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NASA Technical Memorandum 4482

NASA Space Geodesy Program: Catalogue of Site Information

M. A. Bryant and C. E. Noll

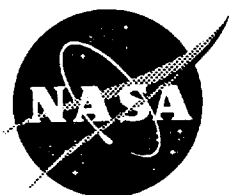
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Catalogue of Site Information**

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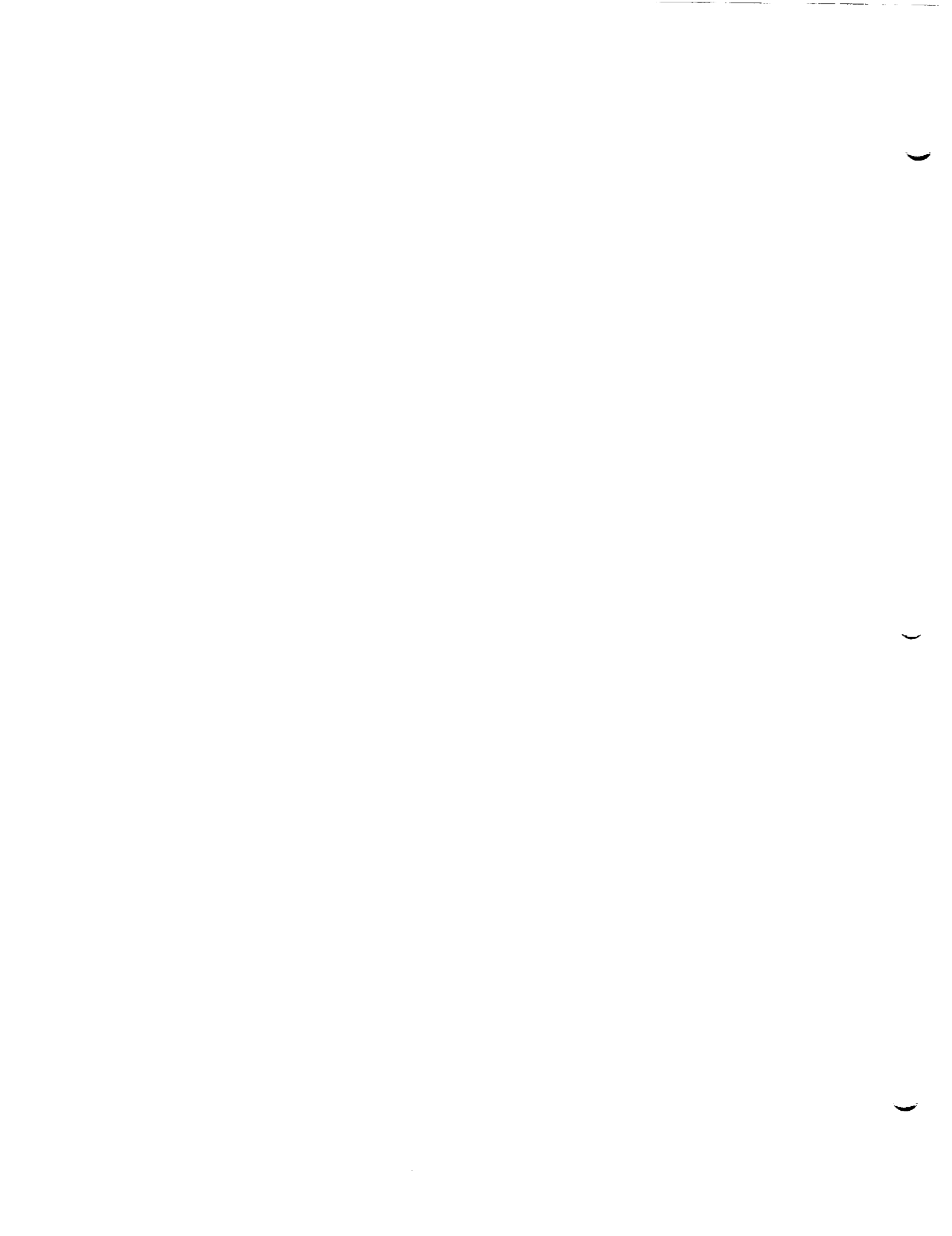


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INTRODUCTION

This is the first edition of the **NASA Space Geodesy Program: Catalogue of Site Information**. This catalogue supersedes all previous versions of the **Crustal Dynamics Project: Catalogue of Site Information**, last published in May 1989. This document is prepared under the direction of the Space Geodesy and Altimetry Projects Office (SGAPO), Code 920.1, Goddard Space Flight Center. SGAPO has assumed the responsibilities of the Crustal Dynamics Project, which officially ended December 31, 1991. The catalogue contains information on all NASA supported sites as well as sites from cooperating international partners.

This catalogue is designed to provide descriptions and occupation histories of high-accuracy geodetic measuring sites employing space-related techniques. The emphasis of the catalogue has been in the past, and continues to be with this edition, station information for facilities and remote locations utilizing the Satellite Laser Ranging (SLR), Lunar Laser Ranging (LLR), and Very Long Baseline Interferometry (VLBI) techniques. With the proliferation of high-quality Global Positioning System (GPS) receivers and Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS) transponders, many co-located at established SLR and VLBI observatories, the requirement for accurate station and localized survey information for an ever broadening base of scientists and engineers has been recognized. It is our objective to provide accurate station information to scientific groups interested in these facilities.

Whenever possible, the information provided for each site includes site location and geographic region, primary scientific purposes, physical description, topographic map reference and source, geological province, and local geology. The number, type, inscription, system capability, and geodetic parameters are included for each observing monument located at a particular site. Differential coordinates and their sources have been listed with this site information. A sketch detailing the positions of the observing and reference monuments is also included for many of the sites. Furthermore, past occupation information is listed for each site.

Users of the catalogue should exercise caution before using absolute positions contained in the Monument Information section. These values are given in a variety of regional and global datums thus making direct comparisons inappropriate. The Crustal Dynamics Data Information System (CDDIS) maintains files containing station positions, with velocities, in a common global reference frame. The positions listed in the catalogue, when possible, are tabulated to five significant digits solely for the recovery of local (intrasite) vectors with subcentimeter precision.

Several conventions used in this document should be noted. Confusion has arisen at times regarding the convention of elevation (orthometric height) and ellipsoidal height. The values detailed in this document are as specific as possible in this regard. Differential coordinates

between monuments are, when available, given in north, east, and up, a planar coordinate system, for distances under 100 meters. For greater distances, differential coordinates are given in X, Y, and Z, an Earth-centered coordinate system. Monument numbers were occasionally established after the placement of the actual monument disk; therefore, the disk inscription may or may not contain the assigned number. The monument numbers of the fixed VLBI antennas (or radio telescopes) usually refer to the intersection of axes or the optical center of the telescope. Deviations are explained within the descriptive information of the monument.

Updates of this version of the catalogue will be distributed when warranted (approximately two to four times per year). These pages will include revisions to existing information as well as new site sections for which complete descriptions were not available at time of publication. The Program actively pursues site information on existing and proposed stations and welcomes contributions from all groups engaged in geodetic measurements. The editors have relied on contributions from dozens of scientific groups and government agencies for the information presented. When data was not provided in the catalogue format an effort was made to reformat the information whenever possible. Great care was taken in presenting this information, however errors do occur. We ask that upon receipt of the catalogue contributors validate the published information. Errors and omissions brought to our attention will be immediately corrected and distributed. Data may be submitted either by mail or electronically to the INTERNET address - SITECAT@CDDIS.GSFC.NASA.GOV.

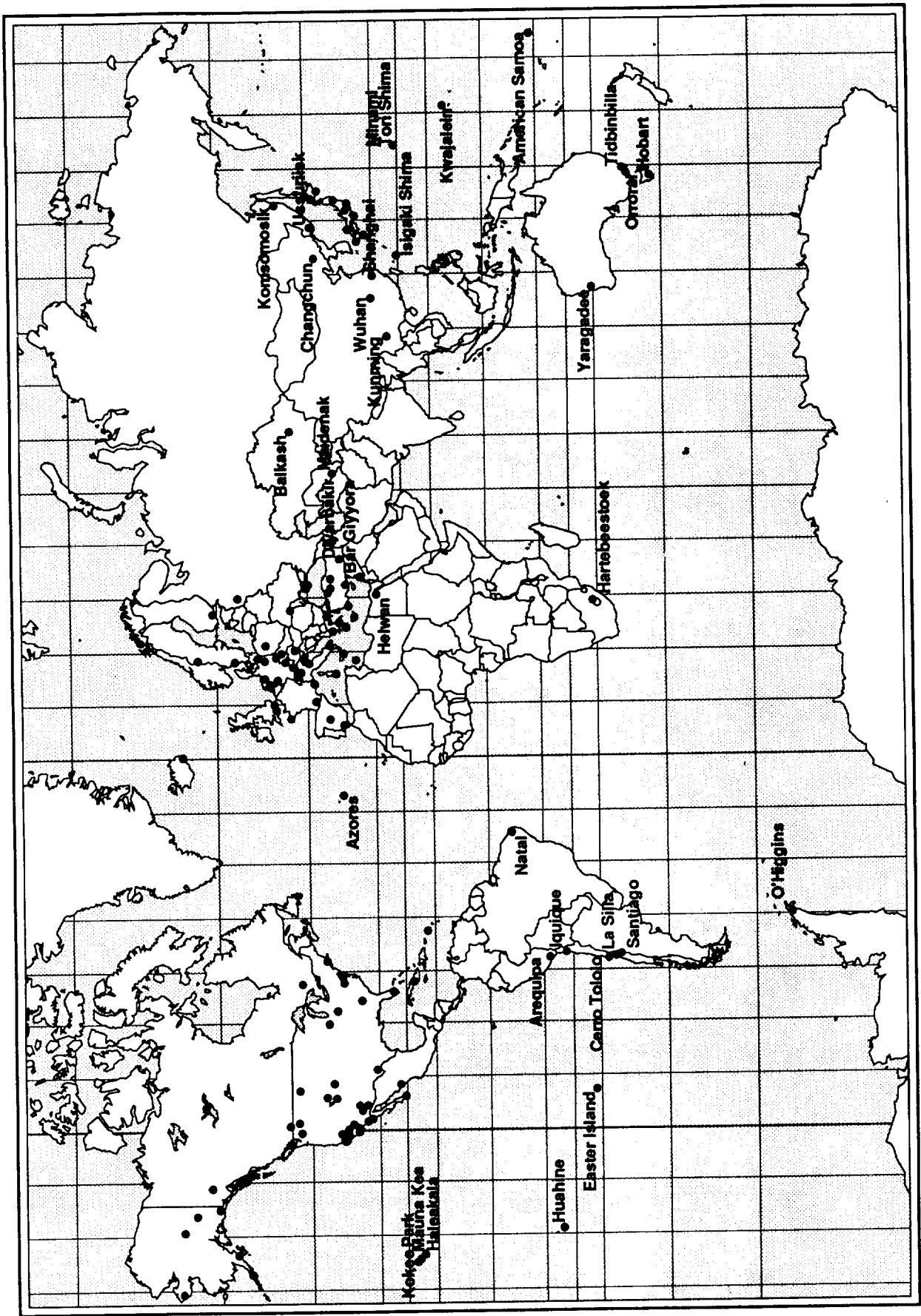
The site information contained in this document is also available through the CDDIS. The CDDIS is accessible by both TCP/IP and DECnet protocols. Users can contact Carey Noll at the address below for further details on the CDDIS.

The editors would like to acknowledge, with great appreciation, the numerous contributors to this catalogue. These international organizations include: BFEC, MIT, JPL, AUSLIG, JHD, CRL, NOAA, NGS, CIGNET, GSI, EMR, DMA, DUT, IPRG, IGN, IfAG, RSASLIG, TELESPAZIO, Statens Kartverk, and literally dozens of other observatories and scientific groups. Thank you all for your contributions to this effort and to all previous.

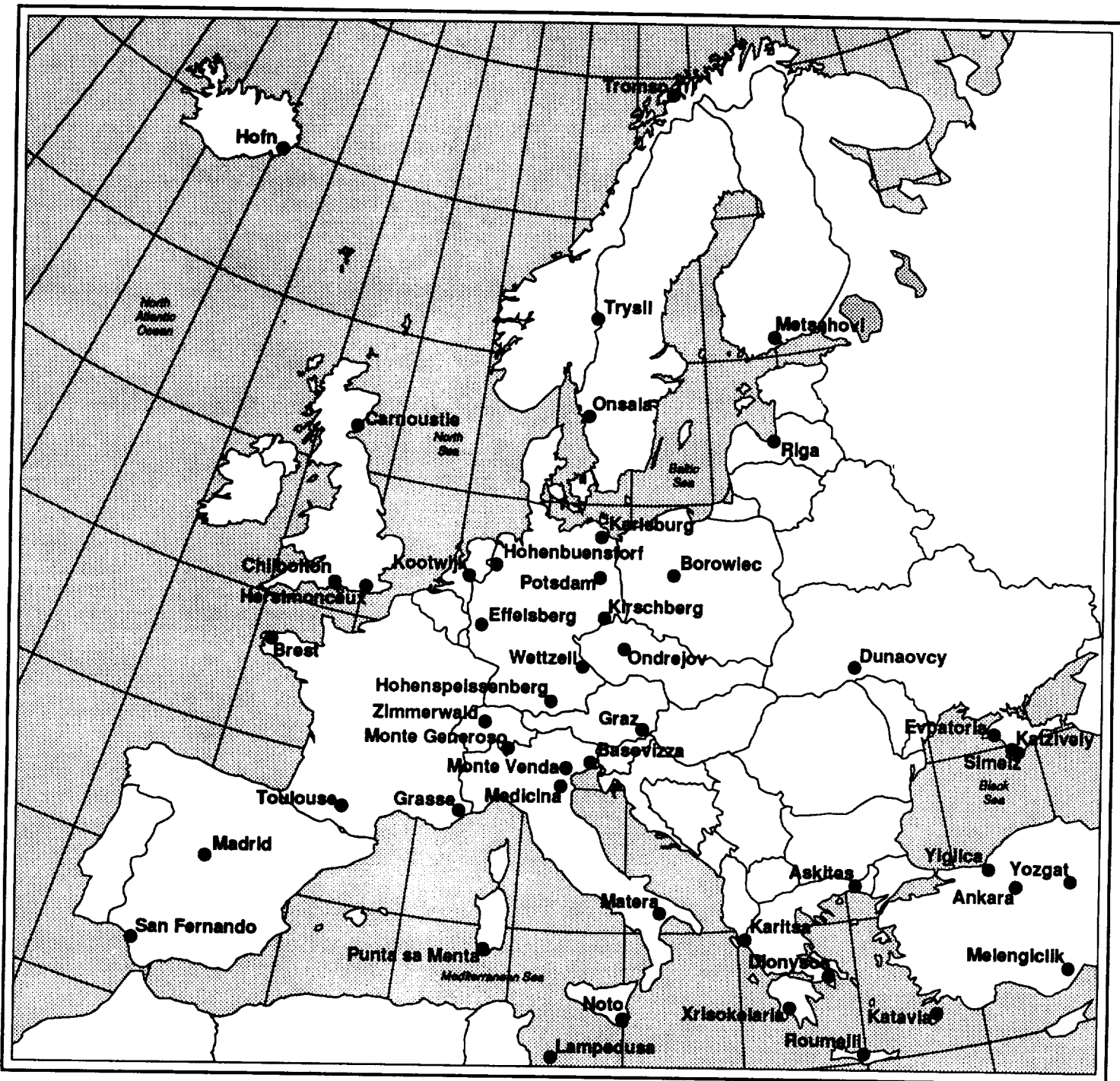
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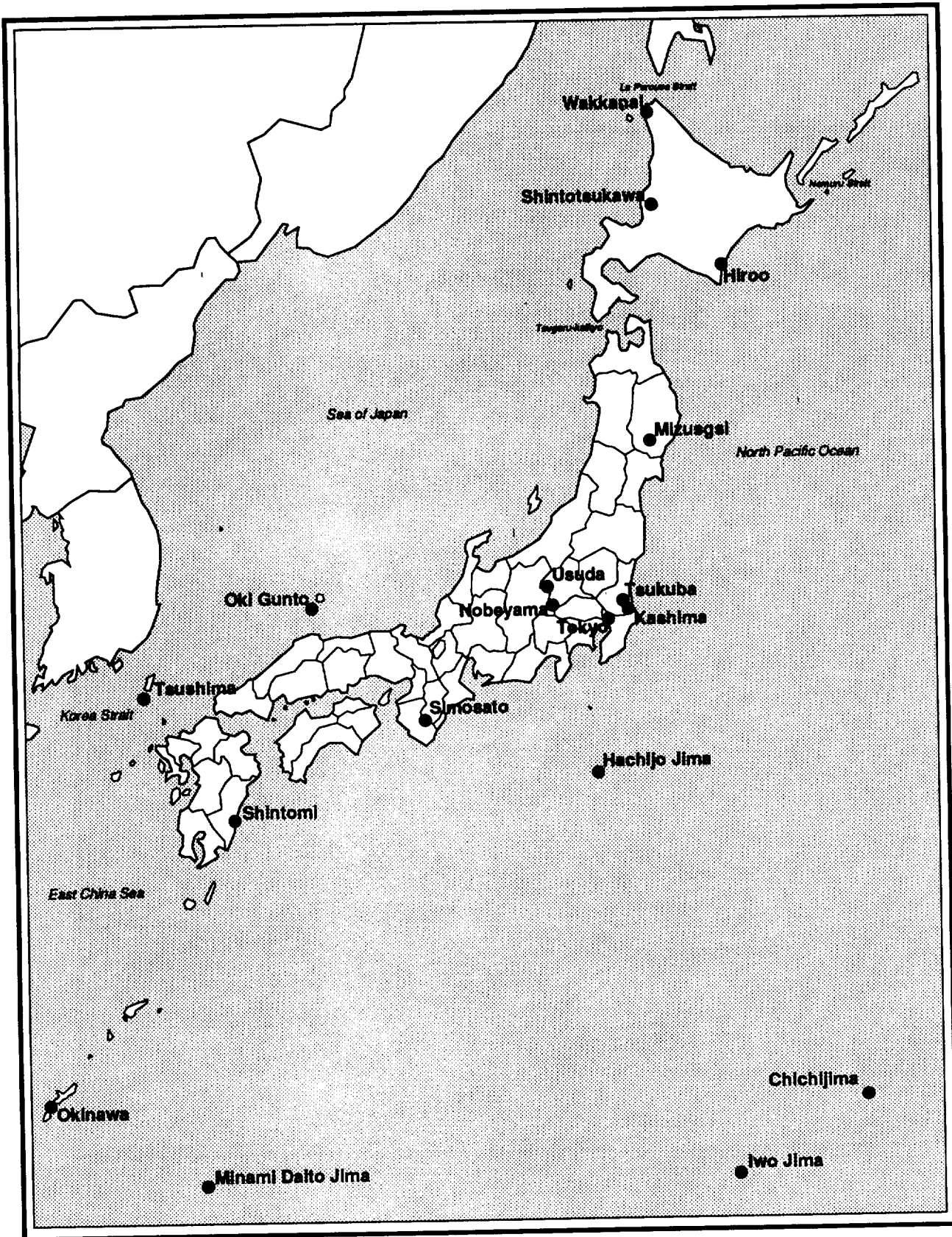
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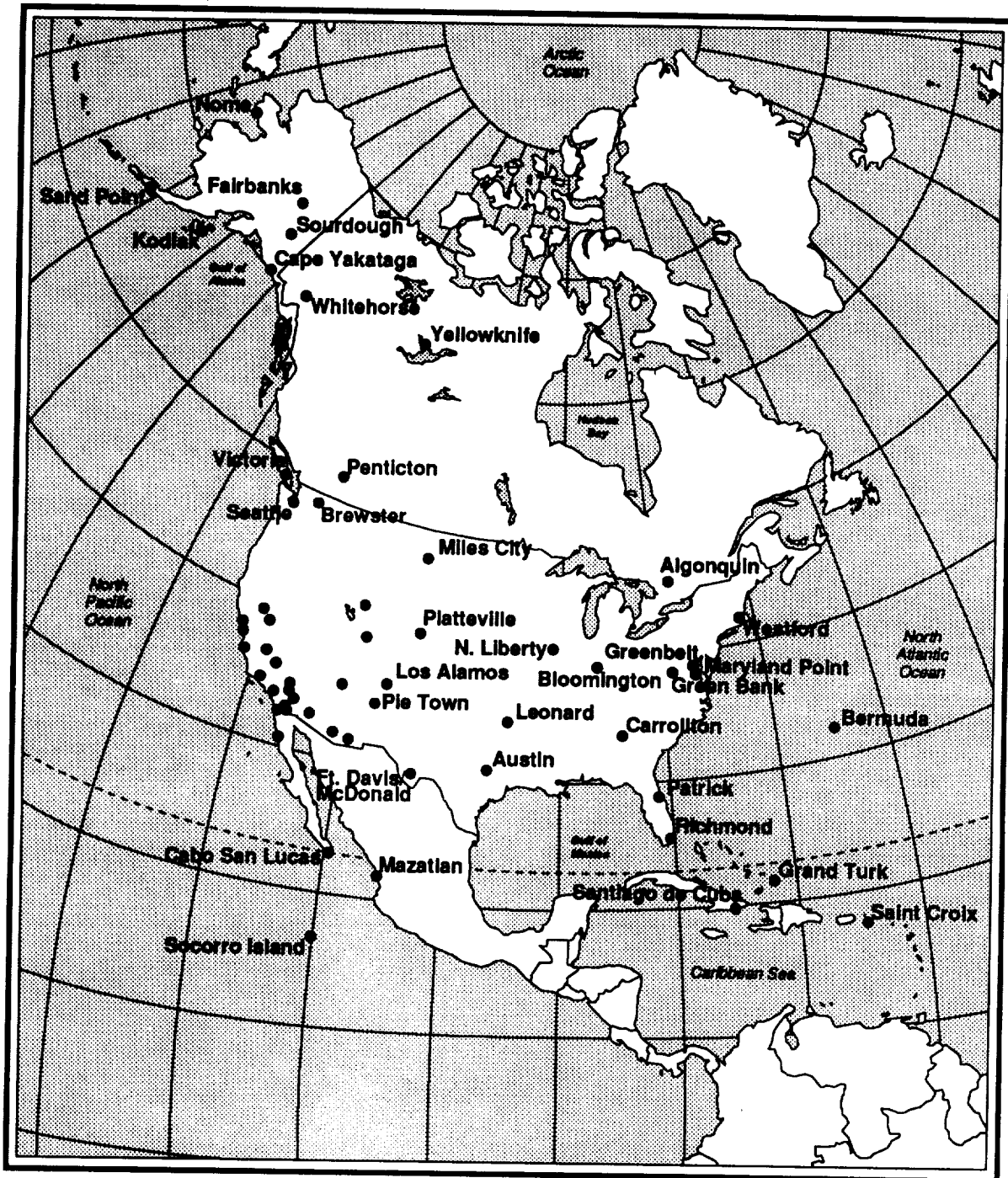
Map of Geodetic Sites - Global



Map of Geodetic Sites - Europe



Map of Geodetic Sites - Japan



Map of Geodetic Sites - North America



Map of Geodetic Sites - Western United States

Table of Sites Listed By Monument Number

Mon. No.	Site Name	Location
1148	ONDREJOV	ONDREJOV, CZECHOSLOVAKIA
1181	POTSDAM	POTSDAM, GERMANY
1311	KOKEE PARK	KOKEE PARK, KAUAI, HI
1319	SANTIAGO	SANTIAGO, CHILE
1338	WALLOPS ISLAND	WALLOPS ISLAND, VA
1360	BERMUDA	BERMUDA ISLAND
1403	QUITO	QUITO, EQUADOR
1404	SANTIAGO	SANTIAGO, CHILE
1513	GOLDSTONE VENUS	GOLDSTONE, CA
1514	GOLDSTONE MARS	GOLDSTONE, CA
1543	TIDBINBILLA	TIDBINBILLA, AUSTRALIA
1561	MADRID	MADRID, SPAIN
1563	MADRID	MADRID, SPAIN
1642	TIDBINBILLA	TIDBINBILLA, AUSTRALIA
1661	MADRID	MADRID, SPAIN
1663	MADRID	MADRID, SPAIN
1665	MADRID	MADRID, SPAIN
1856	KASHIMA	KASHIMA, JAPAN
1857	KASHIMA	KASHIMA, JAPAN
1863	MAIDANAK	MAIDANAK, UZBEKISTAN
1864	MAIDANAK	MAIDANAK, UZBEKISTAN
1866	DUNAOVCY	DUNAOVCY, UKRAINE
1867	EVPATORIA	EVPATORIA, UKRAINE
1868	KOMSOMOLSK	KOMSOMOLSK-NA-AMURE, RUSSIA
1869	BALKHASH	BALKHASH, RUSSIA
1873	SIMEIZ	SIMEIZ, UKRAINE
1884	RIGA	RIGA, LATVIA
1893	KATZIVELY	KATZIVELY, CRIMEA, UKRAINE
1953	SANTIAGO DE CUBA	SANTIAGO DE CUBA, CUBA
4047	FAIRBANKS	FAIRBANKS, AK
4968	KWAJALEIN	KWAJALEIN, MARSHALL ISLANDS
7035	OTAY MOUNTAIN	OTAY MOUNTAIN, SAN DIEGO, CA
7038	MILES CITY	MILES CITY, MONTANA
7046	BEAR LAKE	BEAR LAKE, UT
7051	QUINCY	QUINCY, CA
7055	MOUNT HOPKINS	MOUNT HOPKINS, AZ
7056	MOUNT HOPKINS	MOUNT HOPKINS, AZ

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7061	EASTER ISLAND	EASTER ISLAND, CHILE
7062	OTAY MOUNTAIN	OTAY MOUNTAIN, SAN DIEGO, CA
7063	GREENBELT	GGAO, GSFC, GREENBELT, MD
7064	GREENBELT	GGAO, GSFC, GREENBELT, MD
7065	GREENBELT	GGAO, GSFC, GREENBELT, MD
7066	WALLOPS ISLAND	WALLOPS ISLAND, VA
7067	BERMUDA	BERMUDA ISLAND
7068	GRAND TURK	GRAND TURK ISLAND
7069	PATRICK	PATRICK AIR FORCE BASE, FL
7070	WALLOPS ISLAND	WALLOPS ISLAND, VA
7080	MCDONALD	MCDONALD OBSERVATORY, FT DAVIS, TX
7081	PATRICK	PATRICK AIR FORCE BASE, FL
7082	BEAR LAKE	BEAR LAKE, UT
7083	GREENBELT	GGAO, GSFC, GREENBELT, MD
7084	OWENS VALLEY	OWENS VALLEY RADIO OBS., BIG PINE, CA
7085	GOLDSTONE MARS	GOLDSTONE, CA
7086	MCDONALD	MCDONALD OBSERVATORY, FT DAVIS, TX
7087	FORT DAVIS	FORT DAVIS, TX
7088	MCDONALD	MCDONALD OBSERVATORY, FT DAVIS, TX
7089	MADRID	MADRID, SPAIN
7090	YARRAGADEE	YARRAGADEE, AUSTRALIA
7091	WESTFORD	HAYSTACK OBSERVATORY, WESTFORD, MA
7092	KWAJALEIN	KWAJALEIN, MARSHALL ISLANDS
7093	HELWAN	HELWAN, EGYPT
7094	KOKEE PARK	KOKEE PARK, KAUAI, HI
7095	ONSALA	ONSALA, SWEDEN
7096	AMERICAN SAMOA	AMERICAN SAMOA
7097	EASTER ISLAND	EASTER ISLAND, CHILE
7100	GREENBELT	GGAO, GSFC, GREENBELT, MD
7101	GREENBELT	GGAO, GSFC, GREENBELT, MD
7102	GREENBELT	GGAO, GSFC, GREENBELT, MD
7103	GREENBELT	GGAO, GSFC, GREENBELT, MD
7104	GREENBELT	GGAO, GSFC, GREENBELT, MD
7105	GREENBELT	GGAO, GSFC, GREENBELT, MD
7106	GREENBELT	GGAO, GSFC, GREENBELT, MD
7107	AREQUIPA	AREQUIPA, PERU

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7108	GREENBELT	GGAO, GSFC, GREENBELT, MD
7109	QUINCY	QUINCY, CA
7110	MONUMENT PEAK	MOUNT LAGUNA, CA
7111	VANDENBERG	VANDENBERG AIR FORCE BASE, CA
7112	PLATTEVILLE	PLATTEVILLE, CO
7113	LA JOLLA	LA JOLLA, CA
7114	OWENS VALLEY	OWENS VALLEY RADIO OBS., BIG PINE, CA
7115	GOLDSTONE VENUS	GOLDSTONE, CA
7120	HALEAKALA	LURE OBS., MOUNT HALEAKALA, MAUI, HI
7121	HUAHINE	HUAHINE, SOCIETY IS, FRENCH POLYNESIA
7122	MAZATLAN	MAZATLAN, SINALOA, MEXICO
7123	HUAHINE	HUAHINE, SOCIETY IS, FRENCH POLYNESIA
7125	GREENBELT	GGAO, GSFC, GREENBELT, MD
7129	NATAL	NATAL, BRAZIL
7130	GREENBELT	GGAO, GSFC, GREENBELT, MD
7203	EFFELSBERG	BONN, GERMANY
7204	GREEN BANK	NRAO, GREEN BANK, WV
7205	WESTFORD	HAYSTACK OBSERVATORY, WESTFORD, MA
7206	MCDONALD	MCDONALD OBSERVATORY, FORT DAVIS, TX
7207	OWENS VALLEY	OWENS VALLEY RADIO OBS., BIG PINE, CA
7209	WESTFORD	HAYSTACK OBSERVATORY, WESTFORD, MA
7210	HALEAKALA	LURE OBS., MOUNT HALEAKALA, MAUI, HI
7211	ONSALA	ONSALA, SWEDEN
7212	ONSALA	ONSALA, SWEDEN
7213	ONSALA	ONSALA, SWEDEN
7214	GREEN BANK	NRAO, GREEN BANK, WV
7215	CHILBOLTON	CHILBOLTON, GREAT BRITAIN
7216	FORT DAVIS	FORT DAVIS, TX
7217	MARYLAND POINT	MARYLAND POINT, MD
7218	HAT CREEK	HAT CREEK RADIO ASTRO. OBS., CASSEL, CA
7219	RICHMOND	PERRINE, FL
7220	MONUMENT PEAK	MOUNT LAGUNA, CA
7221	QUINCY	QUINCY, CA
7222	MOJAVE	BARSTOW, CA
7223	VANDENBERG	VANDENBERG AIR FORCE BASE, CA
7224	WETTZELL	WETTZELL, GERMANY

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7225	FAIRBANKS	FAIRBANKS, AK
7226	SHANGHAI	SHANGHAI OBS., PRC
7227	SHANGHAI	SHANGHAI OBS., PRC
7228	CARROLLTON	CARROLLTON, GA
7229	SEATTLE	SEATTLE, WA
7230	MEDICINA	MEDICINA, ITALY
7231	GOLDSTONE MARS	GOLDSTONE, CA
7232	HARTEBEESTHOEK	HARTEBEESTHOEK, REP OF SOUTH AFRICA
7233	SHANGHAI	SHANGHAI OBS., PRC
7234	PIE TOWN	PIE TOWN, NM
7235	MATERA	MATERA, ITALY
7236	WUHAN	WUHAN, PEOPLES REPUBLIC OF CHINA
7237	CHANGCHUN	CHANGCHUN, PEOPLES REPUBLIC OF CHINA
7238	KUNMING	KUNMING, YUNNAN, PRC
7239	LA SILLA	LA SILLA, CHILE
7240	SAO PAULO	SAO PAULO, BRAZIL
7241	FORT ORD	FORT ORD, CA
7242	HOBART	HOBART, TASMANIA
7243	MATERA	MATERA, ITALY
7244	NOBEYAMA	NOBEYAMA, JAPAN
7245	O'HIGGINS	O'HIGGINS BASE STATION, ANTARCTICA
7246	USUDA	USUDA, JAPAN
7247	USSURIISK	USSURIISK, RUSSIA
7248	GREEN BANK	NRAO, GREEN BANK, WV
7249	BEIJING	BEIJING, PEOPLES REPUBLIC OF CHINA
7250	VACAVILLE	VACAVILLE, CA
7251	POINT REYES	POINT REYES, CA
7252	PRESIDIO	SAN FRANCISCO, CA
7253	PEARBLOSSOM	PEARBLOSSOM, CA
7254	PEARBLOSSOM	PEARBLOSSOM, CA
7255	SANTA PAULA	SANTA PAULA, CA
7256	PINYON FLAT	PINYON FLAT, CA
7257	ELY	ELY, NV
7258	PLATTEVILLE	PLATTEVILLE, CO
7259	MAMMOTH LAKES	MAMMOTH LAKES, CA
7260	QUINCY	QUINCY, CA

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7261	FLAGSTAFF	FLAGSTAFF, AZ
7262	LA JOLLA	LA JOLLA, CA
7263	PASADENA	JET PROPULSION LAB, PASADENA, CA
7264	PASADENA	JET PROPULSION LAB, PASADENA, CA
7265	MOJAVE	BARSTOW, CA
7266	FORT ORD	FORT ORD, CA
7267	DEADMAN LAKE	DEADMAN LAKE, CA
7268	PALOS VERDES	PALOS VERDES, CA
7269	BLACK BUTTE	BLACK BUTTE MOUNTAIN, CA
7270	OCOTILLO	OCOTILLO, CA
7271	AUSTIN	AUSTIN, TX
7272	PASADENA	JET PROPULSION LAB, PASADENA, CA
7273	YUMA	YUMA PROVING GROUNDS, AZ
7274	MONUMENT PEAK	MOUNT LAGUNA, CA
7275	GOLDSTONE VENUS	GOLDSTONE, CA
7276	OTAY MOUNTAIN	OTAY MOUNTAIN, SAN DIEGO, CA
7277	CAPE YAKATAGA	CAPE YAKATAGA, AK
7278	KODIAK	KODIAK, AK
7279	NOME	NOME, AK
7280	SAND POINT	SAND POINT, AK
7281	SOURDOUGH	SOURDOUGH, AK
7282	ALGONQUIN	ALGONQUIN, ONTARIO, CANADA
7283	PENTICTON	PENTICTON, BRITISH COLUMBIA, CANADA
7284	WHITEHORSE	WHITEHORSE, YUKON TERRITORY, CANADA
7285	YELLOWKNIFE	YELLOWKNIFE, NW TERRITORY, CAN
7286	ELY	ELY, NV
7287	MOJAVE	BARSTOW, CA
7288	MOJAVE	BARSTOW, CA
7289	VICTORIA	VICTORIA, BRITISH COLUMBIA, CANADA
7290	VERNAL	VERNAL, UT
7291	BLOOMINGTON	BLOOMINGTON, IN
7292	LEONARD	LEONARD, OK
7293	LINCOLN	LINCOLN, NE
7294	BERMUDA	BERMUDA ISLAND
7295	RICHMOND	PERRINE, FL

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7296	YELLOWKNIFE	YELLOWKNIFE, NW TERRITORY, CAN
7297	FORTALEZA	FORTALEZA, BRAZIL
7300	MINAMI TORI SHIMA	OGASAWARA, MINAMI TORI SHIMA, JAPAN
7301	OKINAWA	KOCHINDA CITY, OKINAWA, JAPAN
7302	TSUSHIMA	IZUHARA, TSUSHIMA, JAPAN
7303	OKI GUNTO	OKI GUNTO, JAPAN
7304	MINAMI DAITO JIMA	MINAMI DAITO JIMA, OKINAWA, JAPAN
7305	IWO JIMA	IWO JIMA, JAPAN
7306	TOKATI	TOKATI, JAPAN
7307	ISIGAKI SHIMA	ISIGAKI, NANSEI ISLANDS, JAPAN
7308	TOKYO	TOKYO, JAPAN
7309	HACHUO JIMA	HACHUO JIMA, JAPAN
7310	MINIMI TORI SHIMA	MINIMI TORI SHIMA (MARCUS ISLAND)
7311	TSUKUBA	TSUKUBA, IBARAKI, JAPAN
7312	MIYAZAKI	MIYAZAKI, JAPAN
7313	HIROO	HIROO, HOKKAIDO, JAPAN
7314	MIZUSGSI	MIZUSAWA, IWATE, JAPAN
7315	SHINTOTSUKAWA	SHINTOTSUKAWA, HOKKAIDO, JAPAN
7316	CHICHI JIMA	OGASAWARA, BONIN ISLANDS, JAPAN
7317	MINAMI DAITO JIMA	MINAMI DAITO JIMA, OKINAWA, JAPAN
7318	OKINAWA	NAKAGUSUKU, OKINAWA, JAPAN
7319	WAKKANAI	WAKKANAI, HOKKAIDO, JAPAN
7400	SANTIAGO	SANTIAGO, CHILE
7401	CERRO TOLOLO	CERRO TOLOLO, CHILE
7402	IQUIQUE	IQUIQUE, CHILE
7403	AREQUIPA	AREQUIPA, PERU
7510	ASKITES	ASKITES, GREECE
7512	KATAVIA	KATAVIA, RHODES, GREECE
7515	DIONYSOS	NATIONAL TECH. UNIV., ATHENS, GREECE
7517	ROUMELLI	ROUMELLI, CRETE, GREECE
7520	KARITSA	KARITSA, GREECE
7525	XRISOKALARIA	XRISOKALARIA, GREECE
7530	BAR GIYYORA	BAR GIYYORA, ISRAEL
7540	MATERA	MATERA, ITALY
7541	MATERA	MATERA, ITALY
7542	MONTE VENDA	MONTE VENDA, ITALY

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7543	NOTO	NOTO, SICILY, ITALY
7544	LAMPEDUSA	LAMPEDUSA, ITALY
7545	PUNTA SA MENTA	PUNTA SA MENTA, CAGLIARI, ITALY
7546	MEDICINA	MEDICINA, ITALY
7547	NOTO	NOTO, SICILY, ITALY
7548	TUSCANY	TUSCANY, ITALY
7550	BASOVIZZA	BASOVIZZA, TRIESTE, ITALY
7560	RIGA	RIGA, LATVIA
7561	SIMEIZ	SIMEIZ, UKRAINE
7570	DEMIRKOY	DEMIRKOY, TURKEY
7575	DIYARBAKIR	DIYARBAKIR, TURKEY
7580	MELENGICLIK	MELENGICLIK, TURKEY
7585	YOZGAT	YOZGAT, TURKEY
7587	YIGILCA	YIGILCA, TURKEY
7589	ANKARA	ANKARA, TURKEY
7590	MONTE GENEROSO	MONTE GENEROSO, SWITZERLAND
7595	WETTZELL	WETTZELL, GERMANY
7596	WETTZELL	WETTZELL, GERMANY
7597	WETTZELL	WETTZELL, GERMANY
7598	WETTZELL	WETTZELL, GERMANY
7599	WETTZELL	WETTZELL, GERMANY
7600	HOHENBUENSTORF	HOHENBUENSTORF, GERMANY
7601	METSAHOVI	KIRKKONUMMI, FINLAND
7602	TROMSOE	TROMSOE, NORWAY
7603	CARNOUSTIE	CARNOUSTIE, SCOTLAND, GREAT BRITAIN
7604	BREST	BREST, FRANCE
7605	GRASSE	GRASSE, FRANCE
7606	TIARET	TIARET, ALGERIA
7607	TRYSIL	TRYSIL, NORWAY
7608	TOULOUSE	TOULOUSE, FRANCE
7609	AZORES	AZORES ISLANDS
7610	KITT PEAK	KITT PEAK, AZ
7611	LOS ALAMOS	LOS ALAMOS, NM
7612	NORTH LIBERTY	NORTH LIBERTY, IA
7613	FORT DAVIS	FORT DAVIS, TX
7614	BREWSTER	BREWSTER, WA

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7615	ST. CROIX	ST. CROIX, VI
7616	OWENS VALLEY	OWENS VALLEY RADIO OBS., BIG PINE, CA
7617	MAUNA KEA	MAUNA KEA, HI
7618	PETERBOROUGH	PETERBOROUGH, NH
7619	SOCORRO	SOCORRO, NM
7630	HOHENSPEISSENBERG	HOHENSPEISSENBERG, GERMANY
7631	KIRSCHBERG	KIRSCHBERG, GERMANY
7632	KARLSBURG	KARLSBURG, GERMANY
7635	HOFN	HOFN, ICELAND
7700	STUTTGART	STUTTGART, GERMANY
7701	OBERPFAFFENHOFEN	OBERPFAFFENHOFEN, GERMANY
7702	TROMSOE	TROMSOE, NORWAY
7703	WETTZELL	WETTZELL, GERMANY
7704	MATERA	MATERA, ITALY
7705	NY ALESUND	NY ALESUND, NORWAY
7706	NARSSARSSUAQ	NARSSARSSUAQ, GREENLAND
7707	HOFN	HOFN, ICELAND
7708	FAIRBANKS	FAIRBANKS, AK
7709	MCMURDO	MCMURDO STATION, ANTARCTICA
7710	O'HIGGINS	O'HIGGINS BASE STATION, ANTARCTICA
7711	SYOWA	SYOWA STATION, ANTARCTICA
7712	KERGUELEN	KERGUELEN ISLANDS
7713	TRISTAN DE CUNHA	TRISTAN DE CUNHA ISLAND, UK
7714	HARTEBEESTHOEK	HARTEBEESTHOEK, REP OF SOUTH AFRICA
7715	BUENOS ARIES	BUENOS ARIES, ARGENTINA
7716	FORTALEZA	FORTALEZA, BRAZIL
7717	ASCENSION	ASCENSION ISLANDS
7718	JAKARTA	JAKARTA, INDONESIA
7720	ULAAN BAATAR	ULAAN BAATAR, MONGOLIA
7721	KITAB	KITAB, UZBEKISTAN
7722	GREENBELT	GGAO, GSFC, GREENBELT, MD
7724	KOKEE PARK	KOKEE PARK, KAUAI, HI
7725	BANGALORE	BANGALORE, INDIA
7726	SEYCHELLES	SEYCHELLES ISLANDS
7727	FALKLAND	FALKLAND ISLANDS, UNITED KINGDOM
7728	STAVANGER	STAVANGER, NORWAY

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7729	FRIEDRICHSHAFEN	FRIEDRICHSHAFEN, GERMANY
7740	PTF	OFFSHORE PLATFORM
7741	MONTE VENDA	MONTE VENDA, ITALY
7742	BREMERHAVEN	BREMERHAVEN, GERMANY
7801	HELWAN	HELWAN, EGYPT
7805	METSAHOVI	KIRKKONUMMI, FINLAND
7807	GREENBELT	GGAO, GSFC, GREENBELT, MD
7810	ZIMMERWALD	BERN, SWITZERLAND
7811	BOROWIEC	BOROWIEC, POLAND
7824	SAN FERNANDO	SAN FERNANDO, SPAIN
7831	HELWAN	HELWAN, EGYPT
7833	KOOTWIJK	KOOTWIJK OBS., APELDOORN, NETHERLANDS
7834	WETTZELL	WETTZELL, GERMANY
7835	GRASSE	GRASSE, FRANCE
7836	POTSDAM	POTSDAM, GERMANY
7837	SHANGHAI	SHANGHAI OBS., PRC
7838	SIMOSATO	SIMOSATO HYDROGRAPHIC OB., JAPAN
7839	GRAZ	GRAZ, AUSTRIA
7840	HERSTMONCEUX	ROYAL GREENWICH OBS., GREAT BRITAIN
7842	GRASSE	GRASSE, FRANCE
7843	ORRORAL	ORRORAL VALLEY, AUSTRALIA
7844	CHICHI JIMA	OGASAWARA, BONIN ISLANDS, JAPAN
7845	GRASSE	GRASSE, FRANCE
7850	MCDONALD	MCDONALD OBSERVATORY, FORT DAVIS, TX
7851	MCDONALD	MCDONALD OBSERVATORY, FORT DAVIS, TX
7853	OWENS VALLEY	OWENS VALLEY RADIO OBS., BIG PINE, CA
7880	VANDENBERG	VANDENBERG AIR FORCE BASE, CA
7881	SOCORRO ISLAND	SOCORRO, REVILLAGIGEDO IS., MEXICO
7882	CABO SAN LUCAS	CABO SAN LUCAS, BAJA, MEXICO
7883	ENSENADA	ENSENADA, BAJA, MEXICO
7885	MCDONALD	MCDONALD OBSERVATORY, FORT DAVIS, TX
7886	QUINCY	QUINCY, CA
7887	VANDENBERG	VANDENBERG AIR FORCE BASE, CA
7888	MOUNT HOPKINS	MOUNT HOPKINS, AZ
7889	GREENBELT	GGAO, GSFC, GREENBELT, MD
7890	AUSTIN	AUSTIN, TX

Table of Sites Listed By Monument Number (Continued)

Mon. No.	Site Name	Location
7891	FLAGSTAFF	FLAGSTAFF, AZ
7892	VERNAL	VERNAL, UT
7894	YUMA	YUMA PROVING GROUNDS, AZ
7895	MOUNT WILSON	MOUNT WILSON, CA
7896	PASADENA	JET PROPULSION LAB, PASADENA, CA
7897	MCDONALD	MCDONALD OBSERVATORY, FORT DAVIS, TX
7899	GREENBELT	GGAO, GSFC, GREENBELT, MD
7900	FORT DAVIS	FORT DAVIS, TX
7907	AREQUIPA	AREQUIPA, PERU
7917	GREENBELT	GGAO, GSFC, GREENBELT, MD
7918	GREENBELT	GGAO, GSFC, GREENBELT, MD
7919	GREENBELT	GGAO, GSFC, GREENBELT, MD
7920	GREENBELT	GGAO, GSFC, GREENBELT, MD
7921	MOUNT HOPKINS	MOUNT HOPKINS, AZ
7929	NATAL	NATAL, BRAZIL
7935	DODAIR	DODAIR, JAPAN
7939	MATERA	MATERA, ITALY
7940	DIONYSOS	NATIONAL TECH. UNIV., ATHENS, GREECE
7943	ORRORAL	ORRORAL VALLEY, AUSTRALIA
7944	TIDBINBILLA	TIDBINBILLA, AUSTRALIA
7999	MCDONALD	MCDONALD OBSERVATORY, FORT DAVIS, TX
8833	KOOTWIJK	KOOTWIJK OBS., APELDOORN, NETHERLANDS
8834	WETTZELL	WETTZELL, GERMANY
9929	NATAL	NATAL, BRAZIL

ACRONYMS

AAOEPP	Anglo-Australian Observatory (Epping, NSW, Australia)
ACSnet	Australian Computer Science Network
AFGL	Air Force Geophysics Laboratory
ARC	Ames Research Center
ARELAS	Arequipa, Peru Laser Station
ARIES	Astronomical Radio Interferometric Earth
ARPAnet	Advanced Research Projects Agency Network
AUSLAS	Graz, Austria Laser Station
AUSLIG	Australian Surveying and Land Information Group
AZ	Azimuth
AZ-EL	Azimuth-Elevation
BFEC	Bendix Field Engineering Corporation
BIH	Bureau International de l'Heure
BITnet	Because It's Time Network
BLM	Bureau of Land Management
BM	Bench Mark
CDDIS	Crustal Dynamics Data Information System
CDP	Crustal Dynamics Project
CERGA	Centre d'Etudes et de Recherches Geodynamiques et
CIGNET	Cooperative International GPS Network
CIO	Conventional International Origin
CRL	Communications Research Laboratory (Japan)
CSnet	Computer Science Network
CSTG	International Coordination of Space Techniques for Geodesy and Geodynamics
CTIOV1	Cerro Tololo Inter-American Observatory (La Serena, Chile)
DAO	Dominion Astrophysical Observatory (Victoria, Canada)
DBMS	Data Base Management System
DEC	Digital Equipment Corporation
DECnet	DEC networking product
DET	Detachment
DFN	Deutsche Forshungnetz (Germany)
DFTNIC	Data Flow Technology Network Information Center (GSFC)
DIS	Data Information System
DMA	Defence Mapping Agency
DMAHTC	Defence Mapping Agency Hydrographic and Topographic Center
DOD	Department of Defence
DORIS	Doppler Orbitography and Radiopositioning Integrated by Satellite
DOSE	Dynamics of the Solid Earth (NASA)

ACRONYMS (Continued)

DSIR/PEL	Dept. of Scientific & Indus. Res./Physics & Engineering Lab (Lauder, New Zealand)
DSN	Deep Space Network
DSS	Deep Space Station
EARN	European Academic Research Network
ED	European Datum
EDM	Electronic Distance Measuring
EMR	Energy, Mines and Resources (Canada)
EPP75A	Anglo-Australian Observatory (Epping, NSW, Australia)
ESA	European Space Agency
ESOC	European Space Operations Center
Euro-SPAN	European Space Physics Analysis Network
FAA	Federal Aviation Administration
FAX	Facsimile System
FLINN	Fiducial Laboratories for an International Natural Science Network
FGI	Finnish Geodetic Institute
FINLAS	Metsahovi, Finland Laser Station
FTP	File Transfer Protocol
GHMA	Greek Hellenic Mapping Agency
GIG	GPS IERS and Geodynamics Experiment
GLONASS	Global Navigation Satellite System
GMT	Greenwich Mean Time
GORF	Goddard Optical Research Facility
GP	Gun Position
GPS	Global Positioning System
GRELAS	Dionysos, Greece Laser Station
GRGS	Groupe de Recherches de Geodesie Special
GRS	Global Reference System
GSFC	Goddard Space Flight Center
GSFCMAIL	GSFCMAIL
GSI	Geographical Survey Institute (Japan)
GSS	Geodetic Survey Squadron
GTE	General Telephone and Electric
HAVAGO	Horizontal and Vertical Adjustment of Geodetic Observations
HEPnet	High Energy Physics Network
HO	Haystack Observatory
HOLLAS	Haleakala Laser Station
HOPLAS	Mount Hopkins Laser Station
HRAS	Harvard Radio Astronomy Station

ACRONYMS (Continued)

HTC	Hydrographic and Topographic Center
IAG	International Association of Geodesy
IAU	International Astronomical Union
ICCG	Interagency Coordinating Committee for G
ICG	Inter-Union Commission of Geodynamics
ICRF	IERS Celestial Reference Frame
IERS	International Earth Rotation Service
IFAG	Institut fur Angewandte Geodasie (Germany)
IGS	International Global Positioning System Geodynamics Service
INTA	Instituto Nacional de Tecnica Aeroespacial (Spain)
INTERnet	INTERnet
ITRF	IERS Terrestrial Reference Frame
IUGG	International Union of Geodesy and Geophysics
JANet	Joint Academic Network (United Kingdom)
JHD	Japanese Hydrographic Department
JPL	Jet Propulsion Laboratory
JSC	Johnson Space Center
JUnet	Japanese University Network
KOOLAS	Kootwijk, Netherlands Laser Station
KYOTO	Geophysical Institute (Kyoto University, Kyoto, Japan)
LAGEOS	LASer GEOdynamics Satellite
LLR	Lunar Laser Ranging
LURE	LUnar Ranging Experiment
MACLAS-1	McDonald Laser Station One (2.7 meter telescope)
MACLAS-2	McDonald Laser Station Two (MLRS)
MARK III	GTE MARK III
MATLAS	Matera, Italy Laser Station
MEDLAS	Mediterranean Laser Campaign
MERIT	Monitoring of Earth Rotation and Intercomparison of Techniques
MFE _{net}	Magnetic Fusion Energy Network
MIL _{net}	Defense data network
MLRS	McDonald Laser Ranging System
MOBLAS	MOBile LASer Ranging System
MSFC	Marshall Space Flight Center
MSL	Mean Sea Level
MSO	Mount Stromlo and Siding Spring Observatory (Canberra, NSW, Australia)
MSSSO	Mount Stromlo and Siding Spring Observatory (Canberra, NSW, Australia)

ACRONYMS (Continued)

MTLRS	Modular Transportable Laser Ranging Syst
MV	Mobile VLBI
NAD	North American Datum
NASA	National Aeronautics and Space Administration
NASAMAIL	NASAMAIL
NASCOM	NASA COMMUNICATIONS Network
NATMAP	NATIONAL MAPPING
NAVSTAR	Navigation Satellite Timing and Ranging
NCMN	National Crustal Motion Network
NEROC	North East Rotation Observatory Corporat
NGS	National Geodetic Survey
NGVD	National Geodetic Vertical Datum
NIC	Network Information Center
NLRS	National Laser Ranging System (Orroral, Australia)
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Survey
NRAO	National Radio Astronomy Observatory
NRL	Naval Research Laboratory
NSFnet	National Science Foundation Network
NSI	NASA Science Internet
NSI-DECnet	NASA Science Internet DECnet Protocol
NSI-TCP/IP	NASA Science Internet TCP/IP Protocol
NSN	NASA Science Network
NSSDC	National Space Science Data Center (GSFC)
NWS	National Weather Service
OMMnet	OMnet
ORRLAS	Orroral, Australia Laser Station
ORT	Optical Ranging Telescope
OSGB	Ordinance Survey of Great Britain
OSTA	Office of Space and Terrestrial Applications
OTAGO	University of Otago (Dunedin, New Zealand)
OVRO	Owens Valley Radio Observatory
PAFB	Patrick Air Force Base
POLARIS	POLAR motion Analysis by Radio Interferometric Surveying
PPME	Pacific Plate Motion Experiment
PRARE	Precise Range and Range-rate Equipment
PSI	Packetnet Systems Interface
RGO	Royal Greenwich Observatory
RGOLAS	RGO, Herstmonceux, Great Britain Laser Station

ACRONYMS (Continued)

RINEX	Receiver INdependent EXchange
RM	Reference Monument
RMT	Reference Monument
RPEPPING	Anglo-Australian Observatory (Epping, NSW, Australia)
RRL	Radio Research Laboratories, Japan
SAFE	San Andreas Fault Experiment
SAO	Smithsonian Astrophysical Observatory
SDSC	San Diego Supercomputer Center
SFA	San Fernando Monument Information
SGMS	Space Geodetic Measurement Sites
SHO	Simosato Hydrographic Observatory
SHOLAS	Simosato, Japan Laser Station
SLR	Satellite Laser Ranging
SPAN	Space Physics Analysis Network
SPNLAS	San Fernando Laser Station
SPRINTmail	SPRINT Mail
SSFPO	Space Station Freedom Project Office
SSL	Space Science Laboratory (MSFC)
STALAS	Stationary Laser Station, GSFC
STDN	Spaceflight Tracking and Data Network
TAI	International Atomic Time
TCP/IP	Transmission Control Protocol/INTERnet Protocol
TELEMAIL	TELEMAIL
TELEMAIL2	TELEMAIL
TELENET	GTE public packet switching network
TELEX	TELEX System
TEXnet	Texas Network
THEnet	Texas Higher Education Network
TLRS	Transportable Laser Ranging System
TOPEX	Ocean TOPography EXperiment
TVDS	Transportable VLBI Data System
UARS	Upper Atmospheric Research Satellite
UNAVCO	University NAVSTAR Consortium
UNICANT	University of Canterbury (Christchurch, New Zealand)
USAF	United States Air Force
USC & GS	United States Coast and Geodetic Survey
USGS	United States Geological Survey
USNO	United States Naval Observatory
UTC	Universal Coordinated Time

ACRONYMS (Continued)

UUCP	Unix to Unix Copy Program
VAFB	Vandenberg Air Force Base
VLBA	Very Long Baseline Array
VLBI	Very Long Baseline Interferometry
WCPT	West Coast Precision Traverse
WEGENER	Working Group of European Geoscientists for the Establishment of Networks for Earthquake Research
WETLAS	Wetzell, West Germany Laser Station
WGS	World Geodetic System
X.25	Level II communication protocol for packet
ZIMLAS	Zimmerwald, Switzerland Laser Station

SUBSCRIPTION APPLICATION

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-- SITE INFORMATION --

Site Number: 67

Current Site Name: ALGONQUIN
Location: ALGONQUIN, ONTARIO, CANADA
Geographic Region: NORTH AMERICA
Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF POLAR MOTION, EARTH ROTATION, AND INTERNAL PLATE DEFORMATION.

Site Description: THE SITE IS LOCATED AT THE ALGONQUIN RADIO OBSERVATORY AND IS OPERATED BY THE HERZBERG INSTITUTE OF ASTROPHYSICS, NATIONAL RESEARCH COUNCIL OF CANADA. A FIXED 46-METER ANTENNA IS USED FOR VLBI MEASUREMENTS AND FOR ASTROPHYSICAL STUDIES.

Site Topo Map: LAKE LAVIEILLE 31 E/16, EDITION 3, 1973, 1:50000 TOPOGRAPHIC MAP SERIES. AVAILABLE FROM CANADA MAP OFFICE, DEPARTMENT OF ENERGY, MINES AND RESOURCES, OTTAWA.

GEOLOGICAL INFORMATION

Geological Province: PRECAMBRIAN GRENVILLE PROVINCE

Local Geology: THE SITE IS LOCATED IN THE CENTER OF THE ONTARIO GNEISS BELT, ON HORNBLende AND BIOTITE GNEISS OF THE APHEBIAN PROTEROZOIC.

Comments: NONE

MONUMENT INFORMATION

Site Number: 67
Current Site Name: ALGONQUIN
Location: ALGONQUIN, ONTARIO, CANADA
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7282
Type of Monument: INTERSECTION OF AZ/EL AXES
Monument Inscription: NONE
Systems Using Monument: 46-METER FIXED ANTENNA

Latitude: N 45 57' 19.77967''
Longitude: W 78 4' 21.79448''
Elevation: 260.422 meters
Height Above Ellipsoid:
Survey Source/Date: GEODETIC SURVEY OF CANADA
Datum/Ellipsoid: NAD-83/GRS80

Comments: PRELIMINARY POSITION

Differential Coordinates FROM Observing Monument 7282 TO
Reference Monuments and Other Observing Monuments

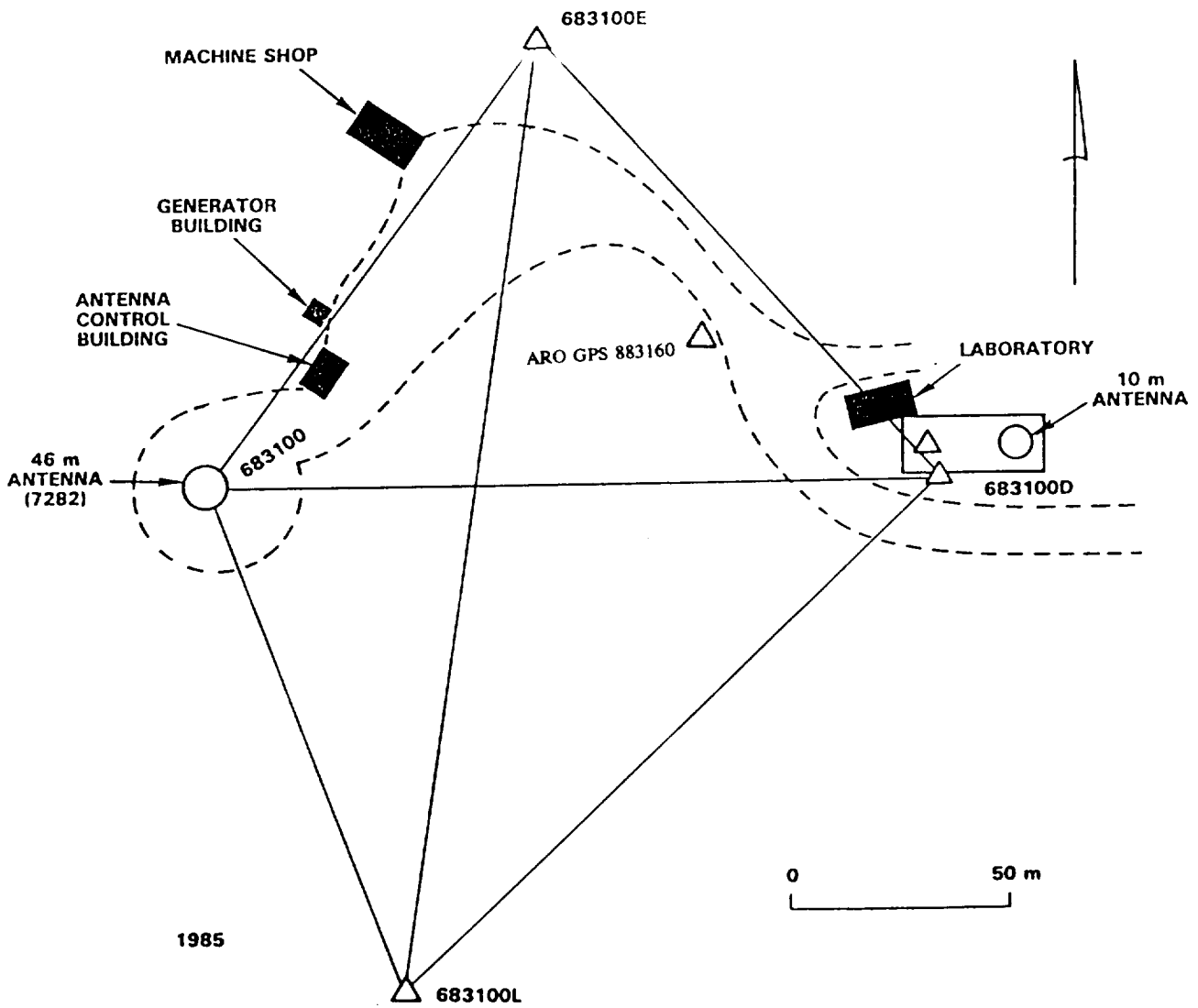
Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	ARO GPS	94.763	61.017	6.666

SITE SKETCH

Site Number: 67
Current Site Name: ALGONQUIN
Location: ALGONQUIN, ONTARIO, CANADA



PREVIOUS OCCUPATION INFORMATION

Site Number: 67

Current Site Name: ALGONQUIN

Location: ALGONQUIN, ONTARIO, CANADA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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7282	150-FOOT	72828201	01-JUL-84	---
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-- SITE INFORMATION --

Site Number: 91

Current Site Name: AMERICAN SAMOA

Location: AMERICAN SAMOA

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASURE CRUSTAL PLATE MOTION.

Site Description: SITE IS LOCATED ON THE ISLAND OF TULUILA OF AMERICAN SAMOA. IT IS IN THE VICINITY OF THE PAGO PAGO INTERNATIONAL AIRPORT APPROXIMATELY ONE MILE SOUTHWEST OF THE AIRPORT TERMINAL ON THE NORTH SIDE OF THE ROAD ON F.A.A. LAND. THE MONUMENTED PAD AT THE SITE IS COMPATIBLE FOR MOBLAS SYSTEMS. NO FACILITIES ARE CURRENTLY AVAILABLE AT SITE.

Site Topo Map: NONE

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: TUTUILA ISLAND CONSISTS OF FIVE PRINCIPLE VOLCANIC CENTERS WHICH ARE COMPOSED PRIMARILY OF BASALTS WITH AN OVERLAY OF TRACHYTES.

Comments: SITE IS NOW INACTIVE.

MONUMENT INFORMATION

Site Number: 91
Current Site Name: AMERICAN SAMOA
Location: AMERICAN SAMOA
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7096
Type of Monument:
Monument Inscription: NASA MOBILE LASER STA 7096
Systems Using Monument: MOBLAS

Latitude: S 14 20' 25.3652''
Longitude: E 189 16' 34.9344''
Elevation: 15.295 meters
Height Above Ellipsoid:
Survey Source/Date: NASA/GSFC/01-JUL-79
Datum/Ellipsoid: AMERICAN SAMOA/CLARKE 1866

Comments: NONE

Differential Coordinates FROM Observing Monument 7096 TO
Reference Monuments and Other Observing Monuments

Data Source:

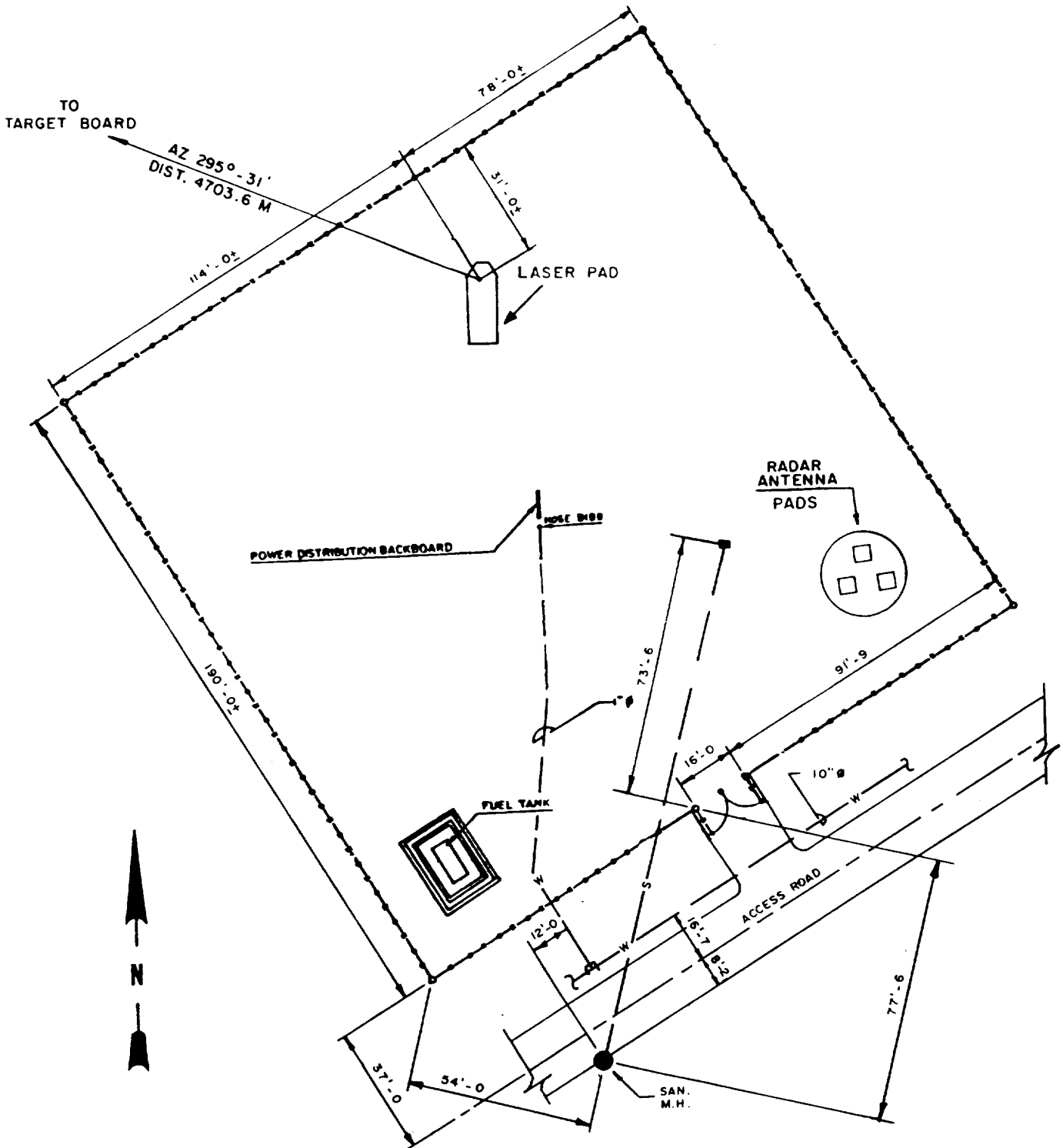
--Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 91

Current Site Name: AMERICAN SAMOA

Location: AMERICAN SAMOA



PREVIOUS OCCUPATION INFORMATION

Site Number: 91

Current Site Name: AMERICAN SAMOA

Location: AMERICAN SAMOA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7096	MOBLAS-6	70960601	10-JUN-79	14-NOV-80

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 678

Current Site Name: ANKARA
Location: ANKARA, TURKEY
Geographic Region: MEDITERRANEAN
Tectonic Plate: ARABIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7589	TLRS-1	75891501	21-JAN-93	--

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 98

Current Site Name: AREQUIPA

Other Site Name:

Location: AREQUIPA, PERU

Geographic Region: SOUTH AMERICA

Tectonic Plate: SOUTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE, MOTION POLAR MOTION/EARTH ROTATION, INTERNAL PLATE DEFORMATION, AND PLATE STABILITY.

Site Description: THE SITE IS LOCATED IN WESTERN SOUTH AMERICA IN SOUTHERN PERU AT THE SMITHSONIAN ASTRONOMICAL OBSERVATORY. THE UNIVERSITY OF AUGUSTA HAS BEEN OPERATING THE SAO-2 LASER SINCE 1965. A PAD COMPATIBLE FOR OCCUPATION BY A TLRS HAS BEEN CONSTRUCTED ON THE SITE. AREQUIPA IS ONE OF THE FEW LASER STATIONS LOCATED IN THE SOUTHERN HEMISPHERE AND IS CRITICAL FOR MEASUREMENTS DETERMINING POLAR MOTION.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: EUGEOSYNCLINAL BELT OF MESOZOIC AGE

Local Geology: QUATERNARY ALLUVIUM OVERLYING GRANODIORITIC UPPER CRETACEOUS LOWER TERTIARY COASTAL BATHOLITH. THIS BATHOLITH CONTAINS FAULTED INLIERS OF PRECAMBRIAN GNEISS.

Comments: DORIS INFORMATION PROVIDED BY IGN

MONUMENT INFORMATION

Site Number: 98
 Current Site Name: AREQUIPA
 Location: AREQUIPA, PERU
 Number of Observing Monuments: 2
 Surveyed into National Network? NO

Monument Number: 7403
 Type of Monument:
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASERS

Latitude: S 16 27' 56.60044"
 Longitude: W 71 29' 34.65216"
 Elevation: 2447.61 m
 Height Above Ellipsoid: 2489.505 m
 Survey Source/Date: BFEC/ AUG 1, 1989
 Datum/Ellipsoid: SLR / a= 6378137 1/f= 298.255

Comments: THIS MONUMENT IS ON THE NEW PAD CONSTRUCTED IN 1988 FOR TLRS-3 OCCUPATION.

Differential Coordinates FROM Observing Monument 7403 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7907	----	-16.0209	-7.9139	-3.6512
	7403 PIER A	29.0627	-20.2491	99.7683
	7403 PIER B	81.2285	5.9638	67.7039
	7403 PIER C	267.4135	169.1748	-281.1366
	7403 PIER D	-25.1056	5.5479	-44.4235
	7403 RM1	-2.1349	-14.0077	48.6579
	7403 RM2	30.5643	11.7284	1.2738
	EST SATELITE	-23.0750	-11.8996	4.4576
	EST SATELITE AZ MARK	367.9123	310.7232	-673.8421

MONUMENT INFORMATION (Continued)

Site Number: 98
 Current Site Name: AREQUIPA
 Location: AREQUIPA, PERU

Monument Number: 7907
 Type of Monument: ROTATION AXES OF LASER
 Monument Inscription: NONE
 Systems Using Monument: SAO-2 FIXED LASER

Latitude: S 16 27' 56.69200''
 Longitude: W 71 29' 35.24880''
 Elevation: 2450.96 meters
 Height Above Ellipsoid: 2492.860 meters
 Survey Source/Date: BFEC / AUG 1, 1989
 Datum/Ellipsoid: SLR / a= 6378137 1/f= 298.255

Comments: THE SYSTEM IS ALSO REFERENCED AS ARELAS.

Differential Coordinates FROM Observing Monument 7907 TO
 Reference Monuments and Other Observing Monuments

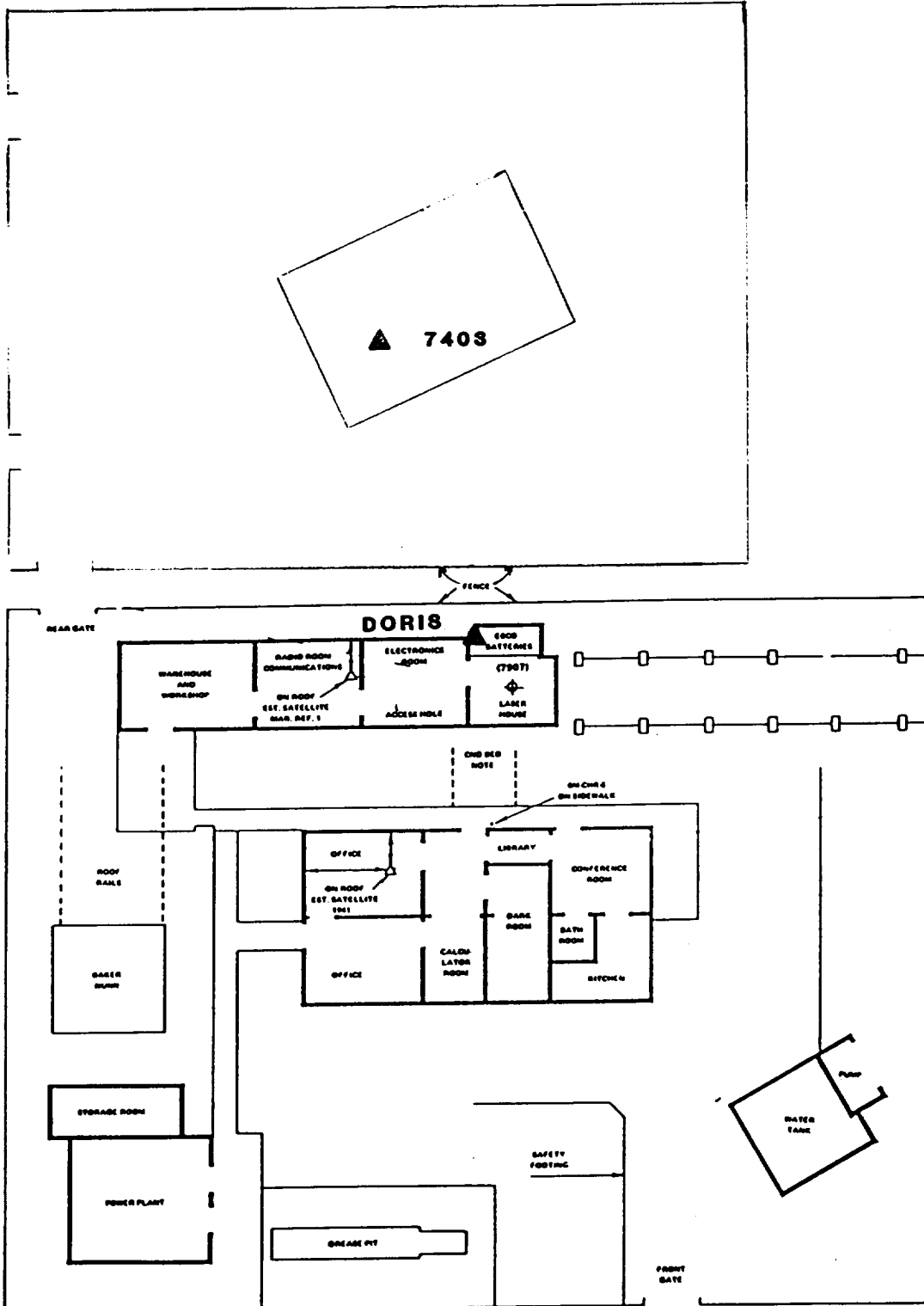
Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7403	CDP STATION 7403	16.0209	7.9139	3.6512
--	7403 PIER C	383.9331	318.6372	-670.1909
--	7403 PIER A	45.0836	-12.3352	103.4195
--	7403 PIER B	97.2494	13.8778	71.3551
--	7403 PIER D	23.0750	11.8996	-4.4576
--	7403 RM1	13.8860	-6.0938	52.3091
--	7403 RM2	46.5851	19.6424	4.9249
--	EST SATELITE	-7.0542	-3.9857	8.1087
--	EST SATELITE AZ MARK	20.9402	-2.1081	44.2004
--	DORIS ANT REF PT	4.654	-0.109	0.038

SITE SKETCH

Site Number: 98
Current Site Name: AREQUIPA
Location: AREQUIPA, PERU



PREVIOUS OCCUPATION INFORMATION

Site Number: 98
Current Site Name: AREQUIPA
Location: AREQUIPA, PERU

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7403	TLRS-3	74031301	14-JUN-90	24-OCT-90
7403	TLRS-3	74031302	26-MAR-91	15-OCT-91
7403	TLRS-3	74031303	14-JUL-92	---
7907	SAO-2	79074001	01-SEP-70	15-JUN-88
7907	SAO-2	79074002	15-JUN-88	01-MAY-91
7907	SAO-2	79074003	18-OCT-91	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 674

Current Site Name: ASKITES

Other Site Name: ALEXANDROPOLIS

Location: ASKITES, GREECE

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND THE KINEMATICS OF THE EAST AND CENTRAL MEDITERRANEAN.

Site Description: THIS WEGENER-MEDLAS SITE IS LOCATED APPROXIMATELY 25 KILOMETERS WEST-NORTHWEST OF ALEXANDROPOLIS-GREECE JUST EAST OF THE VILLAGE OF ASKITES. THE LASER PAD IS LOCATED ADJACENT TO AN UNPAVED ROAD ON A SMALL KNOLL AND IS COMPATIBLE FOR OCCUPATION BY TRANSPORTABLE LASER SYSTEMS.

Site Topo Map: MARONIA 1:50,000; AVAILABLE FROM HELLENIC MILITARY GEOGRAPHIC SERVICE, P. ATROS, ATHENS. TEL: 0030-1-884-2811.

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: MARBLES, PHYLLITES WITH ACIDIC INTRUSIONS OF GRANITES, GRANODIORITES, AND MONZONITES.

Comments: NONE

MONUMENT INFORMATION

Site Number: 674
Current Site Name: ASKITES
Location: ASKITES, GREECE
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7510
Type of Monument:
Monument Inscription: NONE
Systems Using Monument: MOBILE LASER RANGING SYSTEMS

Latitude: N 40 55' 40.54''
Longitude: E 25 33' 57.18''
Elevation:
Height Above Ellipsoid: 177.991 meters
Survey Source/Date: COORDINATES PROVIDED BY DR. DANNY VAN LOON/01-AUG-87
Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7510 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
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-- Differential Coordinate Information Not Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 674

Current Site Name: ASKITES

Location: ASKITES, GREECE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7510	MTLRS-1	75101501	21-MAY-86	21-JUL-86
7510	MTLRS-2	75101602	25-MAY-87	28-AUG-87
7510	MTLRS-2	75101603	05-AUG-89	02-NOV-89
7510	MTLRS-1	75101504	03-NOV-89	04-DEC-89
7510	MTLRS-1	75101505	15-MAY-92	21-JUN-92
7510	MTLRS-1	75101506	22-JUN-92	03-AUG-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 400
Current Site Name: AUSTIN
Other Site Name:
Location: AUSTIN, TX
Geographic Region: NORTH AMERICA
Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE NATIONAL
GEODETIC SURVEY'S NATIONAL CRUSTAL MOTION NETWORK.

Site Description: THIS NCMN SITE IS LOCATED AT THE TEXAS STATE
DEPARTMENT OF HIGHWAYS AND PUBLIC TRANSPORTATION DISTRICT OFFICE.
THIS SITE IS COMPATIBLE FOR OCCUPATION OF MOBILE VLBI SYSTEMS ONLY.

Site Topo Map: NONE

GEOLOGICAL INFORMATION

Geological Province: ATLANTIC COASTAL PLAIN

Local Geology: NONE

Comments: NONE

MONUMENT INFORMATION

Site Number: 400
Current Site Name: AUSTIN
Location: AUSTIN, TX
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7271
Type of Monument: STANDARD DISK-TEXAS STATE HIGHWAY DEPARTMENT
Monument Inscription: AUSTIN VLBI
Systems Using Monument: MOBILE VLBI

Latitude: N 30 20' 21.56726"
Longitude: W 97 41' 44.66628"
Elevation:
Height Above Ellipsoid: 190.963 meters
Survey Source/Date: NGS (ADJUST)/25-FEB-92
Datum/Ellipsoid: NAD83 (1986)

Comments: THIS SITE IS LOCATED AT THE STATE DEPARTMENT OF HIGHWAYS
AND PUBLIC TRANSPORTATION DISTRICT OFFICE.

Differential Coordinates FROM Observing Monument 7271 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
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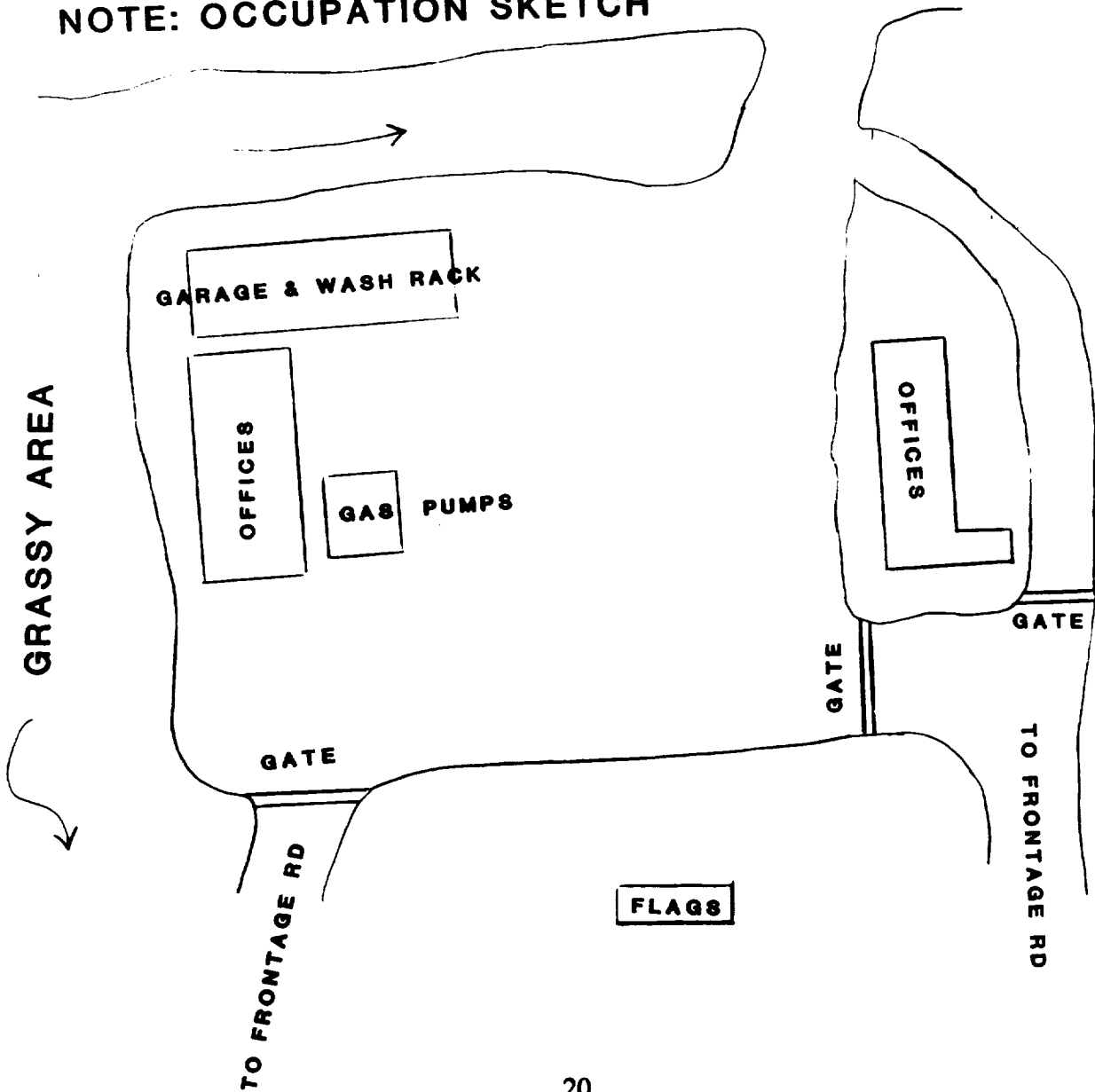
-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 400
Current Site Name: AUSTIN
Location: AUSTIN, TX

▲
7271

NOTE: OCCUPATION SKETCH



PREVIOUS OCCUPATION INFORMATION

Site Number: 400
Current Site Name: AUSTIN
Location: AUSTIN, TX

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7271	MV-3	72715301	10-JUL-87	12-JUL-87

-- SITE INFORMATION --

Site Number: 655
Current Site Name: AZORES
Location: AZORES ISLANDS
Geographic Region: ATLANTIC
Tectonic Plate: NORTH AMERICAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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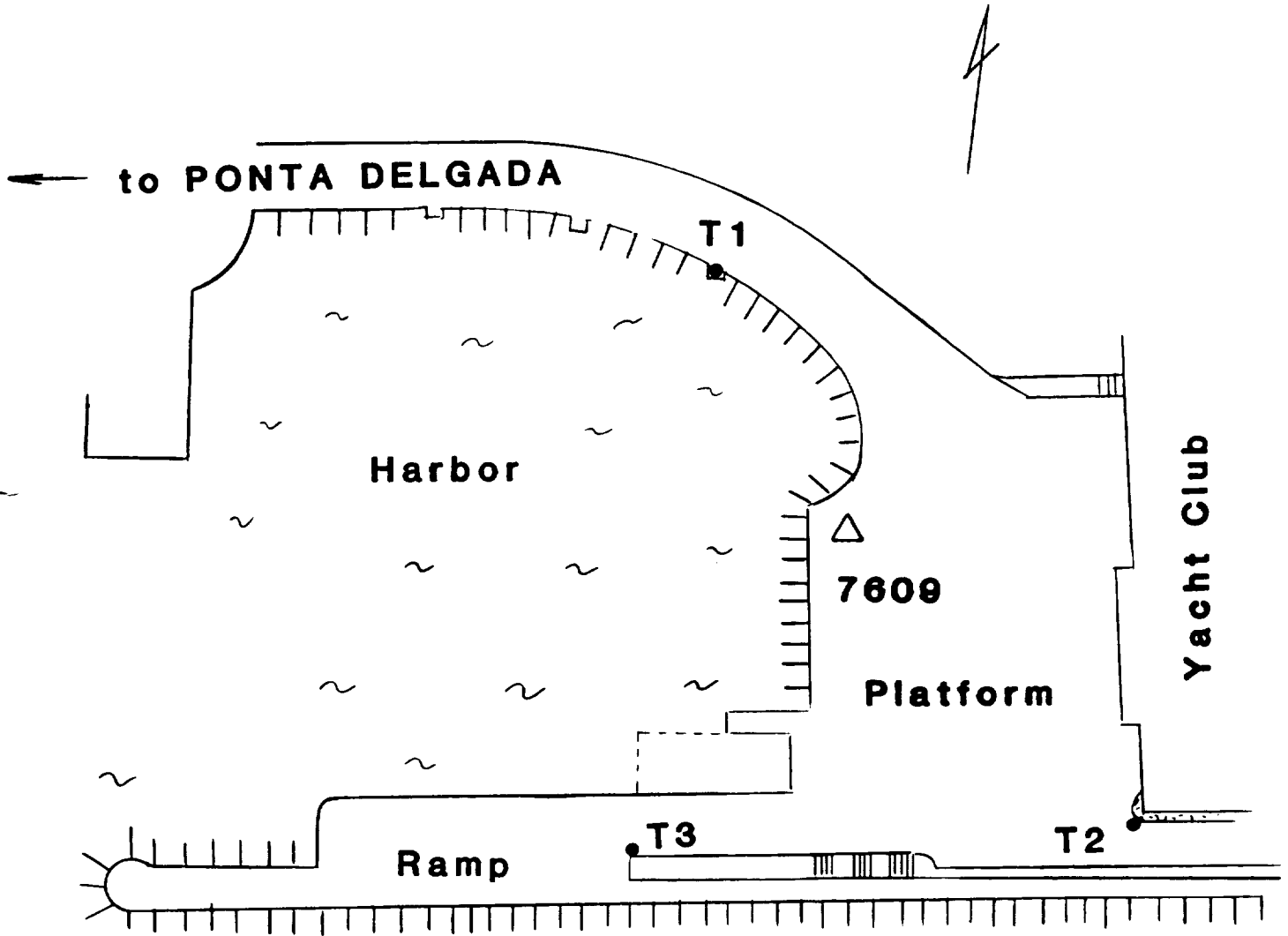
-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7609	MV-2	76035201	25-MAY-92	04-JUN-92

SITE SKETCH

Site Number: 655
Current Site Name: AZORES
Location: AZORES ISLANDS



NOTE: OCCUPATION SKETCH 5/92

-- SITE INFORMATION --

Site Number: 634
Current Site Name: BALKHASH
Location: BALKHASH, KAZAHHSTAN
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1869	BALLAS	18696001	01-MAY-92	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 857

Current Site Name: BAR GIYYORA
Other Site Name: JERUSALEM
Location: BAR GIYYORA, ISRAEL
Geographic Region: MEDITERRANEAN
Tectonic Plate: AFRICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF INTERNAL PLATE DEFORMATION AND PLATE STABILITY, AND MEASUREMENTS SUPPORTING MEDITERRANEAN TECTONICS AND SLR TECHNIQUE DEVELOPMENT.

Site Description: THIS SITE IS LOCATED IN ISRAEL ABOUT 25 MILES WEST OF JERUSALEM. NASA'S MOBLAS-2 LASER RANGING SYSTEM IS OPERATED AS A PERMANENT BASE STATION BY THE INSTITUTE FOR PETROLEUM RESEARCH AND GEOPHYSICS AT BAR GIYYORA. BECAUSE OF THE EXCELLENT WEATHER EXPECTED AT THIS SITE AND ITS GEOGRAPHIC LOCATION, IT IS EXPECTED TO MAKE A LARGE CONTRIBUTION TO THE EXPANDING WORLD-WIDE NETWORK OF LASER RANGING STATIONS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: NOT AVAILABLE

Comments: NONE

MONUMENT INFORMATION

Site Number: 857
 Current Site Name: BAR GIYYORA
 Location: BAR GIYYORA, ISRAEL
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7530
 Type of Monument:
 Monument Inscription: NONE (2/BG-STATION IDENTIFICATION)
 Systems Using Monument:

Latitude: N 31 43' 19.355''
 Longitude: E 35 05' 16.211''
 Elevation: 751.720 meters
 Height Above Ellipsoid:
 Survey Source/Date: INSTITUTE FOR PETROLEUM RESEARCH AND
 GEOPHYSICS/01-AUG-85
 Datum/Ellipsoid: ISRAEL DATUM/CLARKE 1880

Comments: NONE

Differential Coordinates FROM Observing Monument 7530 TO
Reference Monuments and Other Observing Monuments

Data Source:

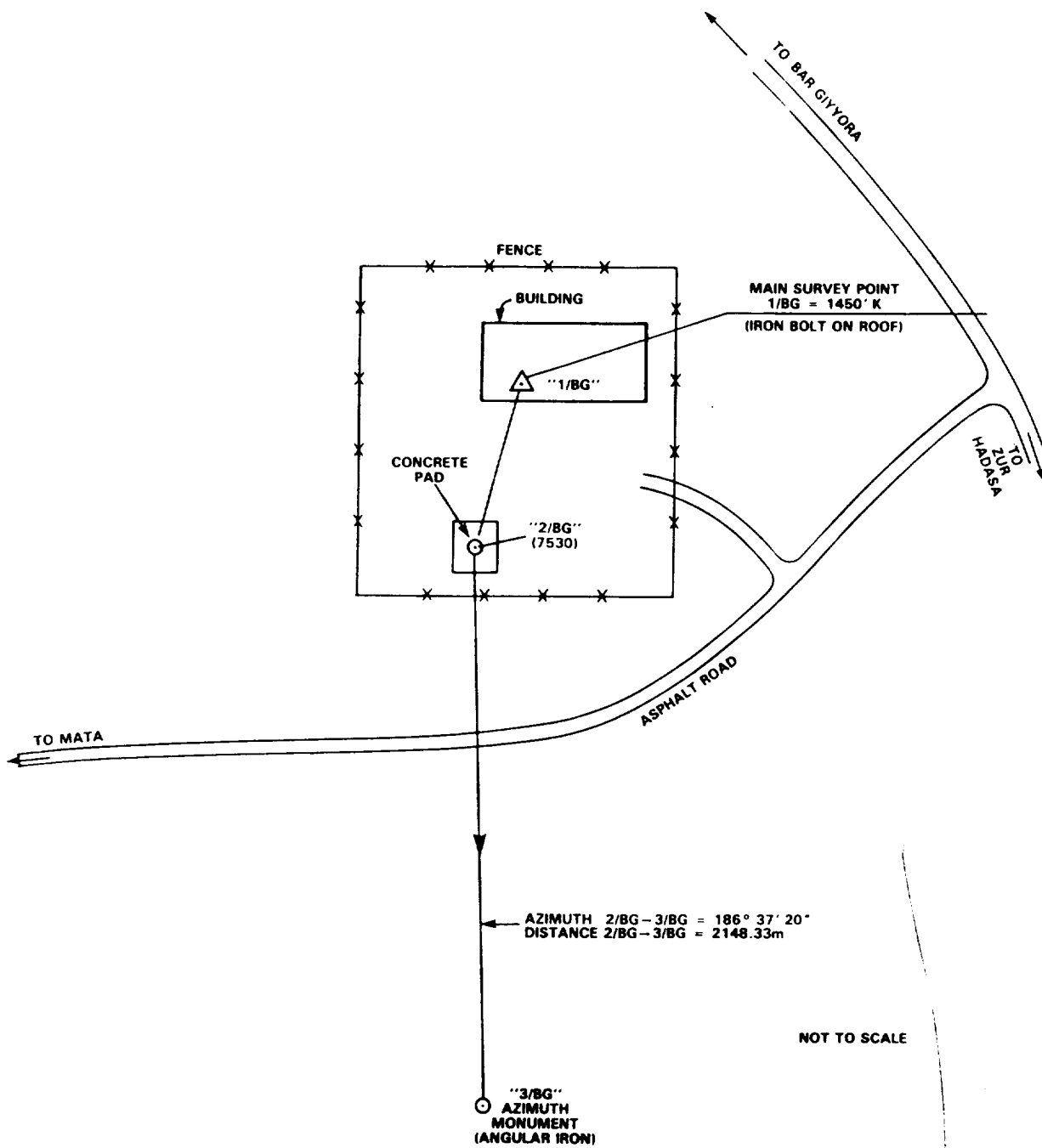
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
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-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 857
Current Site Name: BAR GIYYORA
Location: BAR GIYYORA, ISRAEL



PREVIOUS OCCUPATION INFORMATION

Site Number: 857

Current Site Name: BAR GIYYORA

Location: BAR GIYYORA, ISRAEL

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7530	MOBLAS-2	75300201	02-AUG-85	07-AUG-89
7530	MOBLAS-2	75300202	08-AUG-89	23-JUN-90
7530	MOBLAS-2	75300203	24-JUN-90	19-OCT-91
7530	MOBLAS-2	75300204	20-OCT-91	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 854

Current Site Name: BASOVIZZA
Other Site Name: TRIESTE
Location: BASOVIZZA, TRIESTE, ITALY
Geographic Region: MEDITERRANEAN
Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND THE KINEMATICS OF THE EAST AND CENTRAL MEDITERRANEAN.

Site Description: THIS WEGENER-MEDLAS SITE IS LOCATED IN NORTHERN ITALY NEAR THE YUGOSLAVIAN BORDER. THE PAD AT THE SITE IS COMPATIBLE FOR OCCUPATION BY MOBILE LASER SYSTEMS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: UNKNOWN

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 854
 Current Site Name: BASOVIZZA
 Location: BASOVIZZA, TRIESTE, ITALY
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7550
 Type of Monument:
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASER RANGING SYSTEMS

Latitude: N 45 38' 34.3''
 Longitude: E 13 52' 31.69''
 Elevation:
 Height Above Ellipsoid: 439.004 meters
 Survey Source/Date: COORDINATES PROVIDED BY DR. DANNY VAN LOON/01-AUG-87
 Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7550 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
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-- Differential Coordinate Information Not Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 854

Current Site Name: BASOVIZZA

Location: BASOVIZZA, TRIESTE, ITALY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7550	MTLRS-2	75501601	18-MAR-86	19-MAY-86
7550	MTLRS-2	75501602	26-MAY-89	20-JUL-89

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 22

Current Site Name: BEAR LAKE

Other Site Name:

Location: BEAR LAKE, UT

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED IN WASATCH NATIONAL FOREST TWO MILES SOUTHWEST OF GARDEN CITY, UTAH ON THE SOUTHWEST SHORE OF BEAR LAKE. BEAR LAKE STRADDLES THE BORDER OF UTAH AND IDAHO AND IS APPROXIMATELY 85 MILES NORTH-NORTHEAST OF SALT LAKE CITY. THE SITE IS COMPATIBLE FOR OCCUPATION BY ANY MOBILE LASER OR MOBILE VLBI SYSTEM.

Site Topo Map: GARDEN CITY, UTAH. N4152.5-W11122.5/7.5. 1969, U.S.G.S., RESTON, VA 22029

GEOLOGICAL INFORMATION

Geological Province: MIDDLE ROCKY MOUNTAINS

Local Geology: PRECAMBRIAN BASEMENT. THE SITE IS LOCATED EAST OF THE SAN ANDREAS FAULT AS WELL AS EAST OF OTHER LESS WELL KNOWN BUT ACTIVE FAULTS ON THE NORTH AMERICAN PLATE.

Comments: FROST HEAVE IN THE AREA HAS CAUSED VERTICAL PAD OSCILLATIONS OF UP TO FIVE CENTIMETERS.

MONUMENT INFORMATION

Site Number: 22
 Current Site Name: BEAR LAKE
 Location: BEAR LAKE, UT
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7046
 Type of Monument: STANDARD BRASS DISK
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASER

Latitude: 41 56' 00.71376"
 Longitude: 111 25' 14.48686"
 Elevation:
 Height Above Ellipsoid: 1963.111 meters
 Survey Source/Date: BFEC /SEPT 1988
 Datum/Ellipsoid: NAD83/GRS80

Comments: THIS NEW MONUMENT IS COMPATIBLE FOR OCCUPATION BY ANY MOBILE LASER SYSTEM.

Differential Coordinates FROM Observing Monument 7046 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7046	7046 A (ORIENT. MK)	0.3628	1.5840	1.7869
7046	7046 AZ MARK	-855.7619	179.7866	9.2424
7046	7046 B (ORIENT. MK)	2.9572	1.5289	2.7909
7046	7046 C (ORIENT. MK)	4.0825	-0.3805	1.2689
7046	7046 D (ORIENT. MK)	2.5667	-1.0993	-0.0845
7046	7046 PIER A	60.0962	54.4116	81.7067
7046	7046 PIER B	8.8521	-65.6512	-66.8427
7046	7046 PIER C	-101.4085	91.5084	64.1163
7046	7046 RM1	42.7936	-57.3623	-48.0122
7046	7046 RM2	-62.5307	12.2522	-12.6576
7046	7046 RM3	-8.1180	59.2226	62.0332
7082	PLATE	5.8254	1.2697	3.3910

Monument Number: 7046
 Type of Monument: STANDARD BRASS DISK
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASER

Differential Coordinates FROM Observing Monument 7046 TO Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7046	7046 A (ORIENT. MK)	2.4033	-0.2406	-0.0016
7046	7046 AZ MARK	-90.0928	-862.3190	114.1329
7046	7046 B (ORIENT. MK)	3.7489	2.1948	0.0027
7046	7046 C (ORIENT. MK)	1.7035	3.9396	0.0024
7046	7046 D (ORIENT. MK)	-0.1205	2.7909	0.0076
7046	7046 PIER A	109.2987	36.0778	0.5890
7046	7046 PIER B	-88.4088	32.2136	-1.6024
7046	7046 PIER C	79.8815	-127.8205	7.0159
7046	7046 RM1	-60.9613	60.7847	-3.9804
7046	7046 RM2	-17.0526	-62.6867	0.0431
7046	7046 RM3	81.0106	-29.1828	2.6414
7082	PLATE	4.7341	4.9594	-0.1958

MONUMENT INFORMATION (Continued)

Site Number: 22
 Current Site Name: BEAR LAKE
 Location: BEAR LAKE, UT

Monument Number: 7082
 Type of Monument: RUSTY SUNKEN 4" X 4" STEEL PLATE
 Monument Inscription: 'X'
 Systems Using Monument:

Latitude: N 41 56' 00.86716"
 Longitude: W 111 25' 14.27166"
 Elevation: 1976.515 meters
 Height Above Ellipsoid: 1962.915 meters
 Survey Source/Date: BFEC/SEPT 1988
 Datum/Ellipsoid: NAD 1983/GRS-80

Comments: NONE

Differential Coordinates FROM Observing Monument 7082 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7046	7046 AZ MK	-861.5873	178.5169	5.8514
7046	7046 PIER A	54.2709	53.1420	78.3157
7046	7046 PIER B	3.0268	-66.9209	-70.2338
7046	7046 PIER C	-107.2338	90.2388	60.7253
7046	7046 RM 1	36.9683	-58.6320	-51.4032
7046	7046 RM 2	-68.3561	10.9826	-16.0486
7046	7046 RM 3	-13.9434	57.9530	58.6422
7046	DISK	-5.8254	-1.2697	-3.3910

Monument Number: 7082
 Type of Monument: RUSTY SUNKEN 4" X 4" STEEL PLATE
 Monument Inscription: 'X'
 Systems Using Monument:

Differential Coordinates FROM Observing Monument 7082 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7046	7046 AZ MK	-94.8474	-867.2744	114.3424
7046	7046 PIER A	104.5652	31.1165	0.7886
7046	7046 PIER B	-93.1422	27.2558	-1.4110
7046	7046 PIER C	75.1448	-132.7813	7.2176
7046	7046 RM 1	-65.6942	55.8263	-3.7884
7046	7046 RM 2	-21.7879	-67.6458	0.2394
7046	7046 RM 3	76.2759	-34.1436	2.8411
7046	DISK	-4.7341	-4.9594	0.1958

PREVIOUS OCCUPATION INFORMATION

Site Number: 22

Current Site Name: BEAR LAKE

Location: BEAR LAKE, UT

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7046	MTLRS-1	70461501	03-AUG-90	03-SEP-90
7046	TLRS-4	70461402	25-AUG-91	17-OCT-91
7082	MOBLAS-1	70820101	24-SEP-76	30-NOV-76
7082	MOBLAS-1	70820102	01-JAN-79	20-AUG-79
7082	TLRS-1	70821103	30-MAR-81	06-MAY-81
7082	TLRS-1	70821104	03-NOV-83	10-JAN-84

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 44

Current Site Name: BERMUDA

Other Site Name:

Location: BERMUDA ISLAND

Geographic Region: ATLANTIC

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: NONE

Site Description: THIS SITE IS LOCATED ABOUT 3.2 KILOMETERS (2 MILES) NORTHEAST OF ST. GEORGES, IN THE COUNTRY OF BERMUDA AND ON THE U.S. NAVAL AIR STATION. THERE ARE TWO MONUMENTS LOCATED HERE. THE SLR MARK IS LOCATED AT THE NASA STDN STATION (SEE SKETCH). THE LOCATION OF THE MOBILE VLBI MARK IS DESCRIBED AS: FROM THE MAIN GATE OF THE NAS CONTINUE TO THE AIRFIELD AND STATION ABOUT 0.4 KM NORTHEAST OF THE NORTHEAST END OF THE RUNWAY. THE MOBILE VLBI MARK WAS REPORTED DESTROYED IN 1992.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: VOLCANICS

Comments: NONE

MONUMENT INFORMATION

Site Number: 44
Current Site Name: BERMUDA
Location: BERMUDA ISLAND
Number of Observing Monuments: 2
Surveyed into National Network? NO

Monument Number: 7294
Type of Monument: STANDARD NOS GRAVITY DISK, UNMARKED, SET IN BEDROCK
Monument Inscription: NONE
Systems Using Monument: MOBILE VLBI

Latitude:
Longitude:
Elevation:
Height Above Ellipsoid:
Survey Source/Date:
Datum/Ellipsoid:

Comments: NO GEODETICS AVAILABLE AND PRESUMED DESTROYED

Differential Coordinates FROM Observing Monument 7294 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

-- Differential Coordinate Information Not Available --

MONUMENT INFORMATION (Continued)

Site Number: 44
Current Site Name: BERMUDA
Location: BERMUDA ISLAND

Monument Number: 7067
Type of Monument: STANDARD BRASS DISK
Monument Inscription: UNKNOWN
Systems Using Monument: MOBILE SLR

Latitude: N 32° 21' 13.75368"
Longitude: W 64° 39' 21.92684"
Elevation:
Height Above Ellipsoid: -23.072 meters
Survey Source/Date: BFEC/ MAY 1992
Datum/Ellipsoid: WGS-84 (TRANSFORMED)

Comments: THIS STATION IS LOCATED IN A BUILDING

Differential Coordinates FROM Observing Monument 7067 TO
Reference Monuments and Other Observing Monuments

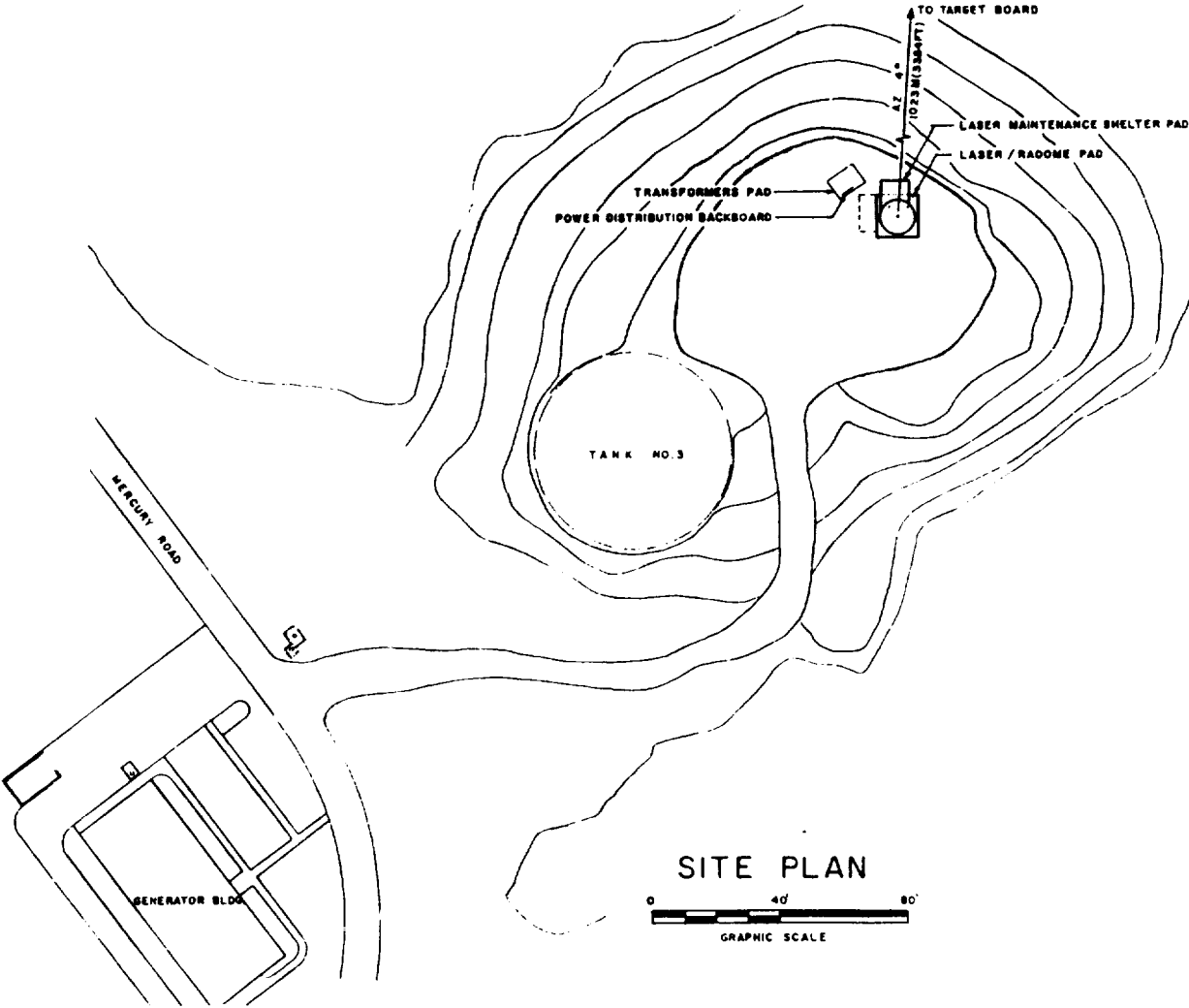
Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	WELL (NGS)	82.6935	-362.3509	-570.6359

SITE SKETCH

Site Number: 44
Current Site Name: BERMUDA
Location: BERMUDA ISLAND



PREVIOUS OCCUPATION INFORMATION

Site Number: 44

Current Site Name: BERMUDA

Location: BERMUDA ISLAND

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7067	MOBLAS-1	70670101	24-AUG-75	16-JUL-76
7067	MOBLAS-1	70670102	30-JUN-78	09-NOV-78

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7294	MV-3	72945301	01-AUG-87	09-AUG-87

-- SITE INFORMATION --

Site Number: 206

Current Site Name: BLACK BUTTE

Other Site Name:

Location: BLACK BUTTE MOUNTAIN, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS APPROXIMATELY 30 MILES EAST OF INDIO, CALIFORNIA AT THE CHIRIACO SUMMIT AIRSTRIP ON RIVERSIDE COUNTY PROPERTY. TO REACH THE STATION FROM THE EAST SIDE OF THE TRUCK STOP BUILDING GO NORTH ALONG THE EAST SIDE OF THE BUILDING AND ALONG THE WEST SIDE OF THE TAXIWAY FOR APPROXIMATELY 0.15 MILES TO THE STATION MARK; 60 FEET EAST OF THE EXTENDED CENTERLINE OF THE NORTH-SOUTH TAXIWAY; 177 FEET NORTH OF THE CENTERLINE OF THE TAXIWAY AT THE POINT OF CURVE. AT PRESENT, THE MONUMENT IS COMPATIBLE FOR OCCUPATION BY MOBILE VLBI SYSTEMS AND TLRs-1 ONLY.

Site Topo Map: CHUCKWALLA MOUNTAINS, CALIFORNIA, 1963, 7.5 QUAD, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: MOJAVE DESERT

Local Geology: QUATERNARY ALLUVIUM

Comments: THE SITE WILL BE PART OF THE U.S.G.S. TRILATERATION NETWORK.

MONUMENT INFORMATION

Site Number: 206
 Current Site Name: BLACK BUTTE
 Location: BLACK BUTTE MOUNTAIN, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7269
 Type of Monument: NGS STATION DISK
 Monument Inscription: BLACK BUTTE NCMN 1982
 Systems Using Monument: MOBILE VLBI

Latitude: N 33 39' 49.48289''
 Longitude: W 115 43' 11.65972''
 Elevation:
 Height Above Ellipsoid: 506.338 meters
 Survey Source/Date: NGS/01-JUL-87
 Datum/Ellipsoid: WGS-72

Comments: NONE

Differential Coordinates FROM Observing Monument 7269 TO
Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	BLACK BUTTE RM #1	92.912	-23.411	28.632
--	BLACK BUTTE RM #2	-34.797	-19.011	-49.946
--	BLACK BUTTE RM #3	-20.880	62.527	75.208

---- Differential Coordinates ----

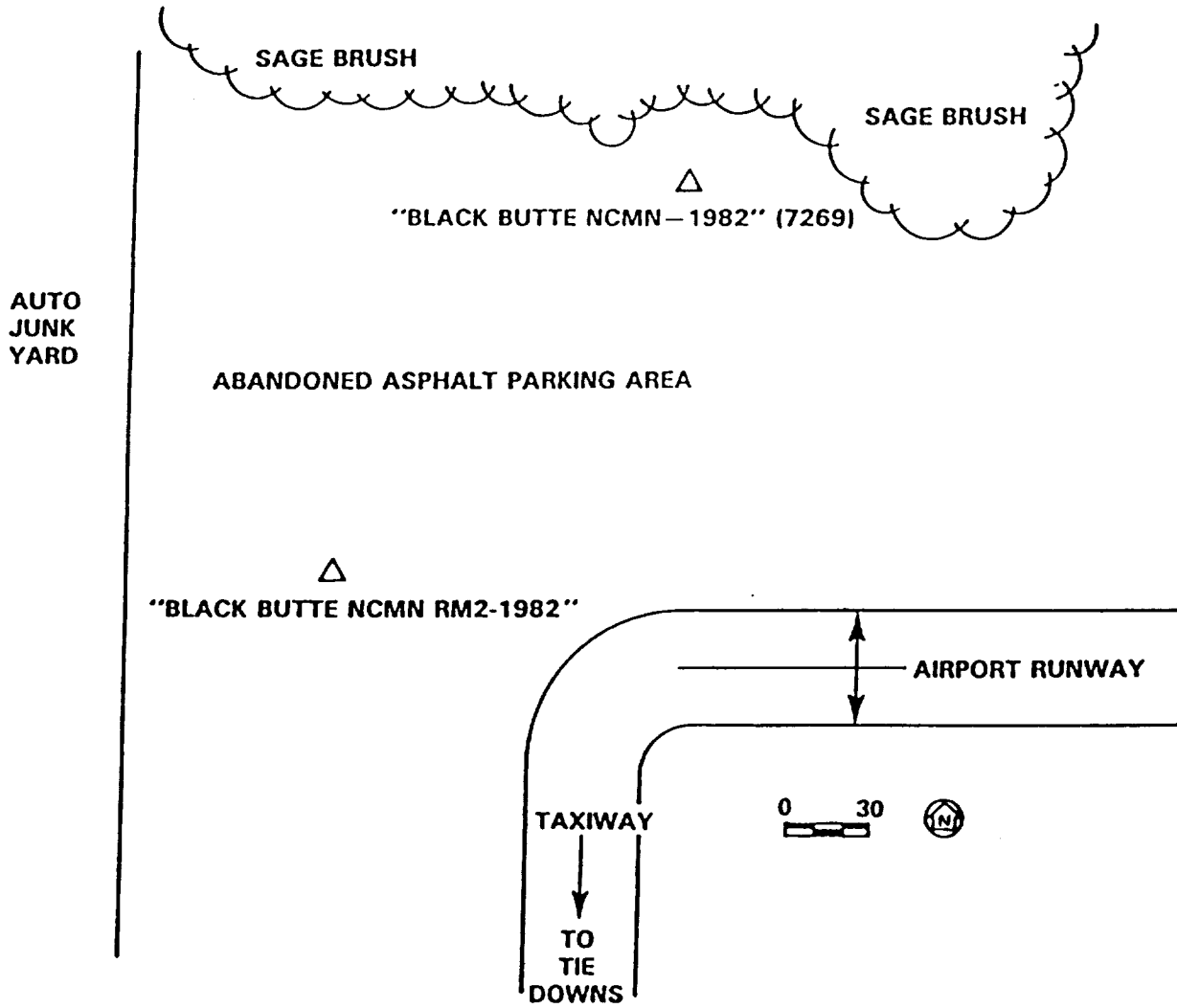
Mon. Number	Monument Inscription	North	East	Up
--	BLACK BUTTE RM #1	34.489	93.867	-0.132
--	BLACK BUTTE RM #2	-59.435	-23.099	-0.861
--	BLACK BUTTE RM #3	88.799	-45.947	2.347

SITE SKETCH

Site Number: 206

Current Site Name: BLACK BUTTE

Location: BLACK BUTTE MOUNTAIN, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 206

Current Site Name: BLACK BUTTE

Location: BLACK BUTTE MOUNTAIN, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7269	MV-2	72695201	08-NOV-83	11-NOV-83
7269	MV-3	72695302	03-MAR-84	04-MAR-84
7269	MV-3	72695303	12-JAN-85	16-JAN-85
7269	MV-3	72695304	17-MAY-86	19-MAY-86
7269	MV-3	72695305	26-OCT-86	27-OCT-86
7269	MV-3	72695306	02-FEB-87	04-FEB-87
7269	MV-2	72695207	17-MAY-87	18-MAY-87
7269	MV-2	72695208	21-OCT-87	22-OCT-87
7269	MV-2	72695209	24-OCT-88	26-OCT-88

-- SITE INFORMATION --

Site Number: 243

Current Site Name: BLOOMINGTON

Other Site Name:

Location: BLOOMINGTON, IN

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE NATIONAL
GEODETIC SURVEY'S NATIONAL CRUSTAL MOTION NETWORK.

Site Description: THE SITE IS LOCATED IN THE PARKING LOT OF THE INDIANA
UNIVERSITY SKEET RANGE NEAR THE MAIN BUILDING. THE STATION IS
COMPATIBLE FOR OCCUPATION BY MOBILE VLBI SYSTEMS ONLY.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 243
 Current Site Name: BLOOMINGTON
 Location: BLOOMINGTON, IN
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7291
 Type of Monument: STANDARD NGS BRASS DISK
 Monument Inscription: BLOOMINGTON NCMN 1985
 Systems Using Monument: MOBILE VLBI

Latitude: N 39 10' 45.62217"
 Longitude: W 86 29' 54.27951"
 Elevation:
 Height Above Ellipsoid: 219.194 meters
 Survey Source/Date: NGS (ADJUST)/25-FEB-92
 Datum/Ellipsoid: NAD83 (1986)/ GRS-80

Comments:

Differential Coordinates FROM Observing Monument 7291 TO
Reference Monuments and Other Observing Monuments

Data Source:

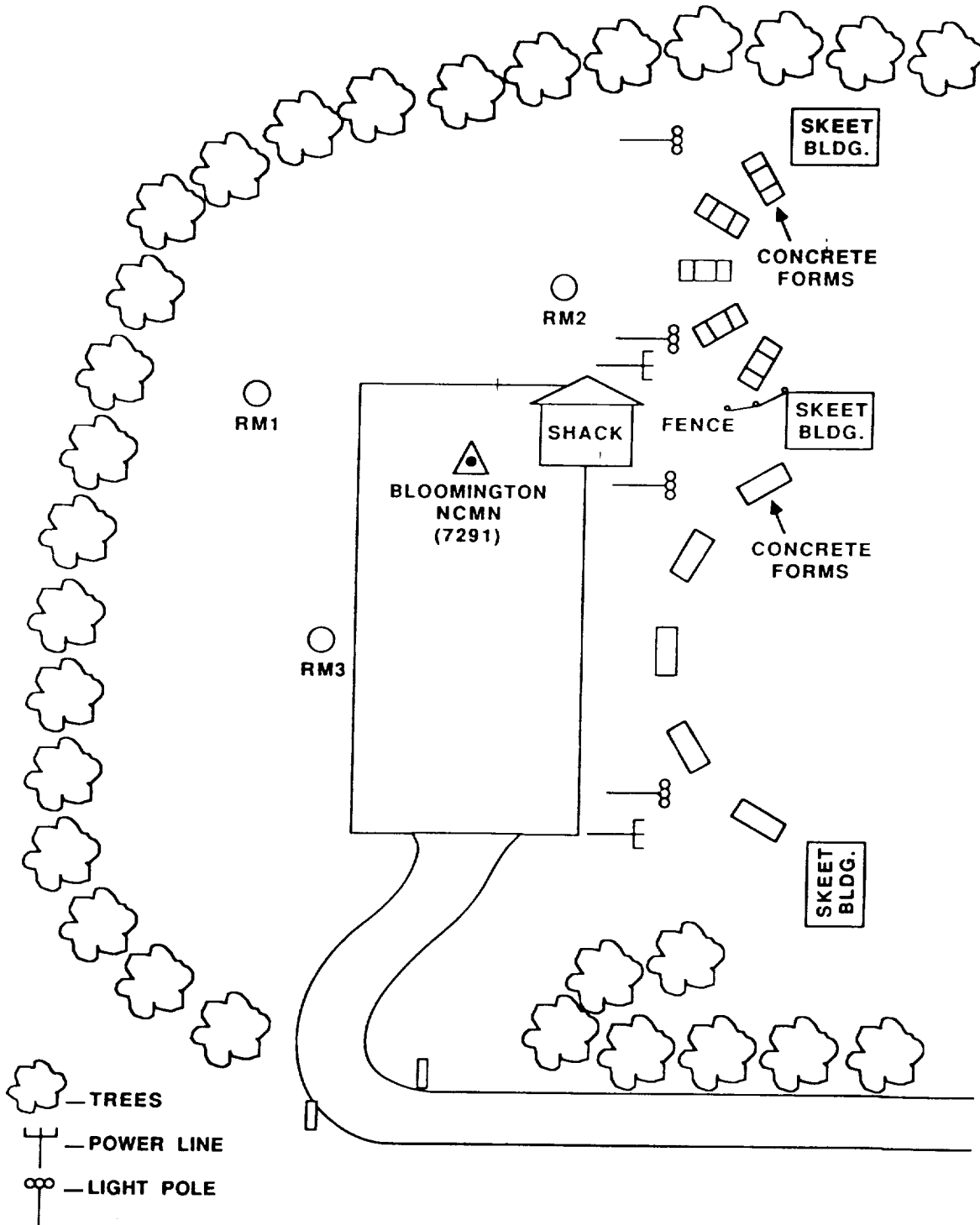
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
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-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 243
Current Site Name: BLOOMINGTON
Location: BLOOMINGTON, IN



PREVIOUS OCCUPATION INFORMATION

Site Number: 243

Current Site Name: BLOOMINGTON

Location: BLOOMINGTON, IN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7291	MV-3	72915301	18-AUG-87	20-AUG-87

-- SITE INFORMATION --

Site Number: 630
Current Site Name: BOROWIEC
Location: BOROWIEC, POLAND
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7811	POLLAS	78113801	01-JAN-76	31-DEC-83
7811	POLLAS	78113802	01-JAN-88	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 692

Current Site Name: BREST

Other Site Name:

Location: BREST, FRANCE

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

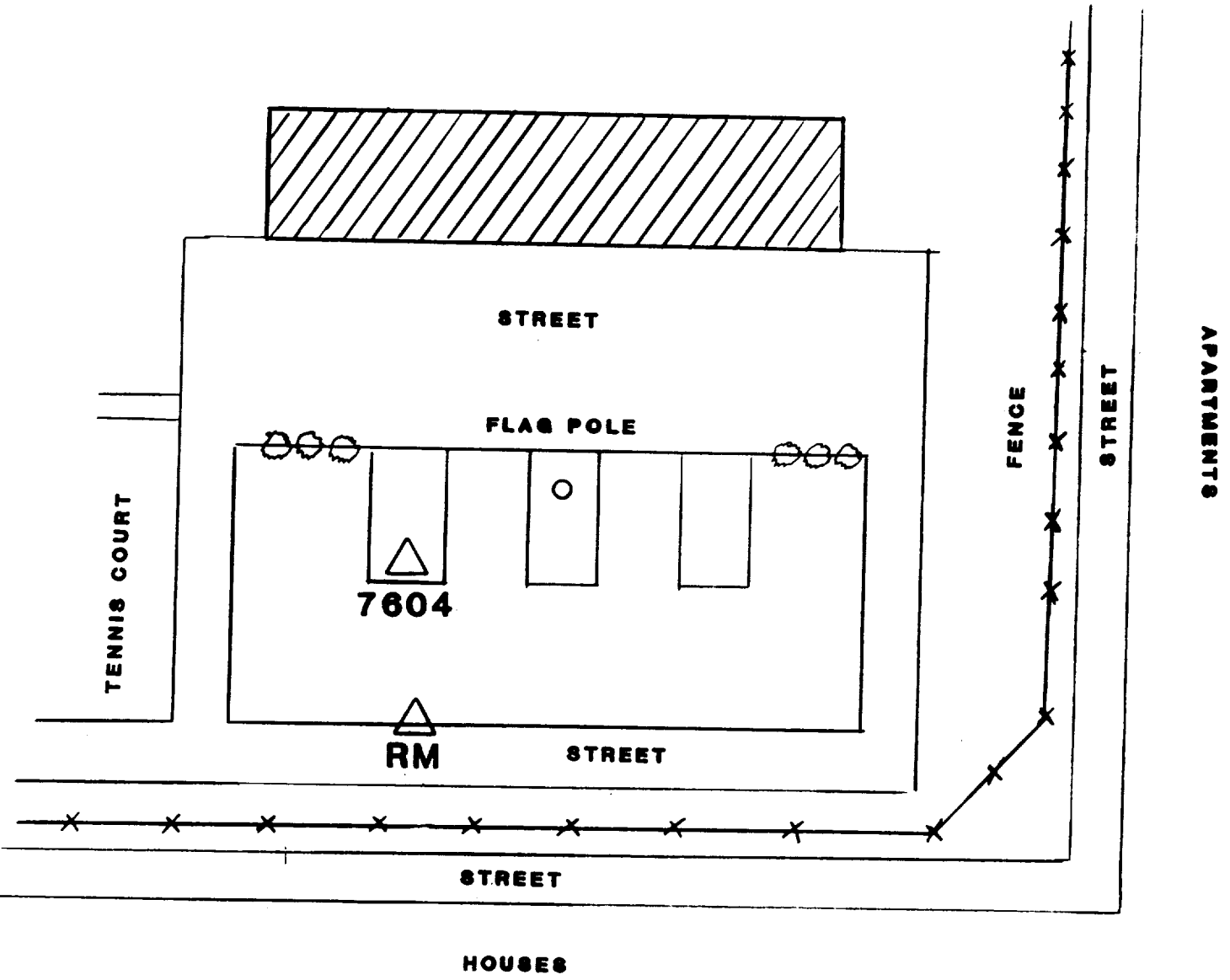
Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7604	MV-3	76045301	23-AUG-89	29-AUG-89

SITE SKETCH

Site Number: 692

Current Site Name: BREST

Location: BREST, FRANCE



-- SITE INFORMATION --

Site Number: 53

Current Site Name: BREWSTER

Other Site Name:

Location: BREWSTER, WA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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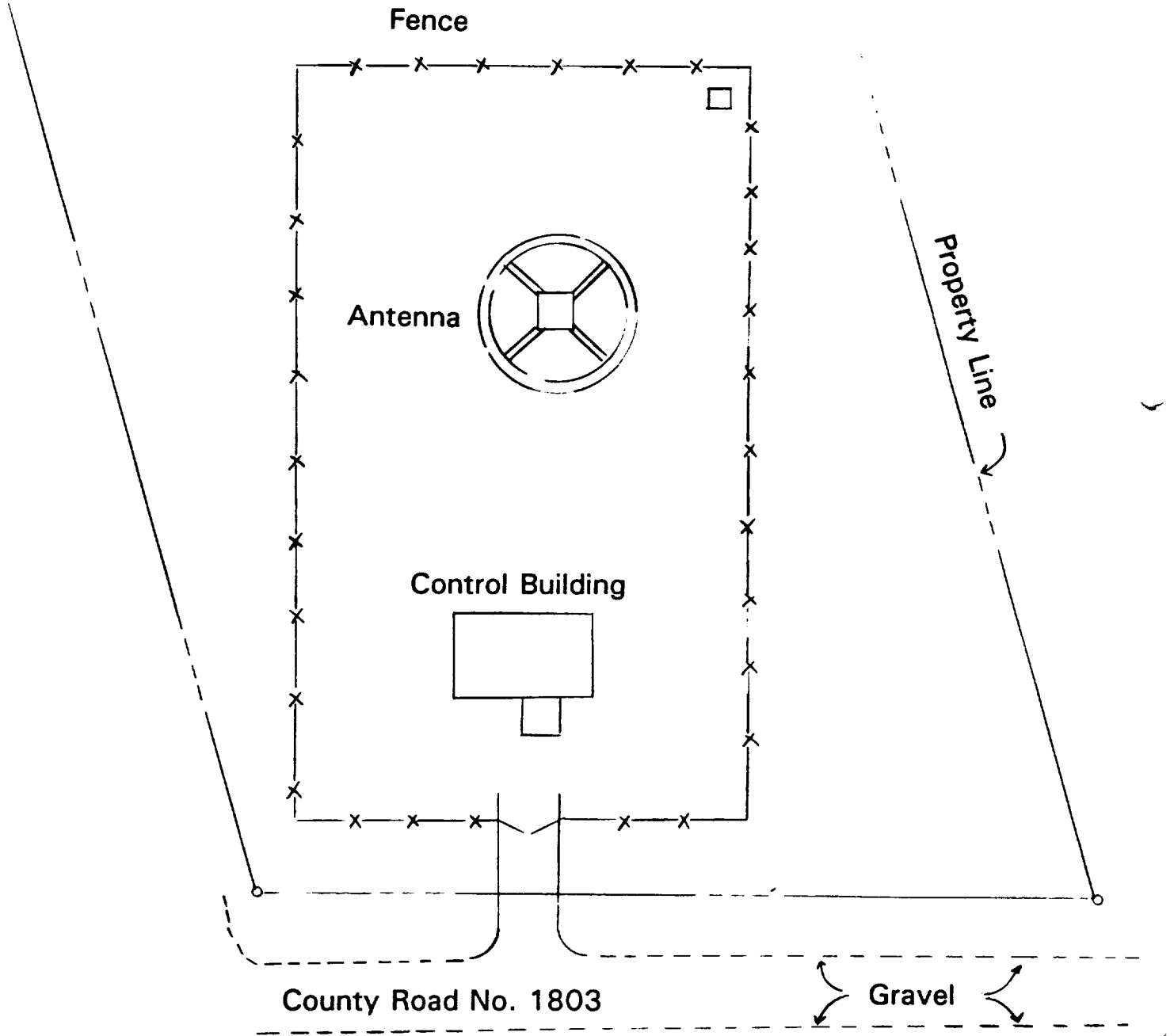
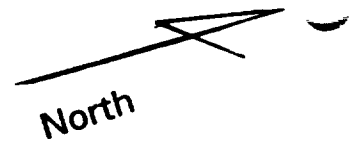
-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7614	VLBA	76149901	01-JAN-90	---

SITE SKETCH

Site Number: 53
Current Site Name: BREWSTER
Location: BREWSTER, WASHINGTON



-- SITE INFORMATION --

Site Number: 70

Current Site Name: CABO SAN LUCAS

Other Site Name:

Location: CABO SAN LUCAS, BAJA, MEXICO

Geographic Region: NORTH AMERICA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED ON THE SOUTHERN TIP OF THE BAJA CALIFORNIA PENINSULA 5 KILOMETERS NORTH OF CABO SAN LUCAS, MEXICO. A CONCRETE WALL STRUCTURE WITH A TARP WAS USED TO HOUSE TLRS-2 DURING ITS OCCUPATION OF THE SITE IN FEBRUARY 1984. THIS WALL HAS SINCE BEEN REMOVED AND THE SITE CAN NOW BE OCCUPIED BY ANY OF THE MOBILE LASER SYSTEMS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: BAJA CALIFORNIA

Local Geology: GRANITE WITH A THIN QUATERNARY COVERING OF ALLUVIUM WITH LARGE GRANITIC BOULDERS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 70
 Current Site Name: CABO SAN LUCAS
 Location: CABO SAN LUCAS, BAJA, MEXICO
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7882
 Type of Monument: NASA/GSFC STANDARD BRASS DISK
 Monument Inscription: CABO SAN LUCAS 7882 1983
 Systems Using Monument: TLRs

Latitude: N 22 55' 03.12924''
 Longitude: W 109 51' 51.85883''
 Elevation:
 Height Above Ellipsoid: 109.878 meters
 Survey Source/Date: BFEC/27-APR-88
 Datum/Ellipsoid: WGS 84

Comments: NONE

Differential Coordinates FROM Observing Monument 7882 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC ADJUSTMENT 88-04-27

---- Differential Coordinates ----

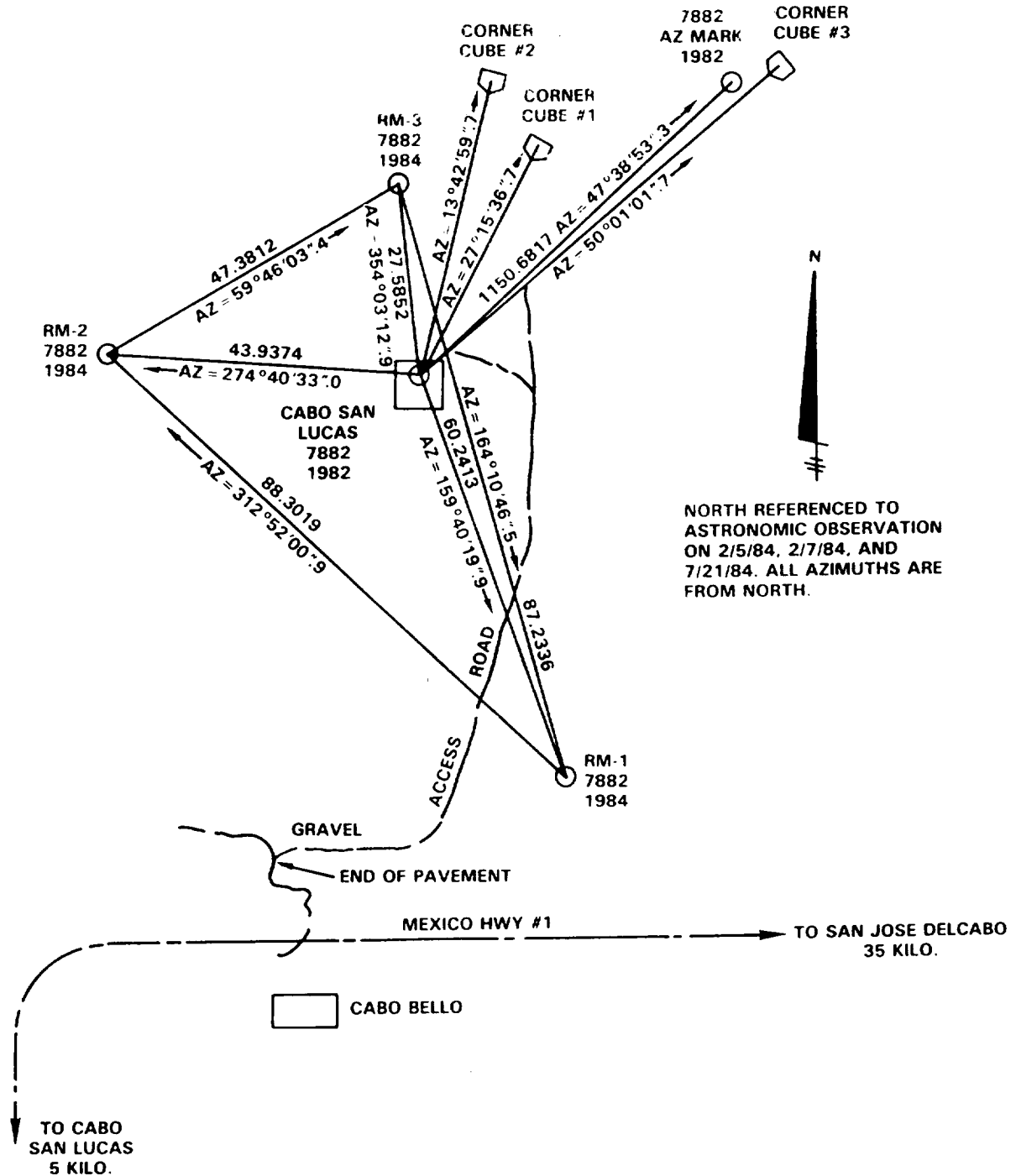
Mon. Number	Monument Inscription	X	Y	Z
--	7882 AZIMUTH MARK	880.5152	-65.5912	741.2469
--	7882 CAL PIER NO.1	85.9886	58.5863	236.2288
--	7882 CAL PIER NO.2	-161.8707	42.4001	-14.4142
--	7882 RM 2	-41.4506	14.1602	4.2148
--	7882 RM 3	0.2988	9.2307	26.0805
--	7883 RM 1	12.3307	-27.4622	-52.1845
--	DOPPLER 30095	-4636.8390	270.9232	-3443.2196

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	7882 RM 2	3.5834	-43.7958	2.3478
--	7882 RM 3	27.4420	-2.8555	2.0662
--	7883 RM 1	-56.4915	20.9285	-0.3907

SITE SKETCH

Site Number: 70
 Current Site Name: CABO SAN LUCAS
 Location: CABO SAN LUCAS, BAJA, MEXICO



PREVIOUS OCCUPATION INFORMATION

Site Number: 70

Current Site Name: CABO SAN LUCAS

Location: CABO SAN LUCAS, BAJA, MEXICO

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7882	TLRS-2	78821201	01-FEB-84	10-MAR-84
7882	TLRS-1	78821102	21-MAR-88	01-AUG-88
7882	TLRS-4	78821403	26-FEB-92	02-JUN-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 805

Current Site Name: CAPE YAKATAGA

Other Site Name:

Location: CAPE YAKATAGA, AK

Geographic Region: ALASKA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED IN SOUTHERN ALASKA ON THE GULF OF ALASKA NEAR THE PANHANDLE. THE SITE IS FIVE KILOMETERS WEST OF CAPE YAKATAGA NEAR THE YAKATAGA AIRPORT. THE AIRPORT IS A PARTIALLY ABANDONED WORLD WAR II AIRPORT WITH A GRAVEL RUNWAY. THE OBSERVING MONUMENT IS COMPATIBLE FOR OCCUPATION BY THE MOBILE VLBI SYSTEMS.

Site Topo Map: BERING GLACIER (A-4), ALASKA. N6000- W14207.5/ 15 X 22.5 U.S.G.S., RESTON, VA.

GEOLOGICAL INFORMATION

Geological Province: COPPER RIVER DELTA

Local Geology: QUATERNARY ALLUVIUM, BEACH DEPOSIT.

Comments: THIS REGION IS A SEISMIC GAP WHICH IS A CANDIDATE LOCATION FOR A MAJOR EARTHQUAKE.

MONUMENT INFORMATION

Site Number: 805
 Current Site Name: CAPE YAKATAGA
 Location: CAPE YAKATAGA, AK
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7277
 Type of Monument: MODIFIED SLEEVED CLASS A BENCH MARK
 Monument Inscription: NONE
 Systems Using Monument: MV-2 ONLY

Latitude: N 60 04' 53.1058''
 Longitude: W 142 29' 11.9030''
 Elevation:
 Height Above Ellipsoid: 17.384 meters
 Survey Source/Date: NGS/01-JAN-86
 Datum/Ellipsoid: WGS 72

Comments: THE SYSTEM LIMITATION IS DUE TO THE TRANSPORTATION TO THE SITE NOT TO THE SITE FACILITIES.

Differential Coordinates FROM Observing Monument 7277 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	G 142	-0.621	-33.664	-12.807
--	YAK 2	-148.032	-60.230	-94.464
--	YAKK	-776.561	982.555	-12.252

---- Differential Coordinates ----

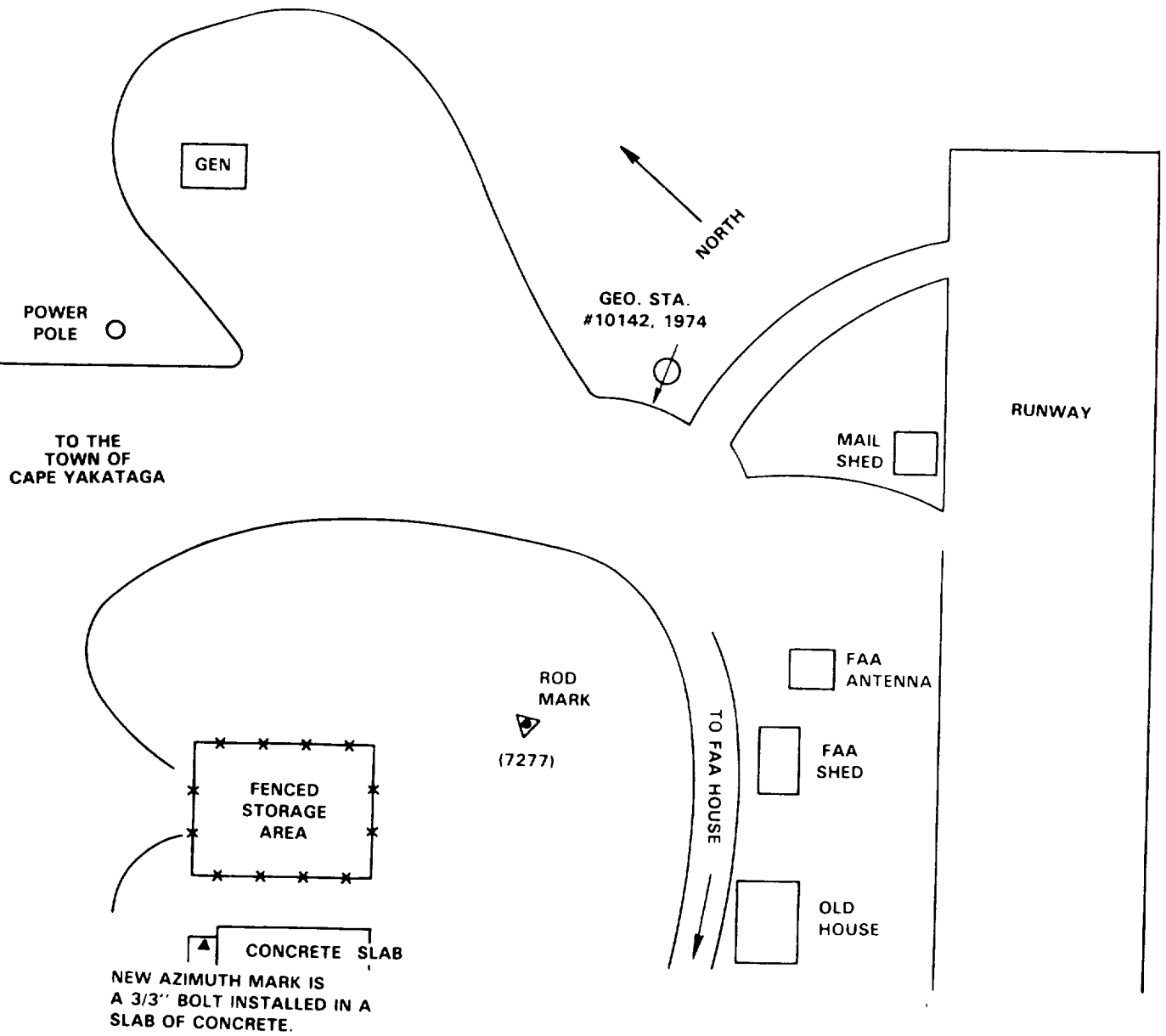
Mon. Number	Monument Inscription	North	East	Up
--	G 142	-24.583	26.324	-0.630

SITE SKETCH

Site Number: 805

Current Site Name: CAPE YAKATAGA

Location: CAPE YAKATAGA, AK



PREVIOUS OCCUPATION INFORMATION

Site Number: 805

Current Site Name: CAPE YAKATAGA

Location: CAPE YAKATAGA, AK

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7277	MV-2	72775201	31-JUL-84	02-AUG-84
7277	MV-2	72775202	05-AUG-85	06-AUG-85
7277	MV-2	72775203	10-AUG-86	12-AUG-86
7277	MV-2	72775204	04-AUG-87	06-AUG-87
7277	MV-2	72775205	19-JUL-88	24-JUL-88
7277	MV-2	72775206	23-JUL-89	25-JUL-89
7277	MV-2	72775207	07-JUN-90	09-JUN-90

-- SITE INFORMATION --

Site Number: 693

Current Site Name: CARNOUSTIE

Other Site Name:

Location: CARNOUSTIE, SCOTLAND, GREAT BRITAIN

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designatorh	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7603	MV-3	76035301	10-AUG-89	16-AUG-89

SITE SKETCH

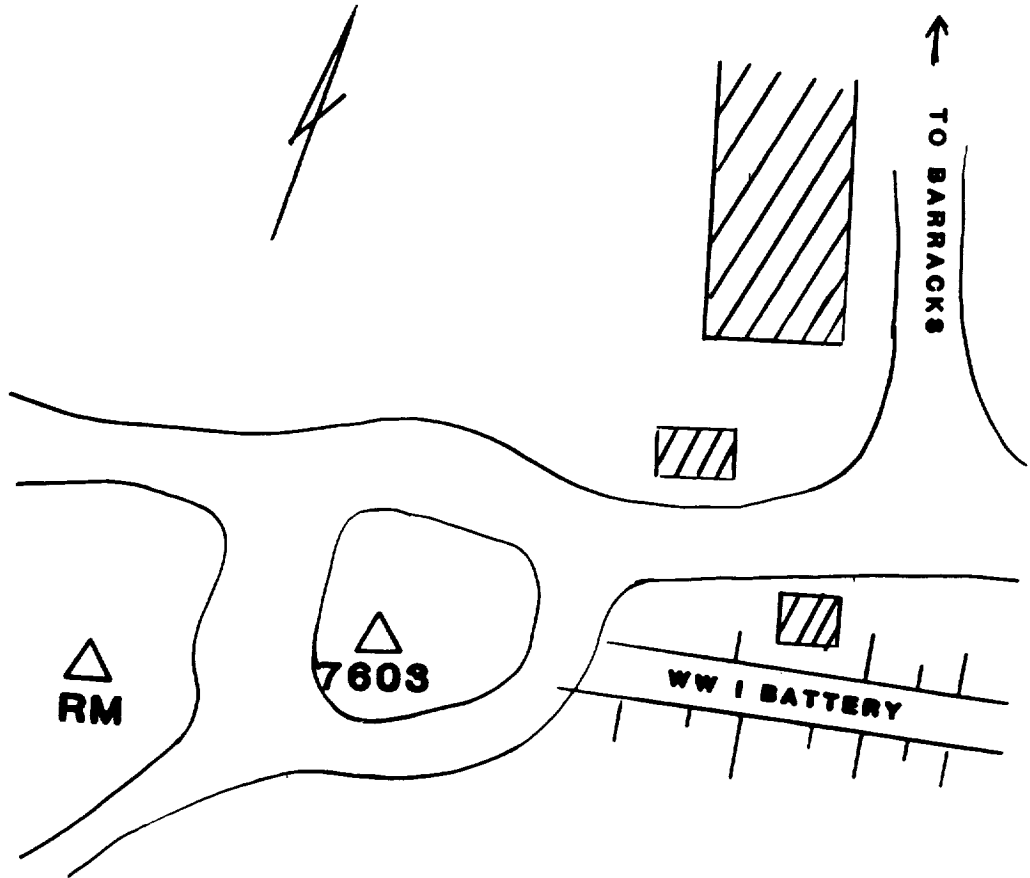
Site Number: 693

Current Site Name: CARNOUSTIE

Location: CARNOUSTIE, SCOTLAND, GREAT BRITAIN

RIFLE RANGE

↑
TO BARRACKS



DUNES

SHORE

NOTE: OCCUPATION SKETCH

-- SITE INFORMATION --

Site Number: 242

Current Site Name: CARROLLTON

Other Site Name:

Location: CARROLLTON, GA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: NONE

Site Description: THE SITE IS LOCATED NEAR THE OBSERVATORY ON THE WEST GEORGIA COLLEGE CAMPUS IN CARROLLTON, GEORGIA. THE STATION IS COMPATIBLE FOR OCCUPATION BY A MOBILE VLBI SYSTEM ONLY.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 242
Current Site Name: CARROLLTON
Location: CARROLLTON, GA
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7228
Type of Monument: STANDARD BRASS NGS DISK
Monument Inscription: CARROLLTON NCMN 1985
Systems Using Monument: MOBILE VLBI

Latitude: N 33 34' 21.16547"
Longitude: W 85 06' 34.48729"
Elevation:
Height Above Ellipsoid: 301.022 meters
Survey Source/Date: NGS (ADJUST)/25-FEB-92
Datum/Ellipsoid: NAD83 (1986)/ GRS-80

Comments:

Differential Coordinates FROM Observing Monument 7228 TO
Reference Monuments and Other Observing Monuments

Data Source:

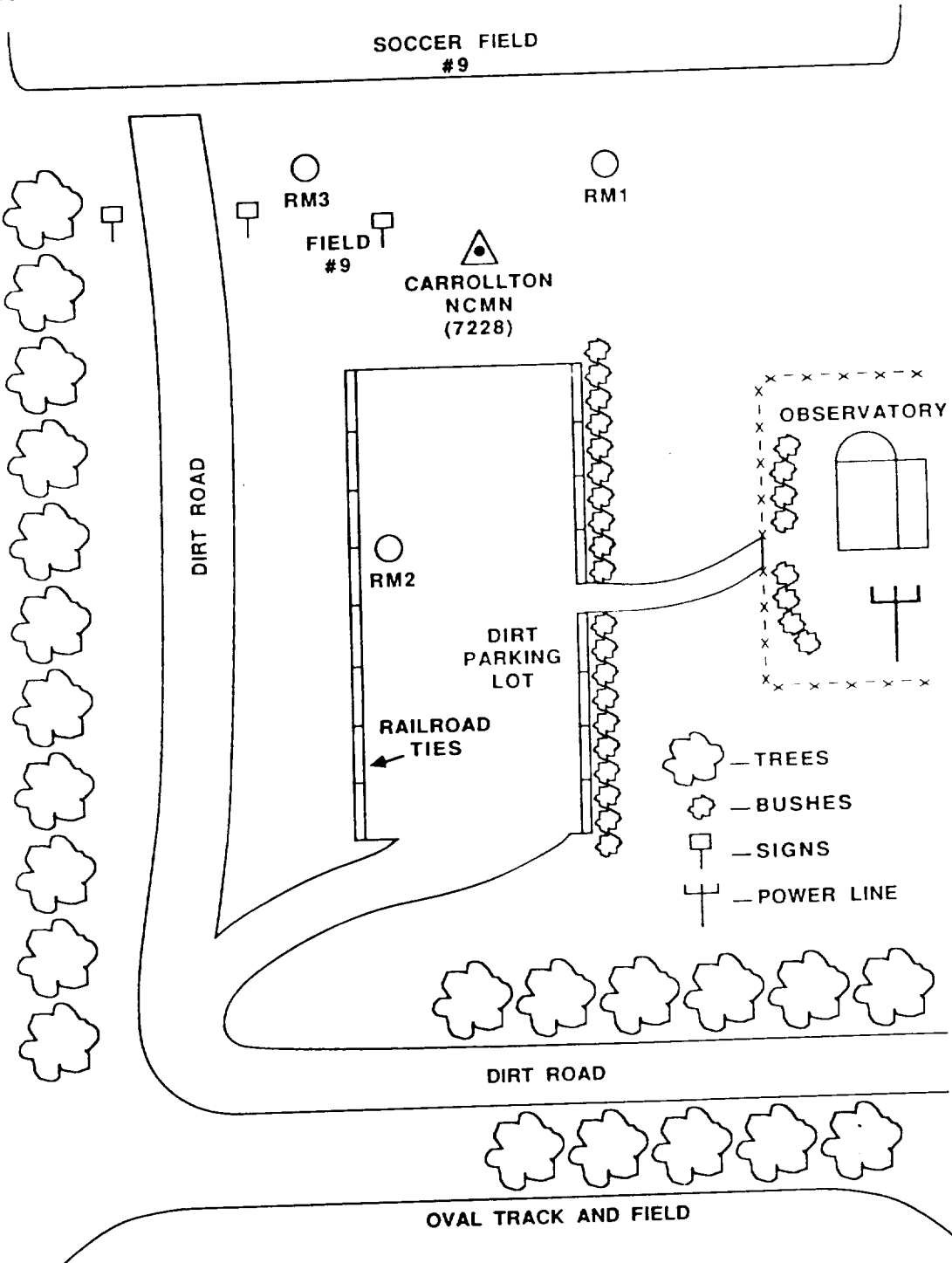
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
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-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 242
Current Site Name: CARROLLTON
Location: CARROLLTON, GA



PREVIOUS OCCUPATION INFORMATION

Site Number: 242

Current Site Name: CARROLLTON

Location: CARROLLTON, GA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7228	MV-3	72285301	17-JUL-87	19-JUL-87

-- SITE INFORMATION --

Site Number: 892

Current Site Name: CERRO TOLOLO

Other Site Name:

Location: CERRO TOLOLO, CHILE

Geographic Region: SOUTH AMERICA

Tectonic Plate: SOUTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE MOTION, INTERNAL PLATE DEFORMATION, AND PLATE STABILITY.

Site Description: THE SITE IS LOCATED AT THE CERRO-TOLOLO OBSERVATORY ON THE WESTERN COAST OF SOUTH AMERICA NEAR THE TOWN OF CERRO TOLOLO IN CENTRAL CHILE. A 25-FOOT BY 25-FOOT PAD IS LOCATED NEAR THE LOWELL TELESCOPE. THIS PAD CAN ACCOMMODATE ALL TLRs SYSTEMS AS WELL AS THE EUROPEAN MOBILE LASER RANGING SYSTEMS MTLRS-1 OR -2.

Site Topo Map: NONE

GEOLOGICAL INFORMATION

Geological Province: ANDEAN CORDILLERA

Local Geology: GRANITIC INTRUSIVES

Comments: NONE

MONUMENT INFORMATION

Site Number: 892
 Current Site Name: CERRO TOLOLO
 Location: CERRO TOLOLO, CHILE
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7401
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7401
 Systems Using Monument: TLRS

Latitude: S 30 10' 20.86692''
 Longitude: W 70 48' 00.15364''
 Elevation: 2123.09 meters
 Height Above Ellipsoid: 2155.748 meters
 Survey Source/Date: BFEC ADJUSTMENT / APR 23, 1990
 Datum/Ellipsoid: SLR / a= 6378137 1/f= 298.255

Comments: NONE

Differential Coordinates FROM Observing Monument 7401 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7401-RM 1	12.896	0.990	6.411
--	7401-RM 2	-2.764	7.884	-11.839
--	7401-RM 3	-10.447	-7.975	5.984
--	OBSERATORIO TOLOLO	-514.515	-407.875	199.969
--	7401 CAL PIER 1	93.795	17.468	20.304
--	7401 CAL PIER 2	-180.550	14.134	-141.261
--	7401 CAL PIER 3	-19.794	-183.146	263.112

Monument Number: 7401
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7401
 Systems Using Monument: TLRS

Differential Coordinates FROM Observing Monument 7401 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

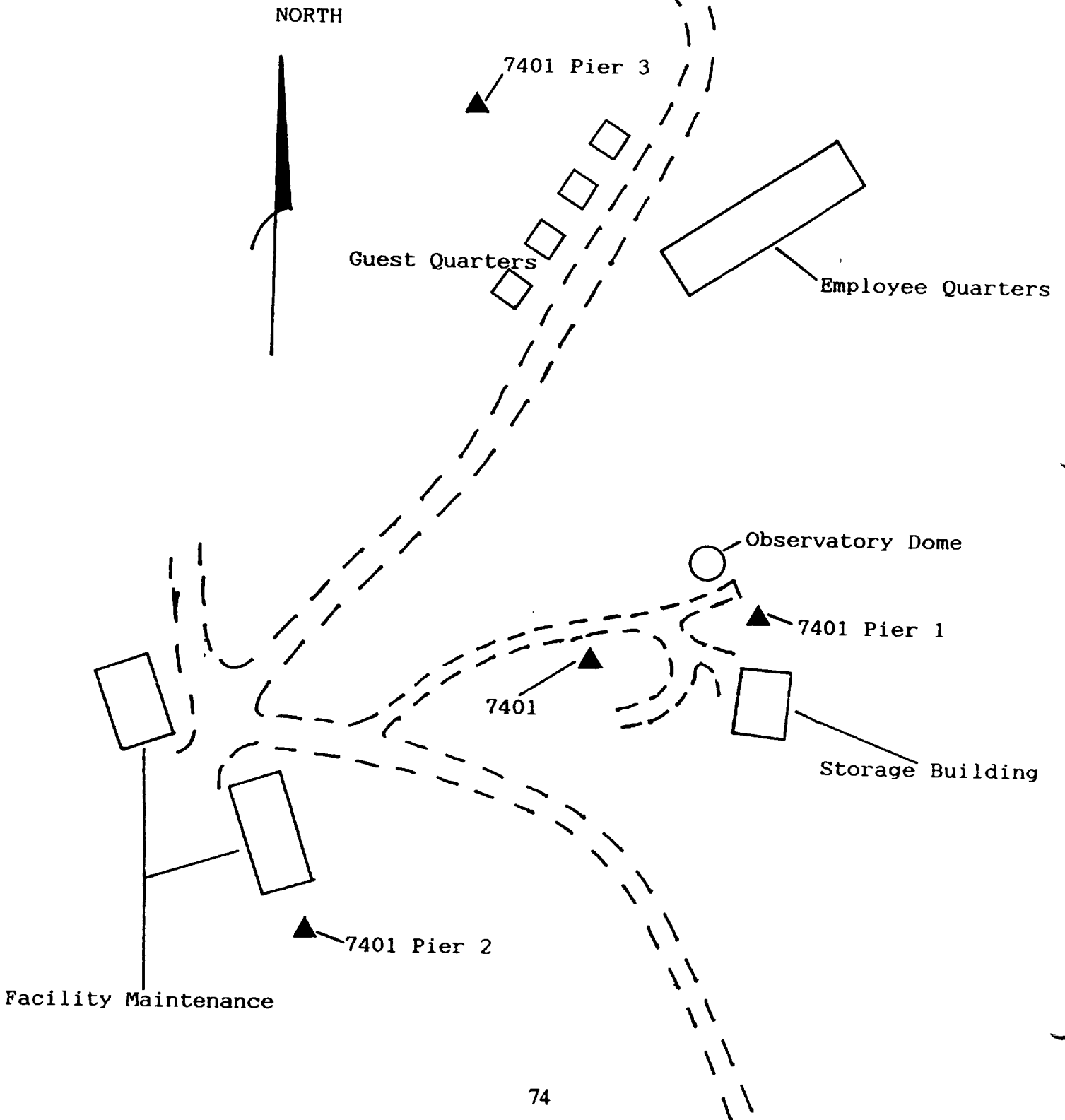
Mon. Number	Monument Inscription	North	East	Up
--	7401-RM 1	7.204	12.505	-0.363
--	7401-RM 2	-14.434	-0.017	-1.273
--	7401-RM 3	7.232	-12.488	0.533
--	7401 CAL PIER 1	24.767	94.322	2.205

SITE SKETCH

Site Number: 892

Current Site Name: CERRO TOLOLO

Location: CERRO TOLOLO, CHILE



PREVIOUS OCCUPATION INFORMATION

Site Number: 892

Current Site Name: CERRO TOLOLO

Location: CERRO TOLOLO, CHILE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7401	TLRS-1	74011101	14-MAY-84	30-JUN-84
7401	TLRS-3	74011302	08-JAN-90	02-JUN-90
7401	TLRS-3	74011303	11-NOV-90	13-MAR-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 662

Current Site Name: CHANGCHUN

Other Site Name:

Location: CHANGCHUN, PEOPLES REPUBLIC OF CHINA

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 662

Current Site Name: CHANGCHUN

Location: CHANGCHUN, PEOPLES REPUBLIC OF CHINA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7237	CHALAS	72371901	01-JAN-91	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 871

Current Site Name: CHICHIJIMA

Other Site Name: TITI SIMA

Location: NTT YOAKEYAMA RELAY STATION, TITI SIMA

Geographic Region: NANPO ISLANDS

Tectonic Plate: PHILIPPINE SEA

Primary Scientific Purposes: MEASUREMENT OF THE THREE DIMENSIONAL GEODETIC POSITION OF THE ISLAND BY THE SIMULTANEOUS LASER OBSERVATION WITH THE SIMOSATO HYDROGRAPHIC OBSERVATORY (SHO). THE OBSERVATION WAS CARRIED OUT FROM JANUARY TO MAY 1988, BY USING THE HYDROGRAPHIC DEPARTMENT TRANSPORTABLE LASER RANGING STATION (HTLRS).

MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION.

Site Description: TITI SIMA OF THE OGASAWARA (BONIN) ISLANDS LIES ABOUT 980 KM SOUTH OF TOKYO. THE NTT RELAY STATION IS LOCATED ABOUT 2 KM EAST OF THE FUTAMI HARBOR. A STONE MARKER IS ESTABLISHED IN THE NTT RELAY STATION.

A METAL MARK WAS PLACED IN THE CONCRETE BASEMENT FOR THE TRANSPORTABLE ANTENNA OF THE GEOGRAPHICAL SURVEY INSTITUTE (GSI). THE SITE WAS OCCUPIED BY THE ANTENNA IN 1987 AND 1989. ALTHOUGH THE ANTENNA HAS BEEN REMOVED, REOCCUPATION IS ALWAYS POSSIBLE. A GPS CIGNET SITE IS OPERATING NEXT TO THIS SITE.

Site Topo Map: CHICHIJIMA (NO. NG-54-8-14-1.2) OF THE 1:25,000 TOPO MAP SERIES OF THE GEOGRAPHICAL SURVEY INSTITUTE (GSI) OF JAPAN.

GEOLOGICAL INFORMATION

Geological Province: OGASAWARA RIDGE

Local Geology: PALAEOGENE ANDESITE AND TUFF BRECCIA

Comments: THIS IS AN SLR/VLBI COLOCATION SITE

MONUMENT INFORMATION

Site Number: 871
Current Site Name: CHICHIJIMA
Location: OGASAWARA VILLAGE, JAPAN
Number of Observing Monuments: 2
Surveyed into National Network? YES

Monument Number: 7844
Type of Monument: FIDUCIAL STONE MARKER
Monument Inscription: NONE
Systems Using Monument: HTLRS

Latitude: N 27 05' 20.065"
Longitude: E 142 12' 49.139"
Elevation: 211.08 m
Height Above Ellipsoid: NOT AVAILABLE
Survey Source/Date: HYDROGRAPHIC DEPARTMENT / FEB 1988
Datum/Ellipsoid: LOCAL / BESSEL

Comments: NONE

Differential Coordinates FROM Observing Monument 7844 TO
Reference Monuments and Other Observing Monuments

Data Source: DATA REPORT OF HYDROGRAPHIC OBSERVATIONS, SERIES OF
SATELLITE GEODESY, NO. 4, 1991

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	YOAKEYAMA	2064.058	1644.702	1037.647

MONUMENT INFORMATION (Continued)

Site Number: 871
 Current Site Name: CHICHIJIMA
 Location: OGASAWARA VILLAGE, JAPAN

Monument Number: 7316
 Type of Monument: INTERSECTION OF AZ/EL AXES
 Monument Inscription: NONE
 Systems Using Monument: 5-METER TRANSPORTABLE ANTENNA

Latitude: N 27 05' 41.522"
 Longitude: E 142 11' 28.995"
 Elevation: 48.92 meters
 Height Above Ellipsoid: NOT AVAILABLE
 Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/ AUG-87
 Datum/Ellipsoid: TOKYO

Comments: A = 6377397.155 F = 1/299.152813

Differential Coordinates FROM Observing Monument 7316 TO
 Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

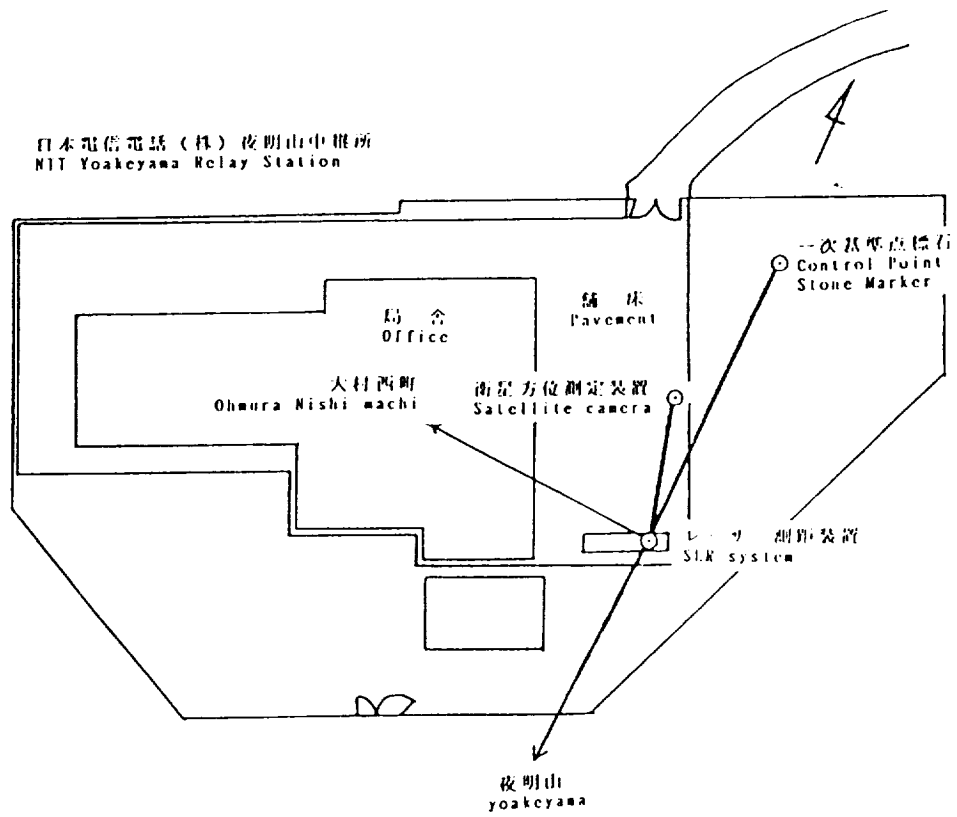
Mon. Number	Monument Inscription	X	Y	Z
--	VLBI MARKER	2.828	-2.194	-1.831

SITE SKETCH

Site Number: 871

Current Site Name: CHICHIJIMA

Location: OGASAWARA VILLAGE, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 871
Current Site Name: CHICHIJIMA
Location: OGASAWARA VILLAGE, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7844	HTLRS-1	78441701	01-JAN-88	13-MAR-88

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7844	JMV	78444401	18-NOV-87	25-NOV-87
7844	JMV	78444402	28-NOV-89	29-NOV-89

-- SITE INFORMATION --

Site Number: 116

Current Site Name: CHILBOLTON

Other Site Name:

Location: CHILBOLTON, GREAT BRITAIN

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DEVELOPMENT OF VLBI TECHNIQUES.

Site Description: THE STATION IS LOCATED IN CENTRAL SOUTHERN ENGLAND AT THE CHILBOLTON OBSERVATORY. A 25-METER ANTENNA WAS USED IN A PRELIMINARY MERIT CAMPAIGN IN 1980. THE ANTENNA IS NO LONGER AVAILABLE FOR VLBI USE.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: UNKNOWN

Local Geology: NOT AVAILABLE

Comments: NONE

MONUMENT INFORMATION

Site Number: 116
Current Site Name: CHILBOLTON
Location: CHILBOLTON, GREAT BRITAIN
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7215
Type of Monument: REFERENCE POINT ON ANTENNA
Monument Inscription: NONE
Systems Using Monument: 25-METER RADIO TELESCOPE

Latitude: N 51 08' 40.0594''
Longitude: W 01 26' 13.1012''
Elevation: 100.020 meters
Height Above Ellipsoid: 100.370 meters
Survey Source/Date: GEODETIC SURVEY OF GREAT BRITAIN/26-JUN-85
Datum/Ellipsoid: OSGB 1970/AIREY SPHEROID

Comments: THE REFERENCE POINT IS THE INTERSECTION OF THE AZIMUTH AXES
AND THE HORIZONTAL PLANE ON WHICH THE ALTITUDE AXES ROTATES.

Differential Coordinates FROM Observing Monument 7215 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

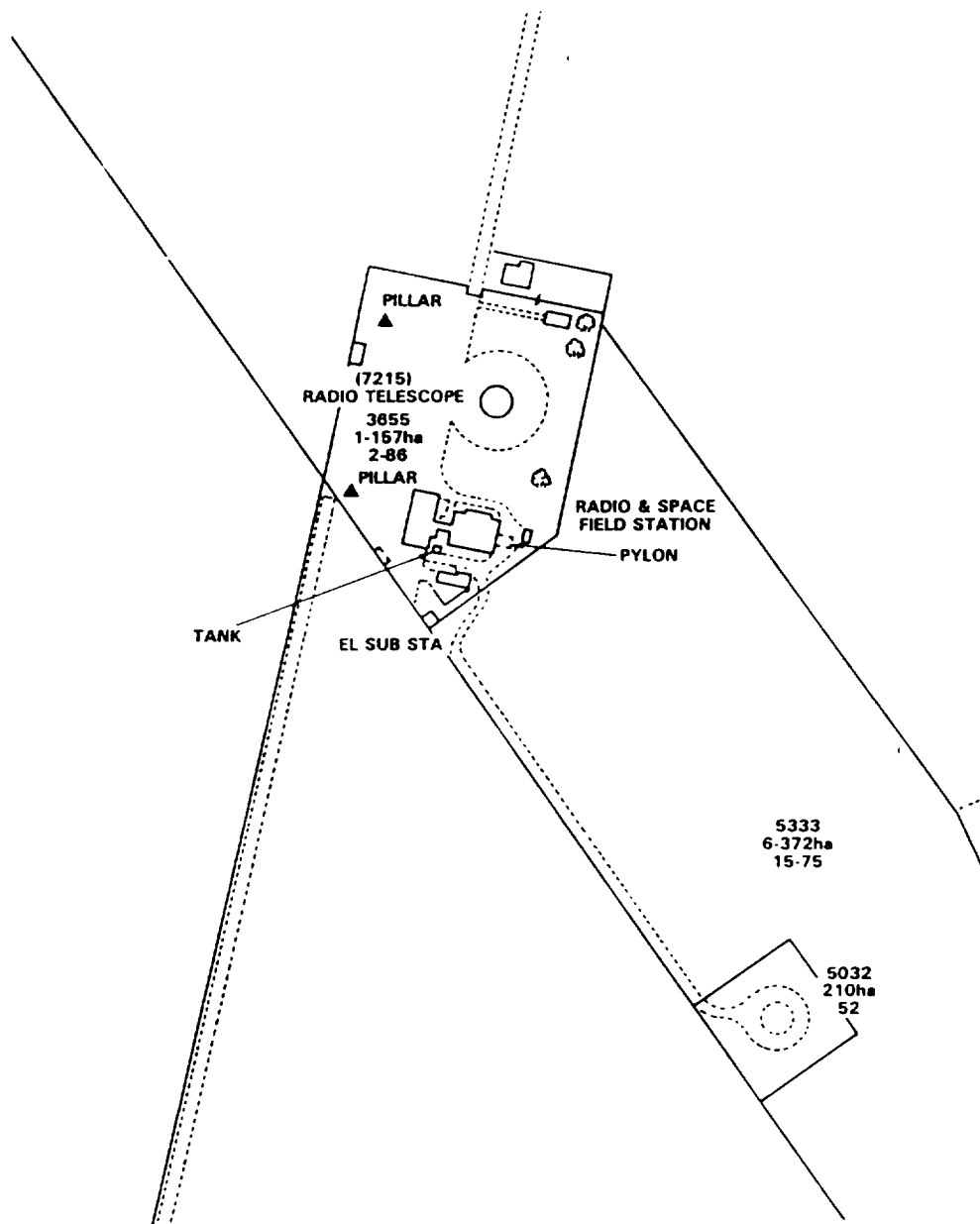
-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 116

Current Site Name: CHILBOLTON

Location: CHILBOLTON, GREAT BRITAIN



PREVIOUS OCCUPATION INFORMATION

Site Number: 116

Current Site Name: CHILBOLTON

Location: CHILBOLTON, GREAT BRITAIN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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7215	26-METER	72156301	16-OCT-80	---
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-- SITE INFORMATION --

Site Number: 205

Current Site Name: DEADMAN LAKE

Other Site Name:

Location: DEADMAN LAKE, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED ON THE TWENTYNINE PALMS TRAINING CENTER OF THE U.S. MARINE CORPS. THE SITE CONSIST OF A CLEARED AREA WITH A MONUMENT COMPATIBLE FOR OCCUPATION BY MOBILE VLBI SYSTEMS.

Site Topo Map: GOAT MOUNTAIN, CALIFORNIA. N3415-W11615/7.5, 1955. STATE OF CALIFORNIA. AVAILABLE THRU THE U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: MOJAVE DESERT

Local Geology: PLEISTOCENE NONMARINE DEPOSITS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 205
 Current Site Name: DEADMAN LAKE
 Location: DEADMAN LAKE, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7267
 Type of Monument: USC & GS STATION DISK
 Monument Inscription: SAND HILL 1939-1981
 Systems Using Monument: MOBILE VLBI

Latitude: N 34 15' 17.96707''
 Longitude: W 116 16' 44.28795''
 Elevation:
 Height Above Ellipsoid: 849.801 meters
 Survey Source/Date: NGS GPS RESULTS/06-MAY-87
 Datum/Ellipsoid: WGS-84

Comments: NONE

Differential Coordinates FROM Observing Monument 7267 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	SAND HILL NO. 3	2.028	-6.366	-7.212
--	SAND HILL NO. 4	-6.847	3.743	0.610
--	SAND HILL NO. 5	16.774	-32.636	-33.955

---- Differential Coordinates ----

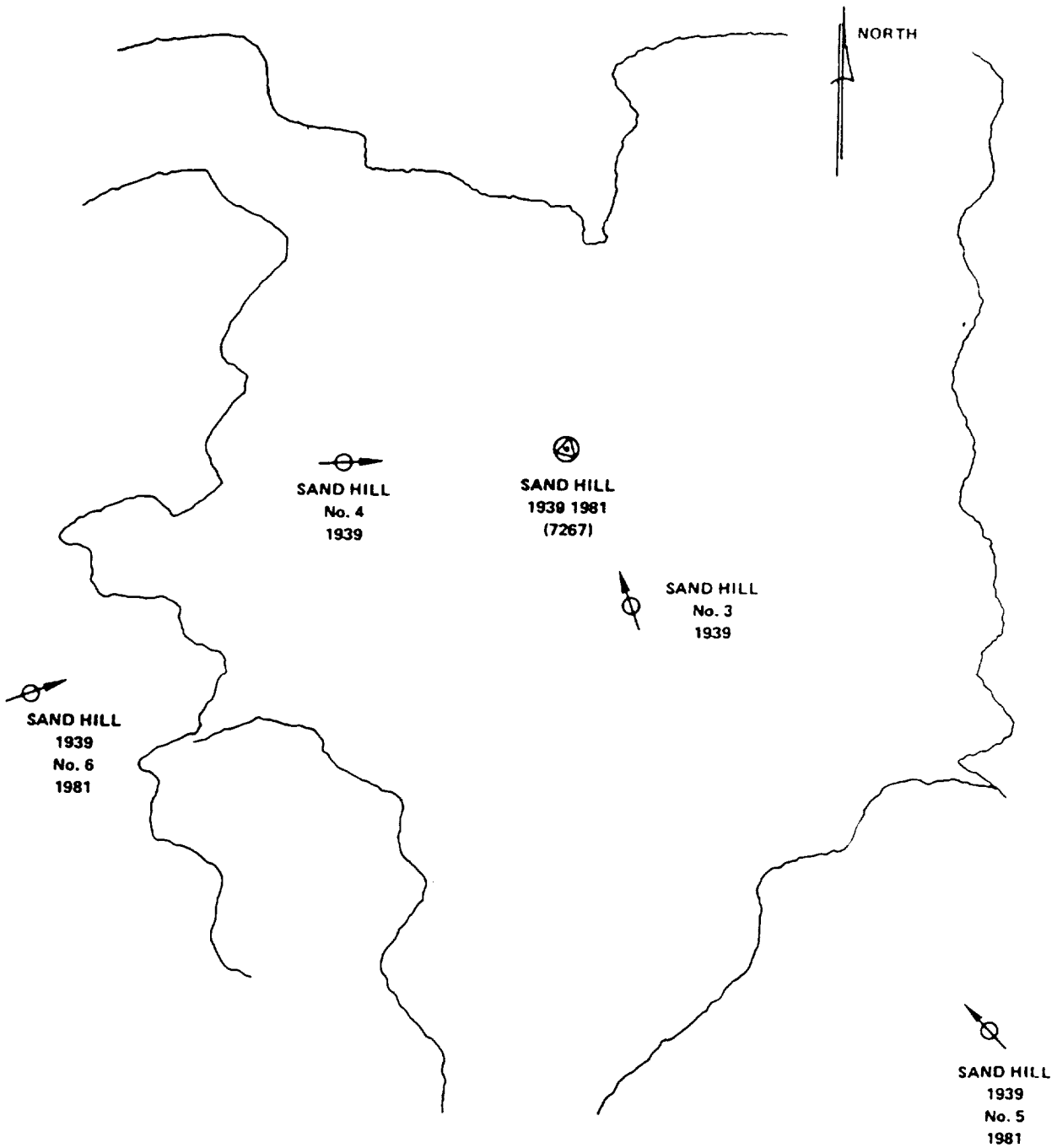
Mon. Number	Monument Inscription	North	East	Up
--	SAND HILL NO. 3	-8.669	4.637	-0.084
--	SAND HILL NO. 4	0.687	-7.797	0.075
--	SAND HILL NO. 5	-40.356	29.490	-1.064

SITE SKETCH

Site Number: 205

Current Site Name: DEADMAN LAKE

Location: DEADMAN LAKE, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 205

Current Site Name: DEADMAN LAKE

Location: DEADMAN LAKE, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7267	MV-3	72675301	31-AUG-83	01-SEP-83
7267	MV-3	72675302	29-FEB-84	01-MAR-84
7267	MV-2	72675203	09-JAN-85	10-JAN-85
7267	MV-3	72675304	28-MAR-87	29-MAR-87
7267	MV-3	72675305	11-DEC-87	12-DEC-87
7267	MV-3	72675306	01-FEB-88	03-FEB-88

-- SITE INFORMATION --

Site Number: 855

Current Site Name: DIONYSOS

Other Site Name: ATHENS

Location: NATIONAL TECHNICAL UNIV., ATHENS, GREECE

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION, TECHNIQUE DEVELOPMENT, AND THE KINEMATICS OF THE EAST AND CENTRAL MEDITERRANEAN.

Site Description: THE FIXED LASER STATION IS LOCATED NEAR DIONYSOS, GREECE. LASER RANGING BEGAN AT THIS SITE IN 1968 AND CONTINUED THROUGH 1976. A QUANTEL LASER WAS ACQUIRED IN 1982 AND THE SYSTEM UNDERWENT MAJOR UPGRADES. THE NEW LASER BECAME OPERATIONAL IN 1984. A MOBILE LASER PAD IS LOCATED ADJACENT TO THE BAKER NUNN CAMERA AND THE FIXED STATION. THE PAD IS COMPATIBLE FOR OCCUPATIONS BY MTLRS-1 OR MTLRS-2.

Site Topo Map: "KIFISIA", SCALE 1:50,000; AVAILABLE FROM HELLENIC MILITARY GEOGRAPHIC SERVICE, P. ATROS, ATHENS. TEL: 0030-1-884-2811.

GEOLOGICAL INFORMATION

Geological Province: UNKNOWN

Local Geology: MARBLES AND CRYSTALLINE LIMESTONES (SCREES) OVERLYING METAMORPHIC BASEMENT ROCK.

Comments: NONE

MONUMENT INFORMATION

Site Number: 855
 Current Site Name: DIONYSOS
 Location: NATIONAL TECHNICAL UNIV., ATHENS, GREECE
 Number of Observing Monuments: 2
 Surveyed into National Network? NO

Monument Number: 7515
 Type of Monument: STANDARD WEGENER DISK; POINT "A" ON STANDARD WEGENER PAD
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASER RANGING SYSTEM

Latitude: N 38 04' 42.821''
 Longitude: E 23 55' 56.316''
 Elevation:
 Height Above Ellipsoid: 507.610 meters
 Survey Source/Date: NATIONAL TECHNICAL UNIVERSITY AT ATHENS/01-APR-86
 Datum/Ellipsoid: WGS-72

Comments: THE WGS 72 COORDINATES WERE DERIVED FROM DOPPLER OBSERVATIONS.

Differential Coordinates FROM Observing Monument 7515 TO Reference Monuments and Other Observing Monuments

Data Source: NTUA

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	CENTRAL PILLAR	-3.90	5.46	6.75

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	CENTRAL PILLAR	-6.15	-6.57	-3.10

MONUMENT INFORMATION (Continued)

Site Number: 855
 Current Site Name: DIONYSOS
 Location: NATIONAL TECHNICAL UNIV., ATHENS, GREECE

Monument Number: 7940
 Type of Monument: INTERSECTION OF LASER AXES
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER

Latitude: N 38 04' 42.159''
 Longitude: E 23 55' 57.385''
 Elevation: 509.020 meters
 Height Above Ellipsoid:
 Survey Source/Date: NATIONAL TECHNICAL UNIVERSITY IN ATHENS/01-JUN-83
 Datum/Ellipsoid: WGS-72

Comments: WGS 72 COORDINATES ARE DERIVED FROM DOPPLER OBSERVATIONS.

Differential Coordinates FROM Observing Monument 7940 TO
 Reference Monuments and Other Observing Monuments

Data Source: NTUA

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	CENTRAL PILLAR	-5.85	-23.90	21.94

---- Differential Coordinates ----

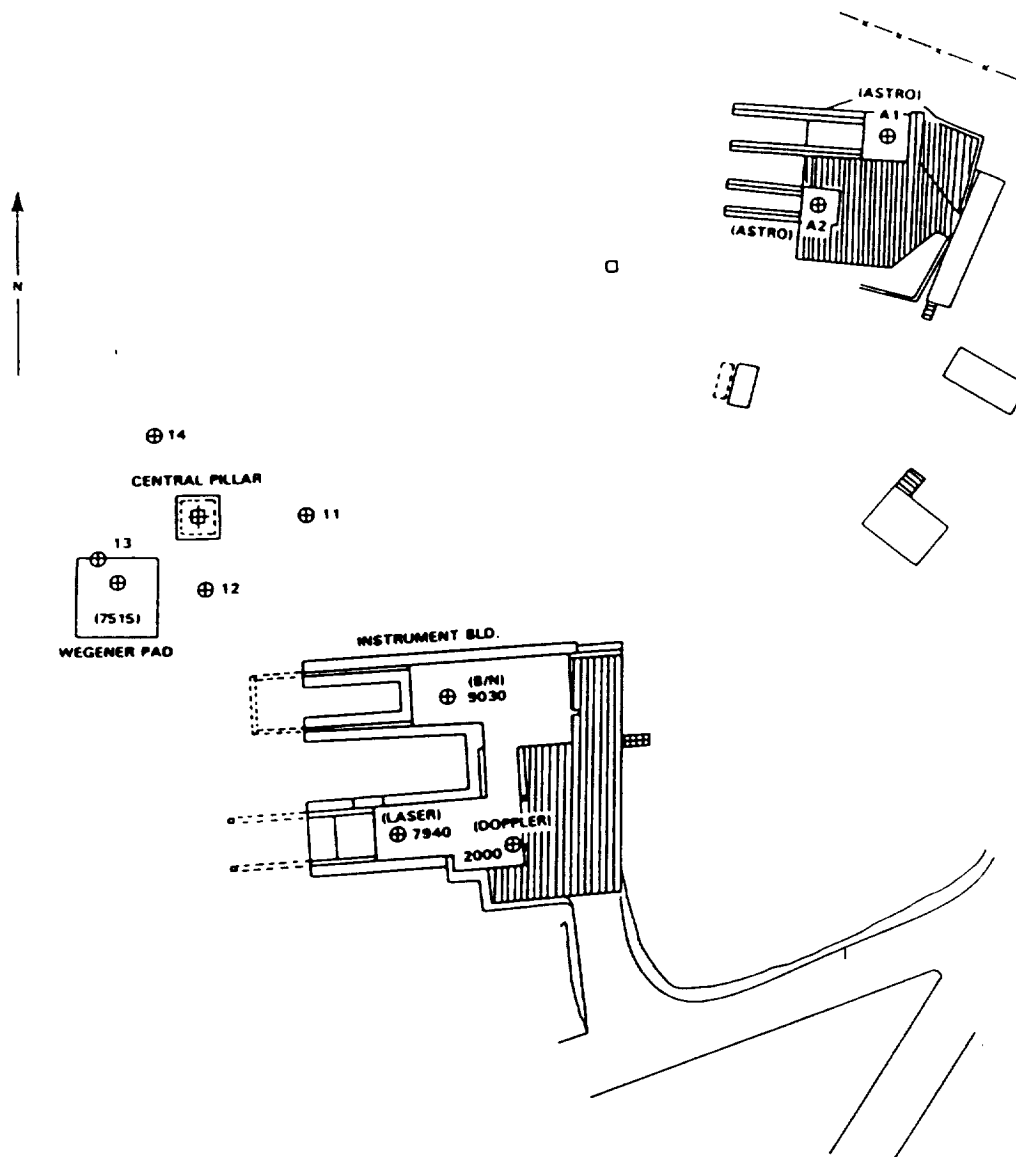
Mon. Number	Monument Inscription	North	East	Up
--	CENTRAL PILLAR	-26.55	19.47	-1.69

SITE SKETCH

Site Number: 855

Current Site Name: DIONYSOS

Location: NATIONAL TECHNICAL UNIV., ATHENS, GREECE



PREVIOUS OCCUPATION INFORMATION

Site Number: 855

Current Site Name: DIONYSOS

Location: NATIONAL TECHNICAL UNIV., ATHENS, GREECE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7515	MTLRS-1	75151501	27-JUL-86	30-AUG-86
7515	MTLRS-1	75151502	20-JUL-87	18-OCT-87
7515	MTLRS-1	75151503	15-DEC-89	29-JAN-90
7515	MTLRS-2	75151604	20-MAR-92	23-AUG-92
7940	GRELAS	79404701	01-MAY-84	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 680

Current Site Name: DIYARBAKIR

Other Site Name:

Location: DIYARBAKIR, TURKEY

Geographic Region: MEDITERRANEAN

Tectonic Plate: ARABIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND THE KINEMATICS OF THE EAST AND CENTRAL MEDITERRANEAN.

Site Description: THIS WEGENER-MEDLAS SITE IS THE EASTERN MOST SITE IN TURKEY. IT IS THE ONLY SITE ASSUMED TO BE ON THE ARABIAN TECTONIC PLATE. THE SITE HAS RECENTLY BEEN VANDALIZED WHERE ALMOST ALL GEODETIC MARKS AT THE SITE WERE REMOVED. IFAG IS WORKING WITH THE TURKS TO IMPLEMENT A NEW SITE IN A MORE SECURE MILITARY AREA AND HOPE TO MAKE A REASONABLE TIE TO THE NEW SITE.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 680
Current Site Name: DIYARBAKIR
Location: DIYARBAKIR, TURKEY
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7575
Type of Monument:
Monument Inscription: NONE
Systems Using Monument: MOBILE LASER RANGING SYSTEM

Latitude: N 37 55' 12.72''
Longitude: E 40 11' 41.72''
Elevation:
Height Above Ellipsoid: 725.068 meters
Survey Source/Date: COORDINATES PROVIDED BY DR. DANNY VAN LOON/01-AUG-87
Datum/Ellipsoid:

Comments: **THIS MONUMENT WAS REPORTED DESTROYED IN 1989**

Differential Coordinates FROM Observing Monument 7575 TO
Reference Monuments and Other Observing Monuments

Data Source: NTUA SURVEY

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
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-- Differential Coordinate Information Not Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 680

Current Site Name: DIYARBAKIR

Location: DIYARBAKIR, TURKEY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7575	MTLRS-1	75751501	23-MAR-87	15-MAY-87
7575	MTLRS-1	75751502	11-SEP-89	26-SEP-89

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 628

Current Site Name: DUNAOVCY

Other Site Name:

Location: DUNAOVCY, UKRAINE

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1866	DUNLAS	18665201	01-OCT-90	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 96

Current Site Name: EASTER ISLAND

Other Site Name: ISLA DE PASCUA

Location: EASTER ISLAND, CHILE

Geographic Region: PACIFIC

Tectonic Plate: NAZCA

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE MOTION, POLAR MOTION, AND EARTH ROTATION.

Site Description: THE SITE IS LOCATED ON THE SOUTHWEST PART OF THE SOUTH PACIFIC CHILEAN ISLAND, EASTER ISLAND. THE FACILITY IS LOCATED INLAND ABOUT 2.5 MILES NORTHEAST OF MATAVERI AIRPORT. A RAISED PIER WAS CONSTRUCTED AT THIS SITE TO ACCOMMODATE THE UPGRADED TLRS-2. THE SYSTEM IS HOUSED IN A BUILDING SPECIFICALLY DESIGNED FOR TLRS-2 OPERATIONS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: EAST SOUTH PACIFIC ISLAND, ABOUT 500 KILOMETERS EAST OF THE CREST OF THE EAST PACIFIC RISE.

Local Geology: THE ISLAND IS THE PRODUCT OF THREE PRINCIPLE VOLCANIC STRUCTURES.

Comments: SOME EVIDENCE SUGGESTS THAT THE ISLAND IS ON A MICROPLATE AT THE EDGE OF THE NAZCA PLATE.

MONUMENT INFORMATION

Site Number: 96
 Current Site Name: EASTER ISLAND
 Location: EASTER ISLAND, CHILE
 Number of Observing Monuments: 2
 Surveyed into National Network? NO

Monument Number: 7061
 Type of Monument: NASA-GSFC STATION DISK
 Monument Inscription: 7061-1983
 Systems Using Monument: TLRs-2

Latitude: S 27 08' 52.15341''
 Longitude: W 109 23' 0.82594''
 Elevation: 119.720 meters
 Height Above Ellipsoid: 114.968 meters
 Survey Source/Date: BFEC ADJUSTMENT 89-03-14/14-MAR-89
 Datum/Ellipsoid: WGS-84 (TRANSFORMED)

Comments: THIS MONUMENT WAS **DESTROYED** DURING THE CONSTRUCTION OF THE TLRs-2 MONUMENT AND SHELTER. 7097 REPLACES THIS MONUMENT.

Differential Coordinates FROM Observing Monument 7061 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7097	7097-1986	-0.4240	-1.2038	-0.6497
--	7061 RM-1	-13.2578	-9.7189	23.6869
--	7061 RM-2	27.5191	-6.8754	-4.9437
--	7061 RM-3	-14.0829	17.1072	-18.4359

Mon. Number	Monument Inscription	North	East	Up
7097	7097-1986	0.0042	-0.0005	1.4321
--	7061 RM-1	27.2685	-9.2804	1.2653
--	7061 RM-2	-5.6075	28.2411	-0.1008
--	7061 RM-3	-21.6353	-18.9626	-1.7879

MONUMENT INFORMATION (Continued)

Site Number: 96
 Current Site Name: EASTER ISLAND
 Location: EASTER ISLAND, CHILE

Monument Number: 7097
 Type of Monument: NASA BRASS DISK
 Monument Inscription: 7097-1986
 Systems Using Monument: TLRS-2

Latitude: S 27 08' 52.15328''
 Longitude: W 109 23' 0.82595''
 Elevation:
 Height Above Ellipsoid: 116.400 meters
 Survey Source/Date: BFEC ADJUSTMENT 89-03-14/14-MAR-89
 Datum/Ellipsoid: WGS 84 (TRANSFORMED)

Comments: THIS MONUMENT REPLACES MONUMENT 7061. THIS MONUMENT IS 4' X 4' TO ACCOMMODATE THE NEW CONFIGURATION OF TLRS-2.

Differential Coordinates FROM Observing Monument 7097 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC ADJUSTMENT 89-03-14

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7061 RM-1 1983	-12.8338	-8.5152	24.3366
--	7061 RM-2 1983	27.9432	-5.6717	-4.2940
--	7061 RM-3 1983	-13.6588	18.3110	-17.7861
--	7097 RM-4 1986	-17.2077	15.8990	-12.0355
--	7097 CAL PIER 1	72.3522	-62.5235	59.0245
--	7097 CAL PIER 2	-352.8236	232.8833	-212.8993
--	7097 CAL PIER 3	-120.25374	-199.8603	364.7567
--	STATION 30730	-3677.2393	1938.0357	-1021.5785

Monument Number: 7097
 Type of Monument: NASA BRASS DISK
 Monument Inscription: 7097-1986
 Systems Using Monument: TLRS-2

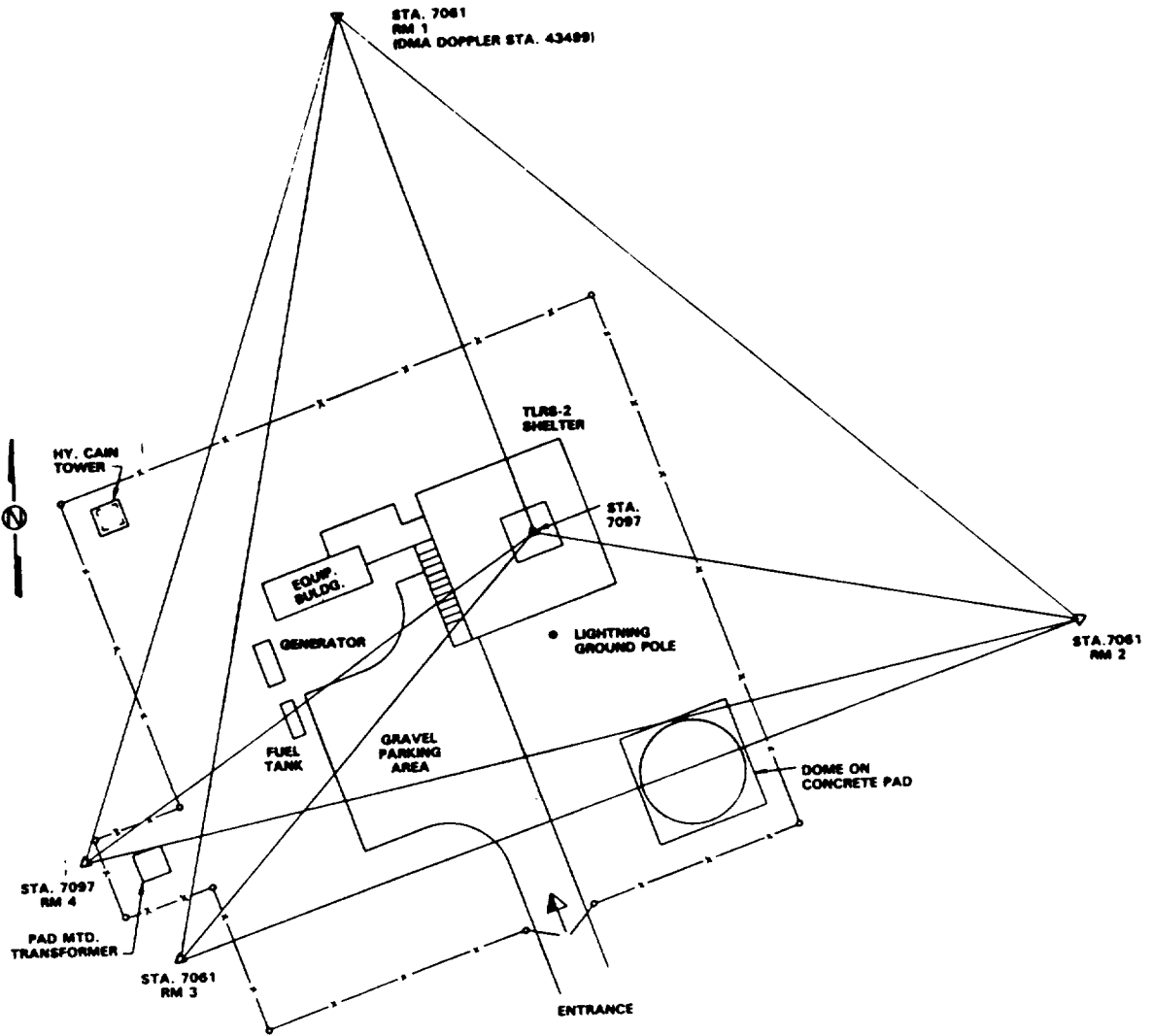
Differential Coordinates FROM Observing Monument 7097 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	7061 RM-1 1983	27.2643	-9.2799	-0.1669
--	7061 RM-2 1983	-5.6117	28.2415	-1.5329
--	7061 RM-3 1983	-21.6395	-18.9622	-3.2200
--	7097 RM-4 1986	-14.9467	-21.5093	-2.7712

SITE SKETCH

Site Number: 96
Current Site Name: EASTER ISLAND
Location: EASTER ISLAND, CHILE



PREVIOUS OCCUPATION INFORMATION

Site Number: 96

Current Site Name: EASTER ISLAND

Location: EASTER ISLAND, CHILE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7061	TLRS-2	70611201	10-JAN-83	02-AUG-83
7061	TLRS-2	70611202	19-MAR-84	12-DEC-84
7097	TLRS-2	70971201	11-NOV-87	29-FEB-88
7097	TLRS-2	70971202	22-SEP-88	31-MAR-89
7097	TLRS-2	70971203	06-OCT-89	25-FEB-90
7097	TLRS-2	70971204	05-SEP-90	09-MAR-91
7097	TLRS-2	70971205	18-SEP-91	09-MAR-92
7097	TLRS-2	70971206	10-MAR-92	18-MAR-92
7097	TLRS-2	70971207	13-AUG-92	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 143

Current Site Name: EFFELSBURG
Other Site Name: BONN
Location: BONN, GERMANY
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE MOTION.

Site Description: THE STATION IS LOCATED 40 KM FROM BONN AT THE OBSERVATORY SITE OF THE MAX-PLANCK-INSTITUTE FOR RADIO ASTRONOMY IN EFFELSBURG, GERMANY. ONE FIXED 100-METER TELESCOPE WAS USED FOR VLBI MEASUREMENTS.

Site Topo Map: TOPOGRAPHIC MAP 1:50,000 NO. L5506 LANDESVERMESSUNGSAMT NRW

GEOLOGICAL INFORMATION

Geological Province: RHEINISCHES SCHIEFERGEBIRGE

Local Geology: RHENANIAN SLATE. DEVONIAN, SILURIAN, CAMBRIAN AGES. SITE IS LOCATED ON VALLEY FILL SEDIMENTS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 143
 Current Site Name: EFFELSBERG
 Location: BONN, GERMANY
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7203
 Type of Monument: MEASUREMENT POINT ON THE RADIO TELESCOPE
 Monument Inscription: NONE
 Systems Using Monument: 100-METER RADIO TELESCOPE

Latitude: N 50 31' 32.342"
 Longitude: E 06 53' 05.286"
 Elevation: 369.082 meters
 Height Above Ellipsoid: 370.182 meters
 Survey Source/Date: GEODETIC INSTITUTE OF BONN/01-APR-86
 Datum/Ellipsoid: EUROPEAN DATUM 50 (GEOID HEIGHT OF 7203 = +1.1M)

Comments: THE MEASUREMENT POINT IS THE INTERSECTION OF THE ELEVATION AXES AND THE VERTICAL AXES.

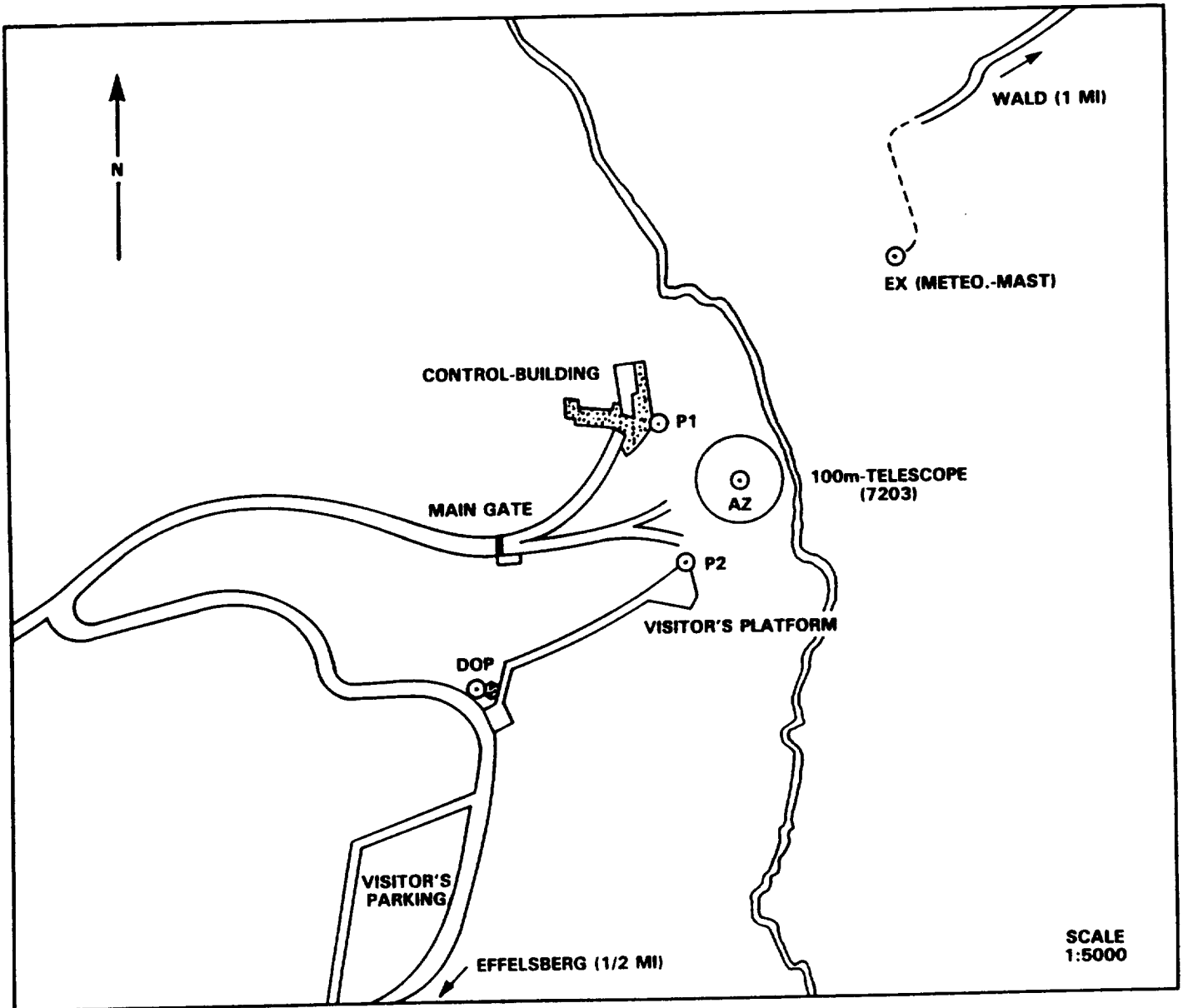
Differential Coordinates FROM Observing Monument 7203 TO
 Reference Monuments and Other Observing Monuments

Data Source:

--- Differential Coordinates ----				
Mon. Number	Monument Inscription	X	Y	Z
--	BESUCHER PAVILLON (DOPPLER 1)	-147.93	179.62	100.93

SITE SKETCH

Site Number: 143
Current Site Name: EFFELSBERG
Location: BONN, GERMANY



PREVIOUS OCCUPATION INFORMATION

Site Number: 143

Current Site Name: EFFELSBURG

Location: BONN, GERMANY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7203	100-METER	72037901	25-NOV-79	06-MAY-83

-- SITE INFORMATION --

Site Number: 26

Current Site Name: ELY

Other Site Name: DUCKWATER

Location: ELY, NV

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE STABILITY, INTERNAL PLATE DEFORMATION, AND REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED AT THE ELY AIRPORT ABOUT FOUR MILES NORTH-NORTHWEST OF ELY, NEVADA. THE SITE IS ON THE NORTH SIDE OF THE FAA AND NWS BUILDING ADJACENT TO THE TAXIWAY. THE SITE IS COMPATIBLE FOR OCCUPATION BY THE MOBILE VLBI ANTENNAS.

Site Topo Map: MCGILL, NEVADA. N3915-W11445/15, 1958, STATE OF NEVADA. AVAILABLE THROUGH THE U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: BASIN AND RANGE

Local Geology: QUATERNARY ALLUVIUM DEPOSITS

Comments: NONE

MONUMENT INFORMATION

Site Number: 26
 Current Site Name: ELY
 Location: ELY, NV
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7257
 Type of Monument: USC & GS STATION DISK
 Monument Inscription: ELY AIRPORT 1954
 Systems Using Monument: MOBILE VLBI

Latitude: N 39 17' 35.20999''
 Longitude: W 114 50' 34.25423''
 Elevation:
 Height Above Ellipsoid: 1888.809 meters
 Survey Source/Date: NGS GPS RESULTS/01-JUL-87
 Datum/Ellipsoid: WGS 1972

Comments: MARKER WAS OCCUPIED DURING THE APRIL 84 BURST WHEN THE R.M. NO. 2 MARKER WAS NOT FOUND. THE MARKER HAS SINCE BEEN FOUND.

Differential Coordinates FROM Observing Monument 7257 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7286	ELY AIRPORT RM NO. 2 1954	-16.416	9.261	2.199
--	ELY NCMN 1	34.915	31.384	52.205

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7286	ELY AIRPORT RM NO. 2 1954	2.656	-18.788	.226
--	ELY NCMN 1	67.728	18.499	-0.333

MONUMENT INFORMATION (Continued)

Site Number: 26
 Current Site Name: ELY
 Location: ELY, NV

Monument Number: 7286
 Type of Monument: USC & GS STATION DISK
 Monument Inscription: ELY AIRPORT R.M. NO. 2 1954
 Systems Using Monument: MOBILE VLBI

Latitude: N 39 17' 35.29609''
 Longitude: W 114 50' 35.03805''
 Elevation:
 Height Above Ellipsoid: 1889.035 meters
 Survey Source/Date: NGS GPS RESULTS/01-JUL-87
 Datum/Ellipsoid: WGS 1972

Comments: CREW COULD NOT FIND THIS DISK DURING THE FIRST OCCUPATION OF THE SITE. IT WILL BE USED FOR ALL SUBSEQUENT OCCUPATIONS.

Differential Coordinates FROM Observing Monument 7286 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

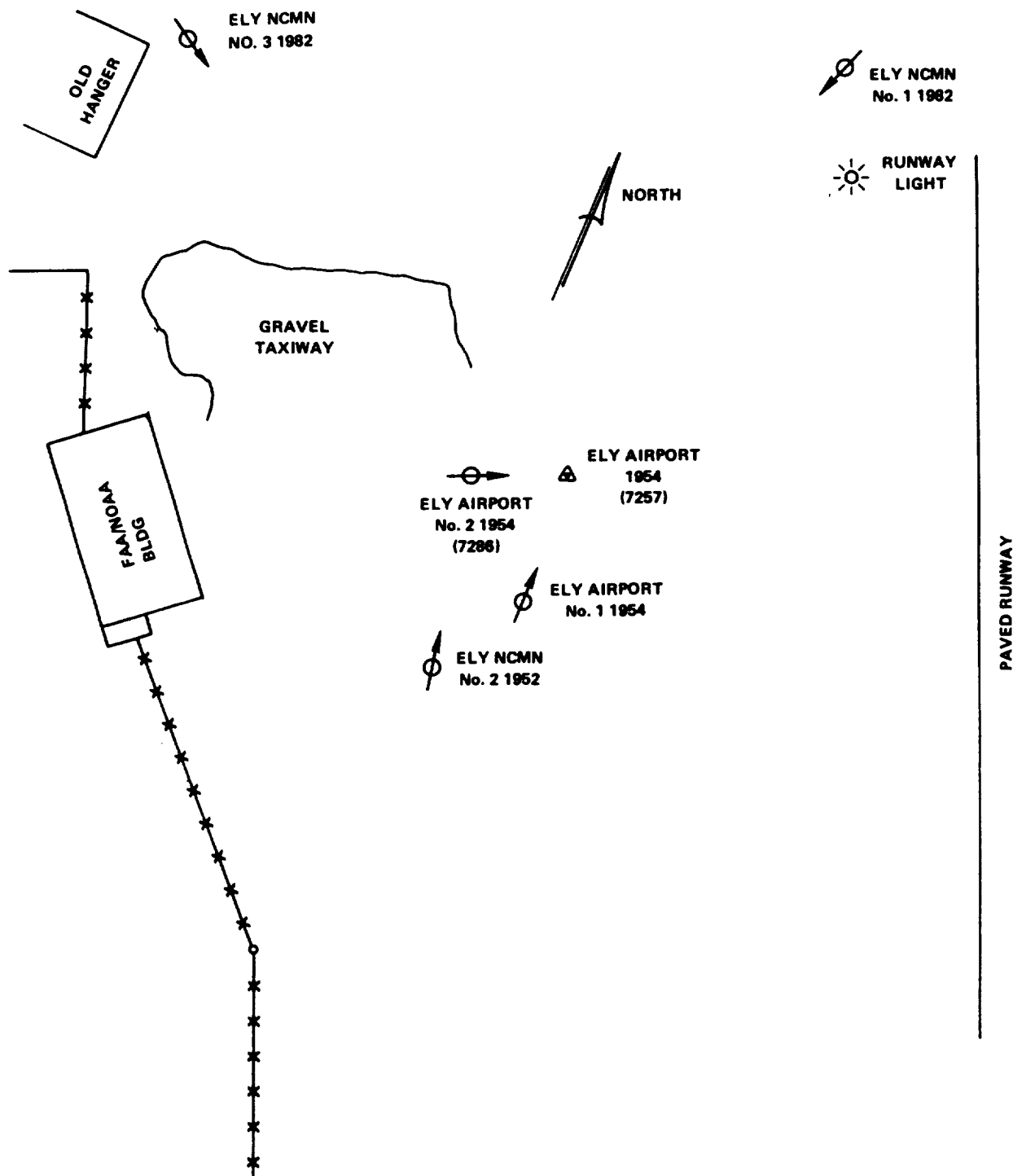
Mon. Number	Monument Inscription	X	Y	Z
7257	ELY AIRPORT 1954	16.416	-9.261	-2.199
--	ELY NCMN 1	51.331	22.123	50.006
--	ELY NCMN 2	-2.261	-20.072	-23.126
--	ELY NCMN 3	-43.017	51.177	34.009

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7257	ELY AIRPORT 1954	-2.656	18.788	-0.226
--	ELY NCMN 1	65.072	37.286	-0.559
--	ELY NCMN 2	-30.034	6.381	0.186
--	ELY NCMN 3	44.285	-60.538	-0.416

SITE SKETCH

Site Number: 26
Current Site Name: ELY
Location: ELY, NV



PREVIOUS OCCUPATION INFORMATION

Site Number: 26
Current Site Name: ELY
Location: ELY, NV

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7257	MV-2	72575201	06-JUN-83	07-JUN-83
7257	MV-3	72575302	21-APR-84	22-APR-84
7286	MV-3	72865301	06-MAY-85	07-MAY-85
7286	MV-2	72865202	02-APR-86	03-APR-86
7286	MV-3	72865303	10-MAY-87	11-MAY-87
7286	MV-2	72865204	28-APR-88	30-APR-88
7286	MV-3	72865305	24-OCT-88	26-OCT-88
7286	MV-2	72865206	29-APR-89	01-MAY-89
7286	MV-2	72865207	14-OCT-90	16-OCT-90

-- SITE INFORMATION --

Site Number: 219

Current Site Name: ENSENADA
Other Site Name: SAN FELIPE
Location: ENSENADA, BAJA, MEXICO
Geographic Region: NORTH AMERICA
Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED IN BAJA CALIFORNIA ON A SMALL KNOLL IN A VINEYARD APPROXIMATELY 53 MILES SOUTH OF THE TOWN OF ENSENADA. A 25-FOOT BY 25-FOOT PAD WITH THE BOLT INSERTS WAS CONSTRUCTED AT THE SITE TO ACCOMMODATE TLRS-3 OR -4 LASER RANGING SYSTEMS. THE SITE IS SOUTH OF THE AQUA BLANCA FAULT.

Site Topo Map: NONE

GEOLOGICAL INFORMATION

Geological Province: BAJA CALIFORNIA

Local Geology: PREBATHOLITHIC: MIXED METAMORPHIC AND PLUTONIC ROCKS. OUTCROP IS PART OF A GRANITIC BATHOLITH.

Comments: NONE

MONUMENT INFORMATION

Site Number: 219
 Current Site Name: ENSENADA
 Location: ENSENADA, BAJA, MEXICO
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7883
 Type of Monument: NASA/GSFC STANDARD BRASS DISK
 Monument Inscription: ENSENADA 7883-1983
 Systems Using Monument: TLRs

Latitude: N 31 15' 23.9299''
 Longitude: W 116 09' 38.6094''
 Elevation:
 Height Above Ellipsoid: 167.649 meters
 Survey Source/Date: BFEC/18-NOV-91
 Datum/Ellipsoid: SLR / a= 6378137 1/f= 298.257

Comments: NONE

Differential Coordinates FROM Observing Monument 7883 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7883 AZIMUTH MARK (1984)	-295.2587	309.6346	254.3663
--	7883 RM 1 (1983)	-20.5382	50.0899	43.7067
--	7883 RM 2 (1983)	30.4875	-41.8741	-25.6051
--	7883 RM 3 (1989)	-49.8683	17.2856	-23.3408
--	7883 CAL PIER A	313.9074	-5.1457	232.0430
--	7883 CAL PIER B	28.7491	-45.5243	-29.5845
--	7883 CAL PIER C	-280.5532	301.3761	250.5330

Monument Number: 7883
 Type of Monument: NASA/GSFC STANDARD BRASS DISK
 Monument Inscription: ENSENADA 7883-1983
 Systems Using Monument: TLRS

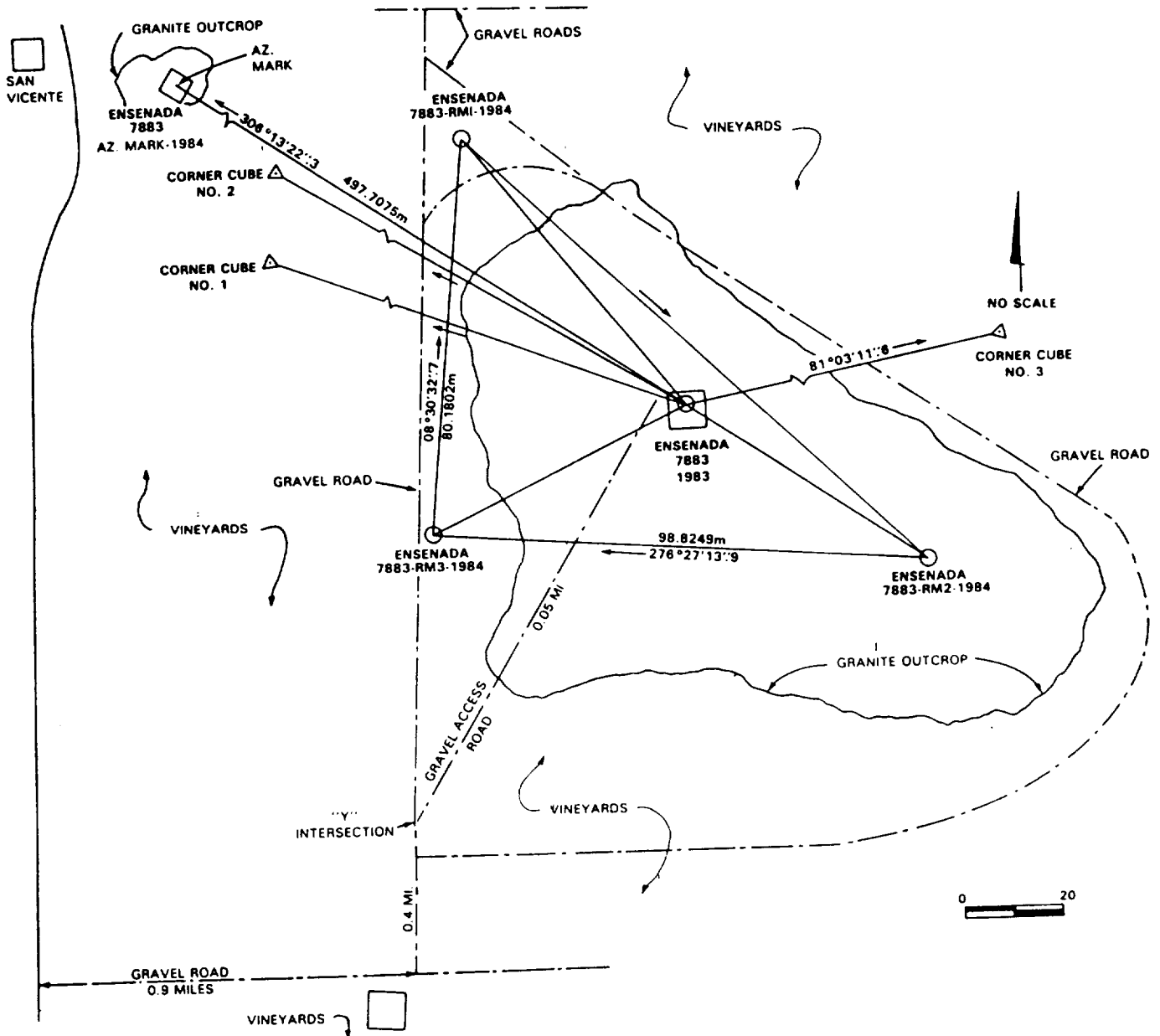
Differential Coordinates FROM Observing Monument 7883 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	7883 RM 1 (1983)	55.9931	-40.5165	-8.0171
--	7883 RM 2 (1983)	-34.4168	45.8250	7.3556
--	7883 RM 3 (1989)	-23.3095	-52.3812	-6.5806
--	7883 CAL PIER B	-39.9162	45.8738	8.7469

SITE SKETCH

Site Number: 219
Current Site Name: ENSENADA
Location: ENSENADA, BAJA, MEXICO



PREVIOUS OCCUPATION INFORMATION

Site Number: 219
Current Site Name: ENSENADA
Location: ENSENADA, BAJA, MEXICO

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7883	TLRS-4	78831401	25-APR-89	13-JUL-89
7883	TLRS-4	78831402	14-JUL-89	06-OCT-89
7883	TLRS-4	78831403	26-OCT-91	12-FEB-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 629

Current Site Name: EVPATORIA

Other Site Name:

Location: EVPATORIA, CIMEA, UKRAINE

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1867	EVPLAS	18675301	01-OCT-90	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 61

**Current Site Name: FAIRBANKS
Other Site Name: GILMORE CREEK
Location: FAIRBANKS, AK
Geographic Region: ALASKA
Tectonic Plate: NORTH AMERICAN**

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND GLOBAL PLATE MOTION.

Site Description: THE SITE IS LOCATED IN CENTRAL ALASKA, 22 KILOMETERS NORTHEAST OF FAIRBANKS, AT THE POINT WHERE ROSE CREEK JOINS GILMORE CREEK. A 26-METER ANTENNA IS USED FOR VLBI MEASUREMENTS.

Site Topo Map: FAIRBANKS, ALASKA (NQ 5,6), 1:1,000,000 SERIES. AVAILABLE THROUGH THE U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: CENTRAL MAINLAND ALASKA

Local Geology: PALEOZOIC METAMORPHIC ROCKS

Comments: NONE

MONUMENT INFORMATION

Site Number: 61
 Current Site Name: FAIRBANKS
 Location: FAIRBANKS, AK

Monument Number: 7225
 Type of Monument: VLBI REFERENCE POINT ON ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 26-METER (85-FOOT) VLBI ANTENNA

Latitude: N 64 58' 42.27927''
 Longitude: W 147 29' 50.95973''
 Elevation:
 Height Above Ellipsoid: 331.679 meters
 Survey Source/Date: BFEC HAVAGO/22-JAN-92
 Datum/Ellipsoid: NAD-83 (GRS80)

Comments: THIS ANTENNA IS ALSO REFERENCED AS GILMORE CREEK.

Differential Coordinates FROM Observing Monument 7225 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
4047	NONE (MK ON ANT BASE)	4.8446	3.0949	-12.3021
--	DOPPLER 30067 1972	-39.7267	21.6599	-20.2772
--	GILCREEK NCMN 1984	74.0049	-112.0378	-11.7599
--	GILCREEK NCMN 2	76.6640	-111.5859	-10.5859
--	GILCREEK NCMN RM 1 1984	-31.6894	-25.8290	-33.5486
--	GILCREEK NCMN RM 2 1984	25.8692	-32.8349	-11.5427
--	GILCREEK NCMN RM 3 1984	0.8982	35.9655	-4.5313
--	NONE "BIG RED" GPS PIER	-74.1409	49.2793	-31.2308
--	ULASKA	-644.308	712.949	-103.129

Monument Number: 7225
 Type of Monument: VLBI REFERENCE POINT ON ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 26-METER (85-FOOT) VLBI ANTENNA

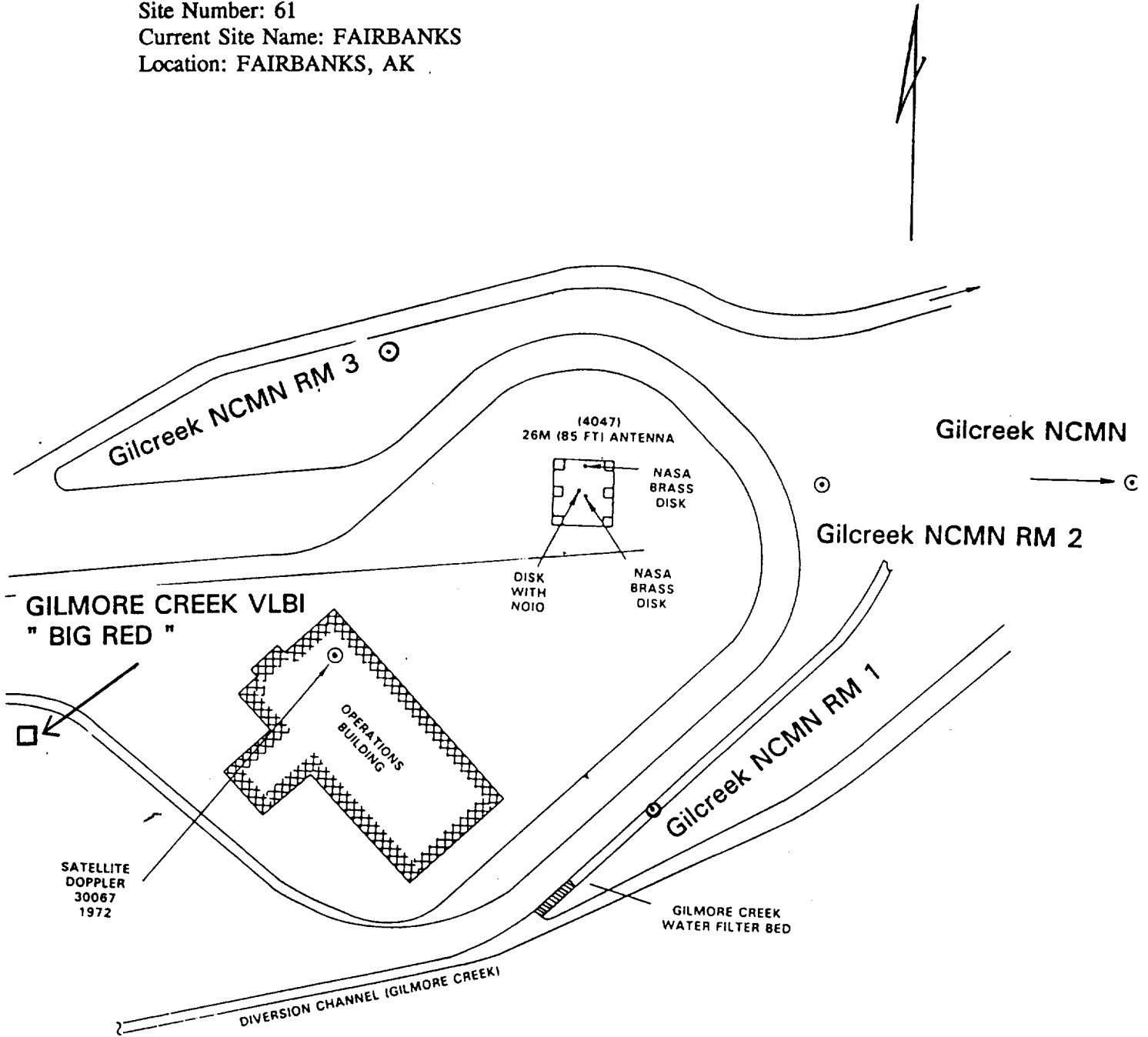
Differential Coordinates FROM Observing Monument 7225 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
4047	NONE (MK ON ANT BASE)	0.0060	-0.0070	-13.5790
--	DOPPLER 30067 1972	-28.3899	-39.6139	-9.1259
--	GILCREEK NCMN RM 1 1984)	-50.9836	4.7555	-13.2259
--	GILCREEK NCMN RM 2 1984	-1.1000	41.5924	-12.2248
--	GILCREEK NCMN RM 3 1984	16.2817	-29.8495	-12.6003
--	NONE "BIG RED" GPS PIER	-45.8747	-81.3992	-13.0527

SITE SKETCH

Site Number: 61
Current Site Name: FAIRBANKS
Location: FAIRBANKS, AK



PREVIOUS OCCUPATION INFORMATION

Site Number: 61

Current Site Name: FAIRBANKS

Location: FAIRBANKS, AK

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
4047	26-METER	40476601	01-JAN-79	---

-- SITE INFORMATION --

Site Number: 27

Current Site Name: FLAGSTAFF

Other Site Name:

Location: FLAGSTAFF, AZ

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED AT THE NORTH EDGE OF FLAGSTAFF, ARIZONA, ON THE GROUNDS OF THE UNITED STATES GEOLOGICAL SURVEY. THE SITE IS EQUIPPED WITH TWO MONUMENTS SET IN AN ASPHALT PARKING LOT. ONE MONUMENT IS COMPATIBLE FOR OCCUPATION BY MOBILE VLBI SYSTEMS. BECAUSE OF ITS PROXIMITY TO A BUILDING, THE SECOND MONUMENT IS COMPATIBLE FOR OCCUPATION BY TLR-1 ONLY.

Site Topo Map: FLAGSTAFF WEST, ARIZONA. N3507.5-W11137.5/7.5, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: COLORADO PLATEAU

Local Geology: VOLCANIC FLOWS AND TUFF

Comments: NONE

MONUMENT INFORMATION

Site Number: 27
 Current Site Name: FLAGSTAFF
 Location: FLAGSTAFF, AZ
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7261
 Type of Monument: NGS STATION DISK
 Monument Inscription: FLAGSTAFF NCMN 1981
 Systems Using Monument: TLRs AND MOBILE VLBI

Latitude: N 35 12' 52.88751''
 Longitude: W 111 38' 05.04098''
 Elevation:
 Height Above Ellipsoid: 2143.910 meters
 Survey Source/Date: BFEC HAVAGO ADJUSTMENT/08-AUG-90
 Datum/Ellipsoid: NAD-83/GRS-80

Comments: THE MONUMENT IS LOCATED IN THE CENTER OF THE USGS PARKING LOT.

Differential Coordinates FROM Observing Monument 7261 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	CAL PIER A	139.2950	-71.4172	-19.2233
--	CAL PIER B	15.1651	-75.6483	-93.4852
--	NCMN NO. 1	19.9584	-7.2788	1.0525
--	NCMN NO. 2	-24.2705	-5.2836	-22.2775
--	NCMN NO. 3	-16.4260	22.0892	18.8558
7891	NCMN NO. 4	16.0215	-16.9849	-14.5357

Monument Number: 7261
 Type of Monument: NGS STATION DISK
 Monument Inscription: FLAGSTAFF NCMN 1981
 Systems Using Monument: TLRS AND MOBILE VLBI

Differential Coordinates FROM Observing Monument 7261 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	NCMN NO. 1	1.2012	21.2360	0.1232
--	NCMN NO. 2	-26.1925	-20.6130	-1.5224
--	NCMN NO. 3	23.7535	-23.4125	-0.9558
7891	NCMN NO. 4	-17.5739	21.1547	-0.3079

MONUMENT INFORMATION (Continued)

Site Number: 27
 Current Site Name: FLAGSTAFF
 Location: FLAGSTAFF, AZ

Monument Number: 7891
 Type of Monument: NGS STATION DISK
 Monument Inscription: FLAGSTAFF RM NO. 4 1981
 Systems Using Monument: TLRS

Latitude: N 35 12' 52.31746"
 Longitude: W 111 38' 04.20482"
 Elevation:
 Height Above Ellipsoid: 2143.601 meters
 Survey Source/Date: BFEC HAVAGO ADJUSTMENT/09-AUG-90
 Datum/Ellipsoid: NAD-83/GRS-80

Comments: THE MONUMENT IS ADJACENT TO A BUILDING AND NOT SUITABLE FOR MV SYSTEMS. THE DISK REPLACES THE NAIL IN THE PAVEMENT.

Differential Coordinates FROM Observing Monument 7891 TO Reference Monuments and Other Observing Monuments

Data Source: NGS HAVAGO ADJUSTMENT 86-09-05

---- Differential Coordinates ----				
Mon. Number	Monument Inscription	X	Y	Z
7261	FLAGSTAFF NCMN	-16.0215	16.9849	14.5357
--	CAL PIER A	123.2735	-54.4324	-4.6877
--	CAL PIER B	-0.8564	-58.6635	-78.9496
--	NCMN NO. 1	3.9369	9.7061	15.5882
--	NCMN NO. 2	-40.2920	11.7012	-7.7418
--	NCMN NO. 3	-32.4474	39.0741	33.3915

Monument Number: 7891
 Type of Monument: NGS STATION DISK
 Monument Inscription: FLAGSTAFF RMT NO. 4 1981
 Systems Using Monument: TLRs

Differential Coordinates FROM Observing Monument 7891 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

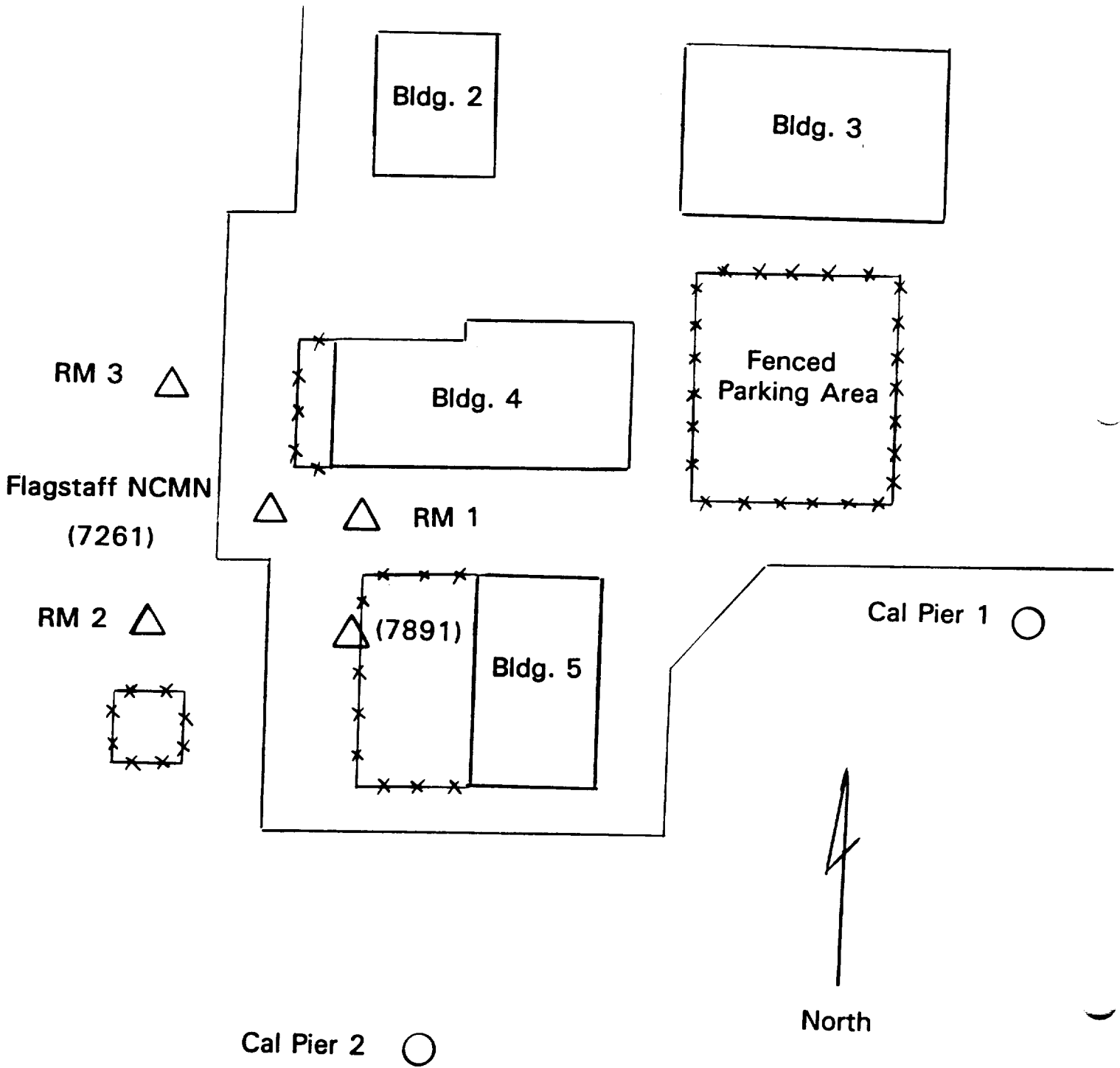
Mon. Number	Monument Inscription	North	East	Up
7261	FLAGSTAFF NCMN	17.5739	-21.1547	0.3079
--	CAL PIER B	-96.1287	20.8311	-0.7125
--	NCMN NO. 1	18.7751	0.0813	0.4311
--	NCMN NO. 2	-8.6185	-41.7677	-1.2146
--	NCMN NO. 3	41.3275	-44.5671	-0.6481

SITE SKETCH

Site Number: 27

Current Site Name: FLAGSTAFF

Location: FLAGSTAFF, AZ



PREVIOUS OCCUPATION INFORMATION

Site Number: 27

Current Site Name: FLAGSTAFF

Location: FLAGSTAFF, AZ

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7261	TLRS-1	72611101	01-MAY-91	15-AUG-91
7891	TLRS-1	78911101	20-JUN-81	06-AUG-81

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7261	MV-3	72615301	17-APR-84	18-APR-84
7261	MV-3	72615302	02-MAY-85	03-MAY-85
7261	MV-2	72615203	26-MAR-86	27-MAR-86
7261	MV-2	72615204	06-MAY-87	07-MAY-87
7261	MV-3	72615305	24-APR-88	26-APR-88
7261	MV-2	72615206	14-OCT-88	16-OCT-88
7261	MV-2	72615207	03-NOV-90	05-NOV-90

-- SITE INFORMATION --

Site Number: 33

Current Site Name: FORT DAVIS

Other Site Name:

Location: FORT DAVIS, TX

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE VLBA STATION IS LOCATED APPROXIMATELY 180 MILES SOUTHWEST OF EL PASO, TEXAS ON THE SOUTHERN EDGE OF THE FORT DAVIS MOUNTAINS AND 8 MILES NORTHWEST OF THE TOWN OF FORT DAVIS. A FIXED 26-METER POLARIS ANTENNA (HRAS 085), LOCATED AT THE GEORGE R. AGASSIZ STATION (GRAS), WAS OPERATIONAL UNTIL 1991. IT HAS SINCE BEEN DISMANTLED. THE VLBA ANTENNA IS 300 METERS SOUTHEAST OF WHERE HRAS WAS LOCATED.

Site Topo Map: MOUNT LOCKE, TEXAS; CASKAT MOUNTAIN, TEXAS. 7.5, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: ROCKY MOUNTAIN PROVINCE

Local Geology: TERTIARY IGNEOUS ROCKS ARE PREDOMINANTLY FOUND ON THE SURFACE. THE INFLUENCE OF TOPOGRAPHY ON SOIL FORMATION IS PRONOUNCED. DUE TO EXTENSIVE EROSION, THE SOILS OF HILLS AND MOUNTAINS ARE SHALLOW, WHEREAS THE SOILS OF VALLEYS AND PLAINS ARE DEEP.

Comments: PLEASE REFER TO MCDONALD SITE FOR FURTHER INFORMATION ON MONUMENTATION.

MONUMENT INFORMATION

Site Number: 33
 Current Site Name: FORT DAVIS
 Location: FORT DAVIS, TX
 Number of Observing Monuments: 3
 Surveyed into National Network? YES

Monument Number: 7216
 Type of Monument: INTERSECTION OF POLAR AXIS & PLANE CONTAINING
 DECLINATION AXIS
 Monument Inscription: NONE
 Systems Using Monument: 85-FOOT FIXED VLBI ANTENNA

Latitude: N 30 38' 12.18808''
 Longitude: W 103 56' 50.11321''
 Elevation:
 Height Above Ellipsoid: 1594.014 meters
 Survey Source/Date: BFEC HAVAGO ADJUSTMENT 88-09-15/09-SEP-88
 Datum/Ellipsoid: NAD 83/GRS 80

Comments: THE ANTENNA IS ALSO REFERENCED AS HRAS 085. FOR MONUMENTS LISTED BELOW SEE MCDONALD SITE.

Differential Coordinates FROM Observing Monument 7216 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7080	7080 1988	-5810.0900	3621.3591	4362.3953
7086	MOBLAS 1979	-5914.4188	3496.5745	4031.8341
7206	NONE (LURE 107 1985)	-6570.3192	3267.5483	3579.2119
7850	7850 1988	-5797.2171	3631.6364	4384.3179
7851	7851 1988	-5798.4940	3632.2561	4384.8285
7897	TLRS 7897	-6589.7744	3298.5000	3585.8591
7900	HARVARD RM 5 1980	-16.9714	-39.9062	-95.3390
--	HARVARD 1977	-9.5154	-5.2569	-39.0374
--	HARVARD RM 3 1977	7.4701	-45.3951	-93.3743
--	HARVARD RM 4 1977	19.1246	-36.6944	-75.0238
--	HARVARD RM 6 1977	-7.1430	-28.8326	-74.1383

MONUMENT INFORMATION (Continued)

Site Number: 33
 Current Site Name: FORT DAVIS
 Location: FORT DAVIS, TX

Monument Number: 7613
 Type of Monument: INTERSECTION OF ELEVATION & AZIMUTH AXES
 Monument Inscription: NONE
 Systems Using Monument: 25-METER VLBA ANTENNA

Latitude: N 30 38' 06.08865"
 Longitude: W 103 56' 41.32054"
 Elevation:
 Height Above Ellipsoid: 1605.458 meters
 Survey Source/Date: BFEC/29-AUG-90
 Datum/Ellipsoid: NAD 83 GRS-80

Comments: NONE

Differential Coordinates FROM Observing Monument 7613 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	FT DAVIS VLBA RM1	30.6341	66.3307	83.6402
--	FT DAVIS VLBA RM2	134.9639	-36.4615	-23.5601
--	FT DAVIS VLBA RM3	-100.7631	1.9052	-67.0102
--	HARVARD 1977	-211.4006	153.5497	116.8460
7216	NONE- HRAS REF PT	-201.8778	158.8104	155.8931
7900	HARVARD NO.5 (1977)	-218.8502	118.9048	60.5534

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	FT DAVIS VLBA RM1	108.5323	13.7461	-19.1225
--	FT DAVIS VLBA RM2	-21.7301	139.7730	-9.5431
--	FT DAVIS VLBA RM3	-69.0893	-98.2524	-14.8435

MONUMENT INFORMATION (Continued)

Site Number: 33
 Current Site Name: FORT DAVIS
 Location: FORT DAVIS, TX

Monument Number: 7900
 Type of Monument: STANDARD BRASS REFERENCE MONUMENT
 Monument Inscription: HARVARD RM 5 1977
 Systems Using Monument: MOBILE VLBI

Latitude: N 30 38' 08.81660''
 Longitude: W 103 56' 50.37055''
 Elevation:
 Height Above Ellipsoid: 1582.404 meters
 Survey Source/Date: BFEC/89-03-14
 Datum/Ellipsoid: NAD 83/GRS 80

Comments: THIS REFERENCE MONUMENT WAS OCCUPIED BY A MOBILE VLBI DURING A SPECIAL VLBI EXPERIMENT IN OCTOBER 1988.

Differential Coordinates FROM Observing Monument 7900 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7080	CDP STATION 7080 1988	-5793.1186	3661.2653	4457.7344
7086	MOBLAS CDP 7086 (1979)	-5897.4473	3536.4807	4127.1731
7206	NONE (LURE 107 1985)	-6553.3478	3307.4545	3674.5509
7850	CDP STATION 7850 (1988)	-5780.2457	3671.5426	4479.6569
7851	CDP STATION 7851 (1988)	-5781.5225	3672.1623	4480.1675
7897	TLRS 7897	-6572.8030	3338.4062	3681.1981
--	HARVARD 1977	7.4561	34.6493	56.3016
--	HARVARD RM 3 1977	24.4416	-5.4889	1.9647
--	HARVARD RM 4 1977	36.0961	3.2117	20.3152
--	HARVARD RM 6 1977	9.8284	11.0736	21.2007


SITE SKETCH

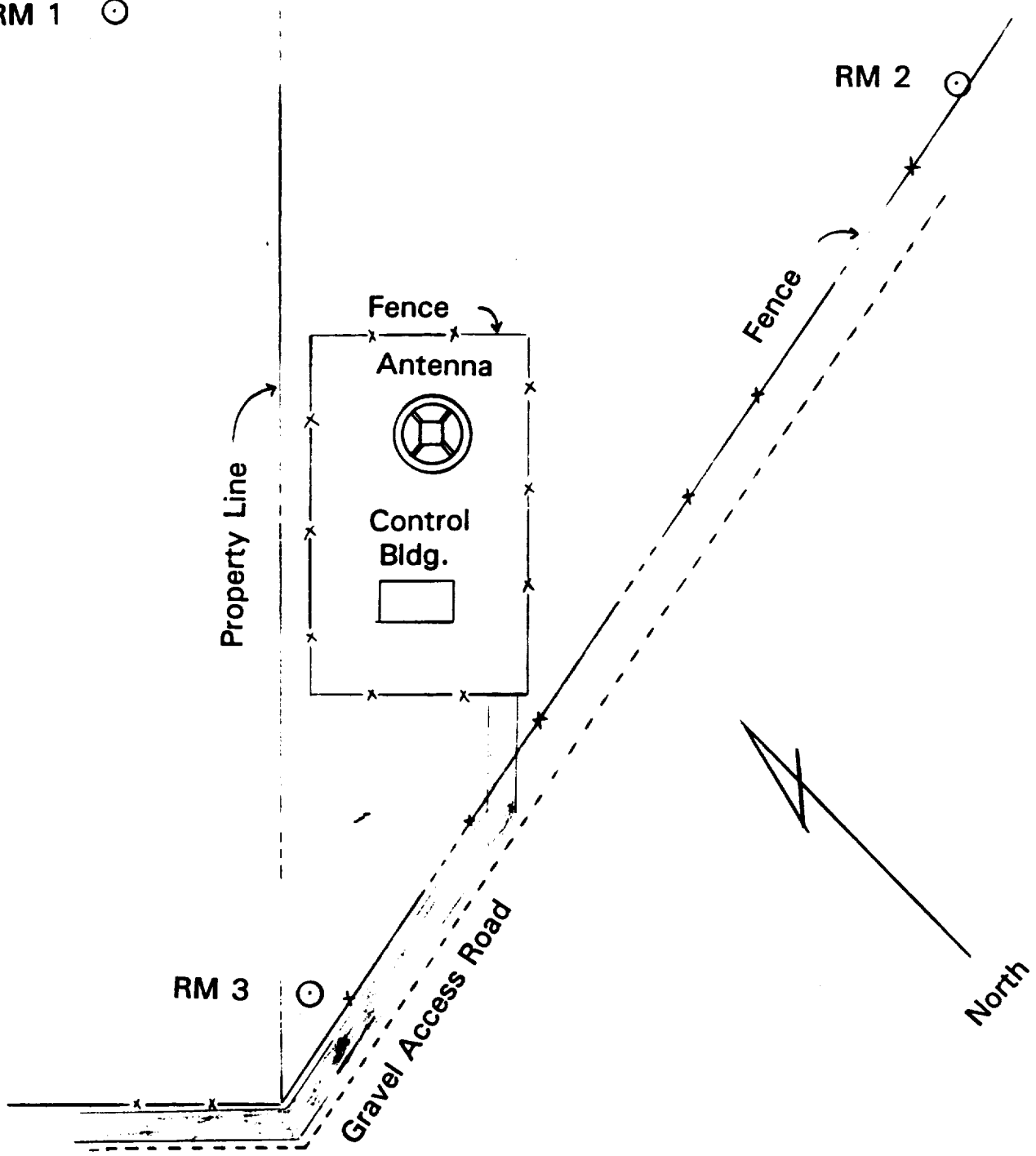
Site Number: 33

Current Site Name: FORT DAVIS

Location: FORT DAVIS, TX

RM 1 

RM 2 



PREVIOUS OCCUPATION INFORMATION

Site Number: 33
Current Site Name: FORT DAVIS
Location: FORT DAVIS, TX

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7216	HRAS 085	72167201	11-APR-80	---
7613	VLBA	76139801	01-JAN-90	---
7900	MV-3	79005301	08-OCT-88	10-OCT-88

-- SITE INFORMATION --

Site Number: 12

Current Site Name: FORT ORD
Other Site Name: ANDERSON PEAK
Location: FORT ORD, CA
Geographic Region: CALIFORNIA
Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE STATION IS LOCATED ON THE U.S. MILITARY RESERVATION, FORT ORD, CALIFORNIA. DUE TO THE CONSTRUCTION OF A HOUSING COMPLEX, THE ORIGINAL SITE WAS DESTROYED. A NEW SITE WAS ESTABLISHED NEAR THE USGS BRUSH 2 MONUMENT ON RANGE 31. GPS OBSERVATIONS AS WELL AS HIGH ACCURACY EDM MEASUREMENTS WERE MADE BETWEEN THE NEW AND THE OLD SITE.

Site Topo Map: MARINA, CALIFORNIA. N3637.5-W12145/7.5, 1947. U.S. DEPARTMENT OF THE ARMY CORPS OF ENGINEERS. AVAILABLE THRU U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: SOUTHERN COAST RANGES, APPROXIMATELY 25 MILES WEST OF THE SAN ANDREAS FAULT.

Local Geology: QUATERNARY STREAM CHANNEL DEPOSITS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 12
 Current Site Name: FORT ORD
 Location: FORT ORD, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7241
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: STAMPED 7421
 Systems Using Monument: MOBILE VLBI

Latitude: 36 35' 21.70940"
 Longitude: 121 46' 19.67455"
 Elevation:
 Height Above Ellipsoid: 248.309 meters
 Survey Source/Date: BFEC/19-JUN-89
 Datum/Ellipsoid: NAD-83/GRS-80

Comments: NEW FORT ORD LOCATION.

Differential Coordinates FROM Observing Monument 7241 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC ADJUSTMENT 89-03-14

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	31 T (30 TH ENGR BN)	1.7187	39.9278	45.2630
--	7421 AZ MARK	346.6626	243.4588	499.3319
--	7421 RM 1	-34.2605	-12.9058	-38.9455
--	7421 RM 2	51.2953	-4.7428	27.2513
--	BRUSH 2 (USGS)	-35.9904	54.1791	35.7642
--	BRUSH 2 NO. 3 (USGS)	-5.1637	42.3373	43.4442
--	BRUSH NO. 1 (USGS)	-65.7309	58.6768	14.8195

Monument Number: 7241

Type of Monument: STANDARD NASA DISK

Monument Inscription: SOME QUESTION AT THIS TIME

Systems Using Monument: MOBILE VLBI

Differential Coordinates FROM Observing Monument 7241 TO
Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	31 T (30 TH ENGR BN)	57.1155	-19.5635	-0.9997
--	7421 AZ MARK	633.1079	166.5114	-15.0967
--	7421 RM 1	-48.5638	-22.3302	0.0790
--	7421 RM 2	35.5778	46.1052	-2.2053
--	BRUSH 2 (USGS)	44.8741	-59.1259	-0.4457
--	BRUSH 2 NO. 3 (USGS)	54.7160	-26.6833	-0.8186
--	BRUSH NO. 1 (USGS)	21.0019	-86.7774	-3.4276

MONUMENT INFORMATION (Continued)

Site Number: 12
 Current Site Name: FORT ORD
 Location: FORT ORD, CA

Monument Number: 7266
 Type of Monument: NGS STATION DISK
 Monument Inscription: FORT ORD NCMN 1981
 Systems Using Monument: MOBILE VLBI

Latitude: N 36 40' 11.35300''
 Longitude: W 121 46' 19.90898''
 Elevation:
 Height Above Ellipsoid: 24.480 meters
 Survey Source/Date: NGS HAVAGO ADJUSTMENT/03-SEP-86
 Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: THIS SITE WAS DESTROYED IN SEPTEMBER 1988. A GPS TIE WAS MADE BETWEEN THIS SITE AND "BRUSH" MONUMENT NEAR NEW SITE.

Differential Coordinates FROM Observing Monument 7266 TO Reference Monuments and Other Observing Monuments

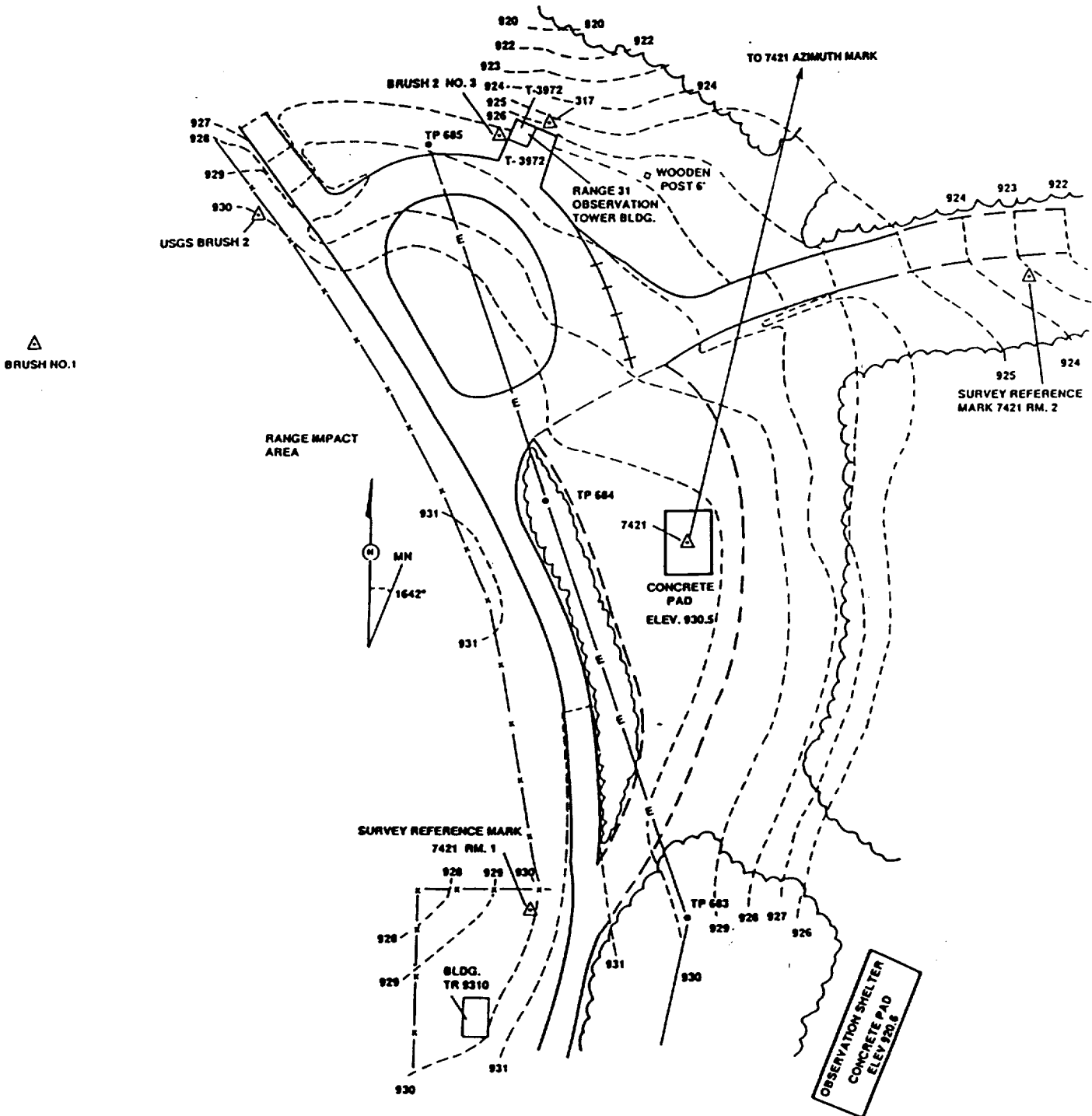
Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	BM TRI ORD USE	12.809	11.873	23.466
--	FORT ORD NCMN AZ. MK.	1382.866	-866.359	-33.097
--	FORT ORD NCMN NO. 1 1981	41.976	-1.520	27.070
--	FORT ORD NCMN NO. 2 1981	-9.273	-16.775	-25.467
--	FORT ORD NCMN NO. 3 1981	-22.279	37.017	25.067
--	FREMONT PEAK 2 1930	23132.335	-8297.390	8321.233
--	FREMONT PEAK 2 1930 AZ MK	23574.172	-8226.970	8515.722
--	MULLIGAN 1932	833.366	5703.821	7029.944

SITE SKETCH

Site Number: 12
Current Site Name: FORT ORD
Location: FORT ORD, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 12
Current Site Name: FORT ORD
Location: FORT ORD, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7241	MV-2	72415201	07-NOV-88	09-NOV-88
7241	MV-2	72415202	01-FEB-89	03-FEB-89
7241	MV-2	72415203	09-MAY-89	11-MAY-89
7241	MV-3	72415304	22-OCT-89	17-NOV-89
7241	MV-2	72415205	21-JUL-91	23-JUL-91
7266	MV-2	72665201	17-DEC-81	18-DEC-81
7266	MV-3	72665302	25-AUG-83	26-AUG-83
7266	MV-3	72665303	23-FEB-84	24-FEB-84
7266	MV-3	72665304	10-MAR-85	11-MAR-85
7266	MV-2	72665205	22-OCT-85	25-OCT-85
7266	MV-2	72665206	08-FEB-87	10-FEB-87
7266	MV-2	72665207	20-MAY-87	21-MAY-87
7266	MV-3	72665308	18-OCT-87	19-OCT-87
7266	MV-2	72665209	12-FEB-88	18-FEB-88

-- SITE INFORMATION --

Site Number: 8C

Current Site Name: GOLDSTONE MARS

Other Site Name: GOLDSTONE

Location: GOLDSTONE, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE SITE IS PART OF AN EXISTING NASA COMPLEX LOCATED NEAR FORT IRWIN WITHIN THE BOUNDARIES OF THE CAMP IRWIN MILITARY RESERVATION. THE 70-METER MARS ANTENNA (UPGRADED FROM 64-METERS), THE 34-METER DSS-15 ANTENNA, AND A LARGE MOBLAS PAD HAVE BEEN USED BY THE PROJECT FOR CERTAIN EXPERIMENTS. THE MOJAVE ANTENNA WAS CHOSEN TO REPLACE THE ANTENNAS AT THE GOLDSTONE COMPLEX FOR ALL CDP VLBI MEASUREMENTS. THE MOJAVE ANTENNA WAS DEACTIVATED IN 1992

Site Topo Map: GOLDSTONE LAKE, CALIFORNIA. N3515-W11645/15, 1948, CORPS OF ENGINEERS, U.S. ARMY. AVAILABLE THROUGH THE U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: MOJAVE DESERT REGION

Local Geology: QUATERNARY ALLUVIUM LOCALLY. EAST OF THE SAN ANDREAS FAULT.

Comments: PLEASE REFER TO MOJAVE SITE FOR FURTHER INFORMATION ON MONUMENTATION.

MONUMENT INFORMATION

Site Number: 8C
 Current Site Name: GOLDSTONE MARS
 Location: GOLDSTONE, CA
 Number of Observing Monuments: 3
 Surveyed into National Network? YES

Monument Number: 1514
 Type of Monument: INTERSECTION OF THE LOCAL ZENITH (Z) AND X AXIS
 Monument Inscription: NONE
 Systems Using Monument: 64-METER FIXED VLBI ANTENNA

Latitude: N 35 25' 33.36612''
 Longitude: W 116 53' 19.35204''
 Elevation:
 Height Above Ellipsoid: 1012.620 meters
 Survey Source/Date: NGS HAVAGO ADJUSTMENT/13-JAN-87
 Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: ALSO REFERENCED AS DSS-14 AND MARS. THIS ANTENNA WAS UPGRADED TO 70-METERS. DUE TO THIS UPGRADE, USE OF THESE DIFFERENTIAL COORDINATES IS NOT RECOMMENDED.

Differential Coordinates FROM Observing Monument 1514 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7085	MOBLAS 7085 GOLDSTONE VAL	227.005	-188.001	-153.150
7231	----	82.433	-307.977	-382.296
--	101 ARIES #2 4-17-78	224.245	-167.412	-126.979
--	ARIES RM1 1976 (DOP 51201)	230.026	-168.704	-124.935
--	ARIES RM2 1976 (DOP 51228)	222.324	-170.193	-131.692
--	GOLDSTONE VAL RM 2	205.240	-213.430	-204.177
--	GOLDSTONE VAL RM 3	193.014	-147.955	-122.263
--	GOLDSTONE VAL RM1(DOP 51212)	283.300	-201.693	-133.590

MONUMENT INFORMATION (Continued)

Site Number: 8C
 Current Site Name: GOLDSTONE MARS
 Location: GOLDSTONE, CA

Monument Number: 7085
 Type of Monument: 6" X 6" STEEL PLATE
 Monument Inscription: MOBLAS 7085 GOLDSTONE VAL
 Systems Using Monument: MOBLAS

Latitude: N 35 25' 28.09458''
 Longitude: W 116 53' 07.95763''
 Elevation:
 Height Above Ellipsoid: 976.830 meters
 Survey Source/Date: NGS HAVAGO ADJUSTMENT/13-JAN-87
 Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: MONUMENT LOCATED ADJACENT TO DSS-14 MARS SITE; USED FOR INITIAL MOBLAS OCCUPATIONS.

Differential Coordinates FROM Observing Monument 7085 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
1514	----	-227.005	188.001	153.150
--	101 ARIES #2 4-17-78	-2.761	20.589	26.171
--	ARIES RM-1 1976	3.021	19.297	28.215
--	ARIES RM-2 1976	-4.682	17.808	21.458
--	GOLDSTONE VAL RM1(DOP 51212)	56.294	-13.692	19.560
--	GOLDSTONE VAL RM 2 "202"	-21.766	-25.429	-51.027
--	GOLDSTONE VAL RM 3 "203"	-33.991	40.046	30.886

Site Number: 8C
 Current Site Name: GOLDSTONE MARS
 Location: GOLDSTONE, CA

Monument Number: 7085
 Type of Monument: 6" X 6" STEEL PLATE
 Monument Inscription: MOBLAS 7085 GOLDSTONE VAL
 Systems Using Monument: MOBLAS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	101 ARIES #2 4-17-78	31.247	-11.773	1.223
--	ARIES RM-1 1976	33.760	-6.032	1.215
--	ARIES RM-2 1976	25.464	-12.229	1.220
--	GOLDSTONE VAL RM1(DOP 51212)	23.617	56.401	0.543
--	GOLDSTONE VAL RM 2 "202"	-60.433	-7.913	-3.073
--	GOLDSTONE VAL RM 3 "203"	36.961	-48.427	1.324

MONUMENT INFORMATION (Continued)

Site Number: 8C
Current Site Name: GOLDSTONE MARS
Location: GOLDSTONE, CA

Monument Number: 7231
Type of Monument: ANTENNA REFERENCE POINT
Monument Inscription: NONE
Systems Using Monument: 34 METER DSS-15 ANTENNA

Latitude: N 35 25' 18.7947''
Longitude: W 116 53' 10.91788''
Elevation:
Height Above Ellipsoid: 984.490 meters
Survey Source/Date: DAVE MARBEDO, SURVEY BY M.J. BURROWS/15-MAR-88
Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: THE ANTENNA IS REFERENCED AS DSS-15. THE QUALITY OF THIS SURVEY IS UNKNOWN.

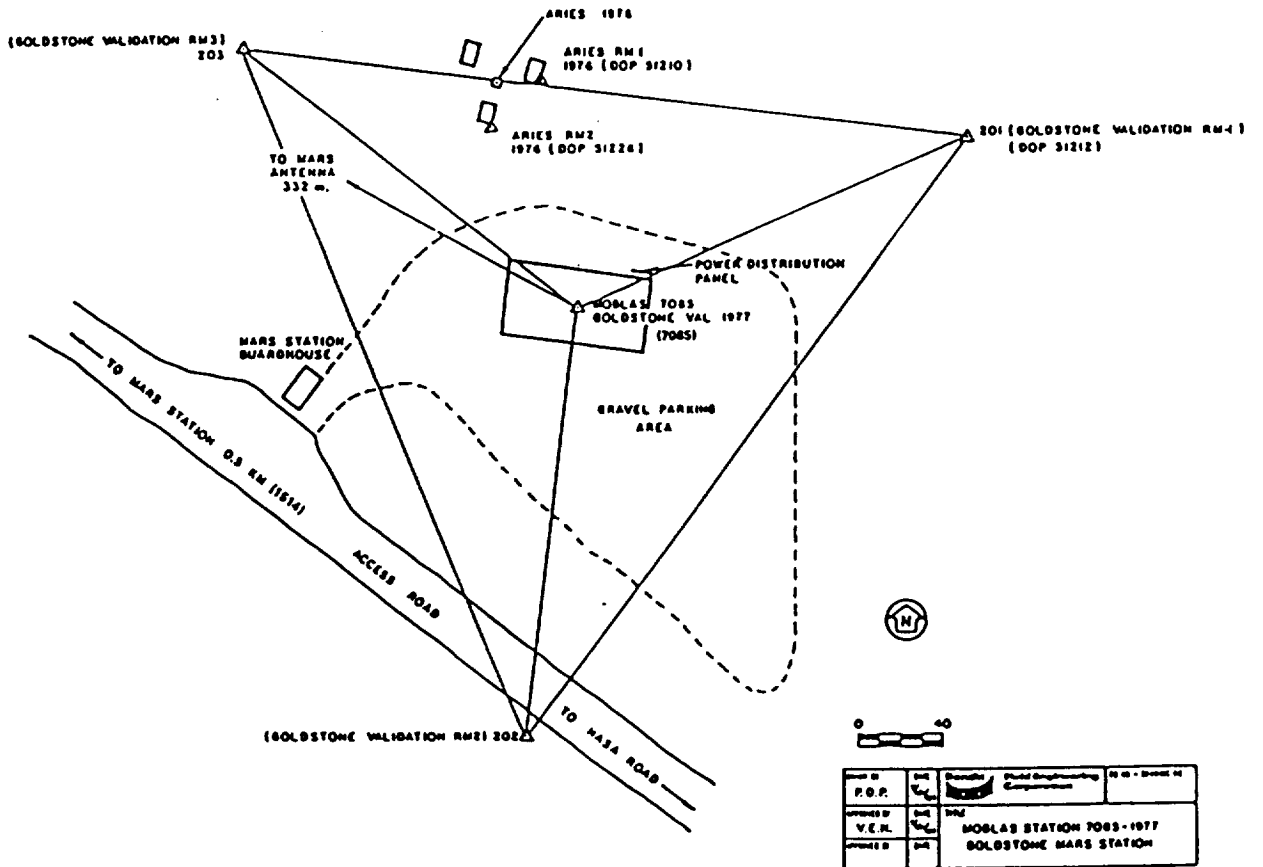
Differential Coordinates FROM Observing Monument 7231 TO
Reference Monuments and Other Observing Monuments


Data Source:

-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 8C
 Current Site Name: GOLDSTONE MARS
 Location: GOLDSTONE, CA



DATE P.O.P.	DATE V.E.R.	DATE AIA	 United States Geological Survey MOBLAS STATION 7085 - 1977 GOLDSTONE MARS STATION	10 10 - DOWNS 14
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PREVIOUS OCCUPATION INFORMATION

Site Number: 8C
Current Site Name: GOLDSTONE MARS
Location: GOLDSTONE, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7085	MOBLAS-1	70850101	12-DEC-77	31-MAR-78

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7231	DSS 15	72318701	06-NOV-88	---

-- SITE INFORMATION --

Site Number: 8

Current Site Name: GOLDSTONE VENUS

Other Site Name: GOLDSTONE

Location: GOLDSTONE, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE SITE IS PART OF AN EXISTING NASA COMPLEX LOCATED NEAR FORT IRWIN WITHIN THE BOUNDARIES OF THE CAMP IRWIN MILITARY RESERVATION. THE SITE CONSISTS OF THE DSS-13 26-METER ANTENNA, A MOBLAS PAD, AND A THREE-PEDESTAL ARIES (MV-1) PAD.

Site Topo Map: GOLDSTONE LAKE, CALIFORNIA. N3515-W11645/15, 1948, CORPS OF ENGINEERS, U.S. ARMY. AVAILABLE THROUGH THE U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: MOJAVE DESERT REGION

Local Geology: QUATERNARY ALLUVIUM LOCALLY. EAST OF THE SAN ANDREAS FAULT.

Comments: NONE

MONUMENT INFORMATION

Site Number: 8
 Current Site Name: GOLDSTONE VENUS
 Location: GOLDSTONE, CA
 Number of Observing Monuments: 3
 Surveyed into National Network? YES

Monument Number: 1513
 Type of Monument: INTERSECTION OF THE LOCAL ZENITH (Z) AND Y AXIS
 Monument Inscription: NONE
 Systems Using Monument: 26-METER AZ-EL FIXED VLBI ANTENNA

Latitude: N 35° 14' 51.82094"
 Longitude: W 116° 47' 38.63051"
 Elevation:
 Height Above Ellipsoid: 1074.167 meters
 Survey Source/Date: NGS HAVAGO/13-JAN-87
 Datum/Ellipsoid: NAD27/CLARKE 1866

Comments: THIS ANTENNA IS ALSO REFERENCED AS DSS-13 AND VENUS

Differential Coordinates FROM Observing Monument 1513 TO
Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7115 RM-1 (DOPPLER 51266)	234.326	-67.277	25.928
--	7115-A (1979)	268.981	-62.793	50.158
7115	7115 (1979)	267.503	-69.179	40.943
7275	ARIES 6-9-81 9MTR	263.944	-122.227	-23.384

MONUMENT INFORMATION (Continued)

Site Number: 8
 Current Site Name: GOLDSTONE VENUS
 Location: GOLDSTONE, CA

Monument Number: 7115
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: MOBLAS 7115-1979
 Systems Using Monument: MOBLAS AND TLRS

Latitude: N 35° 14' 54.00723"
 Longitude: W 116° 47' 27.95387"
 Elevation:
 Height Above Ellipsoid: 1049.753 meters
 Survey Source/Date: NGS HAVAGO/13-JAN-87
 Datum/Ellipsoid: NAD27/CLARKE 1866

Comments: THIS MONUMENT IS LOCATED ADJACENT TO THE 26-METER VENUS ANTENNA

Differential Coordinates FROM Observing Monument 7115 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7115-A (1979)	1.478	6.386	9.215
--	7115 RM-1 (DOPPLER 51266)	-33.177	1.902	-15.015
1513	NONE (26-METER ANTENNA)	-267.503	69.179	-40.943
7275	ARIES 6-9-81 9 MTR	-3.559	-53.048	-64.327

Mon. Number	Monument Inscription	North	East	Up
--	7115-A (1979)	11.200	-1.559	0.119
--	7115 RM-1 (DOPPLER 51266)	-19.912	-30.473	2.160
7275	ARIES 6-9-81 9 MTR	-80.788	20.734	2.858

MONUMENT INFORMATION (Continued)

Site Number: 8
 Current Site Name: GOLDSTONE VENUS
 Location: GOLDSTONE, CA

Monument Number: 7275
 Type of Monument: BRASS DISK IN CONCRETE
 Monument Inscription: ARIES 6-9-81 9MTR
 Systems Using Monument: MV-1

Latitude: N 35° 14' 51.38616"
 Longitude: W 116° 47' 27.13387"
 Elevation:
 Height Above Ellipsoid: 1052.612
 Survey Source/Date: NGS HAVAGO/13-JAN-87
 Datum/Ellipsoid: NAD27/CLARKE 1866

Comments: NONE

Differential Coordinates FROM Observing Monument 7275 TO
 Reference Monuments and Other Observing Monuments

Data Source: NGS'

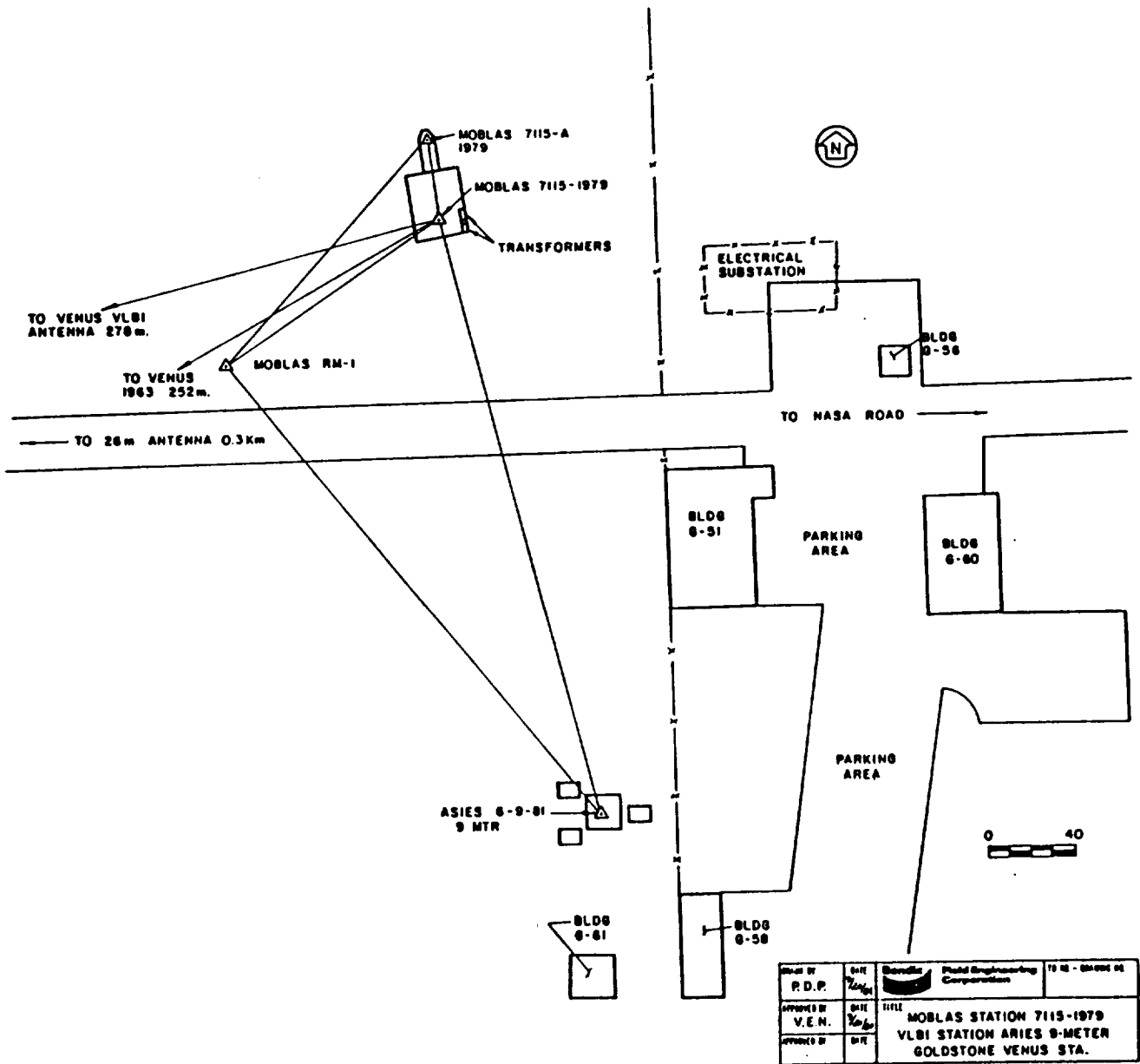
---- Differential Coordinates ----


Mon. Number	Monument Inscription	X	Y	Z
--	7115 RM-1 (DOPPLER 51266)	-29.618	54.950	49.312
--	7115-A (1979)	5.037	59.434	73.542
1513	NONE (26-METER ANTENNA)	-263.944	122.227	23.384
7115	MOBLAS 7115-1979	3.559	53.048	64.327

Mon. Number	Monument Inscription	North	East	Up
--	7115 RM-1 (DOPPLER 51266)	60.874	-51.208	-0.697
--	7115-A (1979)	91.987	-22.295	-2.739
7115	MOBLAS 7115-1979	80.787	-20.736	-2.858

SITE SKETCH

Site Number: 8
 Current Site Name: GOLDSTONE VENUS
 Location: GOLDSTONE, CA



Drawn by P.D.P.	DATE 1/2/81	 Shaw-Walsh Field Engineering Corporation	10 12 - 04000 02
APPROVED BY V.E.N.	DATE 1/2/81		TITLE MOBLAS STATION 7115-1979 VLBI STATION ARIES 9-METER GOLDSTONE VENUS STA.
APPROVED BY	DATE		

PREVIOUS OCCUPATION INFORMATION

Site Number: 8

Current Site Name: GOLDSTONE VENUS

Location: GOLDSTONE, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7115	MOBLAS-3	71150301	15-JUN-79	10-APR-81

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1513	DSS 13	15136801	07-JAN-80	---

-- SITE INFORMATION --

Site Number: 76

Current Site Name: GRAND TURK

Other Site Name:

Location: GRAND TURK ISLAND

Geographic Region: PACIFIC

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: UNKNOWN

Site Description: GRAND TURK ISLAND IS A MEMBER OF THE BAHAMA ISLAND CHAIN, WHICH LIES JUST NORTH OF THE CARIBBEAN SEA IN THE ATLANTIC OCEAN SOUTHEAST OF FLORIDA AND NORTH OF JAMAICA AND CUBA. THE SITE IS EQUIPPED TO HANDLE MOBLAS SYSTEMS. MOBLAS-2 OCCUPIED THE SITE IN 1978. THERE HAVE BEEN NO OCCUPATIONS SINCE.

Site Topo Map: NONE

GEOLOGICAL INFORMATION

Geological Province: BAHAMA PLATFORM

Local Geology: QUATERNARY CARBONATES

Comments: SITE IS INACTIVE.

MONUMENT INFORMATION

Site Number: 76
Current Site Name: GRAND TURK
Location: GRAND TURK ISLAND
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7068
Type of Monument:
Monument Inscription: NONE
Systems Using Monument:

Latitude: N 21 27' 36.1550''
Longitude: E 288 52' 03.8132''
Elevation: 24.844 meters
Height Above Ellipsoid:
Survey Source/Date: GEODETIC SURVEY SQUADRON-PATRICK AFB/10-OCT-79
Datum/Ellipsoid: NAD27/CLARKE 1866 (SHORAN 4 SOLUTION)

Comments: NONE

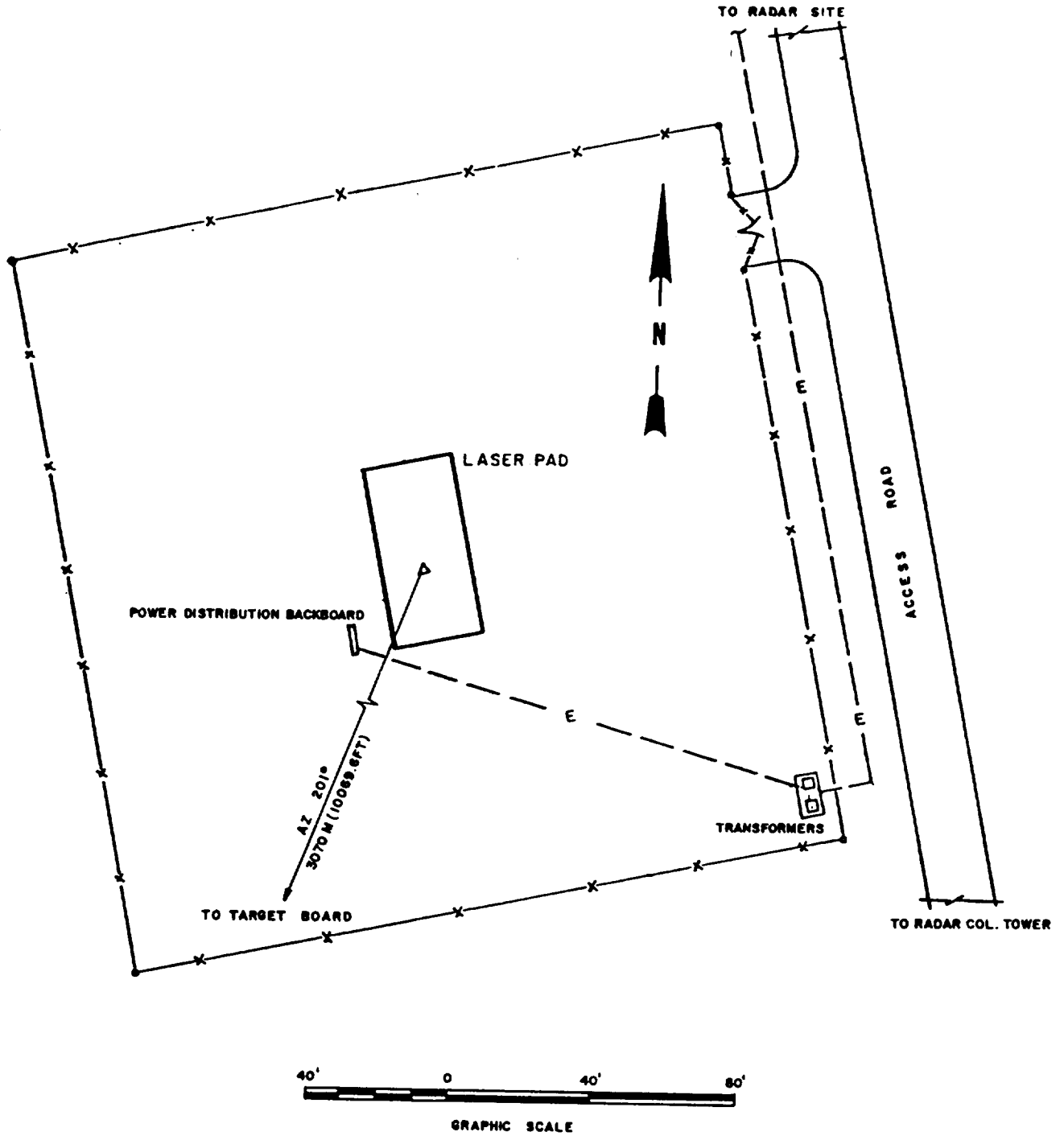
Differential Coordinates FROM Observing Monument 7068 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 76
Current Site Name: GRAND TURK
Location: GRAND TURK ISLAND



PREVIOUS OCCUPATION INFORMATION

Site Number: 76

Current Site Name: GRAND TURK

Location: GRAND TURK ISLAND

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7068	MOBLAS-2	70680201	19-APR-75	05-MAR-76
7068	MOBLAS-2	70680202	30-JUL-78	07-NOV-78

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 142

Current Site Name: GRASSE

Other Site Name:

Location: GRASSE, FRANCE

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND POLAR/EARTH ROTATION.

Site Description: THE STATION IS LOCATED IN SOUTHEAST FRANCE, APPROXIMATELY 15 KILOMETERS NORTH OF THE CITY OF GRASSE AT THE CERGA OBSERVATORY. THREE FIXED LASERS HAVE BEEN OPERATIONAL AT THIS SITE. ONE LASER HAS SINCE MOVED TO THE SAN FERNANDO STATION IN SOUTHERN SPAIN. ONE OF THE TWO OPERATIONAL LASERS IS USED FOR LUNAR RANGING AND THE OTHER IS USED FOR RANGING TO LAGEOS FOR SLR MEASUREMENTS.

Site Topo Map: ROQUESTERON 3642, 1982. AVAILABLE THROUGH IGN, 107 RUE DE LA BOETIE, 75008 PARIS.

GEOLOGICAL INFORMATION

Geological Province: PREALPS REGION OF GRASSE

Local Geology: SECONDARY LIMESTONE PLATEAU (ABOUT 20 KM SQUARE IN SIZE) WITH SINK HOLES AND DEEP CAVES.

Comments: GRAVIMETRICAL DATA WAS OBTAINED AT THIS SITE AROUND 1975 BY THE ROYAL OBSERVATORY OF BELGIUM AT UCCLE.

MONUMENT INFORMATION

Site Number: 142
Current Site Name: GRASSE
Location: GRASSE, FRANCE
Number of Observing Monuments: 3
Surveyed into National Network? YES

Monument Number: 7605
Type of Monument: UNKNOWN
Monument Inscription:
Systems Using Monument: MOBILE VLBI

Latitude:
Longitude:
Elevation:
Height Above Ellipsoid:
Survey Source/Date:
Datum/Ellipsoid:

Comments:

Differential Coordinates FROM Observing Monument 7605 TO
Reference Monuments and Other Observing Monuments

Data Source: IGN

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	DORIS ANT REF PT	-17.360	40.328	19.669

MONUMENT INFORMATION (Continued)

Site Number: 142
 Current Site Name: GRASSE
 Location: GRASSE, FRANCE

Monument Number: 7835
 Type of Monument: AXES OF TELESCOPE
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER

Latitude: N 43 45' 16.79616''
 Longitude: E 6 55' 17.80621''
 Elevation:
 Height Above Ellipsoid: 1281.150 meters
 Survey Source/Date: GRGS-CERGA/22-AUG-85
 Datum/Ellipsoid: EUROPEAN DATUM SYSTEM E.D. 50

Comments: THE LOCAL SURVEY (1975-1978) IS JOINED TO THE NATIONAL NETWORK (IGN, 1980) GEODESICAL MARKER: CAUSSOLS III. DORIS INFORMATION PROVIDED BY IGN (1991).

Differential Coordinates FROM Observing Monument 7835 TO Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7842	NONE (M8)	12.374	28.642	-16.002
7845	NONE (M10)	0.578	36.473	-4.439
--	REFERENCE MONUMENT (M7)	19.406	-19.362	-24.654
--	REFERENCE POINT (M13)	241.562	224.772	-282.127
--	DORIS ANT REF PT	-11.345	6.593	11.567

MONUMENT INFORMATION (Continued)

Site Number: 142
 Current Site Name: GRASSE
 Location: GRASSE, FRANCE

Monument Number: 7842
 Type of Monument: AXES OF TELESCOPE
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER

Latitude: N 43 45' 16.06919''
 Longitude: E 6 55' 19.01021''
 Elevation:
 Height Above Ellipsoid: 1281.450 meters
 Survey Source/Date: GRGS-CERGA/22-AUG-85
 Datum/Ellipsoid: EUROPEAN DATUM SYSTEM E.D. 50

Comments: **THIS SYSTEM HAS BEEN MOVED TO SAN FERNANDO, SPAIN**

Differential Coordinates FROM Observing Monument 7842 TO
 Reference Monuments and Other Observing Monuments

Data Source: GRGS-CERGA/BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7835	NONE (M9)	-12.374	-28.642	16.002
7845	NONE (M10)	-11.796	7.831	11.563
--	NONE (M13)	229.188	196.130	-266.125
--	NONE (M7)	7.032	-48.004	-8.652

MONUMENT INFORMATION (Continued)

Site Number: 142
 Current Site Name: GRASSE
 Location: GRASSE, FRANCE

Monument Number: 7845
 Type of Monument: AXES OF TELESCOPE
 Monument Inscription: NONE
 Systems Using Monument: LUNAR LASER

Latitude: N 43 45' 16.58096''
 Longitude: E 6 55' 19.42118''
 Elevation:
 Height Above Ellipsoid: 1281.670 meters
 Survey Source/Date: GRGS-CERGA/22-AUG-85
 Datum/Ellipsoid: EUROPEAN DATUM SYSTEM E.D. 50

Comments: NONE

Differential Coordinates FROM Observing Monument 7845 TO
 Reference Monuments and Other Observing Monuments

Data Source: GRGS-CERGA

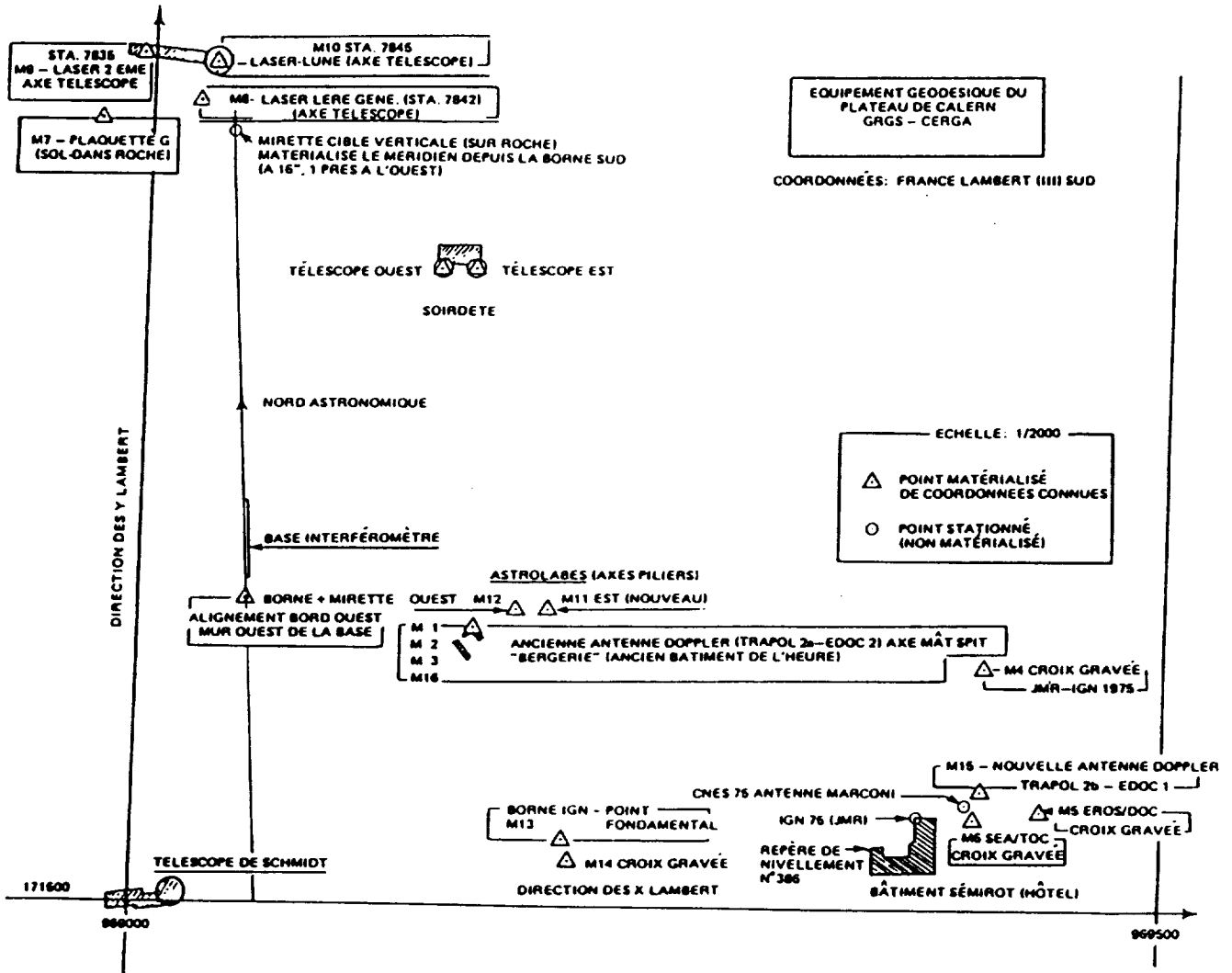
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7835	NONE (M9)	-0.578	-36.473	4.439
7842	NONE (M8)	11.796	-7.831	-11.563
--	NONE (M13)	240.984	188.299	-277.688
--	NONE (M7)	18.828	-55.835	-20.215
--	DORIS ANT REF PT	-11.923	-29.880	16.005

Mon. Number	Monument Inscription	North	East	Up
7835	NONE (M9)	6.644	-36.137	-0.520
7842	NONE (M8)	-16.187	-9.195	-0.220
--	NONE (M7)	-22.873	-57.696	-5.339

SITE SKETCH

Site Number: 142
 Current Site Name: GRASSE
 Location: GRASSE, FRANCE



PREVIOUS OCCUPATION INFORMATION

Site Number: 142
Current Site Name: GRASSE
Location: GRASSE, FRANCE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7835	GRASSE	78353101	01-MAY-76	21-MAR-83
7835	GRASSE	78353102	23-DEC-83	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7605	MV-3	76055301	04-SEP-89	10-SEP-89

-- SITE INFORMATION --

Site Number: 610

Current Site Name: GRAZ

Other Site Name:

Location: GRAZ, AUSTRIA

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF POLAR MOTION AND EARTH ROTATION, AND MEASUREMENTS SUPPORTING SLR TECHNIQUE DEVELOPMENT.

Site Description: THE STATION IS LOCATED AT THE LUSTBUHEL OBSERVATORY IN GRAZ, AUSTRIA. A FIXED LASER IS USED FOR SATELLITE LASER RANGING MEASUREMENTS AND IS OPERATED BY THE INSTITUT FUR WELTRAUMFORSCHUNG-ABTEILUNG SATELLITENGEODASIE.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: UNKNOWN

Local Geology: UNKNOWN

Comments: A HORIZONTAL PENDULUM AND AN EARTH TIDE GRAVIMETER ARE LOCATED 4 KM FROM LASER STATION.

MONUMENT INFORMATION

Site Number: 610
 Current Site Name: GRAZ
 Location: GRAZ, AUSTRIA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7839
 Type of Monument: AZIMUTH-ELEVATION AXES INTERSECTION
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER

Latitude: N 47 04' 04.6435''
 Longitude: E 15 29' 39.3914''
 Elevation: 495.427 meters
 Height Above Ellipsoid:
 Survey Source/Date: GEORG KIRCHNER/BFEC/03-JUN-86
 Datum/Ellipsoid: ED79/GEOID BOMFORD 70

Comments: NONE

Differential Coordinates FROM Observing Monument 7839 TO
Reference Monuments and Other Observing Monuments

Data Source: GRGS-CERGA/BFEC

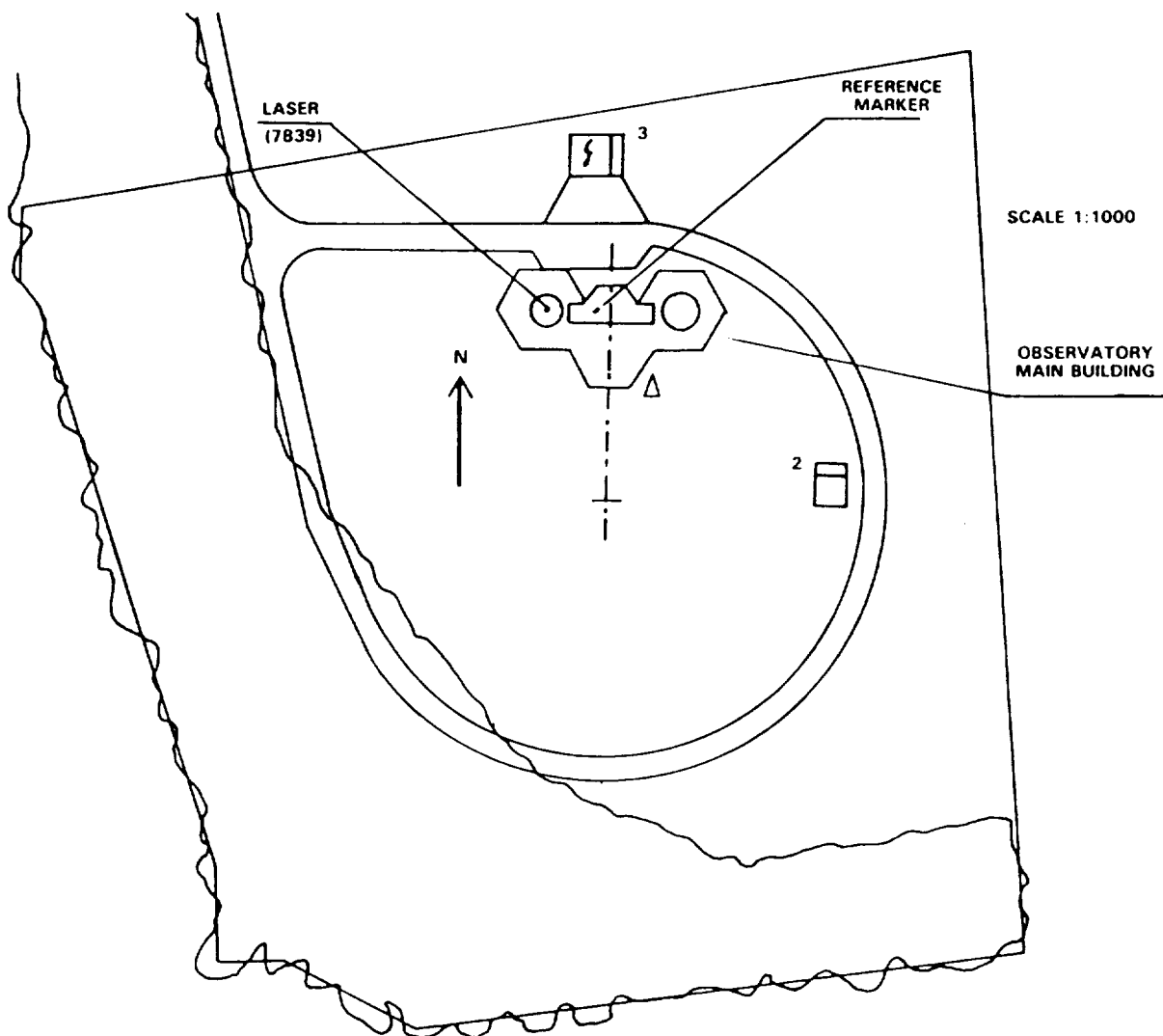
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE-REF MK ON TOP OF BLDG	2.531	-8.496	1.298

Mon. Number	Monument Inscription	North	East	Up
--	NONE-REF MK ON TOP OF BLDG	-0.759	8.864	-1.067

SITE SKETCH

Site Number: 610
Current Site Name: GRAZ
Location: GRAZ, AUSTRIA



PREVIOUS OCCUPATION INFORMATION

Site Number: 610

Current Site Name: GRAZ

Location: GRAZ, AUSTRIA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7839	AUSLAS	78393401	01-SEP-83	31-JUL-88
7839	AUSLAS	78393402	01-AUG-88	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 38

Current Site Name: GREEN BANK

Other Site Name: NRAO

Location: NRAO, GREEN BANK, WV

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE STATION IS LOCATED IN EASTERN WEST VIRGINIA AT THE NATIONAL RADIO ASTRONOMY OBSERVATORY (NRAO) OPERATED BY THE NATIONAL SCIENCE FOUNDATION. THE 140-FOOT RADIO TELESCOPE AND THE #3 85-FOOT ANTENNA HAVE BEEN USED FOR VLBI MEASUREMENTS.

Site Topo Map: CASS, WEST VIRGINIA. 15 MIN.

GEOLOGICAL INFORMATION

Geological Province: THE VALLEY AND RIDGE PROVINCE

Local Geology: PALEOZOIC CONSOLIDATED SEDIMENTARY ROCKS

Comments: NONE

MONUMENT INFORMATION

Site Number: 38

Current Site Name: GREEN BANK

Location: NRAO, GREEN BANK, WV

Number of Observing Monuments: 2

Surveyed into National Network? YES

Monument Number: 7204

Type of Monument: REFERENCE POINT ON RADIO TELESCOPE

Monument Inscription: NONE

Systems Using Monument: 43-METER RADIO TELESCOPE

Latitude: N 38 26' 15.709''

Longitude: W 79 50' 09.613''

Elevation: 844.715 meters

Height Above Ellipsoid: 847.300 meters

Survey Source/Date: FIRST GEODETIC SURVEY SQUADRON USAF/30-NOV-70

Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: THE REFERENCE POINT IS THE PRIMARY POINT OF THE FIXED VLBI RADIO TELESCOPE.

Differential Coordinates FROM Observing Monument 7204 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

MONUMENT INFORMATION (Continued)

Site Number: 38
Current Site Name: GREEN BANK
Location: NRAO, GREEN BANK, WV

Monument Number: 7214
Type of Monument: REFERENCE POINT ON ANTENNA
Monument Inscription: NONE
Systems Using Monument: #3 85-FOOT ANTENNA

Latitude:
Longitude:
Elevation:
Height Above Ellipsoid:
Survey Source/Date:
Datum/Ellipsoid:

Comments: NO GEODETIC INFORMATION AVAILABLE AT PRESENT.

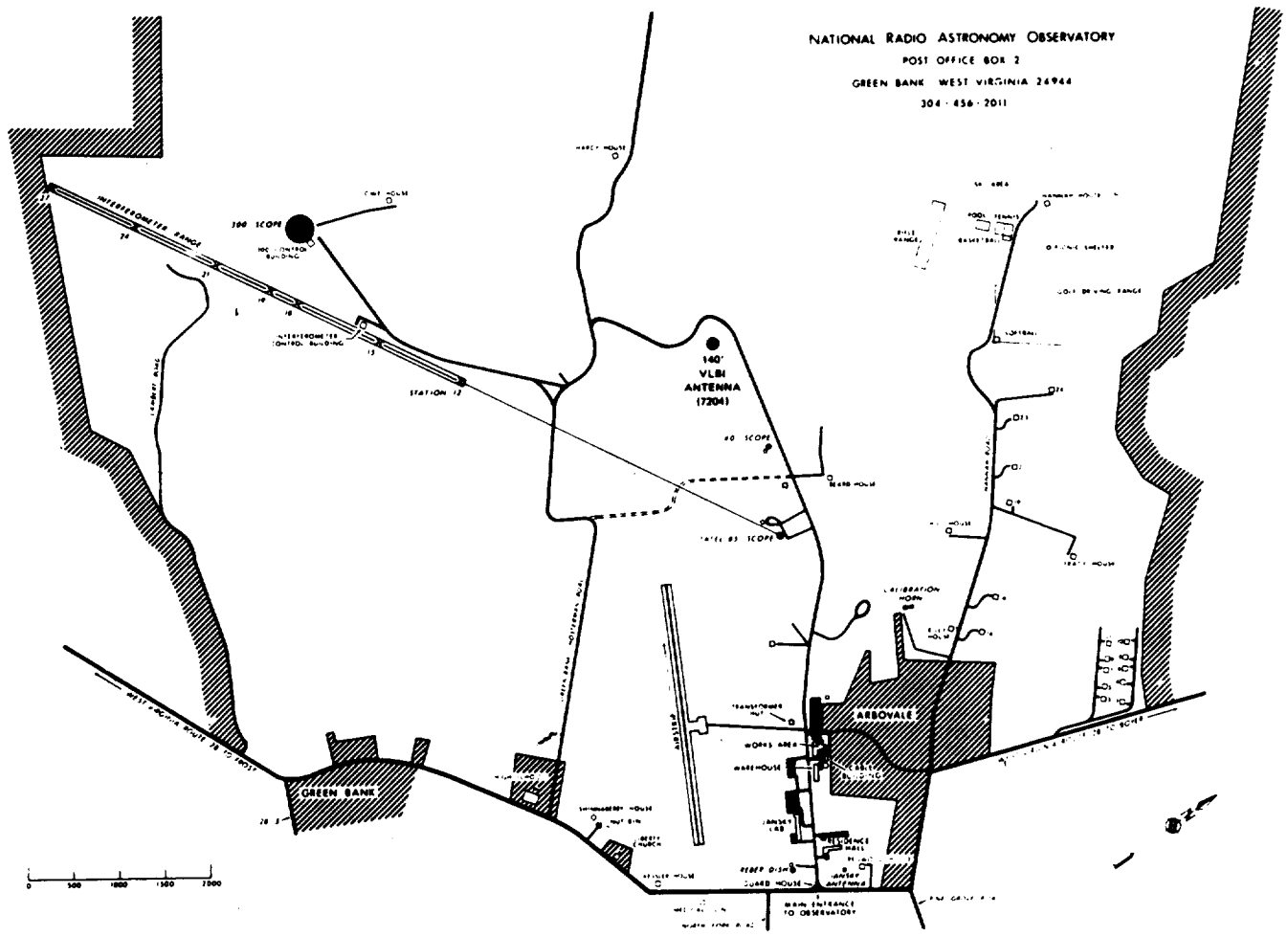
Differential Coordinates FROM Observing Monument 7214 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 38
 Current Site Name: GREEN BANK
 Location: NRAO, GREEN BANK, WV



PREVIOUS OCCUPATION INFORMATION

Site Number: 38

Current Site Name: GREEN BANK

Location: NRAO, GREEN BANK, WV

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7204	NRAO 140	72048001	09-OCT-76	16-DEC-82
7214	85-FEET	72146901	30-MAY-89	31-DEC-91
7214	85-FEET	72146902	01-JAN-91	---
7248	85-FEET 1	72484701	30-OCT-92	---

-- SITE INFORMATION --

Site Number: 39

Current Site Name: GREENBELT

Other Site Name: GODDARD OPTICAL RESEARCH FACILITY (GORF)

Other Site Name: GODDARD GEOPHYSICAL AND ASTRONOMICAL
OBSERVATORY (GGAO)

Location: GODDARD SPACE FLIGHT CENTER, GREENBELT, MD

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF EARTH ROTATION/POLAR MOTION, INTERNAL PLATE DEFORMATION, PLATE MOTION AND PLATE STABILITY, AND DEVELOPMENT OF SLR AND VLBI TECHNIQUE.

Site Description: THE STATION IS LOCATED AT NASA'S GODDARD GEOPHYSICAL AND ASTRONOMICAL OBSERVATORY (GGAO) OUTSIDE THE WASHINGTON D.C. CAPITAL BELTWAY IN GREENBELT, MARYLAND. THE GGAO FACILITY IS EQUIPPED WITH 20 OBSERVING MONUMENTS, ONE OF WHICH IS PERMANENTLY OCCUPIED BY MOB LAS-7. THERE ARE THREE TLRS PADS AND ONE MTLRS PAD. THIS SITE IS THE MAJOR COLLOCATION AND ENGINEERING SITE FOR CALIBRATION AND FIELD TESTING OF LASER RANGING. A NEW PERMANENT FACILITY FOR MV-3 IS UNDER CONSTRUCTION.

NORTH GEOS PIER IS A PRIMARY MARKER FOR THE FEDERAL GEODETIC CONTROL SUBCOMMITTEE GPS TEST NETWORK.

Site Topo Map: LAUREL, MARYLAND. 1943-65- (71 PRINT), U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: COASTAL PLAIN

Local Geology: THICK SECTION OF CRETACEOUS SANDS AND GRAVELS

Comments: NONE

MONUMENT INFORMATION

Site Number: 39
 Current Site Name: GREENBELT
 Location: GSFC, GREENBELT, MD
 Number of Observing Monuments: 7
 Surveyed into National Network? YES

Monument Number: 7102
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7102-1978
 Systems Using Monument: MOBILE LASER

Latitude: N 39 01' 14.36505''
 Longitude: W 76 49' 41.05486''
 Elevation:
 Height Above Ellipsoid: 19.206 meters
 Survey Source/Date: BFEC/22-FEB-93
 Datum/Ellipsoid: NAD 1983 (1991)/GRS 80

Comments: A = 6378137.000 1/f = 298.2572222

Differential Coordinates FROM Observing Monument 7102 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE- NORTH GEOS PIER	44.8188	30.4257	25.5571

Mon. Number	Monument Inscription	North	East	Up
--	NONE- NORTH GEOS PIER	32.0763	50.5737	1.0107

MONUMENT INFORMATION (Continued)

Site Number: 39
 Current Site Name: GREENBELT
 Location: GSFC, GREENBELT, MD

Monument Number: 7103
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7103-1978
 Systems Using Monument: MOBILE LASER

Latitude: N 39 01' 14.59256''
 Longitude: W 76 49' 41.05269''
 Elevation:
 Height Above Ellipsoid: 19.197 meters
 Survey Source/Date: BFEC/ 22-FEB-93
 Datum/Ellipsoid: NAD 1983 (1991)/GRS 80

Comments: NONE

Differential Coordinates FROM Observing Monument 7103 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE- NORTH GEOS PIER	45.7760	26.1065	20.1113

Mon. Number	Monument Inscription	North	East	Up
--	NONE- NORTH GEOS PIER	25.0602	50.5213	1.0189

MONUMENT INFORMATION (Continued)

Site Number: 39
 Current Site Name: GREENBELT
 Location: GSFC, GREENBELT, MD

Monument Number: 7105
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7105-1981
 Systems Using Monument: MOBLAS-7

Latitude: N 39 01' 14.14893''
 Longitude: W 76 49' 39.69092''
 Elevation:
 Height Above Ellipsoid: 20.441 meters
 Survey Source/Date: BFEC/22-FEB-93
 Datum/Ellipsoid: NAD 1983 (1991)/GRS 80

Comments: MOBLAS-7 HAS BEEN OPERATING OVER THIS MONUMENT SINCE 1981.

Differential Coordinates FROM Observing Monument 7105 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE- NORTH GEOS PIER	11.6962	27.9691	29.9570
7102	7102-1978	-33.1225	-2.4566	4.3999
7103	7103-1978	-34.0798	1.8626	9.8457
7106	NONE- 48" TEL REF PT	-73.2975	46.1011	76.2553
7125	7125-1985	26.0378	-17.4601	-29.3893
7920	7125-B	22.1815	-19.2148	-30.4103
7918	NONE	-14.4191	5.1371	9.4560

Monument Number: 7105
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7105-1981
 Systems Using Monument: MOBLAS-7

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	NONE- NORTH GEOS PIER	38.7417	17.7630	-0.2262
7102	7102-1978	6.6653	-32.8107	-1.2366
7103	7103-1978	13.6814	-32.7583	-1.2448
7106	NONE- 48" TEL REF PT	98.0234	-60.8613	0.1563
7125	7125-1985	-37.2730	21.3731	-0.6845
7920	7125-B	-38.5885	17.2184	-0.6828
7918	NONE	12.5648	-12.8688	-0.4859

MONUMENT INFORMATION (Continued)

Site Number: 39
Current Site Name: GREENBELT
Location: GSFC, GREENBELT, MD

Monument Number: 7106
Type of Monument: NONE (REFERENCE POINT)
Monument Inscription: NONE
Systems Using Monument: 48-INCH TELESCOPE HOUSED IN DOME

Latitude: 39 01' 17.32755"
Longitude: 76 49' 42.22102"
Elevation:
Height Above Ellipsoid: 20.601 meters
Survey Source/Date: BFEC/22-FEB-93
Datum/Ellipsoid: NAD 1983 (1991)/GRS 80

Comments: THIS IS AN OPTICAL TESTING FACILITY.

Differential Coordinates FROM Observing Monument 7106 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE- NORTH GEOS PIER	84.9937	-18.1320	-46.2983

Mon. Number	Monument Inscription	North	East	Up
--	NONE- NORTH GEOS PIER	-59.2819	78.6241	-0.3826

MONUMENT INFORMATION (Continued)

Site Number: 39
 Current Site Name: GREENBELT
 Location: GSFC, GREENBELT, MD

Monument Number: 7125
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7125-1985
 Systems Using Monument: MTLRS

Latitude: N 39 01' 12.94027"
 Longitude: W 76 49' 38.80242"
 Elevation:
 Height Above Ellipsoid: 19.756 meters
 Survey Source/Date: BFEC/22-FEB-93
 Datum/Ellipsoid: NAD 1983 (1991)/GRS 80

Comments: THIS PAD HAS THE FOUR ADDITIONAL MONUMENTS REQUIRED BY THE MTLRS EUROPEAN LASER.

Differential Coordinates FROM Observing Monument 7125 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE- NORTH GEOS PIER	-14.3415	45.4292	59.3463

Mon. Number	Monument Inscription	North	East	Up
--	NONE- NORTH GEOS PIER	76.0147	-3.6100	0.4587

MONUMENT INFORMATION (Continued)

Site Number: 39
 Current Site Name: GREENBELT
 Location: GSFC, GREENBELT, MD

Monument Number: 7918
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: NONE
 Systems Using Monument: TLRS-3, TLRS-4

Latitude: N 39 01' 14.55637''
 Longitude: W 76 49' 40.22588''
 Elevation:
 Height Above Ellipsoid: 19.956 meters
 Survey Source/Date: BFEC/ 22-FEB-93
 Datum/Ellipsoid: NAD 1983 (1991)/GRS 80

Comments: THIS IS THE FIELD TEST SITE FOR THE TLRS-3 AND TLRS-4 SYSTEMS.

Differential Coordinates FROM Observing Monument 7918 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE- NORTH GEOS PIER	26.1153	22.8320	20.5010

Mon. Number	Monument Inscription	North	East	Up
--	NONE- NORTH GEOS PIER	26.1768	30.6318	0.2599

MONUMENT INFORMATION (Continued)

Site Number: 39
 Current Site Name: GREENBELT
 Location: GSFC, GREENBELT, MD

Monument Number: 7920
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7125-B
 Systems Using Monument: TLRS-1

Latitude: N 39 01' 12.89761''
 Longitude: W 76 49' 38.97512''
 Elevation:
 Height Above Ellipsoid: 19.758 meters
 Survey Source/Date: BFEC/ 22-FEB-93
 Datum/Ellipsoid: NAD 1983 (1991)/GRS 80

Comments: TLRS-1 OCCUPIED THIS MTLRS MONUMENT BECAUSE THE SYSTEM
 COULD NOT FIT OVER THE 7125 OBSERVING MONUMENT.

Differential Coordinates FROM Observing Monument 7920 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE- NORTH GEOS PIER	-10.4853	47.1839	60.3673

Mon. Number	Monument Inscription	North	East	Up
--	NONE- NORTH GEOS PIER	77.3302	0.5447	0.4570

SITE SKETCH

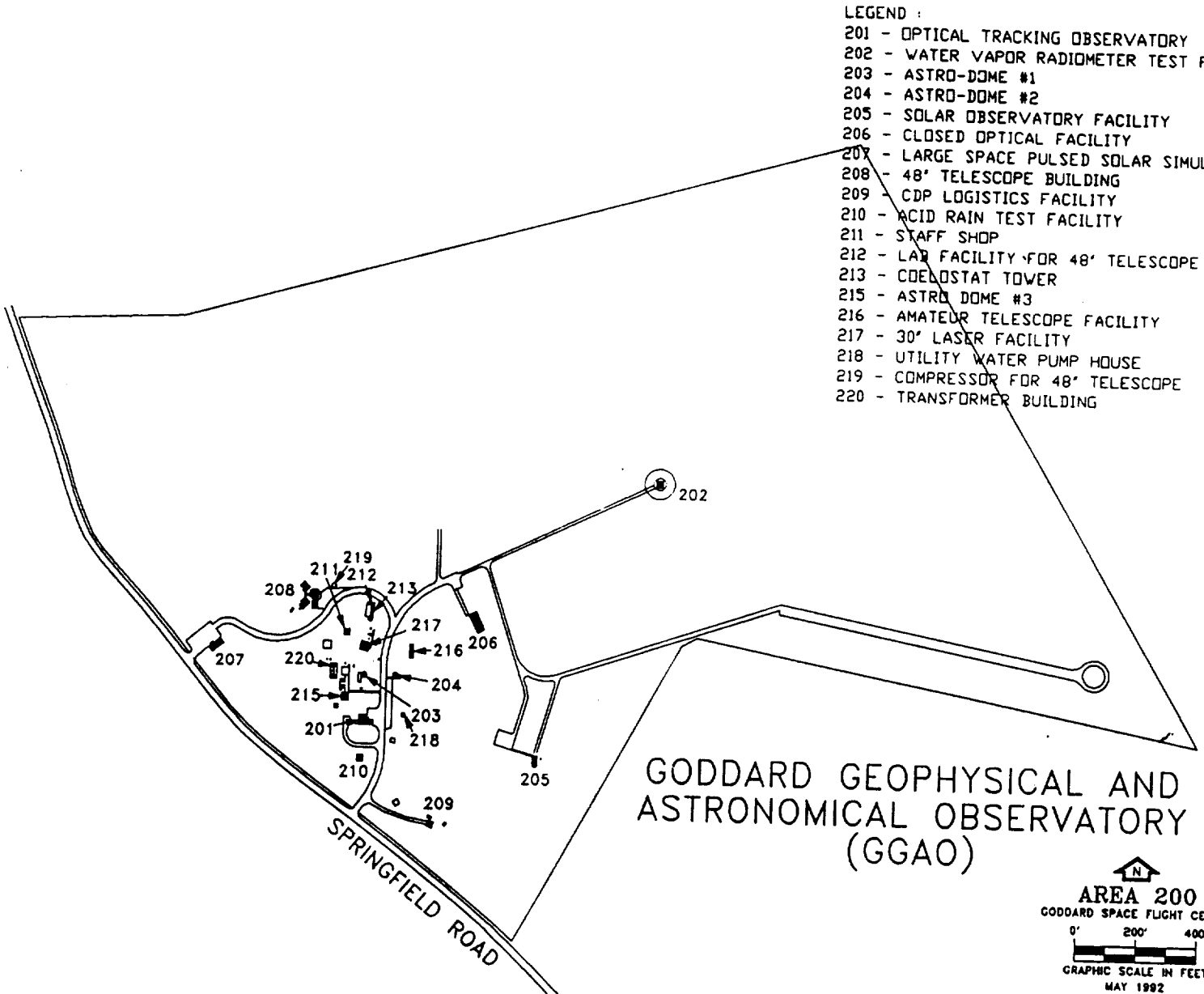
Site Number: 39

Current Site Name: GREENBELT

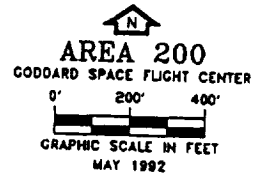
Location: GSFC, GREENBELT, MD

LEGEND :

- 201 - OPTICAL TRACKING OBSERVATORY
- 202 - WATER VAPOR RADIOMETER TEST FACILITY
- 203 - ASTRO-DOME #1
- 204 - ASTRO-DOME #2
- 205 - SOLAR OBSERVATORY FACILITY
- 206 - CLOSED OPTICAL FACILITY
- 207 - LARGE SPACE PULSED SOLAR SIMULATOR
- 208 - 48' TELESCOPE BUILDING
- 209 - CDP LOGISTICS FACILITY
- 210 - ACID RAIN TEST FACILITY
- 211 - STAFF SHOP
- 212 - LAB FACILITY FOR 48' TELESCOPE
- 213 - COELOSTAT TOWER
- 215 - ASTRO DOME #3
- 216 - AMATEUR TELESCOPE FACILITY
- 217 - 30' LASER FACILITY
- 218 - UTILITY WATER PUMP HOUSE
- 219 - COMPRESSOR FOR 48' TELESCOPE
- 220 - TRANSFORMER BUILDING



GODDARD GEOPHYSICAL AND
ASTRONOMICAL OBSERVATORY
(GGAO)



PREVIOUS OCCUPATION INFORMATION

Site Number: 39
 Current Site Name: GREENBELT
 Location: GSFC, GREENBELT, MD

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7063	STALAS	70632101	01-MAY-76	28-AUG-81
7064	MOBLAS-1	70640101	01-OCT-73	30-JUN-74
7064	MOBLAS-1	70640102	21-OCT-77	28-NOV-77
7065	MOBLAS-2	70650201	01-OCT-73	30-JUN-74
7065	MOBLAS-3	70650302	01-AUG-75	09-JUL-76
7065	MOBLAS-2	70650203	17-OCT-77	21-NOV-77
7083	MOBLAS-3	70830301	01-JAN-75	15-JUN-75
7100	MOBLAS-3	71000301	16-AUG-77	18-NOV-77
7100	MOBLAS-4	71000402	01-MAR-78	13-OCT-78
7101	MOBLAS-8	71010801	01-AUG-78	30-MAY-79
7101	MOBLAS-6	71010602	01-FEB-82	01-JUN-82
7102	MOBLAS-5	71020501	01-APR-78	17-MAY-79
7102	MOBLAS-4	71020402	15-MAY-79	15-NOV-82
7102	MOBLAS-4	71020403	01-DEC-82	31-MAR-83
7102	MOBLAS-4	71020404	01-APR-83	31-JUL-83
7102	MOBLAS-3	71020305	01-DEC-84	22-JUN-88
7102	TLRS-1	71021106	21-OCT-88	01-JAN-89
7102	TLRS-1	71021107	02-JAN-89	06-MAR-89
7103	MOBLAS-6	71030601	15-MAY-78	10-MAY-79
7103	MOBLAS-6	71030602	08-JUN-82	02-NOV-82
7104	MOBLAS-7	71040701	01-JUL-78	04-JUN-79
7105	MOBLAS-7	71050701	01-JAN-81	15-JUN-81
7105	MOBLAS-7	71050702	16-JUN-81	01-FEB-83
7105	MOBLAS-7	71050703	01-FEB-83	22-AUG-83
7105	MOBLAS-7	71050704	22-AUG-83	22-MAR-84
7105	MOBLAS-7	71050705	22-MAR-84	07-MAY-85
7105	TLRS-2	71051206	01-MAR-85	23-JUL-85
7105	MOBLAS-2	71050207	29-MAR-85	03-JUL-85
7105	MOBLAS-7	71050708	07-MAY-85	29-JUL-85
7105	MOBLAS-7	71050709	29-JUL-85	27-MAR-86

-- PREVIOUS OCCUPATION INFORMATION (Continued) --

Site Number: 39

Current Site Name: GREENBELT

Location: GSFC, GREENBELT, MD

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7105	MOBLAS-7	71050710	31-MAR-86	06-DEC-86
7105	MOBLAS-7	71050711	06-DEC-86	27-JUL-88
7105	MOBLAS-7	71050712	27-JUL-88	09-JAN-89
7105	MOBLAS-7	71050713	10-JAN-89	14-JUN-89
7105	MOBLAS-7	71050714	15-JUN-89	02-AUG-89
7105	MOBLAS-7	71050715	03-AUG-89	11-OCT-89
7105	MOBLAS-7	71050716	12-OCT-89	24-JUL-90
7105	MOBLAS-7	71050717	25-JUL-90	31-AUG-90
7105	MOBLAS-7	71050718	01-SEP-90	09-DEC-90
7105	MOBLAS-7	71050719	10-DEC-90	09-JUL-91
7105	MOBLAS-7	71050720	10-JUL-91	22-JUL-91
7105	MOBLAS-7	71050721	23-JUL-91	16-OCT-91
7105	MOBLAS-7	71050722	18-OCT-91	08-DEC-91
7105	MOBLAS-7	71050723	09-DEC-91	22-JUN-92
7105	MOBLAS-7	71050724	10-JUL-92	---
7106	48-INCH	71065601	01-JAN-90	---
7125	MTLRS-1	71251501	01-MAY-85	23-JUL-85
7125	TLRS-3	71251302	15-SEP-87	28-JAN-88
7130	TLRS-2	71301201	06-NOV-85	19-MAY-87
7889	TLRS-2	78891201	01-MAY-82	20-DEC-82
7889	TLRS-3	78891302	01-NOV-84	01-AUG-85
7889	TLRS-2	78891203	01-AUG-85	15-OCT-85
7899	TLRS-1	78991101	29-FEB-80	21-MAY-80
7899	TLRS-1	78991102	18-AUG-80	10-OCT-80
7917	SAO-3	79174201	01-SEP-84	31-DEC-85
7918	TLRS-3	79181301	22-AUG-85	08-JUL-86
7918	TLRS-3	79181302	11-FEB-87	15-SEP-87
7918	TLRS-4	79181403	01-FEB-88	23-DEC-88
7918	TLRS-4	79181404	06-MAR-90	23-JUL-90
7918	TLRS-4	79181405	24-JUL-90	04-OCT-90
7918	TLRS-3	79181306	18-DEC-91	14-MAY-92
7918	TLRS-4	79181407	22-JUN-92	29-AUG-92
7919	TLRS-4	79191401	18-NOV-85	02-APR-87

-- PREVIOUS OCCUPATION INFORMATION (Continued) --

Site Number: 39
 Current Site Name: GREENBELT
 Location: GSFC, GREENBELT, MD

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7920	TLRS-1	79201101	29-JUL-85	15-JAN-86
7920	TLRS-1	79201102	16-JAN-86	19-DEC-86
7920	TLRS-1	79201103	21-DEC-86	20-JAN-87
7920	TLRS-1	79201104	21-JAN-87	06-FEB-87
7920	TLRS-1	79201105	03-FEB-88	08-MAR-88
7920	TLRS-3	79201306	03-OCT-88	15-FEB-89
7920	TLRS-3	79201307	16-FEB-89	18-JUN-89
7920	TLRS-3	79201308	19-JUN-89	11-OCT-89
7920	TLRS-3	79201309	12-OCT-89	16-NOV-89
7920	TLRS-1	79201110	04-SEP-90	10-OCT-90
7920	TLRS-1	79201111	26-AUG-91	04-OCT-91
7920	SALRO	79205512	12-FEB-92	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7102	MV-3	71025301	29-MAY-89	31-MAY-89
7102	MV-3	71025302	10-OCT-89	12-OCT-89
7102	MV-3	71025303	01-MAY-91	---

-- SITE INFORMATION --

Site Number: 869

Current Site Name: HACHUO JIMA

Other Site Name:

Location: HACHUO JIMA, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7309	HTLRS-1	73091701	01-OCT-92	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 90

Current Site Name: HALEAKALA

Other Site Name:

Location: LURE OBS., MOUNT HALEAKALA, MAUI, HI

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, INTERNAL PLATE DEFORMATION, PLATE STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE STATION IS LOCATED ON THE ISLAND OF MAUI IN THE HAWAIIAN ISLAND CHAIN. THE FIXED LASER (HOLLAS) IS LOCATED IN THE LURE OBSERVATORY ON MOUNT HALEAKALA. A PAD WAS CONSTRUCTED NEARBY THE OBSERVATORY AND WAS OCCUPIED BY MOBLAS-1 IN 1980 AFTER A STORM RENDERED THE OBSERVATORY INOPERABLE. THE PAD HAS SINCE BEEN OCCUPIED BY A MOBILE VLBI SYSTEM FOR INTERCOMPARISON WITH THE HOLLAS LASER.

Site Topo Map: KILOHANA, HAWAII. 1957, 7.5 QUAD, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: THE HAWAIIAN ARCHIPELAGO

Local Geology: AA BASALTIC FLOWS. HALEAKALA IS THE MORE EASTERLY AND YOUNGER OF THE TWO VOLCANIC MOUNTAINS THAT MAKE UP THE ISLAND OF MAUI. ITS LAVAS OVERLAP THOSE OF THE WEST MAUI VOLCANO AND MAKE UP THE ISTHMUS THAT CONNECTS THE TWO MOUNTAINS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 90
 Current Site Name: HALEAKALA
 Location: LURE OBS., MOUNT HALEAKALA, MAUI, HI
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7120
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: MOBLAS STA 7120-1980
 Systems Using Monument: MOBLAS-1

Latitude: N 20 42' 27.35298"
 Longitude: W 156 15' 21.72411"
 Elevation:
 Height Above Ellipsoid: 3062.965 meters
 Survey Source/Date: BFEC/06-SEP-89
 Datum/Ellipsoid: NAD-83/GRS-80

Comments: THIS MONUMENT WAS OCCUPIED ON A TEMPORARY BASIS UNTIL
 THE OBSERVATORY REGAINED ITS OPERATIONS AFTER A SEVERE STORM.

Differential Coordinates FROM Observing Monument 7120 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7210	----	-8.0441	-19.3811	-40.9923
--	KOLE KOLE (HGS 1876)	-18.8175	8.3804	-29.6831
--	KOLE KOLE NO. 2	-9.5964	-0.5873	-22.9866
--	KOLE KOLE OFFSET (DMA 1986)	-16.3948	10.2591	-17.9106
--	SATE TRI STA 011 RM1 (1966)	4.1546	-20.7836	-13.7230

Mon. Number	Monument Inscription	North	East	Up
7210	----	-43.7071	14.5017	-0.3066
--	KOLE KOLE (HGS 1876)	-32.6630	-15.2478	2.4605
--	KOLE KOLE NO. 2	-24.6913	-3.3263	0.3104
--	KOLE KOLE OFFSET (DMA 1986)	-20.5993	-15.9920	3.8411
--	SATE TRI STA 011 RM1 (1966)	-14.4508	20.6972	-0.5816

MONUMENT INFORMATION (Continued)

Site Number: 90
 Current Site Name: HALEAKALA
 Location: LURE OBS., MOUNT HALEAKALA, MAUI, HI

Monument Number: 7210
 Type of Monument: CARRIAGE BOLT
 Monument Inscription: NONE
 Systems Using Monument: HOLLAS FIXED LASER

Latitude: N 20 42' 25.93247"
 Longitude: W 156 15' 21.22320"
 Elevation:
 Height Above Ellipsoid: 3062.658 meters
 Survey Source/Date: BFEC/06-SEP-89
 Datum/Ellipsoid: NAD-83/GRS-80

Comments: THE SURVEY TABLET WAS USED TO REFERENCE THE FIXED LASER IN THE LURE OBSERVATORY.

Differential Coordinates FROM Observing Monument 7210 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7120	MOBLAS STA 7120-1980	8.0441	19.3811	40.9923
--	KOLE KOLE (HGS 1876)	-10.7734	27.7615	11.3091
--	KOLE KOLE NO. 2	-1.5523	18.7937	18.0056
--	KOLE KOLE OFFSET (DMA 1986)	-8.3507	29.6402	23.0817
--	SATE TRI STA 011 RM1 (1966)	12.1987	-1.4025	27.2693

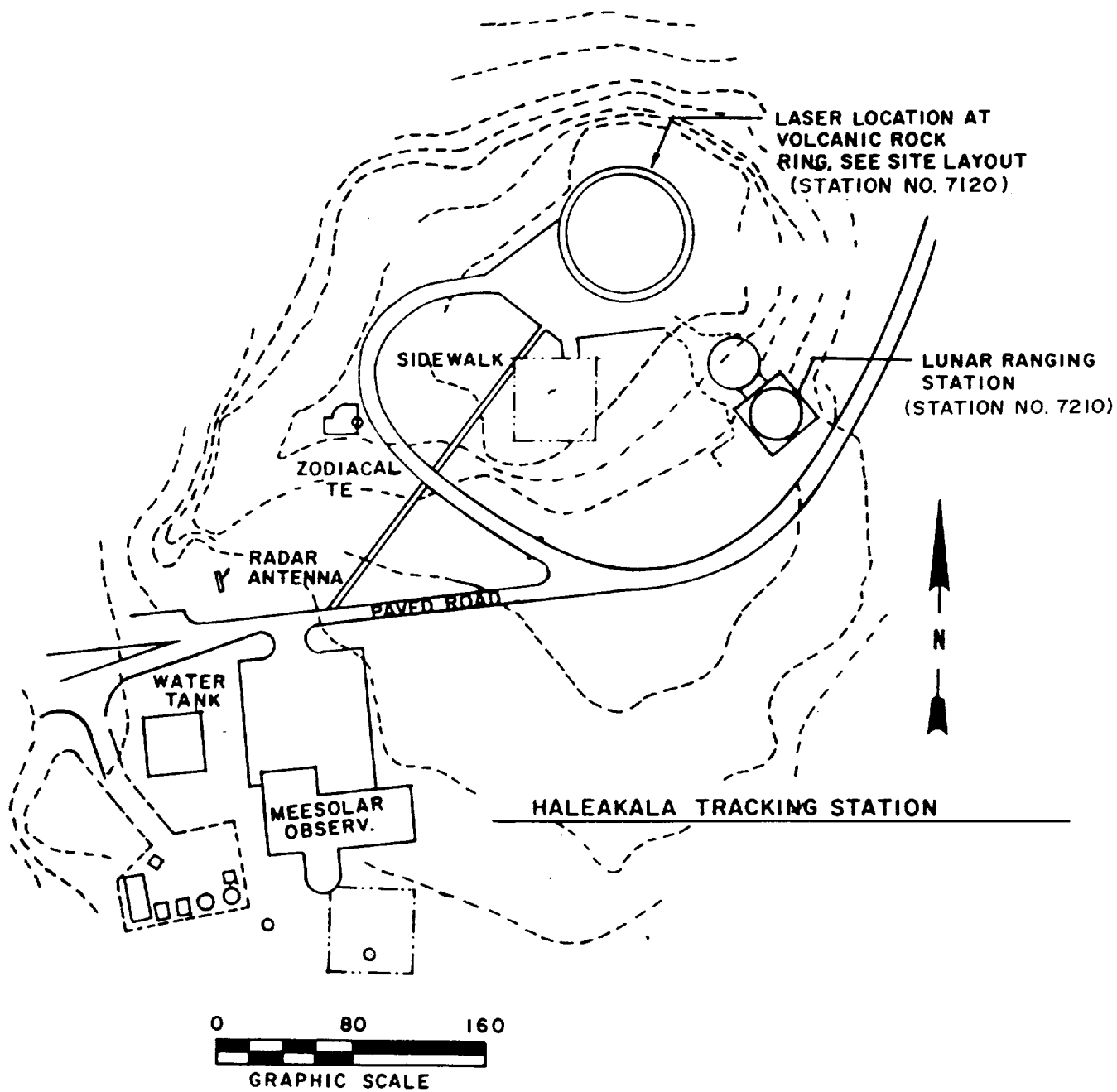
Mon. Number	Monument Inscription	North	East	Up
7120	MOBLAS STA 7120-1980	43.7071	-14.5017	0.3066
--	KOLE KOLE (HGS 1876)	11.0442	-29.7495	2.7670
--	KOLE KOLE NO. 2	19.0158	-17.8280	0.6169
--	KOLE KOLE OFFSET (DMA 1986)	23.1078	-30.4937	4.1475
--	SATE TRI STA 011 RM1 (1966)	29.2562	6.1956	-0.2752

SITE SKETCH

Site Number: 90

Current Site Name: HALEAKALA

Location: LURE OBS., MOUNT HALEAKALA, MAUI, HI



PREVIOUS OCCUPATION INFORMATION

Site Number: 90

Current Site Name: HALEAKALA

Location: LURE OBS., MOUNT HALEAKALA, MAUI, HI

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7120	MOBLAS-1	71200101	15-JUN-80	22-JAN-82
7210	HALEAKALA	72102301	01-MAY-76	31-MAR-84
7210	HALEAKALA	72102302	01-APR-84	16-JUL-87
7210	HALEAKALA	72102303	17-JUL-87	03-AUG-89
7210	HALEAKALA	72102304	04-AUG-89	31-OCT-90
7210	HALEAKALA	72102305	01-NOV-90	21-JAN-91
7210	HALEAKALA	72102306	22-JAN-91	18-JUN-91
7210	HALEAKALA	72102307	19-JUN-91	13-JAN-92
7210	HALEAKALA	72102308	14-JAN-92	07-APR-92
7210	HALEAKALA	72102309	08-APR-92	01-JUL-92
7210	HALEAKALA	72102310	02-JUL-92	14-JUL-92
7210	HALEAKALA	72102311	15-JUL-92	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7120	MV-3	71205301	24-JUN-88	12-JUL-88

-- SITE INFORMATION --

Site Number: 109

Current Site Name: HARTEBEESTHOEK

Other Site Name: JOHANNESBURG

Location: HARTEBEESTHOEK, REPUBLIC OF SOUTH AFRICA

Geographic Region: SOUTHERN AFRICA

Tectonic Plate: AFRICAN

Primary Scientific Purposes: THE OBSERVATORY PROVIDES FACILITIES FOR ASTRONOMERS OF SOUTH AFRICAN UNIVERSITIES, THE INTERNATIONAL COMMUNITY AND ITS OWN STAFF. IT PARTICIPATES IN A VARIETY OF INTERNATIONAL PROGRAMMES, ESPECIALLY THOSE IN WHICH IT CAN MAKE UNIQUE CONTRIBUTIONS AS A RESULT OF ITS SPECIALIZED INSTRUMENTATION AND ITS FAVOURABLE LOCATION.

Site Description: HartRAO IS SITUATED 60 KM NW OF JOHANNESBURG. HartRAO IS A NATIONAL RESEARCH FACILITY WHICH OPERATES WITHIN THE FOUNDATION FOR RESEARCH DEVELOPMENT.

Site Topo Map: HEKPOORT 2527DC 2ND EDITION. 1:50000 TOPOGRAPHIC MAP SERIES. AVAILABLE FROM THE GOVERNMENT PRINTER, PRETORIA.

GEOLOGICAL INFORMATION

Geological Province:

Local Geology: HartRAO IS LOCATED ON THE PRETORIA SERIES OF THE TRANSVAAL SYSTEM. THE TERRITORY OCCUPIED OR ELSE UNDERLAIN BY THE SYSTEM EMBRACES THE GREATER PART OF THE CENTRAL TRANSVAAL. THE TRANSVAAL SYSTEM IS OF PRECAMBRIAN AGE. THE ANTENNA AND BUILDINGS ARE SITUATED ON ONGELUK LAVA.

Comments:

MONUMENT INFORMATION

Site Number: 109

Current Site Name: HARTEBEEESTHOEK

Location: HARTEBEEESTHOEK, REPUBLIC OF SOUTH AFRICA

Number of Observing Monuments:

Surveyed into National Network? YES

Monument Number: 7232

Type of Monument: TELESCOPE REFERENCE CENTRE

Monument Inscription: NONE

Systems Using Monument: 26-METER FIXED ANTENNA

Latitude: S 25 53' 23.1246"

Longitude: E 27 41' 07.4107"

Elevation:

Height Above Ellipsoid: 1415.821 (WGS84)

Survey Source/Date: RSA SURVEYS AND LAND INFORMATION/ MAY 1992

Datum/Ellipsoid: NEOS (1988.0)

Comments:

Differential Coordinates FROM Observing Monument 7232 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	BRITT 44	918.300	-779.681	482.273
--	DORIS ANTENNA (BASE)	-801.231	2086.236	199.869
--	ARGUS ANTENNA (BASE)	-796.764	2076.696	200.037
--	ROGUE ANTENNA			

PREVIOUS OCCUPATION INFORMATION

Site Number: 109

Current Site Name: HARTEBEESTHOEK

Location: HARTEBEESTHOEK, REPUBLIC OF SOUTH AFRICA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7232	26-METER	72326201	01-MAY-76	---

-- SITE INFORMATION --

Site Number: 714

Current Site Name: HAT CREEK

Other Site Name:

Location: HAT CREEK RADIO ASTRONOMICAL OBSERVATORY, CASSEL, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE STABILITY, INTERNAL PLATE DEFORMATION, AND REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED IN NORTHERN CALIFORNIA AT THE HAT CREEK RADIO OBSERVATORY WHICH IS OWNED BY THE UNIVERSITY OF CALIFORNIA AT BERKELEY. ONE FIXED 26-METER RADIO TELESCOPE WAS USED FOR VLBI MEASUREMENTS. THE ANTENNA WAS DESTROYED BY HIGH WINDS IN JANUARY 1993.

Site Topo Map: BURNEY, CALIFORNIA. 1957, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: CASCADE RANGES

Local Geology: PLEISTOCENE VOLCANICS

Comments: NONE

MONUMENT INFORMATION

Site Number: 714

Current Site Name: HAT CREEK

Location: HAT CREEK RADIO ASTRONOMICAL OBSERVATORY, CASSEL, CA

Number of Observing Monuments: 1

Surveyed into National Network? YES

Monument Number: 7218

Type of Monument: INTERSECTION OF AXIS OF THE ANTENNA

Monument Inscription: NONE

Systems Using Monument: 26-METER (85-FOOT) FIXED RADIO TELESCOPE

Latitude: N 40 49' 02.43370''

Longitude: W 121' 28' 13.84265''

Elevation:

Height Above Ellipsoid: 1009.259 meters

Survey Source/Date: BFEC/ 14-MAY-92

Datum/Ellipsoid: NAD83/GRS-80

Comments: ORIGINAL ANTENNA SURVEY BY NGS IN 1987. NAD83 POSITION FROM NGS DATABASE. THE ANTENNA WAS DESTROYED IN JANUARY 1993.

Differential Coordinates FROM Observing Monument 7218 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	HAT CREEK NCMN A	130.6037	21.6264	77.6422
--	HAT CREEK NCMN B	97.9746	-73.5856	-33.4897
--	HAT CREEK NCMN C	-67.7086	-3.3723	-66.9130
--	HAT CREEK NCMN D	-39.5433	61.0460	18.1055
--	SOUTH ALIGNMENT PIER	-6.0041	-9.8512	-33.6312

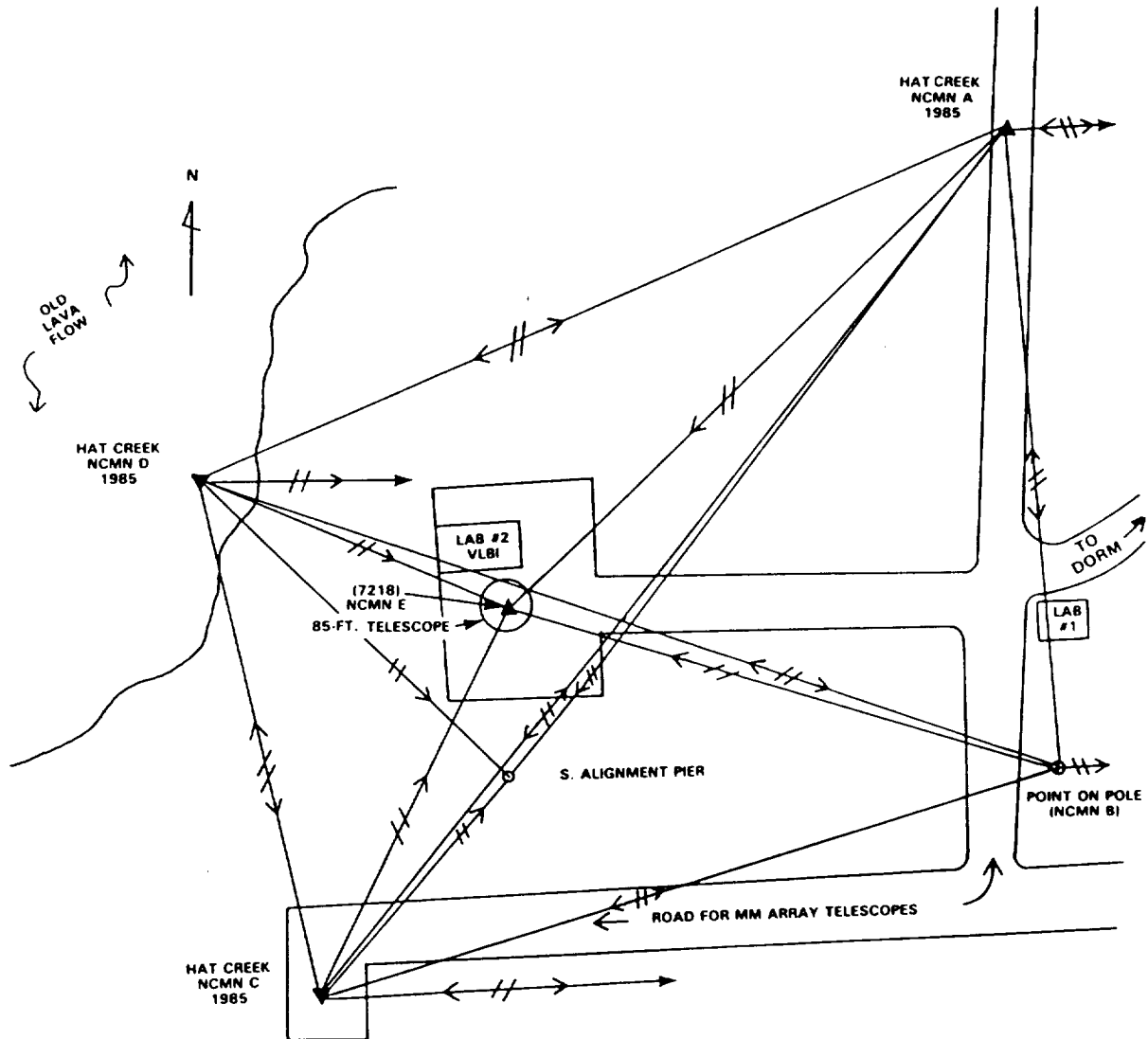
Mon. Number	Monument Inscription	North	East	Up
--	HAT CREEK NCMN C	-75.6248	-55.9887	-14.8097
--	HAT CREEK NCMN D	34.2416	-65.5965	-11.9459
--	HAT CREEK NCMN E	0.0000	0.0000	-14.9420
--	SOUTH ALIGNMENT PIER	-32.9930	0.0220	-13.2521

SITE SKETCH

Site Number: 714

Current Site Name: HAT CREEK

Location: HAT CREEK RADIO ASTRONOMICAL OBSERVATORY, CASSEL, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 714

Current Site Name: HAT CREEK

Location: HAT CREEK RADIO ASTRONOMICAL OBSERVATORY, CASSEL, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7218	26-METER	72186501	06-JUN-83	---

-- SITE INFORMATION --

Site Number: 650

Current Site Name: HELWAN

Other Site Name:

Location: HELWAN, EGYPT

Geographic Region: MEDITERRANEAN

Tectonic Plate: AFRICAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 650

Current Site Name: HELWAN

Location: HELWAN, EGYPT

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7831	HELLAS	78314601	01-MAY-83	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 880

Current Site Name: HERSTMONCEUX

Other Site Name:

Location: ROYAL GREENWICH OBS., GREAT BRITAIN

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION GLOBAL PLATE MOTION, INTERNAL PLATE DEFORMATION/PLATE STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE STATION IS LOCATED AT THE ROYAL GREENWICH OBSERVATORY, HERSTMONCEUX, GREAT BRITAIN. A FIXED SATELLITE LASER RANGING SYSTEM HAS BEEN OPERATING AT HERSTMONCEUX SINCE MARCH 1983.

Site Topo Map: ROYAL GREENWICH OBSERVATORY. SCALE 1:2500. RGO HERSTMONCEUX CASTLE R2064/1. CROWN COPYRIGHT 1971.

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: THE SITE AREA IS BOUNDED ON THE SOUTH BY OLD, BUT NOW DRAINED, MARSHLAND WITH THE ENGLISH CHANNEL ABOUT SIX KM AWAY. THE UNDERLYING STRUCTURE IS INTERBEDDED CLAYS AND SANDSTONES CALLED THE HASTINGS BEDS. THERE IS NO HISTORY OF SEISMIC ACTIVITY IN THE AREA.

Comments: NONE

MONUMENT INFORMATION

Site Number: 880
 Current Site Name: HERSTMONCEUX
 Location: ROYAL GREENWICH OBS., GREAT BRITAIN
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7840
 Type of Monument: INTERSECTION OF AXES
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER

Latitude: N 50 52' 02.5645''
 Longitude: E 00 20' 10.0418''
 Elevation:
 Height Above Ellipsoid: 75.3751 meters
 Survey Source/Date: ORDNANCE SURVEY / JUN-92
 Datum/Ellipsoid: WGS 84

Comments: NONE

Differential Coordinates FROM Observing Monument 7840 TO
Reference Monuments and Other Observing Monuments

Data Source: RGO

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	OSGB PRI PILLAR (PP481)	122.1820	588.5932	-99.1924
--	WEST BLDG ROOF (T225)	168.8124	-76.7684	-137.6589
--	SOLAR PILLAR (T151)	-4.6509	-36.0781	-1.9459
--	MERIDIAN PILLAR (T219)	-414.6863	65.0928	337.6402
--	ROGUE GPS REF POINT	6.5052	10.2783	-3.9453
--	NW RIVET (1991 SLR MARKER)	-1.6043	-0.5748	-1.0581

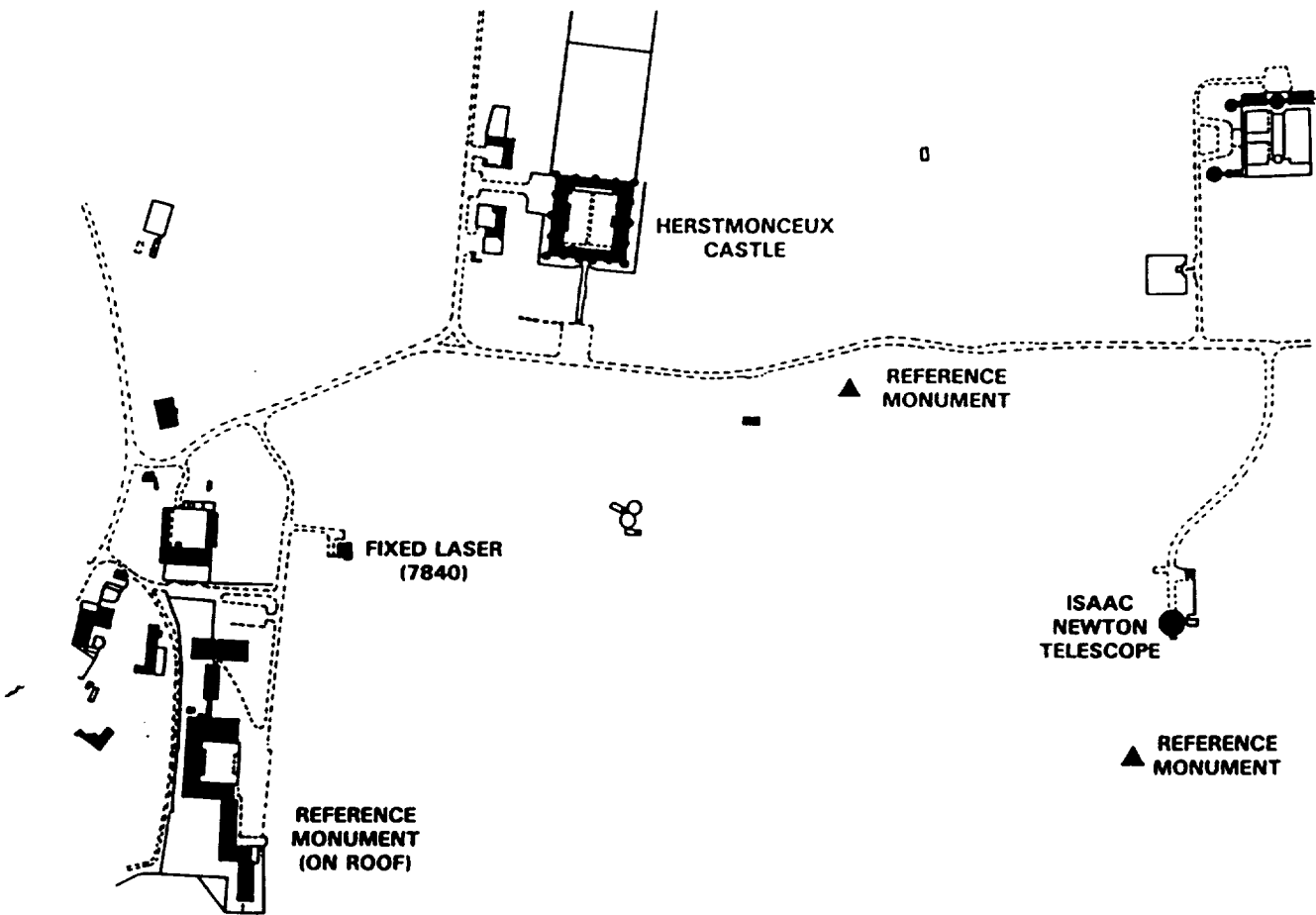
Mon. Number	Monument Inscription	North	East	Up
--	SOLAR PILLAR (T151)	2.5437	-36.0502	-4.5782
--	ROGUE GPS REF POINT	-7.5826	10.2400	1.0832
--	NW RIVET (1991 SLR MARKER)	0.5792	-0.5654	-1.8354

SITE SKETCH

Site Number: 880

Current Site Name: HERSTMONCEUX

Location: ROYAL GREENWICH OBS., GREAT BRITAIN



PREVIOUS OCCUPATION INFORMATION

Site Number: 880

Current Site Name: HERSTMONCEUX

Location: ROYAL GREENWICH OBS., GREAT BRITAIN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7840	RGOLAS	78403501	01-JAN-83	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 868

Current Site Name: HIROO

Other Site Name:

Location: HIROO, HOKKAIDO, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7313	HTLRS-1	73131701	01-AUG-91	31-OCT-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 132

Current Site Name: HOBART

Other Site Name:

Location: MT. PLEASANT OBSERVATORY, HOBART, TASMANIA, AUSTRALIA

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7242	26-METER	72425901	26-SEP-89	---

-- SITE INFORMATION --

Site Number: 601
Current Site Name: HOFN
Location: HOFN, ICELAND
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7635	MV-2	76355201	20-JUL-92	28-JUL-92

-- SITE INFORMATION --

Site Number: 695

Current Site Name: HOHENBUENSTORF

Other Site Name:

Location: HOHENBUENSTORF, GERMANY

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

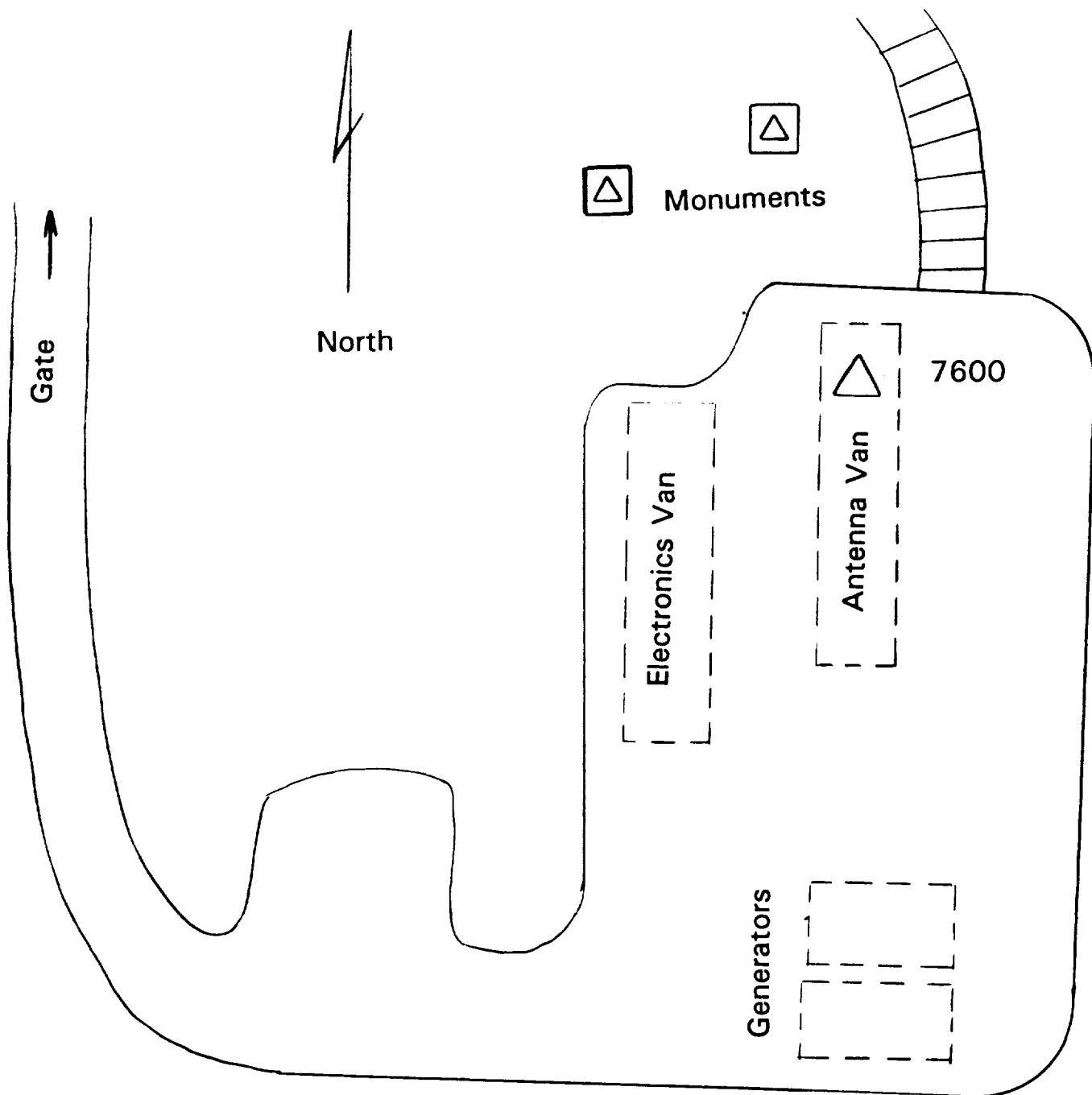
Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7600	MV-3	76005301	21-JUN-89	27-JUN-89

SITE SKETCH

Site Number: 695

Current Site Name: HOHENBUENSTORF

Location: HOHENBUENSTORF, GERMANY



-- SITE INFORMATION --

Site Number: 606
Current Site Name: HOHENSPEISSENBERG
Location: HOHENSPEISSENBERG, GERMANY
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7630	MV-2	76305201	15-JUN-92	19-JUN-92

-- SITE INFORMATION --

Site Number: 92

Current Site Name: HUAHINE

Other Site Name: TAHITI

Location: HUAHINE, SOCIETY IS, FRENCH POLYNESIA

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE SITE IS LOCATED ON HUAHINE ISLAND, A PART OF THE SOCIETY ISLANDS IN THE SOUTH PACIFIC OCEAN, 106 MILES FROM TAHITI. THE LASER PAD IS LOCATED ON THE LAGOON SIDE OF THE ISLAND OFF COPRA ROAD BETWEEN THE OPTICAL STATION AND THE AIRPORT. A RAISED PIER WAS CONSTRUCTED TO ACCOMMODATE THE UPGRADED TLRs-2. IT IS HOUSED IN A BUILDING SPECIFICALLY DESIGNED FOR TLRs-2 OPERATIONS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: SOCIETY ISLANDS; PACIFIC TECTONIC PLATE

Local Geology: BASALTIC LAVAS

Comments: NONE

MONUMENT INFORMATION

Site Number: 92

Current Site Name: HUAHINE

Location: HUAHINE, SOCIETY IS, FRENCH POLYNESIA

Number of Observing Monuments: 1

Surveyed into National Network? YES

Monument Number: 7121

Type of Monument: STANDARD NASA DISK

Monument Inscription: 7121-1982

Systems Using Monument: MOBLAS-1

Latitude: S 16 44' 02.6102''

Longitude: W 151 02' 19.0520''

Elevation: 34.206 meters

Height Above Ellipsoid:

Survey Source/Date: BFEC/01-DEC-82

Datum/Ellipsoid: 153D WEST MERIDIAN/INTERNATIONAL

Comments: THIS STATION HAD A PAD WITH THREE PEDESTALS FOR MOBLAS-1. A MONUMENT FOR TLRs-2 HAS BEEN CONSTRUCTED OVER THIS MONUMENT.

Differential Coordinates FROM Observing Monument 7121 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates Not Available ----

MONUMENT INFORMATION (Continued)

Site Number: 92
 Current Site Name: HUAHINE
 Location: HUAHINE, SOCIETY IS, FRENCH POLYNESIA

Monument Number: 7123
 Type of Monument: STANDARD NASA DISK SET IN A 4' X 4' PIER
 Monument Inscription: NONE
 Systems Using Monument: TLRS-2

Latitude: S 16 44' 00.66829''
 Longitude: W 151 02' 28.08876''
 Elevation: 37.03 meters
 Height Above Ellipsoid: 45.496 meters
 Survey Source/Date: BFEC/ 11-MAY-92
 Datum/Ellipsoid: CDSLR a= 6378137.0 1/f= 298.255

Comments: THIS IS THE NEW MONUMENT THAT REPLACES 7121 AND IS COMPATIBLE FOR OCCUPATION BY THE UPGRADED TLRS-2. DORIS INFORMATION PROVIDED BY IGN.

Differential Coordinates FROM Observing Monument 7123 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

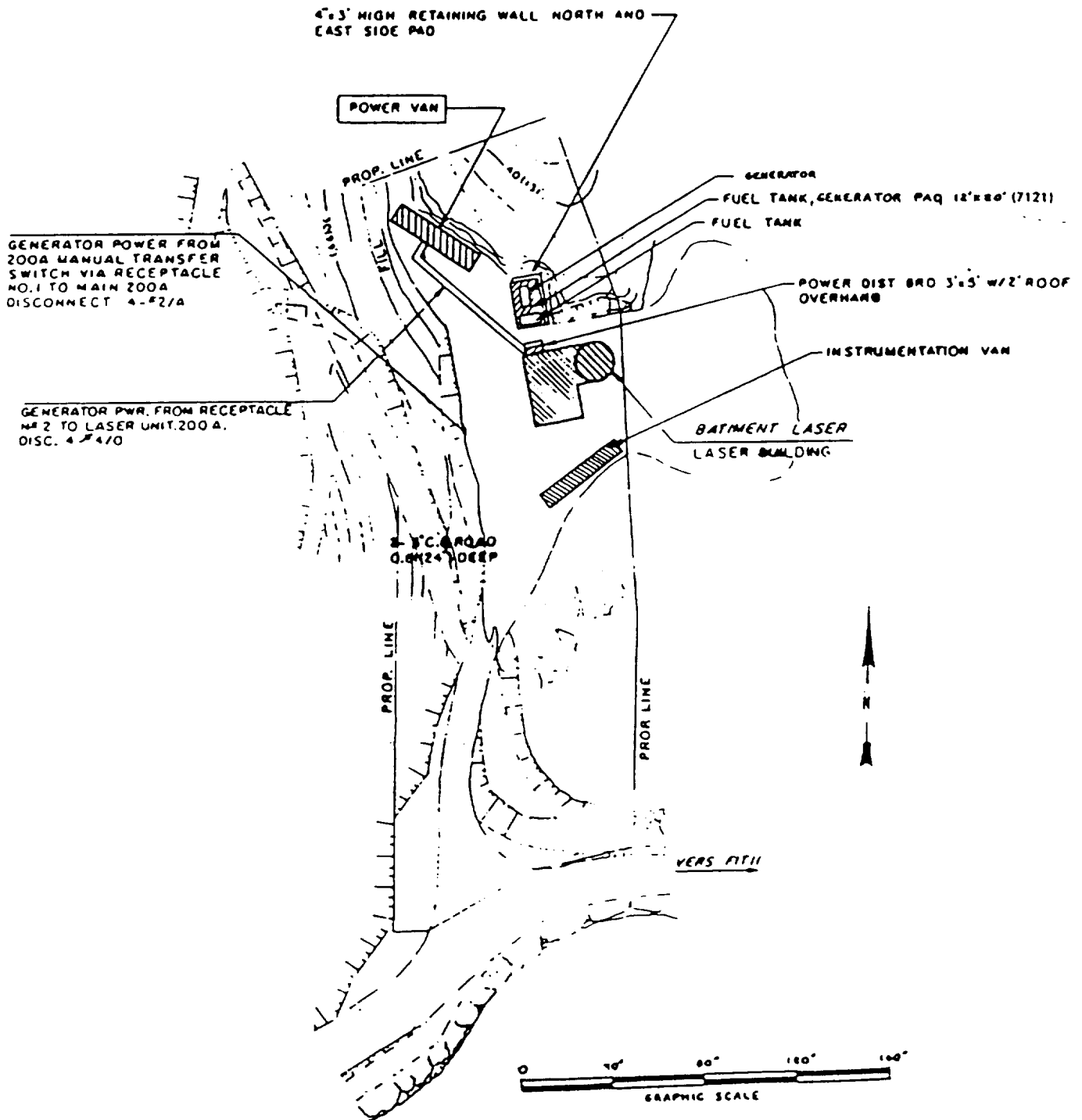
Mon. Number	Monument Inscription	X	Y	Z
7121	NONE- DESTROYED	1.4580	0.8070	0.5010
--	DORIS ANTENNA REF PT	6.282	-7.965	0.173

SITE SKETCH

Site Number: 92

Current Site Name: HUAHINE

Location: HUAHINE, SOCIETY IS, FRENCH POLYNESIA



PREVIOUS OCCUPATION INFORMATION

Site Number: 92

Current Site Name: HUAHINE

Location: HUAHINE, SOCIETY IS, FRENCH POLYNESIA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7121	MOBLAS-1	71210101	01-FEB-83	11-APR-86
7123	TLRS-2	71231201	14-JUL-87	08-OCT-87
7123	TLRS-2	71231202	16-MAR-88	01-SEP-88
7123	TLRS-2	71231203	24-APR-89	02-SEP-89
7123	TLRS-2	71231204	15-MAR-90	20-AUG-90
7123	TLRS-2	71231205	05-APR-91	04-SEP-91
7123	TLRS-2	71231206	07-APR-92	02-AUG-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 891

Current Site Name: IQUIQUE

Other Site Name:

Location: IQUIQUE, CHILE

Geographic Region: SOUTH AMERICA

Tectonic Plate: SOUTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE MOTION, INTERNAL PLATE DEFORMATION, AND PLATE STABILITY

Site Description: THE SITE IS LOCATED ON THE COAST OF NORTHERN CHILE, 33 KILOMETERS FROM THE TRAFFIC CIRCLE AT THE FOOT OF THE CLIFF IN IQUIQUE. THE SITE IS IN FRONT OF POWER POLE NUMBER 162. A UNIVERSAL CONCRETE PAD IS LOCATED 500 METERS SOUTH OF THE ROAD FROM IQUIQUE TO THE PANAMERICAN HIGHWAY AT HUMBERSTONE. THE PAD IS EQUIPPED TO ACCOMMODATE TLRs, MTLRs, MOBLAS, OR ANY MOBILE VLBI SYSTEM. THIS SITE HAS NEVER BEEN OCCUPIED BY AN SLR OR VLBI SYSTEM. IT IS INCLUDED FOR CONSIDERATION AS A POTENTIAL GPS SITE.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: ANDEAN CORDILLERA

Local Geology: BEDROCK IS COMPOSED OF ALTERED VOLCANICS THAT ARE MORE COMPETENT THAN THE BRECCIAS. SOME HILLS AROUND THE SITE AREA ARE COMPOSED OF HARD SANDSTONES, SHALES, AND FINE-GRAIN LIMESTONE.

Comments: NONE

MONUMENT INFORMATION

Site Number: 891
 Current Site Name: IQUIQUE
 Location: IQUIQUE, CHILE
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7402
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7402 RM 1
 Systems Using Monument: TLRs

Latitude: S 20 13' 02.68420''
 Longitude: W 69 54' 07.18400''
 Elevation:
 Height Above Ellipsoid: 1096.982 meters
 Survey Source/Date: BFEC/ 03-AUG-89
 Datum/Ellipsoid: SO AMERICAN DATUM 1956/HAYFORD INTERNATIONAL 1924

Comments: NONE

Differential Coordinates FROM Observing Monument 7402 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7402 A	1.5846	1.1377	-1.4307
--	7402 AZ MARK	-22.0078	-383.4224	924.7447
--	7402 B	0.5759	1.7580	-3.9520
--	7402 C	-1.9262	0.7568	-3.7319
--	7402 D	-2.1211	-0.0892	-1.7574
--	7402 RM 4	24.9227	5.1654	13.6863
--	7402-RM 2	-3.9375	9.7415	-26.8825
--	7402-RM 3	-21.7596	-12.7651	14.0486
--	BOLT	-0.3180	0.7801	-2.2883
--	PIER A	55.7885	48.0794	-72.5551
--	PIER B	-177.1578	-57.0444	-25.0986
--	PIER C	-59.3039	-102.6823	196.5729

Monument Number: 7402
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7402 RM 1
 Systems Using Monument: TLRS

Differential Coordinates FROM Observing Monument 7402 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	7402 A	-1.5236	1.8790	0.0028
--	7402 B	-4.2106	1.1449	0.0021
--	7402 C	-3.9763	-1.5489	0.0016
--	7402 D	-1.8721	-2.0226	0.0020
--	7402 RM 4	14.1263	25.1800	-1.2454
--	7402-RM 2	-28.8554	-0.3503	-0.5642
--	7402-RM 3	14.7418	-24.8210	-0.6222
--	BOLT	-2.4383	-0.0305	0.0008
--	PIER A	-77.0636	68.9127	0.6933

PREVIOUS OCCUPATION INFORMATION

Site Number: 891
Current Site Name: IQUIQUE
Location: IQUIQUE, CHILE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 867

Current Site Name: ISIGAKI SHIMA

Other Site Name:

Location: ISIGAKI CITY FILTRATION PLANT, ISIGAKI CITY, OKINAWA, JAPAN

Geographic Region: NANSEI ISLANDS

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENT OF THE THREE DIMENSIONAL GEODETIC POSITION OF THE ISLAND BY THE SIMULTANEOUS LASER OBSERVATION WITH THE SIMOSATO HYDROGRAPHIC OBSERVATORY (SHO). THE OBSERVATION WAS CARRIED OUT FROM JULY TO SEPTEMBER 1988 BY USING THE HYDROGRAPHIC DEPARTMENT TRANSPORTABLE LASER RANGING STATION (HTLRS).

Site Description: ISIGAKI ISLAND LIES ABOUT 400 KM SOUTHEAST OF OKINAWA ISLAND. THE CITY FILTRATION PLANT IS LOCATED ABOUT 3 KM NORTHEAST OF ISIGAKI HARBOR. A STONE MARKER IS ESTABLISHED IN THE RADIO STATION OF THE ISIGAKI MARITIME SAFETY OFFICE, WHICH IS ABOUT 4 KM EAST OF THE PLANT.

Site Topo Map: ISIGAKI (NO. NG-51-12-14-2.4) OF THE 1:25,000 TOPO MAP SERIES OF THE GEOGRAPHICAL SURVEY INSTITUTE (GSI) OF JAPAN.

GEOLOGICAL INFORMATION

Geological Province: SOUTHERNMOST NANSEI ISLANDS, ISIGAKI BELT

Local Geology: QUARTERNARY LIMESTONE AND CORAL

Comments: NONE

MONUMENT INFORMATION

Site Number: 867
Current Site Name: ISIGAKI SHIMA
Location: ISIGAKI CITY, OKINAWA, JAPAN
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7307
Type of Monument: FIDUCIAL STONE MARKER
Monument Inscription: NONE
Systems Using Monument: HTLRS

Latitude: N 24 21' 49.419"
Longitude: E 124 12' 50.060"
Elevation: 73.29 m
Height Above Ellipsoid: NOT AVAILABLE
Survey Source/Date: HYDROGRAPHIC DEPARTMENT / AUG-88
Datum/Ellipsoid: LOCAL / BESSEL

Comments: NONE

Differential Coordinates FROM Observing Monument 7307 TO
Reference Monuments and Other Observing Monuments

Data Source: DATA REPORT OF HYDROGRAPHIC OBSERVATIONS, SERIES OF
SATELLITE GEODESY, NO. 4, 1991.

---- Differential Coordinates ----

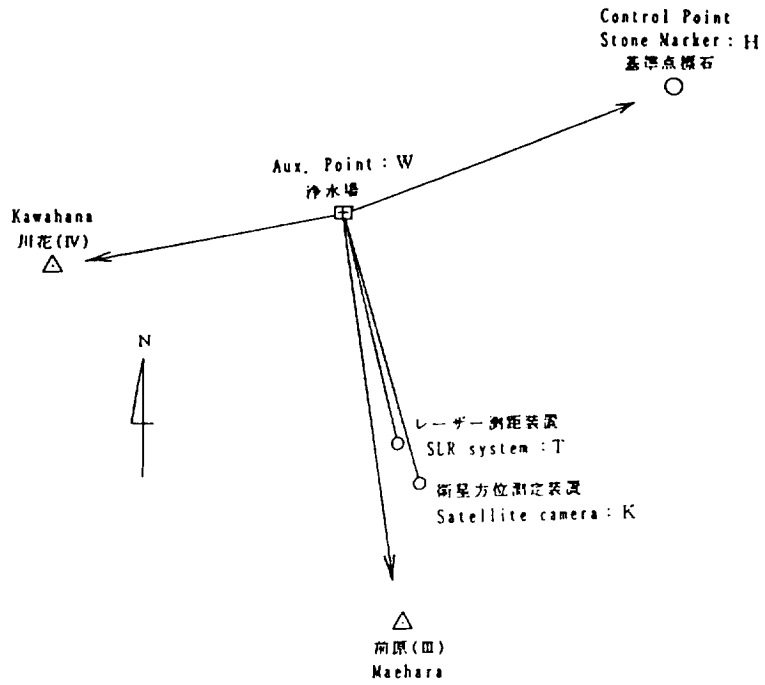
Mon. Number	Monument Inscription	X	Y	Z
--	ZYOSUIZYO	3026.949	2754.847	-1288.321

SITE SKETCH

Site Number: 867

Current Site Name: ISIGAKI SHIMA

Location: ISIGAKI CITY, OKINAWA, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 867

Current Site Name: ISIGAKI SHIMA

Location: ISIGAKI CITY, OKINAWA, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7307	HTLRS-1	73071701	18-JUL-88	17-SEP-88

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 878

Current Site Name: IWO JIMA

Other Site Name:

Location: IWO JIMA, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7305	HTLRS-1	73051701	01-JAN-92	31-MAR-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 675

Current Site Name: KARITSA

Other Site Name: IOANNINA

Location: KARITSA, GREECE

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND THE KINEMATICS OF THE EAST AND CENTRAL MEDITERRANEAN.

Site Description: THIS WEGENER-MEDLAS SITE IS LOCATED APPROXIMATELY 20 KILOMETERS WEST OF THE CITY OF IOANNINA, GREECE AND CLOSE TO THE PERIMETER OF THE VILLAGE OF KARITSA. THE LASER PAD IS LOCATED IN A FIELD CLOSE TO THE ROAD JUST SOUTHEAST OF THE VILLAGE AND IS COMPATIBLE FOR OCCUPATION BY MTLRS-1 OR MTLRS-2.

Site Topo Map: KLIMATIA 1:50,000; AVAILABLE FROM THE HELLENIC MILITARY GEOGRAPHIC SERVICE, P. ATROS, ATHENS. TEL: 0030-1-884-2811.

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UPPER AND LOWER JURASSIC SENONIAN LIMESTONES WITH ADJACENT MARBLES.

Comments: NONE

MONUMENT INFORMATION

Site Number: 675
Current Site Name: KARITSA
Location: KARITSA, GREECE
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7520
Type of Monument:
Monument Inscription: NONE
Systems Using Monument: MOBILE LASER RANGING SYSTEMS

Latitude: N 39 44' 3.1''
Longitude: E 20 39' 52.77''
Elevation:
Height Above Ellipsoid: 601.770 meters
Survey Source/Date: COORDINATES PROVIDED BY DR. DANNY VAN
LOON/01-AUG-87
Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7520 TO
Reference Monuments and Other Observing Monuments

Data Source:

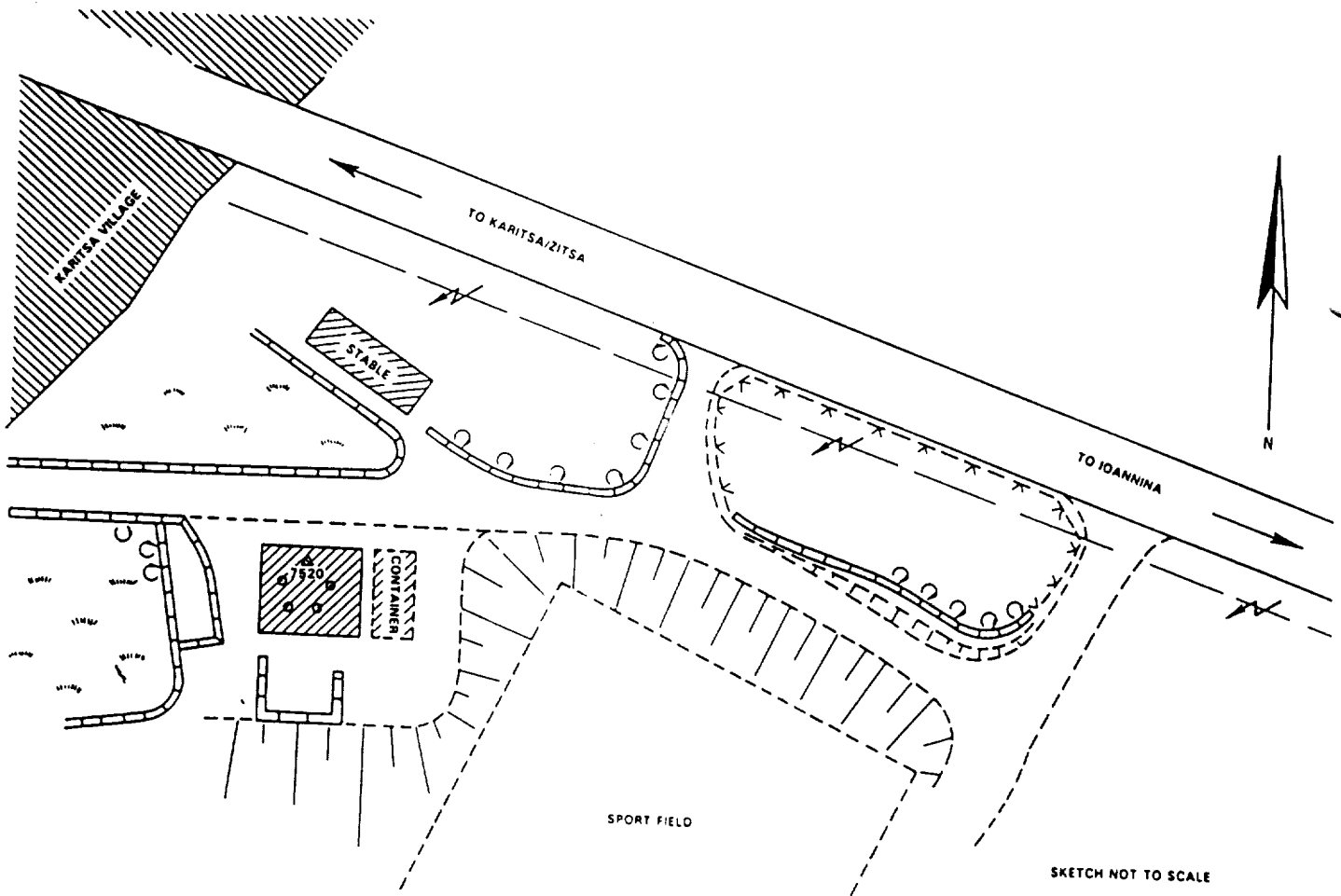
---- Differential Coordinates Not Available ----

SITE SKETCH

Site Number: 675

Current Site Name: KARITSA

Location: KARITSA, GREECE



PREVIOUS OCCUPATION INFORMATION

Site Number: 675
Current Site Name: KARITSA
Location: KARITSA, GREECE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7520	MTLRS-1	75201501	18-MAR-86	13-MAY-86
7520	MTLRS-1	75201502	24-JUN-89	04-AUG-89

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 608
Current Site Name: KARLSBURG
Location: KARLSBURG, GERMANY
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7632	MV-2	76325201	04-JUL-92	08-JUL-92

-- SITE INFORMATION --

Site Number: 138

Current Site Name: KASHIMA

Other Site Name:

Location: KASHIMA, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, POLAR MOTION/EARTH ROTATION, AND MEASUREMENTS SUPPORTING VLBI TECHNIQUE DEVELOPMENT.

Site Description: THE STATION IS LOCATED AT THE KASHIMA SPACE RESEARCH CENTER OPERATED BY COMMUNICATIONS RESEARCH LABORATORIES (CRL), MINISTRY OF POSTS AND TELECOMMUNICATIONS. CRL HAS DEVELOPED ORIGINAL VLBI OBSERVATION SYSTEM CALLED K-3 AND K-4 WHICH IS COMPATIBLE WITH THE MARK III SYSTEM. THE 26-METER ANTENNA WAS BUILT IN 1968 AND HAS BEEN USED IN JOINT VLBI EXPERIMENTS BETWEEN JAPAN AND THE UNITED STATES SINCE SUMMER 1984. THE POSSESSION OF THE ANTENNA WILL BE MOVED TO THE GEOGRAPHICAL SURVEY INSTITUTE IN 1992. THE 34-METER ANTENNA WAS BUILT IN 1988 AS THE MAIN STATION OF THE WESTERN PACIFIC VLBI NETWORK AND IS EQUIPPED WITH 10 FREQUENCY BAND RECEIVERS FROM 330 MHZ TO 43 GHZ. THIS ANTENNA IS BEING USED FOR GEODETIC VLBI AND ASTRONOMICAL OBSERVATIONS.

Site Topo Map: N1-54-19-5-1 (GSI)

GEOLOGICAL INFORMATION

Geological Province: MIDDLE TO UPPER PLEISTOCENE VOLCANIC TEPHRA.

Local Geology: ORIGINALLY VOLCANIC ASH, SCORIA, ETC. MOST OF THEM WEATHERED TO FORM SO-CALLED KANTO LOAM. VOLCANIC EJECTA WERE PROVIDED BY PLEISTOCENE/ACTIVE VOLCANOES SUCH AS FUJI, HALONE, AND OTHERS. HOWEVER, AT PRESENT, NO ACTIVE VOLCANISM IS WITHIN 100 KILOMETERS OF KASHIMA.

Comments: FURTHER GEOLOGICAL DESCRIPTION AVAILABLE IN MACHIDA, H., GEOGR. REPT. TOKYO METROPOL. UNIV., 11, 109-132.

MONUMENT INFORMATION

Site Number: 138
 Current Site Name: KASHIMA
 Location: KASHIMA, JAPAN
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 1856
 Type of Monument: INTERSECTION OF ROTATION AXIS OF ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 26-METER ANTENNA (KASHIMA)

Latitude: N 35 57' 03.197"
 Longitude: E 140 39' 57.818"
 Elevation: 45.02 meters
 Height Above Ellipsoid: 44.59 meters
 Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE /18-MAR-92
 Datum/Ellipsoid: TOKYO

Comments: THE POSITION OF THE AZ-EL INTERSECTION WAS MEASURED BY A CORNER CUBE ATTACHED TO THE MAIN REFLECTOR OF THE ANTENNA WITH SEVERAL AZ-EL ANGLES. GROUND MARKERS WERE CONNECTED TO NATIONAL SURVEY NETWORK BY A MEAN OF GPS MEASUREMENTS.

Differential Coordinates FROM Observing Monument 1856 TO Reference Monuments and Other Observing Monuments

Data Source: RESULT FROM AN ANALYSIS OF A VLBI EXPERIMENT PERFORMED ON JUNE 30, 1990. (Y. KOYAMA, ET AL, JOURNAL OF THE COMMUNICATIONS RESEARCH LABORATORY, VOL.38 PP. 335-340)

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
1857	NONE/34-M ANT AT KASHIMA	243.025	109.489	160.599

Mon. Number	Monument Inscription	North	East	Up
1857	NONE/34-M ANT AT KASHIMA	199.621	-238.725	-1.701

MONUMENT INFORMATION

Site Number: 138
 Current Site Name: KASHIMA
 Location: KASHIMA, JAPAN

Monument Number: 1857
 Type of Monument: INTERSECTION OF ROTATION AXIS OF ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 34-METER ANTENNA (KASHIM34)

Latitude: N 35 57' 09.674"
 Longitude: E 140 39' 48.294"
 Elevation: 43.09 meters
 Height Above Ellipsoid: 42.66 meters
 Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/ 18-MAR-92
 Datum/Ellipsoid: TOKYO

Comments: THE POSITION OF THE AZ-EL INTERSECTION WAS MEASURED BY A CORNER CUBE ATTACHED TO THE MAIN REFLECTOR OF THE ANTENNA WITH SEVERAL AZ-EL ANGLES. GROUND MARKERS WERE CONNECTED TO NATIONAL SURVEY NETWORK BY A MEAN OF GPS MEASUREMENTS.

Differential Coordinates FROM Observing Monument 1857 TO
 Reference Monuments and Other Observing Monuments

Data Source: RESULT FROM AN ANALYSIS OF A VLBI EXPERIMENT PERFORMED ON JUNE 30, 1990. (Y. KOYAMA, ET AL, JOURNAL OF THE COMMUNICATIONS RESEARCH LABORATORY, VOL.38 PP. 335-340)

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
1856	NONE/26-M ANT AT KASHIMA	-243.025	-109.489	-160.599

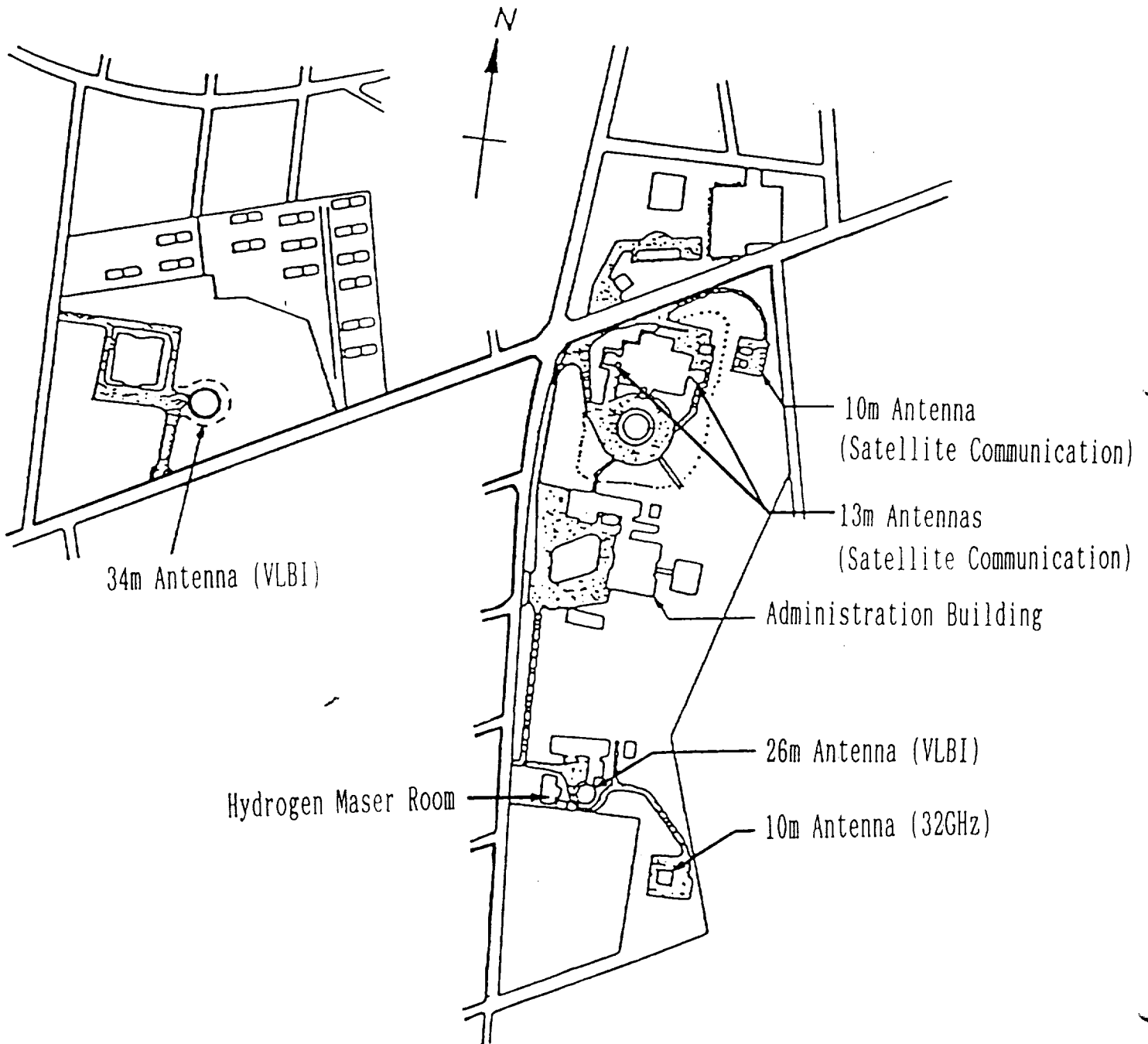
Mon. Number	Monument Inscription	North	East	Up
1856	NONE/26-M ANT AT KASHIMA	-199.621	238.725	1.701

SITE SKETCH

Site Number: 138

Current Site Name: KASHIMA

Location: KASHIMA, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 138
Current Site Name: KASHIMA
Location: KASHIMA, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1856	26-METER	18567601	01-JAN-84	---
1857	34-METER	18575801	19-APR-90	---

-- SITE INFORMATION --

Site Number: 677'

Current Site Name: KATAVIA

Other Site Name: RHODES

Location: KATAVIA, RHODES, GREECE

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF MEDITERRANEAN TECTONICS.

Site Description: THIS WEGENER-MEDLAS SITE IS LOCATED ON THE ISLAND OF RHODES IN GREECE. THE LASER PAD COMPATIBLE FOR OCCUPATION BY MTLRS-1 OR -2 IS LOCATED ON THE EDGE OF THE VILLAGE OF KATAVIA NEAR A FARM.

Site Topo Map: TOPOGRAPHIC MAPS AVAILABLE FROM THE HELLENIC MILITARY GEOGRAPHIC SERVICE, P. ATROS, ATHENS. TEL: 0030-1-884-2811.

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 677

Current Site Name: KATAVIA

Location: KATAVIA, RHODES, GREECE

Number of Observing Monuments: 1

Surveyed into National Network? NO

Monument Number: 7512

Type of Monument:

Monument Inscription: NONE

Systems Using Monument: MOBILE LASER RANGING SYSTEM

Latitude: N 35 57' 5.38''

Longitude: E 27 46' 50.4''

Elevation:

Height Above Ellipsoid: 68.038 meters

Survey Source/Date: COORDINATES PROVIDED BY DR. DANNY VAN
LOON/01-AUG-87

Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7512 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates Not Available ----

PREVIOUS OCCUPATION INFORMATION

Site Number: 677

Current Site Name: KATAVIA

Location: KATAVIA, RHODES, GREECE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7512	MTLRS-1	75121501	05-SEP-86	18-OCT-86
7512	MTLRS-2	75121602	19-MAR-87	15-MAY-87
7512	MTLRS-1	75121503	12-OCT-89	26-OCT-89
7512	MTLRS-1	75121504	20-MAR-92	04-MAY-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 626

Current Site Name: KATZIVELY

Other Site Name: CRIMEA

Location: KATZIVELY, CRIMEA, UKRAINE

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1893	CRMLAS	18931801	01-MAY-76	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 607
Current Site Name: KIRSCHBERG
Location: KIRSCHBERG, GERMANY
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7631	MV-2	76315201	25-JUN-92	28-JUN-92

-- SITE INFORMATION --

Site Number: 54

Current Site Name: KITT PEAK

Other Site Name:

Location: KITT PEAK, AZ

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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7610	VLBA	76109401	01-JAN-90	---
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-- SITE INFORMATION --

Site Number: 803

Current Site Name: KODIAK

Other Site Name:

Location: KODIAK, AK

Geographic Region: ALASKA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE STATION IS LOCATED ON THE U.S. COAST GUARD SUPPORT CENTER ABOUT SIX MILES SOUTHWEST OF THE CITY OF KODIAK AND ABOUT 1.5 MILES SOUTH OF THE KODIAK AIRPORT. THE SITE IS ABOUT 0.25 MILE INSIDE THE BASE FROM THE MAIN GATE AND SOUTHEAST OF THE BASE CHAPEL. THE OBSERVING MONUMENT IS COMPATIBLE FOR OCCUPATION BY THE MOBILE VLBI SYSTEMS.

Site Topo Map: KODIAK (C-2), ALASKA. N5730- W15220/ 15 X 20, 1949. USGS, RESTON, VA. 22092

GEOLOGICAL INFORMATION

Geological Province: ALEUTIAN ISLANDS

Local Geology: SLATE AND GREYWACKE (CRETACEOUS FLYSCH, POSSIBLY SHUMAGIN FORMATION)

Comments: NONE

MONUMENT INFORMATION

Site Number: 803
Current Site Name: KODIAK
Location: KODIAK, AK
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7278
Type of Monument: MODIFIED CLASS A BENCH ROD
Monument Inscription: NONE
Systems Using Monument: MOBILE VLBI SYSTEMS

Latitude: N 57 44' 23.9000''
Longitude: W 152 29' 49.5788''
Elevation:
Height Above Ellipsoid: 36.649 meters
Survey Source/Date: NGS/01-JAN-86
Datum/Ellipsoid: WGS 72

Comments: NONE

Differential Coordinates FROM Observing Monument 7278 TO
Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

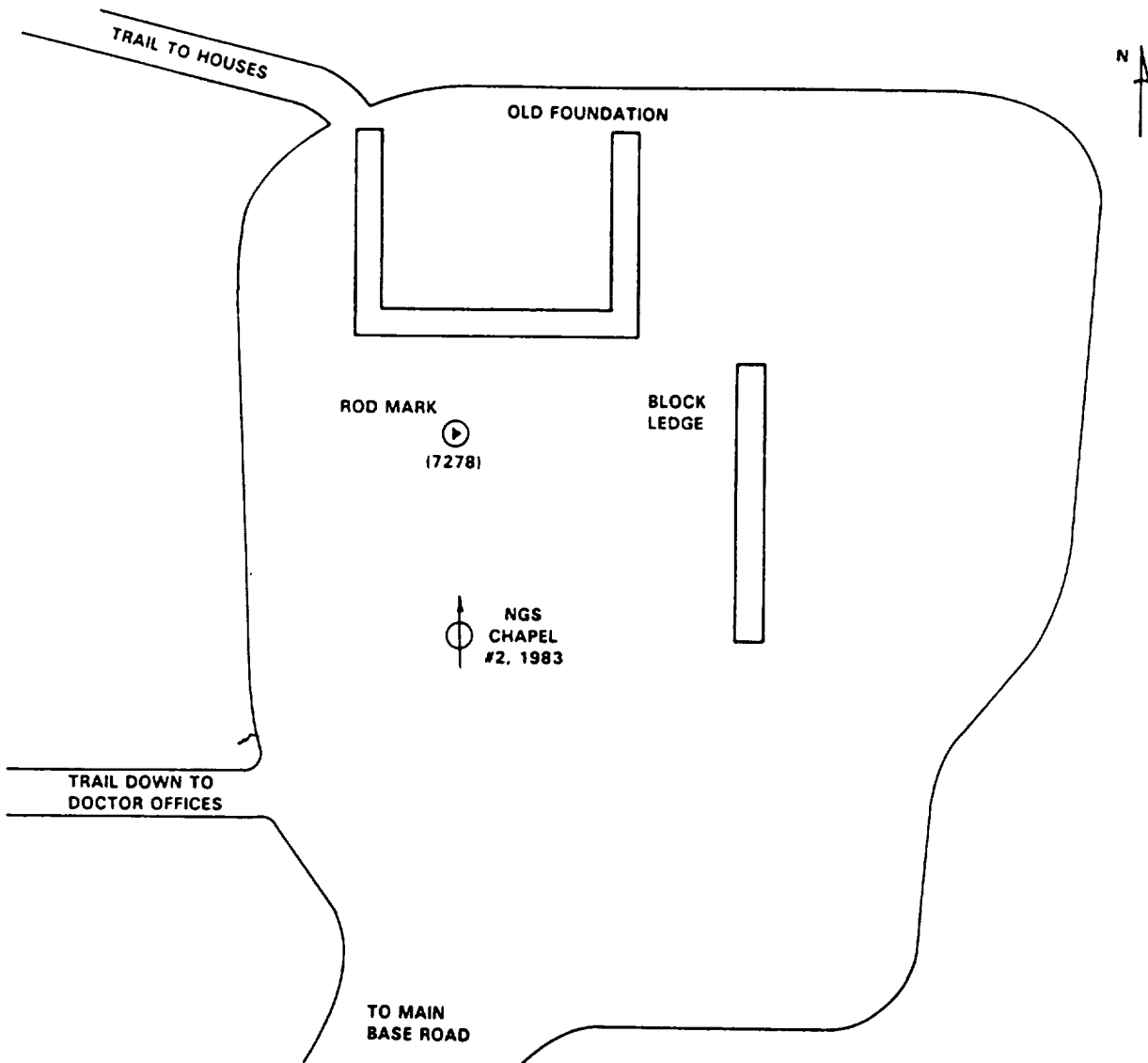
Mon. Number	Monument Inscription	X	Y	Z
--	CHIN	-71.367	533.657	136.351
--	JACK	-268.329	659.240	88.371
--	JOHN	-523.854	13.479	-283.829
--	KODI 1	24.879	-143.865	-41.251

SITE SKETCH

Site Number: 803

Current Site Name: KODIAK

Location: KODIAK, AK



PREVIOUS OCCUPATION INFORMATION

Site Number: 803
Current Site Name: KODIAK
Location: KODIAK, AK

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7278	MV-2	72785201	18-JUL-84	19-JUL-84
7278	MV-3	72785302	18-JUL-85	19-JUL-85
7278	MV-3	72785303	21-JUL-86	23-JUL-86
7278	MV-2	72785204	14-JUL-87	16-JUL-87
7278	MV-2	72785205	02-JUL-88	07-JUL-88
7278	MV-2	72785206	04-JUL-89	06-JUL-89
7278	MV-2	72785207	28-JUN-90	30-JUN-90

-- SITE INFORMATION --

Site Number: 990

Current Site Name: KOKEE PARK

Other Site Name:

Location: KOKEE PARK, KAUAI, HI

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE MOTION.

Site Description: THE SITE IS IN KOKEE PARK, WAIMEA, KAUAI. KAUAI IS THE NORTHERN MOST ISLAND OF THE EIGHT MAJOR ISLANDS OF THE STATE OF HAWAII. A 9-METER ANTENNA IS USED FOR VLBI MEASUREMENTS STUDYING PLATE MOTION. A MOBILE LASER FACILITY IS LOCATED AT THE COMMAND SITE OF THE HAWAIIAN STDN STATION. THE LASER SITE HAS BEEN ABANDONED.

Site Topo Map: MAP OF KAUA'I, THE GARDEN ISLE. THE UNIVERSITY PRESS OF HAWAII, 2840 KOLOWALU STREET, HONOLULU, HAWAII 96822

GEOLOGICAL INFORMATION

Geological Province: HAWAIIAN ARCHIPELAGO

Local Geology: THE ISLANDS PROBABLY ORIGINATED AS THE RESULT OF MOTION OF THE PACIFIC PLATE OVER A FIXED HOT SPOT. THE HOT SPOT HAS BEEN RELEASING MAGMA FROM FRACTURES AS THE PLATE MOVED NORTHWEST.

Comments: NONE

MONUMENT INFORMATION

Site Number: 990
 Current Site Name: KOKEE PARK
 Location: KOKEE PARK, KAUAI, HI
 Number of Observing Monuments: 2
 Surveyed into National Network? NO

Monument Number: 1311
 Type of Monument: AZ-EL AXIS
 Monument Inscription: NONE
 Systems Using Monument: 9-METER ANTENNA

Latitude: N 22 07' 34.62649"
 Longitude: W 159 39' 54.55346"
 Elevation:
 Height Above Ellipsoid: 1162.866 meters
 Survey Source/Date: BFEC /01-AUG-89
 Datum/Ellipsoid: NAD 83/GRS-80

Comments: NONE

Differential Coordinates FROM Observing Monument 1311 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC. DORIS INFORMATION PROVIDED BY IGN.

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	1311 NCMN A	32.9437	-1.3091	54.2803
--	1311 NCMN B	27.4843	-47.8136	7.1722
--	1311 NCMN C	-10.0837	6.9781	-50.6322
--	1311 NCMN D	0.7800	33.4024	7.9929
--	3028-S GPS (JPL 1987)	7.9413	-23.6167	-4.4070
--	CIGNET GPS PIER (NGS)	28.0809	-18.9910	44.3985
--	KOKEE 1961	10.3226	9.1758	14.3221
--	MANU 1961	-115.9374	-13.3172	-276.9144
--	VLBI WVR PIER	28.8716	-24.2070	40.1038
--	DORIS ANT REF PT	-128.587	-26.268	325.949

Monument Number: 1311
 Type of Monument: AZ-EL AXIS
 Monument Inscription: NONE
 Systems Using Monument: 9-METER ANTENNA

Differential Coordinates FROM Observing Monument 1311 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	1311 NCMN A	61.7476	12.6725	-7.7456
--	1311 NCMN B	10.0951	54.3838	-5.7845
--	1311 NCMN C	-49.5507	-10.0467	-12.5613
--	1311 NCMN D	12.0513	-31.0509	-8.4158
--	3028-S GPS (JPL 1987)	-4.3679	24.9046	-0.9581
--	CIGNET GPS PIER (NGS)	48.5618	27.5637	-1.5541
--	KOKEE 1961	18.1144	-5.0181	-6.5238
--	VLBI WVR PIER	44.1802	32.7295	-2.1803

MONUMENT INFORMATION (Continued)

Site Number: 990
Current Site Name: KOKEE PARK
Location: KOKEE PARK, KAUAI, HI

Monument Number: 7094
Type of Monument: STANDARD NASA DISK
Monument Inscription: NONE
Systems Using Monument: MOBILE LASERS

Latitude: N 22 10 00.000''
Longitude: E 200 20' 00.000''
Elevation: 1200.000 meters
Height Above Ellipsoid:
Survey Source/Date: NASA DIRECTORY OF STATION LOCATIONS/
Datum/Ellipsoid: MAP SCALED

Comments: THIS PAD WAS CONSTRUCTED AT THE BEGINNING OF THE PROJECT
BUT WAS NEVER USED OR SURVEYED.

Differential Coordinates FROM Observing Monument 7094 TO
Reference Monuments and Other Observing Monuments

Data Source:

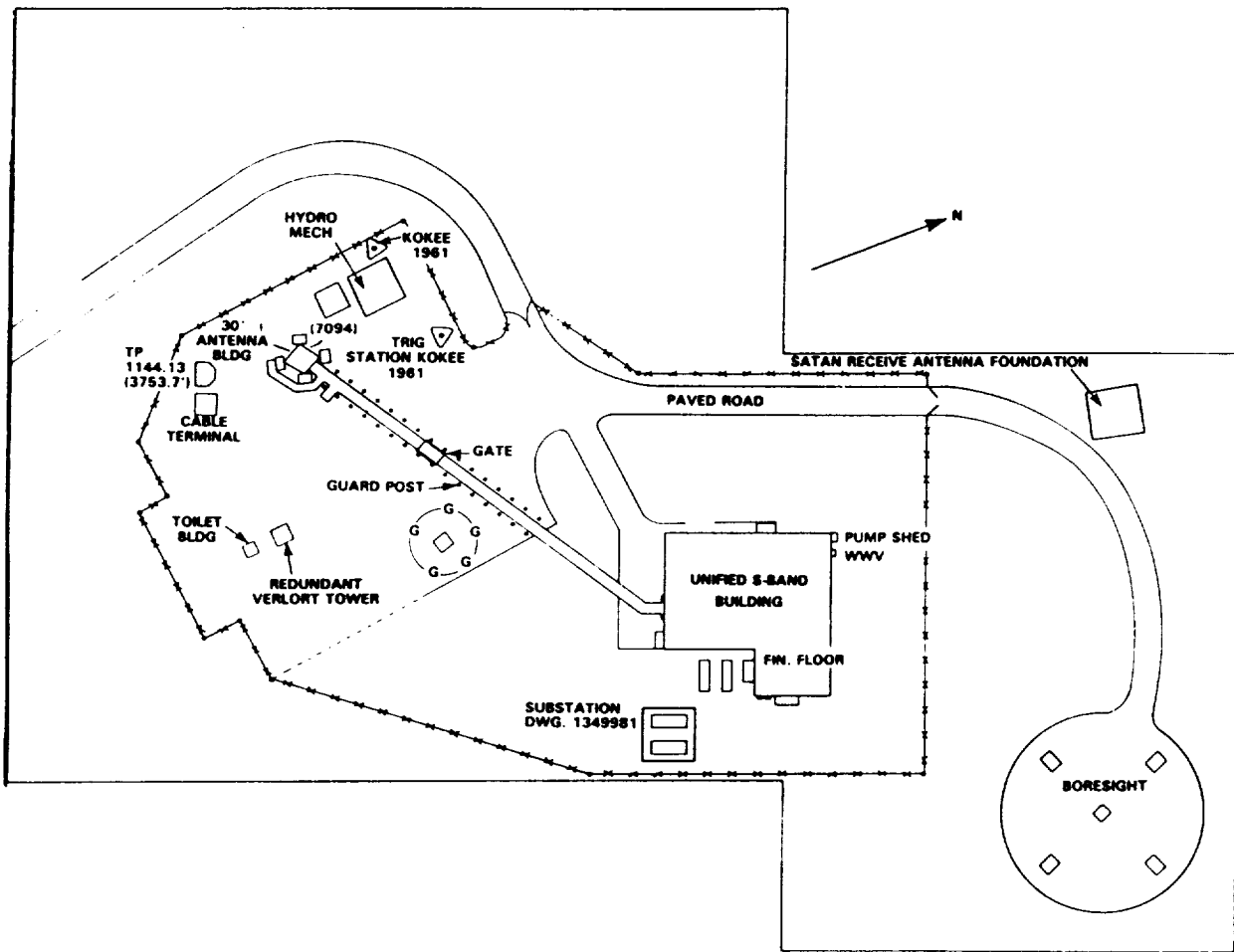
---- Differential Coordinates Not Available ----

SITE SKETCH

Site Number: 990

Current Site Name: KOKEE PARK

Location: KOKEE PARK, KAUAI, HI



PREVIOUS OCCUPATION INFORMATION

Site Number: 990

Current Site Name: KOKEE PARK

Location: KOKEE PARK, KAUAI, HI

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1311	9-METER	13116701	01-JUL-84	---

-- SITE INFORMATION --

Site Number: 633
Current Site Name: KOMSOMOLSK
Location: RUSSIAN FEDERATION
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1868	KOMLAS	18685901	01-MAY-92	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 118

Current Site Name: KOOTWIJK

Other Site Name:

Location: KOOTWIJK OBS., APELDOORN, NETHERLANDS

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING MEDITERRANEAN TECTONICS AND SLR DEVELOPMENT AND THE DETERMINATION OF PLATE STABILITY, PLATE DEFORMATION AND MOTION, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE SITE IS LOCATED IN CENTRAL NETHERLANDS AT THE DELFT UNIVERSITY OF TECHNOLOGY, KOOTWIJK OBSERVATORY, APELDOORN, NETHERLANDS. SATELLITE LASER RANGING OPERATIONS STARTED IN AUGUST 1976 AND HAVE BEEN CONTINUING ON A ROUTINE BASIS. THIS IS A REGULAR TEST SITE FOR THE DUTCH BUILT MOBILE LASER MTLRS-2. THE SITE HAS ALSO BEEN USED FOR COLLOCATION BETWEEN THE GERMAN MTLRS-1 AND MTLRS-2.

Site Topo Map: THE NETHERLANDS, 1:25,000, SHEET 33A, IN. SQUARE: 465-466/
183-184

GEOLOGICAL INFORMATION

Geological Province: SOUTHERN EDGE OF NORTH SEA BASIN

Local Geology: ICE PUSHED LOWER- AND MIDDLE-PLEISTOCENE FLUVIAL FORMATIONS, UPPER-PLEISTOCENE, PERI-GLACIAL DEPOSITS, HOLOCENE IN-LAND DUNE SANDS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 118
 Current Site Name: KOOTWIJK
 Location: KOOTWIJK OBS., APELDOORN, NETHERLANDS
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7833
 Type of Monument: INTERSECTION OF AZ/EL AXES
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER TELESCOPE

Latitude: N 52 10' 45.020''
 Longitude: E 5 48' 39.870''
 Elevation:
 Height Above Ellipsoid: 48.037 meters
 Survey Source/Date: NETHERLANDS TRIANGULATION DEPARTMENT
 Datum/Ellipsoid: EUROPEAN DATUM 1987

Comments: NONE

Differential Coordinates FROM Observing Monument 7833 TO
Reference Monuments and Other Observing Monuments

Data Source: DOCUMENT "POSITION ON KOOTWIJK"

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
8833	NONE (MTLRS)	13.622	26.286	-18.704
--	ASTRONOMICAL PILLAR	14.205	23.794	-18.954
--	CAMERA SYSTEM	-14.571	45.832	6.126
--	MOBILE GPS ANT SUPPORT	-4.708	25.285	-1.110
--	STATIONARY GPS SUP (ROGUE)	1.161	-11.217	4.320

Mon. Number	Monument Inscription	North	East	Up
8833	NONE (MTLRS)	-24.130	24.912	-4.834
--	ASTRONOMICAL PILLAR	-24.557	22.378	-4.830
--	CAMERA SYSTEM	11.818	47.001	-1.205
--	MOBILE GPS ANT SUPPORT	1.147	25.624	-2.180
--	STATIONARY GPS SUP (ROGUE)	2.567	-11.292	3.425

MONUMENT INFORMATION (Continued)

Site Number: 118
 Current Site Name: KOOTWIJK
 Location: KOOTWIJK OBS., APELDOORN, NETHERLANDS

Monument Number: 8833
 Type of Monument:
 Monument Inscription: NONE
 Systems Using Monument: MTLRS

Latitude:
 Longitude:
 Elevation:
 Height Above Ellipsoid:
 Survey Source/Date:
 Datum/Ellipsoid:

Comments: GEODETIC INFORMATION NOT AVAILABLE.

Differential Coordinates FROM Observing Monument 8833 TO
 Reference Monuments and Other Observing Monuments

Data Source: IGS MAIL

---- Differential Coordinates ----

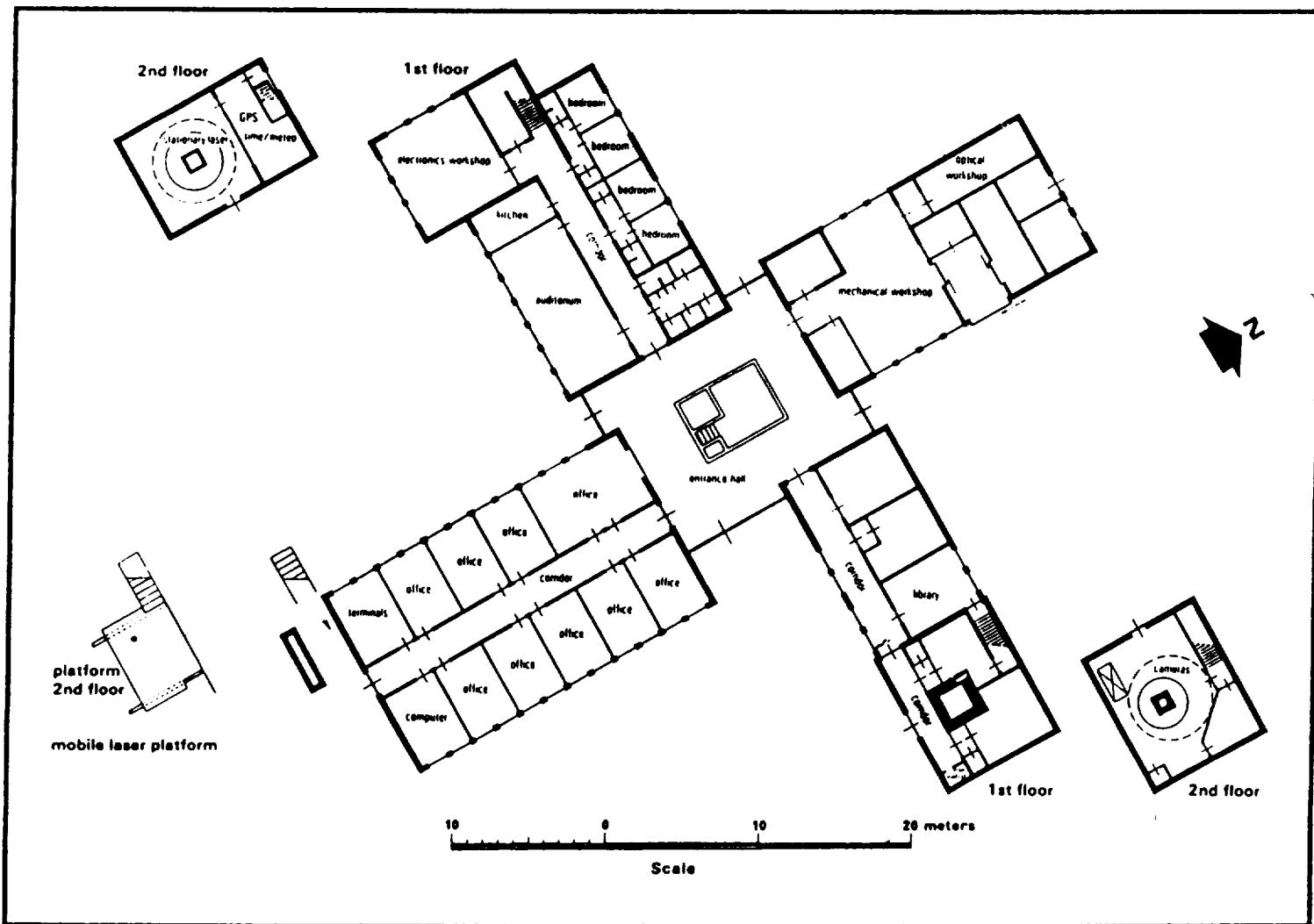
Mon. Number	Monument Inscription	X	Y	Z
--	STATIONARY GPS SUP (ROGUE)	-12.461	-37.503	23.024

SITE SKETCH

Site Number: 118

Current Site Name: KOOTWIJK

Location: KOOTWIJK OBS., APELDOORN, NETHERLANDS



PREVIOUS OCCUPATION INFORMATION

Site Number: 118

Current Site Name: KOOTWIJK

Location: KOOTWIJK OBS., APELDOORN, NETHERLANDS

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7833	KOOLAS	78333201	01-MAY-76	---
8833	MTLRS-1	88331501	01-APR-84	31-MAY-84
8833	MTLRS-2	88331602	15-NOV-84	28-FEB-85
8833	MTLRS-2	88331603	18-APR-85	31-AUG-85
8833	MTLRS-2	88331604	08-JUN-88	24-MAY-89
8833	MTLRS-2	88331605	05-NOV-89	30-JUL-90
8833	MTLRS-2	88331606	25-AUG-92	31-DEC-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 663

Current Site Name: KUNMING

Other Site Name:

Location: KUNMING, YUNNAN, CHINA

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 136

Current Site Name: KWAJALEIN
Other Site Name: ROI-NAMUR
Location: KWAJALEIN, MARSHALL ISLANDS
Geographic Region: PACIFIC
Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, INTERNAL PLATE DEFORMATION, AND PLATE STABILITY.

Site Description: THE SITE IS LOCATED ON THE LAGOON SIDE OF THE AIRPORT ON THE ISLAND OF ROI-NAMUR, FIFTY KILOMETERS NORTH-NORTHWEST OF KWAJALEIN ISLAND WHICH IS ON THE NORTHEAST PART OF THE KWAJALEIN ATOLL. AT PRESENT, THE SITE IS EQUIPPED FOR OCCUPATION BY MOBLAS SYSTEMS. THE TRADEX ANTENNA CURRENTLY USED FOR VLBI MEASUREMENTS IS LOCATED ON THE PACIFIC SIDE OF THE ISLAND.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: MARSHALL ISLANDS

Local Geology: CORAL REEF FORMATION

Comments: NONE

MONUMENT INFORMATION

Site Number: 136
Current Site Name: KWAJALEIN
Location: KWAJALEIN, MARSHALL ISLANDS
Number of Observing Monuments: 2
Surveyed into National Network? YES

Monument Number: 4968
Type of Monument: CENTER OF ROTATION OF THE ANTENNA
Monument Inscription: NONE
Systems Using Monument: TRADEX 26-METER ANTENNA

Latitude: N 09 23' 55.3447''
Longitude: E 167 28' 55.1780''
Elevation: 26.216 meters
Height Above Ellipsoid: 57.316 meters
Survey Source/Date: KWAJALEIN MISSILE RANGE DIRECTORATE/29-JUN-84
Datum/Ellipsoid: WGS 72

Comments: NONE

Differential Coordinates FROM Observing Monument 4968 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates Not Available ----

MONUMENT INFORMATION (Continued)

Site Number: 136
Current Site Name: KWAJALEIN
Location: KWAJALEIN, MARSHALL ISLANDS

Monument Number: 7092
Type of Monument: STANDARD DMA DISK
Monument Inscription: NASA-GSFC MOBILE LASER NO. 7092 TOPO CENTER 1978
Systems Using Monument: MOBLAS

Latitude: N 09 23' 37.5190''
Longitude: E 167 28' 32.0532''
Elevation: 1.701 meters
Height Above Ellipsoid: 32.881 meters
Survey Source/Date: DMAHTC-GSS/20-JUN-84
Datum/Ellipsoid: WGS 72

Comments: NONE

Differential Coordinates FROM Observing Monument 7092 TO
Reference Monuments and Other Observing Monuments

Data Source:

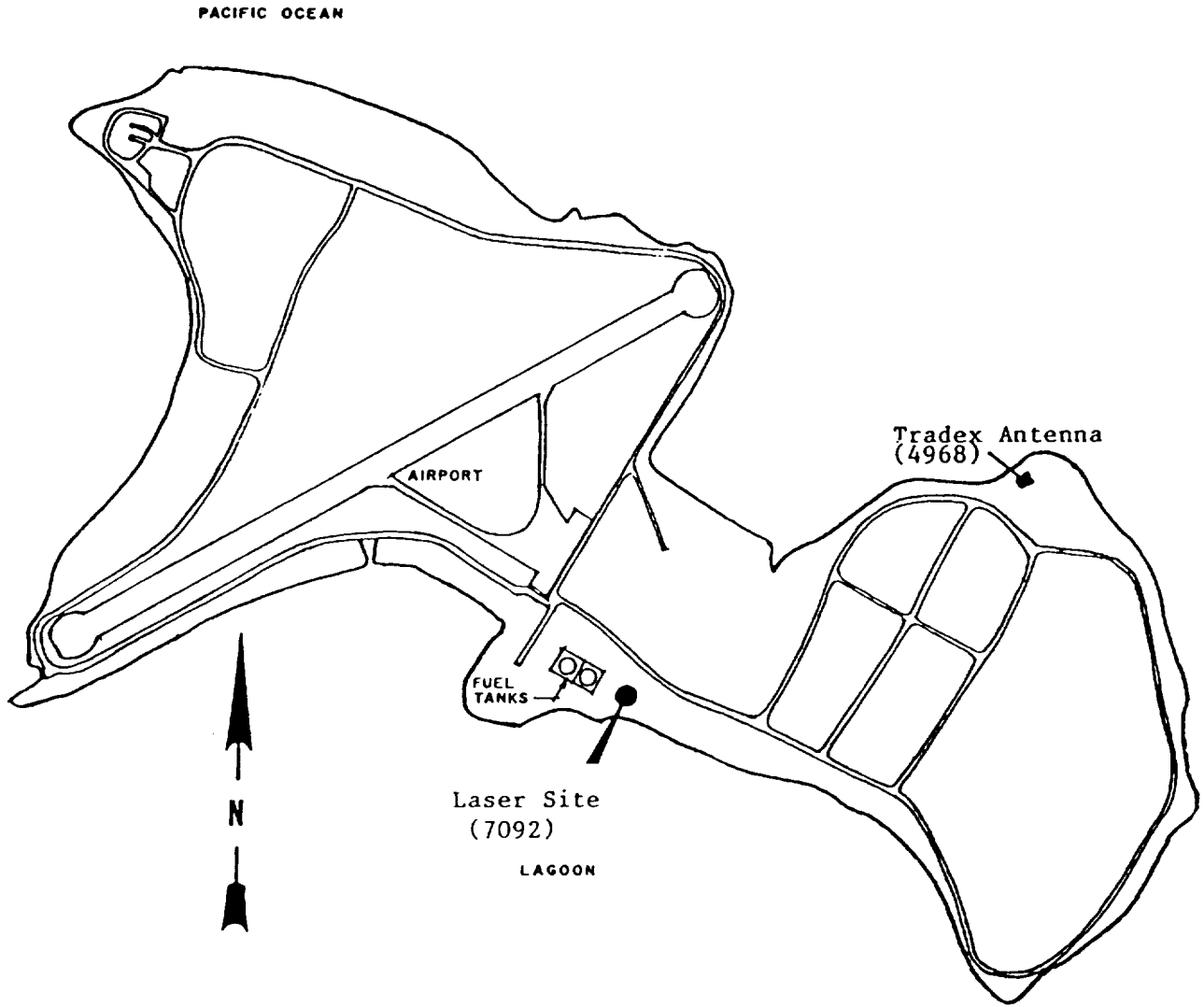
---- Differential Coordinates Not Available ----

SITE SKETCH

Site Number: 136

Current Site Name: KWAJALEIN

Location: KWAJALEIN, MARSHALL ISLANDS



ROI-NAMUR



PREVIOUS OCCUPATION INFORMATION

Site Number: 136

Current Site Name: KWAJALEIN

Location: KWAJALEIN, MARSHALL ISLANDS

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7092	MOBLAS-8	70920801	15-AUG-79	31-OCT-80

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
4968	26-METER	49686401	01-JUL-84	---

-- SITE INFORMATION --

Site Number: 2

Current Site Name: LA JOLLA

Other Site Name:

Location: LA JOLLA, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

-- Site Information Not Yet Available --

MONUMENT REPORTED DESTROYED

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7262	MV-1	72625101	09-JUL-77	10-JUL-77
7262	MV-2	72625202	13-MAY-81	13-MAY-81

-- SITE INFORMATION --

Site Number: 348

Current Site Name: LA SILLA

Other Site Name:

Location: LA SILLA, CHILE

Geographic Region: SOUTH AMERICA

Tectonic Plate: SOUTH AMERICAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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7239	SUB-MM	72399501	18-APR-90	---
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-- SITE INFORMATION --

Site Number: 848

Current Site Name: LAMPEDUSA

Other Site Name:

Location: LAMPEDUSA, ITALY

Geographic Region: MEDITERRANEAN

Tectonic Plate: AFRICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF MEDITERRANEAN TECTONICS.

Site Description: THIS WEGENER-MEDLAS SITE IS LOCATED ON THE ISLAND OF LAMPEDUSA APPROXIMATELY 300 KILOMETERS SOUTH OF SICILY IN THE MEDITERRANEAN SEA. THE SITE IS FOUR KM NORTHEAST OF THE AMERICAN COAST GUARD STATION AND IS EQUIPPED WITH A PAD COMPATIBLE FOR THE EUROPEAN LASER RANGING SYSTEMS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 848
Current Site Name: LAMPEDUSA
Location: LAMPEDUSA, ITALY
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7544
Type of Monument: BRASS DISK
Monument Inscription: NONE
Systems Using Monument: MOBILE LASER RANGING SYSTEMS

Latitude:
Longitude:
Elevation:
Height Above Ellipsoid:
Survey Source/Date:
Datum/Ellipsoid:

Comments: NO GEODETIC INFORMATION AVAILABLE AT PRESENT.

**Differential Coordinates FROM Observing Monument 7544 TO
Reference Monuments and Other Observing Monuments**

Data Source:

PREVIOUS OCCUPATION INFORMATION

Site Number: 848

Current Site Name: LAMPEDUSA

Location: LAMPEDUSA, ITALY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7544	MTLRS-2	75441601	14-SEP-87	11-DEC-87
7544	MTLRS-1	75441502	28-MAR-89	31-MAY-89
7544	MTLRS-1	75441503	09-SEP-92	12-OCT-92
7544	MTLRS-1	75441504	13-OCT-92	10-DEC-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 241

Current Site Name: LEONARD

Other Site Name:

Location: LEONARD, OK

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE NATIONAL GEODETIC SURVEY'S NATIONAL CRUSTAL MOTION NETWORK.

Site Description: THE SITE IS LOCATED IN A CLEARING JUST OFF A DIRT ROAD LEADING TO THE OKLAHOMA GEOPHYSICAL OBSERVATORY IN LEONARD, OKLAHOMA. THE STATION IS COMPATIBLE FOR OCCUPATION BY THE MOBILE VLBI SYSTEMS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 241
Current Site Name: LEONARD
Location: LEONARD, OK
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7292
Type of Monument: STANDARD NGS BRASS DISK
Monument Inscription: LEONARD NCMN 1985
Systems Using Monument: MOBILE VLBI

Latitude: N 35 54' 32.43563"
Longitude: W 95 47' 42.23148"
Elevation:
Height Above Ellipsoid: 227.536 meters
Survey Source/Date: NGS (ADJUST)/25-FEB-92
Datum/Ellipsoid: NAD83

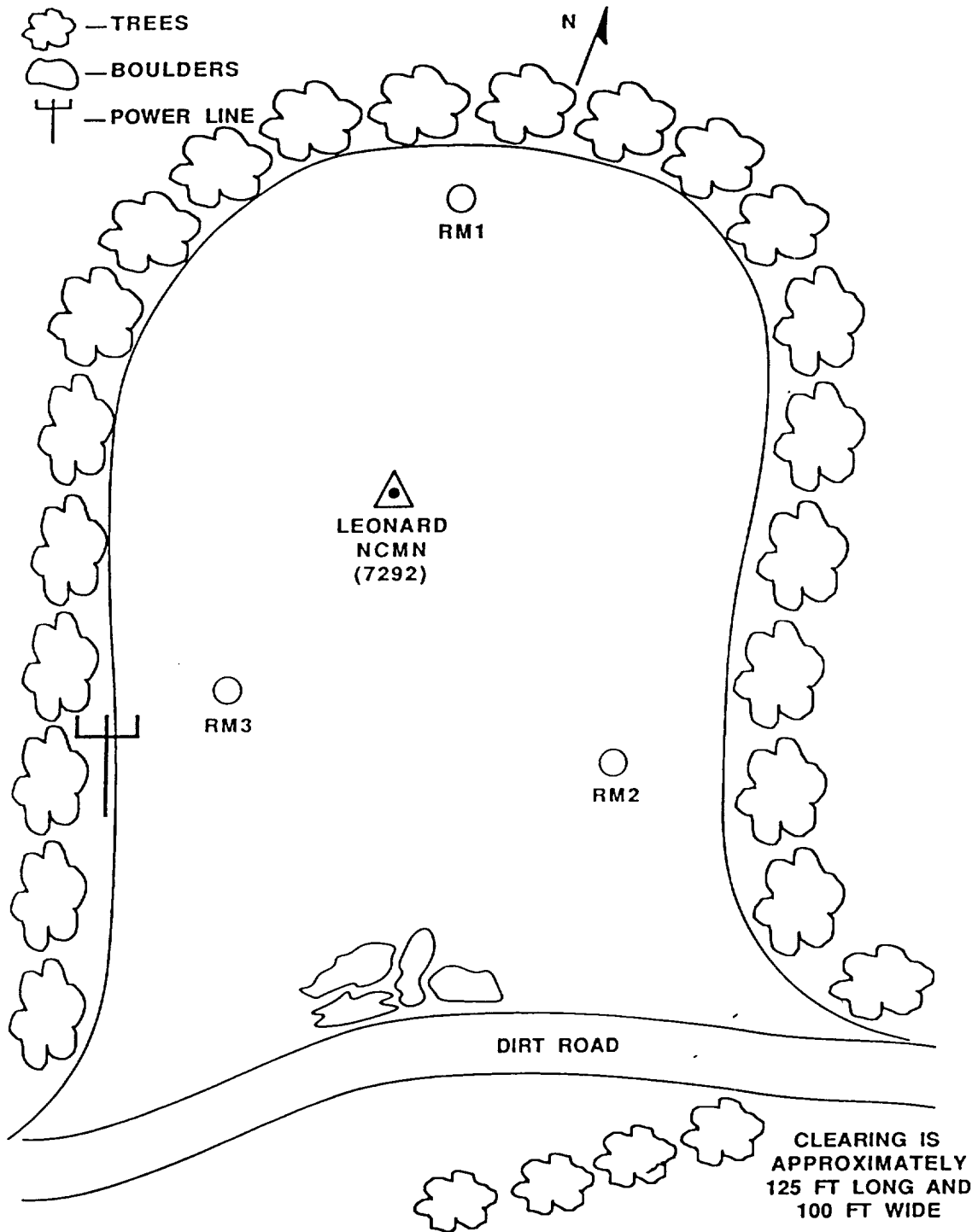
Comments:

Differential Coordinates FROM Observing Monument 7292 TO
Reference Monuments and Other Observing Monuments

Data Source:

SITE SKETCH

Site Number: 241
Current Site Name: LEONARD
Location: LEONARD, OK



PREVIOUS OCCUPATION INFORMATION

Site Number: 241
Current Site Name: LEONARD
Location: LEONARD, OK

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7292	MV-3	72925301	23-AUG-87	25-AUG-87

-- SITE INFORMATION --

Site Number: 55

Current Site Name: LOS ALAMOS

Other Site Name:

Location: LOS ALAMOS, NM

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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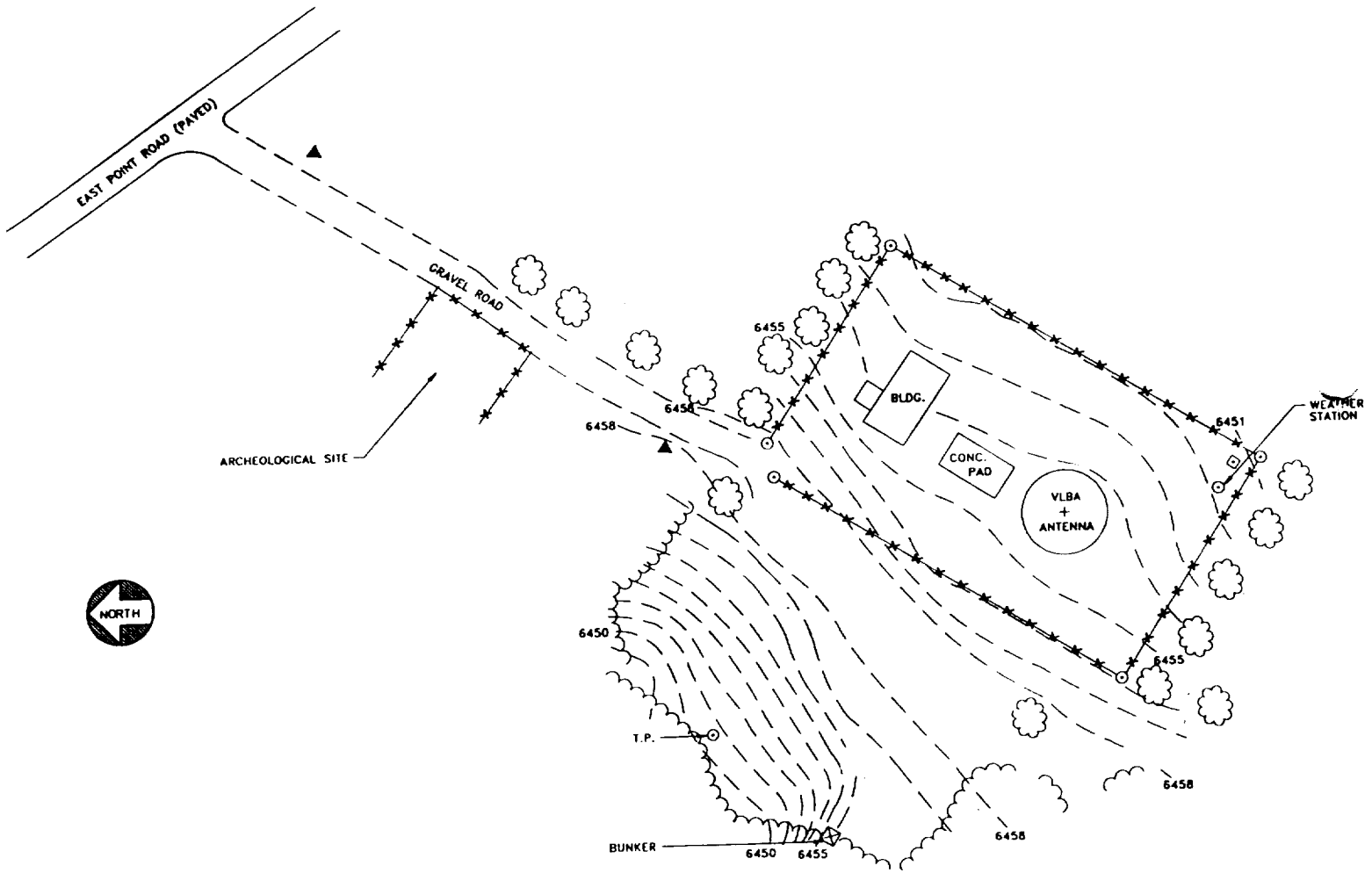
-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7611	VLBA	76119601	01-JAN-90	---

SITE SKETCH

Site Number: 55
Current Site Name: LOS ALAMOS
Location: LOS ALAMOS, NM



-- SITE INFORMATION --

Site Number: 115

Current Site Name: MADRID
Other Site Name: ROBLEDO
Location: MADRID, SPAIN
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE MOTION.

Site Description: THE SITE IS LOCATED IN CENTRAL SPAIN 25 MILES WEST OF MADRID. THE 26-METER ROBLEDO ANTENNA AND A 34-METER ANTENNA ARE USED IN VLBI MEASUREMENT SESSIONS. A NEARBY MONUMENTED PAD IS AVAILABLE FOR MOBILE LASER OCCUPATIONS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: UNKNOWN

Local Geology: THE SUBSURFACE IS COMPOSED OF GRANITE AND THIN LAYERS OF SANDY SOIL. SOLID GRANITE BEDROCK OCCURS AT DEPTHS OF THREE TO NINE METERS. VARYING LAYERS OF SOFT GRANITE AND FRACTURED GRANITE OCCUR BETWEEN SURFACE MATERIAL AND BEDROCK. THE AREA IS UNDERGOING A PHASE OF ACTIVE EROSION.

Comments: NONE

MONUMENT INFORMATION

Site Number: 115
Current Site Name: MADRID
Location: MADRID, SPAIN
Number of Observing Monuments: 3
Surveyed into National Network? YES

Monument Number: 1561
Type of Monument: INTERSECTION OF POLAR AXIS AND HOUR-ANGLE GEAR
Monument Inscription: NONE
Systems Using Monument: 26-METER VLBI ANTENNA (DSS 61)

Latitude: N 40 25' 42.2905''
Longitude: W 4 14' 52.3052''
Elevation: 762.527 meters
Height Above Ellipsoid:
Survey Source/Date: INSTITUTO GEOGRAFICO NACIONAL/ 1989
Datum/Ellipsoid: E.D. 50

Comments: THIS ANTENNA IS ALSO KNOWN AS ROBLEDO.

Differential Coordinates FROM Observing Monument 1561 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates Not Available ----

MONUMENT INFORMATION (Continued)

Site Number: 115
Current Site Name: MADRID
Location: MADRID, SPAIN

Monument Number: 1665
Type of Monument:
Monument Inscription: NONE
Systems Using Monument: 34 METER AZ-EL ANTENNA (DSS-65)

Latitude: N 40 25' 42.1192"
Longitude: W 04 15' 00.3401"
Elevation: 781.259 meters
Height Above Ellipsoid:
Survey Source/Date: INSTITUTO GEOGRAFICO NACIONAL/ 1991
Datum/Ellipsoid: E.D. 50

Comments: NONE

Differential Coordinates FROM Observing Monument 1665 TO
Reference Monuments and Other Observing Monuments

Data Source: IGS MAIL

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	ROGUE GPS MARK (MADR)	-134.246	159.664	164.275

MONUMENT INFORMATION (Continued)

Site Number: 115
Current Site Name: MADRID
Location: MADRID, SPAIN

Monument Number: 7089
Type of Monument: UNKNOWN
Monument Inscription: NONE
Systems Using Monument: MOBILE LASER

Latitude: N 40 52' 00''
Longitude: W 4 15' 00''
Elevation: 800.000 meters
Height Above Ellipsoid:
Survey Source/Date: UNKNOWN/
Datum/Ellipsoid: UNKNOWN

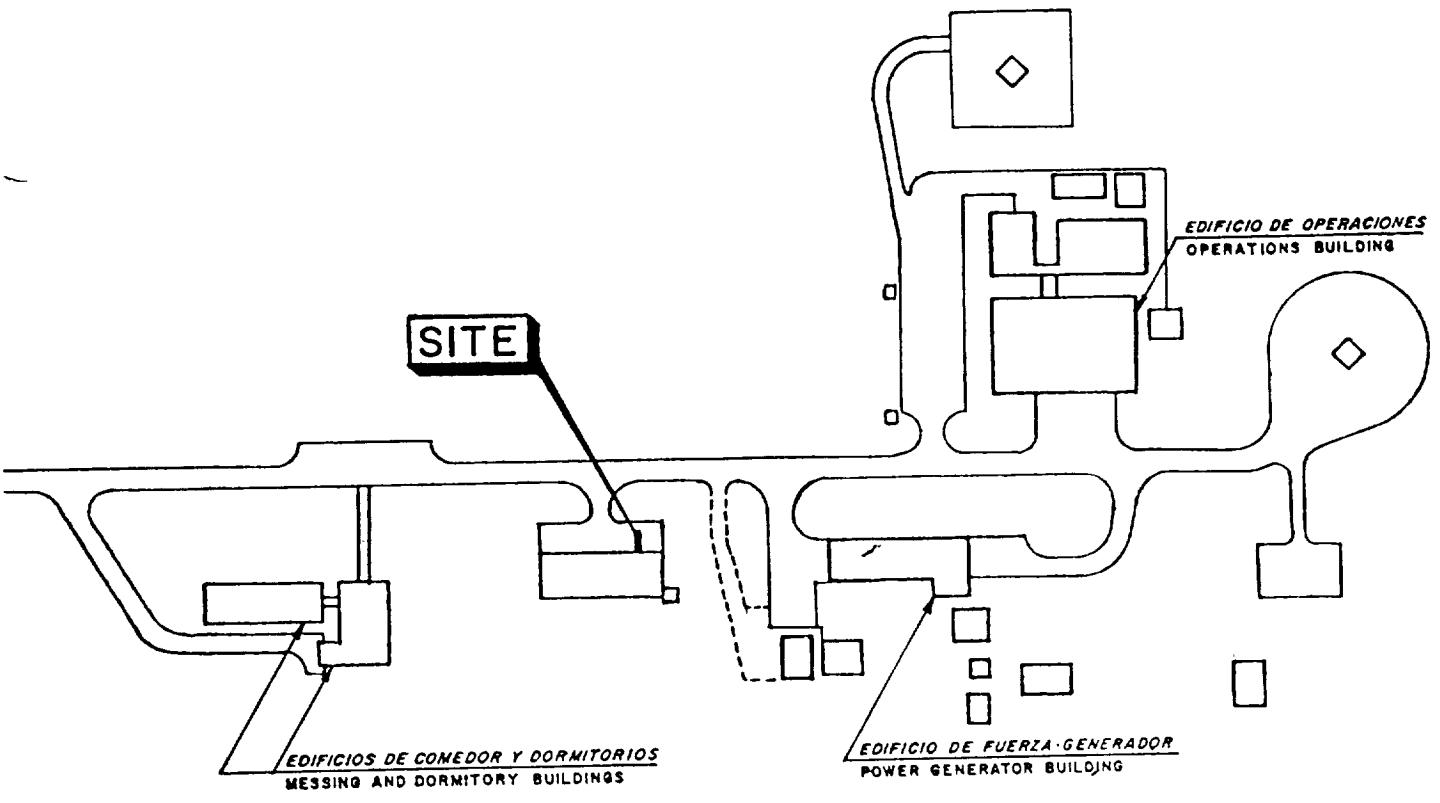
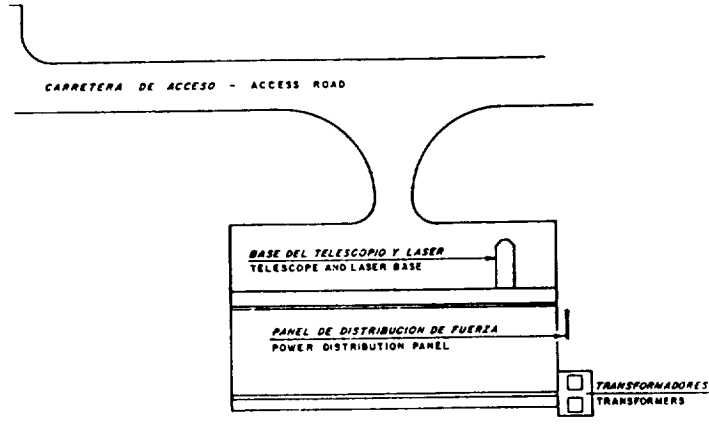
Comments: THESE COORDINATES ARE ESTIMATES.

Differential Coordinates FROM Observing Monument 7089 TO
Reference Monuments and Other Observing Monuments

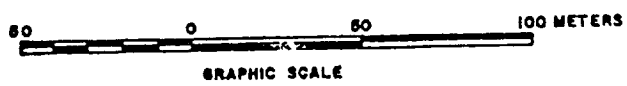
Data Source:

SITE SKETCH

Site Number: 115
Current Site Name: MADRID
Location: MADRID, SPAIN



LOCATION MAP



PREVIOUS OCCUPATION INFORMATION

Site Number: 115

Current Site Name: MADRID

Location: MADRID, SPAIN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1561	26-METER	15618401	05-MAY-83	---
1665	35-METER	16658501	01-JAN-88	---

-- SITE INFORMATION --

Site Number: 627

Current Site Name: MAIDANAK

Other Site Name:

Location: MAIDANAK, UZBEKISTAN

Geographic Region: ASIA

Tectonic Plate: EURASIAN

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1863	MDNLAS1	18635101	01-OCT-90	---
1864	MDNLAS2	18645401	01-OCT-90	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 720

Current Site Name: MAMMOTH LAKES

Other Site Name: LONG VALLEY

Location: MAMMOTH LAKES, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION ASSOCIATED WITH THE LONG VALLEY CALDERA.

Site Description: THE STATION IS LOCATED IN CALIFORNIA, EAST OF THE YOSEMITE NATIONAL PARK INSIDE A CHAIN LINK FENCE AT A SEWAGE TREATMENT PLANT. THE SITE IS EQUIPPED WITH ONE OBSERVING MONUMENT COMPATIBLE FOR OCCUPATION BY MV-2 AND MV-3. NO PAD IS AVAILABLE AT THIS SITE THUS LIMITING OCCUPANCY TO MOBILE VLBI SYSTEMS.

Site Topo Map: MOUNT MORRISON, CALIFORNIA. 1953, 15 QUAD, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: SIERRA NEVADA MOUNTAINS

Local Geology: PLEISTOCENE BASALT

Comments: THE SITE WAS ESTABLISHED TO SUPPORT USGS LEVELING PROGRAM IN THE LONG VALLEY CALDERA.

MONUMENT INFORMATION

Site Number: 720
 Current Site Name: MAMMOTH LAKES
 Location: MAMMOTH LAKES, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7259
 Type of Monument: STANDARD NGS DISK
 Monument Inscription: JPL MV #II 198
 Systems Using Monument: MOBILE VLBI

Latitude: N 37 38' 29.80934''
 Longitude: W 118 56' 42.91246''
 Elevation:
 Height Above Ellipsoid: 2307.359 meters
 Survey Source/Date: NGS GPS SURVEY, NOAA TECHNICAL MEMORANDUM
 NOS 123, NGS 41 / 20-APR-87
 Datum/Ellipsoid: WGS 72

Comments: NONE

Differential Coordinates FROM Observing Monument 7259 TO
Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	JPL MV	12.283	7.359	15.879
--	JPL MV #III 1981	-7.136	-4.064	-9.228

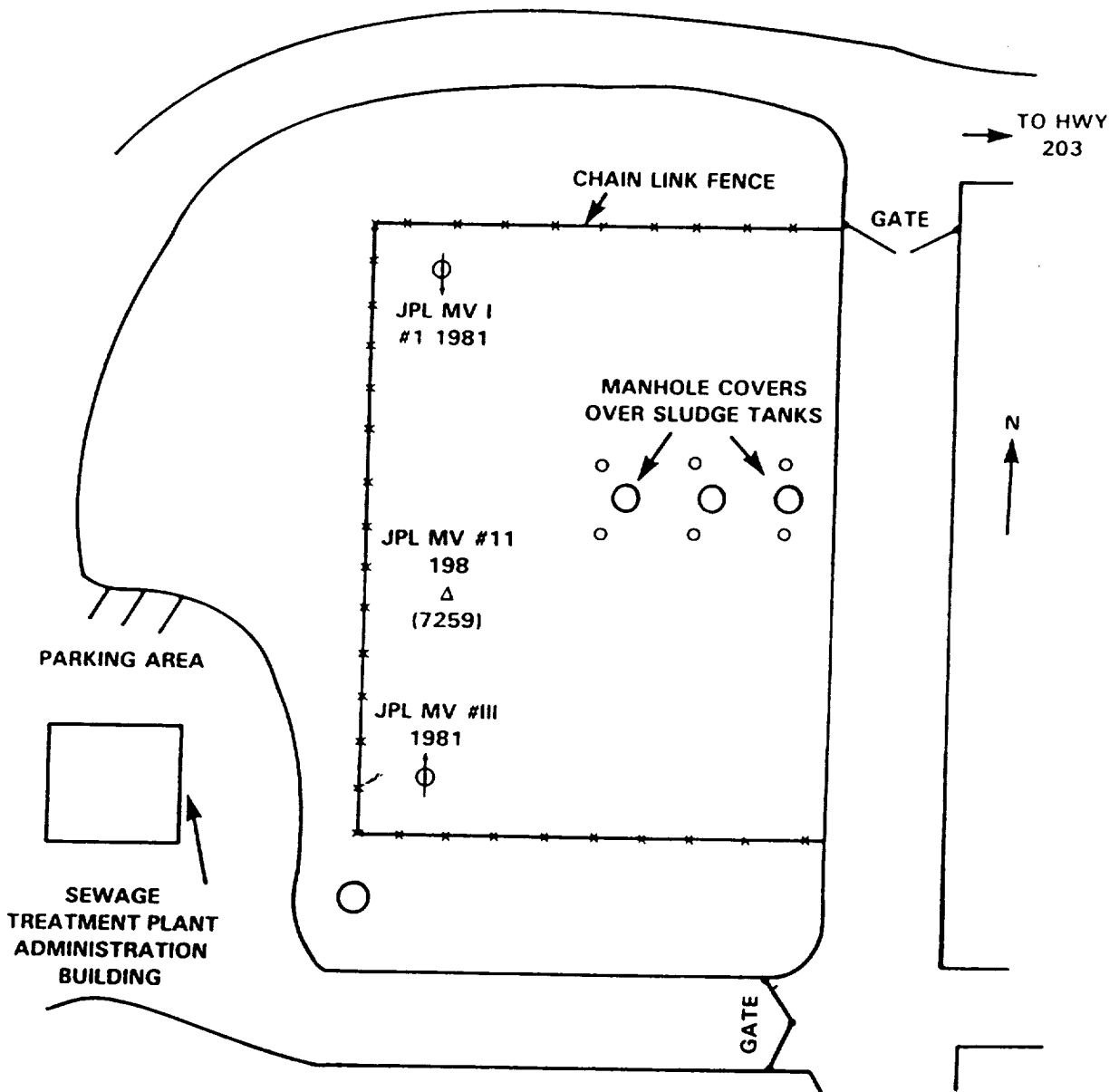
Mon. Number	Monument Inscription	North	East	Up
--	JPL MV	20.137	7.187	-0.109
--	JPL MV #III 1981	-11.588	-4.278	-0.085

SITE SKETCH

Site Number: 720

Current Site Name: MAMMOTH LAKES

Location: MAMMOTH LAKES, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 720

Current Site Name: MAMMOTH LAKES

Location: MAMMOTH LAKES, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7259	MV-2	72595201	29-JUN-83	30-JUN-83
7259	MV-2	72595202	09-APR-84	10-APR-84
7259	MV-3	72595303	22-OCT-84	23-OCT-84
7259	MV-3	72595304	22-OCT-86	23-OCT-86

-- SITE INFORMATION --

Site Number: 40

Current Site Name: MARYLAND POINT

Other Site Name:

Location: MARYLAND POINT, MD

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND TESTING OF VLBI SYSTEMS.

Site Description: THE STATION IS LOCATED AT THE MARYLAND POINT OBSERVATORY OF THE NAVAL RESEARCH LABORATORY. THIS FACILITY IS LOCATED ON THE MARYLAND SHORE OF THE POTOMAC RIVER, ABOUT 1.7 MILES NORTHWEST OF MARYLAND POINT AND ABOUT 21 MILES SOUTH OF INDIAN HEAD, MARYLAND. ONE FIXED 85-FOOT RADIO TELESCOPE IS USED FOR VLBI MEASUREMENTS. RM 5 IS FREQUENTLY USED IN GPS CAMPAIGNS.

Site Topo Map: WIDEWATER, MARYLAND. 1977, 7.5 QUAD, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: COASTAL PLAIN

Local Geology: POTOMAC RIVER FLOOD PLAIN

Comments: NONE

MONUMENT INFORMATION

Site Number: 40
 Current Site Name: MARYLAND POINT
 Location: MARYLAND POINT, MD
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7217
 Type of Monument: VLBI REFERENCE POINT ON RADIO TELESCOPE
 Monument Inscription: NONE
 Systems Using Monument: 85-FOOT RADIO TELESCOPE

Latitude: N 38 22' 26.81930''
 Longitude: W 77 13' 51.14705''
 Elevation:
 Height Above Ellipsoid: 17.491 meters
 Survey Source/Date: NGS/28-APR-81
 Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: THE ANTENNA IS ALSO REFERENCED AS NRL 85.

Differential Coordinates FROM Observing Monument 7217 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

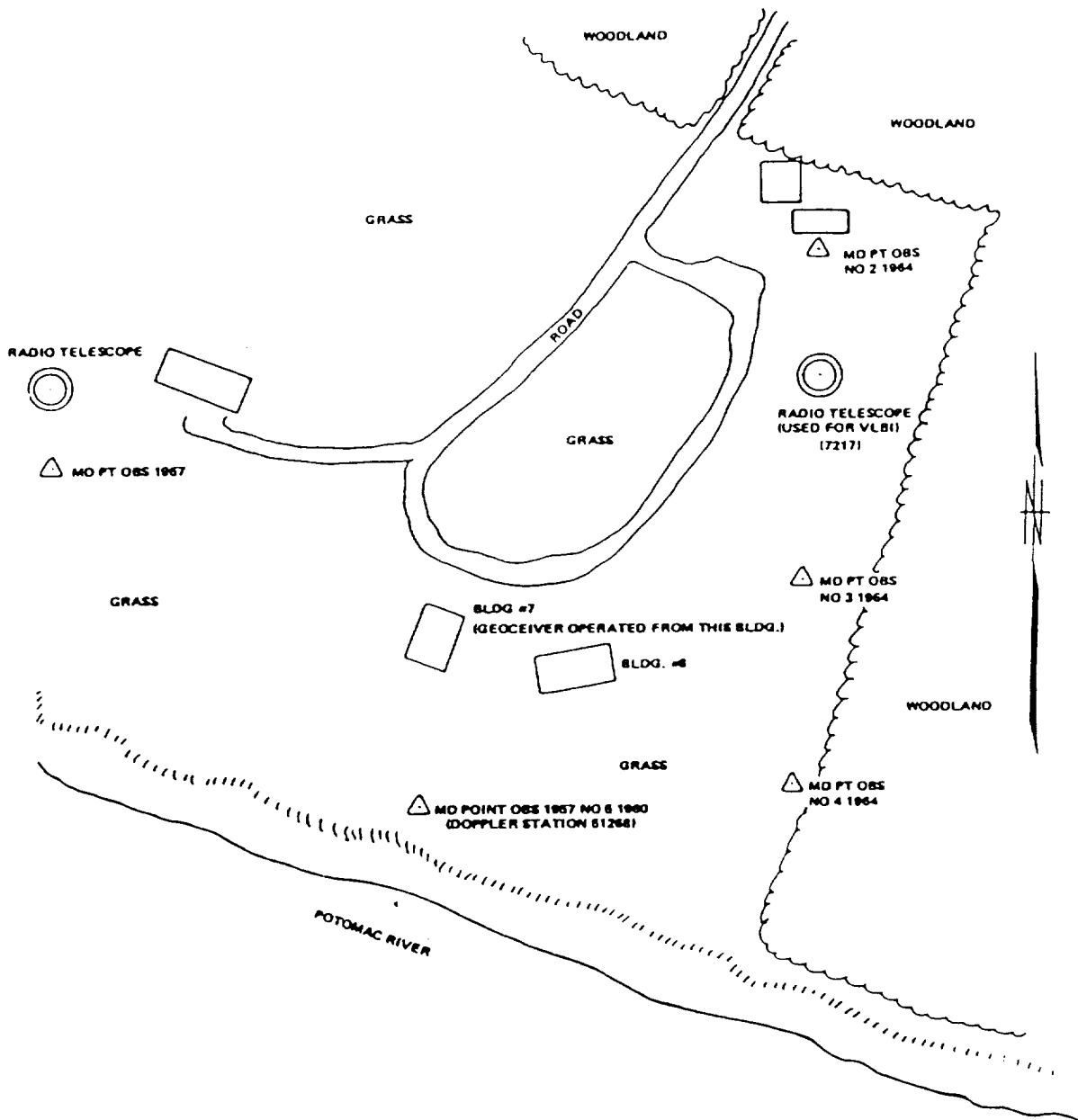
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	MARYLAND PT. NO. 2 1957	-4.695	20.726	5.967
--	MARYLAND PT. NO. 3 1957	4.341	-19.245	-46.819
--	MARYLAND PT. NO. 4 1957	10.078	-44.606	-77.688
--	MARYLAND PT. NO. 5	-69.439	-65.739	-81.945
--	MARYLAND PT. OBS. 1957	-148.364	-38.101	-26.199

Mon. Number	Monument Inscription	North	East	Up
--	MARYLAND PT. NO. 2 195	17.870	0.002	-12.957
--	MARYLAND PT. NO. 3 1957	-48.952	-0.021	-13.597
--	MARYLAND PT. NO. 4 1957	-89.295	-0.032	-12.376

SITE SKETCH

Site Number: 40
Current Site Name: MARYLAND POINT
Location: MARYLAND POINT, MD



PREVIOUS OCCUPATION INFORMATION

Site Number: 40
Current Site Name: MARYLAND POINT
Location: MARYLAND POINT, MD

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7217	NRL 85	72178101	18-JUN-82	18-OCT-82

-- SITE INFORMATION --

Site Number: 850

Current Site Name: MATERA

Other Site Name:

Location: MATERA, ITALY

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING MEDITERRANEAN TECTONICS AND SLR AND VLBI TECHNIQUE DEVELOPMENT, AND DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE SITE IS LOCATED IN THE BOOT OF ITALY JUST ABOVE THE INSTEP, 15 KM EAST OF MATERA AND APPROXIMATELY 80 KM NORTH OF TARANTO. A FIXED SAO LASER HAS BEEN OPERATED BY THE ITALIANS SINCE SEPTEMBER 1983. TWO SLR PADS ARE LOCATED SOUTHWEST OF THE FIXED LASER BUILDING. THE SITE IS EQUIPPED TO HOST TWO MOBILE LASER SYSTEMS SIMULTANEOUSLY. A FIXED VLBI ANTENNA HAS BEEN CONSTRUCTED AT THIS SITE.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: SOUTHERN APPENNINES

Local Geology: UPPER CRETACEOUS SEDIMENTS

Comments: NONE

MONUMENT INFORMATION

Site Number: 850
Current Site Name: MATERA
Location: MATERA, ITALY
Number of Observing Monuments: 4
Surveyed into National Network? YES

Monument Number: 7235
Type of Monument:
Monument Inscription: NONE
Systems Using Monument: FIXED VLBI ANTENNA

Latitude:
Longitude:
Elevation:
Height Above Ellipsoid:
Survey Source/Date:
Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7235 TO
Reference Monuments and Other Observing Monuments

Data Source:

MONUMENT INFORMATION (Continued)

Site Number: 850
 Current Site Name: MATERA
 Location: MATERA, ITALY

Monument Number: 7540
 Type of Monument: STANDARD BRASS MONUMENT IN PAD
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASER RANGING SYSTEMS (MLRS-1)

Latitude: N 40.648540529
 Longitude: E 16.704432660
 Elevation:
 Height Above Ellipsoid: 528.531 meters
 Survey Source/Date: COORDINATES PROVIDED BY DR. DANNY VAN
 LOON/01-AUG-87
 Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7540 TO
 Reference Monuments and Other Observing Monuments

Data Source: SURVEY OF THE MATERA SITE - MARCH 1992

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7939	NONE (MARKER 0)	31.7309	17.3006	7.2087

MONUMENT INFORMATION (Continued)

Site Number: 850
 Current Site Name: MATERA
 Location: MATERA, ITALY

Monument Number: 7541
 Type of Monument: STANDARD BRASS MONUNMENT IN PAD
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASER RANGING SYSTEMS (MTLRS-2)

Latitude: N 40.648526964
 Longitude: E 16.704231100
 Elevation:
 Height Above Ellipsoid: 528.751 meters
 Survey Source/Date: COORDINATES PROVIDED BY DR. DANNY VAN
 LOON/01-AUG-87
 Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7541 TO
 Reference Monuments and Other Observing Monuments

Data Source: SURVEY OF THE MATERA SITE - MARCH 1992

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7939	NONE (MARKER 0)	33.6306	33.7213	7.4486

MONUMENT INFORMATION (Continued)

Site Number: 850
 Current Site Name: MATERA
 Location: MATERA, ITALY

Monument Number: 7939
 Type of Monument: INTERSECTION OF THE AZIMUTH AND ELEVATION AXES
 OF THE LASER
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER (SAO-1)

Latitude: N 40 38' 55.7875''
 Longitude: E 16 42' 16.6921''
 Elevation:
 Height Above Ellipsoid: 528.719 meters
 Survey Source/Date: TELESPAZIO SURVEYING TEAM (A. CALVITTI, M.
 FRONTANI)/ 01-JAN-86
 Datum/Ellipsoid: EUROPEAN 1979/INTERNATIONAL SPHEROID

Comments: NONE

Differential Coordinates FROM Observing Monument 7939 TO
 Reference Monuments and Other Observing Monuments

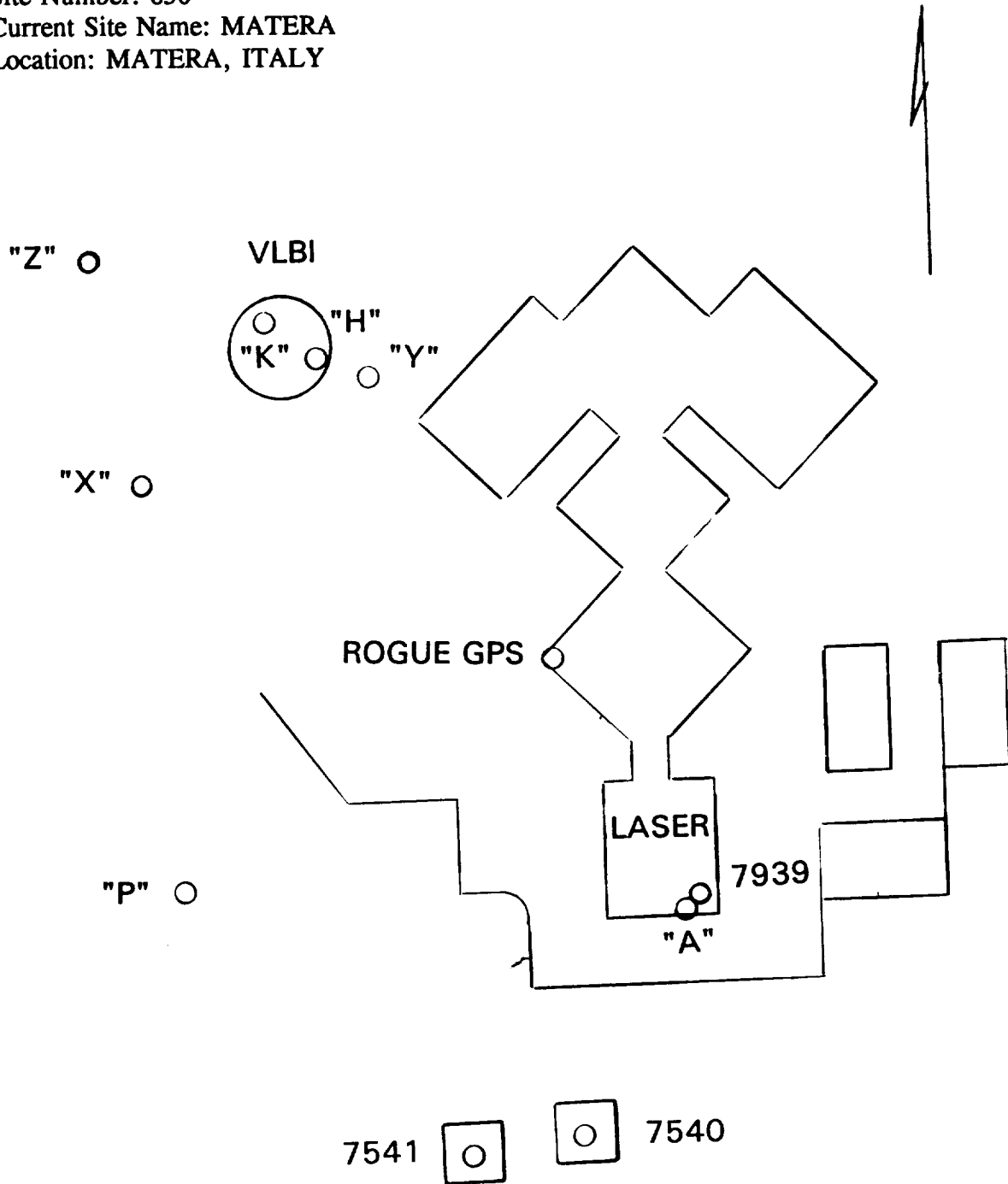
Data Source: SURVEY OF THE MATERA SITE - MARCH 1992

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	"A" - ECCENTRIC MARK	-2.9025	-2.8523	-0.6347
7540	--	-31.7309	-17.3006	-7.2087
7541	--	-33.6306	-33.7213	-7.4486
--	"R" ROGUE GPS MARK	33.0559	-19.4183	-0.1784
--	"H" BASEMENT OF VLBI	71.9615	-55.3370	-3.1880
--	"K" BASEMENT OF VLBI	78.6739	-61.4896	-3.1594
--	"P" REFERENCE MARK	6.0460	-70.4876	-5.7375

SITE SKETCH

Site Number: 850
Current Site Name: MATERA
Location: MATERA, ITALY



PREVIOUS OCCUPATION INFORMATION

Site Number: 850
Current Site Name: MATERA
Location: MATERA, ITALY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7540	MTLRS-1	75401501	08-JAN-86	17-MAR-86
7541	MTLRS-2	75411601	08-DEC-85	12-MAR-86
7939	SAO-1	79394101	01-MAY-83	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7243	20-METER	72435701	24-MAY-90	---

-- SITE INFORMATION --

Site Number: 141

Current Site Name: MAUNA KEA

Other Site Name:

Location: MAUNA KEA, HI

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

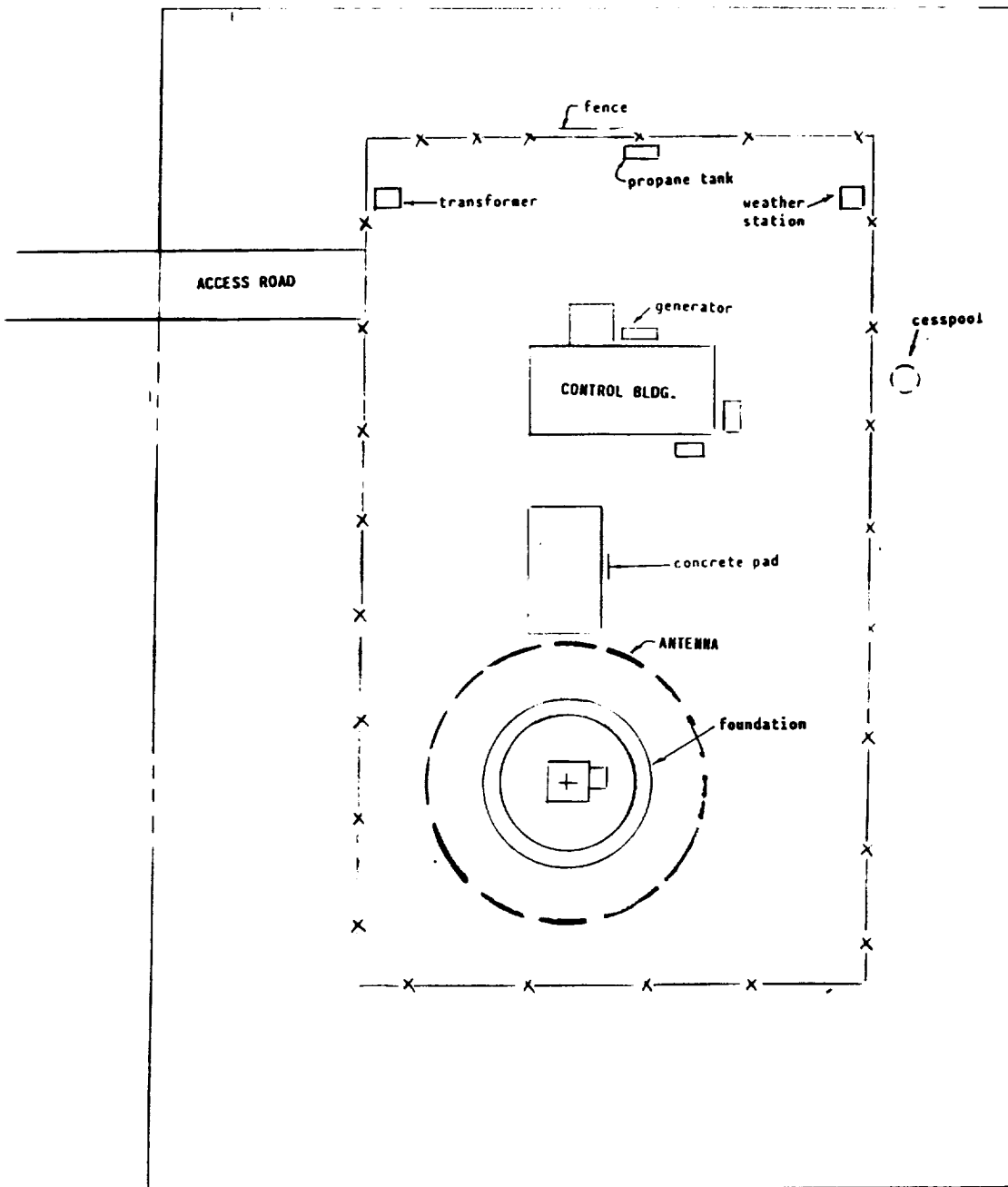
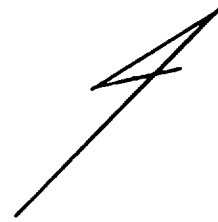
-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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7617	VLBA	76175501	01-JAN-90	---
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SITE SKETCH

Site Number: 141
Current Site Name: MAUNA KEA
Location: MAUNA KEA, HI



-- SITE INFORMATION --

Site Number: 71

Current Site Name: MAZATLAN

Other Site Name:

Location: MAZATLAN, SINALOA, MEXICO

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, AND REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED 7.5 MILES NORTH OF MAZATLAN, MEXICO. MAZATLAN IS ON THE WEST COAST OF MEXICO JUST SOUTH OF THE TROPIC OF CANCER. THE LASER STATION IS EQUIPPED WITH ONE MONUMENTED PAD THAT WAS OCCUPIED BY MOBILAS-6 FROM THE SUMMER OF 1983 UNTIL 1991.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: BURIED RANGES (SINALOA DELTA)

Local Geology: METAMORPHIC QUARTZ-RICH GNEISS

Comments: NONE

MONUMENT INFORMATION

Site Number: 71
 Current Site Name: MAZATLAN
 Location: MAZATLAN, SINALOA, MEXICO
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7122
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7122-1983
 Systems Using Monument: MOBLAS/TLRS

Latitude: N 23 20' 34.25950''
 Longitude: W 106 27' 32.70061''
 Elevation:
 Height Above Ellipsoid: 30.867 meters
 Survey Source/Date: BFEC HAVAGO ADJUSTMENT/15-NOV-88
 Datum/Ellipsoid: WGS 84 (TRANSFORMED FROM CDSLRS OBSERVATIONS)

Comments: NONE

Differential Coordinates FROM Observing Monument 7122 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

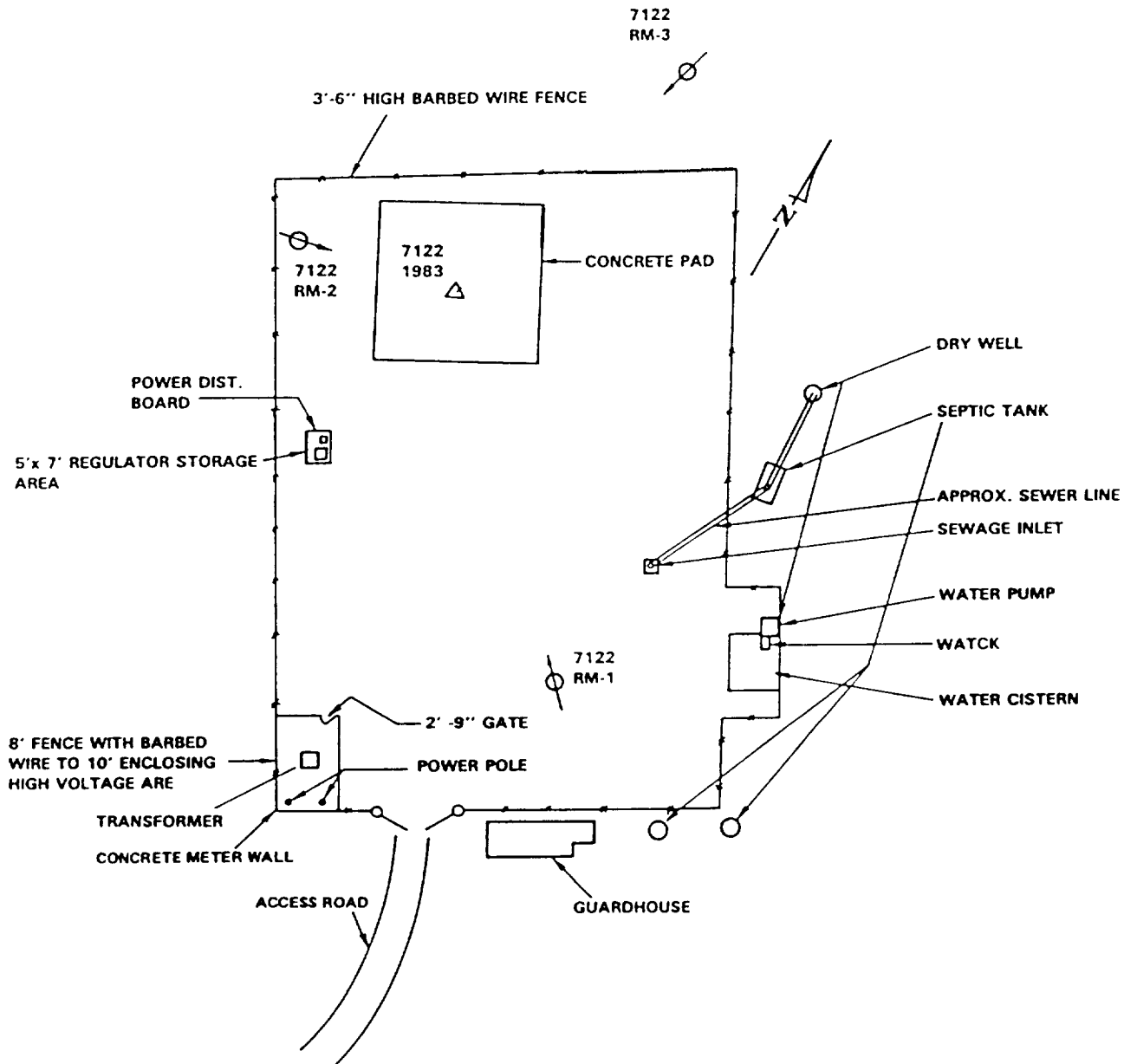
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7122 RM 1 (1983)	15.8453	-12.2278	-16.5974
--	7122 RM 2 (1983)	-10.8306	2.6747	-1.4663
--	7122 RM 3 (1983)	7.4296	6.1804	18.0661
--	7122 PIER A	948.2651	594.1051	1927.9751
--	7122 PIER B	260.4340	-54.3569	21.6603
--	7122 PIER C	-148.9756	-8.1494	-126.0208

Mon. Number	Monument Inscription	North	East	Up
--	7122 RM 1 (1983)	-18.1065	18.6605	0.0685
--	7122 RM 2 (1983)	-1.5458	-11.1447	-0.1187
--	7122 RM 3 (1983)	19.7700	5.3740	-0.2164

SITE SKETCH

Site Number: 71
Current Site Name: MAZATLAN
Location: MAZATLAN, SINALOA, MEXICO



PREVIOUS OCCUPATION INFORMATION

Site Number: 71

Current Site Name: MAZATLAN

Location: MAZATLAN, SINALOA, MEXICO

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7122	MOBLAS-6	71220601	01-MAR-83	01-MAR-84
7122	MOBLAS-6	71220602	01-JUL-84	15-DEC-85
7122	MOBLAS-6	71220603	16-DEC-85	21-JAN-87
7122	MOBLAS-6	71220604	28-JAN-87	17-AUG-88
7122	MOBLAS-6	71220605	17-AUG-88	12-JAN-89
7122	MOBLAS-6	71220606	12-JAN-89	22-JUN-89
7122	MOBLAS-6	71220607	23-JUN-89	03-OCT-89
7122	MOBLAS-6	71220608	04-OCT-89	20-DEC-90
7122	MOBLAS-6	71220609	21-DEC-90	13-APR-91
7122	TLRS-4	71221410	10-SEP-92	13-JAN-93

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 33B

Current Site Name: MCDONALD

Other Site Name: FORT DAVIS

Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE SITE IS LOCATED AT THE MCDONALD OBSERVATORY NEAR FORT DAVIS, TEXAS. THE FACILITY INCLUDES THE FIXED OBSERVATORY WITH A 2.7-METER TELESCOPE AND THE MCDONALD LASER RANGING SYSTEM (MLRS) ON A NEARBY PAD. A NEW PAD FOR THE MLRS AND A GUEST MOBILE LASER PAD HAVE BEEN CONSTRUCTED ON NEARBY MOUNT FLAT TOP AND ARE TIED INTO THE EXISTING MONUMENTATION.

Site Topo Map: MOUNT LOCKE, TEXAS; CASKAT MOUNTAIN, TEXAS. 7.5 MINUTE QUAD, AVAILABLE THROUGH THE U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: ROCKY MOUNTAIN PROVINCE

Local Geology: TERTIARY IGNEOUS ROCKS PREDOMINATELY FOUND ON THE SURFACE. THE INFLUENCE OF TOPOGRAPHY ON SOIL FORMATION IS PRONOUNCED. DUE TO EXTENSIVE EROSION, THE SOILS OF HILLS AND MOUNTAINS ARE SHALLOW, WHEREAS THE SOILS OF VALLEYS AND PLAINS ARE DEEP.

Comments: NONE

MONUMENT INFORMATION

Site Number: 33B
 Current Site Name: MCDONALD
 Location: MCDONALD OBSERVATORY, FORT DAVIS, TX
 Number of Observing Monuments: 6
 Surveyed into National Network? YES

Monument Number: 7080
 Type of Monument: STANDARD BRASS DISK
 Monument Inscription: 7080 1988
 Systems Using Monument: MLRS

Latitude: N 30 40' 48.94384''
 Longitude: W 104 0' 54.67839''
 Elevation: 2025.960 meters
 Height Above Ellipsoid: 2003.128 meters
 Survey Source/Date: BFEC/ 89-03-14
 Datum/Ellipsoid: NAD 83/GRS 80

Comments: NONE

Differential Coordinates FROM Observing Monument 7080 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7086	MOBLAS 7086 1979	-104.3287	-124.7845	-330.5613
7206	MCDONALD LURE 107 (1985)	-760.2292	-353.8108	-783.1834
7216	NONE (HRAS VLBI REF PT)	5810.0900	-3621.3591	-4362.3953
7850	7850 1988	12.8729	10.2774	21.9226
7851	7851 1988	11.5961	10.8970	22.4331
--	7850 CAL PIER 1	1037.0985	795.4296	1796.1866
--	7850 CAL PIER 2	83.2383	-5.3304	24.4964
--	7850 CAL PIER 3	32.3629	-42.4902	-57.3416
--	7850 CAL PIER 4	-14853.204	768.3452	-3998.7707

Monument Number: 7080
Type of Monument: STANDARD BRASS DISK
Monument Inscription: 7080 1988
Systems Using Monument: MLRS

Differential Coordinates FROM Observing Monument 7080 TO
Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7850	7850 1988	25.5326	10.0010	-0.0700
7851	7851 1988	26.1207	8.6120	-0.0605
--	7850 CAL PIER 2	28.7140	82.0516	-0.3879
--	7850 CAL PIER 3	-66.3517	41.6893	-0.5458

MONUMENT INFORMATION (Continued)

Site Number: 33B
 Current Site Name: MCDONALD
 Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Monument Number: 7086
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: NONE
 Systems Using Monument: MLRS, MOBLAS, AND TLRS-1

Latitude: N 30 40' 37.29121''
 Longitude: W 104 00' 57.34505''
 Elevation: 1983.150 meters
 Height Above Ellipsoid: 1960.324 meters
 Survey Source/Date: BFEC/ 88-09-15
 Datum/Ellipsoid: NAD 83/GRS 80

Comments: THIS MONUMENT IS THE SAME AS MONUMENT 7885. THIS IS THE MONUMENT MLRS WAS REFERENCED TO PRIOR TO ITS MOVE.

Differential Coordinates FROM Observing Monument 7086 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7080	CDP STATION 7080 (1988)	104.3287	124.7845	330.5613
7216	NONE (HRAS VLBI REF PT)	5914.4188	-3496.5745	-4031.8341
7850	7850 1988	117.2017	135.0619	352.4838
7851	7851 1988	115.9248	135.6816	352.9944
7897	TLRS 7897	-675.3556	-198.0745	-445.9750

MONUMENT INFORMATION (Continued)

Site Number: 33B
 Current Site Name: MCDONALD
 Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Monument Number: 7088
 Type of Monument: 3-D
 Monument Inscription: NONE (MLRS-TLRS)
 Systems Using Monument: MLRS,TLRS

Latitude: 30 40' 48.85093"
 Longitude: 104 00' 54.03942"
 Elevation:
 Height Above Ellipsoid: 2003.550 meters
 Survey Source/Date: BFEC /13-DEC-90
 Datum/Ellipsoid: NAD-83/GRS-80

Comments: NONE

Differential Coordinates FROM Observing Monument 7088 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7850	7850 (1988)	-3.1814	16.1524	24.1508
--	MCDONALD RM4 (1977)	-827.5744	-338.8477	-814.8319

Mon. Number	Monument Inscription	North	East	Up
7850	7850 (1988)	28.3736	-6.9984	-0.4924

MONUMENT INFORMATION (Continued)

Site Number: 33B
 Current Site Name: MCDONALD
 Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Monument Number: 7206
 Type of Monument: CENTER OF INTERSECTION OF AXIS ON TELESCOPE (1985)
 Monument Inscription: NONE
 Systems Using Monument: FIXED OBSERVATORY (2.7-METER LURE TELESCOPE)

Latitude: N 30 40' 18.34286''
 Longitude: W 104 01' 19.16064''
 Elevation:
 Height Above Ellipsoid: 2057.185 meters
 Survey Source/Date: BFEC / 88-09-15
 Datum/Ellipsoid: NAD 83/GRS 80

Comments: THIS MONUMENT IS USED FOR LUNAR LASER RANGING ONLY.
 THIS POSITION IS UPDATED FROM 7206 (1980).

Differential Coordinates FROM Observing Monument 7206 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7080	CDP 7080 (1988)	760.2292	353.8108	783.1834
7086	MOBLAS 1979	655.9005	229.0262	452.6222
7216	NONE (HRAS VLBI REF PT)	6570.3192	-3267.5483	-3579.2119
7850	CDP 7850 (1988)	773.1021	364.0881	805.1060
7851	CDP 7851 (1988)	771.8253	364.7078	805.6166
7897	TLRS 7897	-19.4552	30.9517	6.6472
7900	HARVARD RM 5 1977	6553.3478	-3307.4545	-3674.5509

Mon. Number	Monument Inscription	North	East	Up
7897	TLRS 7897	18.6312	-26.3750	-18.3830

MONUMENT INFORMATION (Continued)

Site Number: 33B
 Current Site Name: MCDONALD
 Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Monument Number: 7850
 Type of Monument: STANDARD BRASS DISK
 Monument Inscription: 7850 1988
 Systems Using Monument: TLRS-3, TLRS-4, MOBILE VLBI

Latitude: N 30 40' 49.77268''
 Longitude: W 104 0' 54.30278''
 Elevation: 2025.890 meters
 Height Above Ellipsoid: 2003.057 meters
 Survey Source/Date: BFEC /88-09-15
 Datum/Ellipsoid: NAD 83/GRS 80

Comments: THIS MONUMENT IS LOCATED ON THE GUEST PAD BUILT NEAR THE NEW LOCATION FOR THE MLRS.

Differential Coordinates FROM Observing Monument 7850 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7080	CDP 7080 (1988)	-12.8729	-10.2774	-21.9226
7086	MOBLAS 7086 1979	-117.2017	-135.0619	-352.4838
7206	LURE 107 7206 1985	-773.1021	-364.0881	-805.1060
7851	7851 1988	-1.2769	0.6197	0.5106
7897	TLRS 7897	-792.5573	-333.1364	-798.4588
--	7850 RM 1 1988	33.8169	-7.0950	2.0334
--	7850 RM 2 1988	-37.5417	-12.8494	-41.4489
--	7850 RM 3 1988	-33.3543	24.5147	18.9251
--	7850 CAL PIER 1	1024.2255	785.1522	1774.2640
--	7850 CAL PIER 2	70.3654	-15.6077	2.5738
--	7850 CAL PIER 3	19.4900	-52.7676	-79.2642
--	7850 CAL PIER 4	-14866.077	758.0678	-4020.6932

Monument Number: 7850
 Type of Monument: STANDARD BRASS DISK
 Monument Inscription: 7850 1988
 Systems Using Monument: TLR3-3, TLR3-4, MOBILE VLBI

Differential Coordinates FROM Observing Monument 7850 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7080	CDP 7080 (1988)	-25.5326	-10.0008	0.0709
7851	7851 1988	0.5881	-1.3889	0.0094
--	7850 RM 1 1988	2.4151	34.5285	-0.0855
--	7850 RM 2 1988	-46.6474	-33.3124	-2.6083
--	7850 RM 3 1988	24.2907	-38.2983	-3.8522
--	7850 CAL PIER 2	3.1819	72.0506	-0.3188
--	7850 CAL PIER 3	-91.8841	31.6889	-0.4733

MONUMENT INFORMATION (Continued)

Site Number: 33B
 Current Site Name: MCDONALD
 Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Monument Number: 7851
 Type of Monument: STANDARD BRASS DISK
 Monument Inscription: 7851 1988
 Systems Using Monument: TLRs-1

Latitude: N 30 40' 49.79177''
 Longitude: W 104 0' 54.35494''
 Elevation: 2025.900 meters
 Height Above Ellipsoid: 2003.067 meters
 Survey Source/Date: BFEC/ 88-09-15
 Datum/Ellipsoid: NAD 83/GRS 80

Comments: THIS MONUMENT IS LOCATED ON THE GUEST PAD BUILT NEAR THE NEW MLRS SITE.

Differential Coordinates FROM Observing Monument 7851 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7080	CDP 7080 1988	-11.5961	-10.8970	-22.4331
7086	MOBLAS 7086 (1979)	-115.9248	-135.6816	-352.9944
7206	LURE 107 7206 (1985)	-771.8253	-364.7078	-805.6166
7850	CDP 7850 (1988)	1.2769	-0.6197	-0.5106
7897	TLRS 7897	-791.2804	-333.7561	-798.9694
--	7850 RM 1 1988	35.0938	-7.7147	1.5229
--	7850 RM 2 1988	-36.2649	-13.4691	-41.9595
--	7850 RM 3 1988	-32.0774	23.8950	18.4145
--	7850 CAL PIER 1	1025.5024	784.5325	1773.7535
--	7850 CAL PIER 2	71.6422	-16.2274	2.0632
--	7850 CAL PIER 3	20.7669	-53.3872	-79.7748
--	7850 CAL PIER 4	-14864.800	757.4482	-4021.2038

Monument Number: 7851
 Type of Monument: STANDARD BRASS DISK
 Monument Inscription: 7851 1988
 Systems Using Monument: TLRS-1

Differential Coordinates FROM Observing Monument 7851 TO
Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7080	CDP 7080 1988	-26.1207	-8.6119	0.0615
7850	CDP 7850 (1988)	-0.5881	1.3889	-0.0094
--	7850 RM 1 1988	1.8270	35.9174	-0.0949
--	7850 RM 2 1988	-47.2355	-31.9234	-2.6177
--	7850 RM 3 1988	23.7026	-36.9093	-3.8616
--	7850 CAL PIER 2	2.5938	73.4395	-0.3282
--	7850 CAL PIER 3	-92.4722	33.0778	-0.4727

MONUMENT INFORMATION (Continued)

Site Number: 33B
 Current Site Name: MCDONALD
 Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Monument Number: 7885
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: NONE
 Systems Using Monument: MLRS, MOBLAS, AND TLRs-1

Latitude: N 30 40' 37.29121''
 Longitude: W 104 00' 57.34505''
 Elevation: 1983.150 meters
 Height Above Ellipsoid: 1960.324 meters
 Survey Source/Date: BFEC/ 89-03-14
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THIS MONUMENT IS THE SAME AS MONUMENT 7086.

Differential Coordinates FROM Observing Monument 7885 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7206	NONE (LURE 107 1985)	-655.9005	-229.0262	-452.6222
7216	NONE (HRAS REF PT)	5914.4188	-3496.5745	-4031.8341
7897	TLRS 7897	-675.3556	-198.0745	-445.9750

MONUMENT INFORMATION (Continued)

Site Number: 33B
 Current Site Name: MCDONALD
 Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Monument Number: 7897
 Type of Monument: NAIL IN PAVEMENT
 Monument Inscription: NONE
 Systems Using Monument: TLRS-1

Latitude: N 30 40' 18.94766''
 Longitude: W 104 01' 20.15114''
 Elevation: 2061.630 meters
 Height Above Ellipsoid: 2038.802 meters
 Survey Source/Date: BFEC /88-09-15
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THIS LOCATION WAS INITIALLY OCCUPIED BY TLRS-1.

Differential Coordinates FROM Observing Monument 7897 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7080	CDP 7080 1988	779.6844	322.8590	776.5363
7086	MOBLAS 1979	675.3556	198.0745	445.9750
7206	NONE (LURE 107 1985)	19.4552	-30.9517	-6.6472
7216	NONE (HRAS REF PT)	6589.7744	-3298.5000	-3585.8591
7850	CDP 7850 1988	792.5573	333.1364	798.4588
7851	CDP 7851 1988	791.2804	333.7561	798.9694
7900	HARVARD RM 5 1977	6572.8030	-3338.4062	-3681.1981

Mon. Number	Monument Inscription	North	East	Up
7206	NONE (LURE 107 1985)	-18.6312	26.3750	18.3830

MONUMENT INFORMATION (Continued)

Site Number: 33B

Current Site Name: MCDONALD

Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

Monument Number: 7999

Type of Monument:

Monument Inscription: NONE

Systems Using Monument: TLRs-1

Latitude:

Longitude:

Elevation:

Height Above Ellipsoid:

Survey Source/Date:

Datum/Ellipsoid:

**Comments: THIS NUMBER WAS ASSIGNED FOR HORIZONTAL RANGING BUT
WAS NEVER USED FOR POSITIONING.**

**Differential Coordinates FROM Observing Monument 7999 TO
Reference Monuments and Other Observing Monuments**

Data Source:

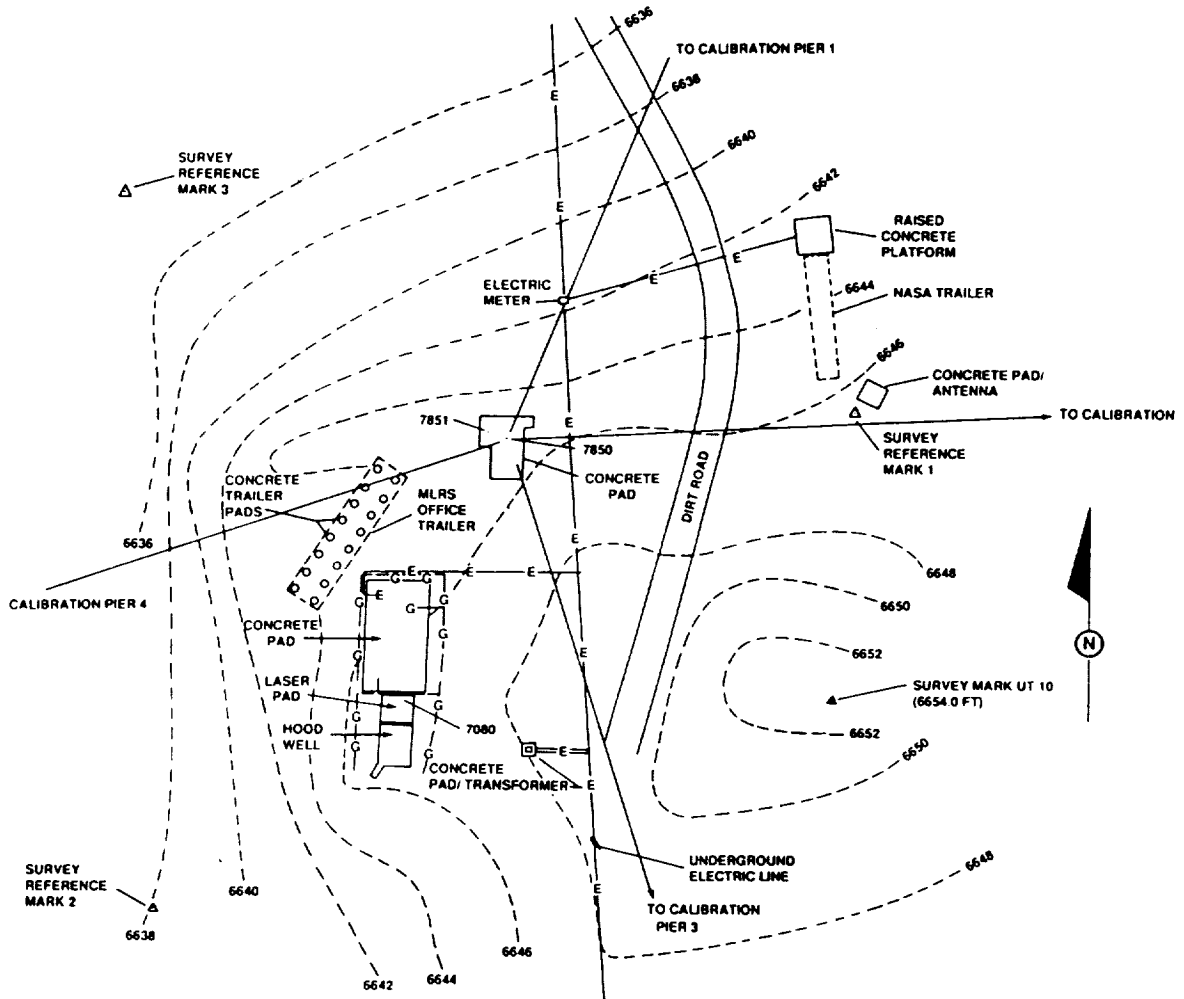
-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 33B

Current Site Name: MCDONALD

Location: MCDONALD OBSERVATORY, FORT DAVIS, TX



PREVIOUS OCCUPATION INFORMATION

Site Number: 33B

Current Site Name: MCDONALD

Location: MCDONALD OBSERVATORY, FORT DAVIS, TX

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7080	MLRS	70802401	10-FEB-88	02-JUN-88
7080	MLRS	70802402	03-JUN-88	21-SEP-88
7080	MLRS	70802403	22-SEP-88	12-SEP-89
7080	MLRS	70802404	13-SEP-89	27-SEP-89
7080	MLRS	70802405	28-SEP-89	24-OCT-89
7080	MLRS	70802406	18-NOV-89	15-JAN-90
7080	MLRS	70802407	16-JAN-90	25-JAN-90
7080	MLRS	70802408	26-JAN-90	03-APR-90
7080	MLRS	70802409	04-APR-90	29-APR-90
7080	MLRS	70802410	30-APR-90	05-JUN-90
7080	MLRS	70802411	06-JUN-90	24-SEP-90
7080	MLRS	70802412	25-SEP-90	30-NOV-90
7080	MLRS	70802413	01-DEC-90	09-APR-91
7080	MLRS	70802414	10-APR-91	03-JUL-91
7080	MLRS	70802415	04-JUL-91	09-APR-92
7080	MLRS	70802416	10-APR-92	12-AUG-92
7080	MLRS	70802417	13-AUG-92	28-JAN-93
7080	MLRS	70802418	29-JAN-93	---
7086	MOBLAS-1	70860101	27-AUG-79	31-MAY-80
7086	TLRS-1	70861102	01-JUL-80	08-AUG-80
7086	MLRS	70862403	11-OCT-82	28-FEB-85
7086	MLRS	70862404	01-MAR-85	17-OCT-86
7086	MLRS	70862405	17-OCT-86	30-JUL-87
7086	MLRS	70862406	30-JUL-87	17-SEP-87
7086	MLRS	70862407	17-SEP-87	24-NOV-87
7086	MLRS	70862408	24-NOV-87	01-FEB-88
7206	2.7 METER	72062601	01-MAY-76	29-JUN-85
7850	TLRS-4	78501401	23-JAN-93	---
7885	TLRS-1	78851101	23-JUL-82	10-OCT-82
7897	TLRS-1	78971101	01-SEP-79	31-DEC-79
7897	TLRS-1	78971102	01-JAN-80	13-FEB-80
7999	TLRS-1	79991101	09-AUG-80	11-AUG-80

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7850	MV-3	78505301	05-OCT-88	08-OCT-88

-- SITE INFORMATION --

Site Number: 851

Current Site Name: MEDICINA

Other Site Name: BOLOGNA

Location: MEDICINA, ITALY

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: RADIOASTRONOMY, EARTH ROTATION, REGIONAL DEFORMATIONS

Site Description: THE SITE IS LOCATED NEAR MEDICINIA, APPROXIMATELY 30 KILOMETERS EAST OF BOLOGNA, AT THE MEDICINIA RADIOASTRONOMY STATION AND IS OPERATED BY THE ISTITUTO DI RADIOASTRONOMIA, NATIONAL RESEARCH COUNCIL OF ITALY.

A FIXED 32-METER ANTENNA IS USED FOR VLBI MEASUREMENTS AND FOR ASTROPHYSICAL STUDIES.

A STANDARD NASA PAD FOR MOBILE LASER RANGING IS LOCATED NEAR THE VLBI ANTENNA.

Site Topo Map: FOGLIO 88 DELLA CARTA D' ITALIA 1:50000; FOGLIO SELVA MALVEZZI 88 IV SE 1:25000

TOPOGRAPHIC MAP SERIES. AVAILABLE FROM ISTITUTO GEOGRAFICO MILITARE - FIRENZE - ITALY

GEOLOGICAL INFORMATION

Geological Province:

Local Geology: THE FLAT PLAIN WHERE THE MEDICINIA STATION IS LOCATED IS CHARACTERIZED BY RECENT ALLUVIONAL CLAY, SAND AND CONGLOMERATE (PLEISTOCENE SUP. HOLOCENE), SAND AND CLAY (PLEISTOCENE INF.), SANDY CLAY (CALABRIAN), UP TO A DEPTH OF ABOUT 4000 M. THE LOWER UNITS ARE PLIOCENIC CLAY, SAND AND SANDY CLAY AS SHOWN BY AN AGIP DWELL.

Comments: NONE

MONUMENT INFORMATION

Site Number: 851
 Current Site Name: MEDICINA
 Location: MEDICINA (BOLOGNA), ITALY
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7230
 Type of Monument: EL AXIS NOT INTERCEPTING AZ AXES
 Monument Inscription: NONE
 Systems Using Monument: 32 METER FIXED ANTENNA

Latitude: N 44 31' 13.8"
 Longitude: E 11 38' 48.9"
 Elevation: 28 M
 Height Above Ellipsoid: 61 M
 Survey Source/Date: ISTITUTO GEOGRAFICO MILITARE 1987
 Datum/Ellipsoid: WGS84

Comments:

Differential Coordinates FROM Observing Monument 7230 TO
Reference Monuments and Other Observing Monuments

Data Source: TELESPAZIO 1988

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	A	-25.728	-43.162	-15.592
--	B	16.760	-47.583	-15.665
--	C	-8.151	-33.367	-15.579
--	D	-0.033	-9.84	-15.782
--	F	24.076	-99.213	-17.726
--	G	370.561	-0.223	-18.096
7546	--	-50.668	-35.250	-17.724

MONUMENT INFORMATION (Continued)

Site Number: 851
 Current Site Name: MEDICINA
 Location: MEDICINA, ITALY

Monument Number: 7546
 Type of Monument: BRASS DISK IN STANDARD NASA PAD
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASER SYSTEMS AND GPS

Latitude: N 44 31' 12.031''
 Longitude: E 11 38' 42.354''
 Elevation:
 Height Above Ellipsoid: 43.787 meters
 Survey Source/Date: TELESPAZIO 1988
 Datum/Ellipsoid: A = 6378144.11, 1/F = 298.257

Comments: NONE

Differential Coordinates FROM Observing Monument 7546 TO
 Reference Monuments and Other Observing Monuments

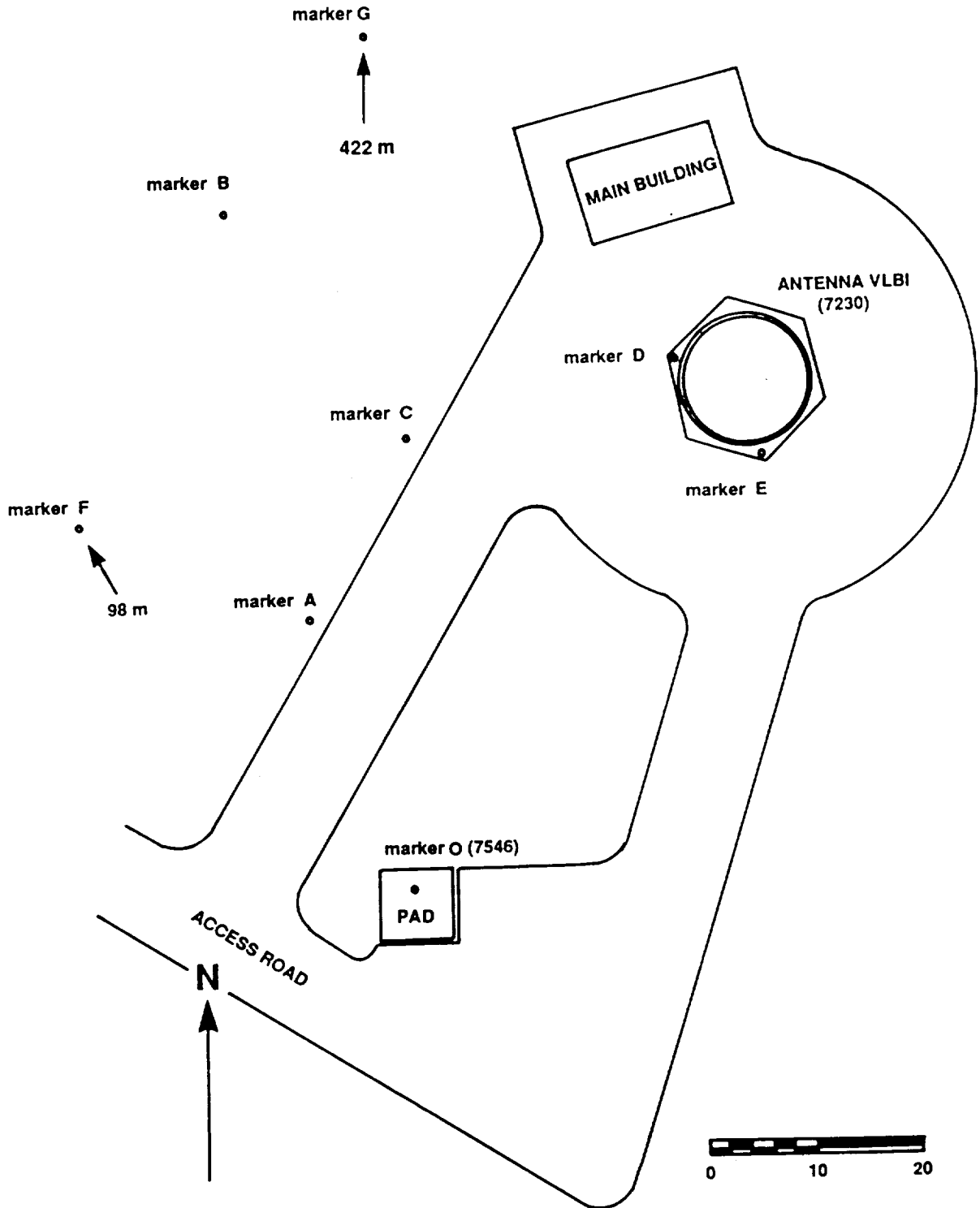
Data Source: TELESPAZIO 1988

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	A	24.9403	-7.9123	2.1320
--	B	67.4279	-12.3328	2.0586
--	C	42.5173	1.8831	2.1452
--	D	50.6353	25.3524	1.9421
--	F	74.7444	-63.9632	-0.0023
--	G	421.2287	35.1365	-0.3766
7230	NONE (32-METER ANTENNA)	50.668	35.250	17.724

SITE SKETCH

Site Number: 851.
Current Site Name: MEDICINA
Location: MEDICINA, ITALY



PREVIOUS OCCUPATION INFORMATION

Site Number: 851

Current Site Name: MEDICINA

Location: MEDICINA, ITALY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7546	MTLRS-2	75461601	28-MAR-88	04-JUN-88

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7230	32-METER	72308801	01-MAY-76	---

-- SITE INFORMATION --

Site Number: 684

Current Site Name: MELENGICLIK

Other Site Name: KARAMAN

Location: MELENGICLIK, TURKEY

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

**Primary Scientific Purposes: MEASUREMENTS SUPPORTING
MEDITERRANEAN TECTONICS.**

**Site Description: THIS WEGENER-MEDLAS SITE IS LOCATED IN SOUTHERN
TURKEY APPROXIMATELY 25 KILOMETERS NORTH OF THE TOWN OF
KARAMAN. THE SITE IS EQUIPPED WITH A PAD COMPATIBLE FOR
OCCUPATION BY ANY MOBILE LASER SYSTEM, AMERICAN OR EUROPEAN.
THIS IS THE FIRST SITE TLRS-1 OCCUPIED IN THE
MEDITERRANEAN CAMPAIGN OF 1987.**

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: UNKNOWN

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 684
 Current Site Name: MELENGICLIK
 Location: MELENGICLIK, TURKEY
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7580
 Type of Monument: STANDARD BRASS MONUMENT
 Monument Inscription: STATION 7580 1987
 Systems Using Monument: MOBILE LASER

Latitude:
 Longitude: POSITION NOT AVAILABLE
 Elevation:
 Height Above Ellipsoid:
 Survey Source/Date: BFEC/29-APR-88
 Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7580 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7580 A (1987)	-0.0168	1.9778	-1.3816
--	7580 AZ MARK	62.0468	219.2908	-261.9226
--	7580 B (1987)	1.8859	1.9325	-3.4342
--	7580 C (1987)	3.0411	-0.4689	-2.9599
--	7580 D (1987)	2.0469	-1.3511	-1.2683
--	7580 RM 1 (1987)	28.3833	18.7789	-50.7845
--	7580 RM 2 (1987)	12.3536	-53.7172	27.5600
--	7580 RM 3 (1987)	-41.8378	32.6947	27.9650
--	CAL PIER	-19.1578	-110.3464	122.0263

Monument Number: 7580
 Type of Monument: STANDARD BRASS MONUMENT
 Monument Inscription: STATION 7580 1987
 Systems Using Monument: MOBILE LASER

Differential Coordinates FROM Observing Monument 7580 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

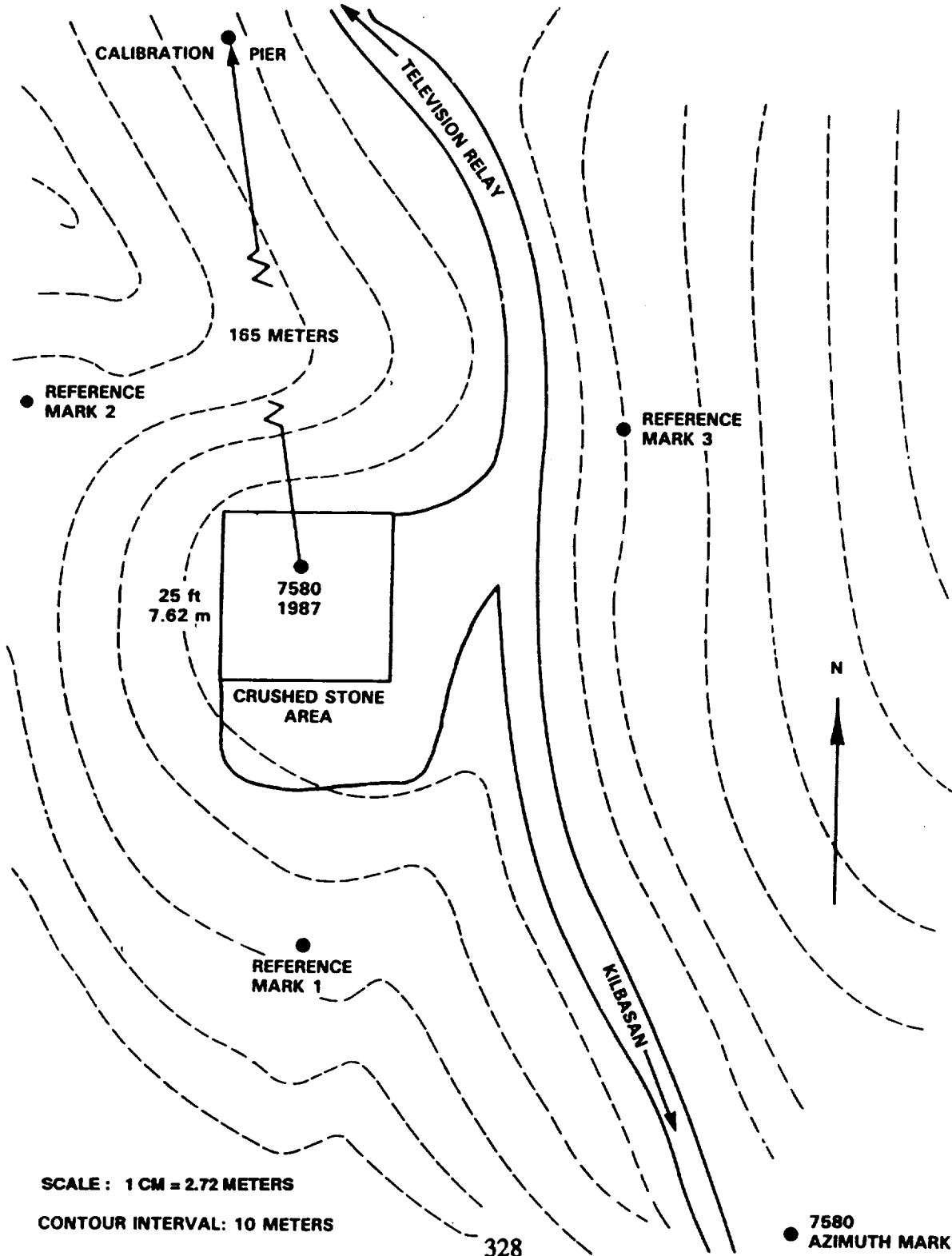
Mon. Number	Monument Inscription	North	East	Up
--	7580 A (1987)	-1.7466	1.6644	0.0105
--	7580 B (1987)	-4.3293	0.5848	0.0100
--	7580 C (1987)	-3.7412	-2.0573	0.0215
--	7580 D (1987)	-1.5987	-2.2512	0.0035
--	7580 RM 1 (1987)	-61.0161	0.1771	-3.7854
--	7580 RM 2 (1987)	33.4765	-51.7160	1.5779
--	7580 RM 3 (1987)	32.6116	50.2640	3.3772

SITE SKETCH

Site Number: 684

Current Site Name: MELENGICLIK

Location: MELENGICLIK, TURKEY



SCALE : 1 CM = 2.72 METERS

CONTOUR INTERVAL: 10 METERS

328

7580
● AZIMUTH MARK

PREVIOUS OCCUPATION INFORMATION

Site Number: 684

Current Site Name: MELENGICLIK

Location: MELENGICLIK, TURKEY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7580	TLRS-1	75801101	02-APR-87	16-MAY-87
7580	TLRS-1	75801102	16-OCT-89	12-NOV-89
7850	TLRS-1	75801103	06-NOV-92	12-NOV-92
7850	TLRS-1	75801104	13-NOV-92	06-JAN-93

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 860

Current Site Name: METSAHOVI

Other Site Name:

Location: KIRKKONUMMI AND SJOKULLA, FINLAND

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE SITE IS LOCATED IN KYLMAELAE VILLAGE, APPROXIMATELY 30 KILOMETERS WEST-NORTHWEST FROM HELSINKI. A FIXED LASER IS LOCATED AT THE SITE FOR SLR OBSERVATIONS.

Site Topo Map: BASIC MAP 1:20000, NO. 203209, VITTRAESK, TOPOGRAPHIC MAP 1:100000, NO. 2031+2032, ESPOO. AVAILABLE THROUGH THE MAP SERVICE (SEE COMMENTS FOR COMPLETE ADDRESS).

GEOLOGICAL INFORMATION

Geological Province: PRECAMBRIAN BEDROCK

Local Geology: MICROCLINE GRANITE

Comments: MAP SERVICE OF THE NATIONAL BOARD OF SURVEY, OPASTINSILTA 12, 00520 HELSINKI, FINLAND.

MONUMENT INFORMATION

Site Number: 860
Current Site Name: METSAHOVI
Location: SJOKULLA, FINLAND
Number of Observing Monuments: 2
Surveyed into National Network? YES

Monument Number: 7601
Type of Monument:
Monument Inscription:
Systems Using Monument: MOBILE VLBI

Latitude: N 60 14' 32.200194''
Longitude: E 24 23' 06.461063''
Elevation:
Height Above Ellipsoid: 40.598 meters
Survey Source/Date: NATIONAL BOARD OF SURVEY
Datum/Ellipsoid: E.D. 87

Comments:

Differential Coordinates FROM Observing Monument 7601 TO
Reference Monuments and Other Observing Monuments

Data Source: DORIS INFORMATION PROVIDED BY IGN. GPS TIE FROM IGS MAIL.

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NONE- DORIS ANT REF PT	-11.609	15.220	6.232
--	GPS REF MARKER S011	1918.159	1547.985	-1324.677

MONUMENT INFORMATION

Site Number: 860
Current Site Name: METSAHOVI
Location: KIRKKONUMMI, FINLAND

Monument Number: 7805
Type of Monument: CROSS POINT OF THE AXIS OF THE LASER,
Monument Inscription: NONE
Systems Using Monument: FIXED LASER

Latitude: N 60 13' 03.4424''
Longitude: E 24 23' 43.5992''
Elevation: 59.230 meters
Height Above Ellipsoid:
Survey Source/Date: FINNISH GEODETIC INSTITUTE/01-JAN-81
Datum/Ellipsoid: E.D. 50/BOMFORD 1970

Comments: THE LASER TELESCOPE STANDS ON A CONCRETE PILLAR BUILT ON
BEDROCK.

Differential Coordinates FROM Observing Monument 7805 TO
Reference Monuments and Other Observing Monuments

Data Source: FINNISH GEODETIC INSTITUTE. DORIS INFORMATION PROVIDED
BY IGN.

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	METSAHOVI STA MARK SF 348	-14.707	-10.547	4.152
--	SF 7 FALKBERG	-557.187	-3459.437	1144.012
--	DORIS ANT REF PT	-1954.310	-1497.249	-1354.108

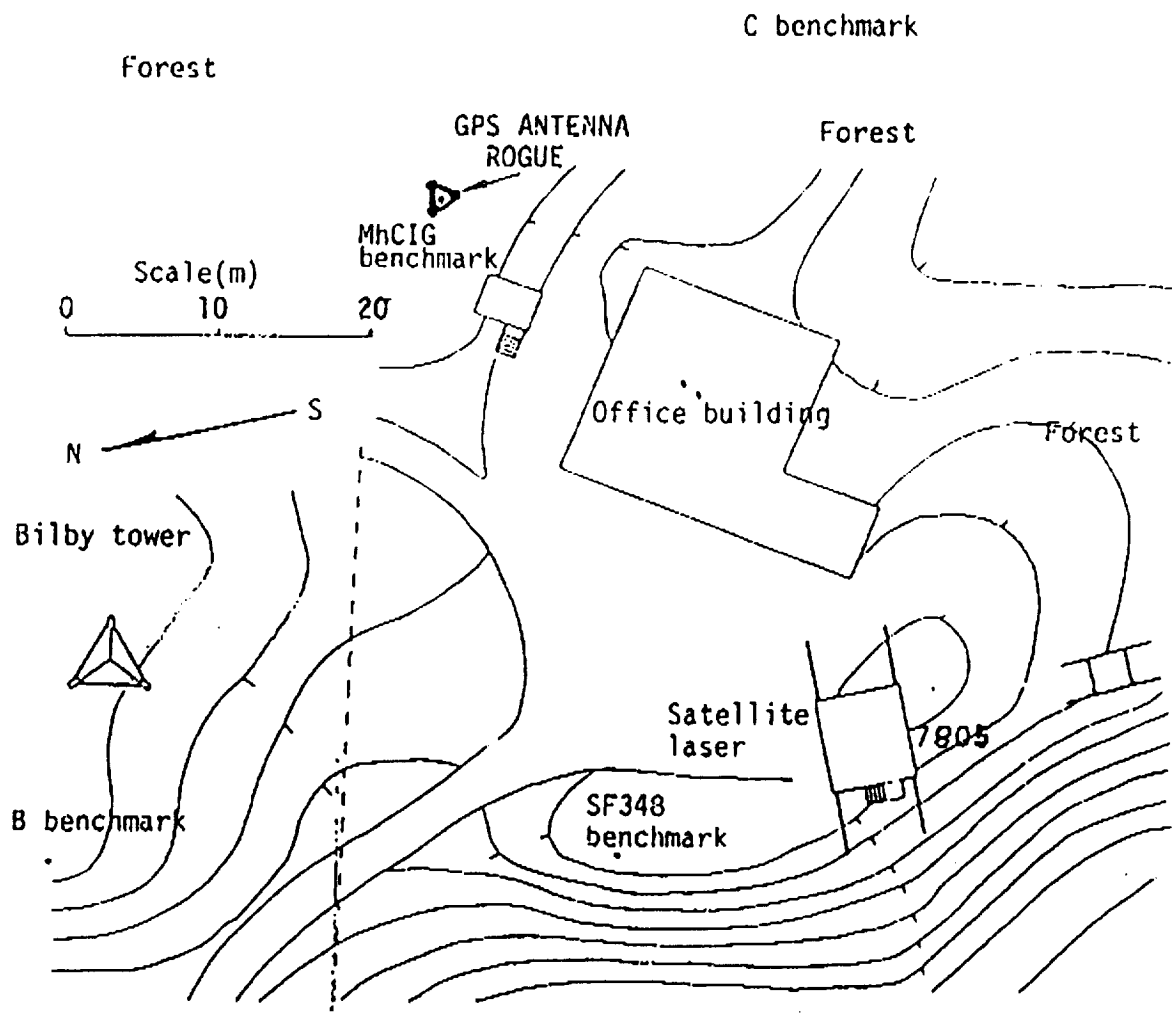
SITE SKETCH

Site Number: 860

Current Site Name: METSAHOVI

Location: KIRKKONUMMI, FINLAND

CIGNET SITE SKETCH



PREVIOUS OCCUPATION INFORMATION

Site Number: 860

Current Site Name: METSAHOVI

Location: KIRKKONUMMI, FINLAND

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7805	FINLAS	78053301	01-AUG-78	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7601	MV-3	76015301	05-JUL-89	12-JUL-89

-- SITE INFORMATION --

Site Number: 52

Current Site Name: MILES CITY

Other Site Name:

Location: MILES CITY, MONTANA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE NATIONAL GEODETIC SURVEY'S NATIONAL CRUSTAL MOTION NETWORK.

Site Description: THIS SITE IS LOCATED ON THE WEST SIDE OF MILES CITY, MONTANA AT THE DISTRICT OF THE BUREAU OF LAND MANAGEMENT. THE STATION IS ON THE SOUTHEAST SIDE OF THE PROPERTY AT AN AUTOMATIC WEATHER STATION, JUST NORTHEAST OF THE STATION "MILES CITY GPS 1987," AND ACROSS THE ROAD FROM THE MILES CITY CUSTER COUNTY FAIRGROUNDS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 52
Current Site Name: MILES CITY
Location: MILES CITY, MONTANA
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7038
Type of Monument: STANDARD BRASS NGS DISK
Monument Inscription: MILES CITY NCMN 1988
Systems Using Monument: MOBILE VLBI

Latitude:
Longitude:
Elevation:
Height Above Ellipsoid:
Survey Source/Date:
Datum/Ellipsoid:

Comments: GEODETICS FOR THE VLBI POINT ARE NOT AVAILABLE AT PRESENT.
THE POSITION OF THE MILES CITY GPS MARK IS LISTED AS:

N 46 23' 46.99423"
W 105 51' 38.93179"
H 704.669 meters
NAD83

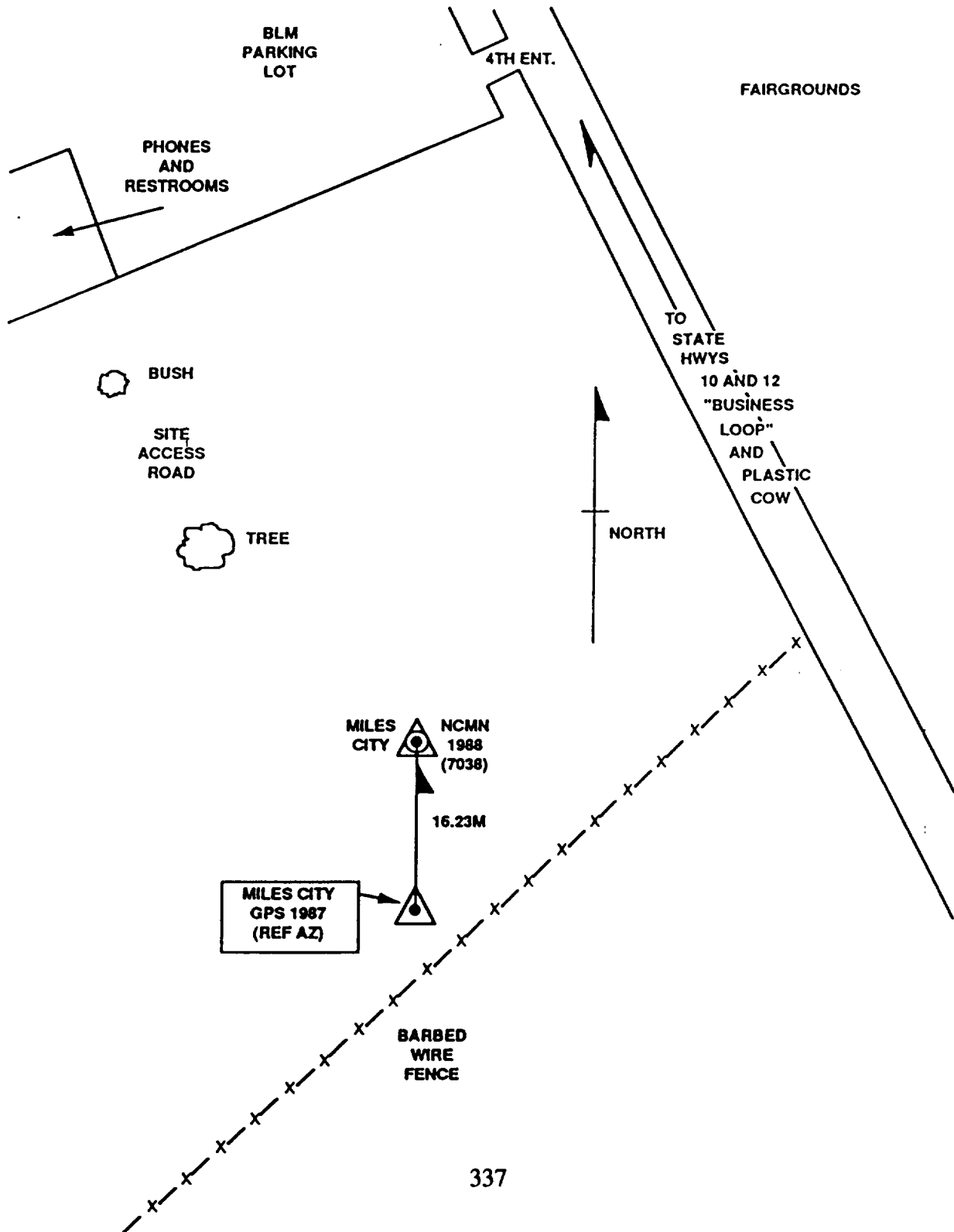
Differential Coordinates FROM Observing Monument 7038 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 52
Current Site Name: MILES CITY
Location: MILES CITY, MONTANA



PREVIOUS OCCUPATION INFORMATION

Site Number: 52
Current Site Name: MILES CITY
Location: MILES CITY, MONTANA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7038	MV-2	70385201	14-APR-88	16-APR-88

-- SITE INFORMATION --

Site Number: 877

Current Site Name: MINAMI DAITO JIMA

Other Site Name:

Location: MINAMI DAITO JIMA, OKINAWA, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: PHILIPPINE SEA

Primary Scientific Purposes: MEASUREMENTS OF THE PHILIPPINE SEA PLATE MOTION

Site Description: MINAMI DAITO JIMA IS LOCATED IN THE SOUTHWEST PART OF JAPAN ON THE PHILIPPINE SEA PLATE APPROXIMATELY 2000 KM FROM THE RYUKYU TRENCH. A FOUNDATION WAS CONSTRUCTED AT SITE, LOCATED IN THE MINAMI DAITO WEATHER STATION, TO ACCOMMODATE THE MOBILE 3-METER ANTENNA AS ONE OF THE WESTERN PACIFIC VLBI NETWORK STATIONS. THE ANTENNA IS EQUIPPED WITH AN X-BAND RECEIVER. IONOSPHERIC EXCESS DELAYS ARE CALIBRATED BY USING TOTAL ELECTRON CONTENT DATA ACQUIRED BY DUAL BAND GPS RECEIVER.

Site Topo Map: OGASAWARA NANSEI SHOTO, 1:500,000 SERIES. AVAILABLE THROUGH THE GSI, TSUKUBA, IBARAKI, JAPAN.

GEOLOGICAL INFORMATION

Geological Province: DAITO ISLANDS

Local Geology: CORAL ISLAND

Comments: NONE

MONUMENT INFORMATION

Site Number: 877

Current Site Name: MINAMI DAITO JIMA

Location: MINAMI DAITO JIMA, OKINAWA, JAPAN

Number of Observing Monuments: 2

Surveyed into National Network? NO

Monument Number: 7317

Type of Monument: INTERSECTION OF ROTATION AXIS OF ANTENNA

Monument Inscription: NONE

Systems Using Monument: MOBILE 3-METER ANTENNA

Latitude: N 25 50'

Longitude: E 131 14'

Elevation: NOT AVAILABLE

Height Above Ellipsoid: NOT AVAILABLE

Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/28-DEC-83

Datum/Ellipsoid: TOKYO

Comments: NONE

Differential Coordinates FROM Observing Monument TO
Reference Monuments and Other Observing Monuments

Data Source:

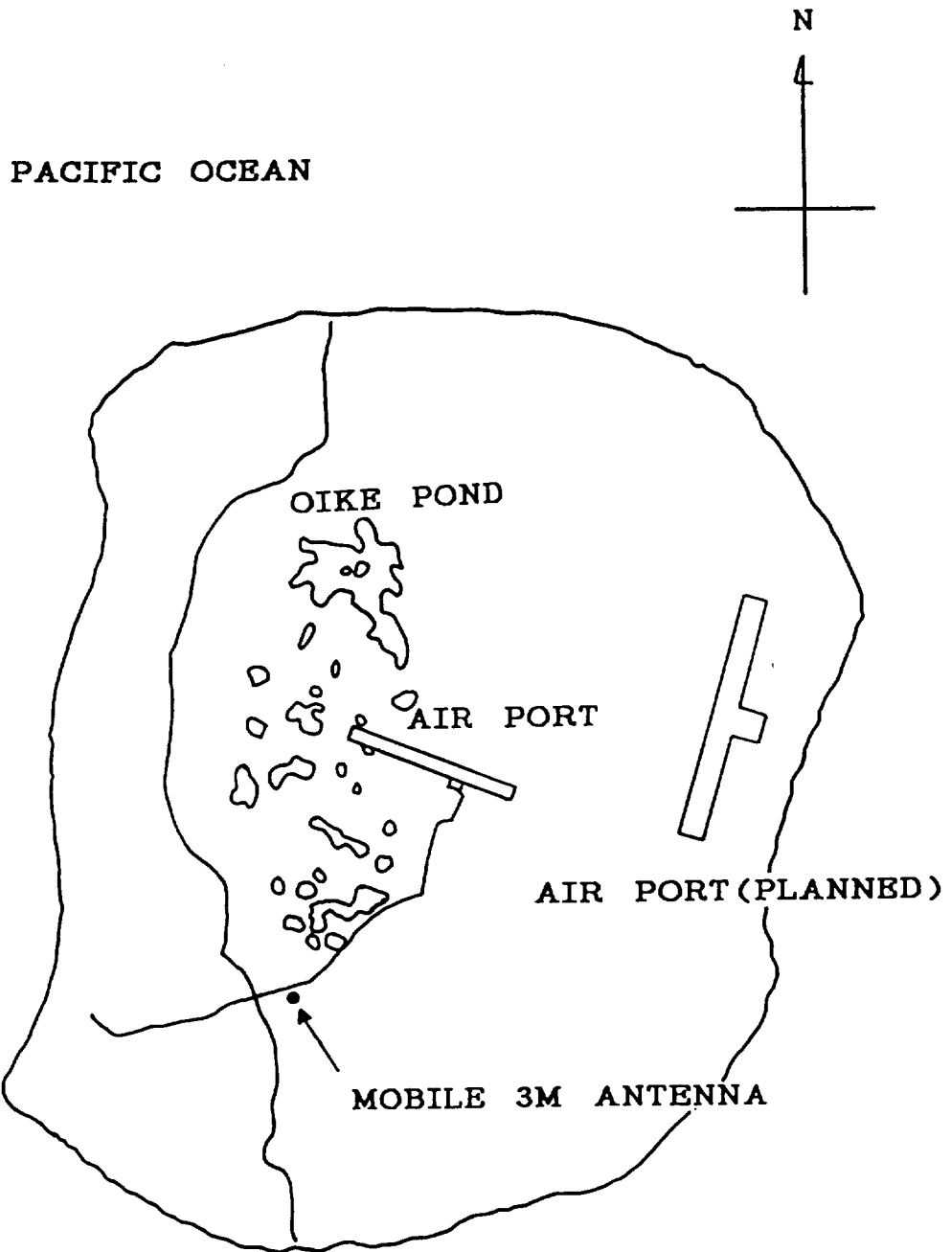
---- Differential Coordinate Information Not Available ----

SITE SKETCH

Site Number: 877

Current Site Name: MINAMI DAITO JIMA

Location: MINAMI DAITO JIMA, OKINAWA, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 877

Current Site Name: MINAMI DAITO JIMA

Location: MINAMI DAITO JIMA, OKINAWA, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7304	HTLRS-1	73041701	02-DEC-90	07-FEB-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7317	3-METER		26-NOV-90	27-NOV-90
7317	3-METER		28-NOV-90	29-NOV-90
7317	3-METER		03-DEC-91	04-DEC-91
7317	3-METER		05-DEC-91	06-DEC-91

-- SITE INFORMATION --

Site Number: 873

Current Site Name: MINAMI TORI SHIMA

Other Site Name: MARCUS

Location: METEOROLOGICAL OBSERVATION STATION, MINAMI TORI SHIMA

Geographic Region: NANPO ISLANDS

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS OF THE THREE DIMENSIONAL GEODETIC POSITION OF THE ISLAND BY THE SIMULTANEOUS LASER OBSERVATION WITH THE SIMOSATO HYDROGRAPHIC OBSERVATORY (SHO). THE OBSERVATION WAS CARRIED OUT FROM JANUARY TO MARCH 1989 BY USING THE HYDROGRAPHIC DEPARTMENT TRANSPORTABLE LASER RANGING STATION (HTLRS).
MEASUREMENTS SUPPORTING THE DETERMINATION OF PACIFIC PLATE MOTION

Site Description: MINAMI TORI ISLAND LIES ABOUT 1,850 KM SOUTHEAST OF TOKYO. THE METEOROLOGICAL STATION IS LOCATED IN THE CENTRAL PART OF THE NORTHWEST COAST OF THE ISLAND, NEAR THE AIRPORT. A STONE MARKER IS ESTABLISHED.

THE 10-METER ANTENNA WAS BUILT IN 1989 AS ONE OF THE WESTERN PACIFIC VLBI NETWORK STATIONS. THE ANTENNA IS EQUIPPED WITH A FREQUENCY SENSITIVE SUBREFLECTOR AND THE X-BAND FEED IS PLACED AT THE CASSEGRAIN FOCUS AND THE S-BAND FEED IS PLACED AT PRIME FOCUS. THE ANTENNA IS FIXED BUT THE VLBI OBSERVATION TERMINAL AND FREQUENCY STANDARD ARE TEMPORARY TRANSPORTED TO THE STATION AT THE TIME OF THE VLBI EXPERIMENT. A CESIUM-CRYSTAL FREQUENCY STANDARD HAD BEEN USED SINCE 1991, BUT IT IS PLANNED TO USE A HYDROGEN MASER SYSTEM IN 1992.

Site Topo Map: MINAMI TORI SHIMA (NO. NG-56-18-3-1) OF THE 1:25,000 TOPO MAP SERIES OF THE GEOGRAPHICAL SURVEY INSTITUTE (GSI) OF JAPAN.

GEOLOGICAL INFORMATION

Geological Province: NORTHWESTERN PACIFIC BASIN

Local Geology: QUARternary LIMESTONE AND CORAL. THIS ISLAND IS CORAL REEF.

Comments: THIS IS AN SLR/VLBI COLOCATION SITE.

MONUMENT INFORMATION

Site Number: 873

Current Site Name: MINAMI TORI SHIMA

Location: METEOROLOGICAL OBSERVATION STATION, MINAMI TORI SHIMA

Number of Observing Monuments: 2

Surveyed into National Network? YES

Monument Number: 7300

Type of Monument: FIDUCIAL STONE MARKER

Monument Inscription: NONE

Systems Using Monument: HTLRS

Latitude: N 24 17' 23.767"

Longitude: E 153 59' 17.095"

Elevation: 8.15 m

Height Above Ellipsoid: NOT AVAILABLE

Survey Source/Date: HYDROGRAPHIC DEPARTMENT / FEB-89

Datum/Ellipsoid: TOKYO / BESSEL

Comments: NONE

Differential Coordinates FROM Observing Monument 7300 TO
Reference Monuments and Other Observing Monuments

Data Source: DATA REPORT OF HYDROGRAPHIC OBSERVATIONS, SERIES OF
SATELLITE GEODESY, NO. 5, 1992.

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	H1	36.762	999.080	-902.740
--	H2	54.175	593.193	-474.526

MONUMENT INFORMATION (Continued)

Site Number: 873
 Current Site Name: MINAMI TORI SHIMA
 Location: METEOROLOGICAL OBSERVATION STATION, MINAMI TORI SHIMA

Monument Number: 7310
 Type of Monument: INTERSECTION OF AXIS OF ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 10-METER ANTENNA

Latitude: N 24' 18'
 Longitude: E 153' 58'
 Elevation: NOT AVAILABLE
 Height Above Ellipsoid: NOT AVAILABLE
 Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/20-DEC-72
 Datum/Ellipsoid: TOKYO

Comments:

Differential Coordinates FROM Observing Monument 7310 TO
 Reference Monuments and Other Observing Monuments

Data Source: GROUND SURVEY PERFORMED BY USING GEODIMETER 440. XYX
 COMPONENTS ARE CALCULATED FROM LOCAL COORDINATES (N-E-U).

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7300	NONE (SLR MARK)	253.29	495.26	1.37

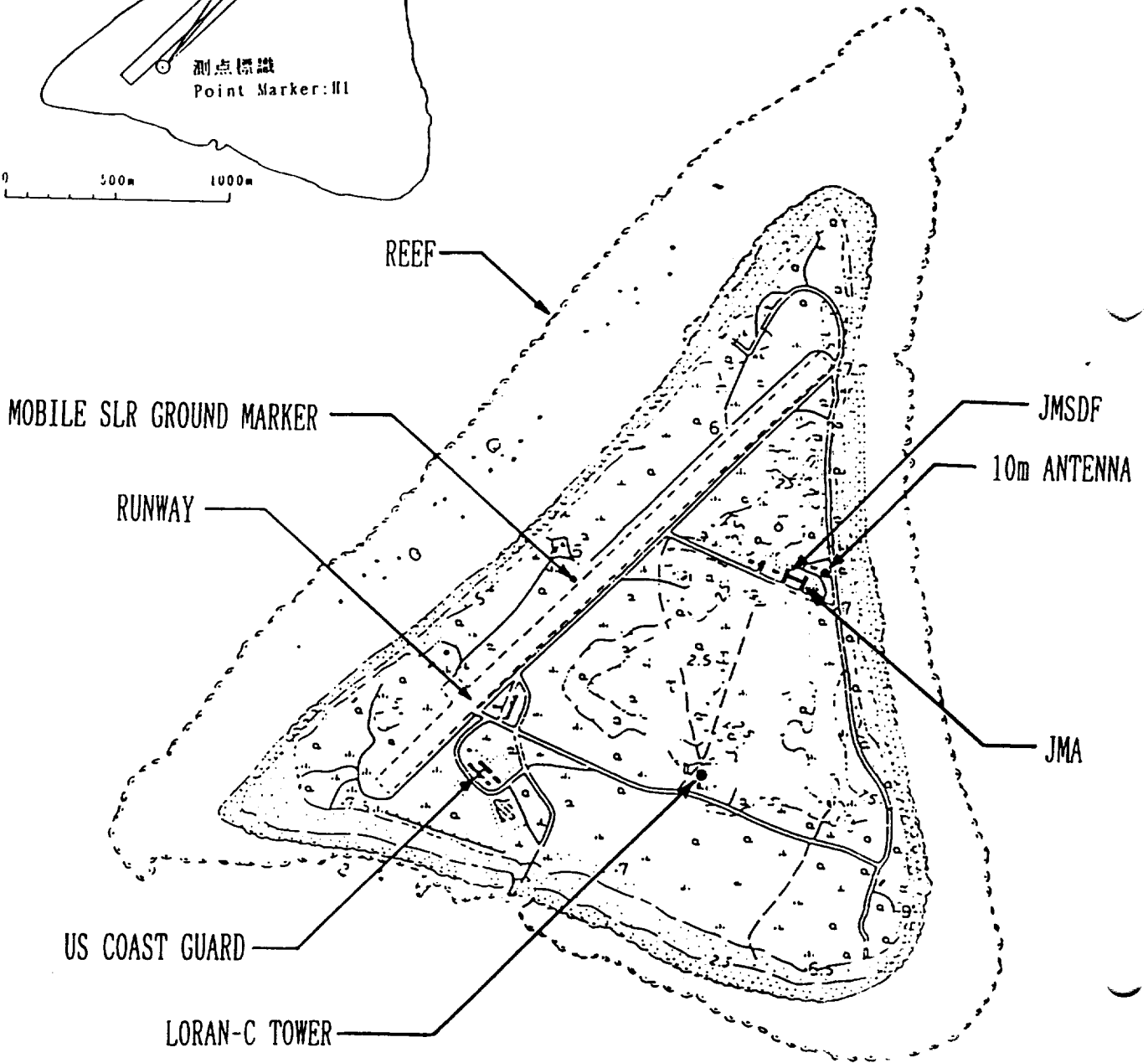
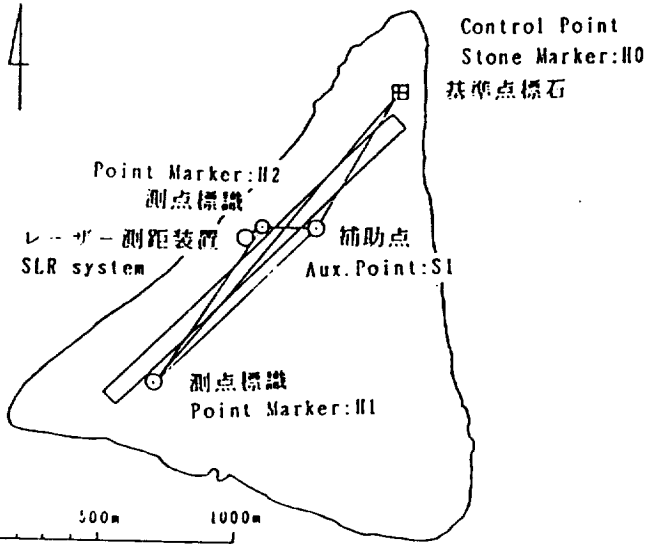
Mon. Number	Monument Inscription	North	East	Up
7300	NONE (SLR MARK)	5.539	-556.171	-8.945

SITE SKETCH

Site Number: 873

Current Site Name: MINAMI TORI SHIMA

Location: METEOROLOGICAL OBSERVATION STATION, MINAMI TORI SHIMA



PREVIOUS OCCUPATION INFORMATION

Site Number: 873

Current Site Name: MINAMI TORI SHIMA

Location: METEOROLOGICAL OBSERVATION STATION, MINAMI TORI SHIMA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7300	HTLRS-1	73001701	10-JAN-89	24-MAR-89

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- SITE INFORMATION --

Site Number: 387

**Current Site Name: MIZUSGSI
Other Site Name: MIZUSAWA
Location: MIZUSAWA, IWATE, JAPAN
Geographic Region: ASIA
Tectonic Plate: NORTH AMERICAN**

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF INTERNAL PLATE MOTION, CONTROL OF GEODETIC NETWORK IN JAPAN, AND MONITORING OF SEA LEVEL.

Site Description: THE STATION IS LOCATED AT THE MIZUSAWA GEODETIC LABORATORY OF THE GEOGRAPHICAL SURVEY INSTITUTE (GSI). CURRENTLY THE SITE IS REPRESENTED BY A METAL MARK PLACED IN THE CONCRETE BASEMENT OF A TRANSPORTABLE ANTENNA OF THE GSI. THE SITE WAS OCCUPIED BY THE ANTENNA IN 1991. ALTHOUGH THE ANTENNA HAS BEEN REMOVED, REOCCUPATION IS ALWAYS POSSIBLE.

Site Topo Map: NJ-54-14-14-1 (GSI)

GEOLOGICAL INFORMATION

Geological Province: PLIOCENE- PLEISTOCENE

Local Geology: GRAVEL, SAND, AND MUD

Comments: NONE

MONUMENT INFORMATION

Site Number: 387
Current Site Name: MIZUSGSI
Other Site Name: MIZUSAWA
Location: MIZUSAWA, IWATE, JAPAN
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7314
Type of Monument: INTERSECTION OF AZ/EL AXES
Monument Inscription: NONE
Systems Using Monument: 5-METER TRANSPORTABLE ANTENNA

Latitude: N 39 06' 27.109"
Longitude: E 141 12' 27.009"
Elevation: 131.655 meters
Height Above Ellipsoid: 122.141
Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/ AUG-91
Datum/Ellipsoid: TOKYO DATUM/BESSEL

Comments: A = 6377397.155 F = 1/299.152813

Differential Coordinates FROM Observing Monument 7314 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	VLBI MARKER	2.421	-1.949	-2.520

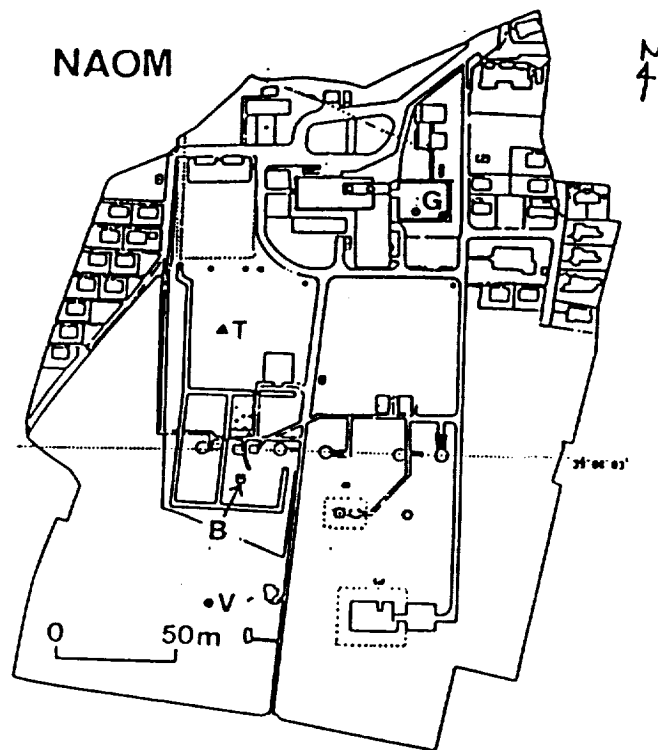
SITE SKETCH

Site Number: 387

Current Site Name: MIZUSGSI

Other Site Name: MIZUSAWA

Location: MIZUSAWA, IWATE, JAPAN



- G - GPS STATION
- T - TRIANGULATION STATION
- B - BENCH MARK
- V - VLBI

PREVIOUS OCCUPATION INFORMATION

Site Number: 387
Current Site Name: MIZUSGSI
Other Site Name: MIZUSAWA
Location: MIZUSAWA, IWATE, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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7314	JMV	73144401	22-NOV-91	28-NOV-91
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-- SITE INFORMATION --

Site Number: 8B

**Current Site Name: MOJAVE
Other Site Name: GOLDSTONE
Location: BARSTOW, CA
Geographic Region: CALIFORNIA
Tectonic Plate: NORTH AMERICAN**

Primary Scientific Purposes: MEASUREMENTS SUPPORTING SLR/VLBI BASELINE INTERCOMPARISONS AND VLBI TECHNIQUE DEVELOPMENT, AND THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND REGIONAL DEFORMATION.

Site Description: THE SITE IS AN EXISTING NASA ANTENNA COMPLEX LOCATED ON THE FORT IRWIN MILITARY RESERVATION. THE SITE IS LOCATED IN THE SAME GENERAL VICINITY AS THE GOLDSTONE ANTENNAS (DSS-14 AND DSS-13). A NEARBY MONUMENTED PAD IS COMPATIBLE FOR TLRS OR MOBILE VLBI, AND IS USED WITH THE OWENS VALLEY SITE AS A GPS CALIBRATION AND TEST RANGE.

Site Topo Map: GOLDSTONE LAKE, CALIFORNIA. N3515-W11645/15, 1948, CORPS OF ENGINEERS, U.S. ARMY. AVAILABLE THROUGH U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: MOJAVE DESERT REGION

Local Geology: QUATERNARY ALLUVIUM LOCALLY. THE SITE IS EAST OF THE SAN ANDREAS FAULT ON NORTH AMERICAN PLATE. THE RIDGES THAT SURROUND THE SITE ARE BASALTIC.

Comments: THIS STATION WAS THE PRINCIPAL VLBI OBSERVING ANTENNA OF THE NASA GOLDSTONE COMPLEX UNTIL CLOSING DOWN IN 1992.

MONUMENT INFORMATION

Site Number: 8B
 Current Site Name: MOJAVE
 Location: BARSTOW, CA
 Number of Observing Monuments: 3
 Surveyed into National Network? YES

Monument Number: 7222
 Type of Monument: REFERENCE POINT ON ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: FIXED 12-METER VLBI ANTENNA

Latitude: N 35 19' 53.85235''
 Longitude: W 116 53' 15.36812''
 Elevation:
 Height Above Ellipsoid: 908.260 meters
 Survey Source/Date: BFEC /08-NOV-88
 Datum/Ellipsoid: NAD 1983/GRS-80

Comments: ANTENNA SURVEY BY NGS IN 1982. REFERENCE; GOLDSTONE
 VALIDATION SURVEY- PHASES II AND III. NOAA TECHN MEMO NOS NGS-36

Differential Coordinates FROM Observing Monument 7222 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7265	MOJAVE NCMN 1983	-304.7471	137.5916	-45.8708
7287	MOJAVE TLRS 1984	-323.1279	148.2075	-43.9681
7288	PNCH MK ON 7287 SURFACE	-323.1315	148.2098	-43.9733
--	82 WFM USGS	-2128.8258	31.8105	-1305.7357
--	MOJAVE A 1981	22.0658	-17.2130	-18.6416
--	MOJAVE B 1981	-14.7771	13.6101	-4.7379
--	MOJAVE C 1981	27.7327	12.0656	21.5283
--	MOJAVE NCMN NO. 1 1983	-253.4726	142.2684	-8.3585
--	MOJAVE NCMN NO. 2 1983	-322.6896	81.3185	-126.5959
--	MOJAVE NCMN NO. 3 1983	-393.1089	184.3462	-43.2016
--	7287 PIER 1	-80.9667	261.4214	259.2354
--	7287 PIER 2	-530.8125	255.9429	-38.3022
--	7287 PIER 3	-342.1601	232.2600	50.9644

MONUMENT INFORMATION (Continued)

Site Number: 8B
 Current Site Name: MOJAVE
 Location: BARSTOW, CA

Monument Number: 7265
 Type of Monument: NGS STATION DISK
 Monument Inscription: MOJAVE NCMN 1983
 Systems Using Monument: TLRs-1 AND MOBILE VLBI

Latitude: N 35 19' 52.35469''
 Longitude: W 116 53' 28.59233''
 Elevation: 926.430 meters
 Height Above Ellipsoid: 894.062 meters
 Survey Source/Date: BFEC /08-NOV-88
 Datum/Ellipsoid: NAD 1983/GRS-80

Comments: THIS MONUMENT IS SET BELOW THE SURFACE OF THE PAD.

Differential Coordinates FROM Observing Monument 7265 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7222	----	304.7471	-137.5916	45.8708
7287	MOJAVE TLRs 1984	-18.3808	10.6159	1.9028
7288	PNCH MK ON SURFACE OF 7287	-18.3844	10.6183	1.8976
--	MOJAVE A 1981	326.8129	-154.8046	27.2292
--	MOJAVE B 1981	289.9701	-123.9815	41.1329
--	MOJAVE C 1981	332.4798	-125.5260	67.3991
--	MOJAVE NCMN AZ. MK.	-142.6875	-461.1188	-657.5975
--	MOJAVE NCMN NO. 1 1983	51.2745	4.6768	37.5123
--	MOJAVE NCMN NO. 2 1983	-17.9425	-56.2731	-80.7251
--	MOJAVE NCMN NO. 3 1983	-88.3618	46.7547	2.6692

MONUMENT INFORMATION (Continued)

Site Number: 8B
 Current Site Name: MOJAVE
 Location: BARSTOW, CA

Monument Number: 7287
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: MOJAVE TLRS 1984 (SHEARED OFF AS OF 10/87)
 Systems Using Monument: TLRS

Latitude: N 35 19' 52.42671''
 Longitude: W 116 53' 29.43144''
 Elevation: 426.590 meters
 Height Above Ellipsoid: 894.221 meters
 Survey Source/Date: BFEC /08-NOV-88
 Datum/Ellipsoid: NAD 1983/GRS-80

Comments: THIS MONUMENT WAS CONSTRUCTED FOR OCCUPATION BY A TLRS.THE MEASUREMENT POINT ON THIS MARKER HAS BEEN DESTROYED.

Differential Coordinates FROM Observing Monument 7287 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7222	----	323.1279	-148.2075	43.9681
7265	MOJAVE NCMN 1983	18.3808	-10.6159	-1.9028
7288	PNCH MK ON SURFACE OF 7287	-0.0035	0.0024	-0.0052
--	82 WFM USGS	-1805.6979	-116.3969	-1261.7676
--	MOJAVE A 1981	345.1937	-165.4205	25.3264
--	MOJAVE B 1981	308.3509	-134.5974	39.2302
--	MOJAVE C 1981	350.8606	-136.1419	65.4964
--	MOJAVE NCMN NO. 1 1983	69.6554	-5.9391	35.6095
--	MOJAVE NCMN NO. 2 1983	0.4384	-66.8890	-82.6279
--	MOJAVE NCMN NO. 3 1983	-69.9810	36.1388	0.7665
--	MOJAVE TRUNNION	324.3019	-145.8922	42.1279
--	7287 PIER 1	242.1612	113.2139	303.2035
--	7287 PIER 2	-207.6845	107.7355	5.6659
--	7287 PIER 3	-19.0322	84.0525	94.9324

MONUMENT INFORMATION (Continued)

Site Number: 8B
 Current Site Name: MOJAVE
 Location: BARSTOW, CA

Monument Number: 7288
 Type of Monument: BRASS MONUMENT
 Monument Inscription: PUNCHMARK ON SHEARED SURFACE OF 7287 MONUMENT
 Systems Using Monument: MOBILE VLBI AND TLRS

Latitude: N 35 19' 52.42658''
 Longitude: W 116 53' 29.43161''
 Elevation: 926.577 meters
 Height Above Ellipsoid: 894.217 meters
 Survey Source/Date: BFEC /08-NOV-88
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: PART OF ORIGINAL 7287 MONUMENT WAS SHEARED OFF. THIS NUMBER WAS ASSIGNED TO A PUNCHMARK IN THE SHEARED SURFACE.

Differential Coordinates FROM Observing Monument 7288 TO Reference Monuments and Other Observing Monuments

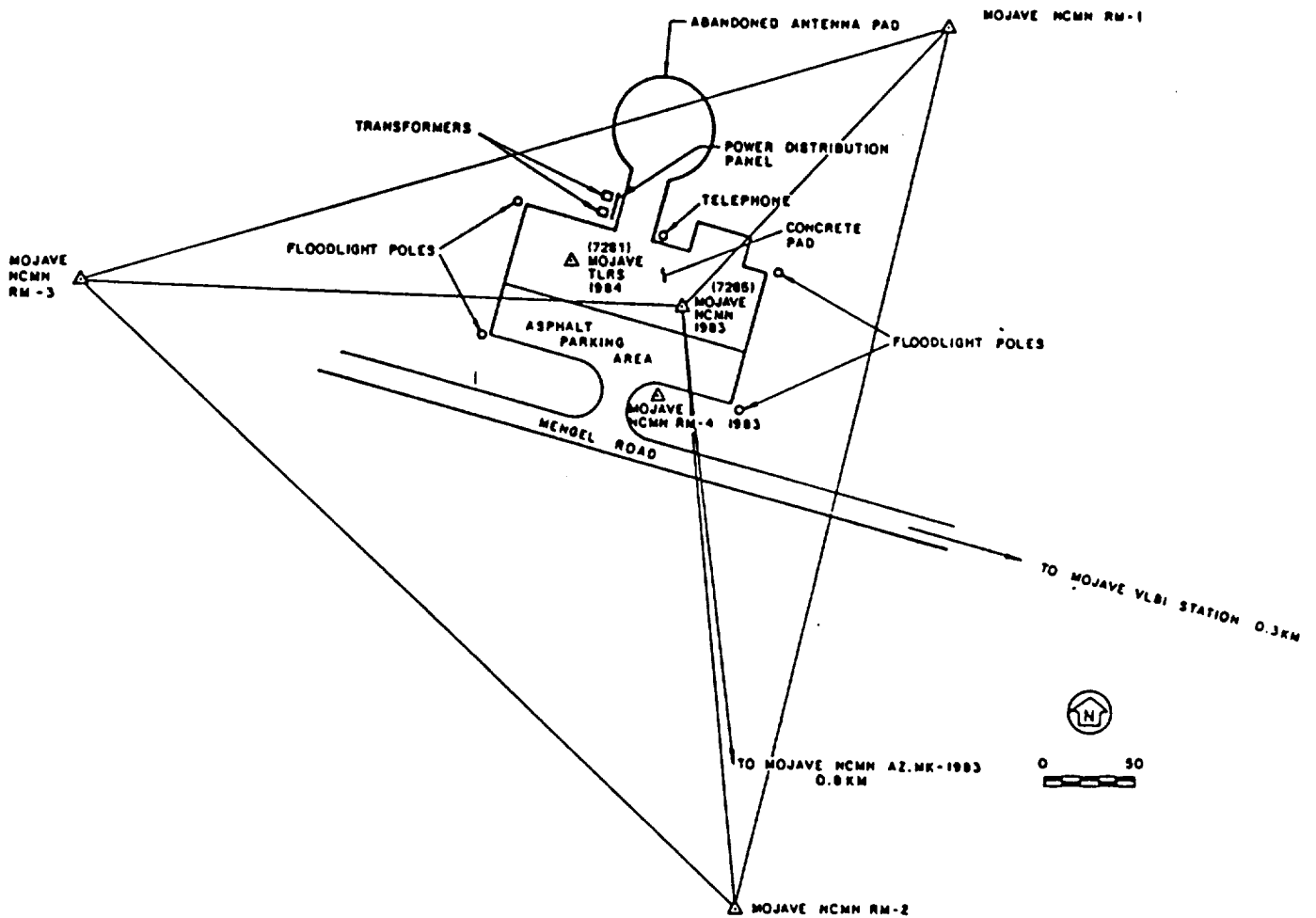
Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7222	----	323.1315	-148.2098	43.9733
7265	MOJAVE NCMN 1983	18.3844	-10.6183	-1.8976
7287	MOJAVE 7287 TLRS 1984	0.0035	-0.0024	0.0052
--	MOJAVE NCMN NO. 1 1983	69.6589	-5.9415	35.6147
--	MOJAVE NCMN NO. 2 1983	0.4419	-66.8914	-82.6227
--	MOJAVE NCMN NO. 3 1983	-69.9775	36.1364	0.7717
--	7287 PIER 1	242.1648	113.2116	303.2087
--	7287 PIER 2	-207.6810	107.7331	5.6711
--	7287 PIER 3	-19.0286	84.0501	94.9376

SITE SKETCH

Site Number: 8B
Current Site Name: MOJAVE
Location: BARSTOW, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 8B
Current Site Name: MOJAVE
Location: BARSTOW, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7265	TLRS-1	72651101	18-JAN-84	06-MAR-84
7288	TLRS-3	72881301	08-FEB-88	15-JUN-88
7288	TLRS-4	72881402	23-JAN-89	18-APR-89
7288	TLRS-4	72881403	21-OCT-89	17-JAN-90
7288	TLRS-4	72881404	20-OCT-90	22-FEB-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7222	12-METER	72227101	27-JUN-83	---
7288	MV-2	72885201	01-NOV-87	02-NOV-87

-- SITE INFORMATION --

Site Number: 883

Current Site Name: MONTE GENEROSO

Other Site Name:

Location: MONTE GENEROSO, SWITZERLAND

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7590	MTLRS-2	75901601	01-SEP-85	18-OCT-85

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 679

Current Site Name: MONTE VENDA
Other Site Name:
Location: MONTE VENDA, ITALY
Geographic Region: MEDITERRANEAN
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7542	MTLRS-2	75421601	17-APR-91	31-DEC-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 701

Current Site Name: MONUMENT PEAK

Other Site Name:

Location: MOUNT LAGUNA, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE STATION IS LOCATED ON MONUMENT PEAK IN THE CLEVELAND NATIONAL PARK NEAR PINE VALLEY, CALIFORNIA ONE MILE NORTHWEST OF THE DEACTIVATED MOUNT LAGUNA AIR FORCE RADAR STATION. THE SITE WAS BUILT TO REPLACE THE OTAY MOUNTAIN SITE. A MONUMENTED PAD HAS BEEN OCCUPIED BY MOBILAS-4 SINCE SEPTEMBER 1983. A JPL DISK AND A MONUMENT SUITABLE FOR OCCUPATION BY MOBILE VLBI ARE ALSO WITHIN THE SITE FACILITY.

Site Topo Map: MONUMENT PEAK, CALIFORNIA. N3252.5-W11622.5/7.5, 1959, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: PENINSULA RANGES; WEST OF THE SAN ANDREAS FAULT.

Local Geology: PRE-CENOZOIC (GRANITIC AND METAMORPHIC ROCK). THE STATION IS LOCATED ALONG THE EASTERN EDGE OF THE PENINSULA MOUNTAIN RANGE. THE PENINSULA RANGE RUNS PARALLEL TO THE PACIFIC COAST AND CONTINUES SOUTH INTO MEXICO.

Comments: NONE

MONUMENT INFORMATION

Site Number: 701
 Current Site Name: MONUMENT PEAK
 Location: MOUNT LAGUNA, CA
 Number of Observing Monuments: 3
 Surveyed into National Network? YES

Monument Number: 7110
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: ORT STATION 7110 1981
 Systems Using Monument: MOBLAS-4

Latitude: N 32 53' 30.23372''
 Longitude: W 116 25' 21.55890''
 Elevation:
 Height Above Ellipsoid: 1837.564 meters
 Survey Source/Date: BFEC /30-OCT-92
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THIS MONUMENT IS THE PERMANENT LOCATION OF MOBLAS-4.

Differential Coordinates FROM Observing Monument 7110 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7220	ARIES ORION STA 7220 1981	-14.2854	6.8787	-0.5950
7274	MONUMENT PEAK NCMN 1983	-11.3935	7.8023	2.5237
--	MON PEAK NCMN NO. 1 1983	-0.1390	15.7974	20.4081
--	7110 PIER B (1988)	-380.6555	-963.2784	-1658.3201
--	7110 Pier A (1990)	145.7026	-114.2405	-27.6541
--	7110 Pier C (1990)	-56.4966	-35.7056	-84.0620
--	LOOKOUT (1988)	-60.7948	-13.7768	-58.3044

Mon. Number	Monument Inscription	North	East	Up
7220	ARIES ORION STA 7220 1981	-0.6074	-15.8549	-0.1592
7274	MON PEAK NCMN 1983	3.1595	-13.6760	-0.2403
--	LOOKOUT (1988)	-70.3485	-48.3185	1.4045
--	MON PEAK NCMN NO. 1 1983	24.7858	-7.1578	-0.7443

MONUMENT INFORMATION

Site Number: 701
 Current Site Name: MONUMENT PEAK
 Location: MOUNT LAGUNA, CA

Monument Number: 7220
 Type of Monument: 10'' X 10'' STEEL PLATE
 Monument Inscription: ARIES ORION STA 7220 1981
 Systems Using Monument: MOBILE VLBI

Latitude: N 32 53' 30.21403''
 Longitude: W 116 25' 22.16871''
 Elevation:
 Height Above Ellipsoid: 1837.406 meters
 Survey Source/Date: BFEC /30-OCT-92
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THE PLATE HAS TWO PUNCH MARKS. THE CENTER PUNCH IS THE SURVEY REFERENCE POINT.

Differential Coordinates FROM Observing Monument 7220 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7110	ORT STATION 7110 1981	14.2854	-6.8787	0.5950
7274	MONUMENT PEAK NCMN 1983	2.8919	0.9236	3.1187
--	7110 PIER B (1988)	-366.3701	-970.1572	-1657.7251
--	LOOKOUT (1988)	-46.5093	-20.6555	-57.7094
--	MON PEAK NCMN NO. 1 1983	14.1465	8.9187	21.0031

Mon. Number	Monument Inscription	North	East	Up
7110	ORT STATION 7110 1981	0.6074	15.8549	0.1592
7274	MONUMENT PEAK NCMN 1983	3.7666	2.1790	-0.0812
--	LOOKOUT (1988)	-69.7416	-32.4622	1.5668
--	MON PEAK NCMN NO. 1 1983	25.3918	8.7010	-0.5852

MONUMENT INFORMATION (Continued)

Site Number: 701
 Current Site Name: MONUMENT PEAK
 Location: MOUNT LAGUNA, CA

Monument Number: 7274
 Type of Monument: STANDARD NGS DISK
 Monument Inscription: MONUMENT PEAK NCMN 1983
 Systems Using Monument: MOBILE VLBI

Latitude: N 32 53' 30.33627''
 Longitude: W 116 25' 22.08490''
 Elevation:
 Height Above Ellipsoid: 1837.325 meters
 Survey Source/Date: BFEC /30-OCT-92
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: A GPS BETWEEN THIS MARK AND OTAY MOUNTAIN (SANDIE NASA 1976) WAS PERFORMED IN 1992. SEE PAGE 421.

Differential Coordinates FROM Observing Monument 7274 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7110	ORT STATION 7110 1981	11.3935	-7.8023	-2.5237
7220	ARIES ORION STA 7220 1981	-2.8919	-0.9236	-3.1187
--	7110 PIER B (1988)	-369.2619	-971.0807	-1660.8437
--	LOOKOUT (1988)	-49.4012	-21.5790	-60.8281
--	MON PEAK NCMN NO. 1 1983	11.25464	7.9951	17.8844

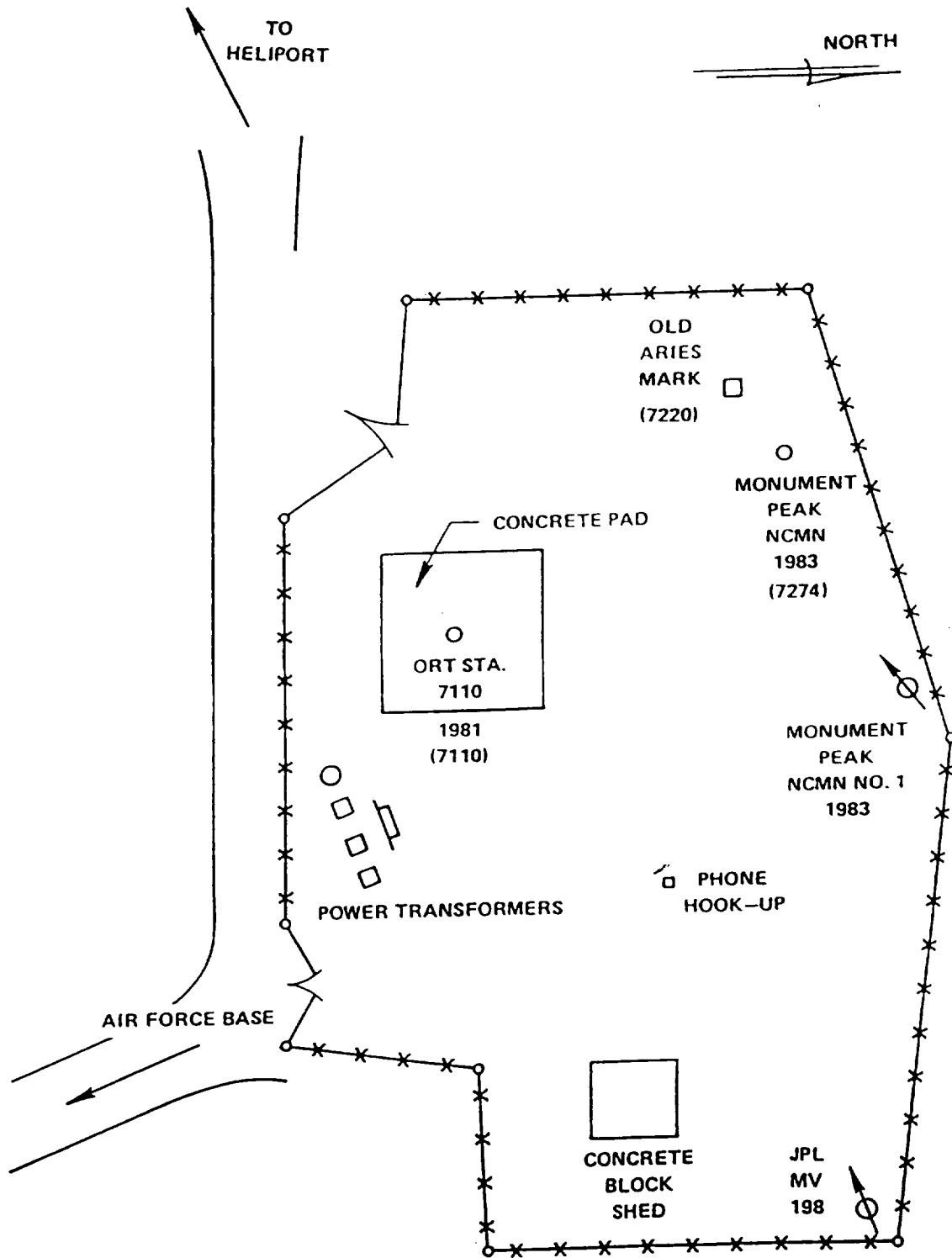
Mon. Number	Monument Inscription	North	East	Up
7110	ORT STATION 7110 1981	-3.1609	13.6751	0.2402
7220	ARIES ORION STA 7220 1981	-3.7666	-2.1790	0.0812
--	LOOKOUT (1988)	-73.5083	-34.6412	1.6479
--	MON PEAK NCMN NO. 1 1983	21.6252	6.5221	-0.5040

SITE SKETCH

Site Number: 701

Current Site Name: MONUMENT PEAK

Location: MOUNT LAGUNA, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 701

Current Site Name: MONUMENT PEAK

Location: MOUNT LAGUNA, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7110	MOBLAS-3	71100301	15-JUL-81	30-JUN-83
7110	MOBLAS-4	71100402	15-AUG-83	12-NOV-86
7110	MOBLAS-4	71100403	20-NOV-86	30-APR-88
7110	MOBLAS-4	71100404	30-APR-88	16-JUN-88
7110	MOBLAS-4	71100405	16-JUN-88	13-DEC-88
7110	MOBLAS-4	71100406	13-DEC-88	13-SEP-90
7110	MOBLAS-4	71100407	14-SEP-90	02-APR-91
7110	MOBLAS-4	71100408	03-APR-91	05-DEC-91
7110	MOBLAS-4	71100409	06-DEC-91	14-JAN-92
7110	MOBLAS-4	71100410	18-JAN-92	09-MAR-92
7110	MOBLAS-4	71100411	01-MAY-92	---
7220	TLRS-1	72201101	30-AUG-83	02-NOV-83
7220	TLRS-1	72201102	28-DEC-84	10-JAN-85
7220	TLRS-1	72201103	13-JAN-85	27-FEB-85
7220	TLRS-1	72201104	03-MAR-85	23-MAR-85
7220	TLRS-1	72201105	24-MAR-85	13-MAY-85
7274	TLRS-1	72741101	16-MAY-85	18-JUL-85

Site Number: 701
Current Site Name: MONUMENT PEAK
Location: MOUNT LAGUNA, CA

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7220	MV-2	72205201	14-MAY-81	14-MAY-81
7220	MV-3	72205302	15-OCT-82	18-OCT-82
7220	MV-3	72205303	27-JUN-83	28-JUN-83
7220	MV-3	72205304	05-NOV-83	09-NOV-83
7274	MV-3	72745301	12-APR-84	13-APR-84
7274	MV-2	72745202	12-JAN-85	13-JAN-85
7274	MV-2	72745203	26-FEB-85	03-MAR-85
7274	MV-2	72745204	12-MAY-85	15-MAY-85
7274	MV-3	72745305	05-NOV-85	06-NOV-85
7274	MV-3	72745306	09-DEC-85	11-DEC-85
7274	MV-3	72745307	05-JAN-86	06-JAN-86
7274	MV-2	72745208	23-FEB-86	24-FEB-86
7274	MV-2	72745209	07-APR-86	08-APR-86
7274	MV-2	72745210	17-MAY-86	22-MAY-86
7274	MV-2	72745211	19-OCT-86	20-OCT-86
7274	MV-2	72745212	26-OCT-86	30-OCT-86
7274	MV-3	72745313	10-DEC-86	11-DEC-86
7274	MV-3	72745314	08-FEB-87	10-FEB-87
7274	MV-2	72745215	22-MAR-87	23-MAR-87
7274	MV-2	72745216	14-MAY-87	15-MAY-87
7274	MV-2	72745217	28-OCT-87	29-OCT-87
7274	MV-2	72745218	05-DEC-87	06-DEC-87
7274	MV-3	72745319	03-MAY-88	05-MAY-88
7274	MV-2	72745220	29-OCT-88	31-OCT-88
7274	MV-2	72745221	18-JAN-89	20-JAN-89
7274	MV-2	72745222	14-MAY-89	16-MAY-89
7274	MV-2	72745223	09-NOV-90	11-NOV-90

-- SITE INFORMATION --

Site Number: 28

Current Site Name: MOUNT HOPKINS

Other Site Name:

Location: MOUNT HOPKINS, AZ

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED AT THE SMITHSONIAN ASTRONOMICAL OBSERVATORY IN MOUNT HOPKINS, ARIZONA. HOMLAS (GODDARD MOBILE LASER) WAS LOCATED AT THE OBSERVATORY. HOMLA2 WAS A RELOCATION OF HOMLAS. HOPLAS WAS AN SAO LASER LOCATED IN THE OBSERVATORY. IN ADDITION, A MONUMENT IN THE VICINITY WAS OCCUPIED BY TLR-1. THE SITE HAS BEEN ABANDONED.

Site Topo Map: TOMBSTONE, ARIZONA. 1952, 7.5 QUAD, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: BASIN AND RANGE

Local Geology: CRETACEOUS VOLCANICS (GRANITES AND QUARTZ MONZONITE) AND INTRUSIVES

Comments: NONE

MONUMENT INFORMATION

Site Number: 28
Current Site Name: MOUNT HOPKINS
Location: MOUNT HOPKINS, AZ
Number of Observing Monuments: 2
Surveyed into National Network? NO

Monument Number: 7888
Type of Monument: NGS STATION DISK
Monument Inscription: TLRS FEBRUARY 1982 7888
Systems Using Monument: TLRS

Latitude: N 31 41' 06.28''
Longitude: W 110 52' 41.6''
Elevation: 2334.450 meters
Height Above Ellipsoid:
Survey Source/Date: PRELIMINARY ESTIMATE BY TLRS/19-APR-82
Datum/Ellipsoid:

Comments: THIS MONUMENT WAS A TEMPORARY MARKER.

Differential Coordinates FROM Observing Monument 7888 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

MONUMENT INFORMATION (Continued)

Site Number: 28
Current Site Name: MOUNT HOPKINS
Location: MOUNT HOPKINS, AZ

Monument Number: 7921
Type of Monument: AXES OF ROTATION OF SAO LASER
Monument Inscription: NONE
Systems Using Monument: HOPLAS (SAO LASER)

Latitude: N 31 41' 02.8954''
Longitude: W 110 52' 38.682''
Elevation: 2383.387 meters
Height Above Ellipsoid:
Survey Source/Date: NASA-GSFC/01-FEB-77
Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: NONE

Differential Coordinates FROM Observing Monument 7921 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 28

Current Site Name: MOUNT HOPKINS

Location: MOUNT HOPKINS, AZ

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7888	TLRS-1	78881101	25-JAN-82	16-APR-82
7921	SAO-4	79214301	10-FEB-68	05-MAR-82

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 407

Current Site Name: MOUNT WILSON

Other Site Name:

Location: MOUNT WILSON, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: STRAIN ACROSS SAN ANDREAS FAULT SYSTEM

Site Description: THE SITE IS 5 TO 10 YARDS NORTHWEST OF LOS ANGELES COUNTY SURVEY CONTROL SYSTEM MARK E10 A, 1971 MT. WILSON, IN THE SE CORNER OF THE FOREST SERVICE SKYLINE PAVILION PARKING LOT.

Site Topo Map: NONE

GEOLOGICAL INFORMATION

Geological Province: TRANSVERSE RANGE

Local Geology: MESOZOIC GRANITIC ROCK

Comments: PRIMARY USE OF SITE HAS BEEN IN HORIZONTAL RANGING BY TLRS-1.

MONUMENT INFORMATION

Site Number: 407
Current Site Name: MOUNT WILSON
Location: MOUNT WILSON, CA
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7895
Type of Monument:
Monument Inscription: 1971 MT. WILSON; E10A POSITION
Systems Using Monument: TLRS

Latitude: N 34 13' 21.2873''
Longitude: W 118 03' 42.0624''
Elevation: 1883.920 meters
Height Above Ellipsoid:
Survey Source/Date: L.A. COUNTY ENGINEERS OFFICE/01-JAN-81
Datum/Ellipsoid:

Comments: NONE

Differential Coordinates FROM Observing Monument 7895 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 407

Current Site Name: MOUNT WILSON

Location: MOUNT WILSON, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7895	TLRS-1	78951101	06-JAN-81	28-JAN-81

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 101

Current Site Name: NATAL

Other Site Name:

Location: NATAL, BRAZIL

Geographic Region: SOUTH AMERICA

Tectonic Plate: SOUTH AMERICAN

Primary Scientific Purposes: NONE

Site Description: THE STATION WAS HOME TO THE SAO-1 LASER SYSTEM FROM OCTOBER 1970 TO SEPTEMBER 1981. THE LASER WAS THEN MOVED TO MATERA, ITALY. NO RECORD OF ANY SURVEY TIEING THE LASER REFERENCE POINT TO EXTERNAL MONUMENTS EXISTS. A DMA DOPPLER SURVEY WAS PERFORMED IN THE VICINITY OF THE OBSERVATORY IN 1984.

THE STATION WAS LOCATED ON THE SOUTHWEST SIDE OF THE BARREIRA DO INFERNO ROCKET LAUNCHING BASE (CAMPO DE LANCAMENTO DE FOGUETES DA BARREIRA DO INFERNO), ABOUT 17 KILOMETERS SOUTHEAST OF NATAL, RIO GRANDE DO NORTE, BRAZIL, AND ABOUT 20 KILOMETERS FROM NATAL AIRPORT.

Site Topo Map: NONE

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: NONE

Comments: NONE

MONUMENT INFORMATION

Site Number: 101
Current Site Name: NATAL
Location: NATAL, BRAZIL
Number of Observing Monuments:
Surveyed into National Network? NO

Monument Number: 7929
Type of Monument: LASER REFERENCE POINT
Monument Inscription: NONE
Systems Using Monument: NATLAS FIXED

Latitude: S 05 55' 38.62''
Longitude: E 324 50' 08.66''
Elevation: 45.600 meters
Height Above Ellipsoid:
Survey Source/Date: UNKNOWN/01-SEP-76
Datum/Ellipsoid: S.A. 1969

**Comments: THIS POSITION WAS AN ESTIMATE. THE REFERENCE POINT
CANNOT BE RECREATED.**

Differential Coordinates FROM Observing Monument TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 101
Current Site Name: NATAL
Location: NATAL, BRAZIL

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7929	SAO-1	79294101	31-OCT-70	30-SEP-81

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 385

Current Site Name: NOBEYAMA

Other Site Name:

Location: NOBEYAMA, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7244	6-METER	72444001	01-AUG-90	---

-- SITE INFORMATION --

Site Number: 801

Current Site Name: NOME

Other Site Name:

Location: NOME, AK

Geographic Region: ALASKA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED IN NORTHERN ALASKA OFF THE COAST OF THE BERING SEA. THE STATION IS LOCATED ON A WHITE ALICE SITE ON ANVIL MOUNTAIN 4.5 MILES NORTH OF THE FISHING TOWN OF NOME. TO REACH THE STATION FROM THE POST OFFICE IN NOME, PROCEED WEST ON FRONT STREET FOR 0.2 MILE TO A SIDE ROAD RIGHT (BERING STREET). TURN RIGHT (NORTH) ON BERING STREET FOR 1.7 MILES TO A SIDE ROAD RIGHT AND STATION BARN. CONTINUE NORTHERLY AND THEN WEST ON BERING STREET FOR 1.5 MILES TO A GRAVEL SIDE ROAD RIGHT. TURN RIGHT AND GO NORTH FOR 0.8 MILE TO A GRAVEL SIDE ROAD LEFT. TURN LEFT AND GO WESTERLY FOR 1.0 MILE TO A CHAIN GATE AND SIDE ROAD LEFT. CONTINUE WESTERLY THROUGH THE GATE FOR 0.7 MILE TOWARD THE TOP OF THE HILL WHERE THE ROAD TURNS SOUTHERLY AND ENTERS THE WHITE ALICE SITE. CONTINUE SOUTHERLY BETWEEN THE TWO EASTERNMOST BUILDINGS AT THE SITE TO THE STATION ON THE LEFT.

THE SITE CAN ACCOMODATE A MOBILE VLBI SYSTEM.

Site Topo Map: NOME (C-1), ALASKA. N6430- W16500/15 X 30, 1950, U.S.G.S., WASHINGTON, D.C. 20242

GEOLOGICAL INFORMATION

Geological Province: WESTERN ALASKAN MAINLAND

Local Geology: PALEOZOIC METAMORPHIC ROCK (SCHIST) CLOSER TO PHYLLITE AT WHITE ALICE SITE.

Comments: NONE

MONUMENT INFORMATION

Site Number: 801
 Current Site Name: NOME
 Location: NOME, AK
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7279
 Type of Monument: NGS MODIFIED SLEEVED CLASS A BENCH MARK
 Monument Inscription: NONE
 Systems Using Monument: MV-2, MV-3

Latitude: N 64 33' 45.5487''
 Longitude: W 165 22' 17.4838''
 Elevation:
 Height Above Ellipsoid: 308.967 meters
 Survey Source/Date: NGS GPS RESULTS/01-JAN-86
 Datum/Ellipsoid: WGS 72

Comments: NONE

Differential Coordinates FROM Observing Monument 7279 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

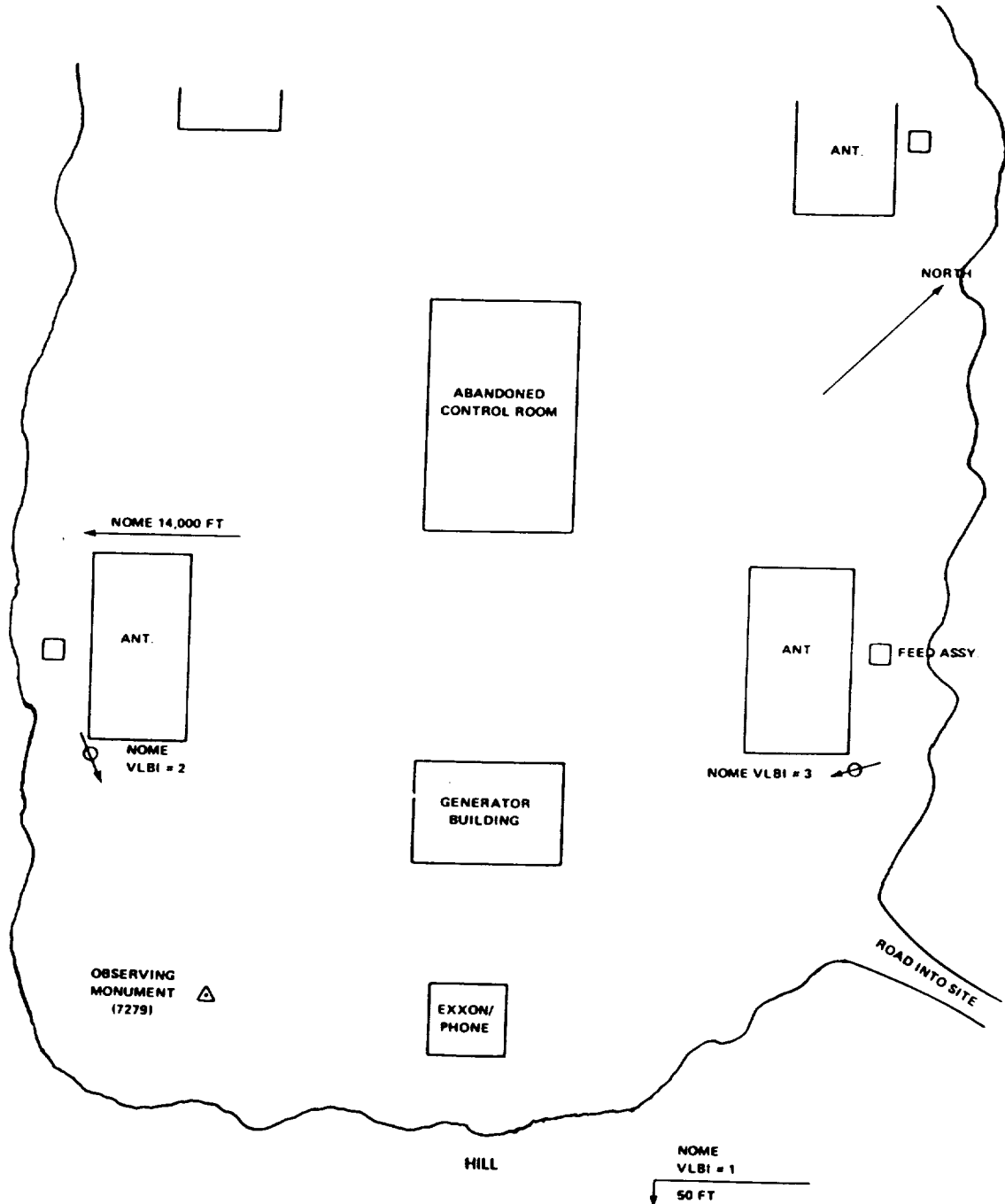
Mon. Number	Monument Inscription	X	Y	Z
--	ANVI	-387.463	757.745	-88.221
--	BARN	-4278.608	-772.784	-2379.800
--	NOM 1	-3.555	-49.068	-12.262

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	NOM 1	-19.564	46.579	-4.273

SITE SKETCH

Site Number: 801
Current Site Name: NOME
Location: NOME, AK



PREVIOUS OCCUPATION INFORMATION

Site Number: 801
Current Site Name: NOME
Location: NOME, AK

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7279	MV-3	72795301	14-JUL-84	25-JUL-84
7279	MV-2	72795202	18-JUL-85	25-JUL-85
7279	MV-2	72795203	21-JUL-86	01-AUG-86
7279	MV-2	72795204	17-JUN-90	19-JUN-90

-- SITE INFORMATION --

Site Number: 56

Current Site Name: NORTH LIBERTY

Other Site Name:

Location: NORTH LIBERTY, IA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE NRAO VLBA STATION IS LOCATED IN EAST CENTRAL IOWA APPROXIMATELY 3 MILES NORTH OF THE TOWN OF NORTH LIBERTY, AND 20 MILES SOUTH OF CEDAR RAPIDS. TO REACH THE STATION FROM THE NORTH LIBERTY POST OFFICE, LOCATED AT THE INTERSECTION OF NORTH FRONT STREET AND DUBUQUE STREET, PROCEED NORTH ON NORTH FRONT STREET 0.20 MILES TO THE "T" INTERSECTION ON THE LEFT (WEST) WITH PENN STREET. CONTINUE STRAIGHT ONTO STATE ROUTE F-28 AND PROCEED 2.0 MILES TO THE "T" INTERSECTION ON THE LEFT (WEST) WITH COUNTY ROAD 47, A DIRT ROAD AND A LOCKED GATE (OBTAIN PRIOR APPROVAL FROM NRAO). TURN LEFT (WEST) ONTO COUNTY ROAD 47, PASSING THROUGH THE GATE AND PROCEED 0.2 MILES TO THE NRAO SITE GATE AND STATION. THE SITE IS ENCLOSED BY AN 8' CHAIN LINK FENCE.

Site Topo Map:

GEOLOGICAL INFORMATION

Geological Province:

Local Geology:

Comments:

MONUMENT INFORMATION

Site Number: 56
 Current Site Name: NORTH LIBERTY
 Location: NORTH LIBERTY, IA
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7612
 Type of Monument: INTERSECTION OF AZIMUTH AND ELEVATION AXES
 Monument Inscription: NONE
 Systems Using Monument: 25 METER VLBA

Latitude: N 41 46' 17.12914"
 Longitude: W 91 34' 26.88697"
 Elevation: 255.73 meters
 Height Above Ellipsoid: 222.206 meters
 Survey Source/Date: BFEC/ 18-DEC-92
 Datum/Ellipsoid: ITRF-89

Comments: NONE

Differential Coordinates FROM Observing Monument 7612 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NORTH LIBERTY 1987 (NGS)	-40.1533	58.4038	37.6966
4007-S	--	-62.2278	25.3872	3.6259
--	VLBA RM 1	35.6968	4.8871	-14.6017
--	VLBA RM 2	-34.3507	-0.9283	-24.8752
--	VLBA RM 3	-37.4668	34.8283	15.1854

Mon. Number	Monument Inscription	North	East	Up
--	NORTH LIBERTY 1987 (NGS)	66.2712	-41.7430	-17.6060
4007-S	--	18.4706	-62.9020	-15.2358

MONUMENT INFORMATION (Continued)

Site Number: 56
 Current Site Name: NORTH LIBERTY
 Location: NORTH LIBERTY, IA

Monument Number: 4007-S

Type of Monument: 0.455 METER DIAMETER STAINLESS STEEL PLATE SET FLUSH IN THE CENTER OF A 0.610 METER DIAMETER CONCRETE MONOLITH THAT PROJECTS 0.465 METERS ABOVE THE GROUND.

Monument Inscription: "NORTH LIBERTY - VLBA GPS STATION MARK - JPL 4007-S 1992 NASA FLINN SITE - NORTH AMERICAN HIGH PRECISION FIDUCIAL NETWORK - BLEWETT AND CLARK - SPACE GEODETIC PIONEERS - JPL/GSFC COLLABORATION"

Systems Using Monument: TURBOROGUE GPS

Latitude: N 41 46' 17.72780"
 Longitude: W 91 34' 29.61034
 Elevation: 240.49 meters
 Height Above Ellipsoid: 206.970 meters
 Survey Source/Date: BFEC/ 18-DEC-92
 Datum/Ellipsoid: ITRF-89

Comments: NONE

Differential Coordinates FROM Observing Monument 4007-S TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	NORTH LIBERTY 1987 (NGS)	22.0745	33.0166	34.0707

Mon. Number	Monument Inscription	North	East	Up
--	NORTH LIBERTY 1987 (NGS)	47.8003	21.1589	-2.3701

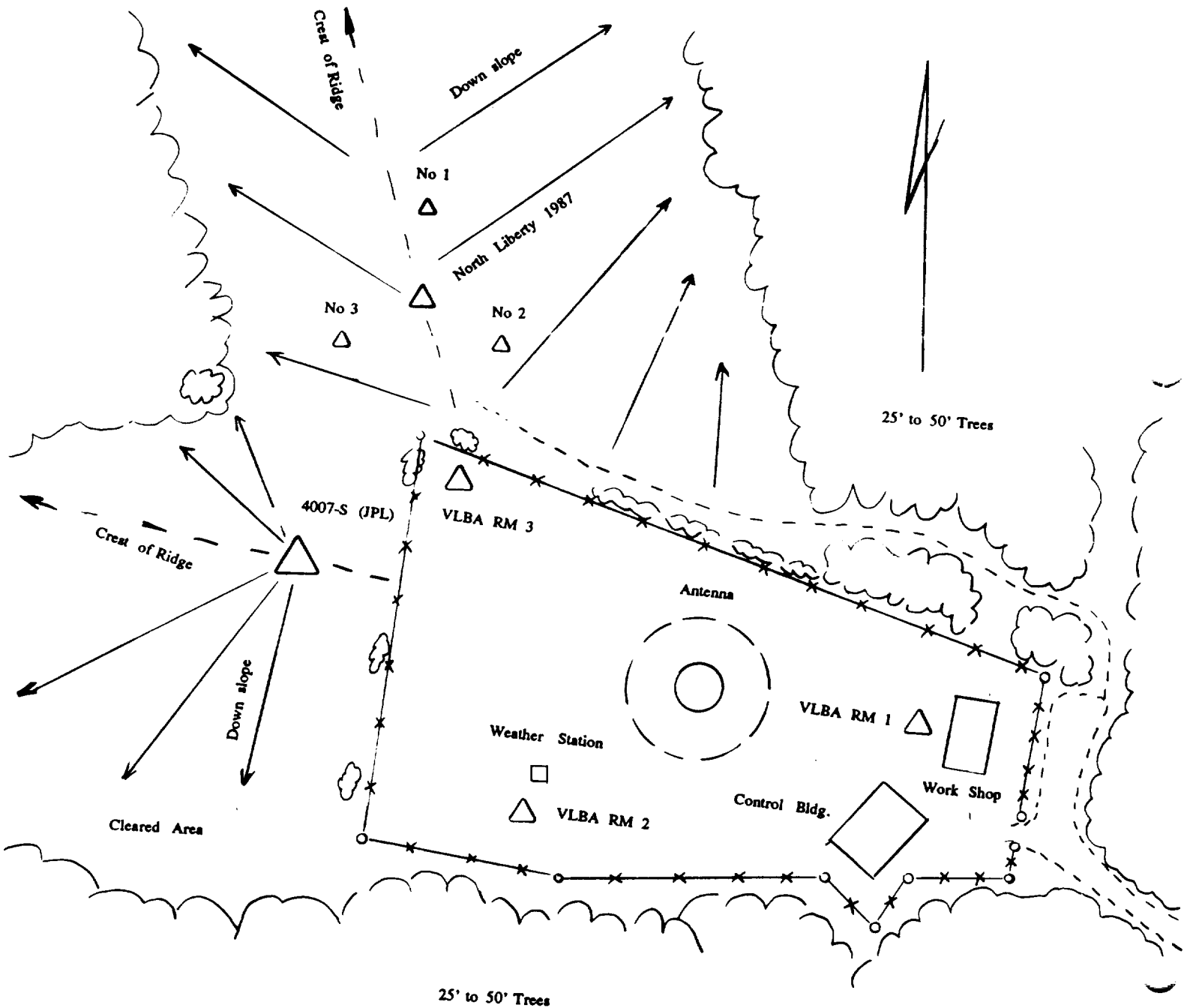
SITE SKETCH

Site Number: 56

Current Site Name: NORTH LIBERTY

Location: NORTH LIBERTY, IA

Cleared Area



PREVIOUS OCCUPATION INFORMATION

Site Number: 56

Current Site Name: NORTH LIBERTY

Location: NORTH LIBERTY, IA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7612	VLBA	76129701	01-JAN-90	---

-- SITE INFORMATION --

Site Number: 852

Current Site Name: NOTO

Other Site Name:

Location: NOTO (SICILY), ITALY

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: RADIOASTRONOMY, EARTH ROTATION, REGIONAL DEFORMATIONS

Site Description: THE SITE IS LOCATED ON THE SOUTH EASTERN PART OF SICILY, ABOUT 40 KM. FROM SIRACUSA, BETWEEN THE SMALL TOWNS OF NOTO AND ROSOLINI. THE NOTO RADIOASTRONOMY STATION IS OPERATED BY THE ISTITUTO DI RADIOASTRONOMIA, NATIONAL RESEARCH COUNCIL OF ITALY. A FIXED 32-METER ANTENNA IS USED FOR VLBI MEASUREMENTS AND FOR ASTROPHYSICAL STUDIES. A STANDARD NASA PAD FOR MOBILE LASER RANGING IS LOCATED NEAR THE VLBI ANTENNA.

Site Topo Map: FOGLIO 277 DELLA CARTA D' ITALIA 1:50000; FOGLIO NOTO IV SO 1:25000 TOPOGRAPHIC MAP SERIES. AVAILABLE FROM ISTITUTO GEOGRAFICO MILITARE - FIRENZE - ITALY.

GEOLOGICAL INFORMATION

Geological Province:

Local Geology: THE NOTO STATION IS LOCATED IN THE SOUTHEASTERN PART OF SICILY ON THE IBLEAN PLATFORM. THE IBLEAN PLATEAU CONSISTS OF CARBONATIC MESOZOIC SEQUENCE IN WHICH TRIASSIC DOLOMITES AND REEF LIMESTONES HAVE A CONSIDERABLE THICKNESS, AND IT IS OVERLAID BY TERRAINS SUCH AS MARLY LIMESTONES, MARLS, AND MARLY SHALES. THERE ARE MIOCENE ARENACEOUS AND MARLY LIMESTONES AT THE VERY TOP OF THE SERIES. MORE RECENT TERRAINS DO NOT APPEAR, OWING TO THE FACT THAT THE PLATEAU, OR AT LEAST ITS CENTRAL PART, HAS EMERGED SINCE PLIOCENE.

Comments: NONE

MONUMENT INFORMATION

Site Number: 852
 Current Site Name: NOTO
 Location: NOTO (SICILY), ITALY
 Number of Observing Monuments: 2
 Surveyed into National Network? NO

Monument Number: 7543
 Type of Monument: BRASS DISK IN STANDARD NASA PAD
 Monument Inscription: NONE
 Systems Using Monument: MOBILE SLR

Latitude: N 36 52' 35.7"
 Longitude: E 14 59' 18.2"
 Elevation:
 Height Above Ellipsoid:
 Survey Source/Date: TELESPAZIO - 1991
 Datum/Ellipsoid: WGS72

Comments: NONE

Differential Coordinates FROM Observing Monument 7543 TO
Reference Monuments and Other Observing Monuments

Data Source: TELESPAZIO

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	A	41.0400	-8.9454	-50.2456
--	B	34.0041	6.3232	-46.1611
--	C	23.5883	7.5669	-32.4209
--	D	37.6439	20.3738	-55.5411
--	E	32.9462	37.7106	-52.2319
--	F	20.5045	39.2891	-36.7468
--	G	-14.4626	9.3899	17.0169
--	H	15.9680	69.2945	-41.5142
--	P	-28.6707	3.4931	39.9740
--	I	26.1298	101.4036	69.4293
--	L	-0.2495	128.8544	-43.2457
--	M	-11.7483	173.9586	-43.0238
7547	--	34.242	67.907	-38.223

Site Number: 852
 Current Site Name: NOTO
 Location: NOTO (SICILY), ITALY

Differential Coordinates FROM Observing Monument 7543 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	A	-62.5937	-19.2579	-2.2883
--	B	-57.6183	-2.6889	-0.1143
--	C	-40.7825	1.2070	0.3392
--	D	-69.4127	9.9417	-0.0224
--	E	-66.7339	27.9036	1.9210
--	F	-47.3799	32.6471	1.9254
--	G	20.5382	12.8118	0.9786
--	H	-53.2221	62.8047	1.7688
--	I	-86.4275	91.1919	-0.4841
--	L	-54.4528	124.5325	0.5240
--	M	-54.6120	171.0760	1.1060
--	P	48.0537	10.7913	2.5545
7547	--	60.968	56.741	17.568

MONUMENT G IS THE GPS REFERENCE POINT FOR THE STATION

MONUMENT INFORMATION (Continued)

Site Number: 852
 Current Site Name: NOTO
 Location: NOTO (SICILY), ITALY

Monument Number: 7547
 Type of Monument: EL AXIS NOT INTERCEPTING AZ AXES
 Monument Inscription: NONE
 Systems Using Monument: 32-METER FIXED ANTENNA

Latitude: N 36 52' 33.78"
 Longitude: E 14 59' 20.51"
 Elevation:
 Height Above Ellipsoid: 136 METERS
 Survey Source/Date:
 Datum/Ellipsoid: WGS84

Comments:

Differential Coordinates FROM Observing Monument 7547 TO
 Reference Monuments and Other Observing Monuments

Data Source: PROF. G. BIRARDI JUNE 1992

---- Differential Coordinates ----

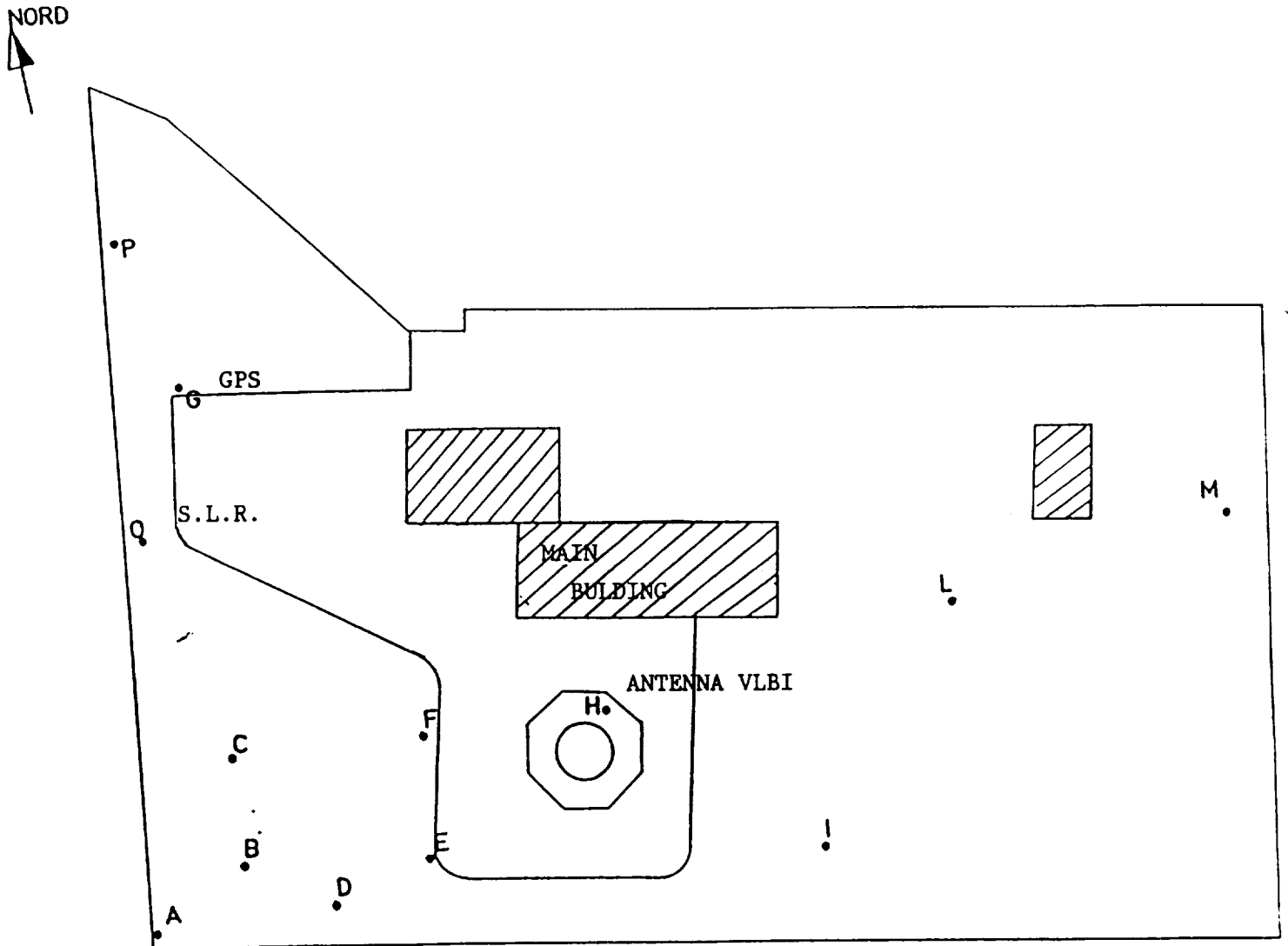
Mon. Number	Monument Inscription	North	East	Up
--	G	81.599	-43.794	-16.589
7543	--	60.968	-56.741	-17.568

SITE SKETCH

Site Number: 852

Current Site Name: NOTO

Location: NOTO (SICILY), ITALY



PREVIOUS OCCUPATION INFORMATION

Site Number: 852

Current Site Name: NOTO

Location: NOTO (SICILY), ITALY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7543	MTLRS-2	75431601	22-OCT-90	12-DEC-90

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7547	25-METER	75478901	01-JUN-89	---

-- SITE INFORMATION --

Site Number: 126

Current Site Name: O'HIGGINS

Other Site Name:

Location: O'HIGGINS BASE STATION, ANTARCTICA

Geographic Region: ANTARCTICA

Tectonic Plate: ANTARCTIC

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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7245	10-METER	72454101	01-JAN-91	---
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-- SITE INFORMATION --

Site Number: 201

Current Site Name: OCOTILLO
Other Site Name: SIGNAL MOUNTAIN
Location: OCOTILLO, CA
Geographic Region: CALIFORNIA
Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED ABOUT 12 MILES EAST-NORTHEAST OF OCOTILLO, CALIFORNIA ALONG THE SOUTH SIDE OF THE IMPERIAL COUNTY HIGHWAY S-80 (OLD U.S. HIGHWAY 80) IN THE CENTER OF AN ABANDONED ROAD BETWEEN THE HIGHWAY AND RAILROAD TRACKS. THE MONUMENTED PAD IS COMPATIBLE FOR OCCUPATION BY MOBILE VLBI SYSTEMS FOR VLBI MEASUREMENTS.

Site Topo Map: PLASTER CITY, CALIFORNIA. N3245-W11545/7.5, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: IMPERIAL VALLEY

Local Geology: QUATERNARY ALLUVIUM. THE STATION IS ON THE "SLUSHY" EDGE OF PACIFIC PLATE.

Comments: NONE

MONUMENT INFORMATION

Site Number: 201
 Current Site Name: OCOTILLO
 Location: OCOTILLO, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7270
 Type of Monument: NGS STATION DISK
 Monument Inscription: OCOTILLO NCMN 1982
 Systems Using Monument: MOBILE VLBI

Latitude: N 32 47' 24.28934''
 Longitude: W 115 47' 46.52283''
 Elevation:
 Height Above Ellipsoid: -18.133 meters
 Survey Source/Date: NGS GPS RESULTS/01-JUL-87
 Datum/Ellipsoid: WGS 1972

Comments: NONE

Differential Coordinates FROM Observing Monument 7270 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	DIXIE 1934	39.006	39.874	82.968
--	OCOTILLO RM2	-56.950	7.569	-27.712
--	OCOTILLO RM4	39.666	-21.645	-3.600

---- Differential Coordinates ----

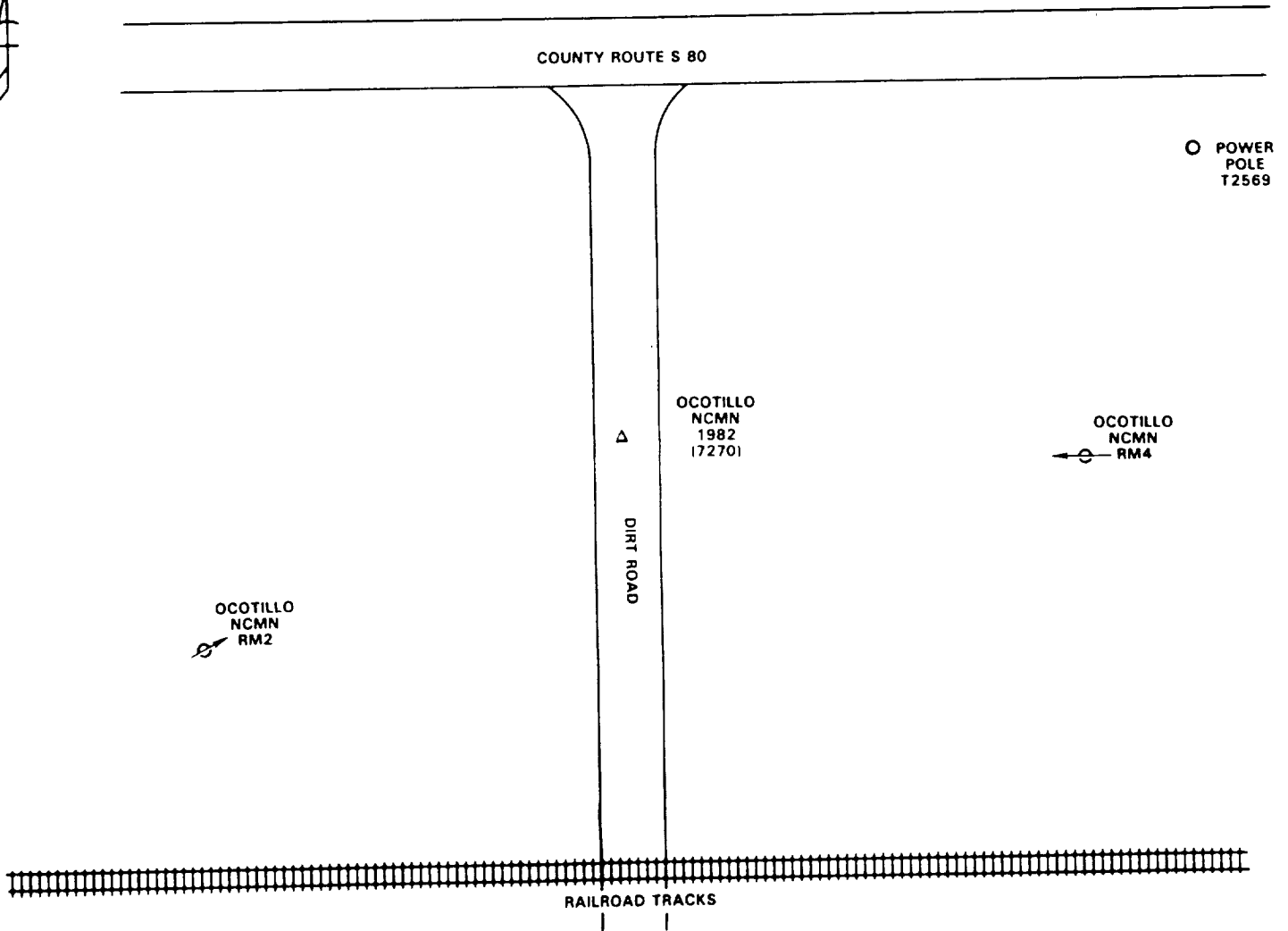
Mon. Number	Monument Inscription	North	East	Up
--	DIXIE 1934	98.383	17.767	0.483
--	OCOTILLO RM2	-33.027	-54.569	0.097
--	OCOTILLO RM4	-4.232	45.132	-0.078

SITE SKETCH

Site Number: 201
Current Site Name: OCOTILLO
Location: OCOTILLO, CA



STATION SKETCH



PREVIOUS OCCUPATION INFORMATION

Site Number: 201

Current Site Name: OCOTILLO

Location: OCOTILLO, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7270	MV-3	72705301	10-NOV-83	13-NOV-83
7270	MV-2	72705202	03-MAR-84	04-MAR-84
7270	MV-2	72705203	15-JAN-85	16-JAN-85
7270	MV-3	72705304	04-MAR-85	05-MAR-85

-- SITE INFORMATION --

Site Number: 876

Current Site Name: OKI GUNTO

Other Site Name:

Location: OKI GUNTO, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7303	HTLRS-1	73031701	11-SEP-90	30-OCT-90

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 874

Current Site Name: OKINAWA (CRL)

Other Site Name:

Location: NAKAGUSUKU, OKINAWA, JAPAN

Geographic Region: ASIA

Tectonic Plate: EURASIA

Primary Scientific Purposes: ESTABLISHMENT OF FIDUCIAL POINT USED FOR VARIOUS PURPOSES SUCH AS GPS ORBIT DETERMINATION.

Site Description: A FOUNDATION FOR THE 3M ANTENNA WAS BUILT AT THIS SITE IN 1989. THE SITE IS LOCATED AT THE OKINAWA RADIOWAVE OBSERVATORY, A BRANCH OF THE COMMUNICATIONS RESEARCH LABORATORY (CRL). CRL MOVES THE 3M ANTENNA TO THE SITE TO CARRY OUT VLBI EXPERIMENTS AS THE NEED ARISES. THE ANTENNA IS EQUIPPED WITH AN X-BAND RECEIVER. IONOSPHERIC EXCESS DELAYS ARE CALIBRATED BY USING TOTAL ELECTRON CONTENT DATA ACQUIRED BY DUAL BAND GPS RECEIVER.

Site Topo Map: SOUTHERN PART OF OKINAWA CITY, 1:25,000 SERIES. AVAILABLE THROUGH THE GSI, TSUKUBA, IBARAKI, JAPAN.

GEOLOGICAL INFORMATION

Geological Province: ANTICLINE AREA OF RYUKYU ARC.

Local Geology: CORAL LIMESTONE

Comments: NONE

MONUMENT INFORMATION

Site Number: 874
Current Site Name: OKINAWA (CRL)
Location: NAKAGUSUKU, OKINAWA, JAPAN
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7318
Type of Monument: GROUND MARKER ON THE ANTENNA FOUNDATION
Monument Inscription: NONE
Systems Using Monument: MOBILE 3-METER ANTENNA

Latitude: N 26 17'
Longitude: E 127 48'
Elevation: ABOUT 148 meters
Height Above Ellipsoid: NOT AVAILABLE
Survey Source/Date:
Datum/Ellipsoid: TOKYO

Comments: NONE

Differential Coordinates FROM Observing Monument 7318 TO
Reference Monuments and Other Observing Monuments

Data Source:

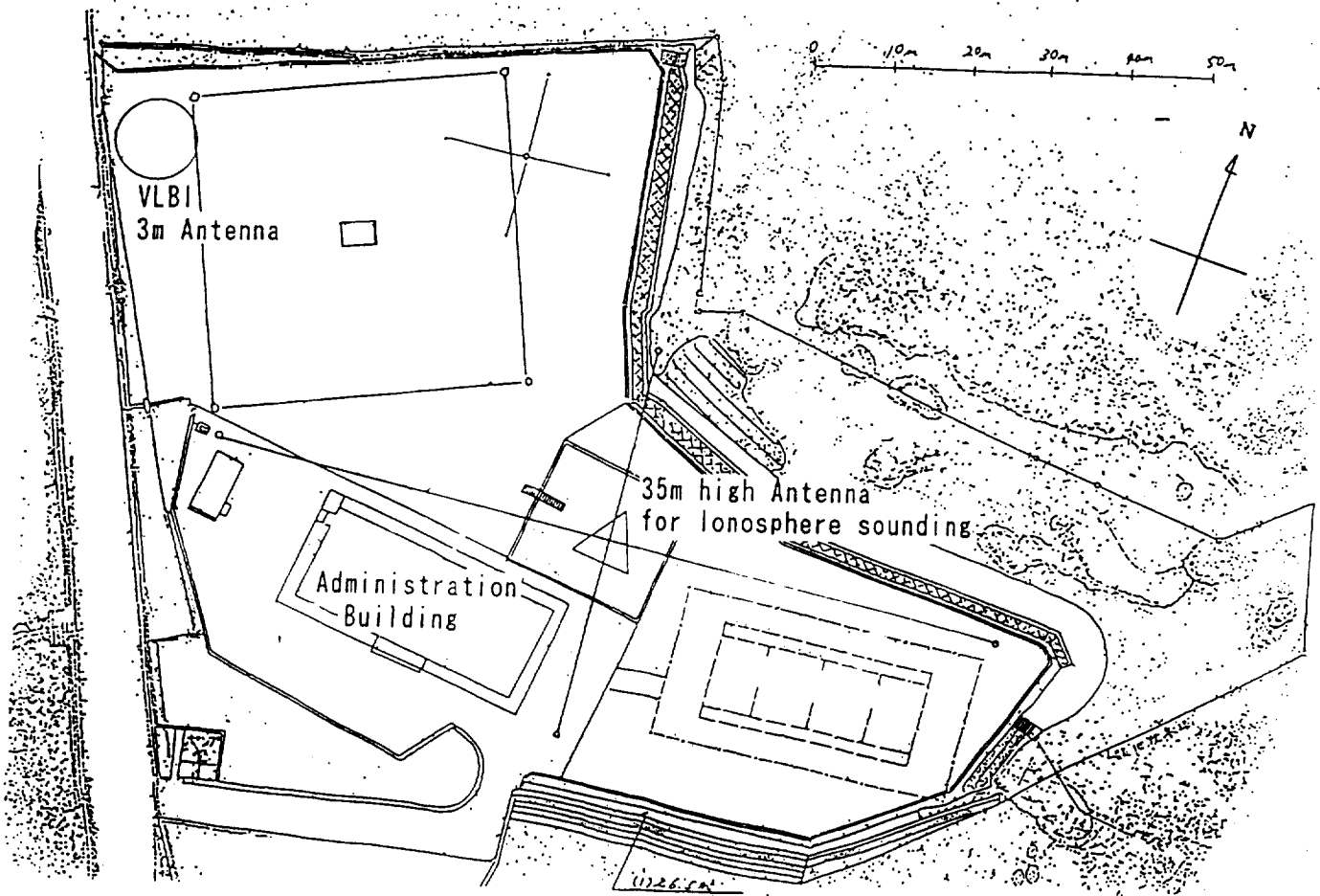
-- Differential Coordinates Not Available --

SITE SKETCH

Site Number: 874

Current Site Name: OKINAWA (CRL)

Location: NAKAGUSUKU, OKINAWA, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 874

Current Site Name: OKINAWA (CRL)

Location: NAKAGUSUKU, OKINAWA, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7318	MOBILE 3M		3-FEB-89	4-FEB-89
7318	MOBILE 3M		23-OCT-90	24-OCT-90

-- SITE INFORMATION --

Site Number: 881

Current Site Name: OKINAWA (JHD)

Other Site Name: OKINAWA SHIMA

Location: KOCHINDA RADIO STATION, 11TH REGIONAL HEADQUARTERS OF THE MARITIME SAFETY AGENCY, KOCHINDA CITY, OKINAWA, JAPAN

Geographic Region: NANSEI ISLANDS

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENT OF THE THREE DIMENSIONAL GEODETIC POSITION OF THE ISLAND BY THE SIMULTANEOUS LASER OBSERVATION WITH THE SIMOSATO HYDROGRAPHIC OBSERVATORY (SHO). THE OBSERVATION WAS CARRIED OUT FROM JULY TO SEPTEMBER 1989 BY USING THE HYDROGRAPHIC TRANSPORTABLE LASER RANGING STATION (HTLRS).

Site Description: KOCHINDA TOWN IS LOCATED IN THE SOUTHWEST PART OF OKINAWA ISLAND, ABOUT 10 KM FROM NAHA CITY. THE KOCHINDA RADIO STATION IS LOCATED ABOUT 4 KM EAST OF ITOMAN HARBOR. A STONE MARKER IS ESTABLISHED.

Site Topo Map: ITOMAN (NO. NG-52-27-8-1) OF THE 1:25,000 TOPO MAP SERIES OF THE GEOGRAPHIC SURVEY INSTITUTE (GSI) OF JAPAN.

GEOLOGICAL INFORMATION

Geological Province: SOUTHWEST JAPAN OUTERSIDE, SHIMANTO BELT

Local Geology: QUARternary CORAL MUDSTONE AND LIMESTONE

Comments: NONE

MONUMENT INFORMATION

Site Number: 881
Current Site Name: OKINAWA (JHD)
Location: KOCHINDA CITY, OKINAWA, JAPAN
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7301
Type of Monument: FIDUCIAL STONE MARKER
Monument Inscription: NONE
Systems Using Monument: HTLRS

Latitude: N 26 07' 40.551"
Longitude: E 127 43' 03.642"
Elevation: 94.92 m
Height Above Ellipsoid: NOT AVAILABLE
Survey Source/Date: HYDROGRAPHIC DEPARTMENT / AUG-89
Datum/Ellipsoid: TOKYO / BESSEL

Comments: NONE

Differential Coordinates FROM Observing Monument 7301 TO
Reference Monuments and Other Observing Monuments

Data Source: DATA REPORT OF HYDROGRAPHIC OBSERVATIONS, SERIES OF
SATELLITE GEODESY, NO. 5, 1992

---- Differential Coordinates ----

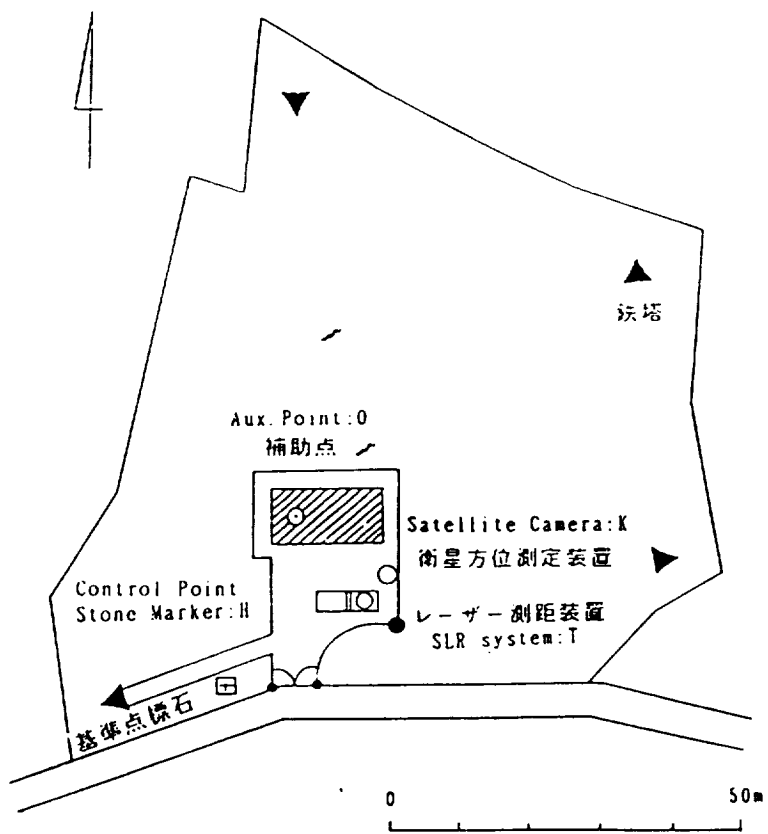
Mon. Number	Monument Inscription	X	Y	Z
--	YAESU	-326.817	195.138	-567.554

SITE SKETCH

Site Number: 881

Current Site Name: OKINAWA (JHD)

Location: KOCHINDA CITY, OKINAWA, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 881

Current Site Name: OKINAWA (JHD)

Location: KOCHINDA CITY, OKINAWA, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7301	HTLRS-1	73011701	10-JUL-89	04-SEP-89

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 612

Current Site Name: ONDREJOV

Other Site Name:

Location: ONDREJOV, CZECHOSLOVAKIA

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1148	ONDLAS	11480901	01-JAN-88	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 120

Current Site Name: ONSALA

Other Site Name:

Location: ONSALA, SWEDEN

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, AND MEASUREMENTS SUPPORTING VLBI TECHNIQUE DEVELOPMENT.

Site Description: THE STATION IS LOCATED AT THE ONSALA SPACE OBSERVATORY IN ONSALA, SWEDEN. AT TYPICAL VLBI SITES, BOTH X AND S BANDS ARE RECEIVED BY THE SAME ANTENNA. HOWEVER, AT ONSALA, ONE ANTENNA IS USED FOR EACH FREQUENCY: THE 26.5 METER ANTENNA RECEIVES S-BAND AND THE 20 METER ANTENNA RECEIVES X-BAND SIGNALS. ALL OF THE RESULTS ARE REFERRED BACK TO THE REFERENCE POINT OF THE 20-METER ANTENNA.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: ARCHAEOAN MOUNTAIN ROCKS, SOUTHWEST FENNOSCANDIA, 1200-1500 MILLION YEARS.

Local Geology: SOLID GRANITE AND GNEISS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 120
 Current Site Name: ONSALA
 Location: ONSALA, SWEDEN
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7212
 Type of Monument: INTERSECTION OF AXES OF THE ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 25.6 METER VLBI ANTENNA

Latitude: N 57 23' 36.9778''
 Longitude: E 11 55' 08.4692''
 Elevation: 24.380 meters
 Height Above Ellipsoid:
 Survey Source/Date: ELIASSON/01-FEB-86
 Datum/Ellipsoid: EUROPEAN DATUM 50

Comments: THIS ANTENNA RECEIVES ONLY S-BAND SIGNALS. ALL DATA IS TRANSFERRED TO THE 20 METER ANTENNA REFERENCE POINT.

Differential Coordinates FROM Observing Monument 7212 TO Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7213	NONE (13-1)	-360.106	451.487	166.752
--	1975 DOPPLER REF POINT (1001)	-60.506	65.157	11.443
--	DOPPLER REF POINT NO. 3	-307.516	411.023	122.831
--	NAT. LAND SURVEY TRIANG MK	-202.197	5.746	138.871

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	1975 DOPPLER REFERENCE POINT (1001)	44.701	76.249	-15.011

MONUMENT INFORMATION (Continued)

Site Number: 120
 Current Site Name: ONSALA
 Location: ONSALA, SWEDEN

Monument Number: 7213
 Type of Monument: INTERSECTION OF AXES OF THE ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 20 METER VLBI ANTENNA

Latitude: N 57 23' 46.9364''
 Longitude: E 11 55' 39.3709''
 Elevation: 25.260 meters
 Height Above Ellipsoid:
 Survey Source/Date: ELIASSON/01-FEB-86
 Datum/Ellipsoid: E.D. 50

Comments: THIS ANTENNA RECEIVES X-BAND SIGNALS ONLY. ALL BASELINE RESULTS REFER TO THIS ANTENNA.

Differential Coordinates FROM Observing Monument 7213 TO Reference Monuments and Other Observing Monuments

Data Source: ELIASSON. TIE TO POINT #301 FROM CIGNET REPORT/IGS MAIL

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7212	NONE (1000-1)	360.106	-451.487	-166.752
--	1975 DOPPLER REF POINT (1001)	299.601	-386.330	-155.309
--	1978 DOPPLER REF POINT (3)	52.590	-40.464	-43.921
--	NAT LAND SURVEY TRIANG MK	157.909	-445.741	-27.881
--	POINT #301 SURVEY MARK (GPS)	52.631	-40.464	-43.865

---- Differential Coordinates ----

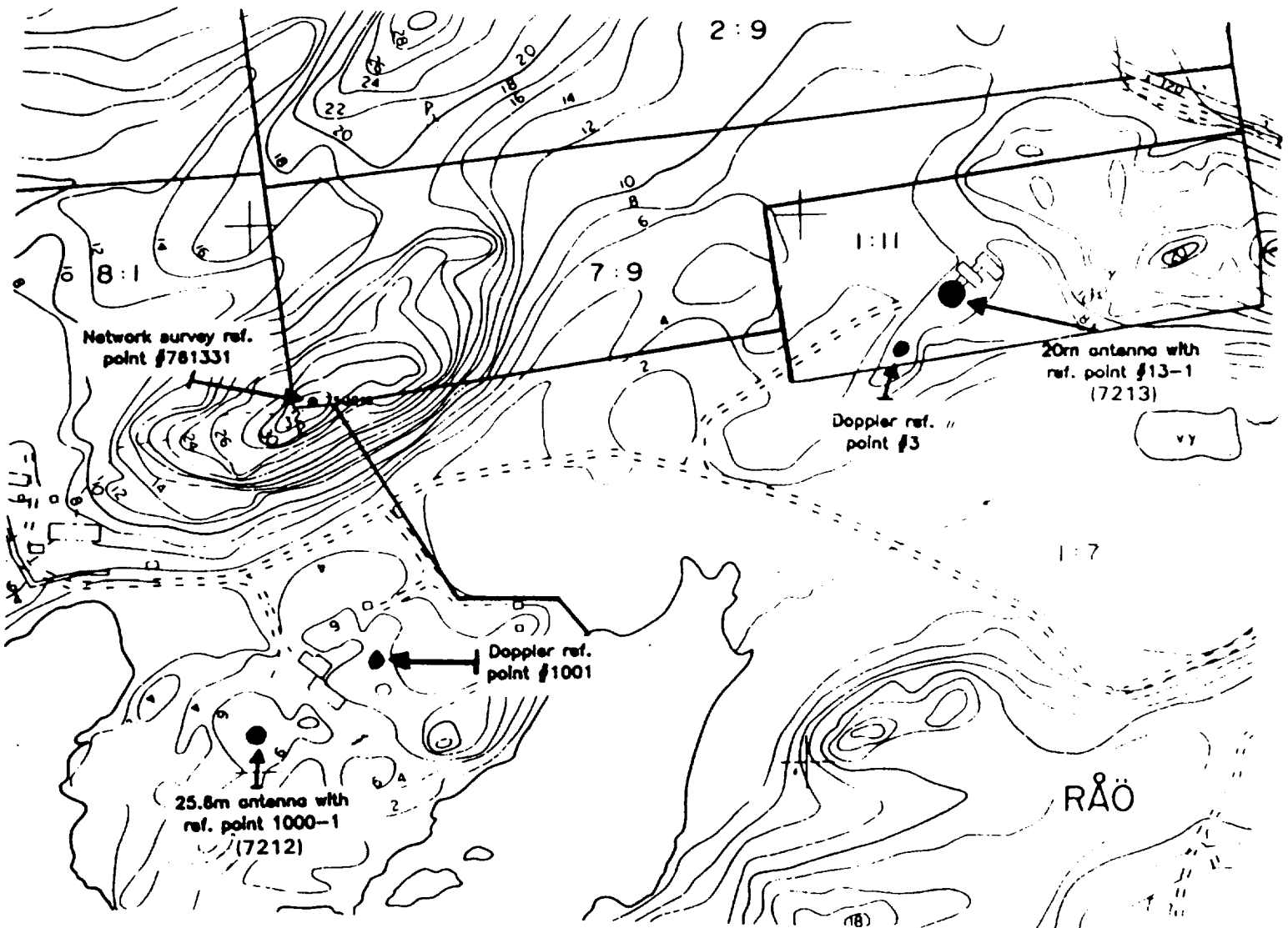
Mon. Number	Monument Inscription	North	East	Up
--	1978 DOPPLER REFERENCE POINT (3)	-59.965	-50.462	-13.781

SITE SKETCH

Site Number: 120

Current Site Name: ONSALA

Location: ONSALA, SWEDEN



PREVIOUS OCCUPATION INFORMATION

Site Number: 120

Current Site Name: ONSALA

Location: ONSALA, SWEDEN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7211	MV-2	72115201	28-APR-92	01-MAY-92
7213	ONSALA60	72137701	24-SEP-77	---

-- SITE INFORMATION --

Site Number: 134

Current Site Name: ORRORAL

Other Site Name:

Location: ORRORAL VALLEY, AUSTRALIA

Geographic Region: AUSTRALIA

Tectonic Plate: AUSTRALIAN-INDIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, AND MEASUREMENTS SUPPORTING SLR TECHNIQUE DEVELOPMENT.

Site Description: THE STATION IS LOCATED IN THE ORRORAL VALLEY, 40 MILES SOUTHWEST OF THE CITY OF CANBERRA IN THE SOUTHERN PART OF THE AUSTRALIAN CAPITAL TERRITORY. THE NATMAP LASER RANGING SYSTEM AT ORRORAL IS RANGING TO BOTH LAGEOS AND THE MOON.

Site Topo Map: 1:100,000 SERIES 'ACT SPECIAL' DIVISION OF NATIONAL MAPPING, AUSTRALIA

GEOLOGICAL INFORMATION

Geological Province: TASMAN GEOSYNCLINAL ZONE

Local Geology: LATE SILURIAN SHANNON'S FLAT ADAMELLITE (MARRUMBRIDGE BATHOLITH)

Comments: NONE

MONUMENT INFORMATION

Site Number: 134
 Current Site Name: ORRORAL
 Location: ORRORAL VALLEY, AUSTRALIA
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7843
 Type of Monument: REFERENCE POINT ON LASER (COUDE MIRROR 7)
 Monument Inscription: NONE
 Systems Using Monument: ORRORAL NATIONAL LASER RANGING SYSTEM (NLRS)

Latitude: S 35 38' 10.53218"
 Longitude: E 148 56' 21.50933"
 Elevation:
 Height Above Ellipsoid: 1349.891 meters
 Survey Source/Date: AUSLIG, GEOD. SER. SECTION/17-SEP-91
 Datum/Ellipsoid: WGS 1984 (DERIVED)

Comments: THIS SYSTEM WAS REFERENCED AS NATMAP. REFERENCE POINT IS THE CENTER OF THE 152MM MIRROR AT NORTH END OF THE HORIZONTAL BEARING.

Differential Coordinates FROM Observing Monument 7843 TO Reference Monuments and Other Observing Monuments

Data Source: AUSLIG. DORIS INFORMATION PROVIDED BY IGN.

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7943	NONE (SAO LASER CENTRE)	-1072.109	-992.940	1255.062
--	AU004 (ORR T1)	-1.117	-13.580	-19.257
--	AU005 (ORR T2)	-1.994	-14.426	-18.835
--	AU006 (ORR T3)	-1.633	-15.480	-20.207
--	CAL RANGE CORNER CUBE	646.601	617.367	-717.895
--	CENTRE GROUNDMARK	6.851	-4.142	2.931
--	CENTRE TOP LEVEL	2.612	-1.589	-0.617
--	LR1A (OLD LLR)	0.555	-0.322	-2.012
--	NLRS PILLAR 2	20.409	-2.978	-13.046
--	NLRS PILLAR 3	2.927	6.972	13.779
--	NM/C/106 (LLR PILLAR 1)	0.277	-22.257	-10.423
--	DORIS ANT REF PT	6.411	-25.040	-22.873

MONUMENT INFORMATION (Continued)

Site Number: 134
Current Site Name: ORRORAL
Location: ORRORAL VALLEY, AUSTRALIA

Monument Number: 7943
Type of Monument: REFERENCE POINT ON LASER CENTER
Monument Inscription: NONE
Systems Using Monument: ORRLAS FIXED LASER (SAO-3)

Latitude: S 35 37' 29.76148''
Longitude: E 148 57' 17.28512''
Elevation:
Height Above Ellipsoid: 948.986 meters
Survey Source/Date: AUSLIG, GEOD. SER. SECTION/17-SEP-91
Datum/Ellipsoid: WGS 84

Comments: OPERATIONS OF THIS LASER HAVE BEEN DISCONTINUED AS OF MARCH 1982.

Differential Coordinates FROM Observing Monument 7943 TO
Reference Monuments and Other Observing Monuments

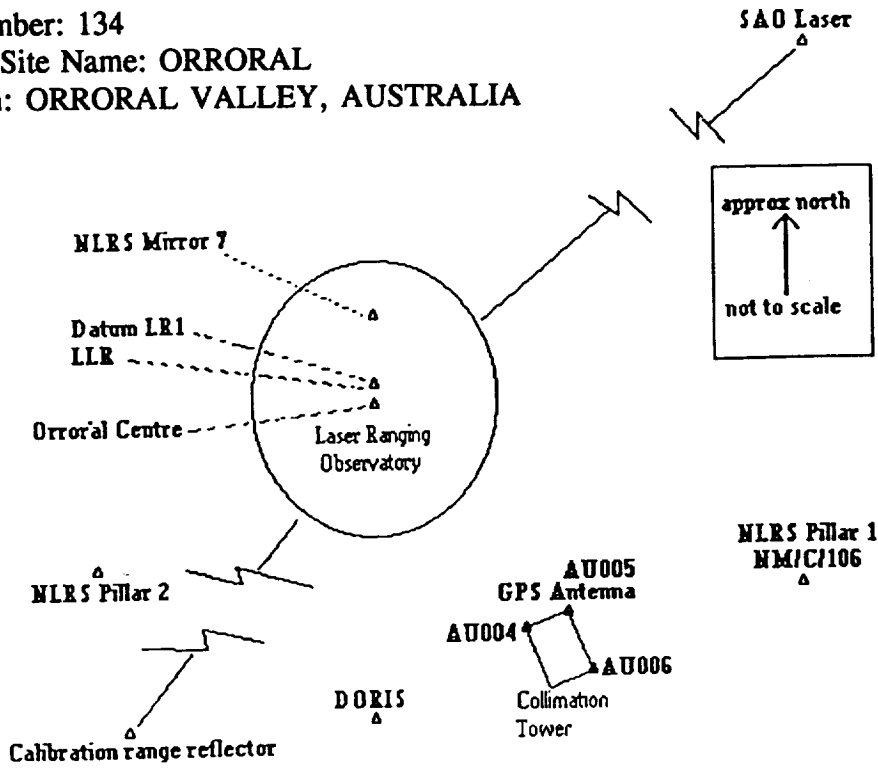
Data Source: . AUSLIG

---- Differential Coordinates ----

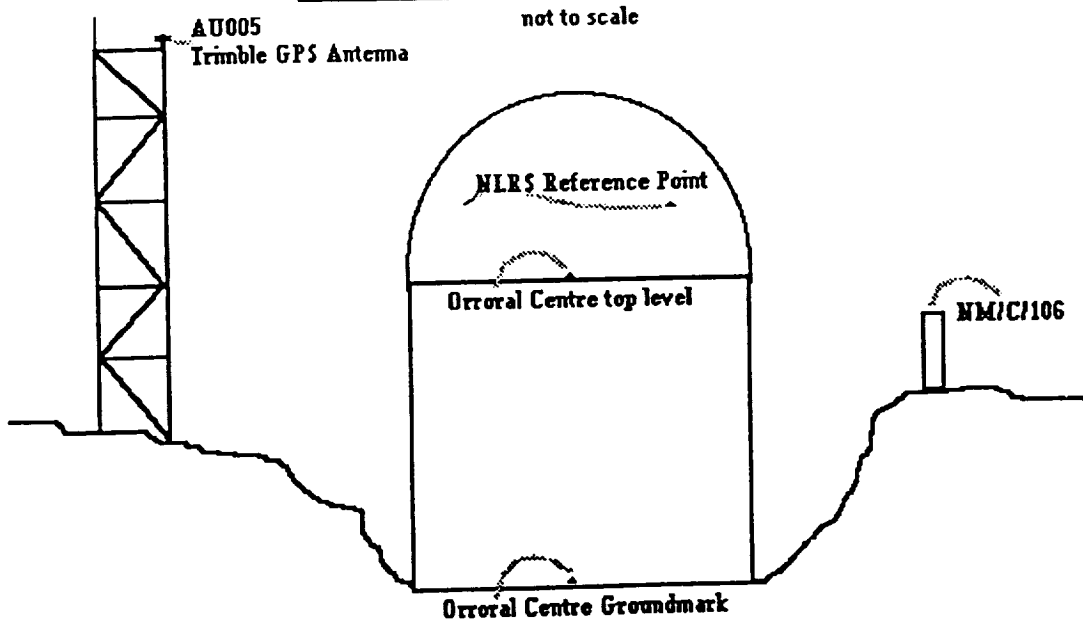
Mon. Number	Monument Inscription	X	Y	Z
7843	NONE (NLRS)	1072.109	992.940	-1255.062

SITE SKETCH

Site Number: 134
 Current Site Name: ORRORAL
 Location: ORRORAL VALLEY, AUSTRALIA



ORRORAL GEODETIC OBSERVATORY



PREVIOUS OCCUPATION INFORMATION

Site Number: 134

Current Site Name: ORRORAL

Location: ORRORAL VALLEY, AUSTRALIA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7843	NLRS	78432501	01-AUG-84	27-OCT-89
7843	NLRS	78432502	28-OCT-89	---
7943	SAO-3	79434201	15-JUN-76	10-MAR-82

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 1

Current Site Name: OTAY MOUNTAIN

Other Site Name:

Location: OTAY MOUNTAIN, SAN DIEGO, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND GLOBAL PLATE MOTION.

Site Description: THE SITE IS LOCATED AT DOGHOUSE JUNCTION IN THE SAN YSIDRO MOUNTAINS, FIVE MILES FROM THE MEXICAN BORDER. IN MID 1979 MOBLAS OPERATIONS WERE DISCONTINUED DUE TO POOR ROAD CONDITIONS. A MOBLAS PAD WAS CONSTRUCTED AT MONUMENT PEAK TO ALLOW CONTINUOUS LASER MEASUREMENTS IN THE REGION. THE SITE IS COMPATIBLE FOR OCCUPATION BY ANY LASER OR VLBI SYSTEM PENDING ROAD ACCESS.

Site Topo Map: OTAY MOUNTAIN, CALIFORNIA. N3236-W11645/7.5, 1972, USGS, RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: PENINSULA RANGES

Local Geology: JURASSIC-TRIASSIC METAVOLCANIC ROCK. THE STATION IS LOCATED ON THE PACIFIC TECTONIC PLATE WEST OF THE SAN ANDREAS FAULT.

Comments: NONE

MONUMENT INFORMATION

Site Number: 1
Current Site Name: OTAY MOUNTAIN
Location: OTAY MOUNTAIN, SAN DIEGO, CA
Number of Observing Monuments: 3
Surveyed into National Network? YES

Monument Number: 7035
Type of Monument: STANDARD BRONZE MARKER
Monument Inscription: STATION 7035 1988
Systems Using Monument: MOBILE LASER

Latitude: N 32 36' 02.42840'
Longitude: W 116 50' 27.00064"
Elevation:
Height Above Ellipsoid: 987.590 meters
Survey Source/Date: BFEC/ 20-MAY-89
Datum/Ellipsoid: NAD-83/ GRS 80

Comments: THIS IS THE NEW MONUMENT CONSTRUCTED ON THE SAME PAD AS
7062 AND 7276 - COMPATIBLE FOR TLR'S OCCUPATION.

Differential Coordinates FROM Observing Monument 7035 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7035 PIER 1	16.1317	36.1059	74.1560
--	7035 PIER 2	237.6103	-234.5597	-149.9331
--	7035 PIER 3	-277.9207	-35.9692	-220.7707

MONUMENT INFORMATION (Continued)

Site Number: 1
 Current Site Name: OTAY MOUNTAIN
 Location: OTAY MOUNTAIN, SAN DIEGO, CA

Monument Number: 7062
 Type of Monument: CIRCULAR 5" STEEL PLATE
 Monument Inscription: "X"
 Systems Using Monument: TLRS-2

Latitude: N 32 36' 02.64825"
 Longitude: W 116 50' 27.04107"
 Elevation:
 Height Above Ellipsoid: 987.459 meters
 Survey Source/Date: BFEC/ 20-MAY-89
 Datum/Ellipsoid: NAD-83/ GRS 80

Comments: THE STATION NAME IS "SANDIE 1976".

Differential Coordinates FROM Observing Monument 7062 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7276	OTAY ARIES 1980	-0.2999	-2.0921	-2.9428

Mon. Number	Monument Inscription	North	East	Up
7276	OTAY ARIES 1980	-3.5578	0.6772	0.1012

IN MAY 1992, A GPS TIE BETWEEN THIS MARK AND MONUMENT PEAK NCMN
 WAS PERFORMED WITH TRIMBLE 4000SST RECEIVERS. THE RESULTS, AS
 COMPUTED BY NGS, ARE:

X 42436.5179 Y -2596.0618 Z 27611.2644 L 50778.7043

MONUMENT INFORMATION (Continued)

Site Number: 1
 Current Site Name: OTAY MOUNTAIN
 Location: OTAY MOUNTAIN, SAN DIEGO, CA

Monument Number: 7276
 Type of Monument: USC&GS MARK
 Monument Inscription: ARIES 7/79
 Systems Using Monument: MV-1

Latitude: N 32:36' 02.53278"
 Longitude: W 116 50' 27.01511"
 Elevation:
 Height Above Ellipsoid: 987.560
 Survey Source/Date: BFEC/ 20-MAY-89
 Datum/Ellipsoid: NAD-83/ GRS 80

Comments: A ROUND AIR HOLE IN THE DISK WAS THE POINT OF OCCUPATION.
 THE STATION NAME OF THIS MONUMENT IS "OTAY ARIES 1980".

Differential Coordinates FROM Observing Monument 7276 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

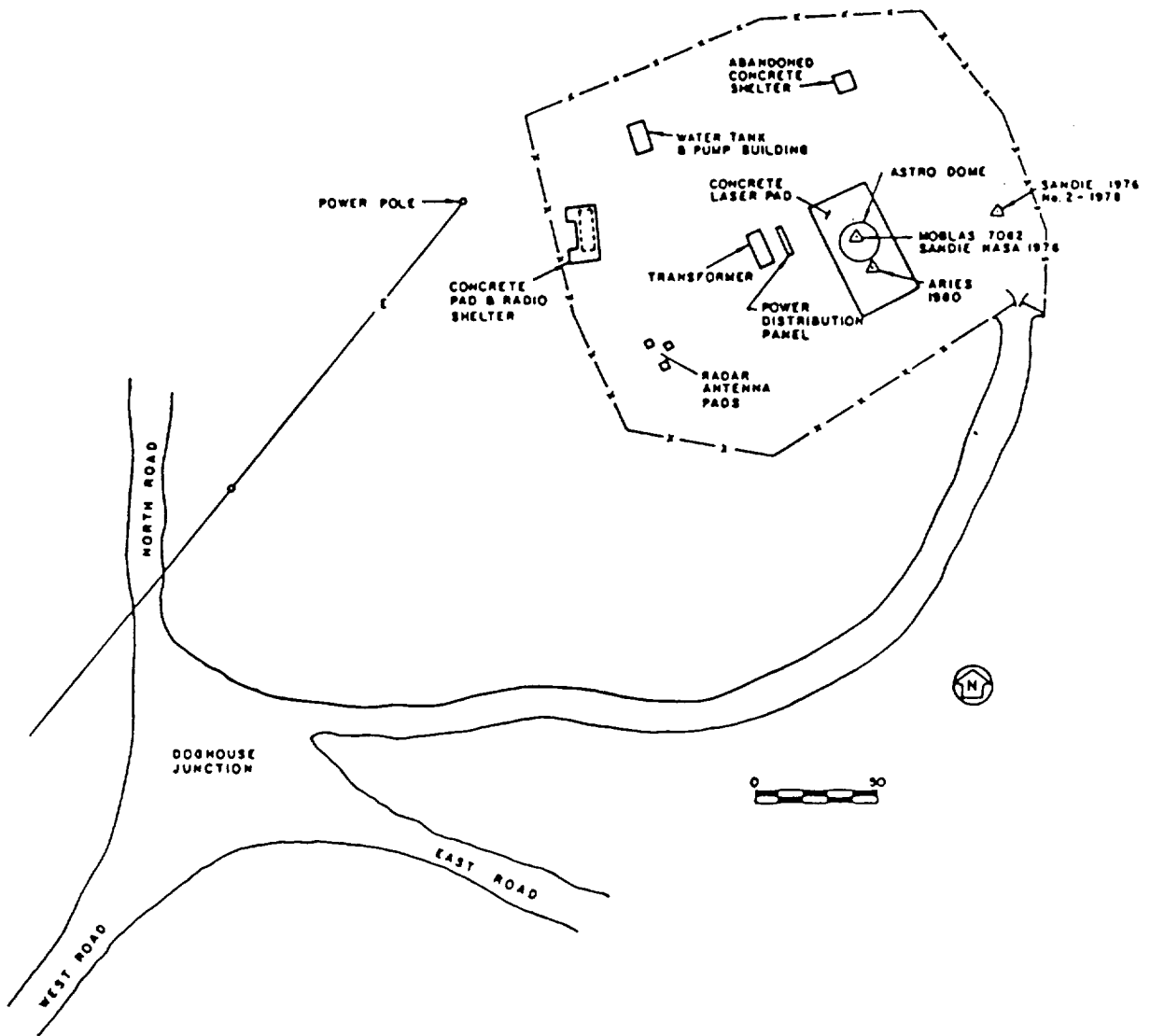
Mon. Number	Monument Inscription	X	Y	Z
7062	SANDIE 1976	0.2999	2.0921	2.9428
--	SANDIE NASA RM 1	114.5120	-106.9640	-108.1400
--	SANDIE NASA AZ MK	-449.7513	-169.9640	-442.0556
--	SANDIE RM 2 (DOPP 51215)	16.8465	-4.3052	5.1339

SITE SKETCH

Site Number: 1

Current Site Name: OTAY MOUNTAIN

Location: OTAY MOUNTAIN, SAN DIEGO, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 1

Current Site Name: OTAY MOUNTAIN

Location: OTAY MOUNTAIN, SAN DIEGO, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7035	TLRS-3	70351301	24-JUN-88	21-SEP-88
7062	MOBLAS-2	70620201	28-AUG-74	14-DEC-74
7062	MOBLAS-3	70620302	14-SEP-76	30-APR-77
7062	MOBLAS-3	70620303	29-JUN-78	30-MAY-79
7062	TLRS-1	70621104	04-OCT-81	08-JAN-82
7062	TLRS-2	70621205	12-SEP-83	04-JAN-84

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7276	MV-1	72765101	11-JUL-79	12-JUL-79

-- SITE INFORMATION --

Site Number: 11

Current Site Name: OWENS VALLEY

Other Site Name:

Location: OWENS VALLEY RADIO OBS., BIG PINE, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE SITE IS LOCATED AT THE OWENS VALLEY RADIO OBSERVATORY, 4.5 MILES NORTHEAST OF BIG PINE, CALIFORNIA. BIG PINE IS IN THE OWENS RIVER VALLEY AND PARALLELS THE SIERRA NEVADAS ON THE EAST. A FIXED ANTENNA WAS USED FOR VLBI MEASUREMENTS. A LASER PAD AT OWENS VALLEY PROVIDES VALIDATION DATA FOR THE VLBI TECHNIQUE. FOLLOWING THE CONSTRUCTION OF A BUILDING OVER THE ORIGINAL PAD, A SECOND STATION WAS ESTABLISHED. AN NRAO VLBA STATION (25 METER ANTENNA) HAS BEEN CONSTRUCTED AT THE OBSERVATORY - SURVEY DATA NOT AVAILABLE.

Site Topo Map: BIG PINE, CALIFORNIA. N3700-W11815/15, 1850, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: BASIN AND RANGE

Local Geology: QUATERNARY ALLUVIUM LOCALLY; EAST OF THE SAN ANDREAS FAULT.

Comments: NONE.

MONUMENT INFORMATION

Site Number: 11
 Current Site Name: OWENS VALLEY
 Location: OWENS VALLEY RADIO OBS., BIG PINE, CA
 Number of Observing Monuments: 4
 Surveyed into National Network? YES

Monument Number: 7084
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: GSFC MOBILE LASER NO. 7084
 Systems Using Monument: MOBLAS AND TLRs

Latitude: N 37 13' 55.65219''
 Longitude: W 118 17' 44.18233''
 Elevation: 1203.940 meters
 Height Above Ellipsoid: 1178.097 meters
 Survey Source/Date: BFEC SURVEY/20-MAR-89
 Datum/Ellipsoid: WGS 1984/WGS 1984

Comments: THIS IS THE ORIGINAL SITE USED BY MOBLAS DURING THE FIRST OCCUPATION.

Differential Coordinates FROM Observing Monument 7084 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7114	MOBLAS 7114 1979	167.8848	-57.4959	37.8418
7207	40-METER ANTENNA REF POINT	989.5906	-604.3722	-45.6510
7853	7853 JUL 87	169.1075	-55.2348	41.4589
--	BP ARIES 1 (DOP. 51105)	946.2830	-623.6184	-124.7693
--	BP ARIES 2	1073.3102	-627.3638	-51.3150
--	BP ARIES 3	947.1833	-523.3847	-10.3832
--	MOBILE LASER 2	32.2433	12.5835	33.4496
--	WEST MONOLITH	795.1358	-467.2249	-37.5551

Mon. Number	Monument Inscription	North	East	Up
--	MOBILE LASER 2	42.5837	22.4257	-0.7522

MONUMENT INFORMATION (Continued)

Site Number: 11
 Current Site Name: OWENS VALLEY
 Location: OWENS VALLEY RADIO OBS., BIG PINE, CA

Monument Number: 7114
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: MOBLAS 7114 1979
 Systems Using Monument: MOBLAS AND TLRs

Latitude: N 37 13' 57.19744''
 Longitude: W 118 17' 37.08103''
 Elevation: 1203.810 meters
 Height Above Ellipsoid: 1177.942 meters
 Survey Source/Date: BFEC SURVEY/20-MAR-89
 Datum/Ellipsoid: WGS 1984/WGS 1984

Comments: THE SECOND MONUMENT WAS BUILT TO REPLACE MONUMENT 7084.

Differential Coordinates FROM Observing Monument 7114 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7084	GSFC MOBILE LASER NO. 7084	-167.8848	57.4959	-37.8418
7207	NONE	821.7057	-546.8763	-83.4928
7853	7853 JUL 87	1.2227	2.2611	3.6171
--	7853 RM 1	25.3004	25.7725	45.5354
--	7853 RM 2	33.1621	-30.9831	-16.3130
--	7853 RM 3	-44.0261	9.3875	-17.3986
--	BP ARIES 1 (DOP. 51105)	778.3982	-566.1225	-162.6111
--	BP ARIES 2	905.4254	-569.8679	-89.1568
--	BP ARIES 3	779.2985	-465.8888	-48.2250
--	MOBILE LASER 2	-135.6415	70.0794	-4.3922
--	WEST MONOLITH	627.2510	-409.7290	-75.3969

MONUMENT INFORMATION (Continued)

Site Number: 11

Current Site Name: OWENS VALLEY

Location: OWENS VALLEY RADIO OBS., BIG PINE, CA

Monument Number: 7207

Type of Monument: REFERENCED TO CENTER OF HORIZONTAL AXES OF ANTENNA

Monument Inscription: NONE

Systems Using Monument: 40-METER FIXED VLBI ANTENNA

Latitude: N 37 13' 53.23318''

Longitude: W 118 16' 57.22086''

Elevation: 1226.630 meters

Height Above Ellipsoid: 1200.799 meters

Survey Source/Date: BFEC /20-MAR-89

Datum/Ellipsoid: WGS 1984/WGS 84

Comments: THIS ANTENNA IS ALSO REFERENCED AS OVRO 130.

Differential Coordinates FROM Observing Monument 7207 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC ADJUSTMENT 89-03-20

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7084	GSFC MOBILE LASER NO. 7084	-989.5906	604.3722	45.6510
7114	MOBLAS 7114 1979	-821.7057	546.8763	83.4928
7853	7853 JUL 87	-820.4831	549.1374	87.1100
--	BP ARIES 1 (DOP. 51105)	-43.3076	-19.2462	-79.1183
--	BP ARIES 2	83.7197	-22.9916	-5.6639
--	BP ARIES 3	-42.4073	80.9875	35.2678
--	MOBILE LASER 2	-957.3472	616.9557	79.1006
--	WEST MONOLITH	-194.4547	137.1473	8.0960

MONUMENT INFORMATION (Continued)

Site Number: 11
 Current Site Name: OWENS VALLEY
 Location: OWENS VALLEY RADIO OBS., BIG PINE, CA

Monument Number: 7853
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7853 JUL 87
 Systems Using Monument: MOBILE VLBI AND MTLRS

Latitude: N 37 13' 57.34129''
 Longitude: W 118 17 37.08083''
 Elevation: 1203.950 meters
 Height Above Ellipsoid: 1178.084 meters
 Survey Source/Date: BFEC /20-MAR-89
 Datum/Ellipsoid: WGS 1984/WGS 84

Comments: THIS NEW MONUMENT HAS TLRS BOLT INSERTS AND MTLRS MONUMENTS.

Differential Coordinates FROM Observing Monument 7853 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

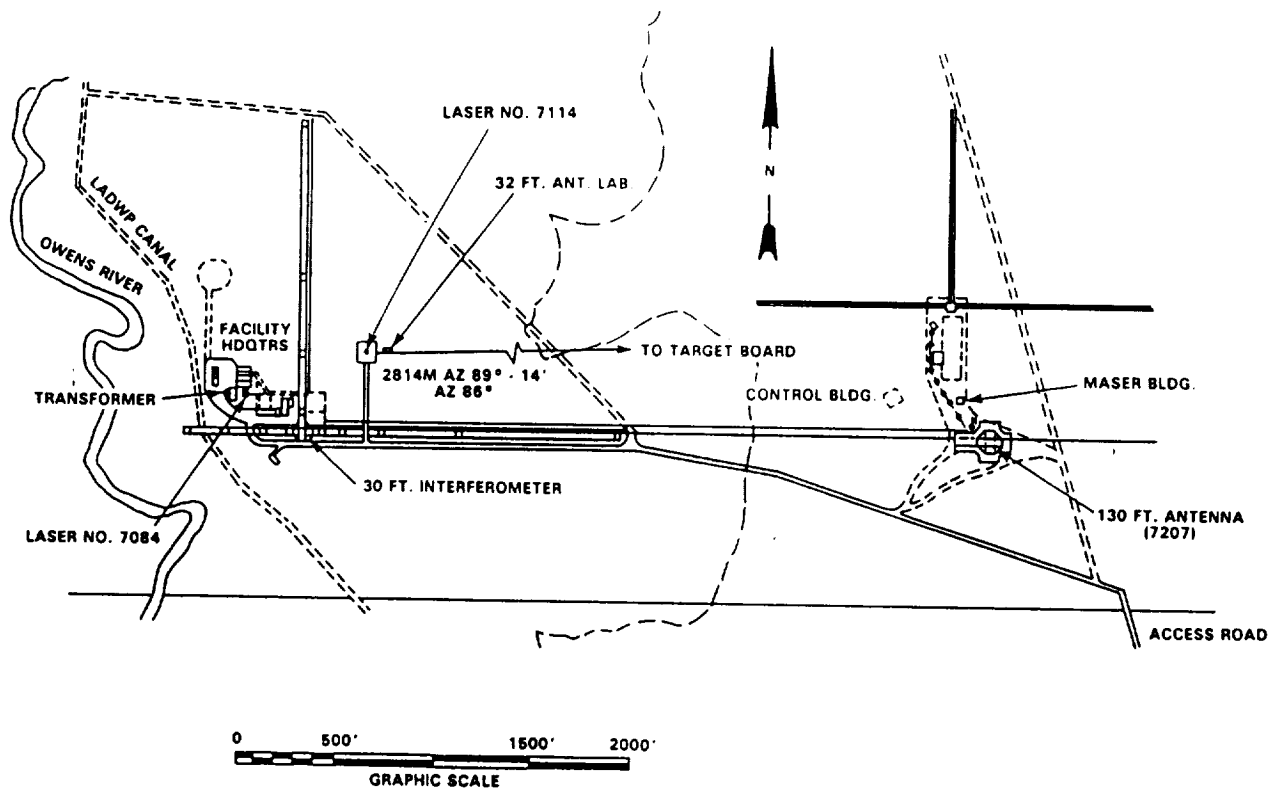
Mon. Number	Monument Inscription	---- Differential Coordinates ----		
		X	Y	Z
7084	GSFC MOBILE LASER NO. 7084	-169.1075	55.2348	-41.4589
7114	MOBLAS 7114 1979	-1.2227	-2.2611	-3.6171
7207	40 METER ANTENNA REF POINT	820.4831	-549.1374	-87.1100
--	7853 1987 A	0.9798	-1.5672	-1.1973
--	7853 1987 B	-0.1638	-2.7990	-3.3445
--	7853 1987 C	-2.4757	-1.4163	-3.1819
--	7853 1987 D	-2.0407	-0.1997	-1.5058
--	7853 RM 1	24.0777	23.5115	41.9183
--	7853 RM 2	31.9394	-33.2441	-19.9301
--	7853 RM 3	-45.2488	7.1264	-21.0157
--	BP ARIES 1 (DOP. 51105)	777.1755	-568.3836	-166.2282
--	7853 CAL PIER 1	242.1403	-70.2059	71.8533
--	7853 CAL PIER 2	-66.4504	-172.7896	-240.0200
--	7853 CAL PIER 3	-126.7464	180.0993	132.4687
--	WEST MONOLITH	626.0284	-411.9901	-79.0140

SITE SKETCH

Site Number: 11

Current Site Name: OWENS VALLEY

Location: OWENS VALLEY RADIO OBS., BIG PINE, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 11

Current Site Name: OWENS VALLEY

Location: OWENS VALLEY RADIO OBS., BIG PINE, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7084	MOBLAS-2	70840201	12-DEC-77	31-MAR-78
7114	MOBLAS-2	71140201	08-JUN-79	31-JAN-81
7114	TLRS-1	71141102	11-AUG-81	29-SEP-81
7114	TLRS-1	71141103	08-NOV-82	21-JAN-83
7853	MTLRS-1	78531501	01-OCT-88	30-NOV-88
7853	MTLRS-1	78531502	27-JUN-90	31-JUL-90

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7207	OVRO 130	72077001	09-SEP-76	---
7616	VLBA	76165401	01-JAN-90	---
7853	MV-3	78535301	01-NOV-87	02-NOV-87

-- SITE INFORMATION --

Site Number: 4

Current Site Name: PALOS VERDES

Other Site Name:

Location: PALOS VERDES, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED ON THE DISMANTLED MISSILE SITE ADJACENT TO THE CITY HALL OF PALOS VERDES. TO REACH THE STATION FROM THE INTERSECTION OF PACIFIC COAST HIGHWAY (ROUTE 1) AND STATE ROUTE 110, PROCEED WEST ON PACIFIC COAST HIGHWAY FOR 4.25 MILES TO A "T" INTERSECTION WITH HAWTHORNE BOULEVARD. TURN LEFT (SOUTH) ONTO HAWTHORNE BLVD. AND PROCEED 6.85 MILES TO THE ENTRANCE OF THE RANCHO PALOS VERDES CITY HALL ON THE LEFT (SOUTH) SIDE OF THE BLVD. TURN LEFT (SOUTH) ONTO THE ENTRANCE ROAD AND PROCEED 0.10 MILES TO AN INTERSECTING ENTRANCE ROAD ON THE LEFT. TURN LEFT AND PROCEED 0.05 MILES, FIRST PASSING TO THE LEFT OF THE TENNIS COURT, THEN TO THE RIGHT OF A ONE STORY BRICK BUILDING (CABLE TV STATION) TO A POINT JUST BEYOND AN OLD GUARD SHACK (BLDG S-200) ON THE RIGHT AND A LOCKED GATE. THE SITE IS A NIKE CONCRETE SLAB LOCATED IN THE NORTH CORNER OF THE FENCED AREA.

ONE MONUMENT COMPATIBLE FOR OCCUPATION BY THE MOBILE VLBI SYSTEMS IS LOCATED ON THIS SLAB.

Site Topo Map: REDONDO BEACH, CALIFORNIA, N3344-W11822.5/8.5 X 7.5, 1963. STATE OF CALIFORNIA, AVAILABLE THROUGH THE U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: LOS ANGELES BASIN

Local Geology: QUATERNARY NON-MARINE TERRACE DEPOSITS

Comments: NONE

MONUMENT INFORMATION

Site Number: 4
 Current Site Name: PALOS VERDES
 Location: PALOS VERDES, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7268
 Type of Monument: NGS STATION DISK
 Monument Inscription: PALOS VERDES ARIES 1976 1980
 Systems Using Monument: MOBILE VLBI

Latitude: N 33 44' 37.51721''
 Longitude: W 118 24' 12.73549''
 Elevation: 105.640 meters
 Height Above Ellipsoid: 69.610 meters
 Survey Source/Date: BFEC HAVAGO ADJUSTMENT/31-MAR-92
 Datum/Ellipsoid: NAD-83 (GRS80)

Comments: NONE.

Differential Coordinates FROM Observing Monument 7268 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	PALOS VERDES ARIES 1 1975	-26.3011	47.2295	51.0606
--	PALOS VERDES ARIES 2 1975	-6.2630	-31.3807	-44.3197
--	PALOS VERDES ARIES 3 1975	-107.7416	29.7025	-39.1639
--	SAN PEDRO HILLS D-7	-357.1040	237.3769	36.3007
--	NEBRASKA 1933 DESTROYED	-358.3878	237.2880	35.3344

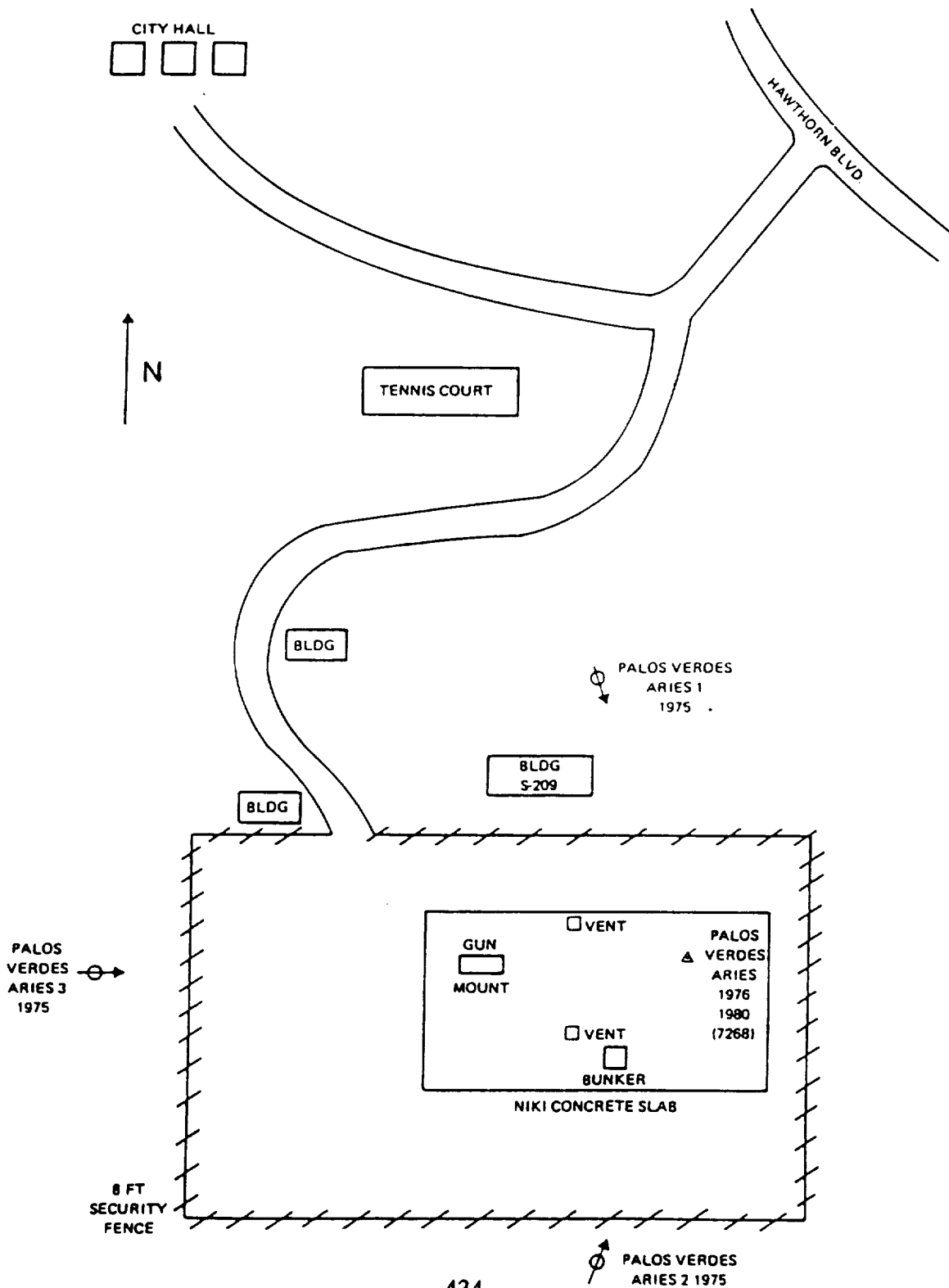
Mon. Number	Monument Inscription	North	East	Up
--	PALOS VERDES ARIES 1 1975	58.5839	-45.6035	4.2207
--	PALOS VERDES ARIES 2 1975	-53.8405	9.4207	0.8141

SITE SKETCH

Site Number: 4

Current Site Name: PALOS VERDES

Location: PALOS VERDES, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 4
Current Site Name: PALOS VERDES
Location: PALOS VERDES, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7268	MV-1	72685101	04-MAR-76	05-MAR-76
7268	MV-1	72685102	13-OCT-76	13-OCT-76
7268	MV-2	72685203	30-JUL-80	31-JUL-80
7268	MV-2	72685204	17-FEB-81	17-FEB-81
7268	MV-2	72685205	26-AUG-81	27-AUG-81
7268	MV-2	72685206	12-NOV-83	13-NOV-83
7268	MV-2	72685207	04-MAR-85	06-MAR-85
7268	MV-2	72685208	25-MAR-87	26-MAR-87
7268	MV-2	72685209	08-DEC-87	09-DEC-87
7268	MV-2	72685210	04-FEB-88	06-FEB-88
7268	MV-2	72685211	23-JAN-89	25-JAN-89

-- SITE INFORMATION --

Site Number: 6

Current Site Name: PASADENA

Other Site Name: JPL MESA

Location: JET PROPULSION LAB, PASADENA, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE SITE IS LOCATED ON A MESA AT THE JET PROPULSION LABORATORY. THE SITE HAS BEEN OCCUPIED BY MOBILE VLBI AND ONE LASER RANGING SYSTEM. IN THE PAST EACH SYSTEM OCCUPIED A UNIQUE MONUMENT. THE SITE IS INSTRUMENTAL IN THE DEVELOPMENT OF THE GLOBAL POSITIONING SYSTEM.

Site Topo Map: PASADENA, CALIFORNIA. N3407.5-W11807.5/7.5, 1966, USGS, RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: LOS ANGELES BASIN/TRANSVERSE RANGES

Local Geology: MESOZOIC GRANITIC ROCKS. THE SITE IS ON THE "SLUSHY" EDGE OF THE PACIFIC PLATE.

Comments: NONE

MONUMENT INFORMATION

Site Number: 6
 Current Site Name: PASADENA
 Other Site Name: JPL MESA
 Location: JET PROPULSION LAB, PASADENA, CA
 Number of Observing Monuments: 4
 Surveyed into National Network? YES

Monument Number: 7263
 Type of Monument: JPL STEEL PLATE (12"x12")
 Monument Inscription: NONE - HOLE IN CENTER
 Systems Using Monument: MOBILE VLBI

Latitude: N 34 12' 18.17872"
 Longitude: W 118 10' 21.00997"
 Elevation:
 Height Above Ellipsoid: 430.250 meters
 Survey Source/Date: NGS/ 05-SEP-86
 Datum/Ellipsoid: NAD 1927/ CLARKE 1866

Comments: NONE

Differential Coordinates FROM Observing Monument 7263 TO
Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	JPL ARIES 1 1975	176.088	-134.553	-21.007
--	JPL ARIES 1 1975 RM 1	183.836	-137.036	-18.800
7896	JPL ARIES 2 1975	94.064	-31.945	55.121
--	JPL ARIES 3 1975	-152.203	28.867	-36.848
--	LA COUNTY ENG (MARK)	99.257	-29.705	61.774
--	MTL C12B	90.408	-28.276	57.431
7264	ARIES 5-B-1 (8/15/78)	-21.464	19.012	10.889
7272	JPL MV-3 (1983)	1.987	-18.063	-22.052

MONUMENT INFORMATION (Continued)

Site Number: 6
 Current Site Name: PASADENA
 Other Site Name: JPL MESA
 Location: JET PROPULSION LAB, PASADENA, CA

Monument Number: 7264
 Type of Monument: STEEL PLATE
 Monument Inscription: ARIES 5-B-1 8-15-78 (PUNCHMARK)
 Systems Using Monument: MOBILE VLBI

Latitude: N 34 12' 18.59185"
 Longitude: W 118 10' 22.09960"
 Elevation:
 Height Above Ellipsoid: 430.892 meters
 Survey Source/Date: NGS/ 05-SEP-86
 Datum/Ellipsoid: NAD 1927/ CLARKE 1866

Comments: THE 4-METER ANTENNA (MV-2) TYPICALLY OCCUPIED THIS MARK

Differential Coordinates FROM Observing Monument 7264 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	JPL ARIES 1 1975	197.552	-153.565	-31.896
--	JPL ARIES 1 1975 RM 1	205.300	-156.048	-29.689
7896	JPL ARIES 2 1975	115.528	-50.957	44.232
--	JPL ARIES 3 1975	-130.739	9.856	-47.738
--	LA COUNTY ENG (MARK)	120.721	-48.717	50.885
--	MTL C12B (MARK)	111.873	-47.287	46.542
7263	--	21.464	-19.012	-10.889
7272	JPL MV3 1983	23.452	-37.074	-32.941

MONUMENT INFORMATION (Continued)

Site Number: 6
 Current Site Name: PASADENA
 Other Site Name: JPL MESA
 Location: JET PROPULSION LAB, PASADENA, CA

Monument Number: 7272
 Type of Monument: JPL DISK
 Monument Inscription: JPL MV3 1983
 Systems Using Monument: MOBILE VLBI

Latitude: N 34 12' 17.31349"
 Longitude: W 118 10' 20.60846"
 Elevation:
 Height Above Ellipsoid: 430.246 meters
 Survey Source/Date: NGS/ 05-SEP-86
 Datum/Ellipsoid: NAD 1927/ CLARKE 1866

Comments: MV-3 PREVIOUSLY OCCUPIED THIS MONUMENT; MODIFICATION OF
 MV-3 MADE THIS MONUMENT UNUSABLE.

Differential Coordinates FROM Observing Monument 7272 TO
 Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	JPL ARIES 1 1975	174.100	-116.490	1.045
--	JPL ARIES 1 1975 RM 1	181.848	-118.974	3.252
7896	JPL ARIES 2 1975	92.076	-13.882	77.173
--	JPL ARIES 3 1975	-154.191	46.930	-14.797
--	LA COUNTY ENG (MARK)	97.269	-11.643	83.826
--	MTL C12B (MARK)	88.421	-10.213	79.483
7263	--	-1.987	18.063	22.052
7896	JPL ARIES 2 1975	92.076	-13.882	77.173

MONUMENT INFORMATION (Continued)

Site Number: 6
 Current Site Name: PASADENA
 Other Site Name: JPL MESA
 Location: JET PROPULSION LAB, PASADENA, CA

Monument Number: 7896
 Type of Monument: NGS STATION DISK
 Monument Inscription: JPL ARIES 2 1975
 Systems Using Monument: TLRS

Latitude: N 34 12' 19.95456
 Longitude: W 118 10' 17.18220"
 Elevation:
 Height Above Ellipsoid: 447.799 meters
 Survey Source/Date: NGS/ 05-SEP-86
 Datum/Ellipsoid: NAD 1927/ CLARKE 1866

Comments: NONE

Differential Coordinates FROM Observing Monument 7896 TO Reference Monuments and Other Observing Monuments

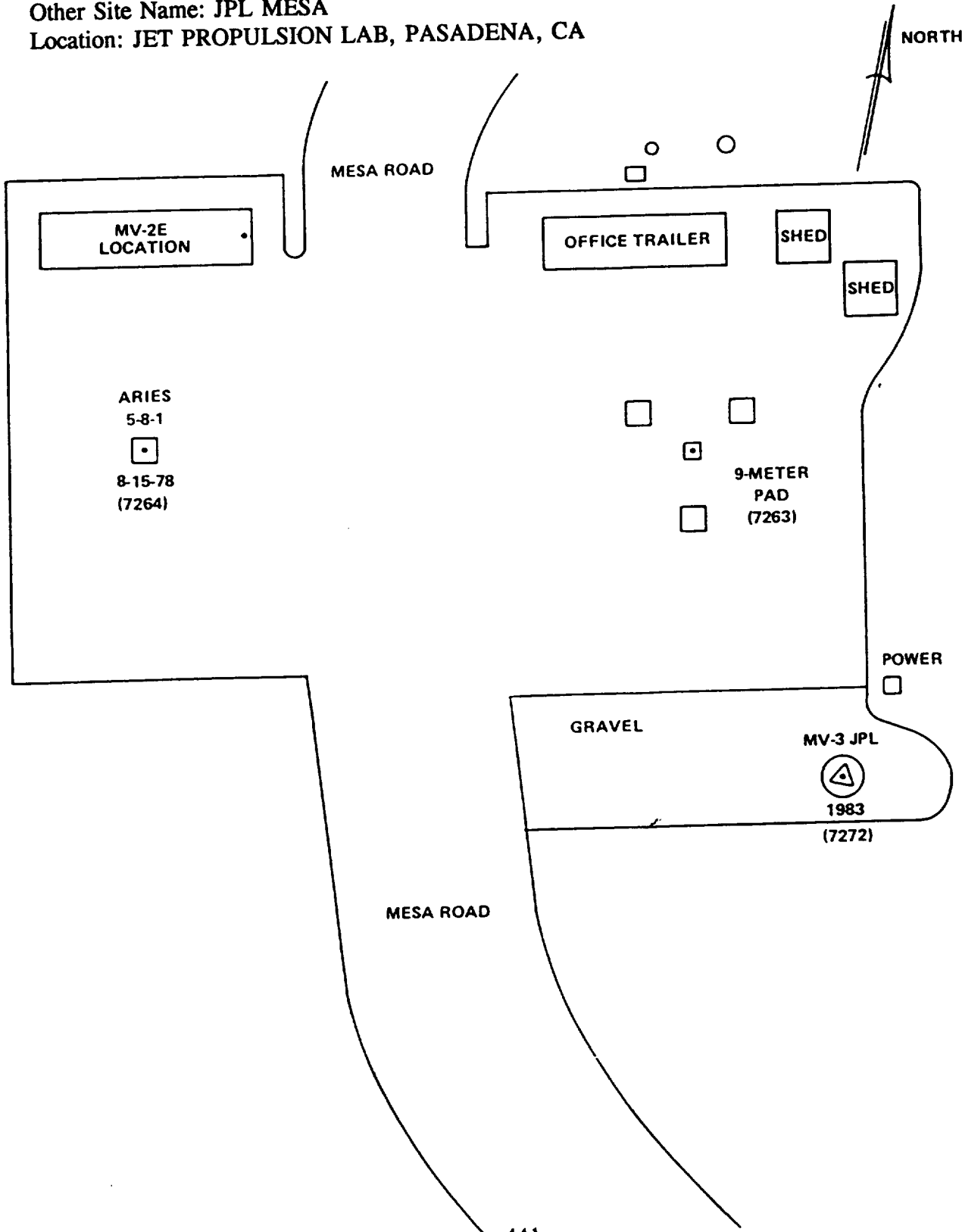
Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	JPL ARIES 1 1975	82.024	-102.608	-76.128
--	JPL ARIES 1 1975 RM 1	89.772	-105.092	-73.921
--	JPL ARIES 3 1975	-246.267	60.812	-91.969
--	LA COUNTY ENG (MARK)	5.193	2.239	6.654
--	MTL C12B (MARK)	-3.655	3.669	2.310
7264	ARIES 5-B-1 (8/15/78)	-115.528	50.957	-44.232
7272	JPL MV-3 (1983)	-92.076	13.882	-77.173

SITE SKETCH

Site Number: 6
Current Site Name: PASADENA
Other Site Name: JPL MESA
Location: JET PROPULSION LAB, PASADENA, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 6

Current Site Name: PASADENA

Other Site Name: JPL MESA

Location: JET PROPULSION LAB, PASADENA, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7896	TLRS-1	78961101	24-OCT-80	06-JAN-81

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7263	MV-1	72635101	25-AUG-74	03-AUG-75
7263	MV-1	72635102	15-JAN-76	27-JAN-76
7263	MV-1	72635103	19-AUG-76	21-AUG-76
7263	MV-1	72635104	19-AUG-77	18-OCT-77
7263	MV-1	72635105	08-MAY-78	05-FEB-80
7263	MV-1	72635106	10-JUN-80	12-JUN-80
7263	MV-1	72635107	10-DEC-81	28-FEB-83
7263	MV-3	72635308	09-APR-84	10-APR-84
7263	MV-2	72635209	22-OCT-84	29-OCT-84
7263	MV-2	72635210	18-JAN-85	19-JAN-85
7263	MV-2	72635211	07-MAR-85	08-MAR-85
7263	MV-2	72635212	27-OCT-85	31-OCT-85
7263	MV-3	72635313	13-APR-86	14-APR-86
7263	MV-2	72635214	22-OCT-86	23-OCT-86
7263	MV-3	72635315	04-NOV-86	05-NOV-86
7263	MV-2	72635216	16-DEC-86	17-DEC-86
7263	MV-3	72635317	27-JAN-87	29-JAN-87
7263	MV-2	72635218	18-OCT-87	19-OCT-87
7263	MV-3	72635319	14-DEC-87	15-DEC-87

PREVIOUS OCCUPATION INFORMATION

Site Number: 6
Current Site Name: PASADENA
Other Site Name: JPL MESA
Location: JET PROPULSION LAB, PASADENA, CA

-- VLBI OCCUPATIONS (Continued) --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7263	MV-2	72635220	02-FEB-88	04-FEB-88
7263	MV-2	72635221	03-NOV-88	05-NOV-88
7264	MV-2	72645201	16-JAN-79	16-JAN-79
7264	MV-2	72645202	05-JAN-80	09-JAN-80
7264	MV-2	72645203	28-JUL-80	29-JUL-80
7264	MV-2	72645204	01-NOV-80	03-NOV-80
7264	MV-2	72645205	14-FEB-81	15-FEB-81
7264	MV-2	72645206	11-MAY-81	12-MAY-81
7264	MV-2	72645207	24-AUG-81	25-AUG-81
7264	MV-2	72645208	22-AUG-83	23-AUG-83
7264	MV-2	72645209	29-OCT-83	01-NOV-83
7264	MV-2	72645210	20-FEB-84	21-FEB-84
7272	MV-3	72725301	29-JUN-83	30-JUN-83

-- SITE INFORMATION --

Site Number: 42

Current Site Name: PATRICK

Other Site Name:

Location: PATRICK AIR FORCE BASE, FL

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: NONE

Site Description: SITES ARE LOCATED ON PATRICK AIR FORCE BASE. RAMLAS IS LOCATED ON THE WEST SIDE OF HANGER 986. THE MOBILE LASER SITE IS LOCATED IN A FENCED BLACK-TOP PARKING AREA AT THE RML SITE. RAMLAS WAS DEACTIVATED ON 9/30/80.

Site Topo Map:

GEOLOGICAL INFORMATION

Geological Province: COASTAL PLAIN

Local Geology:

Comments: NONE

MONUMENT INFORMATION

Site Number: 42
Current Site Name: PATRICK
Location: PATRICK AIR FORCE BASE, FL
Number of Observing Monuments: 2
Surveyed into National Network? NO

Monument Number: 7069
Type of Monument: BRASS DISK SET CONCRETE PAD
Monument Inscription: UNDER 1968
Systems Using Monument: RAMLAS FIXED

Latitude: N 28 13' 40.6604''
Longitude: W 80 36' 20.5557''
Elevation: 6.533 meters
Height Above Ellipsoid: -22.55
Survey Source/Date: DMA DET 4/06-MAY-92
Datum/Ellipsoid: NAD83/ GRS 80

Comments: THERE IS A SEVEN METER DOME OVER THE MARK.

Differential Coordinates FROM Observing Monument 7069 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

MONUMENT INFORMATION (Continued)

Site Number: 42
Current Site Name: PATRICK
Location: PATRICK AIR FORCE BASE, FL

Monument Number: 7081
Type of Monument: STANDARD DMA DISK SET IN CONCRETE
Monument Inscription: MOB LASER 7081
Systems Using Monument: MOBLAS-2

Latitude: N 28 13' 40.7630"
Longitude: W 80 36' 22.6805"
Elevation: 1.855 meters
Height Above Ellipsoid: -27.24
Survey Source/Date: DMA DET 4/06-MAY-92
Datum/Ellipsoid: NAD83/ GRS 80

Comments: NONE

Differential Coordinates FROM Observing Monument 7081 TO
Reference Monuments and Other Observing Monuments

Data Source:

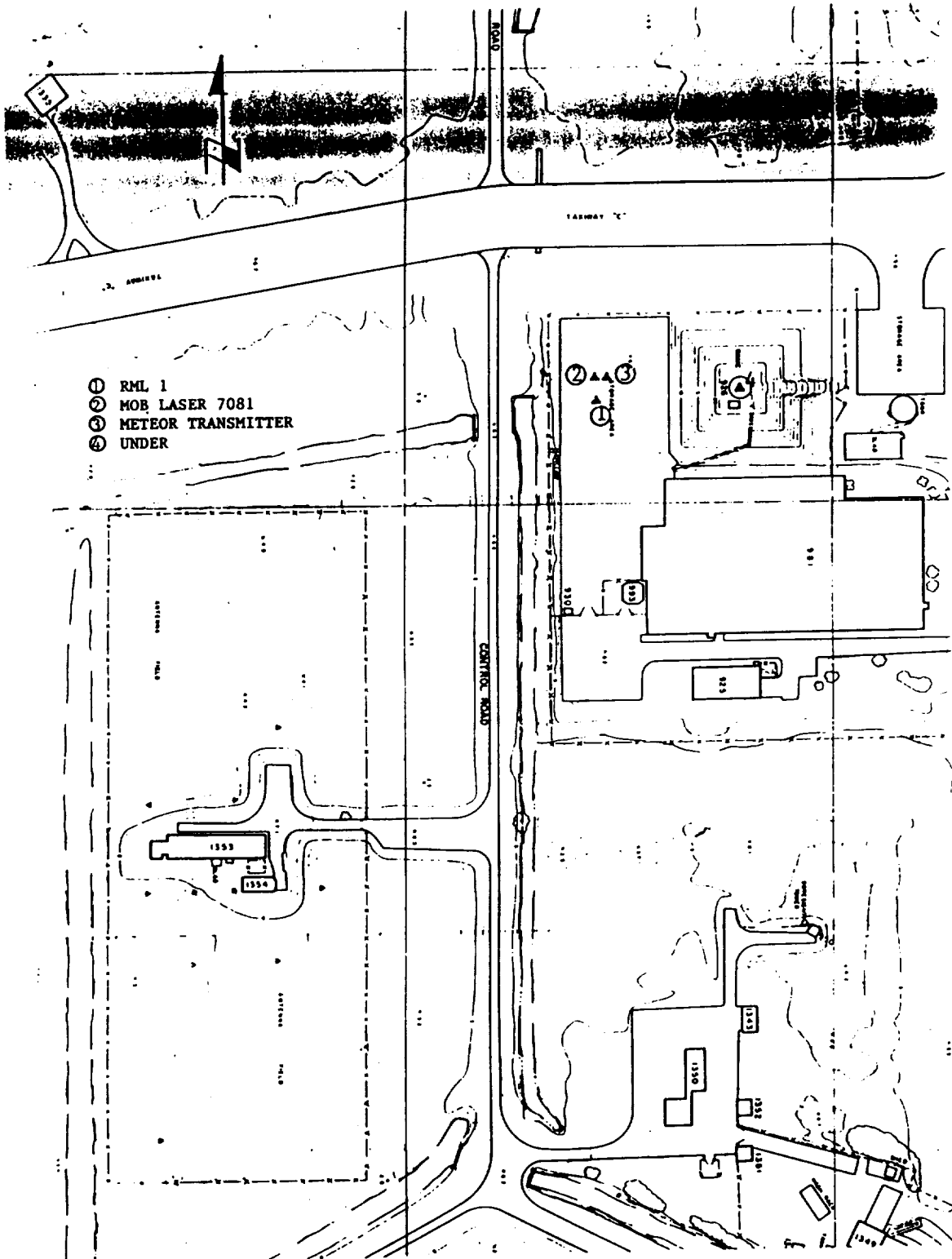
-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 42

Current Site Name: PATRICK

Location: PATRICK AIR FORCE BASE, FL



PREVIOUS OCCUPATION INFORMATION

Site Number: 42

Current Site Name: PATRICK

Location: PATRICK AIR FORCE BASE, FL

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7069	RAMLAS	70692201	01-MAY-76	30-SEP-80
7081	MOBLAS-2	70810201	12-APR-76	07-MAY-76

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 7

Current Site Name: PEARBLOSSOM

Other Site Name:

Location: PEARBLOSSOM, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE SITE IS LOCATED AT THE PEARBLOSSOM AQUEDUCT PUMPING STATION OF THE CALIFORNIA DEPARTMENT OF WATER RESOURCES, ABOUT ONE MILE NORTHWEST OF THE TOWN OF PEARBLOSSOM. THE SITE IS IN THE NORTHEAST CORNER OF A FENCED MACADAM-SURFACED PARKING LOT. THE SITE IS EQUIPPED WITH AN OBSERVING MONUMENT SURROUNDED BY A THREE-PEDESTAL PAD FOR OCCUPATION BY ANY MOBILE VLBI SYSTEM.

Site Topo Map: LITTLE ROCK, CALIFORNIA. N3430-W11752.5/7.5, 1957, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: MOJAVE DESERT

Local Geology: QUATERNARY ALLUVIUM. STRAIN AT THIS SITE IS COMPLEX BECAUSE ITS PROXIMITY TO THE SAN ANDREAS FAULT ZONE.

Comments: NONE

MONUMENT INFORMATION

Site Number: 7
 Current Site Name: PEARBLOSSOM
 Location: PEARBLOSSOM, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7253
 Type of Monument: NAIL IN CONCRETE
 Monument Inscription: NONE
 Systems Using Monument: MOBILE VLBI

Latitude: N 34 30' 43.67359''
 Longitude: W 117 55' 17.32628''
 Elevation:
 Height Above Ellipsoid: 896.648 meters
 Survey Source/Date: NGS /03-SEP-86
 Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: THIS NAIL WAS REPLACED BY THE NGS MONUMENT 7254.

Differential Coordinates FROM Observing Monument 7253 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	BM A 1303	-3.291	4.300	3.246
--	PB ARIES 1 1976 (DOP. 51218)	23.708	15.726	36.551
--	PB ARIES 2 1976	3.944	-21.788	-25.137
--	PB ARIES 3 1976	-31.293	15.908	-3.331

Mon. Number	Monument Inscription	North	East	Up
--	BM A 1303	3.955	-4.922	-0.022
--	PB ARIES 1 1976 (DOP. 51218)	44.282	13.583	0.113
--	PB ARIES 2 1976	-30.574	13.688	0.098
--	PB ARIES 3 1976	-3.083	-35.099	-1.394

MONUMENT INFORMATION (Continued)

Site Number: 7
 Current Site Name: PEARBLOSSOM
 Location: PEARBLOSSOM, CA

Monument Number: 7254
 Type of Monument: NGS STATION DISK
 Monument Inscription: PEARBLOSSOM NCMN 1983
 Systems Using Monument: MOBILE VLBI

Latitude: N 34 30' 43.67357''
 Longitude: W 117 55' 17.32653''
 Elevation:
 Height Above Ellipsoid: 896.648 meters
 Survey Source/Date: NGS/21-SEP-84
 Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: THIS NGS DISK REPLACES THE NAIL (MONUMENT NUMBER 7253).

Differential Coordinates FROM Observing Monument 7254 TO
 Reference Monuments and Other Observing Monuments

Data Source: NGS /86-09-03

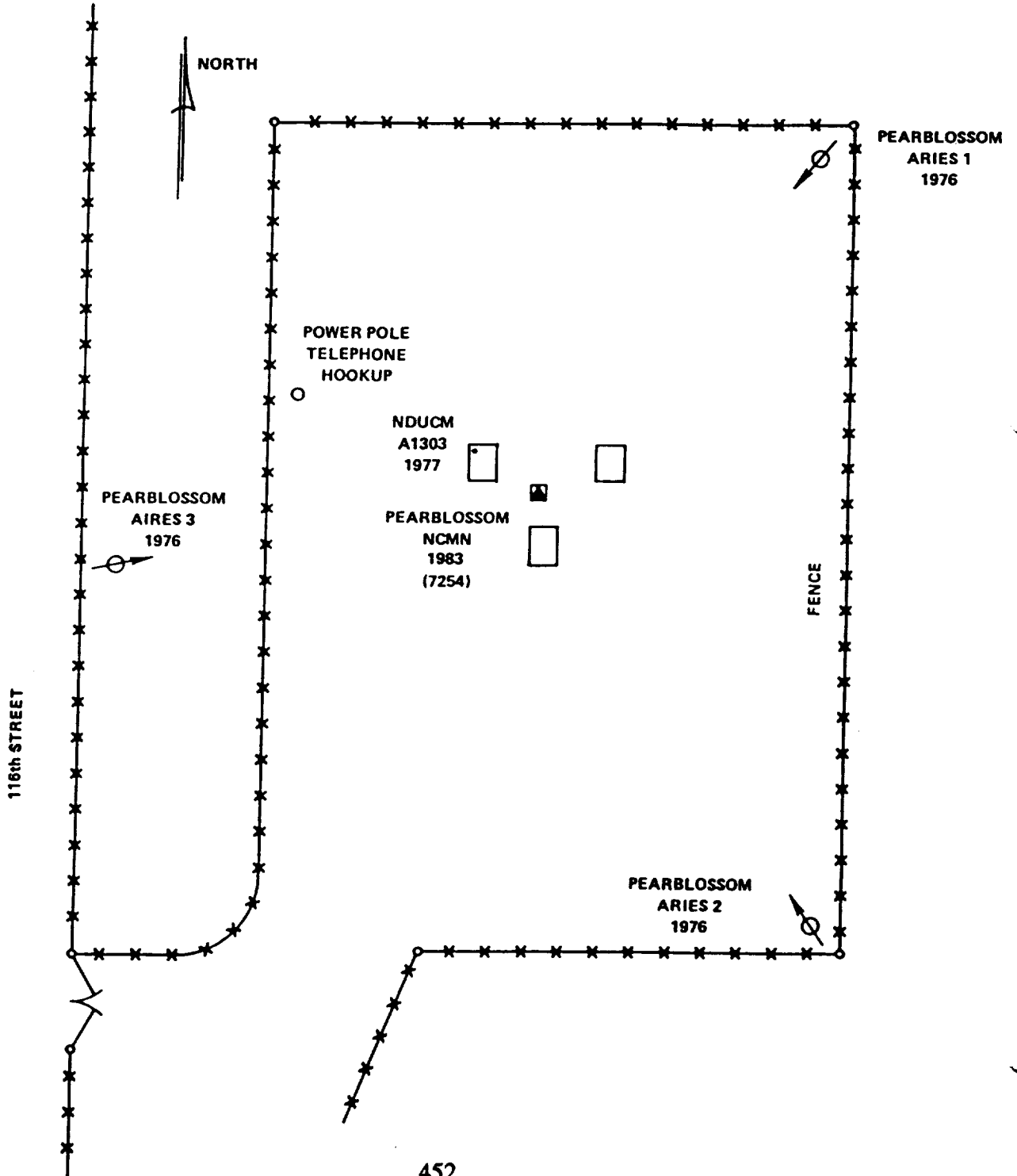
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7253	PB ARIES (NAIL HEAD)	0.006	-0.003	0.000
--	BM A 1303	-3.285	4.298	3.247
--	PB ARIES 1 1976 (DOP. 51218)	23.713	15.724	36.552
--	PB ARIES 2 1976	3.950	-21.791	-25.137
--	PB ARIES 3 1976	-31.287	15.905	-3.330

Mon. Number	Monument Inscription	North	East	Up
7253	PB ARIES (NAIL HEAD)	0.000	0.006	0.000
--	BM A 1303	3.955	-4.915	-0.022
--	PB ARIES 1 1976 (DOP. 51218)	44.282	13.590	0.113
--	PB ARIES 2 1976	-30.574	13.695	0.098
--	PB ARIES 3 1976	-3.083	-35.093	-1.395

SITE SKETCH

Site Number: 7
Current Site Name: PEARBLOSSOM
Location: PEARBLOSSOM, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 7
Current Site Name: PEARBLOSSOM
Location: PEARBLOSSOM, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7253	MV-1	72535101	06-JUN-76	07-JUN-76
7253	MV-1	72535102	14-NOV-77	16-NOV-77
7253	MV-2	72535203	18-FEB-81	19-FEB-81
7253	MV-2	72535204	27-AUG-81	29-AUG-81
7253	MV-3	72535305	21-FEB-83	21-FEB-83
7254	MV-3	72545301	22-AUG-83	23-AUG-83
7254	MV-3	72545302	29-OCT-83	30-OCT-83
7254	MV-3	72545303	20-FEB-84	21-FEB-84
7254	MV-3	72545304	25-OCT-84	26-OCT-84
7254	MV-3	72545305	07-MAR-85	08-MAR-85
7254	MV-3	72545306	27-OCT-85	28-OCT-85
7254	MV-2	72545207	27-JAN-87	29-JAN-87
7254	MV-2	72545208	15-OCT-87	16-OCT-87
7254	MV-2	72545209	14-DEC-87	15-DEC-87
7254	MV-3	72545310	07-FEB-88	09-FEB-88

-- SITE INFORMATION --

Site Number: 69

Current Site Name: PENTICTON

Other Site Name:

Location: PENTICTON, BRITISH COLUMBIA, CANADA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF INTERNAL PLATE DEFORMATION/PLATE STABILITY.

Site Description: THE SITE IS LOCATED ON THE PROPERTY OF THE DOMINION RADIO ASTRONOMY OBSERVATORY (DRAO), SOUTH OF PENTICTON. THE FACILITIES INCLUDE A 26-METER ANTENNA, A FIXED ANTENNA ARRAY, AND A SYNTHESIS INTERFEROMETER EMPLOYING TWO MOVEABLE AND TWO FIXED 8.5-METER ANTENNAS. THE SITE IS EQUIPPED WITH AN OBSERVING MONUMENT THAT CAN ACCOMODATE ANY MOBILE VLBI SYSTEM.

Site Topo Map: PENTICTON 82E/5, EDITION 2, 1978, 1:50,000 TOPOGRAPHIC MAP SERIES. AVAILABLE FROM CANADA MAP OFFICE, DEPARTMENT OF ENERGY, MINES AND RESOURCES, OTTAWA.

GEOLOGICAL INFORMATION

Geological Province: COLUMBIA INTERMONTANE BELT

Local Geology: THE SITE IS ON GLACIAL AND RECENT SEDIMENTARY DEPOSITS THAT LIE ON A THICK SEQUENCE OF EARLY TERTIARY ROCKS OF DISCONTINUOUS BEDS OF BRECCIA, CONGLOMERATE, ANDESITE AND RHYODASITE LAVA, AND VOLCANIC SANDSTONE overlain by lake and stream fan conglomerates.

Comments: NONE

MONUMENT INFORMATION

Site Number: 69
 Current Site Name: PENTICTON
 Location: PENTICTON, BRITISH COLUMBIA, CANADA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7283
 Type of Monument: BRONZE TABLET IN TOP OF A TRUNCATED CONCRETE
 PYRAMID
 Monument Inscription: 837030
 Systems Using Monument: MOBILE VLBI

Latitude: N 49 19' 21.29672''
 Longitude: W 119 37' 11.56464''
 Elevation: 545.859 meters
 Height Above Ellipsoid:
 Survey Source/Date: EMR/01-JUN-92
 Datum/Ellipsoid: NAD83/ GRS 80

Comments: NONE.

Differential Coordinates FROM Observing Monument 7283 TO
Reference Monuments and Other Observing Monuments

Data Source: EMR

---- Differential Coordinates ----

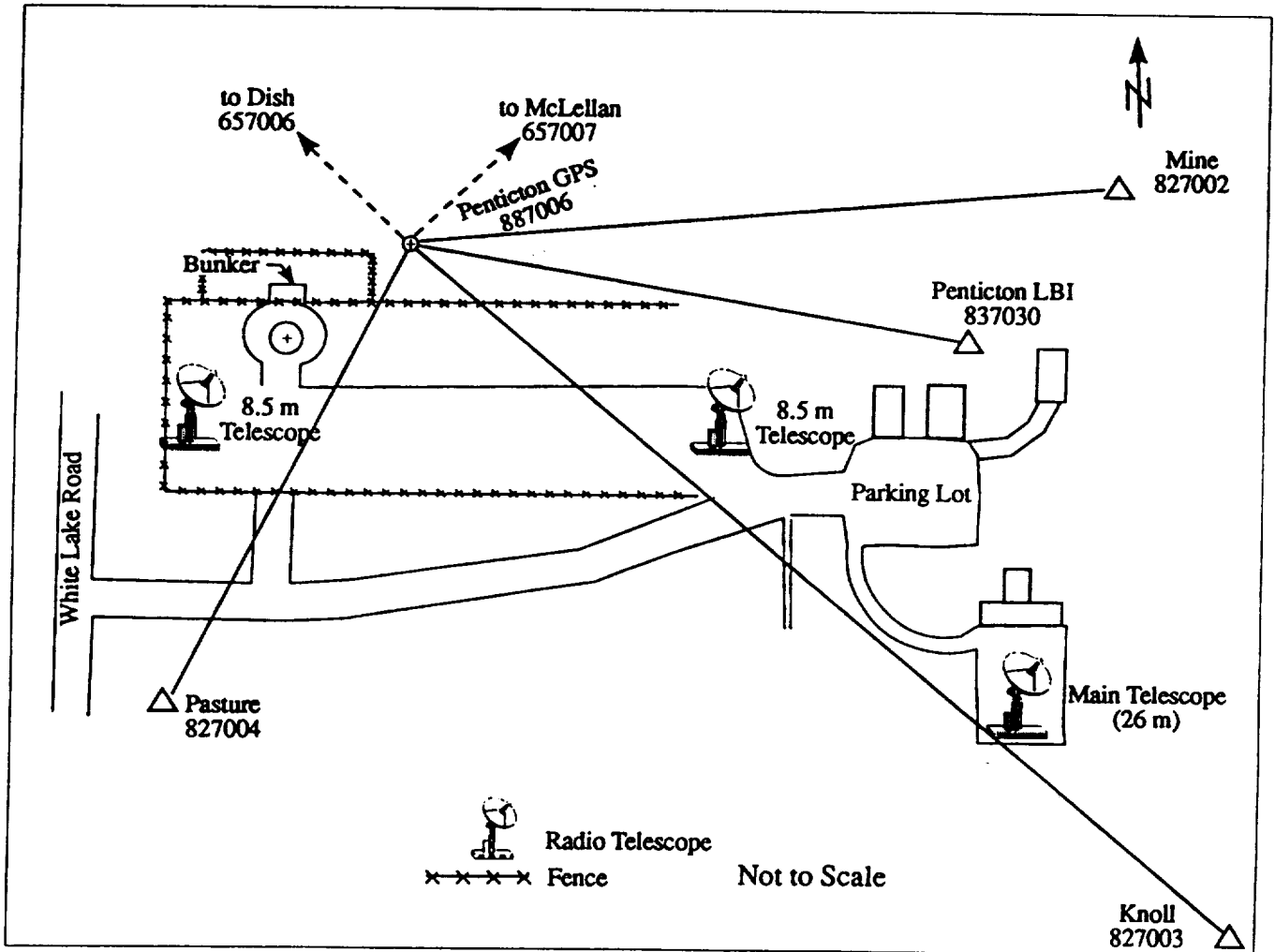
Mon. Number	Monument Inscription	X	Y	Z
--	PENTICTON GPS	-324.180	178.052	11.636

SITE SKETCH

Site Number: 69

Current Site Name: PENTICTON

Location: PENTICTON, BRITISH COLUMBIA, CANADA



PREVIOUS OCCUPATION INFORMATION

Site Number: 69

Current Site Name: PENTICTON

Location: PENTICTON, BRITISH COLUMBIA, CANADA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7283	MV-2	72835201	11-AUG-84	18-AUG-84
7283	MV-2	72835202	28-AUG-85	29-AUG-85
7283	MV-2	72835203	23-JUL-90	25-JUL-90

-- SITE INFORMATION --

Site Number: 229

Current Site Name: PIETOWN

Other Site Name:

Location: PIETOWN, NM

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE STATION IS LOCATED AT THE NRAO VLBA FACILITY NEAR PIETOWN. THE STATION IS 21 MILES NORTH OF DATIL, NM.

Site Topo Map:

GEOLOGICAL INFORMATION

Geological Province:

Local Geology:

Comments: NONE

MONUMENT INFORMATION

Site Number: 229
 Current Site Name: PIETOWN
 Location: PIETOWN, NM
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7234
 Type of Monument: INTERSECTION OF AXES
 Monument Inscription: NONE
 Systems Using Monument: 25-METER VLBA

Latitude: N 34 18' 03.65096"
 Longitude: W 108 07' 09.04376"
 Elevation: 2385.94 meters
 Height Above Ellipsoid: 2365.035 meters
 Survey Source/Date: BFEC/ 05-JAN-1993
 Datum/Ellipsoid: NAD83/ GRS 80

Comments: NONE

Differential Coordinates FROM Observing Monument 7234 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	PIE TOWN VLBI 1988 (NGS)	-29.3183	-221.1968	-309.0211
--	PIE TOWN VLBA RM 1	60.1494	28.5862	34.6957
--	PIE TOWN VLBA RM 2	-69.4865	-135.7720	-208.7317
--	PIE TOWN VLBA RM 3	-265.2430	73.8394	-6.4496
4009-S	JPL/NASA GPS PIER	36.9162	34.8267	35.2550

Mon. Number	Monument Inscription	North	East	Up
--	PIE TOWN VLBA RM 1	54.5143	48.2762	-18.3444
4009-S	JPL/NASA GPS PIER	54.2468	24.2543	-16.9599

PREVIOUS OCCUPATION INFORMATION

Site Number: 229
Current Site Name: PIETOWN
Location: PIETOWN, NM

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7234	25-METER	72348601	01-JAN-88	---

- SITE INFORMATION -

Site Number: 204

Current Site Name: PINYON FLAT

Other Site Name:

Location: PINYON FLAT, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED IN SOUTH CENTRAL CALIFORNIA ABOUT TEN MILES SOUTH OF PALM DESERT, OFF HIGHWAY 74 ON THE PINYON FLAT GEOPHYSICAL OBSERVATORY OPERATED BY THE UNIVERSITY OF CALIFORNIA AT SAN DIEGO. THE SITE IS EQUIPPED WITH ONE 16' X 16' MONUMENTED PAD WITH THREE ARIES PEDESTALS SURROUNDING THE PAD. THE SITE IS COMPATIBLE FOR OCCUPATION BY ANY MOBILE VLBI SYSTEM.

Site Topo Map: PALM DESERT, CALIFORNIA. N3330-W11615/15, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: PENINSULA RANGES; SAN JACINTO MOUNTAINS, MIDWAY BETWEEN SAN ANDREAS FAULT AND SAN JACINTO FAULT.

Local Geology: QUATERNARY ALLUVIUM (SANDY). MESOZOIC GRANITIC ROCKS IN THE AREA. SITE IS LOCATED AMID A COMPLEX PATTERN OF FAULTS, SO DETECTED MOTION AT THIS SITE MAY NOT REFLECT TRUE PACIFIC PLATE MOTION.

Comments: OTHER GEOPHYSICAL INSTRUMENTS OPERATED ON SITE INCLUDE: GRAVITY METER, MAGNETOMETER, TILTMETER, AND STRAIN METER.

MONUMENT INFORMATION

Site Number: 204
 Current Site Name: PINYON FLAT
 Location: PINYON FLAT, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7256
 Type of Monument: NGS STATION DISK
 Monument Inscription: PINYON FLAT NCMN 1981
 Systems Using Monument: MOBILE VLBI

Latitude: 'N 33 36' 33.29394''
 Longitude: W 116 27' 31.68449''
 Elevation: 1267.16 meters
 Height Above Ellipsoid: 1236.519 meters
 Survey Source/Date: BFEC/ 23-OCT-92
 Datum/Ellipsoid: ITRF-90

Comments: NONE

Differential Coordinates FROM Observing Monument 7256 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	51261 PINYON FLAT DMAHTC	-13.7793	21.8608	21.9004
--	51261 PINYON FLAT DMAHTC 1	-1.6018	16.7163	23.5294
--	51261 PINYON FLAT DMAHTC 2	-20.2898	27.2328	24.6944
--	PINYON FLAT AZ. MK.	-58.3547	-679.9495	-943.5120
--	PINYON FLAT NCMN NO 1 1981	31.7267	8.5559	37.7442
--	PINYON FLAT NCMN NO 2 1981	28.7333	-32.3525	-25.1006
--	PINYON FLAT NCMN NO 3 1981	-29.1419	11.3626	-5.8443
--	PINYON FLAT NCMN NO 4 1981	27.2767	-30.2358	-23.5932

Monument Number: 7256
 Type of Monument: NGS STATION DISK
 Monument Inscription: PINYON FLAT NCMN 1981
 Systems Using Monument: MOBILE VLBI

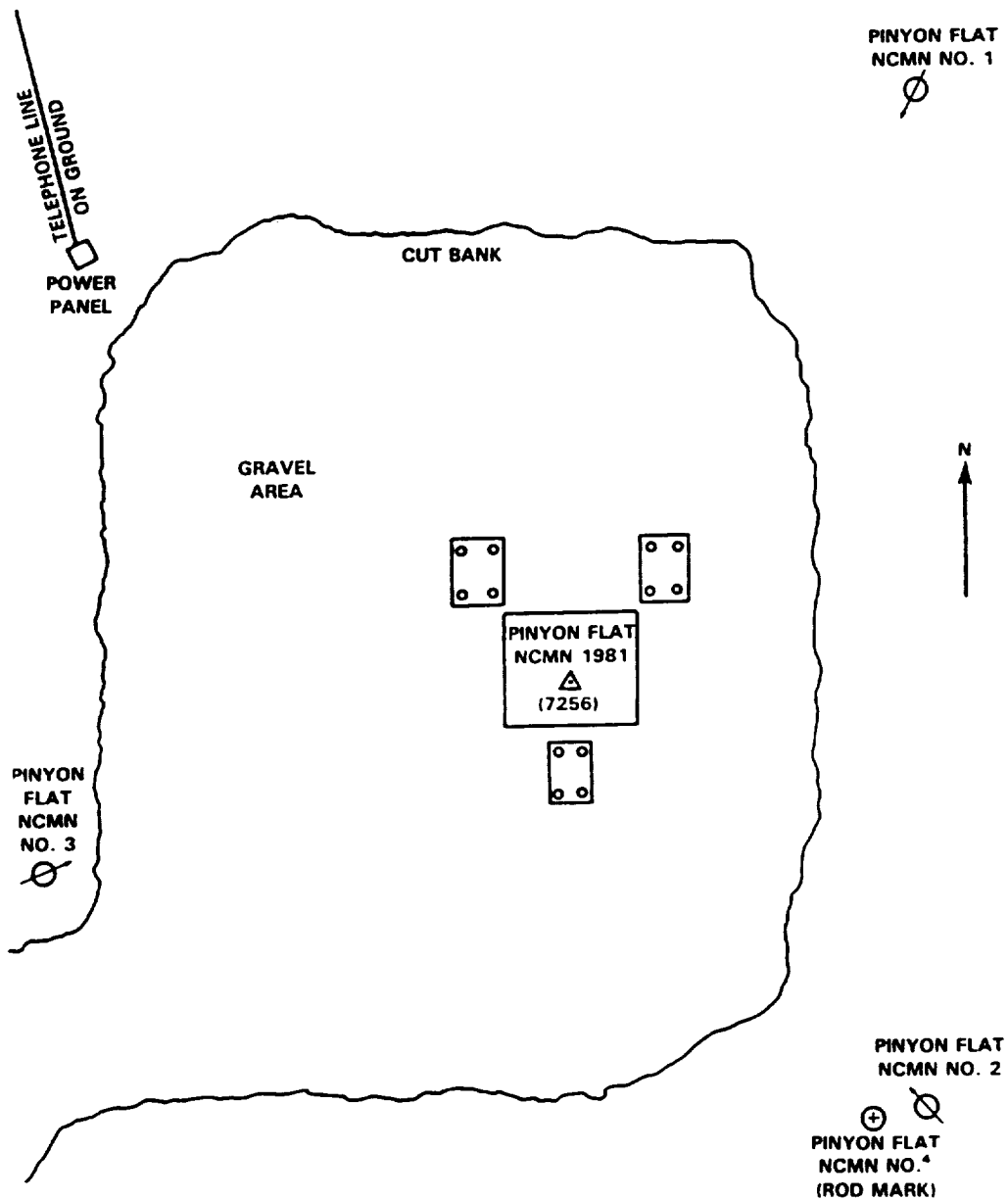
Differential Coordinates FROM Observing Monument 7256 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	51261 PINYON FLAT DMAHTC	25.6745	-22.0757	0.9363
--	51261 PINYON FLAT DMAHTC 1	27.4848	-8.8815	1.1554
--	51261 PINYON FLAT DMAHTC 2	29.0579	-30.2977	0.8932
--	PINYON FLAT NCMN NO 1 1981	43.4986	24.5921	2.7421
--	PINYON FLAT NCMN NO 2 1981	-29.8511	40.1379	-0.4337
--	PINYON FLAT NCMN NO 3 1981	-6.4232	-31.1522	-0.8942
--	PINYON FLAT NCMN NO 4 1981	-27.9059	37.8908	-0.6370

SITE SKETCH

Site Number: 204
Current Site Name: PINYON FLAT
Location: PINYON FLAT, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 204
Current Site Name: PINYON FLAT
Location: PINYON FLAT, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7256	MV-2	72565201	17-MAY-81	19-MAY-81
7256	MV-3	72565302	22-FEB-83	22-FEB-83
7256	MV-3	72565303	31-OCT-83	04-NOV-83
7256	MV-3	72565304	28-OCT-84	01-NOV-84
7256	MV-3	72565305	18-JAN-85	19-JAN-85
7256	MV-3	72565306	30-OCT-85	03-NOV-85
7256	MV-2	72565207	26-FEB-86	27-FEB-86
7256	MV-2	72565208	10-APR-86	14-APR-86
7256	MV-2	72565209	01-NOV-86	05-NOV-86
7256	MV-3	72565310	13-DEC-86	17-DEC-86
7256	MV-3	72565311	30-JAN-87	01-FEB-87
7256	MV-3	72565312	25-MAR-87	26-MAR-87
7256	MV-3	72565313	08-DEC-87	09-DEC-87
7256	MV-3	72565314	04-FEB-88	06-FEB-88
7256	MV-3	72565315	07-MAY-88	09-MAY-88

-- SITE INFORMATION --

Site Number: 24

Current Site Name: PLATTEVILLE

Other Site Name: BOULDER

Location: PLATTEVILLE, CO

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENTS TECHNIQUES.

Site Description: THE SITE IS LOCATED ON AN IONOSPHERE HEATING FIELD STATION UNDER THE NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION, 32 MILES NORTH-NORTHEAST OF DENVER. THE SITE IS EQUIPPED WITH TWO OBSERVING MONUMENTS. ONE MONUMENT IS ON A 34' X 34' MOBLAS PAD OCCUPIED BY MOBLAS-2 FROM 1981 UNTIL LATE 1984. THE OTHER MONUMENT IS THE MIDPOINT OF THE ARIES 3-PEDESTAL PAD CONSTRUCTED FOR MOBILE VLBI OCCUPATION.

Site Topo Map: MILTON RESERVOIR, COLORADO, N4007.5-W10437/7.5, 1950, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: GREAT PLAINS

Local Geology: EOLIAN DEPOSITS, INCLUDES DUNES SAND, SAND AND PEORIA LOESS.

Comments: A PIER SUITABLE FOR PERMANENT GPS OBSERVATIONS WAS ESTABLISHED AT THE SITE IN 1991 (PLATTEVILLE NCMN RM 5). IT IS DESCRIBED AS " A 0.5 METER ROUND CONCRETE POST ENCASED IN A PVC PIPE PROJECTING 1.6 METERS ABOVE GROUND FROM A 1 METER CONCRETE BASE SET 3.4 METERS INTO THE GROUND. A PERMANENT ROUND TRIBRACH WITH THREADBOLT IS CENTERED ON THE POST". SURVEY TIE CURRENTLY NOT AVAILABLE.

MONUMENT INFORMATION

Site Number: 24
 Current Site Name: PLATTEVILLE
 Location: PLATTEVILLE, CO
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7112
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: MOBLAS 7112 1980
 Systems Using Monument: MOBLAS

Latitude: N 40 10' 57.96951''
 Longitude: W 104 43' 33.48514''
 Elevation: 1519.913 meters
 Height Above Ellipsoid: 1502.513 meters
 Survey Source/Date: BFEC/29-JUN-88
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: NONE

Differential Coordinates FROM Observing Monument 7112 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7258	PLATTEVILLE NCMN 1981	-29.8944	9.0355	1.0253
--	7112 PIER-1 (1988)	72.5339	106.1272	150.5930
--	7112 PIER-2 (1988)	205.2441	-183.9354	-153.5472
--	7112 PIER-3 (1988)	-244.3659	48.8742	-7.0957
--	7112-A 1988	1.8968	-1.6853	-1.3267
--	7112-B 1988	0.4001	-2.9398	-3.2180
--	7112-C 1988	-2.1530	-2.0985	-3.0165
--	7112-D 1988	-2.3431	-0.6474	-1.3975
--	PLATTEVILLE NCMN AZ MK (1981)	-1409.0632	-457.7695	-901.1506
--	PLATTEVILLE NCMN RM 1 (1981)	-29.2002	67.0050	72.3624
--	PLATTEVILLE NCMN RM 2 (1981)	47.2811	-25.8334	-17.1748
--	PLATTEVILLE NCMN RM 3 (1981)	-100.2757	-7.4898	-36.6553

Monument Number: 7112
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: MOBLAS 7112 1980
 Systems Using Monument: MOBLAS

Differential Coordinates FROM Observing Monument 7112 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7258	PLATTEVILLE NCMN 1981	1.5186	-31.2092	-0.2091
--	7112-A 1988	-1.7541	2.2629	0.0208
--	7112-B 1988	-4.2274	1.1343	0.0182
--	7112-C 1988	-3.9672	-1.5488	0.0223
--	7112-D 1988	-1.8560	-2.1016	0.0316
--	PLATTEVILLE NCMN RM 2 (1981)	-21.4874	52.2948	-1.1756

MONUMENT INFORMATION (Continued)

Site Number: 24
 Current Site Name: PLATTEVILLE
 Location: PLATTEVILLE, CO

Monument Number: 7258
 Type of Monument: NGS STATION DISK
 Monument Inscription: PLATTEVILLE NCMN 1981
 Systems Using Monument: MOBILE VLBI

Latitude: N 40° 10' 58.01873''
 Longitude: W 104° 43' 34.80406''
 Elevation: 1519.704 meters
 Height Above Ellipsoid: 1502.304 meters
 Survey Source/Date: BFEC /29-JUN-88
 Datum/Ellipsoid: NAD 1983/GRS-80

Comments: NONE

Differential Coordinates FROM Observing Monument 7258 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7112	MOBLAS 7112 1980	29.8944	-9.0355	-1.0253
--	7112 PIER-1 (1988)	102.4283	97.0917	149.5677
--	7112 PIER-2 (1988)	235.1385	-192.9708	-154.5725
--	7112 PIER-3 (1988)	-214.4715	39.8388	-8.1210
--	PLATTEVILLE NCMN AZ MK (1981)	-1379.1688	-466.8049	-902.1759
--	PLATTEVILLE NCMN RM 1 (1981)	0.6942	57.9696	71.3371
--	PLATTEVILLE NCMN RM 2 (1981)	77.1755	-34.8688	-18.2000
--	PLATTEVILLE NCMN RM 3 (1981)	-70.3813	-16.5253	-37.6806

Monument Number: 7258
 Type of Monument: NGS STATION DISK
 Monument Inscription: PLATTEVILLE NCMN 1981
 Systems Using Monument: MOBILE VLBI

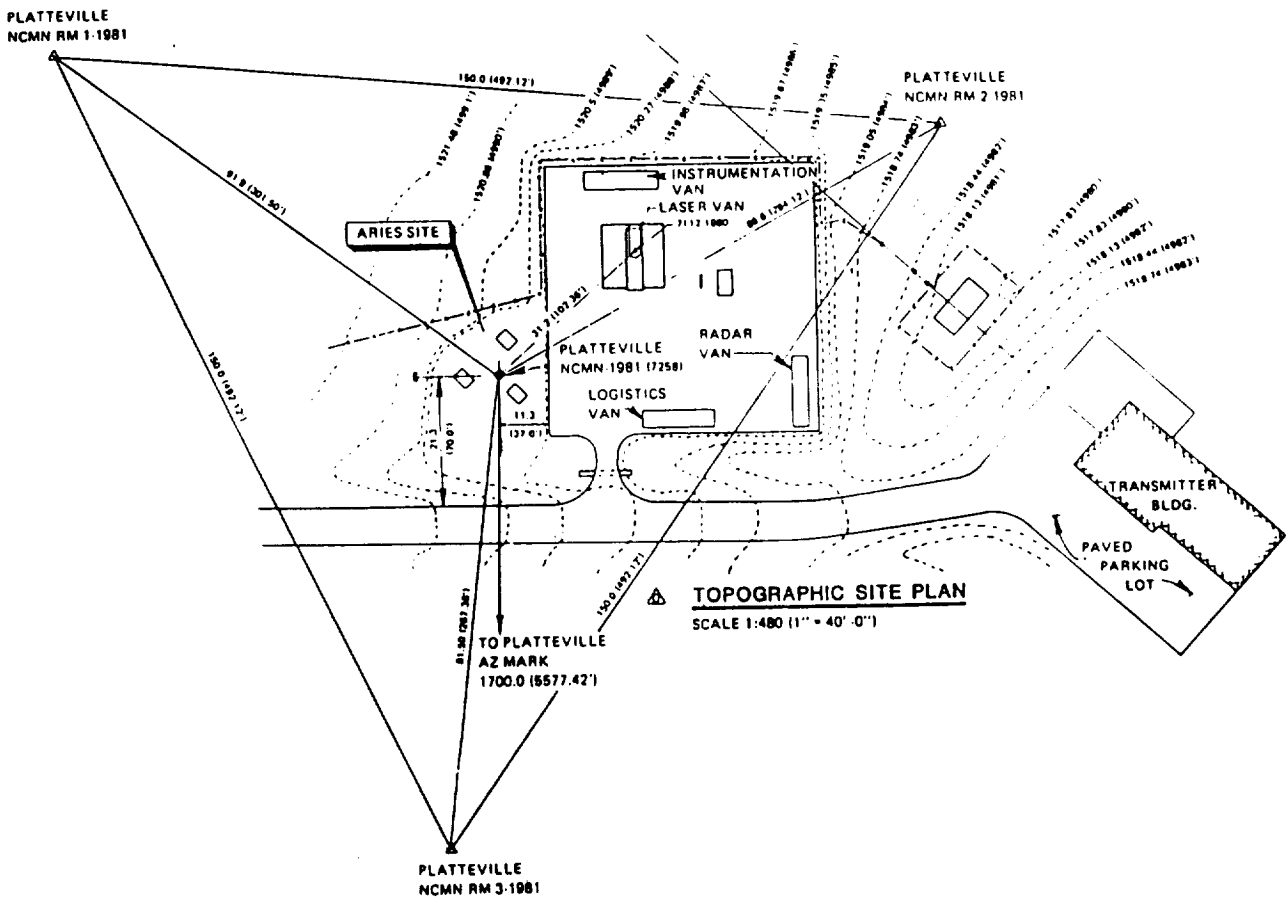
Differential Coordinates FROM Observing Monument 7258 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7112	MOBLAS 7112 1980	-1.5186	31.2092	0.2091
--	PLATTEVILLE NCMN RM 1 (1981)	90.7896	-14.0646	3.0605
--	PLATTEVILLE NCMN RM 2 (1981)	-23.0057	83.5041	-0.9669
--	PLATTEVILLE NCMN RM 3 (1981)	-50.6438	-63.8685	1.5666

SITE SKETCH

Site Number: 24
Current Site Name: PLATTEVILLE
Location: PLATTEVILLE, CO



PREVIOUS OCCUPATION INFORMATION

Site Number: 24

Current Site Name: PLATTEVILLE

Location: PLATTEVILLE, CO

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7112	MOBLAS-2	71120201	01-APR-81	13-OCT-84
7112	MTLRS-1	71121502	30-JUL-88	30-SEP-88
7112	TLRS-4	71121403	26-JAN-90	23-FEB-90
7112	MTLRS-1	71121504	06-SEP-90	16-OCT-90
7112	TLRS-1	71121105	15-OCT-91	25-DEC-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7258	MV-3	72585301	06-JUN-83	10-JUN-83
7258	MV-2	72585202	17-APR-84	27-APR-84
7258	MV-2	72585203	02-MAY-85	08-MAY-85
7258	MV-3	72585304	26-MAR-86	03-APR-86
7258	MV-3	72585305	01-MAY-87	03-MAY-87
7258	MV-2	72585206	19-APR-88	21-APR-88
7258	MV-3	72585307	14-OCT-88	16-OCT-88
7258	MV-2	72585208	19-APR-89	21-APR-89
7258	MV-2	72585209	26-OCT-90	28-OCT-90

-- SITE INFORMATION --

Site Number: 212

Current Site Name: POINT REYES

Other Site Name:

Location: POINT REYES, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED AT THE POINT REYES COAST GUARD COMMUNICATIONS STATION IN THE POINT REYES NATIONAL SEASHORE AREA AND IS SITUATED IN A PARKING LOT ON THE SIDE OF THE COAST GUARD BUILDING. THE STATION IS AN ISOLATED CONCRETE MONUMENT FLUSH WITH THE TOP OF THE PAVED PARKING LOT AND COMPATIBLE FOR OCCUPATION BY MOBILE VLBI SYSTEMS OR TLRs-1.

Site Topo Map: DRAKES BAY, CALIFORNIA. N3800-W12252.5/7.5. 1953, U.S.G.S. RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: NORTHERN CALIFORNIA COASTAL RANGES

Local Geology: MIDDLE OR LOWER PLEISTOCENE MARINE SEDIMENTS. THIS SITE IS SEVERAL KILOMETERS WEST OF SAN ANDREAS FAULT ZONE.

Comments: THIS SITE IS THE FURTHEST NORTHERN PRACTICAL SITE ON THE PACIFIC SIDE OF THE SAN ANDREAS FAULT.

MONUMENT INFORMATION

Site Number: 212
 Current Site Name: POINT REYES
 Location: POINT REYES, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7251
 Type of Monument: NGS STATION DISK
 Monument Inscription: POINT REYES NCMN 1981
 Systems Using Monument: MOBILE VLBI

Latitude: N 38 06' 12.66554''
 Longitude: W 122 56' 11.69090''
 Elevation: 29.740 meters
 Height Above Ellipsoid: -3.602 meters
 Survey Source/Date: BFEC/26-MAR-92
 Datum/Ellipsoid: NAD-83 (GRS80)

Comments: NONE

Differential Coordinates FROM Observing Monument 7251 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	POINT REYES AZIMUTH MARK 2	-980.6557	-266.0250	-961.2594
--	POINT REYES NCMN AZ. MK.	-980.3726	-266.9851	-961.8656
--	POINT REYES NCMN NO 1 1981	15.2811	-24.0272	-14.3698
--	POINT REYES NCMN NO 2 1981	-44.3128	21.2252	-9.2138
--	POINT REYES NCMN NO 3 1981	12.9849	29.0498	38.5835
--	POINT REYES NCMN RM 4 1981	-6.4816	0.4107	-4.2325
--	POINT REYES NCMN RM 5 1981	-0.0097	-58.5613	-61.2502

Monument Number: 7251
 Type of Monument: NGS STATION DISK
 Monument Inscription: POINT REYES NCMN 1981
 Systems Using Monument: MOBILE VLBI

Differential Coordinates FROM Observing Monument 7251 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

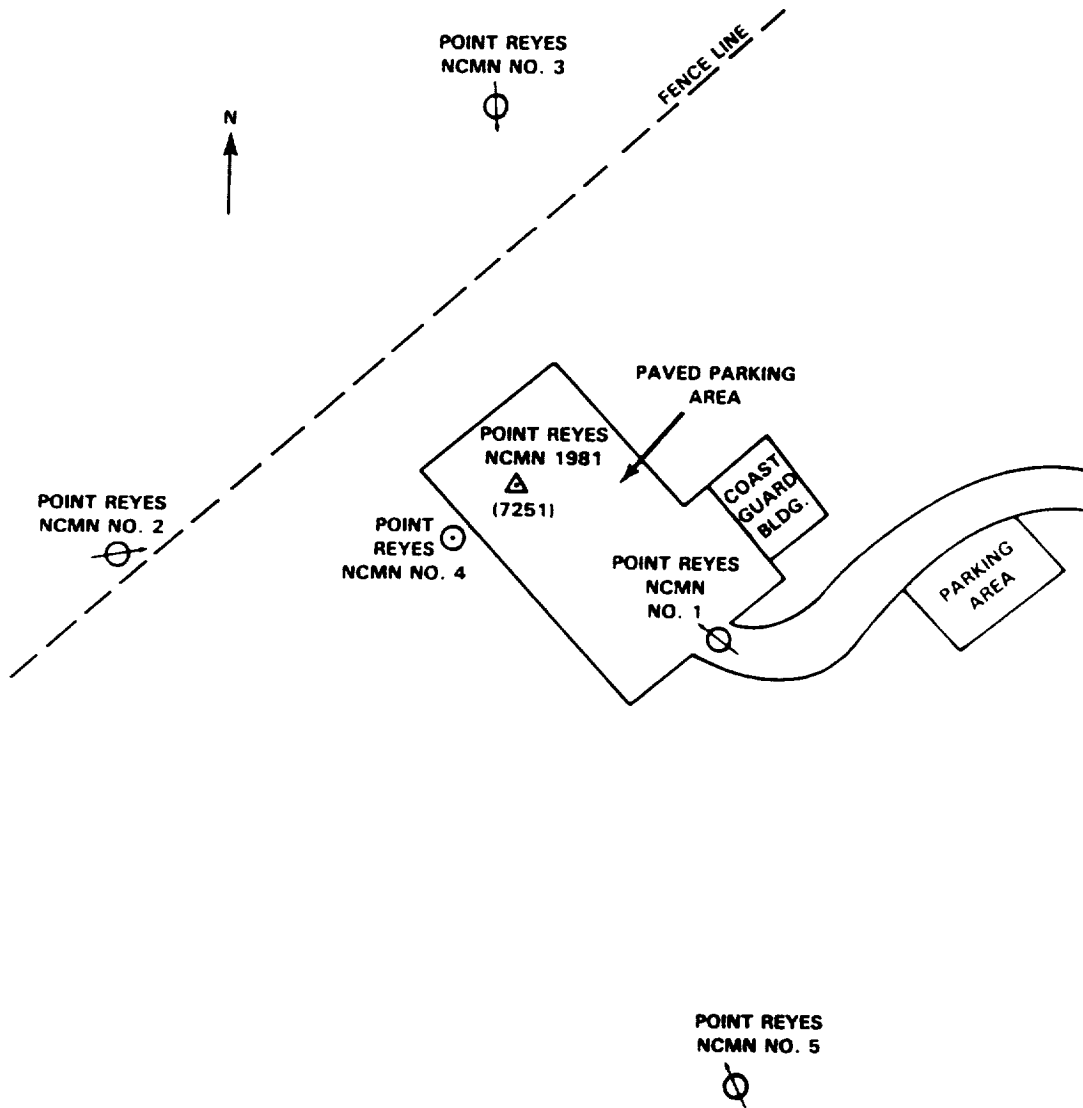
Mon. Number	Monument Inscription	North	East	Up
--	POINT REYES NCMN NO 1 1981	-18.6232	25.8896	0.4619
--	POINT REYES NCMN NO 2 1981	-11.1272	-48.7305	-0.7417
--	POINT REYES NCMN NO 3 1981	49.8987	-4.8987	-0.9322
--	POINT REYES NCMN RM 4 1981	-5.2928	-5.6629	-0.1095
--	POINT REYES NCMN RM 5 1981	-78.5287	31.8353	0.8829

SITE SKETCH

Site Number: 212

Current Site Name: POINT REYES

Location: POINT REYES, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 212
Current Site Name: POINT REYES
Location: POINT REYES, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7251	MV-2	72515201	14-DEC-81	14-DEC-81
7251	MV-3	72515302	27-AUG-83	28-AUG-83
7251	MV-3	72515303	26-FEB-84	27-FEB-84
7251	MV-3	72515304	13-MAR-85	14-MAR-85
7251	MV-2	72515205	19-OCT-85	20-OCT-85
7251	MV-2	72515206	02-FEB-87	04-FEB-87
7251	MV-3	72515307	20-MAY-87	21-MAY-87
7251	MV-3	72515308	24-OCT-87	25-OCT-87
7251	MV-3	72515309	12-FEB-88	15-FEB-88
7251	MV-3	72515310	07-NOV-88	09-NOV-88
7251	MV-2	72515211	05-FEB-89	07-FEB-89
7251	MV-2	72515212	05-NOV-89	07-NOV-89
7251	MV-2	72515213	11-JUL-91	13-JUL-91

-- SITE INFORMATION --

Site Number: 620

Current Site Name: POTSDAM

Other Site Name:

Location: POTSDAM, GERMANY

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1181	GDRLAS	11813901	01-JAN-74	---
7836	POTLAS	78365801	15-NOV-91	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 13

Current Site Name: PRESIDIO

Other Site Name:

Location: SAN FRANCISCO, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE STATION IS LOCATED ON A FORMER TAXIWAY NEAR THE NORTHEAST END OF THE ABANDONED CRISSY FIELD AT THE PRESIDIO IN SAN FRANCISCO. THE SITE IS LOCATED ON A CONCRETE HEADWALL (A FORMER RETAINING WALL FOR A NEARBY WHARF) ON THE SAND DUNES. THE AREA IS PARTIALLY COVERED BY SAND AT TIMES. THE MONUMENT, A BRASS PLUG LEADED INTO A DRILL HOLE IN THE WALL, IS OCCUPIABLE BY MOBILE VLBI SYSTEMS.

Site Topo Map: SAN FRANCISCO NORTH, CALIFORNIA. N3745-W12222.5/7.5, 1956. STATE OF CALIFORNIA, AVAILABLE THRU U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: SOUTHERN COAST RANGES. THE SITE LIES APPROXIMATELY SIX MILES EAST OF THE SAN ANDREAS FAULT.

Local Geology: MESOZOIC ULTRABASE INTRUSIVES ROCKS OF PLEISTOCENE MARINE TERRACE DEPOSITS. THE LOCAL STABILITY OF THE OBSERVING MONUMENT MAY BE IN QUESTION

Comments: NONE

MONUMENT INFORMATION

Site Number: 13
 Current Site Name: PRESIDIO
 Location: SAN FRANCISCO, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7252
 Type of Monument: JPL DISK
 Monument Inscription: JPL 1981
 Systems Using Monument: MOBILE VLBI

Latitude: N 37 48' 19.06638''
 Longitude: W 122 27' 18.19702''
 Elevation:
 Height Above Ellipsoid: -29.540 meters
 Survey Source/Date: BFEC/ 01-MAR-93
 Datum/Ellipsoid: NAD83/ GRS 80

Comments: NONE

Differential Coordinates FROM Observing Monument 7252 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

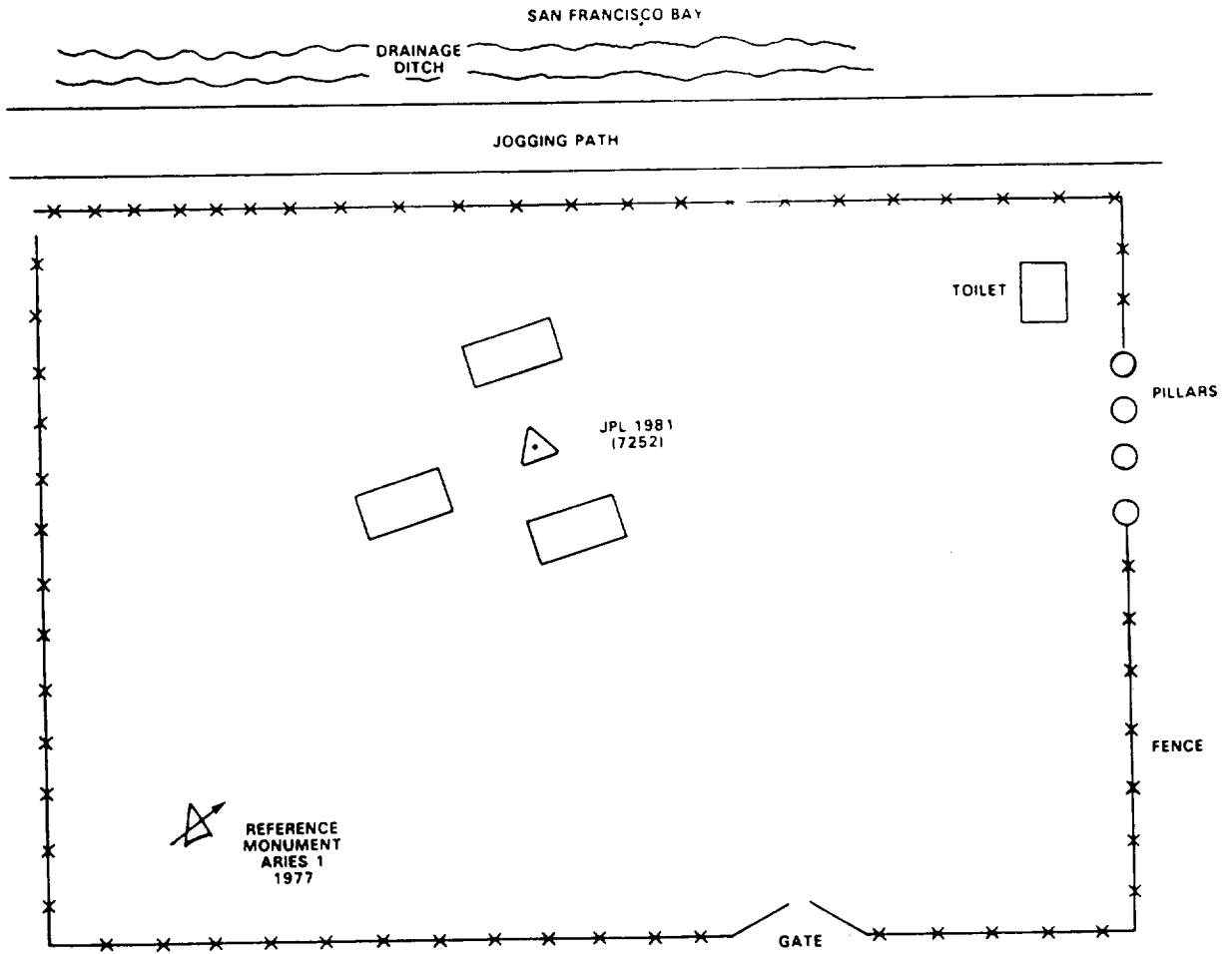
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	ARIES SF1 1977	-32.7111	-9.8218	-34.4364
--	ARIES SF2 1977	-25.5741	33.4856	19.3835
--	ARIES SF3 1991	52.9538	-40.2079	-7.4954

Mon. Number	Monument Inscription	North	East	Up
--	ARIES SF1 1977	-43.0486	-22.3313	-0.6913
--	ARIES SF2 1977	24.2224	-39.5494	0.4003
--	ARIES SF3 1991	-9.3002	66.2602	-0.2404

SITE SKETCH

Site Number: 13
Current Site Name: PRESIDIO
Location: SAN FRANCISCO, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 13
Current Site Name: PRESIDIO
Location: SAN FRANCISCO, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7252	MV-1	72525101	06-JUN-77	09-JUN-77
7252	MV-2	72525202	10-DEC-81	13-DEC-81
7252	MV-2	72525203	25-AUG-83	28-AUG-83
7252	MV-2	72525204	23-FEB-84	27-FEB-84
7252	MV-2	72525205	08-MAR-85	14-MAR-85
7252	MV-3	72525306	19-OCT-85	25-OCT-85
7252	MV-2	72525207	05-FEB-87	07-FEB-87
7252	MV-3	72525308	17-MAY-87	18-MAY-87
7252	MV-3	72525309	21-OCT-87	22-OCT-87
7252	MV-3	72525310	16-FEB-88	18-FEB-88
7252	MV-3	72525311	03-NOV-88	05-NOV-88
7252	MV-2	72525212	10-FEB-89	12-FEB-89
7252	MV-2	72525213	19-OCT-89	24-OCT-89
7252	MV-2	72525214	10-NOV-89	17-NOV-89
7252	MV-2	72525215	16-JUL-91	18-JUL-91

-- SITE INFORMATION --

Site Number: 853

Current Site Name: PUNTA SA MENTA

Other Site Name: CAGLIARI

Location: PUNTA SA MENTA, CAGLIARI, ITALY

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF MEDITERRANEAN TECTONICS.

Site Description: THIS STATION IS LOCATED ON THE SOUTHERN EDGE OF THE ITALIAN ISLAND OF SARDINIA IN THE MEDITERRANEAN SEA. THE SITE IS LOCATED SOUTH OF THE CITY OF CAGLIARI. IT IS EQUIPPED WITH A UNIVERSAL PAD COMPATIBLE FOR OCCUPATION BY THE MTLRS OR THE TLRS SYSTEMS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: CAMPIDANO

Local Geology: BEDROCK COVERED WITH NEOZOIC ALLUVIUM

Comments: NONE

MONUMENT INFORMATION

Site Number: 853
 Current Site Name: PUNTA SA MENTA
 Location: PUNTA SA MENTA, CAGLIARI, ITALY
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7545
 Type of Monument: BRASS DISK
 Monument Inscription: 7545 1987
 Systems Using Monument: MOBILE LASER RANGING SYSTEMS

Latitude: N 39 08' 7.60000''
 Longitude: E 08 58' 21.98000''
 Elevation:
 Height Above Ellipsoid: 188.270 meters
 Survey Source/Date: BFEC/09-MAR-88
 Datum/Ellipsoid: WGS 72

Comments: THESE DOPPLER COORDINATES ARE TO BE CONSIDERED TEMPORARY.

Differential Coordinates FROM Observing Monument 7545 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7545 A 1987	0.6373	2.0283	-1.1590
--	7545 AZIMUTH MARK 1987	-291.5577	161.4829	366.6269
--	7545 B 1987	2.4389	1.6118	-3.2519
--	7545 C 1987	2.7340	-1.0746	-3.1122
--	7545 D 1987	1.5038	-1.7834	-1.4847
--	7545 RM 1 1987	-8.7811	16.3160	8.1851
--	7545 RM 2 1987	7.3666	3.5150	-10.0174
--	7545 RM 3 1987	-6.6707	-9.5268	10.5342
--	CAL PIER REFERENCE POINT	-86.4269	23.5505	125.1968

Monument Number: 7545
 Type of Monument: BRASS DISK
 Monument Inscription: 7545 1987
 Systems Using Monument: MOBILE LASER RANGING SYSTEMS

Differential Coordinates FROM Observing Monument 7545 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

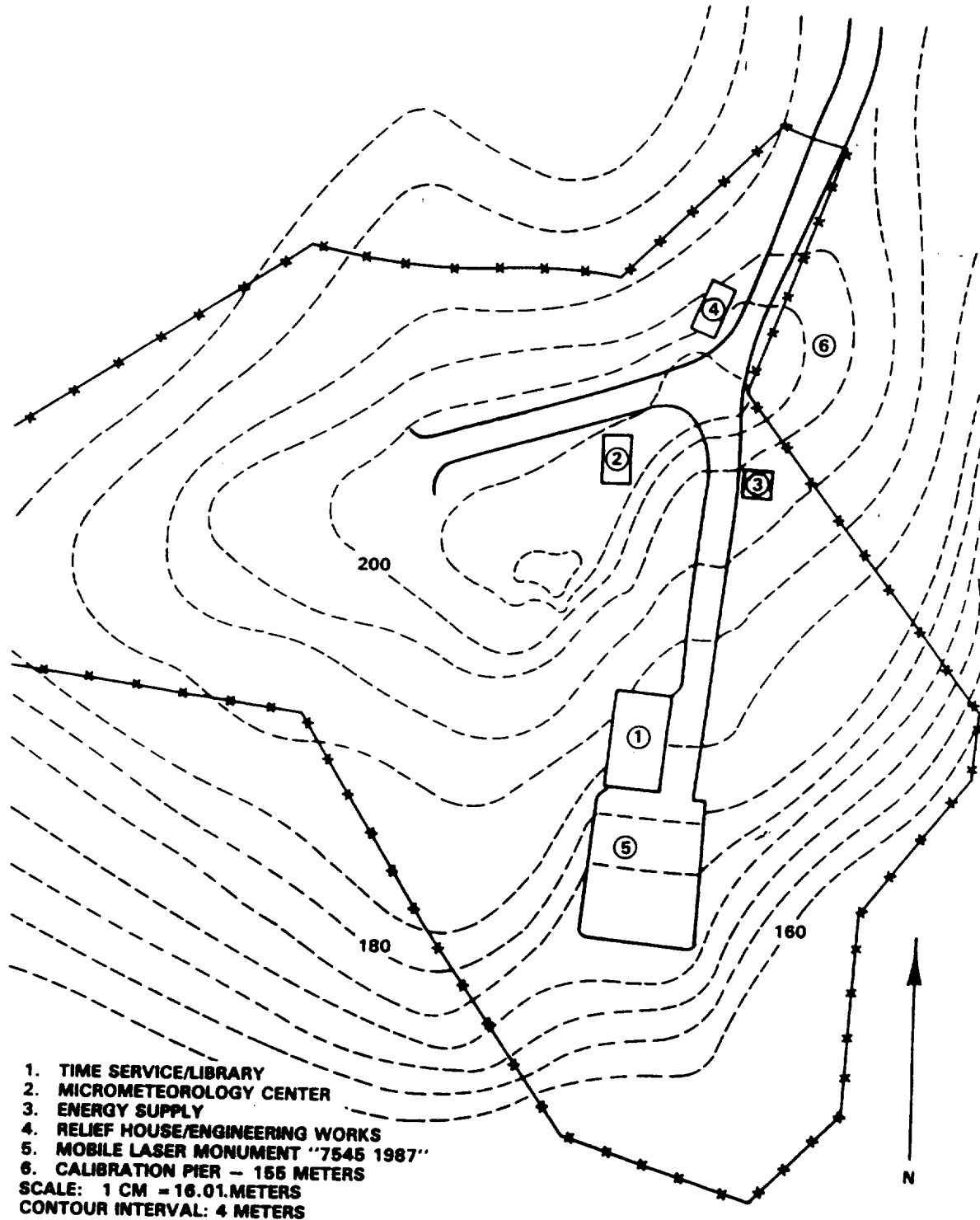
Mon. Number	Monument Inscription	North	East	Up
--	7545 A 1987	-1.4960	1.9041	0.0021
--	7545 B 1987	-4.2015	1.2116	0.0111
--	7545 C 1987	-4.0126	-1.4878	0.0004
--	7545 D 1987	-1.9136	-1.9961	-0.0007
--	7545 RM 1 1987	10.2171	17.4858	0.4122
--	7545 RM 2 1987	-12.7086	2.3231	-0.2533
--	7545 RM 3 1987	13.2674	-8.3699	0.3854

SITE SKETCH

Site Number: 853

Current Site Name: PUNTA SA MENTA

Location: PUNTA SA MENTA, CAGLIARI, ITALY



PREVIOUS OCCUPATION INFORMATION

Site Number: 853

Current Site Name: PUNTA SA MENTA

Location: PUNTA SA MENTA, CAGLIARI, ITALY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7545	MTLRS-2	75451601	19-OCT-85	07-DEC-85
7545	MTLRS-2	75451602	08-JAN-88	23-MAR-88
7545	TLRS-1	75451103	01-FEB-90	24-APR-90

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 14

Current Site Name: QUINCY

Other Site Name:

Location: QUINCY, CA

Geographic Region: CALIFORNIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE SITE IS LOCATED IN THE PLUMAS NATIONAL FOREST, 3 MILES DUE NORTH OF QUINCY AND 100 MILES NORTH OF SACRAMENTO. THE ORIGINAL LOCATION, ADJACENT TO A HELIPORT STATION USED AS A BASE STATION FOR FIRE FIGHTING, WAS ABANDONED AFTER THE SITE BECAME A PRINCIPLE SITE IN THE CDP PROGRAM FOR CONTINUOUS OCCUPATION. THE NEW SITE, HOME TO MOBLAS-8, IS 580 METERS WEST OF THE HELIPORT. BOTH VLBI AND SLR SYSTEMS OCCUPY THE NEW SITE.

Site Topo Map: QUINCY, CALIFORNIA, N3952.5/7.5, 1950, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: SIERRA NEVADA

Local Geology: PALEOZOIC MARINE

Comments: NONE.

MONUMENT INFORMATION

Site Number: 14
 Current Site Name: QUINCY
 Location: QUINCY, CA
 Number of Observing Monuments: 5
 Surveyed into National Network? YES

Monument Number: 7051
 Type of Monument: STEEL PLATE 6' X 6' SQUARE
 Monument Inscription: "X"
 Systems Using Monument: MOBLAS

Latitude: N 39 58' 24.55356''
 Longitude: W 120 56' 22.26456''
 Elevation: 1083.480 meters
 Height Above Ellipsoid: 1058.960 meters
 Survey Source/Date: BFEC /31-MAR-89
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THIS IS THE ABANDONED SITE ON HELIPORT. MOBLAS OPERATIONS
 MOVED TO MONUMENT 7109 IN OCTOBER 1981.

Differential Coordinates FROM Observing Monument 7051 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7109	7109 AUGUST 1981	-341.5809	288.8169	158.1492
7221	7221 1982	-337.6911	249.8303	119.7399
7886	7886-1982	-349.1922	294.1273	158.7682

MONUMENT INFORMATION (Continued)

Site Number: 14
 Current Site Name: QUINCY
 Location: QUINCY, CA

Monument Number: 7109
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7109 AUGUST 1981
 Systems Using Monument: MOBLAS

Latitude: N 39 58' 29.98354''
 Longitude: W 120 56' 40.86578''
 Elevation: 1129.852 meters
 Height Above Ellipsoid: 1105.322 meters
 Survey Source/Date: BFEC /31-MAR-89
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THIS MONUMENT IS THE NEW SITE REPLACING HELIPORT LOCATION.

Differential Coordinates FROM Observing Monument 7109 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7051	"X"	341.5809	-288.8169	-158.1492
7221	7221 1982	3.8898	-38.9866	-38.4094
7260	QUINCY ARIES 1979	250.8950	-256.0650	-178.5923
7886	7886-1982	-7.6113	5.3104	0.6190
--	DOPPLER 51213	281.3154	-272.7916	-178.0449
--	MOBLAS 7051 ECC.	332.6322	-305.5945	-180.7723
--	QUINCY NCMN #3	7.1063	-9.7432	-5.7634
--	QUINCY NCMN 1 (REPLACED '85)	-17.4090	-1.7375	-12.6482
--	7109 PIER #1	1480.5784	685.5786	1761.7355
--	7109 PIER #2	57.5727	-142.1948	-119.8256
--	7109 PIER #3	-194.8887	50.5947	-50.5338

Monument Number: 7109
Type of Monument: STANDARD NASA DISK
Monument Inscription: 7109 AUGUST 1981
Systems Using Monument: MOBLAS

Differential Coordinates FROM Observing Monument 7109 TO
Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7221	7221 1982	-49.6303	23.3849	-0.5854
7886	7886-1982	0.8857	-9.2586	-0.0930
--	QUINCY NCMN #3	-7.4372	11.1050	-0.0996
--	QUINCY NCMN 1 (REPLACED '85)	-16.4016	-14.0371	-0.1232

MONUMENT INFORMATION (Continued)

Site Number: 14
 Current Site Name: QUINCY
 Location: QUINCY, CA

Monument Number: 7221
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7221 1982
 Systems Using Monument: TLRs AND MOBILE VLBI

Latitude: N 39 58' 28.37466''
 Longitude: W 120 56' 39.88053''
 Elevation: 1129.270 meters
 Height Above Ellipsoid: 1104.737 meters
 Survey Source/Date: BFEC /31-MAR-89
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THIS MONUMENT IS THE MOBILE SYSTEMS PAD NEAR THE NEW
 MOBLAS MONUMENT 7109.

Differential Coordinates FROM Observing Monument 7221 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7051	"X"	337.6911	-249.8303	-119.7399
7109	7109 AUGUST 1981	-3.8898	38.9866	38.4094
7260	QUINCY ARIES 1979	247.0052	-217.0784	-140.1830
7886	7886-1982	-11.5011	44.2970	39.0284
--	DOPPLER 51213	277.4256	-233.8050	-139.6355
--	QUINCY NCMN #3 1988	3.2165	29.2434	32.6460
--	QUINCY NCMN 1	-21.2987	37.2491	25.7612
--	7109 CAL PIER 1	1476.6886	724.5652	1800.1449
--	7109 CAL PIER 2	53.6829	-103.2082	-81.4162
--	7109 CAL PIER 3	-198.7784	89.5813	-12.1245

Monument Number: 7221
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7221 1982
 Systems Using Monument: TLRS AND MOBILE VLBI

Differential Coordinates FROM Observing Monument 7221 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7109	7109 AUGUST 1981	49.6303	-23.3849	0.5854
7886	7886-1982	50.5161	-32.6434	0.4919
--	QUINCY NCMN #3 1988	42.1931	-12.2798	0.4855
--	QUINCY NCMN 1	33.2288	-37.4219	0.4619

MONUMENT INFORMATION (Continued)

Site Number: 14
 Current Site Name: QUINCY
 Location: QUINCY, CA

Monument Number: 7260
 Type of Monument: USC & GS STATION DISK
 Monument Inscription: QUINCY ARIES 1979
 Systems Using Monument: MOBILE VLBI

Latitude: N 39 58' 23.65972''
 Longitude: W 120 56' 26.25134''
 Elevation:
 Height Above Ellipsoid: 1060.030 meters
 Survey Source/Date: BFEC /31-MAR-89
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: NONE

Differential Coordinates FROM Observing Monument 7260 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7109	7109 AUGUST 1981	-250.8950	256.0650	178.5923
7221	7221 1982	-247.0052	217.0784	140.1830
7886	7886-1982	-258.5063	261.3754	179.2113

MONUMENT INFORMATION (Continued)

Site Number: 14
 Current Site Name: QUINCY
 Location: QUINCY, CA

Monument Number: 7886
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: 7886-1982
 Systems Using Monument: TLRS

Latitude: N 39 58' 30.01227''
 Longitude: W 120 56' 41.25589''
 Elevation: 1129.760 meters
 Height Above Ellipsoid: 1105.229 meters
 Survey Source/Date: BFEC /31-MAR-89
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: NONE

Differential Coordinates FROM Observing Monument 7886 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7051	"X"	349.1922	-294.1273	-158.7682
7109	7109 AUGUST 1981	7.6113	-5.3104	-0.6190
7221	7221 1982	11.5011	-44.2970	-39.0284
7260	QUINCY ARIES 1979	258.5063	-261.3754	-179.2113
--	DOPPLER 51213	288.9267	-278.1020	-178.6639
--	MOBLAS 7051 ECC.	340.2435	-310.9050	-181.3913
--	QUINCY NCMN #3 1988	14.7176	-15.0536	-6.3824
--	QUINCY NCMN 1	-9.7977	-7.0480	-13.2672
--	7109 CAL PIER 1	1488.1897	680.2682	1761.1165
--	7109 CAL PIER 2	65.1840	-147.5053	-120.4446
--	7109 CAL PIER 3	-187.2774	45.2843	-51.1528

Monument Number: 7886
Type of Monument: STANDARD NASA DISK
Monument Inscription: 7886-1982
Systems Using Monument: TLRS

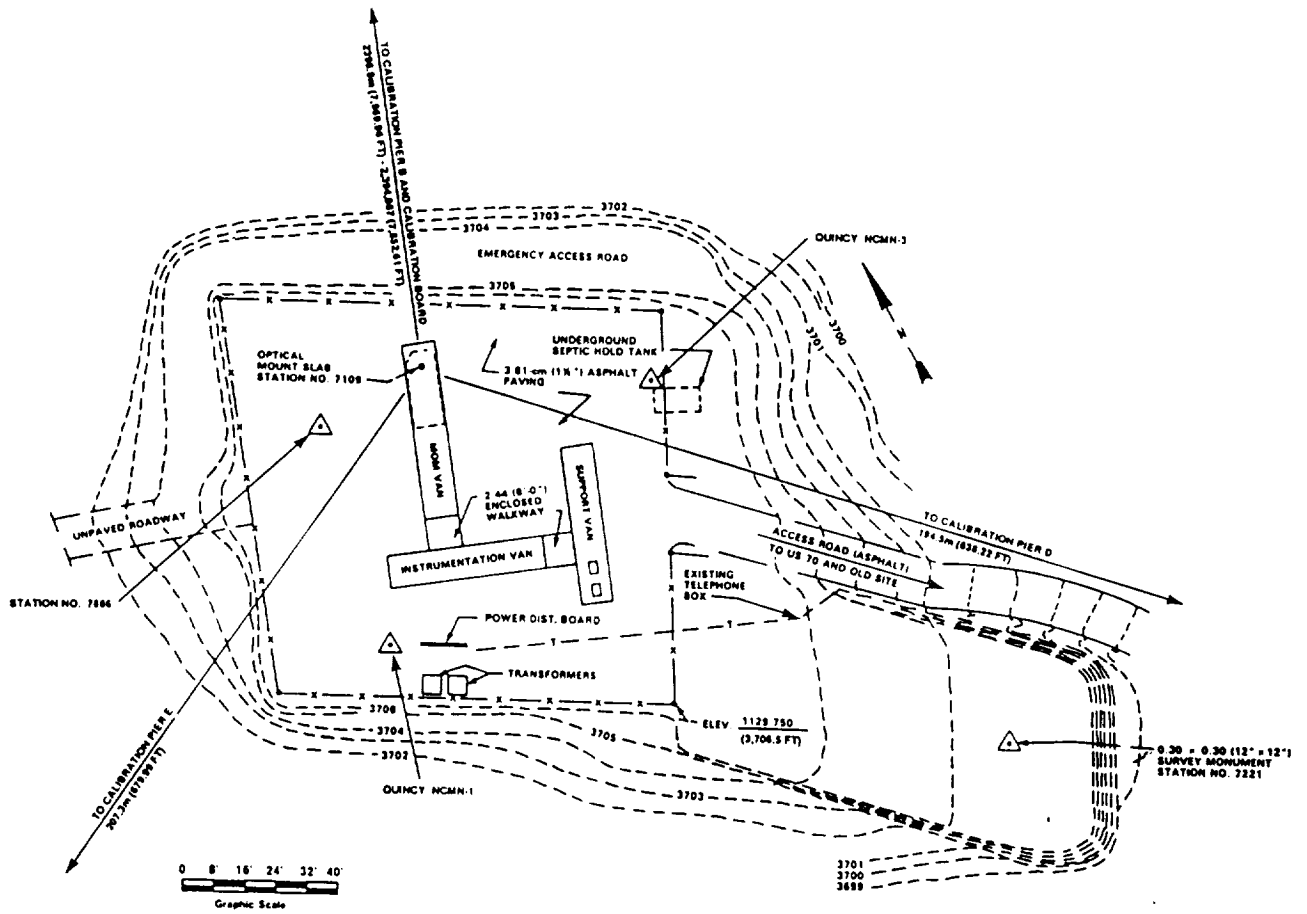
Differential Coordinates FROM Observing Monument 7886 TO
Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7109	7109 AUGUST 1981	-0.8857	9.2586	0.0930
7221	7221 1982	-50.5161	32.6434	-0.4919
--	QUINCY NCMN #3 1988	-8.3230	20.3637	-0.0066
--	QUINCY NCMN 1	-17.2873	-4.7784	-0.0301

SITE SKETCH

Site Number: 14
 Current Site Name: QUINCY
 Location: QUINCY, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 14
 Current Site Name: QUINCY
 Location: QUINCY, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7051	MOBLAS-1	70510101	27-AUG-74	27-NOV-74
7051	MOBLAS-2	70510202	09-JUL-76	30-NOV-76
7051	MOBLAS-2	70510203	01-JAN-79	30-MAY-79
7051	MOBLAS-8	70510804	01-FEB-81	21-MAY-81
7109	MOBLAS-8	71090801	01-OCT-81	29-JUL-82
7109	MOBLAS-8	71090802	15-AUG-82	12-MAR-85
7109	MOBLAS-8	71090803	12-MAR-85	15-AUG-85
7109	MOBLAS-8	71090804	15-AUG-85	18-SEP-86
7109	MOBLAS-8	71090805	26-SEP-86	12-DEC-88
7109	MOBLAS-8	71090806	12-DEC-88	22-MAR-89
7109	MOBLAS-8	71090807	23-MAR-89	28-JUN-90
7109	MOBLAS-8	71090808	01-JUL-90	18-JUL-90
7109	MOBLAS-8	71090809	19-JUL-90	13-SEP-90
7109	MOBLAS-8	71090810	14-SEP-90	07-MAR-91
7109	TLRS-4	71091411	19-MAR-91	19-AUG-91
7109	MOBLAS-8	71090812	18-NOV-91	11-DEC-91
7109	MOBLAS-8	71090813	12-DEC-91	03-APR-92
7109	MOBLAS-8	71090814	08-APR-92	26-APR-92
7109	MOBLAS-8	71090815	27-APR-92	---
7886	TLRS-1	78861101	05-JUL-83	28-AUG-83
788	TLRS-1	78861102	09-JUL-84	13-JUL-84
7886	TLRS-1	78861103	08-AUG-84	07-SEP-84
7886	TLRS-1	78861104	11-SEP-84	18-DEC-84

Site Number: 14
Current Site Name: QUINCY
Location: QUINCY, CA

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7221	MV-3	72215301	21-OCT-82	24-OCT-82
7221	MV-2	72215202	27-JUN-83	28-JUN-83
7221	MV-2	72215203	12-APR-84	13-APR-84
7221	MV-3	72215304	12-MAY-85	15-MAY-85
7221	MV-3	72215305	19-OCT-86	20-OCT-86
7221	MV-3	72215306	14-MAY-87	15-MAY-87
7221	MV-3	72215307	28-OCT-87	29-OCT-87
7221	MV-2	72215208	03-MAY-88	05-MAY-88
7221	MV-3	72215309	29-OCT-88	31-OCT-88
7221	MV-2	72215210	04-MAY-89	06-MAY-89
7221	MV-2	72215211	31-OCT-89	02-NOV-89
7221	MV-2	72215212	06-OCT-90	08-OCT-90
7260	MV-1	72605101	09-MAY-79	09-MAY-79

-- SITE INFORMATION --

Site Number: 43

Current Site Name: RICHMOND

Other Site Name:

Location: PERRINE, FL

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE SITE IS LOCATED ON THE NAVAL OBSERVATORY TIMING STATION IN PERRINE, FLORIDA, ABOUT 25 MILES SOUTH OF MIAMI. A FIXED MARK III VLBI ANTENNA WAS USED FOR VLBI MEASUREMENTS. THE ANTENNA WAS DESTROYED BY HURRICANE ANDREW IN AUGUST 1992. A STANDARD NASA PAD COMPATIBLE FOR OCCUPATION BY TLRs AND MTLRS HAS BEEN CONSTRUCTED AT THE SITE FOR COLLECTION OF INTERCOMPARISON MEASUREMENTS.

Site Topo Map: GOULDS, FLORIDA. 1945-56- (73PR), 7.5 QUAD, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: COASTAL PLAIN PROVINCE

Local Geology: THICK SECTION OF RECENT AND QUATERNARY SANDS AND GRAVELS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 43
 Current Site Name: RICHMOND
 Location: PERRINE, FL
 Number of Observing Monuments: 21
 Surveyed into National Network? NO

Monument Number: 7219
 Type of Monument: MEASUREMENT POINT ON ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 65-FOOT FIXED VLBI ANTENNA

Latitude: N 25 36' 48.13066''
 Longitude: W 80 23' 05.75405''
 Elevation:
 Height Above Ellipsoid: 25.877 meters
 Survey Source/Date: NGS/01-FEB-84
 Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: THE ANTENNA WAS DESTROYED BY HURRICANE ANDREW IN AUGUST 1992.

Differential Coordinates FROM Observing Monument 7219 TO Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	CLN 1981	-4.705	27.782	37.183
--	CLNW 1981	-9.722	26.901	37.197
--	CLS 1981	1.510	-8.872	-41.416
--	CLSW 1981	-3.521	-9.682	-41.436
--	CLW 1981	-29.574	6.351	1.000
--	GPS (TOP OF GROUND PLANE)	51.311	14.378	5.196
--	GPS 1984 (BRASS BOLT)	50.366	19.959	2.483
--	TIMER 1962	59.722	35.213	29.919
--	TIMER RM 2 1962	30.243	16.166	1.150

Monument Number: 7219
 Type of Monument: MEASUREMENT POINT ON ANTENNA
 Monument Inscription: NONE
 Systems Using Monument: 65-FOOT FIXED VLBI ANTENNA

Differential Coordinates FROM Observing Monument 7219 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	CLN 1981	45.710	0.003	-9.335
--	CLNW 1981	45.709	-5.091	-9.302
--	CLS 1981	-41.237	0.006	-9.788
--	CLSW 1981	-41.237	-5.089	-9.835
--	CLW 1981	5.744	-28.098	-9.669
--	GPS (TOP OF GROUND PLANE)	7.108	52.992	-2.807
--	GPS 1984 (BRASS BOLT)	7.108	52.993	-9.084
--	TIMER 1962	37.674	64.765	-9.375
--	TIMER RM 2 1962	5.743	32.519	-9.320

MONUMENT INFORMATION (Continued)

Site Number: 43
 Current Site Name: RICHMOND
 Location: PERRINE, FL

Monument Number: 7295
 Type of Monument: STANDARD NGS
 Monument Inscription: 7275 (1988)
 Systems Using Monument: MOBILE LASERS

Latitude: 25 36' 48.05839"
 Longitude: 80 23' 02.80223"
 Elevation:
 Height Above Ellipsoid: -19.165 meters
 Survey Source/Date: BFEC /28-DEC-90
 Datum/Ellipsoid: NAD83 (GRS 80)

Comments: THIS IS THE OBSERVING MONUMENT ON THE PAD COMPATIBLE
 FOR OCCUPATION BY LASER SYSTEMS.

Differential Coordinates FROM Observing Monument 7295 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC. DORIS INFORMATION FROM IGN.

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7295 PIER A	214.6608	39.7704	6.9168
--	7295 PIER B	-164.6061	-75.0441	-94.3635
--	7295 PIER C	-81.6005	41.1712	116.8505
--	7295 RM1	20.3751	11.7422	17.0395
--	7295 RM2	4.2105	-11.8335	-27.1581
--	7295 RM3	-18.7663	7.5183	22.0821
--	7295-A (1988)	2.0689	-0.2703	-1.2623
--	7295-B (1988)	1.6865	-1.5297	-3.7175
--	7295-C (1988)	-0.9700	-1.9626	-3.6816
--	7295-D (1988)	-1.7298	-1.1725	-1.8062
--	DORIS ANT REF PT	-239.192	514.878	1149.672

Monument Number: 7295
 Type of Monument: STANDARD NGS
 Monument Inscription: 7275 (1988)
 Systems Using Monument: MOBILE LASERS

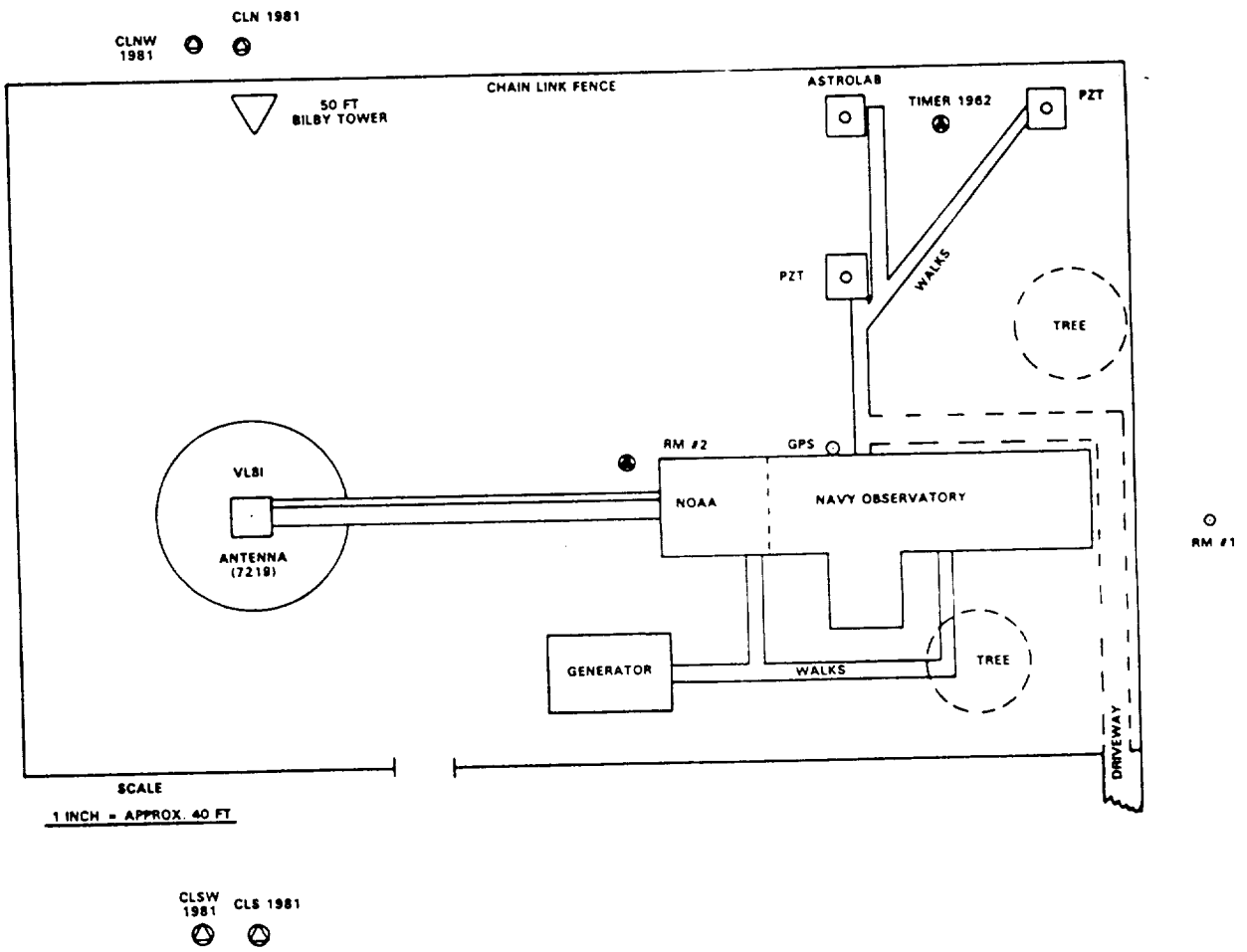
Differential Coordinates FROM Observing Monument 7295 TO
Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	7295 PIER A	7.6871	218.2881	-0.0345
--	7295 PIER B	-105.1895	-174.8288	1.1318
--	7295 PIER C	128.8084	-73.5767	1.6189
--	7295 RM1	18.8986	22.0502	-0.0044
--	7295 RM2	-29.8371	2.1746	-0.5854
--	7295 RM3	24.4717	-17.2467	0.0350
--	7295-A (1988)	-1.4029	1.9946	0.0062
--	7295-B (1988)	-4.1260	1.4073	0.0070
--	7295-C (1988)	-4.0863	-1.2842	0.0072
--	7295-D (1988)	-2.0036	-1.9013	0.0011

SITE SKETCH

Site Number: 43
Current Site Name: RICHMOND
Location: PERRINE, FL



PREVIOUS OCCUPATION INFORMATION

Site Number: 43

Current Site Name: RICHMOND

Location: PERRINE, FL

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7295	MTLRS-1	72951501	24-MAR-88	21-JUL-88
7295	TLRS-1	72951102	21-DEC-90	17-APR-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7219	65-FOOT	72197501	16-MAR-85	---

-- SITE INFORMATION --

Site Number: 624

Current Site Name: RIGA

Other Site Name:

Location: RIGA, RUSSIAN FEDERATION

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1884	RIGLAS	18844401	01-MAY-76	---
7560	MTLRS-1	75601501	15-AUG-91	02-OCT-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 672

Current Site Name: ROUMELLI

Other Site Name:

Location: ROUMELLI, CRETE, GREECE

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF MEDITERRANEAN TECTONICS.

Site Description: THIS WEGENER-MEDLAS SITE IS LOCATED ON THE ISLAND OF CRETE OFF THE COAST OF GREECE IN THE MEDITERRANEAN SEA. THIS SITE IS COMPATIBLE FOR OCCUPATION BY ANY MOBILE LASER, AMERICAN OR EUROPEAN. THE TLRS-1 OCCUPIED THIS SITE IN THE MEDITERRANEAN CAMPAIGN OF 1987.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 672
 Current Site Name: ROUMELLI
 Location: ROUMELLI, CRETE, GREECE
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7517
 Type of Monument: BRASS DISK
 Monument Inscription: 7517
 Systems Using Monument: MOBILE LASER RANGING SYSTEMS

Latitude: N 35 24' 15.15000''
 Longitude: E 24 41' 38.54000
 Elevation:
 Height Above Ellipsoid: 108.590 meters
 Survey Source/Date: GREEK HELLENIC MAPPING AGENCY/BFEC ADJUSTMENT
 /29-APR-88
 Datum/Ellipsoid: WGS 72

Comments: THIS STATION WAS HELD FIXED WITH PRELIMINARY
 COORDINATES DETERMINED BY GHMA AND THROUGH MTLRS OCCUPATIONS.

Differential Coordinates FROM Observing Monument 7517 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7517 A 1987	-0.0134	2.0893	-1.2213
--	7517 AZ MARK 1987	42.8056	-104.6312	0.7732
--	7517 B 1987	1.7002	2.1031	-3.4027
--	7517 C 1987	2.7272	-0.3950	-3.2409
--	7517 D 1987	1.8233	-1.3599	-1.5361
--	7517 RM1 1987 (W1)	-20.1472	6.2969	14.6921
--	7517 RM2 1987 (W2)	-3.8559	28.4149	-6.7812
--	7517 RM3 1987 (W3)	16.8145	-1.7664	-14.3925
--	7517 RM4 1987 (W4)	4.8404	-21.6796	2.4472
--	CAL PIER REFERENCE POINT	-50.9826	177.3828	-2.3276

Monument Number: 7517
 Type of Monument: BRASS DISK
 Monument Inscription: 7517
 Systems Using Monument: MOBILE LASER RANGING SYSTEMS

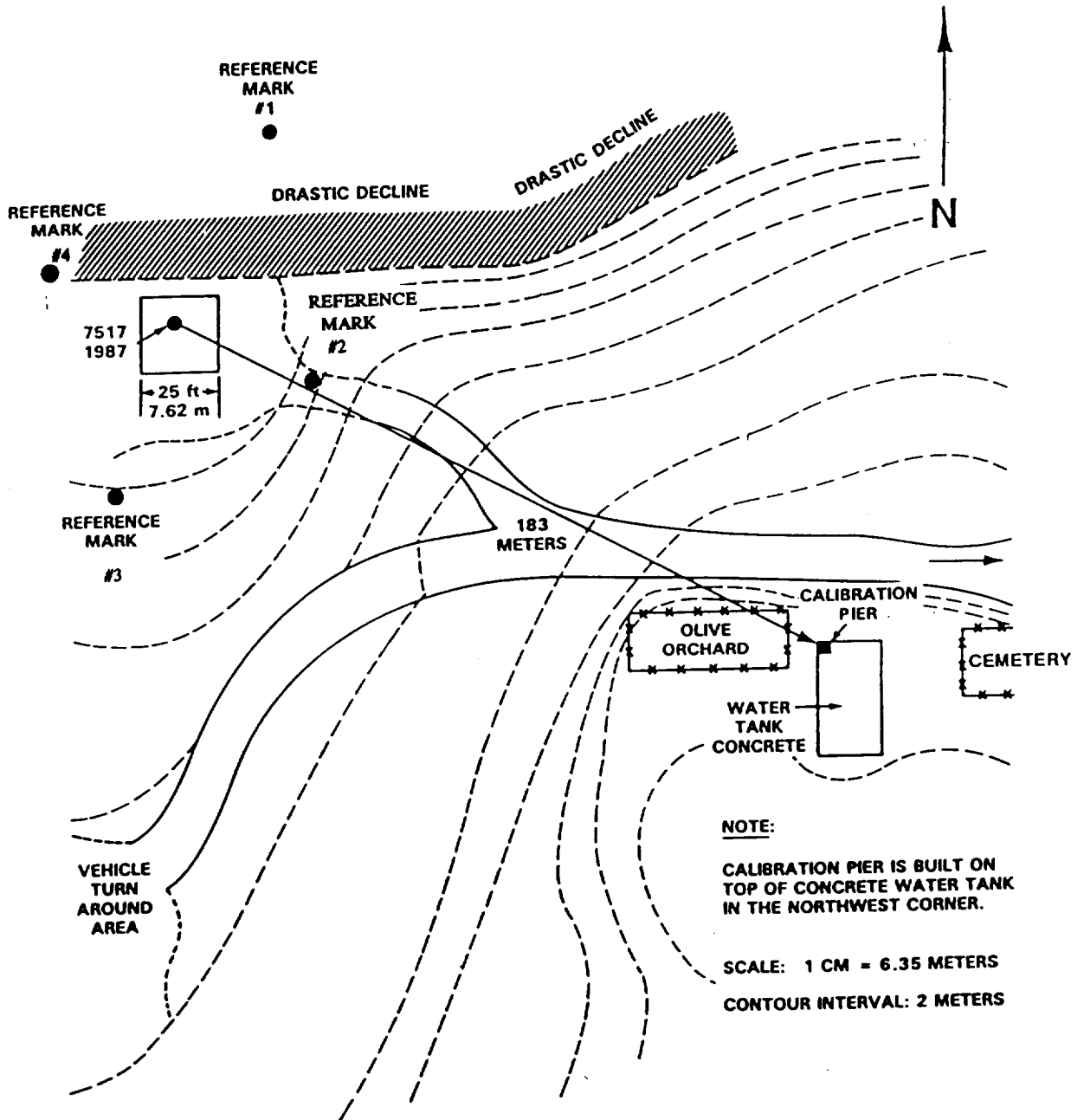
Differential Coordinates FROM Observing Monument 7517 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	7517 A 1987	-1.4941	1.9038	-0.0058
--	7517 B 1987	-4.1774	1.2005	0.0043
--	7517 C 1987	-3.9815	-1.4982	0.0080
--	7517 D 1987	-1.8826	-1.9973	-0.0025
--	7517 RM1 1987 (W1)	21.0555	14.1379	-4.2664
--	7517 RM2 1987 (W2)	-10.3746	27.4273	2.8928
--	7517 RM3 1987 (W3)	-20.1541	-8.6292	3.5131
--	7517 RM4 1987 (W4)	4.6938	-21.7192	-2.3805

SITE SKETCH

Site Number: 672
Current Site Name: ROUMELLI
Location: ROUMELLI, CRETE, GREECE



PREVIOUS OCCUPATION INFORMATION

Site Number: 672

Current Site Name: ROUMELLI

Location: ROUMELLI, CRETE, GREECE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7517	MTLRS-2	75171601	27-MAY-86	31-AUG-86
7517	TLRS-1	75171102	20-JUL-87	28-AUG-87
7517	MTLRS-1	75171503	22-OCT-87	11-DEC-87
7517	TLRS-1	75171104	16-APR-89	20-JUN-89
7517	TLRS-1	75171105	22-JUN-92	06-AUG-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 79

Current Site Name: SAINT CROIX
Other Site Name:
Location: ST. CROIX, USVI
Geographic Region: NORTH AMERICA
Tectonic Plate: NORTH AMERICAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

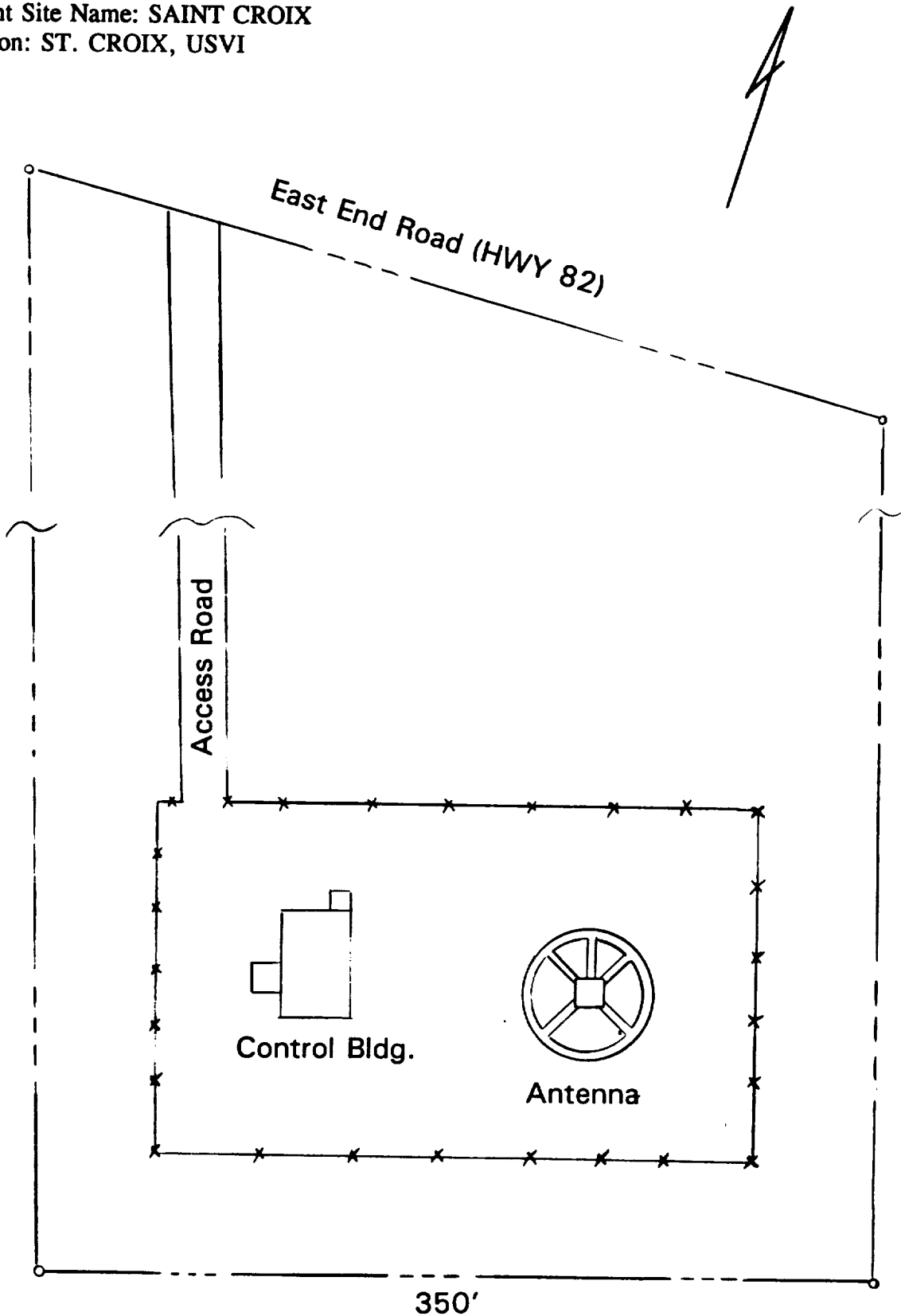
Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7615	VLBA	76159001	01-JAN-90	---

SITE SKETCH

Site Number: 79

Current Site Name: SAINT CROIX

Location: ST. CROIX, USVI



-- SITE INFORMATION --

Site Number: 802

Current Site Name: SAND POINT

Other Site Name:

Location: SAND POINT, AK

Geographic Region: ALASKA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED ON THE NORTHWEST END OF POPOF ISLAND IN THE ALLEUTIAN ISLAND CHAIN OFF THE ALASKAN COAST. THE SITE IS IN THE PARKING LOT OF A SCHOOL ON HIGH GROUND. THE MONUMENT IS COMPATIBLE FOR OCCUPATION BY THE MOBILE VLBI SYSTEMS ONLY.

Site Topo Map: PORT MOLLER (B-2), ALASKA, N5515-W16020/15 X 20, 1963.
U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: ALLEUTIAN ISLANDS

Local Geology: TERTIARY EXTRUSIVE VOLCANIC; DACITE OR ANDESITE. THIS SITE WAS THE ONLY LOCATION FEASIBLE IN THE SEISMICALLY LOCKED SHUMAGIN GAP.

Comments: NONE

MONUMENT INFORMATION

Site Number: 802
 Current Site Name: SAND POINT
 Location: SAND POINT, AK
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7280
 Type of Monument: NGS MODIFIED SLEEVED CLASS A BENCH MARK
 Monument Inscription: NONE
 Systems Using Monument: MOBILE VLBI

Latitude: N 55 21' 8.1260''
 Longitude: W 160 28' 32.2500''
 Elevation:
 Height Above Ellipsoid: 101.744 meters
 Survey Source/Date: NGS GPS RESULTS/01-JAN-86
 Datum/Ellipsoid: WGS 72

Comments: NONE

Differential Coordinates FROM Observing Monument 7280 TO
Reference Monuments and Other Observing Monuments

Data Source: NGS

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	JOEE	-462.964	2757.701	264.599
--	PROM	-2706.756	1200.928	-1573.499
--	SAN 2	35.071	-56.127	5.771
--	SAN 4	-68.953	46.438	-38.520
--	SAND 1	59.762	21.762	43.167

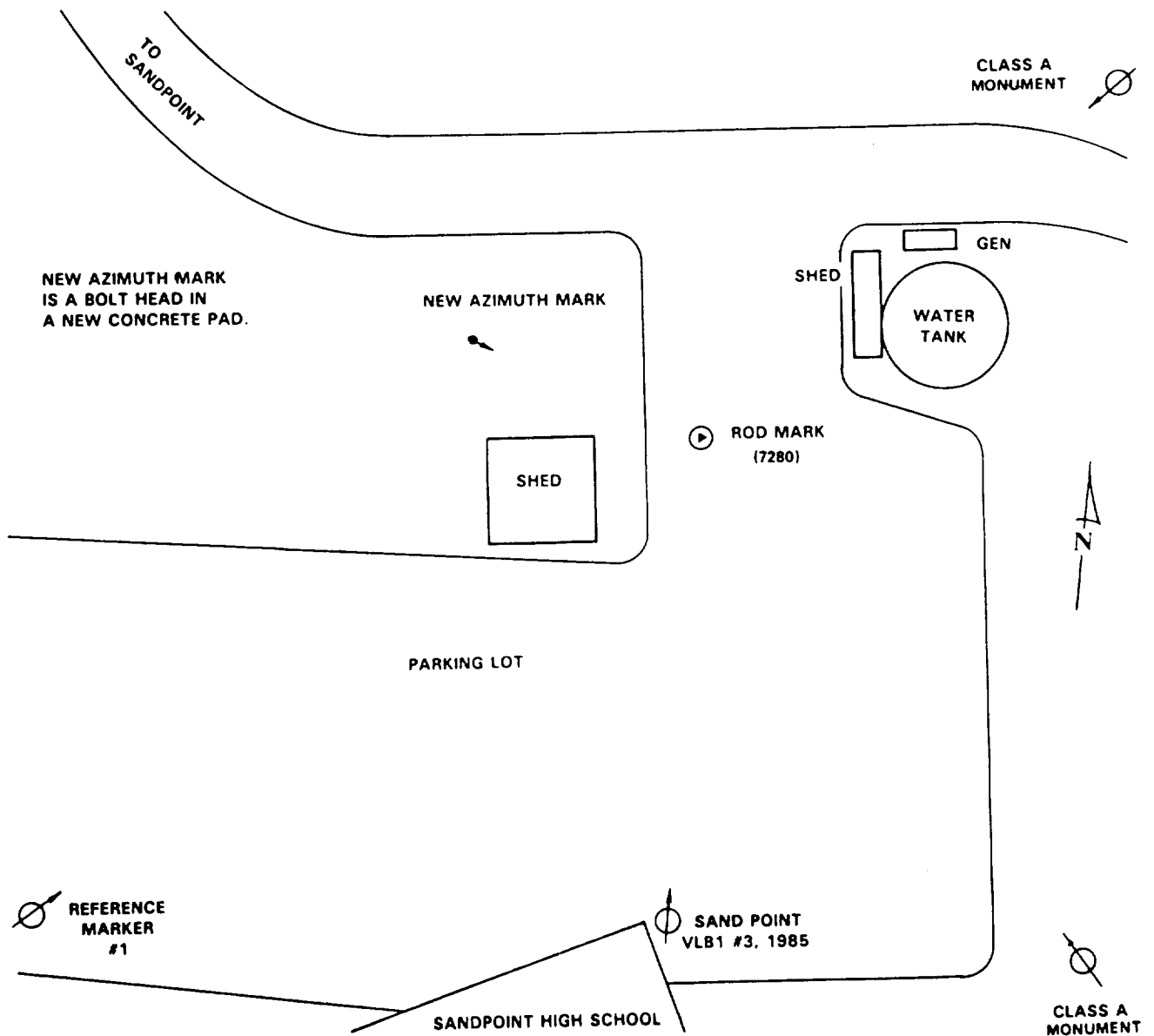
Mon. Number	Monument Inscription	North	East	Up
--	SAN 2	15.042	64.621	-3.380
--	SAN 4	-62.595	-66.813	-3.565
--	SAND 1	76.862	-0.538	-0.646

SITE SKETCH

Site Number: 802

Current Site Name: SAND POINT

Location: SAND POINT, AK



PREVIOUS OCCUPATION INFORMATION

Site Number: 802

Current Site Name: SAND POINT

Location: SAND POINT, AK

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7280	MV-2	72805201	25-JUL-84	26-JUL-84
7280	MV-3	72805302	25-JUL-85	26-JUL-85
7280	MV-3	72805303	30-JUL-86	01-AUG-86
7280	MV-2	72805204	24-JUL-87	26-JUL-87
7280	MV-2	72805205	10-JUL-88	15-JUL-88
7280	MV-2	72805206	12-JUL-89	14-JUL-89
7280	MV-2	72805207	08-JUL-90	10-JUL-90

-- SITE INFORMATION --

Site Number: 640

Current Site Name: SAN FERNANDO

Other Site Name:

Location: SAN FERNANDO, SPAIN

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF MEDITERRANEAN TECTONICS.

Site Description: THE SITE IS LOCATED IN SOUTHERN SPAIN NEAR SAN FERNANDO BY THE BAY OF CADIZ AT THE INSTITUTO Y OBSERVATORIO DE MARINA. A FIXED LASER HAS BEEN USED FOR LASER RANGING SINCE 1968. IN 1980 THE LASER MOVED TO THE DOME OF THE MAIN BUILDING. THE RUBY LASER WAS MOVED FROM GRASSE IN SEPTEMBER 1983 AND HAS BEEN OPERATIONAL SINCE JANUARY 1984.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: UNKNOWN

Local Geology: NOT AVAILABLE

Comments: NONE

MONUMENT INFORMATION

Site Number: 640
 Current Site Name: SAN FERNANDO
 Location: SAN FERNANDO, SPAIN
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7824
 Type of Monument: INTERSECTION OF AXES OF ROTATION
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER

Latitude: N 36 27' 59.5432''
 Longitude: W 6 12' 14.9981''
 Elevation: 53.196 meters
 Height Above Ellipsoid:
 Survey Source/Date: IGN/ 1984
 Datum/Ellipsoid: ED79 MUNICH/INTERNATIONAL

Comments: NONE

Differential Coordinates FROM Observing Monument 7824 TO Reference Monuments and Other Observing Monuments

Data Source: IGN

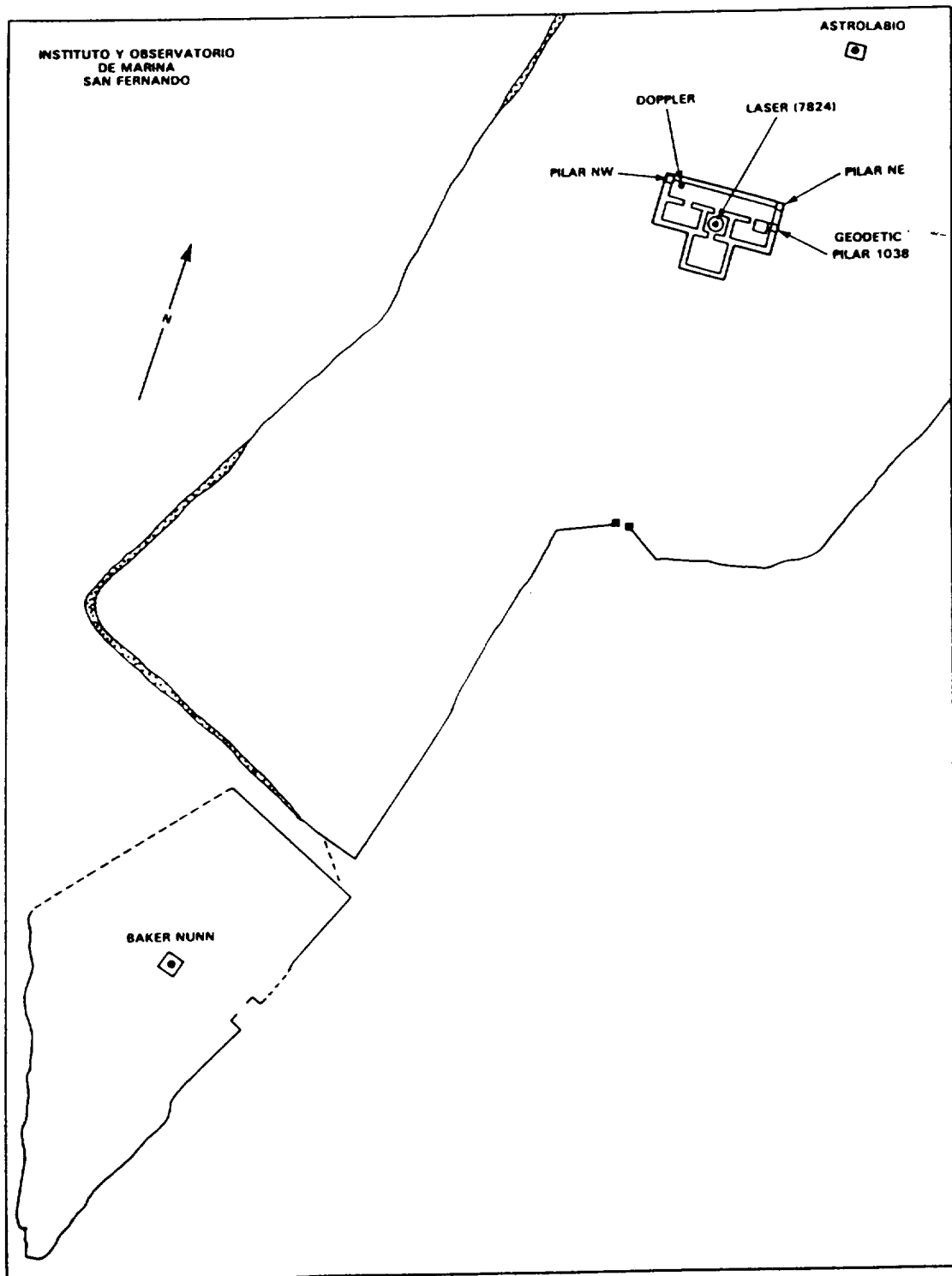
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	ASTROLABIO DANJON	-53.170	34.589	30.785
--	BAKER NUNN CAMERA (SAO4)	116.814	-104.563	-218.907
--	1ST ORDER GEODETIC PILLAR	-8.660	16.239	-2.872
--	GEODETIC PILLAR NORTHEAST	24.251	12.952	28.218
--	GEODETIC PILLAR NORTHWEST	-15.154	-13.951	1.499
--	TRANET2 DOPPLER ANTENNA	-12.377	-12.422	2.968

Mon. Number	Monument Inscription	North	East	Up
--	ASTROLABIO DANJON	59.224	26.945	-27.218
--	1ST ORDER GEODETIC PILLAR	4.291	15.096	-10.042
--	GEODETIC PILLAR NORTHEAST	9.645	15.229	-9.966
--	GEODETIC PILLAR NORTHWEST	8.813	-15.774	-10.012
--	TRANET2 DOPPLER ANTENNA	8.506	-13.945	-7.052

SITE SKETCH

Site Number: 640
Current Site Name: SAN FERNANDO
Location: SAN FERNANDO, SPAIN



PREVIOUS OCCUPATION INFORMATION

Site Number: 640

Current Site Name: SAN FERNANDO

Location: SAN FERNANDO, SPAIN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7824	SPNLAS	78244501	01-MAY-76	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 405

Current Site Name: SANTA PAULA

Other Site Name:

Location: SANTA PAULA, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE STATION IS LOCATED ON PRIVATE PROPERTY ABOUT FOUR MILES EAST-NORTHEAST OF SANTA PAULA, CALIFORNIA, 0.8 MILE NORTH OF STATE HIGHWAY 126, AND 83 FEET EAST OF THE CENTERLINE OF TOLAND ROAD. THE SITE IS EQUIPPED WITH ONE OBSERVING MONUMENT THAT PROJECTS TWO INCHES ABOVE THE GROUND SURFACE. SINCE A PAD IS NOT LOCATED AT THIS SITE, IT IS COMPATIBLE FOR OCCUPATION BY THE MOBILE VLBI SYSTEMS ONLY.

Site Topo Map: FILLMORE, CALIFORNIA. N3422.5-W11852.5/7.5, 1951, U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: TRANSVERSE RANGES

Local Geology: QUATERNARY ALLUVIUM

Comments: NONE

MONUMENT INFORMATION

Site Number: 405
 Current Site Name: SANTA PAULA
 Location: SANTA PAULA, CA
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7255
 Type of Monument: NGS STATION DISK
 Monument Inscription: SANTA PAULA NCMN 1981
 Systems Using Monument: MOBILE VLBI

Latitude: N 34 23' 16.35074''
 Longitude: W 118 59' 55.61435''
 Elevation: 219.490 meters
 Height Above Ellipsoid: 184.689 meters
 Survey Source/Date: BFEC/31-MAR-92
 Datum/Ellipsoid: NAD 83 (GRS-80)

Comments: NONE

Differential Coordinates FROM Observing Monument 7255 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

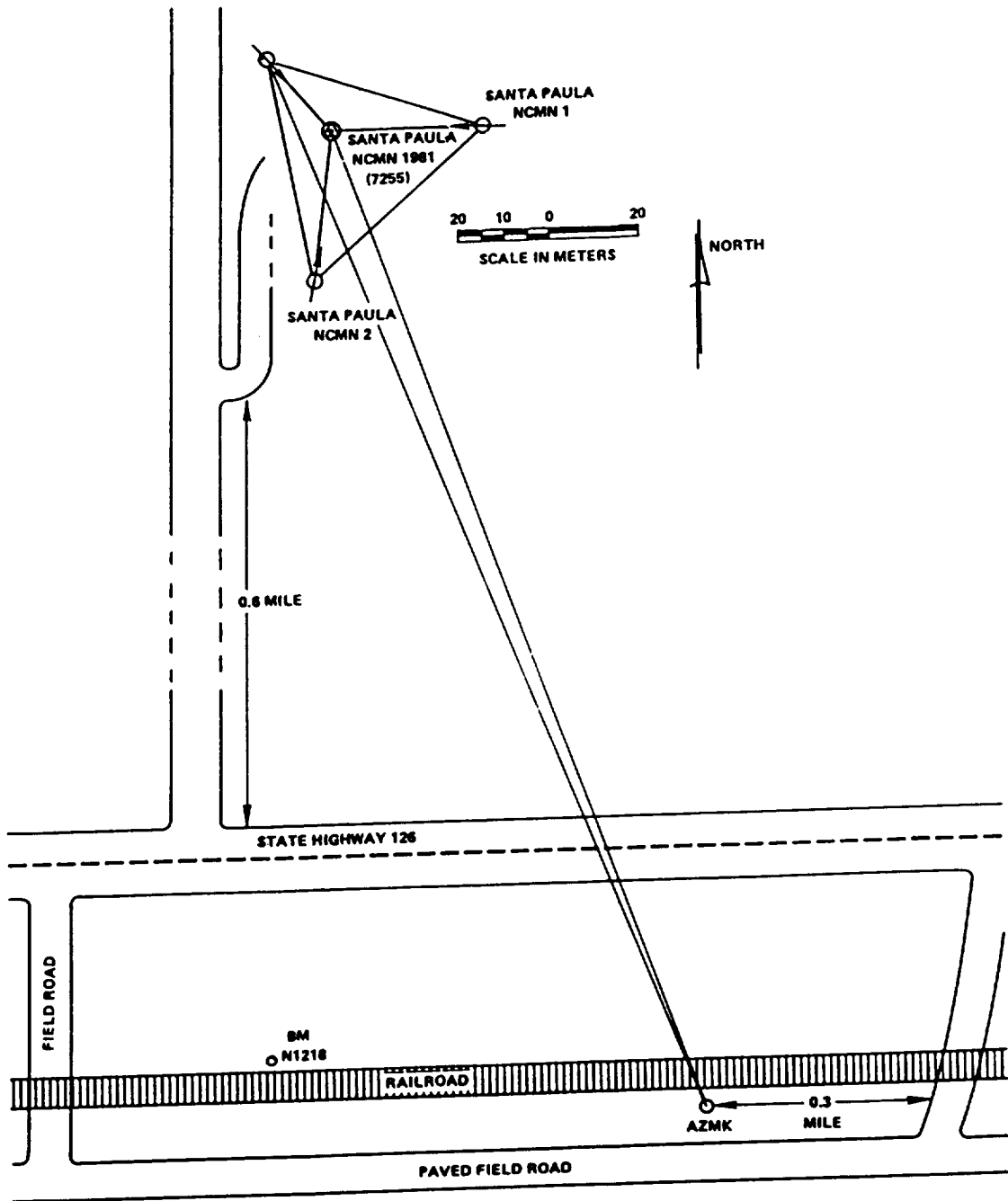
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	SANTA PAULA NCMN AZ MK(1991)	93.8895	90.1219	204.6860
--	SANTA PAULA NCMN NO 1 1981	30.6444	-13.2077	-2.6695
--	SANTA PAULA NCMN NO 2 1981	-11.9400	-11.8262	-28.9028
--	SANTA PAULA NCMN NO 3 1981	-8.2991	13.4843	14.1661

Mon. Number	Monument Inscription	North	East	Up
--	SANTA PAULA NCMN NO 1 1981	-0.3366	33.2054	-4.2353
--	SANTA PAULA NCMN NO 2 1981	-32.9631	-4.7094	-3.0083
--	SANTA PAULA NCMN NO 3 1981	16.0789	-13.7960	1.5873

SITE SKETCH

Site Number: 405
Current Site Name: SANTA PAULA
Location: SANTA PAULA, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 405

Current Site Name: SANTA PAULA

Location: SANTA PAULA, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7255	MV-2	72555201	31-AUG-81	01-SEP-81
7255	MV-2	72555202	31-AUG-83	01-SEP-83
7255	MV-2	72555203	29-FEB-84	01-MAR-84
7255	MV-3	72555304	09-JAN-85	10-JAN-85
7255	MV-2	72555205	28-MAR-87	29-MAR-87
7255	MV-2	72555206	11-DEC-87	12-DEC-87
7255	MV-2	72555207	07-FEB-88	09-FEB-88
7255	MV-2	72555208	27-JAN-89	29-JAN-89

-- SITE INFORMATION --

Site Number: 99

Current Site Name: SANTIAGO

Other Site Name:

Location: SANTIAGO, CHILE

Geographic Region: SOUTH AMERICA

Tectonic Plate: SOUTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE MOTION, AND INTERNAL PLATE DEFORMATION/PLATE STABILITY.

Site Description: THE SITE IS ON THE GROUNDS OF NASA'S SANTIAGO TRACKING STATION WHICH IS LOCATED ON A FLAT AREA SURROUNDED BY FLAT HILLS, 31.5 KILOMETERS NORTH OF PLAZA BULNAS, SANTIAGO, AND 15.5 KILOMETERS NORTHWEST OF PELDEHUE. THE SITE IS IN A CLEARED AREA WITH SPARSE TREE COVER. A STANDARD PAD AT THE SITE IS COMPATIBLE FOR OCCUPATION BY TLR'S. THE 12-METER ANTENNA BEGAN VLBI OPERATIONS IN 1992.

Site Topo Map: NOT AVAILABLE

GEOLOGICAL INFORMATION

Geological Province: ANDEAN CORDILLERA

Local Geology: THE TOP LAYER OF SOIL FROM 0.91 METERS TO 1.52 METERS IS COMPOSED OF CLAY AND IS SUBJECT TO EXTENSIVE SWELLING AND SHRINKING. CLAY BELOW THE TOP LAYER IS A RATHER STABLE COMPACT MATERIAL.

Comments: NONE

MONUMENT INFORMATION

Site Number: 99
 Current Site Name: SANTIAGO
 Location: SANTIAGO, CHILE
 Number of Observing Monuments: 2
 Surveyed into National Network? NO

Monument Number: 1404
 Type of Monument: INTERSECTION OF AXES
 Monument Inscription: NONE
 Systems Using Monument: 12 METER VLBI

Latitude: S 33 09' 05.30894"
 Longitude: W 70 40' 05.91364"
 Elevation:
 Height Above Ellipsoid: 731.378 meters
 Survey Source/Date: BFEC/10-JUL-92
 Datum/Ellipsoid: ITRF90 (1988.0)

Comments: NONE

Differential Coordinates FROM Observing Monument 1404 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	12M-A	26.9099	-38.9370	82.7701
--	12M-B	45.4551	32.9422	-13.5877
--	12M-C	-86.4574	-8.7329	-14.7267
--	1404 RM 1	3.3223	-9.4491	27.6788
--	1404 RM 2	-28.3143	5.3171	-8.0121
--	1404 RM 3	19.0691	21.0261	-8.5644
--	GIG-91 MARKER	31.6040	-7.8023	38.6821
7400	NONE	6.5395	-108.4396	175.0726
4001	SANTIAGO GPS 1992	0.2303	-69.6101	113.9266

MONUMENT INFORMATION (Continued)

Site Number: 99
 Current Site Name: SANTIAGO
 Location: SANTIAGO, CHILE

Monument Number: 7400
 Type of Monument: STANDARD NASA DISK
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASERS

Latitude: S 33 08' 58.69713''
 Longitude: W 70 40' 07.06058''
 Elevation:
 Height Above Ellipsoid: 723.125 meters
 Survey Source/Date: BFEC/10-JUL-92
 Datum/Ellipsoid: ITRF90 (1988.0)

Comments: NONE

Differential Coordinates FROM Observing Monument 7400 TO
 Reference Monuments and Other Observing Monuments

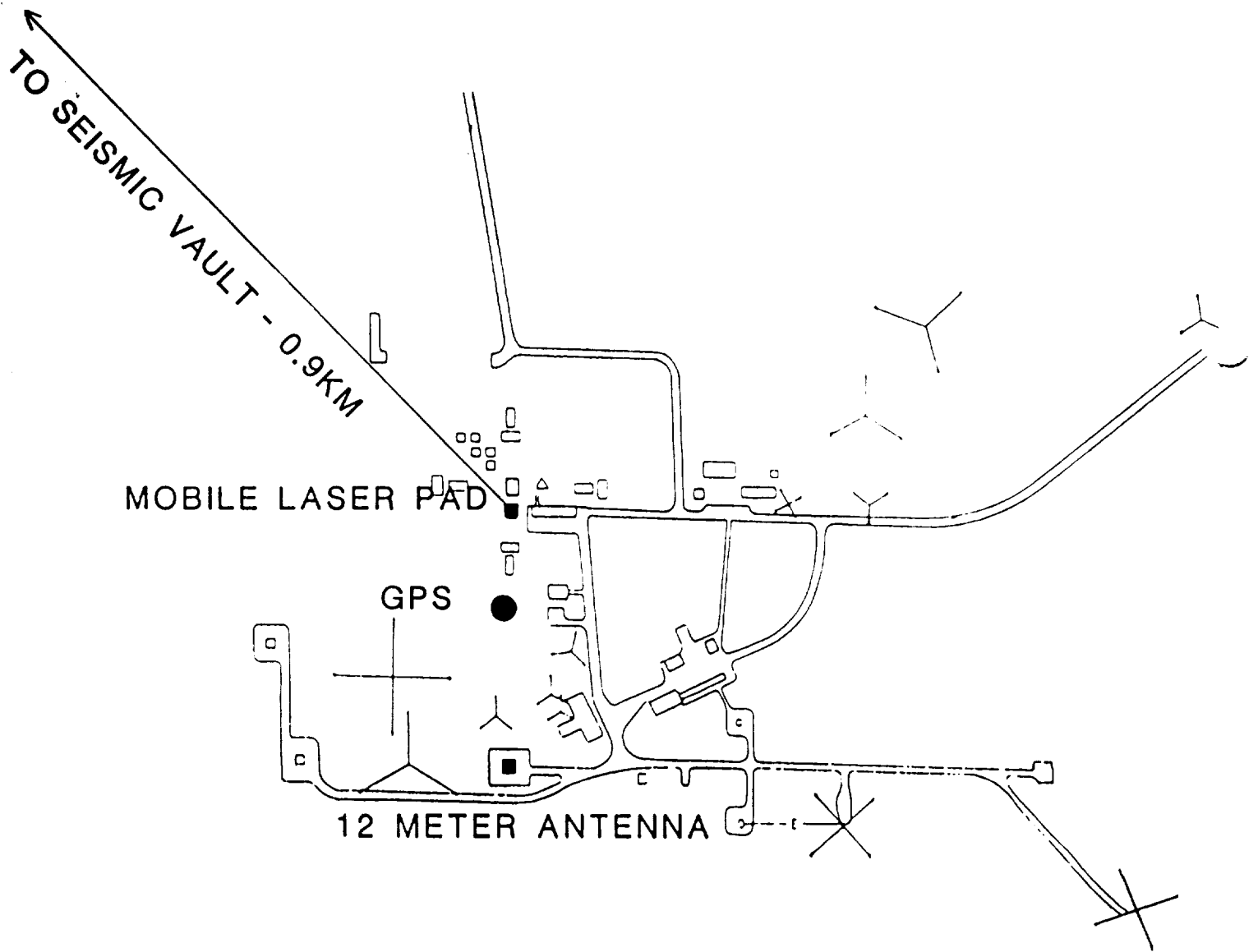
Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7400 AZ MARK	-407.0369	-568.3007	600.1505
--	7400 RM 1 (1984)	26.2192	0.7185	12.0426
--	7400 RM 2 (1984)	-5.2004	14.9762	-24.1029
--	7400 RM 3 (1984)	-21.2134	-15.0835	12.4589
--	PIER A	158.6809	-7.2398	84.8097
--	PIER C	-82.0513	-108.8504	117.6821
--	GIG-91 MARKER	25.0645	100.6373	-136.3905
1404	NONE	-6.5395	108.4396	-175.0726
4001	SANTIAGO GPS 1992	-6.3092	38.8295	-61.1460

SITE SKETCH

Site Number: 99
Current Site Name: SANTIAGO
Location: SANTIAGO, CHILE



PREVIOUS OCCUPATION INFORMATION

Site Number: 99

Current Site Name: SANTIAGO

Location: SANTIAGO, CHILE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7400	TLRS-1	74001101	07-MAR-84	10-MAY-84

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1319	9-METER	13194201	01-JAN-91	---
1404	12-METER	14044301	01-JAN-91	---

MONUMENT INFORMATION

Site Number: 46

Current Site Name: SANTIAGO DE CUBA

Other Site Name:

Location: SANTIAGO DE CUBA, CUBA

Geographic Region: CARIBBEAN

Tectonic Plate: CARIBBEAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1953	CUBLAS	19532001	01-MAY-76	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 50

Current Site Name: SEATTLE

Other Site Name:

Location: SEATTLE, WA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE NATIONAL GEODETIC SURVEY'S NATIONAL CRUSTAL MOTION NETWORK.

Site Description: THE SITE IS LOCATED ON THE WESTERN SHORE OF LAKE WASHINGTON, ON SANDY POINT, ON THE PROPERTY OF THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION FACILITY, ON THE NORTHEAST SIDE OF THE POINT IN A GENTLE, SLOPING, GRASSY AREA AND AT 7600 SAND POINT WAY, N.E. THE STATION IS A STANDARD NGS DISK SET IN A SQUARE CONCRETE MONUMENT 26 CM ON A SIDE LOCATED 16.4 METERS SOUTHWEST FROM THE EDGE OF LAKE WASHINGTON AND 36.9 METERS N-NORTHEAST FROM THE CENTER OF AN OLD PAVED ROAD.

Site Topo Map: UNKNOWN

-- GEOLOGICAL INFORMATION --

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 50
Current Site Name: SEATTLE
Location: SEATTLE, WA
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7229
Type of Monument: STANDARD NGS DISK
Monument Inscription: AVIATION 2 1982
Systems Using Monument: MOBILE VLBI

Latitude: N 47 41' 08.44932"
Longitude: W 122 14' 56.79934"
Elevation: 7.7772 meters (NAVD 88)
Height Above Ellipsoid:
Survey Source/Date: NGS/1993
Datum/Ellipsoid: NAD83/ GRS 80

Comments: NONE.

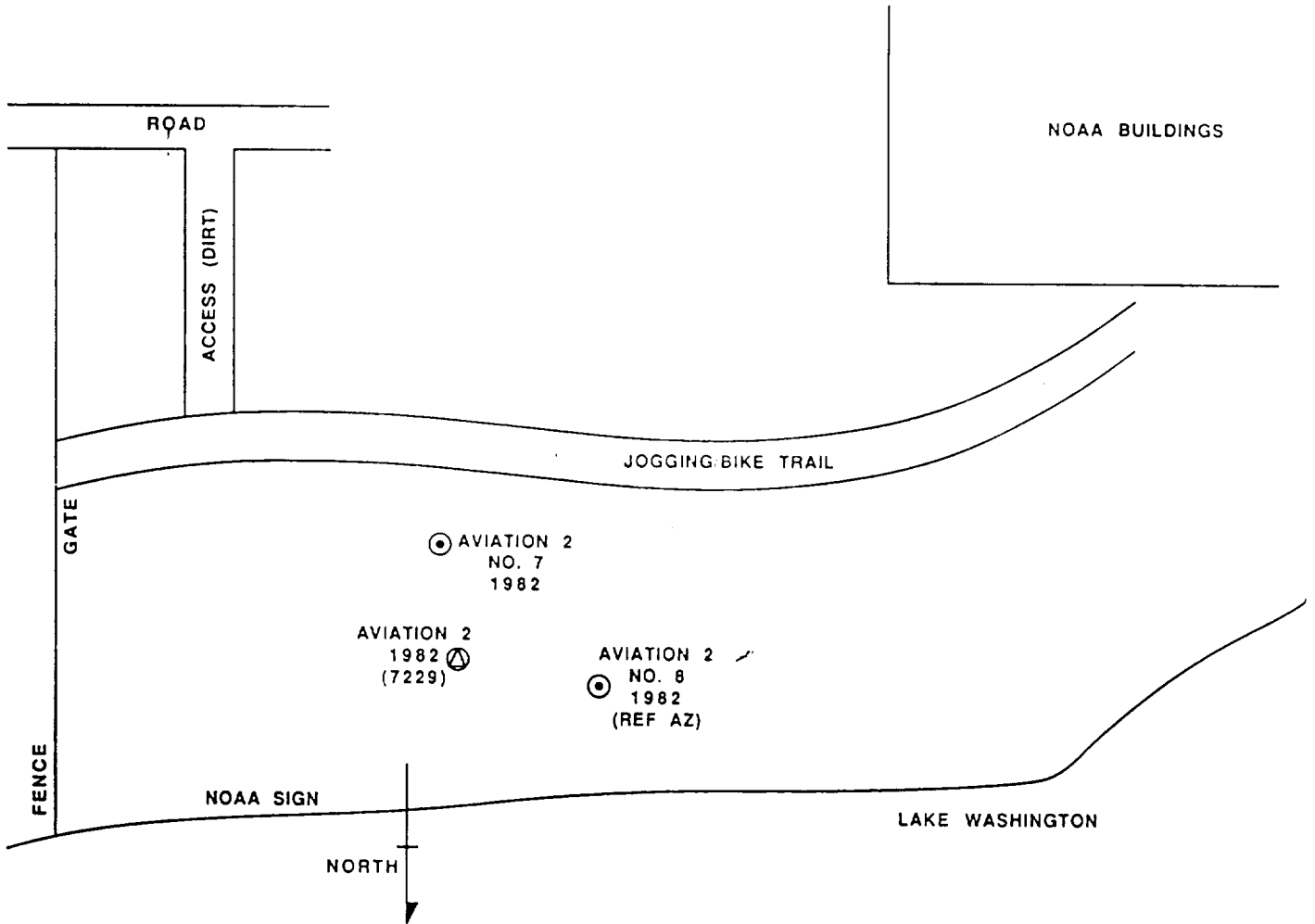
Differential Coordinates FROM Observing Monument 7229 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 50
Current Site Name: SEATTLE
Location: SEATTLE, WA



PREVIOUS OCCUPATION INFORMATION

Site Number: 50

Current Site Name: SEATTLE

Location: SEATTLE, WA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7229	MV-2	72295201	15-AUG-87	17-AUG-87
7229	MV-2	72295202	18-AUG-88	21-AUG-88

-- SITE INFORMATION --

Site Number: 660

Current Site Name: SHANGHAI

Other Site Name:

Location: SHANGHAI OBS., PEOPLES REPUBLIC OF CHINA

Geographic Region: ASIA

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF GLOBAL PLATE MOTION.

Site Description: THE STATION IS LOCATED AT THE SHANGHAI OBSERVATORY IN THE ZI-KA-WEI SECTION. THE LASER SYSTEM BEGAN OPERATIONS IN 1975 AND WAS TERMINATED IN DECEMBER 1982. A NEW LASER WAS INTEGRATED AND BECAME OPERATIONAL IN 1984. A 25-METER ANTENNA HAS BEEN CONSTRUCTED AT THIS SITE FOR VLBI MEASUREMENTS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: ALLUVIAL PLAIN OF THE YANGTSE DELTA.

Local Geology: SO-SE IS A SMALL HILL IN THE ALLUVIUM PLAINS OF THE YANGTSE DELTA, INTERBEDDED WITH VOLCANIC SERIES OF THE MESOZOIC ERA.

Comments: NONE

MONUMENT INFORMATION

Site Number: 660
Current Site Name: SHANGHAI
Location: SHANGHAI OBS., PEOPLES REPUBLIC OF CHINA
Number of Observing Monuments: 3
Surveyed into National Network? NO

Monument Number: 7226
Type of Monument: VLBI REFERENCE POINT ON ANTENNA
Monument Inscription: NONE
Systems Using Monument: 6-METER ANTENNA

Latitude: N 31.19019241
Longitude: E 121.42953729
Elevation: 16.970 meters
Height Above Ellipsoid:
Survey Source/Date: YE SHU-HUA, DIRECTOR SHANGHAI
OBSERVATORY/02-JUN-86
Datum/Ellipsoid:

Comments: NONE.

Differential Coordinates FROM Observing Monument 7226 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

MONUMENT INFORMATION (Continued)

Site Number: 660

Current Site Name: SHANGHAI

Location: SHANGHAI OBS., PEOPLES REPUBLIC OF CHINA

Monument Number: 7233

Type of Monument: ANTENNA REFERENCE POINT

Monument Inscription: NONE

Systems Using Monument: 25 METER ANTENNA

Latitude:

Longitude:

Elevation:

Height Above Ellipsoid:

Survey Source/Date:

Datum/Ellipsoid:

Comments: THIS ANTENNA IS REFERENCED AS SESHAN25 AND IS LOCATED NEAR THE FIXED LASER AND THE 6-METER ANTENNA.

Differential Coordinates FROM Observing Monument 7233 TO Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

MONUMENT INFORMATION (Continued)

Site Number: 660
Current Site Name: SHANGHAI
Location: SHANGHAI OBS., PEOPLES REPUBLIC OF CHINA

Monument Number: 7837
Type of Monument: CENTER OF 45 DEGREE BENDING MIRROR (REFERENCE PT ON MOUNT)
Monument Inscription: NONE
Systems Using Monument: FIXED LASER

Latitude: N 31.097527357
Longitude: E 121.191740599
Elevation: 29.023 meters
Height Above Ellipsoid:
Survey Source/Date: LPM 8402/01-NOV-83
Datum/Ellipsoid: WGS 84

Comments: NONE

Differential Coordinates FROM Observing Monument 7837 TO
Reference Monuments and Other Observing Monuments

Data Source: LOCAL SURVEY AT SESHAN RADIO OBSERVATORY STATION / SGMS
NEWSLETTER, MARCH 1992

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7233	NONE	-598.854	-469.637	154.972

PREVIOUS OCCUPATION INFORMATION

Site Number: 660

Current Site Name: SHANGHAI

Location: SHANGHAI OBS., PEOPLES REPUBLIC OF CHINA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7837	CHILAS	78373701	01-AUG-83	11-DEC-85
7837	CHILAS	78373702	12-DEC-85	28-FEB-86
7837	CHILAS	78373703	01-MAR-86	27-OCT-87
7837	CHILAS	78372804	27-OCT-87	07-APR-88
7837	CHILAS	78372805	08-APR-88	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7233	SESHAN 25	72336101	10-DEC-88	---

-- SITE INFORMATION --

Site Number: 386

Current Site Name: SHINTOMI

Other Site Name: MIYAZAKI

Location: SHINTOMI, MIYAZAKI, JAPAN

Geographic Region: ASIA

Tectonic Plate: EURASIA

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF INTERNAL PLATE MOTION, CONTROL OF GEODETIC NETWORK IN JAPAN, AND MONITORING OF SEA LEVEL.

Site Description: THE SITE IS LOCATED IN A SUBURB OF SHINTOMI TOWN, MIYAZAKI PREFECTURE. CURRENTLY THE SITE IS REPRESENTED BY A METAL MARK PLACED IN THE CONCRETE BASEMENT OF A 5 METER TRANSPORTABLE ANTENNA OF THE GEOGRAPHICAL SURVEY INSTITUTE (GSI). THE SITE WAS OCCUPIED IN 1986 AND 1988. ALTHOUGH THE ANTENNA HAS BEEN REMOVED, REOCCUPATION IS ALWAYS POSSIBLE.

Site Topo Map: NI-52-24-6-12-1 (GSI)

GEOLOGICAL INFORMATION

Geological Province: UPPER PLEISTOCENE RIVER TERRACE DEPOSITS

Local Geology: GRAVEL, SAND, AND MUD

Comments: NONE

MONUMENT INFORMATION

Site Number: 386
 Current Site Name: SHINTOMI
 Location: SHINTOMI, MIYAZAKI. JAPAN
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7312
 Type of Monument: INTERSECTION OF AZ/EL AXES
 Monument Inscription: NONE
 Systems Using Monument: 5-METER TRANSPORTABLE ANTENNA

Latitude: N 32 05' 14.337"
 Longitude: E 131 29' 06.602"
 Elevation: 78.41 meters
 Height Above Ellipsoid: 60.68 meters
 Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/ JUL-86
 Datum/Ellipsoid: TOKYO DATUM/BESSEL

Comments: A = 6377397.155 F = 1/299.152813

Differential Coordinates FROM Observing Monument 7312 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	VLBI MARKER	2.256	-2.552	-2.136

PREVIOUS OCCUPATION INFORMATION

Site Number: 386

Current Site Name: SHINTOMI

Location: SHINTOMI, MIYAZAKI. JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7312	JMV	73124401	06-NOV-88	12-NOV-88

-- SITE INFORMATION --

Site Number: 388

Current Site Name: SHINTOTSUKAWA

Other Site Name:

Location: SHINTOTSUKAWA, HOKKAIDO, JAPAN

Geographic Region: ASIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF INTERNAL PLATE MOTION, CONTROL OF GEODETIC NETWORK IN JAPAN, AND MONITORING OF SEA LEVEL.

Site Description: THE SITE WAS TEMPORARILY BUILT IN THE FIELDS AT SHINTOTSUKAWA-TOWN, HOKKAIDO PREFECTURE BY THE GEOGRAPHICAL SURVEY INSTITUTE (GSI). CURRENTLY THE SITE IS REPRESENTED BY A METAL MARK PLACED IN THE CONCRETE BASEMENT OF A TRANSPORTABLE ANTENNA OF THE GSI. THE SITE WAS OCCUPIED BY THE ANTENNA IN 1990. ALTHOUGH THE ANTENNA HAS BEEN REMOVED, REOCCUPATION IS ALWAYS POSSIBLE. A GPS CIGNET SITE IS OPERATING NEXT TO THIS SITE.

Site Topo Map: NK-54-13-3-4 (GSI)

GEOLOGICAL INFORMATION

Geological Province: MIDDLE TO UPPER PLEISTOCENE RIVER TERRACE DEPOSITS

Local Geology: SAND, GRAVEL, CLAY, AND PEAT

Comments: NONE

MONUMENT INFORMATION

Site Number: 388
Current Site Name: SHINTOTSUKAWA
Location: SHINTOTSUKAWA, HOKKAIDO, JAPAN
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7315
Type of Monument: INTERSECTION OF AZ/EL AXES
Monument Inscription: NONE
Systems Using Monument: 5-METER TRANSPORTABLE ANTENNA

Latitude: N 43 31' 34.900"
Longitude: E 141 50' 54.040"
Elevation: 86.886 meters
Height Above Ellipsoid: 46.665 meters
Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/ JUL-90
Datum/Ellipsoid: TOKYO DATUM/BESSEL

Comments: A = 6377397.155 F = 1/299.152813

Differential Coordinates FROM Observing Monument 7315 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	VLBI MARKER	2.296	-1.807	-2.769

PREVIOUS OCCUPATION INFORMATION

Site Number: 388

Current Site Name: SHINTOTSUKAWA

Location: SHINTOTSUKAWA, HOKKAIDO, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7315	JMV	73154401	23-JUL-90	31-JUL-90

-- SITE INFORMATION --

Site Number: 625

Current Site Name: SIMEIZ

Other Site Name:

Location: SIMEIZ, CRIMEA, UKRAINE

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1873	SHOLAS	18734901	01-MAY-76	---
7561	MTLRS-1	75611501	16-OCT-91	22-NOV-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 870

Current Site Name: SIMOSATO

Other Site Name:

Location: SIMOSATO HYDROGRAPHIC OBSERVATORY, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, POLAR MOTION/EARTH ROTATION, AND MEASUREMENTS SUPPORTING SLR TECHNIQUE DEVELOPMENT.

Site Description: THE SIMOSATO HYDROGRAPHIC OBSERVATORY, ONE OF THE FOUR HYDROGRAPHIC OBSERVATORIES OF THE MARITIME SAFETY AGENCY, IS LOCATED AT SIMOSATO NEAR THE SOUTHERN TIP OF KII PENINSULA, HONSHU, MAINLAND JAPAN. A SATELLITE LASER RANGING SYSTEM WAS INSTALLED AT THE OBSERVATORY IN EARLY MARCH 1982. THE SYSTEM NOT ONLY PROVIDES DATA FOR THE STUDY OF POLAR MOTION AND EARTH ROTATION, BUT ALSO FOR STUDIES ON THE TOKYO DATUM.

Site Topo Map: AVAILABLE FROM HYDROGRAPHIC OBSERVATORY.

GEOLOGICAL INFORMATION

Geological Province: SOUTHWEST JAPAN; OUTER ZONE; SHIMONO BELT

Local Geology: KUMANO ACIDIC IGNEOUS ROCKS OVERLAIN BY MIDDLE MIOCENE SIMOSATO SANDSTONE AND SILTSTONE. THESE ROCKS ARE OVERLAIN BY PLEISTOCENE MARINE TERRACE DEPOSITS.

Comments: NONE.

MONUMENT INFORMATION

Site Number: 870
 Current Site Name: SIMOSATO
 Location: SIMOSATO HYDROGRAPHIC OBSERVATORY, JAPAN
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7838
 Type of Monument: CENTER OF THE RING OF THE BASE PIER
 Monument Inscription: NONE
 Systems Using Monument: SHOLAS FIXED LASER

Latitude: N 33 34' 27.496''
 Longitude: E 135 56' 23.537''
 Elevation: 60.340 meters
 Height Above Ellipsoid:
 Survey Source/Date: JHD TOKYO-SHO/31-JAN-82
 Datum/Ellipsoid: TOKYO/BESSEL

Comments: REFERENCE POINT OF THE SLR (INTERSECTION OF EL-AZ AXES) IS
 2.106 M HIGH ABOVE THE CENTER OF THE RING OF THE BASE PIER.

Differential Coordinates FROM Observing Monument 7838 TO
 Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	FIDUCIAL STONE MARKER	13.703	-2.450	13.823

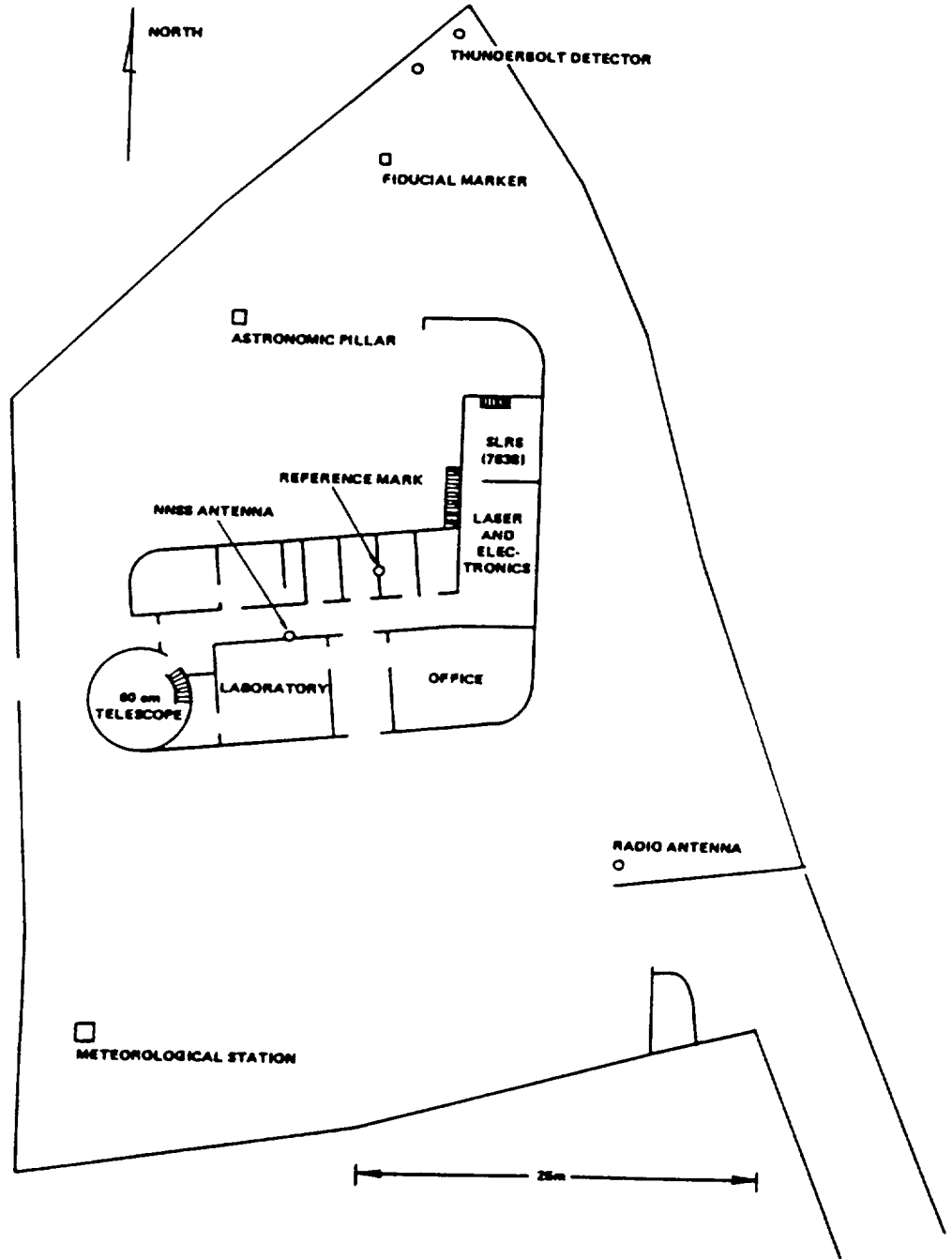
Mon. Number	Monument Inscription	North	East	Up
--	FIDUCIAL STONE MARKER	17.905	-7.770	-1.979

SITE SKETCH

Site Number: 870

Current Site Name: SIMOSATO

Location: SIMOSATO HYDROGRAPHIC OBSERVATORY, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 870

Current Site Name: SIMOSATO

Location: SIMOSATO HYDROGRAPHIC OBSERVATORY, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7838	SHOLAS	78383601	01-MAR-82	30-JUN-90
7838	SHOLAS	78383602	01-JUL-90	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 821

Current Site Name: SOCORRO ISLAND

Other Site Name:

Location: SOCORRO, REVILLAGIGEDO ISLANDS, MEXICO

Geographic Region: NORTH AMERICA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, AND REGIONAL DEFORMATION.

Site Description: THE STATION IS LOCATED ON THE SOUTHERN TIP OF SOCORRO ISLAND IN THE REVILLA GIGEDO GROUP OF ISLANDS OFF THE WEST COAST OF MEXICO. THE SITE IS LOCATED AT BAHIA LUCIO GALLARDO PAVON COVE (BINNER'S COVE) 800 METERS NORTHWEST OF THE MEXICAN NAVAL STATION. A STANDARD SLR PAD HAS BEEN CONSTRUCTED TO ACCOMMODATE ANY MOBILE SLR SYSTEM.

Site Topo Map: NONE AVAILABLE.

GEOLOGICAL INFORMATION

Geological Province: UNKNOWN

Local Geology: VOLCANIC ISLAND

Comments: NO GEODETIC SURVEY OF THIS SITE HAS BEEN CONDUCTED, NOR HAS THE PAD BEEN OCCUPIED.

MONUMENT INFORMATION

Site Number: 821

Current Site Name: SOCORRO ISLAND

Location: SOCORRO, REVILLAGIGEDO ISLANDS, MEXICO

Number of Observing Monuments: 1

Surveyed into National Network? NO

Monument Number: 7881

Type of Monument: STANDARD NASA DISK

Monument Inscription: NONE

Systems Using Monument: MOBILE LASERS

Latitude: N 18 43' 44.93''

Longitude: W 110 57' 20.72''

Elevation:

Height Above Ellipsoid:

Survey Source/Date: COAST & GEODETIC SURVEY, SATELLITE TRIANGULATION
DIVISION/01-DEC-67

Datum/Ellipsoid:

Comments: THE PAD HAS BEEN CONSTRUCTED AT THIS SITE BUT NO SURVEY
HAS BEEN COMPLETED. SURVEY INFORMATION FROM DOPPLER STATION 038.

Differential Coordinates FROM Observing Monument 7881 TO
Reference Monuments and Other Observing Monuments

Data Source:

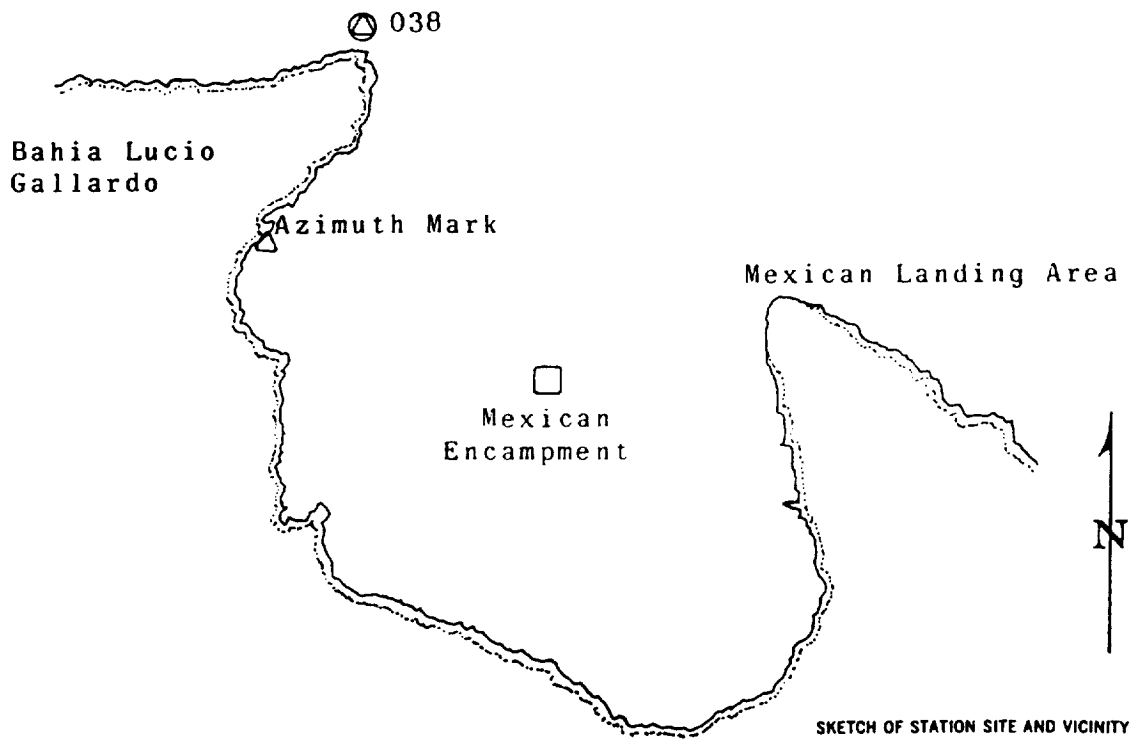
-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 821

Current Site Name: SOCORRO ISLAND

Location: SOCORRO, REVILLAGIGEDO ISLANDS, MEXICO



-- SITE INFORMATION --

Site Number: 804

Current Site Name: SOURDOUGH

Other Site Name:

Location: SOURDOUGH, AK

Geographic Region: ALASKA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE CURRENT SITE IS LOCATED IN SOUTHERN MAINLAND ALASKA. THE ACTUAL SITE IS LOCATED AT AN ABANDONED GRAVEL BURROW PIT THAT RUNS ALONG THE RICHARDSON HIGHWAY, ABOUT 10 MILES NORTH OF THE COMMUNITY OF SOURDOUGH. THE SITE IS COMPATIBLE FOR OCCUPATION BY MOBILE VLBI SYSTEMS.

DUE TO THE PLANNED EXPANSION OF THE RICHARDSON HIGHWAY, A NEW SITE WAS SELECTED IN THE SUMMER OF 1991. THERE HAVE BEEN NO VLBI OCCUPATIONS AT THIS LOCATION. TO REACH THE STATION FROM THE JUNCTION OF STATE HIGHWAY 4 (RICHARDSON HIGHWAY) AND STATE HIGHWAY 8 (DENALI HIGHWAY) IN PAXSON, TRAVEL SOUTH ON HWY 4 FOR 24.6 MILES TO A GRAVEL ROAD LEFT (EAST) MARKED WITH A SIGN LABELLED "28APL1 MP642.0". TURN LEFT AND PROCEED 0.65 MILES TO THE INTERSECTION WITH THE TRANS-ALASKA PIPELINE. CONTINUE STRAIGHT AHEAD ACROSS THE PIPELINE FOR AN ADDITIONAL 0.60 MILES TO THE WEST EDGE OF A LARGE OPEN GRASSY AREA. AT THIS POINT TURN SHARPLY LEFT (NORTH) AND PROCEED 0.1 MILES INTO AN OPEN CLEARING AND WHITE GRANITE ROCK OUTCROPPING ON THE HILLSIDE IMMEDIATELY TO THE NORTH AND THE STATION SITE.

Site Topo Map: MOUNT HAYES (A-4), ALASKA, AND MOUNT HAYES (A-3), ALASKA, 1:63,360 SCALE. U.S.G.S., RESTON, VA AND U.S.G.S. QUAD (1:63,360) GULKANA C-3, ALASKA.

GEOLOGICAL INFORMATION

Geological Province: ALASKA MAINLAND

Local Geology: QUATERNARY GLACIAL DEPOSITS

Comments: NONE

MONUMENT INFORMATION

Site Number: 804
 Current Site Name: SOURDOUGH
 Location: SOURDOUGH, AK
 Number of Observing Monuments: 2
 Surveyed into National Network? YES

Monument Number: 7281
 Type of Monument: NGS MODIFIED CAP SET INSIDE A 24" CAST IRON JUNCTION BOX
 Monument Inscription: NONE
 Systems Using Monument: MOBILE VLBI

Latitude: N 62 39' 50.0033''
 Longitude: W 145 29' 01.7744''
 Elevation:
 Height Above Ellipsoid: 744.599 meters
 Survey Source/Date: NGS GPS RESULTS/01-JAN-86
 Datum/Ellipsoid: WGS 72

Comments: NONE

Differential Coordinates FROM Observing Monument 7281 TO Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	BM O8	-12377.251	-6520.714	-7358.701
--	SOU 1	9.369	-53.889	-11.827
--	SOU 2	-51.496	-19.468	-28.832
--	SOU 3	22.157	30.004	17.218

Mon. Number	Monument Inscription	North	East	Up
--	SOU 1	-25.699	49.712	-0.029
--	SOU 2	-60.731	-13.139	-1.062
--	SOU 3	39.227	-12.167	-0.896

MONUMENT INFORMATION (Continued)

Site Number: 804
 Current Site Name: SOURDOUGH
 Location: SOURDOUGH, AK

Monument Number: 7297
 Type of Monument: DISK IN BEDROCK
 Monument Inscription: 7297
 Systems Using Monument: MOBILE VLBI

Latitude: N 62 41' 16.75600"
 Longitude: W 145 25' 33.80900"
 Elevation: 769.62 meters
 Height Above Ellipsoid: 742.00 meters
 Survey Source/Date: BFEC/ 1991
 Datum/Ellipsoid: NAD83/ GRS 80

Comments: PRELIMINARY POSITION BASED ON GPS TIE BETWEEN 7281 AND 7297.

Differential Coordinates FROM Observing Monument 7297 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

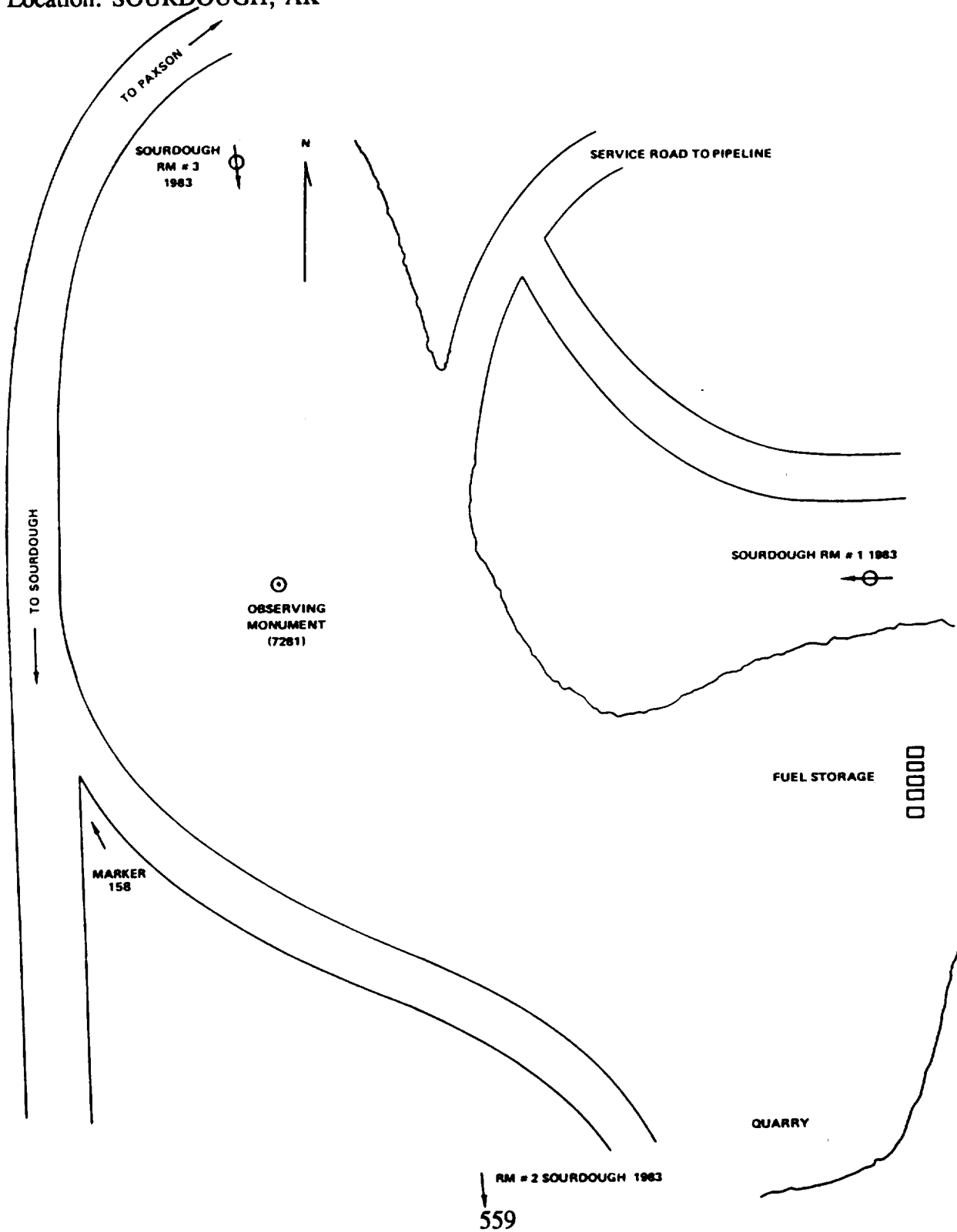
---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7297 RM 1	41.7375	-22.0930	20.8575
--	7297 RM 2	-43.4338	-37.6533	-40.6057
--	7297 RM 3	-13.4595	37.3798	8.4259
--	7297 AZ MK	-205.9289	-241.5378	-185.1144

Mon. Number	Monument Inscription	North	East	Up
--	7297 RM 1	28.9660	41.8760	8.5162
--	7297 RM 2	-69.3928	6.3562	-9.8656
--	7297 RM 3	12.8663	-38.4162	2.8388

SITE SKETCH

Site Number: 804
Current Site Name: SOURDOUGH
Location: SOURDOUGH, AK



PREVIOUS OCCUPATION INFORMATION

Site Number: 804
Current Site Name: SOURDOUGH
Location: SOURDOUGH, AK

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7281	MV-3	72815301	31-JUL-84	09-AUG-84
7281	MV-3	72815302	05-AUG-85	13-AUG-85
7281	MV-3	72815303	10-AUG-86	19-AUG-86
7281	MV-2	72815204	11-AUG-87	13-AUG-87
7281	MV-2	72815205	26-JUL-88	31-JUL-88
7281	MV-2	72815206	31-JUL-89	02-AUG-89

-- SITE INFORMATION --

Site Number: 131

Current Site Name: TIDBINBILLA

Other Site Name:

Location: TIDBINBILLA, AUSTRALIA

Geographic Region: AUSTRALIA

Tectonic Plate: AUSTRALIAN-INDIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF THE MOTION OF THE AUSTRALIA-INDIA TECTONIC PLATE AND SERVES AS AN IMPORTANT SOUTHERN HEMISPHERE FIDUCIAL POINT.

Site Description: THIS SITE IS LOCATED IN SOUTHEAST AUSTRALIA. A 34-METER IS USED FOR VLBI MEASUREMENTS.

Site Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UNKNOWN

Comments: NONE

MONUMENT INFORMATION

Site Number: 131
 Current Site Name: TIDBINBILLA
 Location: TIDBINBILLA, AUSTRALIA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 1642
 Type of Monument: VLBI REFERENCE POINT
 Monument Inscription: NONE
 Systems Using Monument: 34 METER VLBI AZ-EL ANTENNA DSS45

Latitude: S 35 23 54.4928''
 Longitude: E 148 58 39.6691''
 Elevation: 655.359 meters
 Height Above Ellipsoid: 675.891 meters
 Survey Source/Date: AUSLIG, GEODETIC SERV. SECTION/01-NOV-88
 Datum/Ellipsoid: WGS 1984 (DERIVED)

Comments: THE VLBI REFERENCE POINT IS THE INTERSECTION OF THE
 HORIZONTAL AND VERTICAL PLANES CONTAINING CENTER OF THE AXIS OF
 ROTATION.

Differential Coordinates FROM Observing Monument 1642 TO
 Reference Monuments and Other Observing Monuments

Data Source: AUSLIG

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	DSS42 ANTENNA (34 METER)	-45.719	-352.197	-200.597
--	DSS43 ANTENNA (70 METER)	40.684	-404.160	-367.152
--	DSS46 ANTENNA (26 METER)	106.631	-636.154	-594.106
--	NM/C/194	-80.122	-45.920	82.640
--	NM/C/196	-35.655	-414.098	-230.880
--	NM/C/197	116.713	-642.218	-585.742
--	AUSSAT COMM. ANTENNA	-14.432	-392.616	-252.182
--	TID GPS	-15.713	-400.291	-258.273

PREVIOUS OCCUPATION INFORMATION

Site Number: 131

Current Site Name: TIDBINBILLA

Location: TIDBINBILLA, AUSTRALIA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7944	SALRO	79445501	01-OCT-91	20-DEC-91

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
1642	DSS 45	16426001	10-DEC-88	---

-- SITE INFORMATION --

Site Number: 139

Current Site Name: TOKYO

Other Site Name:

Location: TOKYO, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7308	CRLLAS	73085001	01-JAN-90	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 697
Current Site Name: TOULOUSE
Location: TOULOUSE, FRANCE
Geographic Region: EUROPE
Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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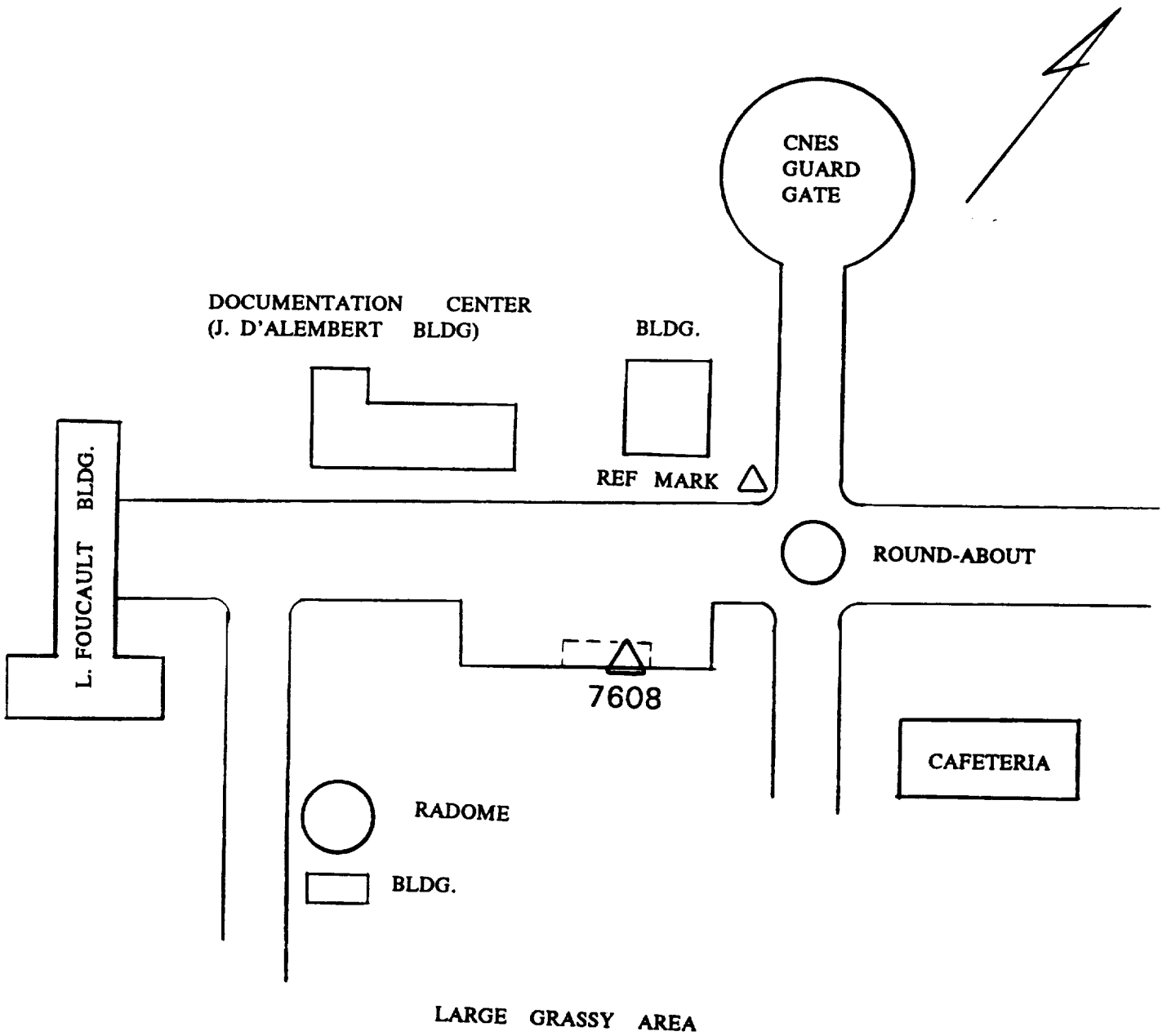
7608	MV-2	76025201	10-MAY-92	13-MAY-92
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SITE SKETCH

Site Number: 697

Current Site Name: TOULOUSE

Location: TOULOUSE, FRANCE



NOTE: MV-2 OCCUPATION SKETCH 5/92

-- SITE INFORMATION --

Site Number: 671

Current Site Name: TROMSOE

Other Site Name:

Location: TROMSOE, NORWAY

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF POLAR MOTION, EARTH ROTATION, AND INTERNAL PLATE DEFORMATION.

Site Description: THE SITE IS LOCATED AT THE UNIVERSITY OF TROMSO AREA, IN THE NORTHERN PART OF NORWAY, IN THE COUNTY OF TROMS, AND IS OPERATED BY THE GEODETIC INSTITUTE OF STATENS KARTVERK.

Site Topo Map:

GEOLOGICAL INFORMATION

Geological Province:

Local Geology:

Comments: NONE

MONUMENT INFORMATION

Site Number: 671
Current Site Name: TROMSOE
Location: TROMSOE, NORWAY

Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7602
Type of Monument:
Monument Inscription:
Systems Using Monument: MOBILE VLBI AND MOBILE SLR

Latitude: N 69 39' 46.7024"
Longitude: E 18 56' 21.9638"
Elevation: 101.40 meters
Height Above Ellipsoid: 132.90 meters
Survey Source/Date: STATENS KARTVERK/DEC 1992
Datum/Ellipsoid: ITRF90 (1988.0)

Comments: NONE

Differential Coordinates FROM Observing Monument 7602 TO
Reference Monuments and Other Observing Monuments

Data Source: STATENS KARTVERK. DORIS INFORMATION PROVIDED BY IGN.

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	GPS REF MARK	36.289	-33.115	-9.215
--	PRARE REF MARK	29.798	11.158	-6.212
--	DORIS ANT REF PT	11.225	1.567	0.514

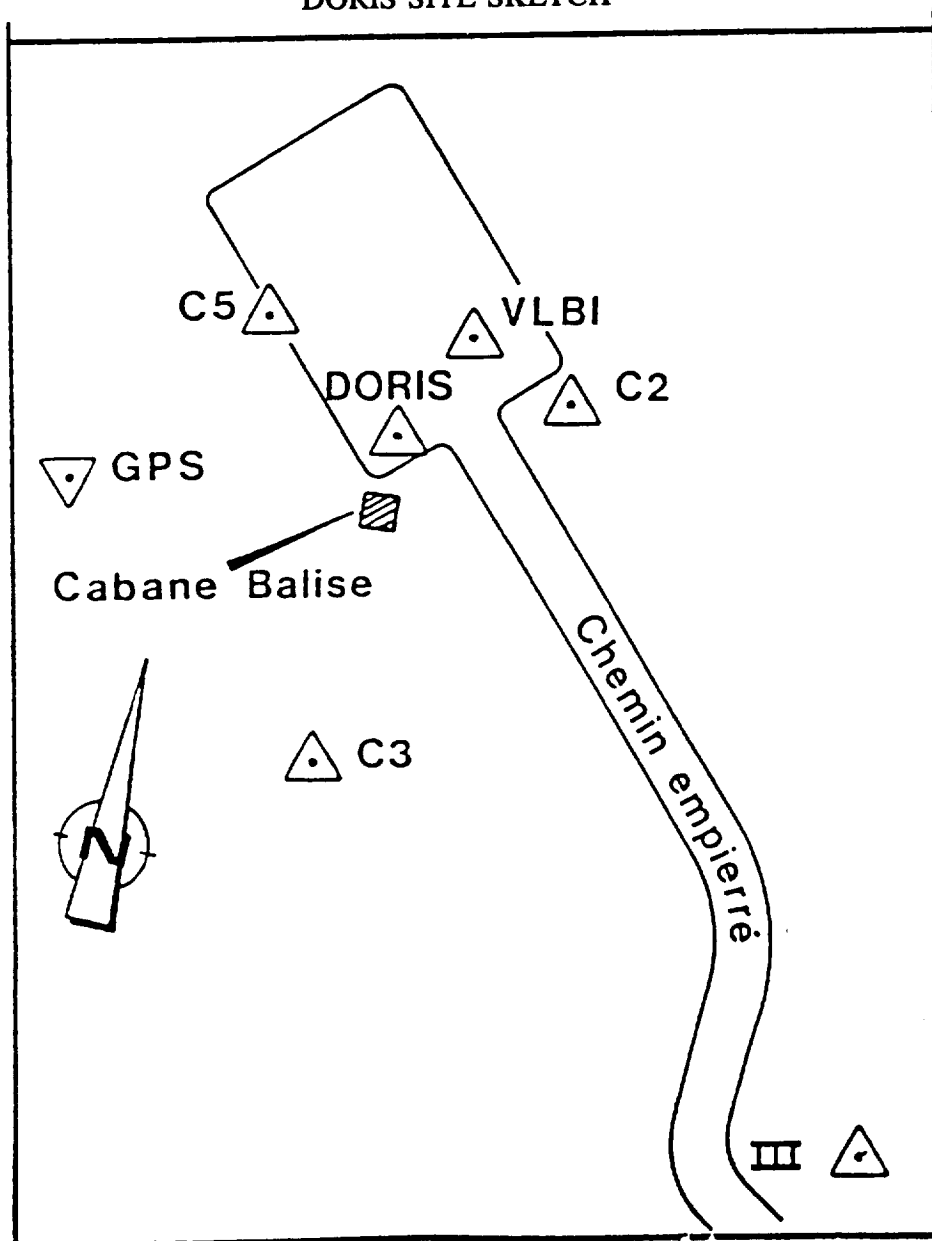
SITE SKETCH

Site Number: 671

Current Site Name: TROMSOE

Location: TROMSOE, NORWAY

DORIS SITE SKETCH



PREVIOUS OCCUPATION INFORMATION

Site Number: 671

Current Site Name: TROMSOE

Location: TROMSOE, NORWAY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7602	MTLRS-2	76021601	05-AUG-90	01-OCT-90

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7602	MV-3	76025301	20-JUL-89	26-JUL-89
7602	MV-2	76025202	11-AUG-92	21-AUG-92

-- SITE INFORMATION --

Site Number: 696

Current Site Name: TRYSIL

Other Site Name:

Location: TRYSIL, NORWAY

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7607	MV-2	76075201	01-DEC-91	---

-- SITE INFORMATION --

Site Number: 389

Current Site Name: TSUKUBA

Other Site Name:

Location: TSUKUBA, IBARAKI, JAPAN

Geographic Region: ASIA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF INTERNAL PLATE MOTION, CONTROL OF GEODETIC NETWORK IN JAPAN, AND MONITORING OF SEA LEVEL.

Site Description: THE STATION IS LOCATED AT THE GEOGRAPHICAL SURVEY INSTITUTE (GSI), MINISTRY OF CONSTRUCTION. A TRANSPORTABLE 5-METER ANTENNA IS USED FOR JUST VLBI MEASUREMENTS. IT IS BASICALLY INSTALLED AT THIS SITE AND HAS BEEN CARRIED TO OTHER SITES: SHINTOMI (MIYAZAKI), CHICHIJIMA (TITIJIMA), SHINTOTSUKAWA, AND MIZUSAWA. THE GPS CIGNET STATION IS ABOUT 50 METERS FROM THIS ANTENNA.

Site Topo Map: NJ-54-24-16-3 (GSI)

GEOLOGICAL INFORMATION

Geological Province: MIDDLE TO UPPER PLEISTOCENE VOLCANIC TEPHRA.

Local Geology: ORIGINALLY VOLCANIC ASH, PUMICE, ETC. MOST OF THEM WEATHERED TO FORM SO-CALLED KANTO LOAM. VOLCANIC EJECTA WERE PROVIDED BY PLEISTOCENE/ACTIVE VOLCANOES SUCH AS HAKONE, AKAGI, AND OTHERS. HOWEVER, AT PRESENT, NO ACTIVE VOLCANISM IS WITHIN 80 KILOMETERS.

Comments: NONE

MONUMENT INFORMATION

Site Number: 389
Current Site Name: TSUKUBA
Location: TSUKUBA, IBARAKI, JAPAN
Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7311
Type of Monument: INTERSECTION OF AZ/EL AXES
Monument Inscription: NONE
Systems Using Monument: 5-METER TRANSPORTABLE ANTENNA

Latitude: N 36 06' 08.804"
Longitude: E 140 05' 24.943"
Elevation: 29.21 meters
Height Above Ellipsoid: 30.17 meters
Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/ OCT-82
Datum/Ellipsoid: TOKYO DATUM/BESSEL

Comments: A = 6377397.155 F = 1/299.152813

Differential Coordinates FROM Observing Monument 7311 TO
Reference Monuments and Other Observing Monuments

Data Source: TIE TO GPS MARK FROM IGS MAIL

---- Differential Coordinates ----

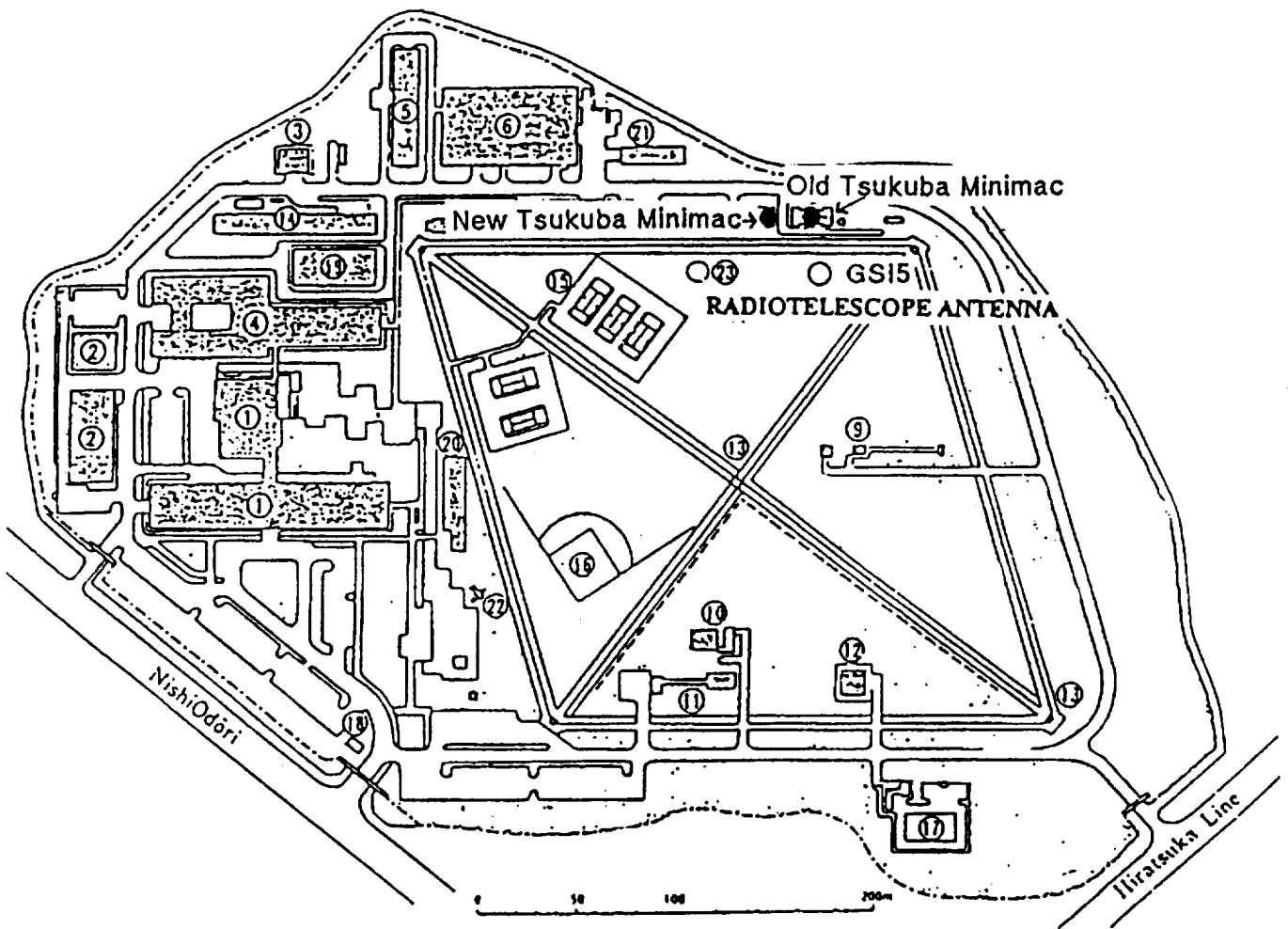
Mon. Number	Monument Inscription	X	Y	Z
--	VLBI MARKER	2.497	-2.089	-2.375
--	GPS MARK	-9.814	-31.622	27.107

SITE SKETCH

Site Number: 389

Current Site Name: TSUKUBA

Location: TSUKUBA, IBARAKI, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 389

Current Site Name: TSUKUBA

Location: TSUKUBA, IBARAKI, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7311	JMV	73114401	18-JUL-84	19-JUL-84
7311	JMV	73114402	08-AUG-85	09-AUG-85
7311	JMV	73114403	17-FEB-86	18-FEB-86
7311	JMV	73114404	23-FEB-87	24-FEB-87
7311	JMV	73114405	09-FEB-88	10-FEB-88
7311	JMV	73114406	25-AUG-88	26-AUG-88
7311	JMV	73114407	29-AUG-89	30-AUG-89

-- SITE INFORMATION --

Site Number: 875

Current Site Name: TSUSHIMA

Other Site Name: TUSIMA

Location: PATROL SHIP BASE, IZUHARA MARITIME SAFETY OFFICE, IZUHARA CITY, NAGASAKI, JAPAN

Geographic Region: SOUTHERN JAPAN SEA

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS OF THE THREE DIMENSIONAL GEODETIC POSITION OF THE ISLAND BY THE SIMULTANEOUS LASER OBSERVATION WITH THE SIMOSATO HYDROGRAPHIC OBSERVATORY (SHO). THE OBSERVATION WAS CARRIED OUT FROM OCTOBER TO NOVEMBER 1989 BY USING THE HYDROGRAPHIC DEPARTMENT TRANSPORTABLE LASER RANGING STATION (HTLRS).

Site Description: TUSIMA LIES IN THE TUSIMA STRAIT, BETWEEN JAPAN AND KOREA. THE SITE IS LOCATED IN THE PATROL SHIP BASE OF THE IZUHARA MARITIME SAFETY OFFICE, IN THE RECLAIMED AREA OF THE IZUHARA HARBOR. A STONE MARKER IS ESTABLISHED.

Site Topo Map: IZUHARA (NO. NG-52-15-11-4) OF THE 1:25,000 TOPO MAP SERIES OF THE GEOGRAPHICAL SURVEY INSTITUTE (GSI) OF JAPAN.

GEOLOGICAL INFORMATION

Geological Province: NORTHWEST KYUSHU, TUSHIMA BELT

Local Geology: QUARTZ-PORPHYRY

Comments: NONE

MONUMENT INFORMATION

Site Number: 875
Current Site Name: TSUSHIMA
Location: IZUHARA CITY, NAGASAKI, JAPAN

Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7302
Type of Monument: FIDUCIAL STONE MARKER
Monument Inscription: NONE
Systems Using Monument: HTLRS

Latitude: N 34 11' 35.528"
Longitude: E 129 17' 45.305"
Elevation: 2.88 m
Height Above Ellipsoid: NOT AVAILABLE
Survey Source/Date: HYDROGRAPHIC DEPARTMENT / NOV-89
Datum/Ellipsoid: TOKYO / BESSEL

Comments: NONE

Differential Coordinates FROM Observing Monument 7302 TO
Reference Monuments and Other Observing Monuments

Data Source: DATA REPORT OF HYDROGRAPHIC OBSERVATIONS, SERIES OF
SATELLITE GEODESY, NO. 5, 1992

---- Differential Coordinates ----

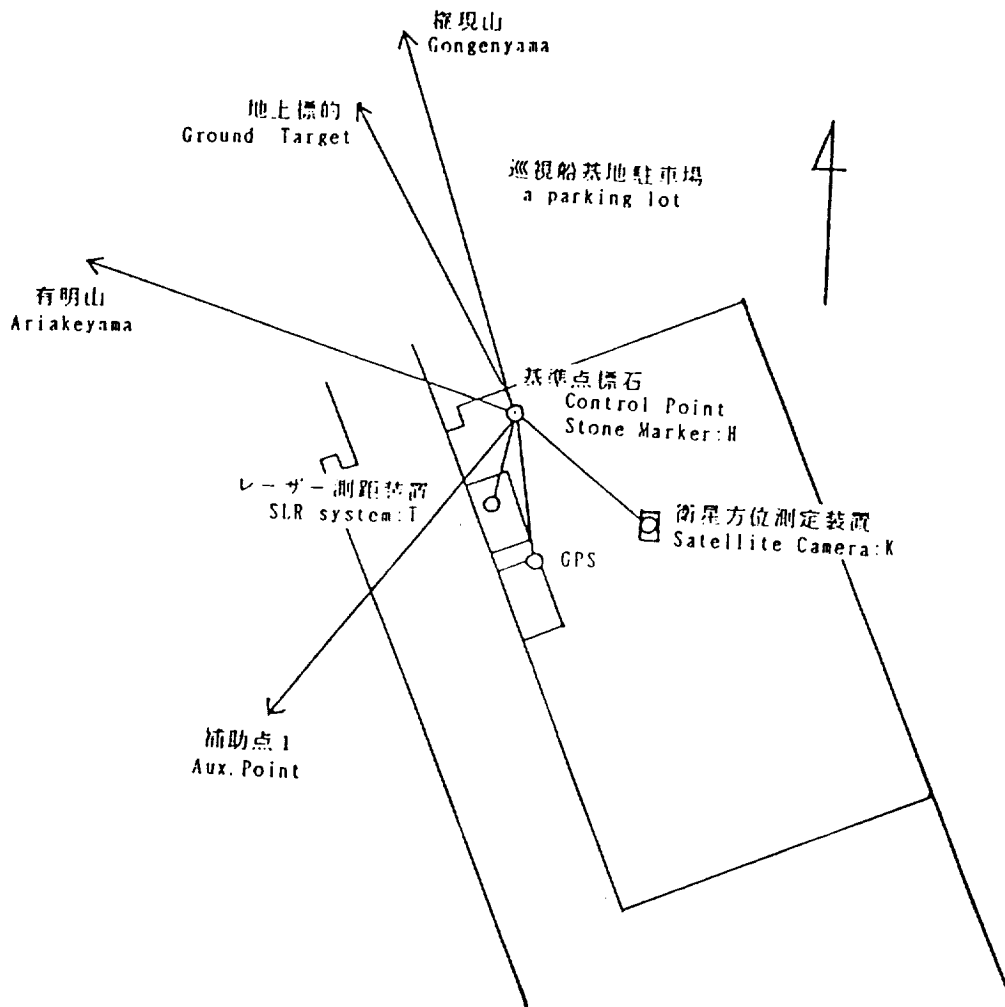
Mon. Number	Monument Inscription	X	Y	Z
--	ARIAKE	2064.058	1644.702	1037.647

SITE SKETCH

Site Number: 875

Current Site Name: TSUSHIMA

Location: IZUHARA CITY, NAGASAKI, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 875

Current Site Name: TSUSHIMA

Location: IZUHARA CITY, NAGASAKI, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7302	HTLRS-1	73021701	03-OCT-89	25-NOV-89

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 632

Current Site Name: USSURIISK

Other Site Name:

Location: USSURIISK, RUSSIAN FEDERATION

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7247	70-METER	72474601	12-MAR-92	---

-- SITE INFORMATION --

Site Number: 140

Current Site Name: USUDA

Other Site Name:

Location: USUDA, JAPAN

Geographic Region: PACIFIC

Tectonic Plate: PACIFIC

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7246	64-METER	72464501	30-JUL-90	---

-- SITE INFORMATION --

Site Number: 9

Current Site Name: VANDENBERG

Other Site Name:

Location: VANDENBERG AIR FORCE BASE, CA

Geographic Region: CALIFORNIA

Tectonic Plate: PACIFIC

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, REGIONAL DEFORMATION, AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE ORIGINAL SITE WAS LOCATED ON A TELEMETRY RECEIVING SITE ON OAK MOUNTAIN AT VANDENBERG AIR FORCE BASE. TWO MONUMENTS WERE PROVIDED FOR JOINT OCCUPATIONS BY MOBILE VLBI AND LASER SYSTEMS. THE OAK MOUNTAIN SITE HAS BEEN ABANDONED DUE TO EXCESSIVE RADIO FREQUENCY INTERFERENCE. THE NEW SITE IS ON THE SOUTH COAST OF THE AIR FORCE BASE NEAR THE BOAT HOUSE ON THE SANTA BARBARA CHANNEL.

Site Topo Map: LOMPOC HILLS, CALIFORNIA. N3430-W12022.5/7.5, 1959. STATE OF CALIF. DEPARTMENT OF WATER RESOURCES. AVAILABLE AT U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: TRANSVERSE RANGES

Local Geology: MIOCENE MARINE TERRACE DEPOSITS

Comments: NONE.

MONUMENT INFORMATION

Site Number: 9
 Current Site Name: VANDENBERG
 Location: VANDENBERG AIR FORCE BASE, CA
 Number of Observing Monuments: 3
 Surveyed into National Network? NO

Monument Number: 7111
 Type of Monument: DMA DISK
 Monument Inscription: MOBLAS STA 7111 1981 (DET 1 GSS)
 Systems Using Monument: TLRs AND MOBILE VLBI

Latitude: N 34 33' 58.71742''
 Longitude: W 120 29' 56.14501''
 Elevation: 629.148 meters
 Height Above Ellipsoid: 596.994 meters
 Survey Source/Date: DMA, DET. 1 GEODETIC SURVEY SQUADRON/28-JAN-87
 Datum/Ellipsoid: NAD 1927 (WCPT)/CLARKE 1866

Comments: THIS PAD WAS ABANDONED BECAUSE OF RADIO FREQUENCY INTERFERENCE PROBLEMS.

Differential Coordinates FROM Observing Monument 7111 TO Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7223	VLBI STA 7223	-9278.854	5310.196	-1277.219
7880	TLRS STA 7880	-9284.117	5304.203	-1288.507
7887	7887-1983	-52.140	18.408	-2.518
--	7111 RM-1	19.137	6.329	15.283
--	7111 RM-2	3.690	-16.798	-18.131
--	7111 RM-3	-20.979	13.570	0.377

MONUMENT INFORMATION (Continued)

Site Number: 9
 Current Site Name: VANDENBERG
 Location: VANDENBERG AIR FORCE BASE, CA

Monument Number: 7223
 Type of Monument: DMA DISK
 Monument Inscription: VLBI STA 7223 1983
 Systems Using Monument: MV-1

Latitude: N 34 33' 21.89626"
 Longitude: W 120 36' 59.09673"
 Elevation: 23.890 meters
 Height Above Ellipsoid: -12.328 meters
 Survey Source/Date: BFEC HAVAGO/24-MAR-92
 Datum/Ellipsoid: NAD-83 (GRS80)

Comments: THIS IS THE NEW SITE ON SOUTH COAST OF VAFB.

Differential Coordinates FROM Observing Monument 7223 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7111	MOBLAS STA 7111	9278.854	-5310.196	1277.219
7880	TLRS STA 7880	-5.263	-5.993	-11.288
7887	7887 GSFC	9226.714	-5291.788	1274.701
--	PGGA 1991	5.0366	12.9083	21.2287
--	RUSTAD RM 1	-440.0538	1154.0226	1449.2508
--	VLBI STA 7223 RM-1	23.0950	-0.9704	17.2426
--	VLBI STA 7223 RM-2	-1.4436	-17.0937	-23.1693
--	VLBI STA 7223 RM-3	-21.9029	17.6695	6.2799

Monument Number: 7223
 Type of Monument: DMA DISK
 Monument Inscription: VLBI STA 7223 1983
 Systems Using Monument: MV-1

Differential Coordinates FROM Observing Monument 7223 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7880	TLRS STA 7880	-13.741	-1.489	0.053
--	PGGA 1991	25.2394	-2.2403	0.7786
--	VLBI STA 7223 RM-1	20.3990	20.3691	0.7793
--	VLBI STA 7223 RM-2	-27.8425	7.4641	-0.4200
--	VLBI STA 7223 RM-3	7.4692	-27.8486	0.2263

MONUMENT INFORMATION (Continued)

Site Number: 9
 Current Site Name: VANDENBERG
 Location: VANDENBERG AIR FORCE BASE, CA

Monument Number: 7880
 Type of Monument: DMA DISK
 Monument Inscription: TLRS STA 7880
 Systems Using Monument: TLRS

Latitude: N 34 33' 21.476''
 Longitude: W 120 36' 55.511''
 Elevation: 23.747 meters
 Height Above Ellipsoid: -8.403 meters
 Survey Source/Date: DETACHMENT 1 DMA HTC-GSS/28-JAN-87
 Datum/Ellipsoid: NAD 1927(WCPT)/CLARKE 1866

Comments: THIS MONUMENT WAS DESTROYED INADVERTENTLY IN SEP 1987.

Differential Coordinates FROM Observing Monument 7880 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7111	MOBLAS STA 7111	9284.117	-5304.203	1288.507
7223	TLRS STA 7223	5.263	5.993	11.288
7887	7887 GSFC	9231.977	-5285.795	1285.989
--	VLBI STA 7223 RM-1	28.366	5.043	28.555
--	VLBI STA 7223 RM-2	3.828	-11.094	-11.866
--	VLBI STA 7223 RM-3	-16.650	23.680	17.582

Mon. Number	Monument Inscription	North	East	Up
7223	TLRS STA 7223	13.741	1.489	-0.053
--	VLBI STA 7223 RM-1	34.173	21.844	0.725
--	VLBI STA 7223 RM-2	-14.082	8.945	0.473
--	VLBI STA 7223 RM-3	21.231	-26.388	0.172

MONUMENT INFORMATION (Continued)

Site Number: 9
 Current Site Name: VANDENBERG
 Location: VANDENBERG AIR FORCE BASE, CA

Monument Number: 7887
 Type of Monument: DMA DISK
 Monument Inscription: 7887 GSFC-1983
 Systems Using Monument: TLRS

Latitude: N 34 33' 58.45498''
 Longitude: W 120 29' 58.27364''
 Elevation: 636.450 meters
 Height Above Ellipsoid: 604.296 meters
 Survey Source/Date: DMA, DET. 1 GEODETIC SURVEY/28-JAN-87
 Datum/Ellipsoid: NAD 1927/CLARKE 1866

Comments: THIS COLLOCATION SITE ON OAK MOUNTAIN IS NOW ABANDONED.
 THE STATION WAS DESTROYED WHEN AN ANTENNA WAS BUILT OVER IT.

Differential Coordinates FROM Observing Monument 7887 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7111	MOBLAS 7111-1981	52.140	-18.408	2.518
7223	VLBI STA 7223	-9226.714	5291.788	-1274.701
7880	TLRS STA 7880	-9231.977	5285.795	-1285.989

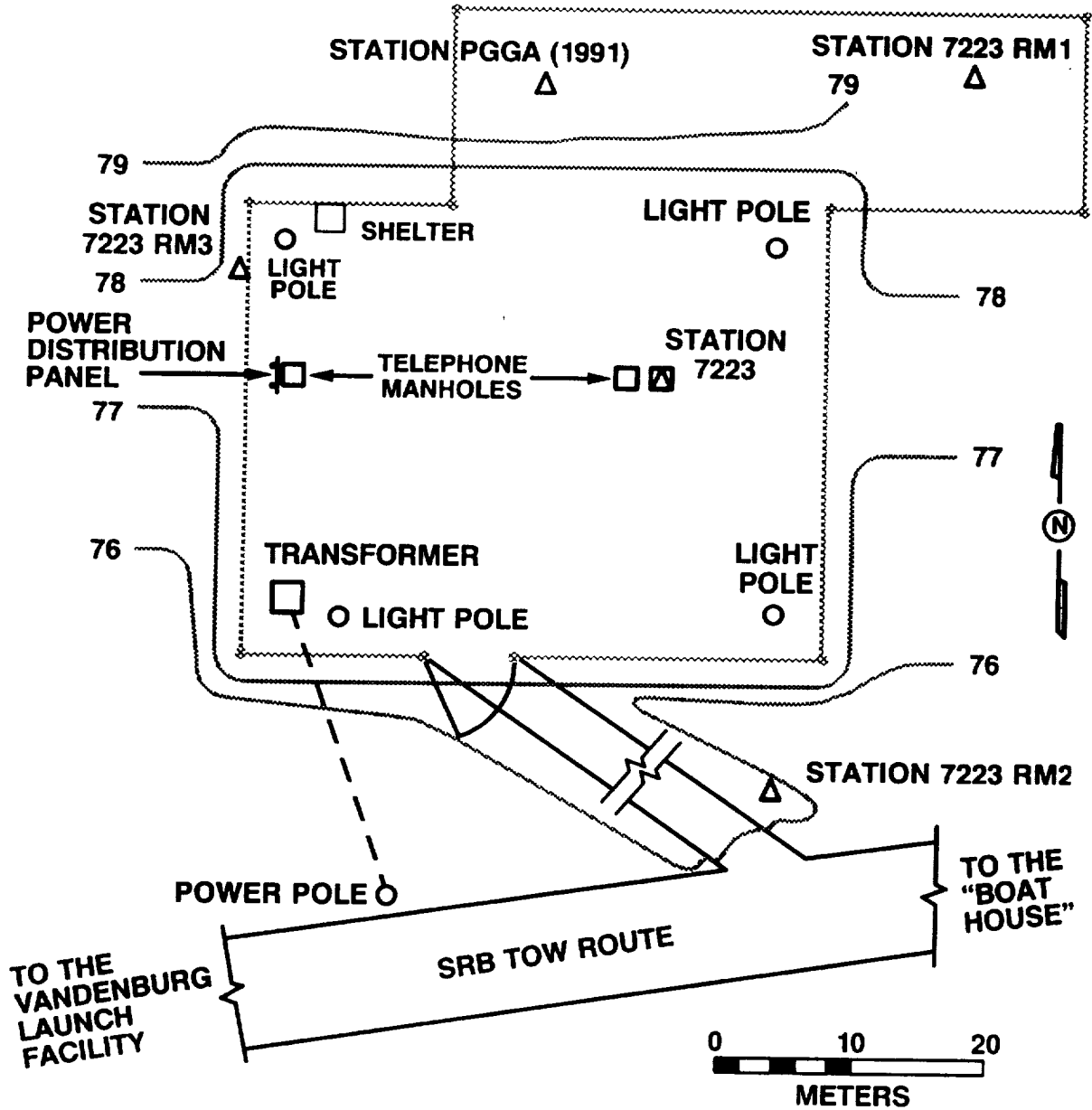
Mon. Number	Monument Inscription	North	East	Up
7111	MOBLAS 7111-1981	8.091	54.266	-7.302

SITE SKETCH

Site Number: 9

Current Site Name: VANDENBERG

Location: VANDENBERG AIR FORCE BASE, CA



PREVIOUS OCCUPATION INFORMATION

Site Number: 9

Current Site Name: VANDENBERG

Location: VANDENBERG AIR FORCE BASE, CA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7111	TLRS-1	71111101	28-APR-82	25-MAY-82
7887	TLRS-1	78871101	25-JAN-83	21-FEB-83

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7111	MV-2	71115201	01-SEP-81	02-SEP-81
7111	MV-2	71115202	22-FEB-83	24-FEB-83
7223	MV-1	72235101	01-AUG-83	07-MAR-84
7223	MV-1	72235102	08-MAR-84	31-DEC-90
7223	MV-2	72235203	26-JUL-91	28-JUL-91

-- SITE INFORMATION --

Site Number: 413

Current Site Name: VERNAL

Other Site Name:

Location: VERNAL, UT

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE STATION IS LOCATED ON THE ABANDONED SITE OF THE UINTA SEISMOLOGICAL OBSERVATORY IN NORTHEAST UTAH. THE SITE WAS DESTROYED WHEN THE TEMPORARY OBSERVATORY LOCATION WAS RETURNED TO THE BUREAU OF LAND MANAGEMENT, THUS MAKING SEVERAL YEARS OF DATA USELESS. THE PROJECT HAS RECONSTRUCTED THE SITE. THE SITE IS NOW EQUIPPED WITH A UNIVERSAL PAD COMPATIBLE FOR OCCUPATION BY TLRS OR MV SYSTEMS.

Site Topo Map: VERNAL SOUTHEAST, UTAH. N4015-W10930/7.5, 1964. U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: UINTA BASIN

Local Geology: DUCHESNE RIVER FORMATION. TERTIARY SEDIMENTS-SHALES, CONGLOMERATES, AND SANDSTONES. BEDROCK-MORRISON SANDSTONE (JURASSIC).

Comments: NONE

MONUMENT INFORMATION

Site Number: 413
 Current Site Name: VERNAL
 Location: VERNAL, UT
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7290
 Type of Monument: NASA BRASS DISK
 Monument Inscription: VERNAL NCMN 1985
 Systems Using Monument: TLRS AND MOBILE VLBI

Latitude: N 40 19' 37.05178''
 Longitude: W 109 34' 14.55374''
 Elevation: 1590.810 meters
 Height Above Ellipsoid: 1590.805 meters
 Survey Source/Date: BFEC /30-MAR-89
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THIS MONUMENT IS IN THE NEW UNIVERSAL PAD THAT REPLACES THE DESTROYED MONUMENT.

Differential Coordinates FROM Observing Monument 7290 TO Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	VERNAL 7290 A	1.4699	-1.5541	-1.1440
--	VERNAL 7290 B	0.2160	-2.9592	-3.1949
--	VERNAL 7290 C	-2.2833	-1.9493	-3.0588
--	VERNAL 7290 D	-2.3043	-0.4903	-1.4498
--	VERNAL NCMN AZ MARK 1981	274.7157	658.2296	868.5810
--	VERNAL NCMN RM 1	43.4296	37.9121	61.5197
--	VERNAL NCMN RM 2	60.6254	-63.0970	-48.0256
--	VERNAL NCMN RM 3	-72.2830	3.3125	-27.4310

Monument Number: 7290
 Type of Monument: NASA BRASS DISK
 Monument Inscription: VERNAL NCMN 1985
 Systems Using Monument: TLRs AND MOBILE VLBI

Differential Coordinates FROM Observing Monument 7290 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	VERNAL 7290 A	-1.5012	1.9056	0.0006
--	VERNAL 7290 B	-4.1932	1.1948	0.0029
--	VERNAL 7290 C	-4.0155	-1.4984	0.0038
--	VERNAL 7290 D	-1.9038	-2.0069	0.0024
--	VERNAL NCMN RM 1	79.4322	28.2213	1.4888
--	VERNAL NCMN RM 2	-61.9451	78.2586	-1.2376
--	VERNAL NCMN RM 3	-34.5617	-69.2168	-1.6725

MONUMENT INFORMATION (Continued)

Site Number: 413
Current Site Name: VERNAL
Location: VERNAL, UT

Monument Number: 7892
Type of Monument: NGS STATION DISK
Monument Inscription: VERNAL NCMN 1981
Systems Using Monument: TLRS AND MOBILE VLBI

Latitude: N 40 19' 36.59''
Longitude: W 109 34' 15.1''
Elevation: 1593.260 meters
Height Above Ellipsoid:
Survey Source/Date: SOLUTION FROM THE FIRST TLRS OCCUPATION/01-JUN-82
Datum/Ellipsoid: UNKNOWN

Comments: THIS MONUMENT WAS DESTROYED DURING THE OBSERVATORY
TEAR DOWN.

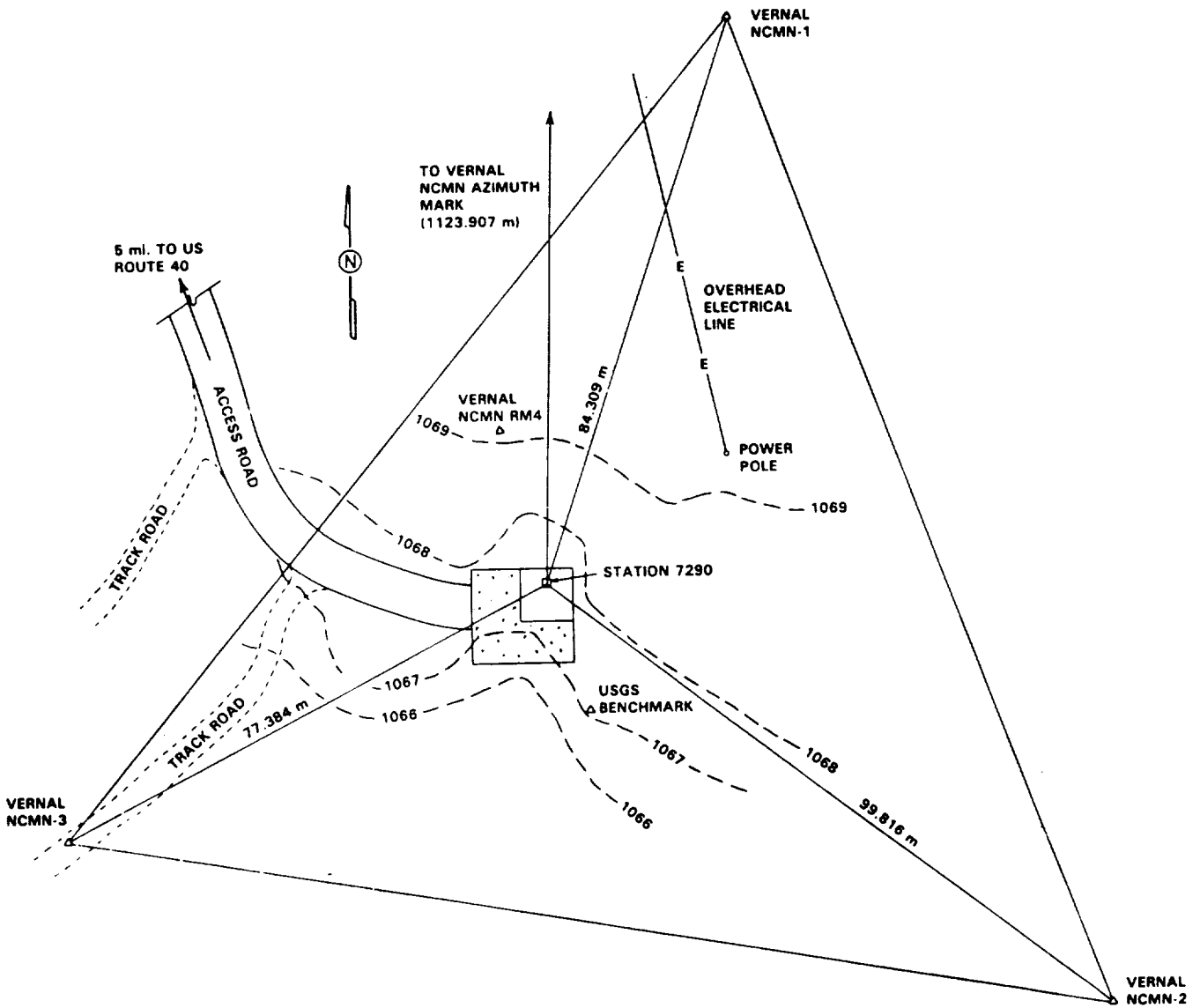
Differential Coordinates FROM Observing Monument 7892 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 413
Current Site Name: VERNAL
Location: VERNAL, UT



PREVIOUS OCCUPATION INFORMATION

Site Number: 413

Current Site Name: VERNAL

Location: VERNAL, UT

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7892	TLRS-1	78921101	07-MAY-81	17-JUN-81
7892	TLRS-1	78921102	31-MAY-82	21-JUL-82

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7290	MV-2	72905201	30-MAR-86	31-MAR-86
7290	MV-3	72905302	06-MAY-87	07-MAY-87
7290	MV-2	72905203	24-APR-88	26-APR-88
7290	MV-3	72905304	19-OCT-88	21-OCT-88
7290	MV-2	72905205	24-APR-89	26-APR-89
7290	MV-2	72905206	20-OCT-90	22-OCT-90

-- SITE INFORMATION --

Site Number: 59

Current Site Name: VICTORIA

Other Site Name:

Location: VICTORIA, BRITISH COLUMBIA, CANADA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED ON THE CANADIAN FORCES BASE (CFB) ESQUILMALT ALBERT HEAD CAMP. FROM THE INTERSECTION OF ROUTE 1A AND METCHOSIN ROAD, IN COLWOOD, TRAVEL 4.1 KM SOUTH ON METCHOSIN ROAD TO LEFT ONTO ALBERT HEAD ROAD. CONTINUE 200 METERS TO MAIN GATE OF THE CAMP. CONTINUE 500 METERS TO SITE ON NORTH SIDE OF ROAD. STATION IS A BRASS TABLET SET IN BEDROCK.

Site Topo Map:

GEOLOGICAL INFORMATION

Geological Province:

Local Geology:

Comments:

MONUMENT INFORMATION

Site Number: 59
Current Site Name: VICTORIA
Location: VICTORIA, BRITISH COLUMBIA, CANADA

Number of Observing Monuments: 1
Surveyed into National Network? YES

Monument Number: 7289
Type of Monument: BRASS TABLET
Monument Inscription: 907001
Systems Using Monument: MOBILE VLBI

Latitude: N 48 23' 37.0"
Longitude: W 123 29' 10.0"
Elevation: 43.6 meters
Height Above Ellipsoid:
Survey Source/Date: CANADIAN GEODETIC SURVEY/ 1991
Datum/Ellipsoid: NAD-83/GRS80

Comments: PRELIMINARY COORDINATES

Differential Coordinates FROM Observing Monument 7289 TO
Reference Monuments and Other Observing Monuments

Data Source:

-- Differential Coordinates Not Available --

PREVIOUS OCCUPATION INFORMATION

Site Number: 59

Current Site Name: VICTORIA

Location: VICTORIA, BRITISH COLUMBIA, CANADA

-- SLR OCCUPATIONS --

Monument Number:	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7289	MV-2	72895201	31-JUL-90	02-AUG-90

-- SITE INFORMATION --

Site Number: 866

Current Site Name: WAKKANAI

Other Site Name:

Location: WAKKANAI, HOKKAIDO, JAPAN

Geographic Region: ASIA

Tectonic Plate: NORTH AMERICA

Primary Scientific Purposes: ESTABLISHMENT OF FIDUCIAL POINT USED FOR VARIOUS PURPOSES SUCH AS GPS ORBIT DETERMINATION.

Site Description: A FOUNDATION FOR THE 3M ANTENNA WAS BUILT AT THIS SITE IN 1988. THE SITE IS LOCATED AT THE WAKKANAI RADIOWAVE OBSERVATORY, A BRANCH OF COMMUNICATIONS RESEARCH LABORATORY (CRL). CRL MOVES THE 3M ANTENNA TO THE SITE TO CARRY OUT VLBI EXPERIMENTS AS THE NEED ARISES. THE ANTENNA IS EQUIPPED WITH AN X-BAND RECEIVER. IONOSPHERIC EXCESS DELAYS ARE CALIBRATED BY USING TOTAL ELECTRON CONTENT DATA ACQUIRED BY DUAL BAND GPS RECEIVER.

Site Topo Map: WAKKANAI, 1:50,000 SERIES. AVAILABLE THROUGH THE GSI, TSUKUBA, IBARAKI, JAPAN.

GEOLOGICAL INFORMATION

Geological Province: ISHIKARI-KAMUIKOTAN

Local Geology: DEPOSIT OF THE QUATERNARY

Comments: NONE

MONUMENT INFORMATION

Site Number: 866
Current Site Name: WAKKANAI
Location: WAKKANAI, HOKKAIDO, JAPAN
Number of Observing Monuments: 1
Surveyed into National Network? NO

Monument Number: 7319
Type of Monument: GROUND MARKER ON THE ANTENNA FOUNDATION
Monument Inscription: NONE
Systems Using Monument: 3-METER ANTENNA

Latitude: N 45 23' 29.571"
Longitude: E 141 41' 07.126"
Elevation: 14.61 meters
Height Above Ellipsoid: -38.96 meters
Survey Source/Date: GEOGRAPHICAL SURVEY INSTITUTE/ JUL-1989
Datum/Ellipsoid: TOKYO

Comments: ELEVATION ABOVE MSL IS MEASURED BY LEVELING. HEIGHT ABOVE ELLIPSOID IS CALCULATED USING JAPANESE ASTRONOMICAL GEOID AT WAKKANAI, -53.568 m.

Differential Coordinates FROM Observing Monument 7319 TO Reference Monuments and Other Observing Monuments

Data Source:

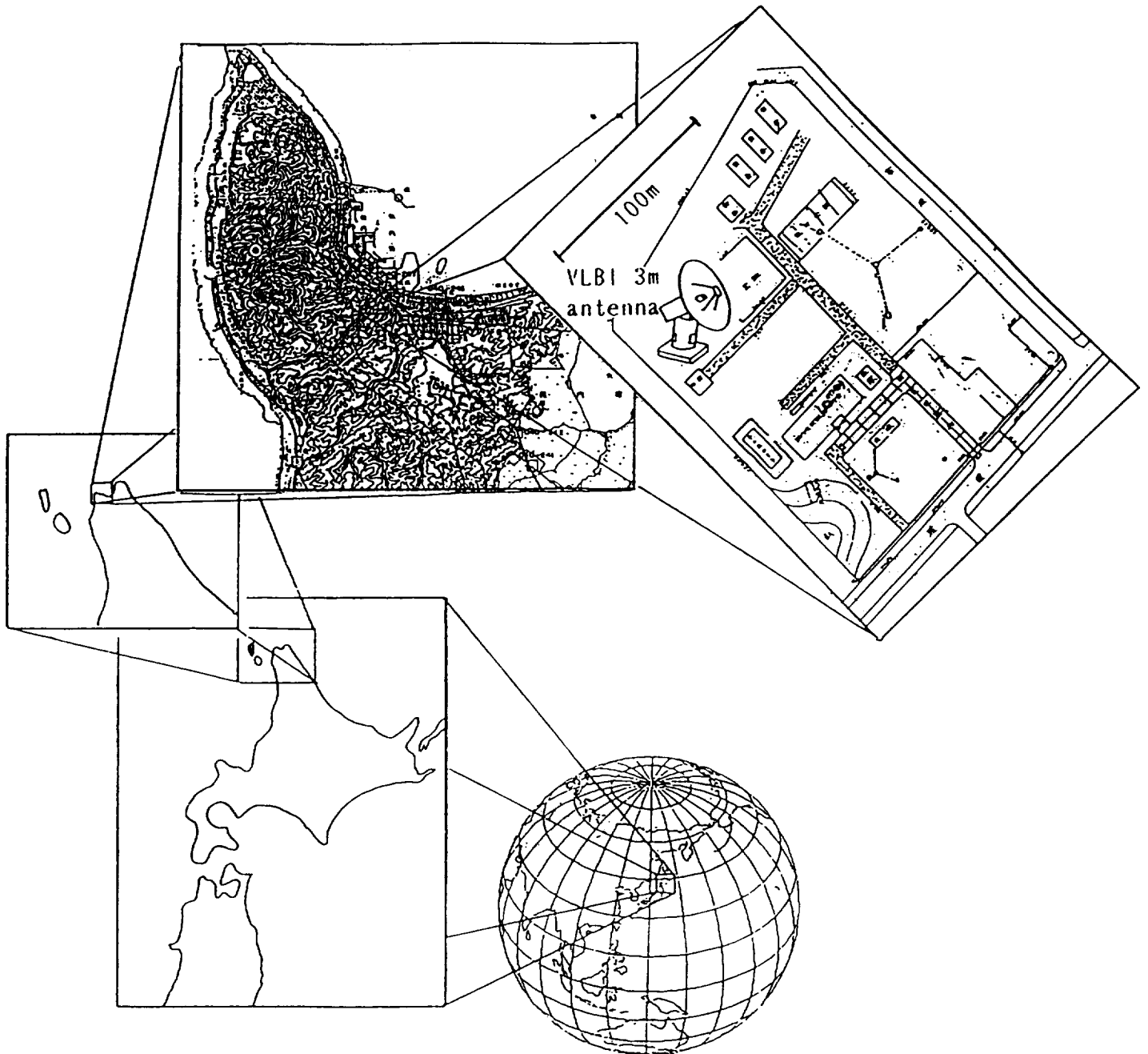
-- Differential Coordinate Information Not Available --

SITE SKETCH

Site Number: 866

Current Site Name: WAKKANAI

Location: WAKKANAI, HOKKAIDO, JAPAN



PREVIOUS OCCUPATION INFORMATION

Site Number: 866

Current Site Name: WAKKANAI

Location: WAKKANAI, HOKKAIDO, JAPAN

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7319	Mobile-3m		5-Oct-88	6-OCT-88

-- SITE INFORMATION --

Site Number: 41

Current Site Name: WESTFORD

Other Site Name: HAYSTACK

Location: HAYSTACK OBSERVATORY, WESTFORD, MA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE INTERCOMPARISON OF MEASUREMENT TECHNIQUES AND VLBI DEVELOPMENT, AND THE DETERMINATION OF PLATE MOTION, STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE SITE IS LOCATED ON GOVERNMENT PROPERTY AT THE HAYSTACK OBSERVATORY NEAR WESTFORD, MASSACHUSETTS, APPROXIMATELY 30 MILES NORTHWEST OF BOSTON. TWO FIXED ANTENNAS, WESTFORD (18-METER NGS RADIO TELESCOPE) AND HAYSTACK (37-METER NEROC RADIO TELESCOPE), ARE USED FOR VLBI EXPERIMENTS. A STANDARD "GUEST" PAD LOCATED NEAR THE ANTENNAS IS COMPATIBLE FOR OCCUPATION BY ANY MOBILE MEASUREMENT SYSTEM LASER OR VLBI.

Site Topo Map: BOSTON, MA 1:250,000 SCALE

GEOLOGICAL INFORMATION

Geological Province: THE NEW ENGLAND PROVINCE

Local Geology: NOT AVAILABLE

Comments: NONE

MONUMENT INFORMATION

Site Number: 41
 Current Site Name: WESTFORD
 Location: HAYSTACK OBSERVATORY, WESTFORD, MA
 Number of Observing Monuments: 3
 Surveyed into National Network? YES

Monument Number: 7091
 Type of Monument: NGS STATION DISK
 Monument Inscription: HAYSTACK INTER COMP 1977
 Systems Using Monument: MOBLAS

Latitude: N 42 37' 21.67243''
 Longitude: W 71 29' 15.51299''
 Elevation: 121.340 meters
 Height Above Ellipsoid: 93.760 meters
 Survey Source/Date: BFEC /15-MAR-89
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THIS MONUMENT IS ON THE "GUEST" PAD THAT WILL
 ACCOMMODATE ALL MOBILE LASER AND VLBI SYSTEMS.

Differential Coordinates FROM Observing Monument 7091 TO
 Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7205	----	-48.865	12.264	65.806
7209	NONE	-247.002	-851.720	-800.428
--	7091 MTLRS A	2.4064	-0.2410	-0.7685
--	7091 MTLRS B	2.5231	-2.4649	-3.1048
--	7091 MTLRS C	-0.5783	-3.4798	-3.0775
--	7091 MTLRS CENTER BOLT	0.5825	-1.7451	-1.6998
--	7091 MTLRS D	-1.8533	-1.9669	-1.0772
--	7091 CAL PIER	67.8889	83.0909	61.7420

Monument Number: 7091
 Type of Monument: NGS STATION DISK
 Monument Inscription: HAYSTACK INTER COMP 1977
 Systems Using Monument: MOBLAS

Differential Coordinates FROM Observing Monument 7091 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
7205	----	66.803	-42.443	24.588
--	7091 MTLRS A	-1.2376	2.2054	0.2100
--	7091 MTLRS B	-4.4099	1.6100	0.2070
--	7091 MTLRS C	-4.3746	-1.6532	0.2090
--	7091 MTLRS CENTER BOLT	-2.4966	-0.0017	0.2027
--	7091 MTLRS D	-1.6572	-2.3819	0.2100

MONUMENT INFORMATION (Continued)

Site Number: 41
 Current Site Name: WESTFORD
 Location: HAYSTACK OBSERVATORY, WESTFORD, MA

Monument Number: 7205
 Type of Monument: REFERENCE POINT ON RADIO TELESCOPE
 Monument Inscription: NONE
 Systems Using Monument: 37-METER RADIO TELESCOPE (NEROC)

Latitude: N 42 37' 23.83731''
 Longitude: W 71 29' 17.37536''
 Elevation:
 Height Above Ellipsoid: 118.347 meters
 Survey Source/Date: BFEC 15-MAR-89
 Datum/Ellipsoid: NAD 1983/GRS 80

Comments: THE SYSTEM IS ALSO REFERENCED AS HAYSTACK.

Differential Coordinates FROM Observing Monument 7205 TO
 Reference Monuments and Other Observing Monuments

Data Source: NGS HAVAGO ADJUSTMENT 87-01-06

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7091	HAYSTACK INTER COMP 1977	48.865	-12.264	-65.806
7209	----	-198.137	-863.984	-866.234
--	HAYSTACK INTER COMP RM 1	72.768	-6.821	-69.196

Mon. Number	Monument Inscription	North	East	Up
7091	HAYSTACK INTER COMP 1977	-66.803	42.443	-24.589
--	HAYSTACK INTER COMP RM 1	-70.941	66.837	-25.098

MONUMENT INFORMATION (Continued)

Site Number: 41
 Current Site Name: WESTFORD
 Location: HAYSTACK OBSERVATORY, WESTFORD, MA

Monument Number: 7209
 Type of Monument: REFERENCE POINT ON RADIO TELESCOPE
 Monument Inscription: NONE
 Systems Using Monument: 18-METER RADIO TELESCOPE (NGS)

Latitude: N 42 36' 46.58197''
 Longitude: W 71 29' 37.65435''
 Elevation:
 Height Above Ellipsoid: 88.422 meters
 Survey Source/Date: BFEC/06-JAN-87 NGS/06-JAN-87
 Datum/Ellipsoid: NAD 83/GRS 80

Comments: THE SYSTEM IS ALSO REFERENCED AS WESTFORD.

Differential Coordinates FROM Observing Monument 7209 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

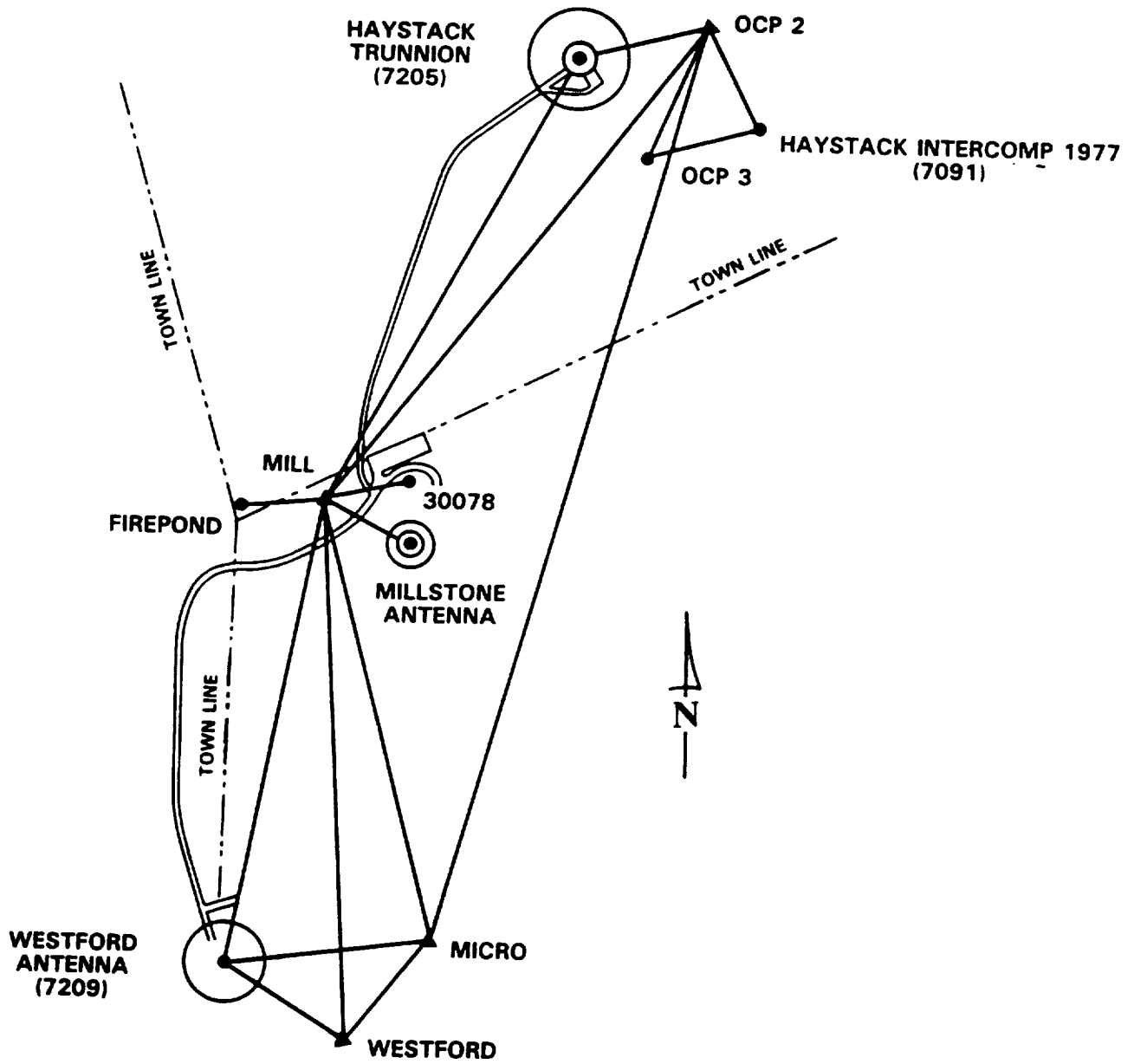
Mon. Number	Monument Inscription	X	Y	Z
7091	HAYSTACK INTER COMP 1977	247.002	851.720	800.428
7205	----	198.137	863.984	866.234
--	HAYSTACK INTER COMP RM 1	270.905	857.163	797.038

SITE SKETCH

Site Number: 41

Current Site Name: WESTFORD

Location: HAYSTACK OBSERVATORY, WESTFORD, MA



PREVIOUS OCCUPATION INFORMATION

Site Number: 41

Current Site Name: WESTFORD

Location: HAYSTACK OBSERVATORY, WESTFORD, MA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7091	MOBLAS-3	70910301	05-DEC-77	31-MAR-78
7091	MOBLAS-7	70910702	10-JUN-79	14-NOV-80
7091	TLRS-1	70911103	09-AUG-88	17-OCT-88
7091	TLRS-1	70911104	10-OCT-90	11-DEC-90

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7205	HAYSTACK	72057401	09-SEP-76	---
7209	WESTFORD	72097301	13-MAY-81	06-JUN-83

-- SITE INFORMATION --

Site Number: 119

Current Site Name: WETTZELL

Other Site Name:

Location: WETTZELL, GERMANY

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE SLR AND VLBI TECHNIQUE DEVELOPMENT AND MEDITERRANEAN TECTONICS, THE DETERMINATION OF PLATE MOTION AND STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE SITE IS LOCATED APPROXIMATELY ONE HUNDRED FIFTY KILOMETERS NORTH OF MUNICH, GERMANY NEAR THE CZECHOSLOVAKIAN BORDER. THE SITE IS OPERATED BY THE INSTITUT FOR APPLIED GEODESY (IFAG) AND THE FORSCHUNGSEINRICHTUNG SATELLITENGEODASIE OF THE TECHNICAL UNIVERSITY OF MUNICH (FESG) ON BEHALF OF THE FORSCHUNGSGRUPPE SATELLITENGEODASIE (FGS). THE SITE CONSISTS OF A FIXED LASER HOUSED IN A BUILDING WITH A MOVABLE ROOF, THE 20-METER VLBI RADIO TELESCOPE, AND FOUR CONCRETE MONUMENTED PADS COMPATIBLE FOR OCCUPATION BY ANY MOBILE LASER RANGING SYSTEM. A DUAL PURPOSE LASER RANGING SYSTEM (WLRS) FOR SATELLITE AND LUNAR TRACKING, WAS ESTABLISHED IN 1990.

Site Topo Map: 1:200000 TOPOGRAPHISCHE UBERSICHTSKARTE BLATT CC 7142 DEGGENDORF. 1:50000 TOPOGRAPHISCHE KARTE BLATTE L 6942. BOTH AVAILABLE FROM BAYERISCHES LANDESVERMESSUNGSAMT.

GEOLOGICAL INFORMATION

Geological Province: BOHMER WALD BORDERING PFALZER WALD DEFINED AS THE MOLDANUVICUM- A SUB-REGION OF THE VARISTICUM (CENTRAL EUROPEAN MOUNTAIN BELT)

Local Geology: METAMORPHIC BASEMENT SUPERIMPOSED BY GLACIAL TILL. GEOLOGIC MAPS ARE AVAILABLE AT BAYERISCHES GEOLOGISCHES LANDESAMT, PRINZREGENTEN STRABE, 8000 MUNCHEN, F.R.G. SCALES AVAILABLE INCLUDE: 1:100000 BLATT 6944 BODENMAIS, 1:200000 BLATTE 7142 DEGGENDORF, 1:1000000 UBERSICHTSKARTE BRD.

Comments: BAYERISCHES LANDESVERMESSUNGSAMT, ALEXANDRASTRABE 4, 8000 MUNCHEN, F.R.G.

MONUMENT INFORMATION

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY
 Number of Observing Monuments: 7
 Surveyed into National Network? YES

Monument Number: 7224
 Type of Monument: INTERSECTION OF AXES OF ROTATION
 Monument Inscription: NONE
 Systems Using Monument: 20-METER FIXED VLBI ANTENNA

Latitude: N 49 08' 41.93740''
 Longitude: E 12 52' 37.95670''
 Elevation:
 Height Above Ellipsoid: 661.224 meters
 Survey Source/Date: LOCAL SURVEY AT THE FUNDAMENTALSTATION WETTZELL
 OCTOBER 1990
 Datum/Ellipsoid: NSWC 9Z2

Comments: NONE

Differential Coordinates FROM Observing Monument 7224 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7595	----	11.338	90.279	-41.504
7596	"A"	42.556	102.066	-69.409
7597	"A"	62.013	91.283	-81.571
7598	----	39.384	71.978	-58.362
7834	----	-10.003	46.149	-11.072

MONUMENT INFORMATION (Continued)

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY

Monument Number: 7595
 Type of Monument: BRONZE MARKER IN LARGE CONCRETE PILLAR FLUSH WITH PAD.
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASERS

Latitude: N 49 08' 40.2954''
 Longitude: E 12 52' 42.1741''
 Elevation:
 Height Above Ellipsoid: 650.224 meters
 Survey Source/Date: LOCAL SURVEY AT THE FUNDAMENTALSTATION WETTZELL
 OCTOBER 1990
 Datum/Ellipsoid: NSWC 9Z2

Comments: NONE.

Differential Coordinates FROM Observing Monument 7595 TO
 Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7224	----	-11.338	-90.279	41.504
7596	"A"	31.218	11.787	-27.905
7597	"A"	50.675	1.004	-40.067
7598	----	28.046	-18.301	-16.858
7834	----	-21.341	-44.130	30.432

MONUMENT INFORMATION (Continued)

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY

Monument Number: 7596
 Type of Monument: BRONZE MARKER IN LARGE CONCRETE PILLAR FLUSH WITH THE PAD.
 Monument Inscription: A
 Systems Using Monument: MTLRS-2 AND MTLRS-1

Latitude: N 49 08' 38.8953''
 Longitude: E 12 52' 42.3977''
 Elevation:
 Height Above Ellipsoid: 650.744 meters
 Survey Source/Date: LOCAL SURVEY AT THE FUNDAMENTALSTATION WETTZELL OCTOBER 1990
 Datum/Ellipsoid: NSWC 9Z2

Comments: NONE.

Differential Coordinates FROM Observing Monument 7596 TO Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7224	----	-42.556	-102.066	69.409
7595	----	-31.218	-11.787	27.905
7597	"A"	19.457	-10.783	-12.162
7598	----	-3.172	-30.088	11.047
7834	----	-52.559	-55.916	58.337

MONUMENT INFORMATION (Continued)

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY

Monument Number: 7597
 Type of Monument: BRONZE MARKER IN LARGE CONCRETE PILLAR FLUSH WITH THE PAD.
 Monument Inscription: A
 Systems Using Monument: MTLRS-1

Latitude: N 49 08' 38.2322''
 Longitude: E 12 52' 41.6652''
 Elevation:
 Height Above Ellipsoid: 652.380 meters
 Survey Source/Date: LOCAL SURVEY AT THE FUNDAMENTALSTATION WETTZELL
 OCTOBER 1990
 Datum/Ellipsoid: NSWC 9Z2

Comments: NONE

Differential Coordinates FROM Observing Monument 7597 TO
 Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7224	----	-62.013	-91.283	81.571
7595	----	-50.675	-1.004	40.067
7596	"A"	-19.457	10.783	12.162
7598	----	-22.629	-19.305	23.209
7834	----	-72.016	-45.134	70.499

MONUMENT INFORMATION (Continued)

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY

Monument Number: 7598
 Type of Monument: BRONZE MARKER IN LARGE CONCRETE PILLAR FLUSH WITH PAD.
 Monument Inscription: NONE
 Systems Using Monument: MOBILE LASERS

Latitude: N 49 08' 39.3690''
 Longitude: E 12 52' 40.9856''
 Elevation:
 Height Above Ellipsoid: 652.690 meters
 Survey Source/Date: LOCAL SURVEY AT THE FUNDAMENTALSTATION WETTZELL
 OCTOBER 1990
 Datum/Ellipsoid: NSWC 9Z2

Comments: NONE

Differential Coordinates FROM Observing Monument 7598 TO
 Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7224	----	-39.384	-71.978	58.362
7595	----	-28.046	18.301	16.858
7596	"A"	3.172	30.088	-11.047
7597	"A"	22.629	19.305	-23.209
7834	----	-49.387	-25.829	47.290

MONUMENT INFORMATION (Continued)

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY

Monument Number: 7599
 Type of Monument: NAIL IN PARKING LOT, PROVISIONAL MARKER.
 Monument Inscription: NONE
 Systems Using Monument: MTLRS-1

Latitude: N 49 08' 45.20''
 Longitude: E 12 52' 43.40''
 Elevation: 610.600 meters
 Height Above Ellipsoid: 613.500 meters
 Survey Source/Date: INSTITUT FUR ANGEWANDTE GEODASIE/05-JUL-84
 Datum/Ellipsoid: EUROPEAN 50/INTERNATIONAL

Comments: THIS NAIL WAS A PROVISIONAL POSITION AND IS NOT TO BE RE-OCCUPIED.

Differential Coordinates FROM Observing Monument 7599 TO
 Reference Monuments and Other Observing Monuments

Data Source: DR. E. REINHART, IFAG

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7224	----	19.2	-14.4	2.3

MONUMENT INFORMATION (Continued)

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY

Monument Number: 7834
 Type of Monument: INTERSECTION OF AXES OF LASER
 Monument Inscription: NONE
 Systems Using Monument: WETZEL FIXED LASER

Latitude: N 49 08' 41.6899''
 Longitude: E 12 52' 40.2863''
 Elevation:
 Height Above Ellipsoid: 653.199 meters
 Survey Source/Date: LOCAL SURVEY AT THE FUNDAMENTALSTATION WETTZELL
 OCTOBER 1990
 Datum/Ellipsoid: NSWC 9Z2

Comments: NONE

Differential Coordinates FROM Observing Monument 7834 TO
 Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7224	----	10.003	-46.149	11.072
7595	----	21.341	44.130	-30.432
7596	"A"	52.559	55.916	-58.337
7597	"A"	72.016	45.134	-70.499
7598	----	49.387	25.829	-47.290

MONUMENT INFORMATION (Continued)

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY

Monument Number: 8834
 Type of Monument: INTERSECTION OF AXES
 Monument Inscription: NONE
 Systems Using Monument: WLRS

Latitude: N 49 08' 39.8114'
 Longitude: E 12 52' 39.9645"
 Elevation:
 Height Above Ellipsoid: 657.479 meters
 Survey Source/Date: LOCAL SURVEY AT THE FUNDAMENTALSTATION WETTZELL
 OCTOBER 1990
 Datum/Ellipsoid: NSWC 9Z2

Comments: NONE

Differential Coordinates FROM Observing Monument 8834 TO
 Reference Monuments and Other Observing Monuments

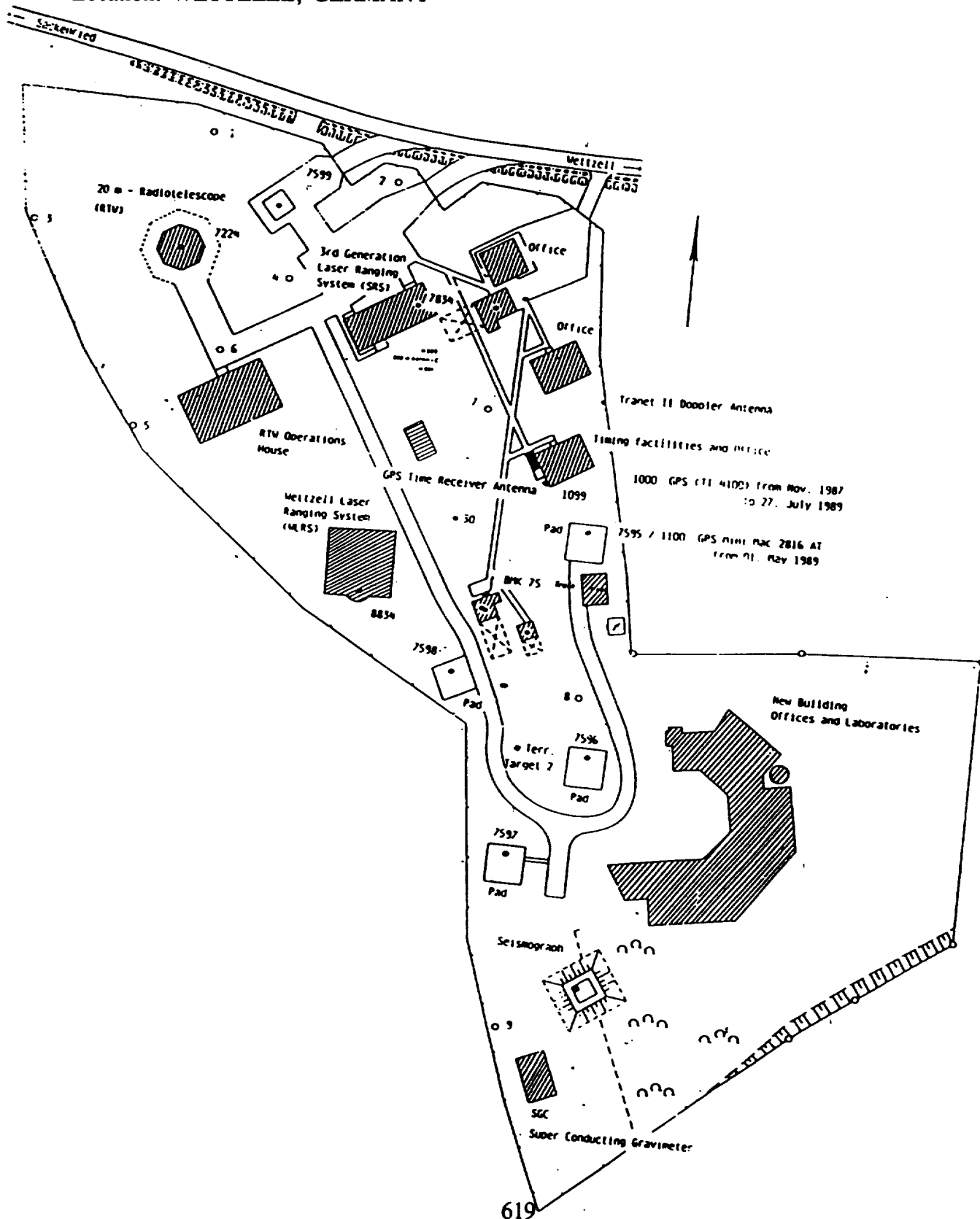
Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7224	----	-36.9737	-50.1982	45.7999
7595	----	-25.6340	40.0808	4.2945
7596	"A"	5.5823	51.8669	-23.6090
7597	"A"	25.0402	41.0856	-35.7732
7598	----	2.4114	21.7818	-12.5633
7834	----	-46.9762	-4.0491	34.7280
--	SURVEY PILLAR 1	-62.3447	-51.1560	53.8232
--	SURVEY PILLAR 2	-65.8164	-13.2466	48.5468
--	SURVEY PILLAR 3	-40.9029	-81.5081	41.1951
--	SURVEY PILLAR 4	-45.8195	-29.2876	35.5449
--	SURVEY PILLAR 5	-16.7241	-51.8229	14.9825
--	SURVEY PILLAR 6	-33.0001	-38.1851	24.0680
--	GROUND MARKER 7	-38.6673	15.0867	18.9440
--	SURVEY PILLAR 8	-0.8023	47.1928	-15.2397
--	GROUND MARKER 9	50.3500	49.2133	-57.5001
--	GROUND MARKER 30	-22.9709	20.5009	5.8776

SITE SKETCH

Site Number: 119
 Current Site Name: WETTZELL
 Location: WETTZELL, GERMANY



PREVIOUS OCCUPATION INFORMATION

Site Number: 119

Current Site Name: WETTZELL

Location: WETTZELL, GERMANY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7596	MTLRS-2	75961601	01-MAR-85	16-APR-85
7596	MTLRS-1	75961502	07-AUG-85	31-DEC-85
7597	MTLRS-1	75971501	01-FEB-85	28-MAR-85
7597	MTLRS-1	75971502	29-MAR-85	30-APR-85
7597	MTLRS-1	75971503	25-JAN-92	09-MAR-92
7599	MTLRS-1	75991501	01-SEP-84	31-DEC-84
7834	WETLAS	78343001	01-MAY-76	---
8834	WLRS	88341001	01-SEP-90	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7224	20-METER	72247801	01-JUL-83	31-AUG-91

-- SITE INFORMATION --

Site Number: 806

Current Site Name: WHITEHORSE

Other Site Name:

Location: WHITEHORSE, YUKON TERRITORY, CANADA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE SITE IS LOCATED IN WEST CANADA 250 METERS SOUTH OF THE CONTROL TOWER OF WHITEHORSE AIRPORT AND 50 METERS NORTH OF AN UPPER ATMOSPHERIC STATION OPERATED BY ENVIRONMENT CANADA. THE SITE IS NORTH OF THE NORTHEAST TRENDING AIRSTRIP USED BY SMALL AIRCRAFT. THE SITE IS IN THE CORNER OF A 30 METER SQUARE AREA OF PAVEMENT. THE OBSERVING MONUMENT IS FLUSH WITH THE PAVEMENT AND CAN ACCOMMODATE ANY MOBILE VLBI SYSTEM.

Site Topo Map: MACRAE 105D/10, EDITION 4, 1980, 1:50,000, TOPOGRAPHIC MAP SERIES. AVAILABLE FROM CANADA MAP OFFICE, DEPARTMENT OF ENERGY, MINES AND RESOURCES, OTTAWA.

GEOLOGICAL INFORMATION

Geological Province: COLUMBIA INTERMONTANE BELT

Local Geology: QUARTERNARY ALLUVIUM DEPOSITS OF THE YUKON RIVER VALLEY UNDERLAIN BY UPPER TERTIARY ROCKS OF THE LEWES RIVER GROUP. THE SITE IS AT AN ELEVATION OF 2300 FT ABOVE SEA LEVEL SURROUNDED BY MOUNTAINS RISING TO ELEVATIONS OF 4000 TO 5000 FEET.

Comments: NONE

MONUMENT INFORMATION

Site Number: 806

Current Site Name: WHITEHORSE

Location: WHITEHORSE, YUKON TERRITORY, CANADA

Number of Observing Monuments: 1

Surveyed into National Network? YES

Monument Number: 7284

Type of Monument: BRONZE TABLET IN 30 INCH DIAMETER CONCRETE PIER.

Monument Inscription: 828102

Systems Using Monument: MOBILE VLBI

Latitude: N 60 42' 40.46349''

Longitude: W 135 04' 37.39408''

Elevation: 702.608 meters

Height Above Ellipsoid:

Survey Source/Date: GEODETIC SURVEY OF CANADA

Datum/Ellipsoid: NAD83/ GRS 80

Comments: PRELIMINARY COORDINATES

Differential Coordinates FROM Observing Monument 7284 TO
Reference Monuments and Other Observing Monuments

Data Source:

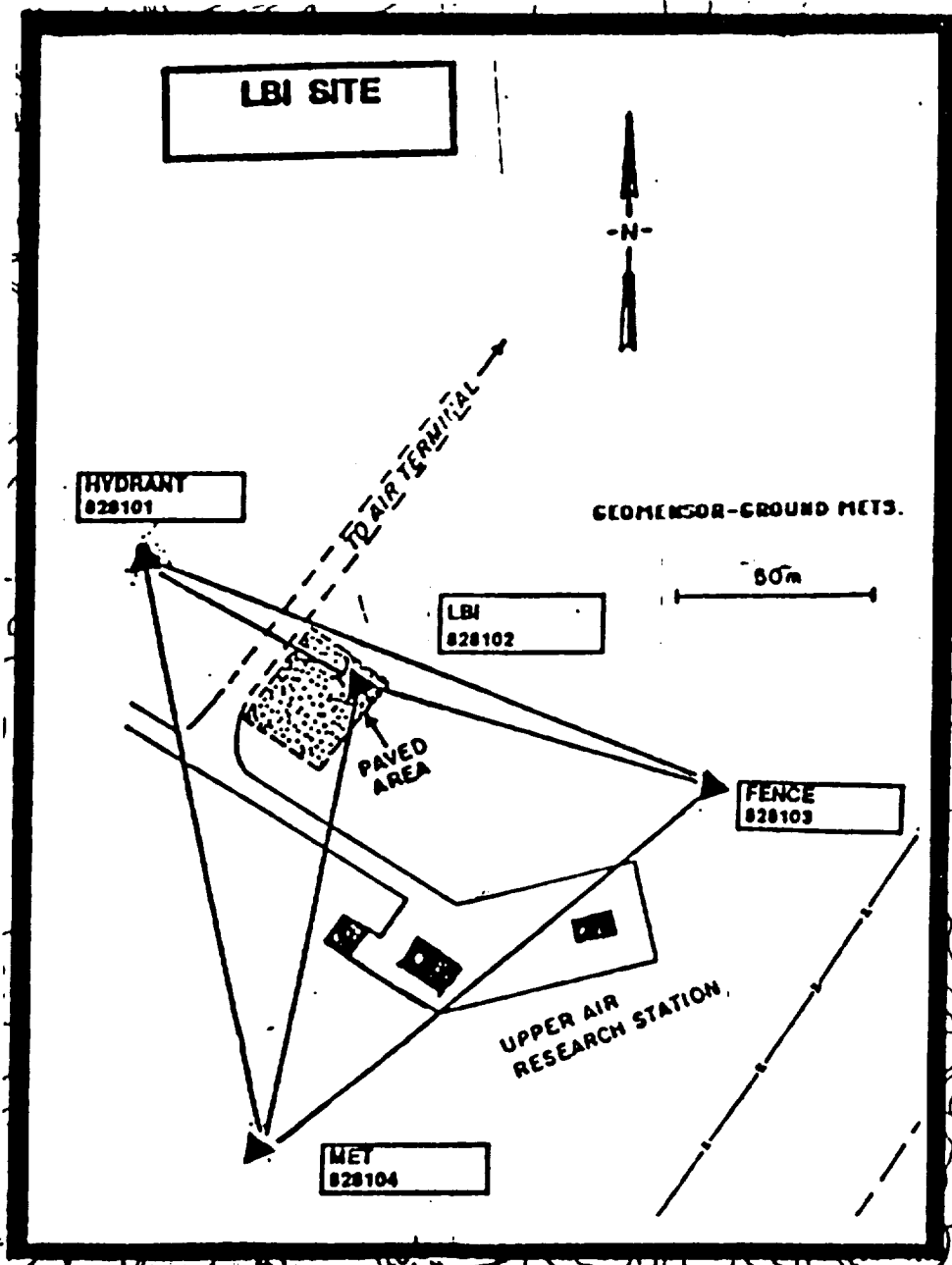
---- Differential Coordinates Not Available ----

SITE SKETCH

Site Number: 806

Current Site Name: WHITEHORSE

Location: WHITEHORSE, YUKON TERRITORY, CANADA



PREVIOUS OCCUPATION INFORMATION

Site Number: 806

Current Site Name: WHITEHORSE

Location: WHITEHORSE, YUKON TERRITORY, CANADA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7284	MV-2	72845201	07-AUG-84	09-AUG-84
7284	MV-2	72845202	12-AUG-85	13-AUG-85
7284	MV-2	72845203	17-AUG-86	19-AUG-86
7284	MV-2	72845204	02-AUG-88	07-AUG-88
7284	MV-2	72845205	07-AUG-89	09-AUG-89

-- SITE INFORMATION --

Site Number: 661

Current Site Name: WUHAN

Other Site Name:

Location: WUHAN, PEOPLES REPUBLIC OF CHINA

Geographic Region: ASIA

Tectonic Plate: EURASIAN

-- Site Information Not Yet Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7236	WUHLAS	72362901	01-JAN-88	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 676

Current Site Name: XRISOKALARIA

Other Site Name: PELOPPONISOS

Location: XRISOKALARIA, GREECE

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND THE KINEMATICS OF EAST AND CENTRAL MEDITERRANEAN.

Site Description: THIS WEGENER-MEDLAS SITE IS LOCATED 6 KILOMETERS WEST OF THE CITY OF KORONI, GREECE. THE LASER PAD IS COMPATIBLE FOR OCCUPATION BY MTLRS-1 OR MTLRS-2.

Site Topo Map: KORONI 1 :50,000

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: UPPER CRETACEOUS PELAGIC LIMESTONE INTERSPERSED WITH JURASSIC AND CRETACEOUS FLYSCHES SANDSTONES AND LIMESTONES.

Comments: NONE

MONUMENT INFORMATION

Site Number: 676
 Current Site Name: XRISOKALARIA
 Location: XRISOKALARIA, GREECE
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7525
 Type of Monument: BRASS DISK
 Monument Inscription: 7525 1987
 Systems Using Monument: MOBILE LASER RANGING SYSTEM

Latitude: N 36 47' 28.93500
 Longitude: E 21 52' 38.93200
 Elevation: 454.627 meters
 Height Above Ellipsoid: 479.230 meters
 Survey Source/Date: GREEK HELLENIC MAPPING AGENCY/BFEC ADJUSTMENT
 /29-APR-88
 Datum/Ellipsoid: WGS72

Comments: THIS STATION IS HELD FIXED WITH PRELIMINARY COORDINATES
 DETERMINED BY GHMA AND MTLRS OCCUPATIONS.

Differential Coordinates FROM Observing Monument 7525 TO
 Reference Monuments and Other Observing Monuments

Data Source: BFEC

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7525 A 1987	0.1311	2.1018	-1.1893
--	7525 B 1987	1.8934	2.0644	-3.3554
--	7525 C 1987	2.7904	-0.4954	-3.1972
--	7525 D 1987	1.8057	-1.4341	-1.5215
--	7525 AZIMUTH MARK 1987	-163.0655	139.6461	101.3817
--	7525 CAL PIER	-88.4201	-81.9790	155.4179
--	NONE (7525 RM 1)	52.2741	-25.2927	-53.9851
--	NONE (7525 RM 2)	0.5110	-24.2026	14.4208
--	NONE (7525 RM 3)	-1.5247	33.3093	-18.6982
--	NONE (CENTRAL MON)	0.8456	0.3414	-1.2089

Monument Number: 7525
 Type of Monument: BRASS DISK
 Monument Inscription: 7525 1987
 Systems Using Monument: MOBILE LASER RANGING SYSTEM

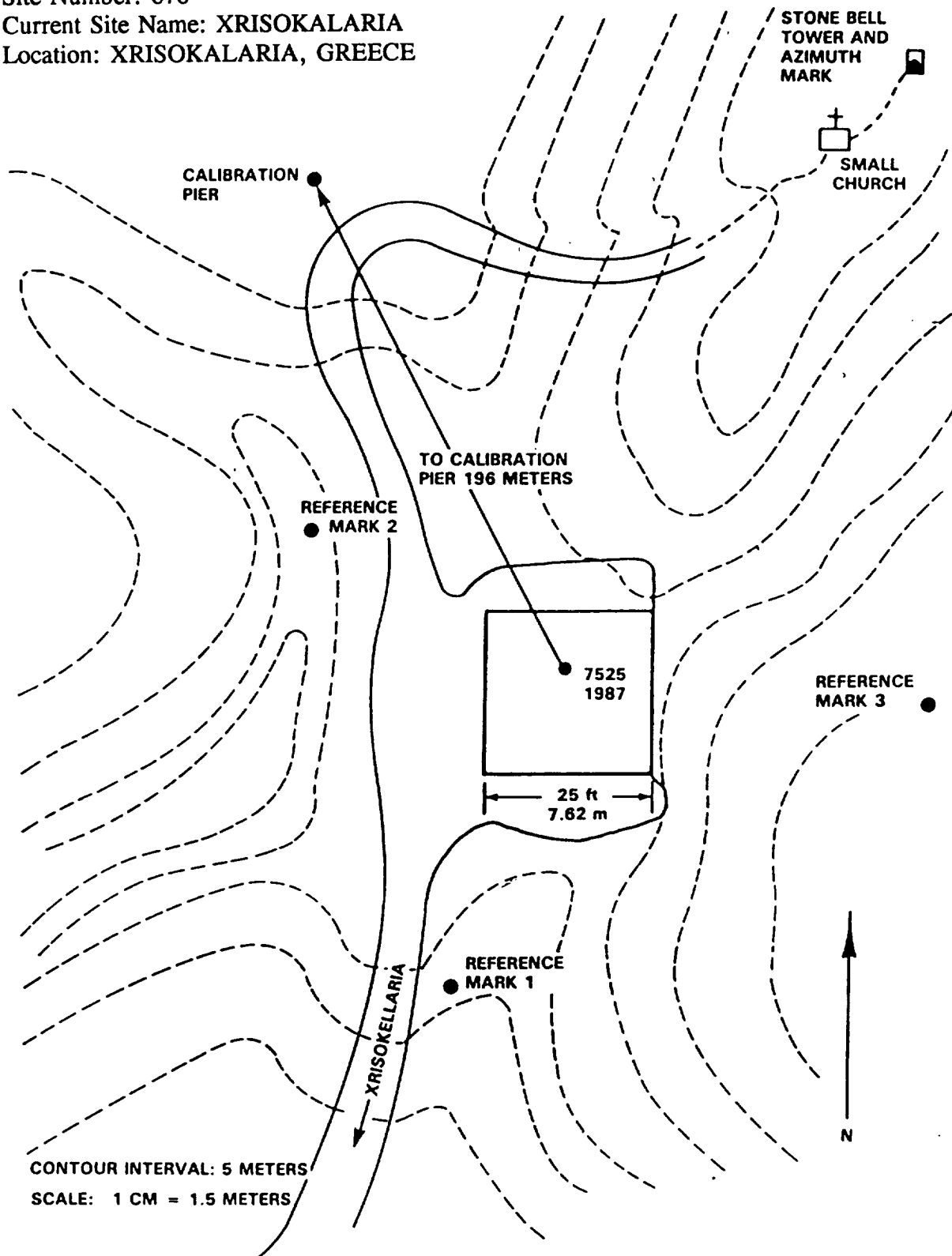
Differential Coordinates FROM Observing Monument 7525 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	7525 A 1987	-1.4943	1.9016	0.0125
--	7525 B 1987	-4.2000	1.2103	0.0140
--	7525 C 1987	-4.0007	-1.4994	0.0115
--	7525 D 1987	-1.9020	-2.0036	0.0030
--	NONE (7525 RM 1)	-66.6412	-42.9488	-1.0240
--	NONE (7525 RM 3)	-21.5598	31.4789	-2.3901
--	NONE (7525 RM 2)	16.6655	-22.6503	1.7929
--	NONE (CENTRAL MON)	-1.5142	0.0017	0.0064

SITE SKETCH

Site Number: 676
Current Site Name: XRISOKALARIA
Location: XRISOKALARIA, GREECE



PREVIOUS OCCUPATION INFORMATION

Site Number: 676

Current Site Name: XRISOKALARIA

Location: XRISOKALARIA, GREECE

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7525	MTLRS-2	75251601	03-SEP-86	12-SEP-86
7525	MTLRS-2	75251602	13-SEP-86	15-SEP-86
7525	MTLRS-2	75251603	15-SEP-86	18-OCT-86
7525	TLRS-1	75251104	10-SEP-87	11-DEC-87
7525	TLRS-1	75251105	19-NOV-89	20-JAN-90
7525	TLRS-1	75251106	10-MAR-92	12-JUN-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 133

Current Site Name: YARAGADEE

Other Site Name:

Location: YARAGADEE, AUSTRALIA

Geographic Region: AUSTRALIA

Tectonic Plate: AUSTRALIAN-INDIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF PLATE MOTION, PLATE STABILITY, AND POLAR MOTION/EARTH ROTATION.

Site Description: THE SITE IS LOCATED ON THE WEST COAST OF AUSTRALIA, 53 MILES EAST SOUTHEAST OF GERALDTOWN AND 218 MILES NORTH OF PERTH. THE MONUMENTED PAD IS COMPATIBLE FOR OCCUPATION BY MOBILE LASER SYSTEMS. MOBLAS-5 FIRST OCCUPIED THE STATION IN AUGUST 1979 AND WILL REMAIN FOR THE DURATION OF THE PROJECT. THIS SITE PLAYS A KEY ROLE IN THE MEASUREMENT OF THE AUSTRALIAN PLATE MOVEMENT.

Site Topo Map: SERIES R611 SHEET 1939 'MINGENEW', DIVISION OF NATIONAL MAPPING, AUSTRALIA

GEOLOGICAL INFORMATION

Geological Province: PERTH BASIN

Local Geology: JURASSIC YARAGADEE FORMATION; SANDSTONE, SILTSTONE, SHALE. THE TERRAIN IS COVERED BY LOW SCRUB.

Comments: THE SITE IS ON THE EDGE OF AN ESCARPMENT RUNNING NORTHEAST FROM WHICH A FLAT PLATEAU EXTENDS TOWARDS THE NORTH.

MONUMENT INFORMATION

Site Number: 133
 Current Site Name: YARAGADEE
 Location: YARAGADEE, AUSTRALIA
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7090
 Type of Monument: BRASS DISK
 Monument Inscription: DONGARA 95
 Systems Using Monument: MOBLAS-5

Latitude: S 29 02' 47.3852''
 Longitude: E 115 20' 48.2480''
 Elevation:
 Height Above Ellipsoid: 241.605 meters
 Survey Source/Date: AUSLIG, GEODETIC SERV. SECTION/29-AUG-91
 Datum/Ellipsoid: WGS 84 (DERIVED)

Comments: NONE

Differential Coordinates FROM Observing Monument 7090 TO
Reference Monuments and Other Observing Monuments

Data Source: AUSLIG. DORIS INFORMATION FROM IGN.

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	DON 38 (PSM2)	46.597	-22.841	-76.112
--	DORIS ANTENNA	2.993	11.264	11.826
--	DORIS STN MARK	3.818	9.521	12.897
--	PILLAR 1	-1440.348	930.486	2602.800
--	PILLAR 2	-64.362	47.561	127.291
--	PILLAR 3	-40.025	34.402	85.360
--	RM 1	-10.552	6.608	19.514
--	RM 2	-4.562	2.856	8.442
--	RM 3	-8.046	-5.369	-2.529
--	RM 4	-18.605	-12.471	-5.835
--	ROGUE GPS (MARK)	-18.605	-12.471	-5.835
--	DORIS ANT REF PT	2.990	11.270	11.823

Monument Number: 7090
 Type of Monument: BRASS DISK
 Monument Inscription: DONGARA 95
 Systems Using Monument: MOBLAS-5

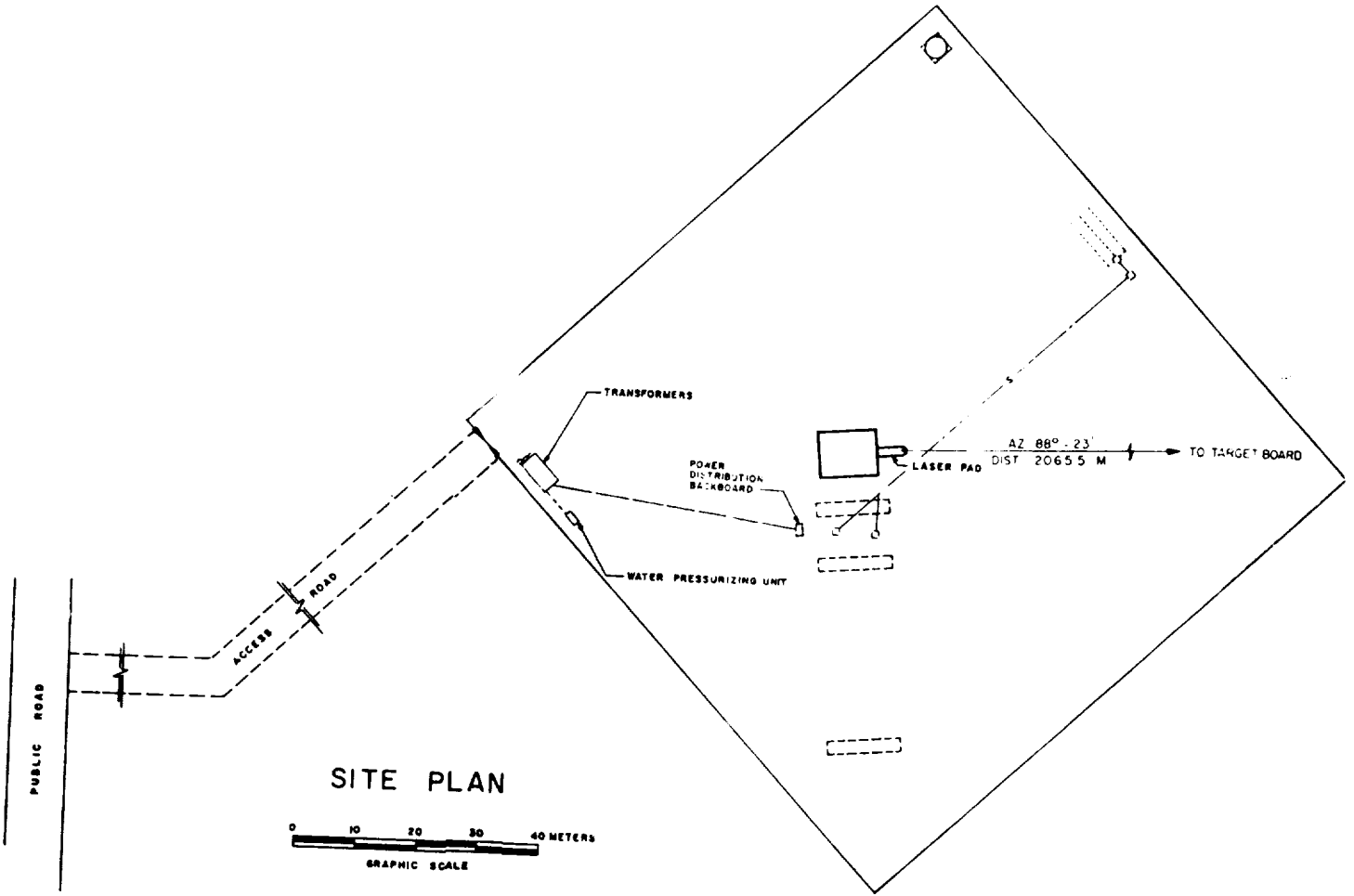
Differential Coordinates FROM Observing Monument 7090 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	DON 38 (PSM2)	-86.246	-32.333	1.469
--	DORIS ANTENNA	14.659	-7.527	2.037
--	DORIS STN MARK	14.659	-7.526	-0.168
--	RM 1	22.152	6.707	-0.304
--	RM 2	9.582	2.900	-0.135
--	RM 3	-2.894	9.570	-0.003
--	RM 4	-6.706	22.153	-0.057

SITE SKETCH

Site Number: 133
Current Site Name: YARAGADEE
Location: YARAGADEE, AUSTRALIA



PREVIOUS OCCUPATION INFORMATION

Site Number: 133

Current Site Name: YARAGADEE

Location: YARAGADEE, AUSTRALIA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7090	MOBLAS-5	70900501	01-JUL-79	27-JUL-83
7090	MOBLAS-5	70900502	27-JUL-83	19-NOV-84
7090	MOBLAS-5	70900503	19-NOV-84	05-SEP-85
7090	MOBLAS-5	70900504	05-SEP-85	16-APR-87
7090	MOBLAS-5	70900505	23-APR-87	13-AUG-87
7090	MOBLAS-5	70900506	13-AUG-87	26-AUG-87
7090	MOBLAS-5	70900507	26-AUG-87	04-AUG-89
7090	MOBLAS-5	70900508	05-AUG-89	12-NOV-90
7090	MOBLAS-5	70900509	13-NOV-90	06-JUN-91
7090	MOBLAS-5	70900510	07-JUN-91	08-JAN-92
7090	MOBLAS-5	70900511	21-JAN-92	23-MAR-92
7090	MOBLAS-5	70900512	24-MAR-92	13-JUL-92
7090	MOBLAS-5	70900513	21-JUL-92	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 408

Current Site Name: YELLOWKNIFE

Other Site Name:

Location: YELLOWKNIFE, NORTHWEST TERRITORY, CANADA

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION.

Site Description: THE OLD SITE IS LOCATED ABOUT 150 METERS NORTH-NORTHWEST OF A TRANSPORT CANADA RECEIVING ANTENNA, 400 METERS NORTHWEST OF THE ENERGY, MINES AND RESOURCES GEOPHYSICAL LABORATORY AND TWO KM NORTHWEST OF THE CONTROL TOWER OF THE YELLOWKNIFE AIRPORT. THE OBSERVING MONUMENT IS NEAR THE HIGHEST POINT OF AN OUTCROP NEAR THE EDGE OF AN OPEN SANDY AREA. A GRAVEL PAD HAS BEEN PREPARED TO ACCOMMODATE THE MOBILE VLBI SYSTEMS. THE NEW SITE IS 1.8 KM NW OF THE MAIN ENTRANCE TO THE AIRPORT TERMINAL ALONG HIGHWAY 3, 1.1 KM FROM THE HIGHWAY PAST THE ENTRANCE TO THE GOLF COURSE. STATION IS A BRASS TAB EPOXIED INTO A DRILL HOLE IN BEDROCK, 0.595 METERS BELOW THE SURFACE OF A CONCRETE PAD UNDER MV-1.

Site Topo Map: MCE 327, EDITION 2, 1981, 1:25,000 TOPOGRAPHIC MILITARY CITY MAP SERIES A902. AVAILABLE FROM CANADA MAP OFFICE, DEPARTMENT OF ENERGY, MINES AND RESOURCES, OTTAWA.

GEOLOGICAL INFORMATION

Geological Province: PRECAMBRIAN SLAVE PROVINCE

Local Geology: OUTCROP OF PRECAMBRIAN BASEMENT; BIOTITE GRANODIORITE, GRANITE, AND ALLIED ROCK OF EARLY PRECAMBRIAN AGE.

Comments: NONE

MONUMENT INFORMATION

Site Number: 408
Current Site Name: YELLOWKNIFE
Location: YELLOWKNIFE, NORTHWEST TERRITORY, CANADA
Number of Observing Monuments: 2
Surveyed into National Network? YES

Monument Number: 7285
Type of Monument: CANADIAN BRONZE DISK SET IN BEDROCK OUTCROP
Monument Inscription: LBI 829098
Systems Using Monument: MOBILE VLBI

Latitude: N 62 28' 45.64077''
Longitude: W 114 28' 20.50130''
Elevation: 203.923 meters
Height Above Ellipsoid:
Survey Source/Date: GEODETIC SURVEY OF CANADA/20-MAY-92
Datum/Ellipsoid: NAD83/ GRS 80

Comments: PRELIMINARY VALUES

Differential Coordinates FROM Observing Monument 7285 TO
Reference Monuments and Other Observing Monuments

Data Source: GEOLOGICAL SURVEY OF CANADA

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
7296	909012	-274.9222	257.4310	64.9133

MONUMENT INFORMATION (Continued)

Site Number: 408

Current Site Name: YELLOWKNIFE

Location: YELLOWKNIFE, NORTHWEST TERRITORY, CANADA

Monument Number: 7296

Type of Monument: CANADIAN BRONZE DISK SET IN BEDROCK OUTCROP

Monument Inscription: LBI 909012

Systems Using Monument: MOBILE VLBI

Latitude: N 62 28" 50.06461''

Longitude: W 114 28' 45.43094''

Elevation: 205.862 meters

Height Above Ellipsoid:

Survey Source/Date: GEODETIC SURVEY OF CANADA/20-MAY-92

Datum/Ellipsoid: NAD83/ GRS 80

Comments: PRELIMINARY VALUES

Differential Coordinates FROM Observing Monument 7296 TO
Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates Not Available ----

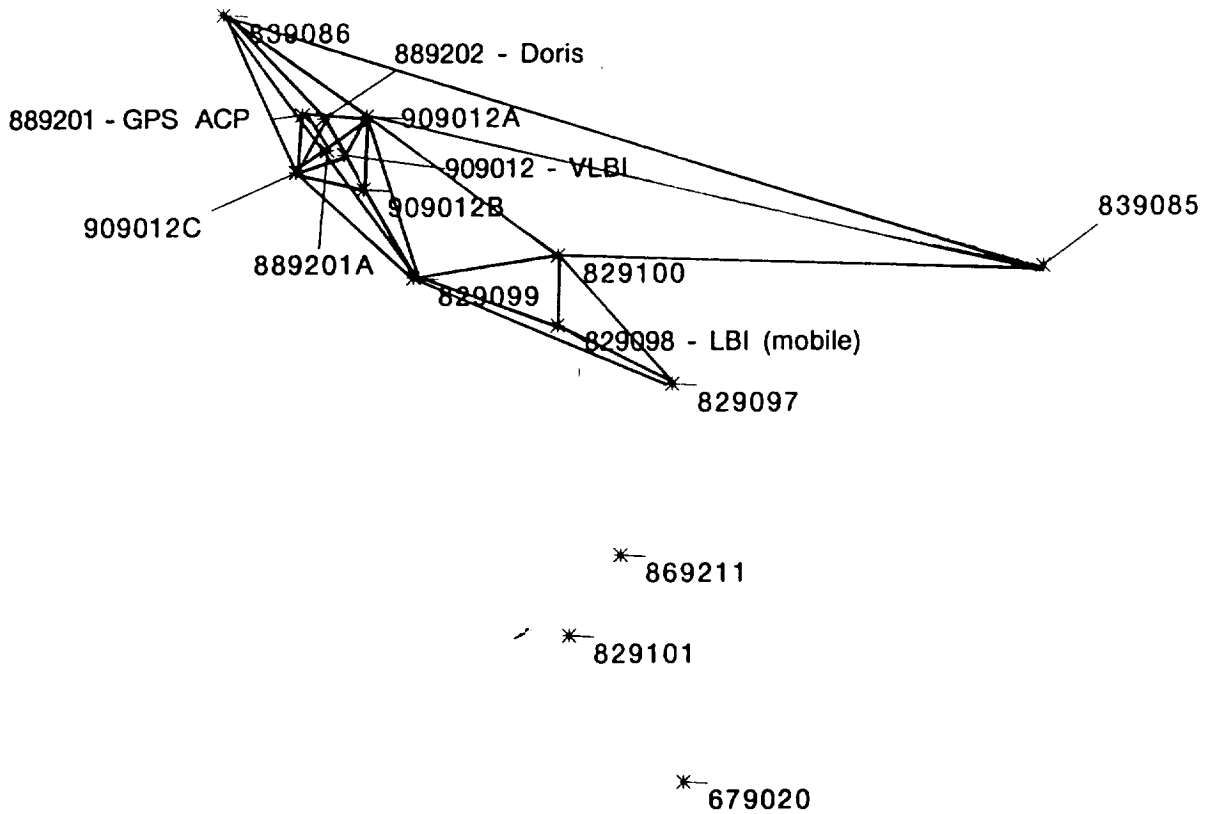
SITE SKETCH

Site Number: 408

Current Site Name: YELLOWKNIFE

Location: YELLOWKNIFE, NORTHWEST TERRITORY, CANADA

YELLOWKNIFE



PREVIOUS OCCUPATION INFORMATION

Site Number: 408

Current Site Name: YELLOWKNIFE

Location: YELLOWKNIFE, NORTHWEST TERRITORY, CANADA

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7285	MV-3	72855301	11-AUG-84	15-AUG-84
7285	MV-3	72855302	28-AUG-85	29-AUG-85
7296	MV-1	72965101	01-JAN-91	---

-- SITE INFORMATION --

Site Number: 683

Current Site Name: YIGILCA

Other Site Name:

Location: YIGILCA, TURKEY

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF MEDITERRANEAN TECTONICS.

Site Description: THE SITE IS LOCATED ON A PRIVATELY-OWNED PIECE OF LAND, NINE KILOMETERS SOUTH-SOUTHEAST OF YIGILCA, ON A PLATEAU 100 TO 150 METERS SOUTH OF THE ROAD TO THE VILLAGE OF KIRIK. A PAD HAS BEEN CONSTRUCTED FOR OCCUPATION BY A MOBILE LASER SYSTEM.

Topo Map: UNKNOWN

GEOLOGICAL INFORMATION

Geological Province: NONE

Local Geology: LIMESTONE OUTCROPS ARE SCATTERED THROUGHOUT THE AREA AND BASEMENT ROCK IS VISIBLE AT THE LOWER LEVELS ON THE MOUNTAIN SLOPES.

Comments: NONE

MONUMENT INFORMATION

Site Number: 683
 Current Site Name: YIGILCA
 Location: YIGILCA, TURKEY
 Number of Observing Monuments: 1
 Surveyed into National Network? NO

Monument Number: 7587
 Type of Monument: BRASS MONUMENT
 Monument Inscription: 7587 1987
 Systems Using Monument: MOBILE LASER RANGING SYSTEM

Latitude: NOT AVAILABLE
 Longitude:
 Elevation:
 Height Above Ellipsoid:
 Survey Source/Date:
 Datum/Ellipsoid:

Comments:

Differential Coordinates FROM Observing Monument 7587 TO
Reference Monuments and Other Observing Monuments

Data Source: BFEC/ 28-APR-88

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	7587 A 1987	0.0271	2.0738	-1.2738
--	7587 AZIMUTH MARK	-181.7286	86.0646	120.9145
--	7587 B 1987	1.9940	2.1324	-3.2445
--	7587 C 1987	3.1228	-0.2995	-2.9062
--	7587 D 1987	2.0933	-1.2722	-1.2864
--	7587 RM 1 1987	34.1532	7.9774	-31.8320
--	7587 RM 2 1987	5.7746	-33.3686	9.8698
--	7587 RM 3 1987	-19.7887	28.9630	0.9395
--	CAL PIER REFERENCE POINT	133.5329	30.2235	-120.9014

Monument Number: 7587
 Type of Monument: BRASS MONUMENT
 Monument Inscription: 7587 1987
 Systems Using Monument: MOBILE LASER RANGING SYSTEM

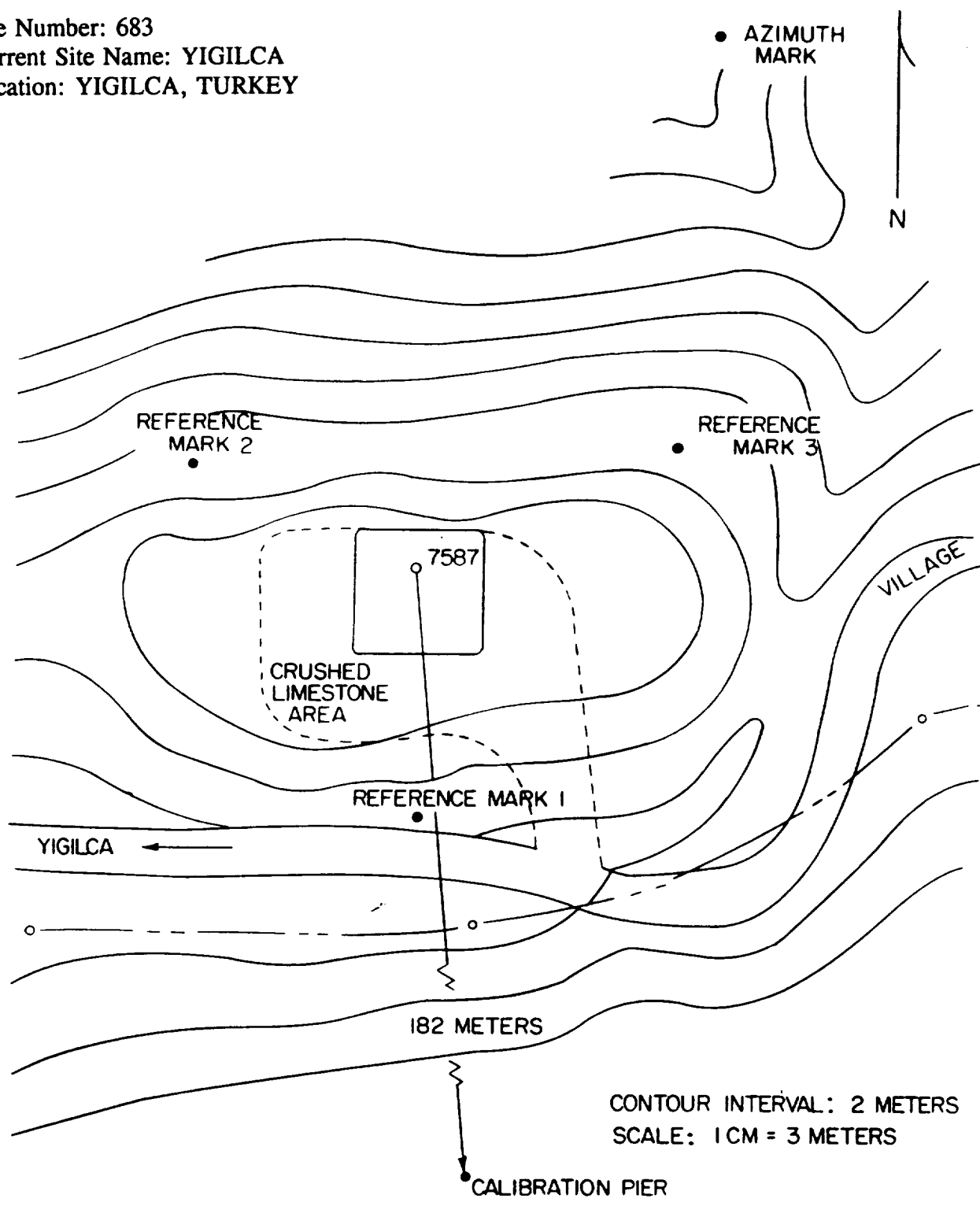
Differential Coordinates FROM Observing Monument 7587 TO
 Reference Monuments and Other Observing Monuments

---- Differential Coordinates ----

Mon. Number	Monument Inscription	North	East	Up
--	7587 A 1987	-1.6862	1.7552	-0.0000
--	7587 B 1987	-4.2945	0.7793	-0.0005
--	7587 C 1987	-3.8389	-1.8843	-0.0095
--	7587 D 1987	-1.7072	-2.1772	0.0050
--	7587 RM 1 1987	-45.8662	-11.0075	4.2988
--	7587 RM 2 1987	15.6317	-31.4820	-2.9591
--	7587 RM 3 1987	1.8741	35.0327	-0.7268

SITE SKETCH

Site Number: 683
Current Site Name: YIGILCA
Location: YIGILCA, TURKEY



PREVIOUS OCCUPATION INFORMATION

Site Number: 683

Current Site Name: YIGILCA

Location: YIGILCA, TURKEY

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7587	TLRS-1	75871101	20-MAY-87	03-JUL-87
7587	TLRS-1	75871102	05-JUL-89	11-OCT-89
7587	TLRS-1	75871103	20-AUG-92	29-OCT-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 682

Current Site Name: YOZGAT

Other Site Name:

Location: YOZGAT, TURKEY

Geographic Region: MEDITERRANEAN

Tectonic Plate: EURASIAN

-- Site Information Not Available --

PREVIOUS OCCUPATION INFORMATION

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7585	MTLRS-1	75851501	25-MAY-87	03-JUL-87
7585	MTLRS-1	75851502	20-AUG-89	05-SEP-89
7585	MTLRS-1	75851503	05-AUG-92	27-AUG-92

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
--------------------	---------------------	--------------------------	------------------	----------------

-- No Previous Occupations --

-- SITE INFORMATION --

Site Number: 202

Current Site Name: YUMA

Other Site Name:

Location: YUMA PROVING GROUNDS, AZ

Geographic Region: NORTH AMERICA

Tectonic Plate: NORTH AMERICAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING THE DETERMINATION OF REGIONAL DEFORMATION AND INTERCOMPARISON OF MEASUREMENT TECHNIQUES.

Site Description: THE NEW SITE IS LOCATED ON AN ABANDONED MORTAR GP-21A PAD ON THE U.S. ARMY YUMA PROVING GROUNDS. THE OBSERVING MONUMENT IS SET IN THE MORTAR PAD TO THE WEST OF THE GUN MOUNT AREA. THE ELECTRONICS VAN FOR THE MOBILE VLBI SYSTEMS LOCATES ON THE EAST SIDE OF THIS GUN MOUNT. BOLT INSERTS HAVE BEEN PLACED IN THE PAD AROUND THE OBSERVING MONUMENT MAKING IT COMPATIBLE FOR OCCUPATION BY TLR-3 OR -4.

Site Topo Map: IMPERIAL RESERVOIR, ARIZONA. U.S.G.S., RESTON, VA 22092

GEOLOGICAL INFORMATION

Geological Province: MOJAVE DESERT

Local Geology: QUATERNARY ALLUVIUM

Comments: THE ORIGINAL SITE WAS OCCUPIED BY MV-2; THE NEW SITE WAS CHOSEN FOR SAFETY REASONS. NO TIE HAS BEEN MADE BETWEEN SITES.

MONUMENT INFORMATION

Site Number: 202

Current Site Name: YUMA

Location: YUMA PROVING GROUNDS, AZ

Number of Observing Monuments: 2

Surveyed into National Network? YES

Monument Number: 7273

Type of Monument: USC & GS STATION DISK

Monument Inscription: LORAC WEST 1956

Systems Using Monument: MOBILE VLBI AND LASERS

Latitude: N 32 54' 12.96626''

Longitude: W 114 20' 15.27960''

Elevation:

Height Above Ellipsoid: 142.620 meters

Survey Source/Date: NGS GPS RESULTS/01-JUL-87

Datum/Ellipsoid: WGS 72

Comments: THIS, THE ORIGINAL SITE, IS NOW ABANDONED.

MONUMENT INFORMATION (Continued)

Site Number: 202
 Current Site Name: YUMA
 Location: YUMA PROVING GROUNDS, AZ

Monument Number: 7894
 Type of Monument: NGS STATION DISK
 Monument Inscription: YUMA NCMN 1983
 Systems Using Monument: MOBILE LASER

Latitude: N 32 56' 20.89116"
 Longitude: W 114 12' 11.64380"
 Elevation:
 Height Above Ellipsoid: 256.410 meters
 Survey Source/Date: NGS GPS RESULTS/01-JUL-87
 Datum/Ellipsoid: WGS 72

Comments: THIS IS THE NEW SITE ON THE MORTAR PAD LOCATED ON THE FIRING RANGE.

Differential Coordinates FROM Observing Monument 7894 TO Reference Monuments and Other Observing Monuments

Data Source:

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	GP 21 A	17.495	11.445	27.440
--	YUMA NCMN NO. 2	-66.342	-19.724	-72.391
--	YUMA NCMN NO. 3	-3.879	38.805	50.909

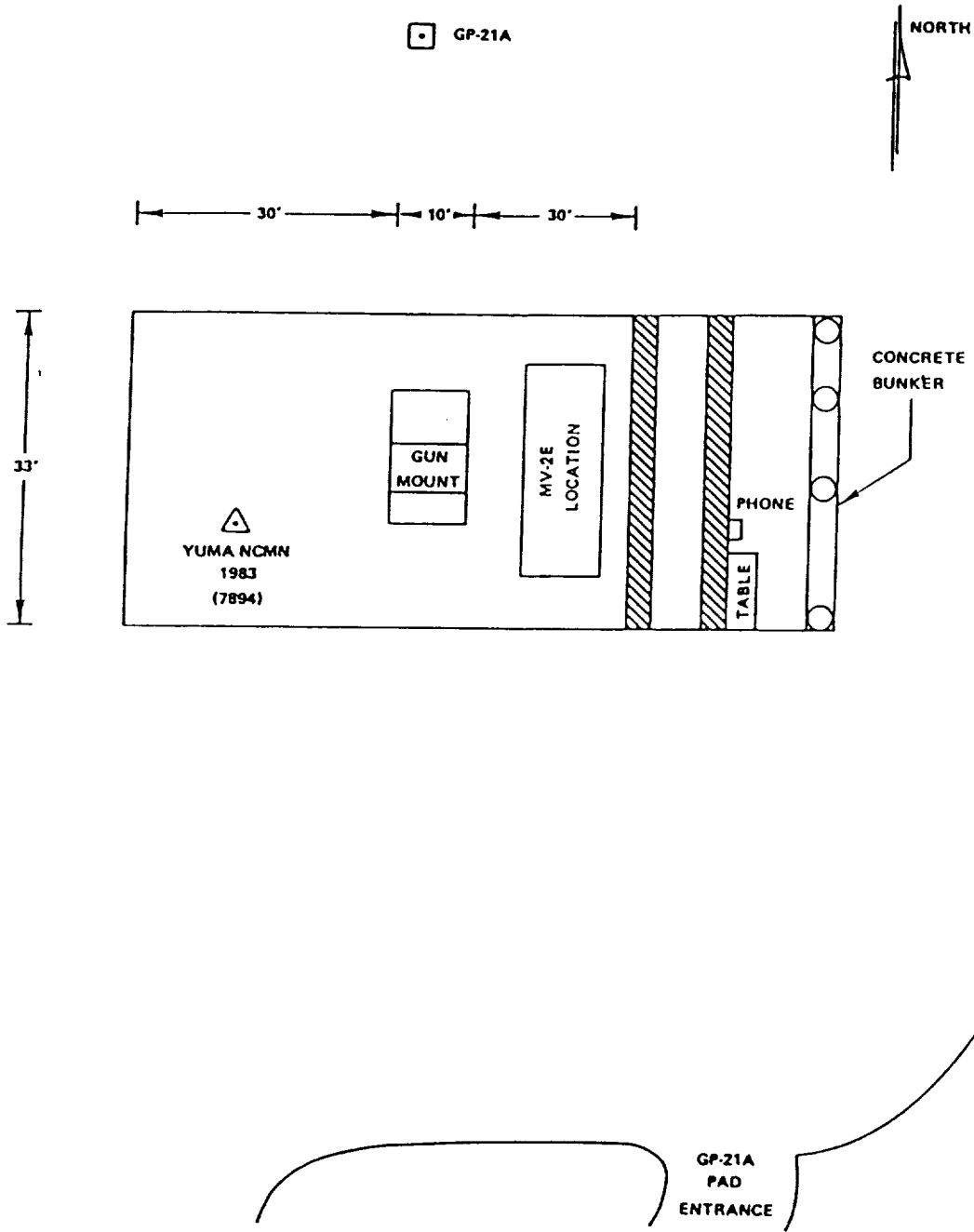
Mon. Number	Monument Inscription	North	East	Up
--	YUMA NCMN NO. 2	-85.325	-52.424	-1.438
--	YUMA NCMN NO. 3	61.106	-19.447	-0.688

SITE SKETCH

Site Number: 202

Current Site Name: YUMA

Location: YUMA PROVING GROUNDS, AZ



PREVIOUS OCCUPATION INFORMATION

Site Number: 202

Current Site Name: YUMA

Location: YUMA PROVING GROUNDS, AZ

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7894	TLRS-1	78941101	22-FEB-83	04-JUL-83

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7273	MV-2	72735201	15-MAY-81	16-MAY-81
7894	MV-2	78945201	03-NOV-83	06-NOV-83
7894	MV-2	78945202	31-OCT-84	01-NOV-84
7894	MV-3	78945303	01-MAR-85	02-MAR-85
7894	MV-2	78945204	02-NOV-85	06-NOV-85
7894	MV-2	78945205	09-DEC-85	11-DEC-85
7894	MV-3	78945306	23-FEB-86	27-FEB-86
7894	MV-3	78945307	07-APR-86	11-APR-86
7894	MV-3	78945308	20-MAY-86	22-MAY-86
7894	MV-3	78945309	29-OCT-86	02-NOV-86
7894	MV-2	78945210	10-DEC-86	14-DEC-86
7894	MV-3	78945311	05-FEB-87	07-FEB-87
7894	MV-3	78945312	22-MAR-87	23-MAR-87
7894	MV-2	78945213	10-MAY-87	11-MAY-87
7894	MV-2	78945214	24-OCT-87	25-OCT-87
7894	MV-3	78945315	05-DEC-87	06-DEC-87
7894	MV-3	78945316	28-APR-88	30-APR-88
7894	MV-2	78945217	19-OCT-88	22-OCT-88

-- SITE INFORMATION --

Site Number: 882

Current Site Name: ZIMMERWALD

Other Site Name:

Location: BERN, SWITZERLAND

Geographic Region: EUROPE

Tectonic Plate: EURASIAN

Primary Scientific Purposes: MEASUREMENTS SUPPORTING ALL GEODYNAMIC INVESTIGATIONS.

Site Description: THE STATION IS LOCATED AT THE ZIMMERWALD OBSERVATORY OF BERNE UNIVERSITY. THE OBSERVATORY HAS CONTRIBUTED SATELLITE DATA TOWARDS INTERNATIONAL GEODETIC PROGRAMS SINCE 1966. THE EARLY PHOTOGRAPHIC METHODS WERE SUBSTITUTED BY LASER RANGING IN THE EARLY SEVENTIES. SINCE 1984 THE LASER STATION HAS BEEN ROUTINELY OPERATING WITH A THIRD GENERATION LASER, MOSTLY TRACKING LAGEOS, AJISAI, AND STARLETTE.

Site Topo Map:

GEOLOGICAL INFORMATION

Geological Province: ALPINE MOLASSE BASIN OF SWITZERLAND

Local Geology: LATE PLEISTOCENE MORAINÉ MATERIAL SUPERPOSED ON SANDSTONES OF THE UPPER MARINE MOLASSE (HELVETIEN MIOCENE)

Comments: THE SITE HAS BEEN TIED INTO A NETWORK OF REFERENCE POINTS LOCATED IN SOLID ROCK AREAS USING GPS RECEIVERS.

MONUMENT INFORMATION

Site Number: 882
 Current Site Name: ZIMMERWALD
 Location: BERN, SWITZERLAND
 Number of Observing Monuments: 1
 Surveyed into National Network? YES

Monument Number: 7810
 Type of Monument: INTERSECTION OF HORIZONTAL AND VERTICAL AXES
 Monument Inscription: NONE
 Systems Using Monument: FIXED LASER

Latitude: N 46 52' 38.0188''
 Longitude: E 07 27' 54.7833''
 Elevation: 901.849 asl
 Height Above Ellipsoid: 951.052 meters
 Survey Source/Date: Federal Office of Topography, Jan 25, 1990
 Datum/Ellipsoid: ITRF89, WGS-84

Comments: NONE

Differential Coordinates FROM Observing Monument 7810 TO Reference Monuments and Other Observing Monuments

Data Source: Federal Office of Topography, Jan 25, 1990

---- Differential Coordinates ----

Mon. Number	Monument Inscription	X	Y	Z
--	CH-99 RETRIG REF MONUMENT	-9.602	34.805	-0.812
--	L+T 88 (GPS marker perm. ant.)	13.680	6.012	-6.242
--	GPS 87 (auxiliary GPS marker)	10.188	-7.805	-4.109
--	DOP 80 (auxiliary GPS marker)	8.448	-0.168	-3.993

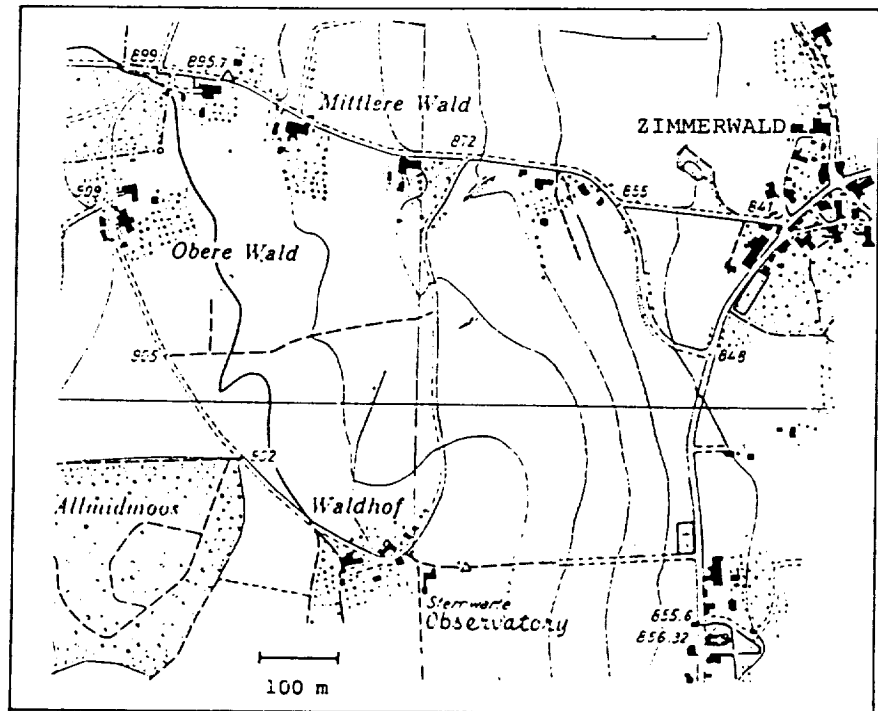
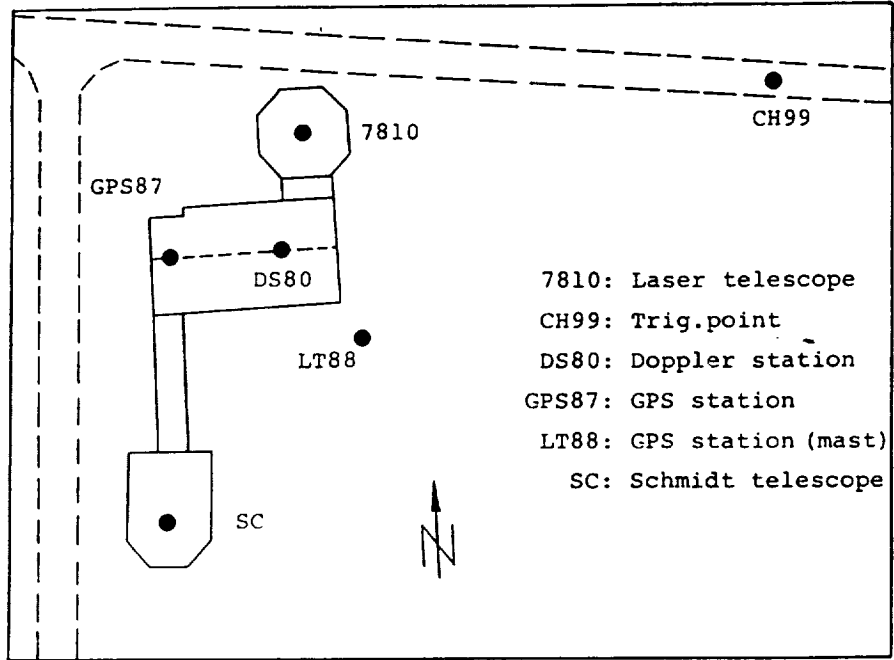
Mon. Number	Monument Inscription	North	East	Up
--	CH-99 RETRIG REF MONUMENT	3.093	35.757	-4.009
--	L+T 88 (GPS marker perm. ant.)	-14.737	4.183	5.250
--	GPS 87 (auxiliary GPS marker)	-9.442	-9.063	3.212
--	DOP 80 (auxiliary GPS marker)	-8.827	-1.264	2.796

SITE SKETCH

Site Number: 882

Current Site Name: ZIMMERWALD

Location: BERN, SWITZERLAND



(WG)

PREVIOUS OCCUPATION INFORMATION

Site Number: 882

Current Site Name: ZIMMERWALD

Location: BERN, SWITZERLAND

-- SLR OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
7810	ZIMLAS	78104801	01-MAY-84	---

-- VLBI OCCUPATIONS --

Monument Number	Occupying System	Occupation Designator	Starting Date	Ending Date
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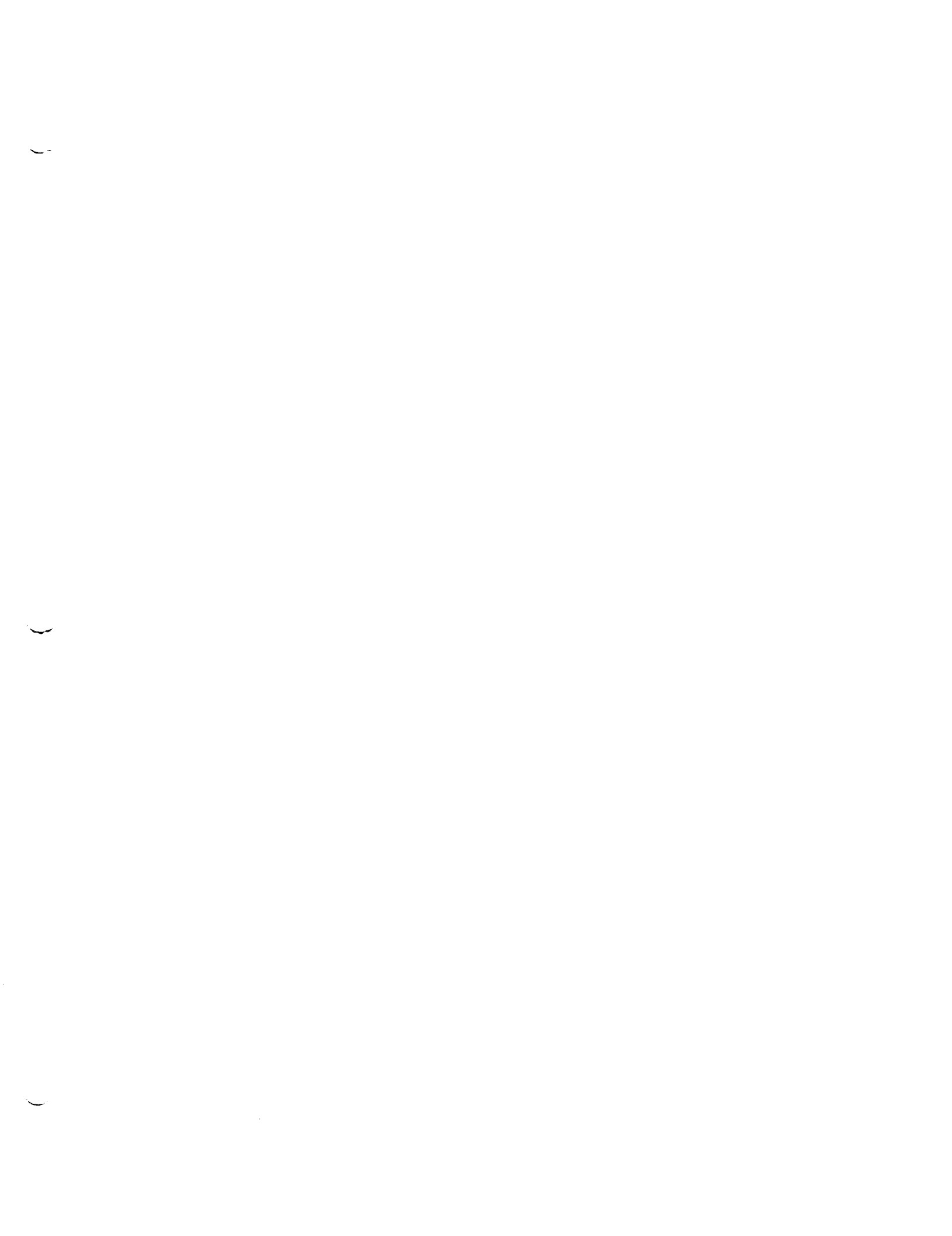
-- No Previous Occupations --

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