

Department of Interior

U. S. Geological Survey

**Catalog of Locations: Low Frequency Instrumentation
in California, 1985**

Katherine S. Breckenridge

M. J. S. Johnston

Open-File Report 85-212

This report is preliminary and has not been reviewed for
conformity with U.S. Geological Survey editorial standards
and stratigraphic nomenclature.

Menlo Park, California

CATALOG OF LOCATIONS: LOW FREQUENCY INSTRUMENTATION IN CALIFORNIA, 1985

Katherine S. Breckenridge

M. J. S. Johnston

In order to monitor crustal activity for earthquake prediction purposes the U.S.G.S. has installed numerous types of instrumentation throughout active fault zones in California. Periodically, it is necessary to update a catalog of instrument locations, providing a current record of monitoring in the state. This report catalogs the location and description of instruments recording continuous data at sample rates of less than one per minute, as well as the location of sites where data are gathered in periodic surveys. These data are termed "low frequency data". The continuous data are telemetered in digital form to Menlo Park where they are available for display and analysis on the Low Frequency Data Acquisition System (Rogers et al., 1977).

The low frequency network fulfills two objectives in the Earthquake Prediction program. First, it establishes an effective monitoring system for crustal deformation along active fault zones in California. Data from the network also provide information on the relation of crustal changes to seismicity. Thus, associated with seismic data, it constitutes the backbone of a prototype operational prediction program.

Previous catalogs of low frequency instrument sites were completed by Daul and Johnston (1978), Daul and Johnston (1980) and Rodriguez et al. (1981). Since then there have been many changes in the character of the network, as areas gain seismic or programmatic prominence. Here we report the status of active monitoring as of February 1985.

Instrument Type and Description of Measurement	Page No.
<p>1) Tiltmeters measure tilt of the ground with respect to local equipotential, as a function of time. Resolution: 0.01 microradians</p> <p>Investigators: Carl Mortensen Phone: (415) 323-8111 x2583 Vince Keller x2705 Rich Liechti x2705 Doug Hopkins x2705 Rod Sheets x2705 Malcolm Johnston x2132</p>	6
<p>2) Creepmeters measure the displacement of two points on opposite side of a fault, using an Invar-wire reference. Resolution: about 0.1 millimeters</p> <p>Investigators: Sandra Schulz Phone: (415) 323-8111 x2763 Beth Brown x2763</p>	8
<p>3) Linear Strainmeters measure strain from small displacements between two points in the ground, as a function of time. Resolution: 0.01 microstrain</p> <p>Investigators: Malcolm Johnston Phone: (415) 323-8111 x2132 Alan Jones x2532</p>	10
<p>4) Volume Strainmeters (Dilatometers) measure changes in volume of an oil-filled stainless steel cylinder cemented into a borehole at a depth of about 200 meters. Resolution: 0.001 microstrain</p> <p>Investigators: Malcolm Johnston Phone: (415) 323-8111 x2132 Doug Myren (415) 323-8111 x2705 Alan Linde (202) 966-0863 Selwyn Sacks (202) 966-0863</p>	10

Instrument Type and Description of Measurement	Page No.
5) Magnetometers measure magnetic field simultaneously at fixed locations as a function of time, using proton magnetometers. Sensitivity: 0.25 gammas Investigators: Bob Mueller Phone: (415) 323-8111 x2533 Malcolm Johnston x2132 Vince Keller x2694	12
6) Portable Magnetometers record from several hours to several months of magnetic field data, depending on the sample interval, at groups of sites along active faults or on volcanoes. Sensitivity: 0.25 gammas Investigators: Bob Mueller Phone: (415) 323-8111 x2533 Malcolm Johnston x2132 Vince Keller x2694	14
7) Magnetic Surveys are taken periodically, measuring magnetic field at pairs of sites along active faults, using proton magnetometers. Sensitivity: 0.25 gammas Investigator: Malcolm Johnston Phone: (415) 323-8111 x2132 Bob Mueller x2533 Stan Silverman x2933 Vince Keller x2964	18
8) Hydrogen is detected using an electrochemical sensor measuring hydrogen available for electrochemical oxidation, with reference to an oxygen source, as a function of time. Investigators: Moto Sato Phone: (703) 860-6600 Ken McGee (206) 696-7693 Jeff Sutton (206) 696-7881	21

Instrument Type and Description of Measurement	Page No.
<p>9) Alignment Arrays measure horizontal fault displacement using a T3 theodolite to determine the angle formed by three or more fixed points.</p> <p>Investigator: Beth Brown Phone: (415) 323-8111 x2763 Sandra Schulz x2763 Ron Jenkins x2763 Brett Baker x2763 Kate Breckenridge x2933</p>	23
<p>10) Support Instrumentation Various meteorological and crustal parameters such as near-surface temperature, pressure, instrument temperature, pore pressure at depth in boreholes containing dilatometers, are measured to aid interpretation of strain and tilt data.</p> <p>Investigator: Malcolm Johnston Phone: (415) 323-8111 x2132 Doug Myren x2705 Alan Jones x2532</p>	26

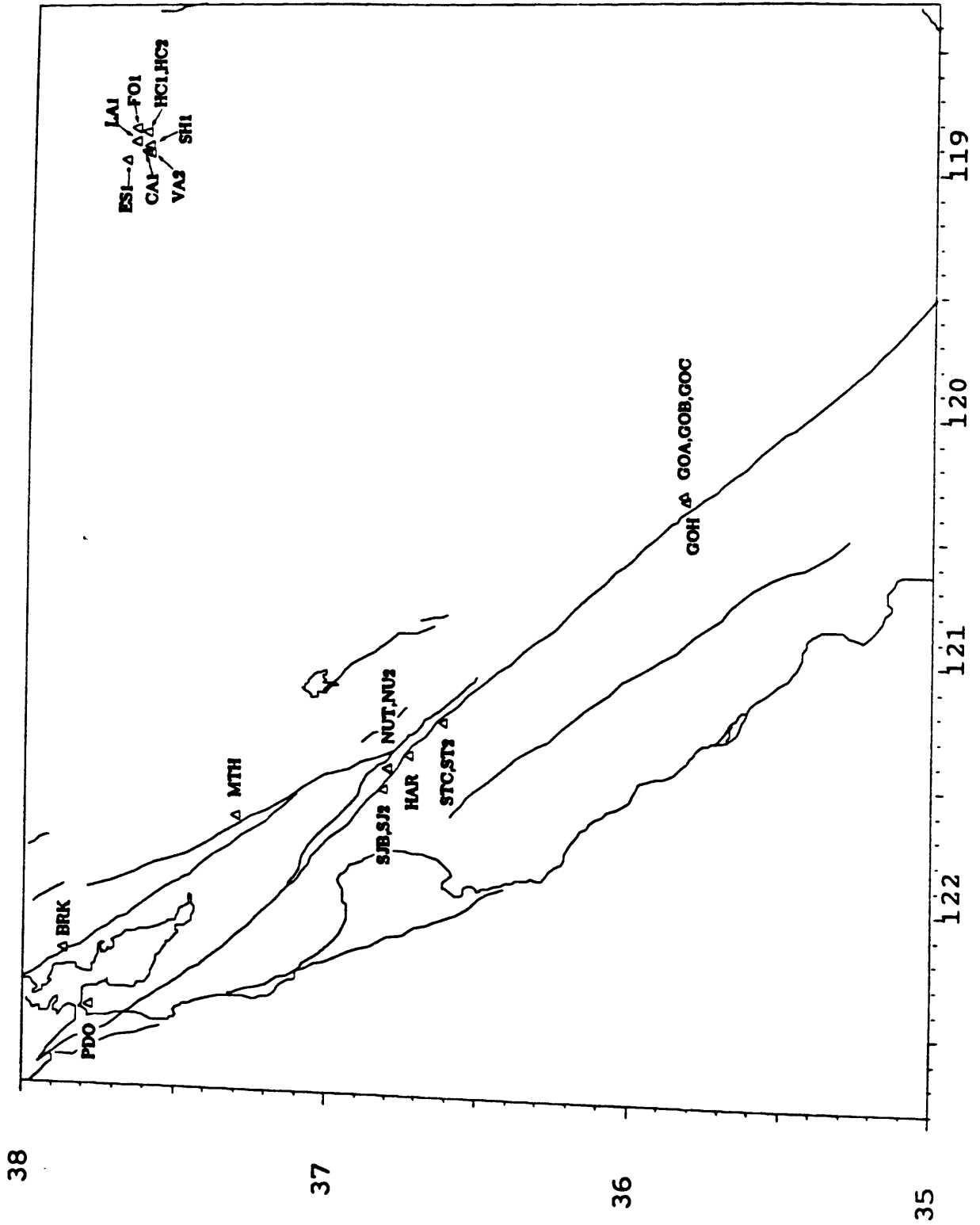
REFERENCES

- Daul, William B. and Johnston, M.J.S. Catalog of Locations of U.S.G.S. Instruments Recording Low Frequency Data in California - 1980, U.S.G.S. Open File Rep. 80-704.
- Daul, William B. and Johnston, M.J.S. Catalog of Locations of U.S.G.S. Instruments Recording Low Frequency Data in California, U.S.G.S. Open File Rep. 78-358.
- Roger, J., Johnston, M. J. S., Mortensen, C. E., and Myren, G. D.,
A multichannel digital telemetry system for low-frequency geophysical data, U.S.G.S. Open File Rep. 77-490.
- Rodriguez, Thelma R. and Raleigh, C. Barry. Locations of Geophysical Instruments and Survey Points Operated Under the Earthquake Prediction Element of the Earthquake Hazards Reduction Program - 1981. U.S.G.S. Open File Rep. 81-955.

TILTMETERS

Abbr	Latitude	Longitude	Invl	Sta. Name	PI
BRK	37 52.62	122 14.10	CON	BERKELEY	MORTENSEN
CA1	37 38.65	118 54.98	CON	CASA DIABLO	MORTENSEN
ES1	37 42.46	118 57.15	CON	ESCAPE	MORTENSEN
FO1	37 40.64	118 49.20	CON	FOSSIL	MORTENSEN
GOA	35 51.06	120 19.02	CON	GOLD HILL	MORTENSEN
GOB	35 51.06	120 19.02	CON	GOLD HILL	MORTENSEN
GOC	35 51.06	120 19.02	CON	GOLD HILL	MORTENSEN
GOH	35 50.52	120 20.22	CON	GOLD HILL	MORTENSEN
HAR	36 45.18	121 23.76	CON	HARRIS	MORTENSEN
HC1	37 38.66	118 50.25	CON	HOT CREEK	MORTENSEN
HC2	37 38.66	118 50.25	CON	HOT CREEK	MORTENSEN
LA1	37 40.63	118 52.50	CON	LITTLE ANTELOPE	MORTENSEN
MTH	37 19.26	121 40.02	CON	MT HAMILTON	MORTENSEN
NU2	36 49.44	121 27.36	CON	NUTTING	MORTENSEN
NUT	36 49.32	121 27.18	CON	NUTTING	MORTENSEN
PDO	37 47.40	122 28.10	CON	PRESIDIO	MORTENSEN
SH1	37 38.17	118 53.55	CON	SHERWIN CREEK	MORTENSEN
SJ2	36 50.10	121 32.46	CON	SAN JUAN BAUTISTA	MORTENSEN
SJB	36 50.10	121 32.46	CON	SAN JUAN BAUTISTA	MORTENSEN
ST2	36 38.40	121 15.60	CON	STONE CANYON	MORTENSEN
STC	36 38.40	121 15.60	CON	STONE CANYON	MORTENSEN
VA2	37 37.80	118 55.35	CON	VALENTINE	MORTENSEN

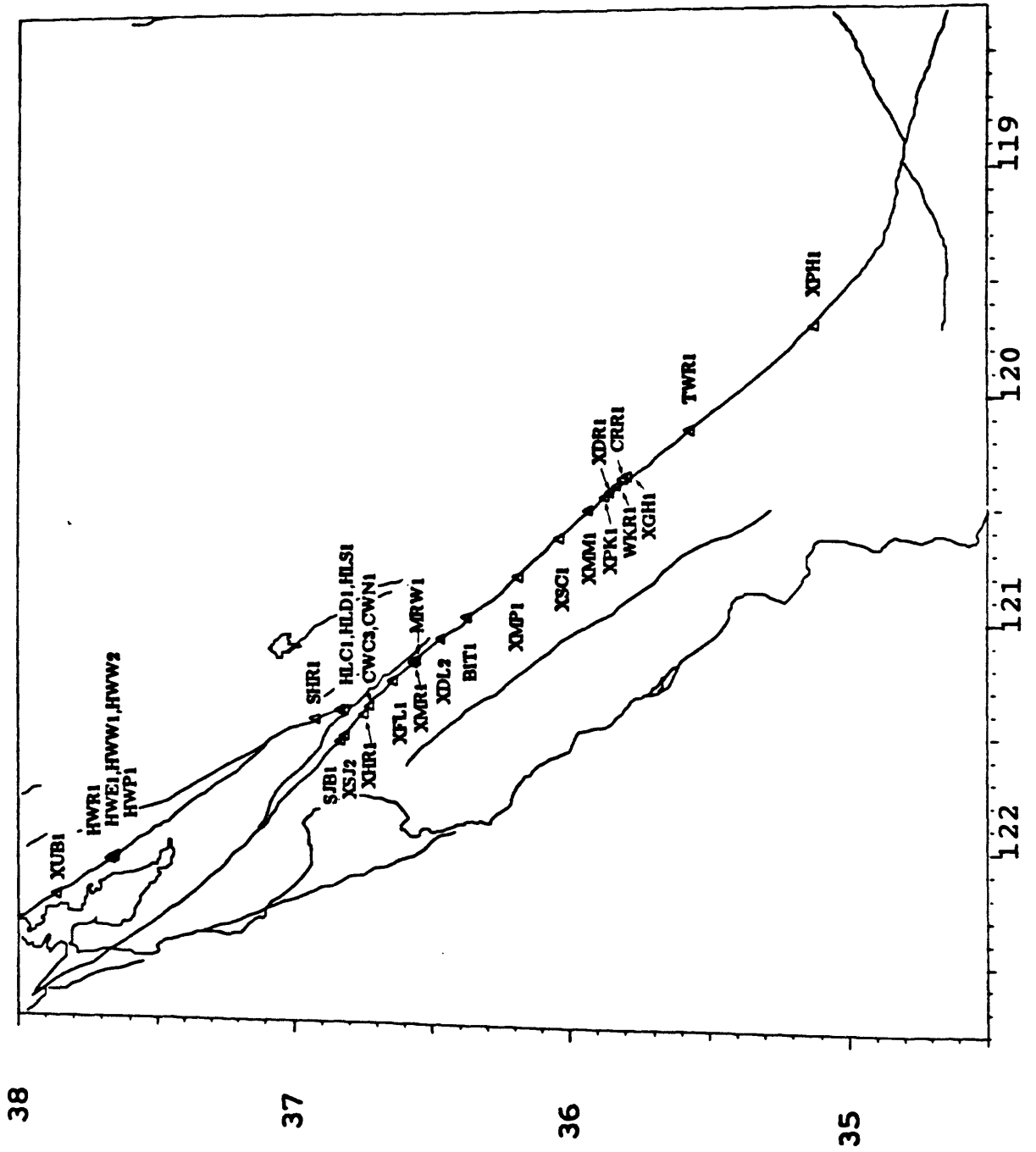
TILTMETERS



CREEPMETERS

Abbr	Latitude	Longitude	Invl	Sta. Name	PI
BIT1	36 23.90	120 58.90	CON	BITTERWATER	SCHULZ
CRR1	35 50.10	120 21.80	CON	CARR RANCH	SCHULZ
CWC3	36 45.00	121 23.10	CON	CIENEGA WINERY CNTRL	SCHULZ
CWN1	36 45.00	121 23.10	CON	CIENEGA WINERY NORTH	SCHULZ
HLC1	36 51.40	121 24.30	CON	HOLLISTER C	SCHULZ
HLD1	36 50.50	121 24.20	CON	HOLLISTER D	SCHULZ
HLS1	36 51.10	121 24.20	CON	HOLLISTER S	SCHULZ
HWE1	37 40.20	122 04.80	CON	HAYWARD D EAST	SCHULZ
HWP1	37 39.80	122 04.50	CON	HAYWARD PALISADE	SCHULZ
HWR1	37 40.80	122 05.40	CON	HAYWARD ROSE	SCHULZ
HW1	37 40.20	122 04.80	CON	HAYWARD D WEST	SCHULZ
HW2	37 40.20	122 04.80	CON	HAYWARD D WEST	SCHULZ
MRW1	36 35.10	121 10.60	CON	MELENDY WINDMILL	SCHULZ
SHR1	36 56.60	121 26.70	CON	SHORE ROAD	SCHULZ
SJB1	36 51.30	121 32.70	CON	SAN JUAN BAUTISTA ROD	SCHULZ
TWR1	35 35.80	120 08.80	CON	TWISSELMAN RANCH	SCHULZ
WKR1	35 51.50	120 23.50	CON	WORK RANCH	SCHULZ
XDL2	36 29.50	121 04.70	CON	DRY LAKE 2	SCHULZ
XDR1	35 53.00	120 25.20	CON	DURHAM RANCH	SCHULZ
XFL1	36 39.90	121 16.30	CON	FRANK LEWIS LONG	SCHULZ
XGH1	35 49.20	120 20.90	CON	GOLD HILL	SCHULZ
XHR1	36 46.30	121 25.30	CON	HARRIS WIRE	SCHULZ
XMM1	35 57.50	120 30.10	CON	MIDDLE MT.	SCHULZ
XMP1	36 12.80	120 47.90	CON	MONARCH PEAK	SCHULZ
XMR1	36 35.70	121 11.20	CON	MELENDY RANCH	SCHULZ
XP1	35 08.90	119 41.50	CON	PANORAMA HILLS	SCHULZ
XP1	35 54.10	120 26.50	CON	PARKFIELD	SCHULZ
XSC1	36 03.90	120 37.70	CON	SLACK CANYON	SCHULZ
XSJ2	36 50.20	121 31.20	CON	SAN JUAN BAUTISTA	SCHULZ
XUB1	37 52.40	122 15.10	CON	BERKELEY	SCHULZ

CREEPMETERS

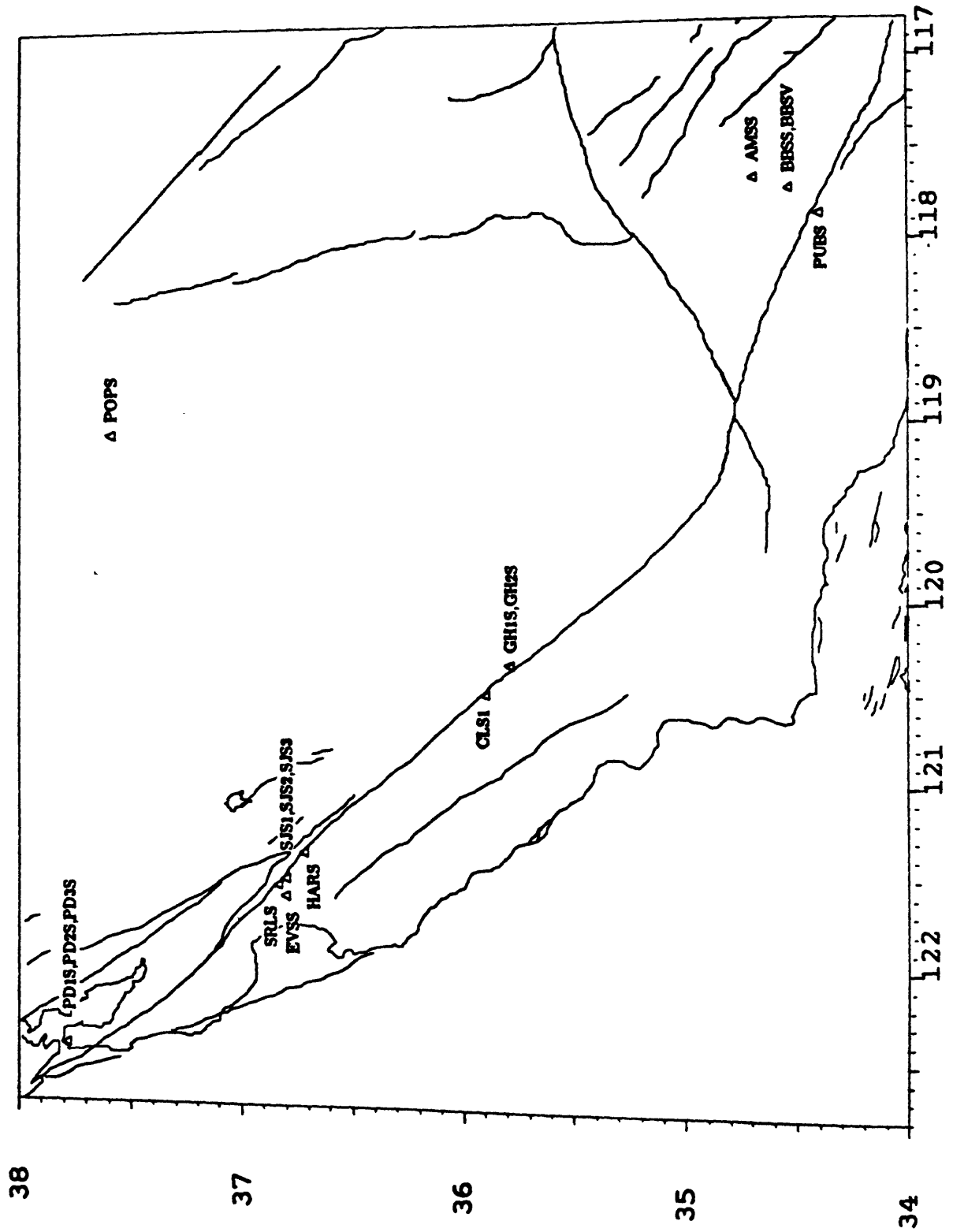


STRAINMETERS

Abbr	Latitude	Longitude	Invl	Sta. Name	PI
AMSS*	34 43.25	117 39.93	CON	ADOBE MTN	JOHNSTON
BBSS*	34 33.67	117 43.45	CON	BLACK BUTTE	JOHNSTON
BBSV	34 33.67	117 43.45	CON	BLACK BUTTE	JOHNSTON
CLS1	35 56.46	120 30.66	CON	CLAASSEN RANCH	JOHNSTON
EVSS*	36 49.92	121 37.98	CON	ECHO VALLEY	JOHNSTON
GH1S*	35 49.96	120 20.82	CON	GOLD HILL	JOHNSTON
GH2S*	35 50.28	120 20.63	CON	GOLD HILL	JOHNSTON
HARS	36 45.18	121 23.82	CON	HARRIS	JOHNSTON
PD1S	37 47.70	122 28.44	CON	PRESIDIO	JOHNSTON
PD2S	37 47.70	122 28.44	CON	PRESIDIO	JOHNSTON
PD3S	37 47.70	122 28.44	CON	PRESIDIO	JOHNSTON
POPS*	37 37.78	119 04.63	CON	DEVIL'S POSTPILE	JOHNSTON
PUBS*	34 25.61	117 51.88	CON	PUNCHBOWL	JOHNSTON
SJS1	36 49.86	121 32.40	CON	SAN JUAN BAUTISTA	JOHNSTON
SJS2	36 49.86	121 32.40	CON	SAN JUAN BAUTISTA	JOHNSTON
SJS3	36 49.86	121 32.40	CON	SAN JUAN BAUTISTA	JOHNSTON
SRLS*	36 51.90	121 34.62	CON	SEARLE ROAD	JOHNSTON

*These are volume strainmeters.

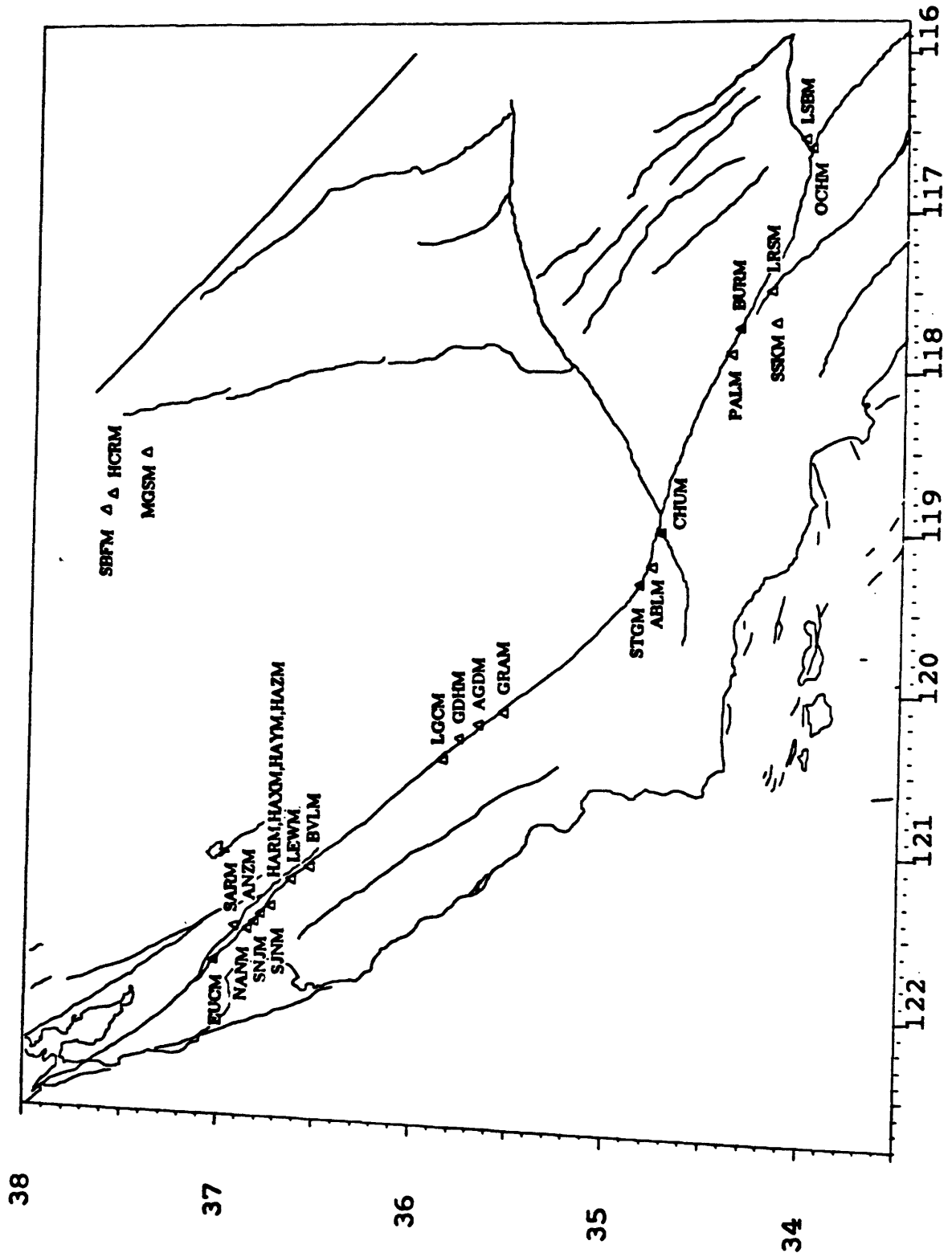
STRAINMETERS



PERMANENT MAGNETOMETERS

Abbr	Latitude	Longitude	Invl	Sta. Name	PI
ABLM	34 50.88	119 13.44	CON	MT. ABLE	MUELLER
AGDM	35 43.62	120 14.94	CON	ANTELOPE GRADE	MUELLER
ANZM	36 53.10	121 35.46	CON	ANZAR	MUELLER
BURM	34 24.36	117 43.56	CON	BLUE RIDGE	MUELLER
BVLM	36 34.20	121 11.34	CON	BEAR VALLEY	MUELLER
CHUM	34 48.36	119 00.42	CON	CHUCHUPATE	MUELLER
EUCM	37 03.12	121 48.18	CON	EUREKA CANYON	MUELLER
GDHM	35 49.44	120 20.28	CON	GOLD HILL	MUELLER
GRAM	35 36.12	120 09.84	CON	GRANT RANCH	MUELLER
HARM	36 45.90	121 26.76	CON	HARRIS RANCH	MUELLER
HAXM	36 45.90	121 26.76	CON	HARRIS RANCH	MUELLER
HAYM	36 45.90	121 26.76	CON	HARRIS RANCH	MUELLER
HAZM	36 45.90	121 26.76	CON	HARRIS RANCH	MUELLER
HCRM	37 38.76	118 50.28	CON	HOT CREEK	MUELLER
LEWM	36 39.84	121 16.44	CON	LEWIS RANCH	MUELLER
LGCM	35 54.36	120 28.56	CON	LANGE CANYON	MUELLER
LRSM	34 14.40	117 29.40	CON	LYTLE CREEK RANCH	MUELLER
LSBM	34 03.54	116 32.52	CON	LITTLE SAN BERDO	MUELLER
MGSM	37 28.75	118 34.40	CON	GRADE SITE	MUELLER
NANM	36 52.86	121 35.70	CON	NEW ANZAR	MUELLER
OCHM	34 01.44	116 36.00	CON	OLD CANYON HOUSE	MUELLER
PALM	34 26.94	117 53.52	CON	PALMDALE	MUELLER
SARM	36 57.24	121 34.92	CON	SARGENT	MUELLER
SBFM	37 40.80	118 56.55	CON	SMOKEY BEAR FLAT	MUELLER
SJNM	36 49.08	121 29.94	CON	SAN JUAN SOUTH	MUELLER
SNJM	36 51.00	121 33.00	CON	SAN JUAN NORTH	MUELLER
SSKM	34 12.72	117 41.46	CON	SUNSET PEAK	MUELLER
STGM	34 54.60	119 20.10	CON	SANTIAGO	MUELLER

PERMANENT MAGNETOMETERS

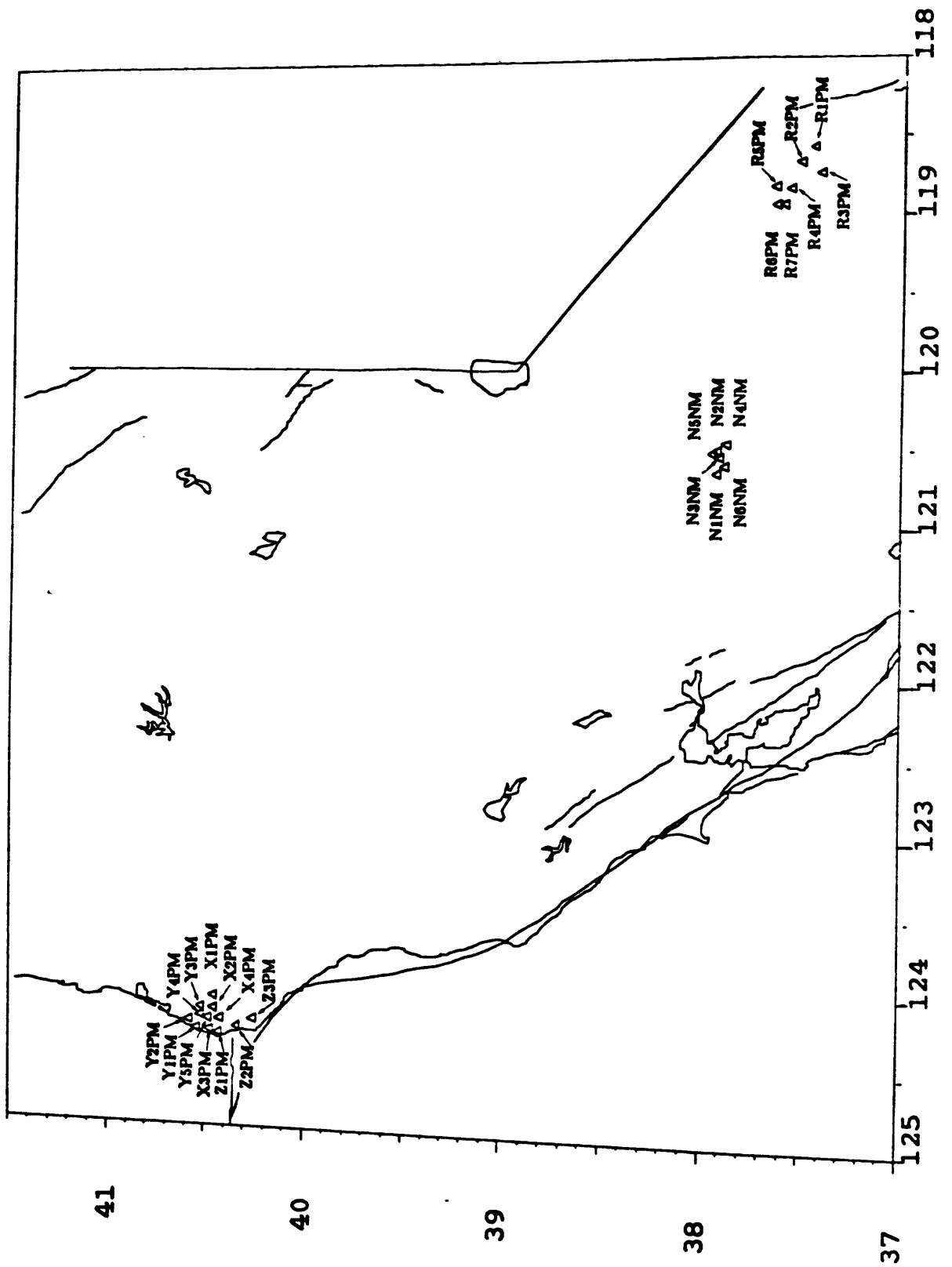


PORTABLE MAGNETOMETERS

Abbr	Latitude	Longitude	Sta. Name	PI
A1PM	33 03.00	115 29.75	SCAL-WEIST LAKE	MUELLER
A2PM	33 23.28	115 45.42	SCAL-BERTRAM MINE	MUELLER
A3PM	33 34.73	115 57.78	SCAL-MECCA HILLS	MUELLER
A4PM	33 39.60	116 04.38	SCAL-THERMAL CANYON	MUELLER
A5PM	33 49.02	116 18.35	SCAL-HIDDEN PALMS	MUELLER
B1PM	33 54.00	116 27.00	SCAL-SINGING TREES	MUELLER
B2PM	33 59.75	116 31.43	SCAL-LOST HEAD RANCH	MUELLER
B3PM	33 57.05	116 39.05	SCAL-WHITE WATER	MUELLER
B4PM	34 02.22	116 40.55	SCAL-CATCLAW FLAT	MUELLER
C1PM	33 58.25	116 48.30	SCAL-MILLARD CANYON	MUELLER
C2PM	34 01.25	116 54.30	SCAL-PINE FLAT	MUELLER
C3PM	34 05.28	116 59.82	SCAL-YUCAIPA RIDGE	MUELLER
C4PM	34 08.58	117 10.73	SCAL-CITY CREEK	MUELLER
D1PM	34 13.43	117 20.45	SCAL-BAILEY CANYON	MUELLER
D2PM	34 10.98	117 32.04	SCAL-DAY CANYON	MUELLER
D3PM	34 11.15	117 36.30	SCAL-CUCAMONGA PEAK	MUELLER
D4PM	34 21.18	117 35.15	SCAL-HORSETHIEF CANYON	MUELLER
E1PM	34 25.20	117 46.43	SCAL-MILE HIGH	MUELLER
E2PM	34 33.05	117 43.62	SCAL-BLACK BUTTE	MUELLER
E3PM	34 24.60	117 52.25	SCAL-PUNCH BOWL	MUELLER
F1PM	34 27.90	117 56.28	SCAL-JUNIPER BOWL	MUELLER
F2PM	34 25.43	117 58.85	SCAL-LITTLE ROCK CREEK	MUELLER
F3PM	34 19.38	118 01.85	SCAL-CHILAO FLAT	MUELLER
F4PM	34 28.92	117 58.85	SCAL-BLM 1	MUELLER
G1PM	34 26.63	118 10.32	SCAL-ACTON	MUELLER
G2PM	34 26.93	118 17.88	SCAL-AGUA DULCE	MUELLER
H1PM	33 41.94	116 52.92	SCAL-HEMET	MUELLER
H2PM	33 35.16	116 40.62	SCAL-CAHUILLA CREEK	MUELLER
H3PM	33 35.22	116 37.38	SCAL-THOMAS MTN.	MUELLER
H4PM	33 34.13	116 37.68	SCAL-ANZA VALLEY	MUELLER
H5PM	33 30.00	116 33.72	SCAL-TABLE MTN.	MUELLER
N1NM	37 59.45	120 39.23	NEWM-COPPEROPOLIS	MUELLER
N2NM	37 59.28	120 30.48	NEWM-REYNOLDS FERRY	MUELLER
N3NM	37 58.68	120 33.05	NEWM-BARTH MTN.	MUELLER
N4NM	37 56.40	120 27.95	NEWM-TABLE MTN.	MUELLER
N5NM	38 00.65	120 31.62	NEWM-CARSON CREEK	MUELLER
N6NM	37 57.00	120 36.42	NEWM-LIGHTNER PEAK	MUELLER
P0PM	35 32.10	120 05.70	PARK-BITTERWATER	MUELLER
P1PM	36 13.55	120 48.05	PARK-MONARCH PEAK	MUELLER
P2PM	36 11.63	120 46.43	PARK-MUSTANG RIDGE	MUELLER
P3PM	36 04.02	120 36.30	PARK-SMITH MTN.	MUELLER
P4PM	35 58.73	120 30.60	PARK-LITTLE CHOLAME CREEK	MUELLER
P5PM	35 51.90	120 22.92	PARK-TURKEY FLAT	MUELLER
P6PM	35 53.10	120 33.42	PARK-VINEYARD CANYON	MUELLER
P7PM	35 51.30	120 29.15	PARK-HOG CANYON	MUELLER
P8PM	35 39.60	120 14.10	PARK-PALO PRIETO	MUELLER
P9PM	35 39.00	120 06.18	PARK-BARREL CANYON	MUELLER

Abbr	Latitude	Longitude	Sta. Name	PI.
Q1PM	35 35.10	120 12.30	PARK-HOLLAND CANYON	MUELLER
R1PM	37 28.75	118 34.40	MAM-GRADE	MUELLER
R2PM	37 33.00	118 40.45	MAM-TOM'S PLACE	MUELLER
R3PM	37 26.90	118 44.65	MAM-ROCK CREEK	MUELLER
R4PM	37 36.25	118 50.45	MAM-MCGEE	MUELLER
R5PM	37 40.85	118 49.80	MAM-HOT CREEK	MUELLER
R6PM	37 40.80	118 56.55	MAM-SMOKEY BEAR	MUELLER
R7PM	37 38.55	118 56.54	MAM-MAMMOTH	MUELLER
X1PM	40 28.85	124 08.28	MEND-FRITZ RANCH	MUELLER
X2PM	40 28.73	124 13.08	MEND-BEAR RIVER	MUELLER
X3PM	40 30.00	124 21.72	MEND-FLYBLOW GULCH	MUELLER
X4PM	40 27.00	124 17.33	MEND-SOUTHMAYD R.	MUELLER
Y1PM	40 33.78	124 21.30	MEND-OCEAN VIEW	MUELLER
Y2PM	40 36.05	124 18.30	MEND-OCCIDENTAL	MUELLER
Y3PM	40 32.58	124 12.78	MEND-BUZZARD PEAK	MUELLER
Y4PM	40 32.82	124 16.20	MEND-WALK IN	MUELLER
Y5PM	40 30.35	124 17.22	MEND-MALFUNCTION J.	MUELLER
Z1PM	40 26.93	124 22.98	MEND-CAPE RANCH	MUELLER
Z2PM	40 21.53	124 20.10	MEND-MCNUTT GULCH	MUELLER
Z3PM	40 16.92	124 17.03	MEND-SHENANIGAN	MUELLER

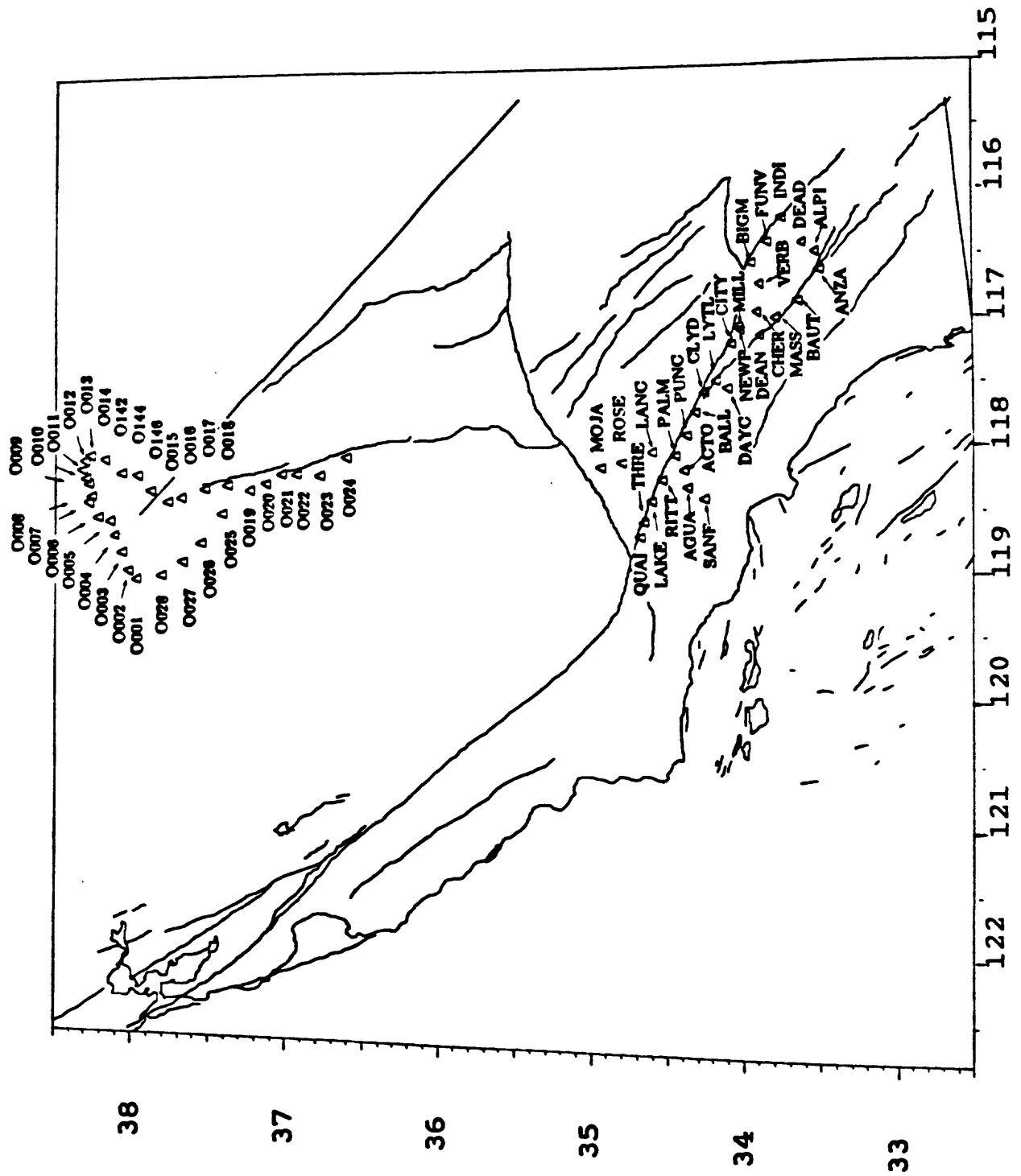
PORTABLE MAGNETOMETERS



SURVEY MAGNETOMETERS

Abbr	Latitude	Longitude	Sta. Name	PI
ACTO	34 27.38	118 12.00	ACTON	JOHNSTON
AGUA	34 26.00	118 20.00	AGUA DULCE	JOHNSTON
ALPI	33 34.55	116 28.50	ALPINE VILLAGE	JOHNSTON
ANZA	33 33.12	116 37.25	ANZA VALLEY	JOHNSTON
BALL	34 22.55	117 44.25	BALL FLAT	JOHNSTON
BAUT	33 41.30	116 51.62	BAUTISTA CANYON	JOHNSTON
BIGM	33 59.68	116 33.25	BIG MORONGO CANYON	JOHNSTON
CHER	33 57.62	116 56.87	CHERRY	JOHNSTON
CITY	34 07.88	117 12.00	CITY CREEK	JOHNSTON
CLYD	34 19.00	117 34.88	CLYDE RANCH	JOHNSTON
DAYC	34 09.75	117 32.75	DAY CANYON	JOHNSTON
DEAD	33 39.62	116 24.38	DEAD INDIAN CREEK	JOHNSTON
DEAN	33 56.25	117 07.88	DE ANZA	JOHNSTON
FUNV	33 53.18	116 23.50	FUN VALLEY	JOHNSTON
INDI	33 47.50	116 12.25	INDIO HILLS	JOHNSTON
LAKE	34 40.13	118 26.63	LAKE HUGHES	JOHNSTON
LANC	34 40.13	118 03.25	LANCASTER	JOHNSTON
LYTL	34 14.12	117 29.43	LYTLE CREEK RANGER STATION	JOHNSTON
MASS	33 50.25	116 59.63	MASSACRE CANYON	JOHNSTON
MILL	34 04.57	117 03.12	MILL CREEK	JOHNSTON
MOJA	35 00.25	118 10.62	MOJAVE	JOHNSTON
NEWP	34 04.25	117 05.00	NEWPORT AVENUE	JOHNSTON
O001	38 02.25	119 06.75	OWENS VALLEY	JOHNSTON
O002	38 05.00	119 02.50	OWENS VALLEY	JOHNSTON
O003	38 07.75	118 53.25	OWENS VALLEY	JOHNSTON
O004	38 10.50	118 45.00	OWENS VALLEY	JOHNSTON
O005	38 12.50	118 38.00	OWENS VALLEY	JOHNSTON
O006	38 17.00	118 36.00	OWENS VALLEY	JOHNSTON
O007	38 20.25	118 28.75	OWENS VALLEY	JOHNSTON
O008	38 19.25	118 25.75	OWENS VALLEY	JOHNSTON
O009	38 20.50	118 19.50	OWENS VALLEY	JOHNSTON
O010	38 21.25	118 16.75	OWENS VALLEY	JOHNSTON
O011	38 23.00	118 12.50	OWENS VALLEY	JOHNSTON
O012	38 21.75	118 08.00	OWENS VALLEY	JOHNSTON
O013	38 20.00	118 05.50	OWENS VALLEY	JOHNSTON
O014	38 14.00	118 07.50	OWENS VALLEY	JOHNSTON
O015	37 49.75	118 28.50	OWENS VALLEY	JOHNSTON
O016	37 44.50	118 26.50	OWENS VALLEY	JOHNSTON
O017	37 35.25	118 22.25	OWENS VALLEY	JOHNSTON
O018	37 26.75	118 20.50	OWENS VALLEY	JOHNSTON
O019	37 17.75	118 23.00	OWENS VALLEY	JOHNSTON
O020	37 11.87	118 19.50	OWENS VALLEY	JOHNSTON
O021	37 05.75	118 15.00	OWENS VALLEY	JOHNSTON
O022	37 00.00	118 15.00	OWENS VALLEY	JOHNSTON
O023	36 50.75	118 15.50	OWENS VALLEY	JOHNSTON
O024	36 40.50	118 06.50	OWENS VALLEY	JOHNSTON
O025	37 28.75	118 34.40	OWENS VALLEY	JOHNSTON
O026	37 36.75	118 48.88	OWENS VALLEY	JOHNSTON

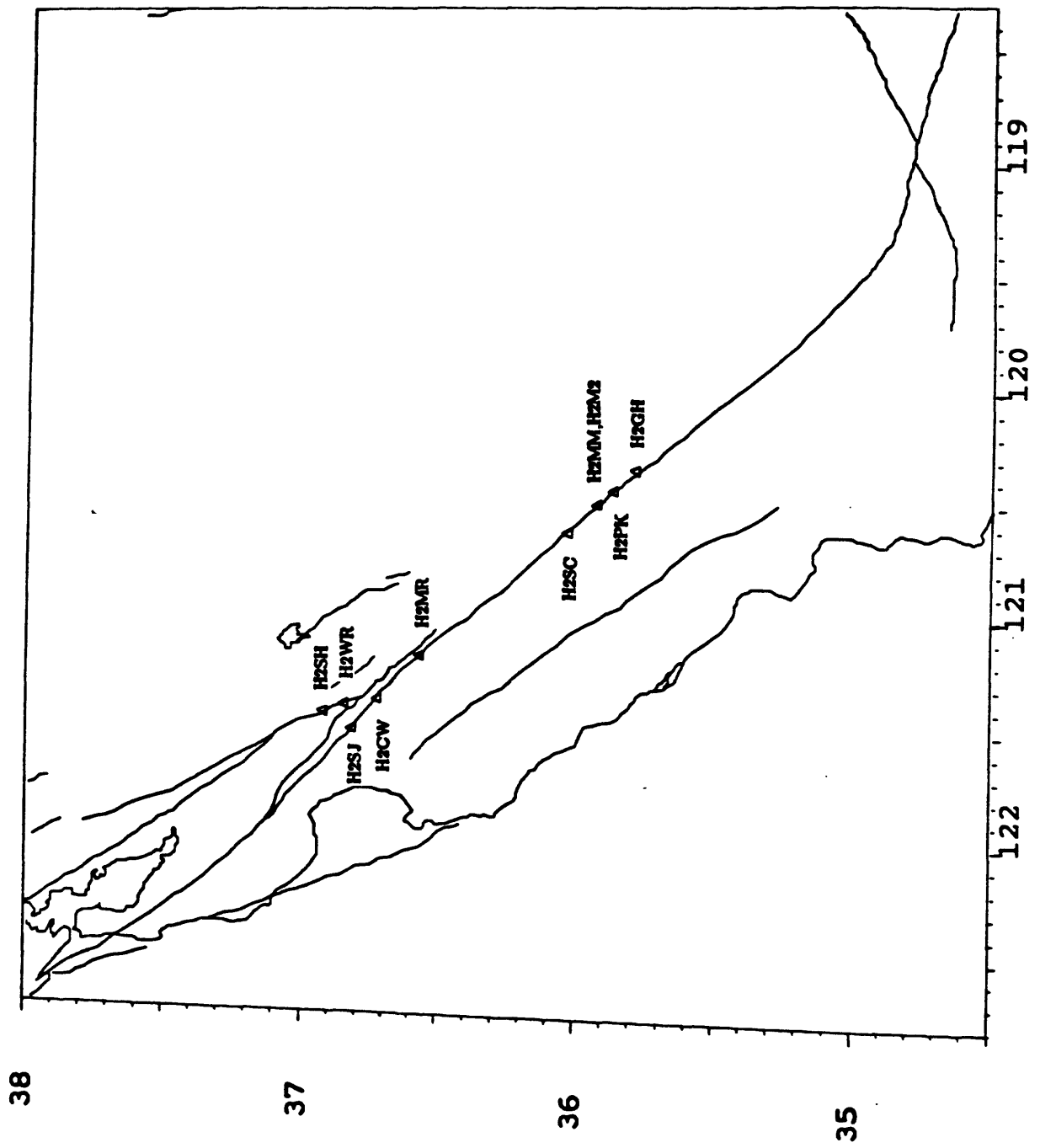
Abbr	Latitude	Longitude	Sta. Name	PI
O027	37 44.25	118 58.13	OWENS VALLEY	JOHNSTON
O028	37 52.25	119 04.75	OWENS VALLEY	JOHNSTON
O142	38 07.75	118 14.50	OWENS VALLEY	JOHNSTON
O144	38 01.50	118 15.50	OWENS VALLEY	JOHNSTON
O146	37 56.25	118 23.00	OWENS VALLEY	JOHNSTON
PALM	34 30.87	118 04.75	PALMDALE	JOHNSTON
PUNC	34 26.37	117 55.00	PUNCHBOWL	JOHNSTON
QUAI	34 45.00	118 43.75	QUAIL LAKE	JOHNSTON
RITT	34 36.25	118 16.25	RITTER RANCH	JOHNSTON
ROSE	34 51.87	118 08.37	ROSEMEAD	JOHNSTON
SANF	34 19.50	118 25.25	SAN FERNANDO	JOHNSTON
THRE	34 43.50	118 36.75	THREE POINTS	JOHNSTON
VERB	33 56.37	116 43.32	VERBENIA	JOHNSTON



HYDROGEN SENSORS

Abbr	Latitude	Longitude	Invl	Sta. Name	PI
H2CW	36 45.00	121 23.10	CON	CIENEGA WINERY	SATO
H2GH	35 49.20	120 20.90	CON	GOLD HILL	SATO
H2M2	35 57.50	120 30.10	CON	MIDDLE MTN.	SATO
H2MM	35 57.50	120 30.10	CON	MIDDLE MTN.	SATO
H2MR	36 35.70	121 11.20	CON	MELENDY RANCH	SATO
H2PK	35 54.10	120 26.50	CON	PARKFIELD	SATO
H2SC	36 03.90	120 37.70	CON	SLACK CANYON	SATO
H2SH	36 56.60	121 26.70	CON	SHORE ROAD	SATO
H2SJ	36 50.20	121 31.20	CON	SAN JUAN BAUTISTA	SATO
H2WR	36 52.20	121 24.80	CON	WRIGHT ROAD	SATO

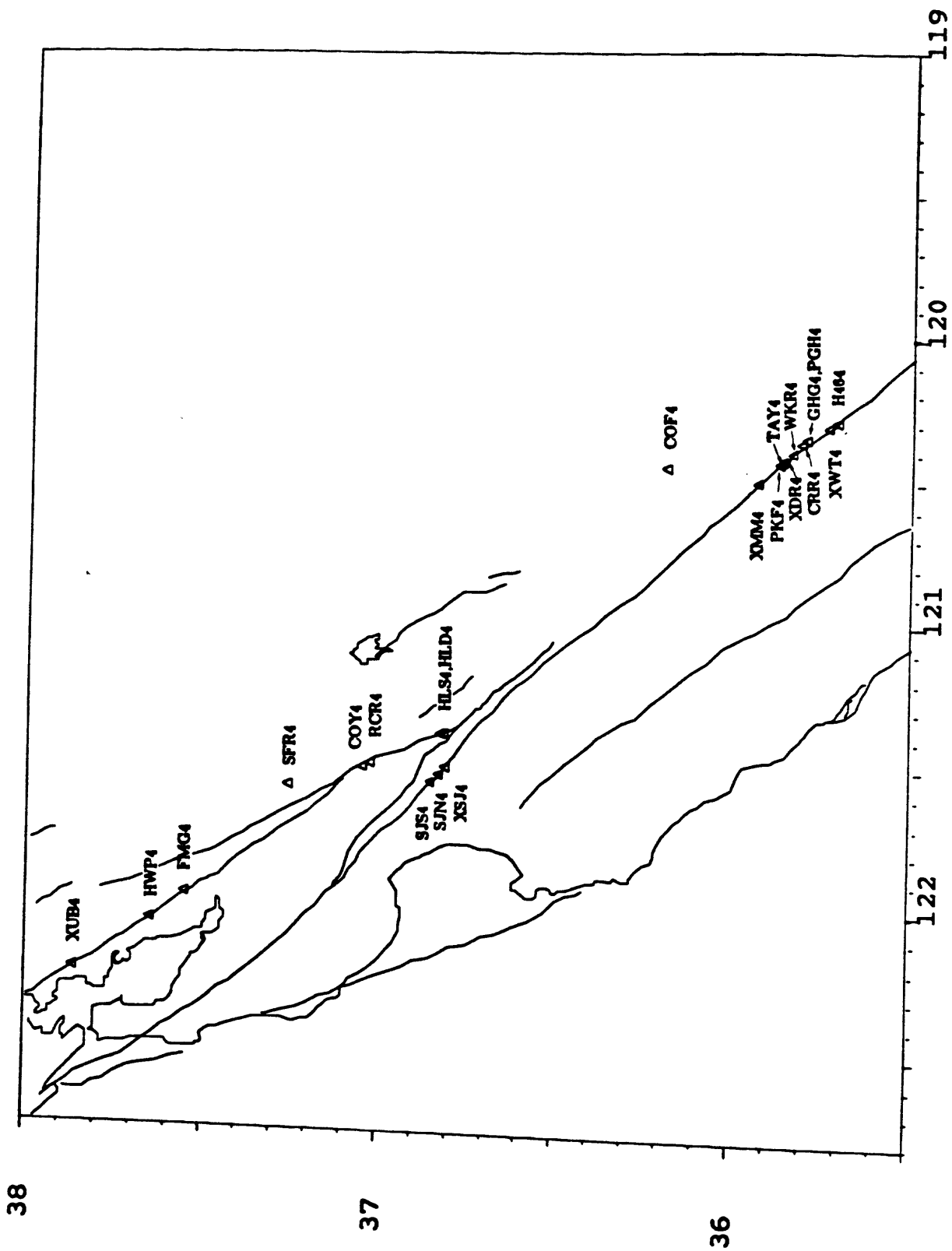
HYDROGEN SENSORS



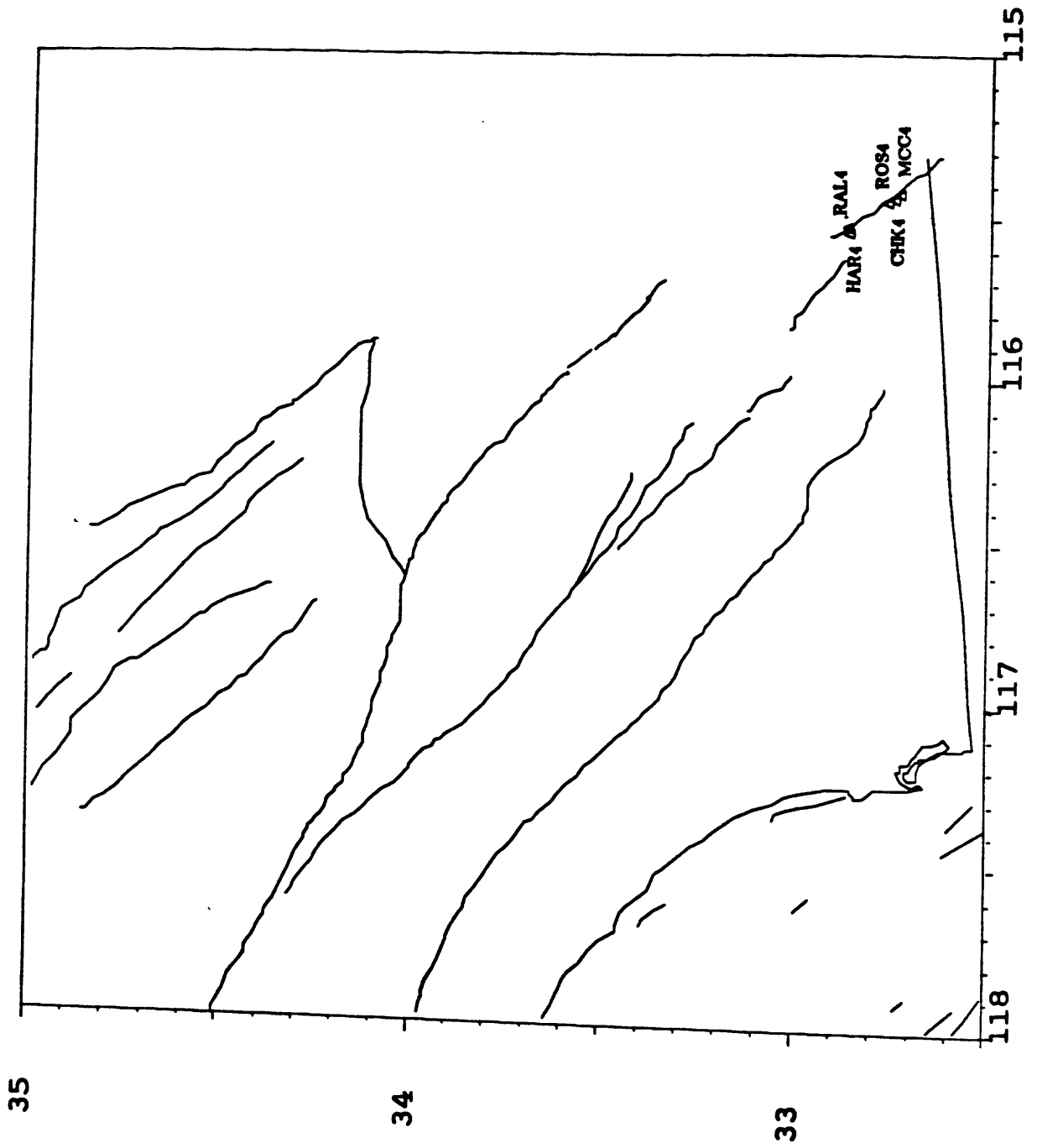
ALIGNMENT ARRAY

Abbr	Latitude	Longitude	Sta. Name	PI
CHK4	32 46.00	115 26.30	CHICK ROAD - IMPERIAL	BROWN
COF4	36 12.80	120 27.20	COALINGA - FLOODPLAIN	BROWN
COY4	37 04.10	121 31.40	COYOTE RESERVOIR	BROWN
CRR4	35 50.10	120 21.80	CARR RANCH	BROWN
FMG4	37 34.00	121 58.90	FREMONT - GILBERT	BROWN
GHG4	35 49.20	120 20.90	GOLD HILL - GILMAN	BROWN
H464	35 44.10	120 17.30	HWY 46 - GILMAN	BROWN
HAR4	32 53.00	115 32.50	HARRIS ROAD - IMPERIAL	BROWN
HLD4	36 50.50	121 24.20	HOLLISTER - D ST.	BROWN
HLS4	36 51.10	121 24.20	HOLLISTER - SEVENTH ST.	BROWN
HWP4	37 39.80	122 04.50	HAYWARD PALISADES	BROWN
MCC4	32 45.10	115 25.50	MCCABE ROAD - IMPERIAL	BROWN
PGH4	35 49.20	120 20.90	GOLD HILL - PHIL	BROWN
PKF4	35 53.70	120 26.00	PARKFIELD BRIDGE	BROWN
RAL4	32 53.10	115 31.40	RALPH ROAD - IMPERIAL	BROWN
RCR4	37 02.90	121 30.60	RUBY CANYON ROAD	BROWN
ROS4	32 46.90	115 26.90	ROSS ROAD - IMPERIAL	BROWN
SFR4	37 16.80	121 35.60	SAN FELIPE RANCH	BROWN
SJN4	36 51.30	121 32.70	SAN JUAN BAUTISTA - NYLAND	BROWN
SJS4	36 52.60	121 34.40	SAN JUAN BAUTISTA - SEARLE	BROWN
TAY4	35 53.40	120 25.60	TAYLOR RANCH	BROWN
WKR4	35 51.60	120 23.80	WORK RANCH - PEACOCK	BROWN
XDR4	35 53.10	120 25.30	DURHAM RANCH	BROWN
XMM4	35 57.50	120 30.10	MIDDLE MTN.	BROWN
XSJ4	36 50.20	121 31.20	SAN JUAN BAUTISTA - MISSION	BROWN
XUB4	37 52.40	122 15.10	U.C. BERKELEY	BROWN
XWT4	35 45.50	120 18.40	WATER TANK	BROWN

ALIGNMENT ARRAY



ALIGNMENT ARRAY



SUPPORT INSTRUMENTATION

Abbr	Latitude	Longitude	Invl	Sta. Name	Inst.
AMBP	34 43.25	117 39.93	CON	ADOBE MT.	BAROMETRIC PRESSURE
AMBV	34 43.25	117 39.93	CON	ADOBE MT.	BATTERY VOLTAGE
AMPP	34 43.25	117 39.93	CON	ADOBE MT.	PORE PRESSURE
BBBP	34 33.67	117 43.45	CON	BLACK BUTTE	BAROMETRIC PRESSURE
BBPP	34 33.67	117 43.45	CON	BLACK BUTTE	PORE PRESSURE
BBST	34 33.67	117 43.45	CON	BLACK BUTTE	TEMPERATURE
CLST	35 56.46	120 30.66	CON	CLAASSEN RANCH	TEMPERATURE
CLT2	35 56.46	120 30.66	CON	CLAASSEN RANCH	TEMPERATURE
EVBP	36 49.92	121 37.98	CON	ECHO VALLEY	BAROMETRIC PRESSURE
EVSP	36 49.92	121 37.98	CON	ECHO VALLEY	PORE PRESSURE
GH1P	35 49.96	120 20.82	CON	GOLD HILL	PORE PRESSURE
GH1T	35 49.96	120 20.82	CON	GOLD HILL	TEMPERATURE
GH2P	35 50.28	120 20.63	CON	GOLD HILL	PORE PRESSURE
GH2T	35 50.28	120 20.63	CON	GOLD HILL	TEMPERATURE
GOHT	35 49.95	120 20.73	CON	GOLD HILL	TEMPERATURE
JRST	35 50.58	120 21.23	CON	JACK RANCH	TEMPERATURE
PDTs	37 47.70	122 28.44	CON	PRESIDIO	TEMPERATURE
POBP	37 37.78	119 04.63	CON	DEVIL'S POSTPILE	BAROMETRIC PRESSURE
POPT	37 37.78	119 04.63	CON	DEVIL'S POSTPILE	TEMPERATURE
PUBP	34 25.61	117 51.88	CON	PUNCHBOWL	BAROMETRIC PRESSURE
PUBT	34 25.61	117 51.88	CON	PUNCHBOWL	TEMPERATURE
PUBV	34 25.61	117 51.88	CON	PUNCHBOWL	BATTERY VOLTAGE
SALT	37 36.18	122 26.03	CON	SAN ANDREAS LAKE	LAKE LEVEL TILT
SJST	36 49.86	121 32.40	CON	SAN JUAN BAUTISTA	TEMPERATURE
SRLP	36 51.90	121 34.62	CON	SEARLE ROAD	PORE PRESSURE
SRLT	36 51.90	121 34.62	CON	SEARLE ROAD	TEMPERATURE

SUPPORT INSTRUMENTATION

