	65.9569	1.5	2.00	3.252	0.300	
539	102	100	460.8301	1.5	2.00	3.655	1.549	
540	102	103	337.9657	1.5	2.00	3.655	2.982	
541	102	104	330.2332	1.5	2.00	3.655	0.300	
542	102	104	330.2266	1.5	2.00	3.655	0.234	
543	102	101	33.7198	1.5	2.00	3.655	1.685	
544	100	101	429.0271	5.0	7.00	1.645	1.725	
545	100	102	460.8421	5.0	7.00	1.645	3.439	
546	100	103	259.7301	5.0	7.00	1.645	3.036	
547	102	101	33.7159	5.0	7.00	3.476	1.725	
548	102	101	33.7186	5.0	7.00	3.479	1.725	
549	102	103	337.9640	5.0	7.00	3.476	3.038	
550	102	103	337.9671	5.0	7.00	3.481	2.973	
551	103	104	65.9580	5.0	7.00	3.074	0.355	
552	103	101	318.3108	5.0	7.00	3.074	1.725	
553	103	102	337.9617	5.0	7.00	3.074	3.439	
554	102	100	460.8376	5.0	7.00	3.476	1.594	
555	102	100	460.8377	5.0	7.00	3.481	1.540	
556	102	104	330.2259	5.0	7.00	3.481	0.256	
557	103	101	318.3154	5.0	2.00	3.139	1.782	
558	101	102	33.7092	5.0	2.00	1.782	3.418	
559	103	101	318.3179	5.0	2.00	3.139	1.782	
560	101	100	429.0362	5.0	2.00	1.782	1.621	
561	103	104	65.9593	5.0	2.00	3.139	0.229	
562	104	102	330.2394	5.0	2.00	0.229	3.461	
563	103	104	65.9594	5.0	2.00	3.139	0.229	
564	104	102	330.2386	5.0	2.00	0.229	3.461	
565	103	102	337.9733	5.0	2.00	3.139	3.505	
566	102	100	460.8479	5.0	2.00	3.505	1.621	
567	103	104	65.9625	5.0	2.00	3.139	0.326	
568	103	101	318.3171	5.0	2.00	3.139	1.695	
569	103	102	337.9716	5.0	2.00	3.139	3.418	
570	103	100	259.7241	5.0	2.00	3.139	1.578	
571	103	104	66.0034	1.0	0.0	0.0	0.0	
572	101	102	33.7315	1.0	0.0	0.0	0.0	
573	101	201	68.3416	1.5	2.00	1.942	0.317	
574	101	203	37.4134	1.5	2.00	1.942	0.192	
575	102	201	61.2151	1.5	2.00	3.655	0.189	
576	102	202	61.2974	1.5	2.00	3.655	0.198	
577	102	203	60.9580	1.5	2.00	3.655	0.192	
578	102	201	61.2095	5.0	7.00	3.479	0.205	
579	102	202	61.2801	5.0	7.00	3.479	0.208	
580	102	203	60.9550	5.0	7.00	3.479	0.205	
581	102	201	61.1470	5.0	7.00	1.752	1.446	3/81 HP3808A
582	102	301	34.3130	5.0	7.00	1.752	1.519	3/81 HP3808A

ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	MM	PPM	H.I.	H.T.		
583	102	101	33.7270	5.0	7.00	1.752	1.511	3/81 HP3808A	
584	102	302	28.2630	5.0	7.00	1.752	1.491	3/81 HP3808A	
585	102	100	460.9070	5.0	7.00	1.752	1.505	3/81 HP3808A	
586	201	302	68.6610	5.0	7.00	1.495	1.491	3/81 HP3808A	
587	201	101	68.3070	5.0	7.00	1.495	1.511	3/81 HP3808A	
588	201	301	63.2570	5.0	7.00	1.495	1.519	3/81 HP3808A	
589	201	100	480.7660	5.0	7.00	1.495	1.505	3/81 HP3808A	
590	100	101	429.0310	5.0	7.00	1.578	1.408	3/81 HP3808A	
-590	301	302	10.3700	5.0	7.00	1.469	1.461	3/81 HP3808A	*
-590	301	101	5.7770	5.0	7.00	1.469	1.481	3/81 HP3808A	*
-590	302	101	6.3200	5.0	7.00	1.536	1.481	3/81 HP3808A	*
591	101	301	5.7580	2.0	0.0	0.0	0.0	TAPED MK TO MK 1/76	
592	101	301	5.7600	2.0	0.0	0.0	0.0	TAPED MK TO MK 1/76	
593	101	301	5.7620	2.0	0.0	0.0	0.0	TAPED MK TO MK 3/81	
594	101	302	6.3030	2.0	0.0	0.0	0.0	TAPED MK TO MK 1/76	
595	101	302	6.3070	2.0	0.0	0.0	0.0	TAPED MK TO MK 3/81	
596	301	302	10.3510	2.0	0.0	0.0	0.0	TAPED MK TO MK 1/76	
597	301	302	10.3570	2.0	0.0	0.0	0.0	TAPED MK TO MK 3/81	
598	10	84	71.9518	5.0	1.00	1.667	1.286	810612 1 663	561
599	10	84	71.9386	2.0	1.00	1.845	1.286	810612 17 612	470
600	84	10	71.9616	5.0	1.00	1.301	1.654	810615 37 663	561
601	84	10	71.9880	2.0	1.00	1.479	1.654	810615 57 612	470
602	84	86	291.7880	5.0	1.00	1.301	1.527	810615 36 663	561
603	84	86	291.8029	2.0	1.00	1.479	1.527	810615 56 612	470
604	86	84	291.7804	5.0	1.00	1.584	1.242	810615 74 663	561
605	86	84	291.7690	2.0	1.00	1.762	1.242	810615 94 612	470
606	84	80	279.2874	5.0	1.00	1.301	1.634	810615 34 663	561
607	84	80	279.3023	2.0	1.00	1.479	1.634	810615 54 612	470
608	80	84	279.2744	5.0	1.00	1.729	1.241	810616 116 663	561
609	80	84	279.2584	2.0	1.00	1.907	1.241	810616 132 612	470
610	84	82	245.1328	5.0	1.00	1.301	1.597	810615 35 663	561
611	84	82	245.1494	2.0	1.00	1.479	1.607	810615 55 612	470
612	82	84	245.1227	5.0	1.00	1.711	1.286	810618 146 663	561
613	82	84	245.1052	2.0	1.00	1.888	1.286	810618 163 612	470
614	84	87	280.7082	5.0	1.00	1.301	1.508	810615 33 663	561
615	84	87	280.7213	2.0	1.00	1.479	1.508	810615 53 612	470
616	87	84	280.6754	2.0	1.00	1.789	1.194	810623 241 612	470
617	87	84	280.6930	5.0	1.00	1.611	1.194	810626 225 663	561
618	14	10	1305.4459	5.0	1.00	2.016	1.562	810618 173 663	561
619	10	14	1305.3738	2.0	1.00	1.846	1.956	810618 185 612	470
620	15	10	3336.6246	5.0	1.00	2.452	1.562	810622 206 663	561
621	10	15	3336.6227	5.0	1.00	1.664	2.343	810624 229 663	561
622	86	10	246.2594	5.0	1.00	1.584	1.654	810615 73 663	561
623	86	10	246.2502	2.0	1.00	1.762	1.654	810615 93 612	470
624	10	86	246.2732	2.0	1.00	1.846	1.477	810618 181 612	470
625	10	80	252.9662	5.0	1.00	1.667	1.623	810612 3 663	561
626	10	80	252.9783	2.0	1.00	1.845	1.623	810612 19 612	470
627	80	10	252.9558	5.0	1.00	1.729	1.564	810616 115 663	561
628	80	10	252.9442	2.0	1.00	1.907	1.564	810616 131 612	470
629	10	82	216.6450	5.0	1.00	1.667	1.570	810612 4 663	561
630	10	82	216.6562	2.0	1.00	1.845	1.570	810612 20 612	470
631	82	10	216.6330	5.0	1.00	1.711	1.562	810618 145 663	561
632	82	10	216.6228	2.0	1.00	1.888	1.462	810618 162 612	470

ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	MM	PPM	H.I.	H.T.				
633	10	87	257.1360	5.0	1.00	1.667	1.591	810612	2	663	561
634	10	87	257.1493	2.0	1.00	1.845	1.591	810612	18	612	470
635	87	10	257.1328	5.0	1.00	1.611	1.564	810623	221	663	561
636	87	10	257.1206	2.0	1.00	1.789	1.564	810623	237	612	470
637	82	15	3129.6442	5.0	1.00	1.711	2.403	810618	148	663	561
638	15	82	3129.6464	5.0	1.00	2.452	1.683	810622	210	663	561
639	15	87	3087.1482	5.0	1.00	2.452	1.507	810622	208	663	561
640	87	15	3087.1452	5.0	1.00	1.611	2.343	810623	212	663	561
641	86	80	83.4517	5.0	1.00	1.584	1.622	810615	76	663	561
642	86	80	83.4592	2.0	1.00	1.762	1.622	810615	96	612	470
643	80	86	83.4510	5.0	1.00	1.729	1.570	810616	113	663	561
644	80	86	83.4453	2.0	1.00	1.907	1.570	810616	129	612	470
645	80	86	83.4450	5.0	1.00	1.724	1.478	810620	202	663	561
646	86	82	79.5497	5.0	1.00	1.584	1.606	810615	75	663	561
647	86	82	79.5535	2.0	1.00	1.762	1.606	810615	95	612	470
648	82	86	79.5465	5.0	1.00	1.711	1.477	810618	147	663	561
649	82	86	79.5487	2.0	1.00	1.888	1.477	810618	161	612	470
650	82	86	79.5486	5.0	1.00	1.707	1.478	810620	188	663	561
651	82	86	79.5505	5.0	5.00	1.739	1.478	810620	195	664	747
652	86	87	94.6905	5.0	1.00	1.584	1.507	810615	77	663	561
653	86	87	94.6962	2.0	1.00	1.762	1.507	810615	97	612	470
654	87	86	94.6887	5.0	1.00	1.611	1.522	810623	217	663	561
655	87	86	94.6822	2.0	1.00	1.789	1.522	810623	233	612	470
656	80	82	36.4585	5.0	1.00	1.729	1.604	810616	114	663	561
657	80	82	36.4472	2.0	1.00	1.907	1.604	810616	130	612	470
658	82	80	36.4690	5.0	1.00	1.707	1.622	810620	187	663	561
659	82	80	36.4764	5.0	5.00	1.739	1.623	810620	199	664	747
660	80	82	36.4655	2.0	0.0	0.0	0.0	810617	5	441	3079
661	82	80	36.4654	2.0	0.0	0.0	0.0	810617	5	441	3079
662	80	82	36.4667	2.0	0.0	0.0	0.0	810617	6	441	4079
663	82	80	36.4664	2.0	0.0	0.0	0.0	810617	6	441	4079
664	80	87	11.3084	2.0	0.0	0.0	0.0	810617	3	441	4079
665	87	80	11.3084	2.0	0.0	0.0	0.0	810617	3	441	4079
666	80	87	11.3091	2.0	0.0	0.0	0.0	810617	4	441	3079
667	87	80	11.3088	2.0	0.0	0.0	0.0	810617	4	441	3079
668	82	87	42.5400	2.0	1.00	1.888	1.507	810618	177	612	470
669	87	82	42.5223	2.0	0.0	0.0	0.0	810617	2	441	3079
670	82	87	42.5223	2.0	0.0	0.0	0.0	810617	2	441	3079
671	87	82	42.5256	2.0	0.0	0.0	0.0	810617	1	441	4079
672	82	87	42.5232	2.0	0.0	0.0	0.0	810617	1	441	4079
673	161	160	33.1068	5.0	1.00	1.571	0.850	810702	280	663	561
674	161	160	33.0846	2.0	1.00	1.749	0.790	810704	302	612	470
675	162	160	19.6240	5.0	1.00	1.571	0.850	810702	272	663	561
676	162	160	19.5872	2.0	1.00	1.749	0.790	810704	306	612	470
677	163	160	36.6370	5.0	1.00	1.570	0.850	810702	268	663	561
678	163	160	36.6124	2.0	1.00	1.748	0.790	810703	290	612	470
679	162	161	50.0066	5.0	1.00	1.571	1.466	810702	276	663	561
680	161	162	50.0087	2.0	1.00	1.749	1.536	810703	298	612	470
681	162	161	50.0014	2.0	1.00	1.749	1.535	810704	310	612	470
682	161	162	50.0074	1.4	1.00	0.0	0.0	810701	9	422	748

ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	MM	PPM	H.I.	H.T.				
683	162	161	50.0071	1.4	1.00	0.0	0.0	810701	9	422	748
684	161	162	50.0089	1.4	1.00	0.0	0.0	810701	12	422	9429
685	162	161	50.0079	1.4	1.00	0.0	0.0	810701	12	422	9429
686	161	162	50.0073	1.4	1.00	0.0	0.0	810701	13	422	754
687	162	161	50.0070	1.4	1.00	0.0	0.0	810701	13	422	754
688	161	162	50.0073	1.4	1.00	0.0	0.0	810701	16	422	915
689	162	161	50.0081	1.4	1.00	0.0	0.0	810701	16	422	915
690	163	161	50.0313	5.0	1.00	1.571	1.466	810701	260	663	561
691	163	161	50.0266	2.0	1.00	1.748	1.535	810703	286	612	470
692	163	161	50.0291	1.4	1.00	0.0	0.0	810701	10	422	9429
693	161	163	50.0290	1.4	1.00	0.0	0.0	810701	10	422	9429
694	163	161	50.0294	1.4	1.00	0.0	0.0	810701	15	422	754
695	161	163	50.0284	1.4	1.00	0.0	0.0	810701	15	422	754
696	163	161	50.0292	1.4	1.00	0.0	0.0	810701	17	422	915
697	161	163	50.0294	1.4	1.00	0.0	0.0	810701	17	422	915
698	161	163	50.0289	1.4	1.00	0.0	0.0	810701	7	422	748
699	163	161	50.0286	1.4	1.00	0.0	0.0	810701	7	422	748
700	161	60	9991.3025	5.0	1.00	1.572	1.442	810630	257	663	561
701	163	162	49.9954	5.0	1.00	1.571	1.465	810701	264	663	561
702	163	162	49.9954	2.0	1.00	1.748	1.536	810703	294	612	470
703	162	156	2482.3516	5.0	1.00	1.568	1.718	810703	285	663	561
704	162	60	9961.4078	7.0	9.90	1.572	1.442	810630	253	662	561
705	163	162	49.9945	1.4	1.00	0.0	0.0	810701	11	422	9429
706	162	163	49.9945	1.4	1.00	0.0	0.0	810701	11	422	9429
707	162	163	49.9941	1.4	1.00	0.0	0.0	810701	14	422	754
708	163	162	49.9940	1.4	1.00	0.0	0.0	810701	14	422	754
709	162	163	49.9942	1.4	1.00	0.0	0.0	810701	8	422	748
710	163	162	49.9942	1.4	1.00	0.0	0.0	810701	8	422	748
711	163	162	49.9946	1.4	1.00	0.0	0.0	810701	18	422	915
712	162	163	49.9948	1.4	1.00	0.0	0.0	810701	18	422	915
713	163	156	2532.3340	5.0	1.00	1.570	1.718	810703	284	663	561
714	163	60	9941.6432	5.0	1.00	1.572	1.442	810630	255	663	561

ELEVATION DIFFERENCES

	FROM	TO	OBSERVED	S.E.			
715	100	101	-19.026	0.003			
716	101	102	-1.220	0.003			
717	102	104	2.982	0.003			
718	104	103	-2.483	0.003			
719	103	102	-0.501	0.003			
720	102	203	1.324	0.003			
721	102	201	0.545	0.003			
722	50	100	-8.187	0.030	SCARP ADJ		
723	20	50	47.230	0.030	SCARP ADJ		
724	10	20	-106.856	0.030	SCARP ADJ		
725	10	82	-12.808	0.003			
726	102	202	-3.073	0.003			
727	302	101	0.002	0.002	3/81 WYE LEVELS		
728	101	301	-0.007	0.002	3/81 WYE LEVELS		
729	301	201	-0.671	0.002	3/81 WYE LEVELS		
730	201	102	-0.543	0.002	3/81 WYE LEVELS		
731	102	302	1.219	0.002	3/81 WYE LEVELS		
732	87	82	2.041	0.003	810611	232	1
733	87	80	-0.119	0.003	810611	232	1
734	80	10	14.966	0.003	810611	232	1
735	80	86	2.858	0.003	810611	232	1
736	86	10	12.108	0.003	810617	232	1
737	80	82	2.159	0.003	810611	232	1
738	10	84	9.384	0.003	810611	232	1
739	10	84	9.385	0.003	810611	232	1
740	84	85	0.063	0.003	810703	232	1
741	84	85	0.063	0.003	810703	232	1
742	156	161	-14.065	0.010			
743	161	162	-0.795	0.003	810701	232	1
744	162	163	0.631	0.003	810701	232	1
745	163	161	0.164	0.003	810701	232	1
746	160	161	-3.215	0.003	810704	232	1
747	161	160	3.216	0.003	810704	232	1
748	160	161	-3.215	0.003	810703	232	1

POSITION DIFFERENCES (METERS)

	FROM	TO	LAT.	S.E.	LON.	S.E.	HEIGHT	S.E.	
749	80	83	0.0070	0.0010	0.0290	0.0010	3.6150	0.0010	
750	102	106	-0.0030	0.0010	0.0080	0.0010	3.8660	0.0010	
751	104	105	-0.0008	0.0001	-0.0049	0.0001	32.8080	0.0020	
752	160	255	0.0	0.0010	0.0	0.0010	3.1825	0.0010	
753	84	85	0.0	0.0010	0.0	0.0010	0.0630	0.0010	
754	101	107	0.4710	0.0020	-0.3540	0.0020	0.0	0.0020	ARIES 2 1978

	FROM	TO
755	10	85
756	10	80
757	10	83
758	102	106
759	10	82
760	102	101
761	103	104
762	103	105
763	102	201
764	102	202
765	102	203
766	10	84
767	10	86
768	10	87
769	102	106
770	160	161

INPUT

771	160	162
772	160	163
773	160	156
774	160	255
775	102	107
776	102	301
777	102	302

A PRIORI STANDARD ERRORS (UNLESS OVERRIDEN BY INPUT ON OBSERVATION CARD)

	VECTOR SUM OF	
DIRECTIONS	1.0 MM	1.0 SEC.
AZIMUTHS	1.0 MM	1.5 SEC.
RECIPROCAL VERTICAL ANGLES	5.0 MM	5.0 SEC.
GROUPED VERTICAL ANGLES	5.0 MM	5.0 SEC.
ABSOLUTE DISTANCES	15.0 MM	1.0 PPM
RELATIVE DISTANCES	0.0 MM	0.0 PPM

ITER. 0, LINE 402, C-0 115.4 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 407, C-0 113.7 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 416, C-0 184.5 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 428, C-0 117.6 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 430, C-0 146.1 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 437, C-0 195.4 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 441, C-0 196.0 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 443, C-0 194.7 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 444, C-0 194.6 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 447, C-0 194.5 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 452, C-0 196.5 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 457, C-0 133.2 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 459, C-0 129.1 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 461, C-0 129.0 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 462, C-0 190.3 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 463, C-0 125.4 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 464, C-0 186.3 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 465, C-0 127.2 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 466, C-0 188.9 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 467, C-0 128.8 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 468, C-0 189.6 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 471, C-0 190.4 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 474, C-0 191.6 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 477, C-0 190.8 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 479, C-0 190.3 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 480, C-0 200.7 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 482, C-0 200.1 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 619, C-0 86.2 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 715, C-0 97.4 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 716, C-0 333.4 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 718, C-0 333.5 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 719, C-0 333.0 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 720, C-0 333.5 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 721, C-0 333.3 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 727, C-0 71.0 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 730, C-0 501.0 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 731, C-0 428.5 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 738, C-0 328.0 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 739, C-0 327.7 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 744, C-0 333.3 TIMES ASSIGNED STANDARD ERROR
ITER. 0, LINE 745, C-0 333.3 TIMES ASSIGNED STANDARD ERROR

JOB STATISTICS

ELLIPSOID: CLARKE 1866 A = 6378206.400 1/F = 294.9786982

GOLDSTONE SURVEY

STANDARD ERROR OF UNIT WEIGHT = 0.91, VARIANCE = 0.82, 534 DEGREES OF FREEDOM.

847	OBSERVATIONS	2	ITERATIONS
244	DIRECTIONS	39	STATIONS
70	ASTR. AZIMUTHS	313	UNKNOWNS
84	REC. VERTICAL ANGLES	67	LISTS OF DIRECTIONS
84	GROUPED VERTICAL ANGLES	51	REFRACTION UNKNOWNS
232	ABSOLUTE DISTANCES	0	SCALE UNKNOWNS
0	RELATIVE DISTANCES		
34	ELEVATION DIFFERENCES		
6	LAT., LON., HEIGHT DIFFERENCES		
0	PLANE DISTANCES		
17	OBSERVED ASTR. LATITUDES		
17	OBSERVED ASTR. LONGITUDES		
1	CONSTRAINED GEOD. LATITUDES		
1	CONSTRAINED GEOD. LONGITUDES		
1	CONSTRAINED GEOD. HEIGHTS		
23	ASTR. POSITION DIFFERENCES		

DK/DH ASSUMED AS -0.010/1000 IF K VALUES NOT INPUT.

SELECTED OPTIONS:

CC	FLAG	OPTION
27	1	MODIFIED GROUPING OF VERTICAL ANGLES
31	9	ITERATIONS

ADJUSTED DATA: STATIONS

STATION		LATITUDE	SIGMA	LONGITUDE	SIGMA	HEIGHT	SIGMA
100	MARS 1963	35 25 39.84438	0.00003	116 53 19.22922	0.00004	997.078	0.001
10	VENUS 1963	35 14 50.10445	0.00042	116 47 36.73461	0.00097	1064.770	0.035
14	BILL 1963	35 15 25.96504	0.00040	116 48 1.91054	0.00093	1342.153	0.035
15	BILLECHO	35 16 5.54612	0.00048	116 46 2.17260	0.00090	962.519	0.038
20	ECHO 1963	35 17 58.25155	0.00039	116 48 18.44450	0.00080	958.030	0.030
25	CALLECHO	35 18 17.26883	0.00038	116 48 27.41161	0.00078	1065.546	0.030
30	BONE	35 17 19.06194	0.00038	116 50 23.91518	0.00085	1186.329	0.037
35	MIDDLE	35 18 42.15927	0.00033	116 50 34.78525	0.00075	1200.902	0.034
40	CALL 1963 RM 3	35 22 41.95473	0.00028	116 50 13.62104	0.00041	1186.392	0.020
45	DRACUP	35 23 10.24305	0.00020	116 52 58.32783	0.00039	1090.585	0.024
50	PIONEER 1963	35 23 20.99658	0.00033	116 50 51.27729	0.00046	1005.307	0.018
55	BOARD	35 23 51.65503	0.00019	116 51 44.12532	0.00028	1231.763	0.016
60	JOE	35 25 4.51854	0.00022	116 55 2.13913	0.00023	1113.752	0.021
70	FOOT 1963	35 26 15.70191	0.00016	116 53 14.62602	0.00011	1114.780	0.011
80	MOBLAS 7115	35 14 54.00722	0.00042	116 47 27.95387	0.00096	1049.805	0.035
82	MOBLAS 7115 RM1-DOP(51266)	35 14 53.36118	0.00042	116 47 29.15900	0.00096	1051.965	0.035
83	MOBLAS 7115 REF PT (ML0307)	35 14 54.00744	0.00042	116 47 27.95502	0.00096	1053.420	0.035
85	VENUS VLBI REF. POINT	35 14 51.82092	0.00042	116 47 38.63051	0.00097	1074.218	0.035
101	ARIES 1976	35 25 29.12361	0.00004	116 53 8.41021	0.00005	978.052	0.002
102	GOLDSTONE VAL. (MOBLAS 7085)	35 25 28.09458	0.00004	116 53 7.95763	0.00004	976.831	0.002
103	MARS CONTROL	35 25 31.52332	0.00004	116 53 20.68095	0.00004	977.326	0.002
104	MARS COLLIMATION	35 25 33.36615	0.00004	116 53 19.35224	0.00005	979.812	0.002
105	MARS VLBI REF. POINT	35 25 33.36612	0.00004	116 53 19.35204	0.00005	1012.620	0.003
106	MOBLAS 7085 REF PT (ML0106)	35 25 28.09448	0.00005	116 53 7.95795	0.00006	980.697	0.002
107	ARIES 2 1978	35 25 29.13890	0.00007	116 53 8.39618	0.00009	978.052	0.003
201	GOLDSTONE VAL. RM1 DOP(51212)	35 25 28.86075	0.00005	116 53 5.72220	0.00006	977.376	0.002
202	GOLDSTONE VALIDATION RM 2	35 25 26.13394	0.00006	116 53 8.27128	0.00006	973.756	0.003
203	GOLDSTONE VALIDATION RM 3	35 25 29.29374	0.00005	116 53 9.87699	0.00006	978.154	0.003
84	VENUS TRUNNION	35 14 51.82092	0.00042	116 47 38.63051	0.00096	1074.155	0.035
86	ARIES 6-9-81 9 MTR.	35 14 51.38615	0.00042	116 47 27.13387	0.00097	1052.661	0.035
87	MOBLAS STA 7115 A	35 14 54.37060	0.00042	116 47 28.01551	0.00096	1049.924	0.035
160	MOJAVE TRUNNION	35 19 53.98601	0.00048	116 53 12.44340	0.00175	918.797	0.338
161	MOJAVE A	35 19 53.39178	0.00048	116 53 11.35611	0.00176	915.583	0.338
162	MOJAVE B	35 19 53.96294	0.00048	116 53 13.20887	0.00175	914.788	0.338
163	MOJAVE C	35 19 54.99305	0.00048	116 53 11.68021	0.00175	915.419	0.338
156	82 WFM USGS	35 19 1.88782	0.00053	116 54 28.16742	0.00208	929.592	0.337
255	MOJAVE VLBI REF. POINT	35 19 53.98601	0.00048	116 53 12.44340	0.00176	921.979	0.338
301	ARIES RM 1 1976 DOP(51201)	35 25 29.18988	0.00005	116 53 8.19671	0.00005	978.045	0.002
302	ARIES RM 2 1976 DOP(51228)	35 25 28.92073	0.00005	116 53 8.44229	0.00005	978.050	0.002

ADJUSTED DATA: DIRECTIONS

	FROM	TO	LIST	OBSERVED	V	N.V	ADJUSTED	DIST.	AZ.	V.A.
1	10	15	1	0 0 0.0	0.14	0.14	0 0 0.0	3336.646	45 47 17.64	91 46 17.61
2	10	14	1	284 16 33.06	-0.14	-0.14	284 16 32.78	1305.349	330 3 50.42	77 44 16.05
3	10	14	2	0 0 0.0	0.45	0.45	0 0 0.0	1305.349	330 3 50.42	77 44 16.05
4	10	15	2	75 43 28.12	-0.44	-0.44	75 43 27.22	3336.646	45 47 17.64	91 46 17.61
5	10	14	3	0 0 0.0	-0.95	-0.94	0 0 0.0	1305.349	330 3 50.42	77 44 16.05
6	10	15	3	75 43 25.34	0.93	0.93	75 43 27.22	3336.646	45 47 17.64	91 46 17.61
7	10	15	4	0 0 0.0	0.48	0.48	0 0 0.0	3336.646	45 47 17.64	91 46 17.61
8	10	14	4	284 16 33.74	-0.49	-0.48	284 16 32.78	1305.349	330 3 50.42	77 44 16.05
9	10	14	5	0 0 0.0	0.75	0.74	0 0 0.0	1305.349	330 3 50.42	77 44 16.05
10	10	15	5	75 43 28.71	-0.74	-0.73	75 43 27.22	3336.646	45 47 17.64	91 46 17.61
11	10	15	6	0 0 0.0	-0.91	-0.91	0 0 0.0	3336.646	45 47 17.64	91 46 17.61
12	10	14	6	284 16 30.94	0.93	0.92	284 16 32.78	1305.349	330 3 50.42	77 44 16.05
13	14	20	4	0 0 0.0	0.28	0.28	0 0 0.0	4728.124	354 54 47.86	94 40 54.10
14	14	15	4	73 7 36.33	0.30	0.30	73 7 36.35	3285.775	68 2 24.21	96 38 58.70
15	14	30	4	319 15 31.46	-0.57	-0.57	319 15 30.61	5006.288	314 10 18.47	91 48 23.11
16	15	10	1	0 0 0.0	0.08	0.08	0 0 0.0	3336.646	225 48 10.79	88 15 29.66
17	15	14	1	22 15 21.61	0.26	0.26	22 15 21.79	3285.775	248 3 32.58	83 22 45.80
18	15	20	1	89 27 11.61	-0.32	-0.32	89 27 11.21	4891.811	315 15 22.00	90 4 28.84
19	15	25	1	92 5 27.89	-0.03	-0.03	92 5 27.78	5474.353	317 53 38.57	88 56 47.00
20	15	10	3	0 0 0.0	-0.63	-0.63	0 0 0.0	3336.646	225 48 10.79	88 15 29.66
21	15	14	3	22 15 21.10	0.06	0.06	22 15 21.79	3285.775	248 3 32.58	83 22 45.80
22	15	20	3	89 27 10.28	0.30	0.30	89 27 11.21	4891.811	315 15 22.00	90 4 28.84
23	15	25	3	92 5 26.89	0.26	0.26	92 5 27.78	5474.353	317 53 38.57	88 56 47.00
24	15	10	4	0 0 0.0	0.04	0.04	0 0 0.0	3336.646	225 48 10.79	88 15 29.66
25	15	14	4	22 15 21.81	0.02	0.02	22 15 21.79	3285.775	248 3 32.58	83 22 45.80
26	15	20	4	89 27 11.41	-0.16	-0.16	89 27 11.21	4891.811	315 15 22.00	90 4 28.84
27	15	25	4	92 5 27.72	0.10	0.10	92 5 27.78	5474.353	317 53 38.57	88 56 47.00
28	20	15	1	0 0 0.0	0.07	0.07	0 0 0.0	4891.811	135 14 3.91	89 58 8.00
29	20	14	1	39 40 34.51	-0.14	-0.14	39 40 34.30	4728.124	174 54 38.21	85 21 37.41
30	20	30	1	113 55 16.63	0.16	0.16	113 55 16.73	3400.805	249 9 20.64	86 9 56.02
31	20	35	1	156 13 23.10	1.06	1.06	156 13 24.09	3709.317	291 27 28.01	86 15 45.38
32	20	25	1	203 37 54.82	-1.26	-1.20	203 37 53.49	637.562	338 51 57.41	80 17 42.46
33	20	15	4	0 0 0.0	0.37	0.37	0 0 0.0	4891.811	135 14 3.91	89 58 8.00
34	20	14	4	39 40 35.06	-0.39	-0.39	39 40 34.30	4728.124	174 54 38.21	85 21 37.41
35	20	30	4	113 55 17.22	-0.12	-0.12	113 55 16.73	3400.805	249 9 20.64	86 9 56.02
36	20	35	4	156 13 24.79	-0.33	-0.33	156 13 24.09	3709.317	291 27 28.01	86 15 45.38
37	20	25	4	203 37 53.34	0.52	0.50	203 37 53.49	637.562	338 51 57.41	80 17 42.46
38	20	15	5	0 0 0.0	0.27	0.27	0 0 0.0	4891.811	135 14 3.91	89 58 8.00

ADJUSTED DATA: DIRECTIONS

	FROM	TO	LIST	OBSERVED	V	N.V	ADJUSTED	DIST.	AZ.	V.A.
39	20	30	5	113 55 17.94	-0.94	-0.94	113 55 16.73	3400.805	249 9 20.64	86 9 56.02
40	20	35	5	156 13 24.48	-0.11	-0.11	156 13 24.09	3709.317	291 27 28.01	86 15 45.38
41	20	25	5	203 37 52.91	0.86	0.82	203 37 53.49	637.562	338 51 57.41	80 17 42.46
42	25	15	4	0 0 0.0	-0.73	-0.72	0 0 0.0	5474.353	137 52 14.81	91 6 9.16
43	25	14	4	35 10 0.39	0.09	0.09	35 10 1.21	5326.528	173 2 16.02	87 2 47.07
44	25	55	4	196 24 39.14	0.33	0.33	196 24 40.19	11442.871	334 16 55.01	89 13 11.54
45	25	40	4	203 56 10.18	0.30	0.30	203 56 11.21	8589.016	341 48 26.02	89 13 59.72
46	30	35	1	0 0 0.0	0.16	0.16	0 0 0.0	2576.064	353 52 44.73	89 41 17.14
47	30	20	1	75 15 22.94	-0.98	-0.98	75 15 21.80	3400.805	69 8 6.53	93 51 55.41
48	30	14	1	140 16 9.41	0.82	0.82	140 16 10.07	5006.288	134 8 54.80	88 14 20.02
49	30	35	2	0 0 0.0	-1.15	-1.14	0 0 0.0	2576.064	353 52 44.73	89 41 17.14
50	30	20	2	75 15 19.42	1.23	1.23	75 15 21.80	3400.805	69 8 6.53	93 51 55.41
51	30	14	2	140 16 9.01	-0.09	-0.09	140 16 10.07	5006.288	134 8 54.80	88 14 20.02
52	30	35	3	0 0 0.0	0.18	0.18	0 0 0.0	2576.064	353 52 44.73	89 41 17.14
53	30	20	3	75 15 19.41	2.57	2.57	75 15 21.80	3400.805	69 8 6.53	93 51 55.41
54	30	14	3	140 16 13.00	-2.75	-2.75	140 16 10.07	5006.288	134 8 54.80	88 14 20.02
55	35	45	1	0 0 0.0	0.09	0.09	0 0 0.0	9024.130	336 19 24.93	90 44 28.52
56	35	40	1	27 48 37.16	0.77	0.77	27 48 37.84	7410.665	4 8 2.77	90 8 46.14
57	35	25	1	127 4 25.35	-0.42	-0.42	127 4 24.84	3311.351	103 23 49.77	92 21 29.29
58	35	20	1	135 6 42.63	0.22	0.22	135 6 42.76	3709.317	111 26 7.69	93 46 16.66
59	35	30	1	197 33 14.34	-0.67	-0.67	197 33 13.58	2576.064	173 52 38.51	90 20 7.07
60	35	45	4	0 0 0.0	-0.81	-0.81	0 0 0.0	9024.130	336 19 24.93	90 44 28.52
61	35	40	4	27 48 37.20	-0.18	-0.18	27 48 37.84	7410.665	4 8 2.77	90 8 46.14
62	35	25	4	127 4 23.71	0.32	0.32	127 4 24.84	3311.351	103 23 49.77	92 21 29.29
63	35	20	4	135 6 41.98	-0.03	-0.03	135 6 42.76	3709.317	111 26 7.69	93 46 16.66
64	35	30	4	197 33 12.06	0.71	0.70	197 33 13.58	2576.064	173 52 38.51	90 20 7.07
65	35	45	5	0 0 0.0	-0.14	-0.14	0 0 0.0	9024.130	336 19 24.93	90 44 28.52
66	35	25	5	127 4 24.66	0.04	0.04	127 4 24.84	3311.351	103 23 49.77	92 21 29.29
67	35	30	5	197 33 13.34	0.10	0.10	197 33 13.58	2576.064	173 52 38.51	90 20 7.07
68	40	25	2	0 0 0.0	0.77	0.77	0 0 0.0	8589.016	161 47 21.40	90 50 41.68
69	40	35	2	22 20 52.47	-0.35	-0.35	22 20 51.35	7410.665	184 8 12.74	89 55 14.24
70	40	50	2	159 54 24.80	-0.43	-0.43	159 54 23.59	1544.206	321 41 44.99	96 44 26.46
71	40	25	4	0 0 0.0	-0.02	-0.02	0 0 0.0	8589.016	161 47 21.40	90 50 41.68
72	40	35	4	22 20 50.91	0.42	0.42	22 20 51.35	7410.665	184 8 12.74	89 55 14.24
73	40	50	4	159 54 23.98	-0.41	-0.40	159 54 23.59	1544.206	321 41 44.99	96 44 26.46
74	40	25	5	0 0 0.0	-0.36	-0.36	0 0 0.0	8589.016	161 47 21.40	90 50 41.68
75	40	35	5	22 20 50.46	0.52	0.52	22 20 51.35	7410.665	184 8 12.74	89 55 14.24
76	40	50	5	159 54 23.39	-0.16	-0.16	159 54 23.59	1544.206	321 41 44.99	96 44 26.46
77	45	60	1	0 0 0.0	0.48	0.48	0 0 0.0	4708.683	318 25 54.81	89 44 18.43

ADJUSTED DATA: DIRECTIONS

	FROM	TO	LIST	OBSERVED	V	N.V	ADJUSTED	DIST.	AZ.	V.A.
78	45	55	1	97 17 10.62	-0.57	-0.57	97 17 9.57	2270.983	55 43 4.38	86 26 51.09
79	45	40	1	143 23 51.74	-0.66	-0.66	143 23 50.60	4249.451	101 49 45.41	88 43 43.21
80	45	35	1	197 52 4.58	0.74	0.74	197 52 4.84	9024.130	156 17 59.65	89 20 25.95
81	45	60	3	0 0 0.0	0.09	0.09	0 0 0.0	4708.683	318 25 54.81	89 44 18.43
82	45	55	3	97 17 9.49	0.17	0.17	97 17 9.57	2270.983	55 43 4.38	86 26 51.09
83	45	40	3	143 23 51.14	-0.45	-0.45	143 23 50.60	4249.451	101 49 45.41	88 43 43.21
84	45	35	3	197 52 4.75	0.18	0.18	197 52 4.84	9024.130	156 17 59.65	89 20 25.95
85	50	40	1	0 0 0.0	0.33	0.33	0 0 0.0	1544.206	141 41 23.25	83 16 23.50
86	50	55	1	163 37 43.17	-0.33	-0.33	163 37 42.51	1650.356	305 19 5.76	82 7 9.97
87	50	40	2	0 0 0.0	0.61	0.61	0 0 0.0	1544.206	141 41 23.25	83 16 23.50
88	50	55	2	163 37 43.73	-0.61	-0.61	163 37 42.51	1650.356	305 19 5.76	82 7 9.97
89	50	55	3	0 0 0.0	-0.57	-0.56	0 0 0.0	1650.356	305 19 5.76	82 7 9.97
90	50	40	3	196 22 16.36	0.57	0.56	196 22 17.49	1544.206	141 41 23.25	83 16 23.50
91	55	60	1	0 0 0.0	-0.14	-0.14	0 0 0.0	5479.971	294 12 56.82	91 15 26.71
92	55	100	1	30 2 58.26	-0.76	-0.76	30 2 57.64	4115.274	324 15 54.46	93 17 14.32
93	55	70	1	38 34 20.86	-0.35	-0.35	38 34 20.65	4994.300	332 47 17.47	91 21 52.20
94	55	50	1	191 5 37.01	1.46	1.45	191 5 38.61	1650.356	125 18 35.43	97 53 42.13
95	55	40	1	199 1 0.47	-0.85	-0.85	199 0 59.76	3136.427	133 13 56.58	90 50 37.13
96	55	25	1	220 2 2.65	-1.37	-1.37	220 2 1.42	11442.871	154 14 58.24	90 53 2.12
97	55	45	1	301 30 48.48	2.05	2.04	301 30 50.67	2270.983	235 43 47.49	93 34 21.85
98	55	60	4	0 0 0.0	-0.24	-0.24	0 0 0.0	5479.971	294 12 56.82	91 15 26.71
99	55	100	4	30 2 57.77	-0.36	-0.36	30 2 57.64	4115.274	324 15 54.46	93 17 14.32
100	55	70	4	38 34 21.55	-1.14	-1.14	38 34 20.65	4994.300	332 47 17.47	91 21 52.20
101	55	50	4	191 5 37.71	0.67	0.66	191 5 38.61	1650.356	125 18 35.43	97 53 42.13
102	55	40	4	199 0 58.89	0.63	0.63	199 0 59.76	3136.427	133 13 56.58	90 50 37.13
103	55	25	4	220 2 0.39	0.79	0.79	220 2 1.42	11442.871	154 14 58.24	90 53 2.12
104	55	45	4	301 30 50.78	-0.34	-0.34	301 30 50.67	2270.983	235 43 47.49	93 34 21.85
105	55	60	5	0 0 0.0	-0.12	-0.12	0 0 0.0	5479.971	294 12 56.82	91 15 26.71
106	55	100	5	30 2 57.23	0.29	0.29	30 2 57.64	4115.274	324 15 54.46	93 17 14.32
107	55	40	5	199 0 59.88	-0.24	-0.24	199 0 59.76	3136.427	133 13 56.58	90 50 37.13
108	55	25	5	220 2 1.17	0.13	0.13	220 2 1.42	11442.871	154 14 58.24	90 53 2.12
109	55	45	5	301 30 50.61	-0.06	-0.06	301 30 50.67	2270.983	235 43 47.49	93 34 21.85
110	60	70	1	0 0 0.0	0.02	0.02	0 0 0.0	3488.873	51 1 19.49	90 0 0.66
111	60	100	1	16 13 6.48	-0.34	-0.34	16 13 6.12	2818.046	67 14 25.61	92 23 12.57
112	60	55	1	63 9 43.40	0.35	0.35	63 9 43.73	5479.971	114 11 3.22	88 47 28.52
113	60	45	1	87 23 24.97	-0.03	-0.03	87 23 24.92	4708.683	138 24 44.41	90 18 11.27
114	60	70	4	0 0 0.0	-0.83	-0.83	0 0 0.0	3488.873	51 1 19.49	90 0 0.66
115	60	100	4	16 13 5.80	-0.51	-0.51	16 13 6.12	2818.046	67 14 25.61	92 23 12.57
116	60	55	4	63 9 42.40	0.50	0.50	63 9 43.73	5479.971	114 11 3.22	88 47 28.52
117	60	45	4	87 23 23.25	0.84	0.84	87 23 24.92	4708.683	138 24 44.41	90 18 11.27
118	100	55	1	0 0 0.0	0.43	0.43	0 0 0.0	4115.274	144 14 59.99	86 44 55.70

ADJUSTED DATA: DIRECTIONS

	FROM	TO	LIST	OBSERVED	V	N.V	ADJUSTED	DIST.	AZ.	V.A.		
119	100	60	1	103 0 25.10	0.21	0.21	103 0 24.88	2818.046	247 15 24.87	87 38 17.02		
120	100	70	1	221 44 50.50	-0.66	-0.65	221 44 49.41	1117.549	5 59 49.40	83 57 39.32		
121	100	55	3	0 0 0.0	-0.36	-0.36	0 0 0.0	4115.274	144 14 59.99	86 44 55.70		
122	100	60	3	103 0 24.69	-0.17	-0.17	103 0 24.88	2818.046	247 15 24.87	87 38 17.02		
123	100	70	3	221 44 48.51	0.54	0.53	221 44 49.41	1117.549	5 59 49.40	83 57 39.32		
124	100	70	4	0 0 0.0	-0.80	-0.78	0 0 0.0	1117.549	5 59 49.40	83 57 39.32		
125	100	55	4	138 15 7.61	2.18	2.18	138 15 10.59	4115.274	144 14 59.99	86 44 55.70		
126	100	60	4	241 15 36.09	-1.42	-1.41	241 15 35.47	2818.046	247 15 24.87	87 38 17.02		
127	70	40	5	0 0 0.0	-0.30	-0.30	0 0 0.0	8017.419	145 15 0.73	89 31 25.68		
128	70	55	5	7 31 24.30	0.50	0.50	7 31 25.09	4994.300	152 46 25.83	88 40 46.45		
129	70	60	5	85 47 20.66	-0.20	-0.20	85 47 20.75	3488.873	231 2 21.49	90 1 50.61		
130	101	103	1	0 0 0.0	-0.35	-0.29	0 0 0.0	318.310	283 26 12.55	90 7 51.74		
131	101	100	1	37 0 16.73	0.25	0.23	37 0 17.33	429.030	320 26 29.88	87 27 36.74		
132	101	102	1	236 45 44.28	1.51	0.24	236 45 46.14	33.733	160 11 58.69	92 4 26.93		
133	102	103	1	0 0 0.0	-0.24	-0.20	0 0 0.0	337.965	288 13 21.24	89 54 59.86		
134	102	100	1	33 38 13.65	0.19	0.18	33 38 14.08	460.920	321 51 35.32	87 29 3.90		
135	102	101	1	51 58 37.00	0.47	0.08	51 58 37.71	33.733	340 11 58.96	87 55 34.17		
136	102	103	2	0 0 0.0	-0.49	-0.42	0 0 0.0	337.965	288 13 21.24	89 54 59.86		
137	102	100	2	33 38 13.19	0.40	0.37	33 38 14.08	460.920	321 51 35.32	87 29 3.90		
138	102	101	2	51 58 36.29	0.93	0.15	51 58 37.71	33.733	340 11 58.96	87 55 34.17		
139	102	103	3	0 0 0.0	-0.55	-0.47	0 0 0.0	337.965	288 13 21.24	89 54 59.86		
140	102	104	3	11 15 6.31	0.10	0.09	11 15 6.96	330.244	299 28 28.21	89 29 0.85		
141	102	100	3	33 38 13.14	0.39	0.36	33 38 14.08	460.920	321 51 35.32	87 29 3.90		
142	103	100	1	0 0 0.0	-1.59	-1.25	0 0 0.0	259.834	8 7 34.87	85 38 34.26		
143	103	101	1	95 18 28.91	-0.08	-0.07	95 18 30.42	318.310	103 26 5.29	89 52 18.66		
144	103	102	1	100 5 35.84	1.42	1.21	100 5 38.86	337.965	108 13 13.73	90 5 11.15		
145	104	102	1	0 0 0.0	-0.36	-0.31	0 0 0.0	330.244	119 28 21.46	90 31 9.84		
146	104	103	1	91 4 28.49	2.80	0.85	91 4 31.65	66.003	210 32 53.11	92 9 26.46		
147	103	100	2	0 0 0.0	-0.09	-0.07	0 0 0.0	259.834	8 7 34.87	85 38 34.26		
148	103	104	2	22 25 16.21	1.17	0.36	22 25 17.47	66.003	30 32 52.34	87 50 35.68		
149	103	102	2	100 5 38.84	-0.07	-0.06	100 5 38.86	337.965	108 13 13.73	90 5 11.15		
150	102	103	4	0 0 0.0	-0.22	-0.19	0 0 0.0	337.965	288 13 21.24	89 54 59.86		
151	102	203	4	19 7 45.90	0.23	0.06	19 7 46.35	60.935	307 21 7.59	88 45 20.17		
152	102	201	4	139 3 23.40	1.77	0.50	139 3 25.39	61.148	67 16 46.63	89 29 27.79		
153	102	202	4	259 14 12.90	-0.00	-0.00	259 14 13.12	61.026	187 27 34.36	92 53 12.62		
154	100	70	5	0 0 0.0	0.83	0.81	0 0 0.0	1117.549	5 59 49.40	83 57 39.32	G-10741	1/31/76
155	100	301	5	133 43 2.20	-0.29	-0.26	133 43 1.08	430.918	139 42 50.48	92 31 59.08	G-10741	1/31/76
156	100	101	5	134 26 35.82	-0.70	-0.63	134 26 34.30	429.030	140 26 23.69	92 32 35.99	G-10741	1/31/76

ADJUSTED DATA: DIRECTIONS

	FROM	TO	LIST	OBSERVED	V	N.V	ADJUSTED	DIST.	AZ.	V.A.		
157	100	70	6	0 0 0.0	-0.14	-0.14	0 0 0.0	1117.549	5 59 49.40	83 57 39.32	G-10741 1/31/76	
158	100	101	6	134 26 33.99	0.17	0.15	134 26 34.30	429.030	140 26 23.69	92 32 35.99	G-10741 1/31/76	
159	101	100	2	0 0 0.0	-1.34	-1.21	0 0 0.0	429.030	320 26 29.88	87 27 36.74	G-10741 1/31/76	
160	101	70	2	33 19 25.88	1.11	1.10	33 19 28.34	1450.693	353 45 58.22	84 35 57.39	G-10741 1/31/76	
161	101	100	3	0 0 0.0	0.37	0.09	0 0 0.0	429.030	320 26 29.88	87 27 36.74	G-10741 1/31/76	
162	101	301	3	108 48 37.10	-61.27	-0.85	108 47 35.46	5.761	69 14 5.34	90 3 58.50	G-10741 1/31/76	
163	101	302	3	226 56 43.10	-43.23	-0.66	226 55 59.50	6.306	187 22 29.38	90 1 2.23	G-10741 1/31/76	
164	86	10	1	0 0 0.0	-0.16	-0.12	0 0 0.0	246.256	260 45 29.52	87 10 57.50	810616	123 8
165	86	84	1	11 52 56.34	-0.61	-0.50	11 52 55.89	291.805	272 38 25.41	85 46 38.42	810616	123 8
166	86	82	1	59 10 18.48	1.20	0.43	59 10 19.84	79.551	319 55 49.36	90 30 9.07	810616	123 8
167	86	80	1	84 50 48.34	2.88	1.08	84 50 51.38	83.455	345 36 20.90	91 57 44.78	810616	123 8
168	86	87	1	85 37 9.26	-0.35	-0.14	85 37 9.07	94.690	346 22 38.59	91 39 28.39	810616	123 8
169	82	15	1	0 0 0.0	0.36	0.35	0 0 0.0	3129.665	44 39 38.72	91 39 8.23	810622	123 8
170	82	80	1	12 10 41.91	-6.18	-1.08	12 10 35.37	36.466	56 50 14.09	93 23 46.14	810622	123 8
171	82	86	1	95 16 11.36	-1.53	-0.55	95 16 9.48	79.551	139 55 48.19	89 29 53.51	810622	123 8
172	82	10	1	197 41 4.34	-0.19	-0.14	197 41 3.80	216.643	242 20 42.52	86 36 43.82	810622	123 8
173	82	87	1	358 14 25.81	3.17	0.64	358 14 28.63	42.523	42 54 7.35	92 45 7.79	810622	123 8
174	80	86	1	0 0 0.0	0.82	0.31	0 0 0.0	83.455	165 36 20.43	88 2 17.92	810615	123 8
175	80	82	1	71 13 50.18	5.00	0.87	71 13 54.36	36.466	236 50 14.79	86 36 15.04	810615	123 8
176	80	10	1	75 56 50.04	-0.45	-0.35	75 56 48.77	252.965	241 33 9.20	86 36 33.75	810615	123 8
177	80	84	1	90 22 49.15	-0.07	-0.06	90 22 48.25	279.315	255 59 8.68	84 59 59.73	810615	123 8
178	80	87	1	186 28 2.45	16.50	0.90	186 28 18.13	11.309	352 4 38.55	89 23 59.28	810615	123 8
179	10	15	7	0 0 0.0	0.17	0.17	0 0 0.0	3336.646	45 47 17.64	91 46 17.61	810619	123 16
180	10	87	7	13 23 55.46	-0.75	-0.58	13 23 54.54	257.134	59 11 12.18	93 18 41.08	810619	123 8
181	10	80	7	15 45 46.21	0.46	0.35	15 45 46.49	252.965	61 33 4.13	93 23 34.42	810619	123 8
182	10	82	7	16 33 20.08	0.60	0.43	16 33 20.51	216.643	62 20 38.15	93 23 23.17	810619	123 8
183	10	86	7	34 58 6.54	-0.03	-0.02	34 58 6.34	246.256	80 45 23.98	92 49 10.45	810619	123 8
184	10	84	7	272 1 52.86	-0.23	-0.08	272 1 52.46	72.009	317 49 10.09	82 30 44.16	810619	123 8
185	10	14	7	284 16 33.22	-0.27	-0.27	284 16 32.78	1305.349	330 3 50.42	77 44 16.05	810619	123 16
186	82	15	2	0 0 0.0	0.20	0.20	0 0 0.0	3129.665	44 39 38.72	91 39 8.23	810623	123 8
187	82	86	2	95 16 10.20	-0.52	-0.19	95 16 9.48	79.551	139 55 48.19	89 29 53.51	810623	123 8
188	82	84	2	214 7 40.99	-0.23	-0.18	214 7 40.55	245.162	258 47 19.27	84 48 28.82	810623	123 8
189	87	15	1	0 0 0.0	-0.46	-0.46	0 0 0.0	3087.170	44 41 6.51	91 38 12.28	810623	123 8
190	87	86	1	121 41 34.12	-3.01	-1.25	121 41 31.58	94.690	166 22 38.08	88 20 34.68	810623	123 8
191	87	80	1	127 23 33.69	-2.14	-0.12	127 23 32.01	11.309	172 4 38.52	90 36 1.09	810623	123 8
192	87	82	1	178 13 1.06	-0.02	-0.00	178 13 1.50	42.523	222 54 8.01	87 14 53.59	810623	123 8
193	87	10	1	194 30 9.89	0.35	0.27	194 30 10.70	257.134	239 11 17.21	86 41 27.22	810623	123 8
194	87	84	1	208 59 45.33	1.20	0.97	208 59 46.99	280.725	253 40 53.50	85 2 57.82	810623	123 8
195	162	60	1	0 0 0.0	0.03	0.03	0 0 0.0	9961.407	343 58 42.54	88 54 1.20	810702	123 8
196	162	163	1	66 35 25.20	2.58	0.61	66 35 27.75	49.994	50 34 10.29	89 16 41.19	810702	123 8
197	162	161	1	126 38 8.98	-3.08	-0.73	126 38 5.87	50.007	110 36 48.42	89 5 25.40	810702	123 8

ADJUSTED DATA: DIRECTIONS

	FROM	TO	LIST	OBSERVED	V	N.V	ADJUSTED	DIST.	AZ.	V.A.		
198	162	163	2	0 0 0.0	0.88	0.21	0 0 0.0	49.994	50 34 10.29	89 16 41.19	810703	123 8
199	162	160	2	37 19 22.69	1.04	0.10	37 19 22.85	19.759	87 53 33.14	78 17 39.66	810703	123 8
200	162	161	2	60 2 40.05	-1.05	-0.25	60 2 38.13	50.007	110 36 48.42	89 5 25.40	810703	123 8
201	163	60	1	0 0 0.0	-0.09	-0.09	0 0 0.0	9941.643	343 42 51.42	88 54 5.76	810702	123 8
202	163	161	1	186 52 0.81	-0.44	-0.10	186 52 0.46	50.029	170 34 51.88	89 48 44.71	810702	123 8
203	163	160	1	228 7 42.50	-1.01	-0.18	228 7 41.58	36.694	211 50 33.00	84 43 0.70	810702	123 8
204	163	156	1	246 1 18.42	0.00	0.00	246 1 18.51	2532.331	229 44 9.93	89 41 21.78	810702	123 8
205	163	162	1	246 51 17.04	2.63	0.62	246 51 19.76	49.994	230 34 11.18	90 43 20.43	810702	123 8
206	160	162	1	0 0 0.0	-3.26	-0.31	0 0 0.0	19.759	267 53 33.59	101 42 20.96	810703	123 9
207	160	163	1	123 56 59.34	-3.63	-0.64	123 56 58.97	36.694	31 50 32.56	95 17 0.49	810703	123 9
208	160	161	1	215 48 9.83	5.60	0.89	215 48 18.69	33.167	123 41 52.28	95 33 44.73	810703	123 7
209	60	100	5	0 0 0.0	1.37	1.37	0 0 0.0	2818.046	67 14 25.61	92 23 12.57	810630	123 8
210	60	45	5	71 10 21.54	-1.37	-1.37	71 10 18.80	4708.683	138 24 44.41	90 18 11.27	810630	123 8
211	60	163	5	96 27 24.08	0.04	0.04	96 27 22.75	9941.643	163 41 48.35	91 11 14.42	810630	123 8
212	60	161	5	96 29 28.09	-0.46	-0.46	96 29 26.26	9991.303	163 43 51.87	91 10 51.38	810630	123 8
213	60	162	5	96 43 15.71	0.42	0.42	96 43 14.76	9961.407	163 57 40.37	91 11 19.63	810630	123 8
214	161	60	1	0 0 0.0	0.06	0.06	0 0 0.0	9991.303	343 44 55.12	88 54 30.41	810703	123 8
215	161	163	1	6 49 57.70	-0.69	-0.16	6 49 56.95	50.029	350 34 52.07	90 11 16.91	810703	123 8
216	161	162	1	306 51 55.54	-1.10	-0.26	306 51 54.38	50.007	290 36 49.49	90 54 36.21	810703	123 8
217	161	160	1	319 56 56.36	1.49	0.24	319 56 57.79	33.167	303 41 52.91	84 26 16.34	810703	123 8
218	201	100	1	0 0 0.0	1.36	0.33	0 0 0.0	480.767	314 48 42.09	87 39 11.98	3/81 T-3 4 POS.	
219	201	102	1	292 28 2.90	4.29	0.55	292 28 5.84	61.148	247 16 47.93	90 30 34.18	3/81 T-3 4 POS.	
220	201	302	1	316 43 47.70	4.46	0.62	316 43 50.80	68.658	271 32 32.89	89 26 11.88	3/81 T-3 4 POS.	
221	201	101	1	322 0 5.80	-3.21	-0.44	322 0 1.23	68.306	276 48 43.32	89 25 55.68	3/81 T-3 4 POS.	
222	201	301	1	324 25 12.50	-10.25	-1.34	324 25 0.89	63.256	279 13 42.98	89 23 34.01	3/81 T-3 4 POS.	
223	102	100	5	0 0 0.0	2.63	0.64	0 0 0.0	460.920	321 51 35.32	87 29 3.90	3/81 T-3 4 POS.	
224	102	302	5	12 29 15.90	5.41	0.36	12 29 18.67	28.275	334 20 54.00	87 31 45.79	3/81 T-3 4 POS.	
225	102	101	5	18 20 26.10	0.16	0.01	18 20 23.63	33.733	340 11 58.96	87 55 34.17	3/81 T-3 4 POS.	
226	102	301	5	28 0 58.00	-22.18	-1.75	28 0 33.18	34.316	349 52 8.51	87 58 21.26	3/81 T-3 4 POS.	
227	102	201	5	105 25 16.60	-2.66	-0.34	105 25 11.31	61.148	67 16 46.63	89 29 27.79	3/81 T-3 4 POS.	
228	302	100	1	0 0 0.0	-0.13	-0.03	0 0 0.0	433.356	321 3 4.65	87 29 7.31	3/81 T-3 4 POS.	
229	302	101	1	46 19 11.80	12.78	0.20	46 19 24.71	6.306	7 22 29.37	89 58 57.98	3/81 T-3 4 POS.	
230	302	301	1	75 42 10.40	5.45	0.14	75 42 15.98	10.355	36 45 20.63	90 1 34.98	3/81 T-3 4 POS.	
231	302	201	1	130 29 27.80	-1.26	-0.18	130 29 26.66	68.658	91 32 31.32	90 33 50.33	3/81 T-3 4 POS.	
232	302	102	1	193 17 43.10	5.83	0.39	193 17 49.06	28.275	154 20 53.72	92 28 15.13	3/81 T-3 4 POS.	
233	301	100	1	0 0 0.0	0.69	0.17	0 0 0.0	430.918	319 42 56.79	87 28 13.72	3/81 T-3 4 POS.	
234	301	201	1	139 30 47.70	-2.26	-0.30	139 30 44.75	63.256	99 13 41.55	90 36 28.03	3/81 T-3 4 POS.	
235	301	102	1	210 9 14.30	-2.04	-0.16	210 9 11.58	34.316	169 52 8.37	92 1 39.85	3/81 T-3 4 POS.	
236	301	302	1	257 2 11.00	13.66	0.34	257 2 23.98	10.355	216 45 20.77	89 58 25.36	3/81 T-3 4 POS.	
237	301	101	1	289 30 57.40	11.96	0.17	289 31 8.67	5.761	249 14 5.46	89 56 1.69	3/81 T-3 4 POS.	
238	301	100	2	0 0 0.0	0.10	0.03	0 0 0.0	430.918	319 42 56.79	87 28 13.72	G-10741 1/31/76	

ADJUSTED DATA: DIRECTIONS

	FROM	TO	LIST	OBSERVED	V	N.V	ADJUSTED	DIST.	AZ.	V.A.	
239	301	101	2	289 31 40.60	-31.83	-0.44	289 31 8.67	5.761	249 14 5.46	89 56 1.69	G-10741 1/31/76
240	101	100	2	0 0 0.0	-1.25	-0.30	0 0 0.0	429.030	320 26 29.88	87 27 36.74	3/81 T-3 4 POS.
241	101	301	2	108 47 44.80	-10.59	-0.15	108 47 35.46	5.761	69 14 5.34	90 3 58.50	3/81 T-3 4 POS.
242	101	201	2	136 22 7.50	3.13	0.43	136 22 11.88	68.306	96 48 41.76	90 34 6.52	3/81 T-3 4 POS.
243	101	102	2	199 45 26.20	1.36	0.11	199 45 28.81	33.733	160 11 58.69	92 4 26.93	3/81 T-3 4 POS.
244	101	302	2	226 55 23.30	34.95	0.53	226 55 59.50	6.306	187 22 29.38	90 1 2.23	3/81 T-3 4 POS.

ADJUSTED DATA: ASTRONOMIC AZIMUTHS

	FROM	TO	OBSERVED	V	N.V	ADJUSTED	DIST.	V.A.		
245	14	10	150 3 33.19	2.08	1.38	150 3 35.27	1305.349	102 16 26.71	790517	DAB 74722
246	14	10	150 3 37.65	-2.38	-1.58	150 3 35.27	1305.349	102 16 26.71	790529	GEN 41152
247	14	15	68 2 21.57	2.64	1.76	68 2 24.21	3285.775	96 38 58.70	790517	DAB 74722
248	14	15	68 2 25.76	-1.55	-1.03	68 2 24.21	3285.775	96 38 58.70	790529	GEN 41152
249	14	20	354 54 44.04	3.82	2.55	354 54 47.86	4728.124	94 40 54.10		
250	14	20	354 54 48.80	-0.94	-0.62	354 54 47.86	4728.124	94 40 54.10		
251	14	20	354 54 48.11	-0.25	-0.16	354 54 47.86	4728.124	94 40 54.10		
252	14	25	353 2 28.85	2.52	1.68	353 2 31.37	5326.528	93 0 4.23	790517	DAB 74722
253	14	25	353 2 32.92	-1.55	-1.03	353 2 31.37	5326.528	93 0 4.23	790529	GEN 41152
254	14	25	353 2 31.17	0.20	0.13	353 2 31.37	5326.528	93 0 4.23	790608	CFS 74724
255	14	30	314 10 16.92	1.55	1.04	314 10 18.47	5006.288	91 48 23.11	790517	DAB 74722
256	14	30	314 10 19.30	-0.83	-0.55	314 10 18.47	5006.288	91 48 23.11	790529	GEN 41152
257	14	40	346 6 7.82	2.62	1.74	346 6 10.44	13845.575	90 42 26.71	790517	DAB 74722
258	14	40	346 6 11.54	-1.10	-0.74	346 6 10.44	13845.575	90 42 26.71	790529	GEN 41152
259	25	14	173 2 17.22	-1.20	-0.80	173 2 16.02	5326.528	87 2 47.07	790521	GEN 74724
260	25	14	173 2 14.37	1.65	1.10	173 2 16.02	5326.528	87 2 47.07	790514	DAB 18593
261	25	15	137 52 16.24	-1.43	-0.95	137 52 14.81	5474.353	91 6 9.16		
262	25	15	137 52 14.35	0.46	0.31	137 52 14.81	5474.353	91 6 9.16		
263	25	20	158 51 52.62	-0.78	-0.51	158 51 51.84	637.562	99 42 38.17	790521	GEN 74724
264	25	35	283 25 5.05	-0.63	-0.42	283 25 4.42	3311.351	87 40 19.25	790521	GEN 74724
265	25	40	341 48 26.95	-0.93	-0.62	341 48 26.02	8589.016	89 13 59.72	790521	GEN 74724
266	25	55	334 16 55.45	-0.44	-0.30	334 16 55.01	11442.871	89 13 11.54	790521	GEN 74724
267	40	14	166 4 52.39	-1.96	-1.31	166 4 50.43	13845.575	89 25 3.78	790522	DAB 74722
268	40	14	166 4 51.37	-0.94	-0.63	166 4 50.43	13845.575	89 25 3.78	790524	WRO 74724
269	40	25	161 47 22.05	-0.65	-0.44	161 47 21.40	8589.016	90 50 41.68		
270	40	25	161 47 21.03	0.37	0.24	161 47 21.40	8589.016	90 50 41.68		
271	40	35	184 8 14.43	-1.69	-1.12	184 8 12.74	7410.665	89 55 14.24	790522	DAB 74722
272	40	35	184 8 12.78	-0.04	-0.02	184 8 12.74	7410.665	89 55 14.24	790524	WRO 74724
273	40	45	281 51 21.61	-0.90	-0.60	281 51 20.71	4249.451	91 18 34.06	790522	DAB 74722
274	40	45	281 51 20.05	0.66	0.44	281 51 20.71	4249.451	91 18 34.06	790524	WRO 74724
275	40	55	313 14 48.78	-0.04	-0.02	313 14 48.74	3136.427	89 11 3.77	790522	DAB 74722
276	40	55	313 14 48.19	0.55	0.37	313 14 48.74	3136.427	89 11 3.77	790524	WRO 74724
277	40	70	325 16 44.72	-0.17	-0.11	325 16 44.55	8017.419	90 32 50.32	790522	DAB 74722
278	40	70	325 16 43.94	0.61	0.41	325 16 44.55	8017.419	90 32 50.32	790524	WRO 74724
279	70	40	145 15 1.37	-0.64	-0.42	145 15 0.73	8017.419	89 31 25.68		
280	70	40	145 14 59.47	1.26	0.84	145 15 0.73	8017.419	89 31 25.68		
281	70	55	152 46 27.72	-1.89	-1.26	152 46 25.83	4994.300	88 40 46.45	790430	GEN 53089
282	70	55	152 46 24.15	1.68	1.12	152 46 25.83	4994.300	88 40 46.45	790516	WRO 74722
283	70	60	231 2 24.35	-2.86	-1.91	231 2 21.49	3488.873	90 1 50.61	790430	GEN 53069
284	70	60	231 2 20.31	1.18	0.78	231 2 21.49	3488.873	90 1 50.61	790516	WRO 74722
285	70	100	185 59 54.07	-1.89	-1.25	185 59 52.18	1117.549	96 2 56.87	790430	GEN 53089
286	70	100	185 59 51.77	0.41	0.27	185 59 52.18	1117.549	96 2 56.87	790516	WRO 74722
287	100	101	140 26 20.80	2.89	1.84	140 26 23.69	429.030	92 32 35.99		
288	100	101	140 26 23.18	0.51	0.33	140 26 23.69	429.030	92 32 35.99		
289	100	101	140 26 23.06	0.63	0.40	140 26 23.69	429.030	92 32 35.99		
290	100	101	140 26 25.32	-1.63	-1.03	140 26 23.69	429.030	92 32 35.99		
291	100	102	141 51 28.05	0.82	0.53	141 51 28.87	460.920	92 31 9.84		
292	100	102	141 51 29.17	-0.30	-0.19	141 51 28.87	460.920	92 31 9.84		
293	100	102	141 51 28.32	0.55	0.35	141 51 28.87	460.920	92 31 9.84		
294	100	102	141 51 30.96	-2.09	-1.33	141 51 28.87	460.920	92 31 9.84		

ADJUSTED DATA: ASTRONOMIC AZIMUTHS

	FROM	TO	OBSERVED	V	N.V	ADJUSTED	DIST.	V.A.
295	100	103	188 7 36.51	-0.64	-0.38	188 7 35.87	259.834	94 21 33.10
296	100	103	188 7 36.45	-0.58	-0.34	188 7 35.87	259.834	94 21 33.10
297	100	103	188 7 36.22	-0.35	-0.21	188 7 35.87	259.834	94 21 33.10
298	100	103	188 7 37.99	-2.12	-1.25	188 7 35.87	259.834	94 21 33.10
299	102	100	321 51 39.32	-4.00	-2.55	321 51 35.32	460.920	87 29 3.90
300	102	100	321 51 37.08	-1.76	-1.12	321 51 35.32	460.920	87 29 3.90
301	102	100	321 51 34.22	1.10	0.71	321 51 35.32	460.920	87 29 3.90
302	102	103	288 13 22.06	-0.82	-0.50	288 13 21.24	337.965	89 54 59.86
303	102	103	288 13 22.36	-1.12	-0.69	288 13 21.24	337.965	89 54 59.86
304	102	103	288 13 18.07	3.17	1.96	288 13 21.24	337.965	89 54 59.86
305	102	103	288 13 20.97	0.27	0.17	288 13 21.24	337.965	89 54 59.86
306	103	100	8 7 32.02	2.85	1.68	8 7 34.87	259.834	85 38 34.26
307	103	100	8 7 33.35	1.52	0.90	8 7 34.87	259.834	85 38 34.26
308	103	100	8 7 31.41	3.46	2.04	8 7 34.87	259.834	85 38 34.26
309	103	100	8 7 33.55	1.32	0.78	8 7 34.87	259.834	85 38 34.26
310	103	101	103 26 5.34	-0.05	-0.03	103 26 5.29	318.310	89 52 18.66
311	103	102	108 13 13.94	-0.21	-0.13	108 13 13.73	337.965	90 5 11.15
312	103	102	108 13 13.98	-0.25	-0.16	108 13 13.73	337.965	90 5 11.15
313	103	102	108 13 12.95	0.78	0.48	108 13 13.73	337.965	90 5 11.15
314	103	102	108 13 13.08	0.65	0.40	108 13 13.73	337.965	90 5 11.15

ADJUSTED DATA: RECIPROCAL VERTICAL ANGLES

	FROM	TO	OBSERVED	REF/KM	V	N.V	ADJUSTED	DIST.	AZ.
315	10	14	77 44 14.10	3.61	-2.65	-0.74	77 44 16.05	1305.349	330 3 50.42
316	14	10	102 16 20.12	3.61	1.98	0.64	102 16 26.71	1305.349	150 3 35.27
317	10	15	91 46 0.89	7.04	-6.77	-1.93	91 46 17.61	3336.646	45 47 17.64
318	15	10	88 14 59.40	7.04	6.77	1.93	88 15 29.66	3336.646	225 48 10.79
319	10	14	77 44 1.56	7.44	5.00	0.99	77 44 16.05	1305.349	330 3 50.42
320	14	10	102 16 19.73	7.44	-2.51	-0.70	102 16 26.71	1305.349	150 3 35.27
321	10	15	91 45 56.71	5.06	4.01	1.14	91 46 17.61	3336.646	45 47 17.64
322	15	10	88 15 20.93	5.06	-8.15	-1.63	88 15 29.66	3336.646	225 48 10.79
323	14	15	96 38 48.49	2.79	1.10	0.31	96 38 58.70	3285.775	68 2 24.21
324	15	14	83 22 37.80	2.79	-1.10	-0.31	83 22 45.80	3285.775	248 3 32.58
325	15	20	90 4 3.03	4.05	6.02	1.72	90 4 28.84	4891.811	315 15 22.00
326	20	15	89 57 54.22	4.05	-6.02	-1.72	89 58 8.00	4891.811	135 14 3.91
327	14	30	91 48 14.78	1.85	-0.91	-0.26	91 48 23.11	5006.288	314 10 18.47
328	30	14	88 14 9.87	1.85	0.91	0.26	88 14 20.02	5006.288	134 8 54.80
329	20	30	86 9 42.41	3.61	1.37	0.39	86 9 56.02	3400.805	249 9 20.64
330	30	20	93 51 44.53	3.61	-1.37	-0.39	93 51 55.41	3400.805	69 8 6.53
331	30	35	89 41 12.55	1.45	0.84	0.24	89 41 17.14	2576.064	353 52 44.73
332	35	30	90 20 4.17	1.45	-0.84	-0.24	90 20 7.07	2576.064	173 52 38.51
333	14	20	94 40 44.58	2.34	-1.52	-0.43	94 40 54.10	4728.124	354 54 47.86
334	20	14	85 21 25.25	2.34	1.12	0.37	85 21 37.41	4728.124	174 54 38.21
335	20	25	80 17 33.06	17.96	-1.88	-0.49	80 17 42.46	637.562	338 51 57.41
336	25	20	99 42 25.01	17.96	1.88	0.49	99 42 38.17	637.562	158 51 51.84
337	20	35	86 15 33.54	1.68	5.64	1.61	86 15 45.38	3709.317	291 27 28.01
338	35	20	93 46 16.10	1.68	-5.64	-1.61	93 46 16.66	3709.317	111 26 7.69
339	25	35	87 40 21.86	0.53	-4.37	-1.45	87 40 19.25	3311.351	283 25 4.42
340	35	25	92 21 21.59	0.53	5.93	1.69	92 21 29.29	3311.351	103 23 49.77
341	35	40	90 8 30.96	2.18	-0.96	-0.28	90 8 46.14	7410.665	4 8 2.77
342	40	35	89 54 57.13	2.18	0.96	0.28	89 55 14.24	7410.665	184 8 12.74
343	35	45	90 44 6.16	2.23	2.24	0.64	90 44 28.52	9024.130	336 19 24.93
344	45	35	89 20 8.06	2.23	-2.24	-0.64	89 20 25.95	9024.130	156 17 59.65
345	55	100	93 17 6.68	1.58	1.16	0.33	93 17 14.32	4115.274	324 15 54.46
346	100	55	86 44 50.38	1.58	-1.16	-0.33	86 44 55.70	4115.274	144 14 59.99
347	60	100	92 22 49.70	5.79	6.57	1.87	92 23 12.57	2818.046	67 14 25.61
348	100	60	87 38 7.30	5.79	-6.57	-1.87	87 38 17.02	2818.046	247 15 24.87
349	70	100	96 3 0.13	-2.17	-0.85	-0.27	96 2 56.87	1117.549	185 59 52.18
350	100	70	83 57 40.61	-2.17	1.13	0.31	83 57 39.32	1117.549	5 59 49.40
351	45	60	89 44 7.14	1.90	2.34	0.67	89 44 18.43	4708.683	318 25 54.81
352	60	45	90 18 4.66	1.90	-2.34	-0.67	90 18 11.27	4708.683	138 24 44.41
353	55	60	91 15 14.71	1.61	3.15	0.90	91 15 26.71	5479.971	294 12 56.82
354	60	55	88 47 22.83	1.61	-3.15	-0.90	88 47 28.52	5479.971	114 11 3.22
355	60	70	90 0 0.39	1.08	-3.51	-1.00	90 0 0.66	3488.873	51 1 19.49
356	70	60	90 1 43.32	1.08	3.51	1.00	90 1 50.61	3488.873	231 2 21.49
357	25	55	89 12 48.75	1.96	0.34	0.10	89 13 11.54	11442.871	334 16 55.01
358	55	25	90 52 40.02	1.96	-0.34	-0.10	90 53 2.12	11442.871	154 14 58.24
359	40	55	89 10 56.95	1.66	1.61	0.46	89 11 3.77	3136.427	313 14 48.74
360	55	40	90 50 33.53	1.66	-1.61	-0.46	90 50 37.13	3136.427	133 13 56.58
361	45	55	86 26 44.61	2.43	0.97	0.27	86 26 51.09	2270.983	55 43 4.38
362	55	45	93 34 17.30	2.43	-0.97	-0.27	93 34 21.85	2270.983	235 43 47.49
363	55	70	91 21 39.05	3.16	-2.64	-0.75	91 21 52.20	4994.300	332 47 17.47
364	70	55	88 40 28.02	3.16	2.64	0.75	88 40 46.45	4994.300	152 46 25.83

ADJUSTED DATA: RECIPROCAL VERTICAL ANGLES

	FROM	TO	OBSERVED	REF/KM	V	N.V	ADJUSTED	DIST.	AZ.
365	55	100	93 17 7.44	2.35	-2.79	-1.11	93 17 14.32	4115.274	324 15 54.46
366	100	55	86 44 43.23	2.35	2.79	1.11	86 44 55.70	4115.274	144 14 59.99
367	40	50	96 44 25.39	0.35	0.54	0.15	96 44 26.46	1544.206	321 41 44.99
368	50	40	83 16 23.50	0.35	-0.54	-0.15	83 16 23.50	1544.206	141 41 23.25
369	50	55	82 7 13.49	-2.32	0.28	0.08	82 7 9.97	1650.356	305 19 5.76
370	55	50	97 53 46.21	-2.32	-0.28	-0.08	97 53 42.13	1650.356	125 18 35.43
371	14	40	90 41 57.82	2.03	0.73	0.21	90 42 26.71	13845.575	346 6 10.44
372	40	14	89 24 36.36	2.03	-0.73	-0.21	89 25 3.78	13845.575	166 4 50.43
373	40	25	90 50 22.31	2.12	1.17	0.33	90 50 41.68	8589.016	161 47 21.40
374	25	40	89 13 42.69	2.12	-1.17	-0.33	89 13 59.72	8589.016	341 48 26.02
375	40	55	89 11 1.73	1.65	-3.14	-0.89	89 11 3.77	3136.427	313 14 48.74
376	55	40	90 50 28.80	1.65	3.14	0.89	90 50 37.13	3136.427	133 13 56.58
377	40	70	90 32 33.06	1.98	1.42	0.40	90 32 50.32	8017.419	325 16 44.55
378	70	40	89 31 11.26	1.98	-1.42	-0.40	89 31 25.68	8017.419	145 15 0.73
379	14	25	92 59 53.06	2.18	-0.44	-0.13	93 0 4.23	5326.528	353 2 31.37
380	25	14	87 2 35.01	2.18	0.44	0.13	87 2 47.07	5326.528	173 2 16.02
381	40	25	90 50 16.44	2.96	-0.18	-0.05	90 50 41.68	8589.016	161 47 21.40
382	25	40	89 13 34.12	2.96	0.18	0.05	89 13 59.72	8589.016	341 48 26.02
383	25	55	89 12 43.18	2.64	-1.83	-0.52	89 13 11.54	11442.871	334 16 55.01
384	55	25	90 52 30.11	2.64	1.83	0.52	90 53 2.12	11442.871	154 14 58.24
385	14	40	90 42 2.52	1.84	-1.27	-0.36	90 42 26.71	13845.575	346 6 10.44
386	40	14	89 24 37.05	1.84	1.27	0.36	89 25 3.78	13845.575	166 4 50.43
387	40	45	91 18 25.80	1.64	1.29	0.37	91 18 34.06	4249.451	281 51 20.71
388	45	40	88 43 37.52	1.64	-1.29	-0.37	88 43 43.21	4249.451	101 49 45.41
389	40	70	90 32 34.49	2.30	-2.58	-0.74	90 32 50.32	8017.419	325 16 44.55
390	70	40	89 31 4.69	2.30	2.58	0.74	89 31 25.68	8017.419	145 15 0.73
391	40	70	90 32 42.96	1.35	-3.48	-0.99	90 32 50.32	8017.419	325 16 44.55
392	70	40	89 31 11.35	1.35	3.48	0.99	89 31 25.68	8017.419	145 15 0.73
393	55	70	91 21 35.89	2.47	3.98	1.32	91 21 52.20	4994.300	332 47 17.47
394	70	55	88 40 39.53	2.47	-5.41	-1.54	88 40 46.45	4994.300	152 46 25.83
395	14	25	92 59 54.02	1.90	0.08	0.02	93 0 4.23	5326.528	353 2 31.37
396	25	14	87 2 37.02	1.90	-0.08	-0.02	87 2 47.07	5326.528	173 2 16.02
397	15	25	88 56 29.17	3.09	0.90	0.26	88 56 47.00	5474.353	317 53 38.57
398	25	15	91 5 53.12	3.09	-0.90	-0.26	91 6 9.16	5474.353	137 52 14.81

ADJUSTED DATA: GROUPED VERTICAL ANGLES

	FROM	TO	LIST	OBSERVED	REF/KM	V	N.V	ADJUSTED	DIST.	AZ.			
399	15	25	2	88 56 2.30	7.88	1.56	0.31	88 56 47.00	5474.353	317 53 38.57	C1626790413		
400	15	25	2	88 56 5.20	7.88	-1.34	-0.27	88 56 47.00	5474.353	317 53 38.57	C1744790413		
401	80	10	2	86 36 34.63	7.88	-2.87	-0.45	86 36 33.75	252.965	241 33 9.20	8106151705	123	8
402	80	84	2	85 0 1.67	7.88	-4.13	-0.66	84 59 59.73	279.315	255 59 8.68	8106151710	123	8
403	80	87	2	89 23 48.98	7.88	10.21	0.11	89 23 59.28	11.309	352 4 38.55	8106151715	123	9
404	80	86	2	88 2 19.77	7.88	-2.51	-0.19	88 2 17.92	83.455	165 36 20.43	8106151655	123	9
405	80	82	2	86 36 26.56	7.88	-11.81	-0.41	86 36 15.04	36.466	236 50 14.79	8106151700	123	8
406	86	10	1	87 10 44.05	44.05	2.61	0.40	87 10 57.50	246.256	260 45 29.52	810616 30	123	8
407	86	84	1	85 46 27.39	44.05	-1.78	-0.29	85 46 38.42	291.805	272 38 25.41	810616 20	123	8
408	86	82	1	90 30 9.94	44.05	-4.38	-0.31	90 30 9.07	79.551	319 55 49.36	810616 35	123	8
409	86	80	1	91 57 43.56	44.05	-2.45	-0.18	91 57 44.78	83.455	345 36 20.90	810616 40	123	7
410	86	87	1	91 39 21.64	44.05	2.59	0.22	91 39 28.39	94.690	346 22 38.59	810616 45	123	8
411	10	15	2	91 45 50.92	7.89	0.37	0.07	91 46 17.61	3336.646	45 47 17.64	810619 238	123	8
412	10	87	2	93 18 36.13	7.89	2.92	0.46	93 18 41.08	257.134	59 11 12.18	810619 242	123	
413	10	80	2	93 23 32.94	7.89	-0.51	-0.08	93 23 34.42	252.965	61 33 4.13	810619 246	123	8
414	10	82	2	93 23 23.11	7.89	-1.64	-0.24	93 23 23.17	216.643	62 20 38.15	810619 250	123	8
415	10	86	2	92 49 8.88	7.89	-0.37	-0.06	92 49 10.45	246.256	80 45 23.98	810619 254	123	8
416	10	84	2	82 30 45.11	7.89	-1.52	-0.10	82 30 44.16	72.009	317 49 10.09	810619 258	123	
417	10	14	2	77 44 7.07	7.89	-1.08	-0.21	77 44 16.05	1305.349	330 3 50.42	810619 302	123	8
418	82	15	1	91 38 48.71	6.17	0.24	0.05	91 39 8.23	3129.665	44 39 38.72	8106222020	123	7
419	82	80	1	93 24 10.80	6.17	-24.89	-0.87	93 23 46.14	36.466	56 50 14.09	8106222025	123	8
420	82	86	1	89 30 2.55	6.17	-9.53	-0.69	89 29 53.51	79.551	139 55 48.19	8106222030	123	8
421	82	10	1	86 36 47.71	6.17	-5.22	-0.76	86 36 43.82	216.643	242 20 42.52	8106222035	123	8
422	82	87	1	92 45 21.68	6.17	-14.15	-0.57	92 45 7.79	42.523	42 54 7.35	8106222040	123	8
423	87	15	2	91 37 58.48	0.56	12.08	2.41	91 38 12.28	3087.170	44 41 6.51	8106231930	123	8
424	87	86	2	88 20 33.13	0.56	1.49	0.12	88 20 34.68	94.690	166 22 38.08	8106231905	123	8
425	87	80	2	90 35 46.31	0.56	14.77	0.16	90 36 1.09	11.309	172 4 38.52	8106231910	123	8
426	87	82	2	87 14 52.19	0.56	1.37	0.06	87 14 53.59	42.523	222 54 8.01	8106231915	123	8
427	87	10	2	86 41 26.41	0.56	0.67	0.10	86 41 27.22	257.134	239 11 17.21	8106231920	123	8
428	87	84	2	85 2 54.73	0.56	2.94	0.47	85 2 57.82	280.725	253 40 53.50	8106231925	123	8
429	15	10	2	88 15 39.20	0.56	-11.39	-2.27	88 15 29.66	3336.646	225 48 10.79	8106231040	142	3
430	82	84	2	84 48 28.30	0.56	0.39	0.06	84 48 28.82	245.162	258 47 19.27	8106231730	123	8
431	60	100	1	92 23 15.06	1.08	-5.53	-1.10	92 23 12.57	2818.046	67 14 25.61	8106301435	123	3
432	60	45	1	90 17 59.23	1.08	6.97	1.39	90 18 11.27	4708.683	138 24 44.41	8106301437	123	3
433	60	163	1	91 11 4.14	1.08	-0.42	-0.08	91 11 14.42	9941.643	163 41 48.35	8106301830	123	8
434	60	161	1	91 10 40.99	1.08	-0.37	-0.07	91 10 51.38	9991.303	163 43 51.87	8106301835	123	8
435	60	162	1	91 11 9.85	1.08	-0.94	-0.19	91 11 19.63	9961.407	163 57 40.37	8106301840	123	8
436	162	60	2	88 53 33.68	2.56	2.06	0.41	88 54 1.20	9961.407	343 58 42.54	8107021540	123	8
437	162	163	2	89 16 58.58	2.56	-17.52	-0.83	89 16 41.19	49.994	50 34 10.29	8107021545	123	9
438	162	60	2	88 53 36.58	2.56	-0.84	-0.17	88 54 1.20	9961.407	343 58 42.54	8107021626	123	3
439	162	160	2	78 18 0.75	2.56	-21.13	-0.40	78 17 39.66	19.759	87 53 33.14	8107021550	123	10
440	162	161	2	89 5 39.03	2.56	-13.75	-0.65	89 5 25.40	50.007	110 36 48.42	8107021555	123	8
441	163	160	2	84 43 11.49	2.56	-10.88	-0.38	84 43 0.70	36.694	211 50 33.00	8107022215	123	8
442	163	156	2	89 41 25.32	2.56	-10.01	-2.00	89 41 21.78	2532.331	229 44 9.93	8107022220	123	8

ADJUSTED DATA: GROUPED VERTICAL ANGLES

	FROM	TO	LIST	OBSERVED	REF/KM	V	N.V	ADJUSTED	DIST.	AZ.			
443	163	161	2	89 48 38.28	2.56	6.30	0.30	89 48 44.71	50.029	170 34 51.88	8107022230	123	9
444	163	162	2	90 43 18.28	2.56	2.02	0.10	90 43 20.43	49.994	230 34 11.18	8107022235	123	10
445	163	156	2	89 41 10.12	2.56	5.19	1.03	89 41 21.78	2532.331	229 44 9.93	8107022359	123	3
446	161	60	1	88 54 1.81	3.16	-2.97	-0.59	88 54 30.41	9991.303	343 44 55.12	8107031825	123	8
447	161	163	1	90 11 19.99	3.16	-3.24	-0.15	90 11 16.91	50.029	350 34 52.07	8107031830	123	8
448	161	162	1	90 54 42.94	3.16	-6.88	-0.32	90 54 36.21	50.007	290 36 49.49	8107031835	123	8
449	161	160	1	84 26 13.74	3.16	2.50	0.08	84 26 16.34	33.167	303 41 52.91	8107031840	123	8
450	162	156	1	89 39 45.39	3.16	12.04	2.40	89 40 5.27	2482.351	229 43 8.60	810703 25	123	3
451	160	162	1	101 42 38.05	3.16	-17.15	-0.32	101 42 20.96	19.759	267 53 33.59	8107031947	123	3
452	160	163	1	95 17 3.50	3.16	-3.13	-0.11	95 17 0.49	36.694	31 50 32.56	8107031952	123	3
453	160	161	1	95 33 50.27	3.16	-5.64	-0.18	95 33 44.73	33.167	123 41 52.28	8107031958	123	3
454	100	101	2	92 32 26.93	11.47	4.14	1.59	92 32 35.99	429.030	140 26 23.69			
455	100	103	2	94 21 31.18	11.47	-1.05	-0.26	94 21 33.10	259.834	188 7 35.87			
456	100	101	2	92 32 30.24	11.47	0.84	0.32	92 32 35.99	429.030	140 26 23.69			
457	100	102	2	92 30 59.81	11.47	4.75	1.94	92 31 9.84	460.920	141 51 28.87			
458	100	101	2	92 32 34.16	11.47	-3.09	-1.19	92 32 35.99	429.030	140 26 23.69			
459	100	102	2	92 31 9.76	11.47	-5.20	-2.12	92 31 9.84	460.920	141 51 28.87			
460	100	103	2	94 21 34.69	11.47	-4.56	-1.11	94 21 33.10	259.834	188 7 35.87			
461	102	100	2	87 29 2.12	11.47	-3.50	-1.43	87 29 3.90	460.920	321 51 35.32			
462	102	103	2	89 55 0.11	11.47	-4.13	-1.29	89 54 59.86	337.965	288 13 21.24			
463	102	100	2	87 28 53.15	11.47	5.48	2.23	87 29 3.90	460.920	321 51 35.32			
464	102	103	2	89 54 47.29	11.47	8.69	2.71	89 54 59.86	337.965	288 13 21.24			
465	102	100	2	87 28 57.56	11.47	1.06	0.43	87 29 3.90	460.920	321 51 35.32			
466	102	103	2	89 54 55.59	11.47	0.39	0.12	89 54 59.86	337.965	288 13 21.24			
467	102	100	2	87 29 1.52	11.47	-2.90	-1.18	87 29 3.90	460.920	321 51 35.32			
468	102	103	2	89 54 57.86	11.47	-1.88	-0.58	89 54 59.86	337.965	288 13 21.24			
469	102	104	2	89 28 56.44	11.47	0.62	0.19	89 29 0.85	330.244	299 28 28.21			
470	103	100	2	85 38 38.22	11.47	-6.93	-1.69	85 38 34.26	259.834	8 7 34.87			
471	103	102	2	90 5 8.46	11.47	-1.19	-0.37	90 5 11.15	337.965	108 13 13.73			
472	103	100	2	85 38 31.48	11.47	-0.19	-0.05	85 38 34.26	259.834	8 7 34.87			
473	103	101	2	89 52 13.36	11.47	1.65	0.49	89 52 18.66	318.310	103 26 5.29			
474	103	102	2	90 5 4.61	11.47	2.67	0.83	90 5 11.15	337.965	108 13 13.73			
475	103	100	2	85 38 29.76	11.47	1.53	0.37	85 38 34.26	259.834	8 7 34.87			
476	103	101	2	89 52 14.82	11.47	0.19	0.06	89 52 18.66	318.310	103 26 5.29			
477	103	102	2	90 5 7.04	11.47	0.23	0.07	90 5 11.15	337.965	108 13 13.73			
478	103	100	2	85 38 31.68	11.47	-0.39	-0.09	85 38 34.26	259.834	8 7 34.87			
479	103	102	2	90 5 8.83	11.47	-1.56	-0.48	90 5 11.15	337.965	108 13 13.73			
480	103	104	2	87 50 22.94	11.47	11.98	0.76	87 50 35.68	66.003	30 32 52.34			
481	104	102	2	90 31 9.17	11.47	-3.12	-0.95	90 31 9.84	330.244	119 28 21.46			
482	104	103	2	92 9 29.98	11.47	-4.28	-0.27	92 9 26.46	66.003	210 32 53.11			

ADJUSTED DATA: ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	V	N.V	ADJUSTED	AZ.	V.A	
483	10	14	1305.3433	0.0062	0.61	1305.3494	330 3 50.42	77 44 16.05	102979 1 513 80117
484	10	14	1305.3502	-0.0008	-0.08	1305.3494	330 3 50.42	77 44 16.05	103979 21 507 225
485	10	15	3336.6416	0.0048	0.45	3336.6464	45 47 17.64	91 46 17.61	103979 22 507 225
486	10	15	3336.6526	-0.0062	-0.59	3336.6464	45 47 17.64	91 46 17.61	103979 27 507 225
487	15	14	3285.7715	0.0033	0.32	3285.7748	248 3 32.58	83 22 45.80	103979 9 513 80117
488	20	14	4728.1208	0.0036	0.32	4728.1244	174 54 38.21	85 21 37.41	109979 43 513 80117
489	25	14	5326.5195	0.0081	0.72	5326.5277	173 2 16.02	87 2 47.07	130979 144 513 80117
490	25	14	5326.5295	-0.0019	-0.17	5326.5277	173 2 16.02	87 2 47.07	130979 145 513 80117
491	30	14	5006.2885	-0.0005	-0.04	5006.2880	134 8 54.80	88 14 20.02	108979 31 513 80117
492	40	14	13845.5736	0.0015	0.09	13845.5750	166 4 50.43	89 25 3.78	135979 157 507 225
493	40	14	13845.5721	0.0030	0.17	13845.5750	166 4 50.43	89 25 3.78	129979 131 513 80117
494	15	20	4891.8069	0.0044	0.40	4891.8113	315 15 22.00	90 4 28.84	103979 10 513 80117
495	15	25	5474.3579	-0.0053	-0.47	5474.3526	317 53 38.57	88 56 47.00	103979 11 513 80117
496	25	15	5474.3558	-0.0033	-0.29	5474.3526	137 52 14.81	91 6 9.16	137979 177 507 225
497	20	25	637.5620	-0.0004	-0.04	637.5616	338 51 57.41	80 17 42.46	109979 45 513 80117
498	20	25	637.5634	-0.0018	-0.23	637.5616	338 51 57.41	80 17 42.46	109979 55 661 1037
499	30	20	3400.8099	-0.0054	-0.51	3400.8045	69 8 6.53	93 51 55.41	108979 30 513 80117
500	20	35	3709.3247	-0.0079	-0.74	3709.3167	291 27 28.01	86 15 45.38	109979 44 513 80117
501	35	25	3311.3481	0.0031	0.29	3311.3512	103 23 49.77	92 21 29.29	110979 60 513 80117
502	40	25	8589.0213	-0.0049	-0.37	8589.0163	161 47 21.40	90 50 41.68	129979 130 513 80117
503	25	40	8589.0219	-0.0055	-0.42	8589.0163	341 48 26.02	89 13 59.72	130979 147 513 80117
504	55	25	11442.8750	-0.0036	-0.24	11442.8713	154 14 58.24	90 53 2.12	123979 101 513 80117
505	55	25	11442.8710	0.0004	0.02	11442.8713	154 14 58.24	90 53 2.12	123979 114 513 80117
506	30	35	2576.0576	0.0066	0.64	2576.0642	353 52 44.73	89 41 17.14	108979 29 513 80117
507	35	40	7410.6644	0.0007	0.05	7410.6651	4 8 2.77	90 8 46.14	110979 59 513 80117
508	35	45	9024.1190	0.0109	0.81	9024.1299	336 19 24.93	90 44 28.52	110979 58 513 80117
509	40	45	4249.4480	0.0031	0.28	4249.4510	281 51 20.71	91 18 34.06	135979 158 507 225
510	50	40	1544.1935	0.0128	0.79	1544.2063	141 41 23.25	83 16 23.50	124979 124 661 1037
511	55	40	3136.4219	0.0052	0.50	3136.4271	133 13 56.58	90 50 37.13	123979 100 513 80117
512	40	55	3136.4335	-0.0064	-0.61	3136.4271	313 14 48.74	89 11 3.77	129979 132 513 80117
513	40	70	8017.4137	0.0052	0.41	8017.4189	325 16 44.55	90 32 50.32	135979 159 507 225
514	70	40	8017.4341	-0.0152	-1.19	8017.4189	145 15 0.73	89 31 25.68	136979 169 513 80117
515	55	45	2270.9866	-0.0032	-0.31	2270.9835	235 43 47.49	93 34 21.85	123979 102 513 80117
516	60	45	4708.6650	0.0184	1.67	4708.6834	138 24 44.41	90 18 11.27	122979 90 513 80117
517	50	55	1650.3481	0.0076	0.44	1650.3557	305 19 5.76	82 7 9.97	124979 127 661 1037
518	60	55	5479.9656	0.0052	0.45	5479.9708	114 11 3.22	88 47 28.52	122979 89 513 80117
519	100	55	4115.2780	-0.0036	-0.33	4115.2744	144 14 59.99	86 44 55.70	115979 76 513 80117
520	55	100	4115.2762	-0.0018	-0.16	4115.2744	324 15 54.46	93 17 14.32	123979 103 513 80117
521	55	100	4115.2792	-0.0048	-0.44	4115.2744	324 15 54.46	93 17 14.32	123979 120 513 80117
522	55	70	4994.2991	0.0005	0.05	4994.2996	332 47 17.47	91 21 52.20	123979 117 513 80117
523	70	55	4994.3066	-0.0071	-0.63	4994.2996	152 46 25.83	88 40 46.45	136979 175 513 80117
524	100	60	2818.0563	-0.0105	-1.01	2818.0458	247 15 24.87	87 38 17.02	115979 77 513 80117
525	60	70	3488.8651	0.0074	0.70	3488.8725	51 1 19.49	90 0 0.66	122979 88 513 80117
526	100	70	1117.5541	-0.0053	-0.43	1117.5488	5 59 49.40	83 57 39.32	114979 70 661 1037
527	100	70	1117.5499	-0.0011	-0.10	1117.5488	5 59 49.40	83 57 39.32	115979 85 513 80117
528	10	82	216.6521	-0.0093	-1.72	216.6428	62 20 38.15	93 23 23.17	15035DMAHTC 1/25/80
529	103	100	259.8326	0.0011	0.69	259.8337	8 7 34.87	85 38 34.26	
530	103	101	318.3087	0.0014	0.84	318.3101	103 26 5.29	89 52 18.66	
531	103	104	66.0033	-0.0001	-0.05	66.0032	30 32 52.34	87 50 35.68	
532	102	100	460.9191	0.0004	0.24	460.9195	321 51 35.32	87 29 3.90	

ADJUSTED DATA: ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	V	N.V	ADJUSTED	AZ.	V.A	
533	102	101	33.7354	-0.0026	-1.70	33.7328	340 11 58.96	87 55 34.17	
534	102	103	337.9664	-0.0015	-0.92	337.9649	288 13 21.24	89 54 59.86	
535	102	104	330.2441	-0.0001	-0.07	330.2440	299 28 28.21	89 29 0.85	
536	102	104	330.2416	0.0025	1.51	330.2440	299 28 28.21	89 29 0.85	
537	103	104	66.0026	0.0006	0.38	66.0032	30 32 52.34	87 50 35.68	
538	103	104	66.0021	0.0011	0.75	66.0032	30 32 52.34	87 50 35.68	
539	102	100	460.9176	0.0019	1.08	460.9195	321 51 35.32	87 29 3.90	
540	102	103	337.9658	-0.0009	-0.56	337.9649	288 13 21.24	89 54 59.86	
541	102	104	330.2463	-0.0023	-1.41	330.2440	299 28 28.21	89 29 0.85	
542	102	104	330.2397	0.0044	2.67	330.2440	299 28 28.21	89 29 0.85	
543	102	101	33.7336	-0.0008	-0.50	33.7328	340 11 58.96	87 55 34.17	
544	100	101	429.0305	-0.0010	-0.17	429.0295	140 26 23.69	92 32 35.99	
545	100	102	460.9172	0.0023	0.38	460.9195	141 51 28.87	92 31 9.84	
546	100	103	259.8320	0.0017	0.32	259.8337	188 7 35.87	94 21 33.10	
547	102	101	33.7338	-0.0010	-0.20	33.7328	340 11 58.96	87 55 34.17	
548	102	101	33.7365	-0.0037	-0.73	33.7328	340 11 58.96	87 55 34.17	
549	102	103	337.9642	0.0007	0.13	337.9649	288 13 21.24	89 54 59.86	
550	102	103	337.9673	-0.0024	-0.43	337.9649	288 13 21.24	89 54 59.86	
551	103	104	66.0044	-0.0012	-0.24	66.0032	30 32 52.34	87 50 35.68	
552	103	101	318.3109	-0.0008	-0.14	318.3101	103 26 5.29	89 52 18.66	
553	103	102	337.9619	0.0031	0.55	337.9649	108 13 13.73	90 5 11.15	
554	102	100	460.9163	0.0033	0.55	460.9195	321 51 35.32	87 29 3.90	
555	102	100	460.9187	0.0008	0.14	460.9195	321 51 35.32	87 29 3.90	
556	102	104	330.2392	0.0049	0.88	330.2440	299 28 28.21	89 29 0.85	
557	103	101	318.3155	-0.0054	-1.06	318.3101	103 26 5.29	89 52 18.66	
558	101	102	33.7287	0.0041	0.82	33.7328	160 11 58.69	92 4 26.93	
559	103	101	318.3180	-0.0079	-1.56	318.3101	103 26 5.29	89 52 18.66	
560	101	100	429.0432	-0.0137	-2.70	429.0295	320 26 29.88	87 27 36.74	
561	103	104	66.0048	-0.0016	-0.31	66.0032	30 32 52.34	87 50 35.68	
562	104	102	330.2527	-0.0086	-1.71	330.2440	119 28 21.46	90 31 9.84	
563	103	104	66.0049	-0.0017	-0.33	66.0032	30 32 52.34	87 50 35.68	
564	104	102	330.2519	-0.0078	-1.55	330.2440	119 28 21.46	90 31 9.84	
565	103	102	337.9735	-0.0085	-1.69	337.9649	108 13 13.73	90 5 11.15	
566	102	100	460.9266	-0.0071	-1.40	460.9195	321 51 35.32	87 29 3.90	
567	103	104	66.0085	-0.0053	-1.06	66.0032	30 32 52.34	87 50 35.68	
568	103	101	318.3170	-0.0069	-1.37	318.3101	103 26 5.29	89 52 18.66	
569	103	102	337.9717	-0.0068	-1.35	337.9649	108 13 13.73	90 5 11.15	
570	103	100	259.8380	-0.0043	-0.85	259.8337	8 7 34.87	85 38 34.26	
571	103	104	66.0034	-0.0002	-0.19	66.0032	30 32 52.34	87 50 35.68	
572	101	102	33.7315	0.0013	1.32	33.7328	160 11 58.69	92 4 26.93	
573	101	201	68.3062	-0.0004	-0.30	68.3057	96 48 41.76	90 34 6.52	
574	101	203	37.3772	0.0003	0.19	37.3775	278 3 51.07	89 50 33.18	
575	102	201	61.1478	0.0005	0.33	61.1483	67 16 46.63	89 29 27.79	
576	102	202	61.0259	0.0002	0.12	61.0261	187 27 34.36	92 53 12.62	
577	102	203	60.9348	0.0000	0.03	60.9348	307 21 7.59	88 45 20.17	
578	102	201	61.1511	-0.0028	-0.55	61.1483	67 16 46.63	89 29 27.79	
579	102	202	61.0281	-0.0021	-0.41	61.0261	187 27 34.36	92 53 12.62	
580	102	203	60.9381	-0.0033	-0.66	60.9348	307 21 7.59	88 45 20.17	
581	102	201	61.1489	-0.0007	-0.13	61.1483	67 16 46.63	89 29 27.79	3/81 HP3808A
582	102	301	34.3204	-0.0040	-0.80	34.3164	349 52 8.51	87 58 21.26	3/81 HP3808A

ADJUSTED DATA: ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	V	N.V	ADJUSTED	AZ.	V.A	
583	102	101	33.7349	-0.0020	-0.41	33.7328	340 11 58.96	87 55 34.17	3/81 HP3808A
584	102	302	28.2730	0.0016	0.31	28.2746	334 20 54.00	87 31 45.79	3/81 HP3808A
585	102	100	460.9177	0.0019	0.31	460.9195	321 51 35.32	87 29 3.90	3/81 HP3808A
586	201	302	68.6610	-0.0032	-0.63	68.6578	271 32 32.89	89 26 11.88	3/81 HP3808A
587	201	101	68.3068	-0.0011	-0.22	68.3057	276 48 43.32	89 25 55.68	3/81 HP3808A
588	201	301	63.2567	-0.0011	-0.22	63.2556	279 13 42.98	89 23 34.01	3/81 HP3808A
589	201	100	480.7655	0.0014	0.23	480.7669	314 48 42.09	87 39 11.98	3/81 HP3808A
590	100	101	429.0233	0.0062	1.06	429.0295	140 26 23.69	92 32 35.99	3/81 HP3808A
591	101	301	5.7580	0.0031	1.53	5.7611	69 14 5.34	90 3 58.50	TAPED MK TO MK 1/76
592	101	301	5.7600	0.0011	0.53	5.7611	69 14 5.34	90 3 58.50	TAPED MK TO MK 1/76
593	101	301	5.7620	-0.0009	-0.47	5.7611	69 14 5.34	90 3 58.50	TAPED MK TO MK 3/81
594	101	302	6.3030	0.0026	1.32	6.3056	187 22 29.38	90 1 2.23	TAPED MK TO MK 1/76
595	101	302	6.3070	-0.0014	-0.68	6.3056	187 22 29.38	90 1 2.23	TAPED MK TO MK 3/81
596	301	302	10.3510	0.0035	1.77	10.3545	216 45 20.77	89 58 25.36	TAPED MK TO MK 1/76
597	301	302	10.3570	-0.0025	-1.23	10.3545	216 45 20.77	89 58 25.36	TAPED MK TO MK 3/81
598	10	84	72.0004	0.0087	1.74	72.0092	317 49 10.09	82 30 44.16	810612 1 663 561
599	10	84	72.0093	-0.0002	-0.08	72.0092	317 49 10.09	82 30 44.16	810612 17 612 470
600	84	10	72.0067	0.0024	0.48	72.0092	137 49 9.00	97 29 18.16	810615 37 663 561
601	84	10	72.0106	-0.0014	-0.72	72.0092	137 49 9.00	97 29 18.16	810615 57 612 470
602	84	86	291.8045	0.0005	0.11	291.8050	92 38 18.77	94 13 30.98	810615 36 663 561
603	84	86	291.8064	-0.0013	-0.66	291.8050	92 38 18.77	94 13 30.98	810615 56 612 470
604	86	84	291.8053	-0.0003	-0.06	291.8050	272 38 25.41	85 46 38.42	810615 74 663 561
605	86	84	291.8068	-0.0017	-0.86	291.8050	272 38 25.41	85 46 38.42	810615 94 612 470
606	84	80	279.3162	-0.0015	-0.30	279.3146	75 59 2.52	95 0 9.26	810615 34 663 561
607	84	80	279.3157	-0.0011	-0.52	279.3146	75 59 2.52	95 0 9.26	810615 54 612 470
608	80	84	279.3165	-0.0018	-0.36	279.3146	255 59 8.68	84 59 59.73	810616 116 663 561
609	80	84	279.3156	-0.0010	-0.47	279.3146	255 59 8.68	84 59 59.73	810616 132 612 470
610	84	82	245.1594	0.0026	0.53	245.1620	78 47 13.81	95 11 39.06	810615 35 663 561
611	84	82	245.1609	0.0011	0.54	245.1620	78 47 13.81	95 11 39.06	810615 55 612 470
612	82	84	245.1607	0.0012	0.25	245.1620	258 47 19.27	84 48 28.82	810618 146 663 561
613	82	84	245.1589	0.0031	1.53	245.1620	258 47 19.27	84 48 28.82	810618 163 612 470
614	84	87	280.7259	-0.0008	-0.15	280.7252	73 40 47.37	94 57 11.22	810615 33 663 561
615	84	87	280.7237	0.0014	0.70	280.7252	73 40 47.37	94 57 11.22	810615 53 612 470
616	87	84	280.7261	-0.0009	-0.45	280.7252	253 40 53.50	85 2 57.82	810623 241 612 470
617	87	84	280.7286	-0.0035	-0.69	280.7252	253 40 53.50	85 2 57.82	810626 225 663 561
618	14	10	1305.3490	0.0004	0.08	1305.3494	150 3 35.27	102 16 26.71	810618 173 663 561
619	10	14	1305.3500	-0.0006	-0.26	1305.3494	330 3 50.42	77 44 16.05	810618 185 612 470
620	15	10	3336.6507	-0.0043	-0.72	3336.6464	225 48 10.79	88 15 29.66	810622 206 663 561
621	10	15	3336.6424	0.0040	0.66	3336.6464	45 47 17.64	91 46 17.61	810624 229 663 561
622	86	10	246.2559	-0.0001	-0.02	246.2558	260 45 29.52	87 10 57.50	810615 73 663 561
623	86	10	246.2554	0.0004	0.17	246.2558	260 45 29.52	87 10 57.50	810615 93 612 470
624	10	86	246.2547	0.0011	0.52	246.2558	80 45 23.98	92 49 10.45	810618 181 612 470
625	10	80	252.9635	0.0013	0.26	252.9648	61 33 4.13	93 23 34.42	810612 3 663 561
626	10	80	252.9650	-0.0002	-0.09	252.9648	61 33 4.13	93 23 34.42	810612 19 612 470
627	80	10	252.9654	-0.0006	-0.12	252.9648	241 33 9.20	86 36 33.75	810616 115 663 561
628	80	10	252.9642	0.0006	0.32	252.9648	241 33 9.20	86 36 33.75	810616 131 612 470
629	10	82	216.6392	0.0036	0.72	216.6428	62 20 38.15	93 23 23.17	810612 4 663 561
630	10	82	216.6397	0.0031	1.52	216.6428	62 20 38.15	93 23 23.17	810612 20 612 470
631	82	10	216.6417	0.0011	0.21	216.6428	242 20 42.52	86 36 43.82	810618 145 663 561
632	82	10	216.6475	-0.0047	-2.35	216.6428	242 20 42.52	86 36 43.82	810618 162 612 470

ADJUSTED DATA: ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	V	N.V	ADJUSTED	AZ.			V.A						
633	10	87	257.1315	0.0026	0.52	257.1341	59	11	12.18	93	18	41.08	810612	2	663	561
634	10	87	257.1344	-0.0003	-0.14	257.1341	59	11	12.18	93	18	41.08	810612	18	612	470
635	87	10	257.1354	-0.0013	-0.26	257.1341	239	11	17.21	86	41	27.22	810623	221	663	561
636	87	10	257.1334	0.0007	0.36	257.1341	239	11	17.21	86	41	27.22	810623	237	612	470
637	82	15	3129.6629	0.0017	0.29	3129.6646	44	39	38.72	91	39	8.23	810618	148	663	561
638	15	82	3129.6673	-0.0027	-0.45	3129.6646	224	40	27.50	88	22	32.39	810622	210	663	561
639	15	87	3087.1739	-0.0038	-0.64	3087.1701	224	41	54.63	88	23	26.97	810622	208	663	561
640	87	15	3087.1649	0.0052	0.88	3087.1701	44	41	6.51	91	38	12.28	810623	212	663	561
641	86	80	83.4530	0.0018	0.36	83.4548	345	36	20.90	91	57	44.78	810615	76	663	561
642	86	80	83.4543	0.0005	0.26	83.4548	345	36	20.90	91	57	44.78	810615	96	612	470
643	80	86	83.4563	-0.0015	-0.30	83.4548	165	36	20.43	88	2	17.92	810616	113	663	561
644	80	86	83.4561	-0.0014	-0.67	83.4548	165	36	20.43	88	2	17.92	810616	129	612	470
645	80	86	83.4530	0.0017	0.35	83.4548	165	36	20.43	88	2	17.92	810620	202	663	561
646	86	82	79.5499	0.0015	0.30	79.5514	319	55	49.36	90	30	9.07	810615	75	663	561
647	86	82	79.5520	-0.0006	-0.29	79.5514	319	55	49.36	90	30	9.07	810615	95	612	470
648	82	86	79.5482	0.0032	0.64	79.5514	139	55	48.19	89	29	53.51	810618	147	663	561
649	82	86	79.5512	0.0002	0.09	79.5514	139	55	48.19	89	29	53.51	810618	161	612	470
650	82	86	79.5503	0.0011	0.23	79.5514	139	55	48.19	89	29	53.51	810620	188	663	561
651	82	86	79.5523	-0.0009	-0.19	79.5514	139	55	48.19	89	29	53.51	810620	195	664	747
652	86	87	94.6882	0.0021	0.42	94.6903	346	22	38.59	91	39	28.39	810615	77	663	561
653	86	87	94.6885	0.0018	0.92	94.6903	346	22	38.59	91	39	28.39	810615	97	612	470
654	87	86	94.6912	-0.0009	-0.18	94.6903	166	22	38.08	88	20	34.68	810623	217	663	561
655	87	86	94.6895	0.0008	0.39	94.6903	166	22	38.08	88	20	34.68	810623	233	612	470
656	80	82	36.4657	0.0000	0.00	36.4657	236	50	14.79	86	36	15.04	810616	114	663	561
657	80	82	36.4639	0.0018	0.91	36.4657	236	50	14.79	86	36	15.04	810616	130	612	470
658	82	80	36.4639	0.0018	0.37	36.4657	56	50	14.09	93	23	46.14	810620	187	663	561
659	82	80	36.4693	-0.0036	-0.73	36.4657	56	50	14.09	93	23	46.14	810620	199	664	747
660	80	82	36.4655	0.0002	0.10	36.4657	236	50	14.79	86	36	15.04	810617	5	441	3079
661	82	80	36.4654	0.0003	0.15	36.4657	56	50	14.09	93	23	46.14	810617	5	441	3079
662	80	82	36.4667	-0.0010	-0.50	36.4657	236	50	14.79	86	36	15.04	810617	6	441	4079
663	82	80	36.4664	-0.0007	-0.35	36.4657	56	50	14.09	93	23	46.14	810617	6	441	4079
664	80	87	11.3084	0.0005	0.26	11.3089	352	4	38.55	89	23	59.28	810617	3	441	4079
665	87	80	11.3084	0.0005	0.26	11.3089	172	4	38.52	90	36	1.09	810617	3	441	4079
666	80	87	11.3091	-0.0002	-0.09	11.3089	352	4	38.55	89	23	59.28	810617	4	441	3079
667	87	80	11.3088	0.0001	0.06	11.3089	172	4	38.52	90	36	1.09	810617	4	441	3079
668	82	87	42.5200	0.0027	1.37	42.5227	42	54	7.35	92	45	7.79	810618	177	612	470
669	87	82	42.5223	0.0004	0.22	42.5227	222	54	8.01	87	14	53.59	810617	2	441	3079
670	82	87	42.5223	0.0004	0.22	42.5227	42	54	7.35	92	45	7.79	810617	2	441	3079
671	87	82	42.5256	-0.0029	-1.43	42.5227	222	54	8.01	87	14	53.59	810617	1	441	4079
672	82	87	42.5232	-0.0005	-0.23	42.5227	42	54	7.35	92	45	7.79	810617	1	441	4079
673	161	160	33.1689	-0.0017	-0.34	33.1672	303	41	52.91	84	26	16.34	810702	280	663	561
674	161	160	33.1638	0.0034	1.70	33.1672	303	41	52.91	84	26	16.34	810704	302	612	470
675	162	160	19.7576	0.0017	0.34	19.7593	87	53	33.14	78	17	39.66	810702	272	663	561
676	162	160	19.7593	0.0000	0.02	19.7593	87	53	33.14	78	17	39.66	810704	306	612	470
677	163	160	36.6963	-0.0023	-0.45	36.6940	211	50	33.00	84	43	0.70	810702	268	663	561
678	163	160	36.6882	0.0058	2.92	36.6940	211	50	33.00	84	43	0.70	810703	290	612	470
679	162	161	50.0081	-0.0010	-0.20	50.0071	110	36	48.42	89	5	25.40	810702	276	663	561
680	161	162	50.0048	0.0023	1.14	50.0071	290	36	49.49	90	54	36.21	810703	298	612	470
681	162	161	50.0043	0.0028	1.40	50.0071	110	36	48.42	89	5	25.40	810704	310	612	470
682	161	162	50.0074	-0.0003	-0.19	50.0071	290	36	49.49	90	54	36.21	810701	9	422	748

ADJUSTED DATA: ABSOLUTE DISTANCES

	FROM	TO	OBSERVED	V	N.V	ADJUSTED	AZ.			V.A					
683	162	161	50.0071	0.0000	0.02	50.0071	110	36	48.42	89	5	25.40	810701	9	422	748
684	161	162	50.0089	-0.0018	-1.26	50.0071	290	36	49.49	90	54	36.21	810701	12	422	9429
685	162	161	50.0079	-0.0008	-0.55	50.0071	110	36	48.42	89	5	25.40	810701	12	422	9429
686	161	162	50.0073	-0.0002	-0.12	50.0071	290	36	49.49	90	54	36.21	810701	13	422	754
687	162	161	50.0070	0.0001	0.09	50.0071	110	36	48.42	89	5	25.40	810701	13	422	754
688	161	162	50.0073	-0.0002	-0.12	50.0071	290	36	49.49	90	54	36.21	810701	16	422	915
689	162	161	50.0081	-0.0010	-0.69	50.0071	110	36	48.42	89	5	25.40	810701	16	422	915
690	163	161	50.0315	-0.0026	-0.52	50.0289	170	34	51.88	89	48	44.71	810701	260	663	561
691	163	161	50.0268	0.0021	1.04	50.0289	170	34	51.88	89	48	44.71	810703	286	612	470
692	163	161	50.0291	-0.0002	-0.13	50.0289	170	34	51.88	89	48	44.71	810701	10	422	9429
693	161	163	50.0290	-0.0001	-0.06	50.0289	350	34	52.07	90	11	16.91	810701	10	422	9429
694	163	161	50.0294	-0.0005	-0.35	50.0289	170	34	51.88	89	48	44.71	810701	15	422	754
695	161	163	50.0284	0.0005	0.37	50.0289	350	34	52.07	90	11	16.91	810701	15	422	754
696	163	161	50.0292	-0.0003	-0.20	50.0289	170	34	51.88	89	48	44.71	810701	17	422	915
697	161	163	50.0294	-0.0005	-0.35	50.0289	350	34	52.07	90	11	16.91	810701	17	422	915
698	161	163	50.0289	0.0000	0.01	50.0289	350	34	52.07	90	11	16.91	810701	7	422	748
699	163	161	50.0286	0.0003	0.23	50.0289	170	34	51.88	89	48	44.71	810701	7	422	748
700	161	60	9991.3027	0.0001	0.01	9991.3028	343	44	55.12	88	54	30.41	810630	257	663	561
701	163	162	49.9939	0.0001	0.02	49.9941	230	34	11.18	90	43	20.43	810701	264	663	561
702	163	162	49.9923	0.0018	0.90	49.9941	230	34	11.18	90	43	20.43	810703	294	612	470
703	162	156	2482.3501	0.0010	0.19	2482.3511	229	43	8.60	89	40	5.27	810703	285	663	561
704	162	60	9961.4080	-0.0014	-0.01	9961.4066	343	58	42.54	88	54	1.20	810630	253	662	561
705	163	162	49.9945	-0.0004	-0.32	49.9941	230	34	11.18	90	43	20.43	810701	11	422	9429
706	162	163	49.9945	-0.0004	-0.32	49.9941	50	34	10.29	89	16	41.19	810701	11	422	9429
707	162	163	49.9941	-0.0000	-0.03	49.9941	50	34	10.29	89	16	41.19	810701	14	422	754
708	163	162	49.9940	0.0001	0.04	49.9941	230	34	11.18	90	43	20.43	810701	14	422	754
709	162	163	49.9942	-0.0001	-0.11	49.9941	50	34	10.29	89	16	41.19	810701	8	422	748
710	163	162	49.9942	-0.0001	-0.11	49.9941	230	34	11.18	90	43	20.43	810701	8	422	748
711	163	162	49.9946	-0.0005	-0.39	49.9941	230	34	11.18	90	43	20.43	810701	18	422	915
712	162	163	49.9948	-0.0007	-0.53	49.9941	50	34	10.29	89	16	41.19	810701	18	422	915
713	163	156	2532.3325	-0.0011	-0.19	2532.3315	229	44	9.93	89	41	21.78	810703	284	663	561
714	163	60	9941.6434	-0.0000	-0.00	9941.6434	343	42	51.42	88	54	5.76	810630	255	663	561

ADJUSTED ELEVATION DIFFERENCES

	FROM	TO	MEASURED	V	N.V	ADJUSTED				ELEVATIONS	
715	100	101	-19.0262	0.0013	0.43	-19.0249				1016.45	997.43
716	101	102	-1.2198	-0.0010	-0.33	-1.2208				997.43	996.21
717	102	104	2.9821	0.0030	1.02	2.9851				996.21	999.19
718	104	103	-2.4834	-0.0009	-0.29	-2.4843				999.19	996.71
719	103	102	-0.5009	0.0001	0.03	-0.5008				996.71	996.21
720	102	203	1.3236	0.0000	0.01	1.3236				996.21	997.53
721	102	201	0.5452	-0.0017	-0.58	0.5435				996.21	996.75
722	50	100	-8.1870	-0.0168	-0.56	-8.2038	SCARP ADJ			1024.66	1016.45
723	20	50	47.2300	-0.0032	-0.11	47.2268	SCARP ADJ			977.43	1024.66
724	10	20	-106.8560	0.0296	0.99	-106.8264	SCARP ADJ			1084.26	977.43
725	10	82	-12.8080	0.0020	0.66	-12.8060				1084.26	1071.45
726	102	202	-3.0732	0.0000	0.00	-3.0732				996.21	993.13
727	302	101	0.0020	-0.0001	-0.05	0.0019	3/81 WYE LEVELS			997.43	997.43
728	101	301	-0.0070	0.0003	0.17	-0.0067	3/81 WYE LEVELS			997.43	997.42
729	301	201	-0.6710	0.0003	0.16	-0.6707	3/81 WYE LEVELS			997.42	996.75
730	201	102	-0.5430	-0.0005	-0.23	-0.5435	3/81 WYE LEVELS			996.75	996.21
731	102	302	1.2190	-0.0001	-0.05	1.2189	3/81 WYE LEVELS			996.21	997.43
732	87	82	2.0410	0.0006	0.21	2.0416	810611	232	1	1069.41	1071.45
733	87	80	-0.1190	0.0005	0.18	-0.1185	810611	232	1	1069.41	1069.29
734	80	10	14.9660	0.0001	0.04	14.9661	810611	232	1	1069.29	1084.26
735	80	86	2.8580	-0.0007	-0.23	2.8573	810611	232	1	1069.29	1072.15
736	86	10	12.1080	0.0008	0.27	12.1088	810617	232	1	1072.15	1084.26
737	80	82	2.1590	0.0011	0.37	2.1601	810611	232	1	1069.29	1071.45
738	10	84	9.3840	0.0002	0.07	9.3842	810611	232	1	1084.26	1093.64
739	10	84	9.3850	-0.0008	-0.27	9.3842	810611	232	1	1084.26	1093.64
740	84	85	0.0630	-0.0000	-0.00	0.0630	810703	232	1	1093.64	1093.70
741	84	85	0.0630	-0.0000	-0.00	0.0630	810703	232	1	1093.64	1093.70
742	156	161	-14.0650	-0.0024	-0.24	-14.0674				948.29	934.22
743	161	162	-0.7950	0.0009	0.31	-0.7941	810701	232	1	934.22	933.43
744	162	163	0.6310	-0.0009	-0.31	0.6301	810701	232	1	933.43	934.06
745	163	161	0.1640	-0.0000	-0.00	0.1640	810701	232	1	934.06	934.22
746	160	161	-3.2150	0.0002	0.06	-3.2148	810704	232	1	937.44	934.22
747	161	160	3.2160	-0.0012	-0.40	3.2148	810704	232	1	934.22	937.44
748	160	161	-3.2150	0.0002	0.06	-3.2148	810703	232	1	937.44	934.22

ADJUSTED POSITION DIFFERENCES (METERS)

	FROM	TO	LAT.	V	LON.	V	H	V	
749	80	83	0.0070	0.0000	0.0290	-0.0000	3.6150	0.0000	
750	102	106	-0.0030	0.0000	0.0080	0.0000	3.8660	-0.0000	
751	104	105	-0.0008	0.0000	-0.0049	0.0000	32.8080	-0.0000	
752	160	255	0.0000	0.0000	0.0000	0.0000	3.1825	0.0000	
753	84	85	0.0000	0.0000	-0.0000	-0.0000	0.0630	-0.0000	
754	101	107	0.4710	0.0000	-0.3540	0.0000	0.0	0.0	ARIES 2 1978

ADJUSTED ASTRONOMIC LATITUDES AND LONGITUDES

STATION				OBSERVED	V	N.V	ADJUSTED	SIGMA	
778	100	MARS 1963	LAT	35 25 34.50	0.06	0.15	35 25 34.56	0.36	
779	100	MARS 1963	LON	116 53 24.88	-0.12	-0.30	116 53 24.76	0.34	
780	10	VENUS 1963	LAT	35 14 47.15	-0.01	-0.02	35 14 47.14	0.36	
781	10	VENUS 1963	LON	116 47 36.18	-0.05	-0.12	116 47 36.13	0.36	
782	14	BILL 1963	LAT	35 15 24.15	-0.03	-0.07	35 15 24.12	0.36	
783	14	BILL 1963	LON	116 48 2.15	0.29	0.72	116 48 2.44	0.34	
784	15	BILLECHO	LAT	35 16 3.48	0.10	0.25	35 16 3.58	0.36	
785	15	BILLECHO	LON	116 46 3.91	0.02	0.05	116 46 3.93	0.36	
786	20	ECHO 1963	LAT	35 17 55.05	-0.02	-0.06	35 17 55.03	0.35	
787	20	ECHO 1963	LON	116 48 19.03	0.09	0.22	116 48 19.12	0.36	
788	25	CALLECHO	LAT	35 18 14.12	-0.07	-0.18	35 18 14.05	0.36	
789	25	CALLECHO	LON	116 48 29.13	-0.19	-0.49	116 48 28.94	0.34	
790	30	BONE	LAT	35 17 16.49	0.05	0.10	35 17 16.54	0.45	
791	30	BONE	LON	116 50 27.23	0.02	0.04	116 50 27.25	0.45	
792	35	MIDDLE	LAT	35 18 40.25	0.04	0.09	35 18 40.29	0.36	
793	35	MIDDLE	LON	116 50 38.00	0.00	0.01	116 50 38.00	0.36	
794	40	CALL 1963 RM 3	LAT	35 22 40.35	-0.07	-0.18	35 22 40.28	0.36	
795	40	CALL 1963 RM 3	LON	116 50 20.96	-0.21	-0.54	116 50 20.75	0.34	
796	45	DRACUP	LAT	35 23 9.01	0.10	0.21	35 23 9.11	0.45	
797	45	DRACUP	LON	116 53 5.31	0.05	0.10	116 53 5.36	0.45	
798	50	PIONEER 1963	LAT	35 23 19.70	0.01	0.02	35 23 19.71	0.36	
799	50	PIONEER 1963	LON	116 50 58.30	0.07	0.16	116 50 58.37	0.36	
800	55	BOARD	LAT	35 23 49.46	0.01	0.03	35 23 49.47	0.36	
801	55	BOARD	LON	116 51 50.87	-0.04	-0.11	116 51 50.83	0.36	
802	60	JOE	LAT	35 25 1.34	0.01	0.02	35 25 1.35	0.45	
803	60	JOE	LON	116 55 6.86	0.03	0.06	116 55 6.89	0.45	
804	70	FOOT 1963	LAT	35 26 10.57	-0.03	-0.08	35 26 10.54	0.36	
805	70	FOOT 1963	LON	116 53 20.02	-0.09	-0.22	116 53 19.93	0.34	
806	80	MOBLAS 7115	LAT	35 14 54.01	-2.96	-0.30	35 14 51.04	0.37	NOT OBS.
807	80	MOBLAS 7115	LON	116 47 27.95	-0.60	-0.04	116 47 27.35	0.37	NOT OBS.
808	82	MOBLAS 7115 RM1-DOP(51266)	LAT	35 14 53.36	-2.96	-0.30	35 14 50.40	0.37	NOT OBS.
809	82	MOBLAS 7115 RM1-DOP(51266)	LON	116 47 29.16	-0.60	-0.04	116 47 28.56	0.37	NOT OBS.
810	83	MOBLAS 7115 REF PT (ML0307)	LAT	35 14 54.01	-2.96	-0.30	35 14 51.04	0.37	NOT OBS.
811	83	MOBLAS 7115 REF PT (ML0307)	LON	116 47 27.96	-0.60	-0.04	116 47 27.35	0.37	NOT OBS.

ADJUSTED ASTRONOMIC LATITUDES AND LONGITUDES

	STATION			OBSERVED	V	N.V	ADJUSTED	SIGMA	
812	85	VENUS VLBI REF. POINT	LAT	35 14 51.82	-2.96	-0.30	35 14 48.86	0.37	NOT OBS.
813	85	VENUS VLBI REF. POINT	LON	116 47 38.63	-0.60	-0.04	116 47 38.03	0.37	NOT OBS.
814	101	ARIES 1976	LAT	35 25 29.12	-3.85	-0.38	35 25 25.28	0.28	NOT OBS.
815	101	ARIES 1976	LON	116 53 8.41	5.61	0.37	116 53 14.02	0.36	NOT OBS.
816	102	GOLDSTONE VAL. (MOBLAS 7085)	LAT	35 25 24.21	0.04	0.12	35 25 24.25	0.27	
817	102	GOLDSTONE VAL. (MOBLAS 7085)	LON	116 53 13.70	-0.13	-0.33	116 53 13.57	0.35	
818	103	MARS CONTROL	LAT	35 25 27.36	-0.03	-0.09	35 25 27.33	0.27	
819	103	MARS CONTROL	LON	116 53 26.26	0.28	0.70	116 53 26.54	0.34	
820	104	MARS COLLIMATION	LAT	35 25 33.37	-4.19	-0.42	35 25 29.18	0.28	NOT OBS.
821	104	MARS COLLIMATION	LON	116 53 19.35	5.86	0.39	116 53 25.21	0.35	NOT OBS.
822	105	MARS VLBI REF. POINT	LAT	35 25 33.37	-4.19	-0.42	35 25 29.18	0.28	NOT OBS.
823	105	MARS VLBI REF. POINT	LON	116 53 19.35	5.86	0.39	116 53 25.21	0.35	NOT OBS.
824	106	MOBLAS 7085 REF PT (ML0106)	LAT	35 25 28.09	-3.85	-0.38	35 25 24.25	0.28	NOT OBS.
825	106	MOBLAS 7085 REF PT (ML0106)	LON	116 53 7.96	5.61	0.37	116 53 13.57	0.35	NOT OBS.
826	107	ARIES 2 1978	LAT	35 25 29.14	-3.85	-0.38	35 25 25.29	0.28	NOT OBS.
827	107	ARIES 2 1978	LON	116 53 8.40	5.61	0.37	116 53 14.01	0.36	NOT OBS.
828	201	GOLDSTONE VAL. RM1 DOP(51212)	LAT	35 25 28.86	-3.85	-0.38	35 25 25.01	0.28	NOT OBS.
829	201	GOLDSTONE VAL. RM1 DOP(51212)	LON	116 53 5.72	5.61	0.37	116 53 11.33	0.36	NOT OBS.
830	202	GOLDSTONE VALIDATION RM 2	LAT	35 25 26.13	-3.85	-0.38	35 25 22.29	0.28	NOT OBS.
831	202	GOLDSTONE VALIDATION RM 2	LON	116 53 8.27	5.61	0.37	116 53 13.88	0.36	NOT OBS.
832	203	GOLDSTONE VALIDATION RM 3	LAT	35 25 29.29	-3.85	-0.38	35 25 25.44	0.28	NOT OBS.
833	203	GOLDSTONE VALIDATION RM 3	LON	116 53 9.88	5.61	0.37	116 53 15.49	0.36	NOT OBS.
834	84	VENUS TRUNNION	LAT	35 14 51.82	-2.96	-0.30	35 14 48.86	0.37	NOT OBS.
835	84	VENUS TRUNNION	LON	116 47 38.63	-0.60	-0.04	116 47 38.03	0.37	NOT OBS.
836	86	ARIES 6-9-81 9 MTR.	LAT	35 14 51.39	-2.96	-0.30	35 14 48.42	0.37	NOT OBS.
837	86	ARIES 6-9-81 9 MTR.	LON	116 47 27.13	-0.60	-0.04	116 47 26.53	0.37	NOT OBS.
838	87	MOBLAS STA 7115 A	LAT	35 14 54.37	-2.96	-0.30	35 14 51.41	0.37	NOT OBS.
839	87	MOBLAS STA 7115 A	LON	116 47 28.02	-0.60	-0.04	116 47 27.41	0.37	NOT OBS.
840	160	MOJAVE TRUNNION	LAT	35 19 52.72	0.00	0.00	35 19 52.72	0.45	
841	160	MOJAVE TRUNNION	LON	116 53 18.80	-0.04	-0.08	116 53 18.76	0.45	
842	161	MOJAVE A	LAT	35 19 53.39	-1.27	-0.13	35 19 52.13	0.46	NOT OBS.
843	161	MOJAVE A	LON	116 53 11.36	6.31	0.42	116 53 17.67	0.46	NOT OBS.
844	162	MOJAVE B	LAT	35 19 53.96	-1.27	-0.13	35 19 52.69	0.46	NOT OBS.
845	162	MOJAVE B	LON	116 53 13.21	6.32	0.42	116 53 19.53	0.46	NOT OBS.

ADJUSTED ASTRONOMIC LATITUDES AND LONGITUDES

	STATION			OBSERVED	V	N.V	ADJUSTED	SIGMA	
846	163	MOJAVE C	LAT	35 19 54.99	-1.26	-0.13	35 19 53.73	0.46	NOT OBS.
847	163	MOJAVE C	LON	116 53 11.68	6.31	0.42	116 53 18.00	0.46	NOT OBS.
848	156	82 WFM USGS	LAT	35 19 1.89	-1.26	-0.13	35 19 0.62	0.46	NOT OBS.
849	156	82 WFM USGS	LON	116 54 28.17	6.32	0.42	116 54 34.48	0.46	NOT OBS.
850	255	MOJAVE VLBI REF. POINT	LAT	35 19 53.99	-1.27	-0.13	35 19 52.72	0.46	NOT OBS.
851	255	MOJAVE VLBI REF. POINT	LON	116 53 12.44	6.32	0.42	116 53 18.76	0.46	NOT OBS.
852	301	ARIES RM 1 1976 DOP(51201)	LAT	35 25 29.19	-3.85	-0.38	35 25 25.34	0.28	NOT OBS.
853	301	ARIES RM 1 1976 DOP(51201)	LON	116 53 8.20	5.61	0.37	116 53 13.81	0.36	NOT OBS.
854	302	ARIES RM 2 1976 DOP(51228)	LAT	35 25 28.92	-3.85	-0.38	35 25 25.07	0.28	NOT OBS.
855	302	ARIES RM 2 1976 DOP(51228)	LON	116 53 8.44	5.61	0.37	116 53 14.05	0.36	NOT OBS.

GEODETIC LATITUDE CONSTRAINTS

STATION		CONSTRAINED	V	N.V	ADJUSTED	SIGMA
856	100	35 25 39.84438	-0.00000	-0.00001	35 25 39.84438	0.00003

GEODETIC LONGITUDE CONSTRAINTS

STATION		CONSTRAINED	V	N.V	ADJUSTED	SIGMA
857	100	116 53 19.22922	-0.00000	-0.00001	116 53 19.22922	0.00004

GEODETIC HEIGHT CONSTRAINTS

STATION		CONSTRAINED	V	N.V	ADJUSTED	SIGMA
858	100	997.0780	-0.0000	-0.0	997.0780	0.001

ADJUSTED CARTESIAN COORDINATES

DX	DY	DZ	EPSILON	PSI	OMEGA	SCALE
-8.270	147.490	176.380	0.0	0.0	0.0	0.0

	STATION	X	Y	Z	TRANSFORMED COORDINATES X	Y	Z
100	MARS 1963	-2353551.582	-4641377.147	3677026.674	-2353559.852	-4641229.657	3677203.054
10	VENUS 1963	-2351087.893	-4655667.699	3660728.821	-2351096.163	-4655520.209	3660905.201
14	BILL 1963	-2351470.608	-4655013.439	3661791.558	-2351478.878	-4654865.949	3661967.938
15	BILLECHO	-2348311.134	-4655472.071	3662568.536	-2348319.404	-4655324.581	3662744.916
20	ECHO 1963	-2350479.796	-4652125.380	3665401.623	-2350488.066	-4651977.890	3665578.003
25	CALLECHO	-2350568.844	-4651799.176	3665942.129	-2350577.114	-4651651.686	3666118.509
30	BONE	-2353708.482	-4651483.712	3664547.619	-2353716.752	-4651336.222	3664723.999
35	MIDDLE	-2353290.648	-4650049.668	3666646.438	-2353298.918	-4649902.178	3666822.818
40	CALL 1963 RM 3	-2350877.792	-4646465.202	3672667.043	-2350886.062	-4646317.712	3672843.423
45	DRACUP	-2354323.732	-4644066.505	3673322.471	-2354332.002	-4643919.015	3673498.851
50	PIONEER 1963	-2351344.648	-4645282.502	3673543.307	-2351352.918	-4645135.012	3673719.687
55	BOARD	-2352370.863	-4644356.315	3674444.825	-2352379.133	-4644208.825	3674621.205
60	JOE	-2356195.717	-4640849.844	3676206.992	-2356203.987	-4640702.354	3676383.372
70	FOOT 1963	-2353201.592	-4640943.710	3677995.465	-2353209.862	-4640796.220	3678171.845
80	MOBLAS 7115	-2350852.898	-4655694.901	3660818.424	-2350861.168	-4655547.411	3660994.804
82	MOBLAS 7115 RM1-DOP(51266)	-2350886.074	-4655692.999	3660803.408	-2350894.344	-4655545.509	3660979.788
83	MOBLAS 7115 REF PT (ML0307)	-2350854.252	-4655697.520	3660820.516	-2350862.522	-4655550.030	3660996.896
85	VENUS VLBI REF. POINT	-2351120.400	-4655625.722	3660777.480	-2351128.670	-4655478.232	3660953.860
101	ARIES 1976	-2353387.736	-4641657.602	3676746.378	-2353396.006	-4641510.112	3676922.758
102	GOLDSTONE VAL. (MOBLAS 7085)	-2353385.416	-4641678.276	3676719.824	-2353393.686	-4641530.786	3676896.204
103	MARS CONTROL	-2353644.208	-4641478.825	3676806.230	-2353652.478	-4641331.335	3676982.610
104	MARS COLLIMATION	-2353600.334	-4641466.428	3676853.957	-2353608.604	-4641318.938	3677030.337
105	MARS VLBI REF. POINT	-2353612.421	-4641490.274	3676872.974	-2353620.691	-4641342.784	3677049.354
106	MOBLAS 7085 REF PT (ML0106)	-2353386.848	-4641681.083	3676722.062	-2353395.118	-4641533.593	3676898.442
107	ARIES 2 1978	-2353387.297	-4641657.518	3676746.762	-2353395.567	-4641510.028	3676923.142
201	GOLDSTONE VAL. RM1 DOP(51212)	-2353329.121	-4641691.968	3676739.384	-2353337.391	-4641544.478	3676915.764
202	GOLDSTONE VALIDATION RM 2	-2353407.181	-4641703.705	3676668.796	-2353415.451	-4641556.215	3676845.176
203	GOLDSTONE VALIDATION RM 3	-2353419.407	-4641638.230	3676750.710	-2353427.677	-4641490.740	3676927.090
84	VENUS TRUNNION	-2351120.377	-4655625.676	3660777.444	-2351128.647	-4655478.186	3660953.824
86	ARIES 6-9-81 9 MTR.	-2350856.455	-4655747.948	3660754.096	-2350864.725	-4655600.458	3660930.476
87	MOBLAS STA 7115 A	-2350851.419	-4655688.515	3660827.639	-2350859.689	-4655541.025	3661004.019
160	MOJAVE TRUNNION	-2356161.271	-4646902.646	3668289.697	-2356169.541	-4646755.156	3668466.077
161	MOJAVE A	-2356140.380	-4646922.174	3668272.896	-2356148.650	-4646774.684	3668449.276
162	MOJAVE B	-2356177.223	-4646891.352	3668286.798	-2356185.493	-4646743.862	3668463.178
163	MOJAVE C	-2356134.714	-4646892.896	3668313.066	-2356142.984	-4646745.406	3668489.446
156	82 WFM USGS	-2358291.256	-4646873.142	3666985.799	-2358299.526	-4646725.652	3667162.179
255	MOJAVE VLBI REF. POINT	-2356162.446	-4646904.962	3668291.538	-2356170.716	-4646757.472	3668467.918
301	ARIES RM 1 1976 DOP(51201)	-2353382.394	-4641658.977	3676748.038	-2353390.664	-4641511.487	3676924.418
302	ARIES RM 2 1976 DOP(51228)	-2353390.097	-4641660.467	3676741.281	-2353398.367	-4641512.977	3676917.661

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO	STANDARD ERRORS	CORRELATION COEFF. AZ.	DIST.	V.A.		STANDARD ERRORS	CORRELATION COEFF DX	DY	DZ	DX,DY,DZ	AZ.,DIST.,V.A.	AZ.,DIST.,B.AZ. (GEODETIC)
10	80	AZ. 0.82	1.00	-0.01	0.00	DX	0.001	1.00	0.40	-0.51	234.995	61 33 4.13	61 33 3.68
		DIST. 0.001	-0.01	1.00	-0.00	DY	0.001	0.40	1.00	-0.40	-27.202	252.965	252.480
		V.A. 1.23	0.00	-0.00	1.00	DZ	0.001	-0.51	-0.40	1.00	89.602	93 23 34.42	241 33 8.75
10	82	AZ. 0.82	1.00	0.00	0.00	DX	0.001	1.00	0.46	-0.52	201.819	62 20 38.15	62 20 37.69
		DIST. 0.001	0.00	1.00	-0.00	DY	0.001	0.46	1.00	-0.53	-25.300	216.643	216.228
		V.A. 1.47	0.00	-0.00	1.00	DZ	0.001	-0.52	-0.53	1.00	74.587	93 23 23.17	242 20 42.06
10	83	AZ. 1.11	1.00	-0.01	0.00	DX	0.001	1.00	0.21	-0.26	233.640	61 32 47.78	61 32 47.37
		DIST. 0.001	-0.01	1.00	0.01	DY	0.002	0.21	1.00	-0.26	-29.821	252.755	252.458
		V.A. 1.44	0.00	0.01	1.00	DZ	0.001	-0.26	-0.26	1.00	91.694	92 34 30.47	241 32 52.43
10	85	AZ. 3.29	1.00	0.03	0.04	DX	0.001	1.00	0.24	-0.20	-32.507	317 49 10.10	317 49 9.45
		DIST. 0.001	0.03	1.00	0.03	DY	0.002	0.24	1.00	-0.37	41.977	72.017	71.383
		V.A. 5.26	0.04	0.03	1.00	DZ	0.001	-0.20	-0.37	1.00	48.659	82 27 45.26	137 49 8.36
10	86	AZ. 0.86	1.00	-0.02	-0.02	DX	0.001	1.00	0.59	-0.42	231.437	80 45 23.98	80 45 23.51
		DIST. 0.001	-0.02	1.00	-0.02	DY	0.001	0.59	1.00	-0.47	-80.249	246.256	245.917
		V.A. 1.43	-0.02	-0.02	1.00	DZ	0.001	-0.42	-0.47	1.00	25.274	92 49 10.45	260 45 29.05
10	87	AZ. 0.78	1.00	-0.01	0.00	DX	0.001	1.00	0.50	-0.60	236.474	59 11 12.18	59 11 11.74
		DIST. 0.001	-0.01	1.00	-0.02	DY	0.001	0.50	1.00	-0.54	-20.816	257.134	256.663
		V.A. 1.41	0.00	-0.02	1.00	DZ	0.001	-0.60	-0.54	1.00	98.818	93 18 41.08	239 11 16.77
10	101	AZ. 0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2299.844	336 59 5.34	336 59 4.95
		DIST. 0.008	0.02	1.00	0.02	DY	0.027	0.27	1.00	-0.87	14010.097	21404.070	21400.468
		V.A. 0.47	-0.16	0.02	1.00	DZ	0.023	-0.11	-0.87	1.00	16017.557	90 19 45.57	156 55 53.12
10	102	AZ. 0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2297.523	336 58 46.79	336 58 46.39
		DIST. 0.008	0.02	1.00	0.01	DY	0.027	0.27	1.00	-0.87	13989.423	21370.417	21366.817
		V.A. 0.47	-0.16	0.01	1.00	DZ	0.023	-0.11	-0.87	1.00	15991.003	90 19 58.13	156 55 34.83
10	105	AZ. 0.33	1.00	-0.00	-0.16	DX	0.028	1.00	0.27	-0.11	-2524.528	336 26 52.17	336 26 51.78
		DIST. 0.008	-0.00	1.00	0.02	DY	0.027	0.27	1.00	-0.87	14177.424	21633.452	21629.868
		V.A. 0.47	-0.16	0.02	1.00	DZ	0.023	-0.11	-0.87	1.00	16144.152	90 14 10.81	156 23 33.61
10	106	AZ. 0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2298.955	336 58 46.71	336 58 46.31
		DIST. 0.008	0.02	1.00	0.02	DY	0.027	0.27	1.00	-0.87	13986.615	21370.409	21366.818
		V.A. 0.47	-0.16	0.02	1.00	DZ	0.023	-0.11	-0.87	1.00	15993.241	90 19 20.81	156 55 34.74
10	161	AZ. 0.72	1.00	-0.66	-0.08	DX	0.132	1.00	0.93	-0.93	-5052.488	317 53 32.77	317 53 32.37
		DIST. 0.026	-0.66	1.00	-0.37	DY	0.251	0.93	1.00	-1.00	8745.524	12606.542	12603.702
		V.A. 5.56	-0.08	-0.37	1.00	DZ	0.192	-0.93	-1.00	1.00	7544.075	90 44 7.62	137 50 19.06
10	255	AZ. 0.71	1.00	-0.67	-0.08	DX	0.132	1.00	0.93	-0.93	-5074.553	317 51 21.15	317 51 20.75
		DIST. 0.026	-0.67	1.00	-0.36	DY	0.252	0.93	1.00	-1.00	8762.737	12638.486	12635.710
		V.A. 5.55	-0.08	-0.36	1.00	DZ	0.192	-0.93	-1.00	1.00	7562.716	90 42 17.56	137 48 6.81

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO	STANDARD ERRORS	CORRELATION COEFF AZ.	DIST.	V.A.		STANDARD ERRORS	CORRELATION COEFF DX	DY	DZ	DX,DY,DZ	AZ.,DIST.,V.A.	AZ.,DIST.,B.AZ (GEODETIC)
80	82	AZ. 2.98	1.00	-0.05	-0.00	DX	0.001	1.00	0.60	-0.57	-33.176	236 50 14.79	236 50 14.34
		DIST. 0.000	-0.05	1.00	0.05	DY	0.001	0.60	1.00	-0.72	1.902	36.466	36.396
		V.A. 7.91	-0.00	0.05	1.00	DZ	0.001	-0.57	-0.72	1.00	-15.015	86 36 15.04	56 50 13.65
80	83	AZ.6277.73	1.00	-0.00	-0.00	DX	0.001	1.00	0.00	-0.00	-1.355	283 39 48.62	283 34 13.81
		DIST. 0.001	-0.00	1.00	0.00	DY	0.001	0.00	1.00	-0.00	-2.619	3.615	0.030
		V.A. 51.81	-0.00	0.00	1.00	DZ	0.001	-0.00	-0.00	1.00	2.092	0 28 23.62	103 34 13.81
80	85	AZ. 1.12	1.00	0.01	-0.03	DX	0.001	1.00	0.38	-0.31	-267.503	255 59 8.68	255 59 8.11
		DIST. 0.001	0.01	1.00	0.02	DY	0.002	0.38	1.00	-0.37	69.179	279.320	278.205
		V.A. 1.68	-0.03	0.02	1.00	DZ	0.002	-0.31	-0.37	1.00	-40.943	84 59 13.38	75 59 1.95
80	86	AZ. 1.36	1.00	0.00	-0.03	DX	0.001	1.00	0.60	-0.55	-3.558	165 36 20.43	165 36 20.05
		DIST. 0.001	0.00	1.00	0.03	DY	0.001	0.60	1.00	-0.65	-53.047	83.455	83.392
		V.A. 3.83	-0.03	0.03	1.00	DZ	0.001	-0.55	-0.65	1.00	-64.328	88 2 17.92	345 36 20.52
80	87	AZ. 8.26	1.00	-0.02	0.05	DX	0.001	1.00	0.67	-0.60	1.479	352 4 38.55	352 4 38.18
		DIST. 0.001	-0.02	1.00	0.05	DY	0.001	0.67	1.00	-0.69	6.386	11.309	11.306
		V.A. 26.90	0.05	0.05	1.00	DZ	0.001	-0.60	-0.69	1.00	9.215	89 23 59.28	172 4 38.15
80	101	AZ. 0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2534.839	336 18 45.27	336 18 44.88
		DIST. 0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14037.299	21381.555	21378.037
		V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15927.954	90 17 21.70	156 15 27.96
80	102	AZ. 0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2532.518	336 18 22.88	336 18 22.48
		DIST. 0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14016.625	21347.927	21344.412
		V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15901.400	90 17 34.04	156 15 5.83
80	105	AZ. 0.33	1.00	-0.01	-0.17	DX	0.028	1.00	0.28	-0.10	-2759.523	335 46 56.08	335 46 55.68
		DIST. 0.008	-0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14204.627	21613.305	21609.781
		V.A. 0.47	-0.17	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	16054.550	90 11 48.11	155 43 32.44
80	106	AZ. 0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2533.950	336 18 22.80	336 18 22.40
		DIST. 0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14013.818	21347.921	21344.412
		V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15903.639	90 16 56.69	156 15 5.75
80	161	AZ. 0.71	1.00	-0.68	-0.08	DX	0.132	1.00	0.93	-0.93	-5287.483	316 47 2.16	316 47 1.76
		DIST. 0.026	-0.68	1.00	-0.34	DY	0.251	0.93	1.00	-1.00	8772.727	12668.361	12665.698
		V.A. 5.53	-0.08	-0.34	1.00	DZ	0.192	-0.93	-1.00	1.00	7454.473	90 39 52.99	136 43 43.38
80	255	AZ. 0.71	1.00	-0.68	-0.08	DX	0.132	1.00	0.93	-0.93	-5309.548	316 45 1.28	316 45 0.88
		DIST. 0.026	-0.68	1.00	-0.34	DY	0.251	0.93	1.00	-1.00	8789.939	12700.463	12697.857
		V.A. 5.52	-0.08	-0.34	1.00	DZ	0.192	-0.93	-1.00	1.00	7473.114	90 38 4.09	136 41 41.87
80	301	AZ. 0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2529.496	336 19 40.78	336 19 40.38
		DIST. 0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14035.924	21381.257	21377.739
		V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15929.615	90 17 21.77	156 16 23.59

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO	AZ.,DIST.,B.AZ. (GEODETIC)	STANDARD ERRORS	CORRELATION COEFF AZ.	DIST.	V.A.		STANDARD ERRORS	CORRELATION COEFF DX	DY	DZ	DX,DY,DZ	AZ.,DIST.,V.A.
80	302	336 18 13.43	AZ. 0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2537.199	336 18 13.83
		21372.640	DIST. 0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14034.434	21376.157
		156 14 56.50	V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15922.857	90 17 21.81
82	83	56 48 10.47	AZ. 5.95	1.00	-0.01	0.00	DX	0.001	1.00	0.27	-0.24	31.822	56 48 10.63
		36.375	DIST. 0.001	-0.01	1.00	0.08	DY	0.001	0.27	1.00	-0.40	-4.521	36.410
		236 48 11.16	V.A. 9.43	0.00	0.08	1.00	DZ	0.001	-0.24	-0.40	1.00	17.107	87 42 36.36
82	85	258 47 18.68	AZ. 1.18	1.00	0.00	-0.02	DX	0.001	1.00	0.39	-0.31	-234.326	258 47 19.27
		244.115	DIST. 0.001	0.00	1.00	0.02	DY	0.002	0.39	1.00	-0.44	67.277	245.168
		78 47 13.22	V.A. 1.92	-0.02	0.02	1.00	DZ	0.002	-0.31	-0.44	1.00	-25.928	84 47 36.04
82	86	139 55 47.78	AZ. 1.37	1.00	0.15	-0.05	DX	0.001	1.00	0.69	-0.65	29.619	139 55 48.19
		79.535	DIST. 0.001	0.15	1.00	0.02	DY	0.001	0.69	1.00	-0.74	-54.949	79.551
		319 55 48.95	V.A. 4.45	-0.05	0.02	1.00	DZ	0.001	-0.65	-0.74	1.00	-49.313	89 29 53.51
82	87	42 54 6.96	AZ. 2.45	1.00	-0.08	0.01	DX	0.001	1.00	0.65	-0.61	34.655	42 54 7.35
		42.467	DIST. 0.000	-0.08	1.00	-0.03	DY	0.001	0.65	1.00	-0.76	4.484	42.523
		222 54 7.62	V.A. 7.32	0.01	-0.03	1.00	DZ	0.001	-0.61	-0.76	1.00	24.230	92 45 7.79
82	101	336 24 30.45	AZ. 0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2501.662	336 24 30.85
		21384.059	DIST. 0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14035.397	21387.589
		156 21 14.24	V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15942.970	90 17 42.43
82	102	336 24 8.61	AZ. 0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2499.342	336 24 9.01
		21350.429	DIST. 0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14014.723	21353.956
		156 20 52.66	V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15916.416	90 17 54.81
82	105	335 52 38.06	AZ. 0.33	1.00	-0.01	-0.17	DX	0.028	1.00	0.28	-0.10	-2726.347	335 52 38.46
		21615.469	DIST. 0.008	-0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14202.724	21619.002
		155 49 15.52	V.A. 0.47	-0.17	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	16069.565	90 12 8.72
82	106	336 24 8.53	AZ. 0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2500.774	336 24 8.92
		21350.430	DIST. 0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14011.915	21353.950
		156 20 52.57	V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15918.654	90 17 17.46
82	161	316 56 44.97	AZ. 0.71	1.00	-0.67	-0.08	DX	0.132	1.00	0.93	-0.93	-5254.306	316 56 45.37
		12659.395	DIST. 0.026	-0.67	1.00	-0.35	DY	0.251	0.93	1.00	-1.00	8770.824	12662.083
		136 53 27.28	V.A. 5.54	-0.08	-0.35	1.00	DZ	0.192	-0.93	-1.00	1.00	7469.488	90 40 29.16
82	201	336 33 59.19	AZ. 0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.28	-0.10	-2443.047	336 33 59.59
		21349.522	DIST. 0.008	0.02	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14001.031	21353.048
		156 30 44.53	V.A. 0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15935.975	90 17 49.56
82	255	316 54 42.55	AZ. 0.71	1.00	-0.67	-0.08	DX	0.132	1.00	0.93	-0.93	-5276.372	316 54 42.95
		12691.533	DIST. 0.026	-0.67	1.00	-0.34	DY	0.251	0.93	1.00	-1.00	8788.037	12694.163
		136 51 24.23	V.A. 5.52	-0.08	-0.34	1.00	DZ	0.192	-0.93	-1.00	1.00	7488.129	90 38 40.12

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO		STANDARD ERRORS	CORRELATION AZ.	CORRELATION DIST.	CORRELATION V.A.		STANDARD ERRORS	CORRELATION DX	CORRELATION DY	CORRELATION DZ	DX,DY,DZ	AZ.,DIST.,V.A.	AZ.,DIST.,B.AZ (GEODETIC)
82	301	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2496.320	336 25 26.34	336 25 25.95
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14034.021	21387.300	21383.770
		V.A.	0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15944.630	90 17 42.50	156 22 9.85
82	302	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2504.023	336 23 59.50	336 23 59.11
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14032.531	21382.185	21378.656
		V.A.	0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15937.873	90 17 42.55	156 20 42.87
83	85	AZ.	1.30	1.00	0.01	-0.02	DX	0.002	1.00	0.28	-0.22	-266.148	255 58 58.40	255 58 57.86
		DIST.	0.001	0.01	1.00	-0.00	DY	0.002	0.28	1.00	-0.30	71.798	279.001	278.179
		V.A.	1.81	-0.02	-0.00	1.00	DZ	0.002	-0.22	-0.30	1.00	-43.035	85 43 34.08	75 58 51.70
83	86	AZ.	2.63	1.00	0.00	-0.02	DX	0.001	1.00	0.31	-0.27	-2.203	165 35 15.27	165 35 14.89
		DIST.	0.001	0.00	1.00	-0.03	DY	0.002	0.31	1.00	-0.39	-50.428	83.423	83.406
		V.A.	4.44	-0.02	-0.03	1.00	DZ	0.001	-0.27	-0.39	1.00	-66.420	90 31 14.78	345 35 15.36
83	87	AZ.	18.53	1.00	-0.01	0.02	DX	0.001	1.00	0.31	-0.26	2.833	352 13 5.47	352 13 5.07
		DIST.	0.001	-0.01	1.00	-0.26	DY	0.001	0.31	1.00	-0.40	9.005	11.826	11.296
		V.A.	29.46	0.02	-0.26	1.00	DZ	0.001	-0.26	-0.40	1.00	7.123	107 11 50.34	172 13 5.04
83	101	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2533.484	336 18 45.50	336 18 45.11
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14039.918	21381.556	21378.019
		V.A.	0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15925.862	90 17 56.57	156 15 28.19
83	102	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2531.163	336 18 23.11	336 18 22.71
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14019.244	21347.927	21344.394
		V.A.	0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15899.308	90 18 8.97	156 15 6.06
83	105	AZ.	0.33	1.00	-0.01	-0.17	DX	0.028	1.00	0.28	-0.10	-2758.168	335 46 56.30	335 46 55.90
		DIST.	0.008	-0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14207.245	21613.300	21609.762
		V.A.	0.47	-0.17	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	16052.458	90 12 22.61	155 43 32.66
83	106	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2532.596	336 18 23.02	336 18 22.63
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14016.436	21347.921	21344.394
		V.A.	0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15901.547	90 17 31.62	156 15 5.98
83	161	AZ.	0.71	1.00	-0.67	-0.08	DX	0.132	1.00	0.93	-0.93	-5286.128	316 47 2.42	316 47 2.03
		DIST.	0.026	-0.67	1.00	-0.35	DY	0.251	0.93	1.00	-1.00	8775.345	12668.378	12665.673
		V.A.	5.53	-0.08	-0.35	1.00	DZ	0.192	-0.93	-1.00	1.00	7452.381	90 40 51.85	136 43 43.64
83	255	AZ.	0.71	1.00	-0.67	-0.08	DX	0.132	1.00	0.93	-0.93	-5308.193	316 45 1.54	316 45 1.15
		DIST.	0.026	-0.67	1.00	-0.34	DY	0.252	0.93	1.00	-1.00	8792.558	12700.479	12697.832
		V.A.	5.52	-0.08	-0.34	1.00	DZ	0.192	-0.93	-1.00	1.00	7471.022	90 39 2.80	136 41 42.13
85	86	AZ.	1.10	1.00	0.04	0.00	DX	0.001	1.00	0.47	-0.26	263.945	92 38 18.78	92 38 18.20
		DIST.	0.001	0.04	1.00	-0.01	DY	0.002	0.47	1.00	-0.43	-122.226	291.810	290.964
		V.A.	1.73	0.00	-0.01	1.00	DZ	0.002	-0.26	-0.43	1.00	-23.385	94 14 15.39	272 38 24.84

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO		STANDARD ERRORS	CORRELATION AZ.	CORRELATION DIST.	CORRELATION V.A.		STANDARD ERRORS	CORRELATION DX	CORRELATION DY	CORRELATION DZ	DX,DY,DZ	AZ.,DIST.,V.A.	AZ.,DIST.,B.AZ (GEODETIC)
85	87	AZ.	1.09	1.00	-0.00	0.03	DX	0.001	1.00	0.42	-0.36	268.981	73 40 47.37	73 40 46.81
		DIST.	0.001	-0.00	1.00	-0.03	DY	0.002	0.42	1.00	-0.44	-62.793	280.731	279.631
		V.A.	1.78	0.03	-0.03	1.00	DZ	0.002	-0.36	-0.44	1.00	50.159	94 57 57.33	253 40 52.93
85	101	AZ.	0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2267.336	337 2 50.83	337 2 50.44
		DIST.	0.008	0.02	1.00	0.01	DY	0.027	0.27	1.00	-0.87	13968.120	21336.702	21333.054
		V.A.	0.48	-0.16	0.01	1.00	DZ	0.023	-0.11	-0.87	1.00	15968.898	90 21 18.45	156 59 39.70
85	102	AZ.	0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2265.015	337 2 32.58	337 2 32.18
		DIST.	0.008	0.02	1.00	0.01	DY	0.027	0.27	1.00	-0.87	13947.446	21303.048	21299.402
		V.A.	0.48	-0.16	0.01	1.00	DZ	0.023	-0.11	-0.87	1.00	15942.344	90 21 31.20	156 59 21.71
85	105	AZ.	0.33	1.00	-0.00	-0.17	DX	0.028	1.00	0.28	-0.11	-2492.021	336 30 29.20	336 30 28.80
		DIST.	0.008	-0.00	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14135.447	21565.851	21562.237
		V.A.	0.48	-0.17	0.02	1.00	DZ	0.023	-0.11	-0.87	1.00	16095.493	90 15 41.64	156 27 11.74
85	106	AZ.	0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2266.448	337 2 32.50	337 2 32.10
		DIST.	0.008	0.02	1.00	0.01	DY	0.027	0.27	1.00	-0.87	13944.638	21303.038	21299.402
		V.A.	0.48	-0.16	0.01	1.00	DZ	0.023	-0.11	-0.87	1.00	15944.582	90 20 53.77	156 59 21.63
85	161	AZ.	0.72	1.00	-0.66	-0.08	DX	0.132	1.00	0.93	-0.93	-5019.980	317 53 33.17	317 53 32.78
		DIST.	0.026	-0.66	1.00	-0.38	DY	0.251	0.93	1.00	-1.00	8703.547	12535.278	12532.319
		V.A.	5.59	-0.08	-0.38	1.00	DZ	0.192	-0.93	-1.00	1.00	7495.416	90 46 55.82	137 50 20.56
85	201	AZ.	0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2208.721	337 12 24.63	337 12 24.24
		DIST.	0.008	0.02	1.00	0.01	DY	0.027	0.27	1.00	-0.87	13933.754	21302.824	21299.179
		V.A.	0.48	-0.16	0.01	1.00	DZ	0.023	-0.11	-0.87	1.00	15961.903	90 21 25.93	157 9 15.05
85	301	AZ.	0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2261.994	337 3 46.49	337 3 46.09
		DIST.	0.008	0.02	1.00	0.01	DY	0.027	0.27	1.00	-0.87	13966.744	21336.478	21332.830
		V.A.	0.48	-0.16	0.01	1.00	DZ	0.023	-0.11	-0.87	1.00	15970.558	90 21 18.52	157 0 35.48
85	302	AZ.	0.33	1.00	0.02	-0.16	DX	0.028	1.00	0.27	-0.11	-2269.697	337 2 20.00	337 2 19.60
		DIST.	0.008	0.02	1.00	0.01	DY	0.027	0.27	1.00	-0.87	13965.254	21331.263	21327.616
		V.A.	0.48	-0.16	0.01	1.00	DZ	0.023	-0.11	-0.87	1.00	15963.801	90 21 18.62	156 59 8.85
85	255	AZ.	0.72	1.00	-0.66	-0.08	DX	0.132	1.00	0.93	-0.93	-5042.045	317 51 20.80	317 51 20.41
		DIST.	0.026	-0.66	1.00	-0.37	DY	0.252	0.93	1.00	-1.00	8720.760	12567.216	12564.328
		V.A.	5.58	-0.08	-0.37	1.00	DZ	0.192	-0.93	-1.00	1.00	7514.057	90 45 4.70	137 48 7.56
86	87	AZ.	1.23	1.00	0.05	0.04	DX	0.001	1.00	0.68	-0.61	5.036	346 22 38.59	346 22 38.22
		DIST.	0.001	0.05	1.00	-0.03	DY	0.001	0.68	1.00	-0.73	59.433	94.690	94.635
		V.A.	3.94	0.04	-0.03	1.00	DZ	0.001	-0.61	-0.73	1.00	73.543	91 39 28.39	166 22 37.71
86	101	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2531.281	336 20 55.18	336 20 54.78
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14090.346	21463.884	21460.339
		V.A.	0.47	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15992.282	90 17 47.83	156 17 37.40

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO		STANDARD ERRORS	CORRELATION COEFF AZ.	DIST.	V.A.		STANDARD ERRORS	CORRELATION COEFF DX	DY	DZ	DX,DY,DZ	AZ.,DIST.,V.A	AZ.,DIST.,B.AZ (GEODETIC)
86	102	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2528.960	336 20 33.07	336 20 32.68
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14069.672	21430.254	21426.712
		V.A.	0.47	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15965.728	90 18 0.16	156 17 15.55
86	105	AZ.	0.33	1.00	-0.01	-0.17	DX	0.028	1.00	0.28	-0.10	-2755.965	335 49 11.84	335 49 11.44
		DIST.	0.008	-0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14257.673	21695.502	21691.955
		V.A.	0.47	-0.17	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	16118.878	90 12 15.26	155 45 47.72
86	106	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2530.393	336 20 32.99	336 20 32.59
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14066.864	21430.248	21426.713
		V.A.	0.47	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15967.967	90 17 22.95	156 17 15.47
86	161	AZ.	0.71	1.00	-0.67	-0.08	DX	0.132	1.00	0.93	-0.93	-5283.925	316 57 53.58	316 57 53.18
		DIST.	0.026	-0.67	1.00	-0.35	DY	0.251	0.93	1.00	-1.00	8825.773	12741.527	12738.823
		V.A.	5.50	-0.08	-0.35	1.00	DZ	0.192	-0.93	-1.00	1.00	7518.801	90 40 27.87	136 54 34.32
86	255	AZ.	0.70	1.00	-0.67	-0.08	DX	0.132	1.00	0.93	-0.93	-5305.990	316 55 51.75	316 55 51.36
		DIST.	0.026	-0.67	1.00	-0.34	DY	0.252	0.93	1.00	-1.00	8842.986	12773.604	12770.958
		V.A.	5.49	-0.08	-0.34	1.00	DZ	0.192	-0.93	-1.00	1.00	7537.442	90 38 39.52	136 52 31.87
87	101	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2536.317	336 18 15.59	336 18 15.19
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14030.913	21370.673	21367.156
		V.A.	0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15918.739	90 17 23.02	156 14 58.31
87	102	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2533.996	336 17 53.13	336 17 52.73
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14010.239	21337.045	21333.531
		V.A.	0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15892.185	90 17 35.37	156 14 36.12
87	105	AZ.	0.33	1.00	-0.01	-0.17	DX	0.028	1.00	0.28	-0.10	-2761.002	335 46 25.75	335 46 25.35
		DIST.	0.008	-0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14198.240	21602.452	21598.929
		V.A.	0.47	-0.17	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	16045.335	90 11 49.24	155 43 2.14
87	106	AZ.	0.33	1.00	0.01	-0.16	DX	0.028	1.00	0.28	-0.10	-2535.429	336 17 53.05	336 17 52.65
		DIST.	0.008	0.01	1.00	0.02	DY	0.027	0.28	1.00	-0.87	14007.431	21337.039	21333.532
		V.A.	0.48	-0.16	0.02	1.00	DZ	0.023	-0.10	-0.87	1.00	15894.423	90 16 58.00	156 14 36.04
87	161	AZ.	0.71	1.00	-0.68	-0.08	DX	0.132	1.00	0.93	-0.93	-5288.961	316 45 15.66	316 45 15.27
		DIST.	0.026	-0.68	1.00	-0.34	DY	0.251	0.93	1.00	-1.00	8766.340	12659.135	12656.471
		V.A.	5.54	-0.08	-0.34	1.00	DZ	0.192	-0.93	-1.00	1.00	7445.257	90 39 56.36	136 41 56.92
87	255	AZ.	0.71	1.00	-0.68	-0.08	DX	0.132	1.00	0.93	-0.93	-5311.027	316 43 14.97	316 43 14.57
		DIST.	0.026	-0.68	1.00	-0.34	DY	0.251	0.93	1.00	-1.00	8783.553	12691.241	12688.634
		V.A.	5.52	-0.08	-0.34	1.00	DZ	0.192	-0.93	-1.00	1.00	7463.899	90 38 7.37	136 39 55.59
101	102	AZ.	2.54	1.00	0.02	0.00	DX	0.001	1.00	0.66	-0.62	2.321	160 11 58.69	160 12 1.70
		DIST.	0.001	0.02	1.00	-0.06	DY	0.001	0.66	1.00	-0.69	-20.674	33.733	33.706
		V.A.	7.97	0.00	-0.06	1.00	DZ	0.001	-0.62	-0.69	1.00	-26.554	92 4 26.93	340 12 1.96

NATIONAL GEODETIC SURVEY, ROCKVILLE,MD

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO		STANDARD ERRORS	CORRELATION COEFF AZ.	DIST.	V.A.		STANDARD ERRORS	CORRELATION COEFF DX	DY	DZ	DX,DY,DZ	AZ.,DIST.,V.A	AZ.,DIST.,B.AZ (GEODETIC)
101	105	AZ.	0.61	1.00	0.02	-0.04	DX	0.001	1.00	0.75	-0.63	-224.684	295 20 45.73	295 20 48.31
		DIST.	0.001	0.02	1.00	0.36	DY	0.002	0.75	1.00	-0.80	167.327	307.422	305.424
		V.A.	1.80	-0.04	0.36	1.00	DZ	0.002	-0.63	-0.80	1.00	126.596	83 32 39.41	115 20 41.97
101	106	AZ.	6.11	1.00	0.00	0.00	DX	0.001	1.00	0.28	-0.24	0.888	160 12 50.33	160 12 53.98
		DIST.	0.001	0.00	1.00	0.07	DY	0.001	0.28	1.00	-0.35	-23.481	33.814	33.706
		V.A.	9.67	0.00	0.07	1.00	DZ	0.001	-0.24	-0.35	1.00	-24.316	85 30 48.54	340 12 54.24
101	161	AZ.	0.90	1.00	0.65	-0.04	DX	0.132	1.00	0.93	-0.93	-2752.644	180 24 39.98	180 24 43.20
		DIST.	0.015	0.65	1.00	0.31	DY	0.251	0.93	1.00	-1.00	-5264.572	10348.559	10346.830
		V.A.	6.75	-0.04	0.31	1.00	DZ	0.191	-0.93	-1.00	1.00	-8473.482	90 23 29.11	0 24 41.50
101	201	AZ.	2.56	1.00	-0.14	-0.01	DX	0.001	1.00	0.37	-0.27	58.615	96 48 41.76	96 48 44.95
		DIST.	0.001	-0.14	1.00	0.03	DY	0.001	0.37	1.00	-0.57	-34.366	68.306	68.292
		V.A.	4.90	-0.01	0.03	1.00	DZ	0.001	-0.27	-0.57	1.00	-6.994	90 34 6.52	276 48 46.51
101	255	AZ.	0.90	1.00	0.64	-0.04	DX	0.132	1.00	0.93	-0.93	-2774.709	180 33 50.97	180 33 54.19
		DIST.	0.015	0.64	1.00	0.32	DY	0.251	0.93	1.00	-1.00	-5247.360	10330.446	10328.752
		V.A.	6.76	-0.04	0.32	1.00	DZ	0.191	-0.93	-1.00	1.00	-8454.840	90 21 23.27	0 33 51.86
101	301	AZ.	26.23	1.00	0.03	0.00	DX	0.001	1.00	0.45	-0.43	5.342	69 14 5.34	69 14 8.64
		DIST.	0.001	0.03	1.00	0.00	DY	0.001	0.45	1.00	-0.58	-1.375	5.761	5.760
		V.A.	54.39	0.00	0.00	1.00	DZ	0.001	-0.43	-0.58	1.00	1.661	90 3 58.50	249 14 8.76
101	302	AZ.	25.04	1.00	-0.12	-0.00	DX	0.001	1.00	0.39	-0.36	-2.360	187 22 29.38	187 22 32.65
		DIST.	0.001	-0.12	1.00	0.00	DY	0.001	0.39	1.00	-0.43	-2.865	6.306	6.305
		V.A.	47.11	-0.00	0.00	1.00	DZ	0.001	-0.36	-0.43	1.00	-5.097	90 1 2.23	7 22 32.63
102	105	AZ.	0.53	1.00	-0.05	-0.04	DX	0.001	1.00	0.76	-0.58	-227.005	299 28 29.83	299 28 32.42
		DIST.	0.001	-0.05	1.00	0.38	DY	0.002	0.76	1.00	-0.82	188.001	332.161	330.175
		V.A.	1.50	-0.04	0.38	1.00	DZ	0.002	-0.58	-0.82	1.00	153.150	83 48 55.30	119 28 25.81
102	106	AZ.	*******	1.00	0.00	-0.00	DX	0.001	1.00	0.00	-0.00	-1.433	249 41 50.50	249 26 37.91
		DIST.	0.001	0.00	1.00	-0.00	DY	0.001	0.00	1.00	-0.00	-2.808	3.866	0.009
		V.A.	48.45	-0.00	-0.00	1.00	DZ	0.001	-0.00	-0.00	1.00	2.238	0 7 30.29	69 26 37.91
102	161	AZ.	0.91	1.00	0.65	-0.04	DX	0.132	1.00	0.93	-0.93	-2754.965	180 28 33.09	180 28 36.31
		DIST.	0.015	0.65	1.00	0.31	DY	0.251	0.93	1.00	-1.00	-5243.899	10316.923	10315.207
		V.A.	6.77	-0.04	0.31	1.00	DZ	0.191	-0.93	-1.00	1.00	-8446.928	90 23 8.00	0 28 34.35
102	201	AZ.	2.49	1.00	-0.03	0.01	DX	0.001	1.00	0.25	-0.16	56.294	67 16 46.63	67 16 49.95
		DIST.	0.001	-0.03	1.00	0.05	DY	0.001	0.25	1.00	-0.51	-13.692	61.148	61.136
		V.A.	4.53	0.01	0.05	1.00	DZ	0.001	-0.16	-0.51	1.00	19.560	89 29 27.79	247 16 51.25
102	255	AZ.	0.91	1.00	0.65	-0.04	DX	0.132	1.00	0.93	-0.93	-2777.030	180 37 46.18	180 37 49.40
		DIST.	0.015	0.65	1.00	0.32	DY	0.251	0.93	1.00	-1.00	-5226.686	10298.842	10297.160
		V.A.	6.78	-0.04	0.32	1.00	DZ	0.191	-0.93	-1.00	1.00	-8428.286	90 21 1.73	0 37 46.81

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO		STANDARD ERRORS	CORRELATION COEFF AZ.	DIST.	V.A.		STANDARD ERRORS	CORRELATION COEFF DX	DY	DZ	DX,DY,DZ	AZ.,DIST.,V.A	AZ.,DIST.,B.AZ (GEODETIC)
102	301	AZ.	4.54	1.00	-0.07	0.00	DX	0.001	1.00	0.46	-0.45	3.022	349 52 8.51	349 52 11.55
		DIST.	0.001	-0.07	1.00	0.05	DY	0.001	0.46	1.00	-0.54	19.298	34.316	34.290
		V.A.	9.95	0.00	0.05	1.00	DZ	0.001	-0.45	-0.54	1.00	28.215	87 58 21.26	169 52 11.41
102	302	AZ.	5.60	1.00	0.01	-0.00	DX	0.001	1.00	0.34	-0.35	-4.681	334 20 54.00	334 20 56.94
		DIST.	0.001	0.01	1.00	0.03	DY	0.001	0.34	1.00	-0.35	17.808	28.275	28.244
		V.A.	10.50	-0.00	0.03	1.00	DZ	0.001	-0.35	-0.35	1.00	21.457	87 31 45.79	154 20 56.66
105	106	AZ.	0.78	1.00	-0.02	0.03	DX	0.001	1.00	0.53	-0.39	225.573	119 28 27.15	119 28 29.90
		DIST.	0.001	-0.02	1.00	-0.19	DY	0.002	0.53	1.00	-0.63	-190.809	331.761	330.170
		V.A.	1.61	0.03	-0.19	1.00	DZ	0.002	-0.39	-0.63	1.00	-150.911	95 31 26.09	299 28 36.51
105	161	AZ.	0.90	1.00	0.62	-0.03	DX	0.132	1.00	0.93	-0.93	-2527.960	178 53 41.53	178 53 44.88
		DIST.	0.013	0.62	1.00	0.26	DY	0.251	0.93	1.00	-1.00	-5431.900	10481.290	10479.253
		V.A.	6.67	-0.03	0.26	1.00	DZ	0.191	-0.93	-1.00	1.00	-8600.077	90 34 35.59	358 53 49.51
105	201	AZ.	0.67	1.00	-0.14	0.02	DX	0.001	1.00	0.59	-0.43	283.299	111 59 17.03	111 59 19.84
		DIST.	0.001	-0.14	1.00	-0.21	DY	0.002	0.59	1.00	-0.72	-201.694	372.539	370.810
		V.A.	1.53	0.02	-0.21	1.00	DZ	0.002	-0.43	-0.72	1.00	-133.590	95 25 52.11	291 59 27.74
105	255	AZ.	0.90	1.00	0.62	-0.03	DX	0.132	1.00	0.93	-0.93	-2550.025	179 2 35.95	179 2 39.30
		DIST.	0.014	0.62	1.00	0.27	DY	0.251	0.93	1.00	-1.00	-5414.687	10462.433	10460.450
		V.A.	6.68	-0.03	0.27	1.00	DZ	0.191	-0.93	-1.00	1.00	-8581.436	90 32 32.59	359 2 43.30
105	301	AZ.	0.74	1.00	0.03	0.03	DX	0.001	1.00	0.65	-0.55	230.027	114 34 32.11	114 34 34.81
		DIST.	0.001	0.03	1.00	-0.28	DY	0.002	0.65	1.00	-0.72	-168.703	311.419	309.445
		V.A.	1.92	0.03	-0.28	1.00	DZ	0.002	-0.55	-0.72	1.00	-124.935	96 22 35.38	294 34 41.28
105	302	AZ.	0.78	1.00	0.09	0.03	DX	0.001	1.00	0.62	-0.51	222.324	116 27 43.22	116 27 45.90
		DIST.	0.001	0.09	1.00	-0.25	DY	0.002	0.62	1.00	-0.67	-170.193	309.413	307.428
		V.A.	1.86	0.03	-0.25	1.00	DZ	0.002	-0.51	-0.67	1.00	-131.693	96 25 1.54	296 27 52.22
106	161	AZ.	0.91	1.00	0.65	-0.04	DX	0.132	1.00	0.93	-0.93	-2753.532	180 28 32.93	180 28 36.16
		DIST.	0.015	0.65	1.00	0.30	DY	0.251	0.93	1.00	-1.00	-5241.091	10316.946	10315.203
		V.A.	6.77	-0.04	0.30	1.00	DZ	0.191	-0.93	-1.00	1.00	-8449.166	90 24 25.29	0 28 34.19
106	255	AZ.	0.91	1.00	0.65	-0.04	DX	0.132	1.00	0.93	-0.93	-2775.598	180 37 46.02	180 37 49.25
		DIST.	0.015	0.65	1.00	0.32	DY	0.251	0.93	1.00	-1.00	-5223.879	10298.864	10297.156
		V.A.	6.78	-0.04	0.32	1.00	DZ	0.191	-0.93	-1.00	1.00	-8430.525	90 22 19.15	0 37 46.65
161	255	AZ.	6.66	1.00	-0.04	0.00	DX	0.001	1.00	0.18	-0.20	-22.065	303 41 53.29	303 41 56.12
		DIST.	0.001	-0.04	1.00	0.13	DY	0.001	0.18	1.00	-0.32	17.213	33.625	33.006
		V.A.	9.40	0.00	0.13	1.00	DZ	0.001	-0.20	-0.32	1.00	18.641	79 1 57.14	123 41 55.49
201	301	AZ.	3.18	1.00	-0.07	0.00	DX	0.001	1.00	0.18	-0.19	-53.273	279 13 42.98	279 13 46.16
		DIST.	0.001	-0.07	1.00	-0.01	DY	0.001	0.18	1.00	-0.39	32.991	63.256	63.242
		V.A.	4.95	0.00	-0.01	1.00	DZ	0.001	-0.19	-0.39	1.00	8.655	89 23 34.01	99 13 44.73

MISCELLANEOUS DATA FOR SELECTED LINES, PART 1

FROM	TO		STANDARD ERRORS	CORRELATION COEFF AZ.	DIST.	V.A.		STANDARD ERRORS	CORRELATION COEFF DX	DY	DZ	DX,DY,DZ	AZ.,DIST.,V.A	AZ.,DIST.,B.AZ. (GEODETIC)
201	302	AZ.	3.12	1.00	-0.00	0.00	DX	0.001	1.00	0.29	-0.29	-60.975	271 32 32.89	271 32 36.10
		DIST.	0.001	-0.00	1.00	-0.02	DY	0.002	0.29	1.00	-0.48	31.501	68.658	68.644
		V.A.	5.58	0.00	-0.02	1.00	DZ	0.001	-0.29	-0.48	1.00	1.897	89 26 11.88	91 32 34.53
255	301	AZ.	0.92	1.00	0.63	0.04	DX	0.132	1.00	0.93	-0.93	2780.052	0 35 35.35	0 35 38.99
		DIST.	0.015	0.63	1.00	-0.32	DY	0.251	0.93	1.00	-1.00	5245.985	10332.543	10330.848
		V.A.	6.76	0.04	-0.32	1.00	DZ	0.191	-0.93	-1.00	1.00	8456.501	89 44 9.70	180 35 41.44
255	302	AZ.	0.92	1.00	0.63	0.04	DX	0.132	1.00	0.93	-0.93	2772.349	0 33 33.29	0 33 36.92
		DIST.	0.015	0.63	1.00	-0.32	DY	0.251	0.93	1.00	-1.00	5244.495	10324.185	10322.492
		V.A.	6.77	0.04	-0.32	1.00	DZ	0.191	-0.93	-1.00	1.00	8449.743	89 44 8.57	180 33 39.23
301	302	AZ.	17.91	1.00	-0.05	-0.00	DX	0.001	1.00	0.48	-0.47	-7.703	216 45 20.77	216 45 24.09
		DIST.	0.001	-0.05	1.00	0.00	DY	0.002	0.48	1.00	-0.60	-1.490	10.355	10.353
		V.A.	38.58	-0.00	0.00	1.00	DZ	0.001	-0.47	-0.60	1.00	-6.758	89 58 25.36	36 45 23.95

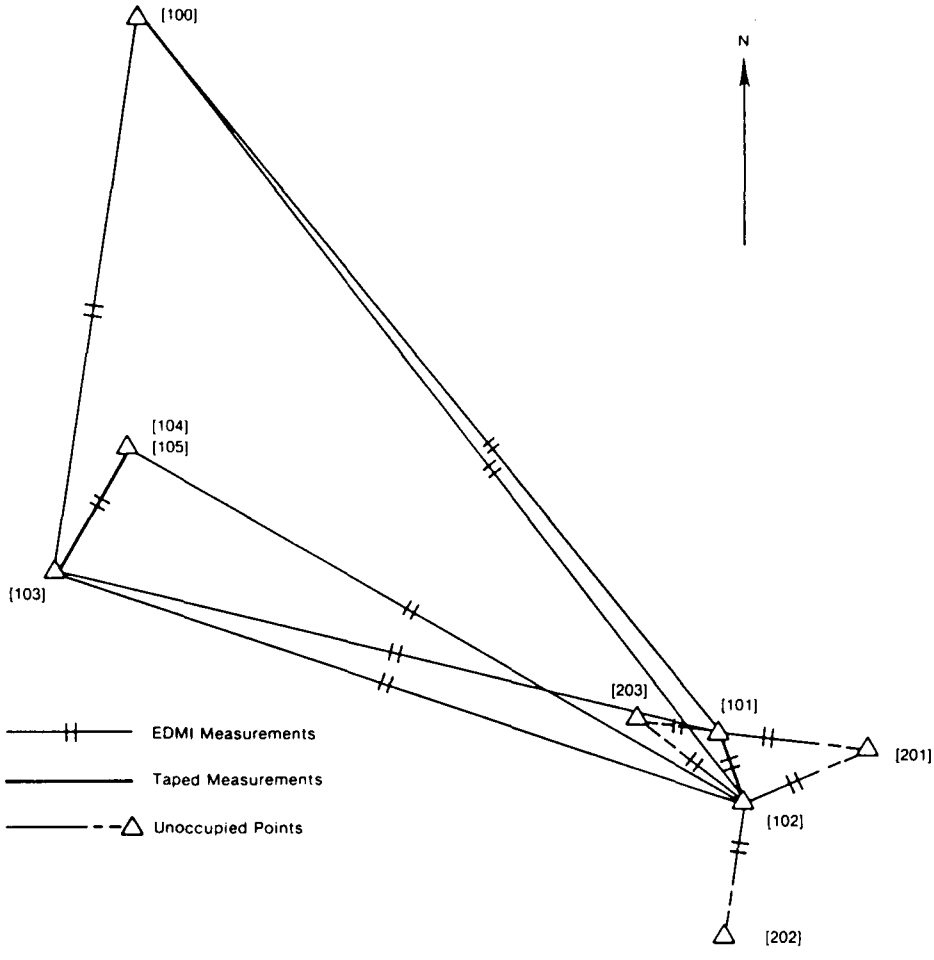
MISCELLANEOUS DATA FOR SELECTED LINES, PART 2

FROM	TO	EQUATORIAL SYSTEM ALTITUDE	AZIMUTH	DISTANCE	HORIZON SYSTEM, ORIGIN AT THE STANDPOINT DN	SIGMA	DE	SIGMA	DU	SIGMA
10	80	20 44 41.71	353 23 49.23	252.965	120.295	0.001	222.028	0.001	-14.971	0.002
10	82	20 8 17.54	352 51 16.96	216.643	100.382	0.001	191.556	0.001	-12.810	0.002
10	83	21 16 15.58	352 43 34.75	252.755	120.302	0.001	221.999	0.001	-11.356	0.002
10	85	42 30 18.23	127 45 16.31	72.017	52.906	0.001	-47.940	0.001	9.447	0.002
10	86	5 53 27.24	340 52 34.99	246.256	39.508	0.001	242.764	0.001	-12.114	0.002
10	87	22 36 1.81	354 58 9.77	257.134	131.495	0.001	220.469	0.001	-14.853	0.002
10	101	48 26 48.94	99 19 20.32	21404.070	19700.008	0.013	-8368.319	0.024	-123.026	0.035
10	102	48 26 29.00	99 19 35.73	21370.417	19668.276	0.013	-8356.928	0.024	-124.133	0.035
10	105	48 16 2.38	100 5 47.93	21633.452	19831.143	0.013	-8644.307	0.024	-89.235	0.035
10	106	48 27 1.67	99 20 2.92	21370.409	19668.285	0.013	-8356.941	0.024	-120.267	0.035
10	161	36 45 25.95	120 0 57.60	12606.542	9351.863	0.019	-8452.300	0.045	-161.813	0.339
10	255	36 45 16.28	120 4 31.39	12638.486	9370.214	0.019	-8479.755	0.045	-155.480	0.339
80	82	24 18 55.89	176 43 5.10	36.466	-19.912	0.001	-30.473	0.000	2.160	0.001
80	83	35 21 28.77	242 38 42.84	3.615	0.007	0.001	-0.029	0.001	3.615	0.001
80	85	8 25 44.01	165 30 1.05	279.320	-67.382	0.001	-269.970	0.001	24.407	0.002
80	86	50 25 36.34	266 9 46.49	83.455	-80.788	0.001	20.734	0.001	2.857	0.002
80	87	54 34 29.17	76 57 53.10	11.309	11.200	0.001	-1.559	0.000	0.118	0.001
80	101	48 9 13.90	100 14 9.93	21381.555	19579.927	0.013	-8589.861	0.024	-107.983	0.035
80	102	48 8 52.13	100 14 30.06	21347.927	19548.194	0.013	-8578.471	0.024	-109.090	0.035
80	105	47 58 16.40	100 59 37.94	21613.305	19711.068	0.013	-8865.848	0.024	-74.199	0.035
80	106	48 9 24.61	100 14 57.71	21347.921	19548.203	0.013	-8578.485	0.024	-105.224	0.035
80	161	36 2 45.02	121 4 41.30	12668.361	9231.784	0.019	-8674.095	0.045	-146.969	0.339
80	255	36 2 40.02	121 8 2.42	12700.463	9250.135	0.019	-8701.550	0.044	-140.637	0.339
80	301	48 9 41.13	100 12 57.44	21381.257	19581.964	0.013	-8584.473	0.024	-107.988	0.035
80	302	48 8 58.34	100 14 50.89	21376.157	19573.674	0.013	-8590.677	0.024	-107.967	0.035
82	83	28 1 27.01	351 54 49.69	36.410	19.919	0.001	30.444	0.001	1.455	0.002
82	85	6 4 14.73	163 58 50.85	245.168	-47.471	0.001	-239.497	0.001	22.249	0.002
82	86	38 18 27.78	298 19 31.30	79.551	-60.875	0.001	51.207	0.001	0.697	0.002
82	87	34 44 16.77	7 22 19.75	42.523	31.113	0.001	28.914	0.000	-2.042	0.002
82	101	48 11 46.04	100 6 22.47	21387.589	19599.810	0.013	-8559.456	0.024	-110.163	0.035
82	102	48 11 24.55	100 6 41.93	21353.956	19568.077	0.013	-8548.065	0.024	-111.271	0.035
82	105	48 0 50.13	100 51 58.62	21619.002	19730.950	0.013	-8835.442	0.024	-76.378	0.035
82	106	48 11 57.05	100 7 9.51	21353.950	19568.086	0.013	-8548.079	0.024	-107.405	0.035
82	161	36 9 2.21	120 55 27.88	12662.083	9251.667	0.019	-8643.655	0.045	-149.117	0.339
82	201	48 16 18.01	99 53 52.51	21353.048	19591.641	0.013	-8491.642	0.024	-110.723	0.035
82	255	36 8 56.52	120 58 50.77	12694.163	9270.018	0.019	-8671.110	0.044	-142.784	0.339
82	301	48 12 13.19	100 5 9.85	21387.300	19601.847	0.013	-8554.067	0.024	-110.169	0.035
82	302	48 11 30.57	100 7 3.37	21382.185	19593.557	0.013	-8560.271	0.024	-110.147	0.035
83	85	8 52 23.40	164 54 10.22	279.001	-67.389	0.002	-269.941	0.001	20.792	0.002
83	86	52 46 0.05	267 29 54.43	83.423	-80.795	0.001	20.763	0.001	-0.758	0.002
83	87	37 2 15.76	72 32 4.06	11.826	11.193	0.001	-1.530	0.001	-3.497	0.002
83	101	48 8 43.64	100 13 43.93	21381.556	19579.919	0.013	-8589.833	0.024	-111.598	0.035
83	102	48 8 21.83	100 14 4.02	21347.927	19548.187	0.013	-8578.442	0.024	-112.705	0.035
83	105	47 57 46.64	100 59 11.87	21613.300	19711.061	0.013	-8865.819	0.024	-77.814	0.035
83	106	48 8 54.32	100 14 31.66	21347.921	19548.196	0.013	-8578.456	0.024	-108.839	0.035
83	161	36 2 2.69	121 3 50.72	12668.378	9231.777	0.019	-8674.066	0.045	-150.584	0.339
83	255	36 1 57.82	121 7 11.94	12700.479	9250.128	0.019	-8701.521	0.044	-144.252	0.339
85	86	4 35 47.07	335 9 8.32	291.810	-13.397	0.002	290.703	0.001	-21.563	0.002
85	87	10 17 32.63	346 51 35.00	280.731	78.590	0.001	268.408	0.001	-24.301	0.002
85	101	48 27 14.52	99 13 11.86	21336.702	19647.059	0.013	-8320.484	0.024	-132.247	0.035
85	102	48 26 54.57	99 13 26.78	21303.048	19615.327	0.013	-8309.093	0.024	-133.354	0.035

MISCELLANEOUS DATA FOR SELECTED LINES, PART 2

		EQUATORIAL SYSTEM			HORIZON SYSTEM, ORIGIN AT THE STANDPOINT					
FROM	TO	ALTITUDE	AZIMUTH	DISTANCE	DN	SIGMA	DE	SIGMA	DU	SIGMA
85	105	48 16 28.08	99 59 53.77	21565.851	19778.192	0.013	-8596.473	0.024	-98.452	0.035
85	106	48 27 27.37	99 13 53.99	21303.038	19615.336	0.013	-8309.106	0.024	-129.488	0.035
85	161	36 43 22.48	119 58 30.84	12535.278	9298.914	0.019	-8404.411	0.045	-171.120	0.339
85	201	48 31 42.78	99 0 26.45	21302.824	19638.892	0.013	-8252.671	0.024	-132.809	0.035
85	301	48 27 41.18	99 11 58.20	21336.478	19649.096	0.013	-8315.096	0.024	-132.252	0.035
85	302	48 26 59.56	99 13 52.52	21331.263	19640.806	0.013	-8321.300	0.024	-132.230	0.035
85	255	36 43 13.15	120 2 6.13	12567.216	9317.264	0.019	-8431.866	0.045	-164.786	0.339
86	87	50 57 24.32	85 9 22.75	94.690	91.988	0.001	-22.293	0.001	-2.740	0.002
86	101	48 9 57.08	100 11 3.67	21463.884	19660.732	0.013	-8610.550	0.024	-111.117	0.035
86	102	48 9 35.48	100 11 23.45	21430.254	19629.000	0.013	-8599.160	0.024	-112.225	0.035
86	105	47 59 2.86	100 56 24.64	21695.502	19791.875	0.013	-8886.537	0.024	-77.336	0.035
86	106	48 10 7.85	100 11 50.97	21430.248	19629.009	0.013	-8599.173	0.024	-108.359	0.035
86	161	36 9 51.29	120 54 31.12	12741.527	9312.590	0.019	-8694.808	0.045	-149.972	0.339
86	255	36 9 45.54	120 57 52.93	12773.604	9330.941	0.019	-8722.263	0.045	-143.640	0.339
87	101	48 8 57.85	100 14 47.40	21370.673	19568.725	0.013	-8588.306	0.024	-108.064	0.035
87	102	48 8 36.05	100 15 7.59	21337.045	19536.993	0.013	-8576.916	0.024	-109.172	0.035
87	105	47 57 59.95	101 0 16.00	21602.452	19699.866	0.013	-8864.293	0.024	-74.280	0.035
87	106	48 9 8.55	100 15 35.26	21337.039	19537.001	0.013	-8576.929	0.024	-105.306	0.035
87	161	36 1 28.72	121 6 13.22	12659.135	9220.583	0.019	-8672.538	0.045	-147.069	0.339
87	255	36 1 23.88	121 9 34.20	12691.241	9238.934	0.019	-8699.993	0.044	-140.737	0.339
101	102	51 55 24.11	276 24 18.52	33.733	-31.718	0.001	11.419	0.000	-1.221	0.001
101	105	24 19 4.26	143 19 26.84	307.422	130.768	0.001	-276.067	0.001	34.565	0.003
101	106	45 58 45.87	272 9 59.02	33.814	-31.721	0.001	11.411	0.001	2.645	0.002
101	161	54 57 56.30	242 23 47.94	10348.559	-10348.051	0.015	-74.250	0.044	-70.696	0.338
101	201	5 52 37.74	329 37 0.62	68.306	-8.101	0.001	67.820	0.001	-0.678	0.002
101	255	54 55 43.81	242 7 51.32	10330.446	-10329.746	0.015	-101.714	0.044	-64.270	0.338
101	301	16 45 9.23	345 33 46.32	5.761	2.043	0.001	5.387	0.001	-0.007	0.002
101	302	53 55 56.32	230 31 11.06	6.306	-6.253	0.001	-0.809	0.001	-0.002	0.001
102	105	27 27 22.54	140 22 8.85	332.161	162.486	0.001	-287.486	0.001	35.785	0.002
102	106	35 22 47.70	242 58 8.46	3.866	-0.003	0.001	-0.008	0.001	3.866	0.001
102	161	54 57 33.66	242 17 2.77	10316.923	-10316.333	0.015	-85.682	0.044	-69.424	0.338
102	201	18 39 19.29	346 19 45.97	61.148	23.617	0.001	56.401	0.001	0.543	0.001
102	255	54 55 19.83	242 1 3.03	10298.842	-10298.028	0.015	-113.146	0.044	-62.998	0.338
102	301	55 18 16.26	81 6 5.18	34.316	33.760	0.001	-6.032	0.001	1.214	0.002
102	302	49 21 56.05	104 43 40.45	28.275	25.464	0.001	-12.229	0.001	1.219	0.001
105	106	27 3 25.91	319 46 21.23	331.761	-162.479	0.001	287.482	0.001	-31.936	0.003
105	161	55 8 11.71	245 2 35.29	10481.290	-10478.810	0.015	202.142	0.044	-105.469	0.338
105	201	21 0 49.79	324 33 4.43	372.539	-138.857	0.001	343.890	0.001	-35.261	0.003
105	255	55 6 22.46	244 46 55.56	10462.433	-10460.506	0.015	174.678	0.044	-99.041	0.338
105	301	23 39 7.14	323 44 36.51	311.419	-128.716	0.001	281.456	0.001	-34.587	0.003
105	302	25 11 23.85	322 33 55.15	309.413	-137.012	0.001	275.261	0.001	-34.582	0.003
106	161	54 58 50.94	242 17 1.45	10316.946	-10316.330	0.015	-85.674	0.044	-73.290	0.338
106	255	54 56 37.25	242 1 1.20	10298.864	-10298.025	0.015	-113.138	0.044	-66.864	0.338
161	255	33 40 6.97	142 2 35.54	33.625	18.315	0.001	-27.464	0.001	6.397	0.002
201	301	7 51 50.44	148 13 51.23	63.256	10.144	0.001	-62.433	0.001	0.670	0.002
201	302	1 35 0.47	152 40 42.71	68.658	1.848	0.001	-68.630	0.001	0.675	0.002
255	301	54 55 41.88	62 4 44.91	10332.543	10331.880	0.015	106.965	0.044	47.604	0.338
255	302	54 55 44.76	62 8 17.30	10324.185	10323.584	0.015	100.768	0.044	47.622	0.338
301	302	40 44 21.14	190 56 53.04	10.355	-8.296	0.001	-6.196	0.001	0.005	0.002

APPENDIX C. PLAN VIEW OF GOLDSTONE PHASE I SURVEY NETWORK



Station Name	Identification No.
MARS 1963	[100]
ARIES 1976	[101]
GOLDSTONE VALIDATION	[102]
MARS CONTROL	[103]
MARS COLLIMATION	[104]
MARS VLBI	[105]
GOLDSTONE VALIDATION RM 1	[201]
GOLDSTONE VALIDATION RM 2	[202]
GOLDSTONE VALIDATION RM 2	[203]

Figure 8.--Sketch of Goldstone phase I survey network.

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