

NOAA Technical Report NOS 120 NGS 38



Subsidence in the Vicinity of New Orleans as Indicated by Analysis of Geodetic Leveling Data

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ERRATA

NOAA Technical Report NOS 120 NGS 38
"Subsidence in the Vicinity of New Orleans as
Indicated by Analysis of Geodetic Leveling Data"

Page 11, paragraph 3, last sentence:

Original:

To assist in cross-referencing the bench mark code numbers and designations, a listing consisting of the code numbers and designations, sorted by designation, was included. (See appendix C.)

Replacement:

To assist in cross-referencing the bench mark code numbers, designations, and archival cross-reference numbers (ACRNs), a listing consisting of the code numbers, designations, and ACRNs, sorted by ACRNs, is included. (See appendix C.)

Page 86, paragraph 1

Original:

Appendix C is sorted by bench mark designations. If the bench mark code number is known, appendix A can be used to find the corresponding designation.

Replacement:

Appendix C is sorted by bench mark ACRNs. If the bench mark code number is known, appendix A can be used to find the corresponding ACRN and designation.

DATA THAT COULD NOT BE PLOTTED

BM #	ACRN	LATITUDE	LONGITUDE	QUAD	DIFF HEIGHT	STD ERROR	YEAR 1	YEAR 2
519	AU0555	29.945200	90.131100	29090114	-74.634000	11.638268	1985.0	1951.0
525	AU0574	29.918000	90.125200	29090114	-126.657000	11.197118	1985.0	1964.0
526	AU0573	29.918900	90.125200	29090114	-150.801000	11.229857	1985.0	1964.0
526	AU0573	29.918900	90.125200	29090114	-226.812000	11.595000	1985.0	1951.0
528	AU0576	29.916300	90.120200	29090111	-136.047000	11.219072	1985.0	1964.0
528	AU0576	29.916300	90.120200	29090111	-190.181000	11.576466	1985.0	1951.0
529	AU0577	29.916100	90.118000	29090111	-147.266000	11.227570	1985.0	1964.0
529	AU0577	29.916100	90.118000	29090111	-204.671000	11.581250	1985.0	1951.0
533	AU0582	29.916600	90.103000	29090111	-174.392000	11.226911	1985.0	1964.0
533	AU0582	29.916600	90.103000	29090111	-275.896000	11.570897	1985.0	1951.0
534	AU0583	29.917200	90.095200	29090111	-169.492000	11.192947	1985.0	1964.0
534	AU0583	29.917200	90.095200	29090111	-275.143000	11.549386	1985.0	1951.0
541	AU0600	29.929100	90.064100	29090111	-196.306000	11.164663	1985.0	1964.0
542	AU0604	29.929900	90.064100	29090111	-210.393000	11.168161	1985.0	1964.0
543	AU0603	29.929700	90.064400	29090111	-220.320000	11.158992	1985.0	1964.0
544	AU0605	29.929900	90.064400	29090111	-215.988000	11.154742	1985.0	1964.0
545	AU0607	29.930200	90.064400	29090111	-215.967000	11.150500	1985.0	1964.0
546	AU0601	29.929100	90.065000	29090111	-171.493000	11.153254	1985.0	1964.0
546	AU0601	29.929100	90.065000	29090111	-297.650000	11.582505	1985.0	1951.0
547	AU0609	29.929100	90.063800	29090111	-171.034000	11.153942	1985.0	1964.0
547	AU0609	29.929100	90.063800	29090111	-305.126000	11.573930	1985.0	1951.0
555	AU1064	29.947700	90.069100	29090111	-218.004000	11.013988	1985.0	1964.0
555	AU1064	29.947700	90.069100	29090111	-381.862000	11.375259	1985.0	1951.0
562	AU0644	29.960800	90.056600	29090111	-173.870000	10.835708	1985.0	1964.0
565	AU0649	29.965200	90.056100	29090111	-124.279000	10.774899	1985.0	1964.0
565	AU0649	29.965200	90.056100	29090111	-179.168000	11.142458	1985.0	1951.0
567	AU0652	29.968300	90.053600	29090111	-108.732000	10.726163	1985.0	1964.0
567	AU0652	29.968300	90.053600	29090111	-150.475000	11.087968	1985.0	1951.0
570	AU0659	29.962500	90.049100	29090111	-150.356000	10.888046	1985.0	1964.0
570	AU0659	29.962500	90.049100	29090111	-223.621000	11.273539	1985.0	1951.0
572	AU0662	29.966100	90.036900	29090111	-189.067000	10.859636	1985.0	1964.0
572	AU0662	29.966100	90.036900	29090111	-286.137000	11.252759	1985.0	1951.0
588	AU0910	29.999400	90.049700	29090111	-139.338000	10.300883	1985.0	1964.0
588	AU0910	29.999400	90.049700	29090111	-159.390000	10.684713	1985.0	1951.0
593	AU1014	29.968000	90.084400	29090111	-70.032000	10.923415	1985.0	1964.0
593	AU1014	29.968000	90.084400	29090111	-87.673000	11.291898	1985.0	1951.0
597	AU1018	29.961900	90.069100	29090111	-84.283000	10.890959	1985.0	1964.0
597	AU1018	29.961900	90.069100	29090111	-130.733000	11.363034	1985.0	1951.0
598	AU0879	29.962500	90.075900	29090111	-30.489000	10.985554	1985.0	1964.0
598	AU0879	29.962500	90.075900	29090111	-34.786000	11.363986	1985.0	1951.0
603	AU1080	29.963000	90.085200	29090111	-48.026000	10.938337	1985.0	1964.0
603	AU1080	29.963000	90.085200	29090111	-70.608000	11.308287	1985.0	1951.0
610	AU1003	29.973600	90.103300	29090111	-55.812000	10.809777	1985.0	1964.0
629	AU1052	29.949400	90.088600	29090111	-48.090000	11.014614	1985.0	1964.0
629	AU1052	29.949400	90.088600	29090111	-68.176000	11.391381	1985.0	1951.0
630	AU0867	29.949100	90.085300	29090111	-77.805000	11.012843	1985.0	1964.0
631	AU0868	29.949400	90.085200	29090111	118.856000	11.016428	1985.0	1964.0
632	AU0869	29.950200	90.084700	29090111	-73.394000	11.020014	1985.0	1964.0
633	AU1056	29.948000	90.076300	29090111	-180.478000	11.093219	1985.0	1964.0
635	AU1055	29.944800	90.075900	29090111	-206.817000	11.081849	1985.0	1964.0
638	AU1058	29.943000	90.071600	29090111	-218.894000	11.087054	1985.0	1964.0

DATA THAT COULD NOT BE PLOTTED

RM #	ACPN	LATITUDE	LONGITUDE	QUAD	DIFF HEIGHT	STD ERROR	YEAR 1	YEAR 2
219	ATO407	29.624100	89.902700	29089433	-21.475000	17.229972	1964.0	1951.0
311	BJ1184	30.001900	90.056100	30090222	-7.656000	11.005850	1964.0	1951.0
312	BJ1185	30.002500	90.053300	30090222	-20.504000	10.891032	1964.0	1951.0
313	BJ1186	30.003000	90.050200	30090222	-42.403000	10.966180	1964.0	1951.0
314	BJ1187	30.002200	90.045000	30090222	-12.209000	10.971150	1964.0	1951.0
328	BH1164	30.166300	89.737200	30089324	-25.590000	1.144191	1964.0	1951.0
330	BH1160	30.166300	89.737500	30089324	-7.160000	1.169003	1964.0	1951.0
331	BH1162	30.166100	89.737200	30089324	-12.570000	0.919188	1964.0	1951.0
352	BH1132	30.064300	89.805000	30089332	20.500000	7.052893	1964.0	1951.0
380	BJ1189	30.008300	90.029400	30090222	-43.860000	10.843149	1964.0	1951.0
392	AU1024	29.884100	90.102200	29090111	-39.622000	11.245224	1964.0	1951.0
432	BJ1382	30.032700	90.026600	30090222	-56.357000	10.997844	1964.0	1951.0
433	BJ1383	30.032700	90.026600	30090222	-45.661000	10.998644	1964.0	1951.0
435	BJ1379	30.033000	90.039400	30090222	-78.818000	11.028779	1964.0	1951.0
437	BJ1377	30.035200	90.043800	30090222	-69.142000	11.073463	1964.0	1951.0
447	BJ1375	30.034100	90.053000	30090222	-70.463000	11.110398	1964.0	1951.0
448	BJ1374	30.033300	90.053600	30090222	-75.829000	11.112541	1964.0	1951.0
452	BJ1365	30.031300	90.068300	30090222	-41.179000	11.192896	1964.0	1951.0
454	BJ1362	30.032700	90.068400	30090222	-29.489000	11.162421	1964.0	1951.0
456	BJ1360	30.031800	90.076600	30090222	-38.823000	11.188730	1964.0	1951.0
457	BJ1359	30.031800	90.076600	30090222	-36.425000	11.190143	1964.0	1951.0
459	BJ1357	30.029100	90.079700	30090222	-36.370000	11.194429	1964.0	1951.0
466	BJ1354	30.027700	90.086600	30090222	-45.824000	11.244676	1964.0	1951.0
468	BJ1353	30.029700	90.091900	30090222	-30.401000	11.257443	1964.0	1951.0
469	BJ1351	30.028000	90.096300	30090222	-35.661000	11.285970	1964.0	1951.0
470	BJ1349	30.028600	90.098000	30090222	-42.709000	11.290822	1964.0	1951.0
471	BJ1350	30.028600	90.098000	30090222	-43.981000	11.280151	1964.0	1951.0
473	BJ1345	30.027200	90.105500	30090222	-59.210000	11.356710	1964.0	1951.0
475	BJ1342	30.026600	90.112700	30090222	-48.536000	11.392870	1964.0	1951.0
476	BJ1344	30.026600	90.112700	30090222	-73.552000	11.393695	1964.0	1951.0
485	BJ1432	30.003000	90.107700	30090222	6.190000	11.460241	1964.0	1951.0
497	AU0842	29.948300	90.120000	29090111	-11.178000	11.431530	1964.0	1951.0
498	AU0846	29.948000	90.114100	29090111	-14.171000	11.355784	1964.0	1951.0
501	AU0830	29.941600	90.111900	29090111	-2.664000	11.365735	1964.0	1951.0
508	AU0985	29.934700	90.120300	29090111	-22.012000	11.486337	1964.0	1951.0
508	AU0982	29.933000	90.121800	29090111	-11.031000	11.503388	1964.0	1951.0
510	AU0980	29.930800	90.122500	29090111	-22.995000	11.508314	1964.0	1951.0
514	AU0979	29.922700	90.126600	29090114	-20.119000	11.505532	1964.0	1951.0
519	AU0955	29.945200	90.121100	29090114	-39.850000	11.630055	1964.0	1951.0
526	AU0973	29.918900	90.125200	29090114	-76.011000	11.815976	1964.0	1951.0
528	AU0976	29.916300	90.120200	29090111	-54.134000	11.827021	1964.0	1951.0
529	AU0977	29.916100	90.118000	29090111	-57.403000	11.828034	1964.0	1951.0
533	AU0982	29.916800	90.103000	29090111	-101.804000	11.809679	1964.0	1951.0
534	AU0983	29.917200	90.099200	29090111	-105.651000	11.492368	1964.0	1951.0
546	AU0601	29.829100	90.089000	29090111	-126.197000	11.547727	1964.0	1951.0
547	AU0609	29.828100	90.083800	29090111	-134.093000	11.845274	1964.0	1951.0
555	AU1044	29.947700	90.089100	29090111	-163.858000	11.321357	1964.0	1951.0
565	AU0649	29.865200	90.056100	29090111	-54.889000	11.153393	1964.0	1951.0
567	AU0652	29.868300	90.053600	29090111	-41.743000	11.122798	1964.0	1951.0
572	AU0662	29.866100	90.036900	29090111	-87.070000	11.142356	1964.0	1951.0

LIST OF BENCH MARK CODE NUMBERS AND DESIGNATIONS, SORTED BY DESIGNATION

The attached list is sorted by bench mark designation. If the bench mark code number is known, appendix A* can be used to find the corresponding designation.

BM# - bench mark code number

ACRN - archival cross reference number

Latitude - scaled geodetic latitude (degrees)

Longitude - scaled geodetic longitude (degrees)

Quad - 7.5 minute identifier

Years - the 2 years involved in the height difference estimate, year 1 minus year 2

Diff - estimate of height difference (year 1 minus year 2),
units = mm

Sigma - estimate of standard error of height difference,
units = mm

- Pages 19-44 in NOAA Technical Report NOS 120 NGS 38:
"Subsidence in the Vicinity of New Orleans as Indicated by
Analysis of Geodetic Leveling Data," by Silkoski and Reese,
November 1986.

<u>ROW</u>	<u>ACRN</u>	<u>BEACON MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
510	AU0990	A 3157 LAGS	29.930800	90.122900	29090111	1985.0-1984.0	-49.1	11.2
510	AU0990	A 3157 LAGS	29.930800	90.122500	29090111	1985.0-1951.0	-72.1	11.6
510	AU0980	A 3157 LAGS	29.930800	90.122500	29090111	1984.0-1951.0	-23.0	11.5
509	AU0981	A 3158 LAGS	29.932200	90.121900	29090111	1985.0-1984.0	-38.4	11.2
509	AU0981	A 3158 LAGS	29.932200	90.121900	29090111	1985.0-1951.0	-54.9	11.6
509	AU0981	A 3158 LAGS	29.932200	90.121900	29090111	1984.0-1951.0	-18.5	11.5
508	AU0982	A 3158 LAGS	29.933000	90.121600	29090111	1985.0-1984.0	-38.0	11.2
508	AU0982	A 3158 LAGS	29.933000	90.121600	29090111	1985.0-1951.0	-49.0	11.6
508	AU0982	A 3159 LAGS	29.933000	90.121600	29090111	1984.0-1951.0	-11.0	11.5
507	AU0983	A 3161 LAGS	29.933300	90.121300	29090111	1985.0-1984.0	-34.8	11.2
507	AU0983	A 3161 LAGS	29.933300	90.121300	29090111	1985.0-1951.0	-82.7	11.6
507	AU0983	A 3161 LAGS	29.933300	90.121300	29090111	1984.0-1951.0	-17.9	11.5
503	AU0988	A 3168 LAGS	29.936600	90.121300	29090111	1985.0-1984.0	-32.0	11.2
503	AU0988	A 3168 LAGS	29.936600	90.121300	29090111	1985.0-1951.0	-59.4	11.6
503	AU0988	A 3168 LAGS	29.936600	90.121300	29090111	1984.0-1951.0	-27.4	11.5
496	AU0845	A 3175 LAGS	29.948800	90.115200	29090111	1985.0-1984.0	-52.5	11.0
496	AU0845	A 3175 LAGS	29.948800	90.115200	29090111	1985.0-1951.0	-75.1	11.4
496	AU0845	A 3175 LAGS	29.948800	90.115200	29090111	1984.0-1951.0	-22.6	11.4
495	AU0844	A 3178 LAGS	29.950800	90.115800	29090111	1985.0-1984.0	-32.7	11.0
494	AU0840	A 3178 LAGS	29.952800	90.118600	29090111	1985.0-1984.0	-54.2	11.0
494	AU0840	A 3178 LAGS	29.952800	90.118600	29090111	1985.0-1951.0	-71.8	11.3
494	AU0840	A 3178 LAGS	29.952800	90.118600	29090111	1984.0-1951.0	-15.7	11.3
917	AU0839	A 3180 LAGS	29.955200	90.120500	29090111	1984.0-1951.0	-46.6	11.3
912	AU0832	A 3183 LAGS	29.963000	90.129700	29090114	1984.0-1951.0	-58.5	11.4
910	AU0828	A 3184 LAGS	29.964100	90.131300	29090114	1984.0-1951.0	-88.5	11.4
909	AU0827	A 3185 LAGS	29.964100	90.132600	29090114	1984.0-1951.0	-71.3	11.4
938	AU0913	A 3188 LAGS	29.961900	90.141600	29090114	1984.0-1951.0	-38.4	11.5
440	BJ1408	A 3199 LAGS	30.025200	90.051900	30090222	1985.0-1984.0	-154.9	10.4
440	BJ1408	A 3199 LAGS	30.025200	90.051900	30090222	1985.0-1951.0	-196.0	10.6
440	BJ1408	A 3199 LAGS	30.025200	90.051900	30090222	1984.0-1951.0	-41.1	11.1
441	BJ1408	A 3200 LAGS	30.021900	90.051600	30090222	1985.0-1984.0	-140.8	10.4
441	BJ1408	A 3200 LAGS	30.021900	90.051600	30090222	1985.0-1951.0	-182.7	10.6
441	BJ1408	A 3200 LAGS	30.021900	90.051600	30090222	1984.0-1951.0	-41.9	11.1
347	BH1126	A 92	30.078800	89.791900	30089332	1985.0-1984.0	-49.8	6.0
347	BH1126	A 92	30.078800	89.791900	30089332	1985.0-1951.0	-90.3	6.2
347	BH1126	A 92	30.078800	89.791900	30089332	1984.0-1951.0	-40.7	6.6
928	AU0894	A 93	29.994400	90.057500	29090111	1984.0-1951.0	-122.2	11.1
924	AU0872	A 96	29.916100	90.127200	29090114	1985.0-1984.0	-176.9	11.2
924	AU0872	A 96	29.916100	90.127200	29090114	1985.0-1951.0	-287.4	11.6
924	AU0872	A 96	29.916100	90.127200	29090114	1984.0-1951.0	-80.6	11.8
460	BJ1421	AA 180	30.019600	90.079200	30090222	1985.0-1984.0	-106.0	10.6
431	BJ1400	AIRPORT	30.041100	90.031300	30090222	1985.0-1984.0	-179.1	10.6
431	BJ1400	AIRPORT	30.041100	90.031300	30090222	1985.0-1951.0	-320.1	11.0
431	BJ1400	AIRPORT	30.041100	90.031300	30090222	1984.0-1951.0	-41.0	11.0
968	BJ1401	AIRPORT RM	30.041100	90.031300	30090222	1984.0-1951.0	-41.1	11.0
475	BJ1342	ALCO 1931	30.026600	90.112700	30090222	1985.0-1984.0	-133.2	10.8
475	BJ1342	ALCO 1931	30.026600	90.112700	30090222	1985.0-1951.0	-181.8	11.3
475	BJ1342	ALCO 1931	30.026600	90.112700	30090222	1984.0-1951.0	-48.5	11.4
476	BJ1344	ALCO 1931 RM	30.026600	90.112700	30090222	1985.0-1984.0	-169.4	10.9
476	BJ1344	ALCO 1931 RM	30.026600	90.112700	30090222	1985.0-1951.0	-242.8	11.3

RESET 1993

<u>BNW</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
571	AU0581	B 3139 LAGS	29.965800	90.037200	29090111	1964.0-1951.0	-110.1	11.2
579	AU0572	B 3142 LAGS	29.961600	90.018300	29090111	1965.0-1964.0	-213.4	11.0
579	AU0672	B 3142 LAGS	29.961600	90.018300	29090111	1965.0-1951.0	-271.8	11.4
579	AU0672	B 3142 LAGS	29.961600	90.018300	29090111	1964.0-1951.0	-58.4	11.2
525	AU0574	B 3148 LAGS	29.918000	90.125200	29090114	1965.0-1964.0	-126.7	11.2
525	AU0574	B 3148 LAGS	29.918000	90.125200	29090114	1965.0-1951.0	-187.1	11.6
525	AU0574	B 3148 LAGS	29.918000	90.125200	29090114	1964.0-1951.0	-60.4	11.5
528	AU0576	B 3147 LAGS	29.916300	90.120700	29090111	1965.0-1964.0	-136.0	11.2
528	AU0576	B 3147 LAGS	29.916300	90.120700	29090111	1965.0-1951.0	-190.2	11.6
528	AU0576	B 3147 LAGS	29.916300	90.120700	29090111	1964.0-1951.0	-54.1	11.5
534	AU0583	B 3148 LAGS	29.917200	90.095200	29090111	1965.0-1964.0	-169.5	11.2
534	AU0583	B 3148 LAGS	29.917200	90.095200	29090111	1965.0-1951.0	-275.1	11.8
534	AU0583	B 3148 LAGS	29.917200	90.095200	29090111	1964.0-1951.0	-105.7	11.5
706	AU0597	B 3148 LAGS	29.927700	90.066900	29090111	1964.0-1951.0	-152.3	11.5
707	AU0598	B 3150 LAGS	29.928400	90.065000	29090111	1964.0-1951.0	-167.1	11.5
714	AU0616	B 3152 LAGS	29.938300	90.063300	29090111	1964.0-1951.0	-248.7	11.4
722	AU0631	B 3157 LAGS	29.952200	90.063800	29090111	1964.0-1951.0	-157.0	11.3
965	AU0649	B 3161 LAGS	29.965200	90.056100	29090111	1965.0-1964.0	-124.3	10.8
965	AU0649	B 3161 LAGS	29.965200	90.056100	29090111	1965.0-1951.0	-179.2	11.1
965	AU0649	B 3161 LAGS	29.965200	90.056100	29090111	1964.0-1951.0	-54.9	11.2
499	AU0849	B 3164 LAGS	29.944700	90.113600	29090111	1965.0-1964.0	-68.3	11.1
499	AU0849	B 3164 LAGS	29.944700	90.113600	29090111	1965.0-1951.0	-116.2	11.4
499	AU0849	B 3164 LAGS	29.944700	90.113600	29090111	1964.0-1951.0	-47.9	11.4
920	AU0877	B 3181 LAGS	29.982700	90.073800	29090111	1964.0-1951.0	-66.6	11.2
921	AU0882	B 3182 LAGS	29.967500	90.069700	29090111	1964.0-1951.0	-25.6	11.2
922	AU0883	B 3184 LAGS	29.970500	90.066900	29090111	1964.0-1951.0	-82.6	11.2
923	AU0885	B 3185 LAGS	29.972400	90.065000	29090111	1964.0-1951.0	-128.3	11.2
925	AU0889	B 3188 LAGS	29.972400	90.061500	29090111	1964.0-1951.0	-108.0	11.1
804	ATO423	B 91	29.998800	89.827500	29094322	1964.0-1951.0	-20.6	17.9
740	AU0673	B 93	29.960200	90.011900	29090111	1964.0-1951.0	-68.6	11.2
956	AU0629	B 96	29.950900	90.065800	29090111	1965.0-1964.0	-264.9	11.0
956	AU0629	B 96	29.950900	90.065800	29090111	1965.0-1951.0	-441.7	11.3
956	AU0629	B 96	29.950900	90.065800	29090111	1964.0-1951.0	-176.6	11.3
849	BJ1371	BM	30.021500	90.081900	30090222	1964.0-1951.0	-69.5	11.1
428	BJ1389	BM LAGS RESET 1963	30.035200	90.024700	30090222	1965.0-1964.0	-359.1	10.6
501	AU0850	BM MC MAIN	29.941600	90.111900	29090111	1965.0-1964.0	0.8	11.1
501	AU0850	BM MC MAIN	29.941600	90.111900	29090111	1965.0-1951.0	-1.8	11.8
501	AU0850	BM MC MAIN	29.941600	90.111900	29090111	1964.0-1951.0	-2.7	11.4
638	AU1058	BM XX C OF NG	29.943000	90.071800	29090111	1965.0-1964.0	-218.9	11.1
638	AU1058	BM XX C OF NG	29.943000	90.071800	29090111	1965.0-1951.0	-424.5	11.5
638	AU1058	BM XX C OF NG	29.943000	90.071800	29090111	1964.0-1951.0	-215.6	11.3
472	BJ1346	BUICK	30.027200	90.105500	30090222	1965.0-1964.0	-222.7	10.8
472	BJ1346	BUICK	30.027200	90.105500	30090222	1965.0-1951.0	-326.4	11.2
472	BJ1346	BUICK	30.027200	90.105500	30090222	1964.0-1951.0	-103.6	11.4
473	BJ1348	BUICK RW	30.027200	90.105500	30090222	1965.0-1964.0	-222.6	10.8
473	BJ1348	BUICK RW	30.027200	90.105500	30090222	1965.0-1951.0	-322.4	11.2
473	BJ1348	BUICK RW	30.027200	90.105500	30090222	1964.0-1951.0	-99.8	11.4
876	AU1087	C 147	29.971100	90.177500	29090114	1964.0-1951.0	2.6	11.7
844	AU1038	C 148	29.978900	90.114400	29090111	1964.0-1951.0	-31.0	11.3
855	AU1084	C 148	29.947700	90.069100	29090111	1965.0-1964.0	-218.0	11.0

BWP	ACRN	BENCH MARK	LATITUDE	LONGITUDE	QUAD	YEARS	DIFF	SIGMA
543	AU0845	D 149	29.962200	89.055800	29090111	1985.0-1991.0	-187.8	11.2
563	AU0845	D 149	29.962200	89.055800	29090111	1984.0-1991.0	-59.1	11.2
595	AU0880	D 150	29.964100	89.072200	29090111	1985.0-1984.0	-82.8	10.8
595	AU0880	D 150	29.964100	89.072200	29090111	1985.0-1991.0	-136.4	11.3
595	AU0880	D 150	29.964100	89.072200	29090111	1984.0-1991.0	-53.6	11.2
259	AT0328	D 151	29.888800	89.896900	29089444	1985.0-1984.0	-83.6	12.1
259	AT0328	D 151	29.888800	89.896900	29089444	1985.0-1991.0	-78.7	12.5
259	AT0328	D 151	29.888800	89.896900	29089444	1984.0-1991.0	-24.9	12.4
803	AT0425	D 152 USE	29.601900	89.834400	29089432	1984.0-1991.0	-83.0	17.8
361	BH1109	D 189	30.064100	89.865000	30089332	1985.0-1984.0	-33.0	7.7
245	AT0357	D 194	29.859900	89.971800	29089443	1985.0-1984.0	-21.5	13.7
889	AU0432	D 3118 LAGS	29.991900	90.068300	29090111	1984.0-1991.0	-39.8	11.1
309	AU0434	D 3120 LAGS	29.995200	90.062500	29090111	1985.0-1984.0	-178.8	10.4
309	AU0434	D 3120 LAGS	29.995200	90.062500	29090111	1985.0-1991.0	-236.6	10.7
309	AU0434	D 3120 LAGS	29.995200	90.062500	29090111	1984.0-1991.0	-57.8	11.1
311	BJ1184	D 3123 LAGS	30.001900	90.056100	30090222	1985.0-1984.0	-88.2	10.3
311	BJ1184	D 3123 LAGS	30.001900	90.056100	30090222	1985.0-1991.0	-95.9	10.7
311	BJ1184	D 3123 LAGS	30.001900	90.056100	30090222	1984.0-1991.0	-7.7	11.0
312	BJ1185	D 3124 LAGS	30.002500	90.053300	30090222	1985.0-1984.0	-128.5	10.3
312	BJ1185	D 3124 LAGS	30.002500	90.053300	30090222	1985.0-1991.0	-147.0	10.7
312	BJ1185	D 3124 LAGS	30.002500	90.053300	30090222	1984.0-1991.0	-20.9	11.0
464	BJ1413	D 3126 LAGS	30.003800	90.059400	30090222	1985.0-1984.0	-98.1	10.4
464	BJ1413	D 3126 LAGS	30.003800	90.059400	30090222	1985.0-1991.0	-112.1	10.8
464	BJ1413	D 3126 LAGS	30.003800	90.059400	30090222	1984.0-1991.0	-14.0	11.1
462	BJ1414	D 3127 LAGS	30.008000	90.059700	30090222	1985.0-1984.0	-108.8	10.4
462	BJ1414	D 3127 LAGS	30.008000	90.059700	30090222	1985.0-1991.0	-142.9	10.8
462	BJ1414	D 3127 LAGS	30.008000	90.059700	30090222	1984.0-1991.0	-33.7	11.1
463	BJ1416	D 3128 LAGS	30.011300	90.060000	30090222	1985.0-1984.0	-179.7	10.9
463	BJ1416	D 3128 LAGS	30.011300	90.060000	30090222	1985.0-1991.0	-309.8	10.8
463	BJ1416	D 3128 LAGS	30.011300	90.060000	30090222	1984.0-1991.0	-129.8	11.1
964	BJ1417	D 3130 LAGS	30.021300	90.060800	30090222	1984.0-1991.0	-30.0	11.1
449	BJ1370	D 3132 LAGS RESET 1981	30.028700	90.061100	30090222	1985.0-1984.0	-235.1	10.9
848	BJ1364	D 3134 LAGS	30.032700	90.064800	30090222	1984.0-1991.0	-42.2	11.1
899	BH1097	D 3136 LAGS	30.038300	89.903300	30089333	1984.0-1991.0	11.0	8.3
745	AT0288	D 3199 LAGS	29.846300	89.990300	29089444	1984.0-1991.0	-42.0	11.2
747	AT0290	D 3196 LAGS	29.844700	89.985000	29089444	1984.0-1991.0	-68.8	11.1
743	AT0288	D 3157 LAGS	29.847400	89.992200	29089444	1984.0-1991.0	-54.8	11.2
343	BH1142	D 82	30.104400	89.762200	30089332	1985.0-1984.0	-43.3	4.8
343	BH1142	D 82	30.104400	89.762200	30089332	1985.0-1991.0	-71.0	8.0
343	BH1142	D 82	30.104400	89.762200	30089332	1984.0-1991.0	-27.7	8.3
728	AU0840	DECATUR GATE STOP	29.996100	90.062700	29090111	1984.0-1991.0	-141.3	11.3
392	AU1024	DELGADO NDS+WB	29.984100	90.102300	29090111	1985.0-1984.0	-151.8	10.7
392	AU1024	DELGADO NDS+WB	29.984100	90.102300	29090111	1985.0-1991.0	-191.8	11.1
392	AU1024	DELGADO NDS+WB	29.984100	90.102300	29090111	1984.0-1991.0	-39.8	11.2
467	BJ1352	DODGE RW	30.029700	90.081900	30090222	1985.0-1984.0	-128.8	10.7
467	BJ1352	DODGE RW	30.029700	90.081900	30090222	1985.0-1991.0	-158.2	11.1
467	BJ1352	DODGE RW	30.029700	90.081900	30090222	1984.0-1991.0	-29.3	11.3
468	BJ1353	DODGE	30.029700	90.081900	30090222	1985.0-1984.0	-128.1	10.7
468	BJ1353	DODGE	30.029700	90.081900	30090222	1985.0-1991.0	-158.6	11.1
468	BJ1353	DODGE	30.029700	90.081900	30090222	1984.0-1991.0	-30.4	11.3

<u>RNF</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
618	AU1010	F 148	29.958000	90.117500	29090111	1985.0-1991.0	-39.8	11.3
618	AU1010	F 148	29.958000	90.117500	29090111	1984.0-1991.0	-11.1	11.3
594	AU1015	F 149	29.966600	90.077200	29090111	1985.0-1984.0	-53.4	10.9
594	AU1016	F 149	29.966600	90.077200	29090111	1985.0-1991.0	-63.0	11.3
594	AU1016	F 149	29.966600	90.077200	29090111	1984.0-1991.0	-9.6	11.2
762	AT0334	F 151	29.887700	89.890500	29089443	1984.0-1991.0	15.5	12.7
268	AT0294	F 152	29.940200	89.973800	29089444	1985.0-1984.0	-351.8	10.6
268	AT0294	F 152	29.940200	89.973800	29089444	1985.0-1991.0	-426.7	11.0
268	AT0294	F 152	29.940200	89.973800	29089444	1984.0-1991.0	-75.0	11.1
658	BH1179	F 153	30.055200	89.972200	30089333	1984.0-1991.0	-21.9	11.1
307	AU0431	F 156	29.889900	90.070800	29090111	1985.0-1984.0	-136.0	10.4
1073	BH1139	F 157	30.049900	89.777700	30089332	1984.0-1991.0	-51.5	6.1
282	BH1084	F 189	30.016600	89.831600	30089333	1985.0-1984.0	-459.0	9.1
663	AU0948	F 190	29.924400	90.033800	29090111	1985.0-1984.0	-33.9	11.7
348	BH1135	F 193	30.071100	89.800500	30089332	1985.0-1984.0	-28.4	6.2
257	AT0333	F 194	29.871100	89.894400	29089443	1985.0-1984.0	-25.2	12.3
869	AT0473	F 3123 LAOS	29.978000	89.946100	29089444	1984.0-1991.0	-176.0	10.7
254	AT0339	F 3138 LAOS RESET 1998	29.959900	89.912700	29089443	1985.0-1984.0	3.9	12.7
252	AT0342	F 3340 LAOS RESET 1998	29.858600	89.919700	29089443	1985.0-1984.0	-120.3	12.8
292	AU0410	F 83 RESET 1998	29.933300	90.178800	29090114	1985.0-1984.0	-46.0	11.2
619	AU1045	F 96	29.962500	90.106100	29090111	1985.0-1984.0	-221.9	10.9
619	AU1045	F 96	29.962500	90.106100	29090111	1985.0-1991.0	-442.3	11.3
619	AU1045	F 96	29.962500	90.106100	29090111	1984.0-1991.0	-320.9	11.3
693	AU0560	FLEET	29.936400	90.134100	29090114	1984.0-1991.0	-7.4	11.6
741	AT0284	FOLSE	29.955800	89.989400	29089444	1984.0-1991.0	-43.2	11.2
458	BJ1358	FORD 1931	30.029100	90.079700	30090222	1985.0-1984.0	-235.9	10.6
458	BJ1358	FORD 1931	30.029100	90.079700	30090222	1985.0-1991.0	-211.9	11.0
459	BJ1357	FORD 1931 NW	30.029100	90.079700	30090222	1985.0-1984.0	-240.0	10.6
459	BJ1357	FORD 1931 NW	30.029100	90.079700	30090222	1985.0-1991.0	-276.4	11.0
458	BJ1358	FORD 1931	30.029100	90.079700	30090222	1984.0-1991.0	-36.1	11.2
459	BJ1357	FORD 1931 NW	30.029100	90.079700	30090222	1984.0-1991.0	-36.4	11.2
620	AU1048	G 148	29.961300	90.103300	29090111	1985.0-1984.0	-63.4	10.9
620	AU1048	G 148	29.961300	90.103300	29090111	1985.0-1991.0	-90.1	11.3
620	AU1048	G 148	29.961300	90.103300	29090111	1984.0-1991.0	-26.7	11.2
993	AU1014	G 149	29.968000	90.084400	29090111	1985.0-1984.0	-70.0	10.9
993	AU1014	G 149	29.968000	90.084400	29090111	1985.0-1991.0	-87.7	11.3
993	AU1014	G 149	29.968000	90.084400	29090111	1984.0-1991.0	-17.6	11.3
763	AT0339	G 151	29.864400	89.887700	29089443	1984.0-1991.0	-22.6	12.8
742	AT0285	G 152	29.958100	89.988000	29089444	1984.0-1991.0	-193.9	11.2
857	BH1174	G 153	30.046600	89.888600	30089333	1984.0-1991.0	-17.6	11.1
385	AU1028	G 156	29.968300	90.064400	29090111	1985.0-1984.0	-87.9	10.9
337	BH1155	G 183	30.155200	89.738000	30089324	1985.0-1984.0	-77.8	2.4
263	AT0308	G 184	29.924400	89.822500	29089444	1985.0-1984.0	-88.1	11.3
778	BH1150	G 82	30.143600	89.747500	30089324	1985.0-1984.0	-25.6	3.1
778	BH1150	G 82	30.143600	89.747500	30089324	1985.0-1991.0	-45.5	3.2
337	BH1150	G 82	30.143600	89.747500	30089324	1984.0-1991.0	-19.7	3.4
611	AU1040	G 96 RESET 1998	29.975200	90.110800	29090111	1985.0-1984.0	-83.2	10.8
384	AU0442	GENT FLA NDS+WB	29.989900	90.074700	29090111	1985.0-1984.0	-146.3	10.4
384	AU0442	GENT FLA NDS+WB	29.989900	90.074700	29090111	1985.0-1991.0	-183.1	10.8
384	AU0442	GENT FLA NDS+WB	29.989900	90.074700	29090111	1984.0-1991.0	-36.8	11.1

<u>BMP</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
813	AU0771	J 150	29.985500	90.257700	29090141	1964.0-1951.0	10.2	12.2
767	AT0350	J 151 USE	29.873000	89.951900	29089443	1964.0-1951.0	-189.4	12.3
872	AU0682	J 152	29.966100	90.038900	29090111	1985.0-1964.0	-189.1	10.9
872	AU0682	J 152	29.966100	90.038900	29090111	1985.0-1951.0	-286.1	11.3
872	AU0682	J 152	29.966100	90.038900	29090111	1964.0-1951.0	-87.1	11.1
858	BH1173	J 153	30.042700	89.898900	30089323	1964.0-1951.0	-37.1	11.1
636	AU1053	J 157	28.843600	90.077700	29090111	1985.0-1964.0	-212.4	11.1
483	BJ1429	J 188	30.005200	90.114400	30090222	1985.0-1964.0	-218.0	10.9
264	AT0308	J 184	29.929700	89.933300	29089444	1985.0-1964.0	-144.8	11.1
326	BH1167	J 92	30.167700	89.736600	30089324	1985.0-1964.0	0.0	0.0
326	BH1167	J 92	30.167700	89.736600	30089324	1985.0-1951.0	0.0	0.0
326	BH1167	J 92	30.167700	89.736600	30089324	1964.0-1951.0	0.0	0.0
915	AU0838	J 94	29.955500	90.120800	29090111	1964.0-1951.0	-222.3	11.3
726	AU0637	JAK 1	29.856900	90.083300	29090111	1964.0-1951.0	-200.0	11.3
723	AU0638	JAK 2	29.956100	90.063000	29090111	1964.0-1951.0	-132.8	11.3
436	BJ1378	JEWETT	30.035200	90.043800	30090222	1985.0-1964.0	-211.2	10.5
436	BJ1378	JEWETT	30.035200	90.043800	30090222	1985.0-1951.0	-279.8	10.9
436	BJ1378	JEWETT	30.035200	90.043800	30090222	1964.0-1951.0	-88.8	11.1
437	BJ1377	JEWETT RM	30.035200	90.043800	30090222	1985.0-1964.0	-215.2	10.5
437	BJ1377	JEWETT RM	30.035200	90.043800	30090222	1985.0-1951.0	-284.3	10.9
437	BJ1377	JEWETT RM	30.035200	90.043800	30090222	1964.0-1951.0	-89.1	11.1
1	AU0353	JF 58 USGS	29.926100	90.220900	29090114	1985.0-1964.0	0.1	12.1
682	AU0525	K 146	29.962500	90.220000	29090114	1964.0-1951.0	9.1	11.8
904	AU0817	K 147	29.949700	90.146300	29090114	1964.0-1951.0	-22.5	11.5
950	AU1011	K 149	29.974100	90.098300	29090111	1964.0-1951.0	-15.0	11.2
768	AT0392	K 151 USE	29.877700	89.964100	29089444	1964.0-1951.0	-27.2	13.6
870	AT0477	K 152	29.955200	89.957200	29089444	1964.0-1951.0	-51.3	10.9
435	BJ1379	K 153	30.033000	90.039400	30090222	1985.0-1964.0	-258.0	10.5
435	BJ1379	K 153	30.033000	90.039400	30090222	1985.0-1951.0	-336.8	10.9
435	BJ1379	K 153	30.033000	90.039400	30090222	1964.0-1951.0	-78.8	11.0
942	AU0804	K 156	29.929500	90.084100	29090111	1985.0-1964.0	-210.4	11.2
901	AU1077	K 157	29.960000	90.086600	29090111	1985.0-1964.0	-54.9	11.0
383	AU1038	K 188	29.984700	90.115800	29090111	1985.0-1964.0	-812.8	10.8
389	AU1021	K 189	29.989900	90.100500	29090111	1985.0-1964.0	-981.4	10.7
261	AT0314	K 194	29.901900	89.901900	29089444	1985.0-1964.0	-41.4	11.8
903	AU0818	L 147	29.970200	90.149700	29090114	1964.0-1951.0	-18.8	11.5
890	AU0896	L 148	29.983800	90.089700	29090111	1985.0-1964.0	-235.6	10.7
890	AU0896	L 148	29.983800	90.089700	29090111	1985.0-1951.0	-310.2	11.1
890	AU0896	L 148	29.983800	90.089700	29090111	1964.0-1951.0	-74.7	11.2
870	AU0858	L 150	29.962500	90.049100	29090111	1985.0-1964.0	-180.4	10.9
870	AU0858	L 150	29.962500	90.049100	29090111	1985.0-1951.0	-223.6	11.3
870	AU0858	L 150	29.962500	90.049100	29090111	1964.0-1951.0	-73.3	11.3
772	AT0382	L 181 USE	29.833300	89.967700	29089443	1964.0-1951.0	-108.9	14.3
876	AU0670	L 182 RESET 1981	29.958600	90.022200	29090111	1985.0-1964.0	-315.1	11.0
934	BJ1410	L 183	30.025800	90.051600	30090222	1964.0-1951.0	-32.8	11.1
843	AU0803	L 186	29.929700	90.084400	29090111	1985.0-1964.0	-220.3	11.2
277	AU0422	L 188	29.988300	90.116600	29090111	1985.0-1964.0	-102.3	10.7
231	AU1191	L 194	29.747700	90.007200	29090121	1985.0-1964.0	18.0	14.9
320	BJ1193	LAFON	30.011300	90.005200	30090222	1985.0-1964.0	-322.9	9.9
320	BJ1193	LAFON	30.011300	90.005200	30090222	1985.0-1951.0	-378.2	10.3

<u>BMP</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
1008	AU0967	P 149	29.809800	90.090800	29090111	1964.0-1951.0	-49.8	11.1
545	AU0407	P 150 RESET 1960	29.830700	90.064400	29090111	1965.0-1964.0	-218.0	11.2
779	AU1149	P 151 USE	29.780200	90.014100	29090112	1964.0-1951.0	-200.8	19.1
568	AU0660	P 152	29.968600	90.046300	29090111	1965.0-1964.0	-112.5	10.8
368	AU0660	P 152	29.968600	90.046300	29090111	1965.0-1951.0	-149.9	11.2
568	AU0660	P 152	29.968600	90.046300	29090111	1964.0-1951.0	-37.1	11.1
455	BJ1361	P 153	30.030800	90.073600	30090222	1985.0-1964.0	-201.4	10.6
455	BJ1361	P 153	30.030800	90.073600	30090222	1985.0-1951.0	-237.6	11.0
455	BJ1361	P 153	30.030800	90.073600	30090222	1964.0-1951.0	-28.2	11.2
298	AU0423	P 188	29.890500	90.109700	29090111	1985.0-1964.0	-157.0	10.7
624	AU0857	P 189	29.840200	90.097200	29090111	1985.0-1964.0	-18.8	11.1
144	AU0689	P 190	29.861300	90.098300	29090112	1985.0-1964.0	-32.7	12.7
310	AU0435	P 193	29.899700	90.058800	29090111	1985.0-1964.0	-86.1	10.3
222	ATO401	P 194	29.842500	89.929700	29089434	1985.0-1964.0	-43.2	16.0
520	AU0559	PBM DEPOT USE	29.837700	90.134700	29090114	1985.0-1964.0	-77.1	11.3
520	AU0559	PBM DEPOT USE	29.837700	90.134700	29090114	1985.0-1951.0	-104.0	11.6
520	AU0559	PBM DEPOT USE	29.837700	90.134700	29090114	1964.0-1951.0	-28.9	11.6
735	AU0865	PBM DEPOT BOLT	29.860800	90.031100	29090111	1964.0-1951.0	-136.5	11.2
735	AU0110	PBM DEPOT CAP	29.860800	90.031100	29090111	1964.0-1951.0	-129.1	11.2
897	BH1078	PBM KURTZ BOLT USE	30.012500	89.845500	30089333	1964.0-1951.0	-18.1	10.3
898	BH1077	PBM KURTZ CAP USE	30.012500	89.845500	30089333	1964.0-1951.0	-16.3	10.3
900	BH1100	PBM NICHEAU BOLT USE	30.038000	89.902500	30089333	1964.0-1951.0	1.5	9.4
829	AU0899	PBM PUMPHOUSE USE	29.865500	90.045000	29090111	1964.0-1951.0	-38.8	11.1
691	AU0556	PBM XX C OF MD	29.845800	90.130500	29090114	1964.0-1951.0	-31.2	11.6
290	AU0538	PBM 210/2 CAP USE	29.835800	90.190500	29090114	1985.0-1964.0	-108.6	11.4
290	AU0538	PBM 210/2 CAP USE	29.835800	90.190500	29090114	1985.0-1951.0	-125.6	11.8
290	AU0538	PBM 210/2 CAP USE	29.835800	90.190500	29090114	1964.0-1951.0	-17.0	12.0
884	AU0537	PBM 210/2 BOLT USE	29.835500	90.190200	29090114	1964.0-1951.0	-19.3	12.0
899	AU0549	PBM 212/2 BOLT USE	29.821600	90.132500	29090114	1964.0-1951.0	-25.0	11.5
700	AU0568	PBM 212/2 CAP USE	29.821600	90.132500	29090114	1964.0-1951.0	-21.0	11.5
239	AU1146	PBM 222/2 CAP NRC	29.792200	90.005500	29090112	1985.0-1964.0	-51.2	14.5
239	AU1146	PBM 222/2 CAP NRC	29.792200	90.005500	29090112	1985.0-1951.0	-119.7	19.0
239	AU1146	PBM 222/2 CAP NRC	29.792200	90.005500	29090112	1964.0-1951.0	-68.8	14.9
789	ATO394	PBM 220/2 BOLT NRC	29.869700	89.868600	29089442	1964.0-1951.0	-20.4	13.8
778	AU1147	PBM 222/2 BOLT NRC	29.792800	90.004400	29090112	1964.0-1951.0	-76.2	14.9
800	ATO414	PBM 226/2 BOLT NRC	29.809900	89.860500	29089432	1964.0-1951.0	-39.7	17.6
801	ATO413	PBM 226/2 CAP NRC	29.809900	89.860500	29089432	1964.0-1951.0	-29.8	17.6
784	ATO403	PBM 27 BOLT NRC	29.838300	89.924400	29089434	1964.0-1951.0	-40.9	17.0
785	ATO402	PBM 27 CAP NRC	29.838300	89.924400	29089434	1964.0-1951.0	-40.8	17.0
786	ATO390	PBM 28 BOLT NRC	29.887200	89.862700	29089434	1964.0-1951.0	-20.0	16.9
787	ATO389	PBM 28 CAP NRC	29.887200	89.862700	29089434	1964.0-1951.0	-19.9	16.9
330	BH1180	PIKE RN 3	30.166300	89.737500	30089324	1985.0-1964.0	-14.4	1.1
330	BH1180	PIKE RN 3	30.166300	89.737500	30089324	1985.0-1951.0	-21.8	1.1
330	BH1180	PIKE RN 3	30.166300	89.737500	30089324	1964.0-1951.0	-7.2	1.2
331	BH1182	PIKE RN 2	30.166100	89.737200	30089324	1985.0-1964.0	-19.6	1.1
331	BH1182	PIKE RN 2	30.166100	89.737200	30089324	1985.0-1951.0	-22.1	1.0
331	BH1142	PIKE RN 2	30.166100	89.737200	30089324	1964.0-1951.0	-12.6	0.9
328	BH1164	PIKE 1931 1962	30.166300	89.737200	30089324	1985.0-1964.0	-26.5	1.0
328	BH1164	PIKE 1931 1962	30.166300	89.737200	30089324	1985.0-1951.0	-54.1	0.9
328	BH1164	PIKE 1931 1952	30.166300	89.737200	30089324	1964.0-1951.0	-25.6	1.1

BN#	ACRN	WENCHI PARK	LATITUDE	LONGITUDE	QUAD	YEARS	DIFF	SIGMA
517	AU0549	T 148	29.951300	90.137500	29090114	1985.0-1984.0	-28.4	11.1
517	AU0549	T 148	29.951300	90.137500	29090114	1985.0-1951.0	-45.5	11.6
517	AU0549	T 148	29.951300	90.137500	29090114	1964.0-1951.0	-17.1	11.6
551	AU0902	T 147	29.986300	90.139400	29090114	1964.0-1951.0	-22.4	11.5
496	BJ1428	T 149	30.003600	90.100000	30090222	1985.0-1984.0	-152.9	10.7
496	BJ1428	T 149	30.003600	90.100000	30090222	1985.0-1951.0	-208.4	11.1
496	BJ1428	T 149	30.003600	90.100000	30090222	1964.0-1951.0	-53.4	11.2
539	AU0595	T 150	29.925200	90.068800	29090111	1985.0-1984.0	-193.3	11.2
539	AU0595	T 150	29.925200	90.068800	29090111	1985.0-1951.0	-340.2	11.6
539	AU0595	T 150	29.925200	90.068800	29090111	1964.0-1951.0	-146.9	11.5
782	AT0375	T 151	29.779100	89.988000	29089434	1964.0-1951.0	-130.6	15.9
963	BJ1188	T 152	30.018000	90.021300	30090222	1964.0-1951.0	-73.7	10.9
189	BJ1447	T 189	30.005200	90.227200	30090223	1985.0-1984.0	-47.9	11.5
145	AU0882	T 150	29.959100	90.110000	29090112	1984.0-1984.0	-17.9	12.9
959	AU0440	TEST	29.988800	90.068800	29090111	1964.0-1951.0	-44.3	11.1
695	AU0583	THOMPSON	29.932500	90.133800	29090114	1964.0-1951.0	-20.6	11.6
709	AU0610	TIDAL 4	29.931500	90.085500	29090111	1964.0-1951.0	-205.2	11.5
723	AU0632	TIDAL 3	29.954700	90.063700	29090111	1964.0-1951.0	-158.6	11.3
728	AU0648	TIDAL W PARK	29.964400	90.058600	29090111	1964.0-1951.0	-46.9	11.2
802	AU1079	TONTI	29.962500	90.084700	29090111	1985.0-1984.0	-43.7	10.9
802	AU1079	TONTI	29.962500	90.084700	29090111	1985.0-1951.0	-90.1	11.3
802	AU1079	TONTI	29.962500	90.084700	29090111	1964.0-1951.0	-6.4	11.3
774	AT0369	T 18 L USGS	29.819100	89.896100	29089443	1964.0-1951.0	-31.2	14.8
960	AU1032	T 3 P USGS	29.995500	90.073600	29090111	1964.0-1951.0	-135.7	11.2
766	AT0348	T 202 USGS	29.865800	89.943000	29089443	1964.0-1951.0	-42.8	13.3
499	AU0848	TULANE NDS+WB	29.948000	90.114100	29090111	1985.0-1984.0	-13.3	11.0
499	AU0848	TULANE NDS+WB	29.948000	90.114100	29090111	1985.0-1951.0	-27.5	11.4
805	AU0987	TULANE RESET 1988	29.935200	90.121900	29090111	1985.0-1984.0	-25.4	11.3
499	AU0848	TULANE NDS+WB	29.948000	90.114100	29090111	1964.0-1951.0	-14.2	11.4
518	AU0550	U 146	29.946100	90.135200	29090114	1985.0-1984.0	-72.7	11.2
518	AU0550	U 146	29.946100	90.135200	29090114	1985.0-1951.0	-244.2	11.6
518	AU0550	U 146	29.946100	90.135200	29090114	1964.0-1951.0	-171.4	11.6
296	AU0420	U 147	29.986900	90.128600	29090114	1985.0-1984.0	-92.2	10.8
296	AU0420	U 147	29.986900	90.128600	29090114	1985.0-1951.0	-107.0	11.2
296	AU0420	U 147	29.986900	90.128600	29090114	1964.0-1951.0	-14.8	11.4
478	BJ1425	U 149	30.018600	90.099000	30090222	1985.0-1984.0	-174.1	10.8
478	BJ1425	U 149	30.018600	90.099000	30090222	1985.0-1951.0	-234.6	11.2
478	BJ1425	U 149	30.018600	90.099000	30090222	1964.0-1951.0	-60.7	11.3
704	AU0884	U 150	29.918800	90.094700	29090111	1964.0-1951.0	-99.6	11.9
229	AT0383	U 151 USE	29.718400	89.982200	29089434	1985.0-1984.0	-311.8	18.3
229	AT0383	U 151 USE	29.718400	89.982200	29089434	1985.0-1951.0	-580.0	18.9
229	AT0383	U 151 USE	29.718400	89.982200	29089434	1964.0-1951.0	-248.3	18.0
958	AU0441	U 153	29.986300	90.087900	29090111	1964.0-1951.0	-36.3	11.1
31	AU0892	U 180	29.877400	90.113900	29090111	1985.0-1984.0	-34.4	12.9
844	BJ1343	V 148	30.028600	90.113800	30090223	1964.0-1951.0	-31.7	11.5
467	BJ1351	V 149	30.028000	90.096300	30090223	1985.0-1984.0	-189.8	10.7
469	BJ1351	V 149	30.028000	90.096300	30090223	1985.0-1951.0	-199.5	11.1
469	BJ1351	V 149	30.028000	90.096300	30090223	1964.0-1951.0	-35.7	11.3
932	AU0581	V 150	29.915800	90.103000	29090111	1985.0-1984.0	-178.3	11.2
932	AU0581	V 150	29.915800	90.103000	29090111	1985.0-1951.0	-297.6	11.6

ROW	ACRN	BENCH MARK	LATITUDE	LONGITUDE	QUAD	YEARS	DIFF	SIGMA
696	AU0998	Y 120	29.929700	90.133000	29090114	1964.0-1951.0	-47.2	11.6
793	A10400	Y 151 USE	29.643300	89.935900	29089434	1964.0-1951.0	-106.2	18.9
427	BJ1393	Y 152 RESET 1963	30.075900	90.073900	30090222	1985.0-1964.0	-356.8	10.6
607	AU0997	Y 153	29.981800	90.092500	29090111	1985.0-1964.0	-240.6	10.7
607	AU0997	Y 153	29.981800	90.092500	29090111	1985.0-1951.0	-297.5	11.1
607	AU0997	Y 153	29.981800	90.092500	29090111	1964.0-1951.0	-56.8	11.2
600	AU0872	Y 156	29.953800	90.081300	29090111	1985.0-1964.0	-107.7	11.0
14	AU0388	Y 190	29.919100	90.207500	29090114	1985.0-1964.0	-16.0	11.9
308	AU0433	Z 147	29.991600	90.067700	29090111	1985.0-1964.0	-132.5	10.4
308	AU0433	Z 147	29.991600	90.067700	29090111	1985.0-1951.0	-163.1	10.8
308	AU0433	Z 147	29.991600	90.067700	29090111	1964.0-1951.0	-30.6	11.1
698	AU0567	Z 148	29.929900	90.132500	29090114	1964.0-1951.0	-39.6	11.6
623	AU0958	Z 149	29.941300	90.094100	29090111	1985.0-1964.0	-9.8	11.1
623	AU0958	Z 149	29.941300	90.094100	29090111	1985.0-1951.0	109.2	11.5
623	AU0958	Z 149	29.941300	90.094100	29090111	1964.0-1951.0	119.0	11.3
941	AU0990	Z 190	29.941900	90.114300	29090111	1964.0-1951.0	-5.7	11.4
797	A10408	Z 151	29.834100	89.916600	29089434	1964.0-1951.0	-47.5	17.1
429	BJ1381	Z 152	30.032500	90.032500	30090222	1985.0-1964.0	-259.8	10.9
429	BJ1381	Z 152	30.032500	90.032500	30090222	1985.0-1951.0	-322.7	10.8
429	BJ1381	Z 152	30.032500	90.032500	30090222	1964.0-1951.0	-68.8	11.0
843	BJ1341	Z 153	30.070200	90.113000	30090222	1964.0-1951.0	-136.6	11.4
630	AU0867	Z 156	29.949100	90.045500	29090111	1985.0-1964.0	-77.8	11.0
191	BJ1448	Z 189	30.005000	90.210800	30090223	1985.0-1964.0	-48.3	11.3
661	AU0919	Z 193	29.930200	90.078600	29090111	1985.0-1964.0	-43.5	11.6
553	AU1081	1 A C OF NO	29.947700	90.089700	29090111	1985.0-1964.0	-233.8	11.0
553	AU1081	1 A C OF NO	29.947700	90.089700	29090111	1985.0-1951.0	-458.9	11.4
553	AU1081	1 A C OF NO	29.947700	90.089700	29090111	1964.0-1951.0	-225.2	11.3
428	BJ1394	1 A LAGS	30.037200	90.018000	30090222	1985.0-1964.0	-398.2	10.6
295	AU0408	1 G USGS	29.953600	90.179700	29090114	1985.0-1964.0	-37.1	11.2
295	AU0408	1 G USGS	29.953600	90.179700	29090114	1985.0-1951.0	-37.3	11.7
295	AU0408	1 G USGS	29.953600	90.179700	29090114	1964.0-1951.0	-0.2	11.9
538	AU0388	11 NODLE	29.918000	90.086600	29090111	1985.0-1964.0	-179.7	11.1
538	AU0388	11 NODLE	29.918000	90.086600	29090111	1985.0-1951.0	-262.4	11.8
538	AU0388	11 NODLE	29.918000	90.086600	29090111	1964.0-1951.0	-86.6	11.4
294	AU0409	12.22 USGS	29.953600	90.179100	29090114	1985.0-1951.0	-39.7	11.7
497	AU0842	14 C NDS+EB	29.948300	90.120000	29090111	1985.0-1964.0	-6.4	11.1
497	AU0842	14 C NDS+EB	29.948300	90.120000	29090111	1985.0-1951.0	-17.6	11.6
497	AU0842	14 C NDS+EB	29.948300	90.120000	29090111	1964.0-1951.0	-11.2	11.4
814	AU0838	16 B NDS+WB	29.987400	90.129100	29090114	1964.0-1951.0	-18.8	11.8
1007	AU0948	1601 LAGS	29.908100	90.083600	29090111	1964.0-1951.0	-68.1	11.9
1001	AU0957	1608 LAGS	29.907400	90.084700	29090111	1964.0-1951.0	-120.2	11.9
1051	AU0787	1820 LAGS	29.919700	90.214100	29090114	1964.0-1951.0	-33.8	12.7
616	AU1008	18 C NDS+WB	29.986800	90.118300	29090111	1985.0-1964.0	883.8	11.0
610	AU1003	19 C NDS+WB	29.973900	90.103300	29090111	1985.0-1964.0	-55.8	10.6
426	BJ1398	2 A LAGS	30.040200	90.021300	30090222	1985.0-1964.0	-321.1	10.6
637	AU1037	2 A NDS+WB	29.942700	90.072200	29090111	1985.0-1964.0	-209.9	11.1
637	AU1037	2 A NDS+WB	29.942700	90.072200	29090111	1985.0-1951.0	-421.1	11.4
637	AU1037	2 A NDS+WB	29.942700	90.072200	29090111	1964.0-1951.0	-211.6	11.3
851	BJ1380	201 LAGS	30.030000	90.037500	30090222	1964.0-1951.0	-88.4	11.0
424	BJ1384	204 LAGS	30.038600	90.008600	30090222	1985.0-1964.0	-276.8	10.6

<u>ROW</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
777	AU1148	3150 R LAGS	29.794100	90.004700	29090112	1964.0-1951.0	-88.8	14.9
783	AT0377	3162 LAGS	29.728300	89.987500	29089434	1964.0-1951.0	-144.8	19.8
788	AT0392	3168 LAGS	29.885500	89.862200	29089434	1964.0-1951.0	-120.8	16.3
789	AT0393	3170 LAGS	29.878800	89.958300	29089434	1964.0-1951.0	-82.8	16.4
827	AU0578	3186 LAGS	29.916900	90.123000	29090111	1985.0-1964.0	-134.8	11.2
927	AU0578	3186 LAGS	29.916900	90.123000	29090111	1985.0-1951.0	-184.8	11.6
927	AU0578	3186 LAGS	29.916900	90.123000	29090111	1964.0-1951.0	-80.1	11.5
929	AU0577	3187 LAGS	29.916100	90.118000	29090111	1985.0-1964.0	-147.2	11.2
929	AU0577	3187 LAGS	29.916100	90.118000	29090111	1985.0-1951.0	-204.7	11.6
929	AU0577	3187 LAGS	29.916100	90.118000	29090111	1964.0-1951.0	-87.4	11.5
931	AU0579	3188 R LAGS	29.916100	90.113000	29090111	1985.0-1964.0	-159.5	11.2
931	AU0579	3188 R LAGS	29.916100	90.113000	29090111	1985.0-1951.0	-269.2	11.6
931	AU0579	3188 R LAGS	29.916100	90.113000	29090111	1964.0-1951.0	-109.8	11.5
703	AU0580	3189 LAGS	29.916100	90.108300	29090111	1964.0-1951.0	-103.2	11.5
533	AU0582	3190 LAGS	29.916600	90.107000	29090111	1985.0-1964.0	-174.4	11.2
533	AU0582	3190 LAGS	29.916600	90.103000	29090111	1985.0-1951.0	-275.9	11.6
533	AU0582	3190 LAGS	29.916600	90.107000	29090111	1964.0-1951.0	-101.5	11.5
535	AU0586	3192 LAGS	29.917400	90.091900	29090111	1985.0-1964.0	-181.2	11.2
535	AU0586	3192 LAGS	29.917400	90.091900	29090111	1985.0-1951.0	-305.4	11.5
535	AU0586	3192 LAGS	29.917400	90.091900	29090111	1964.0-1951.0	-114.1	11.5
705	AU0589	3193 LAGS	29.918000	90.086300	29090111	1964.0-1951.0	-83.1	11.4
837	AU0590	3195 LAGS	29.920200	90.078300	29090111	1985.0-1964.0	-148.8	11.2
837	AU0590	3195 LAGS	29.920200	90.078300	29090111	1985.0-1951.0	-272.4	11.5
837	AU0590	3195 LAGS	29.920200	90.078300	29090111	1964.0-1951.0	-125.8	11.5
710	AU0611	3199 LAGS	29.931900	90.065500	29090111	1964.0-1951.0	-196.0	11.5
711	AU0612	3200 LAGS	29.935200	90.066100	29090111	1964.0-1951.0	-200.2	11.4
559	AU0638	36 A NDS+WB	29.956400	90.063000	29090111	1985.0-1964.0	-173.4	10.9
559	AU0638	36 A NDS+WB	29.956400	90.063000	29090111	1985.0-1951.0	-314.7	11.3
559	AU0638	36 A NDS+WB	29.956400	90.063000	29090111	1964.0-1951.0	-141.2	11.3
737	AU0667	41 B NDSWB	29.963300	90.025200	29090111	1964.0-1951.0	-87.6	11.2
1011	AU0670	4138+73.0 USE	29.905200	90.087700	29090111	1964.0-1951.0	-129.8	11.8
883	AU0805	43 B NDS+WB	29.977200	90.033800	29090111	1985.0-1964.0	-107.1	10.9
883	AU0805	44 B NDSWB	29.986100	90.123800	29090111	1964.0-1951.0	-22.7	11.4
172	AU0404	44 LAGS RESET 1989	29.936300	90.187200	29090114	1985.0-1964.0	-88.1	11.4
300	AU0425	45 B NDS+WB	29.984100	90.101100	29090111	1985.0-1964.0	-220.1	10.8
300	AU0425	45 B NDS+WB	29.984100	90.101100	29090111	1985.0-1951.0	-270.8	11.0
300	AU0425	45 B NDS+WB	29.984100	90.101100	29090111	1964.0-1951.0	-80.7	11.2
174	AU0831	48 LAGS	29.935800	90.208700	29090114	1985.0-1964.0	-82.8	11.4
174	AU0831	48 LAGS	29.935800	90.208700	29090114	1985.0-1951.0	-68.8	11.6
174	AU0831	48 LAGS	29.935800	90.208700	29090114	1964.0-1951.0	-2.0	12.0
683	AU0827	48 LAGS	29.991100	90.213800	29090114	1964.0-1951.0	8.9	11.8
631	AU0868	5.68 LADM	29.848400	90.085200	29090111	1985.0-1964.0	118.8	11.0
680	AU0819	50 LAGS	29.970800	90.238200	29090114	1964.0-1951.0	17.4	11.9
692	AU0858	50+38.40 USE	29.936300	90.134700	29090114	1964.0-1951.0	-33.4	11.5
842	AU1033	54 A NDSWB	29.995500	90.115200	29090111	1964.0-1951.0	-28.5	11.3
888	AU0908	57 B NDS+WB	29.997700	90.049400	29090111	1985.0-1964.0	-118.8	10.3
888	AU0908	57 B NDS+WB	29.997700	90.049400	29090111	1985.0-1951.0	-132.2	10.7
888	AU0908	57 B NDS+WB	29.997700	90.049400	29090111	1964.0-1951.0	-12.8	11.0
1058	AU0781	68 LLO USE	29.843000	90.228400	29090114	1964.0-1951.0	-3.4	13.1
1055	AU0758	69 LLO USE	29.825200	90.218400	29090114	1964.0-1951.0	-14.0	12.8

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SUBSIDENCE IN THE VICINITY OF NEW ORLEANS AS INDICATED BY ANALYSIS OF GEODETIC LEVELING DATA

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ABSTRACT. It is well known that the city of New Orleans and southern Louisiana are subsiding. This analysis of geodetic leveling networks indicates that the movement varies greatly from bench mark to bench mark. Three separate networks were prepared from the leveling data observed in 1951-55, 1964, and 1984-85. A minimum constraint least squares adjustment was performed for each network.

Adjusted heights of the three networks were compared to obtain an estimate of the vertical crustal motion in the region. Computer plots depicting the apparent crustal movement were generated for all 7.5-minute quads that involved bench marks common to two or more epochs. Apparent subsidence amounting to 2.5 to 3 decimeters from 1951 to 1985 is common. The results of the study should provide information for engineers, surveyors, and scientists to plan and evaluate future projects, and to correlate apparent movements to geologic and hydrologic parameters. Further analysis and publication of results are planned for the future.

INTRODUCTION

Several studies have been published documenting the subsidence of New Orleans and southern Louisiana (Holdahl 1973, Brown et al. 1982, Mitchell and Zilkoski 1986). Many potential factors contribute to the subsidence, including the geologic composition of the area and withdrawal of ground water and oil. The land subsidence experienced by New Orleans and other regions of southern Louisiana presents unique problems for the National Geodetic Reference System.

Mitchell and Zilkoski (1986) documented a subsidence monitoring plan which includes analyzing and correlating geologic and hydrologic data to apparent vertical crustal movements. The purpose of this report is to provide scientists, engineers, and surveyors estimates of apparent movements of bench marks as indicated by analyses of geodetic leveling data. These estimates of apparent movement should be helpful to engineers when planning projects, to surveyors when evaluating leveling data, and to scientists when correlating apparent movements to geologic and hydrologic parameters.

ANALYSIS OF THE OBSERVATIONS

Precise differential (geodetic) leveling is one of the most accurate methods for establishing heights of bench marks. The leveling observations are first analyzed for blunders, systematic errors, and consistency. Then minimally constrained least

squares adjustments are performed to obtain adjusted heights of bench marks. The differences in adjusted heights of bench marks common to two or more leveling lines, observed at different epochs, can be used to estimate the apparent movement over time in an area.

During 1984 and 1985 major relevelings of the vertical control network in the vicinity of New Orleans were performed for the third time. The other network surveys were performed in 1951-55 and 1964. In addition, several leveling lines of this network were releveled in 1969, 1971, and 1977.

For this study, only the three leveling networks (1951-55, 1964, and 1984-85) were used to estimate apparent crustal movement. The leveling observations were corrected for rod scale, rod temperature, level collimation, orthometric, astronomic, and refraction effects (Balazs and Young 1982). The spirit leveling instruments used in the 1951-55 and 1964 network surveys were not influenced by magnetic fields, and the particular compensator leveling instrument used in the 1984-85 survey, a Jena NI 002, was not significantly influenced by magnetic fields (Whalen 1984). All section and loop misclosures were computed and checked within allowable Federal Geodetic Control Committee (FGCC) specifications (FGCC 1974, 1980, 1984). Figure 1 depicts the area covered by the leveling data. All leveling lines were observed using first-order, class II procedures (FGCC 1984). The 1951-55 and 1964 levelings were performed using the double-run method; the 1984-85 leveling was completed using the double-simultaneous, single-run procedure (Whalen and Balazs 1976).

MATHEMATICAL MODEL

Differential leveling observations are relative height differences measured between bench marks. The bench marks' heights and leveling observations are related through the following linear model:

$$H_j - H_i = L_b,$$

where

H_i = height of bench mark i ,

H_j = height of bench mark j , and

L_b = observed height difference between bench
mark i and bench mark j .

In the leveling networks used in this study, as in most leveling networks, there were more observations than unknowns; i.e., the number of observed height differences exceeded the number of unknown bench mark heights. This redundancy determines the degrees of freedom of an adjustment; i.e., the degrees of freedom equal the number of observations minus the number of unknown parameters. What this really means is that different adjusted values of bench mark heights can be estimated by using different combinations of leveling data.

For this study, the classical least squares method of observation equations with weighted parameters was used to perform separate adjustments of the three networks cited previously. The mathematical model of the method of observation equations can be represented by the following equation:

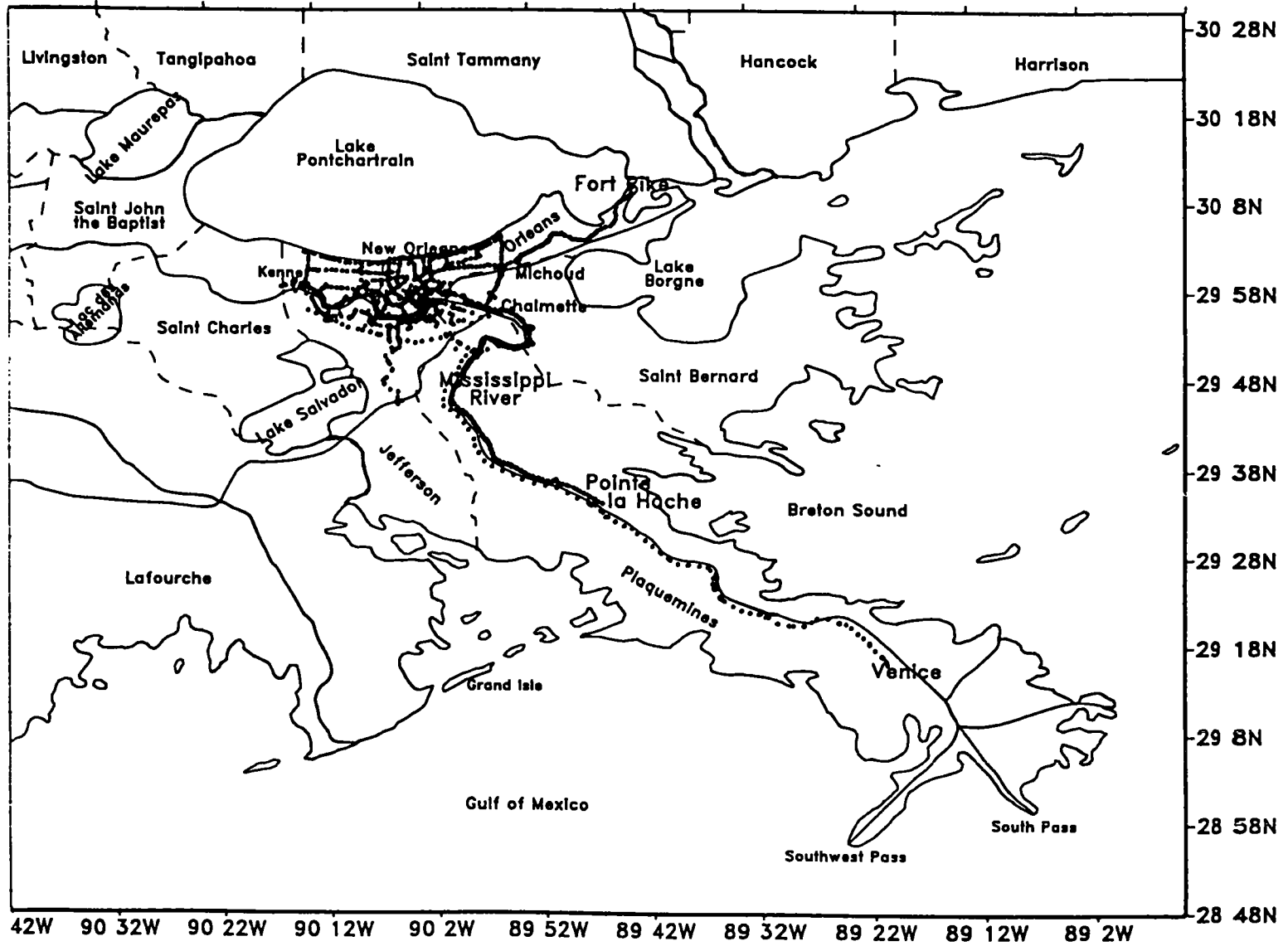


Figure 1. Area involved in the New Orleans subsidence study.

$$L_a = F(X_a),$$

where L_a is a set of adjusted observations (e.g., leveling height differences), X_a is a set of parameters (e.g., bench mark heights), and F is a function which relates the observations to the parameters.

The set of observation equations can be represented as

$$V + L = AX,$$

where

V = vector of residuals (discrepancies),
 A = design matrix,
 X = vector of parameters, and
 L = vector of observations.

It can be shown that when the least squares condition of minimum sum of the weighted residuals squared is fulfilled, the normal equations will be

$$NX + U = 0,$$

where

$$N = A^T P A,$$

$$U = A^T P L,$$

$$P = k(\text{Var-Cov})^{-1},$$

k = a priori estimate of variance factor, and

Var-Cov = symmetric, positive definite, variance-covariance matrix of observations.

The least squares estimate of X is obtained from

$$X = -N^{-1}U.$$

In order to solve for X , the matrix N must be of full rank. In other words, the rank of N must be equal to the number of unknowns.

In a leveling network adjustment consisting only of measured height differences, N will not be of full rank, but will actually be equal to the number of unknowns minus one. Therefore, at least one parameter will have to be weighted when using the method of weighted parameters. By weighting one parameter, fixing it to its a-priori estimate, N can be inverted and the solution of X obtained. This is called a minimum constraint least squares adjustment, or "free" adjustment.

The observation equations for differential leveling observations between station i and station j consist of the following:

$$V_k = H_j - H_i - L_{ij},$$

where

V_k = residual for observation k,

H_i = height of bench mark i,

H_j = height of bench mark j, and

L_{ij} = observed height difference from station i to station j.

The observed height differences are assumed to be uncorrelated; hence all off-diagonal terms of the variance-covariance matrix of the observations are equal to zero.

ADJUSTMENTS

As stated earlier, differences in adjusted heights of bench marks common to two or more epochs can be used to estimate apparent vertical movement in an area. Therefore, three separate networks were generated using the leveling data observed in 1951-55, 1964, and 1984-85. A minimum constraint least squares adjustment (Mikhail 1976) was performed for each network. The weights of the observations were calculated using the formula $1/(\text{variance of the observation})$, where the variance of first-order, class II observations = $(1.4 \text{ mm}^2 \times \text{kilometers of leveling})/(\text{number of runnings})$.

Table 1 contains statistics from the adjustments. It should be noted that the 1985 leveling included a portion of the 1984 network and, therefore, this network has more degrees of freedom than the other two networks. All leveling data used in this study met FGCC specifications for section and loop closures. Also, to reduce the effects on the results due to different network configuration, similar network designs were used when preparing the network data.

Table 1. Statistics from network adjustments

Epoch	Number of			Degrees of freedom	Variance of unit weight*
	BM	TBM**	Obs		
1951-55	602	151	791	39	1.82
1964	682	223	965	61	1.60
1984-85	671	1	783	112	1.25

*A posteriori variance of unit weight (a priori = 1.0).

**TBM--Temporary bench marks.

The following basic assumptions are made when performing least squares adjustments:

- (1) All data outliers have been removed from the data.
- (2) The mathematical model was correct.
- (3) Correct relative and absolute weights were imposed.

All systematic errors must be resolved when evaluating the mathematical model. If one or more of these assumptions are invalid, the adjustment results may be distorted. Statistical techniques can be performed to check these assumptions. In this study, the chi-square test was applied.

The chi-square statistic was used to test the hypothesis that the a posteriori estimate of the variance factor (variance of unit weight) from the adjustment was equal to its assumed (a priori) value. The variance of unit weight was estimated using the following equation:

$$\text{variance of unit weight} = V^tPV/\text{degrees of freedom,}$$

where

degrees of freedom = (number of observations minus number of bench marks
minus number of temporary bench marks) plus number of
bench mark heights fixed.

The estimated variance factor is an unbiased estimate of the a priori variance factor under the assumptions stated above. Rejection of this hypothesis is taken to imply that one or more of the above assumptions are invalid. Table 2 lists the results of the chi-square test.

Both preliminary adjustments of the 1951-55 and 1964 networks failed the chi-square test. (See table 2.) As stated above, this is an indication that one or more of the assumptions are invalid. Due to the small number of degrees of freedom present in leveling networks, it is possible that some data outliers went undetected. However, since both surveys were double-run and met all FGCC specifications, the number (and size) of data outliers remaining in the data should be very small.

The mathematical model could be invalid because the New Orleans region is influenced by crustal movement and additional parameters were not included in the model to account for bench mark movement. However, since each network was observed over a relatively short time span and all loop closures met FGCC specifications, any movement that occurred during the surveys should not significantly distort the results.

The relative weighting scheme imposed for each network adjustment should be valid because all data within each epoch were obtained using the same procedures. The absolute weighting scheme, however, could be invalid because different procedures, specifications, and instrumentation were used to observe each epoch of data, e.g., sight lengths were reduced in the 1950's and then again in the 1960's. In addition, since the 1951-55 and 1964 networks were double-run, the variance of a meaned observation is $0.98 \text{ mm}^2 \times (\text{km})$. This value may be too optimistic. The variance for an individual observation for the 1985 survey, which was obtained using the double-simultaneous, single-run procedure, is $1.96 \text{ mm}^2 \times (\text{km})$. When the variance of a meaned observation is increased to $1.28 \text{ mm}^2 \times (\text{km})$ for the 1951-55 and 1964 epochs, the a posteriori variance of unit weight is acceptable using the chi-square test. (See table 3.)

Table 2. Chi-square test results (variance of an observation = (1.4mm)**2 X km/number of runnings).

Epoch	Estimated variance factor (EVF)	Degrees of freedom (DF)	Computed chi-square statistic (CCSS)	Chi-square statistic (5%) (CSS)		Accept or reject
				lower	upper	
1951-55	1.82	39	71.0	23.2	57.6	Reject
1964	1.60	61	97.6	40.9	84.0	Reject
1984-85	1.25	112	140.0	84.2	142.7	Accept

Notes:

- o A priori variance factor (AVF) equal to 1.
- o $CCSS = ((DF) \times (EVF)) / AVF$
- o Hypothesis -- Ho: EVF equal to AVF
 H1: EVF not equal to AVF
 Reject if CCSS less than CSS(lower)
 or
 CCSS greater than CSS(upper)
- o Chi-square statistic estimated using the following formula:
 - o $CSS = (1/2) \times [((\alpha\text{-point}) + \text{SQRT}((2 \times DF) - 1))]^2$
 - o Alpha-point = the standardized random variable of the cumulative normal distribution.
 - o Assumes that a normal approximation is accurate enough for DF greater than 30.
 - o CRC (Selby, 1968)

Table 3. Chi-square test results (variance of an observation for 1951-55 and 1964 data = $(1.6\text{mm})^2 \times \text{km}/\text{number of runnings}$).

Epoch	Estimated variance factor (EVF)	Degrees of freedom (DF)	Computed chi-square statistic (CCSS)	chi-square statistic (5%) (CSS)		Accept or reject
				lower	upper	
1951-55	1.43	39	55.8	23.2	57.6	Accept
1964	1.24	61	75.6	40.9	84.0	Accept

Notes:

o A priori variance factor (AVF) equal to 1.

o $CCSS = ((DF) \times (EVF)) / AVF$

o Hypothesis -- Ho: EVF equal to AVF

 H1: EVF not equal to AVF

 Reject if CCSS less than CSS(lower)

 or

 CCSS greater than CSS(upper)

o Chi-square statistic estimated using the following formula:

o $CSS = (1/2) \times [((\alpha\text{-point}) + \text{SQRT}((2 \times DF) - 1))^2]$

o Alpha-point = the standardized random variable of the cumulative normal distribution

o Assumes that a normal approximation is accurate enough for DF greater than 30.

o CRC (Selby, 1968)

Multiplying all variances by a constant does not change the values of any adjusted heights. This will, however, change the statistics obtained from the adjustment. It is not proper to arbitrarily change the standard error of an observation solely to make the adjustment results appear to be acceptable. Standard errors of observations should be based on prior theoretical and empirical analyses. NGS has performed preliminary analyses to estimate variance components in leveling data using the Iterated Almost Unbiased Estimation (IAUE) technique (Lucas et al. 1985). The results provided some interesting information. All of the standard error estimates obtained from IAUE are larger than those obtained from analyses of forward and backward running differences. However, not all of the corrections described by Balazs and Young (1982) had been applied to the data used in their 1985 study. All data in the NGS vertical data base have now been processed using the latest corrections. The networks used in their 1985 study will be reexamined. It is anticipated that the IAUE standard error estimates will be closer to the a priori value due to the reduced influence of systematic errors.

In addition, a pooled standard error estimate equal to 1.6 mm X SQRT(km) was determined from analyses of forward and backward running differences for the 1951-55 and 1964 leveling lines, which is larger than the assumed value of 1.4 mm X SQRT(km). Therefore, based on the results of Lucas et al. (1985) and the analyses of forward and backward running differences, increasing the variance of observations in the 1951-55 and 1964 networks is not completely arbitrary. Additional analyses are required before estimating a final standard error for data observed during 1951-55 and 1964, as well as before determining which assumptions, if any, are invalid. The reader should keep this in mind when using the results of this study.

DATUM POINT

At least one stable bench mark is required when using geodetic leveling to estimate crustal motion. The estimates of apparent movement are all relative to the datum point(s) chosen. If the datum point moves vertically during the time between surveys, all differences in adjusted heights will be in error by the amount of movement that occurred at the datum point. Both the 1951 and 1964 surveys extended outside the New Orleans area to a relatively stable region, i.e., Biloxi, Mississippi. The 1984-85 network only extended to northeastern Orleans Parish (bench mark J 92).

Comparisons of leveling performed in 1938, 1955, 1964, 1969, 1970, and 1977 were used to determine if bench mark J 92 had moved significantly. The comparisons indicated that bench mark J 92, relative to Biloxi, Mississippi, subsided only 40 mm from 1938 to 1977. (See fig. 2.) The standard error of the difference was approximately 15 mm. Therefore, for this study it was assumed that J 92 was stable, and it was used as the datum point for all adjustments. Anyone using these results should take this into account, since all absolute height differences would be affected accordingly if bench mark J 92 moved, although the relative height differences between bench marks should still provide adequate information for engineers, surveyors, and scientists to plan and evaluate projects.

RELATIVE HEIGHT CHANGES

The adjusted heights of the three networks were compared to obtain an estimate of the amount of apparent movement. The standard deviations of the height differences were calculated using the formula: square root [variance of bench mark A(i) +

BILOXI, MS, TO FORT PIKE, LA (BENCH MARK J 92)

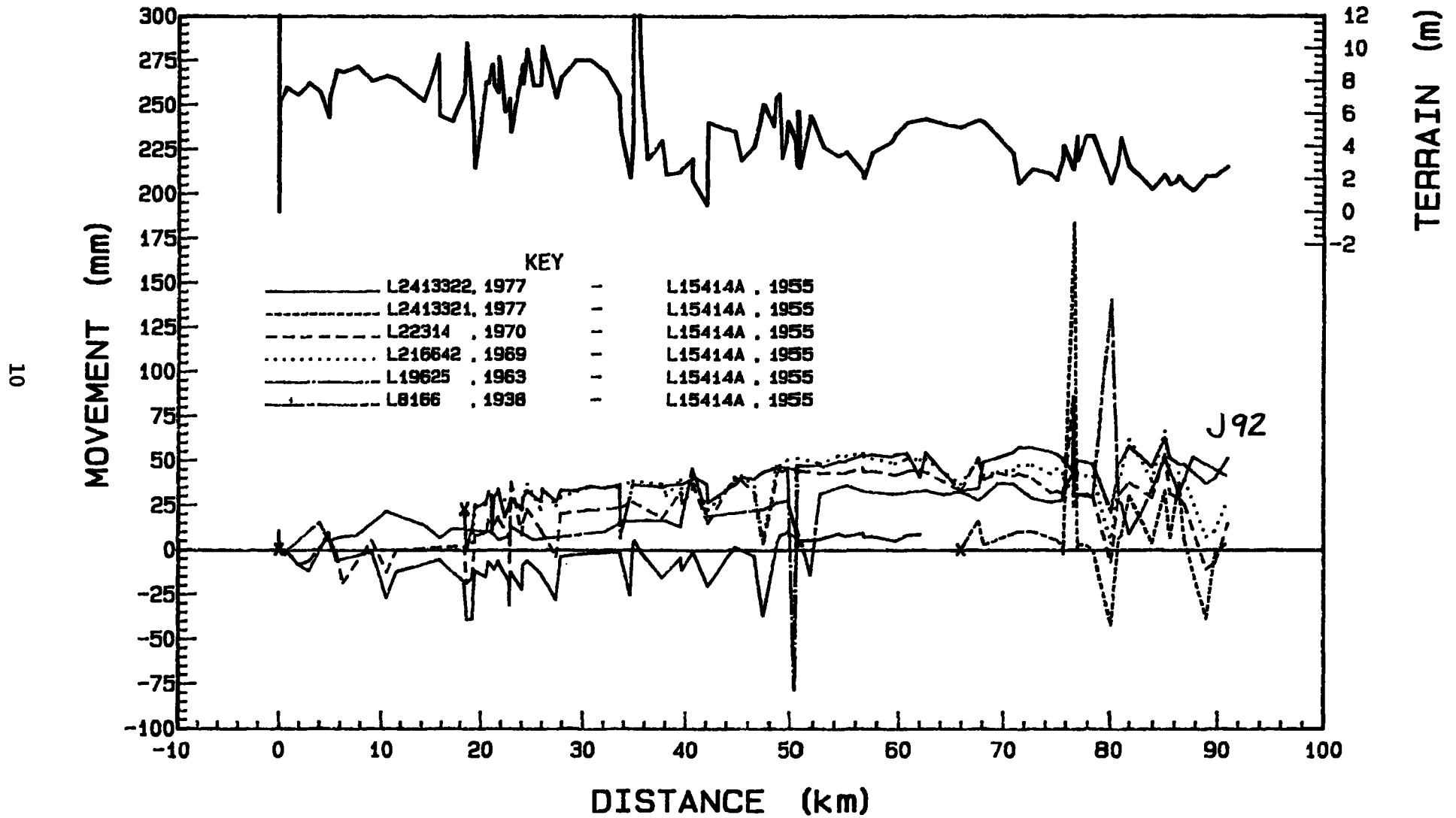


Figure 2.--Profile of leveling data between Biloxi, MS, and bench mark J 92.

variance of bench mark A(j)], where variance of bench mark A(i) is the estimated variance of the height of bench mark A from the network i adjustment.

The adjusted height differences of bench marks common to at least two epochs were computed. Appendix A lists the adjusted height differences between the 1984-85 and 1951-55 epochs, 1984-85 and 1964 epochs, and 1964 and 1951-55 epochs. If a bench mark was not involved in at least two surveys, the entry is blank.

Whenever relative height changes are computed using leveling data, an estimate of the accuracy of these changes must be considered. Appendix A lists the standard error of the height difference and ratio of the height difference estimate to its standard error. Almost all height changes were greater than their estimated standard errors, i.e., the ratio is greater than 1. Since the values are larger than the expected random error, it implies that the height changes are due to movement and not random errors in the leveling data. However, some height changes are less than their standard errors and these should not be interpreted as crustal motion.

The bench mark code numbers and adjusted height differences were then plotted by computer. Appendix B contains the plots. Each plot represents a 7.5-minute quad. All quads involving bench marks common to two or more surveys were generated. For each plot, the quad number is printed in the middle of the last line and on the right-hand border. The epochs and type of plot (difference of height or bench mark code) are also listed on the right-hand border. The plots were designed so that adjacent quads could be matched at their borders. Two plots were generated for each quad: a plot depicting the bench mark code numbers and a plot depicting the adjusted height differences. The bench mark code numbers listed in appendix A are the same numbers plotted in appendix B. Due to the high density of bench marks in some locations, not all bench marks could be plotted. These bench marks are listed after the plots. To assist in cross-referencing the bench mark code numbers and designations, a listing consisting of the code numbers and designations, sorted by designation, was included. (See appendix C.)

The plots clearly show how the height differences vary considerably from bench mark to bench mark, and from epoch to epoch. There are many factors which contribute to the movement. Subsidence values of 2.5 to 3 decimeters from 1951 to 1985 are common. For specific areas of interest, the reader is referred to appendix B.

The NASA Michoud area, quad 30089333, is one area the authors feel is important to bring to the attention of the reader. (See figs. 3 and 4 and table 4.) There are four deep-well marks (bench mark numbers 284-287) located at this site. Three of the four (bench marks 284, 285, and 287) were leveled in both 1964 and 1985. These three bench marks are deep-casement wells ranging in depth from 565 to 590 ft. They were assumed to be stable because of their depth. However, based on this study it appears that they have subsided a significant amount since 1964; e.g., from 1964 to 1985, bench mark 284 subsided 231.4 mm, bench mark 285 subsided 214.6 mm, and bench mark 287 subsided 269.8 mm. Bench mark 286, which was not leveled in 1951-55 or 1964, is reported to be 6,600 ft deep. All four marks were leveled in 1969, 1971, 1977, 1984, and 1985. A preliminary analysis of these data indicates that the marks are not stable, including bench mark 286. (See appendix D.) No conclusive statements can be made until additional studies are performed to investigate this area in more detail.

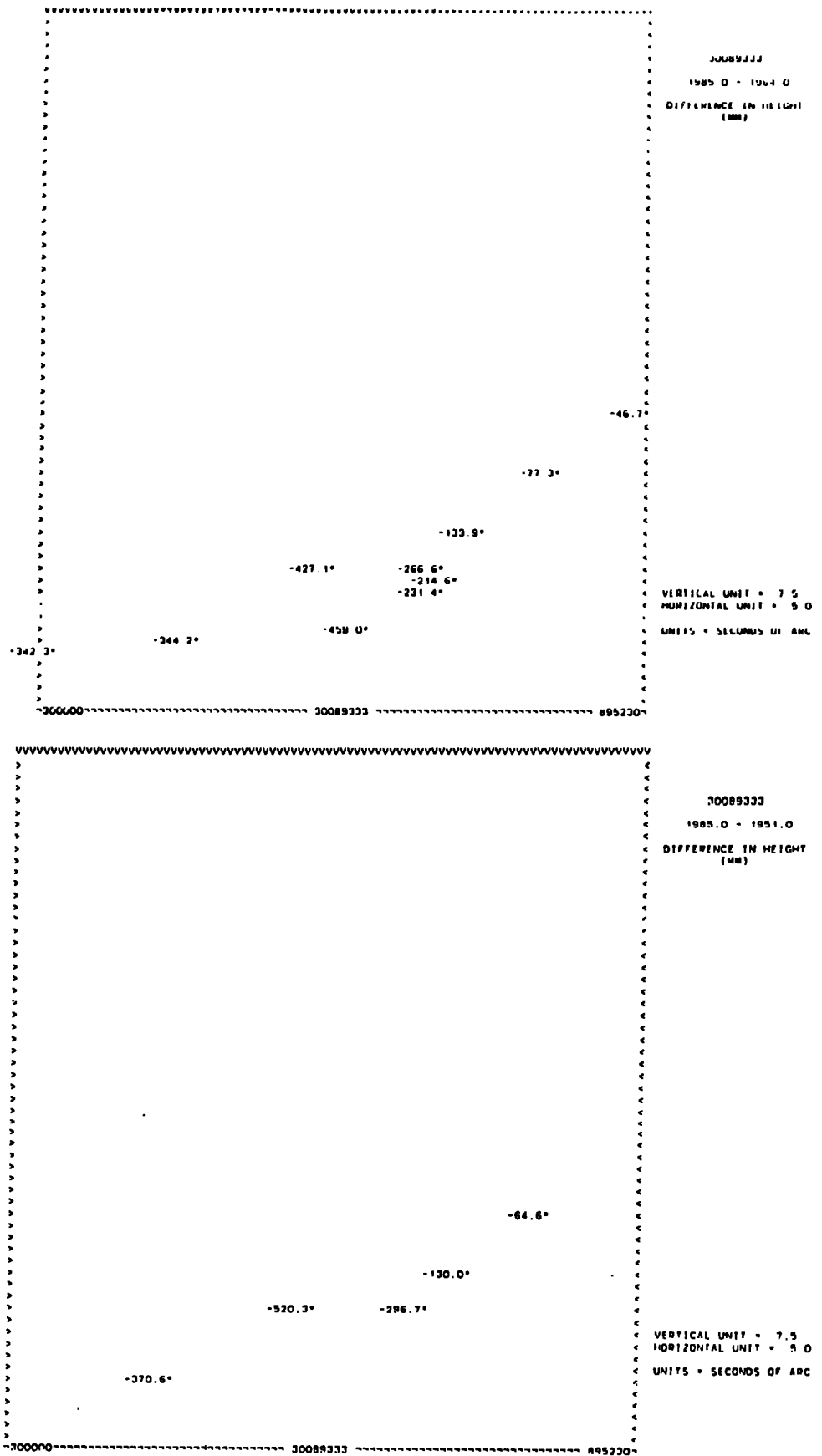


Figure 3.--Plot depicting height differences in NASA Michoud area

NOTE: 1985.0--denoted as 1984-85 network in text.
1951.0--denoted as 1951-55 network in text.

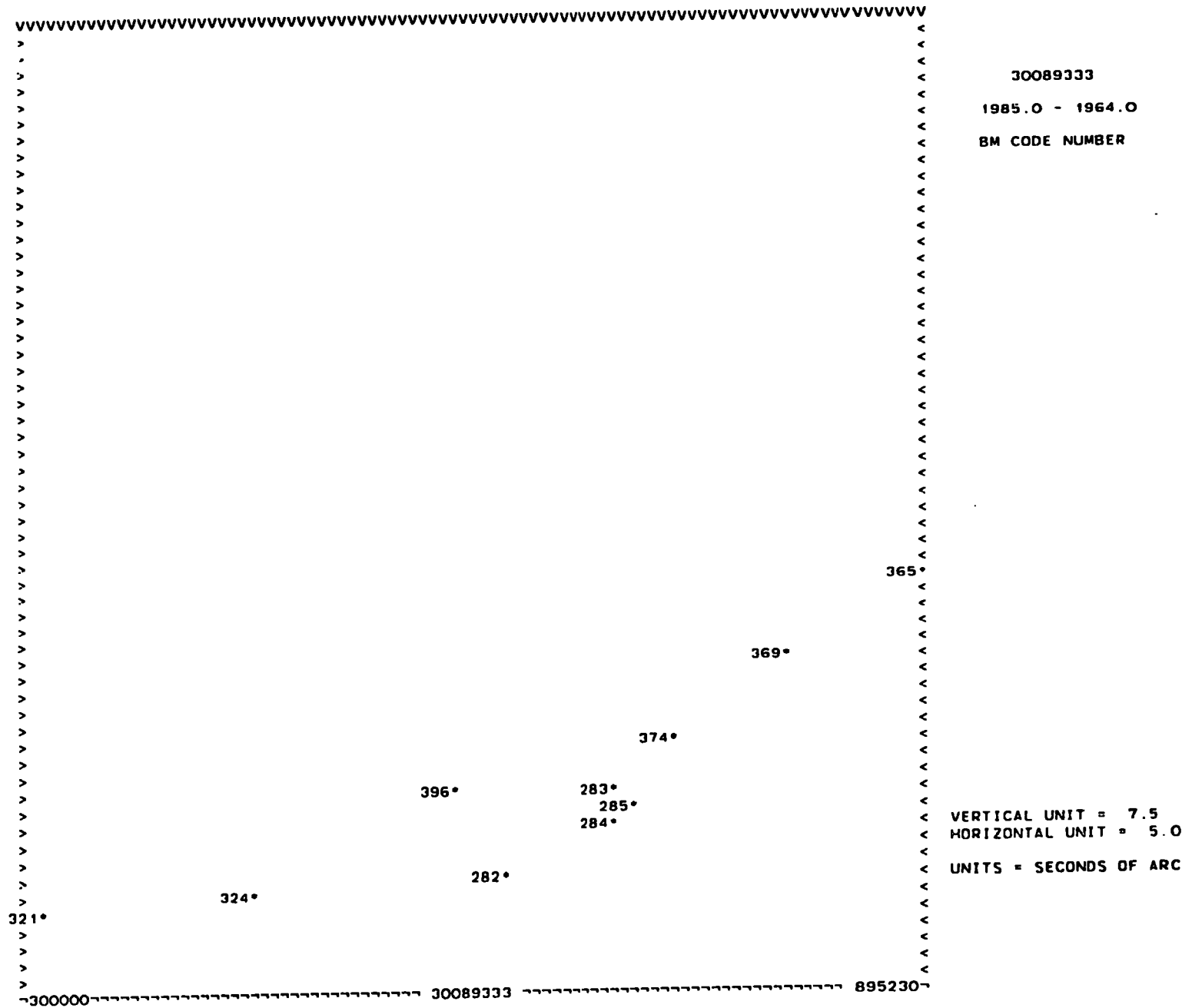


Figure 4.--Plot depicting bench mark code numbers in NASA Michoud area.

NOTE: 1985.0--denoted as 1984-85 network in text.
 1951.0--denoted as 1951-55 network in text.

Table 4. Differences of heights near NASA Michoud area.

NOTE: 1985.0 -- denoted as 1984-85 network in text.
 1951.0 -- denoted as 1951-55 network in text.

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
255	ATO538	JACK AZ MK RESET 1978									
256	ATO336	M 278									
257	ATO333	F 194	-25.2	12.3	2.0						
258	ATO332	L 278									
259	ATO328	D 151	-53.8	12.1	4.5	-78.7	12.5	6.3	-24.9	12.4	2.0
260	ATO322	VIOLET 2 RM 3									
261	ATO314	K 194	-41.4	11.8	3.5						
262	ATO311	B 194	-50.9	11.5	4.4						
263	ATO309	G 194	-88.1	11.3	7.8						
264	ATO306	J 194	-144.8	11.1	13.0						
265	ATO304	H 194	-138.8	11.0	12.7						
266	ATO302	A 194	-164.9	10.7	15.4						
267	ATO297	A 151	-222.1	10.5	21.1	-267.0	10.9	24.5	-44.9	11.0	4.1
268	ATO294	F 152	-351.8	10.6	33.1	-426.7	11.0	38.8	-75.0	11.1	6.8
269	ATO759	G 189 RESET 1984									
270	ATO478	K 152 RESET 1973									
271	ATO474	H 278									
272	ATO757	R 371									
273	ATO471	239 LAGS RESET 1974									
274	ATO468	J 278									
275	ATO758	U 371									
276	BH1769	V 371									
277	BH1770	W 371									
278	BH1083	D 276									
279	BH1192	K 278									
280	BH1443	236 AZ MK									
281	BH1442	Z 297									
282	BH1084	F 189	-459.0	9.1	50.6						
283	BH1087	W 152	-266.6	8.9	30.0	-296.7	9.2	32.3	-30.2	9.7	3.1
284	BH1091	OR 80 WELL USGS	-231.4	9.0	25.6						
285	BH1090	OR 79 WELL USGS	-214.6	9.0	23.8						
286	BH1089	WASTE WELL 2 USGS									
287	BH1088	OR 78 WELL USGS	-269.8	9.0	30.1						
288	BH1092	GATE 11 USE									
289	AU2180	T 371									
290	AU0538	PBM 210/2 CAP USE	-108.6	11.4	9.5	-125.6	11.8	10.6	-17.0	12.0	1.4
291	AU0407	M 189	-55.9	11.3	4.9						
292	AU0410	F 93 RESET 1959	-46.0	11.2	4.1						
293	AU0411	N 146	-149.2	11.3	13.2	-172.2	11.8	14.6	-22.9	11.8	1.9
294	AU0409	13.22 USGS				-39.7	11.7	3.4			
295	AU0408	1 G USGS	-37.1	11.2	3.3	-37.3	11.7	3.2	-0.2	11.9	0.0
296	AU0420	U 147	-92.2	10.8	8.5	-107.0	11.2	9.5	-14.8	11.4	1.3
297	AU0421	277 LAGS RESET 1967									
298	AU0422	L 188	-103.3	10.7	9.6						
299	AU0423	P 188	-157.0	10.7	14.7						
300	AU0425	45 B NOS+WB	-220.1	10.6	20.7	-270.8	11.0	24.6	-50.7	11.2	4.5
301	AU0424	281 LAGS RESET 1952	-226.6	10.6	21.3						
302	AU0426	X 147 RESET 1971									
303	AU0427	W 147	-244.4	10.6	23.1	-295.1	11.0	26.9	-50.7	11.2	4.5
304	AU0428	Y 147	-169.5	10.5	16.1	-210.0	10.9	19.2	-40.5	11.2	3.6
305	AU0429	A 148	-148.4	10.5	14.1	-188.6	10.9	17.3	-40.2	11.2	3.6

As stated earlier, these estimates of apparent movement should be helpful to engineers when planning projects, to surveyors when evaluating leveling data, and to scientists when correlating apparent movements to geologic and hydrologic parameters. There are many parameters which need to be considered when modeling vertical crustal movements. Some examples are well-water pumping rates, bench mark type and depth, and construction-fill type and depth. All parameters must be related by location, i.e., geodetic latitude and longitude.

When correlating apparent movement to these parameters, bench mark descriptions must be read closely to ensure that the bench mark has not been disturbed between surveys. Some examples of this are bench marks E 3149 LAGS (BM # 346, ACRN = BH1137), A 92 (BM # 347, ACRN = BH1136), and F 193 (BM # 348, ACRN = BH1136). The recovery notes (appendix E) state that the marks have been disturbed. These marks should be excluded from the analysis. The inclusion of bench marks that have been disturbed could distort the results of the study. In the above example, the computations indicate that E 3149 LAGS subsided 155.2 mm between 1964 and 1985, and 35.4 mm between 1951 and 1964. However, the total movement value cannot be separated into movement due to subsidence and movement due to the bench mark being disturbed. This difference, therefore, should not be used to correlate apparent movement to geologic or hydrologic parameters.

One final area that may be of interest to the reader is the Chalmette area, quad 29089444. (See figs. 5 and 6.) There appears to be an increase in the amount of subsidence beyond bench mark 263. According to the bench mark description, bench mark 265 (H 194) is located on the grounds of the Murphy Oil Company refinery. It is in a tower reported to be constructed on piles driven to a depth of 75 ft. This bench mark is classified as a class "B" mark. Traveling farther down the road toward bench mark 268 (F 152), there appears to be another increase in apparent subsidence. According to a USGS topographic map, F 152 is located across the street from a refinery. Bench mark F 152 is also classified as a class "B" mark. There is obviously something unusual influencing the bench mark heights in this quad. It is beyond the scope of this paper to investigate the causes of these deformations. This task will be left for geologists and geophysicists.

CONCLUSION

It is well known that New Orleans and southern Louisiana are subsiding. This analysis of geodetic leveling networks indicates that the movement varies greatly from bench mark to bench mark. Three separate networks were generated using leveling data observed in 1951-55, 1964, and 1984-85. A minimum constraint least squares adjustment was performed for each network.

Adjusted heights of the three networks were compared to obtain an estimate of the vertical crustal motion in the region. Computer plots depicting apparent crustal movement were generated for all 7.5-minute quads that involved bench marks common to two or more epochs. Apparent subsidence amounting to 2.5 to 3 decimeters from 1951 to 1985 is common. The results of the study should provide information for planning and evaluating future projects, and for correlating apparent movements to geologic and hydrologic parameters. Further analysis and publication of results using additional data are planned for the future.

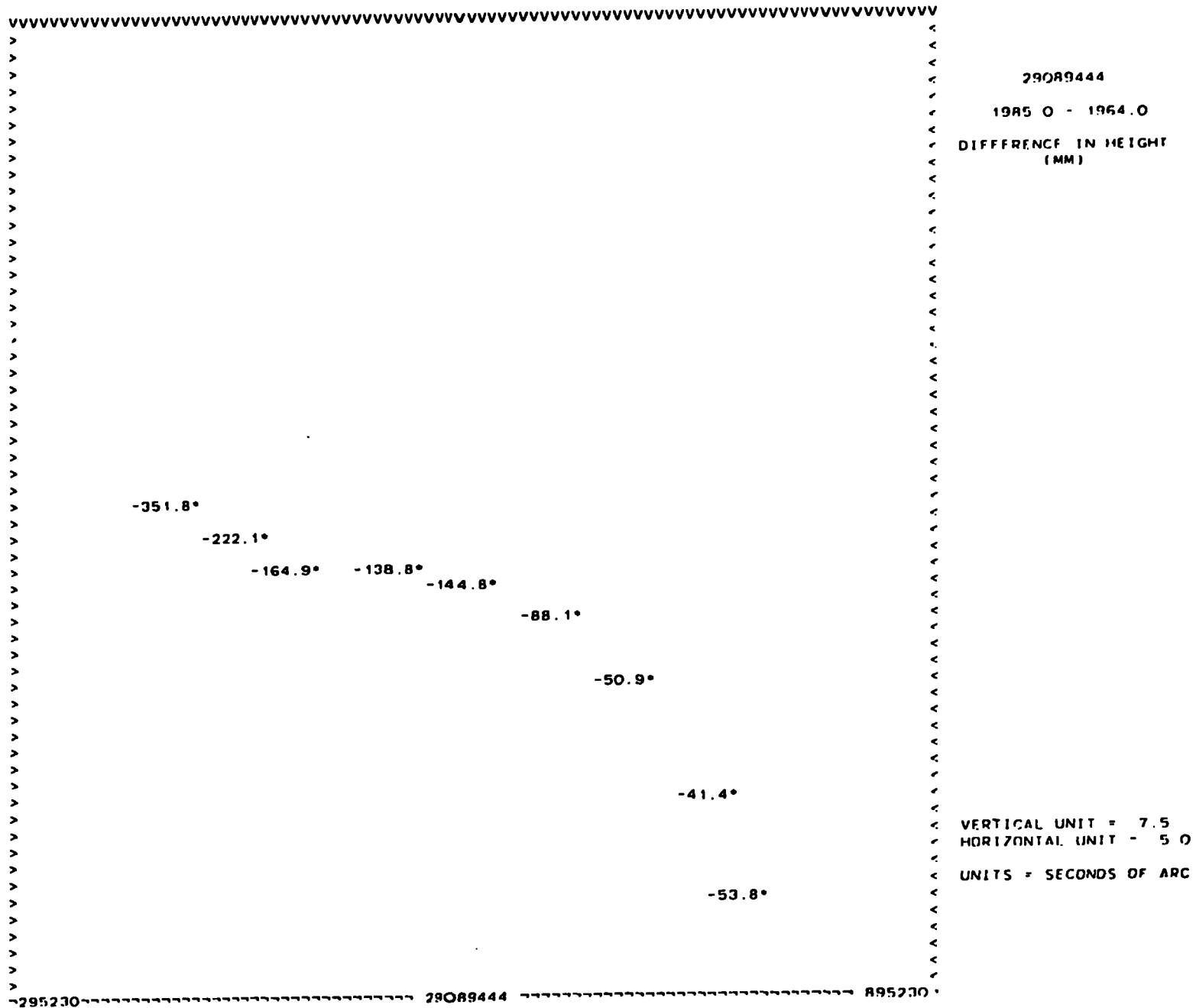


Figure 5.--Plot depicting height differences in Chalmette area (quad 29089444).

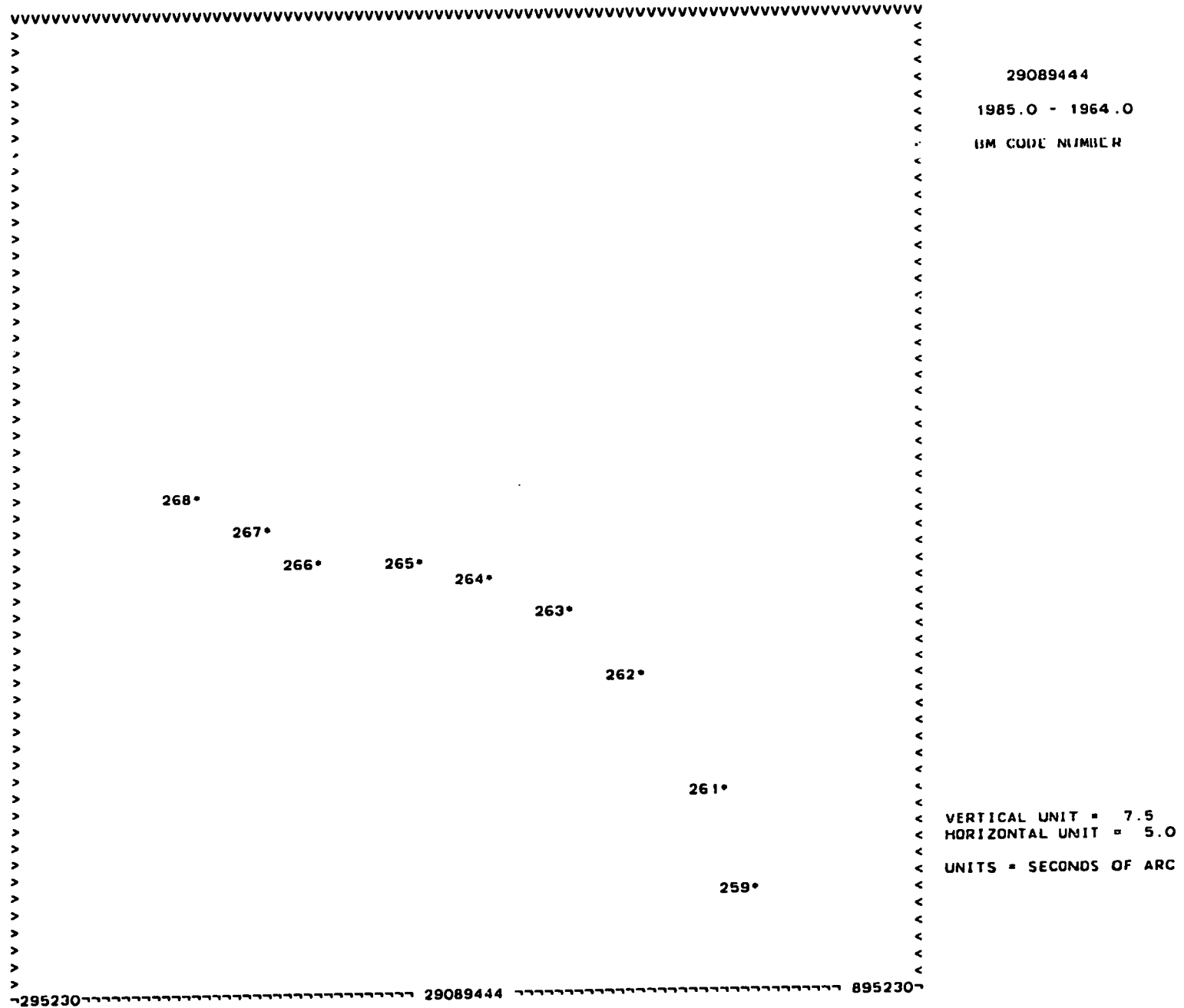


Figure 6.--Plot depicting bench mark code numbers in Chalmette area (quad 29089444).

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APPENDIX A.--LIST OF ADJUSTED HEIGHT DIFFERENCES BETWEEN 1984-85 AND 1964, 1984-85 AND 1951-55, AND 1964 AND 1951-55.

NOTE: 1985.0--denoted as 1984-85 network in text.
1951.0--denoted as 1951-55 network in text.

Appendix A is sorted by bench mark code number. The bench mark code numbers were determined by the input order to the plotting program. The 1984-85 adjusted heights were inputted first, the 1964 adjusted heights next, and the 1951-55 adjusted heights last. This listing can be used to find the movement value or designation if the bench mark code number is known. Appendix C can be used to find the code number of the bench mark or the estimate of apparent movement if the code designation is known.

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
1	AU0353	JF 58 USGS	0.1	12.1	0.0						
2	AU0349	A 10				-36.5	12.4	2.9			
3	AU0351	WILLSWOOD RM 3									
4	AU0352	WILLSWOOD RM 2				-3.6	12.5	0.3			
5	AU2107	G 368									
6	AU0348	G 319									
7	AU0754	A 165									
8	AU0347	F 319									
9	AU2108	F 368									
10	AU0346	E 319									
11	AU0345	D 319									
12	AU2109	E 368									
13	AU0388	70 LLD USE	-93.6	11.9	7.9	-139.6	12.1	11.6	-46.0	12.6	3.6
14	AU0356	Y 190	-16.0	11.9	1.3						
15	AU2110	G 365									
16	AU0738	X 190	-219.8	12.0	18.3						
17	AU2111	H 365									
18	AU2112	J 365									
19	AU2113	H 368									
20	AU2114	J 368									
21	AU2115	K 368									
22	AU2116	L 368									
23	AU2117	M 368									
24	AU2118	N 368									
25	AU2119	K 365									
26	AU2120	L 365									
27	AU2121	M 365									
28	AU2122	P 368									
29	AU2123	Q 368									
30	AU2124	AMES RM 1									
31	AU0693	U 190	-34.4	12.5	2.8						
32	AU2125	R 368									
33	AU2126	X 367									
34	AU2127	Y 367									
35	AU2128	Z 367									
36	AU2129	S 368									
37	AU2130	T 368									
38	AU2131	U 368									
39	AU2132	V 368									
40	AU2133	W 368									
41	AU2134	N 365									
42	AU2135	Q 365									
43	AU1187	F 200 RESET 1971									
44	AU2136	P 365									
45	AU1189	N 200									
46	AU1190	PT 16 SOUTH ABUTMENT USE									
47	AU2137	G 369 P PA									
48	AU1192	P 200									
49	AU1191	R 200									
50	AT0695	A 367									

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
51	AT0696	B 367									
52	AT0697	C 367									
53	AT0698	A 366									
54	AU2138	B 366									
55	AU2139	C 366									
56	AU2140	D 366									
57	AU2141	D 367									
58	AU2142	E 366									
59	AU2143	F 366									
60	AU2144	G 366									
61	AU2145	H 366									
62	AU2146	E 367									
63	AT0699	J 366									
64	AT0700	K 366									
65	AT0701	L 366									
66	AT0702	M 366									
67	AT0703	F 367									
68	AT0704	N 366									
69	AT0705	P 366									
70	AT0706	Q 366									
71	AT0707	G 367									
72	AT0708	R 366									
73	AT0709	S 366									
74	AT0710	T 366									
75	AT0711	U 366									
76	AT0712	V 366									
77	AT0713	W 366									
78	AT0714	H 367									
79	AT0715	X 366									
80	AT0439	FERRY									
81	AT0438	FERRY RM 1									
82	AT0716	Y 366									
83	AT0717	Z 366									
84	AT0718	A 370									
85	AT0448	B 195									
86	AT0539	H 91 RESET 1981									
87	AT0458	C 195									
88	AT0719	B 370									
89	AT0720	C 366 X									
90	AT0466	E 195									
91	AT0721	J 367									
92	AT0722	C 370									
93	AT0195	W 194									
94	AT0196	F 195									
95	AT0200	MILAN 2									
96	AT0205	G 195									
97	AT0723	D 370									
98	AT0724	K 367									
99	AT0208	A 279									
100	AT0209	B 26 USE									
101	AT0213	X 194									

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
102	ATO214	T 91									
103	ATO725	E 370									
104	ATO674	II 270									
105	ATO726	F 370									
106	ATO223	J 195									
107	ATO727	L 367									
108	ATO231	EMPIRE AZ MK 2 1934 1966									
109	ATO234	K 195									
110	ATO235	L 195									
111	ATO728	G 370									
112	ATO245	M 195									
113	ATO247	C 279									
114	ATO248	N 195									
115	ATO252	MASTAGE AZ MK RESET 1955									
116	ATO254	MASTAGE 1934 1966									
117	ATO258	Q 195									
118	ATO259	P 195									
119	ATO729	M 367									
120	ATO262	B 196									
121	AT0005	R 195									
122	AT0006	Z 91									
123	ATO730	H 370									
124	AT0007	S 195									
125	AT0011	T 195 RESET 1973									
126	ATO731	N 367									
127	AT0016	V 195 RESET 1970									
128	AT0025	W 195									
129	AT0032	X 195 RESET 1967									
130	AT0033	C 196									
131	AT0034	E 279									
132	AT0037	Z 195									
133	AT0043	A 196 RESET 1967									
134	ATO732	P 367									
135	ATO733	J 370									
136	ATO734	K 370									
137	AT0046	G 279									
138	ATO735	L 370									
139	ATO736	Q 367									
140	AT0060	H 279									
141	ATO737	R 367									
142	AT0077	T 281									
143	AT0076	PBM DARBON USE									
144	AU0689	P 190	-32.7	12.7	2.6						
145	AU0692	T 190	-17.8	12.8	1.4						
146	AU0691	S 190 RESET 1971									
147	AU2147	X 368									
148	AU2148	A 365									
149	AU2149	Y 368									
150	AU2150	B 365									
151	AU2151	C 365									
152	AU2152	Z 368									

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
153	AU2153	A 369									
154	AU2154	PUMP AZ MK									
155	AU2155	PUMP RM 1									
156	AU2156	PUMP									
157	AU2157	PUMP RM 2									
158	AU2158	MARRERO RM 2									
159	AU2159	MARRERO RM 3									
160	AU2160	MARRERO									
161	AU2161	C 369									
162	AU2162	D 369									
163	AU2163	B 369									
164	AU2164	F 369									
165	AU2165	E 369									
166	AU2166	F 365									
167	AU2167	E 365									
168	AU2168	D 365									
169	AU2169	G 369 J PA									
170	AU0402	R 276									
171	AU0403	B 156	-81.5	11.4	7.2						
172	AU0404	44 LAGS RESET 1959	-86.1	11.4	7.6						
173	AU0406	M 146	-99.9	11.3	8.8	-117.8	11.8	10.0	-17.9	12.0	1.5
174	AU0531	46 LAGS	-63.8	11.4	5.6	-65.9	11.8	5.6	-2.0	12.0	0.2
175	AU0530	Q 188	-45.4	11.4	4.0						
176	AU0526	Q 276									
177	AU0443	K 146 RESET 1979									
178	AU2170	H 369									
179	AU2171	J 369									
180	AU0520	S 188	-1.3	11.4	0.1						
181	AU2172	K 369									
182	AU0518	J 146 RESET 1961	-19.8	11.5	1.7						
183	AU0775	HANSEN	1.0	11.5	0.1						
184	AU0774	S 281									
185	AU0778	L 148 RESET 1975									
186	BJ3239	D 368									
187	BJ3240	L 369									
188	BJ3241	M 369									
189	BJ1447	T 189	-47.9	11.5	4.2						
190	BJ3242	N 369									
191	BJ1446	Z 189	-46.3	11.5	4.0						
192	BJ3243	A 368									
193	BJ1441	W 189 RESET 1966									
194	BJ1439	X 189	-16.3	11.4	1.4						
195	BJ3244	R 369									
196	BJ3245	Q 369									
197	BJ3246	P 369									
198	AU2173	B 368									
199	AU2174	C 368									
200	AU0418	Y 188 RESET 1977									
201	AU0419	A 276									
202	AU0417	M 188	-52.8	10.9	4.8						
203	AU0415	NEW ORLEANS EB 1929 1952									

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
204	AU0413	Q 147	-41.3	11.0	3.8	-57.4	11.4	5.1	-16.2	11.5	1.4
205	AU2175	S 369									
206	AU2176	T 369									
207	AU2177	U 369									
208	ATO738	A 371									
209	ATO739	S 367									
210	ATO429	E 91	-90.0	16.9	5.3	-145.6	17.5	8.3	-55.5	18.3	3.0
211	ATO428	E 152	-66.9	16.8	4.0	-133.5	17.5	7.6	-66.6	18.1	3.7
212	ATO740	B 371									
213	ATO424	B 91 RESET 1966									
214	ATO741	C 371									
215	ATO419	Q 194	-29.3	16.6	1.8						
216	ATO412	E 281									
217	ATO742	D 371									
218	ATO743	E 371									
219	ATO407	A 152	-9.8	16.2	0.6	-31.3	16.9	1.9	-21.5	17.2	1.2
220	ATO744	M 371									
221	ATO745	T 367									
222	ATO401	P 194	-43.2	16.0	2.7						
223	ATO398	D 281									
224	ATO746	F 371									
225	ATO747	G 371									
226	ATO748	W 278 RESET 1983									
227	ATO749	H 371									
228	ATO750	J 371									
229	ATO383	U 151 USE	-311.8	15.3	20.4	-560.0	15.9	35.3	-248.2	16.0	15.6
230	ATO376	R 194	24.3	15.2	1.6						
231	ATO751	K 371									
232	ATO374	S 151 USE	-17.6	15.1	1.2	-129.6	15.7	8.3	-111.9	15.7	7.1
233	AU1991	L 194	18.0	14.9	1.2						
234	AU2178	L 371									
235	AU2179	U 367									
236	AU1153	Q 151	-2.2	14.8	0.2	-50.6	15.3	3.3	-48.4	15.3	3.2
237	AU1152	U 278									
238	AU1143	G 281									
239	AU1146	PBM 222/2 CAP MRC	-51.2	14.5	3.5	-119.7	15.0	8.0	-68.5	14.9	4.6
240	ATO370	T 278									
241	ATO364	S 278									
242	ATO752	N 371									
243	ATO753	V 367									
244	ATO359	Q 278									
245	ATO357	D 194	-21.5	13.7	1.6						
246	ATO754	P 371									
247	ATO755	Q 371									
248	ATO351	N 278									
249	ATO349	E 151	-142.5	13.1	10.9	-178.5	13.6	13.2	-36.1	13.4	2.7
250	ATO344	H 151 RESET 1964	-32.1	12.9	2.5						
251	ATO756	W 367									
252	ATO342	F 3340 LAGS RESET 1958	-120.3	12.8	9.4						
253	ATO340	C 194	2.0	12.8	0.2						
254	ATO339	F 3138 LAGS RESET 1958	3.9	12.7	0.3						

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
255	ATO538	JACK AZ MK RESET 1978									
256	ATO336	M 278									
257	ATO333	F 194	-25.2	12.3	2.0						
258	ATO332	L 278									
259	ATO328	D 151	-53.8	12.1	4.5	-78.7	12.5	6.3	-24.9	12.4	2.0
260	ATO322	VIOLET 2 RM 3									
261	ATO314	K 194	-41.4	11.8	3.5						
262	ATO311	B 194	-50.9	11.5	4.4						
263	ATO309	G 194	-88.1	11.3	7.8						
264	ATO306	J 194	-144.8	11.1	13.0						
265	ATO304	H 194	-138.8	11.0	12.7						
266	ATO302	A 194	-164.9	10.7	15.4						
267	ATO297	A 151	-222.1	10.5	21.1	-267.0	10.9	24.5	-44.9	11.0	4.1
268	ATO294	F 152	-351.8	10.6	33.1	-426.7	11.0	38.8	-75.0	11.1	6.8
269	ATO759	G 189 RESET 1984									
270	ATO478	K 152 RESET 1973									
271	ATO474	H 278									
272	ATO757	R 371									
273	ATO471	239 LAGS RESET 1974									
274	ATO468	J 278									
275	ATO758	U 371									
276	BH1769	V 371									
277	BH1770	W 371									
278	BH1083	D 276									
279	BH1192	K 278									
280	BH1443	236 AZ MK									
281	BH1442	Z 297									
282	BH1084	F 189	-459.0	9.1	50.6						
283	BH1087	W 152	-266.6	8.9	30.0	-296.7	9.2	32.3	-30.2	9.7	3.1
284	BH1091	OR 80 WELL USGS	-231.4	9.0	25.6						
285	BH1090	OR 79 WELL USGS	-214.6	9.0	23.8						
286	BH1089	WASTE WELL 2 USGS									
287	BH1088	OR 78 WELL USGS	-269.8	9.0	30.1						
288	BH1092	GATE 11 USE									
289	AU2180	T 371									
290	AUO538	PBM 210/2 CAP USE	-108.6	11.4	9.5	-125.6	11.8	10.6	-17.0	12.0	1.4
291	AUO407	M 189	-55.9	11.3	4.9						
292	AUO410	F 93 RESET 1959	-46.0	11.2	4.1						
293	AUO411	N 146	-149.2	11.3	13.2	-172.2	11.8	14.6	-22.9	11.8	1.9
294	AUO409	13.22 USGS				-39.7	11.7	3.4			
295	AUO408	1 G USGS	-37.1	11.2	3.3	-37.3	11.7	3.2	-0.2	11.9	0.0
296	AUO420	U 147	-92.2	10.8	8.5	-107.0	11.2	9.5	-14.8	11.4	1.3
297	AUO421	277 LAGS RESET 1967									
298	AUO422	L 188	-103.3	10.7	9.6						
299	AUO423	P 188	-157.0	10.7	14.7						
300	AUO425	45 B NDS+WB	-220.1	10.6	20.7	-270.8	11.0	24.6	-50.7	11.2	4.5
301	AUO424	281 LAGS RESET 1952	-226.6	10.6	21.3						
302	AUO426	X 147 RESET 1971									
303	AUO427	W 147	-244.4	10.6	23.1	-295.1	11.0	26.9	-50.7	11.2	4.5
304	AUO428	Y 147	-169.5	10.5	16.1	-210.0	10.9	19.2	-40.5	11.2	3.6
305	AUO429	A 148	-148.4	10.5	14.1	-188.6	10.9	17.3	-40.2	11.2	3.6

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306	AUO430	B 148	-194.7	10.5	18.6	-268.5	10.9	24.7	-73.7	11.1	6.6
307	AUO431	F 156	-136.0	10.4	13.1						
308	AUO433	Z 147	-132.5	10.4	12.7	-163.1	10.8	15.1	-30.6	11.1	2.8
309	AUO434	D 3120 LAGS	-178.8	10.4	17.2	-236.6	10.7	22.0	-57.8	11.1	5.2
310	AUO435	P 193	-86.1	10.3	8.3						
311	BJ1184	D 3123 LAGS	-88.2	10.3	8.6	-95.9	10.7	9.0	-7.7	11.0	0.7
312	BJ1185	D 3124 LAGS	-126.5	10.3	12.3	-147.0	10.7	13.8	-20.5	11.0	1.9
313	BJ1186	B 3105 LAGS	-152.2	10.2	14.9	-194.6	10.6	18.3	-42.4	11.0	3.9
314	BJ1187	S 152	-101.7	10.2	10.0	-113.9	10.6	10.7	-12.2	11.0	1.1
315	BJ1188	G 278									
316	BJ1190	B 3130 LAGS	-213.3	10.1	21.1	-240.7	10.5	22.9	-27.4	10.9	2.5
317	BJ1191	225 LAGS RESET 1951	-250.8	10.1	24.9						
318	BJ1192	B 276									
319	BJ1194	A 3128 LAGS RESET 1961	-469.5	9.9	47.3						
320	BJ1193	LAFON	-327.9	9.9	33.0	-378.2	10.3	36.7	-50.3	10.8	4.6
321	BH1065	A 3129 LAGS RESET 1961	-342.3	9.9	34.7						
322	BH1067	227 LAGS RESET 1961	-273.9	9.8	27.8						
323	BH1071	C 157 RESET 1964									
324	BH1073	231 LAGS	-344.2	9.6	35.9	-370.6	10.0	37.2	-26.4	10.5	2.5
325	BH1076	C 276									
326	BH1167	J 92	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
327	BH1165	PIKE RM 4									
328	BH1164	PIKE 1931 1952	-28.5	1.0	28.1	-54.1	0.9	61.5	-25.6	1.1	22.4
329	BH1163	C 193	-5.4	0.8	6.3						
330	BH1160	PIKE RM 3	-14.4	1.1	13.4	-21.6	1.1	19.7	-7.2	1.2	6.1
331	BH1162	PIKE RM 2	-19.6	1.1	18.4	-32.1	1.0	32.7	-12.6	0.9	13.7
332	BH1538	WES 15 USE									
333	BH1537	WES 16 USE									
334	BH1539	WES 14 USE									
335	BH1161	OR 179 USGS									
336	BH1158	E 3168 LAGS	-56.5	1.8	31.3	-118.4	1.8	65.5	-61.9	1.8	35.1
337	BH1155	G 193	-77.8	2.4	32.6						
338	BH1150	G 92	-25.8	3.1	8.3	-45.5	3.2	14.2	-19.7	3.4	5.8
339	BH1794	A 375									
340	BH1795	B 375									
341	BH1147	E 92	-42.9	4.3	9.9	-66.7	4.5	14.9	-23.9	4.8	5.0
342	BH1145	E 193	-42.3	4.5	9.3						
343	BH1142	D 92	-43.3	4.9	8.9	-71.0	5.0	14.2	-27.7	5.3	5.2
344	BH1446	K 319									
345	BH1445	J 319									
346	BH1137	E 3149 LAGS	-155.2	5.9	26.5	-190.6	6.1	31.5	-35.4	6.5	5.5
347	BH1136	A 92	-49.6	6.0	8.3	-90.3	6.2	14.7	-40.7	6.6	6.2
348	BH1135	F 193	-29.4	6.2	4.7						
349	BH1134	E 3146 LAGS				-124.1	6.5	19.2			
350	BH1133	E 3145 LAGS	-8.8	6.3	1.4	12.8	6.5	2.0	21.5	7.0	3.1
351	BH1131	E 3144 LAGS	-20.9	6.4	3.3	-1.7	6.6	0.3	19.2	7.0	2.7
352	BH1132	R 153 LAGS	-22.7	6.4	3.6	-2.2	6.6	0.3	20.5	7.1	2.9
353	BH1127	A 3121 LAGS	-66.0	6.5	10.2	-63.9	6.7	9.5	2.1	7.2	0.3
354	BH1123	A 3122 LAGS	62.9	6.6	9.5	54.6	6.9	7.9	-8.3	7.3	1.1
355	BH1121	A 3120 LAGS	-75.1	6.8	11.0	-127.4	7.1	18.0	-52.3	7.5	7.0
356	BH1119	C 189	-24.5	7.1	3.4						

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357	BH1117	G 276									
358	BH1444	WYNOT RM 4									
359	BH1113	A 3141 LAGS	-33.1	7.5	4.4	-5.1	7.7	0.7	27.9	8.2	3.4
360	BH1110	F 276									
361	BH1109	D 189	-33.0	7.7	4.3						
362	BH1796	BAT RM 1 LADH									
363	BH1797	BAT LADH									
364	BH1798	BAT RM 2 LADH									
365	BH1106	E 189	-46.7	8.0	5.8						
366	BH1799	H 374									
367	BH1104	E 276									
368	BH1800	G 374									
369	BH1102	H 153	-77.3	8.4	9.2	-64.6	8.6	7.5	12.6	9.1	1.4
370	BH1801	F 374									
371	BH1093	FOLGER RM 2									
372	BH1094	FOLGER									
373	BH1095	FOLGER RM 1									
374	BH1096	A 3135 LAGS	-133.9	8.7	15.4	-130.0	9.0	14.4	3.9	9.5	0.4
375	BH1802	D 374									
376	BH1803	M 374									
377	BH1804	N 374									
378	BJ3676	P 374									
379	BJ1197	B 157 RESET 1960	-229.2	10.1	22.8						
380	BJ1189	HIGGINS	-203.1	10.1	20.0	-247.1	10.5	23.5	-44.0	10.9	4.0
381	BJ3677	Q 374									
382	BJ3678	R 374									
383	BJ3679	S 374									
384	AU0442	GENT FLA NOS+WB	-146.3	10.4	14.0	-183.1	10.8	16.9	-36.8	11.1	3.3
385	AU1026	G 156	-97.9	10.5	9.4						
386	AU2189	Z 374									
387	AU2190	A 376									
388	AU2191	B 376									
389	AU1021	K 189	-161.4	10.7	15.1						
390	AU1022	CITY STONE=XXMR C OF NO				-172.2	11.1	15.5			
391	AU1023	CITY STONE=U C OF NO	-141.8	10.7	13.2	-172.2	11.1	15.5	-30.4	11.2	2.7
392	AU1024	DELGADO NOS+WB	-151.9	10.7	14.2	-191.5	11.1	17.3	-39.6	11.2	3.5
393	AU1036	K 188	-112.8	10.8	10.5						
394	BH1805	TBM NORTH									
395	BH1806	U 375									
396	BH1189	A 153	-427.1	9.5	44.8	-520.3	9.9	52.6	-93.1	10.4	9.0
397	BH1807	E 374									
398	BH1808	T 375									
399	BH1809	C 374									
400	BH1810	B 374									
401	BH1811	A 374									
402	BH1543	WES 7 USE									
403	BH1179	PONTCHARTRAIN RM 5									
404	BH1180	PONTCHARTRAIN RM 6									
405	BH1812	S 375									
406	BH1813	R 375									
407	BH1814	Q 375									

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408	BH1815	P 375									
409	BH1816	N 375									
410	BH1817	M 375									
411	BH1818	L 375									
412	BH1819	K 375									
413	BH1820	J 375									
414	BH1821	H 375									
415	BH1822	G 375									
416	BH1823	F 375									
417	BJ3680	E 375									
418	BJ3681	D 375									
419	BJ3682	C 375									
420	BJ1195	NOPSI RESET 1970									
421	BH1824	K 374									
422	BH1825	L 374									
423	BH1826	J 374									
424	BJ1384	204 LAGS	-276.8	10.6	26.2	-341.7	10.9	31.4	-64.9	11.0	5.9
425	BJ1394	1 A LAGS	-398.2	10.6	37.7						
426	BJ1395	2 A LAGS	-321.1	10.6	30.3						
427	BJ1393	Y 152 RESET 1963	-356.9	10.6	33.7						
428	BJ1389	BM LAGS RESET 1963	-359.1	10.6	34.0						
429	BJ1381	Z 152	-253.9	10.5	24.1	-322.7	10.9	29.6	-68.8	11.0	6.3
430	BJ1402	3 A LAGS	-200.9	10.6	18.9						
431	BJ1400	AIRPORT	-179.1	10.6	16.9	-220.1	11.0	20.1	-41.0	11.0	3.7
432	BJ1382	Y 109	-291.8	10.6	27.6	-348.2	10.9	32.1	-56.4	11.0	5.1
433	BJ1383	X 152	-284.7	10.6	27.0	-330.3	10.9	30.4	-45.7	11.0	4.2
434	BJ3683	U 374									
435	BJ1379	K 153	-258.0	10.5	24.6	-336.8	10.9	31.0	-78.8	11.0	7.1
436	BJ1378	JEWETT	-211.2	10.5	20.1	-279.8	10.9	25.7	-68.6	11.1	6.2
437	BJ1377	JEWETT RM	-215.2	10.5	20.5	-284.3	10.9	26.2	-69.1	11.1	6.2
438	BJ3684	T 374									
439	BJ0131	L 153 RESET 1980									
440	BJ1409	A 3199 LAGS	-154.9	10.4	14.8	-196.0	10.8	18.1	-41.1	11.1	3.7
441	BJ1408	A 3200 LAGS	-140.8	10.4	13.5	-182.7	10.8	16.9	-41.9	11.1	3.8
442	BJ1407	B 3101 LAGS	-141.0	10.4	13.5	-176.8	10.8	16.4	-35.8	11.1	3.2
443	BJ1406	B 3102 LAGS	-160.6	10.4	15.5	-202.4	10.8	18.8	-41.8	11.0	3.8
444	BJ1405	B 3103 LAGS	-167.0	10.3	16.2	-220.1	10.7	20.5	-53.0	11.0	4.8
445	BJ1403	B 3104 LAGS	-152.8	10.3	14.8	-193.4	10.7	18.1	-40.6	11.0	3.7
446	BJ1376	ISOTTA	-254.8	10.5	24.3	-326.9	10.9	30.1	-72.1	11.1	6.5
447	BJ1375	ISOTTA RM	-251.7	10.5	24.0	-322.1	10.9	29.7	-70.5	11.1	6.3
448	BJ1374	M 153	-264.4	10.5	25.2	-340.3	10.9	31.3	-75.8	11.1	6.8
449	BJ1370	D 3132 LAGS RESET 1961	-235.1	10.5	22.3						
450	BJ3685	V 374									
451	BJ1366	B 110	-154.5	10.6	14.6	-207.0	11.0	18.9	-52.5	11.2	4.7
452	BJ1365	N 153	-172.5	10.6	16.3	-213.7	11.0	19.4	-41.2	11.2	3.7
453	BJ1363	HAYNES	-141.8	10.6	13.4	-169.6	11.0	15.5	-27.8	11.2	2.5
454	BJ1362	HAYNES RM	-148.1	10.6	14.0	-177.6	11.0	16.2	-29.5	11.2	2.6
455	BJ1361	P 153	-201.4	10.6	19.0	-237.6	11.0	21.6	-36.2	11.2	3.2
456	BJ1360	GRAHAM	-184.9	10.6	17.4	-223.7	11.0	20.4	-38.8	11.2	3.5
457	BJ1359	GRAHAM RM	-181.8	10.6	17.1	-218.2	11.0	19.9	-36.4	11.2	3.3
458	BJ1358	FORD 1931	-235.9	10.6	22.2	-271.9	11.0	24.8	-36.1	11.2	3.2

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459	BJ1357	FORD 1931 RM	-240.0	10.6	22.6	-276.4	11.0	25.2	-36.4	11.2	3.2
460	BJ1421	AA 190	-106.0	10.6	10.0						
461	BJ1419	A 1 NUS+WB	-156.1	10.6	14.7						
462	BJ1414	D 3127 LAGS	-108.8	10.4	10.4	-142.5	10.8	13.2	-33.7	11.1	3.0
463	BJ1416	D 3128 LAGS	-179.7	10.5	17.2	-309.5	10.9	28.5	-129.8	11.1	11.7
464	BJ1413	D 3126 LAGS	-98.1	10.4	9.4	-112.1	10.8	10.4	-14.0	11.1	1.3
465	BJ1355	ESSEX	-201.4	10.7	18.8	-248.3	11.1	22.4	-46.9	11.2	4.2
466	BJ1354	ESSEX RM	-190.3	10.7	17.8	-236.1	11.1	21.3	-45.8	11.2	4.1
467	BJ1352	DODGE RM	-128.8	10.7	12.0	-158.2	11.1	14.2	-29.3	11.3	2.6
468	BJ1353	DODGE	-128.1	10.7	11.9	-158.6	11.1	14.3	-30.4	11.3	2.7
469	BJ1351	V 149	-163.8	10.7	15.2	-199.5	11.1	17.9	-35.7	11.3	3.2
470	BJ1349	CHRYSLER RM	-146.7	10.8	13.6	-189.4	11.2	17.0	-42.7	11.3	3.8
471	BJ1350	CHRYSLER	-144.1	10.8	13.4	-188.1	11.2	16.9	-44.0	11.3	3.9
472	BJ1346	BUICK	-232.7	10.8	21.5	-336.4	11.2	30.0	-103.6	11.4	9.1
473	BJ1345	BUICK RM	-222.6	10.8	20.5	-322.4	11.2	28.7	-99.8	11.4	8.8
474	BJ3686	X 374									
475	BJ1342	ALCO 1931	-133.3	10.9	12.3	-181.8	11.3	16.2	-48.5	11.4	4.3
476	BJ1344	ALCO 1931 RM	-169.4	10.9	15.6	-242.9	11.3	21.6	-73.6	11.4	6.5
477	BJ3687	Y 374									
478	BJ1425	U 149	-174.1	10.8	16.1	-234.8	11.2	21.0	-60.7	11.3	5.4
479	BJ1347	CANAL AND LEE NOS+WB	-102.4	10.9	9.4						
480	BJ1334	12									
481	BJ1333	H 188	-275.2	10.9	25.2						
482	BJ3688	W 374									
483	BJ1429	J 188	-216.0	10.8	20.0						
484	BJ1431	W 148 RESET 1961	-84.4	10.8	7.8						
485	BJ1432	CANAL 1938	-25.9	10.9	2.4	-19.8	11.2	1.8	6.2	11.5	0.5
486	BJ1428	T 149	-152.9	10.7	14.3	-206.4	11.1	18.6	-53.4	11.3	4.7
487	AU0818	P 147	-62.4	11.0	5.7	-80.9	11.4	7.1	-18.5	11.4	1.6
488	AU0823	D 156 RESET 1973									
489	AU0828	A 3185 LAGS RESET 1973									
490	AU0830	A 3184 LAGS RESET 1973									
491	AU2192	D 376									
492	AU2193	E 376									
493	AU2194	C 376									
494	AU0840	A 3178 LAGS	-56.2	11.0	5.1	-71.8	11.3	6.3	-15.7	11.3	1.4
495	AU0844	A 3176 LAGS RESET 1953	-32.7	11.0	3.0						
496	AU0845	A 3175 LAGS	-52.5	11.0	4.8	-75.1	11.4	6.6	-22.6	11.4	2.0
497	AU0842	14 C NOS+EB	-6.4	11.1	0.6	-17.6	11.5	1.5	-11.2	11.4	1.0
498	AU0846	TULANE NOS+WB	-13.3	11.0	1.2	-27.5	11.4	2.4	-14.2	11.4	1.2
499	AU0849	B 3164 LAGS	-68.3	11.1	6.2	-116.2	11.4	10.2	-47.9	11.4	4.2
500	AU0851	Y 149	0.9	11.1	0.1	0.5	11.5	0.0	-0.4	11.4	0.0
501	AU0850	BM MC MAIN	0.8	11.1	0.1	-1.9	11.5	0.2	-2.7	11.4	0.2
502	AU0372	Z 150 RESET 1980									
503	AU0988	A 3166 LAGS	-32.0	11.2	2.9	-59.4	11.6	5.1	-27.4	11.5	2.4
504	AU0989	270 LAGS	-27.1	11.2	2.4	-39.7	11.6	3.4	-12.6	11.5	1.1
505	AU0987	TULANE RESET 1958	-25.4	11.2	2.3						
506	AU0985	272 LAGS	-22.4	11.2	2.0	-44.5	11.6	3.8	-22.0	11.5	1.9
507	AU0983	A 3161 LAGS	-34.8	11.2	3.1	-52.7	11.6	4.5	-17.9	11.5	1.6
508	AU0982	A 3159 LAGS	-38.0	11.2	3.4	-49.0	11.6	4.2	-11.0	11.5	1.0
509	AU0981	A 3158 LAGS	-38.4	11.2	3.4	-54.9	11.6	4.7	-16.5	11.5	1.4

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510	AU0980	A 3157 LAGS	-49.1	11.2	4.4	-72.1	11.6	6.2	-23.0	11.5	2.0
511	AU0979	A 3156 LAGS	-47.2	11.2	4.2	-60.4	11.6	5.2	-13.2	11.5	1.1
512	AU0978	A 3155 LAGS	-42.2	11.2	3.8	-64.1	11.6	5.5	-21.9	11.5	1.9
513	AU0976	A 3153 LAGS	-48.9	11.2	4.4	-63.5	11.6	5.5	-14.6	11.5	1.3
514	AU0975	A 3152 LAGS	-65.4	11.2	5.8	-85.5	11.6	7.4	-20.1	11.5	1.7
515	AU0974	N 189	-132.5	11.2	11.8						
516	AU2195	G 376									
517	AU0549	T 146	-28.4	11.1	2.5	-45.5	11.5	3.9	-17.1	11.6	1.5
518	AU0550	U 146	-72.7	11.2	6.5	-244.2	11.6	21.1	-171.4	11.6	14.8
519	AU0555	C 3135 LAGS	-35.1	11.3	3.1	-74.6	11.6	6.4	-39.5	11.6	3.4
520	AU0559	PBM DEPOT USE	-77.1	11.3	6.8	-104.0	11.6	8.9	-26.9	11.6	2.3
521	AU0557	D USE	-48.3	11.3	4.3						
522	AU2196	DISTRICT 1 A USE									
523	AU2197	F 376									
524	AU0572	A 96	-176.9	11.2	15.8	-267.4	11.6	23.1	-90.6	11.5	7.9
525	AU0574	B 3146 LAGS	-126.7	11.2	11.3	-187.1	11.6	16.2	-60.4	11.5	5.2
526	AU0573	W 150	-150.8	11.2	13.4	-226.8	11.6	19.6	-76.0	11.5	6.6
527	AU0575	3186 LAGS	-134.5	11.2	12.0	-194.6	11.6	16.8	-60.1	11.5	5.2
528	AU0576	B 3147 LAGS	-136.0	11.2	12.1	-190.2	11.6	16.4	-54.1	11.5	4.7
529	AU0577	3187 LAGS	-147.3	11.2	13.1	-204.7	11.6	17.7	-57.4	11.5	5.0
530	AU0578	9 A NOS+WB	-112.7	11.3	10.0						
531	AU0579	3188 R LAGS	-159.5	11.2	14.2	-269.2	11.6	23.2	-109.8	11.5	9.5
532	AU0581	V 150	-176.3	11.2	15.7	-297.6	11.6	25.7	-121.3	11.5	10.5
533	AU0582	3190 LAGS	-174.4	11.2	15.5	-275.9	11.6	23.8	-101.5	11.5	8.8
534	AU0583	B 3148 LAGS	-169.5	11.2	15.1	-275.1	11.5	23.8	-105.7	11.5	9.2
535	AU0586	3192 LAGS	-191.3	11.2	17.1	-305.4	11.5	26.5	-114.1	11.5	9.9
536	AU0588	11 NODLB	-175.7	11.1	15.8	-262.4	11.5	22.8	-86.6	11.4	7.6
537	AU0590	3195 LAGS	-146.9	11.2	13.2	-272.4	11.5	23.6	-125.5	11.5	10.9
538	AU0592	876 1885 TIDAL 2	-188.0	11.2	16.8	-300.9	11.6	26.0	-113.0	11.5	9.8
539	AU0595	T 150	-193.3	11.2	17.3	-340.2	11.6	29.4	-146.9	11.5	12.8
540	AU0602	N 156	-191.5	11.2	17.1						
541	AU0600	M 156	-196.3	11.2	17.6						
542	AU0604	K 156	-210.4	11.2	18.8						
543	AU0603	L 156	-220.3	11.2	19.7						
544	AU0605	NOPSI 2 C OF NO	-216.0	11.2	19.4	-381.0	11.6	33.0	-165.0	11.5	14.3
545	AU0607	P 150 RESET 1960	-216.0	11.2	19.4						
546	AU0601	Q 150	-171.5	11.2	15.4	-297.6	11.6	25.7	-126.2	11.5	10.9
547	AU0609	MARKET STREET NODLB RESET	-171.0	11.2	15.3	-305.1	11.6	26.4	-134.1	11.5	11.6
548	AU2198	M 376									
549	AU2098	R 156 RESET 1982									
550	AU1072	V 156	-226.2	11.0	20.5						
551	AU2199	L 376									
552	AU2097	A 149 RESET 1982									
553	AU1061	I A C OF NO	-233.8	11.0	21.2	-458.9	11.4	40.3	-225.2	11.3	19.9
554	AU1063	NEW ORLEANS LONG 1965									
555	AU1064	C 149	-218.0	11.0	19.8	-381.9	11.4	33.6	-163.9	11.3	14.5
556	AU0629	B 96	-264.9	11.0	24.1	-441.7	11.3	38.9	-176.8	11.3	15.6
557	AU0633	876 1885 TIDAL 3 1974									
558	AU2200	LMS 91 USE									
559	AU0638	36 A NOS+WB	-173.4	10.9	15.9	-314.7	11.3	27.9	-141.3	11.3	12.5
560	AU0459	LMS 93 USE									

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
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561	AU0642	Q 156	-176.0	10.8	16.2						
562	AU0644	24 NODLB	-173.9	10.8	16.0	-261.3	11.2	23.3	-87.4	11.2	7.8
563	AU0645	D 149	-138.5	10.8	12.8	-197.6	11.2	17.7	-59.1	11.2	5.3
564	AU0646	31 A LAGS	-152.4	10.8	14.1	-198.5	11.2	17.8	-46.1	11.2	4.1
565	AU0649	B 3161 LAGS	-124.3	10.8	11.5	-179.2	11.1	16.1	-54.9	11.2	4.9
566	AU0651	Q 152	-97.0	10.7	9.1	-124.7	11.1	11.3	-27.6	11.1	2.5
567	AU0652	B 3135 LAGS	-108.7	10.7	10.1	-150.5	11.1	13.6	-41.7	11.1	3.8
568	AU0660	P 152	-112.5	10.8	10.4	-149.5	11.2	13.4	-37.1	11.1	3.3
569	AU0658	M 150 RESET 1960	-130.0	10.8	12.0						
570	AU0659	L 150	-150.4	10.9	13.8	-223.6	11.3	19.8	-73.3	11.3	6.5
571	AU0661	B 3139 LAGS	-235.2	10.9	21.7	-345.4	11.3	30.7	-110.1	11.2	9.9
572	AU0662	J 152	-199.1	10.9	18.3	-286.1	11.3	25.4	-87.1	11.1	7.8
573	AU2201	H 376									
574	AU0663	H 152	-257.5	10.9	23.6	-339.9	11.3	30.0	-82.4	11.2	7.4
575	AU2202	J 376									
576	AU0670	L 152 RESET 1961	-315.1	11.0	28.6						
577	AU2203	K 376									
578	AU0676	Q 189	-176.8	11.0	16.0						
579	AU0672	B 3142 LAGS	-213.4	11.0	19.4	-271.8	11.4	23.9	-58.4	11.2	5.2
580	AU0668	M 152	-207.5	11.0	18.8	-264.7	11.4	23.2	-57.1	11.2	5.1
581	AU0903	R 189	-156.3	11.0	14.2						
582	AU0902	S 189	-169.7	10.9	15.5						
583	AU0905	43 B NOS+WB	-107.1	10.9	9.8						
584	AU0901	STA D NOS+WB	-167.6	10.7	15.7	-236.6	11.1	21.3	-69.0	11.1	6.2
585	AU0896	R 152	-151.8	10.5	14.4	-186.4	10.9	17.1	-34.6	11.1	3.1
586	AU0113	J 156 RESET 1980									
587	AU0908	B 3107 LAGS	-133.4	10.4	12.9	-145.8	10.7	13.6	-12.3	11.0	1.1
588	AU0909	57 B NOS+WB	-118.6	10.3	11.5	-132.2	10.7	12.3	-13.5	11.0	1.2
589	AU0910	B 3106 LAGS	-139.3	10.3	13.5	-159.4	10.7	14.9	-20.1	11.0	1.8
590	AU0996	L 149	-235.6	10.7	22.1	-310.2	11.1	28.1	-74.7	11.2	6.7
591	AU0884	27 B NOS+WB	-175.3	10.9	16.1						
592	AU1015	28 C NOS+WB	-76.9	10.9	7.0	-98.4	11.3	8.7	-21.5	11.3	1.9
593	AU1014	G 149	-70.0	10.9	6.4	-87.7	11.3	7.8	-17.6	11.3	1.6
594	AU1016	F 149	-53.4	10.9	4.9	-63.0	11.3	5.6	-9.6	11.2	0.9
595	AU0880	D 150	-82.8	10.9	7.6	-136.4	11.3	12.1	-53.6	11.2	4.8
596	AU1017	31 F NOS+WB	-55.4	11.0	5.0	-83.0	11.4	7.3	-27.6	11.3	2.5
597	AU1018	E 149	-84.3	11.0	7.7	-130.7	11.4	11.5	-46.4	11.3	4.1
598	AU0879	E 150	-30.5	11.0	2.8	-34.8	11.4	3.1	-4.3	11.2	0.4
599	AU0874	C 150	-100.3	11.0	9.1	-145.6	11.3	12.8	-45.2	11.2	4.0
600	AU0872	Y 156	-107.7	11.0	9.8						
601	AU1077	K 157	-54.9	11.0	5.0						
602	AU1079	TONTI	-43.7	10.9	4.0	-50.1	11.3	4.4	-6.4	11.3	0.6
603	AU1080	CANAL 1951	-48.0	10.9	4.4	-70.6	11.3	6.2	-22.6	11.3	2.0
604	AU0119	H 149 RESET 1980									
605	AU1012	J 149	-64.9	10.9	6.0	-76.4	11.2	6.8	-11.5	11.3	1.0
606	AU0999	CARRULLTON CANAL NOS+WB	-98.3	10.8	9.1						
607	AU0997	Y 153	-240.6	10.7	22.5	-297.5	11.1	26.8	-56.9	11.2	5.1
608	AU0998	X 153	-211.8	10.7	19.7	-316.6	11.1	28.5	-104.8	11.2	9.4
609	AU1002	V 153	-49.7	10.8	4.6	-58.1	11.2	5.2	-8.4	11.2	0.7
610	AU1003	19 C NOS+WB	-55.8	10.8	5.2						
611	AU1040	G 96 RESET 1959	-93.2	10.8	8.6						

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612	AU1042	D 148	-44.9	10.8	4.1	-62.0	11.2	5.5	-17.1	11.3	1.5
613	AU1004	E 156	-55.7	10.8	5.1						
614	AU1005	E 148	-56.9	10.9	5.2	-74.0	11.2	6.6	-17.1	11.3	1.5
615	AU1892	S 149 RESET 1982									
616	AU1008	18 C NOS+WB	863.6	11.0	78.6						
617	AU1009	H 96	-143.3	10.9	13.1	-206.0	11.3	18.2	-62.7	11.3	5.5
618	AU1010	F 148	-28.6	10.9	2.6	-39.8	11.3	3.5	-11.1	11.3	1.0
619	AU1045	F 96	-221.5	10.9	20.3	-442.3	11.3	39.2	-220.9	11.3	19.6
620	AU1048	G 148	-63.4	10.9	5.8	-90.1	11.3	8.0	-26.7	11.3	2.4
621	AU1049	H 148	-32.0	11.0	2.9	-42.8	11.3	3.8	-10.7	11.3	0.9
622	AU1050	24 B NOS+WB	-13.3	11.1	1.2						
623	AU0858	Z 149	-9.8	11.1	0.9	109.2	11.5	9.5	119.0	11.3	10.5
624	AU0857	P 189	-18.6	11.1	1.7						
625	AU0995	8 B NOS+WB	-28.7	11.1	2.6	-37.0	11.5	3.2	-8.3	11.4	0.7
626	AU0994	X 149	-148.4	11.1	13.3	-221.5	11.5	19.2	-73.1	11.4	6.4
627	AU0993	W 149	-213.2	11.2	19.1	-381.0	11.5	33.1	-167.8	11.4	14.7
628	AU1051	J 148	-72.7	11.0	6.6	-115.4	11.4	10.1	-42.6	11.3	3.8
629	AU1052	B 150	-48.1	11.0	4.4	-68.2	11.4	6.0	-20.1	11.3	1.8
630	AU0867	Z 156	-77.8	11.0	7.1						
631	AU0868	5.66 LADH	119.9	11.0	10.9						
632	AU0869	7.001 LADH	-73.4	11.0	6.7						
633	AU1056	M 141	-180.5	11.1	16.3						
634	AU1054	C 96	-235.4	11.1	21.2	-344.1	11.5	30.0	-108.7	11.3	9.6
635	AU1055	C 96 RESET 1961	-206.9	11.1	18.7						
636	AU1053	J 157	-212.4	11.1	19.2						
637	AU1057	2 A NOS+WB	-209.3	11.1	18.9	-421.1	11.4	36.8	-211.8	11.3	18.7
638	AU1058	BM XX C OF NO	-218.9	11.1	19.8	-434.5	11.5	37.9	-215.6	11.3	19.0
639	AU2204	N 376									
640	AU1067	X 156	-206.5	11.1	18.7						
641	AU0455	LMS 12 USE RESET 1977									
642	AU0454	LMS 11 USE									
643	AU2205	49+10.68 USE									
644	AU1157	K 196									
645	AU2206	R 376									
646	AU2207	Q 376									
647	AU1159	M 196									
648	AU2208	S 376									
649	AU1160	C 200									
650	AU1161	H 196									
651	AU1164	J 196									
652	AU1181	11 NOS+WB									
653	AU2209	P 376									
654	AU2210	Z 375									
655	AU1165	N 196									
656	AU2211	Y 375									
657	ATO482	P 196									
658	ATO483	Q 196									
659	ATO760	V 375									
660	AU0932	E 190	-109.8	11.5	9.6						
661	AU0919	Z 193	-43.5	11.6	3.8						
662	AU1163	T 196									

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663	AU0948	F 190	-33.9	11.7	2.9						
664	AU1178	W 196 RESET 1977									
665	AU1176	U 196									
666	AU1170	A 200									
667	AU1169	V 196 RESET 1973									
668	AU1167	61 NOS+WB									
669	AU1175	Z 196									
670	ATO498	5 NOS+WB									
671	ATO761	X 375									
672	ATO762	W 375									
673	AU0505	H 93									
674	AU0506	X 188									
675	AU0507	W 188									
676	AU0508	G 146									
677	AU0511	G 93									
678	AU0512	H 146									
679	AU0516	PBM GENELLA USE RESET 195									
680	AU0519	50 LAGS						17.4	11.9	1.5	
681	AU0524	Z 146 RESET 1961									
682	AU0525	K 146						9.1	11.8	0.8	
683	AU0527	48 LAGS						8.9	11.9	0.7	
684	AU0537	PBM 210/2 BOLT USE						-19.3	12.0	1.6	
685	AU0437	1271 USGS RESET									
686	AU0447	P 146						-32.5	11.7	2.8	
687	AU0546	R 188									
688	ZZ0051	TBM 61 B									
689	AU0547	S 146						-52.8	11.5	4.6	
690	AU0554	C 3134 LAGS						-31.1	11.6	2.7	
691	AU0556	PBM XX C OF NO						-31.2	11.6	2.7	
692	AU0558	50+38 40 USE						-33.4	11.6	2.9	
693	AU0560	FLEET						-7.4	11.6	0.6	
694	AU0561	RESERVATION						-14.2	11.6	1.2	
695	AU0563	THOMPSON						-20.6	11.6	1.8	
696	AU0566	Y 150						-47.2	11.6	4.1	
697	AU0565	X 150						-26.4	11.6	2.3	
698	AU0567	Z 148						-39.6	11.6	3.4	
699	AU0569	PBM 212/2 BOLT USE						-25.0	11.5	2.2	
700	AU0568	PBM 212/2 CAP USE						-21.0	11.5	1.8	
701	ZZ0052	TBM 62 B									
702	AU0571	3141 LAGS						-107.6	11.5	9.4	
703	AU0580	3189 LAGS						-103.3	11.5	9.0	
704	AU0584	U 150						-99.6	11.5	8.7	
705	AU0589	3193 LAGS						-83.1	11.4	7.3	
706	AU0597	B 3149 LAGS						-152.3	11.5	13.3	
707	AU0598	B 3150 LAGS						-167.1	11.5	14.6	
708	AU0599	S 150						-177.9	11.5	15.5	
709	AU0610	TIDAL 4						-205.2	11.5	17.9	
710	AU0611	3199 LAGS						-196.0	11.5	17.1	
711	AU0612	3200 LAGS						-200.2	11.4	17.5	
712	AU0613	B 149						-219.1	11.4	19.2	
713	AU0615	POINT D MM									

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714	AU0616	B 3152 LAGS							-248.7	11.4	21.8
715	AU0617	R 156									
716	AU0618	N 150							-253.7	11.4	22.3
717	AU0619	A 149							-304.3	11.3	26.8
718	AU0621	B 189									
719	AU0623	X 148							-158.9	11.3	14.0
720	ZZ0053	TBM 49 T									
721	AU0627	K 150 RESET 1960									
722	AU0631	B 3157 LAGS							-157.0	11.3	13.9
723	AU0632	TIDAL 3							-158.6	11.3	14.1
724	AU0635	REGAL WELL									
725	AU0636	JAX 2							-133.8	11.3	11.9
726	AU0637	JAX 1							-200.0	11.3	17.7
727	AU0639	ST PETER GATE STOP							-141.5	11.3	12.6
728	AU0640	DECATUR GATE STOP							-141.3	11.3	12.6
729	AU0648	TIDAL W PARK							-46.9	11.2	4.2
730	AU0650	L 189									
731	AU0893	J 156									
732	ZZ0054	TBM 25 T									
733	AU0654	B 3136 LAGS							-60.4	11.1	5.4
734	ZZ0055	TBM 48 T									
735	AU0665	PBM DEPOT BOLT							-136.5	11.2	12.1
736	AU0110	PBM DEPOT CAP							-129.1	11.2	11.5
737	AU0667	41 B NOSWB							-67.6	11.2	6.0
738	AU0671	215/1 BOLT MRC							-64.4	11.2	5.7
739	AU2007	215/1 CAP MRC							-62.8	11.2	5.6
740	AU0673	B 93							-68.6	11.2	6.1
741	ATO284	FOLSE							-43.2	11.2	3.9
742	ATO285	G 152							-153.8	11.2	13.8
743	ATO286	D 3157 LAGS							-54.8	11.2	4.9
744	ATO287	CHALMETTE RM 2							-59.5	11.2	5.3
745	ATO288	D 3155 LAGS							-42.0	11.2	3.8
746	ATO289	CHALMETTE RM 1							-75.9	11.3	6.7
747	ATO290	D 3156 LAGS							-68.8	11.1	6.2
748	ATO295	E 3124 LAGS							-68.6	11.1	6.2
749	ZZ0056	TBM 54 T									
750	ATO299	77 LAGS							-31.6	11.1	2.9
751	ATO292	E 3128 LAGS							-32.4	11.2	2.9
752	ATO300	216/1 BOLT MRC							-34.3	11.2	3.1
753	ATO293	216/1 CAP MRC							-35.2	11.2	3.1
754	ATO303	B 151							-41.4	11.3	3.7
755	ATO308	217/1 MRC=DUCROS									
756	ATO316	SB 33 USGS									
757	ATO317	C 151									
758	ATO326	218/1 BOLT MRC							-17.4	12.2	1.4
759	ATO325	218/1 CAP MRC							-1.3	12.4	0.1
760	ATO329	86 LAGS							7.2	12.4	0.6
761	ATO331	E 3190 LAGS RESET 1958							-7.3	12.4	0.6
762	ATO334	F 151							15.5	12.7	1.2
763	ATO335	G 151									
764	ATO337	SB 26 USGS							-22.6	12.8	1.8

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
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765	ATO345	PBM 219/2 CAP MRC									
766	ATO348	TTS 202 USGS									
767	ATO350	J 151 USE							-42.8	13.3	3.2
768	ATO352	K 151 USE							-169.4	13.5	12.6
769	ATO354	PBM 220/2 BOLT MRC							-27.2	13.6	2.0
770	ATO358	3143 R LAGS							-20.4	13.8	1.5
771	ATO361	3144 R LAGS							-40.1	14.0	2.9
772	ATO363	L 151 USE							-16.8	14.2	1.2
773	ATO368	M 151 USE							-106.5	14.3	7.4
774	ATO369	TT 16 L USGS							-15.7	14.5	1.1
775	AU1992	N 151 USE							-31.2	14.6	2.1
776	AU1144	E 194							-115.0	14.7	7.8
777	AU1145	3150 R LAGS									
778	AU1147	PBM 222/2 BOLT MRC							-65.6	14.9	4.4
779	AU1149	P 151 USE							-76.2	14.9	5.1
780	AU1155	223 2 MRC=BERTHOUD							-200.8	15.1	13.3
781	AU1990	R 151 USE							-28.8	15.4	1.9
782	ATO375	T 151							-99.7	15.6	6.4
783	ATO377	3162 LAGS							-130.6	15.8	8.3
784	ATO385	V 151 USE							-144.6	15.8	9.1
785	ATO386	W 151 USE							-152.2	16.1	9.5
786	ATO390	PBM 28 BOLT MRC							-111.7	16.2	6.9
787	ATO389	PBM 28 CAP MRC							-20.0	16.3	1.2
788	ATO392	3168 LAGS							-19.8	16.3	1.2
789	ATO393	3170 LAGS							-120.8	16.3	7.4
790	ATO394	M 194							-82.5	16.4	5.0
791	ATO396	N 194									
792	ATO399	S 194									
793	ATO400	Y 151 USE							-106.2	16.9	6.3
794	ATO403	PBM 27 BOLT MRC							-40.9	17.0	2.4
795	ATO402	PBM 27 CAP MRC							-40.6	17.0	2.4
796	ATO405	PL 11 USGS									
797	ATO406	Z 151							-47.5	17.1	2.8
798	ATO409	B 152 USE							-35.4	17.3	2.0
799	ATO410	C 152 USE							-52.9	17.5	3.0
800	ATO414	PBM 228/2 BOLT MRC							-35.7	17.6	2.0
801	ATO413	PBM 228/2 CAP MRC							-29.8	17.6	1.7
802	ATO420	T 194									
803	ATO425	D 152 USE							-93.0	17.9	5.2
804	ATO423	B 91							-20.6	17.9	1.1
805	ATO426	Z 194									
806	ATO431	U 194									
807	AU0764	D 188									
808	AU0765	NEW ORLEANS WB 2 RM 4									
809	AU0766	NEW ORLEANS WB 2									
810	AU0767	NEW ORLEANS NB 2 RM 3									
811	AU0768	Y 146							-8.2	12.0	0.7
812	AU0769	X 146							4.9	12.1	0.4
813	AU0771	J 150							18.2	12.2	1.5
814	AU0772	W 146							-84.2	12.2	6.9
815	AU0777	L 148 RESET 1960									

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
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816	ZZ0058	TBM 21 B									
817	BJ1296	E 188									
818	BJ1297	M 148									
819	BJ1298	F 188						-254.0	12.0	21.1	
820	BJ1300	N 148						24.2	12.1	2.0	
821	BJ1301	LEVEE 2									
822	BJ1302	LEVEE 2 RM 4									
823	BJ1303	LEVEE 2 RM 3									
824	BJ1304	H 150						40.4	12.2	3.3	
825	BJ1306	G 150 RESET 1960									
826	BJ1307	PBM 428+00 USE									
827	BJ1309	F 150 RESET 1960									
828	BJ1311	G 188									
829	BJ1312	PBM 533+00 USE									
830	BJ1313	PBM 548+7612 USE									
831	BJ1316	Q 148 RESET 1960									
832	BJ1319	A USE									
833	BJ1320	623+00 USE									
834	BJ1322	B USE									
835	BJ1323	684+00 USE									
836	BJ1325	S 148 RESET 1960									
837	BJ1327	INDIAN RM 4									
838	BJ1328	INDIAN									
839	BJ1329	INDIAN RM 5									
840	BJ1332	C USE									
841	BJ1335	N GATE						-178.8	11.4	15.7	
842	BJ1338	N GATE RM						-166.9	11.4	14.6	
843	BJ1341	Z 153						-136.6	11.4	12.0	
844	BJ1343	V 148						-31.7	11.5	2.8	
845	BJ1348	Z 188									
846	ZZ0059	TBM 24 T									
847	BJ1356	Q 153						-62.3	11.2	5.6	
848	BJ1364	D 3134 LAGS						-42.2	11.1	3.8	
849	BJ1371	BM						-69.5	11.1	6.3	
850	BJ1373	A 3118 LAGS						-90.4	11.1	8.1	
851	BJ1380	201 LAGS						-98.4	11.0	9.0	
852	ZZ0060	TBM 23 T									
853	ZZ0061	TBM 26 T									
854	BJ1387	N 193									
855	BJ1391	PBM AB RESET 1963									
856	BH1173	J 153						-37.1	11.1	3.4	
857	BH1174	G 153						-17.6	11.1	1.6	
858	BH1175	F 153						-21.9	11.1	2.0	
859	BH1176	E 153						-8.2	11.0	0.7	
860	BH1177	PONTCHARTRAIN						16.2	10.9	1.5	
861	BH1184	M 193									
862	BH1186	H 193									
863	BH1188	L 193									
864	BH1081	235 R LAGS						-20.5	10.1	2.0	
865	ZZ0062	TBM 6 T									
866	BH1191	236 LAGS						-24.5	10.2	2.4	

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867	ATO469	H 189									
868	ATO470	239 LAGS									
869	ATO473	F 3123 LAGS						-65.0	10.6	6.1	
870	ATO477	K 152						-176.0	10.7	16.5	
871	ATO479	J 193						-51.3	10.9	4.7	
872	ATO480	K 193									
873	ATO481	G 189									
874	AUO779	S 147						13.3	11.8	1.1	
875	AUO781	N 188									
876	AUO782	B 147						-41.8	11.9	3.5	
877	AUO785	R 147						7.1	11.7	0.6	
878	AUO787	C 147						2.6	11.7	0.2	
879	ZZO063	TBM 31 B									
880	AUO448	Y 188									
881	AUO802	T 147						-23.4	11.5	2.0	
882	AUO804	277 LAGS						-48.6	11.3	4.3	
883	AUO805	44 B NOSWB						-22.7	11.4	2.0	
884	AUO438	276 LAGS						-50.8	11.5	4.4	
885	ZZO064	TBM 22 T									
886	ZZO065	TBM 21 T									
887	AUO812	X 147						-51.1	11.2	4.6	
888	ZZO066	TBM 20 T									
889	AUO432	D 3118 LAGS						-35.8	11.1	3.2	
890	AUO815	D 3119 LAGS RESET 1952									
891	ZZO067	TBM 16 T									
892	ZZO068	TBM 15 T									
893	BJ1452	A 157									
894	BJ1196	225/1 LAGS						6.4	10.9	0.6	
895	BH1070	C 157									
896	BH1075	234 R LAGS						-24.4	10.3	2.4	
897	BH1079	PBM KURTZ BOLT USE						-18.1	10.3	1.8	
898	BH1077	PBM KURTZ CAP USE						-16.3	10.3	1.6	
899	BH1097	D 3136 LAGS						11.0	9.3	1.2	
900	BH1100	PBM MICHEAUD BOLT USE						1.5	9.4	0.2	
901	BH1103	A 3137 LAGS						16.0	9.0	1.8	
902	BH1116	E 157									
903	AUO816	L 147						-16.8	11.5	1.5	
904	AUO817	K 147						-22.5	11.5	2.0	
905	ZZO069	TBM 50 B									
906	AUO820	211 A BOLT MRC						-62.7	11.4	5.5	
907	AUO819	211 A CAP MRC						-61.3	11.4	5.4	
908	AUO822	D 156									
909	AUO827	A 3185 LAGS						-71.3	11.4	6.2	
910	AUO829	A 3184 LAGS						-88.5	11.4	7.7	
911	AUO831	N 147						-21.8	11.4	1.9	
912	AUO832	A 3183 LAGS						-58.5	11.4	5.1	
913	AUO834	PURIFICATION						-39.3	11.4	3.4	
914	AUO835	16 B NOSWB						-18.9	11.5	1.7	
915	AUO838	J 96						-222.3	11.3	19.6	
916	ZZO070	TBM 42 B									
917	AUO839	A 3180 LAGS						-46.6	11.3	4.1	

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918	AU0848	A 3174 LAGS RESET 1953									
919	AU0876	22 A NOSWB						-23.8	11.2	2.1	
920	AU0877	B 3181 LAGS						-66.6	11.2	5.9	
921	AU0882	B 3183 LAGS						-25.6	11.2	2.3	
922	AU0883	B 3184 LAGS						-82.6	11.2	7.4	
923	AU0885	B 3185 LAGS						-128.3	11.2	11.5	
924	AU0887	A 150						-45.7	11.2	4.1	
925	AU0889	B 3186 LAGS						-108.0	11.1	9.7	
926	AU0894	A 93						-122.2	11.1	11.1	
927	AU0895	33 C NOSWB									
928	AU0898	B 3111 LAGS						-103.0	11.1	9.3	
929	AU0899	PBM PUMPHOUSE USE						-38.9	11.1	3.5	
930	AU0900	39 B NOSWB									
931	AU0904	5 NOSWB									
932	AU0906	A 189									
933	AU0907	B 3108 LAGS						-78.4	11.0	7.1	
934	BJ1410	L 153						-33.8	11.1	3.1	
935	BJ1411	CURVE						-224.1	11.1	20.3	
936	BJ1412	CURVE RM 1						-295.7	11.1	26.7	
937	AU0911	M 147						-34.3	11.5	3.0	
938	AU0913	A 3188 LAGS						-38.4	11.5	3.3	
939	AU0977	A 3154 LAGS						-18.9	11.5	1.6	
940	AU0984	MEDICAL BLDG						-20.8	11.5	1.8	
941	AU0990	Z 150						-5.7	11.4	0.5	
942	AU1033	54 A NOSWB						-29.5	11.3	2.6	
943	AU1037	J 189									
944	AU1038	C 148						-31.0	11.3	2.7	
945	AU1062	NEW ORLEANS LONGITUDE						-249.9	11.3	22.1	
946	AU1065	A 3104 LAGS						-157.6	11.3	13.9	
947	ZZ0071	TBM 41 B									
948	AU1001	W 153 RESET 1958									
949	AU1006	S 149						37.9	11.3	3.4	
950	AU1011	K 149						-15.0	11.2	1.3	
951	AU1013	H 149						-75.7	11.2	6.7	
952	ZZ0072	TBM 57 T									
953	BJ1424	C 3124 LAGS						-98.1	11.3	8.7	
954	BJ1426	C 3123 LAGS						-57.0	11.3	5.0	
955	BJ1427	C 3120 LAGS						-67.7	11.3	6.0	
956	AU1019	C 3118 LAGS						-136.2	11.2	12.1	
957	AU1025	H 156									
958	AU0441	U 153						-36.3	11.1	3.3	
959	AU0440	TEST						-44.3	11.1	4.0	
960	AU1032	TT 3 F USGS						-135.7	11.2	12.2	
961	BJ1422	SOUTH GATE RM 1						-26.0	11.3	2.3	
962	BJ1423	SOUTH GATE						-36.6	11.3	3.2	
963	BJ1415	58 B NOSWB									
964	BJ1417	D 3130 LAGS						-30.0	11.1	2.7	
965	BJ1198	T 152						-73.7	10.9	6.7	
966	BJ1385	NOPSI						-54.5	11.0	4.9	
967	BJ1386	X 109						-36.6	11.0	3.3	
968	BJ1401	AIRPORT RM						-41.1	11.0	3.7	

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969	AU1074	H 157									
970	AU1078	21 B NOSWB									
971	AU0915	D 190									
972	AU0916	C 190									
973	AU0917	B 190									
974	AU0918	A 190									
975	AU0920	W 193									
976	AU0922	V 193									
977	AU0923	P 157									
978	AU0924	U 193									
979	AU0927	62 NOSWB									
980	AU0928	M 149						-112.6	11.7	9.6	
981	AU0929	L 157									
982	AU0930	M 157									
983	AU0931	85 LLD USE						-150.0	11.7	12.8	
984	AU0933	84 LLD USE						-79.0	11.8	6.7	
985	AU0934	GRETNA 2						-44.5	12.0	3.7	
986	AU0935	GRETNA						-62.4	12.0	5.2	
987	AU0936	48 JF USGS									
988	AU0937	83 LLD USE						-106.5	11.8	9.0	
989	AU0941	T 157									
990	AU0942	R 190									
991	AU0944	WTPS RESET 1960									
992	ZZ1024	TBM 76 B									
993	AU0945	X 193									
994	AU0946	Y 193									
995	AU0947	H 190									
996	AU0949	WESSON						-60.5	11.8	5.1	
997	AU0952	SHEAR						-36.0	11.9	3.0	
998	AU0953	1602 LAGS									
999	AU0955	213 C BOLT MRC									
1000	AU0954	213 C CAP MRC									
1001	AU0957	1609 LAGS						-120.2	11.9	10.1	
1002	AU0958	35 JF USGS									
1003	AU0959	G 190									
1004	AU0960	M 190									
1005	AU0963	HARVEY RM 2						-81.7	11.9	6.9	
1006	AU0964	HARVEY RM 3									
1007	AU0965	1601 LAGS						-68.1	11.9	5.7	
1008	AU0967	P 149						-49.5	11.9	4.2	
1009	AU0968	SOLVENT						-47.3	11.9	4.0	
1010	AU0969	N 149						-54.2	11.9	4.6	
1011	AU0970	4138+73.0 USE						-123.9	11.8	10.5	
1012	AU0682	U 157									
1013	AU0683	42 JF USGS									
1014	AU0684	J 190									
1015	AU0687	N 190									
1016	AU0688	1667 LAGS									
1017	AU0690	S 190									
1018	AU0694	O 190									
1019	AU0695	K 190									

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1020	AU0697	V 157									
1021	AU0698	W 157									
1022	AU0699	44 JF USGS									
1023	AU0700	45 JF USGS									
1024	AU0701	X 157									
1025	AU0703	Y 157									
1026	AU0704	Z 157									
1027	AU0706	A 158									
1028	AU0708	212/4 BOLT MRC									
1029	AU0707	212/4 CAP MRC									
1030	AU0710	L 190									
1031	AU0711	V 190									
1032	AU0712	B 158									
1033	AU0713	33 JF USGS									
1034	AU0714	WEST WEGO 2									
1035	AU0715	WEST WEGO 2 RM 4									
1036	AU0716	WEST WEGO 2 RM 3									
1037	AU0717	C 158									
1038	AU0718	X 191									
1039	AU0720	D 158									
1040	AU0721	E 158									
1041	AU0722	6 JF USGS									
1042	AU0725	2 G USGS									
1043	AU0726	F 158									
1044	AU0727	G 158									
1045	AU0728	H 158									
1046	AU0729	W 190									
1047	AU0730	J 158									
1048	AU0731	K 158									
1049	AU0733	B 192									
1050	AU0734	L 158									
1051	AU0757	1620 LAGS									
1052	AU0756	B 10						-33.8	12.7	2.7	
1053	AU0387	86 JF USGS						-6.7	12.7	0.5	
1054	AU0354	A 156									
1055	AU0758	69 LLD USE									
1056	AU0759	WILLSWOOD AZ RESET 1953						-14.0	12.8	1.1	
1057	AU0760	209 C USE RESET									
1058	AU0761	68 LLD USE						67.7	12.9	5.2	
1059	AU1068	W 156						-3.4	13.1	0.3	
1060	AU1069	PILE									
1061	AU1925	T 193									
1062	BJ1434	S 193									
1063	BJ1435	R 193									
1064	BJ1436	Q 193									
1065	BJ1437	Y 189									
1066	BJ1440	W 189									
1067	BJ1442	V 189									
1068	BJ1444	U 189									
1069	BH1166	HUEY LHC									
1070	BH1149	E 3163 LAGS						-0.2	0.6	0.4	
								-74.3	4.1	18.2	

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1071	BH1143	E 3158 LAGS							-58.8	5.3	11.1
1072	BH1140	C 92							-70.6	5.9	12.1
1073	BH1139	F 157							-51.5	6.1	8.5
1074	AU0515	PBM GENELLA USE									
1075	AU0517	J 146									
1076	AU0522	Z 146									
1077	AU0528	TTS 6 F USGS									
1078	AU0529	L 146									
1079	ZZ1030	TBM 24 M									
1080	AU0533	44 LAGS									
1081	AU0535	43 LAGS									
1082	AU0541	12.71 USGS									
1083	AU0543	TTS 5 F USGS									
1084	AU0544	F 93									
1085	AU0445	Q 146									
1086	AU0545	R 146									
1087	AU0551	PBM CURB USE									
1088	AU0587	R 150									
1089	AU0591	TIDAL 1									
1090	AU0594	TIDAL 3									
1091	AU0596	B 3190 LAGS									
1092	AU0606	P 150									
1093	AU0614	390+67.44 USE									
1094	AU0622	B 3155 LAGS									
1095	AU0624	Y 148									
1096	AU0620	BM CANAL STREET NODLB									
1097	AU0625	B 3156 LAGS									
1098	AU0626	K 150									
1099	AU0634	B 3158 LAGS									
1100	AU0643	B 3159 LAGS									
1101	AU0891	215 M LAGS									
1102	AU0657	M 150									
1103	AU1949	PBM GENERAL BOLT USE									
1104	AU0669	L 152									
1105	ATO291	E 3123 LAGS									
1106	ATO296	N 152									
1107	ATO298	E 3127 LAGS									
1108	ATO305	E 3132 LAGS									
1109	ATO307	E 3134 LAGS									
1110	ATO310	E 3142 LAGS									
1111	ATO312	E 3137 LAGS									
1112	ATO313	84 LAGS									
1113	ATO315	E 3140 LAGS									
1114	ATO318	VIOLET									
1115	ATO319	VIOLET RM 1									
1116	ATO320	E 3188 LAGS									
1117	ATO321	VIOLET RM 2									
1118	ATO330	E 3190 LAGS									
1119	ATO338	F 3138 LAGS									
1120	ATO341	F 3340 LAGS									
1121	ATO343	H 151									

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1122	ATO353	PBM 220/2 CAP MRC									
1123	ATO366	STELLA TILE MRC									
1124	ATO365	STELLA CAP MRC									
1125	ATO395	X 151 USE									
1126	ATO397	3174 LAGS									
1127	ATO417	BM 228/1 BOLT MRC									
1128	ATO416	BM 228/1 CAP MRC									
1129	ATO421	C 91									
1130	ATO427	D 91									
1131	ATO430	F 91									
1132	ATO433	PBM 23 BOLT MRC									
1133	ATO432	PBM 23 CAP MRC									
1134	AUO386	1621 LAGS									
1135	AUO350	WILLSWOOD									
1136	AUO755	WILLSWOOD RM 1									
1137	AUO762	67 LLD USE									
1138	AUO763	29 LAGS									
1139	AUO770	A 1693 LAGS									
1140	AUO776	L 148									
1141	BJ1305	G 150									
1142	BJ1308	F 150									
1143	BJ1314	P 148									
1144	BJ1315	Q 148									
1145	BJ1321	R 148									
1146	BJ1324	S 148									
1147	BJ1326	T 148 USE									
1148	BJ1330	U 148									
1149	BJ1331	11 LAGS									
1150	BJ1340	TIDAL 3									
1151	BJ1367	C 110									
1152	BJ1368	MILNEBURG RM 2									
1153	BJ1372	MILNEBURG RM 1									
1154	ZZ1031	TBM 59 L									
1155	BH1183	D 153									
1156	BH1185	C 153									
1157	BH1187	B 153									
1158	BH1190	D 3137 LAGS									
1159	ATO475	U 152									
1160	ATO476	V 152									
1161	AUO780	A 147									
1162	AUO784	G 10 RESET									
1163	AUO789	36 LAGS									
1164	AUO795	1 LAGS									
1165	AUO801	V 147									
1166	AUO807	6 LAGS									
1167	AUO808	278 LAGS									
1168	AUO810	281 LAGS									
1169	AUO811	C 3117 LAGS									
1170	AUO814	D 3119 LAGS									
1171	AU1947	D 3122 LAGS									
1172	BJ3069	B 3125 LAGS									

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
1173	BJ1451	B 3128 LAGS									
1174	BJ3070	B 3129 LAGS									
1175	BJ1450	225 LAGS									
1176	BJ1448	A 3128 LAGS									
1177	BH1064	A 3129 LAGS									
1178	BH1066	227 LAGS									
1179	BH1068	E 3118 LAGS									
1180	BH1069	229 LAGS									
1181	BH1072	230 LAGS									
1182	BH1074	232 R LAGS									
1183	BH1082	6 A LAGS									
1184	BH1085	5 A LAGS									
1185	BH1086	A 3132 LAGS									
1186	BH1098	PBM MICHEAUD CAP USE									
1187	BH1105	100 LAGS									
1188	BH1111	93 LAGS									
1189	BH1112	A 3143 LAGS									
1190	BH1114	A 3144 LAGS									
1191	BH1115	A 3145 LAGS									
1192	BH1118	A 3146 LAGS									
1193	BH1120	A 3148 LAGS									
1194	BH1122	A 3149 LAGS									
1195	BH1124	A 3150 LAGS									
1196	AU0836	A 3182 LAGS									
1197	AU0837	A 3181 LAGS									
1198	AU0841	A 3177 LAGS									
1199	AU0843	A 3176 LAGS									
1200	AU0847	A 3174 LAGS									
1201	AU0852	B 3166 LAGS									
1202	AU0853	B 3167 LAGS									
1203	AU0854	B 3168 LAGS									
1204	AU0855	B 3169 LAGS									
1205	AU0856	B 3170 LAGS									
1206	AU0859	B 3171 LAGS									
1207	AU0860	B 3172 LAGS									
1208	AU0861	B 3173 LAGS									
1209	AU0862	B 3174 LAGS									
1210	AU0863	B 3175 LAGS									
1211	AU0865	B 3176 LAGS									
1212	AU0866	B 3177 LAGS									
1213	ZZ1032	TBM 12 J									
1214	AU0875	B 3179 LAGS									
1215	ZZ1033	TBM 13 J									
1216	AU0881	B 3182 LAGS									
1217	AU0892	215 LAGS									
1218	AU0897	B 3112 LAGS									
1219	BJ1404	55 A NOSWB									
1220	BJ3066	Z 109									
1221	AU0972	3140 X LAGS									
1222	AU0973	3140 LAGS									
1223	AU0986	TULANE 1951									

BM #	ACRN	DESIGNATION	1985.0 - 1964.0			1985.0 - 1951.0			1964.0 - 1951.0		
			HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO	HEIGHT DIFFERENCE (MM)	STANDARD ERROR (MM)	RATIO
1224	AU0991	A 3172 LAGS									
1225	AU0992	A 3173 LAGS									
1226	BJ1430	W 148									
1227	AU1034	25 E NOSWB									
1228	AU1035	L 10									
1229	AU1039	G 96									
1230	AU1041	D 3195 LAGS									
1231	AU1043	D 3194 LAGS									
1232	ZZ1034	TBM 10 J									
1233	ZZ1035	TBM 9 J									
1234	AU1060	K 148									
1235	AU1000	W 153									
1236	ZZ1036	TBM 14 J									
1237	AU1020	CITY PARK									
1238	AU1027	34 B NOSWB									
1239	AU1030	B 3114 LAGS									
1240	AU1031	B 3115 LAGS									
1241	AU1945	T 153									
1242	BJ3065	S 153									
1243	BJ1420	3101 LAGS									
1244	BJ1418	D 3131 LAGS									
1245	BJ1369	D 3132 LAGS									
1246	BJ1388	ADMIN BLDG LAGS									
1247	BJ1390	PBM CHIS SQ AB									
1248	BJ1392	Y 152									
1249	BJ1396	D 3182 A LAGS									
1250	BJ1397	D 3184 A LAGS									
1251	BJ1398	D 3185 A LAGS									
1252	BJ1399	D 3186 A LAGS									
1253	AU1075	Q 149									
1254	AU1076	R 149									
1255	AU0943	WTPS									
1256	AU0962	HARVEY									
1257	AU0966	E 147 USE									
1258	AU0971	228+23.38 USE									
1259	BH1156	TIDAL 3									
1260	BH1153	TIDAL 1									
1261	BH1154	H 92									
1262	BH1152	E 3166 LAGS									
1263	BH1151	G 157									
1264	BH1144	E 3159 LAGS									

APPENDIX B.--PLOTS OF ADJUSTED HEIGHT DIFFERENCES BETWEEN 1984-85 AND 1964,
1984-85 AND 1951-55, AND 1964 AND 1951-55, AND BENCH MARK
CODE NUMBERS

NOTE: 1985.0--denoted as 1984-85 network in text.
1951.0--denoted as 1951-55 network in text.

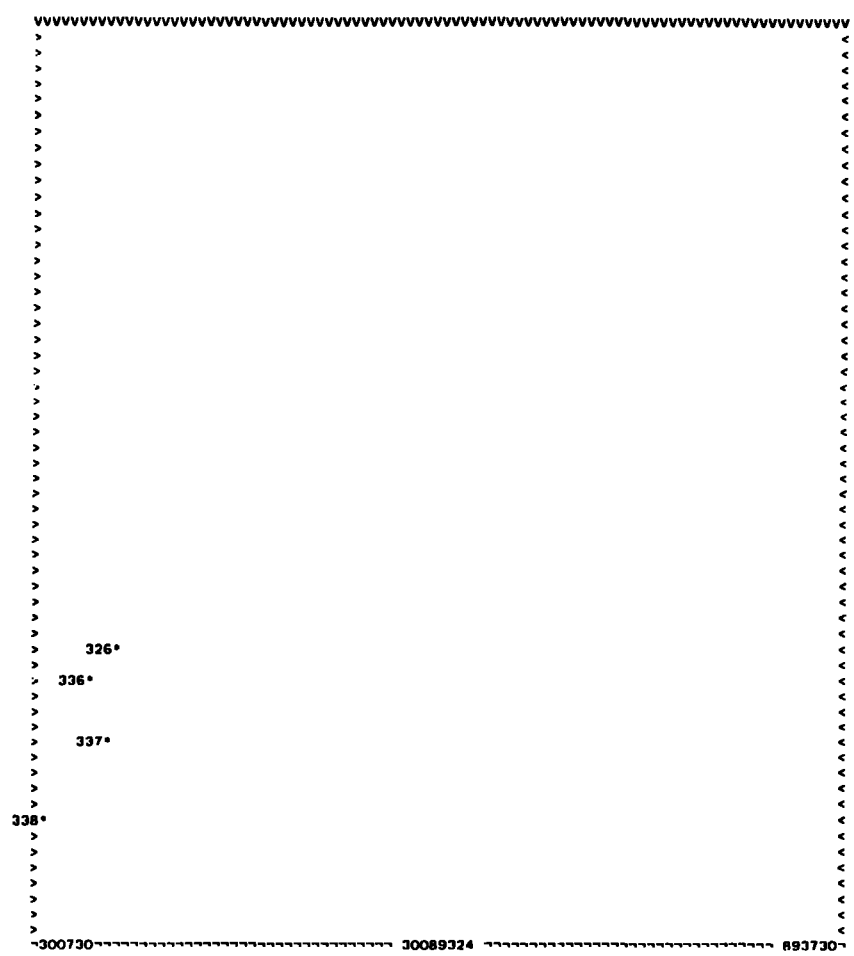
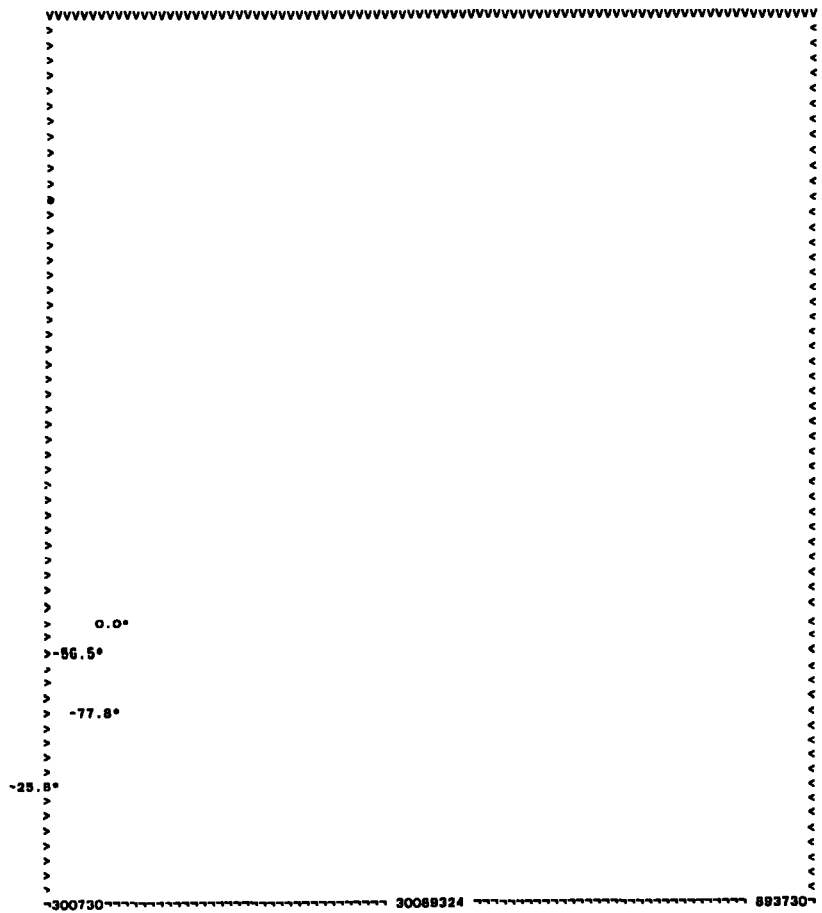
* NNN

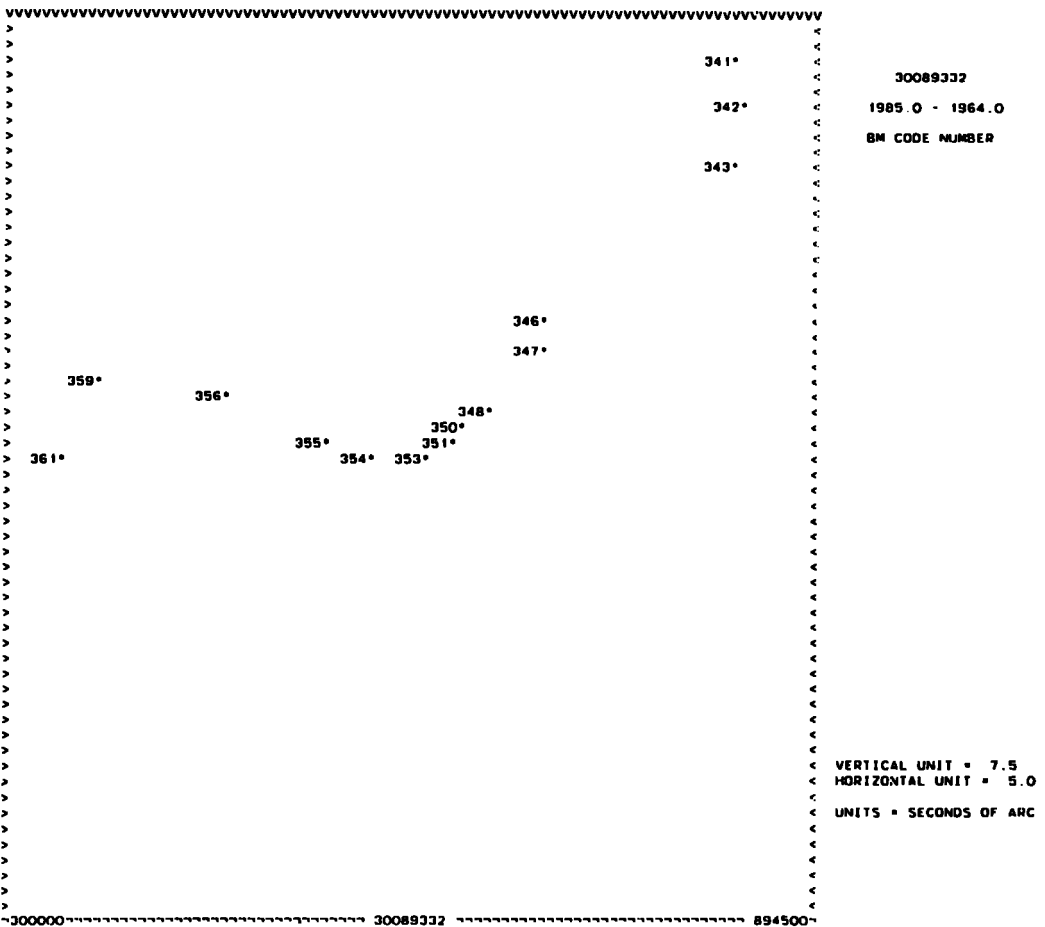
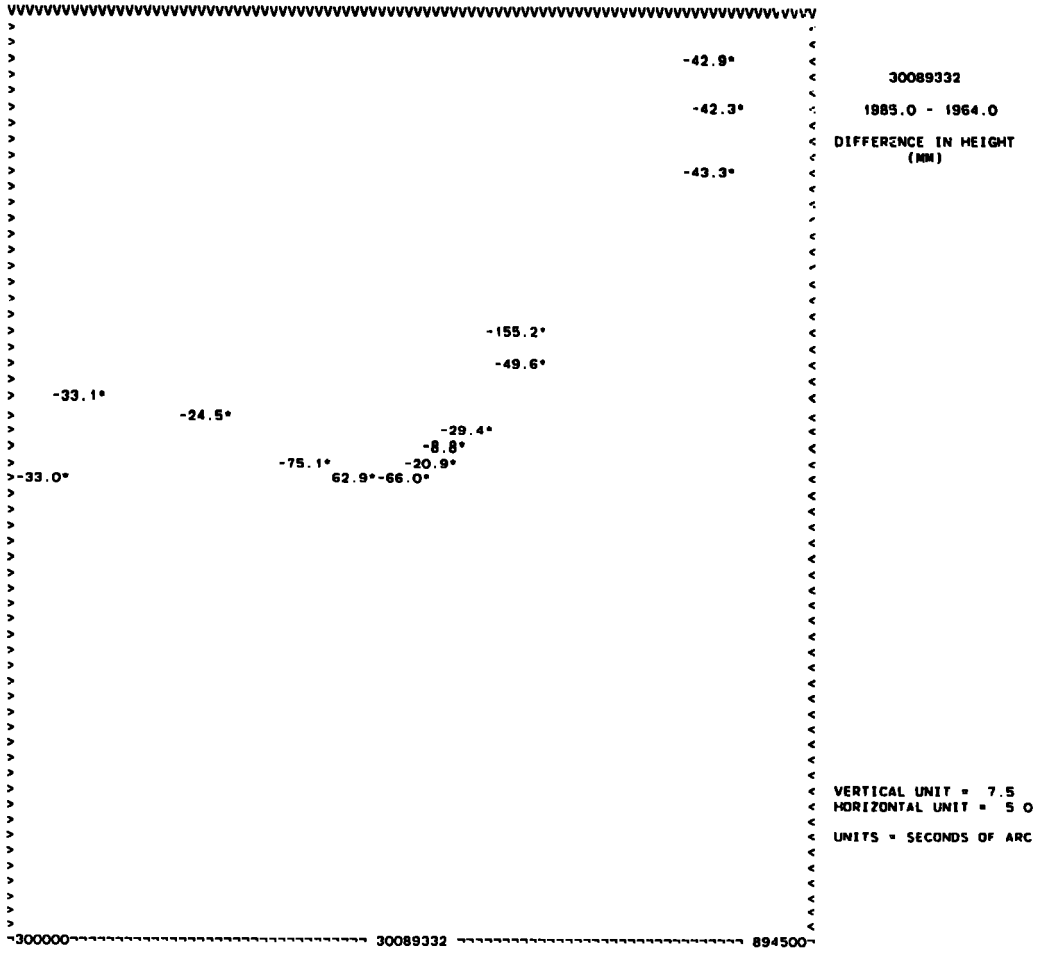
* - indicates bench mark location
NNN - bench mark code number.

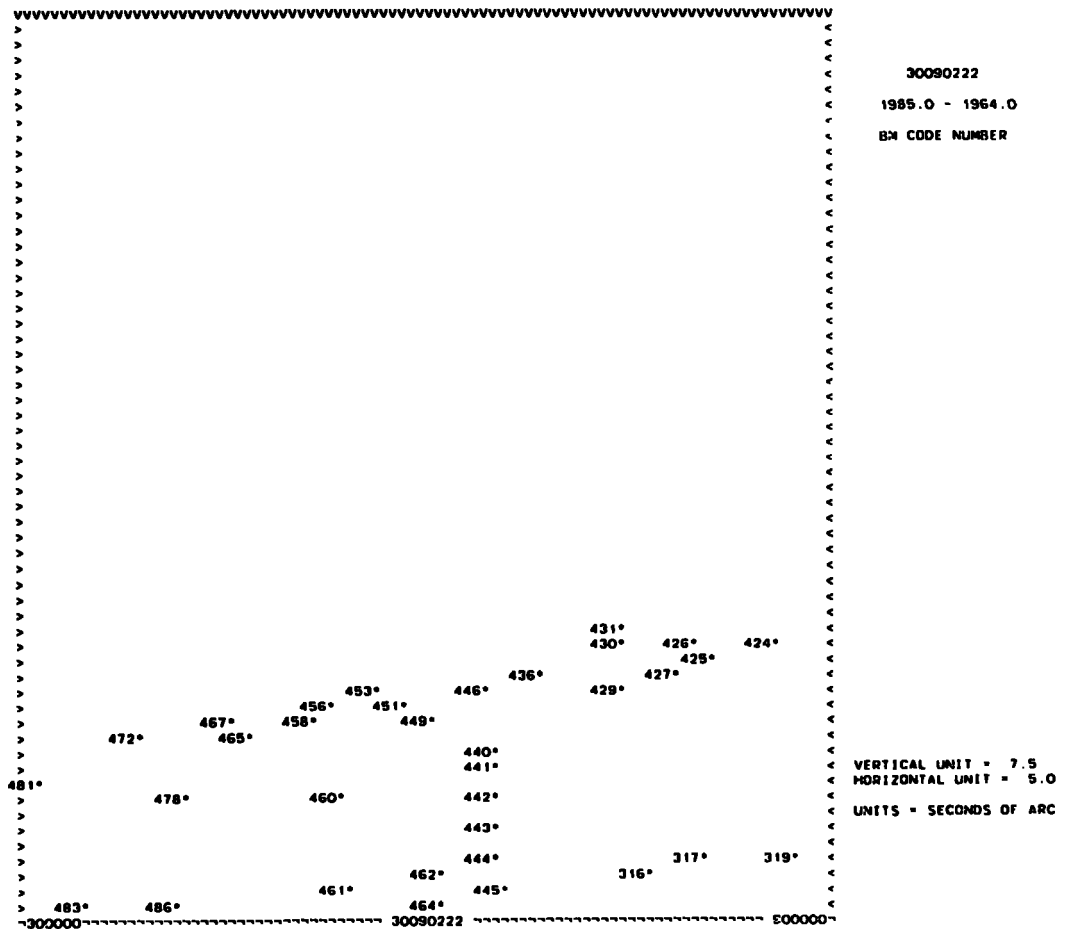
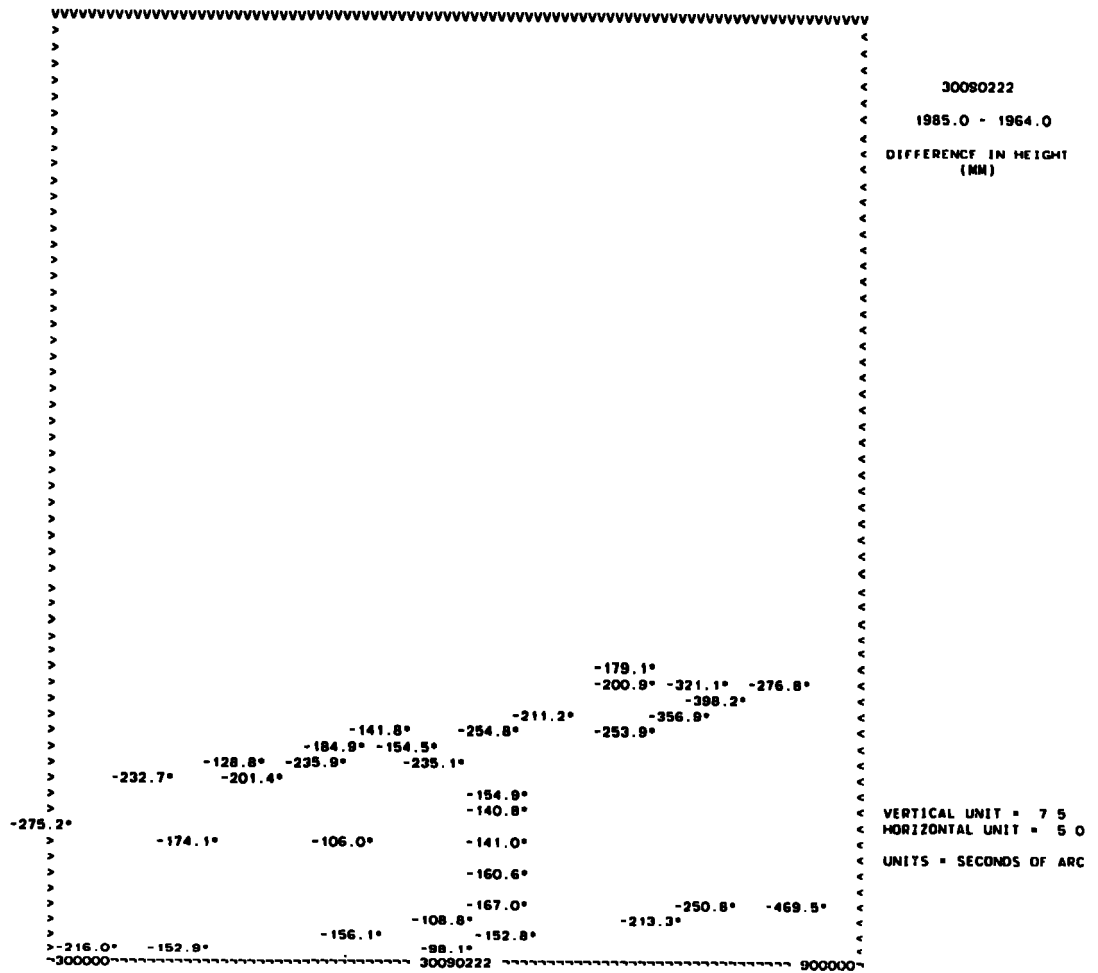
\$ NNN

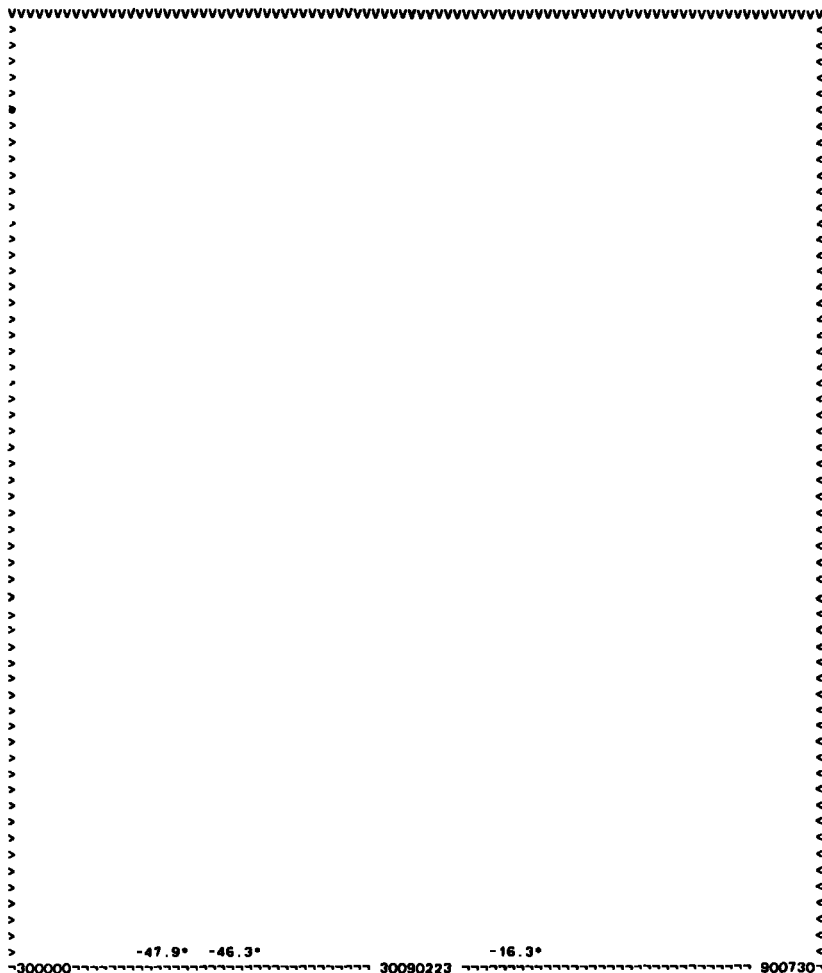
\$ - indicates bench mark was moved
arbitrarily to avoid plotting over
another bench mark.

NNN - bench mark code number.



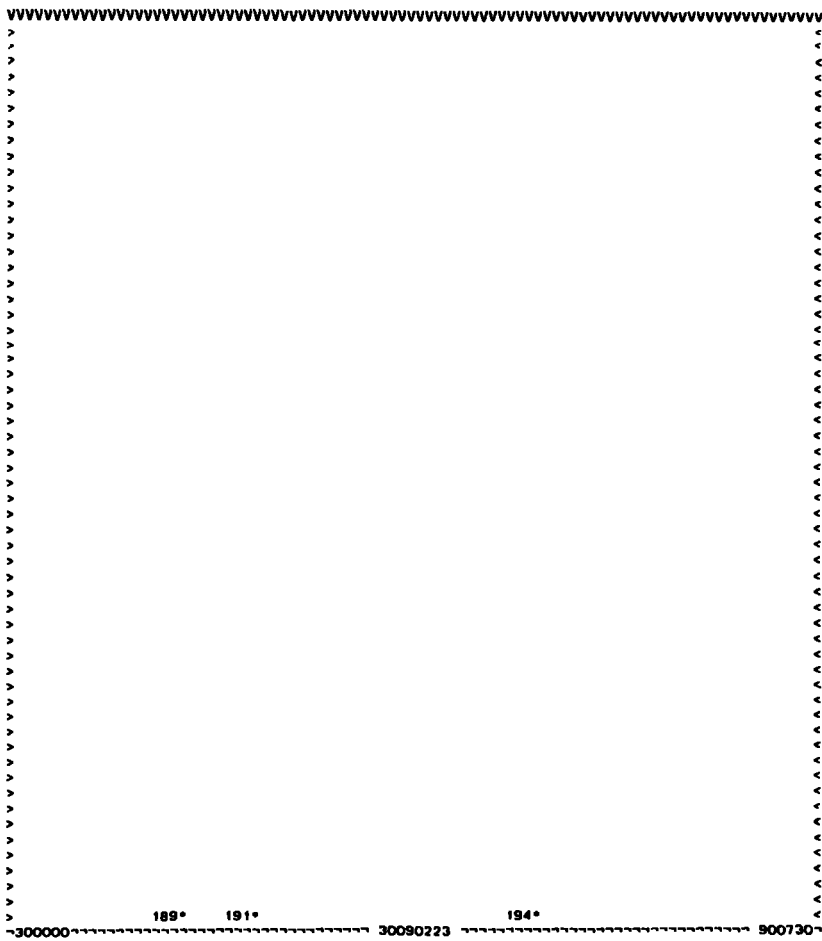






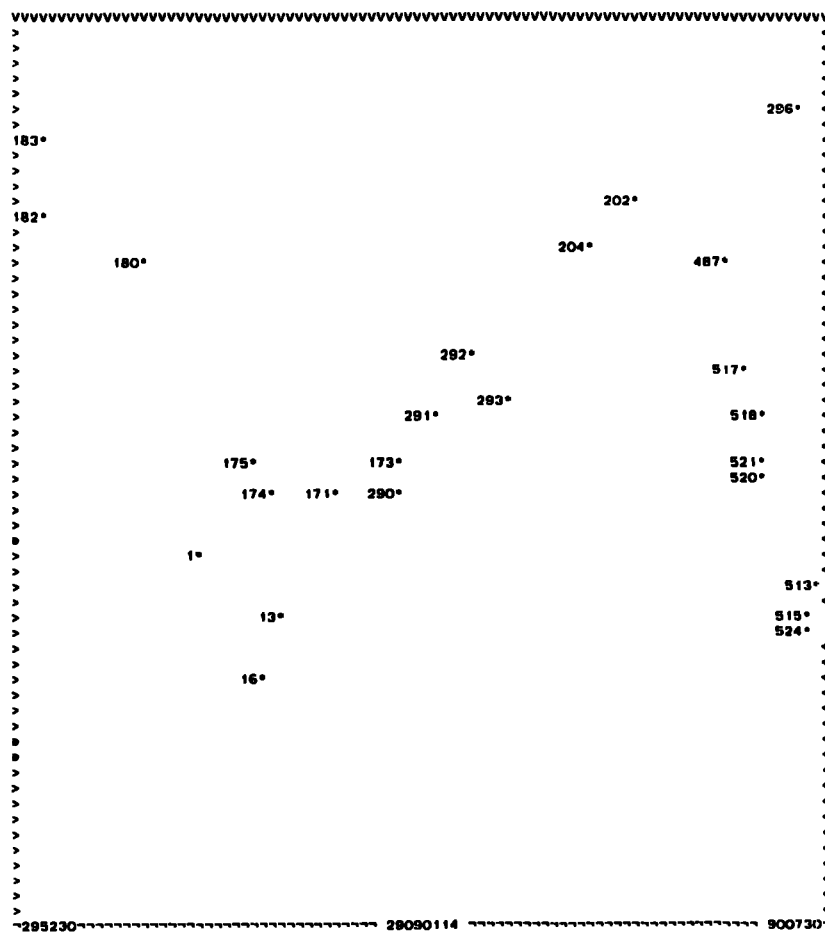
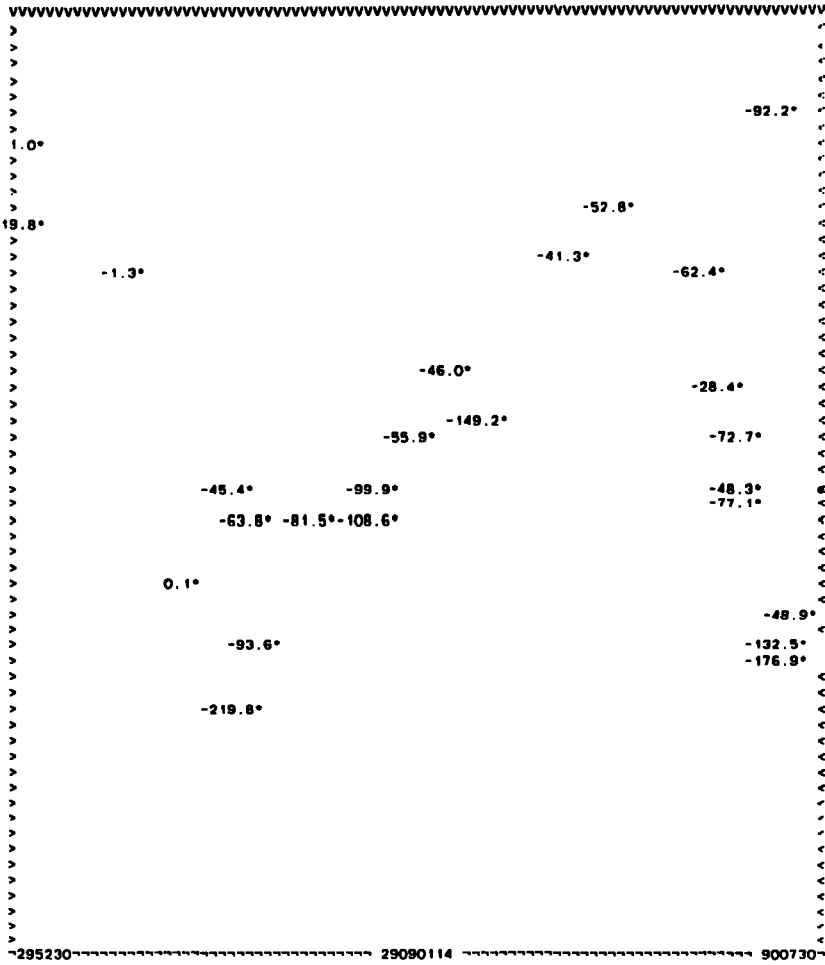
30090223
 1985.0 - 1964.0
 DIFFERENCE IN HEIGHT
 (MM)

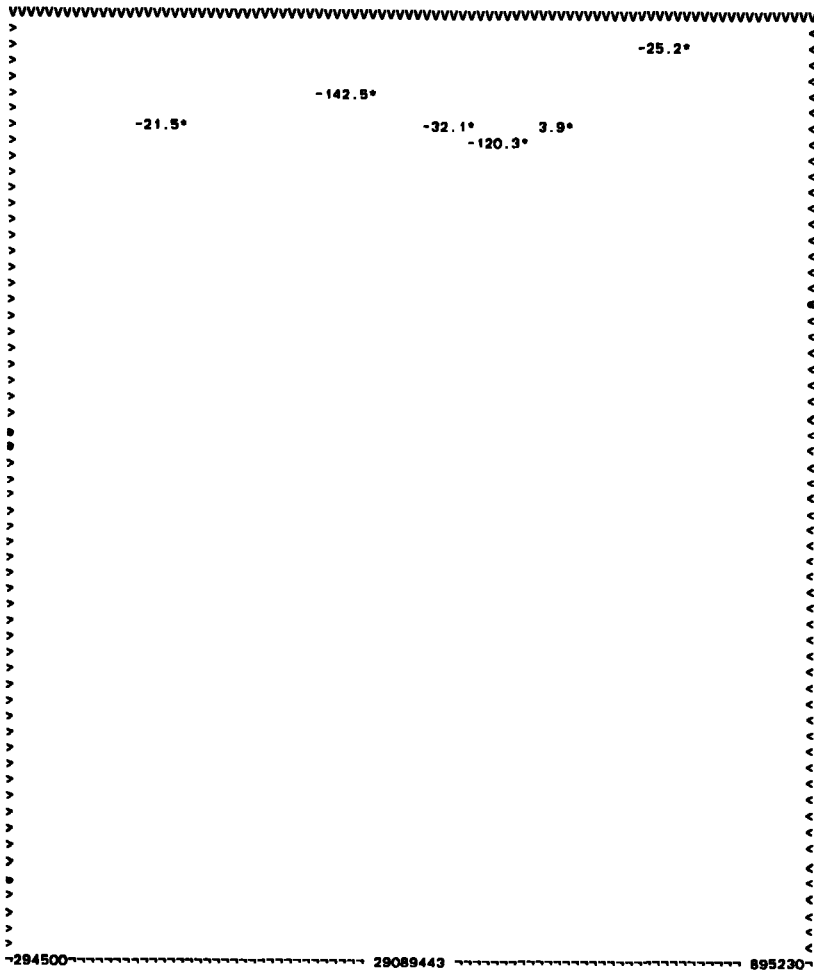
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 UNITS = SECONDS OF ARC



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 1985.0 - 1964.0
 BM CODE NUMBER

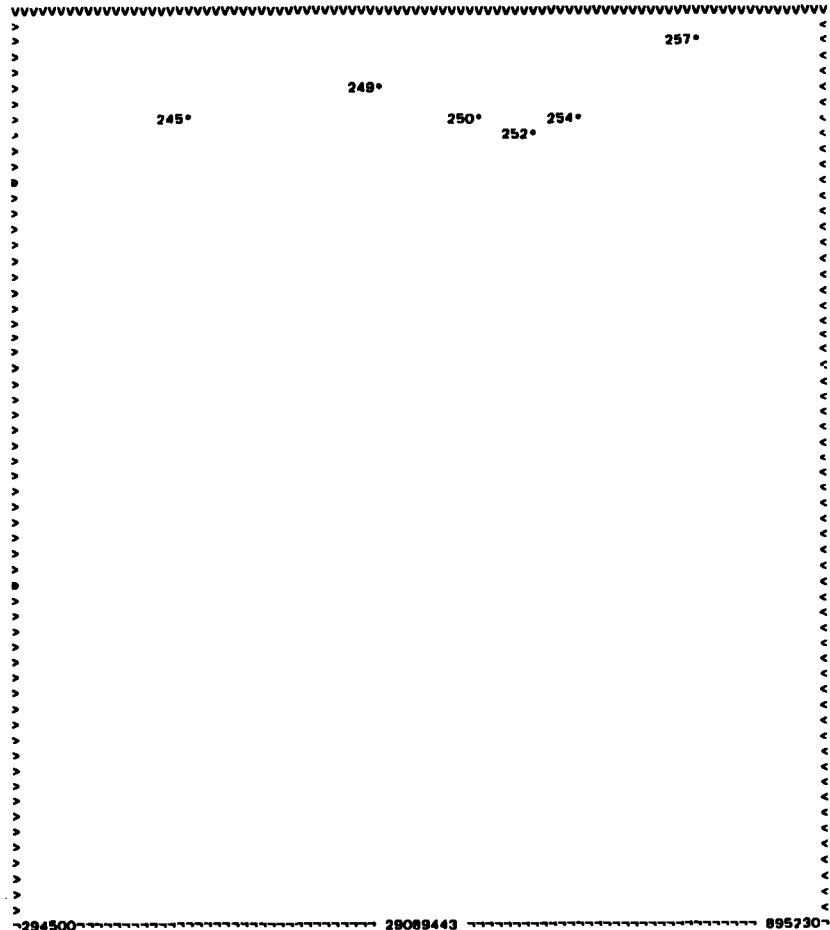
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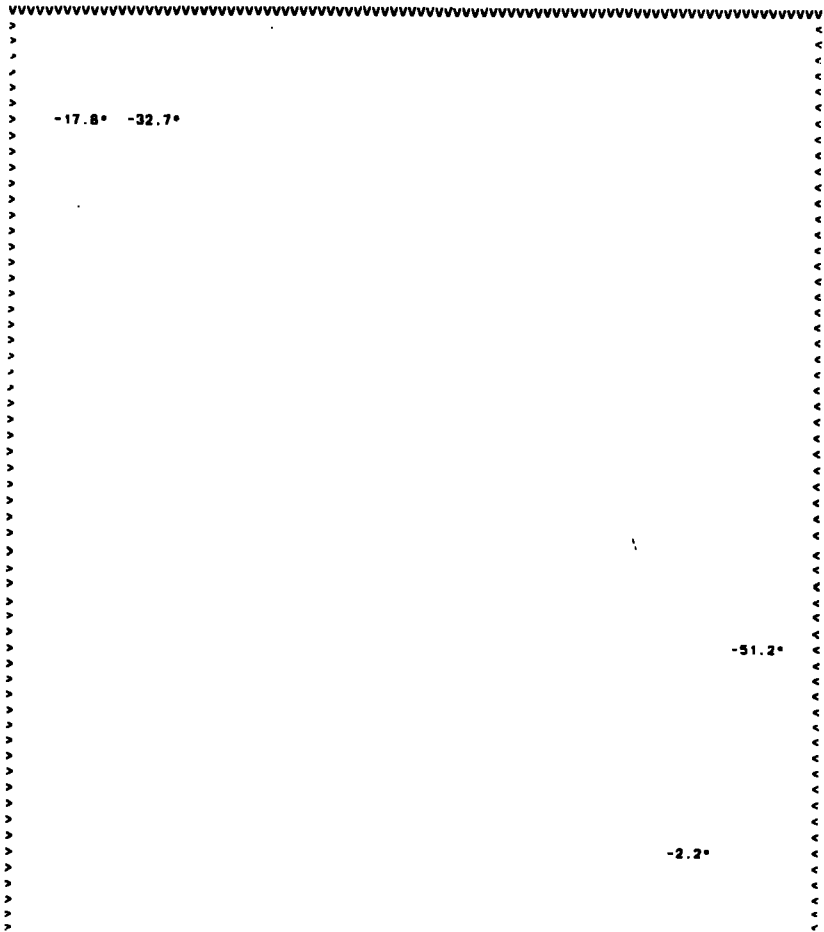
29089443
 1985.0 - 1964.0
 DIFFERENCE IN HEIGHT
 (MM)

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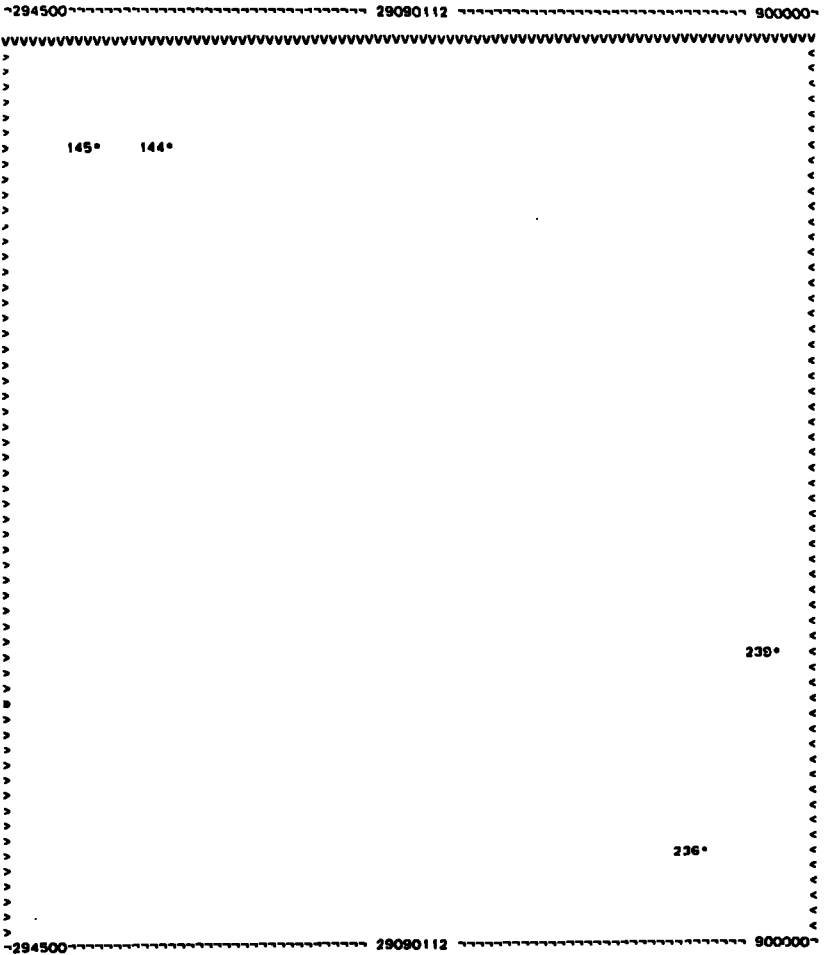
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 BM CODE NUMBER

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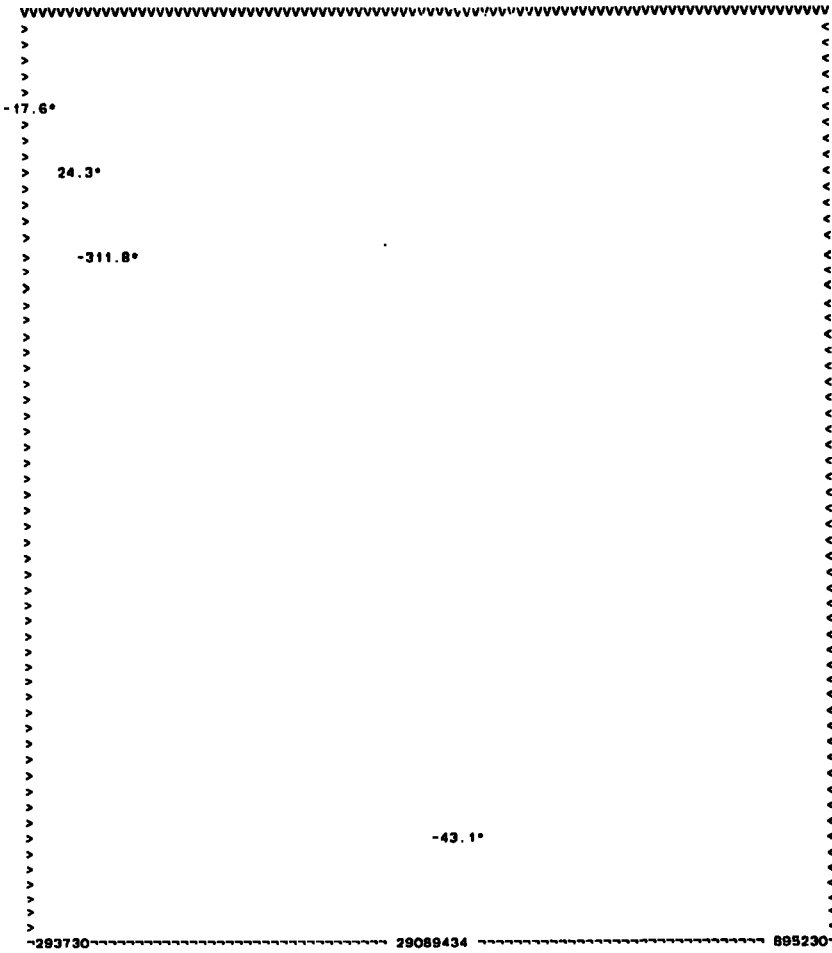
29090112
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 DIFFERENCE IN HEIGHT
 (MM)

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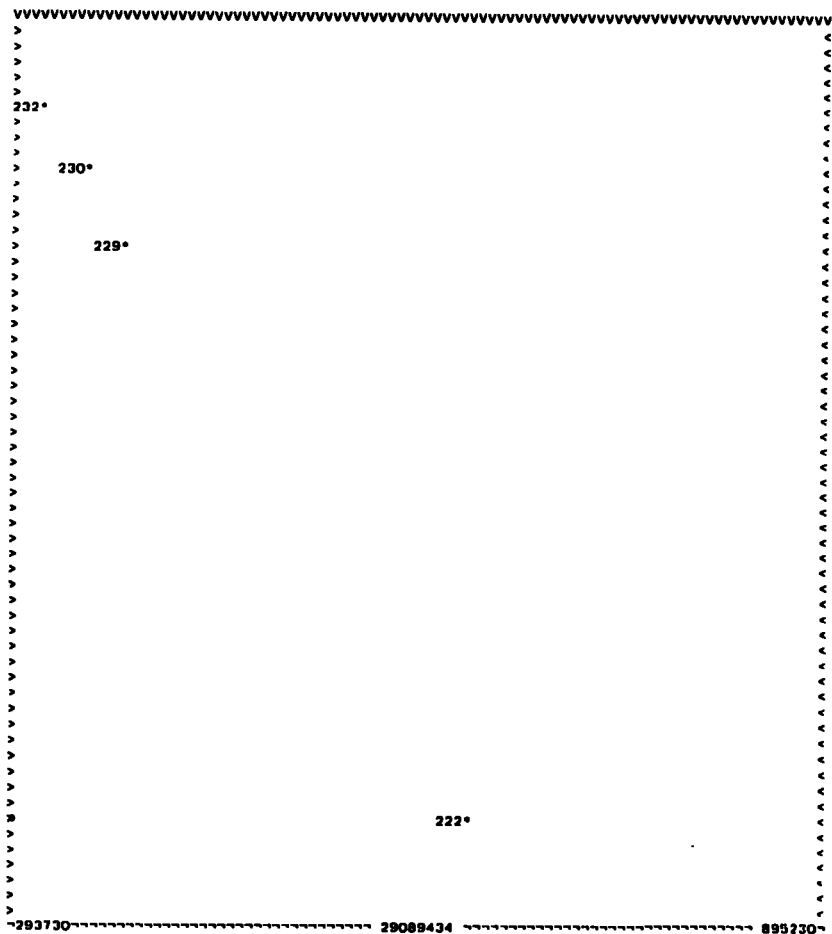
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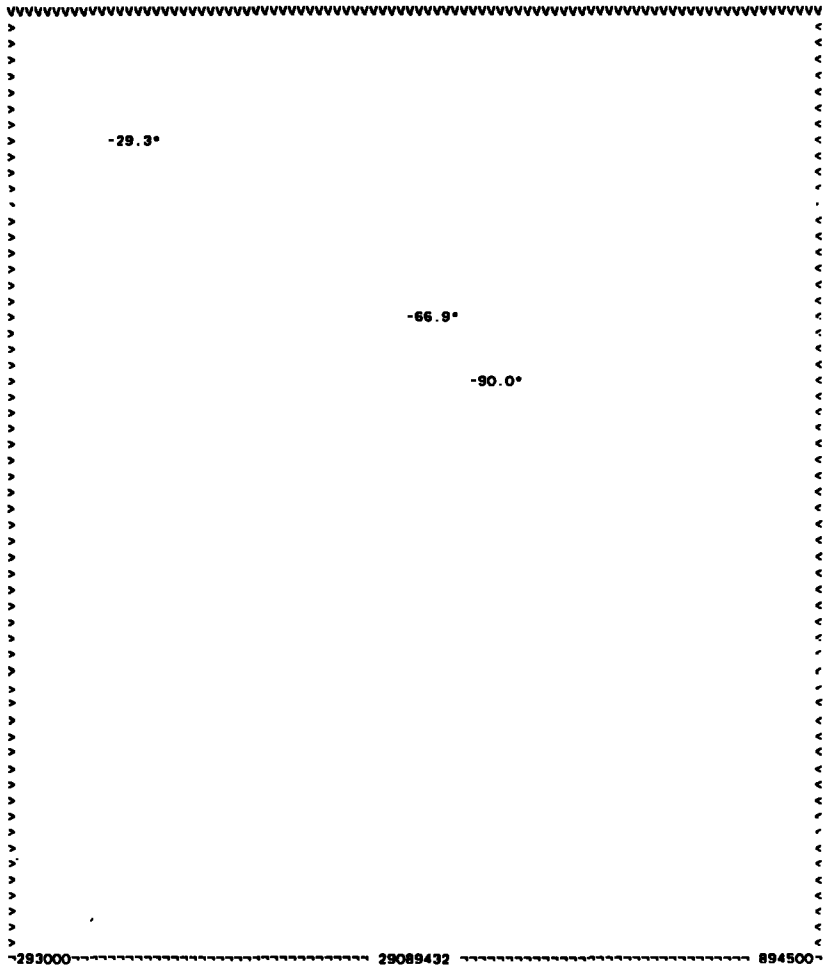
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 (MM)

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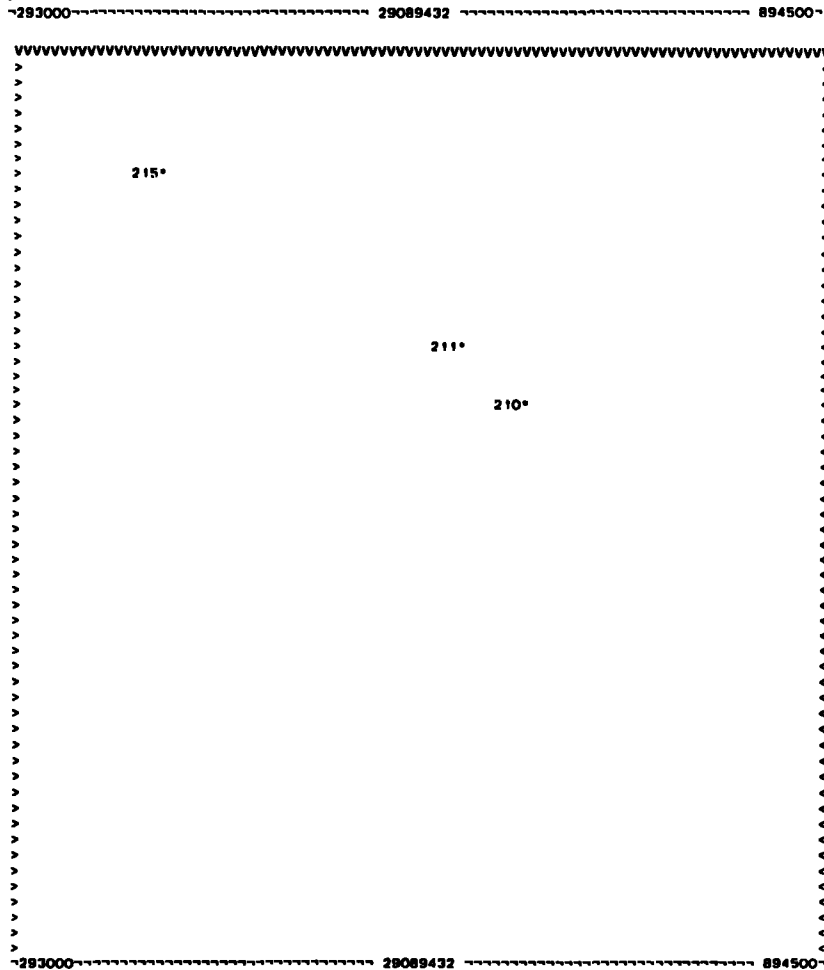
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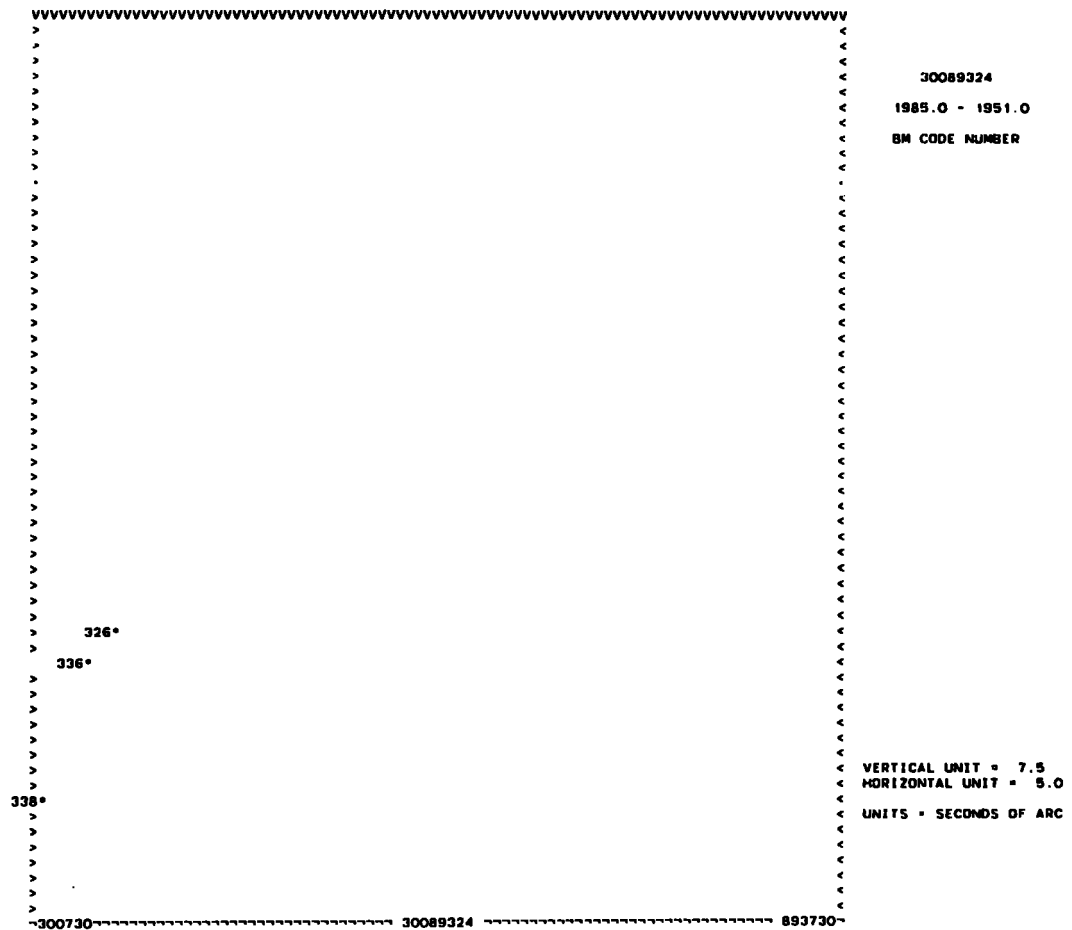
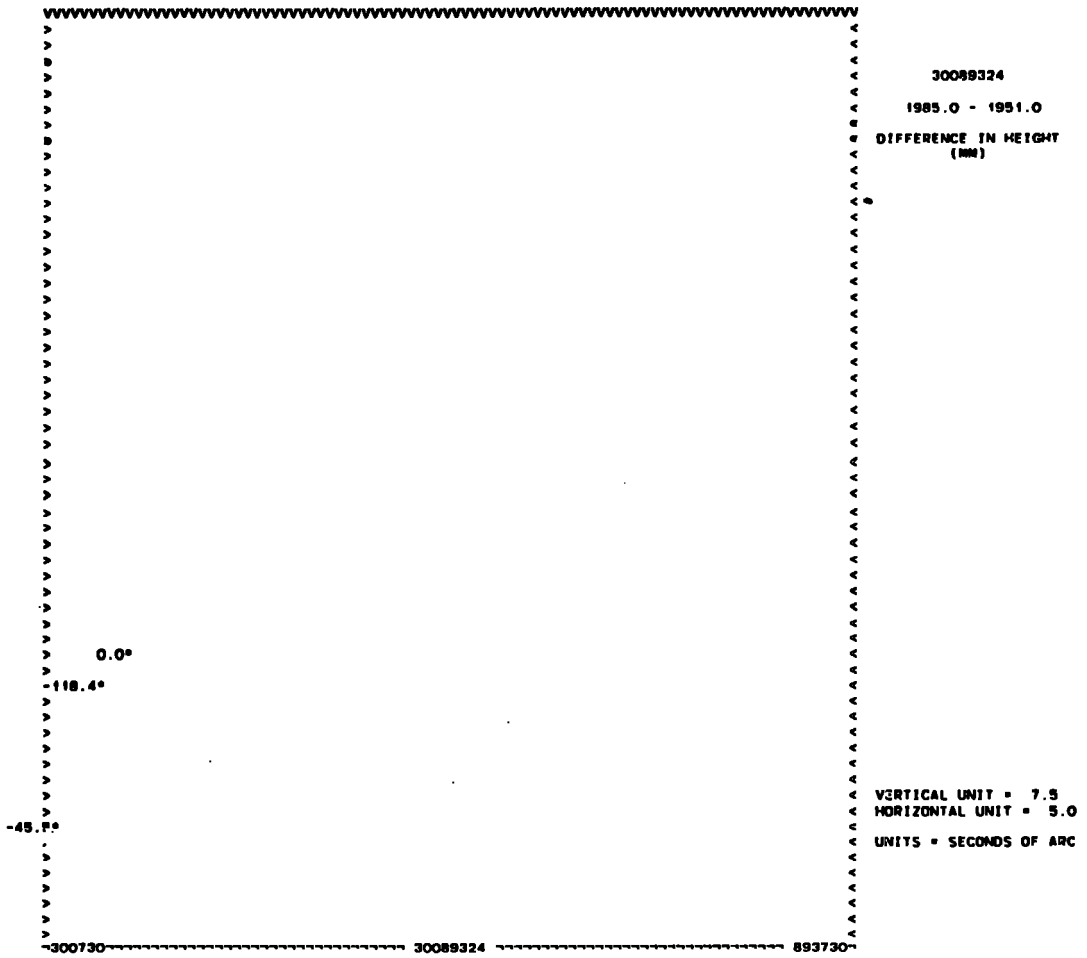
29089432
 1985.0 - 1964.0
 DIFFERENCE IN HEIGHT
 (MM)

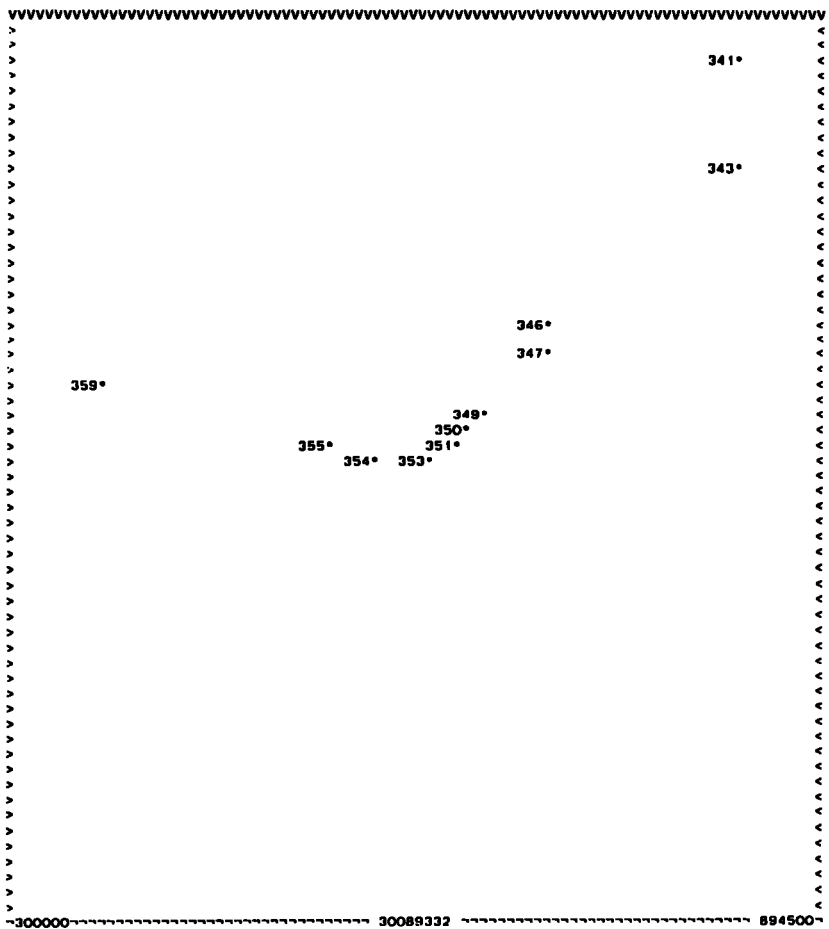
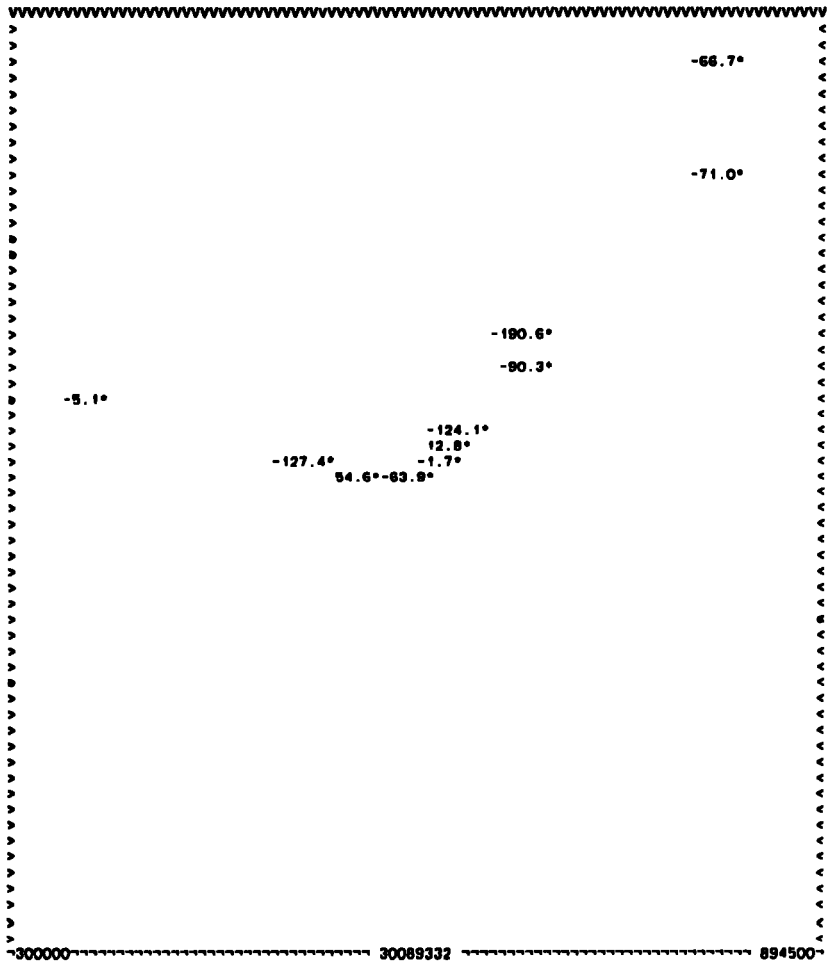
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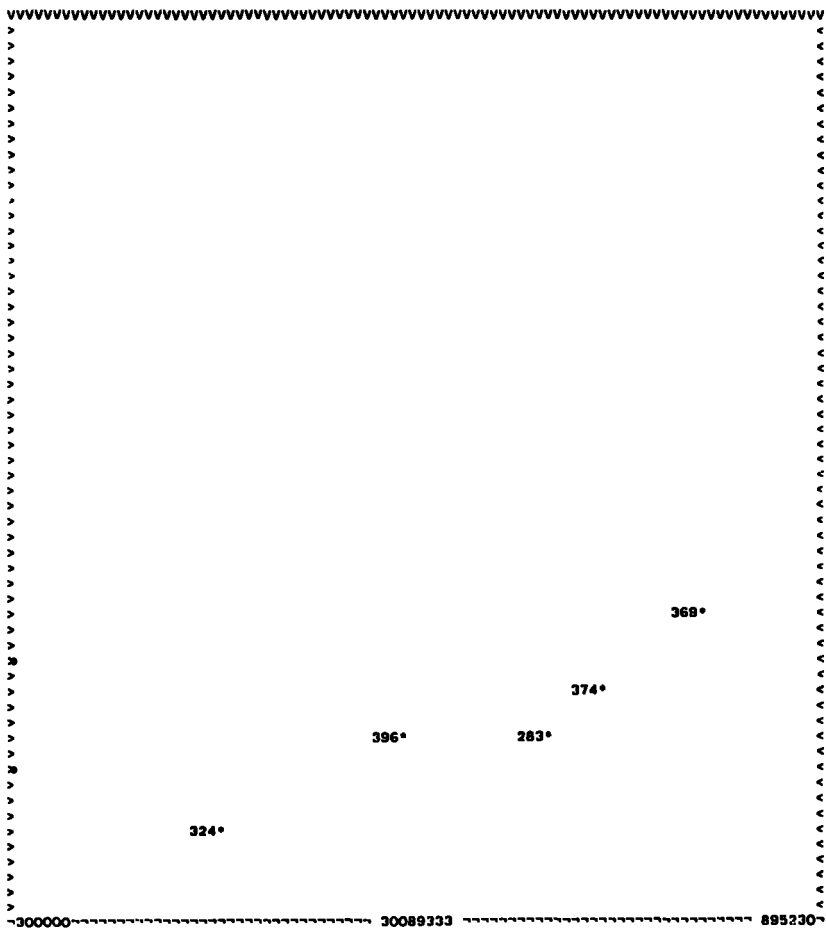
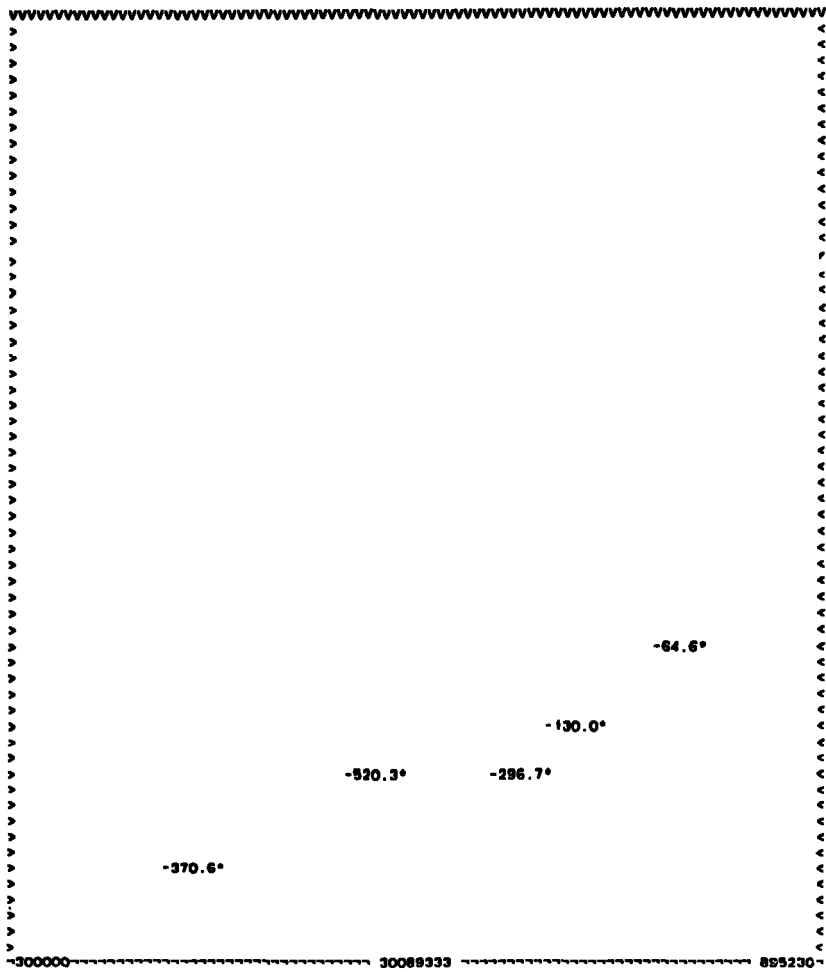


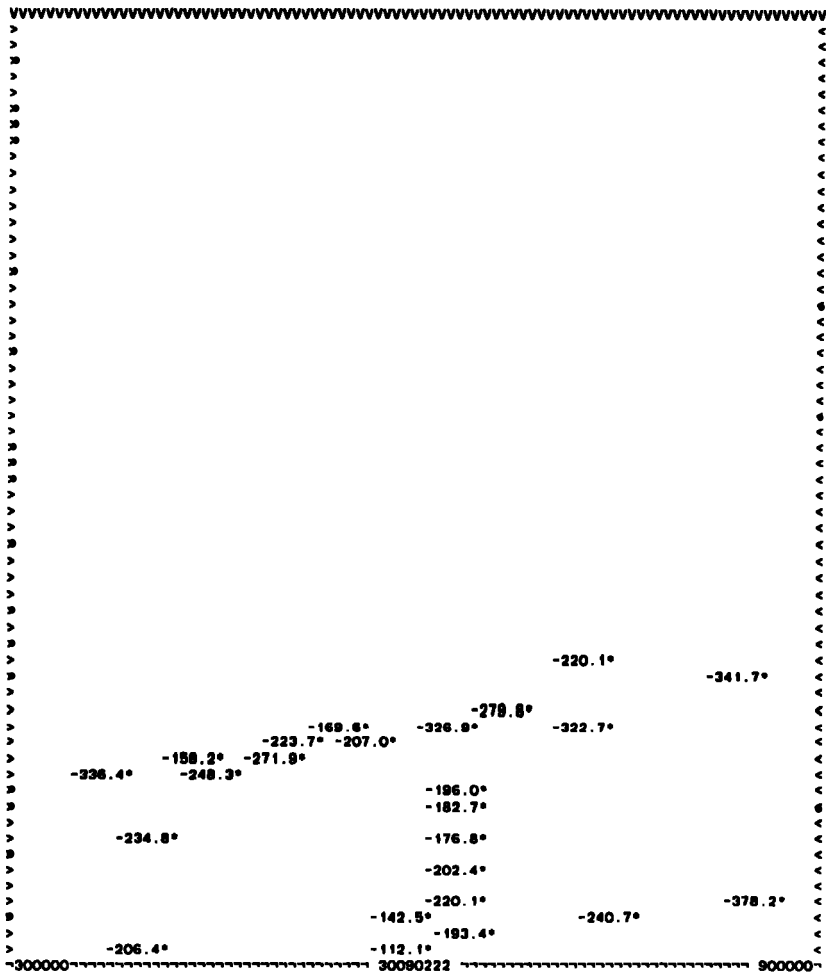
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 BM CODE NUMBER

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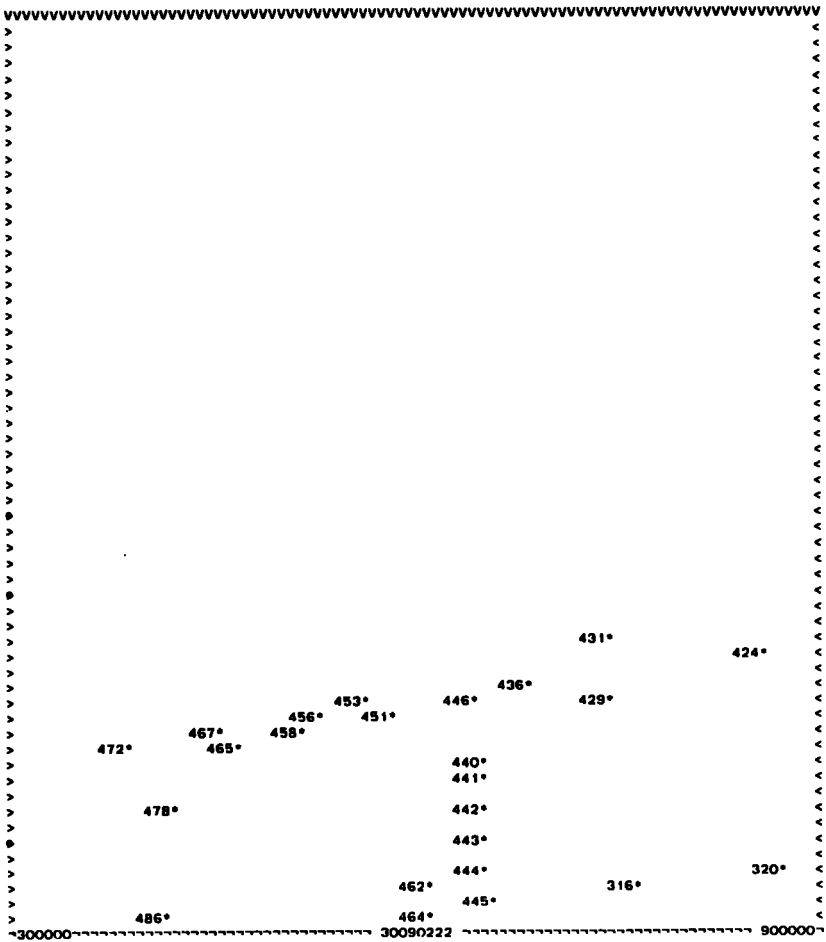






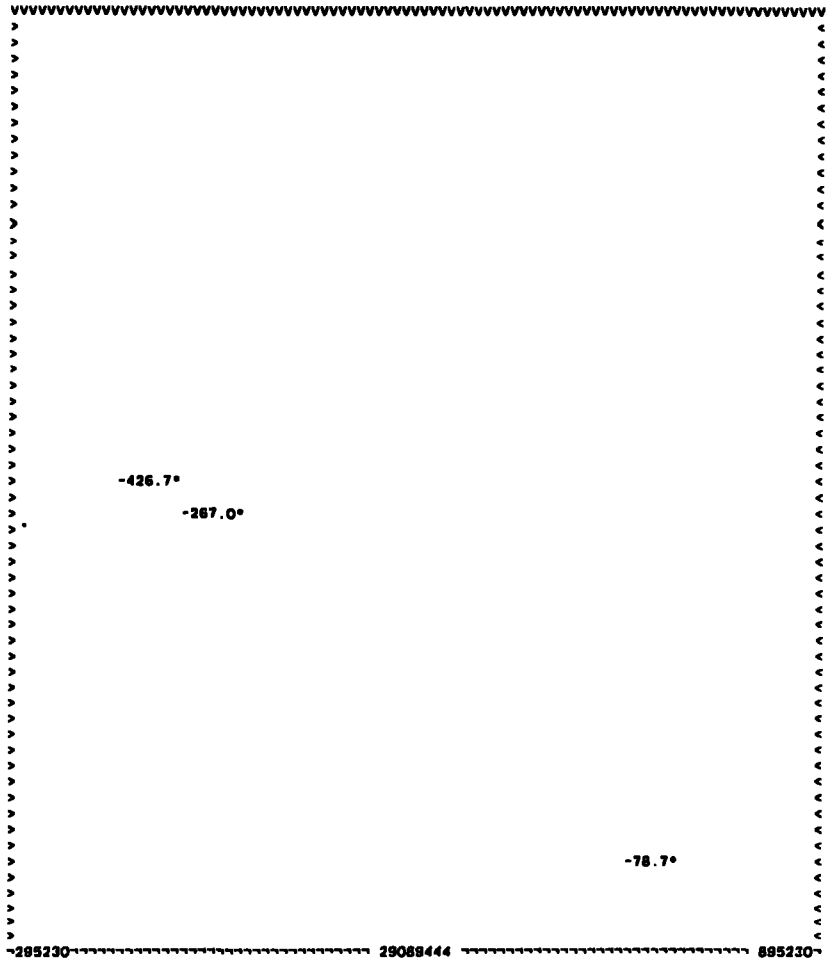
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 DIFFERENCE IN HEIGHT
 (MM)

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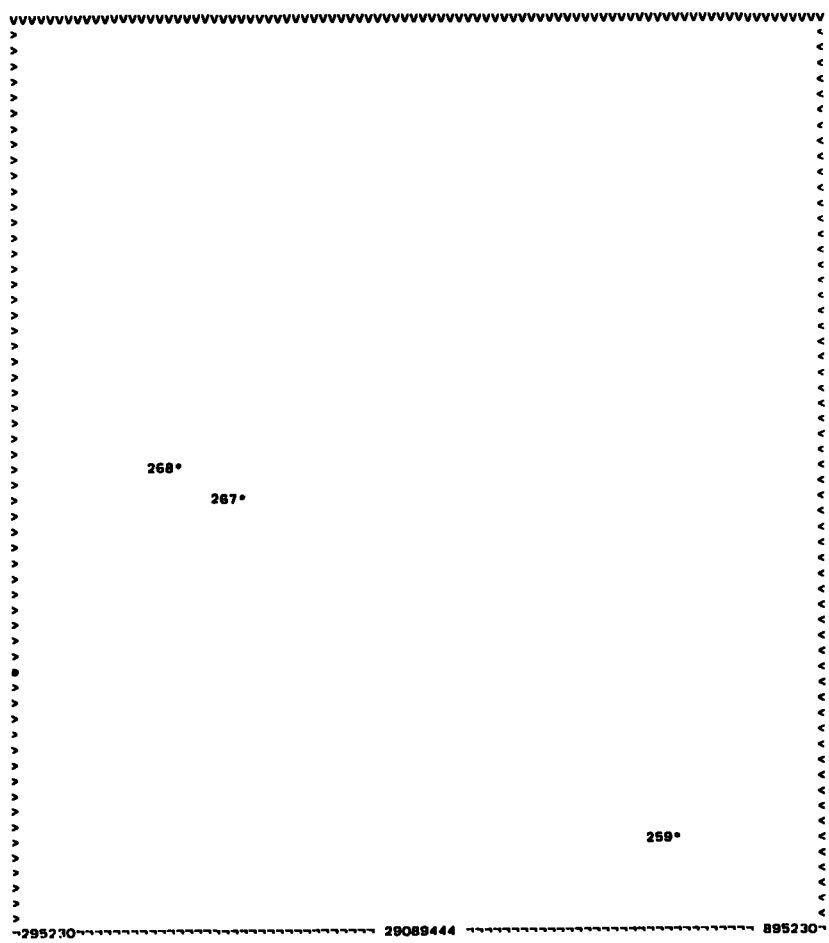
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 1985.0 - 1951.0
 BM CODE NUMBER

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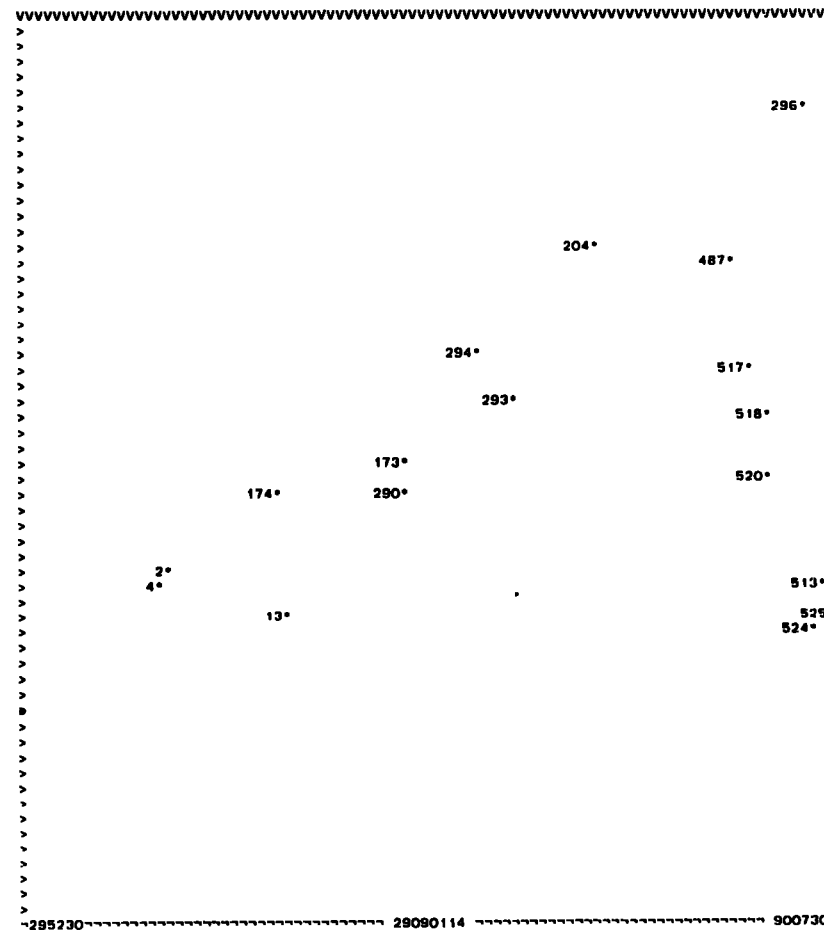
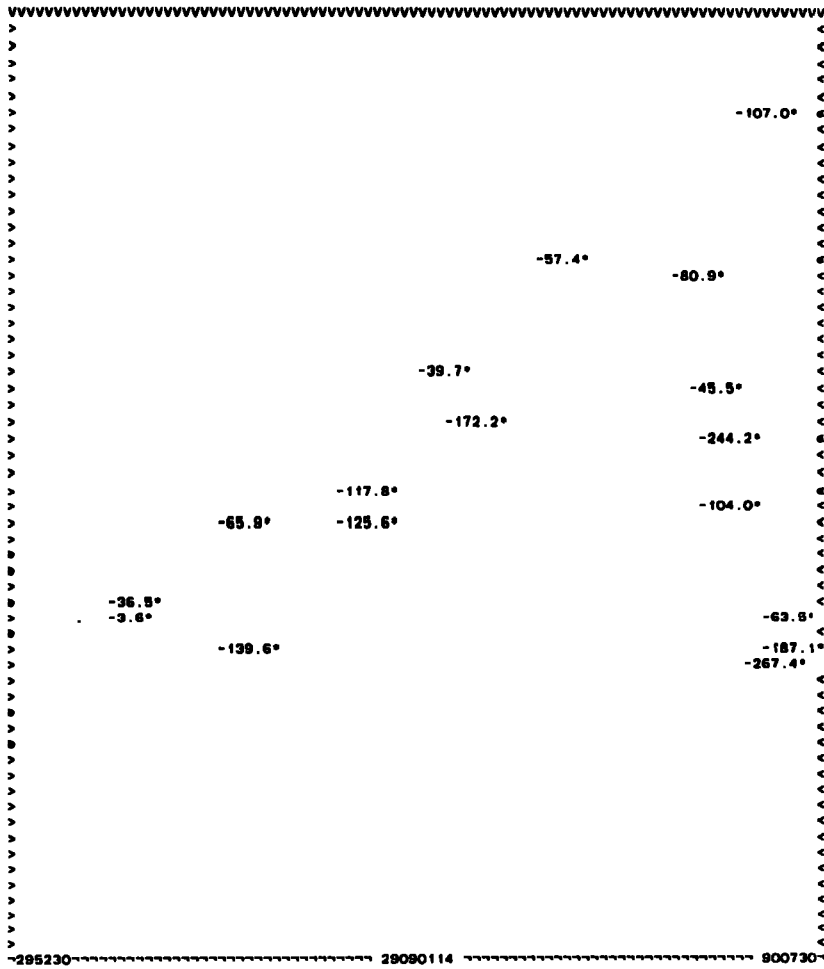
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 DIFFERENCE IN HEIGHT
 (MM)

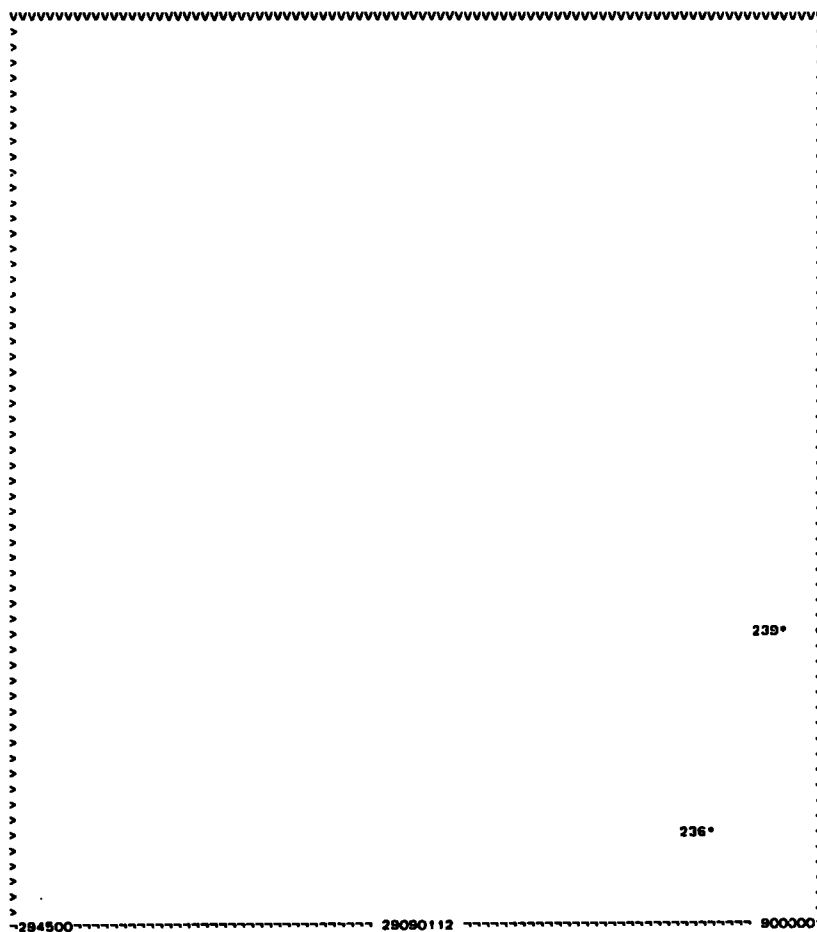
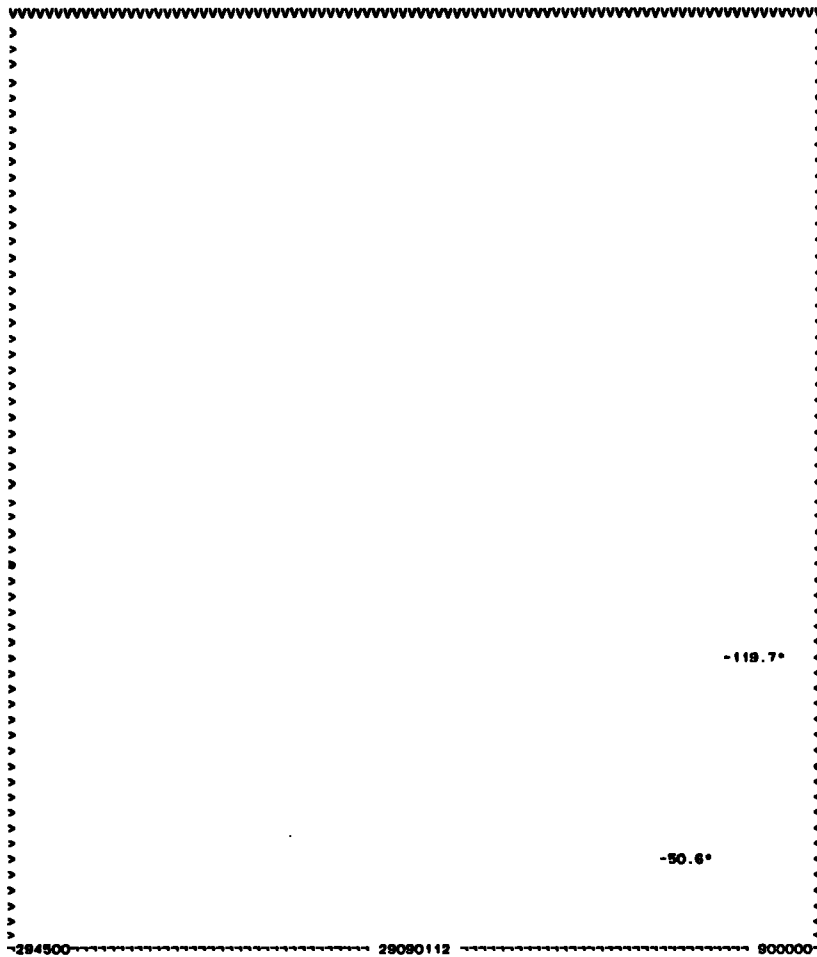
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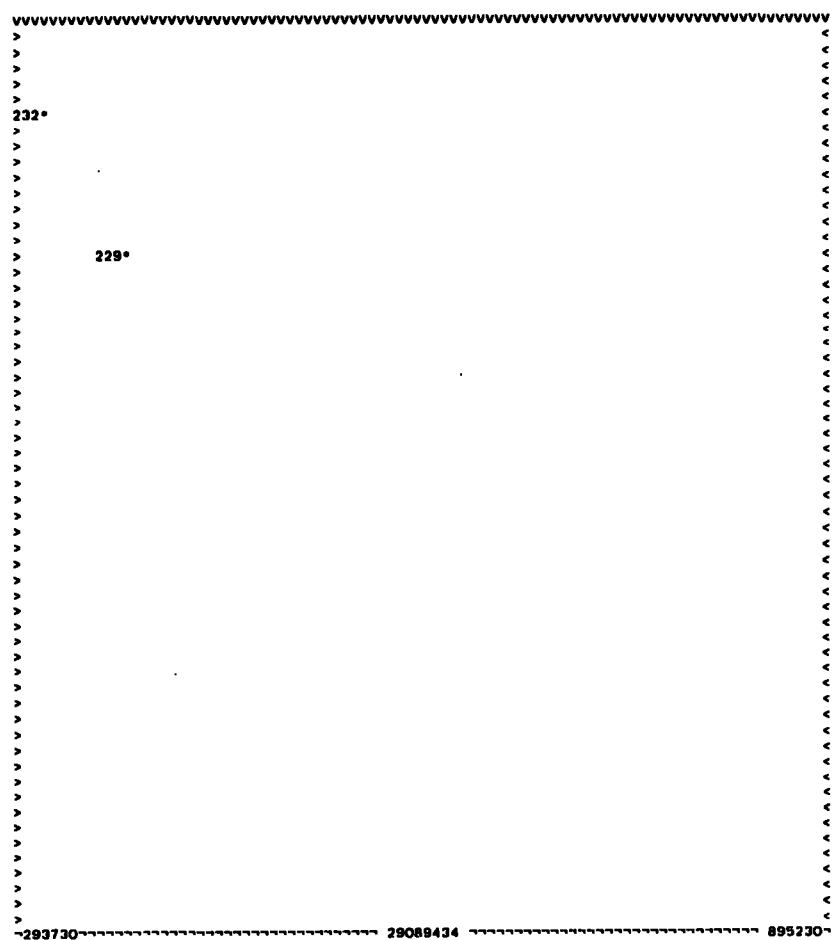
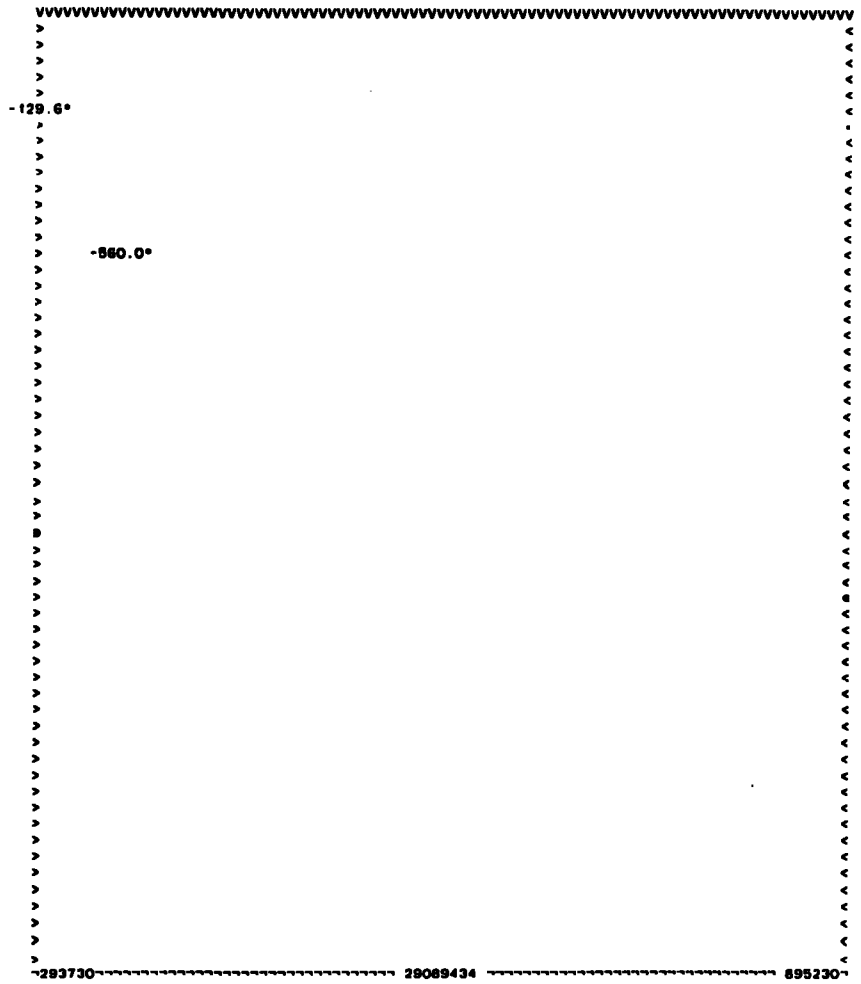


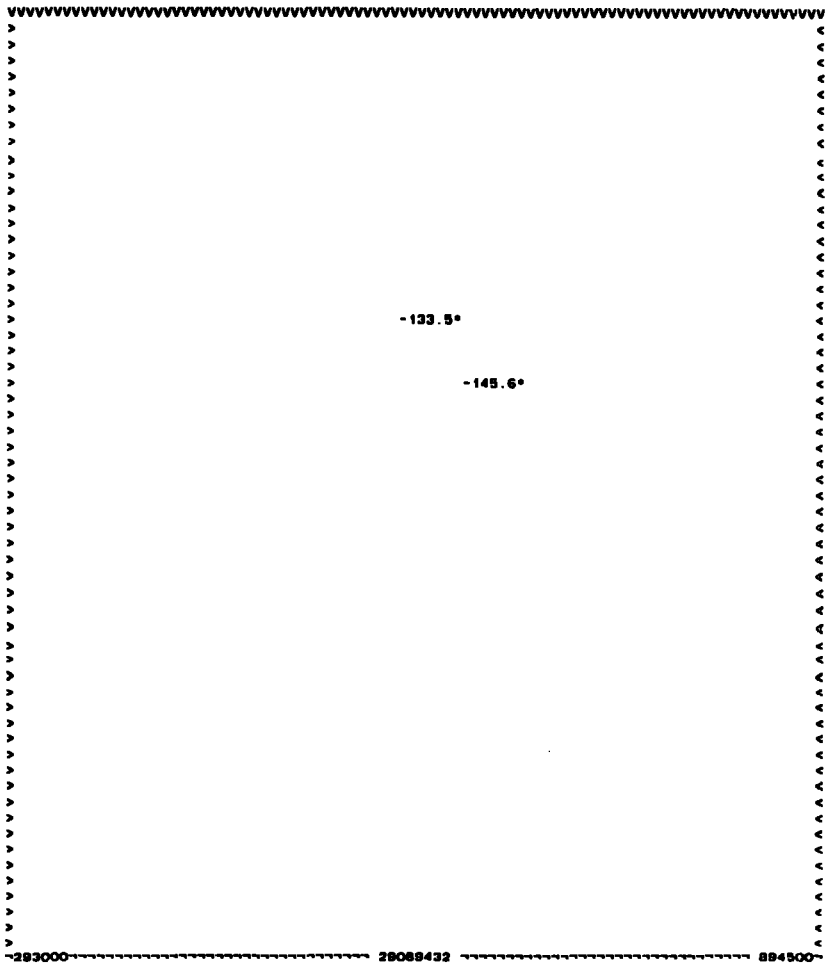
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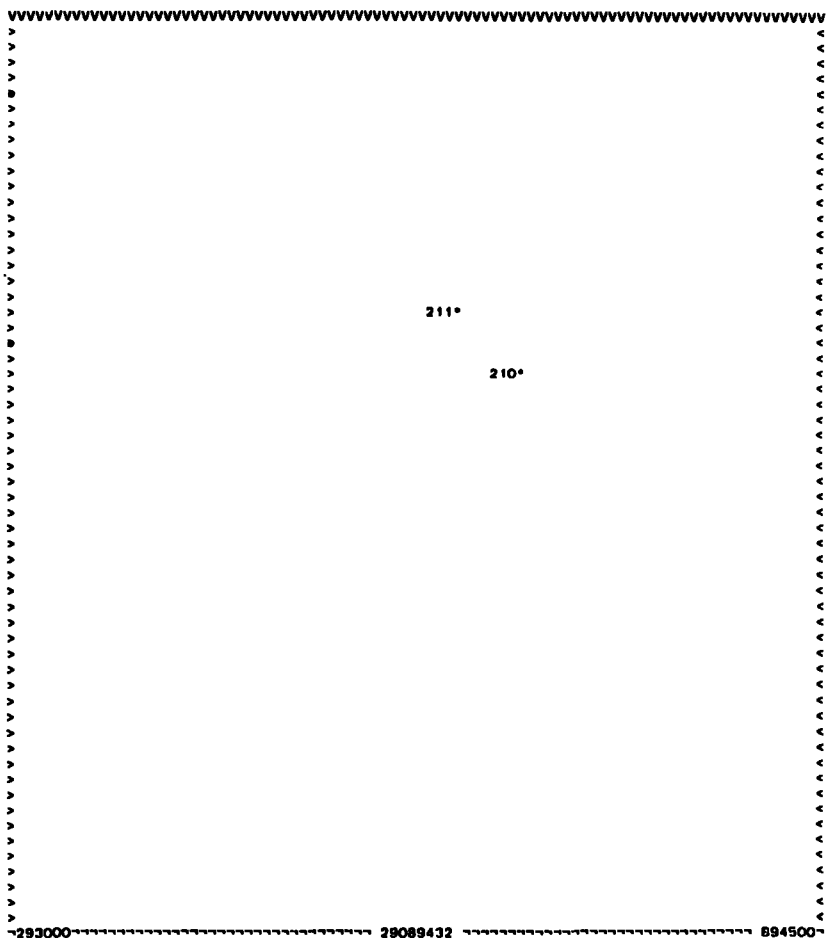






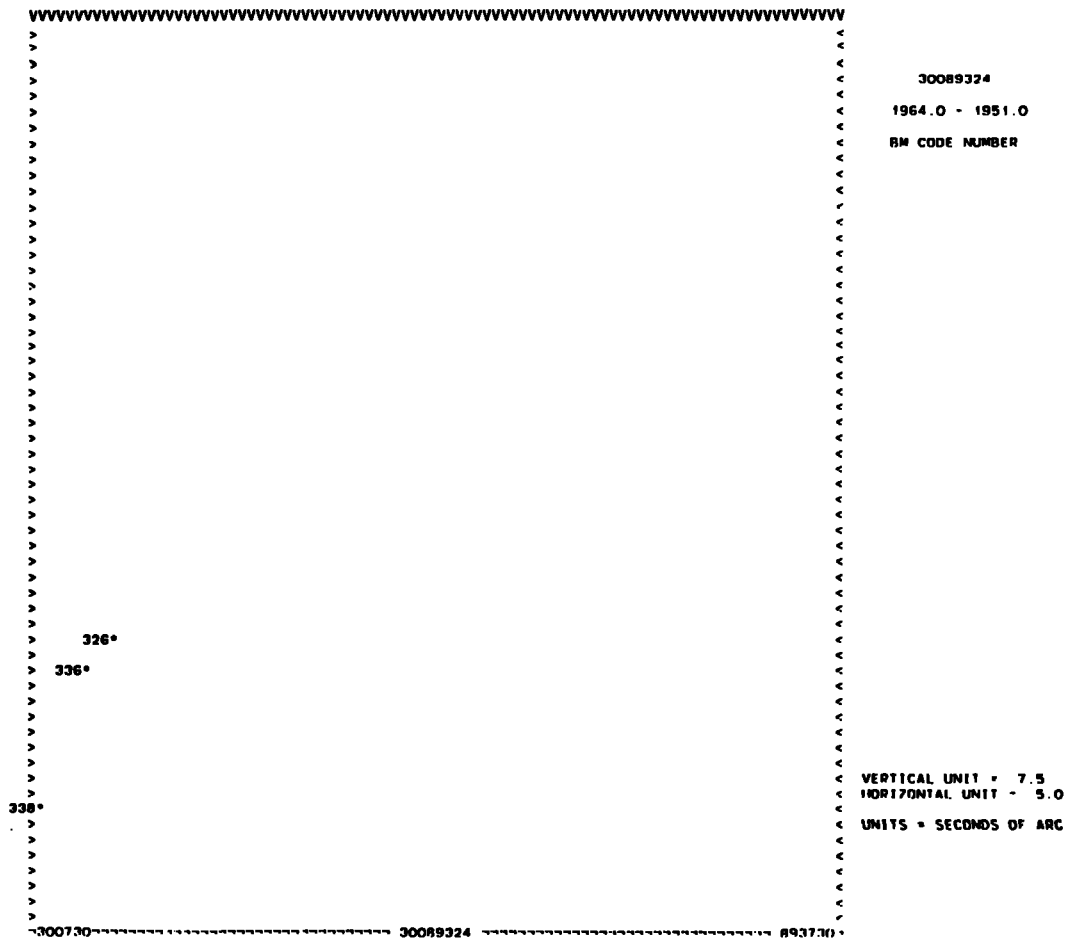
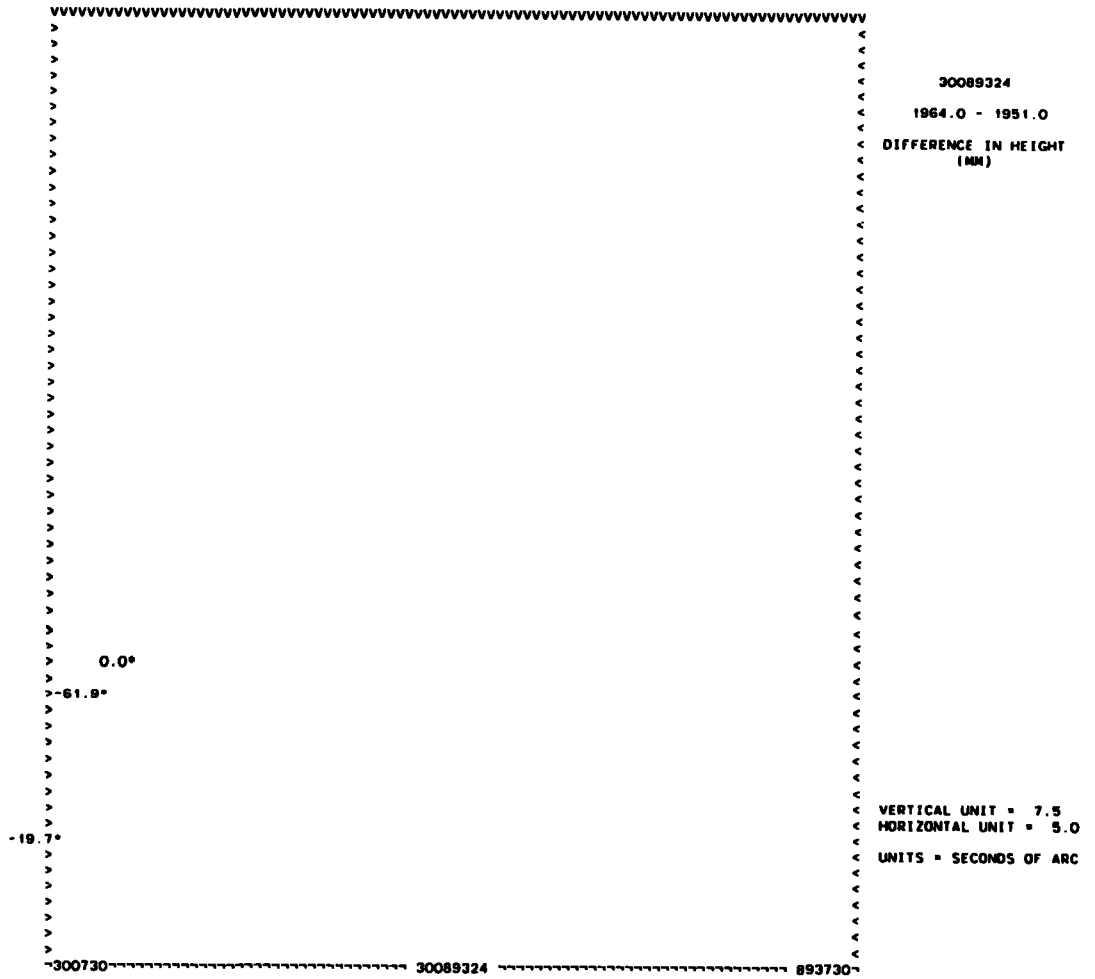
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 DIFFERENCE IN HEIGHT
 (MM)

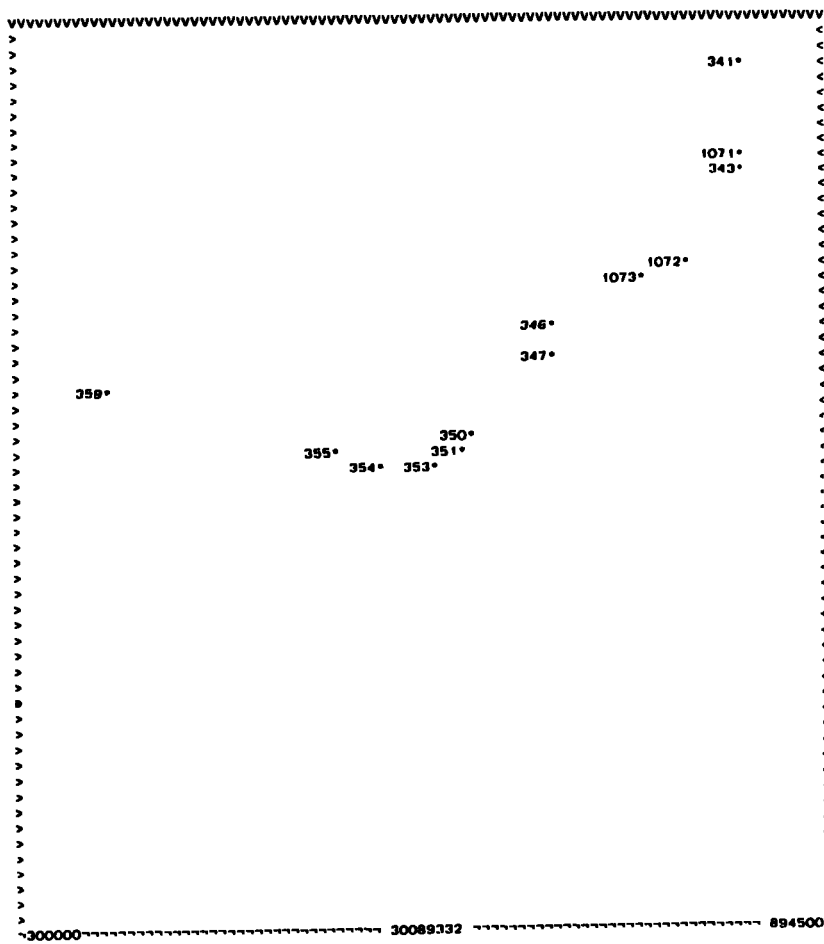
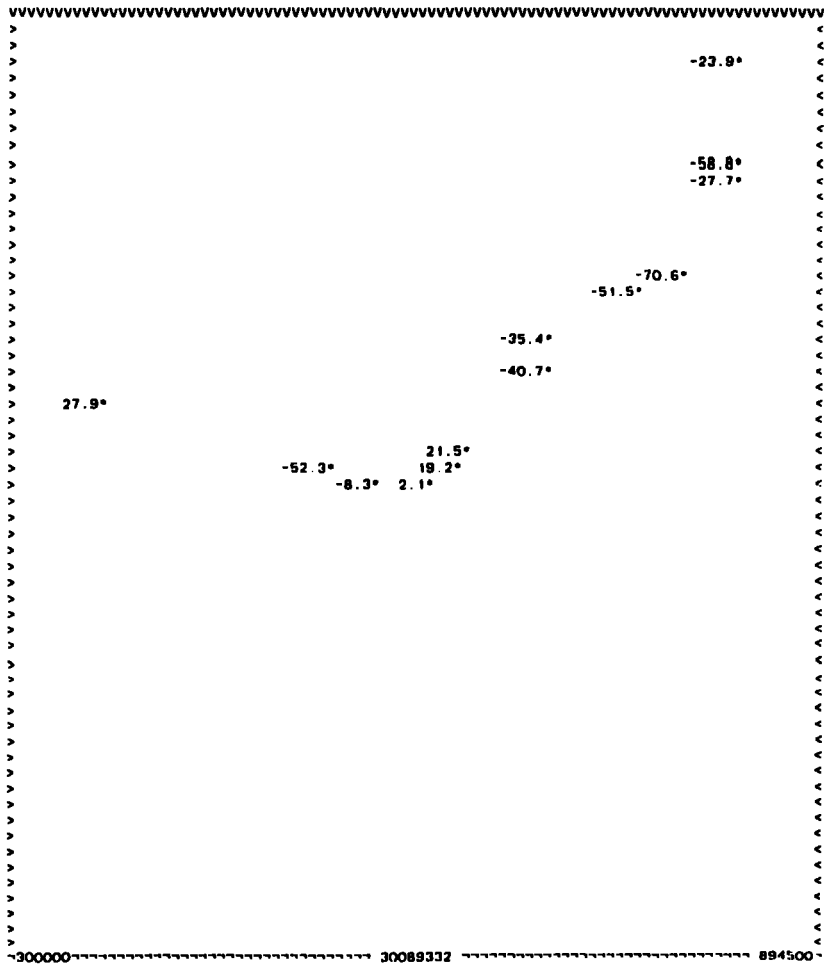
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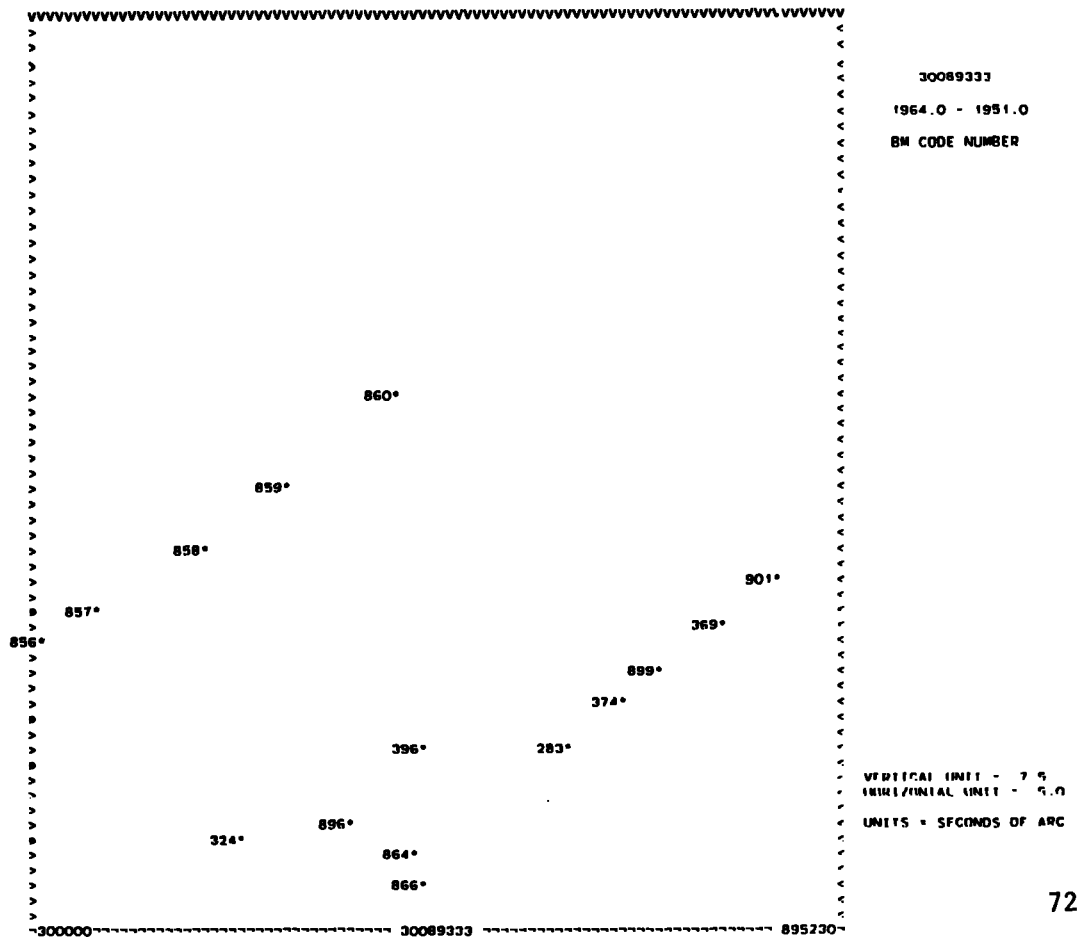
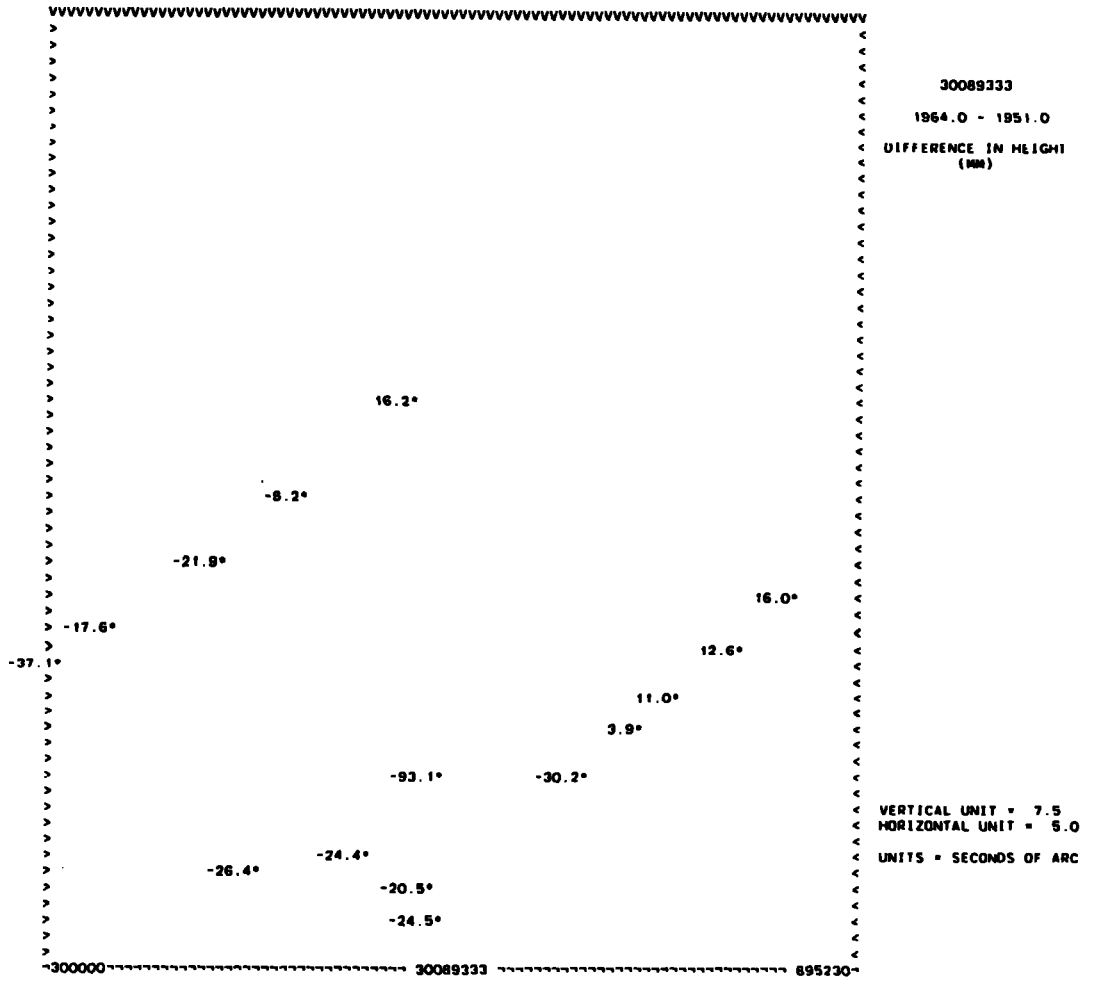


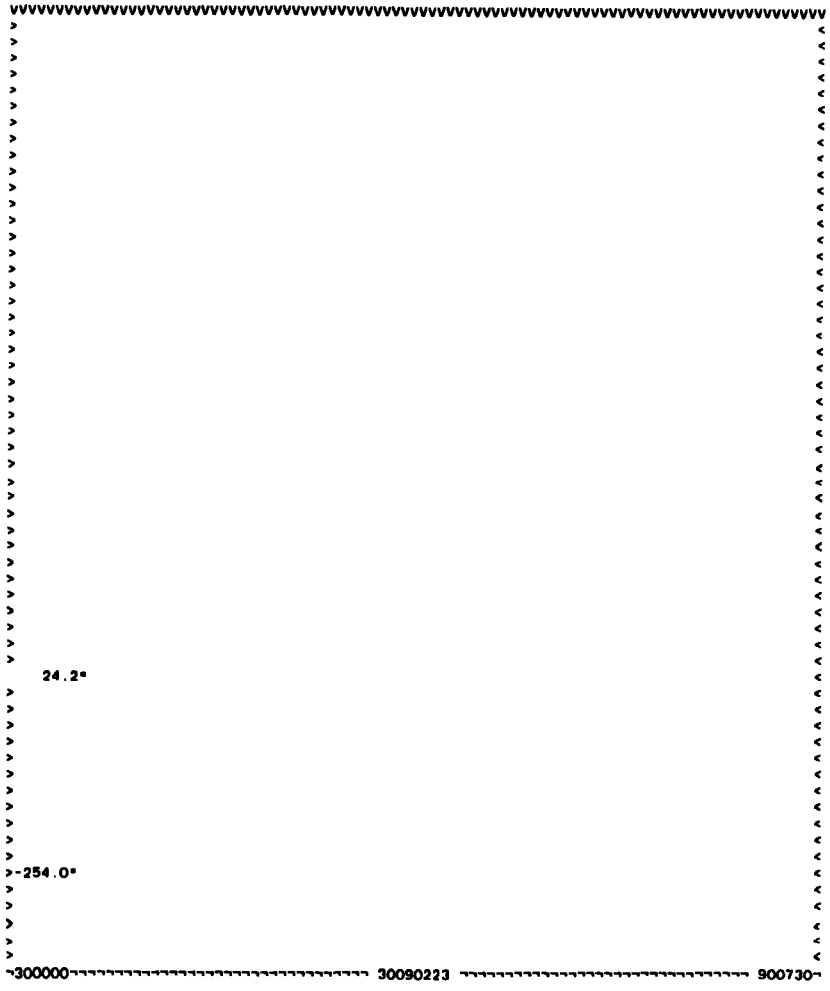
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 BM CODE NUMBER

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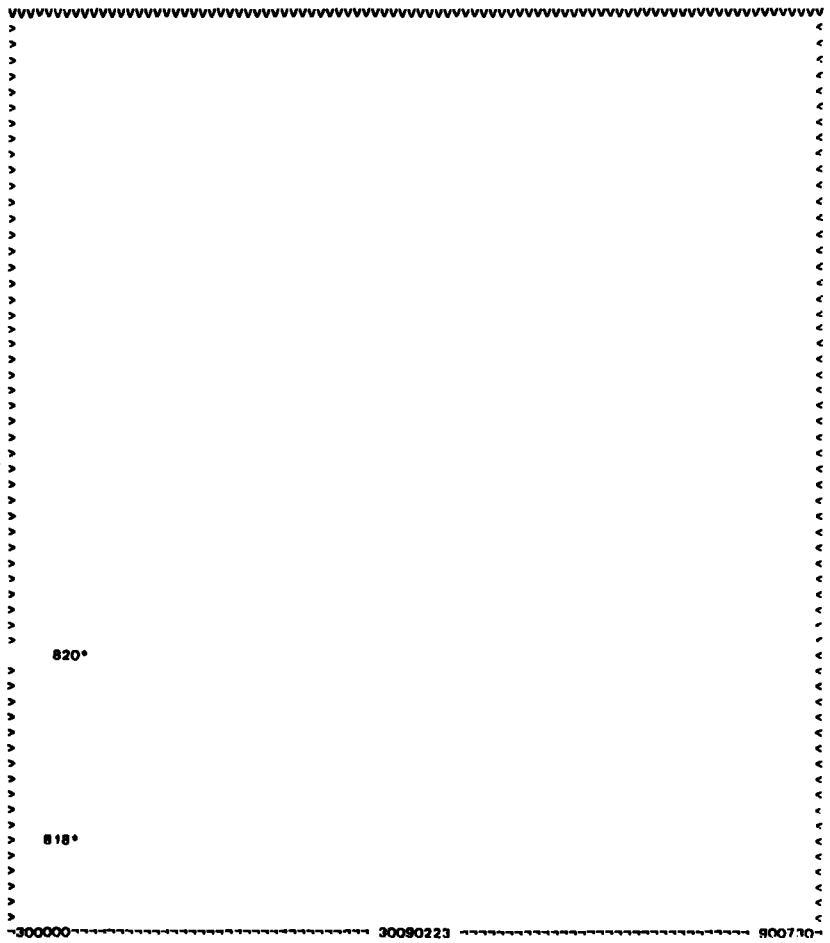






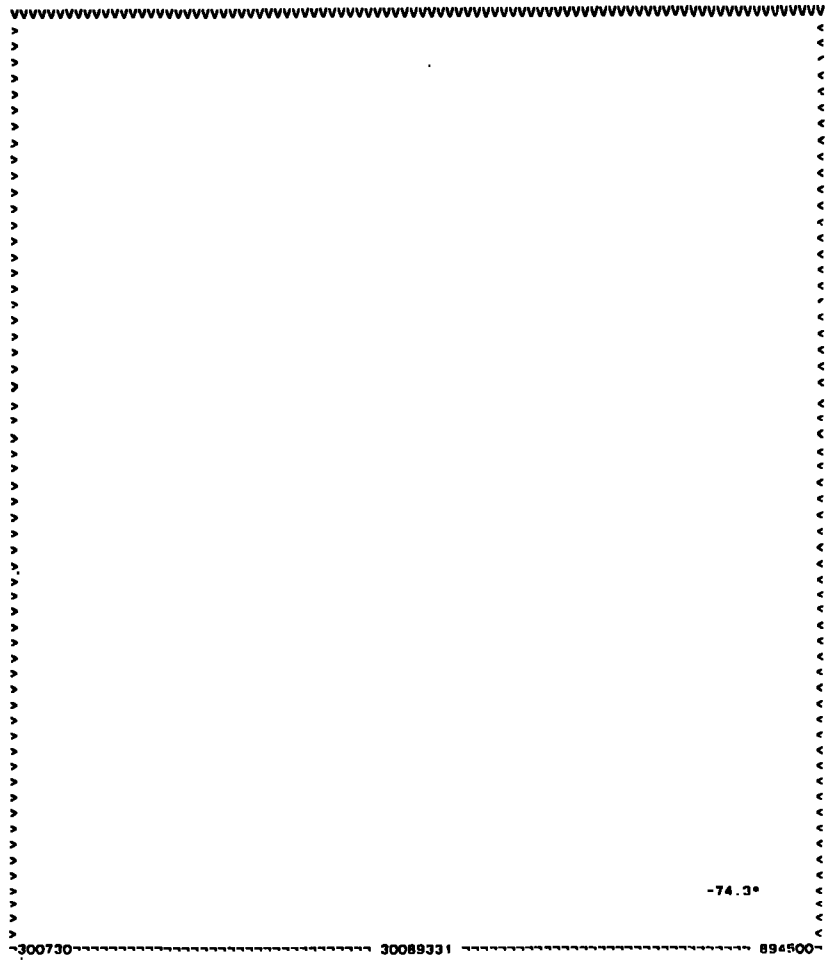
30090223
 1964.0 - 1951.0
 DIFFERENCE IN HEIGHT
 (MM)

 VERTICAL UNIT = 7.5
 HORIZONTAL UNIT = 5.0
 UNITS = SECONDS OF ARC



30090223
 1964.0 - 1951.0
 BM CODE NUMBER

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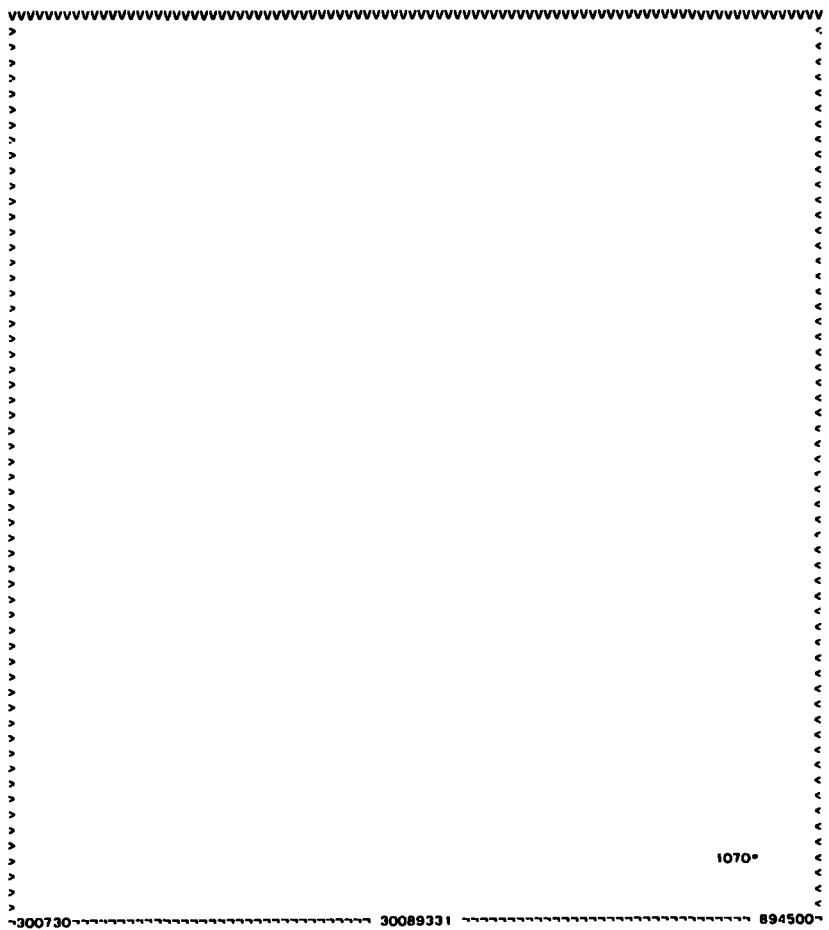


30089331
 1964.0 - 1951.0
 DIFFERENCE IN HEIGHT
 (MM)

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-74.3°

300730 30089331 894500

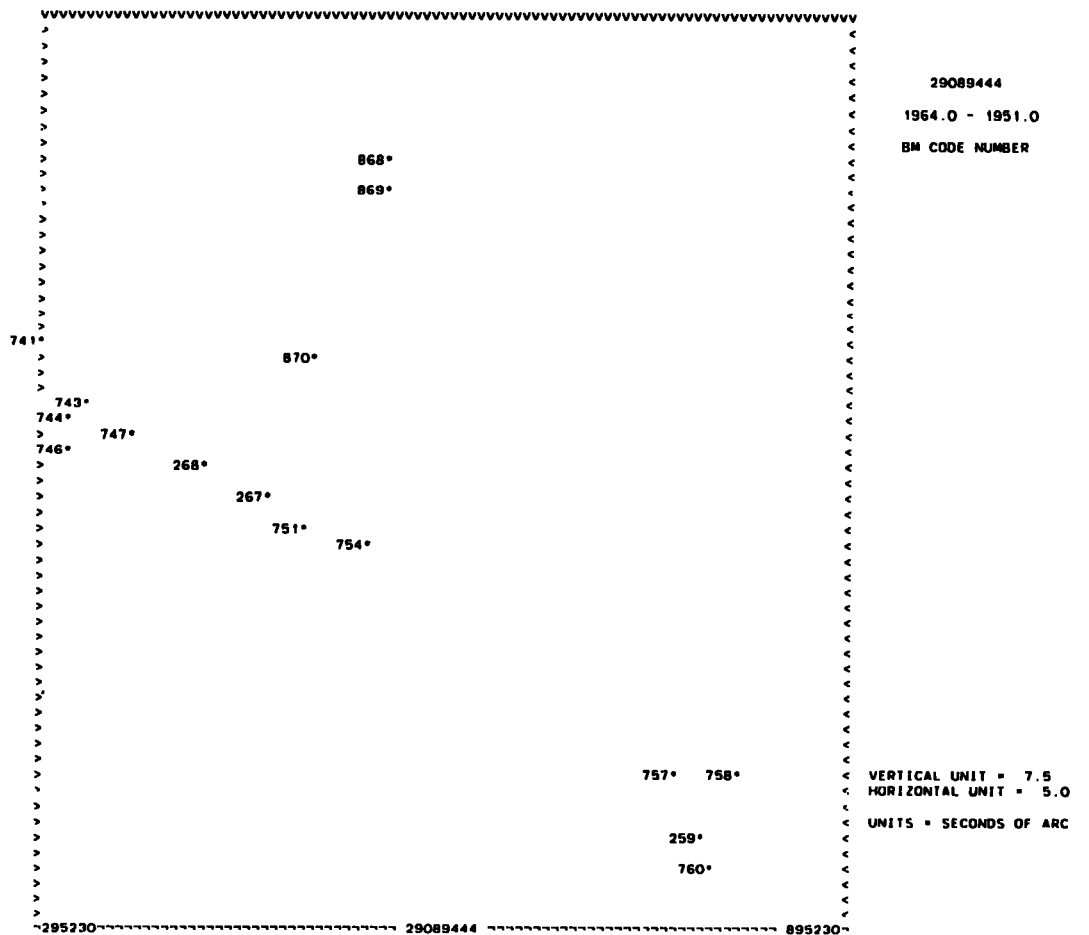
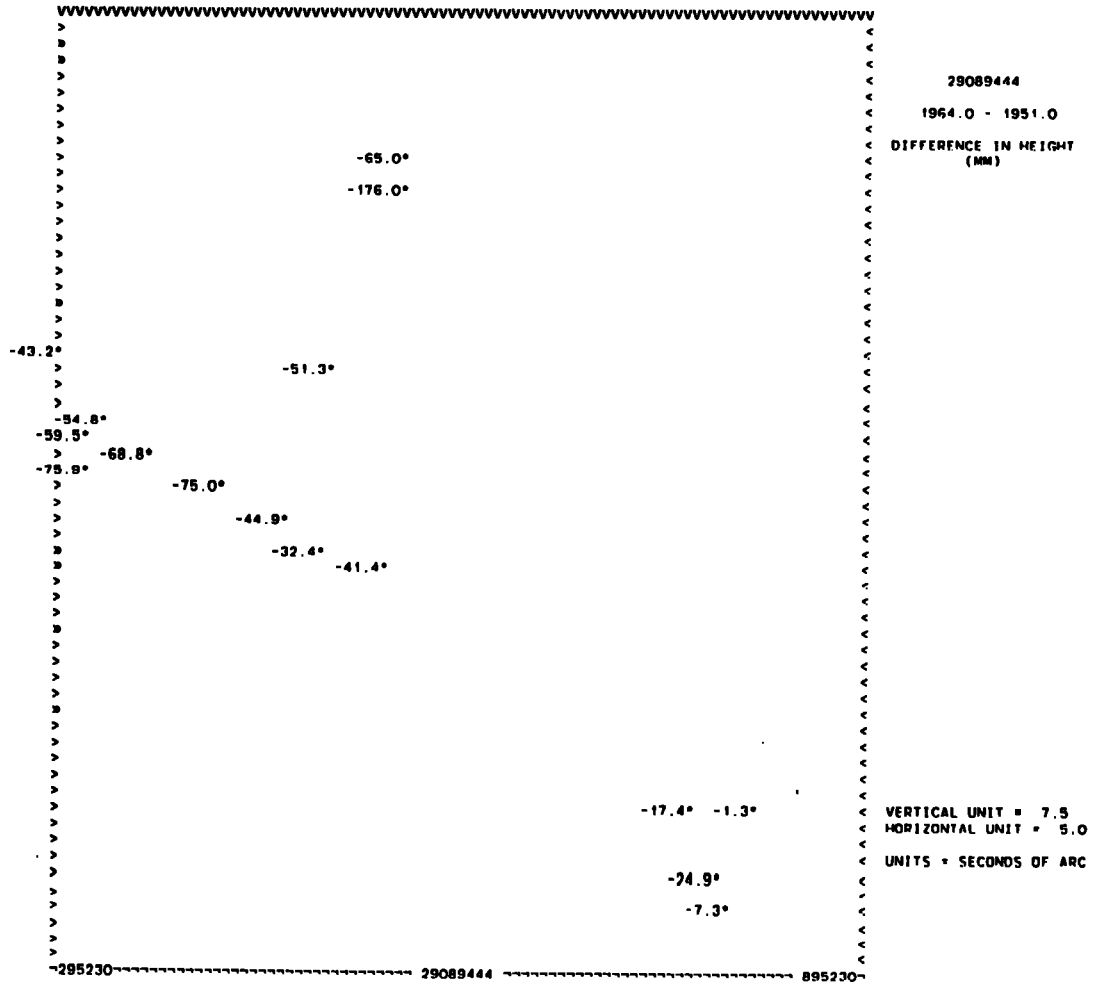


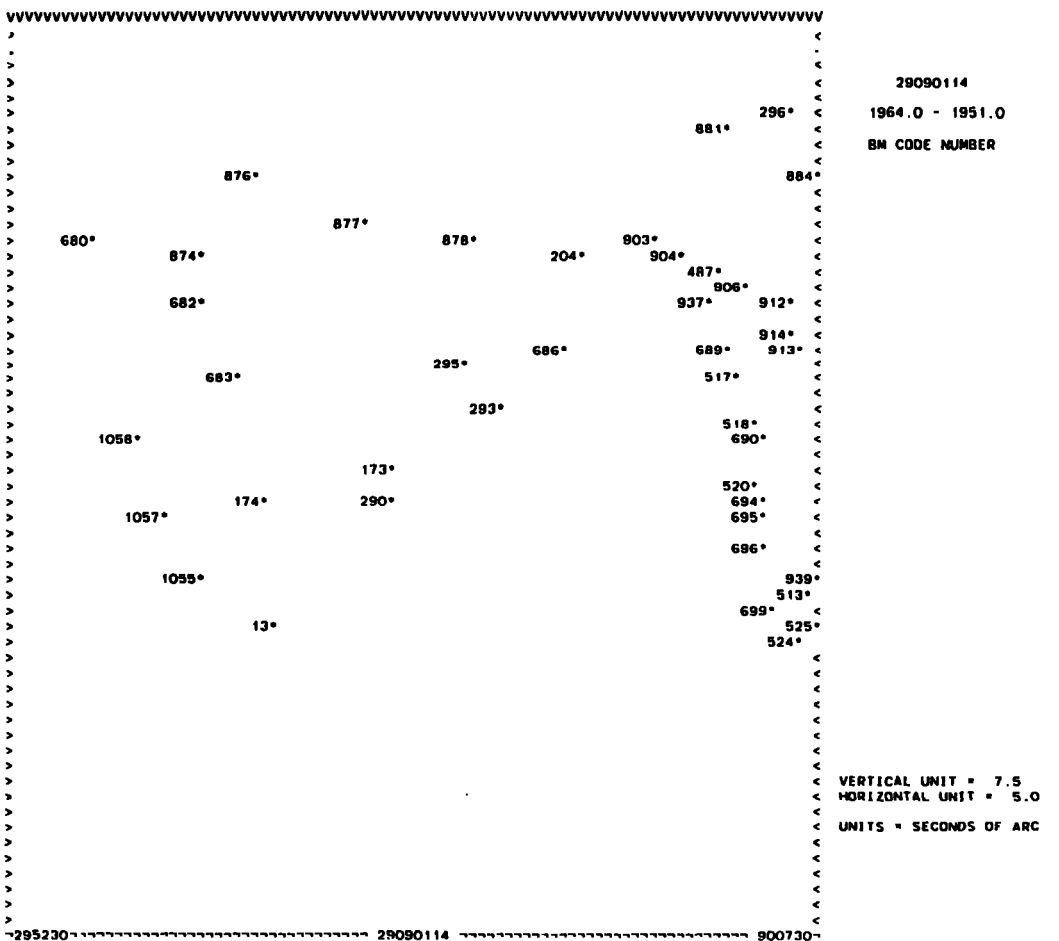
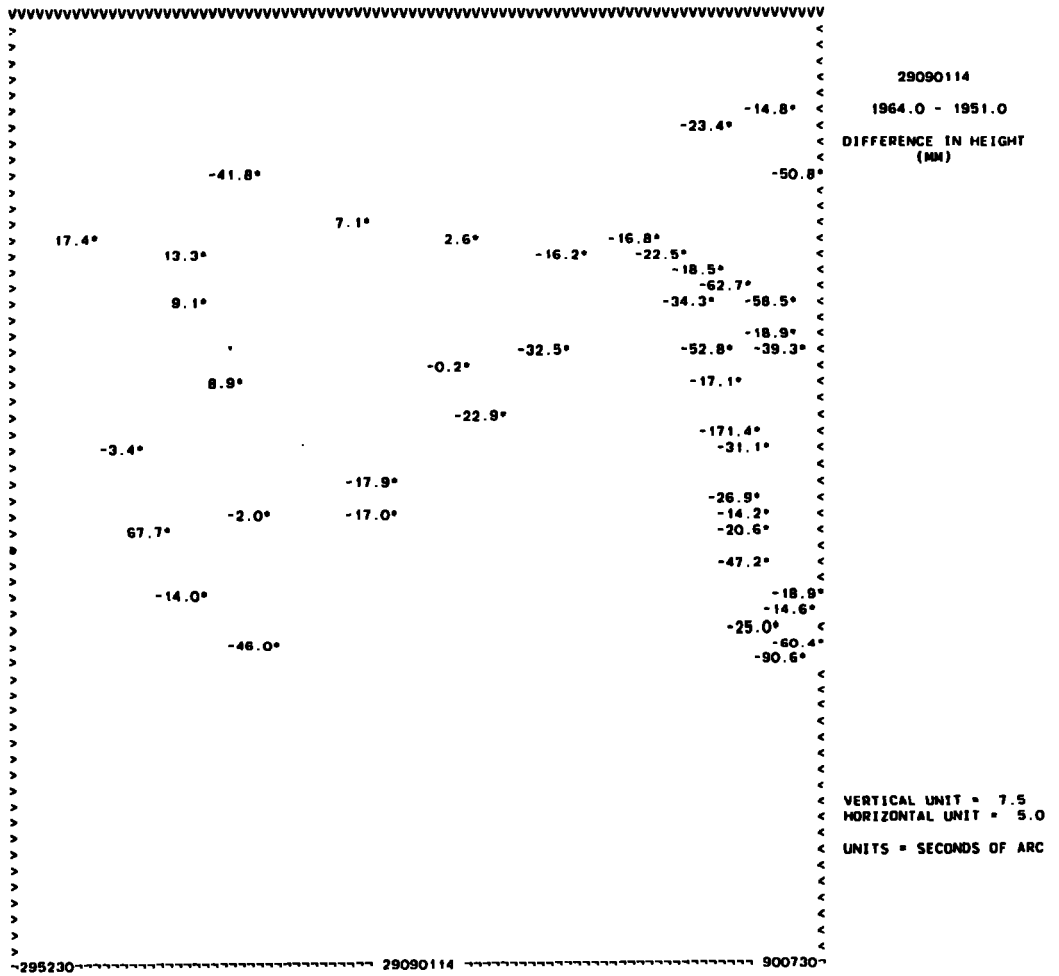
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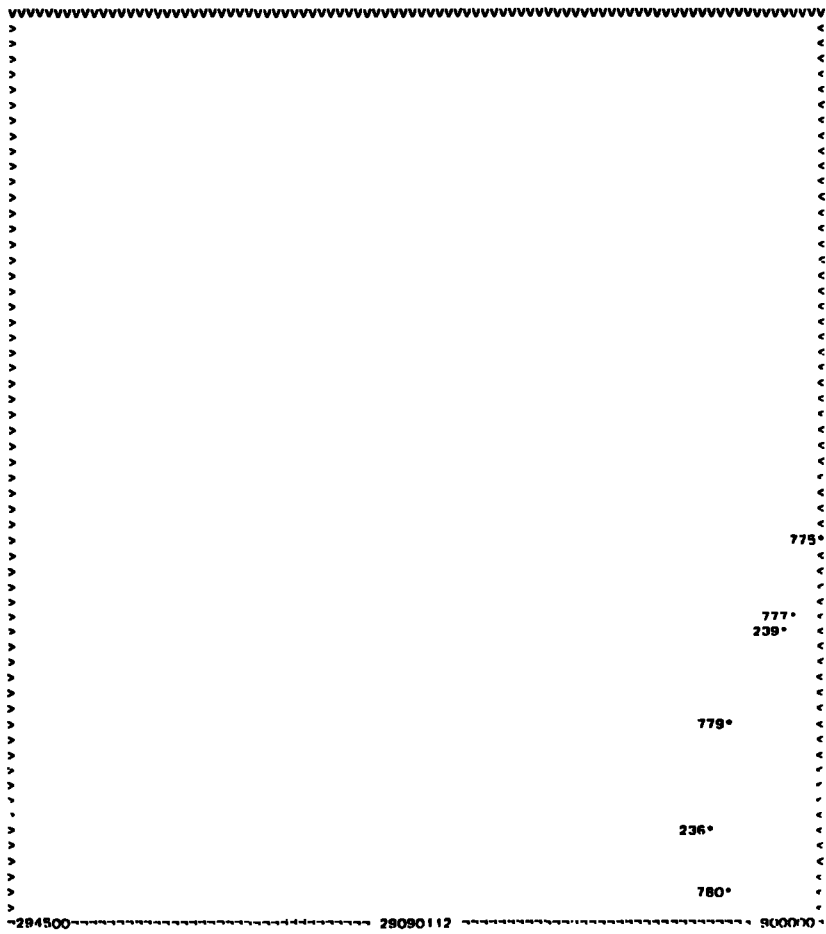
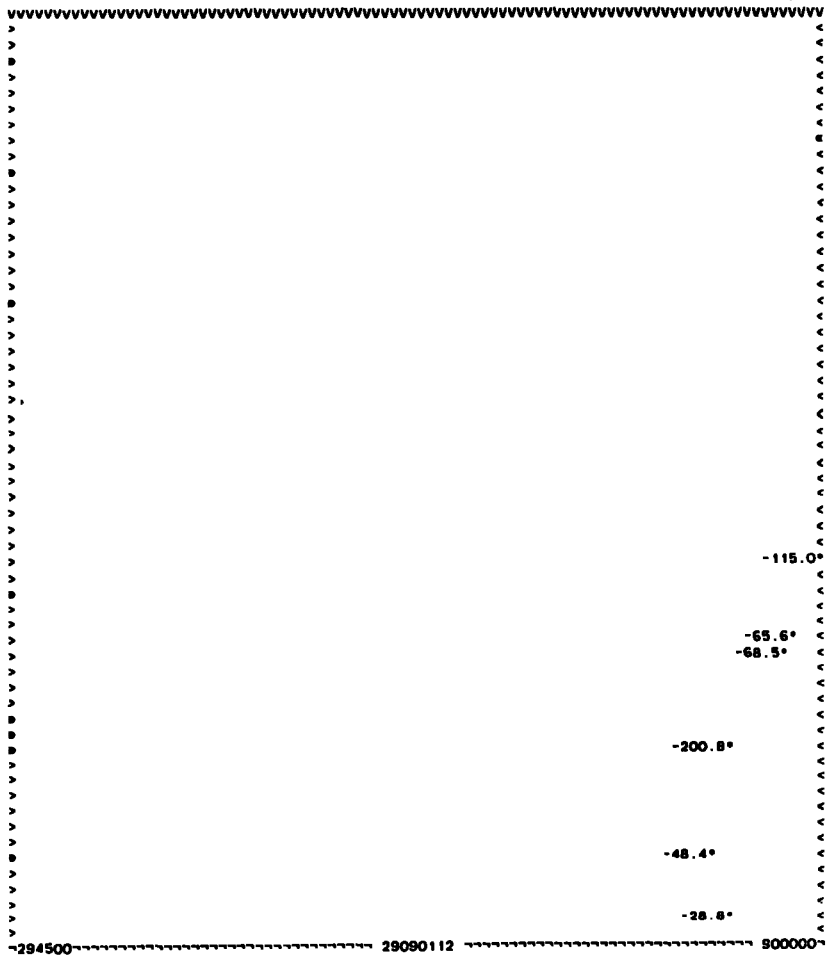
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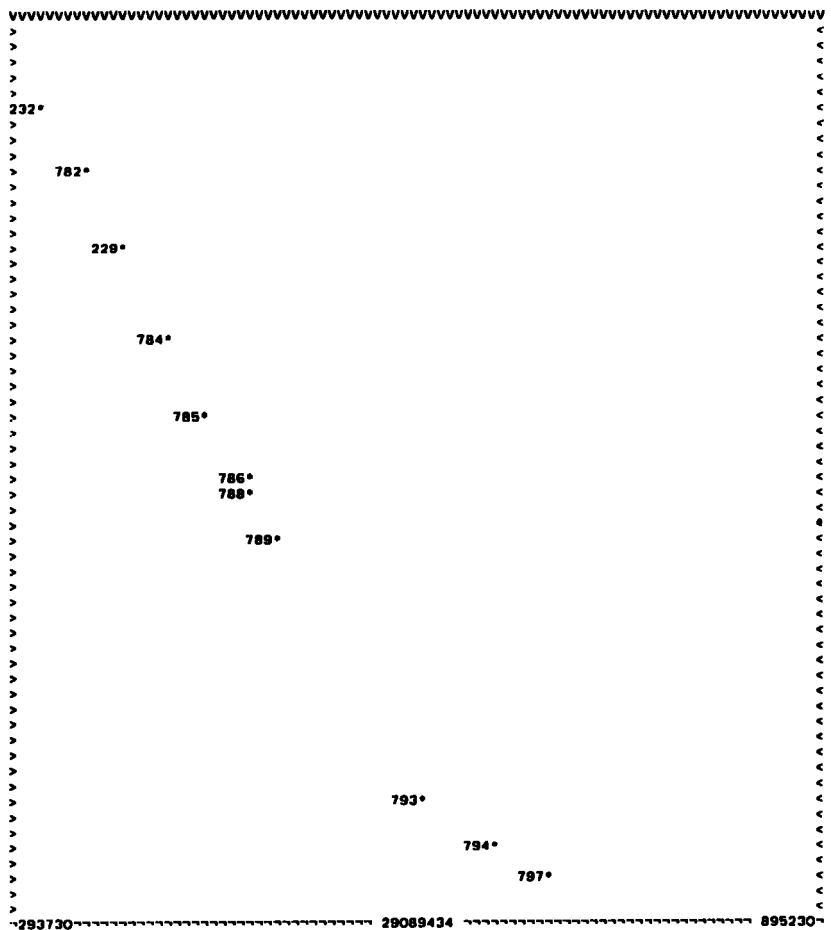
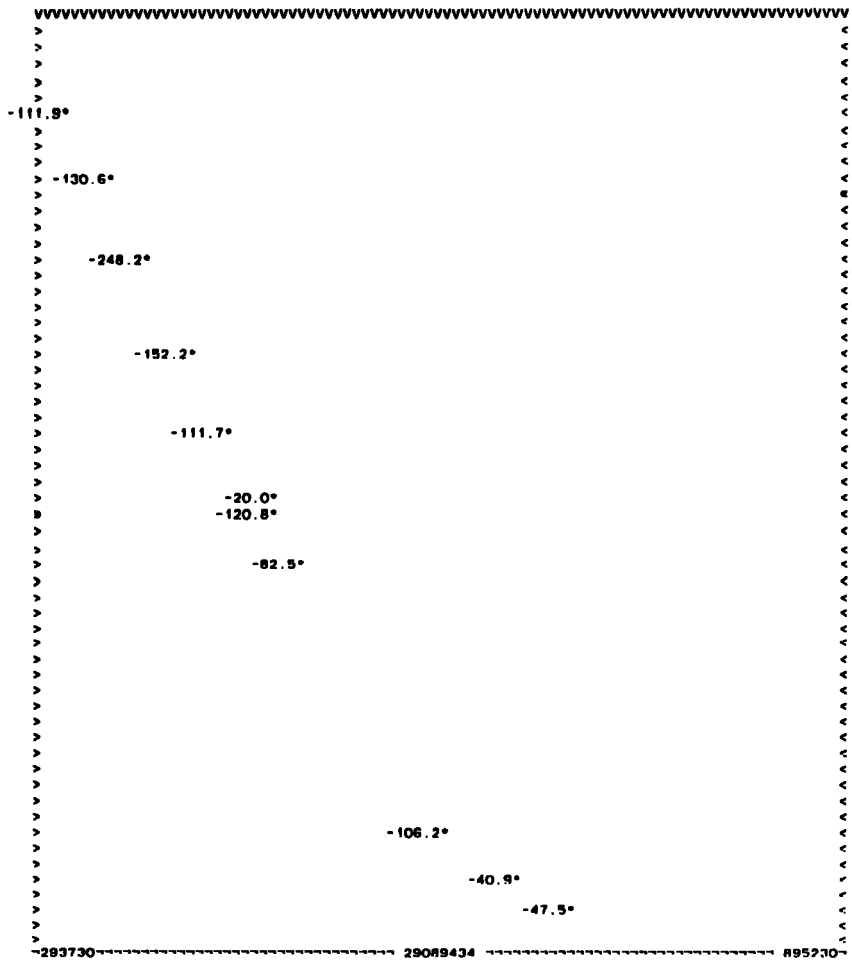
1070°

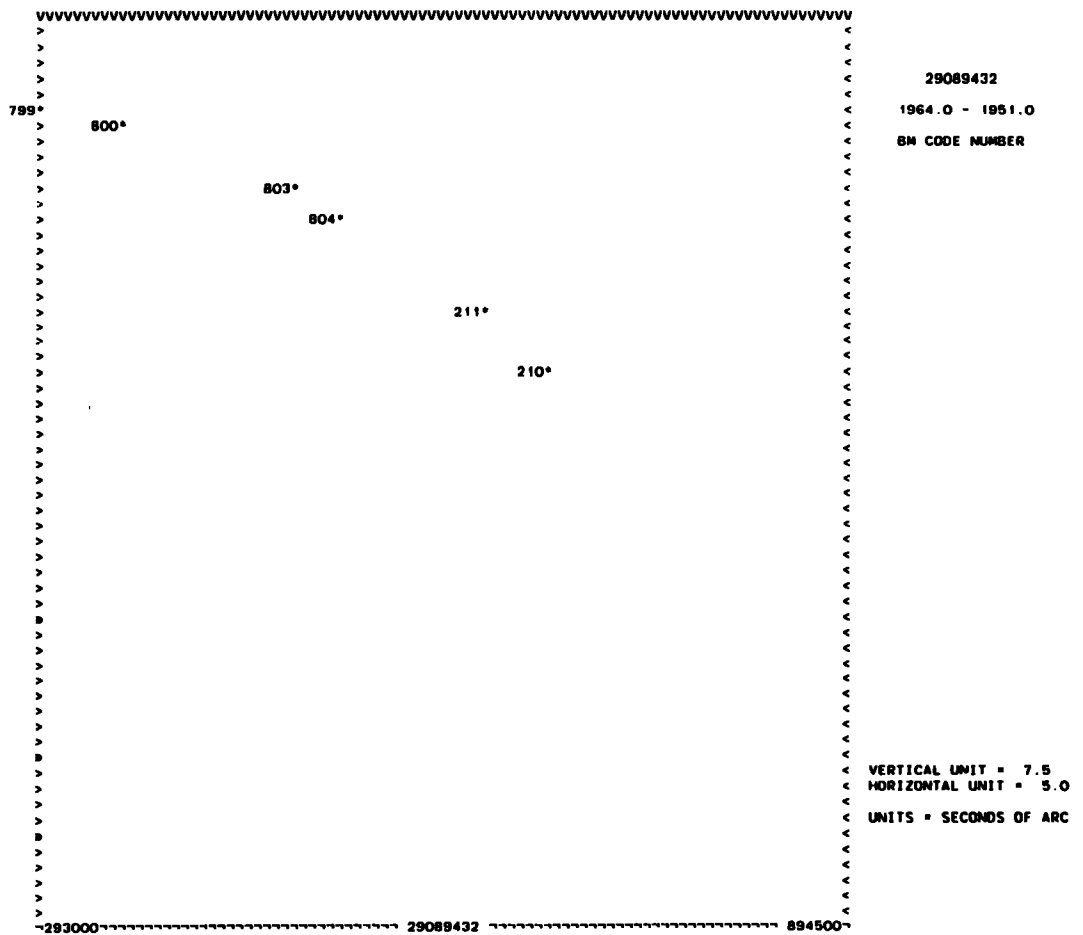
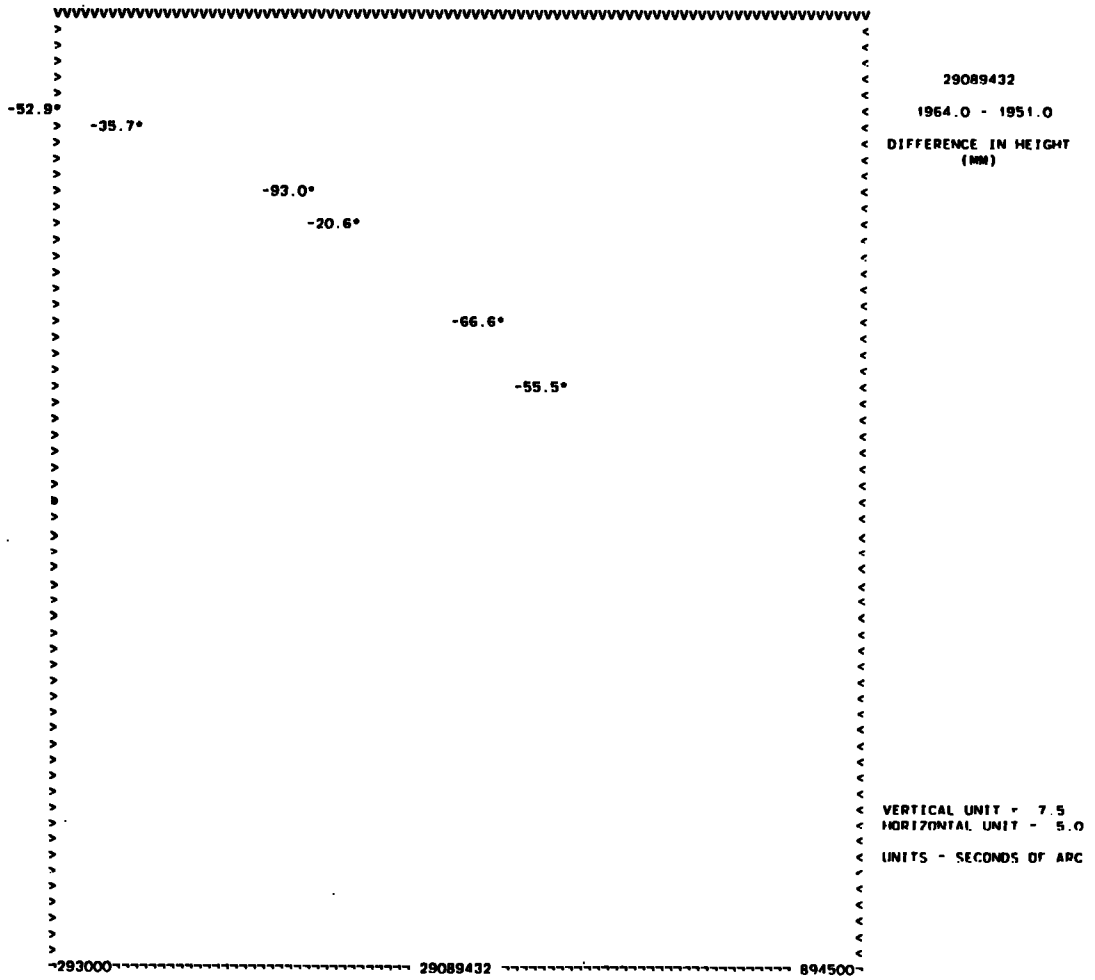
300730 30089331 894500

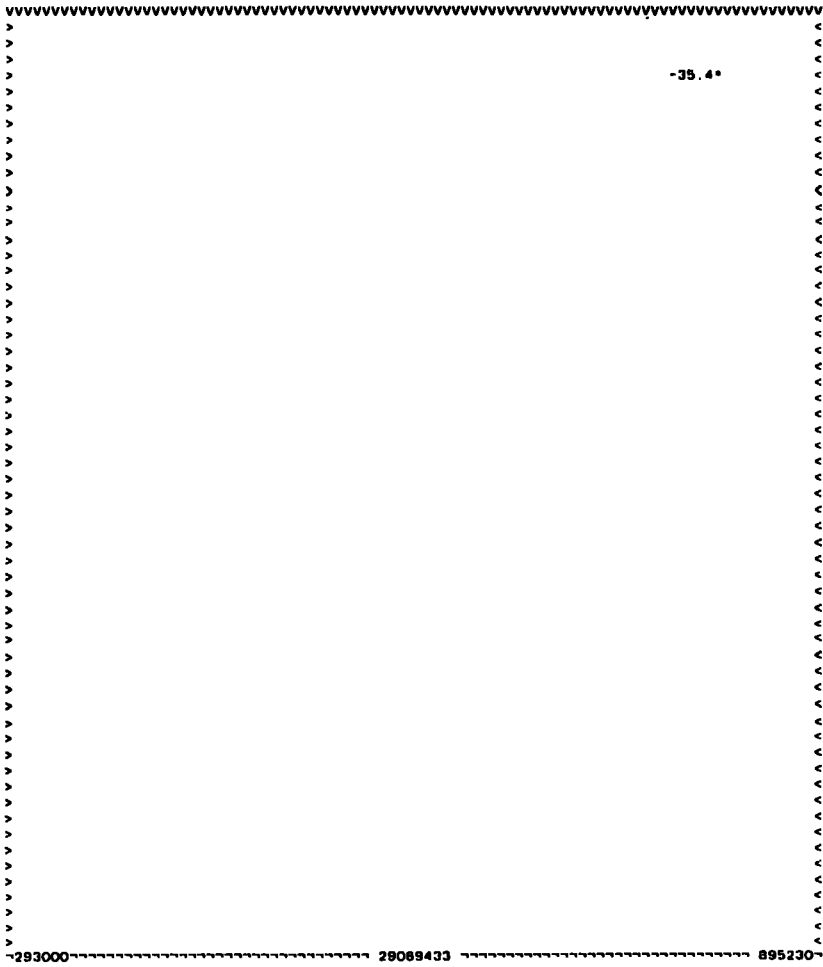












-35.4*

29089433

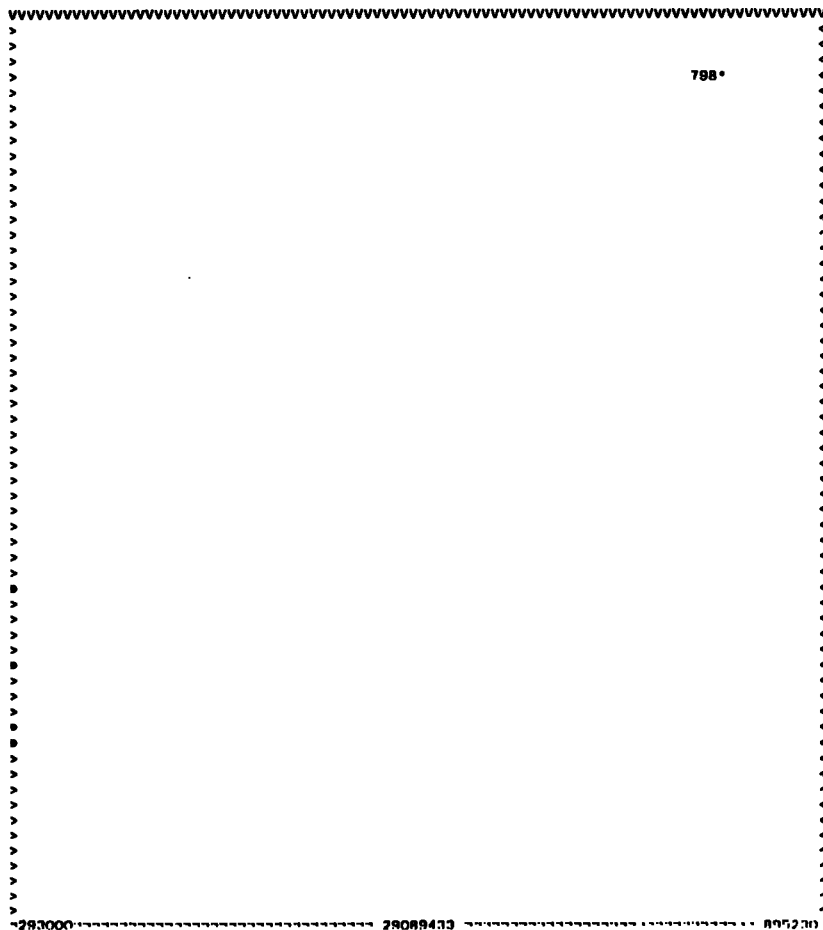
1964.0 - 1951.0

DIFFERENCE IN HEIGHT
(MM)

VERTICAL UNIT = 7.5
HORIZONTAL UNIT = 5.0

UNITS = SECONDS OF ARC

293000 29089433 895230



788*

29089433

1964.0 - 1951.0

BM CODE NUMBER

VERTICAL UNIT = 7.5
HORIZONTAL UNIT = 5.0

UNITS = SECONDS OF ARC

293000 29089433 895230

APPENDIX C.--LIST OF BENCH MARK CODE NUMBERS AND DESIGNATIONS, SORTED BY
DESIGNATIONS

Appendix C is sorted by bench mark designations. If the bench mark code number is known, appendix A can be used to find the corresponding designation.

BM# - bench mark code number

ACRN - archival cross reference number

Latitude - scaled geodetic latitude (degrees)

Longitude- scaled geodetic longitude (degrees)

Quad - 7.5 minute identifier

Years - the 2 years involved in the height difference
estimate, year 1 minus year 2

Diff - estimate of height difference (year 1 minus year 2),
units = mm

Sigma - estimate of standard error of height difference,
units = mm

<u>BM#</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
741	ATO284	FOLSE	29.955800	89.999400	29089444	1964.0-1951.0	-43.2	11.2
742	ATO285	G 152	29.956100	89.998000	29089444	1964.0-1951.0	-153.8	11.2
743	ATO286	D 3157 LAGS	29.947400	89.992200	29089444	1964.0-1951.0	-54.8	11.2
744	ATO287	CHALMETTE RM 2	29.945500	89.994700	29089444	1964.0-1951.0	-59.5	11.2
745	ATO288	D 3155 LAGS	29.946300	89.990200	29089444	1964.0-1951.0	-42.0	11.2
746	ATO289	CHALMETTE RM 1	29.942400	89.993800	29089444	1964.0-1951.0	-75.9	11.3
747	ATO290	D 3156 LAGS	29.944700	89.985000	29089444	1964.0-1951.0	-68.8	11.1
751	ATO292	E 3128 LAGS	29.931600	89.958000	29089444	1964.0-1951.0	-32.4	11.2
753	ATO293	216/1 CAP MRC	29.931900	89.957700	29089444	1964.0-1951.0	-35.2	11.2
268	ATO294	F 152	29.940200	89.973800	29089444	1985.0-1964.0	-351.8	10.6
268	ATO294	F 152	29.940200	89.973800	29089444	1985.0-1951.0	-426.7	11.0
268	ATO294	F 152	29.940200	89.973800	29089444	1964.0-1951.0	-75.0	11.1
748	ATO295	E 3124 LAGS	29.939700	89.973800	29089444	1964.0-1951.0	-68.6	11.1
267	ATO297	A 151	29.936100	89.964400	29089444	1985.0-1964.0	-222.1	10.5
267	ATO297	A 151	29.936100	89.964400	29089444	1985.0-1951.0	-267.0	10.9
267	ATO297	A 151	29.936100	89.964400	29089444	1964.0-1951.0	-44.9	11.0
750	ATO299	77 LAGS	29.934400	89.962200	29089444	1964.0-1951.0	-31.6	11.1
752	ATO300	216/1 BOLT MRC	29.931900	89.957700	29089444	1964.0-1951.0	-34.3	11.2
266	ATO302	A 194	29.931900	89.957200	29089444	1985.0-1964.0	-164.9	10.7
754	ATO303	B 151	29.930200	89.949100	29089444	1964.0-1951.0	-41.4	11.3
265	ATO304	H 194	29.930500	89.942500	29089444	1985.0-1964.0	-138.8	11.0
264	ATO306	J 194	29.929700	89.933300	29089444	1985.0-1964.0	-144.8	11.1
263	ATO309	G 194	29.924400	89.922500	29089444	1985.0-1964.0	-88.1	11.3
262	ATO311	B 194	29.916100	89.911900	29089444	1985.0-1964.0	-50.9	11.5
261	ATO314	K 194	29.901900	89.901900	29089444	1985.0-1964.0	-41.4	11.8
757	ATO317	C 151	29.898300	89.901300	29089444	1964.0-1951.0	-17.4	12.2
759	ATO325	218/1 CAP MRC	29.896900	89.891600	29089444	1964.0-1951.0	7.2	12.4
758	ATO326	218/1 BOLT MRC	29.896900	89.891600	29089444	1964.0-1951.0	-1.3	12.4
259	ATO328	D 151	29.888800	89.896900	29089444	1985.0-1964.0	-53.8	12.1
259	ATO328	D 151	29.888800	89.896900	29089444	1985.0-1951.0	-78.7	12.5
259	ATO328	D 151	29.888800	89.896900	29089444	1964.0-1951.0	-24.9	12.4
760	ATO329	86 LAGS	29.885800	89.896100	29089444	1964.0-1951.0	-7.3	12.4
257	ATO333	F 194	29.871100	89.894400	29089443	1985.0-1964.0	-25.2	12.3
762	ATO334	F 151	29.867700	89.890500	29089443	1964.0-1951.0	15.5	12.7
763	ATO335	G 151	29.864400	89.897700	29089443	1964.0-1951.0	-22.6	12.8
254	ATO339	F 3138 LAGS RESET 1958	29.859900	89.912700	29089443	1985.0-1964.0	3.9	12.7
253	ATO340	C 194	29.858800	89.915800	29089443	1985.0-1964.0	2.0	12.8
252	ATO342	F 3340 LAGS RESET 1958	29.858600	89.919700	29089443	1985.0-1964.0	-120.3	12.8
250	ATO344	H 151 RESET 1964	29.860800	89.928300	29089443	1985.0-1964.0	-32.1	12.9
766	ATO348	TTS 202 USGS	29.865800	89.943000	29089443	1964.0-1951.0	-42.8	13.3
249	ATO349	E 151	29.864400	89.943600	29089443	1985.0-1964.0	-142.5	13.1
249	ATO349	E 151	29.864400	89.943600	29089443	1985.0-1951.0	-178.5	13.6
249	ATO349	E 151	29.864400	89.943600	29089443	1964.0-1951.0	-36.1	13.4
767	ATO350	J 151 USE	29.873000	89.951900	29089443	1964.0-1951.0	-169.4	13.5
768	ATO352	K 151 USE	29.877700	89.964100	29089444	1964.0-1951.0	-27.2	13.6
769	ATO354	PBM 220/2 BOLT MRC	29.869700	89.968600	29089443	1964.0-1951.0	-20.4	13.8
245	ATO357	D 194	29.859900	89.971600	29089443	1985.0-1964.0	-21.5	13.7
770	ATO358	3143 R LAGS	29.852400	89.971100	29089443	1964.0-1951.0	-40.1	14.0
771	ATO361	3144 R LAGS	29.841900	89.978300	29089443	1964.0-1951.0	-16.8	14.2
772	ATO363	L 151 USE	29.833300	89.987700	29089443	1964.0-1951.0	-106.5	14.3

<u>BM#</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
773	ATO368	M 151 USE	29.819100	89.996100	29089443	1964.0-1951.0	-15.7	14.5
774	ATO369	TT 16 L USGS	29.819100	89.996100	29089443	1964.0-1951.0	-31.2	14.6
232	ATO374	S 151 USE	29.736900	89.994400	29089434	1985.0-1964.0	-17.6	15.1
232	ATO374	S 151 USE	29.736900	89.994400	29089434	1985.0-1951.0	-129.6	15.7
232	ATO374	S 151 USE	29.736900	89.994400	29089434	1964.0-1951.0	-111.9	15.7
782	ATO375	T 151	29.729100	89.988000	29089434	1964.0-1951.0	-130.6	15.8
230	ATO376	R 194	29.729100	89.988000	29089434	1985.0-1964.0	24.3	15.2
783	ATO377	3162 LAGS	29.728300	89.987500	29089434	1964.0-1951.0	-144.6	15.8
229	ATO383	U 151 USE	29.719400	89.982200	29089434	1985.0-1964.0	-311.8	15.3
229	ATO383	U 151 USE	29.719400	89.982200	29089434	1985.0-1951.0	-560.0	15.9
229	ATO383	U 151 USE	29.719400	89.982200	29089434	1964.0-1951.0	-248.2	16.0
784	ATO385	V 151 USE	29.707200	89.975500	29089434	1964.0-1951.0	-152.2	16.1
785	ATO386	W 151 USE	29.695500	89.969100	29089434	1964.0-1951.0	-111.7	16.2
787	ATO389	PBM 28 CAP MRC	29.687200	89.962700	29089434	1964.0-1951.0	-19.8	16.3
786	ATO390	PBM 28 BOLT MRC	29.687200	89.962700	29089434	1964.0-1951.0	-20.0	16.3
788	ATO392	3168 LAGS	29.685500	89.962200	29089434	1964.0-1951.0	-120.8	16.3
789	ATO393	3170 LAGS	29.678800	89.958300	29089434	1964.0-1951.0	-82.5	16.4
793	ATO400	Y 151 USE	29.643300	89.935800	29089434	1964.0-1951.0	-106.2	16.9
222	ATO401	P 194	29.642500	89.929700	29089434	1985.0-1964.0	-43.2	16.0
795	ATO402	PBM 27 CAP MRC	29.638300	89.924400	29089434	1964.0-1951.0	-40.6	17.0
794	ATO403	PBM 27 BOLT MRC	29.638300	89.924400	29089434	1964.0-1951.0	-40.9	17.0
797	ATO406	Z 151	29.634100	89.916600	29089434	1964.0-1951.0	-47.5	17.1
219	ATO407	A 152	29.624100	89.902700	29089433	1985.0-1964.0	-9.8	16.2
219	ATO407	A 152	29.624100	89.902700	29089433	1985.0-1951.0	-31.3	16.9
219	ATO407	A 152	29.624100	89.902700	29089433	1964.0-1951.0	-21.5	17.2
798	ATO409	B 152 USE	29.617700	89.890200	29089433	1964.0-1951.0	-35.4	17.3
799	ATO410	C 152 USE	29.612400	89.875000	29089432	1964.0-1951.0	-52.9	17.5
801	ATO413	PBM 228/2 CAP MRC	29.609900	89.860500	29089432	1964.0-1951.0	-29.8	17.6
800	ATO414	PBM 228/2 BOLT MRC	29.609900	89.860500	29089432	1964.0-1951.0	-35.7	17.6
215	ATO419	Q 194	29.608300	89.851900	29089432	1985.0-1964.0	-29.3	16.6
804	ATO423	B 91	29.598800	89.827500	29089432	1964.0-1951.0	-20.6	17.9
803	ATO425	D 152 USE	29.601900	89.834400	29089432	1964.0-1951.0	-93.0	17.9
211	ATO428	E 152	29.585500	89.805800	29089432	1985.0-1964.0	-66.9	16.8
211	ATO428	E 152	29.585500	89.805800	29089432	1985.0-1951.0	-133.5	17.5
211	ATO428	E 152	29.585500	89.805800	29089432	1964.0-1951.0	-66.6	18.1
210	ATO429	E 91	29.577700	89.795800	29089432	1985.0-1964.0	-90.0	16.9
210	ATO429	E 91	29.577700	89.795800	29089432	1985.0-1951.0	-145.6	17.5
210	ATO429	E 91	29.577700	89.795800	29089432	1964.0-1951.0	-55.5	18.3
868	ATO470	239 LAGS	29.982200	89.945500	29089444	1964.0-1951.0	-65.0	10.6
869	ATO473	F 3123 LAGS	29.978000	89.946100	29089444	1964.0-1951.0	-176.0	10.7
870	ATO477	K 152	29.955200	89.957200	29089444	1964.0-1951.0	-51.3	10.9
736	AU0110	PBM DEPOT CAP	29.960800	90.031100	29090111	1964.0-1951.0	-129.1	11.2
2	AU0349	A 10	29.924400	90.226300	29090114	1985.0-1951.0	-36.5	12.4
4	AU0352	WILLSWOOD RM 2	29.923600	90.227200	29090114	1985.0-1951.0	-3.6	12.5
1	AU0353	JF 58 USGS	29.926100	90.220800	29090114	1985.0-1964.0	0.1	12.1
14	AU0356	Y 190	29.919100	90.207500	29090114	1985.0-1964.0	-16.0	11.9
13	AU0388	70 LLD USE	29.919700	90.208300	29090114	1985.0-1964.0	-93.6	11.9
13	AU0388	70 LLD USE	29.919700	90.208300	29090114	1985.0-1951.0	-139.6	12.1
13	AU0388	70 LLD USE	29.919700	90.208300	29090114	1964.0-1951.0	-46.0	12.6
171	AU0403	B 156	29.934400	90.199700	29090114	1985.0-1964.0	-81.5	11.4

<u>BM#</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
172	AUO404	44 LAGS RESET 1959	29.936300	90.197200	29090114	1985.0-1964.0	-86.1	11.4
173	AUO406	M 146	29.938600	90.189700	29090114	1985.0-1964.0	-99.9	11.3
173	AUO406	M 146	29.938600	90.189700	29090114	1985.0-1951.0	-117.8	11.8
173	AUO406	M 146	29.938600	90.189700	29090114	1964.0-1951.0	-17.9	12.0
291	AUO407	M 189	29.944900	90.185000	29090114	1985.0-1964.0	-55.9	11.3
295	AUO408	1 G USGS	29.953600	90.179700	29090114	1985.0-1964.0	-37.1	11.2
295	AUO408	1 G USGS	29.953600	90.179700	29090114	1985.0-1951.0	-37.3	11.7
295	AUO408	1 G USGS	29.953600	90.179700	29090114	1964.0-1951.0	-0.2	11.9
294	AUO409	13.22 USGS	29.953600	90.179100	29090114	1985.0-1951.0	-39.7	11.7
292	AUO410	F 93 RESET 1959	29.953300	90.178800	29090114	1985.0-1964.0	-46.0	11.2
293	AUO411	N 146	29.948000	90.173300	29090114	1985.0-1964.0	-149.2	11.3
293	AUO411	N 146	29.948000	90.173300	29090114	1985.0-1951.0	-172.2	11.8
293	AUO411	N 146	29.948000	90.173300	29090114	1964.0-1951.0	-22.9	11.8
204	AUO413	Q 147	29.969400	90.160500	29090114	1985.0-1964.0	-41.3	11.0
204	AUO413	Q 147	29.969400	90.160500	29090114	1985.0-1951.0	-57.4	11.4
204	AUO413	Q 147	29.969400	90.160500	29090114	1964.0-1951.0	-16.2	11.5
202	AUO417	M 188	29.974400	90.154700	29090114	1985.0-1964.0	-52.8	10.9
296	AUO420	U 147	29.986900	90.128600	29090114	1985.0-1964.0	-92.2	10.8
296	AUO420	U 147	29.986900	90.128600	29090114	1985.0-1951.0	-107.0	11.2
296	AUO420	U 147	29.986900	90.128600	29090114	1964.0-1951.0	-14.8	11.4
298	AUO422	L 188	29.988300	90.116600	29090111	1985.0-1964.0	-103.3	10.7
299	AUO423	P 188	29.990500	90.109700	29090111	1985.0-1964.0	-157.0	10.7
301	AUO424	281 LAGS RESET 1952	29.993800	90.100800	29090111	1985.0-1964.0	-226.6	10.6
300	AUO425	45 B NOS+WB	29.994100	90.101100	29090111	1985.0-1964.0	-220.1	10.6
300	AUO425	45 B NOS+WB	29.994100	90.101100	29090111	1985.0-1951.0	-270.8	11.0
300	AUO425	45 B NOS+WB	29.994100	90.101100	29090111	1964.0-1951.0	-50.7	11.2
303	AUO427	W 147	29.992700	90.092500	29090111	1985.0-1964.0	-244.4	10.6
303	AUO427	W 147	29.992700	90.092500	29090111	1985.0-1951.0	-295.1	11.0
303	AUO427	W 147	29.992700	90.092500	29090111	1964.0-1951.0	-50.7	11.2
304	AUO428	Y 147	29.992400	90.086300	29090111	1985.0-1964.0	-169.5	10.5
304	AUO428	Y 147	29.992400	90.086300	29090111	1985.0-1951.0	-210.0	10.9
304	AUO428	Y 147	29.992400	90.086300	29090111	1964.0-1951.0	-40.5	11.2
305	AUO429	A 148	29.988800	90.086900	29090111	1985.0-1964.0	-148.4	10.5
305	AUO429	A 148	29.988800	90.086900	29090111	1985.0-1951.0	-188.6	10.9
305	AUO429	A 148	29.988800	90.086900	29090111	1964.0-1951.0	-40.2	11.2
306	AUO430	B 148	29.987700	90.074400	29090111	1985.0-1964.0	-194.7	10.5
306	AUO430	B 148	29.987700	90.074400	29090111	1985.0-1951.0	-268.5	10.9
306	AUO430	B 148	29.987700	90.074400	29090111	1964.0-1951.0	-73.7	11.1
307	AUO431	F 156	29.989900	90.070800	29090111	1985.0-1964.0	-136.0	10.4
889	AUO432	D 3118 LAGS	29.991900	90.068300	29090111	1964.0-1951.0	-35.8	11.1
308	AUO433	Z 147	29.991600	90.067700	29090111	1985.0-1964.0	-132.5	10.4
308	AUO433	Z 147	29.991600	90.067700	29090111	1985.0-1951.0	-163.1	10.8
308	AUO433	Z 147	29.991600	90.067700	29090111	1964.0-1951.0	-30.6	11.1
309	AUO434	D 3120 LAGS	29.995200	90.062500	29090111	1985.0-1964.0	-178.8	10.4
309	AUO434	D 3120 LAGS	29.995200	90.062500	29090111	1985.0-1951.0	-236.6	10.7
309	AUO434	D 3120 LAGS	29.995200	90.062500	29090111	1964.0-1951.0	-57.8	11.1
310	AUO435	P 193	29.999700	90.058800	29090111	1985.0-1964.0	-86.1	10.3
884	AUO438	276 LAGS	29.978800	90.125200	29090114	1964.0-1951.0	-50.8	11.5
959	AUO440	TEST	29.988800	90.068000	29090111	1964.0-1951.0	-44.3	11.1
958	AUO441	U 153	29.988300	90.067500	29090111	1964.0-1951.0	-36.3	11.1

<u>BM#</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
384	AUO442	GENT FLA NOS+WB	29.989900	90.074700	29090111	1985.O-1964.O	-146.3	10.4
384	AUO442	GENT FLA NOS+WB	29.989900	90.074700	29090111	1985.O-1951.O	-183.1	10.8
384	AUO442	GENT FLA NOS+WB	29.989900	90.074700	29090111	1964.O-1951.O	-36.8	11.1
686	AUO447	P 146	29.956600	90.163600	29090114	1964.O-1951.O	-32.5	11.7
182	AUO518	J 146 RESET 1961	29.972200	90.243800	29090114	1985.O-1964.O	-19.8	11.5
680	AUO519	50 LAGS	29.970800	90.236300	29090114	1964.O-1951.O	17.4	11.9
180	AUO520	S 188	29.966600	90.229100	29090114	1985.O-1964.O	-1.3	11.4
682	AUO525	K 146	29.962500	90.220000	29090114	1964.O-1951.O	9.1	11.8
683	AUO527	48 LAGS	29.951100	90.213800	29090114	1964.O-1951.O	8.9	11.9
175	AUO530	Q 188	29.940500	90.213000	29090114	1985.O-1964.O	-45.4	11.4
174	AUO531	46 LAGS	29.935800	90.209700	29090114	1985.O-1964.O	-63.8	11.4
174	AUO531	46 LAGS	29.935800	90.209700	29090114	1985.O-1951.O	-65.9	11.8
174	AUO531	46 LAGS	29.935800	90.209700	29090114	1964.O-1951.O	-2.0	12.0
684	AUO537	PBM 210/2 BOLT USE	29.935500	90.190200	29090114	1964.O-1951.O	-19.3	12.0
290	AUO538	PBM 210/2 CAP USE	29.935800	90.190500	29090114	1985.O-1964.O	-108.6	11.4
290	AUO538	PBM 210/2 CAP USE	29.935800	90.190500	29090114	1985.O-1951.O	-125.6	11.8
290	AUO538	PBM 210/2 CAP USE	29.935800	90.190500	29090114	1964.O-1951.O	-17.0	12.0
689	AUO547	S 146	29.956300	90.138800	29090114	1964.O-1951.O	-52.8	11.5
517	AUO549	T 146	29.951300	90.137500	29090114	1985.O-1964.O	-28.4	11.1
517	AUO549	T 146	29.951300	90.137500	29090114	1985.O-1951.O	-45.5	11.5
517	AUO549	T 146	29.951300	90.137500	29090114	1964.O-1951.O	-17.1	11.6
518	AUO550	U 146	29.946100	90.135200	29090114	1985.O-1964.O	-72.7	11.2
518	AUO550	U 146	29.946100	90.135200	29090114	1985.O-1951.O	-244.2	11.6
518	AUO550	U 146	29.946100	90.135200	29090114	1964.O-1951.O	-171.4	11.6
690	AUO554	C 3134 LAGS	29.943000	90.133600	29090114	1964.O-1951.O	-31.1	11.6
519	AUO555	C 3135 LAGS	29.945200	90.131100	29090114	1985.O-1964.O	-35.1	11.3
519	AUO555	C 3135 LAGS	29.945200	90.131100	29090114	1985.O-1951.O	-74.6	11.6
519	AUO555	C 3135 LAGS	29.945200	90.131100	29090114	1964.O-1951.O	-39.5	11.6
691	AUO556	PBM XX C OF NO	29.945800	90.130500	29090114	1964.O-1951.O	-31.2	11.6
521	AUO557	D USE	29.938600	90.134400	29090114	1985.O-1964.O	-48.3	11.3
692	AUO558	50+38.40 USE	29.938300	90.134700	29090114	1964.O-1951.O	-33.4	11.6
520	AUO559	PBM DEPOT USE	29.937700	90.134700	29090114	1985.O-1964.O	-77.1	11.3
520	AUO559	PBM DEPOT USE	29.937700	90.134700	29090114	1985.O-1951.O	-104.0	11.6
520	AUO559	PBM DEPOT USE	29.937700	90.134700	29090114	1964.O-1951.O	-26.9	11.6
693	AUO560	FLEET	29.936600	90.134100	29090114	1964.O-1951.O	-7.4	11.6
694	AUO561	RESERVATION	29.934400	90.133600	29090114	1964.O-1951.O	-14.2	11.6
695	AUO563	THOMPSON	29.932500	90.133800	29090114	1964.O-1951.O	-20.6	11.6
697	AUO565	X 150	29.930200	90.132500	29090114	1964.O-1951.O	-26.4	11.6
696	AUO566	Y 150	29.929700	90.133000	29090114	1964.O-1951.O	-47.2	11.6
698	AUO567	Z 148	29.929900	90.132500	29090114	1964.O-1951.O	-39.6	11.6
700	AUO568	PBM 212/2 CAP USE	29.921600	90.132500	29090114	1964.O-1951.O	-21.0	11.5
699	AUO569	PBM 212/2 BOLT USE	29.921600	90.132500	29090114	1964.O-1951.O	-25.0	11.5
702	AUO571	3141 LAGS	29.917400	90.129700	29090114	1964.O-1951.O	-107.6	11.5
524	AUO572	A 96	29.916100	90.127200	29090114	1985.O-1964.O	-176.9	11.2
524	AUO572	A 96	29.916100	90.127200	29090114	1985.O-1951.O	-267.4	11.6
524	AUO572	A 96	29.916100	90.127200	29090114	1964.O-1951.O	-90.6	11.5
526	AUO573	W 150	29.916900	90.125200	29090114	1985.O-1964.O	-150.8	11.2
526	AUO573	W 150	29.916900	90.125200	29090114	1985.O-1951.O	-226.8	11.6
526	AUO573	W 150	29.916900	90.125200	29090114	1964.O-1951.O	-76.0	11.5
525	AUO574	B 3146 LAGS	29.918000	90.125200	29090114	1985.O-1964.O	-126.7	11.2

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525	AU0574	B 3146 LAGS	29.918000	90.125200	29090114	1985.0-1951.0	-187.1	11.6
525	AU0574	B 3146 LAGS	29.918000	90.125200	29090114	1964.0-1951.0	-60.4	11.5
527	AU0575	3186 LAGS	29.916900	90.123000	29090111	1985.0-1964.0	-134.5	11.2
527	AU0575	3186 LAGS	29.916900	90.123000	29090111	1985.0-1951.0	-194.6	11.6
527	AU0575	3186 LAGS	29.916900	90.123000	29090111	1964.0-1951.0	-60.1	11.5
528	AU0576	B 3147 LAGS	29.916300	90.120200	29090111	1985.0-1964.0	-136.0	11.2
528	AU0576	B 3147 LAGS	29.916300	90.120200	29090111	1985.0-1951.0	-190.2	11.6
528	AU0576	B 3147 LAGS	29.916300	90.120200	29090111	1964.0-1951.0	-54.1	11.5
529	AU0577	3187 LAGS	29.916100	90.118000	29090111	1985.0-1964.0	-147.3	11.2
529	AU0577	3187 LAGS	29.916100	90.118000	29090111	1985.0-1951.0	-204.7	11.6
529	AU0577	3187 LAGS	29.916100	90.118000	29090111	1964.0-1951.0	-57.4	11.5
530	AU0578	9 A NOS+WB	29.922700	90.114400	29090111	1985.0-1964.0	-112.7	11.3
531	AU0579	3188 R LAGS	29.916100	90.113000	29090111	1985.0-1964.0	-159.5	11.2
531	AU0579	3188 R LAGS	29.916100	90.113000	29090111	1985.0-1951.0	-269.2	11.6
531	AU0579	3188 R LAGS	29.916100	90.113000	29090111	1964.0-1951.0	-109.8	11.5
703	AU0580	3189 LAGS	29.916100	90.108300	29090111	1964.0-1951.0	-103.3	11.5
532	AU0581	V 150	29.915800	90.103000	29090111	1985.0-1964.0	-176.3	11.2
532	AU0581	V 150	29.915800	90.103000	29090111	1985.0-1951.0	-297.6	11.6
532	AU0581	V 150	29.915800	90.103000	29090111	1964.0-1951.0	-121.3	11.5
533	AU0582	3190 LAGS	29.916600	90.103000	29090111	1985.0-1964.0	-174.4	11.2
533	AU0582	3190 LAGS	29.916600	90.103000	29090111	1985.0-1951.0	-275.9	11.6
533	AU0582	3190 LAGS	29.916600	90.103000	29090111	1964.0-1951.0	-101.5	11.5
534	AU0583	B 3148 LAGS	29.917200	90.095200	29090111	1985.0-1964.0	-169.5	11.2
534	AU0583	B 3148 LAGS	29.917200	90.095200	29090111	1985.0-1951.0	-275.1	11.5
534	AU0583	B 3148 LAGS	29.917200	90.095200	29090111	1964.0-1951.0	-105.7	11.5
704	AU0584	U 150	29.916900	90.094700	29090111	1964.0-1951.0	-99.6	11.5
535	AU0586	3192 LAGS	29.917400	90.091900	29090111	1985.0-1964.0	-191.3	11.2
535	AU0586	3192 LAGS	29.917400	90.091900	29090111	1985.0-1951.0	-305.4	11.5
535	AU0586	3192 LAGS	29.917400	90.091900	29090111	1964.0-1951.0	-114.1	11.5
536	AU0588	11 NODLB	29.918000	90.086600	29090111	1985.0-1964.0	-175.7	11.1
536	AU0588	11 NODLB	29.918000	90.086600	29090111	1985.0-1951.0	-262.4	11.5
536	AU0588	11 NODLB	29.918000	90.086600	29090111	1964.0-1951.0	-86.6	11.4
705	AU0589	3193 LAGS	29.918000	90.086300	29090111	1964.0-1951.0	-83.1	11.4
537	AU0590	3195 LAGS	29.920200	90.078300	29090111	1985.0-1964.0	-146.9	11.2
537	AU0590	3195 LAGS	29.920200	90.078300	29090111	1985.0-1951.0	-272.4	11.5
537	AU0590	3195 LAGS	29.920200	90.078300	29090111	1964.0-1951.0	-125.5	11.5
538	AU0592	876 1885 TIDAL 2	29.922700	90.070800	29090111	1985.0-1964.0	-188.0	11.2
538	AU0592	876 1885 TIDAL 2	29.922700	90.070800	29090111	1985.0-1951.0	-300.9	11.6
538	AU0592	876 1885 TIDAL 2	29.922700	90.070800	29090111	1964.0-1951.0	-113.0	11.5
539	AU0595	T 150	29.925200	90.068800	29090111	1985.0-1964.0	-193.3	11.2
539	AU0595	T 150	29.925200	90.068800	29090111	1985.0-1951.0	-340.2	11.6
539	AU0595	T 150	29.925200	90.068800	29090111	1964.0-1951.0	-146.9	11.5
706	AU0597	B 3149 LAGS	29.927700	90.066900	29090111	1964.0-1951.0	-152.3	11.5
707	AU0598	B 3150 LAGS	29.929400	90.065000	29090111	1964.0-1951.0	-167.1	11.5
708	AU0599	S 150	29.929400	90.064400	29090111	1964.0-1951.0	-177.9	11.5
541	AU0600	M 156	29.929100	90.064100	29090111	1985.0-1964.0	-196.3	11.2
546	AU0601	Q 150	29.929100	90.065000	29090111	1985.0-1964.0	-171.5	11.2
546	AU0601	Q 150	29.929100	90.065000	29090111	1985.0-1951.0	-297.6	11.6
546	AU0601	Q 150	29.929100	90.065000	29090111	1964.0-1951.0	-126.2	11.5
540	AU0602	N 156	29.929100	90.063800	29090111	1985.0-1964.0	-191.5	11.2

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543	AU0603	L 156	29.929700	90.064400	29090111	1985.0-1964.0	-220.3	11.2
542	AU0604	K 156	29.929900	90.064100	29090111	1985.0-1964.0	-210.4	11.2
544	AU0605	NOPSI 2 C OF NO	29.929900	90.064400	29090111	1985.0-1964.0	-216.0	11.2
544	AU0605	NOPSI 2 C OF NO	29.929900	90.064400	29090111	1985.0-1951.0	-381.0	11.6
544	AU0605	NOPSI 2 C OF NO	29.929900	90.064400	29090111	1964.0-1951.0	-165.0	11.5
545	AU0607	P 150 RESET 1960	29.930200	90.064400	29090111	1985.0-1964.0	-216.0	11.2
547	AU0609	MARKET STREET NODLB RESET	29.929100	90.063800	29090111	1985.0-1964.0	-171.0	11.2
547	AU0609	MARKET STREET NODLB RESET	29.929100	90.063800	29090111	1985.0-1951.0	-305.1	11.6
547	AU0609	MARKET STREET NODLB RESET	29.929100	90.063800	29090111	1964.0-1951.0	-134.1	11.5
709	AU0610	TIDAL 4	29.931900	90.065500	29090111	1964.0-1951.0	-205.2	11.5
710	AU0611	3199 LAGS	29.931900	90.065500	29090111	1964.0-1951.0	-196.0	11.5
711	AU0612	3200 LAGS	29.935200	90.066100	29090111	1964.0-1951.0	-200.2	11.4
712	AU0613	B 149	29.935500	90.063800	29090111	1964.0-1951.0	-219.1	11.4
714	AU0616	B 3152 LAGS	29.938300	90.063300	29090111	1964.0-1951.0	-248.7	11.4
716	AU0618	N 150	29.939900	90.065200	29090111	1964.0-1951.0	-253.7	11.4
717	AU0619	A 149	29.944100	90.063300	29090111	1964.0-1951.0	-304.3	11.3
719	AU0623	X 148	29.950000	90.063800	29090111	1964.0-1951.0	-158.9	11.3
556	AU0629	B 96	29.950800	90.065800	29090111	1985.0-1964.0	-264.9	11.0
556	AU0629	B 96	29.950800	90.065800	29090111	1985.0-1951.0	-441.7	11.3
556	AU0629	B 96	29.950800	90.065800	29090111	1964.0-1951.0	-176.8	11.3
722	AU0631	B 3157 LAGS	29.952200	90.063800	29090111	1964.0-1951.0	-157.0	11.3
723	AU0632	TIDAL 3	29.954700	90.063300	29090111	1964.0-1951.0	-158.6	11.3
725	AU0636	JAX 2	29.956100	90.063000	29090111	1964.0-1951.0	-133.8	11.3
726	AU0637	JAX 1	29.956900	90.063300	29090111	1964.0-1951.0	-200.0	11.3
559	AU0638	36 A NOS+WB	29.956600	90.063000	29090111	1985.0-1964.0	-173.4	10.9
559	AU0638	36 A NOS+WB	29.956600	90.063000	29090111	1985.0-1951.0	-314.7	11.3
559	AU0638	36 A NOS+WB	29.956600	90.063000	29090111	1964.0-1951.0	-141.3	11.3
727	AU0639	ST PETER GATE STOP	29.956600	90.063000	29090111	1964.0-1951.0	-141.5	11.3
728	AU0640	DECATUR GATE STOP	29.956100	90.062700	29090111	1964.0-1951.0	-141.3	11.3
561	AU0642	Q 156	29.960500	90.057700	29090111	1985.0-1964.0	-176.0	10.8
562	AU0644	24 NODLB	29.960800	90.056600	29090111	1985.0-1964.0	-173.9	10.8
562	AU0644	24 NODLB	29.960800	90.056600	29090111	1985.0-1951.0	-261.3	11.2
562	AU0644	24 NODLB	29.960800	90.056600	29090111	1964.0-1951.0	-87.4	11.2
563	AU0645	D 149	29.962200	90.055800	29090111	1985.0-1964.0	-138.5	10.8
563	AU0645	D 149	29.962200	90.055800	29090111	1985.0-1951.0	-197.6	11.2
563	AU0645	D 149	29.962200	90.055800	29090111	1964.0-1951.0	-59.1	11.2
564	AU0646	31 A LAGS	29.964400	90.056600	29090111	1985.0-1964.0	-152.4	10.8
564	AU0646	31 A LAGS	29.964400	90.056600	29090111	1985.0-1951.0	-198.5	11.2
564	AU0646	31 A LAGS	29.964400	90.056600	29090111	1964.0-1951.0	-46.1	11.2
729	AU0648	TIDAL W PARK	29.964400	90.056600	29090111	1964.0-1951.0	-46.9	11.2
565	AU0649	B 3161 LAGS	29.965200	90.056100	29090111	1985.0-1964.0	-124.3	10.8
565	AU0649	B 3161 LAGS	29.965200	90.056100	29090111	1985.0-1951.0	-179.2	11.1
565	AU0649	B 3161 LAGS	29.965200	90.056100	29090111	1964.0-1951.0	-54.9	11.2
566	AU0651	Q 152	29.968300	90.054100	29090111	1985.0-1964.0	-97.0	10.7
566	AU0651	Q 152	29.968300	90.054100	29090111	1985.0-1951.0	-124.7	11.1
566	AU0651	Q 152	29.968300	90.054100	29090111	1964.0-1951.0	-27.6	11.1
567	AU0652	B 3135 LAGS	29.968300	90.053600	29090111	1985.0-1964.0	-108.7	10.7
567	AU0652	B 3135 LAGS	29.968300	90.053600	29090111	1985.0-1951.0	-150.5	11.1
567	AU0652	B 3135 LAGS	29.968300	90.053600	29090111	1964.0-1951.0	-41.7	11.1
733	AU0654	B 3136 LAGS	29.968300	90.047200	29090111	1964.0-1951.0	-60.4	11.1

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569	AU0658	M 150 RESET 1960	29.964900	90.047500	29090111	1985.0-1964.0	-130.0	10.8
570	AU0659	L 150	29.962500	90.049100	29090111	1985.0-1964.0	-150.4	10.9
570	AU0659	L 150	29.962500	90.049100	29090111	1985.0-1951.0	-223.6	11.3
570	AU0659	L 150	29.962500	90.049100	29090111	1964.0-1951.0	-73.3	11.3
568	AU0660	P 152	29.968600	90.046300	29090111	1985.0-1964.0	-112.5	10.8
568	AU0660	P 152	29.968600	90.046300	29090111	1985.0-1951.0	-149.5	11.2
568	AU0660	P 152	29.968600	90.046300	29090111	1964.0-1951.0	-37.1	11.1
571	AU0661	B 3139 LAGS	29.965800	90.037200	29090111	1985.0-1964.0	-235.2	10.9
571	AU0661	B 3139 LAGS	29.965800	90.037200	29090111	1985.0-1951.0	-345.4	11.3
571	AU0661	B 3139 LAGS	29.965800	90.037200	29090111	1964.0-1951.0	-110.1	11.2
572	AU0662	J 152	29.966100	90.036900	29090111	1985.0-1964.0	-199.1	10.9
572	AU0662	J 152	29.966100	90.036900	29090111	1985.0-1951.0	-286.1	11.3
572	AU0662	J 152	29.966100	90.036900	29090111	1964.0-1951.0	-87.1	11.1
574	AU0663	H 152	29.963600	90.027500	29090111	1985.0-1964.0	-257.5	10.9
574	AU0663	H 152	29.963600	90.027500	29090111	1985.0-1951.0	-339.9	11.3
574	AU0663	H 152	29.963600	90.027500	29090111	1964.0-1951.0	-82.4	11.2
735	AU0665	PBM DEPOT BOLT	29.960800	90.031100	29090111	1964.0-1951.0	-136.5	11.2
737	AU0667	41 B NOSWB	29.963300	90.025200	29090111	1964.0-1951.0	-67.6	11.2
580	AU0668	M 152	29.965800	90.026300	29090111	1985.0-1964.0	-207.5	11.0
580	AU0668	M 152	29.965800	90.026300	29090111	1985.0-1951.0	-264.7	11.4
580	AU0668	M 152	29.965800	90.026300	29090111	1964.0-1951.0	-57.1	11.2
576	AU0670	L 152 RESET 1961	29.958600	90.022200	29090111	1985.0-1964.0	-315.1	11.0
738	AU0671	215/1 BOLT MRC	29.965200	90.020000	29090111	1964.0-1951.0	-64.4	11.2
579	AU0672	B 3142 LAGS	29.961600	90.018300	29090111	1985.0-1964.0	-213.4	11.0
579	AU0672	B 3142 LAGS	29.961600	90.018300	29090111	1985.0-1951.0	-271.8	11.4
579	AU0672	B 3142 LAGS	29.961600	90.018300	29090111	1964.0-1951.0	-58.4	11.2
740	AU0673	B 93	29.960200	90.011900	29090111	1964.0-1951.0	-68.6	11.2
578	AU0676	Q 189	29.959100	90.009400	29090111	1985.0-1964.0	-176.8	11.0
144	AU0689	P 190	29.861300	90.098300	29090112	1985.0-1964.0	-32.7	12.7
145	AU0692	T 190	29.859700	90.110000	29090112	1985.0-1964.0	-17.8	12.8
31	AU0693	U 190	29.877400	90.113800	29090111	1985.0-1964.0	-34.4	12.5
16	AU0738	X 190	29.909900	90.210800	29090114	1985.0-1964.0	-219.8	12.0
1052	AU0756	B 10	29.919400	90.214700	29090114	1964.0-1951.0	-6.7	12.7
1051	AU0757	1620 LAGS	29.919700	90.214100	29090114	1964.0-1951.0	-33.8	12.7
1055	AU0758	69 LLD USE	29.925200	90.219400	29090114	1964.0-1951.0	-14.0	12.8
1057	AU0760	209 C USE RESET	29.933800	90.225200	29090114	1964.0-1951.0	67.7	12.9
1058	AU0761	68 LLD USE	29.943000	90.229400	29090114	1964.0-1951.0	-3.4	13.1
811	AU0768	Y 146	29.980800	90.250500	29090141	1964.0-1951.0	-8.2	12.0
812	AU0769	X 146	29.982500	90.258600	29090141	1964.0-1951.0	4.9	12.1
813	AU0771	J 150	29.985500	90.257700	29090141	1964.0-1951.0	18.2	12.2
814	AU0772	W 146	29.986100	90.261600	29090141	1964.0-1951.0	-84.2	12.2
183	AU0775	HANSEN	29.982500	90.244400	29090114	1985.0-1964.0	1.0	11.5
874	AU0779	S 147	29.969400	90.218800	29090114	1964.0-1951.0	13.3	11.8
876	AU0782	B 147	29.978300	90.211100	29090114	1964.0-1951.0	-41.8	11.9
877	AU0785	R 147	29.972400	90.194100	29090114	1964.0-1951.0	7.1	11.7
878	AU0787	C 147	29.971100	90.177500	29090114	1964.0-1951.0	2.6	11.7
881	AU0802	T 147	29.986300	90.139400	29090114	1964.0-1951.0	-23.4	11.5
882	AU0804	277 LAGS	29.986900	90.124100	29090111	1964.0-1951.0	-48.6	11.3
883	AU0805	44 B NOSWB	29.986100	90.123800	29090111	1964.0-1951.0	-22.7	11.4
887	AU0812	X 147	29.993000	90.092700	29090111	1964.0-1951.0	-51.1	11.2

<u>BM#</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
903	AU0816	L 147	29.970200	90.149700	29090114	1964.0-1951.0	-16.8	11.5
904	AU0817	K 147	29.969700	90.146300	29090114	1964.0-1951.0	-22.5	11.5
487	AU0818	P 147	29.967500	90.140500	29090114	1985.0-1964.0	-62.4	11.0
487	AU0818	P 147	29.967500	90.140500	29090114	1985.0-1951.0	-80.9	11.4
487	AU0818	P 147	29.967500	90.140500	29090114	1964.0-1951.0	-18.5	11.4
907	AU0819	211 A CAP MRC	29.964700	90.136300	29090114	1964.0-1951.0	-61.3	11.4
906	AU0820	211 A BOLT MRC	29.964700	90.136300	29090114	1964.0-1951.0	-62.7	11.4
909	AU0827	A 3185 LAGS	29.964100	90.133600	29090114	1964.0-1951.0	-71.3	11.4
910	AU0829	A 3184 LAGS	29.964100	90.131300	29090114	1964.0-1951.0	-88.5	11.4
911	AU0831	N 147	29.963800	90.130000	29090114	1964.0-1951.0	-21.8	11.4
912	AU0832	A 3183 LAGS	29.963000	90.129700	29090114	1964.0-1951.0	-58.5	11.4
913	AU0834	PURIFICATION	29.956900	90.128300	29090114	1964.0-1951.0	-39.3	11.4
914	AU0835	16 B NOSWB	29.957400	90.129100	29090114	1964.0-1951.0	-18.9	11.5
915	AU0838	J 96	29.955500	90.120800	29090111	1964.0-1951.0	-222.3	11.3
917	AU0839	A 3180 LAGS	29.955200	90.120500	29090111	1964.0-1951.0	-46.6	11.3
494	AU0840	A 3178 LAGS	29.953800	90.118600	29090111	1985.0-1964.0	-56.2	11.0
494	AU0840	A 3178 LAGS	29.953800	90.118600	29090111	1985.0-1951.0	-71.8	11.3
494	AU0840	A 3178 LAGS	29.953800	90.118600	29090111	1964.0-1951.0	-15.7	11.3
497	AU0842	14 C NOS+EB	29.948300	90.120000	29090111	1985.0-1964.0	-6.4	11.1
497	AU0842	14 C NOS+EB	29.948300	90.120000	29090111	1985.0-1951.0	-17.6	11.5
497	AU0842	14 C NOS+EB	29.948300	90.120000	29090111	1964.0-1951.0	-11.2	11.4
495	AU0844	A 3176 LAGS RESET 1953	29.950800	90.115800	29090111	1985.0-1964.0	-32.7	11.0
496	AU0845	A 3175 LAGS	29.948800	90.115200	29090111	1985.0-1964.0	-52.5	11.0
496	AU0845	A 3175 LAGS	29.948800	90.115200	29090111	1985.0-1951.0	-75.1	11.4
496	AU0845	A 3175 LAGS	29.948800	90.115200	29090111	1964.0-1951.0	-22.6	11.4
498	AU0846	TULANE NOS+WB	29.948000	90.114100	29090111	1985.0-1964.0	-13.3	11.0
498	AU0846	TULANE NOS+WB	29.948000	90.114100	29090111	1985.0-1951.0	-27.5	11.4
498	AU0846	TULANE NOS+WB	29.948000	90.114100	29090111	1964.0-1951.0	-14.2	11.4
499	AU0849	B 3164 LAGS	29.944700	90.113600	29090111	1985.0-1964.0	-68.3	11.1
499	AU0849	B 3164 LAGS	29.944700	90.113600	29090111	1985.0-1951.0	-116.2	11.4
499	AU0849	B 3164 LAGS	29.944700	90.113600	29090111	1964.0-1951.0	-47.9	11.4
501	AU0850	BM MC MAIN	29.941600	90.111900	29090111	1985.0-1964.0	0.8	11.1
501	AU0850	BM MC MAIN	29.941600	90.111900	29090111	1985.0-1951.0	-1.9	11.5
501	AU0850	BM MC MAIN	29.941600	90.111900	29090111	1964.0-1951.0	-2.7	11.4
500	AU0851	Y 149	29.941600	90.111300	29090111	1985.0-1964.0	0.9	11.1
500	AU0851	Y 149	29.941600	90.111300	29090111	1985.0-1951.0	0.5	11.5
500	AU0851	Y 149	29.941600	90.111300	29090111	1964.0-1951.0	-0.4	11.4
624	AU0857	P 189	29.940200	90.097200	29090111	1985.0-1964.0	-18.6	11.1
623	AU0858	Z 149	29.941300	90.094100	29090111	1985.0-1964.0	-9.8	11.1
623	AU0858	Z 149	29.941300	90.094100	29090111	1985.0-1951.0	109.2	11.5
623	AU0858	Z 149	29.941300	90.094100	29090111	1964.0-1951.0	119.0	11.3
630	AU0867	Z 156	29.949100	90.085500	29090111	1985.0-1964.0	-77.8	11.0
631	AU0868	5.66 LADH	29.949400	90.085200	29090111	1985.0-1964.0	119.9	11.0
632	AU0869	7.001 LADH	29.950200	90.084700	29090111	1985.0-1964.0	-73.4	11.0
600	AU0872	Y 156	29.953800	90.081300	29090111	1985.0-1964.0	-107.7	11.0
599	AU0874	C 150	29.956100	90.079100	29090111	1985.0-1964.0	-100.3	11.0
599	AU0874	C 150	29.956100	90.079100	29090111	1985.0-1951.0	-145.6	11.3
599	AU0874	C 150	29.956100	90.079100	29090111	1964.0-1951.0	-45.2	11.2
919	AU0876	22 A NOSWB	29.958600	90.077700	29090111	1964.0-1951.0	-23.8	11.2
920	AU0877	B 3181 LAGS	29.962700	90.073800	29090111	1964.0-1951.0	-66.6	11.2

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598	AU0879	E 150	29.962500	90.075800	29090111	1985.0-1964.0	-30.5	11.0
598	AU0879	E 150	29.962500	90.075800	29090111	1985.0-1951.0	-34.8	11.4
598	AU0879	E 150	29.962500	90.075800	29090111	1964.0-1951.0	-4.3	11.2
595	AU0880	D 150	29.964100	90.072200	29090111	1985.0-1964.0	-82.8	10.9
595	AU0880	D 150	29.964100	90.072200	29090111	1985.0-1951.0	-136.4	11.3
595	AU0880	D 150	29.964100	90.072200	29090111	1964.0-1951.0	-53.6	11.2
921	AU0882	B 3183 LAGS	29.967500	90.069700	29090111	1964.0-1951.0	-25.6	11.2
922	AU0883	B 3184 LAGS	29.970500	90.066900	29090111	1964.0-1951.0	-82.6	11.2
591	AU0884	27 B NOS+WB	29.977200	90.080000	29090111	1985.0-1964.0	-175.3	10.9
923	AU0885	B 3185 LAGS	29.972400	90.065000	29090111	1964.0-1951.0	-128.3	11.2
924	AU0887	A 150	29.973000	90.064100	29090111	1964.0-1951.0	-45.7	11.2
925	AU0889	B 3186 LAGS	29.972400	90.061900	29090111	1964.0-1951.0	-108.0	11.1
926	AU0894	A 93	29.984400	90.057500	29090111	1964.0-1951.0	-122.2	11.1
585	AU0896	R 152	29.984700	90.057700	29090111	1985.0-1964.0	-151.8	10.5
585	AU0896	R 152	29.984700	90.057700	29090111	1985.0-1951.0	-186.4	10.9
585	AU0896	R 152	29.984700	90.057700	29090111	1964.0-1951.0	-34.6	11.1
928	AU0898	B 3111 LAGS	29.985800	90.053300	29090111	1964.0-1951.0	-103.0	11.1
929	AU0899	PBM PUMPHOUSE USE	29.985500	90.045000	29090111	1964.0-1951.0	-38.9	11.1
584	AU0901	STA D NOS+WB	29.985500	90.044700	29090111	1985.0-1964.0	-167.6	10.7
584	AU0901	STA D NOS+WB	29.985500	90.044700	29090111	1985.0-1951.0	-236.6	11.1
584	AU0901	STA D NOS+WB	29.985500	90.044700	29090111	1964.0-1951.0	-69.0	11.1
582	AU0902	S 189	29.981900	90.028300	29090111	1985.0-1964.0	-169.7	10.9
581	AU0903	R 189	29.979900	90.019100	29090111	1985.0-1964.0	-156.3	11.0
583	AU0905	43 B NOS+WB	29.977200	90.033600	29090111	1985.0-1964.0	-107.1	10.9
933	AU0907	B 3108 LAGS	29.993000	90.049100	29090111	1964.0-1951.0	-78.4	11.0
587	AU0908	B 3107 LAGS	29.996100	90.049400	29090111	1985.0-1964.0	-133.4	10.4
587	AU0908	B 3107 LAGS	29.996100	90.049400	29090111	1985.0-1951.0	-145.8	10.7
587	AU0908	B 3107 LAGS	29.996100	90.049400	29090111	1964.0-1951.0	-12.3	11.0
588	AU0909	57 B NOS+WB	29.997700	90.049400	29090111	1985.0-1964.0	-118.6	10.3
588	AU0909	57 B NOS+WB	29.997700	90.049400	29090111	1985.0-1951.0	-132.2	10.7
588	AU0909	57 B NOS+WB	29.997700	90.049400	29090111	1964.0-1951.0	-13.5	11.0
589	AU0910	B 3106 LAGS	29.999400	90.049700	29090111	1985.0-1964.0	-139.3	10.3
589	AU0910	B 3106 LAGS	29.999400	90.049700	29090111	1985.0-1951.0	-159.4	10.7
589	AU0910	B 3106 LAGS	29.999400	90.049700	29090111	1964.0-1951.0	-20.1	11.0
937	AU0911	M 147	29.961600	90.142200	29090114	1964.0-1951.0	-34.3	11.5
938	AU0913	A 3188 LAGS	29.961900	90.141600	29090114	1964.0-1951.0	-38.4	11.5
661	AU0919	Z 193	29.930200	90.038600	29090111	1985.0-1964.0	-43.5	11.6
980	AU0928	M 149	29.944700	90.053600	29090111	1964.0-1951.0	-112.6	11.7
983	AU0931	85 LLD USE	29.938600	90.053000	29090111	1964.0-1951.0	-150.0	11.7
660	AU0932	E 190	29.937700	90.052200	29090111	1985.0-1964.0	-109.8	11.5
984	AU0933	84 LLD USE	29.927200	90.057200	29090111	1964.0-1951.0	-79.0	11.8
985	AU0934	GRETNA 2	29.921100	90.051300	29090111	1964.0-1951.0	-44.5	12.0
986	AU0935	GRETNA	29.917700	90.058000	29090111	1964.0-1951.0	-62.4	12.0
988	AU0937	83 LLD USE	29.919100	90.063600	29090111	1964.0-1951.0	-106.5	11.8
663	AU0948	F 190	29.924400	90.033800	29090111	1985.0-1964.0	-33.9	11.7
996	AU0949	WESSON	29.913000	90.068300	29090111	1964.0-1951.0	-60.5	11.8
997	AU0952	SHEAR	29.908300	90.073000	29090111	1964.0-1951.0	-36.0	11.9
1001	AU0957	1609 LAGS	29.907400	90.084700	29090111	1964.0-1951.0	-120.2	11.9
1005	AU0963	HARVEY RM 2	29.907700	90.083800	29090111	1964.0-1951.0	-81.7	11.9
1007	AU0965	1601 LAGS	29.909100	90.083600	29090111	1964.0-1951.0	-68.1	11.9

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1008	AU0967	P 149	29.908600	90.090800	29090111	1964.0-1951.0	-49.5	11.9
1009	AU0968	SOLVENT	29.908300	90.092200	29090111	1964.0-1951.0	-47.3	11.9
1010	AU0969	N 149	29.907400	90.094400	29090111	1964.0-1951.0	-54.2	11.9
1011	AU0970	4138+73.0 USE	29.905200	90.099700	29090111	1964.0-1951.0	-123.9	11.8
515	AU0974	N 189	29.919400	90.128300	29090114	1985.0-1964.0	-132.5	11.2
514	AU0975	A 3152 LAGS	29.922700	90.126600	29090114	1985.0-1964.0	-65.4	11.2
514	AU0975	A 3152 LAGS	29.922700	90.126600	29090114	1985.0-1951.0	-85.5	11.6
514	AU0975	A 3152 LAGS	29.922700	90.126600	29090114	1964.0-1951.0	-20.1	11.5
513	AU0976	A 3153 LAGS	29.923800	90.126300	29090114	1985.0-1964.0	-48.9	11.2
513	AU0976	A 3153 LAGS	29.923800	90.126300	29090114	1985.0-1951.0	-63.5	11.6
513	AU0976	A 3153 LAGS	29.923800	90.126300	29090114	1964.0-1951.0	-14.6	11.5
939	AU0977	A 3154 LAGS	29.924900	90.125500	29090114	1964.0-1951.0	-18.9	11.5
512	AU0978	A 3155 LAGS	29.926900	90.124700	29090111	1985.0-1964.0	-42.2	11.2
512	AU0978	A 3155 LAGS	29.926900	90.124700	29090111	1985.0-1951.0	-64.1	11.6
512	AU0978	A 3155 LAGS	29.926900	90.124700	29090111	1964.0-1951.0	-21.9	11.5
511	AU0979	A 3156 LAGS	29.929700	90.123300	29090111	1985.0-1964.0	-47.2	11.2
511	AU0979	A 3156 LAGS	29.929700	90.123300	29090111	1985.0-1951.0	-60.4	11.6
511	AU0979	A 3156 LAGS	29.929700	90.123300	29090111	1964.0-1951.0	-13.2	11.5
510	AU0980	A 3157 LAGS	29.930800	90.122500	29090111	1985.0-1964.0	-49.1	11.2
510	AU0980	A 3157 LAGS	29.930800	90.122500	29090111	1985.0-1951.0	-72.1	11.6
510	AU0980	A 3157 LAGS	29.930800	90.122500	29090111	1964.0-1951.0	-23.0	11.5
509	AU0981	A 3158 LAGS	29.932200	90.121900	29090111	1985.0-1964.0	-38.4	11.2
509	AU0981	A 3158 LAGS	29.932200	90.121900	29090111	1985.0-1951.0	-54.9	11.6
509	AU0981	A 3158 LAGS	29.932200	90.121900	29090111	1964.0-1951.0	-16.5	11.5
508	AU0982	A 3159 LAGS	29.933000	90.121600	29090111	1985.0-1964.0	-38.0	11.2
508	AU0982	A 3159 LAGS	29.933000	90.121600	29090111	1985.0-1951.0	-49.0	11.6
508	AU0982	A 3159 LAGS	29.933000	90.121600	29090111	1964.0-1951.0	-11.0	11.5
507	AU0983	A 3161 LAGS	29.933300	90.121300	29090111	1985.0-1964.0	-34.8	11.2
507	AU0983	A 3161 LAGS	29.933300	90.121300	29090111	1985.0-1951.0	-52.7	11.6
507	AU0983	A 3161 LAGS	29.933300	90.121300	29090111	1964.0-1951.0	-17.9	11.5
940	AU0984	MEDICAL BLDG	29.933600	90.120800	29090111	1964.0-1951.0	-20.8	11.5
506	AU0985	272 LAGS	29.934700	90.120200	29090111	1985.0-1964.0	-22.4	11.2
506	AU0985	272 LAGS	29.934700	90.120200	29090111	1985.0-1951.0	-44.5	11.6
506	AU0985	272 LAGS	29.934700	90.120200	29090111	1964.0-1951.0	-22.0	11.5
505	AU0987	TULANE RESET 1958	29.935200	90.121900	29090111	1985.0-1964.0	-25.4	11.2
503	AU0988	A 3166 LAGS	29.936600	90.121300	29090111	1985.0-1964.0	-32.0	11.2
503	AU0988	A 3166 LAGS	29.936600	90.121300	29090111	1985.0-1951.0	-59.4	11.6
503	AU0988	A 3166 LAGS	29.936600	90.121300	29090111	1964.0-1951.0	-27.4	11.5
504	AU0989	270 LAGS	29.936100	90.121300	29090111	1985.0-1964.0	-27.1	11.2
504	AU0989	270 LAGS	29.936100	90.121300	29090111	1985.0-1951.0	-39.7	11.6
504	AU0989	270 LAGS	29.936100	90.121300	29090111	1964.0-1951.0	-12.6	11.5
941	AU0990	Z 150	29.941900	90.118300	29090111	1964.0-1951.0	-5.7	11.4
627	AU0993	W 149	29.923600	90.088800	29090111	1985.0-1964.0	-213.2	11.2
627	AU0993	W 149	29.923600	90.088800	29090111	1985.0-1951.0	-381.0	11.5
627	AU0993	W 149	29.923600	90.088800	29090111	1964.0-1951.0	-167.8	11.4
626	AU0994	X 149	29.936100	90.094400	29090111	1985.0-1964.0	-148.4	11.1
626	AU0994	X 149	29.936100	90.094400	29090111	1985.0-1951.0	-221.5	11.5
626	AU0994	X 149	29.936100	90.094400	29090111	1964.0-1951.0	-73.1	11.4
625	AU0995	8 B NOS+WB	29.938000	90.099100	29090111	1985.0-1964.0	-28.7	11.1
625	AU0995	8 B NOS+WB	29.938000	90.099100	29090111	1985.0-1951.0	-37.0	11.5

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625	AU0995	B B NDS+WB	29.938000	90.099100	29090111	1964.0-1951.0	-8.3	11.4
590	AU0996	L 149	29.983800	90.089700	29090111	1985.0-1964.0	-235.6	10.7
590	AU0996	L 149	29.983800	90.089700	29090111	1985.0-1951.0	-310.2	11.1
590	AU0996	L 149	29.983800	90.089700	29090111	1964.0-1951.0	-74.7	11.2
607	AU0997	Y 153	29.981600	90.092500	29090111	1985.0-1964.0	-240.6	10.7
607	AU0997	Y 153	29.981600	90.092500	29090111	1985.0-1951.0	-297.5	11.1
607	AU0997	Y 153	29.981600	90.092500	29090111	1964.0-1951.0	-56.9	11.2
608	AU0998	X 153	29.977400	90.097200	29090111	1985.0-1964.0	-211.8	10.7
608	AU0998	X 153	29.977400	90.097200	29090111	1985.0-1951.0	-316.6	11.1
608	AU0998	X 153	29.977400	90.097200	29090111	1964.0-1951.0	-104.8	11.2
606	AU0999	CARROLLTON CANAL NOS+WB	29.974400	90.100000	29090111	1985.0-1964.0	-98.3	10.8
609	AU1002	V 153	29.972700	90.102500	29090111	1985.0-1964.0	-49.7	10.8
609	AU1002	V 153	29.972700	90.102500	29090111	1985.0-1951.0	-58.1	11.2
609	AU1002	V 153	29.972700	90.102500	29090111	1964.0-1951.0	-8.4	11.2
610	AU1003	19 C NOS+WB	29.973600	90.103300	29090111	1985.0-1964.0	-55.8	10.8
613	AU1004	E 156	29.967200	90.107700	29090111	1985.0-1964.0	-55.7	10.8
614	AU1005	E 148	29.965500	90.110000	29090111	1985.0-1964.0	-56.9	10.9
614	AU1005	E 148	29.965500	90.110000	29090111	1985.0-1951.0	-74.0	11.2
614	AU1005	E 148	29.965500	90.110000	29090111	1964.0-1951.0	-17.1	11.3
949	AU1006	S 149	29.962500	90.111900	29090111	1964.0-1951.0	37.9	11.3
616	AU1008	18 C NOS+WB	29.966900	90.118300	29090111	1985.0-1964.0	863.6	11.0
617	AU1009	H 96	29.962500	90.113600	29090111	1985.0-1964.0	-143.3	10.9
617	AU1009	H 96	29.962500	90.113600	29090111	1985.0-1951.0	-206.0	11.3
617	AU1009	H 96	29.962500	90.113600	29090111	1964.0-1951.0	-62.7	11.3
618	AU1010	F 148	29.958000	90.117500	29090111	1985.0-1964.0	-28.6	10.9
618	AU1010	F 148	29.958000	90.117500	29090111	1985.0-1951.0	-39.8	11.3
618	AU1010	F 148	29.958000	90.117500	29090111	1964.0-1951.0	-11.1	11.3
950	AU1011	K 149	29.974100	90.098300	29090111	1964.0-1951.0	-15.0	11.2
605	AU1012	J 149	29.968000	90.092200	29090111	1985.0-1964.0	-64.9	10.9
605	AU1012	J 149	29.968000	90.092200	29090111	1985.0-1951.0	-76.4	11.2
605	AU1012	J 149	29.968000	90.092200	29090111	1964.0-1951.0	-11.5	11.3
951	AU1013	H 149	29.964900	90.087700	29090111	1964.0-1951.0	-75.7	11.2
593	AU1014	G 149	29.968000	90.084400	29090111	1985.0-1964.0	-70.0	10.9
593	AU1014	G 149	29.968000	90.084400	29090111	1985.0-1951.0	-87.7	11.3
593	AU1014	G 149	29.968000	90.084400	29090111	1964.0-1951.0	-17.6	11.3
592	AU1015	28 C NOS+WB	29.969100	90.083300	29090111	1985.0-1964.0	-76.9	10.9
592	AU1015	28 C NOS+WB	29.969100	90.083300	29090111	1985.0-1951.0	-98.4	11.3
592	AU1015	28 C NOS+WB	29.969100	90.083300	29090111	1964.0-1951.0	-21.5	11.3
594	AU1016	F 149	29.966600	90.077200	29090111	1985.0-1964.0	-53.4	10.9
594	AU1016	F 149	29.966600	90.077200	29090111	1985.0-1951.0	-63.0	11.3
594	AU1016	F 149	29.966600	90.077200	29090111	1964.0-1951.0	-9.6	11.2
596	AU1017	31 F NOS+WB	29.962200	90.069400	29090111	1985.0-1964.0	-55.4	11.0
596	AU1017	31 F NOS+WB	29.962200	90.069400	29090111	1985.0-1951.0	-83.0	11.4
596	AU1017	31 F NOS+WB	29.962200	90.069400	29090111	1964.0-1951.0	-27.6	11.3
597	AU1018	E 149	29.961900	90.069100	29090111	1985.0-1964.0	-84.3	11.0
597	AU1018	E 149	29.961900	90.069100	29090111	1985.0-1951.0	-130.7	11.4
597	AU1018	E 149	29.961900	90.069100	29090111	1964.0-1951.0	-46.4	11.3
956	AU1019	C 3118 LAGS	29.996300	90.100000	29090111	1964.0-1951.0	-136.2	11.2
389	AU1021	K 189	29.989900	90.100500	29090111	1985.0-1964.0	-161.4	10.7
390	AU1022	CITY STONE=XXMR C OF NO	29.983800	90.101600	29090111	1985.0-1951.0	-172.2	11.1

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391	AU1023	CITY STONE=U C OF NO	29.983800	90.101600	29090111	1985.0-1964.0	-141.8	10.7
391	AU1023	CITY STONE=U C OF NO	29.983800	90.101600	29090111	1985.0-1951.0	-172.2	11.1
391	AU1023	CITY STONE=U C OF NO	29.983800	90.101600	29090111	1964.0-1951.0	-30.4	11.2
392	AU1024	DELGADO NOS+WB	29.984100	90.102200	29090111	1985.0-1964.0	-151.9	10.7
392	AU1024	DELGADO NOS+WB	29.984100	90.102200	29090111	1985.0-1951.0	-191.5	11.1
392	AU1024	DELGADO NOS+WB	29.984100	90.102200	29090111	1964.0-1951.0	-39.6	11.2
385	AU1026	G 156	29.988300	90.066600	29090111	1985.0-1964.0	-97.9	10.5
960	AU1032	TT 3 F USGS	29.995500	90.073600	29090111	1964.0-1951.0	-135.7	11.2
942	AU1033	54 A NOSWB	29.995500	90.115200	29090111	1964.0-1951.0	-29.5	11.3
393	AU1036	K 188	29.994700	90.115800	29090111	1985.0-1964.0	-112.8	10.8
944	AU1038	C 148	29.976900	90.114400	29090111	1964.0-1951.0	-31.0	11.3
611	AU1040	G 96 RESET 1959	29.975200	90.110800	29090111	1985.0-1964.0	-93.2	10.8
612	AU1042	D 148	29.970200	90.110200	29090111	1985.0-1964.0	-44.9	10.8
612	AU1042	D 148	29.970200	90.110200	29090111	1985.0-1951.0	-62.0	11.2
612	AU1042	D 148	29.970200	90.110200	29090111	1964.0-1951.0	-17.1	11.3
619	AU1045	F 96	29.962500	90.106100	29090111	1985.0-1964.0	-221.5	10.9
619	AU1045	F 96	29.962500	90.106100	29090111	1985.0-1951.0	-442.3	11.3
619	AU1045	F 96	29.962500	90.106100	29090111	1964.0-1951.0	-220.9	11.3
620	AU1048	G 148	29.961300	90.103300	29090111	1985.0-1964.0	-63.4	10.9
620	AU1048	G 148	29.961300	90.103300	29090111	1985.0-1951.0	-90.1	11.3
620	AU1048	G 148	29.961300	90.103300	29090111	1964.0-1951.0	-26.7	11.3
621	AU1049	H 148	29.955800	90.096100	29090111	1985.0-1964.0	-32.0	11.0
621	AU1049	H 148	29.955800	90.096100	29090111	1985.0-1951.0	-42.8	11.3
621	AU1049	H 148	29.955800	90.096100	29090111	1964.0-1951.0	-10.7	11.3
622	AU1050	24 B NOS+WB	29.951600	90.098300	29090111	1985.0-1964.0	-13.3	11.1
628	AU1051	J 148	29.950200	90.088300	29090111	1985.0-1964.0	-72.7	11.0
628	AU1051	J 148	29.950200	90.088300	29090111	1985.0-1951.0	-115.4	11.4
628	AU1051	J 148	29.950200	90.088300	29090111	1964.0-1951.0	-42.6	11.3
629	AU1052	B 150	29.949400	90.088600	29090111	1985.0-1964.0	-48.1	11.0
629	AU1052	B 150	29.949400	90.088600	29090111	1985.0-1951.0	-68.2	11.4
629	AU1052	B 150	29.949400	90.088600	29090111	1964.0-1951.0	-20.1	11.3
636	AU1053	J 157	29.943600	90.077700	29090111	1985.0-1964.0	-212.4	11.1
634	AU1054	C 96	29.944900	90.075800	29090111	1985.0-1964.0	-235.4	11.1
634	AU1054	C 96	29.944900	90.075800	29090111	1985.0-1951.0	-344.1	11.5
634	AU1054	C 96	29.944900	90.075800	29090111	1964.0-1951.0	-108.7	11.3
635	AU1055	C 96 RESET 1961	29.944900	90.075800	29090111	1985.0-1964.0	-206.9	11.1
633	AU1056	M 141	29.948000	90.076300	29090111	1985.0-1964.0	-180.5	11.1
637	AU1057	2 A NOS+WB	29.942700	90.072200	29090111	1985.0-1964.0	-209.3	11.1
637	AU1057	2 A NOS+WB	29.942700	90.072200	29090111	1985.0-1951.0	-421.1	11.4
637	AU1057	2 A NOS+WB	29.942700	90.072200	29090111	1964.0-1951.0	-211.8	11.3
638	AU1058	BM XX C OF NO	29.943000	90.071600	29090111	1985.0-1964.0	-218.9	11.1
638	AU1058	BM XX C OF NO	29.943000	90.071600	29090111	1985.0-1951.0	-434.5	11.5
638	AU1058	BM XX C OF NO	29.943000	90.071600	29090111	1964.0-1951.0	-215.6	11.3
553	AU1061	1 A C OF NO	29.947700	90.069700	29090111	1985.0-1964.0	-233.8	11.0
553	AU1061	1 A C OF NO	29.947700	90.069700	29090111	1985.0-1951.0	-458.9	11.4
553	AU1061	1 A C OF NO	29.947700	90.069700	29090111	1964.0-1951.0	-225.2	11.3
945	AU1062	NEW ORLEANS LONGITUDE	29.947700	90.069400	29090111	1964.0-1951.0	-249.9	11.3
555	AU1064	C 149	29.947700	90.069100	29090111	1985.0-1964.0	-218.0	11.0
555	AU1064	C 149	29.947700	90.069100	29090111	1985.0-1951.0	-381.9	11.4
555	AU1064	C 149	29.947700	90.069100	29090111	1964.0-1951.0	-163.9	11.3

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946	AU1065	A 3104 LAGS	29.948600	90.066900	29090111	1964.0-1951.0	-157.6	11.3
640	AU1067	X 156	29.937700	90.072700	29090111	1985.0-1964.0	-206.5	11.1
550	AU1072	V 156	29.939100	90.065200	29090111	1985.0-1964.0	-226.2	11.0
601	AU1077	K 157	29.960000	90.086600	29090111	1985.0-1964.0	-54.9	11.0
602	AU1079	TONTI	29.962500	90.084700	29090111	1985.0-1951.0	-43.7	10.9
602	AU1079	TONTI	29.962500	90.084700	29090111	1985.0-1951.0	50.1	11.3
602	AU1079	TONTI	29.962500	90.084700	29090111	1964.0-1951.0	-6.4	11.3
603	AU1080	CANAL 1951	29.963000	90.085200	29090111	1985.0-1964.0	-48.0	10.9
603	AU1080	CANAL 1951	29.963000	90.085200	29090111	1985.0-1951.0	-70.6	11.3
603	AU1080	CANAL 1951	29.963000	90.085200	29090111	1964.0-1951.0	-22.6	11.3
777	AU1145	3150 R LAGS	29.794100	90.004700	29090112	1964.0-1951.0	-65.6	14.9
239	AU1146	PBM 222/2 CAP MRC	29.792200	90.005500	29090112	1985.0-1964.0	-51.2	14.5
239	AU1146	PBM 222/2 CAP MRC	29.792200	90.005500	29090112	1985.0-1951.0	-119.7	15.0
239	AU1146	PBM 222/2 CAP MRC	29.792200	90.005500	29090112	1964.0-1951.0	-68.5	14.9
778	AU1147	PBM 222/2 BOLT MRC	29.793800	90.004400	29090112	1964.0-1951.0	-76.2	14.9
779	AU1149	P 151 USE	29.780200	90.014100	29090112	1964.0-1951.0	-200.8	15.1
236	AU1153	Q 151	29.763800	90.017200	29090112	1985.0-1964.0	-2.2	14.8
236	AU1153	Q 151	29.763800	90.017200	29090112	1985.0-1951.0	-50.6	15.3
236	AU1153	Q 151	29.763800	90.017200	29090112	1964.0-1951.0	-48.4	15.3
780	AU1155	223 2 MRC=BERTHOUD	29.755800	90.014400	29090112	1964.0-1951.0	-28.8	15.4
781	AU1990	R 151 USE	29.747200	90.007500	29090121	1964.0-1951.0	-99.7	15.6
233	AU1991	L 194	29.747700	90.007200	29090121	1985.0-1964.0	18.0	14.9
775	AU1992	N 151 USE	29.804700	90.000000	29090112	1964.0-1951.0	-115.0	14.7
739	AU2007	215/1 CAP MRC	29.965200	90.020000	29090111	1964.0-1951.0	-62.8	11.2
321	BH1065	A 3129 LAGS RESET 1961	30.012500	89.996100	30089333	1985.0-1964.0	-342.3	9.9
322	BH1067	227 LAGS RESET 1961	30.013000	89.990800	30089333	1985.0-1964.0	-273.9	9.8
324	BH1073	231 LAGS	30.014100	89.966600	30089333	1985.0-1964.0	-344.2	9.6
324	BH1073	231 LAGS	30.014100	89.966600	30089333	1985.0-1951.0	-370.6	10.0
324	BH1073	231 LAGS	30.014100	89.966600	30089333	1964.0-1951.0	-26.4	10.5
896	BH1075	234 R LAGS	30.015800	89.950200	30089333	1964.0-1951.0	-24.4	10.3
898	BH1077	PBM KURTZ CAP USE	30.012500	89.945500	30089333	1964.0-1951.0	-16.3	10.3
897	BH1079	PBM KURTZ BOLT USE	30.012500	89.945500	30089333	1964.0-1951.0	-18.1	10.3
864	BH1081	235 R LAGS	30.011600	89.940000	30089333	1964.0-1951.0	-20.5	10.1
282	BH1084	F 189	30.016600	89.931600	30089333	1985.0-1964.0	-459.0	9.1
283	BH1087	W 152	30.026600	89.916900	30089333	1985.0-1964.0	-266.6	8.9
283	BH1087	W 152	30.026600	89.916900	30089333	1985.0-1951.0	-296.7	9.2
283	BH1087	W 152	30.026600	89.916900	30089333	1964.0-1951.0	-30.2	9.7
287	BH1088	OR 78 WELL USGS	30.026900	89.911300	30089333	1985.0-1964.0	-269.8	9.0
285	BH1090	OR 79 WELL USGS	30.024100	89.913800	30089333	1985.0-1964.0	-214.6	9.0
284	BH1091	OR 80 WELL USGS	30.021900	89.916300	30089333	1985.0-1964.0	-231.4	9.0
374	BH1096	A 3135 LAGS	30.033600	89.908800	30089333	1985.0-1964.0	-133.9	8.7
374	BH1096	A 3135 LAGS	30.033600	89.908800	30089333	1985.0-1951.0	-130.0	9.0
374	BH1096	A 3135 LAGS	30.033600	89.908800	30089333	1964.0-1951.0	3.9	9.5
899	BH1097	D 3136 LAGS	30.038300	89.903300	30089333	1964.0-1951.0	11.0	9.3
900	BH1100	PBM MICHEAUD BOLT USE	30.038000	89.902500	30089333	1964.0-1951.0	1.5	9.4
369	BH1102	H 153	30.043600	89.892500	30089333	1985.0-1964.0	-77.3	8.4
369	BH1102	H 153	30.043600	89.892500	30089333	1985.0-1951.0	-64.6	8.6
369	BH1102	H 153	30.043600	89.892500	30089333	1964.0-1951.0	12.6	9.1
901	BH1103	A 3137 LAGS	30.049100	89.885200	30089333	1964.0-1951.0	16.0	9.0
365	BH1106	E 189	30.054700	89.875500	30089333	1985.0-1964.0	-46.7	8.0

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361	BH1109	D 189	30.064100	89.865000	30089332	1985.0-1964.0	-33.0	7.7
359	BH1113	A 3141 LAGS	30.075500	89.859400	30089332	1985.0-1964.0	-33.1	7.5
359	BH1113	A 3141 LAGS	30.075500	89.859400	30089332	1985.0-1951.0	-5.1	7.7
359	BH1113	A 3141 LAGS	30.075500	89.859400	30089332	1964.0-1951.0	27.9	8.2
356	BH1119	C 189	30.073300	89.840000	30089332	1985.0-1964.0	-24.5	7.1
355	BH1121	A 3120 LAGS	30.066100	89.825000	30089332	1985.0-1964.0	-75.1	6.8
355	BH1121	A 3120 LAGS	30.066100	89.825000	30089332	1985.0-1951.0	-127.4	7.1
355	BH1121	A 3120 LAGS	30.066100	89.825000	30089332	1964.0-1951.0	-52.3	7.5
354	BH1123	A 3122 LAGS	30.065200	89.817500	30089332	1985.0-1964.0	62.9	6.6
354	BH1123	A 3122 LAGS	30.065200	89.817500	30089332	1985.0-1951.0	54.6	6.9
354	BH1123	A 3122 LAGS	30.065200	89.817500	30089332	1964.0-1951.0	-8.3	7.3
353	BH1127	A 3121 LAGS	30.064100	89.809100	30089332	1985.0-1964.0	-66.0	6.5
353	BH1127	A 3121 LAGS	30.064100	89.809100	30089332	1985.0-1951.0	-63.9	6.7
353	BH1127	A 3121 LAGS	30.064100	89.809100	30089332	1964.0-1951.0	2.1	7.2
351	BH1131	E 3144 LAGS	30.066300	89.805000	30089332	1985.0-1964.0	-20.9	6.4
351	BH1131	E 3144 LAGS	30.066300	89.805000	30089332	1985.0-1951.0	-1.7	6.6
351	BH1131	E 3144 LAGS	30.066300	89.805000	30089332	1964.0-1951.0	19.2	7.0
352	BH1132	R 153 LAGS	30.066300	89.805000	30089332	1985.0-1964.0	-22.7	6.4
352	BH1132	R 153 LAGS	30.066300	89.805000	30089332	1985.0-1951.0	-2.2	6.6
352	BH1132	R 153 LAGS	30.066300	89.805000	30089332	1964.0-1951.0	20.5	7.1
350	BH1133	E 3145 LAGS	30.068300	89.803600	30089332	1985.0-1964.0	-8.8	6.3
350	BH1133	E 3145 LAGS	30.068300	89.803600	30089332	1985.0-1951.0	12.8	6.5
350	BH1133	E 3145 LAGS	30.068300	89.803600	30089332	1964.0-1951.0	21.5	7.0
349	BH1134	E 3146 LAGS	30.070200	89.801300	30089332	1985.0-1951.0	-124.1	6.5
348	BH1135	F 193	30.071100	89.800500	30089332	1985.0-1964.0	-29.4	6.2
347	BH1136	A 92	30.078800	89.791900	30089332	1985.0-1964.0	-49.6	6.0
347	BH1136	A 92	30.078800	89.791900	30089332	1985.0-1951.0	-90.3	6.2
347	BH1136	A 92	30.078800	89.791900	30089332	1964.0-1951.0	-40.7	6.6
346	BH1137	E 3149 LAGS	30.082500	89.791100	30089332	1985.0-1964.0	-155.2	5.9
346	BH1137	E 3149 LAGS	30.082500	89.791100	30089332	1985.0-1951.0	-190.6	6.1
346	BH1137	E 3149 LAGS	30.082500	89.791100	30089332	1964.0-1951.0	-35.4	6.5
1073	BH1139	F 157	30.089900	89.777700	30089332	1964.0-1951.0	-51.5	6.1
1072	BH1140	C 92	30.091900	89.770200	30089332	1964.0-1951.0	-70.6	5.9
343	BH1142	D 92	30.104400	89.762200	30089332	1985.0-1964.0	-43.3	4.9
343	BH1142	D 92	30.104400	89.762200	30089332	1985.0-1951.0	-71.0	5.0
343	BH1142	D 92	30.104400	89.762200	30089332	1964.0-1951.0	-27.7	5.3
1071	BH1143	E 3158 LAGS	30.105500	89.762200	30089332	1964.0-1951.0	-58.8	5.3
342	BH1145	E 193	30.113300	89.761300	30089332	1985.0-1964.0	-42.3	4.5
341	BH1147	E 92	30.118800	89.762700	30089332	1985.0-1964.0	-42.9	4.3
341	BH1147	E 92	30.118800	89.762700	30089332	1985.0-1951.0	-66.7	4.5
341	BH1147	E 92	30.118800	89.762700	30089332	1964.0-1951.0	-23.9	4.8
1070	BH1149	E 3163 LAGS	30.134400	89.759700	30089331	1964.0-1951.0	-74.3	4.1
338	BH1150	G 92	30.143600	89.747500	30089324	1985.0-1964.0	-25.8	3.1
338	BH1150	G 92	30.143600	89.747500	30089324	1985.0-1951.0	-45.5	3.2
338	BH1150	G 92	30.143600	89.747500	30089324	1964.0-1951.0	-19.7	3.4
337	BH1155	G 193	30.155200	89.738000	30089324	1985.0-1964.0	-77.8	2.4
336	BH1158	E 3168 LAGS	30.163000	89.740200	30089324	1985.0-1964.0	-56.5	1.8
336	BH1158	E 3168 LAGS	30.163000	89.740200	30089324	1985.0-1951.0	-118.4	1.8
336	BH1158	E 3168 LAGS	30.163000	89.740200	30089324	1964.0-1951.0	-61.9	1.8
330	BH1160	PIKE RM 3	30.166300	89.737500	30089324	1985.0-1964.0	-14.4	1.1

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330	BH1160	PIKE RM 3	30.166300	89.737500	30089324	1985.0-1951.0	-21.6	1.1
330	BH1160	PIKE RM 3	30.166300	89.737500	30089324	1964.0-1951.0	-7.2	1.2
331	BH1162	PIKE RM 2	30.166100	89.737200	30089324	1985.0-1964.0	-19.6	1.1
331	BH1162	PIKE RM 2	30.166100	89.737200	30089324	1985.0-1951.0	-32.1	1.0
331	BH1162	PIKE RM 2	30.166100	89.737200	30089324	1964.0-1951.0	-12.6	0.9
329	BH1163	C 193	30.166600	89.737500	30089324	1985.0-1964.0	-5.4	0.8
328	BH1164	PIKE 1931 1952	30.166300	89.737200	30089324	1985.0-1964.0	-28.5	1.0
328	BH1164	PIKE 1931 1952	30.166300	89.737200	30089324	1985.0-1951.0	-54.1	0.9
328	BH1164	PIKE 1931 1952	30.166300	89.737200	30089324	1964.0-1951.0	-25.6	1.1
1069	BH1166	HUEY LHC	30.167400	89.736600	30089324	1964.0-1951.0	-0.2	0.6
326	BH1167	J 92	30.167700	89.736600	30089324	1985.0-1964.0	0.0	0.0
326	BH1167	J 92	30.167700	89.736600	30089324	1985.0-1951.0	0.0	0.0
326	BH1167	J 92	30.167700	89.736600	30089324	1964.0-1951.0	0.0	0.0
856	BH1173	J 153	30.042700	89.996900	30089333	1964.0-1951.0	-37.1	11.1
857	BH1174	G 153	30.046600	89.988600	30089333	1964.0-1951.0	-17.6	11.1
858	BH1175	F 153	30.055200	89.972200	30089333	1964.0-1951.0	-21.9	11.1
859	BH1176	E 153	30.063000	89.959100	30089333	1964.0-1951.0	-8.2	11.0
860	BH1177	PONTCHARTRAIN	30.075200	89.943600	30089333	1964.0-1951.0	16.2	10.9
396	BH1189	A 153	30.026900	89.938800	30089333	1985.0-1964.0	-427.1	9.5
396	BH1189	A 153	30.026900	89.938800	30089333	1985.0-1951.0	-520.3	9.9
396	BH1189	A 153	30.026900	89.938800	30089333	1964.0-1951.0	-93.1	10.4
866	BH1191	236 LAGS	30.008000	89.939100	30089333	1964.0-1951.0	-24.5	10.2
311	BJ1184	D 3123 LAGS	30.001900	90.056100	30090222	1985.0-1964.0	-88.2	10.3
311	BJ1184	D 3123 LAGS	30.001900	90.056100	30090222	1985.0-1951.0	-95.9	10.7
311	BJ1184	D 3123 LAGS	30.001900	90.056100	30090222	1964.0-1951.0	-7.7	11.0
312	BJ1185	D 3124 LAGS	30.002500	90.053300	30090222	1985.0-1964.0	-126.5	10.3
312	BJ1185	D 3124 LAGS	30.002500	90.053300	30090222	1985.0-1951.0	-147.0	10.7
312	BJ1185	D 3124 LAGS	30.002500	90.053300	30090222	1964.0-1951.0	-20.5	11.0
313	BJ1186	B 3105 LAGS	30.003000	90.050200	30090222	1985.0-1964.0	-152.2	10.2
313	BJ1186	B 3105 LAGS	30.003000	90.050200	30090222	1985.0-1951.0	-194.6	10.6
313	BJ1186	B 3105 LAGS	30.003000	90.050200	30090222	1964.0-1951.0	-42.4	11.0
314	BJ1187	S 152	30.002200	90.045000	30090222	1985.0-1964.0	-101.7	10.2
314	BJ1187	S 152	30.002200	90.045000	30090222	1985.0-1951.0	-113.9	10.6
314	BJ1187	S 152	30.002200	90.045000	30090222	1964.0-1951.0	-12.2	11.0
380	BJ1189	HIGGINS	30.008300	90.029400	30090222	1985.0-1964.0	-203.1	10.1
380	BJ1189	HIGGINS	30.008300	90.029400	30090222	1985.0-1951.0	-247.1	10.5
380	BJ1189	HIGGINS	30.008300	90.029400	30090222	1964.0-1951.0	-44.0	10.9
316	BJ1190	B 3130 LAGS	30.008300	90.027500	30090222	1985.0-1964.0	-213.3	10.1
316	BJ1190	B 3130 LAGS	30.008300	90.027500	30090222	1985.0-1951.0	-240.7	10.5
316	BJ1190	B 3130 LAGS	30.008300	90.027500	30090222	1964.0-1951.0	-27.4	10.9
317	BJ1191	225 LAGS RESET 1951	30.010200	90.020000	30090222	1985.0-1964.0	-250.8	10.1
320	BJ1193	LAFON	30.011300	90.005200	30090222	1985.0-1964.0	-327.9	9.9
320	BJ1193	LAFON	30.011300	90.005200	30090222	1985.0-1951.0	-378.2	10.3
320	BJ1193	LAFON	30.011300	90.005200	30090222	1964.0-1951.0	-50.3	10.8
319	BJ1194	A 3128 LAGS RESET 1961	30.011300	90.005800	30090222	1985.0-1964.0	-469.5	9.9
894	BJ1196	225/1 LAGS	30.008300	90.027200	30090222	1964.0-1951.0	6.4	10.9
379	BJ1197	B 157 RESET 1960	30.010000	90.018000	30090222	1985.0-1964.0	-229.2	10.1
965	BJ1198	T 152	30.018000	90.021300	30090222	1964.0-1951.0	-73.7	10.9
818	BJ1297	M 148	30.013800	90.238800	30090223	1964.0-1951.0	-254.0	12.0
820	BJ1300	N 148	30.039100	90.237700	30090223	1964.0-1951.0	24.2	12.1

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824	BJ1304	H 150	30.038800	90.243300	30090223	1964.0-1951.0	40.4	12.2
481	BJ1333	H 188	30.019900	90.121100	30090222	1985.0-1964.0	-275.2	10.9
841	BJ1335	N GATE	30.019700	90.114100	30090222	1964.0-1951.0	-178.8	11.4
842	BJ1338	N GATE RM	30.019700	90.113800	30090222	1964.0-1951.0	-166.9	11.4
843	BJ1341	Z 153	30.020200	90.113000	30090222	1964.0-1951.0	-136.6	11.4
475	BJ1342	ALCO 1931	30.026600	90.112700	30090222	1985.0-1964.0	-133.3	10.9
475	BJ1342	ALCO 1931	30.026600	90.112700	30090222	1985.0-1951.0	-181.8	11.3
475	BJ1342	ALCO 1931	30.026600	90.112700	30090222	1964.0-1951.0	-48.5	11.4
844	BJ1343	V 148	30.026600	90.113800	30090222	1964.0-1951.0	-31.7	11.5
476	BJ1344	ALCO 1931 RM	30.026600	90.112700	30090222	1985.0-1964.0	-169.4	10.9
476	BJ1344	ALCO 1931 RM	30.026600	90.112700	30090222	1985.0-1951.0	-242.9	11.3
476	BJ1344	ALCO 1931 RM	30.026600	90.112700	30090222	1964.0-1951.0	-73.6	11.4
473	BJ1345	BUICK RM	30.027200	90.105500	30090222	1985.0-1964.0	-222.6	10.8
473	BJ1345	BUICK RM	30.027200	90.105500	30090222	1985.0-1951.0	-322.4	11.2
473	BJ1345	BUICK RM	30.027200	90.105500	30090222	1964.0-1951.0	-99.8	11.4
472	BJ1346	BUICK	30.027200	90.105500	30090222	1985.0-1964.0	-232.7	10.8
472	BJ1346	BUICK	30.027200	90.105500	30090222	1985.0-1951.0	-336.4	11.2
472	BJ1346	BUICK	30.027200	90.105500	30090222	1964.0-1951.0	-103.6	11.4
479	BJ1347	CANAL AND LEE NOS+WB	30.019700	90.105800	30090222	1985.0-1964.0	-102.4	10.9
470	BJ1349	CHRYSLER RM	30.028600	90.098000	30090222	1985.0-1964.0	-146.7	10.8
470	BJ1349	CHRYSLER RM	30.028600	90.098000	30090222	1985.0-1951.0	-189.4	11.2
470	BJ1349	CHRYSLER RM	30.028600	90.098000	30090222	1964.0-1951.0	-42.7	11.3
471	BJ1350	CHRYSLER	30.028600	90.098000	30090222	1985.0-1964.0	-144.1	10.8
471	BJ1350	CHRYSLER	30.028600	90.098000	30090222	1985.0-1951.0	-188.1	11.2
471	BJ1350	CHRYSLER	30.028600	90.098000	30090222	1964.0-1951.0	-44.0	11.3
469	BJ1351	V 149	30.028000	90.096300	30090222	1985.0-1964.0	-163.8	10.7
469	BJ1351	V 149	30.028000	90.096300	30090222	1985.0-1951.0	-199.5	11.1
469	BJ1351	V 149	30.028000	90.096300	30090222	1964.0-1951.0	-35.7	11.3
467	BJ1352	DODGE RM	30.029700	90.091900	30090222	1985.0-1964.0	-128.8	10.7
467	BJ1352	DODGE RM	30.029700	90.091900	30090222	1985.0-1951.0	-158.2	11.1
467	BJ1352	DODGE RM	30.029700	90.091900	30090222	1964.0-1951.0	-29.3	11.3
468	BJ1353	DODGE	30.029700	90.091900	30090222	1985.0-1964.0	-128.1	10.7
468	BJ1353	DODGE	30.029700	90.091900	30090222	1985.0-1951.0	-158.6	11.1
468	BJ1353	DODGE	30.029700	90.091900	30090222	1964.0-1951.0	-30.4	11.3
466	BJ1354	ESSEX RM	30.027700	90.088600	30090222	1985.0-1964.0	-190.3	10.7
466	BJ1354	ESSEX RM	30.027700	90.088600	30090222	1985.0-1951.0	-236.1	11.1
466	BJ1354	ESSEX RM	30.027700	90.088600	30090222	1964.0-1951.0	-45.8	11.2
465	BJ1355	ESSEX	30.027700	90.088600	30090222	1985.0-1964.0	-201.4	10.7
465	BJ1355	ESSEX	30.027700	90.088600	30090222	1985.0-1951.0	-248.3	11.1
465	BJ1355	ESSEX	30.027700	90.088600	30090222	1964.0-1951.0	-46.9	11.2
847	BJ1356	Q 153	30.025800	90.080800	30090222	1964.0-1951.0	-62.3	11.2
459	BJ1357	FORD 1931 RM	30.029100	90.079700	30090222	1985.0-1964.0	-240.0	10.6
459	BJ1357	FORD 1931 RM	30.029100	90.079700	30090222	1985.0-1951.0	-276.4	11.0
459	BJ1357	FORD 1931 RM	30.029100	90.079700	30090222	1964.0-1951.0	-36.4	11.2
458	BJ1358	FORD 1931	30.029100	90.079700	30090222	1985.0-1964.0	-235.9	10.6
458	BJ1358	FORD 1931	30.029100	90.079700	30090222	1985.0-1951.0	-271.9	11.0
458	BJ1358	FORD 1931	30.029100	90.079700	30090222	1964.0-1951.0	-36.1	11.2
457	BJ1359	GRAHAM RM	30.031600	90.076600	30090222	1985.0-1964.0	-181.8	10.6
457	BJ1359	GRAHAM RM	30.031600	90.076600	30090222	1985.0-1951.0	-218.2	11.0
457	BJ1359	GRAHAM RM	30.031600	90.076600	30090222	1964.0-1951.0	-36.4	11.2

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456	BJ1360	GRAHAM	30.031600	90.076600	30090222	1985.0-1964.0	-184.9	10.6
456	BJ1360	GRAHAM	30.031600	90.076600	30090222	1985.0-1951.0	-223.7	11.0
456	BJ1360	GRAHAM	30.031600	90.076600	30090222	1964.0-1951.0	-38.8	11.2
455	BJ1361	P 153	30.030800	90.073600	30090222	1985.0-1964.0	-201.4	10.6
455	BJ1361	P 153	30.030800	90.073600	30090222	1985.0-1951.0	-237.6	11.0
455	BJ1361	P 153	30.030800	90.073600	30090222	1964.0-1951.0	-36.2	11.2
454	BJ1362	HAYNES RM	30.032700	90.069400	30090222	1985.0-1964.0	-148.1	10.6
454	BJ1362	HAYNES RM	30.032700	90.069400	30090222	1985.0-1951.0	-177.6	11.0
454	BJ1362	HAYNES RM	30.032700	90.069400	30090222	1964.0-1951.0	-29.5	11.2
453	BJ1363	HAYNES	30.032700	90.069400	30090222	1985.0-1964.0	-141.8	10.6
453	BJ1363	HAYNES	30.032700	90.069400	30090222	1985.0-1951.0	-169.6	11.0
453	BJ1363	HAYNES	30.032700	90.069400	30090222	1964.0-1951.0	-27.8	11.2
848	BJ1364	D 3134 LAGS	30.032700	90.066600	30090222	1964.0-1951.0	-42.2	11.1
452	BJ1365	N 153	30.031300	90.068300	30090222	1985.0-1964.0	-172.5	10.6
452	BJ1365	N 153	30.031300	90.068300	30090222	1985.0-1951.0	-213.7	11.0
452	BJ1365	N 153	30.031300	90.068300	30090222	1964.0-1951.0	-41.2	11.2
451	BJ1366	B 110	30.031300	90.065200	30090222	1985.0-1964.0	-154.5	10.6
451	BJ1366	B 110	30.031300	90.065200	30090222	1985.0-1951.0	-207.0	11.0
451	BJ1366	B 110	30.031300	90.065200	30090222	1964.0-1951.0	-52.5	11.2
449	BJ1370	D 3132 LAGS RESET 1961	30.029700	90.061100	30090222	1985.0-1964.0	-235.1	10.5
849	BJ1371	BM	30.031900	90.061900	30090222	1964.0-1951.0	-69.5	11.1
850	BJ1373	A 3118 LAGS	30.033300	90.057700	30090222	1964.0-1951.0	-90.4	11.1
448	BJ1374	M 153	30.033300	90.053600	30090222	1985.0-1964.0	-264.4	10.5
448	BJ1374	M 153	30.033300	90.053600	30090222	1985.0-1951.0	-340.3	10.9
448	BJ1374	M 153	30.033300	90.053600	30090222	1964.0-1951.0	-75.8	11.1
447	BJ1375	ISOTTA RM	30.034100	90.053000	30090222	1985.0-1964.0	-251.7	10.5
447	BJ1375	ISOTTA RM	30.034100	90.053000	30090222	1985.0-1951.0	-322.1	10.9
447	BJ1375	ISOTTA RM	30.034100	90.053000	30090222	1964.0-1951.0	-70.5	11.1
446	BJ1376	ISOTTA	30.034100	90.053000	30090222	1985.0-1964.0	-254.8	10.5
446	BJ1376	ISOTTA	30.034100	90.053000	30090222	1985.0-1951.0	-326.9	10.9
446	BJ1376	ISOTTA	30.034100	90.053000	30090222	1964.0-1951.0	-72.1	11.1
437	BJ1377	JEWETT RM	30.035200	90.043800	30090222	1985.0-1964.0	-215.2	10.5
437	BJ1377	JEWETT RM	30.035200	90.043800	30090222	1985.0-1951.0	-284.3	10.9
437	BJ1377	JEWETT RM	30.035200	90.043800	30090222	1964.0-1951.0	-69.1	11.1
436	BJ1378	JEWETT	30.035200	90.043800	30090222	1985.0-1964.0	-211.2	10.5
436	BJ1378	JEWETT	30.035200	90.043800	30090222	1985.0-1951.0	-279.8	10.9
436	BJ1378	JEWETT	30.035200	90.043800	30090222	1964.0-1951.0	-68.6	11.1
435	BJ1379	K 153	30.033000	90.039400	30090222	1985.0-1964.0	-258.0	10.5
435	BJ1379	K 153	30.033000	90.039400	30090222	1985.0-1951.0	-336.8	10.9
435	BJ1379	K 153	30.033000	90.039400	30090222	1964.0-1951.0	-78.8	11.0
851	BJ1380	201 LAGS	30.030000	90.037500	30090222	1964.0-1951.0	-98.4	11.0
429	BJ1381	Z 152	30.032500	90.032500	30090222	1985.0-1964.0	-253.9	10.5
429	BJ1381	Z 152	30.032500	90.032500	30090222	1985.0-1951.0	-322.7	10.9
429	BJ1381	Z 152	30.032500	90.032500	30090222	1964.0-1951.0	-68.8	11.0
432	BJ1382	Y 109	30.032700	90.026600	30090222	1985.0-1964.0	-291.8	10.6
432	BJ1382	Y 109	30.032700	90.026600	30090222	1985.0-1951.0	-348.2	10.9
432	BJ1382	Y 109	30.032700	90.026600	30090222	1964.0-1951.0	-56.4	11.0
433	BJ1383	X 152	30.032700	90.026600	30090222	1985.0-1964.0	-284.7	10.6
433	BJ1383	X 152	30.032700	90.026600	30090222	1985.0-1951.0	-330.3	10.9
433	BJ1383	X 152	30.032700	90.026600	30090222	1964.0-1951.0	-45.7	11.0

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424	BJ1384	204 LAGS	30.038800	90.008600	30090222	1985.0-1964.0	-276.8	10.6
424	BJ1384	204 LAGS	30.038800	90.008600	30090222	1985.0-1951.0	-341.7	10.9
424	BJ1384	204 LAGS	30.038800	90.008600	30090222	1964.0-1951.0	-64.9	11.0
966	BJ1385	NOPSI	30.016600	90.025800	30090222	1964.0-1951.0	-54.5	11.0
967	BJ1386	X 109	30.025800	90.024100	30090222	1964.0-1951.0	-36.6	11.0
428	BJ1389	BM LAGS RESET 1963	30.035200	90.024700	30090222	1985.0-1964.0	-359.1	10.6
427	BJ1393	Y 152 RESET 1963	30.035800	90.023800	30090222	1985.0-1964.0	-356.9	10.6
425	BJ1394	1 A LAGS	30.037200	90.018000	30090222	1985.0-1964.0	-398.2	10.6
426	BJ1395	2 A LAGS	30.040200	90.021300	30090222	1985.0-1964.0	-321.1	10.6
431	BJ1400	AIRPORT	30.041100	90.031300	30090222	1985.0-1964.0	-179.1	10.6
431	BJ1400	AIRPORT	30.041100	90.031300	30090222	1985.0-1951.0	-220.1	11.0
431	BJ1400	AIRPORT	30.041100	90.031300	30090222	1964.0-1951.0	-41.0	11.0
968	BJ1401	AIRPORT RM	30.041100	90.031300	30090222	1964.0-1951.0	-41.1	11.0
430	BJ1402	3 A LAGS	30.039400	90.031300	30090222	1985.0-1964.0	-200.9	10.6
445	BJ1403	B 3104 LAGS	30.006600	90.050500	30090222	1985.0-1964.0	-152.8	10.3
445	BJ1403	B 3104 LAGS	30.006600	90.050500	30090222	1985.0-1951.0	-193.4	10.7
445	BJ1403	B 3104 LAGS	30.006600	90.050500	30090222	1964.0-1951.0	-40.6	11.0
444	BJ1405	B 3103 LAGS	30.010200	90.050800	30090222	1985.0-1964.0	-167.0	10.3
444	BJ1405	B 3103 LAGS	30.010200	90.050800	30090222	1985.0-1951.0	-220.1	10.7
444	BJ1405	B 3103 LAGS	30.010200	90.050800	30090222	1964.0-1951.0	-53.0	11.0
443	BJ1406	B 3102 LAGS	30.013800	90.050800	30090222	1985.0-1964.0	-160.6	10.4
443	BJ1406	B 3102 LAGS	30.013800	90.050800	30090222	1985.0-1951.0	-202.4	10.8
443	BJ1406	B 3102 LAGS	30.013800	90.050800	30090222	1964.0-1951.0	-41.8	11.0
442	BJ1407	B 3101 LAGS	30.018000	90.051300	30090222	1985.0-1964.0	-141.0	10.4
442	BJ1407	B 3101 LAGS	30.018000	90.051300	30090222	1985.0-1951.0	-176.8	10.8
442	BJ1407	B 3101 LAGS	30.018000	90.051300	30090222	1964.0-1951.0	-35.8	11.1
441	BJ1408	A 3200 LAGS	30.021900	90.051600	30090222	1985.0-1964.0	-140.8	10.4
441	BJ1408	A 3200 LAGS	30.021900	90.051600	30090222	1985.0-1951.0	-182.7	10.8
441	BJ1408	A 3200 LAGS	30.021900	90.051600	30090222	1964.0-1951.0	-41.9	11.1
440	BJ1409	A 3199 LAGS	30.025200	90.051900	30090222	1985.0-1964.0	-154.9	10.4
440	BJ1409	A 3199 LAGS	30.025200	90.051900	30090222	1985.0-1951.0	-196.0	10.8
440	BJ1409	A 3199 LAGS	30.025200	90.051900	30090222	1964.0-1951.0	-41.1	11.1
934	BJ1410	L 153	30.025800	90.051600	30090222	1964.0-1951.0	-33.8	11.1
935	BJ1411	CURVE	30.026600	90.047200	30090222	1964.0-1951.0	-224.1	11.1
936	BJ1412	CURVE RM 1	30.026600	90.047200	30090222	1964.0-1951.0	-295.7	11.1
464	BJ1413	D 3126 LAGS	30.003800	90.059400	30090222	1985.0-1964.0	-98.1	10.4
464	BJ1413	D 3126 LAGS	30.003800	90.059400	30090222	1985.0-1951.0	-112.1	10.8
464	BJ1413	D 3126 LAGS	30.003800	90.059400	30090222	1964.0-1951.0	-14.0	11.1
462	BJ1414	D 3127 LAGS	30.008000	90.059700	30090222	1985.0-1964.0	-108.8	10.4
462	BJ1414	D 3127 LAGS	30.008000	90.059700	30090222	1985.0-1951.0	-142.5	10.8
462	BJ1414	D 3127 LAGS	30.008000	90.059700	30090222	1964.0-1951.0	-33.7	11.1
463	BJ1416	D 3128 LAGS	30.011300	90.060000	30090222	1985.0-1964.0	-179.7	10.5
463	BJ1416	D 3128 LAGS	30.011300	90.060000	30090222	1985.0-1951.0	-309.5	10.9
463	BJ1416	D 3128 LAGS	30.011300	90.060000	30090222	1964.0-1951.0	-129.8	11.1
964	BJ1417	D 3130 LAGS	30.021300	90.060800	30090222	1964.0-1951.0	-30.0	11.1
461	BJ1419	A 1 NOS+WB	30.006900	90.074100	30090222	1985.0-1964.0	-156.1	10.6
460	BJ1421	AA 190	30.018600	90.075200	30090222	1985.0-1964.0	-106.0	10.6
961	BJ1422	SOUTH GATE RM 1	30.018800	90.083800	30090222	1964.0-1951.0	-26.0	11.3
962	BJ1423	SOUTH GATE	30.018800	90.083800	30090222	1964.0-1951.0	-36.6	11.3
953	BJ1424	C 3124 LAGS	30.018300	90.096300	30090222	1964.0-1951.0	-98.1	11.3

<u>BM#</u>	<u>ACRN</u>	<u>BENCH MARK</u>	<u>LATITUDE</u>	<u>LONGITUDE</u>	<u>QUAD</u>	<u>YEARS</u>	<u>DIFF</u>	<u>SIGMA</u>
478	BJ1425	U 149	30.018600	90.098000	30090222	1985.0-1964.0	-174.1	10.8
478	BJ1425	U 149	30.018600	90.098000	30090222	1985.0-1951.0	-234.8	11.2
478	BJ1425	U 149	30.018600	90.098000	30090222	1964.0-1951.0	-60.7	11.3
954	BJ1426	C 3123 LAGS	30.014700	90.097200	30090222	1964.0-1951.0	-57.0	11.3
955	BJ1427	C 3120 LAGS	30.003300	90.098800	30090222	1964.0-1951.0	-67.7	11.3
486	BJ1428	T 149	30.003600	90.100000	30090222	1985.0-1964.0	-152.9	10.7
486	BJ1428	T 149	30.003600	90.100000	30090222	1985.0-1951.0	-206.4	11.1
486	BJ1428	T 149	30.003600	90.100000	30090222	1964.0-1951.0	-53.4	11.3
483	BJ1429	J 188	30.005200	90.114400	30090222	1985.0-1964.0	-216.0	10.8
484	BJ1431	W 148 RESET 1961	30.004700	90.112200	30090222	1985.0-1964.0	-84.4	10.8
485	BJ1432	CANAL 1938	30.003000	90.107700	30090222	1985.0-1964.0	-25.9	10.9
485	BJ1432	CANAL 1938	30.003000	90.107700	30090222	1985.0-1951.0	-19.8	11.2
485	BJ1432	CANAL 1938	30.003000	90.107700	30090222	1964.0-1951.0	6.2	11.5
194	BJ1439	X 189	30.004400	90.167500	30090223	1985.0-1964.0	-16.3	11.4
191	BJ1446	Z 189	30.005000	90.210800	30090223	1985.0-1964.0	-46.3	11.5
189	BJ1447	T 189	30.005200	90.222200	30090223	1985.0-1964.0	-47.9	11.5

**APPENDIX D.--HEIGHT DIFFERENCES BETWEEN BENCH MARKS FROM J 92 TO THE
DEEP-WELL MARKS AT MICHLOUD, LA**

PROFILE DATA - BENCH MARK J 92 TO DEEP-WELL MARKS AT MICHOU, LOUISIANA

COMPARISON A : L2413321, 1977 MINUS L249032, 1985
 COMPARISON B : L22314, 1971 MINUS L249032, 1985
 COMPARISON C : L216642, 1969 MINUS L249032, 1985

DESIGNATION	DISTANCE (KM)	HEIGHT (M)	A (MM)	B (MM)	C (MM)	
J 92	0.00	2.7528	0.00	0.00	0.00	
PIKE RM 4	0.09	2.9570	6.83	13.61	18.06	
PIKE 1931 1952	0.12	2.7867	9.45	13.82	16.34	
C 193	0.15	2.8568	1.76	3.68	3.89	
PIKE RM 3	0.17	3.0757	5.12	9.39	10.18	
PIKE RM 2	0.19	2.7652	6.99	12.43	13.73	
OR 179 USGS	0.53	1.6811	2.45	2.85	3.79	
E 3168 LAGS	0.93	2.2482	6.14	13.72	21.57	
G 193	1.80	1.6575	22.33	39.28	45.73	
G 92	3.51	1.0358	14.97	15.92	19.00	
E 92	6.97	1.2992	18.35	23.91	30.56	
E 193	7.62	1.1768	18.04	23.22	29.16	
D 92	8.73	1.2572		22.05	29.19	
K 319	9.60	0.6105	18.99			
J 319	11.23	2.4500	27.88			
E 3149 LAGS	12.84	2.5975	77.66	122.78	135.17	
A 92	13.27	1.0710	18.28	20.24	32.01	
F 193	14.49	1.7138	9.93	4.05	15.46	
E 3145 LAGS	14.89	5.1315	5.82	-7.10	1.24	
E 3144 LAGS	15.11	5.0894	10.26	1.06	11.18	
R 153 LAGS	15.12	3.4803	10.06	0.84	10.31	
A 3121 LAGS	15.62	1.7767	22.13	23.85	36.85	
A 3122 LAGS	16.43	1.1520	22.18	24.19	37.06	
A 3120 LAGS	17.17	0.7289	10.55	42.54	54.96	
C 189	18.90	0.9451	12.45	0.76	8.10	
G 276	19.57	0.5604	-6.51	-14.83	-8.36	
WYNOT RM 4	20.56	2.8671	24.33			
A 3141 LAGS	20.83	0.4960	10.40	3.87	11.64	
F 276	21.18	0.9321	12.07	6.75	14.00	
D 189	22.32	0.6988	8.38	2.53	11.34	
E 189	23.93	0.7193	11.85	8.46	19.36	
E 276	24.35	-0.6910	8.63	4.49	15.03	
H 153	25.85	0.7099	25.21	26.08	44.34	
FOLGER RM 2	27.88	1.1746	62.98	91.03		
FOLGER	27.89	1.1318	61.02	100.90		
FOLGER RM 1	27.91	0.8355	92.09	162.70		
A 3135 LAGS	28.08	0.7472	53.27	69.20	90.94	
GATE 11 USE	28.84	0.6678	130.77	220.09		
OR 78 WELL USGS	29.30	1.2838	92.87	148.10	184.73	** DEEP-WELL MARK **
OR 79 WELL USGS	29.73	1.2276	87.48	123.45	151.64	** DEEP-WELL MARK **
WASTE WELL 2 USGS	29.96	1.7524	56.37	70.64	93.58	** DEEP-WELL MARK **
OR 80 WELL USGS	30.44	1.2600	95.48	135.01	165.34	** DEEP-WELL MARK **

PROFILE DATA - BENCH MARK J 92 TO DEEP-WELL MARKS AT MICHOU, LOUISIANA

COMPARISON A : L2413321, 1977 MINUS L249032 , 1985
 COMPARISON B : L22314 , 1971 MINUS L249032 , 1985
 COMPARISON C : L216642 , 1969 MINUS L249032 , 1985

DESIGNATION	DISTANCE (KM)	HEIGHT (M)	A (MM)	B (MM)	C (MM)
W 152	29.14	1.5176	98.73	158.17	192.84
F 189	30.98	0.5266	153.86	289.42	355.46
Z 297	32.18	0.5234	107.94		
D 276	32.71	1.1875	113.69	210.32	275.80
236 AZ MK LAGS	32.74	1.1878	115.55		
C 276	33.75	1.0408	123.29	238.88	297.39
231 LAGS	35.59	0.3070	97.71	187.69	239.72
C 157 RESET 1964	36.84	0.7369	101.21	217.38	287.94
227 LAGS RESET 1961	38.19	0.5714	108.00	155.23	192.05
A 3129 LAGS RESET 19 LAFON	38.68	0.3499	99.93	210.32	254.62
A 3128 LAGS RESET 19	39.69	-0.3617	77.60	157.92	208.18
B 276	39.76	0.0649	190.14	299.20	350.10
B 157 RESET 1960	40.58	1.5828	53.95	84.09	114.21
225 LAGS RESET 1951	41.25	0.6970		100.28	138.03
B 3130 LAGS	41.53	0.4250	67.19	122.51	163.49
HIGGINS	42.21	5.6425	66.22	102.77	137.40
G 278	42.46	2.8477	48.28	87.41	125.18
S 152	43.30	1.2978	29.76	33.94	
B 3105 LAGS	44.18	-0.6197	22.58	20.75	44.78
D 3124 LAGS	44.76	0.1833	31.81	49.05	79.96
D 3123 LAGS	45.11	0.2980	30.56	39.14	65.05
P 193	45.39	0.2158	24.35	18.07	37.81
D 3120 LAGS	45.82	0.7773	23.61	16.14	36.19
Z 147	46.42	0.5966	50.28	72.15	102.75
F 156	47.06	2.6354	38.41	48.74	73.56
GENT FLA NOS+WB	47.46	-0.7799	41.91	54.59	79.72
Y 147	47.54	-0.4565		61.87	86.77
A 148	49.00	0.8539	58.28	86.97	114.37
W 147	49.43	2.0987	49.87	67.90	95.19
X 147 RESET 1971	50.20	0.0163	65.95	113.89	151.25
45 B NOS+WB	50.28	0.4855	67.29		
K 189	51.30	0.4455	65.58	114.55	149.12
P 188	51.83	-0.2823		79.11	106.33
L 188	52.76	1.7989	48.60	70.55	98.45
U 147	54.49	2.7753	34.94	37.00	57.84
A 276	55.63	1.2387	32.62	30.93	49.25
Y 188 RESET 1977	56.84	2.2010	24.87	13.33	27.86
M 188	57.85	0.6206	23.60		
	59.10	1.4412	9.36	-5.96	11.25

APPENDIX E.--RECOVERY NOTES FOR BENCH MARKS E 3149 LAGS, A 92, and F 193

ACRN=BH1135 ***** BENCH MARK DESCRIPTION *****
 DESIGNATION--F 193 STATE--LA COUNTY--ORLEANS
 QUAD--0300893 QSN-- LINE--101 AREA--
 LOCATION-- 14.9 MI E OF NEW ORLEANS
 MONUMENT BY--CGS YR--1963 CP-- MARK TYPE--BM DISK
 RECOVERY BY--NGS YR--1985 CP--DCF CONDITION--GOOD
 SPECIFIC SETTING--COPPER-CLAD STEEL ROD MONUMENTATION CODE--B
 STAMPING--F 193 1963 OTHER CONTROL--
 LATITUDE = 300416N LONGITUDE = 0894802W

***** RECOVERY DESCRIPTION *****

ABOUT 14.9 MILES EAST ALONG U. S. HIGHWAY 90 FROM THE I 10 OVERPASS OVER U. S. HIGHWAY 90 AT NEW ORLEANS, ABOUT 0.2 MILE NORTHEAST OF THE NORTHEAST END OF THE HIGHWAY BRIDGE OVER CHEF MENTEUR PASS, AT THE CHEF HARBOR, 113 FEET NORTHWEST OF THE CENTER LINE OF THE HIGHWAY, 46 FEET NORTHEAST OF THE CENTER LINE OF HARBOR DRIVE, 41.2 FEET EAST OF AND ACROSS A DRIVEWAY FROM THE SOUTH ONE OF 4 METAL BOAT SHED, 18 1/2 FEET SOUTHWEST OF THE CENTER LINE OF A DRIVEWAY LEADING NORTHEAST, 2 1/2 FEET NORTHEAST OF POWER LINE POLE 456 R, 1.5 FEET SOUTHWEST OF A METAL WITNESS POST, 3 FEET BELOW THE LEVEL OF THE HIGHWAY AND IS A DISK ON THE TOP OF A COPPER COATED STEEL ROD PROJECTING 2 INCHES ABOVE THE LEVEL OF THE GROUND AND PROTECTED BY A 4 INCH METAL PIPE WHICH PROJECTS 3 INCHES ABOVE THE LEVEL OF THE GROUND. THE ROD WAS DRIVEN TO A DEPTH OF 56 FEET. NOTE-- THE ROD WAS BENT IN AN L SHAPE AND THE DISK WAS BATTERED. THE ROD AND THE DISK WAS STRAIGHTENED. RECOVERED IN GOOD CONDITION, THE 1969 RECOVERY NOTE IS ADEQUATE EXCEPT THAT THE BASE OF A TREE HAS GROWN AROUND THE BASE OF THE METAL PIPE.

ACRN=BH1137 ***** BENCH MARK DESCRIPTION *****
 DESIGNATION--E 3149 STATE--LA COUNTY--ORLEANS
 QUAD--0300893 QSN-- LINE--101 AREA--
 LOCATION-- 15.95 MI E OF NEW ORLEANS
 MONUMENT BY--LAGS YR--UNK CP-- MARK TYPE--SURVEY DISK
 RECOVERY BY--NGS YR--1985 CP--DCF CONDITION--POOR
 SPECIFIC SETTING--CONCRETE POST MONUMENTATION CODE--C
 STAMPING--E 3149 OTHER CONTROL--
 LATITUDE = 300457N LONGITUDE = 0894728W

***** RECOVERY DESCRIPTION *****

ABOUT 15.95 MILES EAST ALONG U.S. HIGHWAY 90 FROM THE HIGHWAY UNDERPASS FOR INTERSTATE HIGHWAY 10 AT NEW ORLEANS, 1.2 MILES NORTHEAST OF THE NORTHEAST END OF THE HIGHWAY BRIDGE OVER CHEF MENTEUR PASS, 42 FEET NORTHWEST OF THE CENTER LINE OF THE HIGHWAY, 56 FEET SOUTHWEST OF A TELEPHONE POLE, 62 FEET NORTHEAST OF THE CENTER LINE OF A PRIVATE DRIVEWAY, 56 FEET SOUTHEAST OF A 25-INCH FORKED TREE, 1.0 FOOT NORTHWEST OF A METAL WITNESS POST, ABOUT 3 1/2 FEET BELOW THE LEVEL OF THE HIGHWAY, AND SET IN THE TOP OF A CONCRETE POST WHICH PROJECTS 4 INCHES. RECOVERED IN POOR CONDITION. THE CONCRETE POST HAS BEEN STRUCK AND IS LEANING TO THE WEST. THE DESCRIPTION IS ADEQUATE.

ACRN-BH1136	*****	BENCH MARK DESCRIPTION	*****
DESIGNATION--A 92		STATE--LA	COUNTY--ORLEANS
QUAD--0300893	QSN--	LINE--101	AREA--
LOCATION-- 15.7 MI E		OF NEW ORLEANS	
MONUMENT BY--CGS	YR--1938	CP--	MARK TYPE--BM DISK
RECOVERY BY--NGS	YR--1985	CP--DCF	CONDITION--GOOD
SPECIFIC SETTING--CONCRETE POST			MONUMENTATION CODE--C
STAMPING--A 92 1938			OTHER CONTROL--
LATITUDE = 300444N	LONGITUDE = 0894731W		

***** RECOVERY DESCRIPTION *****

ABOUT 15.7 MILES EAST ALONG U. S. HIGHWAY 90 FROM THE I 10 OVERPASS OVER U. S. HIGHWAY 90 AT NEW ORLEANS, ABOUT 0.95 MILE NORTHEAST OF THE NORTHEAST END OF THE HIGHWAY BRIDGE OVER CHEF MENTEUR PASS, NEAR THE COCHRANS BOATYARD, 138 FEET NORTHWEST OF THE CENTER LINE OF THE HIGHWAY, 63 1/2 FEET SOUTH OF THE SOUTH CORNER OF A ONE-STORY HOUSE, 33 1/2 FEET NORTHEAST OF THE CENTER LINE OF THE NORTHEAST ONE OF TWO DRIVEWAYS, 26 1/2 FEET NORTH OF POWER LINE POLE 466 B, 13 1/2 FEET WEST OF A SHORT METER POLE, 1.7 FEET SOUTH OF A METAL WITNESS POST, 10 FEET BELOW THE LEVEL OF THE HIGHWAY AND SET IN THE TOP OF A CONCRETE POST 1 FOOT UNDERGROUND. NOTE-- THE POST IS LEANING SLIGHTLY TO THE SOUTHEAST, BUT IS STILL SOLID. 15.7 MILES EAST ALONG U.S. HIGHWAY 90 FROM THE INTERSTATE HIGHWAY 10 OVERPASS, 0.95 MILE NORTHEAST OF THE NORTHEAST END OF THE HIGHWAY BRIDGE OVER CHEF MENTEUR PASS, AT COCHRANS BOATYARD, 135 FT. NORTHWEST OF THE CENTER LINE OF THE HIGHWAY, 65 FT. SOUTHEAST OF THE SOUTH CORNER OF A ONE STORY HOUSE WITH BRICK FACING HALF WAY UP AROUND THE HOUSE, 26.5 FT. NORTH OF POWER LINE POLE WITH ONE GUY WIRE, NUMBER 466 B, NOTE MARK LEANS SLIGHTLY TO THE SOUTHEAST, BUT IS SOLID. RECOVERED IN GOOD CONDITION, THE 1977 RECOVERY NOTE IS ADEQUATE. A DISK SET INTO THE TOP OF A CONCRETE POST RECESSED 30 CENTIMETERS. 6 FEET BELOW HIGHWAY.