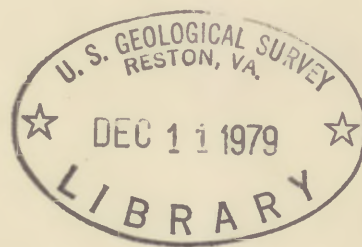
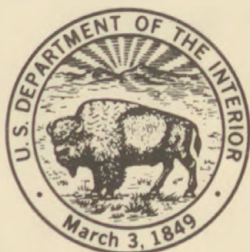


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UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

CATALOG OF CREEPMETER MEASUREMENTS
IN CENTRAL CALIFORNIA FOR 1976 AND 1977

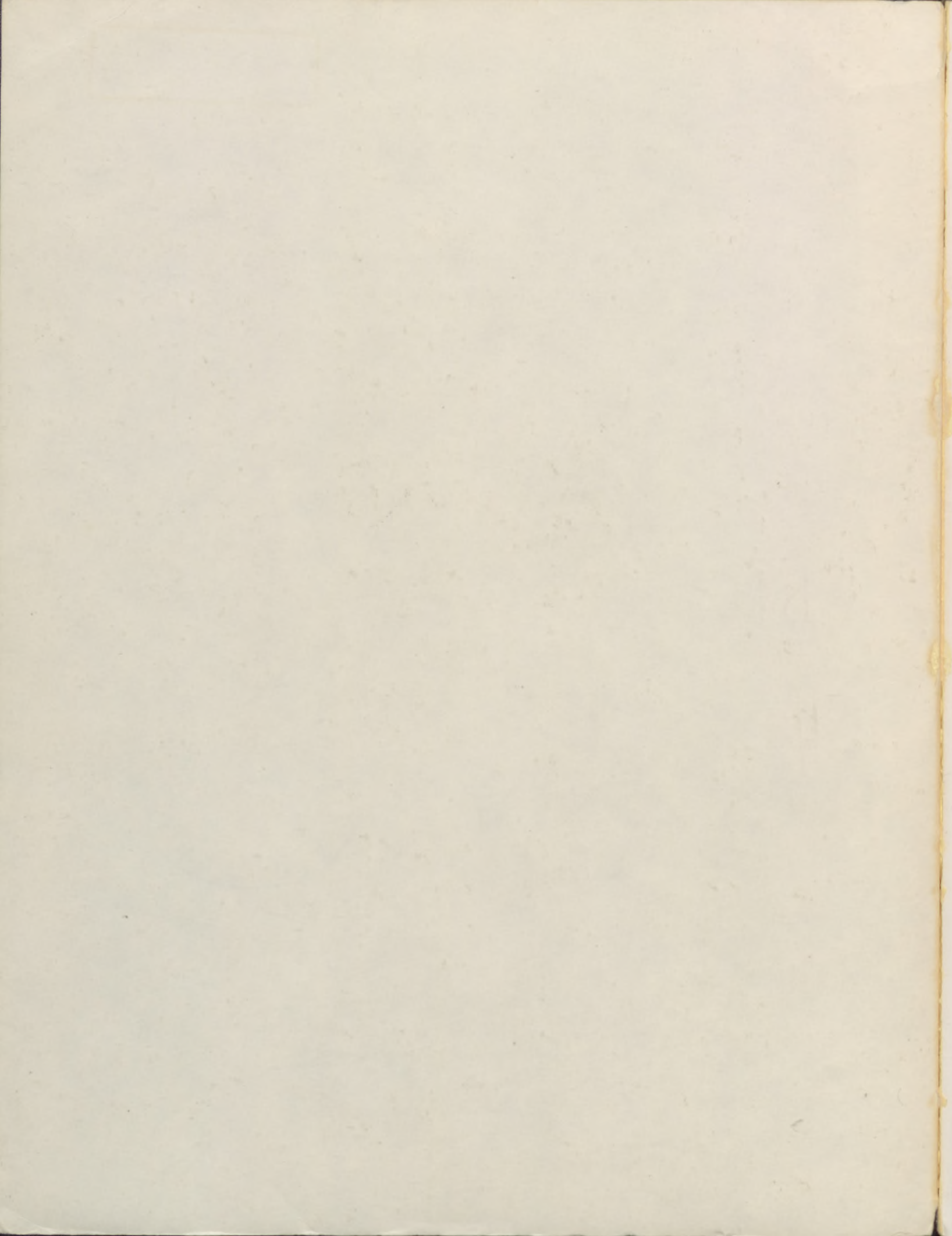


OPEN-FILE REPORT 79-1609

This report is preliminary and has not been edited or reviewed for conformity
with Geological Survey standards and nomenclature

Menlo Park, California

1979



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R290
no. 79-1609

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UNITED STATES

DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

CATALOG OF CREEPMETER MEASUREMENTS
IN CENTRAL CALIFORNIA FOR 1976 AND 1977

by

S. S. Schulz and R. O. Burford

OPEN-FILE REPORT 79-1609

300092

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CATALOG OF CREEPMETER MEASUREMENTS
IN CENTRAL CALIFORNIA FOR 1976 AND 1977

1

By S. S. Schulz and R. O. Burford

INTRODUCTION

This catalogue contains data for 1976 and 1977 from a 46-station creepmeter network located primarily in central California. The list on pages 5 and 6 and the Maps on pages 7 and 8 indicate station locations.

The data for this network prior to 1976 were detailed in three U.S. Geological Survey open-file reports published in 1973 (1), 1974 (2), and 1976 (3). The present catalog is a continuation of the data as presented in these three previous reports.

For description of the mechanical design and operation of all stations beginning with the letter X (XSJ2, XPR1, etc.), the reader is referred to the report by Yamashita, et al. Mechanical information for all other instruments will be found in the report by Nason, et al. Some of the stations listed in the previous reports are no longer operating and thus are omitted here. Conversely, some new stations appear here for the first time.

1. Yamashita, P. A. and R. O. Burford, 1973, Catalog of preliminary results from an 18-station creepmeter network along the san Andreas fault system in central California for the time interval June 1969 to June 1973: U.S. Geol. Survey Open-File Report, 215 pp.
2. Nason, R. D., F. R. Phillippsborn, and P. A. Yamashita, 1974, Catalog of Creepmeter Measurements in central California from 1968 to 1972: U.S. Geol. Survey Open File Report No. 74-31, 287 pp.
3. Schulz, S. S., R. O. Burford, and R. D. Nason, 1976, Catalog of Creepmeter Measurements in central California from 1973 through 1975: U.S. Geol. Survey Open-File Report No. 77-31, 480 pp.

Data Format for Creepmeter Network

Each station has a separate data section consisting of the following:

1. Station description: A brief summary of the station's physical setting and characteristics.
2. Corrected readings: A list of the amounts of movement (slip) seen at the instrument; these figures are calculated from mechanical readings taken in the field and are corrected by a factor determined by the angle of the instrument to the fault.
3. One-year plot of data: See below for explanation of symbols.
4. Ten-year plot of data: See below for explanation of symbols.
5. Table of creep events: Omitted when no distinct events were seen at the station.
6. Event figures: Xerox copies of the events listed in the previous table. These copies were made from the records of an on-site electronic recording system.

Explanation of Plot Notation

One-year plots: Vertical scale: 2.56 cm = 5 millimeters of creep

Diamond-shaped points are actual dial or micrometer readings taken in the field.

Closely-spaced dots represent data points from an on-site electronic recording system.

A dashed line means electronic data exist for this period, but are confusing or contradict the on-site reading; the trend of movement is approximated.

A blank space between diamond-shaped points means no electronic data are available for this time period.

Refer to Table of Events for each station for explanation of unusual movements.

Ten year plots: Vertical scale: 8 mm = 10 mm of creep
(except where noted)

Any comments on the data, or suggestions concerning measuring or plotting techniques which would increase the usefulness of the data would be appreciated.

ACKNOWLEDGEMENTS

Special thanks are due the field crew for retrieving the data, making readings on site, and keeping the stations functioning. The crew has included Bruce Echols, Suzanne Lewis and Kevin Lillis.

The gathering and interpretation of the data would not have been possible without the continued patience and cooperation of the land-owners, ranchers, and civic officials on whose property the instruments are located, and we offer them our kindest thanks.

TABLE 1. CREEPMETER SITES

<u>Site</u>	<u>Name</u>	<u>Distance</u> ^{1/} <u>km</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Installation</u> <u>Date</u>
<u>San Andreas Fault</u>					
SJN	Nyland	307.7	36°51.3'	121°32.7'	Aug. 1968
XSJ2	San Juan Bautista	310.8	36°50.2'	121°31.2'	Nov. 1974
HRS	Harris	321.9	36°46.3'	121°25.3'	Jun. 1969
CWN	Cienega Winery North	326.0	36°45.0'	121°23.1'	Jun. 1972
CWC	Cienega Winery Central	326.0	36°45.0'	121°23.1'	Nov. 1968
XPR1	Paicines Ranch	330.0	36°43.4'	121°20.9'	May 1973
XFL1	Frank Lewis Long	339.4	36°39.9'	121°16.3'	Apr. 1973
XFL2	Frank Lewis N-S	339.4	36°39.9'	121°16.3'	Apr. 1973
SCN	Stone Canyon North	344.2	36°38.2'	121°14.3'	Sep. 1972
SCR	Stone Canyon River	344.9	36°37.9'	121°13.9'	Sep. 1970
WLC	Willow Creek	350.0	36°35.8'	121°11.5'	Oct. 1972
XMR1	Melendy Ranch	350.8	36°35.7'	121°11.2'	Jun. 1969
MRC	Melendy Ranch	351.2	36°35.5'	121°11.1'	Sep. 1970
MRB	Melendy Barn	351.3	36°35.4'	121°11.0'	Jun. 1969
MRR	Melendy River	351.5	36°35.3'	121°10.9'	Oct. 1972
MRW	Melendy Windmill	352.1	36°35.1'	121°10.6'	Sep. 1972
SBN	San Benito	362.2	36°30.8'	121°06.0'	Jun. 1969
XDL2	Dry Lake Long	365.7	36°29.5'	121°04.7'	1973
BIT	Bitterwater	379.1	36°23.9'	120°58.9'	Jul. 1969
XSR2	Smith Ranch	381.0	36°23.0'	120°58.0'	Jun. 1969
XMP1	Monarch Peak	405.1	36°12.8'	120°47.9'	Jun. 1969
XSC1	Slack Canyon	427.6	36°03.9'	120°37.7'	Jun. 1969
XDR1	Durham Ranch	454.8	35°53.0'	120°25.2'	Jul. 1969
XGH1	Gold Hill	463.8	35°49.2'	120°20.9'	Jul. 1969
XWT1	Water Tank	472.6	35°45.4'	120°18.5'	Jun. 1969
XPH1	Panorama Hills	563.7	35°08.9'	119°41.5'	Aug. 1977
XUL1	Una Lake	720.5	34°32.9'	118°06.4'	Oct. 1977
XWR1	Wiebe Ranch	733.2	34°29.6'	117°58.2'	Oct. 1977

^{1/} The positions on the San Andreas fault are given in kilometers southeastward along the fault trace from Point Arena.

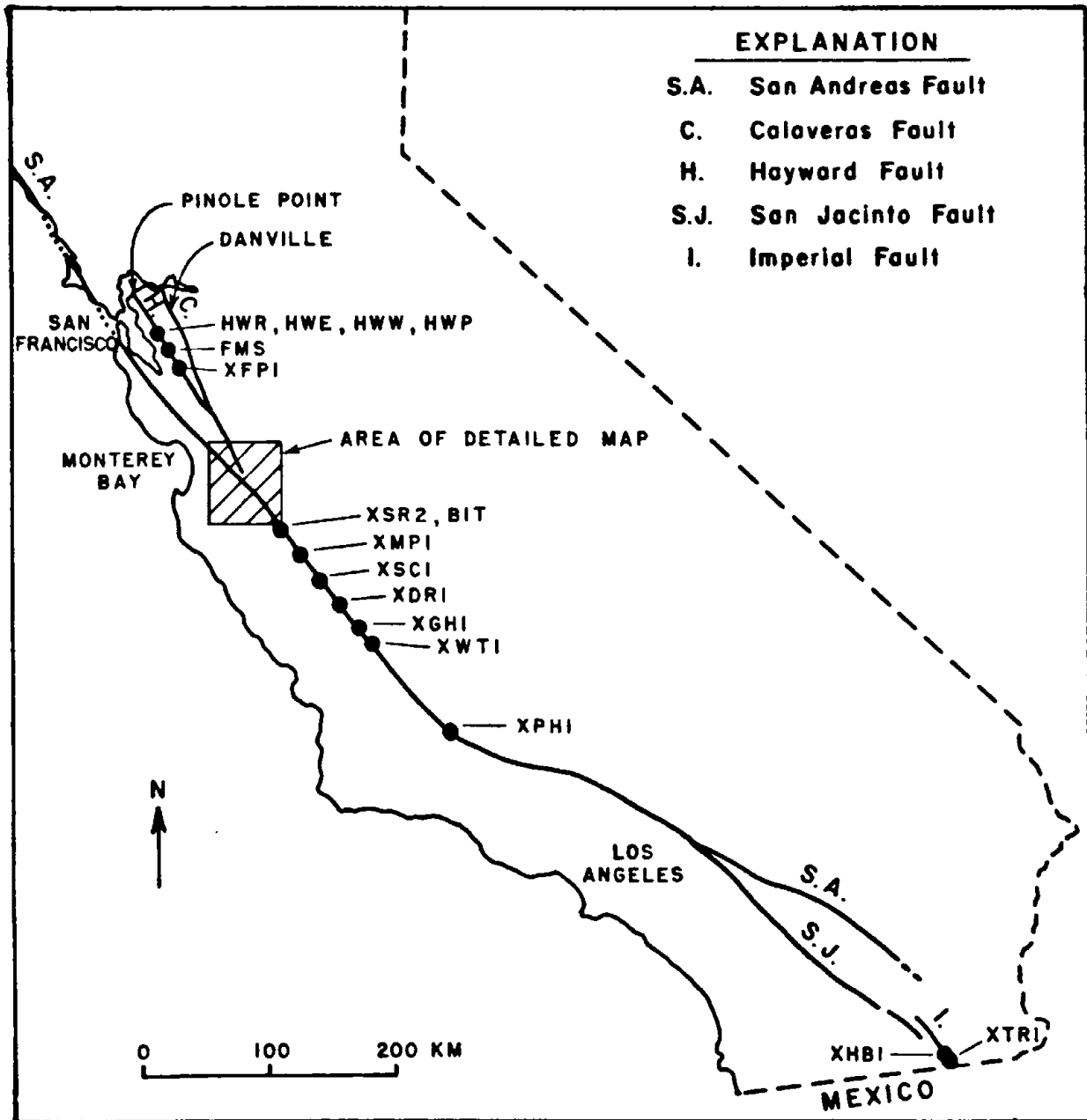
Table 2. CREEPMETER SITES

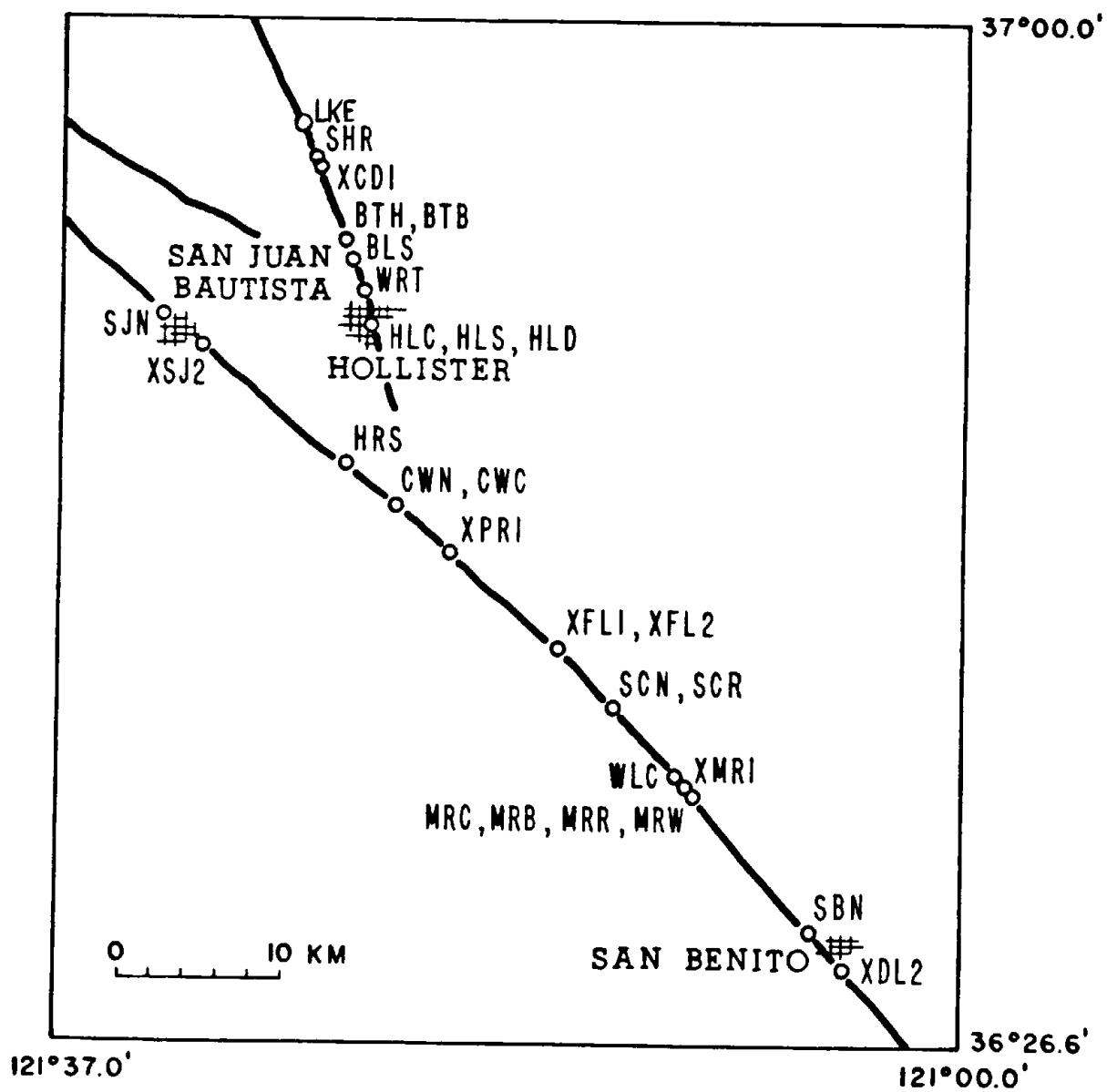
<u>Site</u>	<u>Name</u>	<u>Distance</u> ^{2/} <u>km</u>	<u>Latitude</u>	<u>Longitude</u>	<u>Installation</u> <u>Date</u>
<u>Hayward Fault</u>					
HWR	Hayward, Rose Street	42.6	37°40.8'	122°05.4'	Apr. 1968
HWE	Hayward, D St. East	44.0	37°40.2'	122°04.8'	Apr. 1968
HWW	Hayward, D St. West	44.0	37°40.2'	122°04.8'	Apr. 1968
HWP	Hayward, Palisade St.	45.0	37°39.8'	122°04.5'	Jun. 1970
FMS	Fremont, Shinn Station	58.2	37°34.1'	121°58.9'	Aug. 1970
XFP1	Fremont, Prune Avenue	66.3	37°30.4'	121°55.8'	Jun. 1969
<u>Calaveras Fault</u>					
		^{3/}			
LKE	Lake Road	108.1	36°57.2'	121°26.9'	Jun. 1969
SHR	Shore Road	109.2	36°56.6'	121°26.7'	Jun. 1971
XCD1	Costa Dairy	111.1	36°55.5'	121°26.2'	Aug. 1976
BTH	Bertuccio House	114.0	36°54.1'	121°25.6'	Jun. 1971
BTB	Bertuccio Barn	114.1	36°54.1'	121°25.6'	Jun. 1971
BLS	Bolsa Road	114.9	36°53.6'	121°25.4'	Jun. 1971
WRT	Wright Road	117.7	36°52.2'	121°24.8'	Jun. 1971
HLC	Hollister, Central Ave.	119.5	36°51.4'	121°24.3'	Apr. 1970
HLS	Hollister, Seventh St.	120.0	36°51.1'	121°24.2'	Apr. 1970
HLD	Hollister, D Street	121.0	36°50.5'	121°24.2'	Apr. 1970
<u>Imperial Fault</u>					
		^{4/}			
XHB1	Heber Road	7.6	32°43.8'	115°24.3'	Oct. 1975
XTR1	Tuttle Ranch	2.7	32°41.6'	115°24.3'	Oct. 1975

^{2/} The positions on the Hayward fault are given in kilometers southeastward along the fault trace from Pinole point.

^{3/} The positions on the Calaveras fault are given in kilometers southeastward along the fault trace from Danville, California.

^{4/} The positions on the Imperial Fault are given in kilometers northwestward from the U.S. - Mexico border.





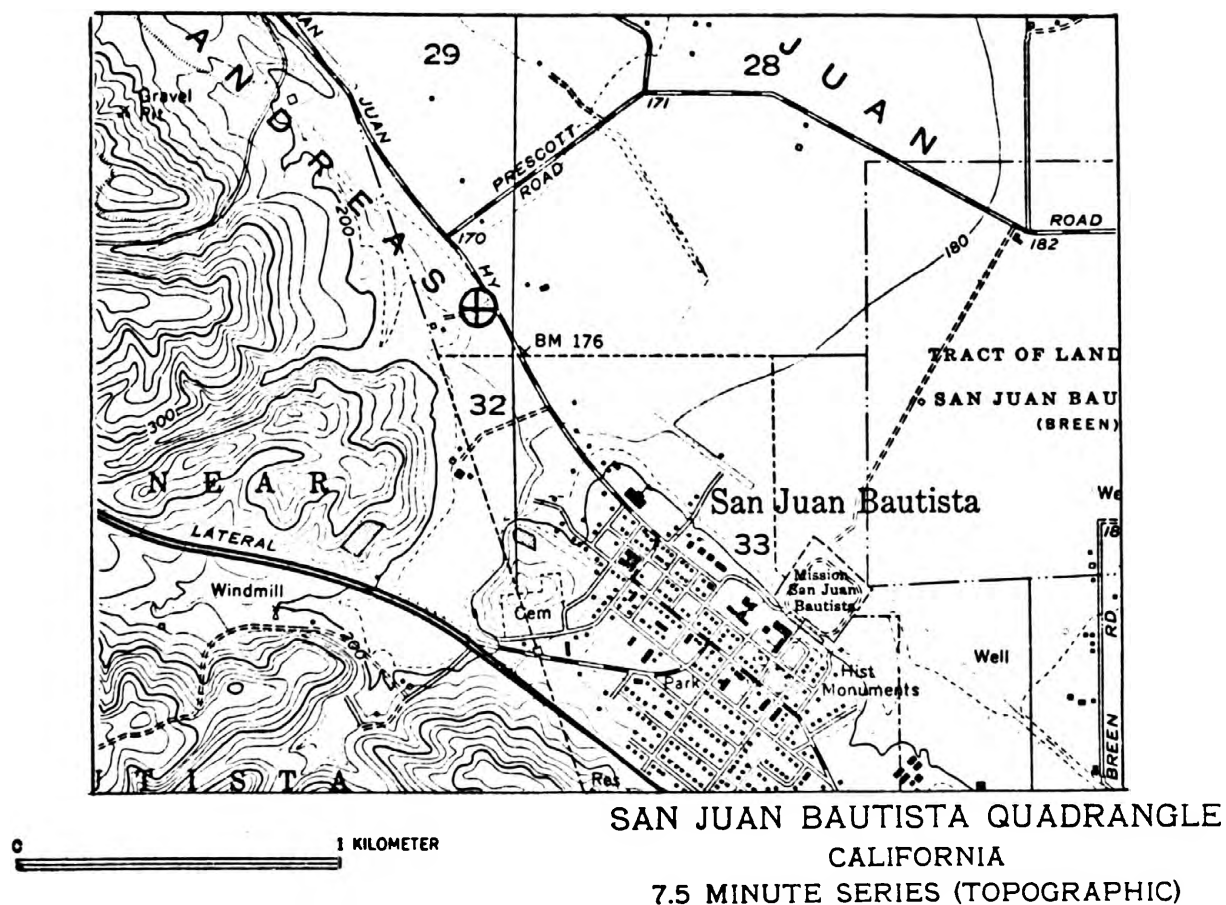
STATION SJN

Latitude $36^{\circ} 57.3'$

Position 307.7 km

Longitude $121^{\circ} 32.7'$ 12 meter rods, $\phi=45$

The San Juan Bautista (Nyland Ranch) creepmeters were installed during August, 1968, on the San Andreas fault at a site 1.4 km northwest of Mission San Juan Bautista. The installation consists of a pair of crossed rods buried a few centimeters below a nearly flat surface in alluvium. Creep activity at this site is composed of occasional minor events of up to 1 mm in amplitude, superimposed on a background of nearly steady-state slip at about 8 mm/yr, with a distinct seasonal variation.



SJN CORRECTED CREEPMETER READINGS (mm)

10

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					58.62	55.11
FEB 11	2.24	1.97	2.24	1.97	60.86	57.08
APR 20	0.83		3.07		61.69	
APR 22	-0.07	1.48	3.00	3.45	61.62	58.56
AUG 18	1.78	1.74	4.78	5.19	63.40	60.30
OCT 1	1.54	1.02	6.32	6.21	64.94	61.32
NOV 4	0.19	0.30	6.51	6.51	65.13	61.62
DEC 8	1.43	1.04	7.94	7.55	66.56	62.66
 <u>1977</u>						
JAN 17	0.62		0.62		67.18	
JAN 20	0.14		0.76		67.32	
FEB 10	0.23		0.99		67.55	
MAR 19	0.65		1.64		68.20	
APR 14	0.31	1.39	1.95	1.39	68.51	64.05
JUL 15	1.65	0.92	3.60	2.31	70.16	64.97
AUG 10	0.38	0.13	3.98	2.44	70.54	65.10
OCT 4	0.39	0.22	4.37	2.66	70.93	65.32
DEC 2	1.62	0.38	5.99	3.04	72.55	65.70
DEC 30	0.47	0.17	6.46	3.21	73.02	65.87

SJN1 1976

CREEP IN MM

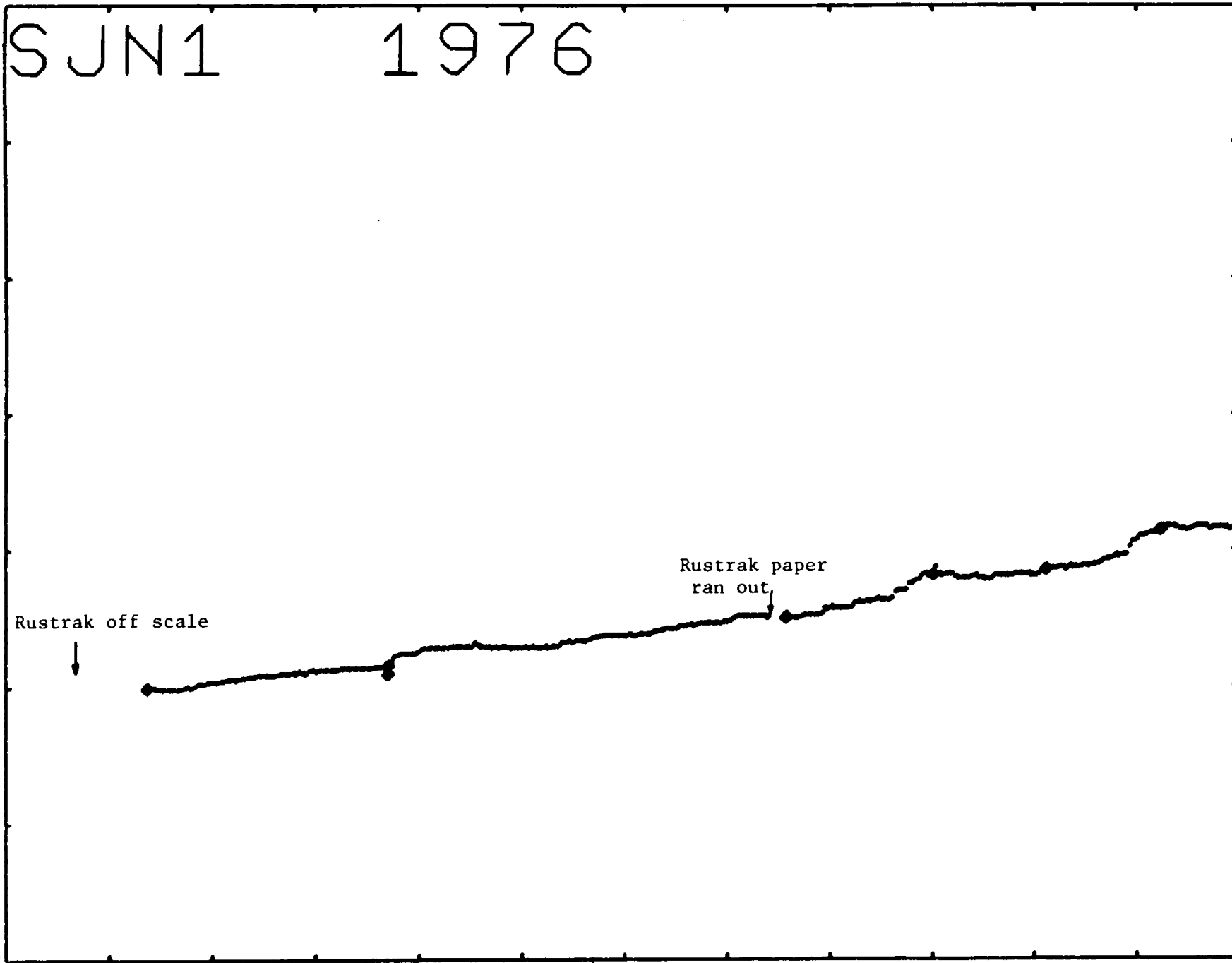
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15.00
10.00
5.00
0.00
-5.00
-10.00

Rustrak off scale

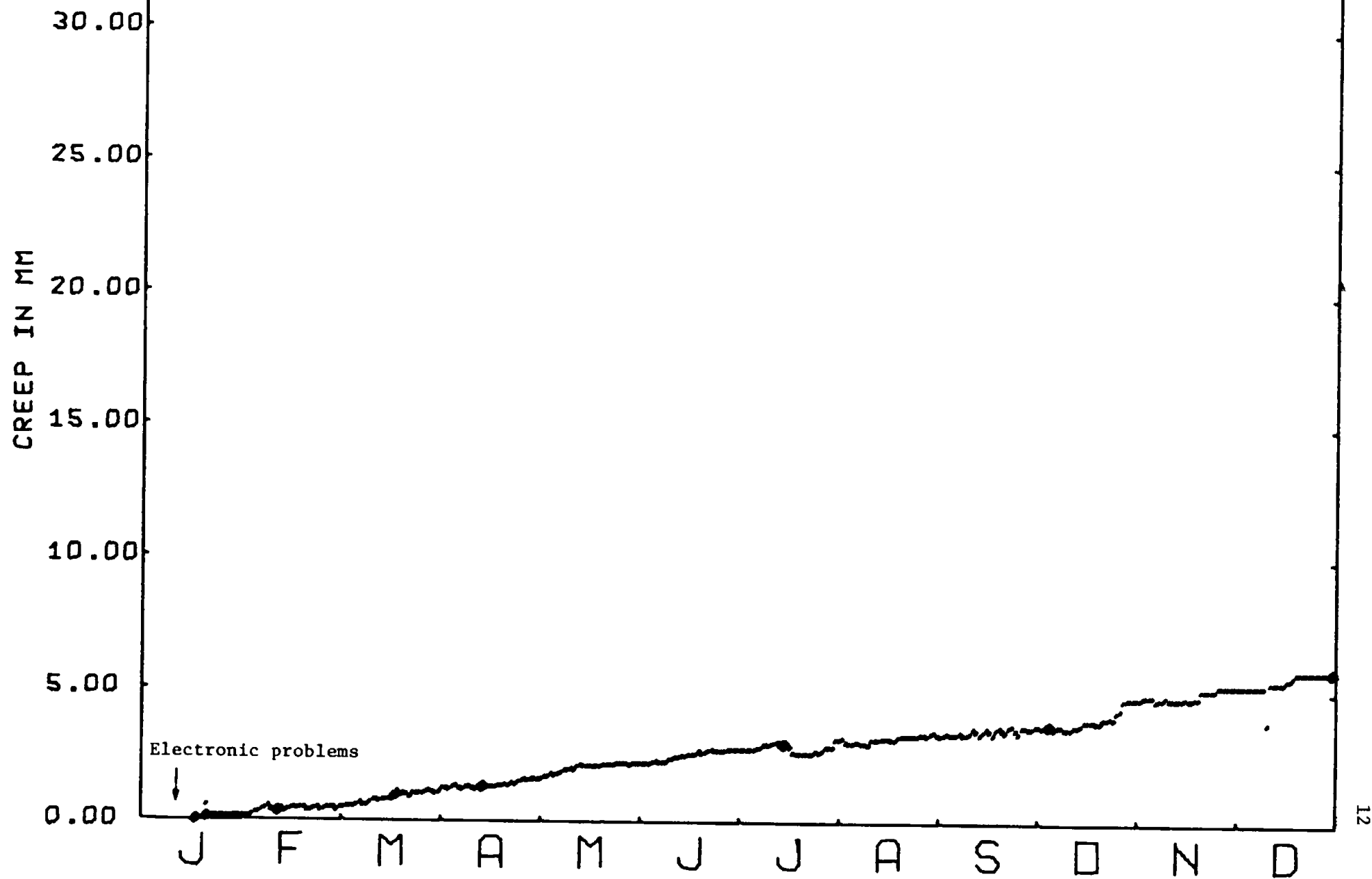


Rustrak paper
ran out

J F M A M J J A S O N D



SJN1 1977



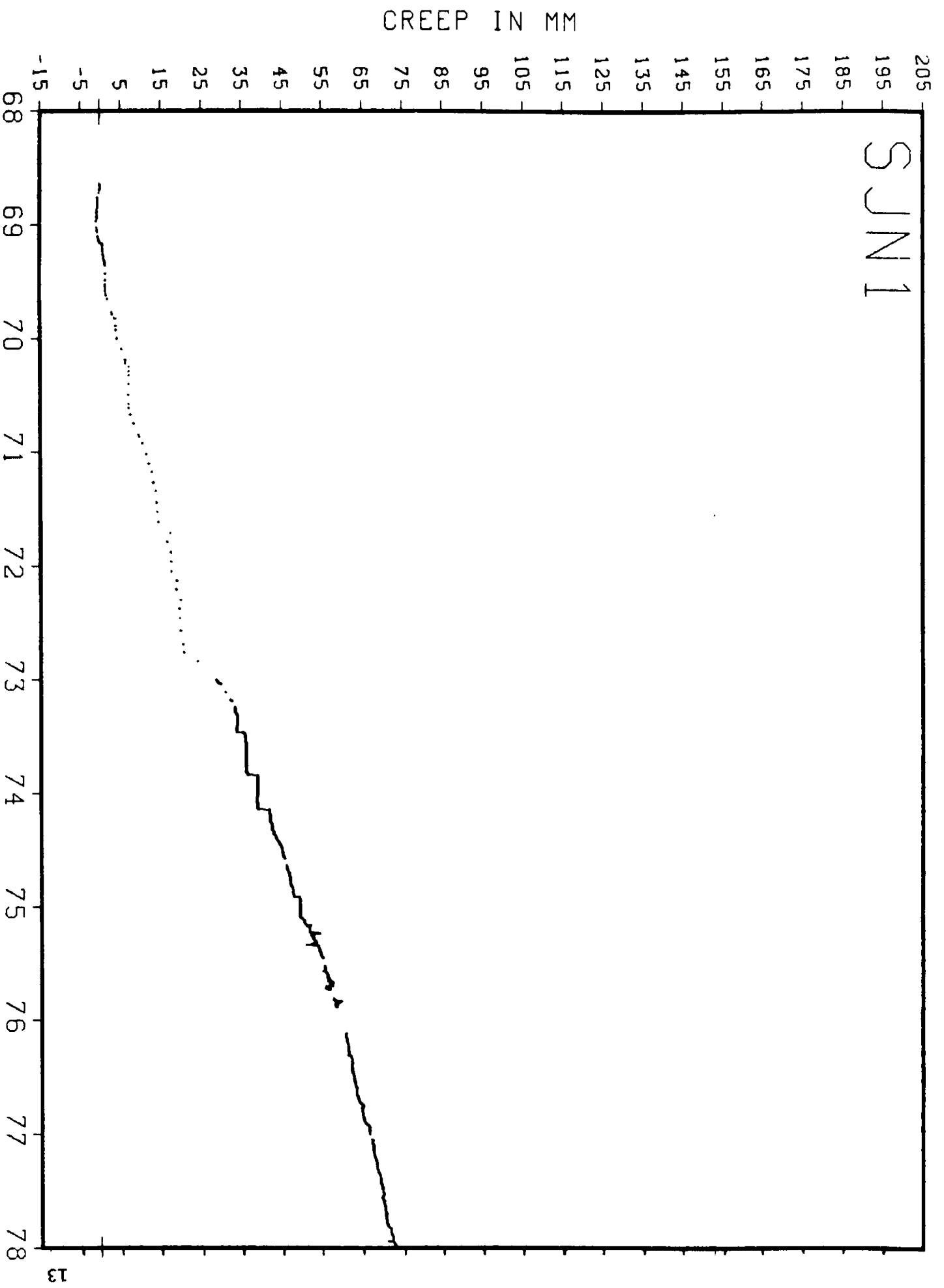


Table of SJN1 Events

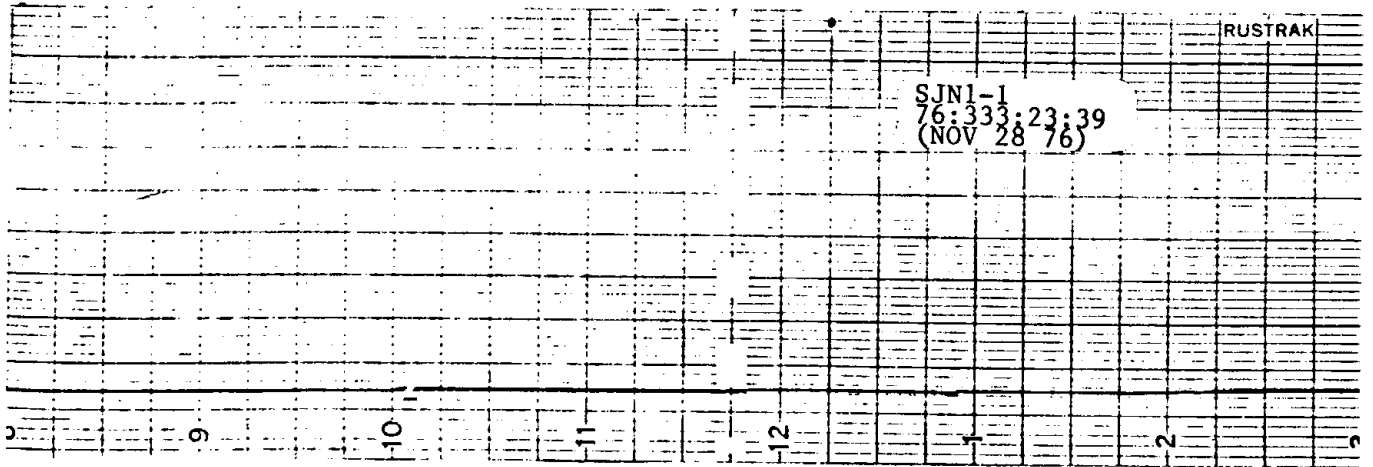
14

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. No.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	114	Apr. 23 ^{1/}		0.45	*		
	121-122	Apr. 30 - May 1		0.20	*		
	242-243	Aug. 29 - 30		0.20	*		
	251	Sep. 7		0.18	*		
	263	Sep. 19		0.25	*		
	267	Sep. 23		0.20	*		
	267-272	Sep. 23 - 28		0.40	*		
	333	Nov. 28	2339	0.93	1	0.91	1.41
	343	Dec. 8 ^{2/}			*		
1977	287	Oct. 14	1520	0.23	*	0.93	1.41
	295	Oct. 22	0905	0.21	*	0.94	1.41
	297	Oct. 24	1339	0.61	*	0.94	1.41
	323	Nov. 19	1335	0.08	*	0.94	1.41
	348	Dec. 14	2358	0.35	*	0.94	1.41

^{1/} Possible instrumental effect.

^{2/} Mechanical interruption due to visit; not an event.

* Refer to annual plot.

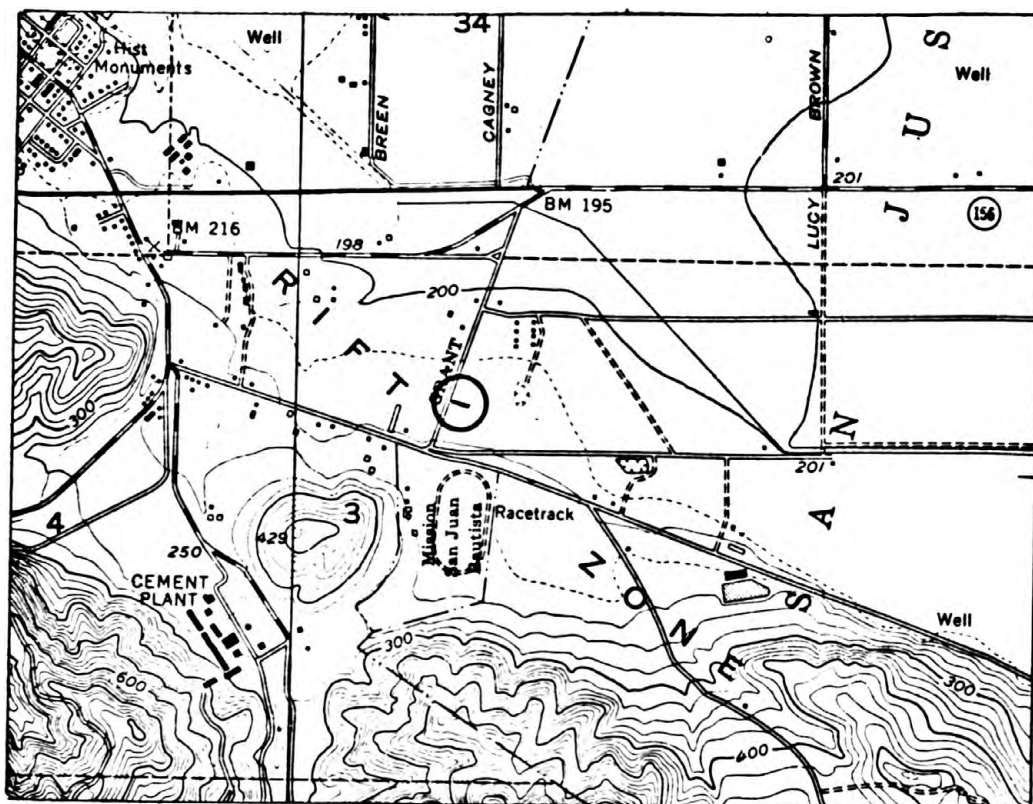


STATION XSJ2

Latitude $36^{\circ} 50.2'$
 Longitude $121^{\circ} 31.2'$

Position 310.8 km
 20 meter wire, $\phi=30^{\circ}$

The San Juan Bautista (Mission Vineyard Road) creep-meter was installed during November, 1974, on the San Andreas fault at a site 1.7 km southeast of Mission San Juan Bautista as a replacement for a 10-meter wire instrument (XSJ1) that was destroyed during November, 1973. The installation consists of a single wire entrenched about 1 meter below the surface, across a slight scarp on the northeast side of a shallow fault-line trough on a broad, low alluvial fan. Creep activity at this site is composed of distinct events of up to about 5 mm in amplitude, superimposed on a background of zero to slight right- or left-lateral drift. The average creep rate is about 10 mm/yr.



0 1 KILOMETER

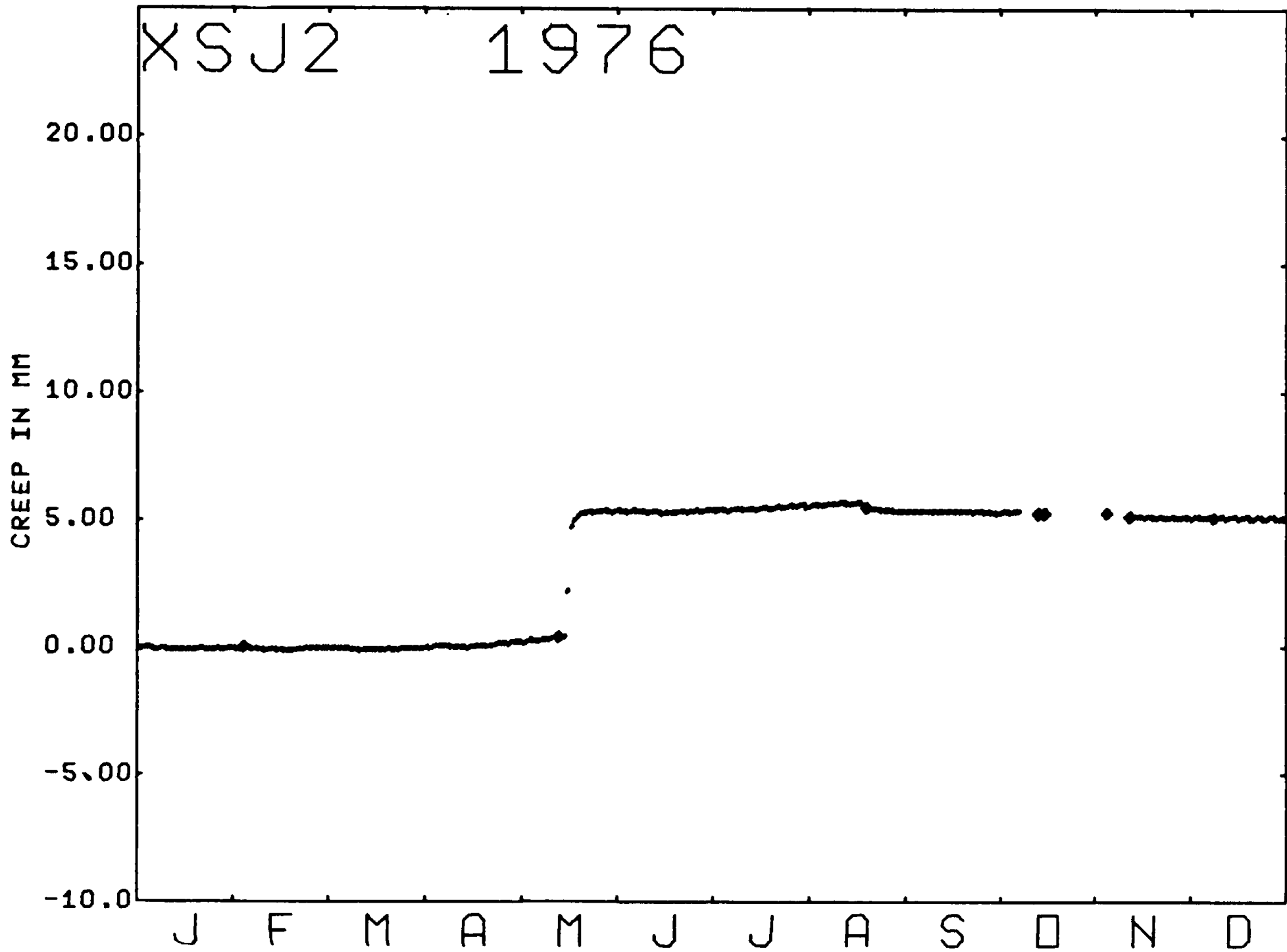
SAN JUAN BAUTISTA QUADRANGLE
 CALIFORNIA
 7.5 MINUTE SERIES (TOPOGRAPHIC)

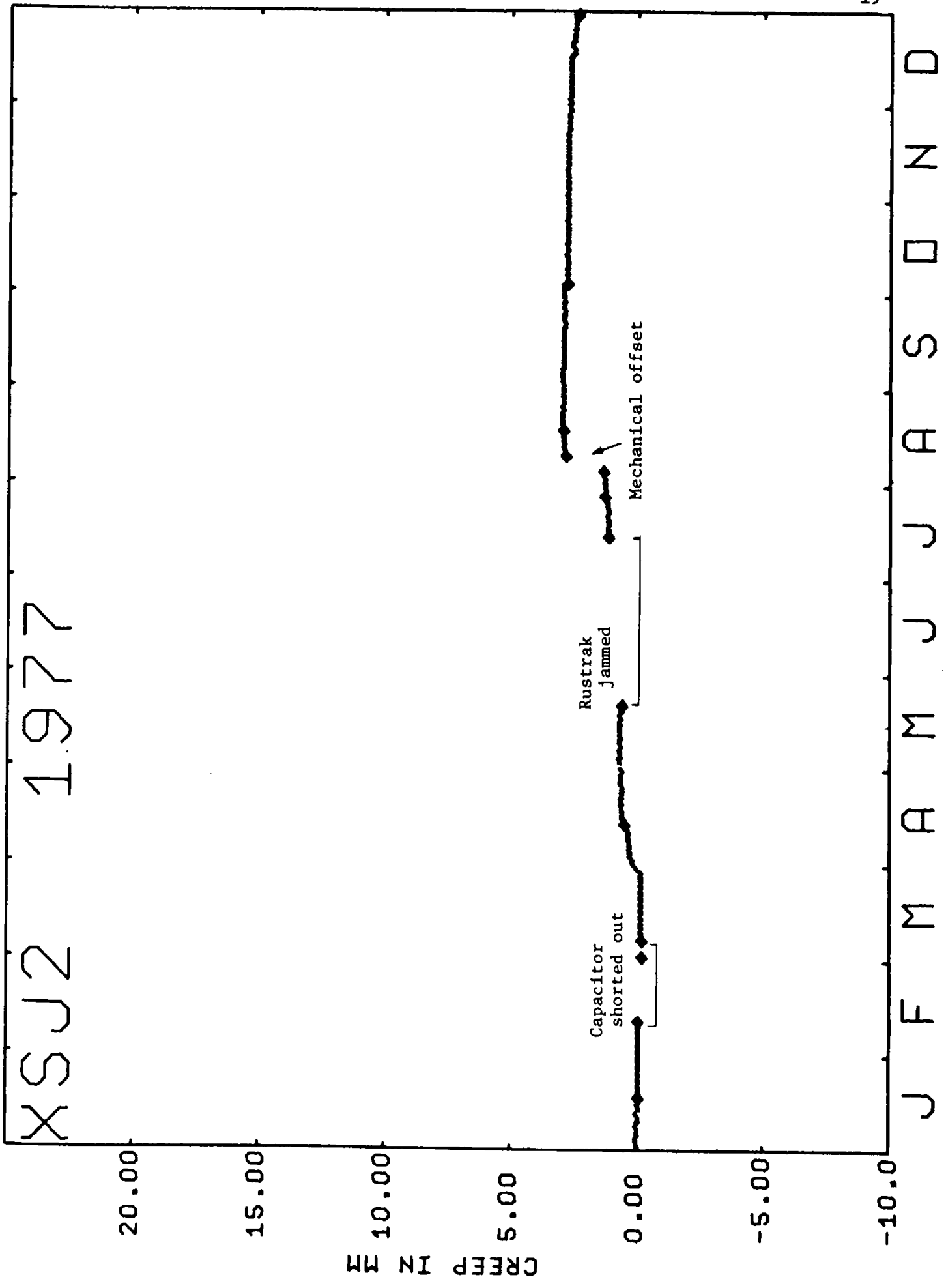
XSJ2 CORRECTED CREEPMETER READINGS (mm)

17

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					10.00	
FEB 3	-0.02		-0.02		9.98	
MAY 13	0.39		0.37		10.37	
AUG 19	5.12		5.49		15.49	
OCT 13	-0.23		5.26		15.26	
OCT 15	-0.03		5.23		15.23	
OCT 15	0.07		5.30		15.30	
NOV 4	-0.02		5.28		15.28	
NOV 11	-0.13		5.15		15.15	
DEC 8	-0.06		5.09		15.09	
<u>1977</u>						
JAN 17	-0.14		-0.14		14.95	
MAR 3	-0.16		-0.30		14.79	
MAR 8	0.03		-0.27		14.82	
APR 14	0.70		0.43		15.52	
JUL 15	0.62		1.05		16.14	
JUL 28	0.17		1.22		16.31	
AUG 10	1.54		2.76		17.85	
AUG 18	0.11		2.87		17.96	
SEP 8	-0.02		2.85		17.94	
OCT 4	-0.15		2.70		17.79	
NOV 4	0.11		2.81		17.90	
DEC 2	-0.17		2.64		17.73	
DEC 30	-0.31		2.33		17.42	

XSJ2 1976





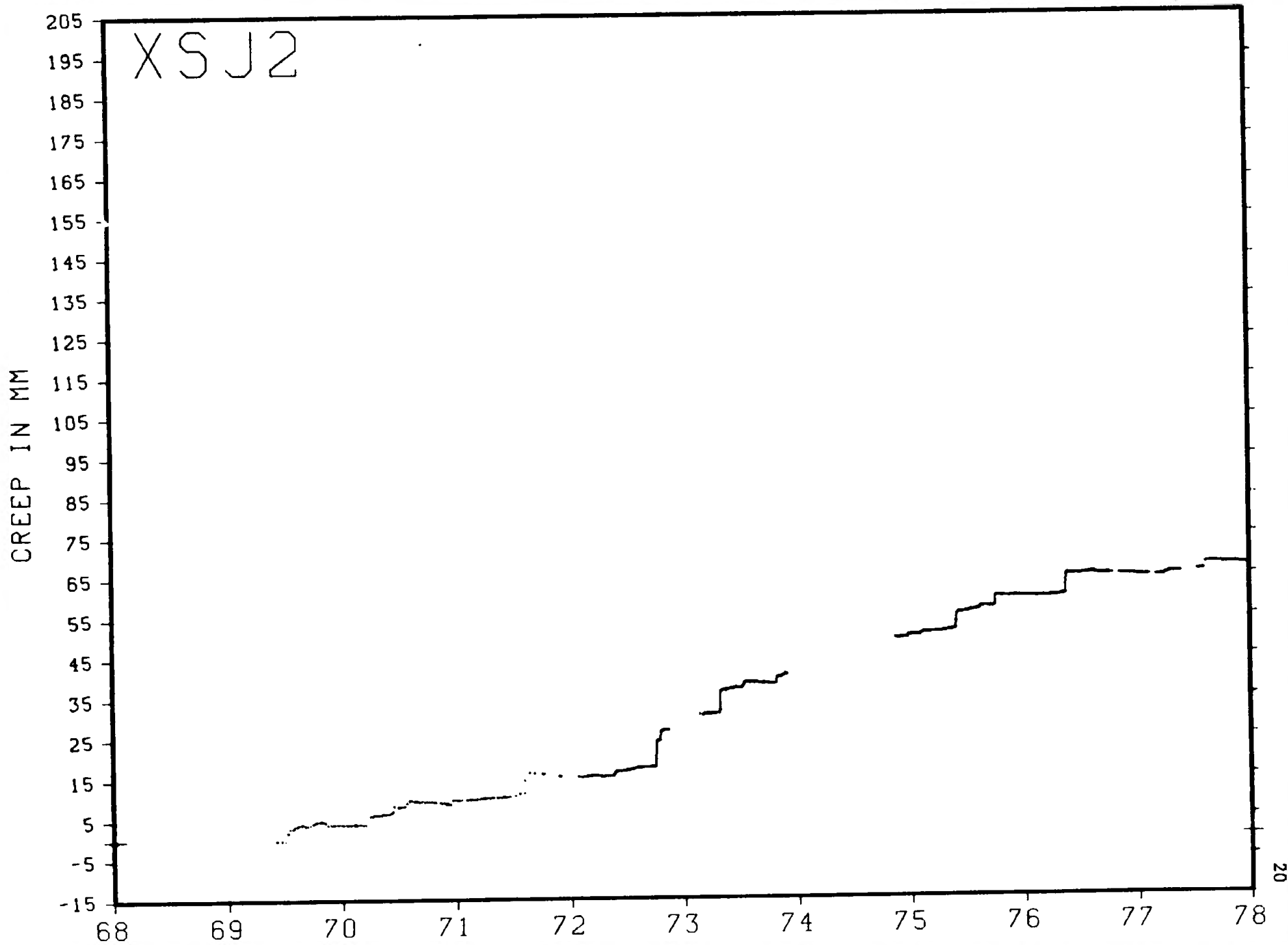
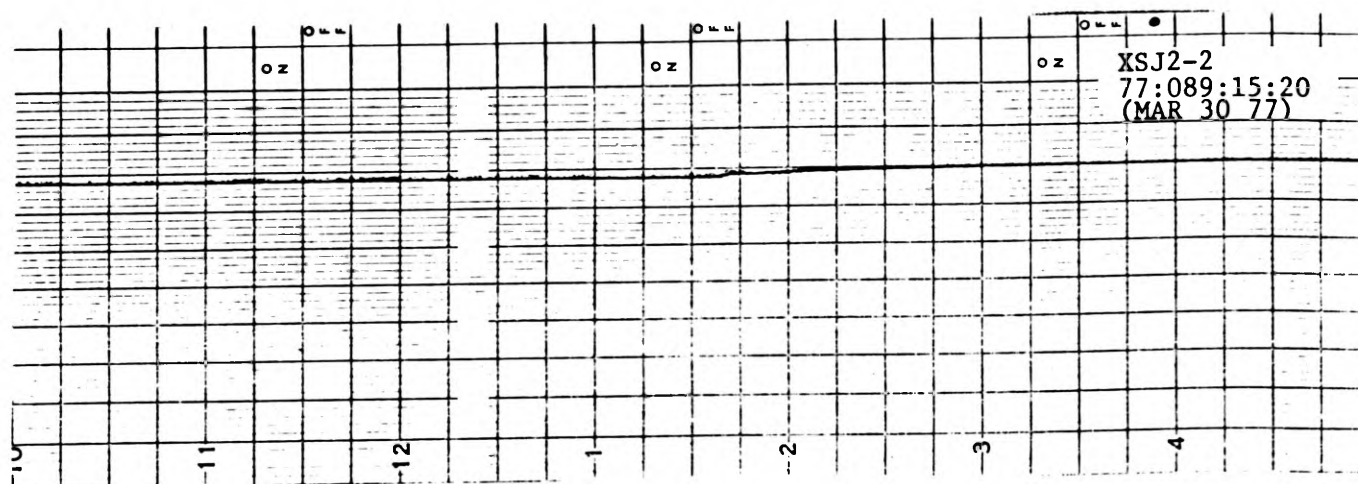
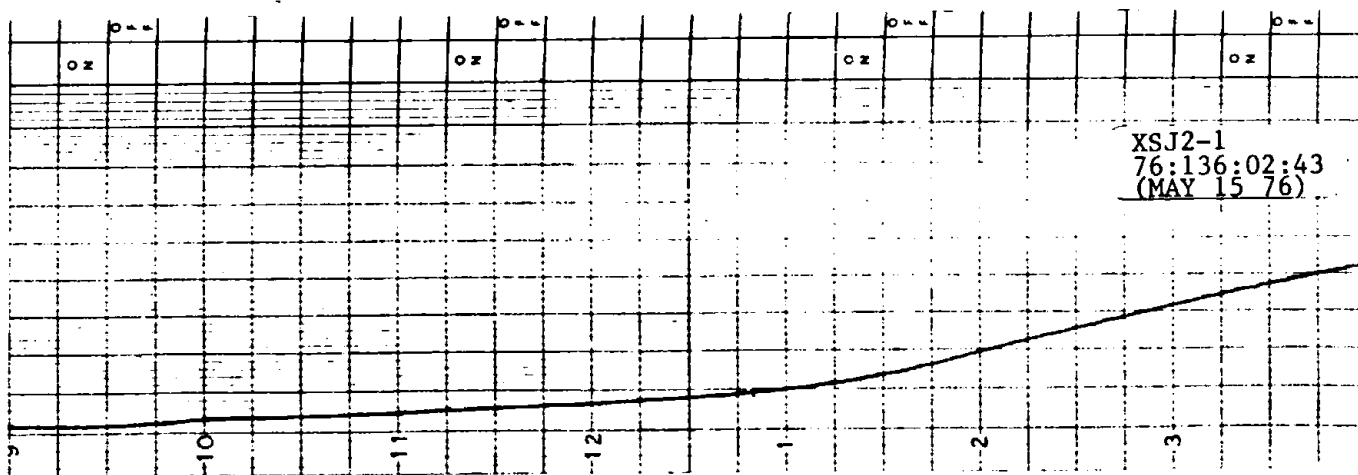


Table of XSJ2 Events

21

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig.No.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	136	May 15	0243 (onset and steepest part)	4.915	1	1.0	.6034
1977	089	Mar. 30 Apr.	1520 Mechanical offset	0.56	2	1.0	.5860



STATION HRS

Latitude $36^{\circ} 46.3'$
Longitude $121^{\circ} 25.3'$

Position 321.9 km
30 meter rod, $\phi=45$

The Harris Ranch creepmeter was installed during June, 1969, on the San Andreas fault at a site 12.8 km southeast of San Juan Bautista. The installation consists of a single rod buried a few centimeters below the surface on the gentle slope of a stream terrace. HRS records show the effects of considerable instrumental friction. Creep activity at this site is composed of distinct events of up to about 3 mm in amplitude, with little or no background slip. The average creep rate is about 11 mm/yr.

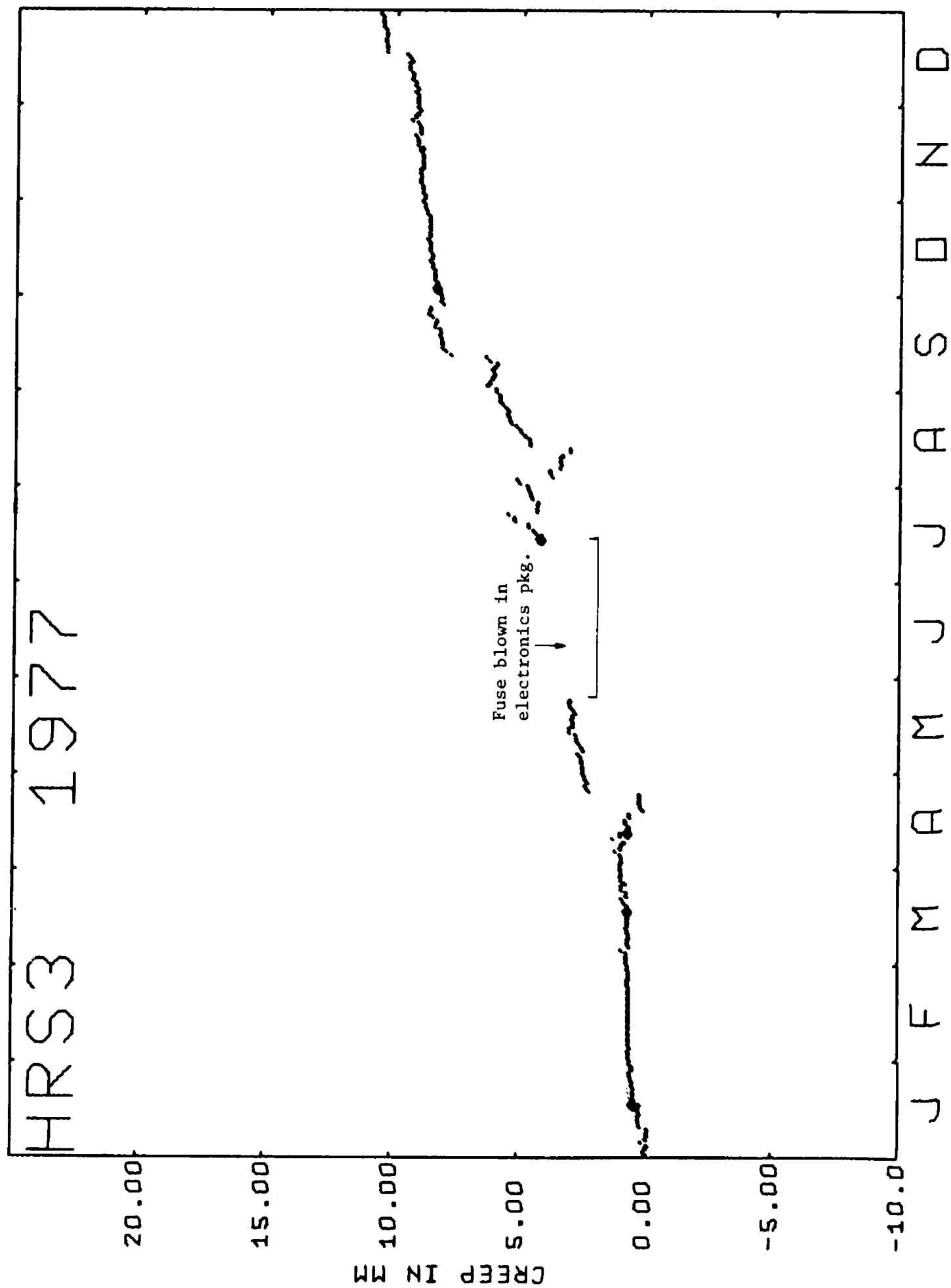
7.5 MINUTE SERIES (TOPOGRAPHIC)

HRS CORRECTED CREEPMETER READINGS (mm)

24

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					66.54	
FEB 11	0.40		0.40		66.94	
APR 26	1.00		1.40		67.94	
AUG 18	4.77		6.17		72.71	
SEP 17	0.14		6.31		72.85	
OCT 6	3.11		9.42		75.96	
NOV 3	0.37		9.79		76.33	
DEC 8	0.03		9.82		76.36	
<u>1977</u>						
JAN 17	0.11		0.11		76.47	
MAR 19	0.24		0.35		76.71	
APR 13	0.01		0.36		76.72	
JUL 15	3.51		3.87		80.23	
JUL 18	0.00		3.87		80.23	
JUL 27	0.07		3.94		80.30	
AUG 11	0.14		4.08		80.44	
OCT 3	3.95		8.03		84.39	
NOV 16	0.42		8.45		84.81	

CREEP IN MM



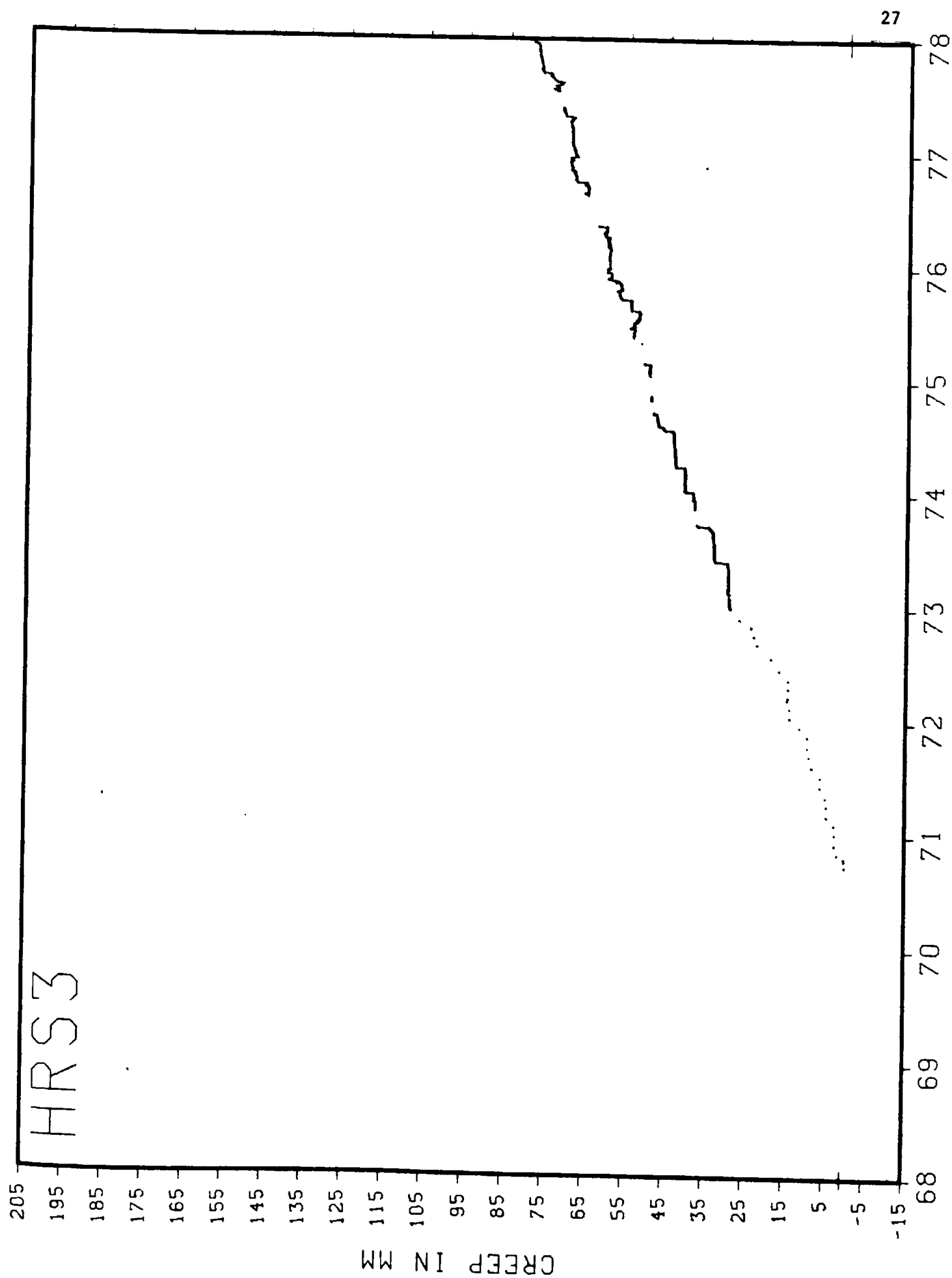


Table of HRS3 Events

28

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. No.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	096	Apr. 5		1.00	*		
	131	May 10	1339	{ 2.39 total	1	0.89	1.54
	131	May 10	1851		1	0.89	1.54
	236	Aug. 23 ^{1/}		0.70	*		
	239	Aug. 26 ^{1/}		-1.00	*		
	263	Sep. 19 ^{2/}	0337	0.70	*		
	265	Sep. 21	0314	-0.56	2	0.89	1.27
	272	Sep. 28	1913	1.47	3	0.89	1.27
	273	Sep. 29	0413	1.02	3	0.90	1.27
	308-311	Nov. 3-6		0.69	*		
	353	Dec. 18 ^{3/}			*		
	355-360	Dec. 20-25		0.57	*		
1977	115	Apr. 25	0350	2.11	4	0.90	1.54
	135	May 15 ^{4/}	1952	0.23	5	0.90	1.54
	225	Aug. 13	0707	1.57	6	0.90	2.18
	254	Sep. 11	1501	1.28	7	0.90	2.18
	351	Dec. 17	1327	1.16	8	0.91	1.54

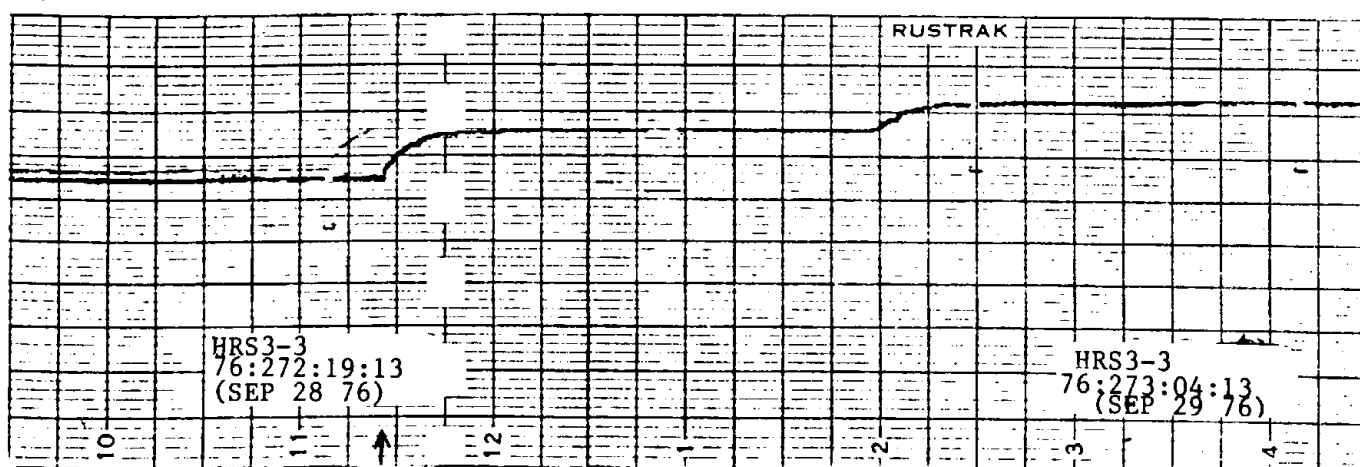
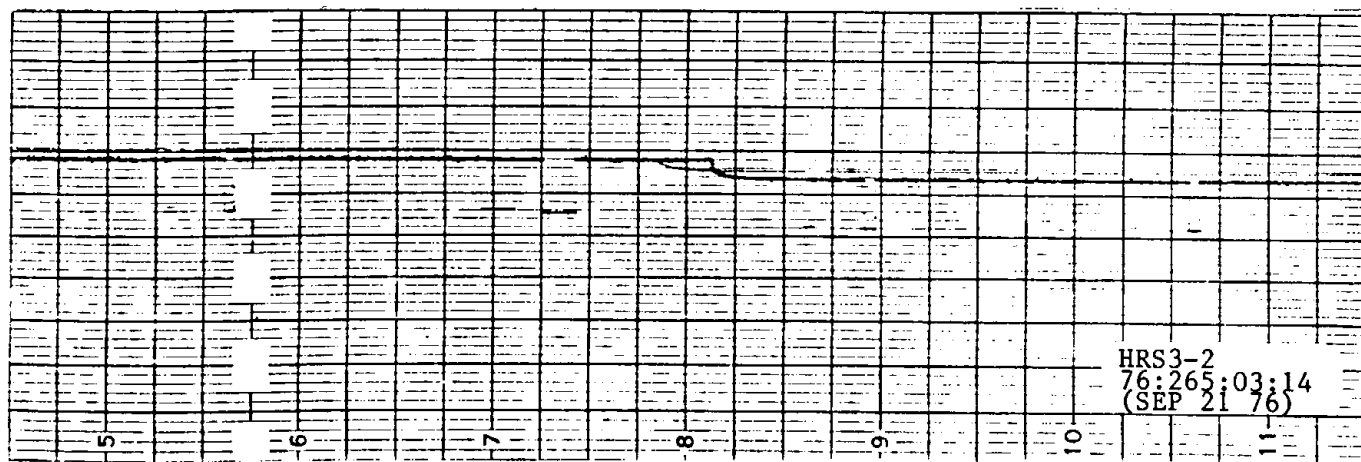
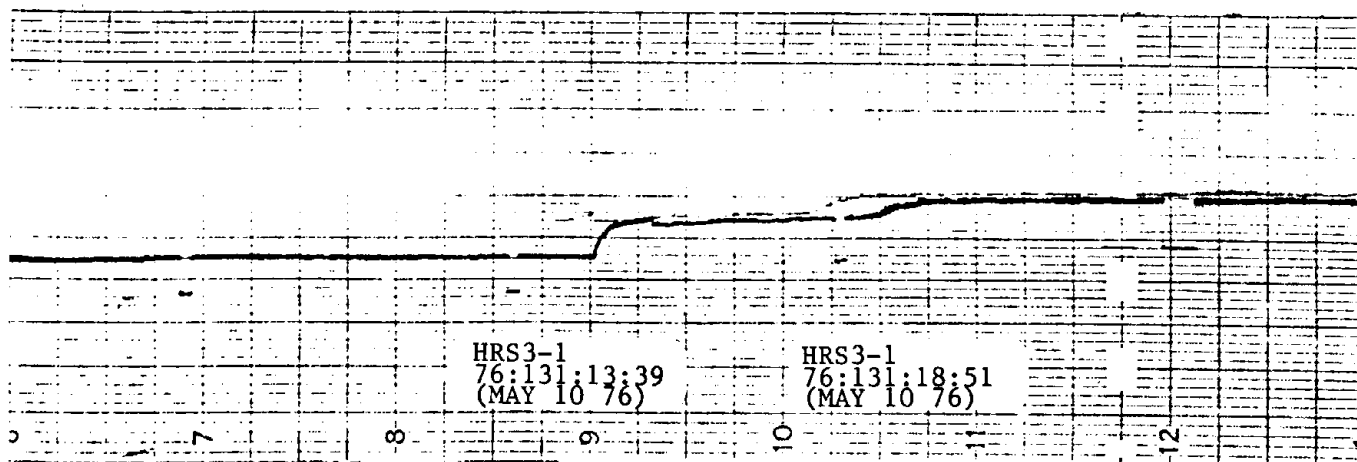
1/ Possible electronic problems

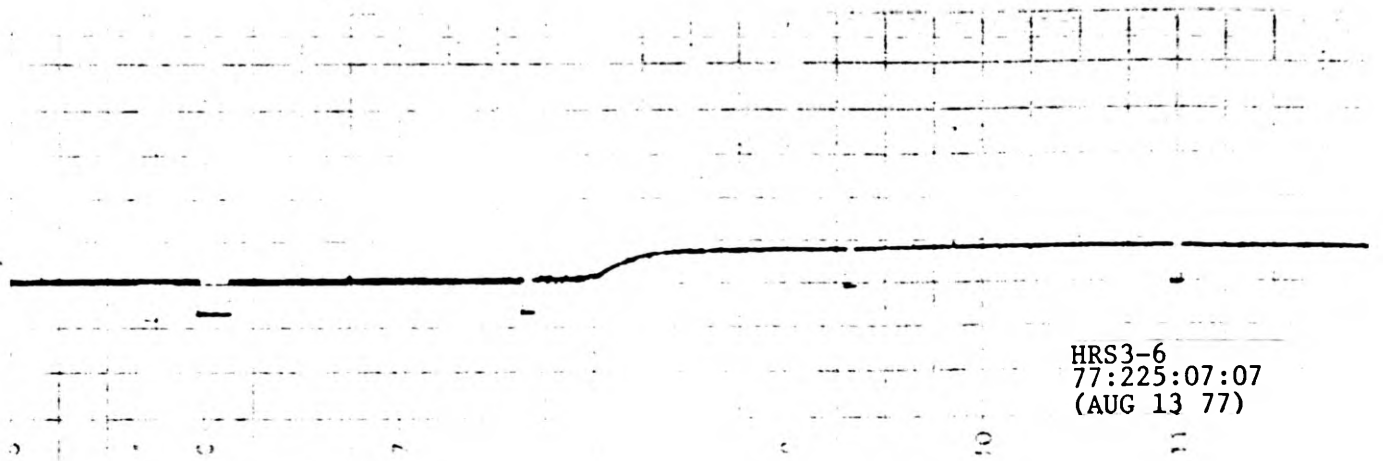
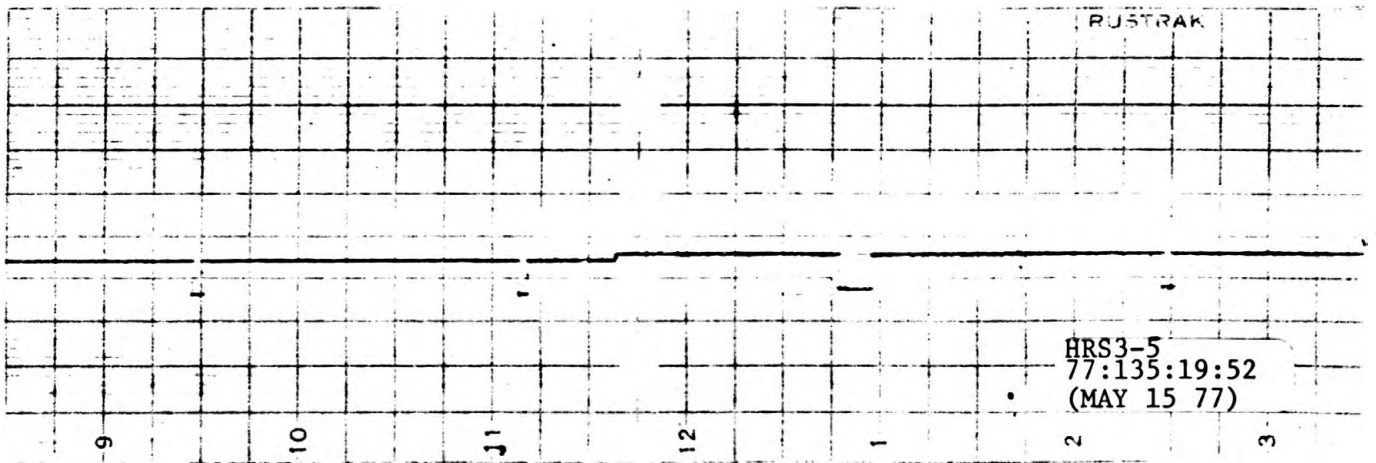
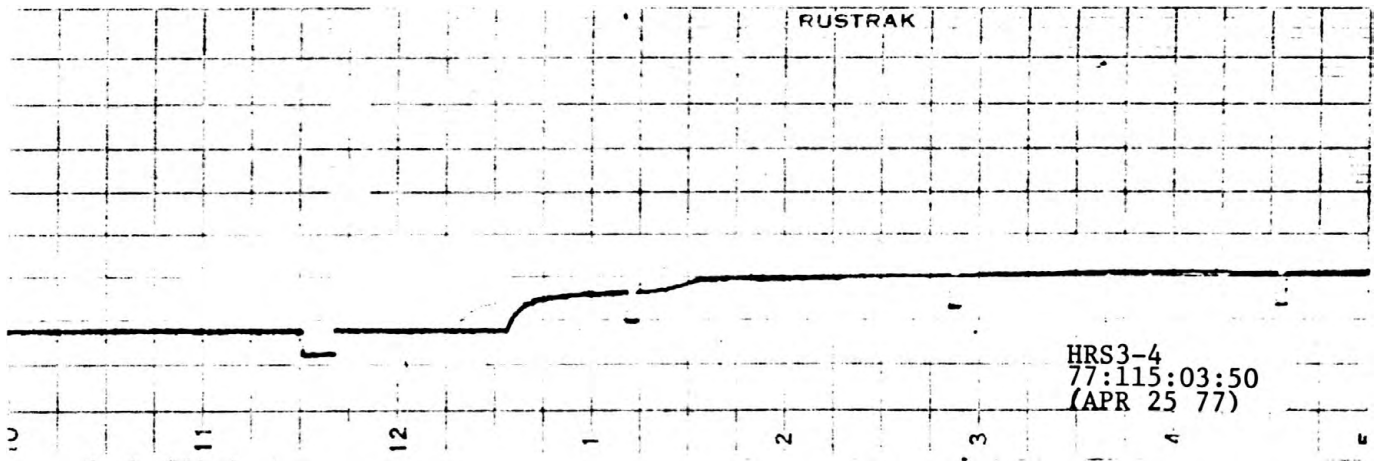
2/ Possible mechanical problems

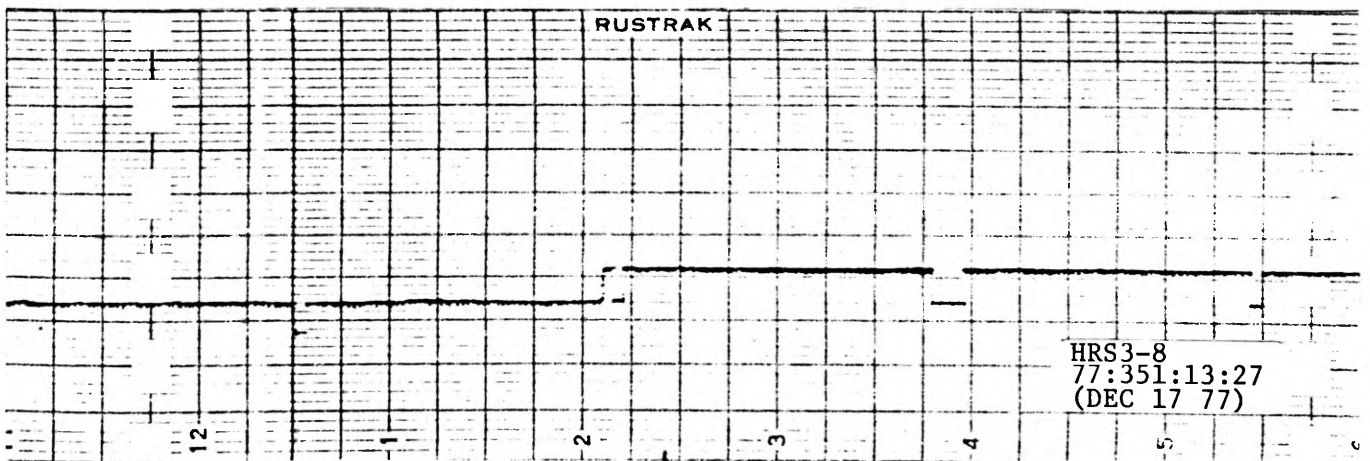
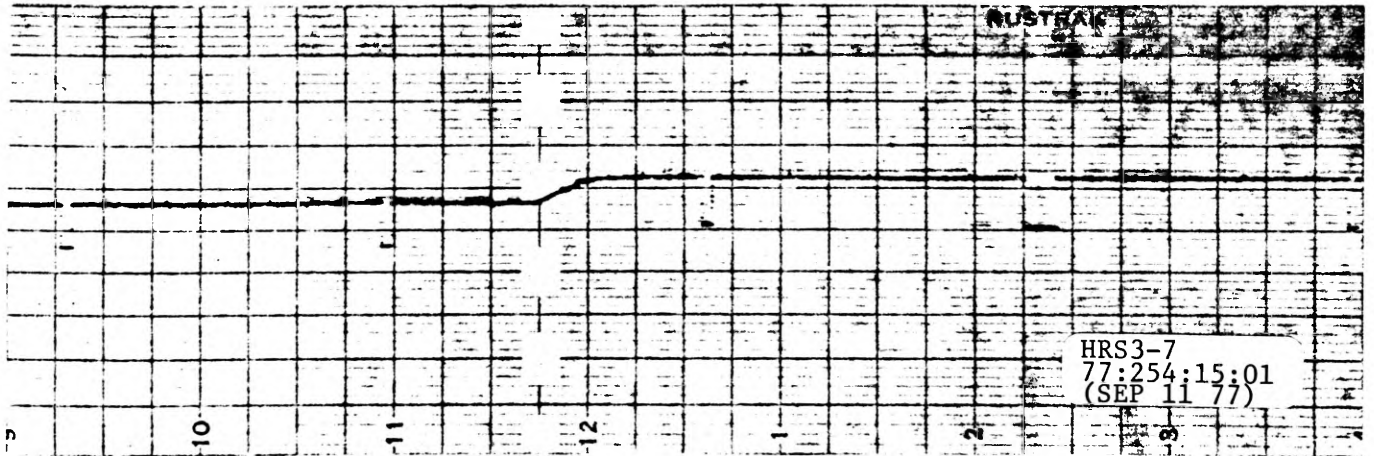
3/ Possible mechanical disturbance; cause unknown

4/ Prob. friction

* Refer to annual plot







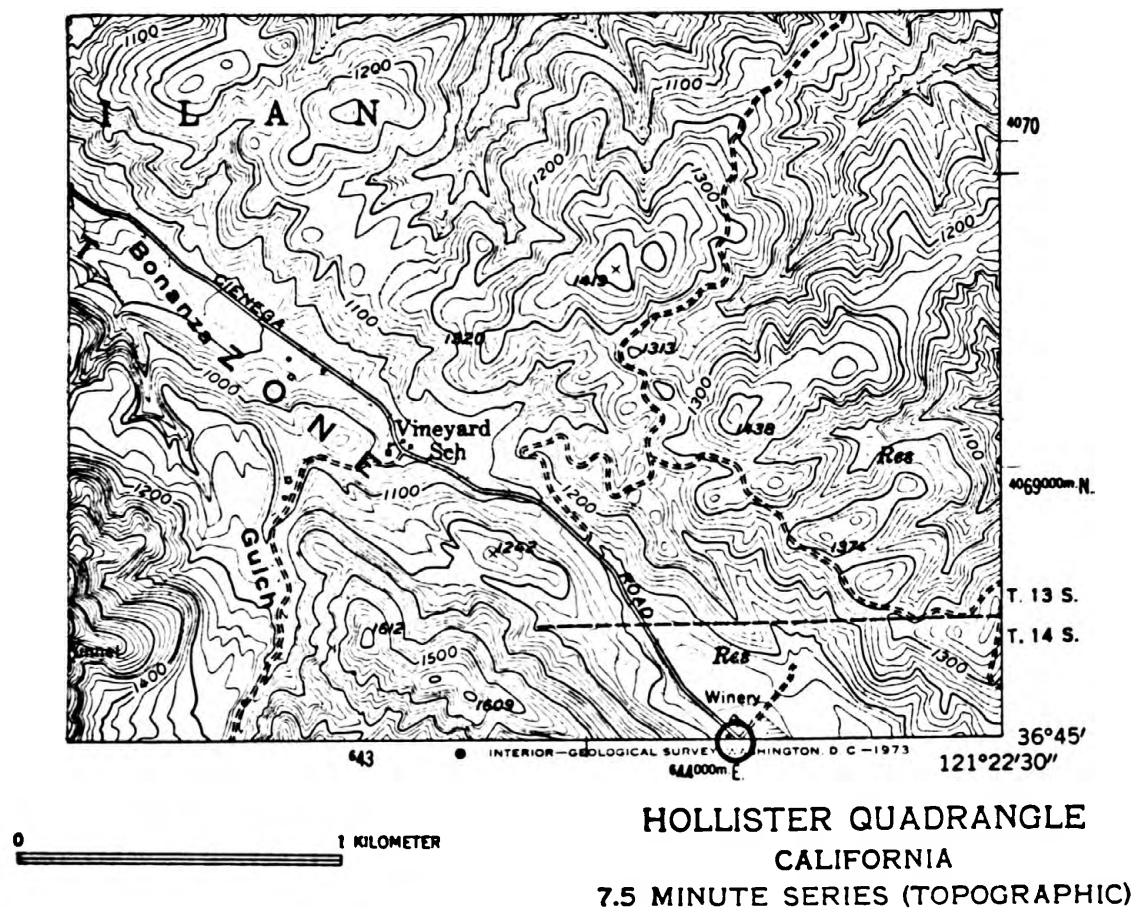
STATION CWN

32

Latitude $36^{\circ} 45.0'$
 Longitude $121^{\circ} 23.1'$

Position 326.0 km
 15 cm beam, $\phi=0^{\circ}$

The Cienega Winery (North) creepmeter was installed during June, 1972, on the San Andreas fault at the winery site 16.9 km southeast of San Juan Bautista. The installation is near the northwest wall of the winery building. Components of the beam instrument are bolted to adjacent concrete slabs of the winery floor. The beam crosses a construction joint that is approximately parallel to, and centered over, the underlying fault trace. Outside of the building the fault trace is characterized by a line of prominent springs along the crest of a steep, northeast-facing scarp at the base of a broad, high ridge. Creep activity at this site consists of distinct events of up to about 3.5 mm in amplitude, superimposed on a background of zero to slight right-lateral slip. The average creep rate is about 12 mm/yr.

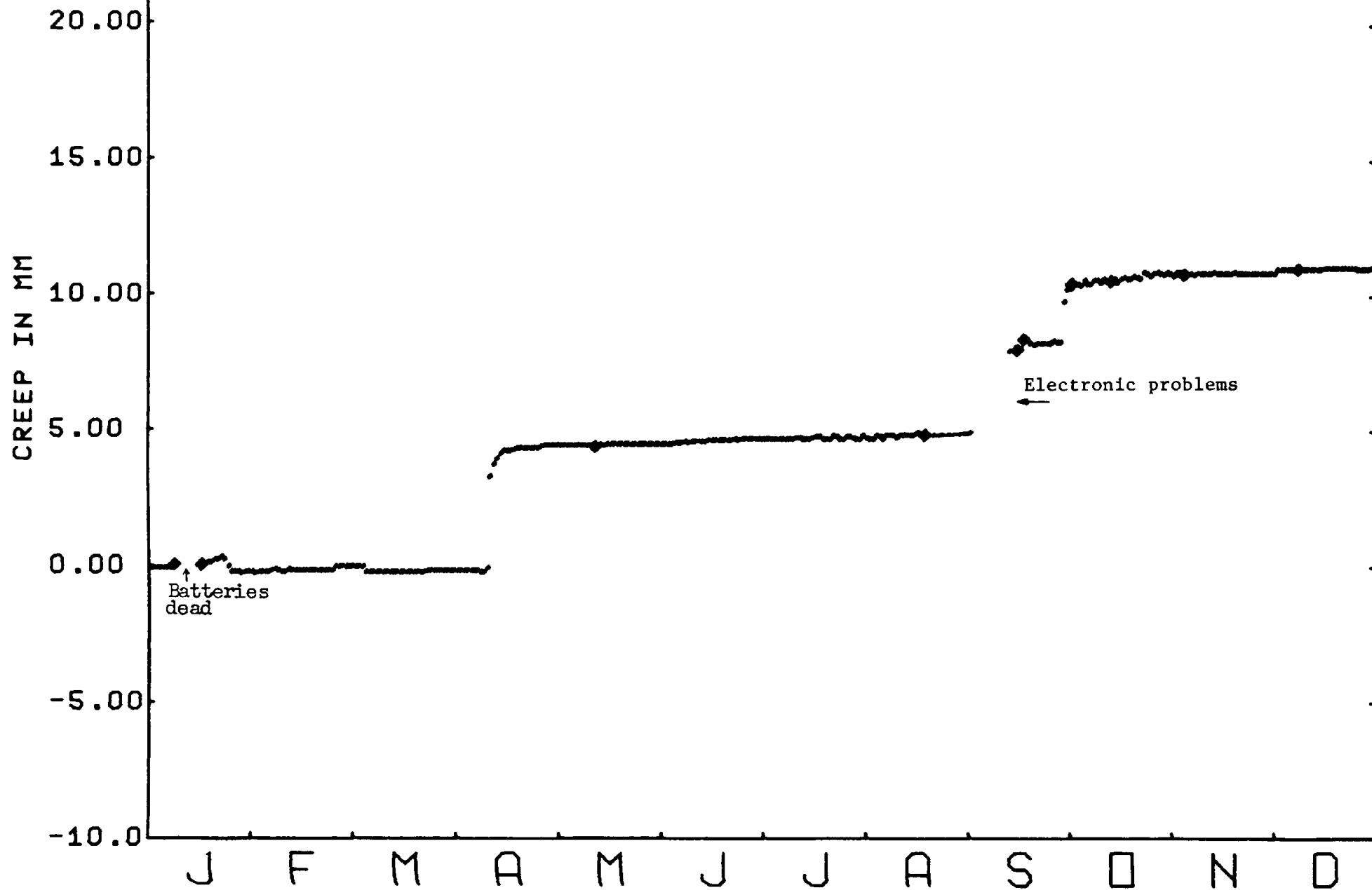


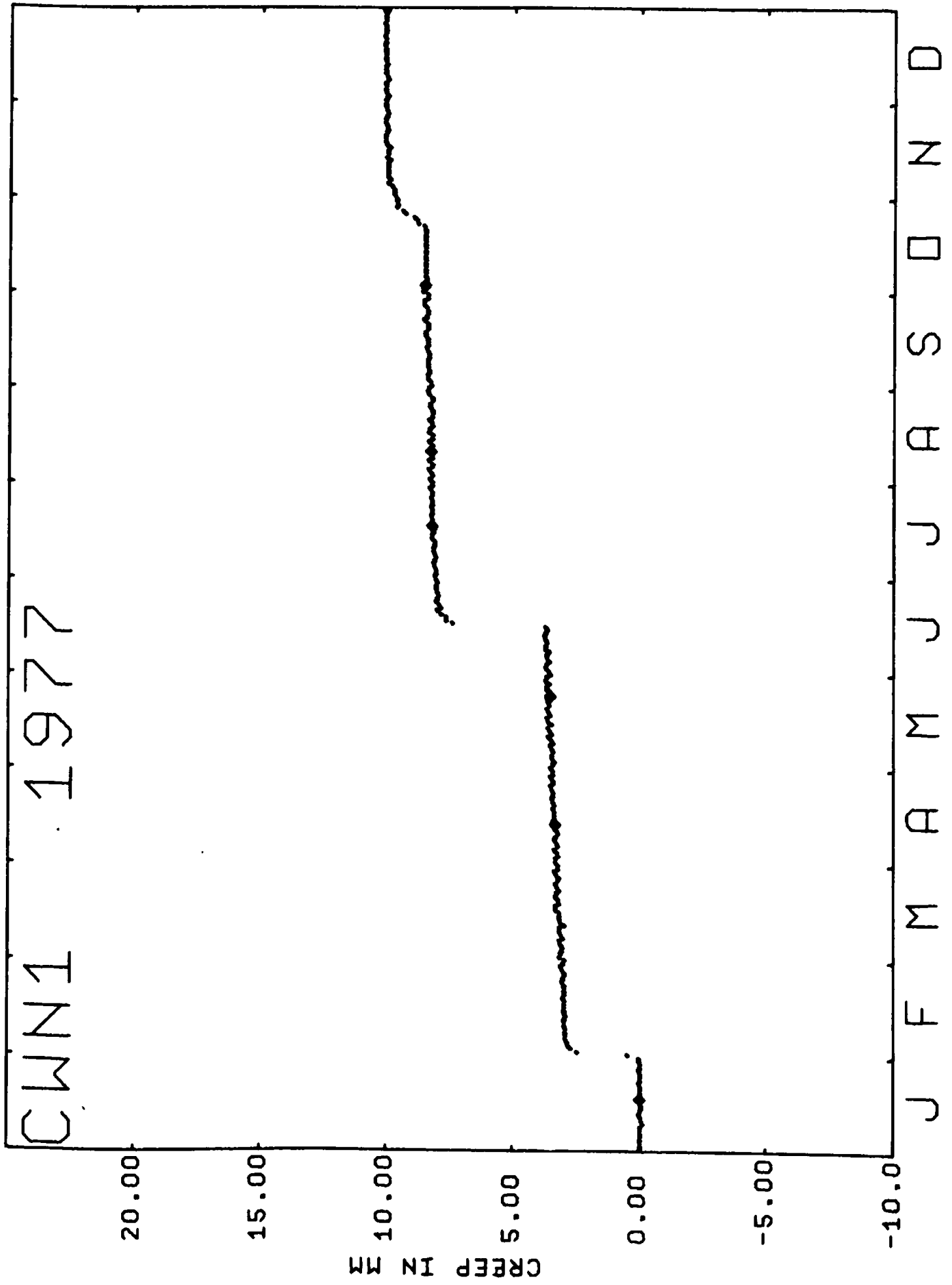
CWN CORRECTED CREEPMETER READINGS (mm)

33

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					45.38	
JAN 16	0.11		0.11		45.49	
MAY 12	4.35		4.46		49.84	
AUG 18	0.39		4.85		50.23	
SEP 17	3.54		8.39		53.77	
OCT 1	2.09		10.48		55.86	
OCT 13	0.09		10.57		55.95	
NOV 4	0.24		10.81		56.19	
DEC 8	0.19		11.00		56.38	
<u>1977</u>						
JAN 17	0.03		0.03		56.41	
APR 14	3.35		3.38		59.76	
MAY 25	0.20		3.58		59.96	
JUL 18	4.69		8.27		64.65	
AUG 11	0.06		8.33		64.71	
OCT 3	0.22		8.55		64.93	
OCT 5	0.08		8.63		65.01	
NOV 4	1.31		9.94		66.32	
NOV 16	0.05		9.99		66.37	
DEC 2	0.01		10.00		66.38	

CWN1 1976





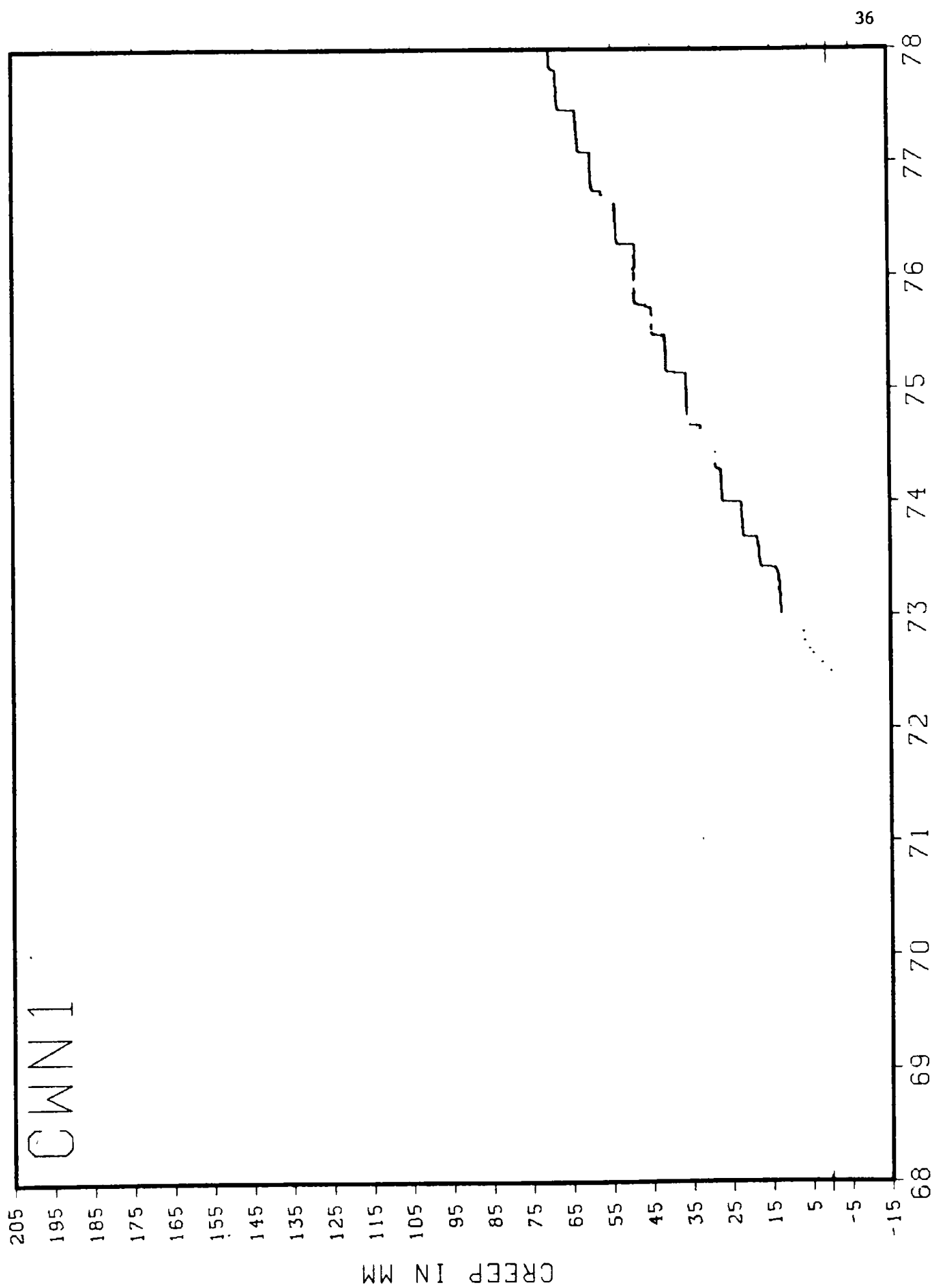
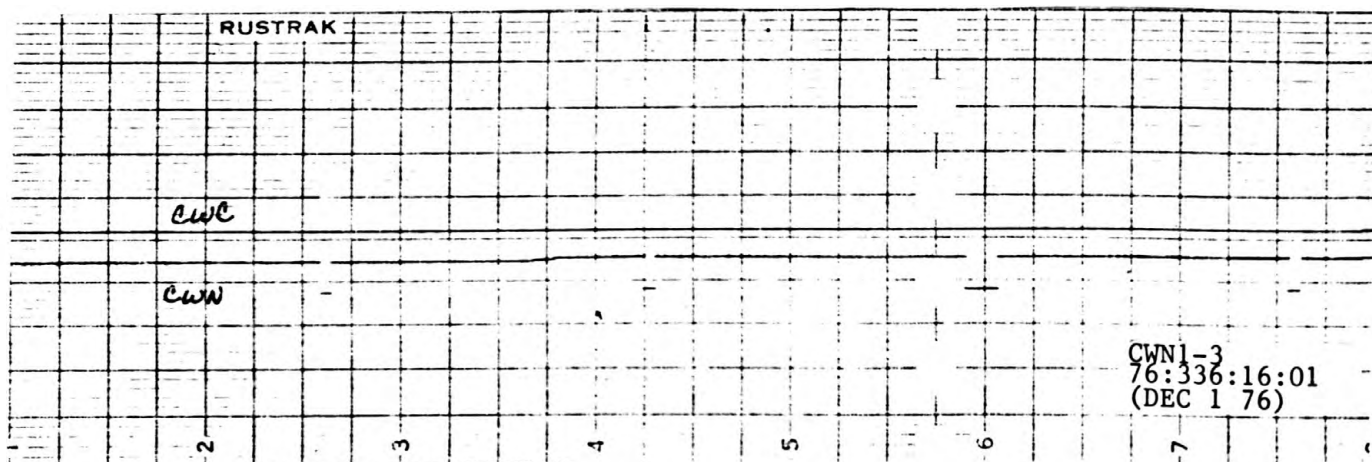
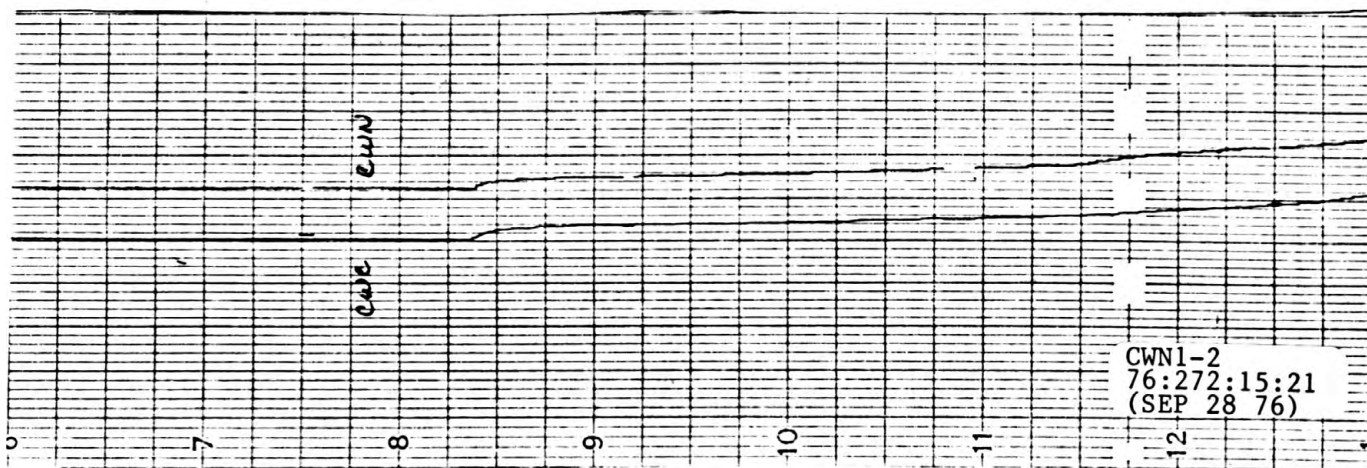
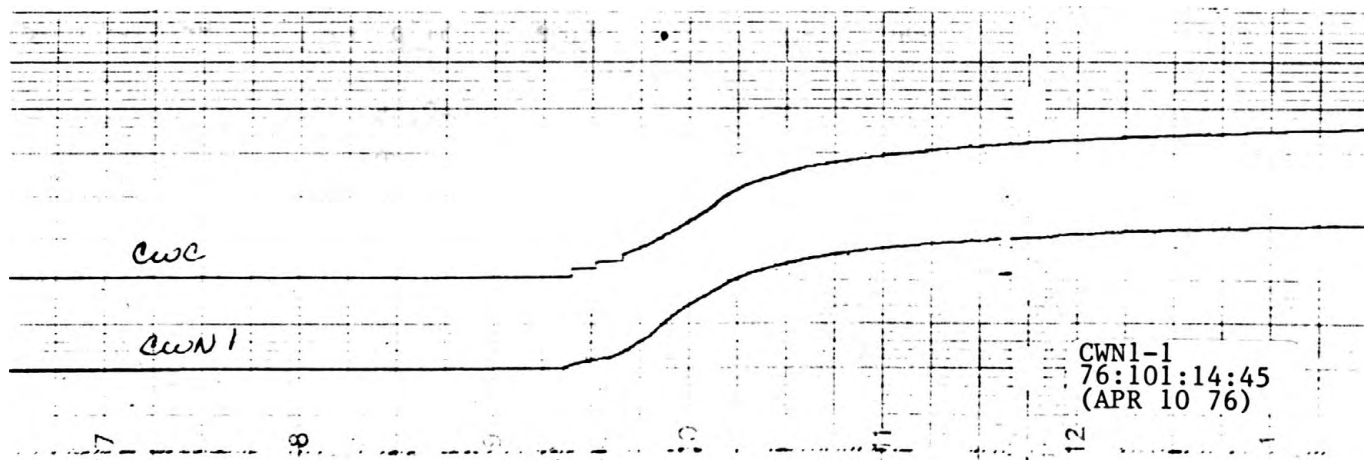


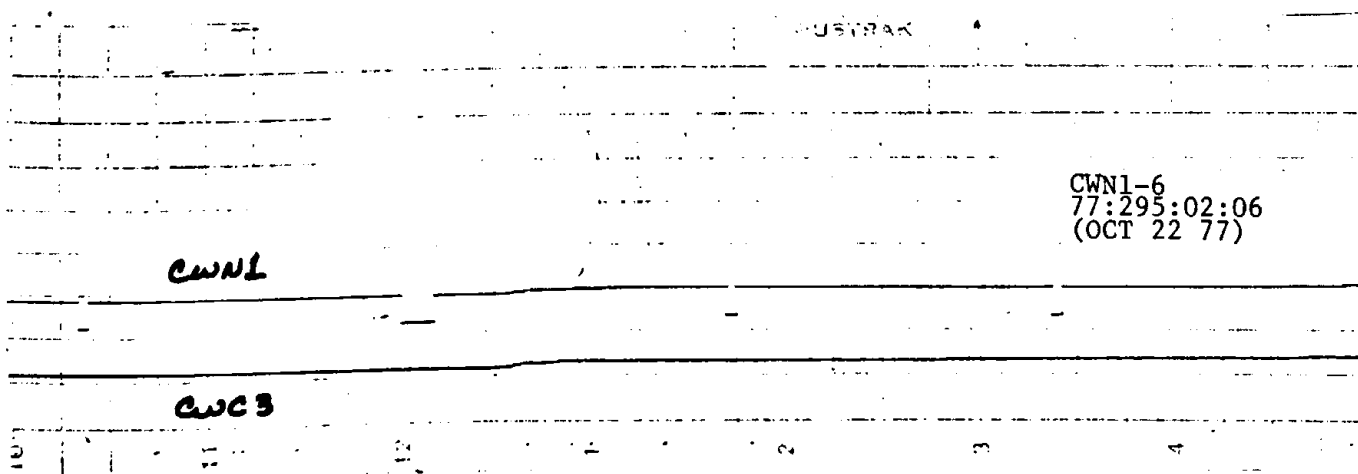
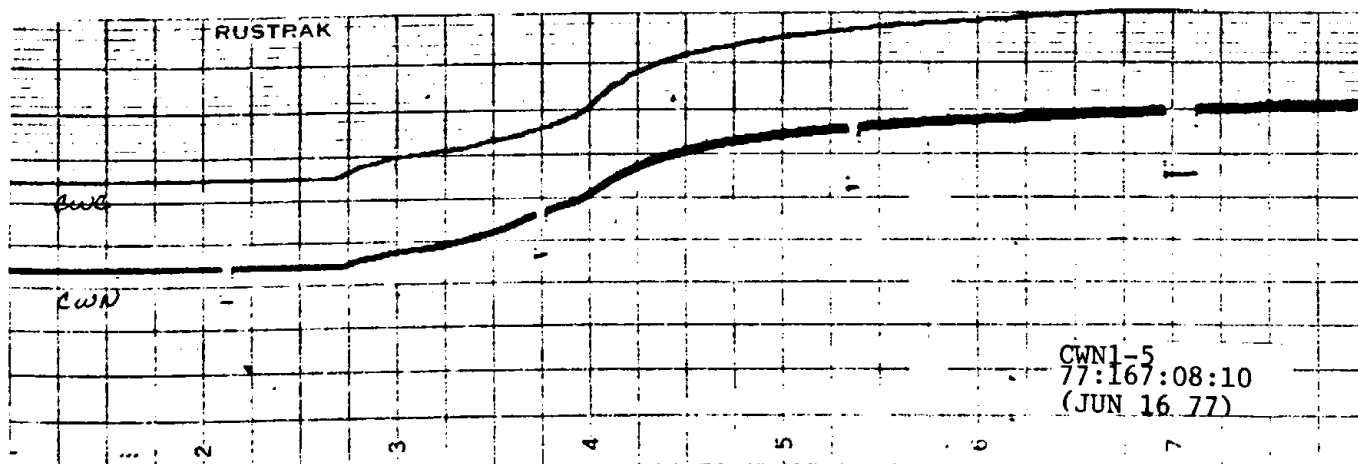
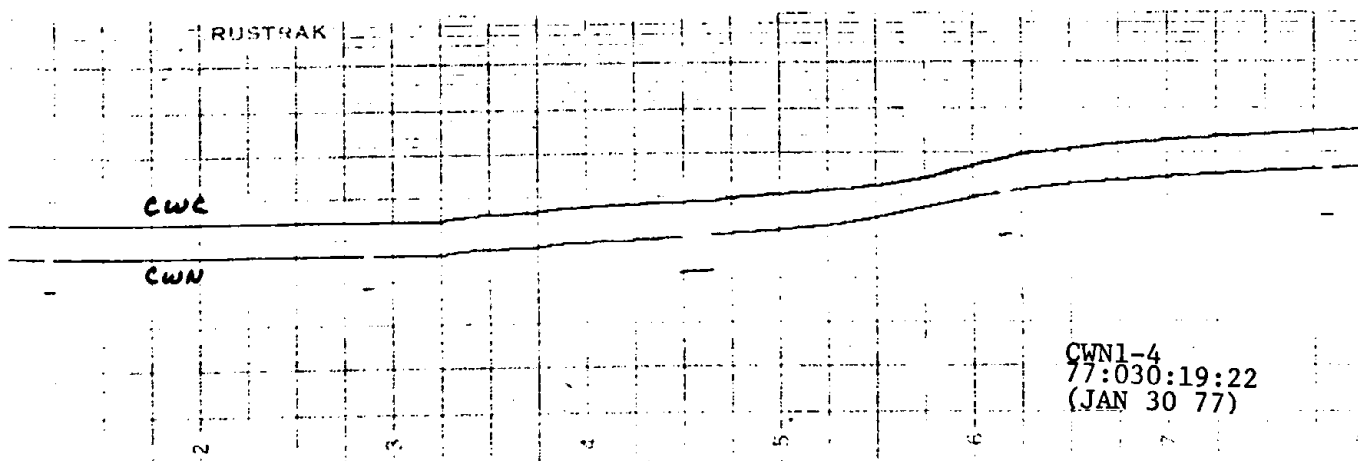
Table of CWN1 Events

37

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. No.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	023-026	Jan. 23-26		-0.55	*		
	054	Feb. 23		0.20	*		
	064	Mar. 4	2246	-0.20	*		
	101	Apr. 10	1445	4.24	1	1.02	1.10
	272	Sep. 28	1521	2.01	2	0.91	1.12
	336	Dec. 1	1601	0.15	3	0.90	1.00
1977	030	Jan. 30	1922	2.88	4	0.91	1.05
	167	Jun. 16	0810	3.88	5	0.93	1.02
	295	Oct. 22	0206	1.09	6	0.89	1.14
				(Total after approx. 6 days)			

* Refer to annual plot.





STATION CWC

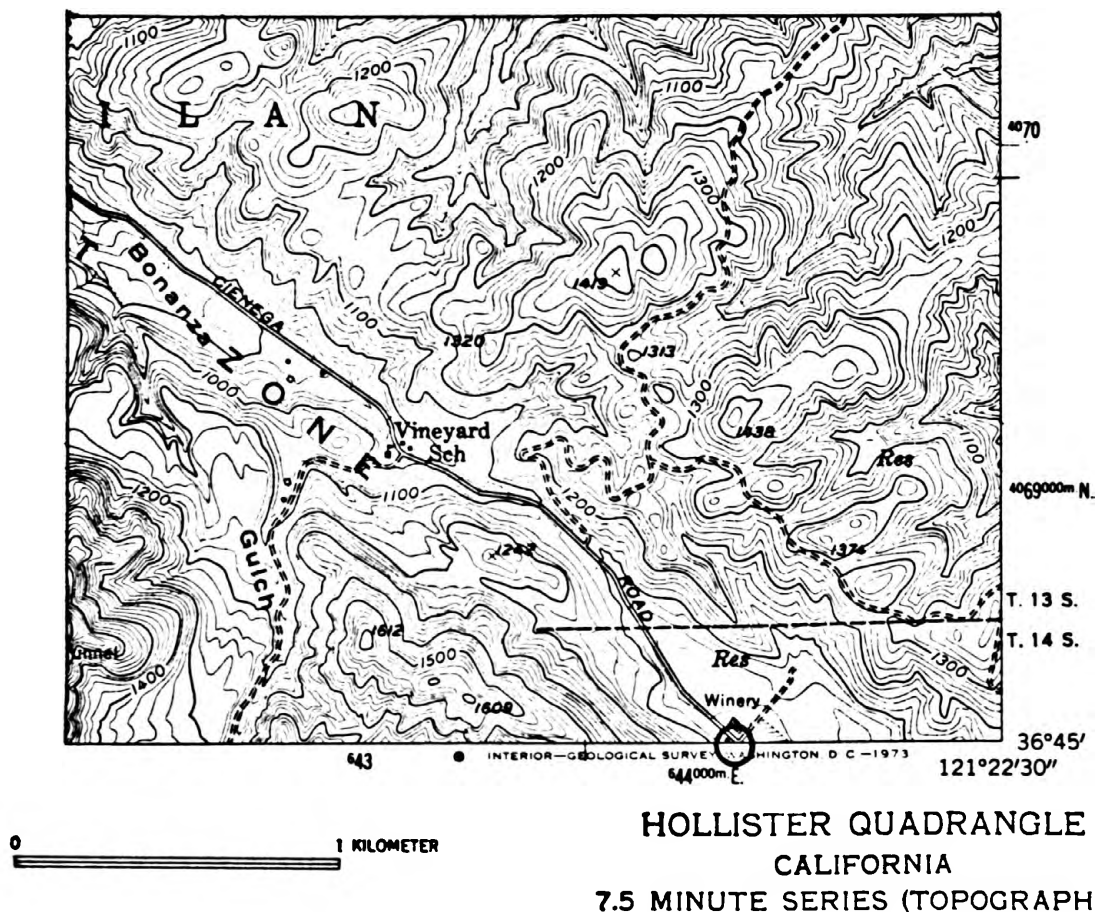
40

Latitude $36^{\circ} 45.0'$

Position 326.0 km

Longitude $121^{\circ} 23.1'$ 15 cm beam, $\theta=0^{\circ}$

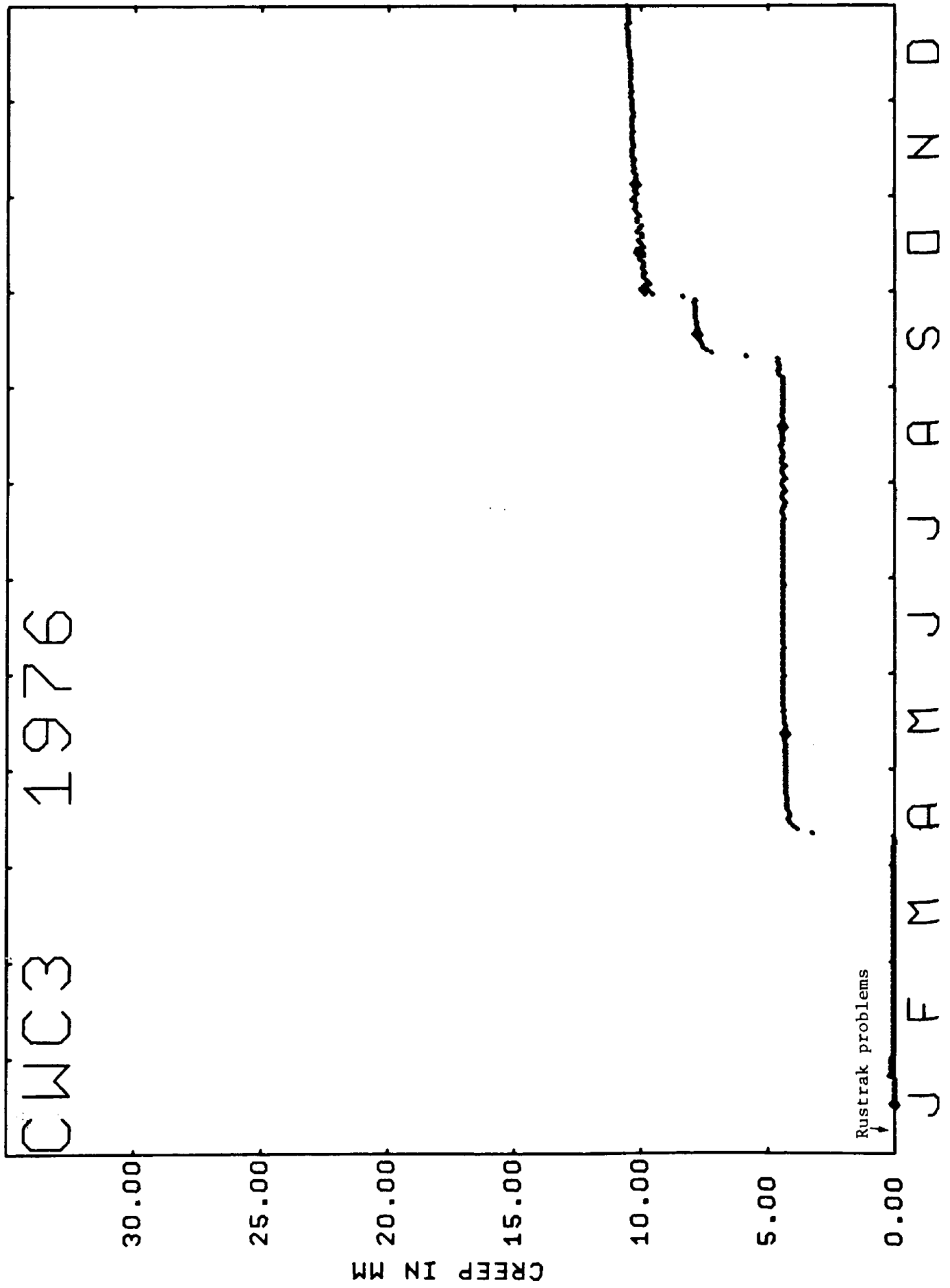
The Cienega Winery (Central) creepmeter was installed near the center of the winery building during October, 1968, as a replacement for an instrument installed by the University of California (Berkeley) in 1958. The CWC creepmeter was constructed in a manner similar to that described for CWN, at a point 30 meters farther southeast along the same construction joint. Records from CWC and CWN are practically identical, except that some of the event amplitudes are slightly smaller at CWC, and the long-term apparent creep rate from CWC records is usually somewhat lower, perhaps due to local complexities in the building at a strong cross-wall attached to both floor slabs near the instrument.



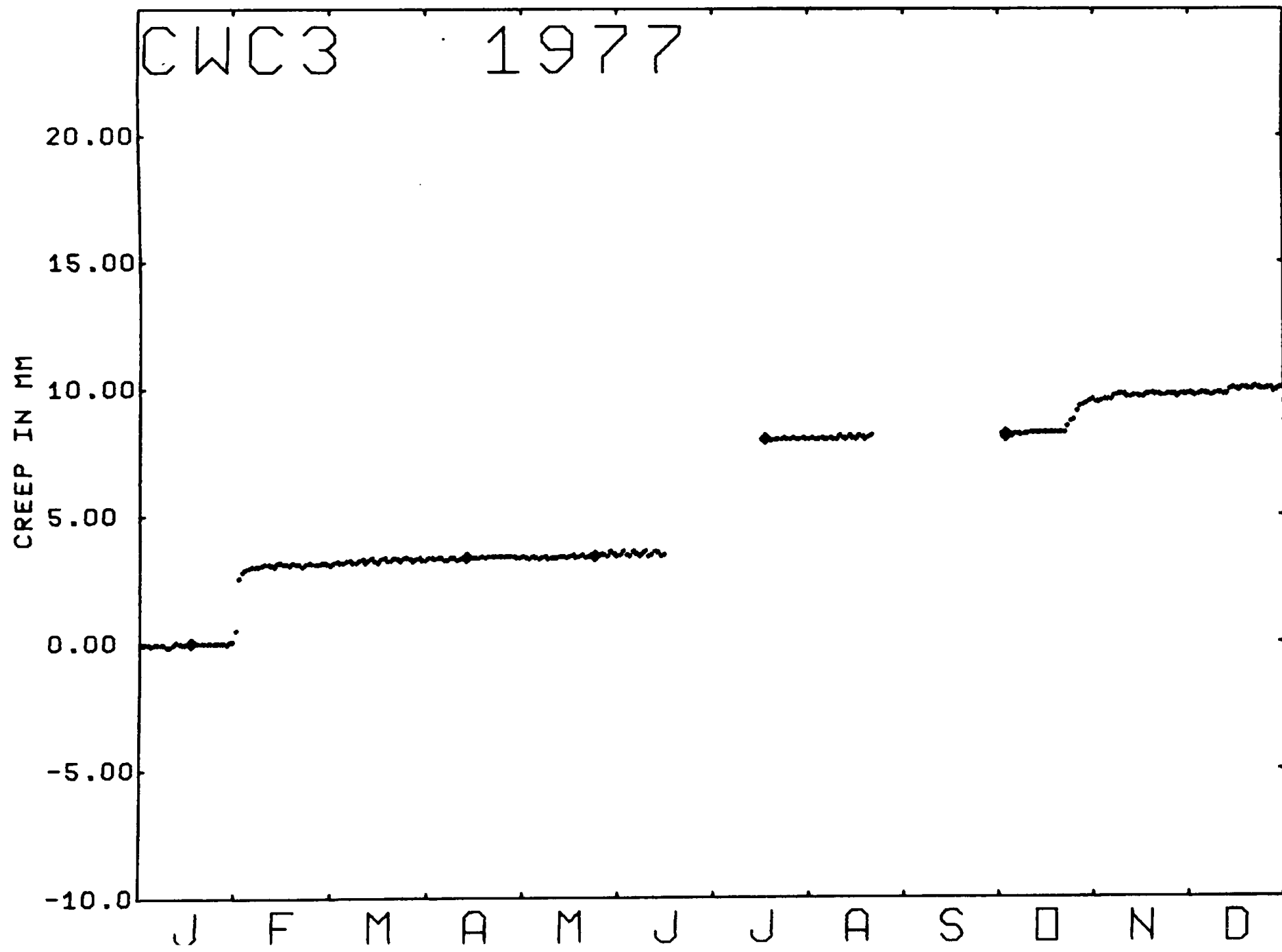
CWC3 CORRECTED CREEPMETER READINGS (mm)

41

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>						
JAN 16	0.00		0.00		69.13	
MAY 12	4.31		4.31		73.44	
AUG 18	0.12		4.43		73.56	
SEP 17	3.37		7.80		76.93	
OCT 1	2.06		9.86		78.99	
OCT 13	0.20		10.06		79.19	
NOV 4	0.17		10.23		79.36	
DEC 8	0.23		10.46		79.59	
<u>1977</u>						
JAN 17	0.14		0.14		79.73	
APR 13	3.33		3.47		83.06	
MAY 25	0.04		3.51		83.10	
JUL 18	4.62		8.13		87.72	
AUG 11	0.06		8.19		87.78	
OCT 3	0.13		8.32		87.91	
OCT 5	0.03		8.35		87.94	
NOV 4	1.31		9.66		89.25	
NOV 16	0.02		9.68		89.27	
DEC 2	0.01		9.69		89.28	



CWC3 1977



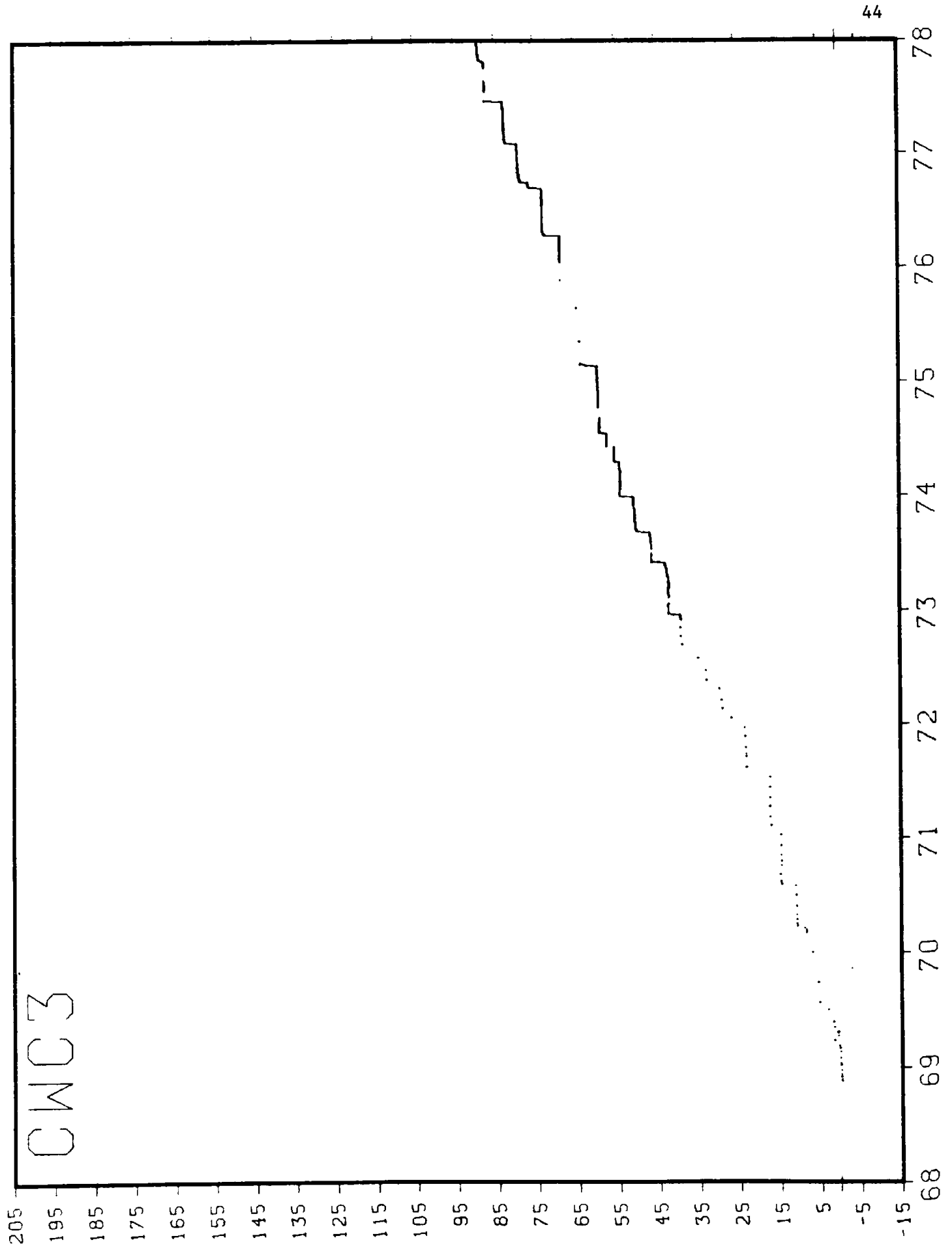
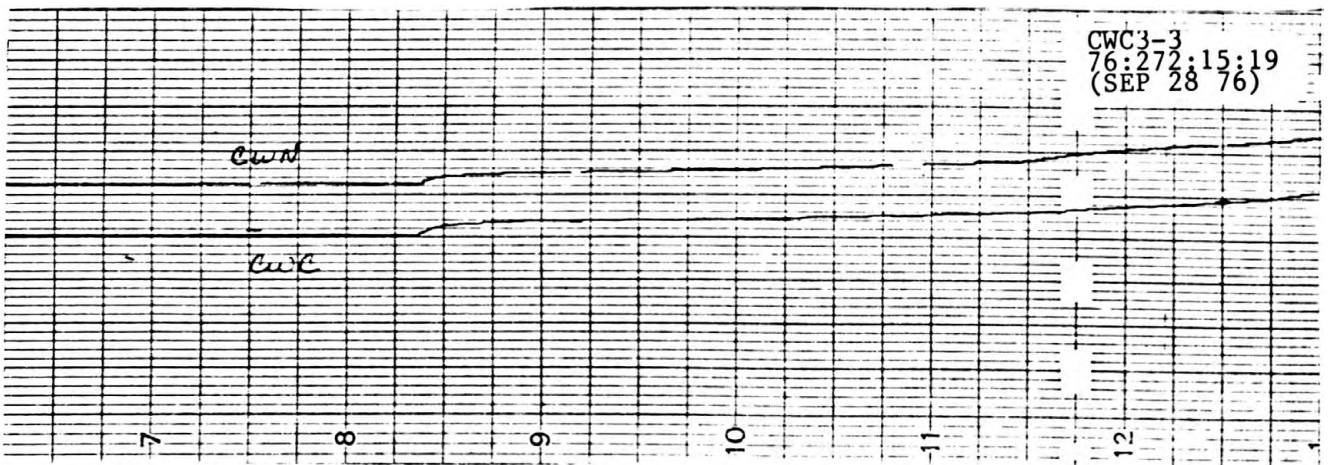
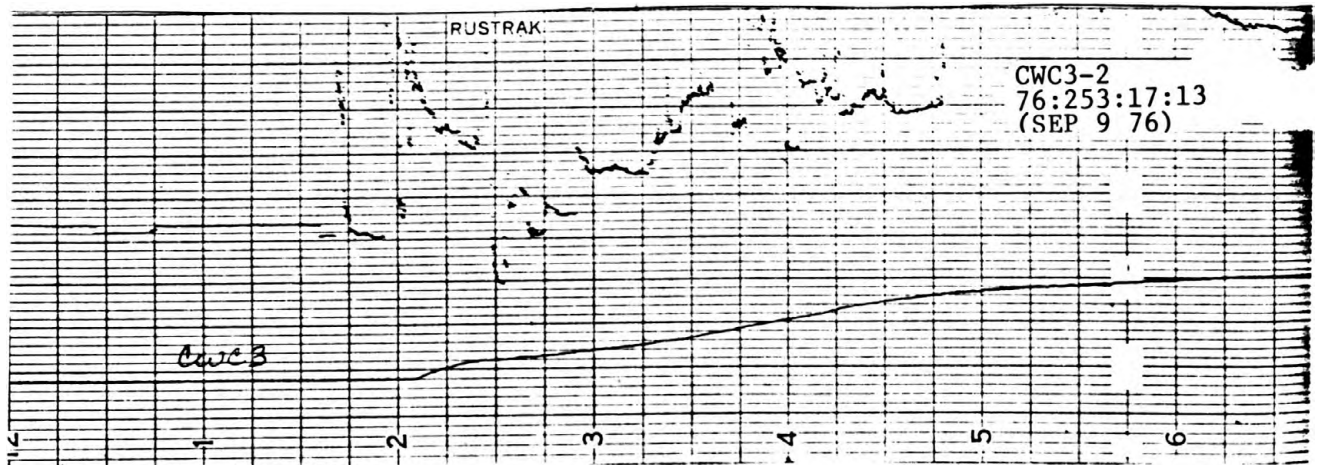
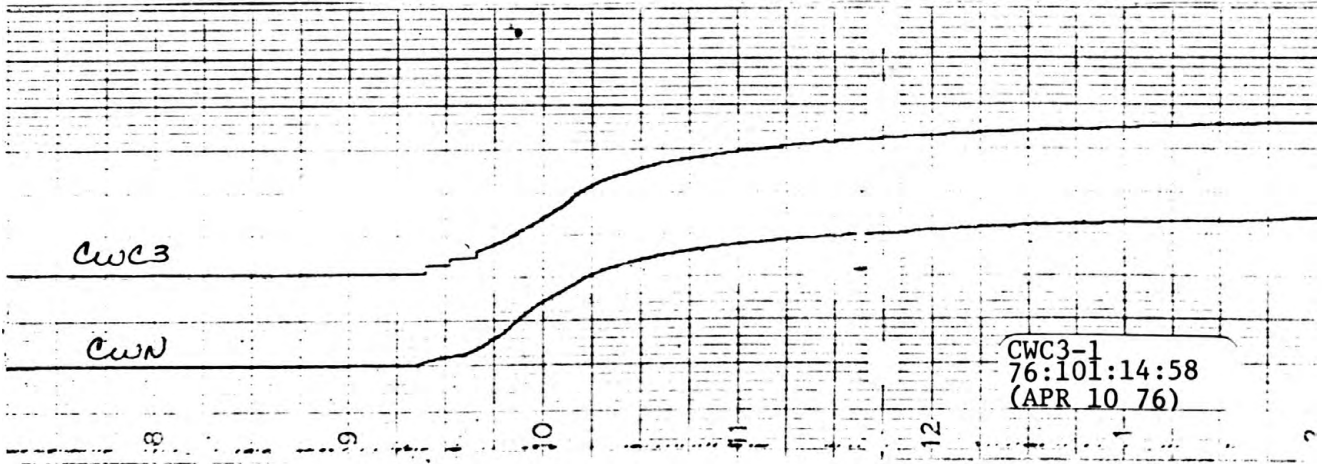
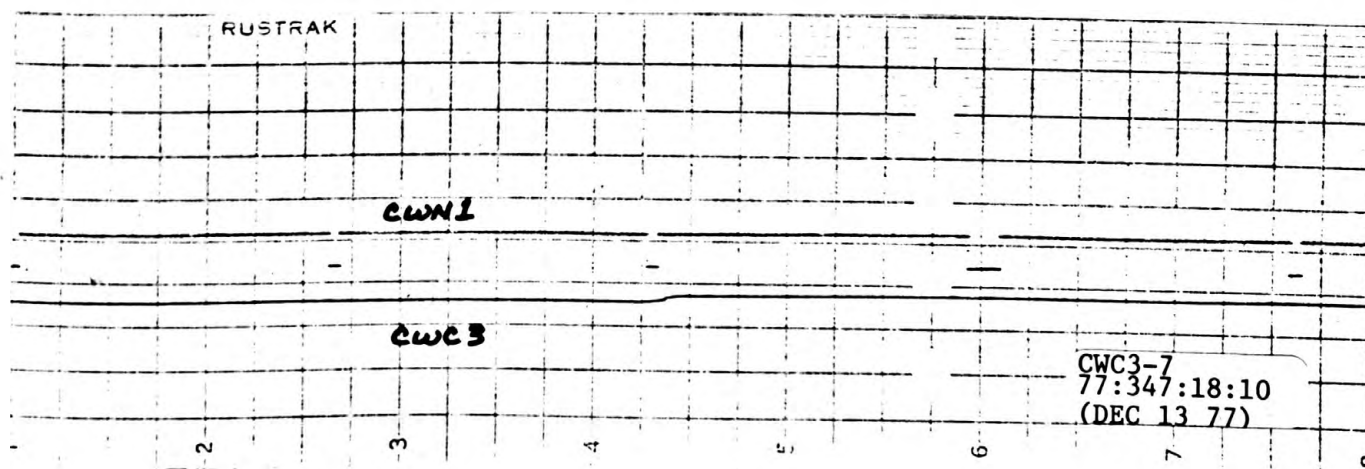
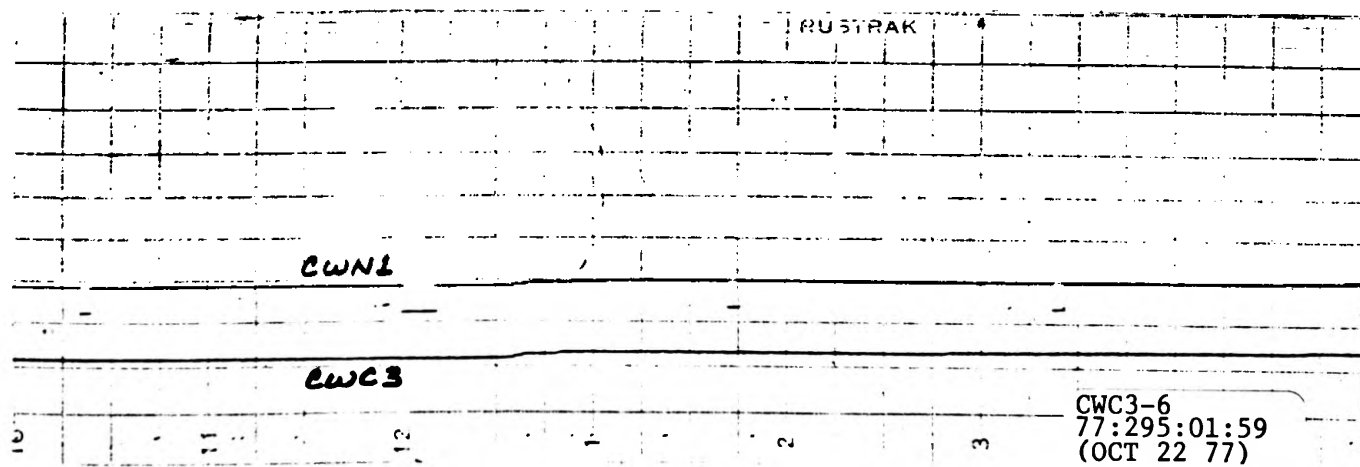
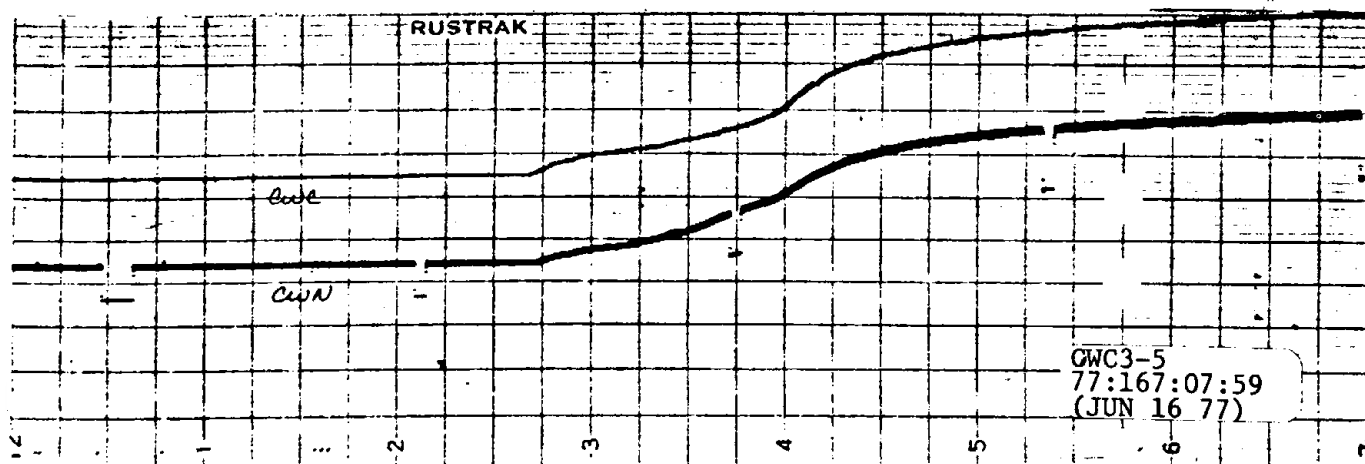
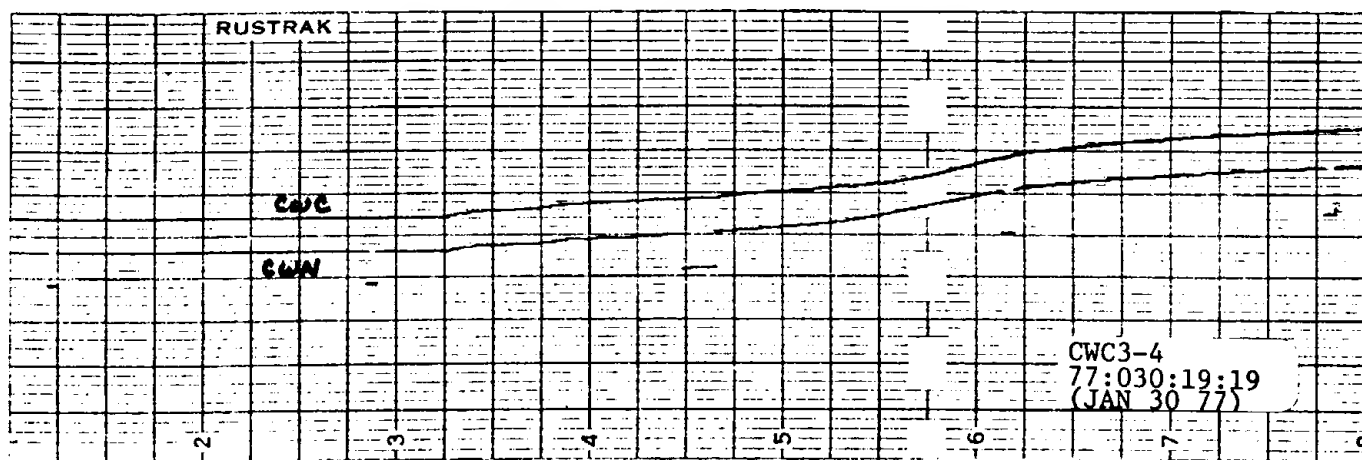


Table of CWC3 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. No.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	025	Jan. 25		0.27	*		
	101	Apr. 10	1458	4.07	1	1.02	1.00
	247	Sep. 3	2005	0.22	*		
	253	Sep. 9	1713	2.99	2	0.91	1.01
	272	Sep. 28	1519	1.92	3	0.91	1.01
1977	030	Jan. 30	1919	2.76	4	0.91	1.05
	167	Jun. 16	0759	>3.48	5	0.93	1.29
	295	Oct. 22	0159	1.12	6	0.89	1.08
				(Total after approx. 6 days)			
	347	Dec. 13	1810	0.22	7	0.91	1.08

*Refer to annual plot





STATION XPRI

48

Latitude $36^{\circ} 43.4'$
Longitude $121^{\circ} 20.9'$

Position 330.0 km
20 meter wire, $\phi=30^{\circ}$

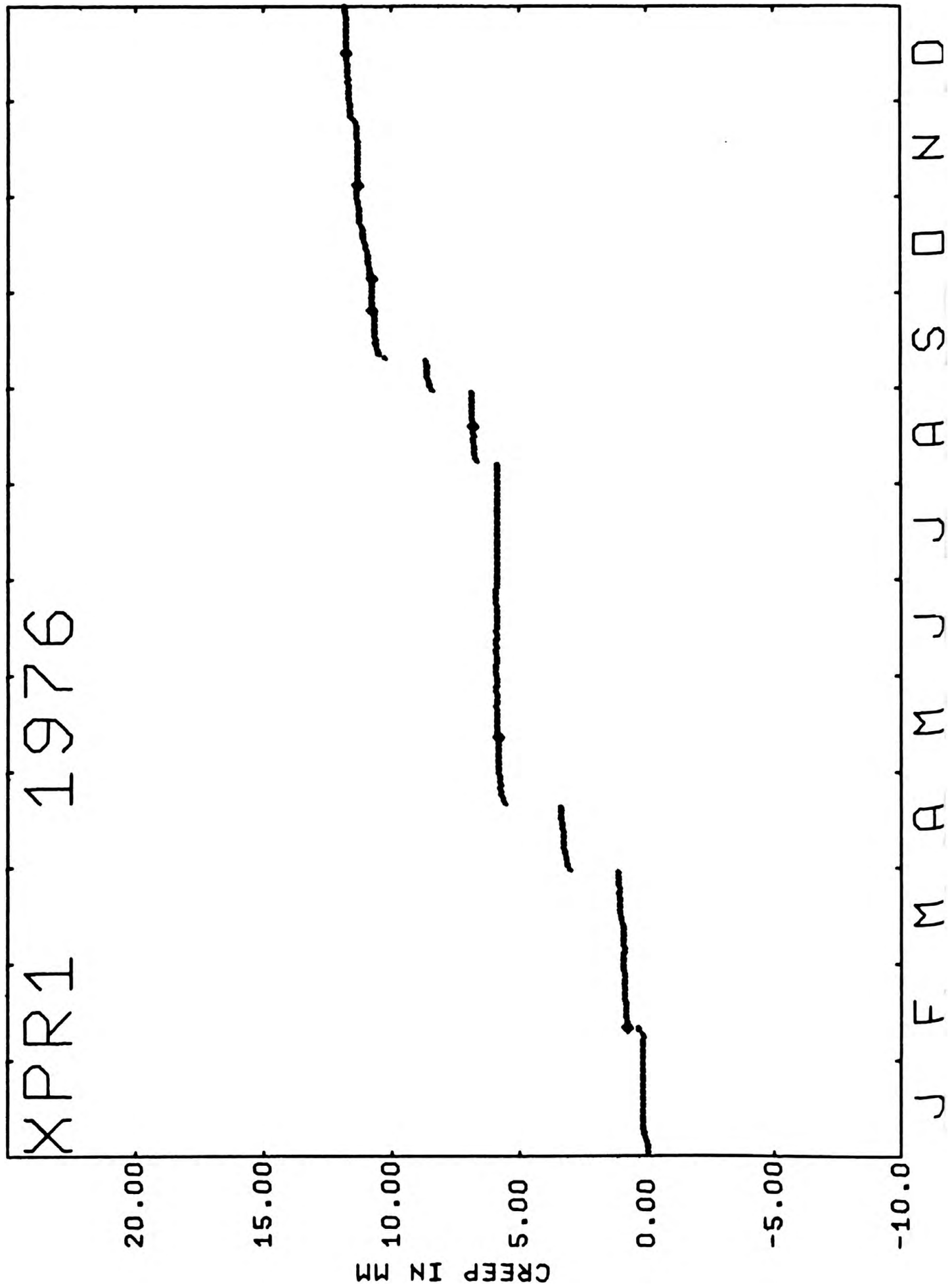
The Paicines Ranch creepmeter was installed during April and May, 1973, on the San Andreas fault at a site 20.9 km southeast of San Juan Bautista. The installation consists of a single wire entrenched about 1 meter below the surface within a prominent fault-line trough along the crest of a broad ridge. Creep activity at this site is composed of distinct events of up to about 2.5 mm in amplitude, superimposed on a background of low- to moderate-rate right-lateral slip. The average creep rate is about 13 mm/yr.

7.5 MINUTE SERIES (TOPOGRAPHIC)

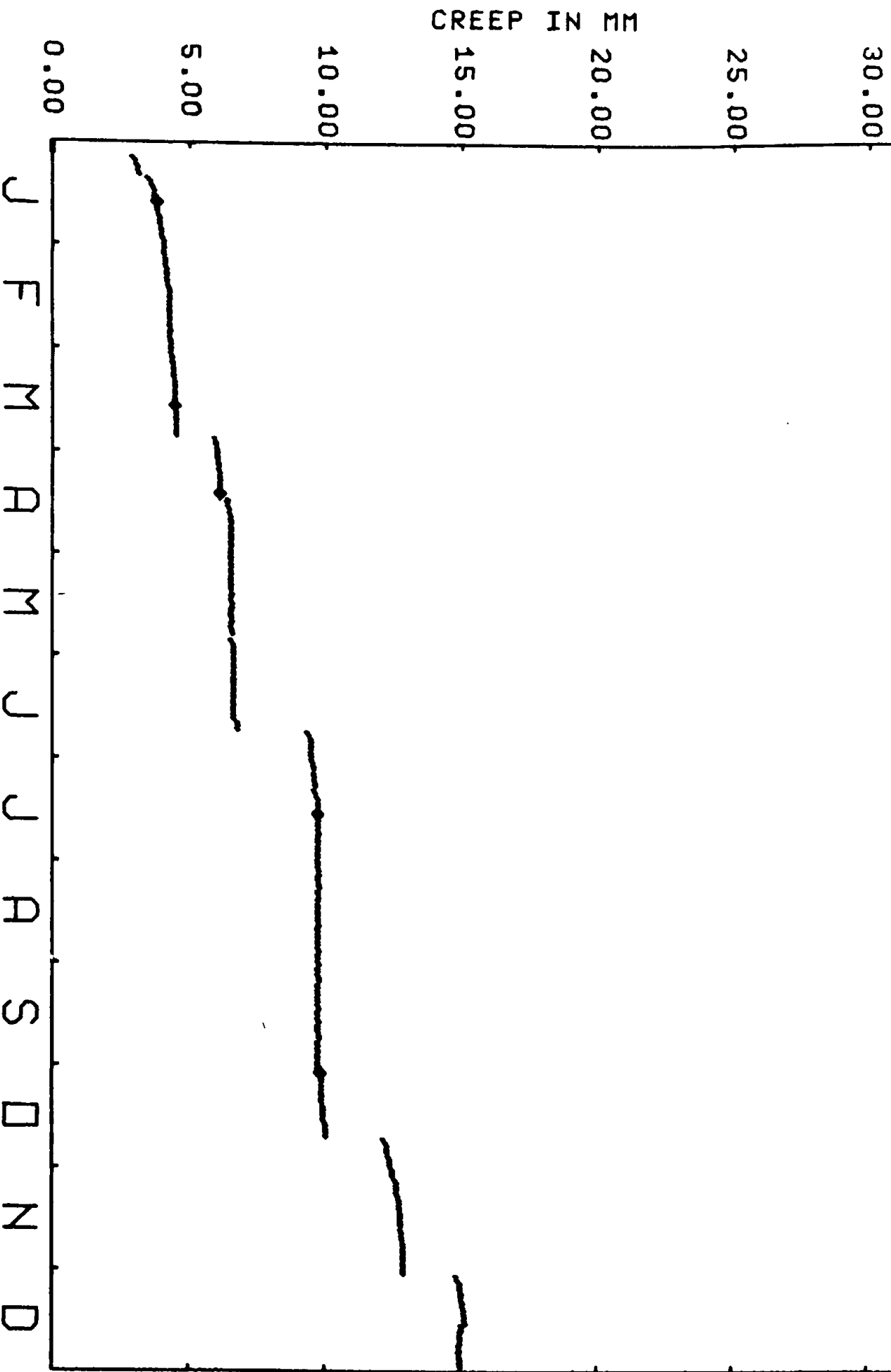
· XPR1 CORRECTED CREEPMETER READINGS (mm)

49

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					34.98	
FEB 10	1.01		1.01		35.99	
MAY 12	5.04		6.05		41.03	
AUG 19	0.98		7.03		42.01	
OCT 5	3.96		10.99		45.97	
NOV 4	0.53		11.52		46.50	
DEC 16	0.45		11.97		46.95	
<u>1977</u>						
JAN 18	3.85		3.85		50.80	
MAR 19	0.66		4.51		51.46	
APR 14	1.65		6.16		53.11	
JUL 18	3.62		9.78		56.73	
AUG 11	0.01		9.79		56.74	
OCT 3	0.06		9.85		56.80	



XPR1 1977



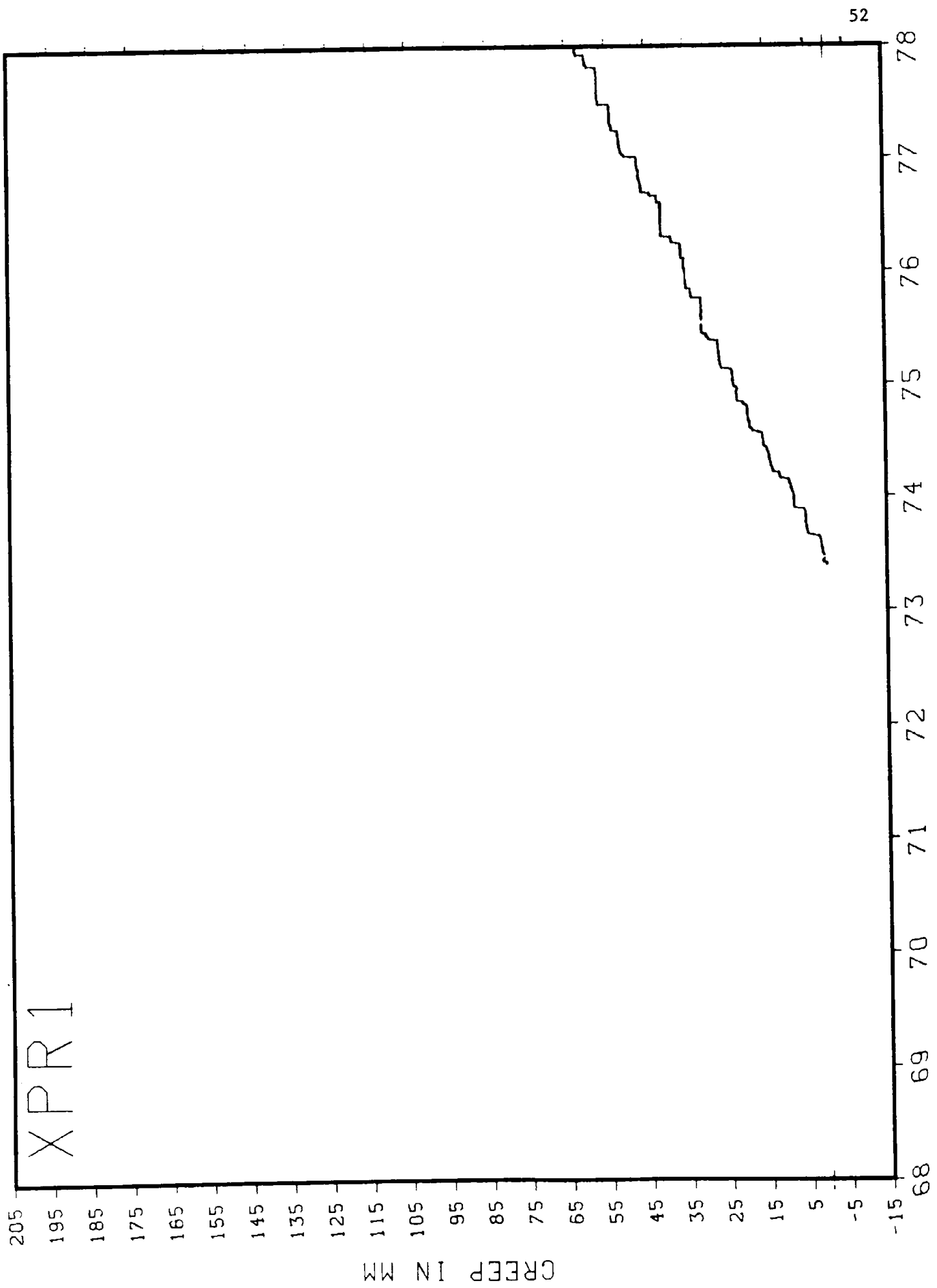
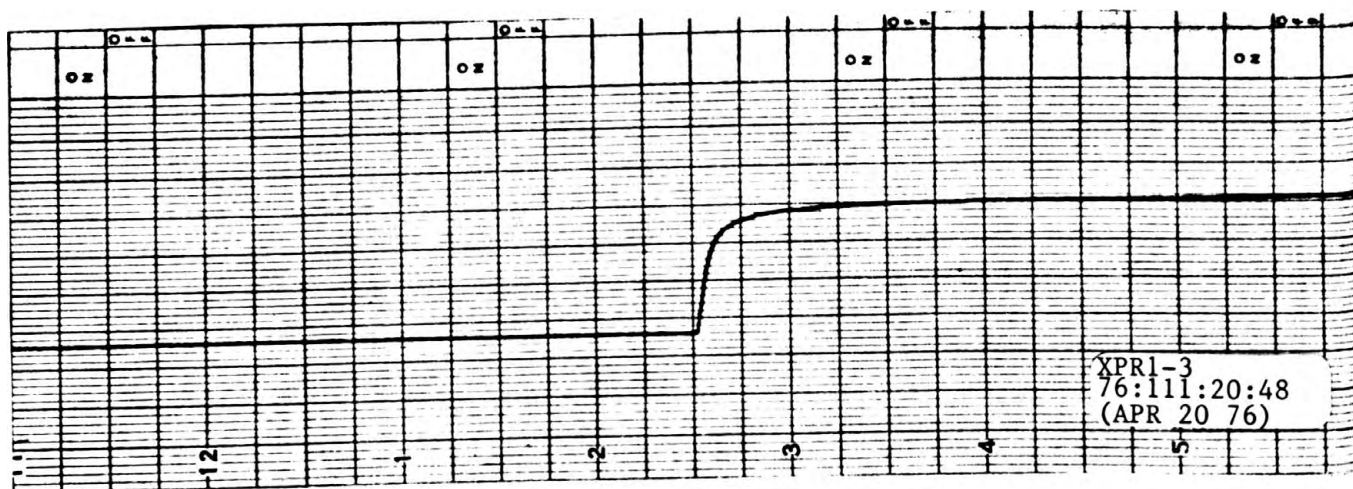
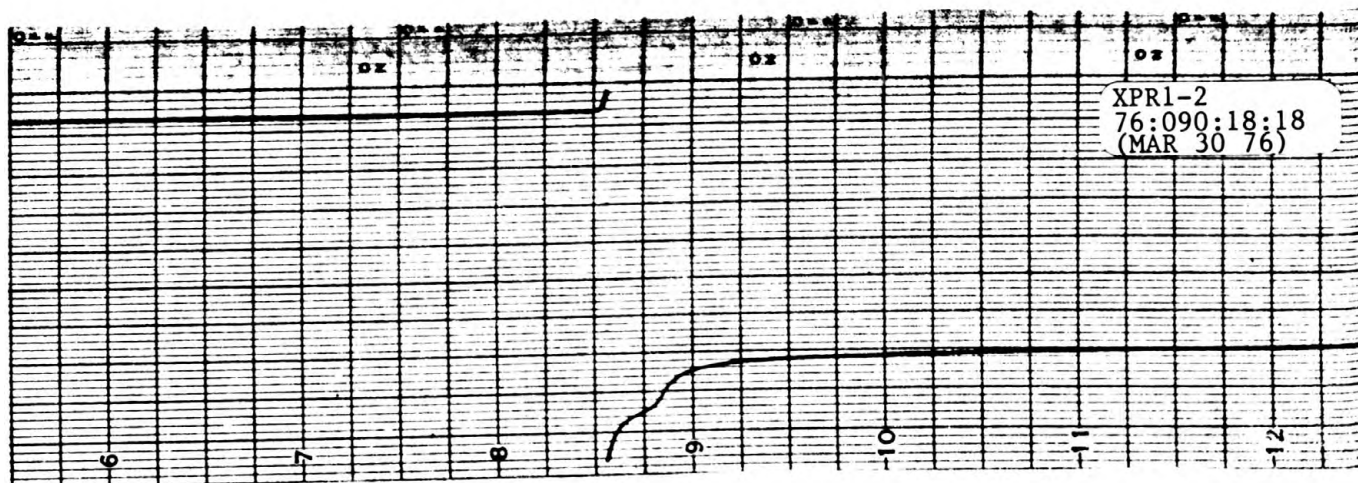
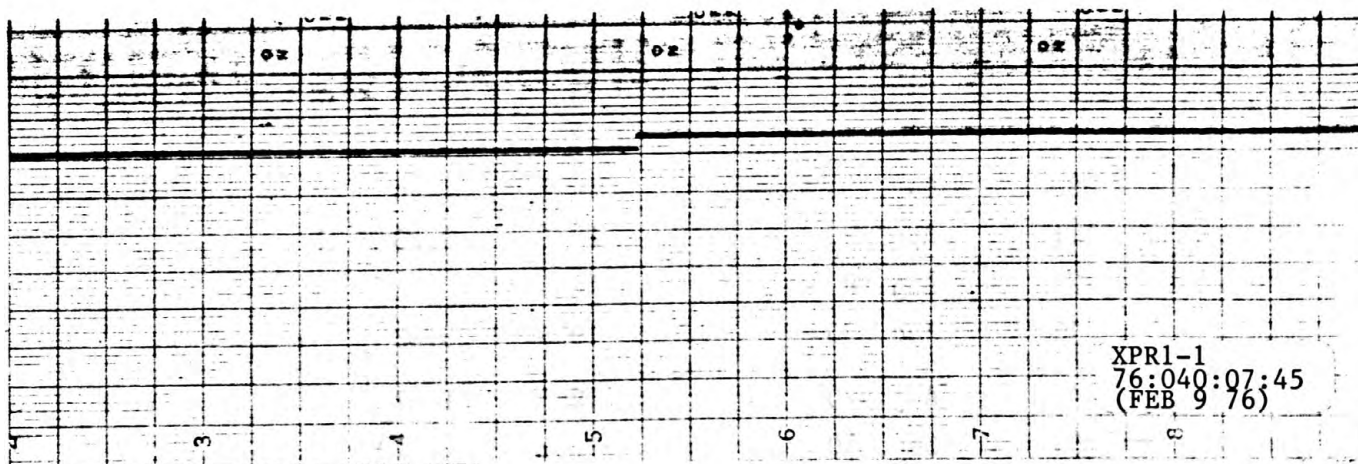


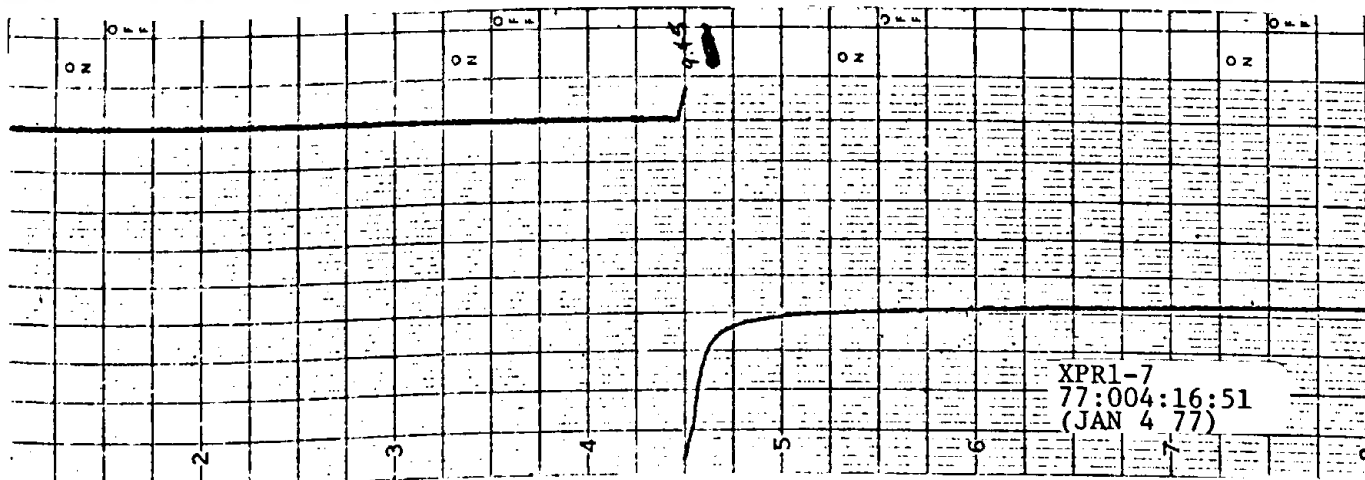
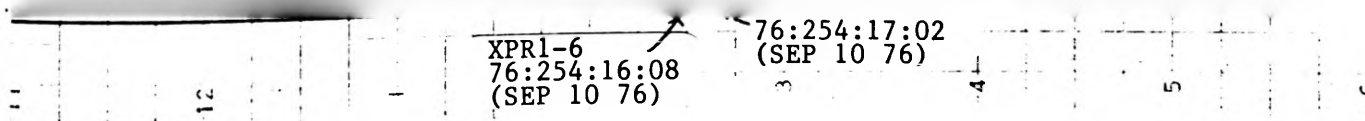
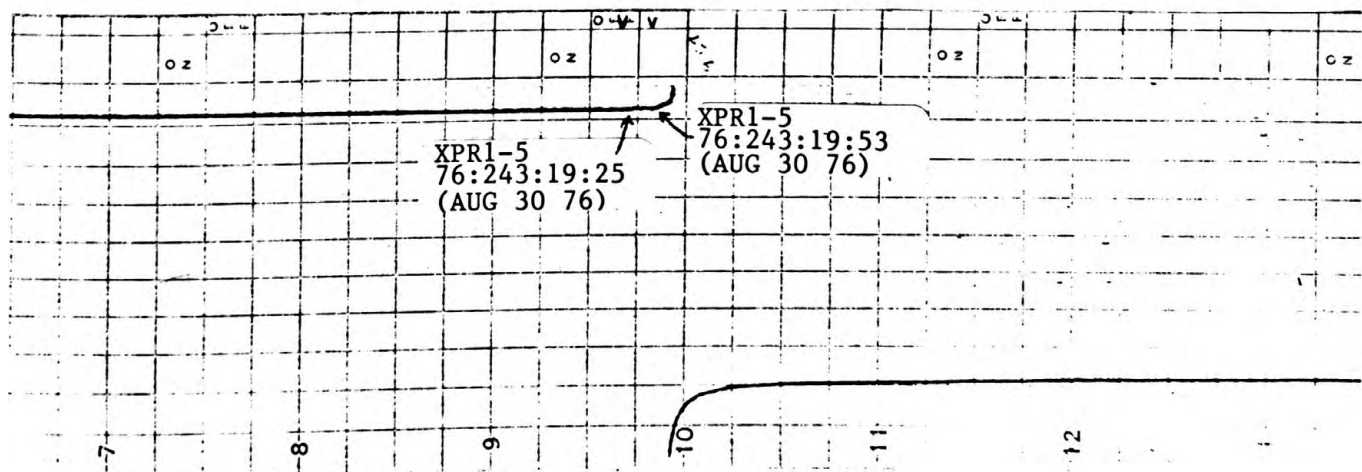
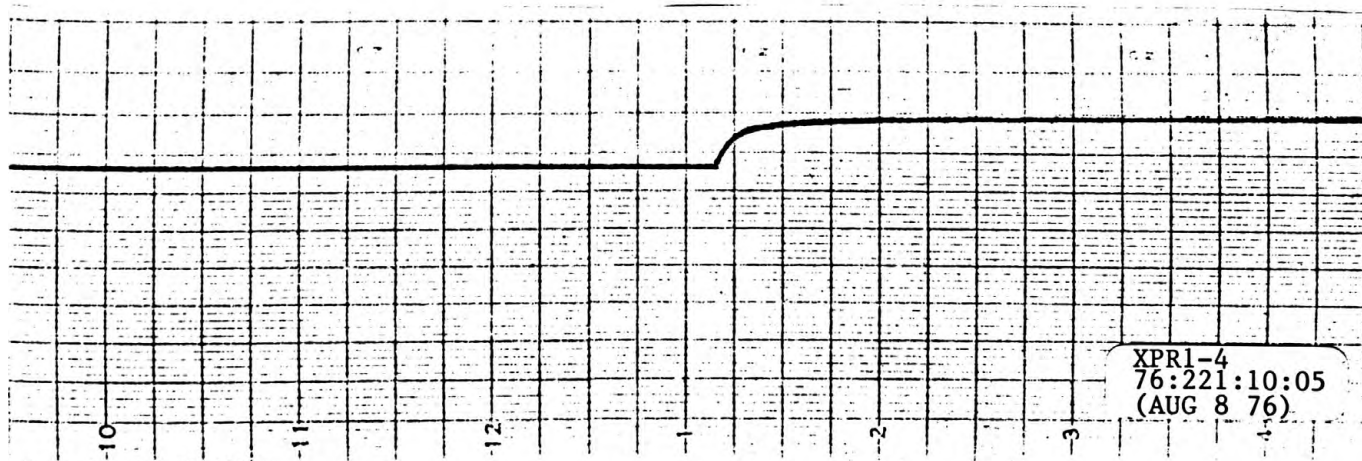
Table of XPR1 Events

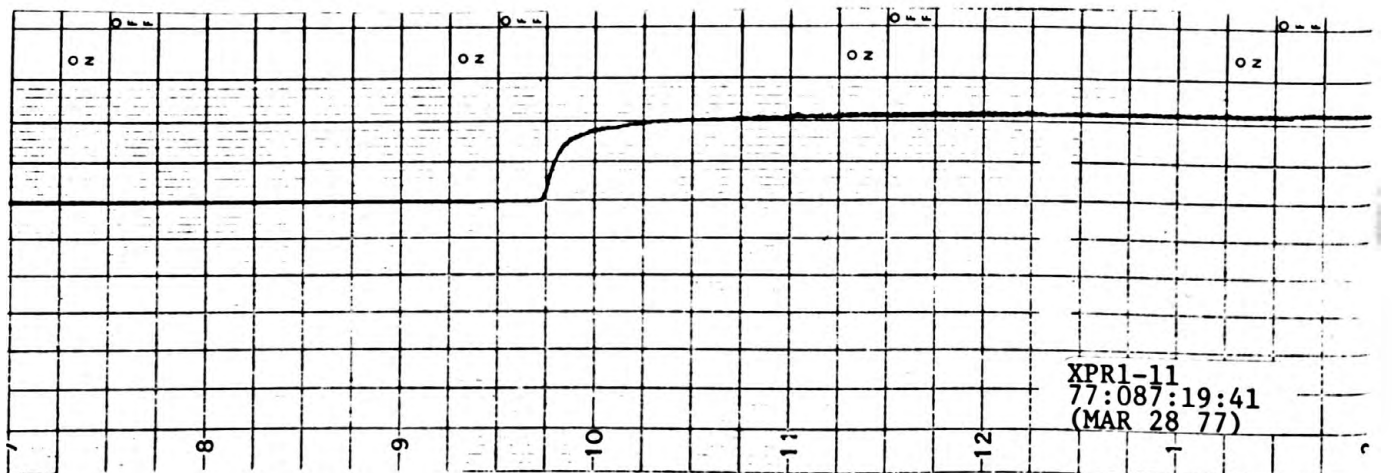
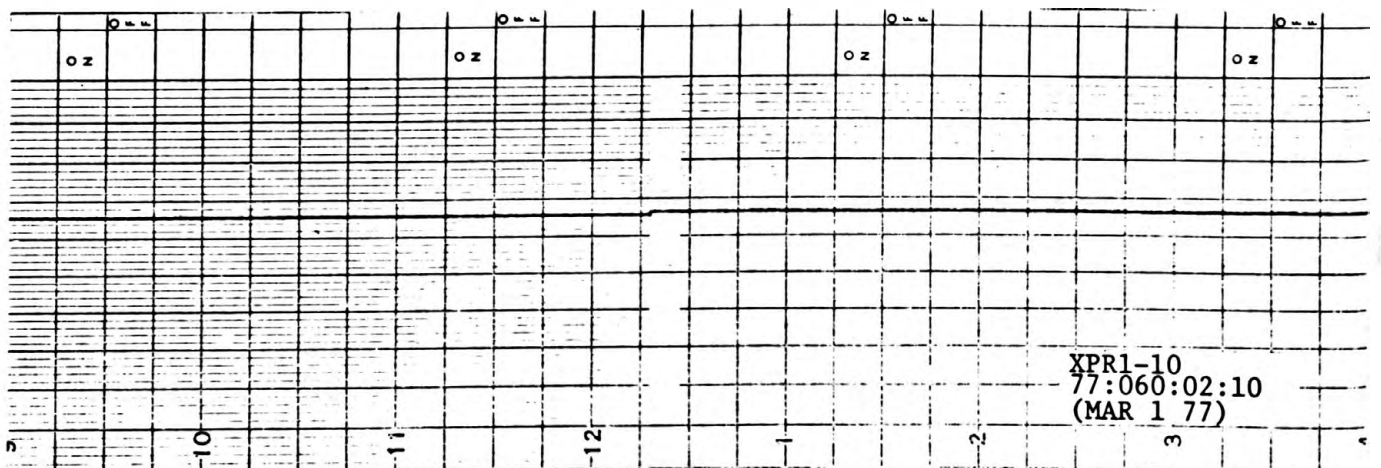
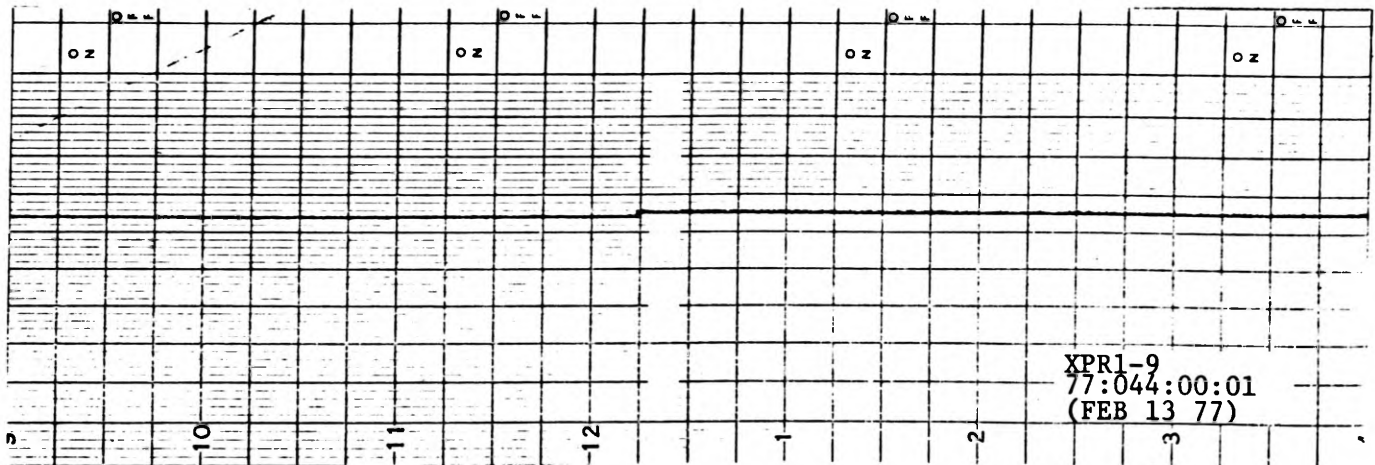
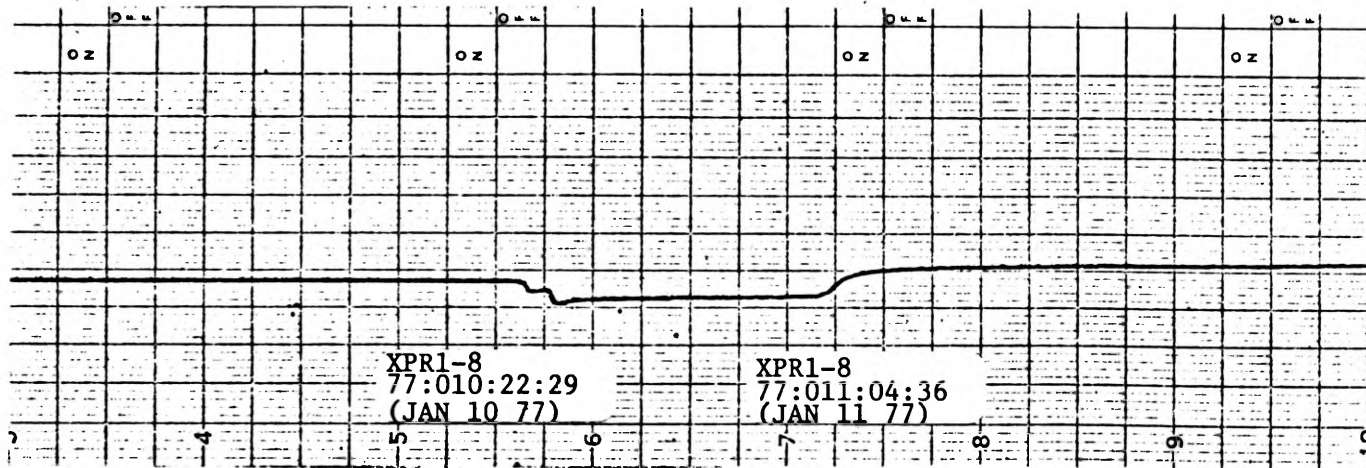
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. No.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	004-009	Jan. 4-9		0.21	*		
	040	Feb. 9	0745	0.17	1	1.00	1.029
	090	Mar. 30	1818	1.90	2	1.00	.6030
	111	Apr. 20	2048	2.23	3	1.00	.6030
	221	Aug. 8	1005	0.82	4	1.00	.6030
	243	Aug. 30	1925	0.03	5	1.00	.6030
	243	Aug. 30	1953	1.57		1.00	.6030
	254	Sep. 10	1608	0.04	6	1.00	.6030
	254	Sep. 10	1702	1.84		1.00	.6030
	297	Oct. 22-23		0.14	*		
	329	Nov. 24-25	0157	0.25	*	1.00	.6030
1977	004	Jan. 4	1651	2.85	7	1.00	.6205
	010	Jan. 10	2229	-0.28	8	1.00	.6205
	011	Jan. 11	0436	0.55		1.00	.6205
	044	Feb. 13	0001	0.07	9	1.00	.5984
	060	Mar. 1	0210	0.03	10	1.00	.5984
	087	Mar. 28	1941	1.42	11	1.00	.5984
	105	Apr. 15	1852	0.60	12	1.00	.6158
	171	Jun. 20	0621	0.13	13	1.00	.6158
	174	Jun. 23	1808	2.51	14	1.00	.6158
	175	Jun. 24	0949	0.05	14	1.00	.6158
	295	Oct. 22	1421	2.13	15	1.00	.6231
	337	Dec. 3	0641	1.97	16	1.00	.6231
	351	Dec. 17 ^{1/}	2208	-0.18	17	1.00	.6231

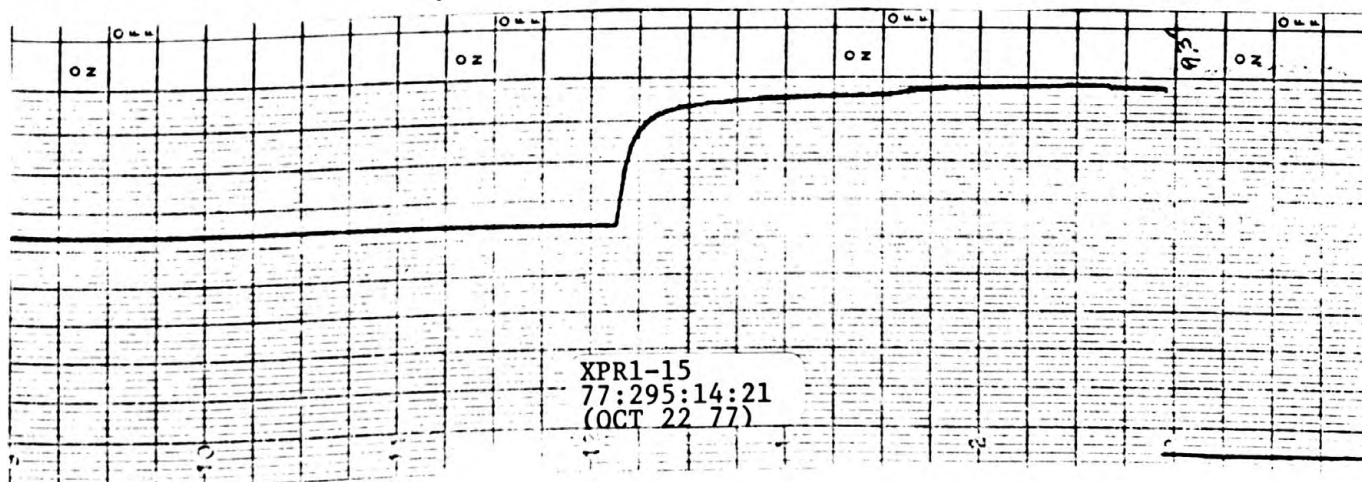
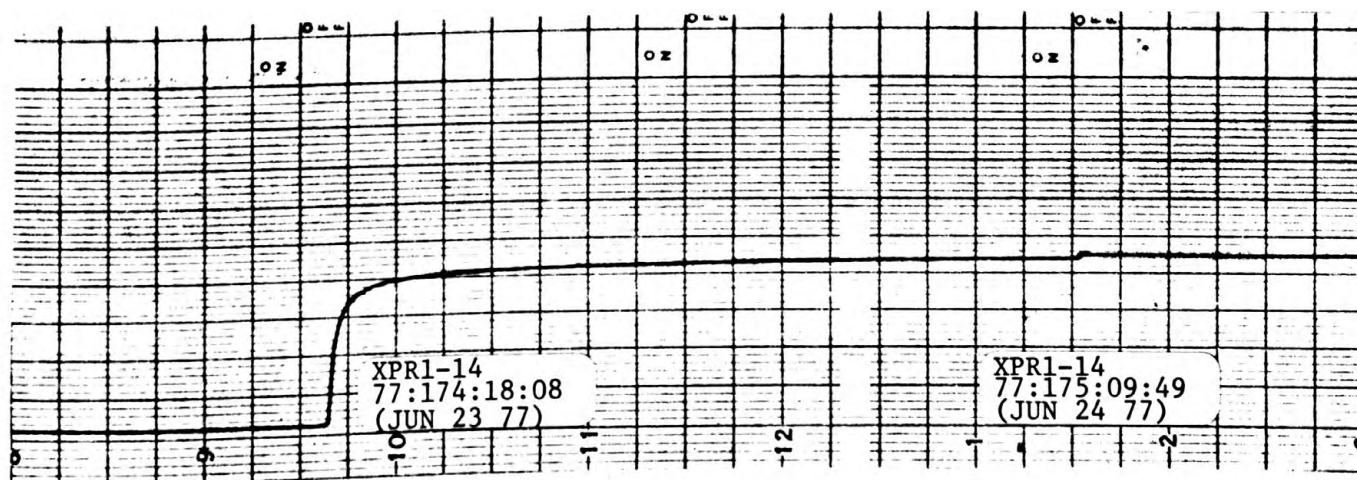
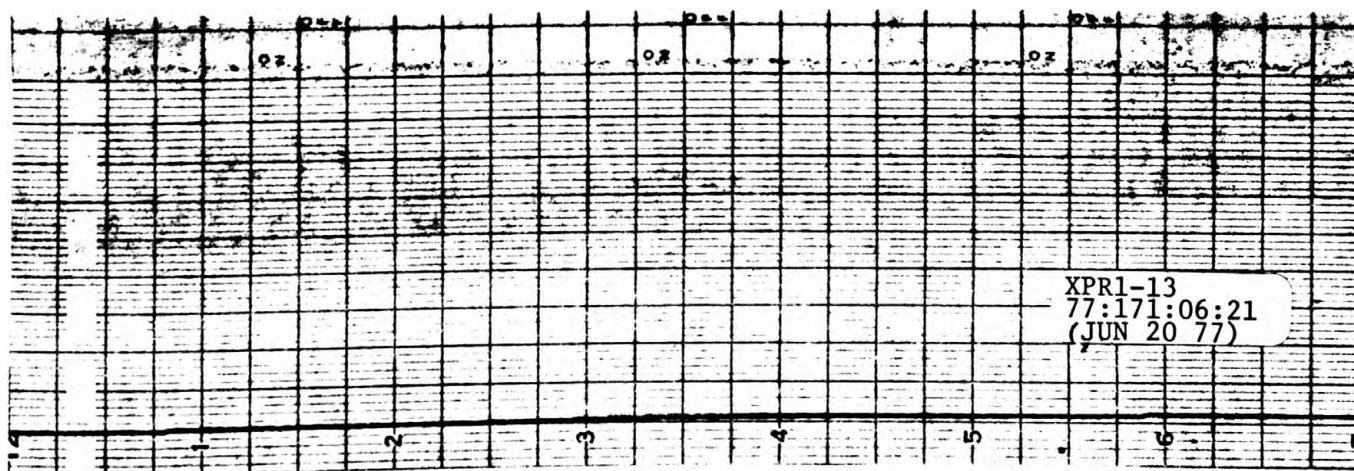
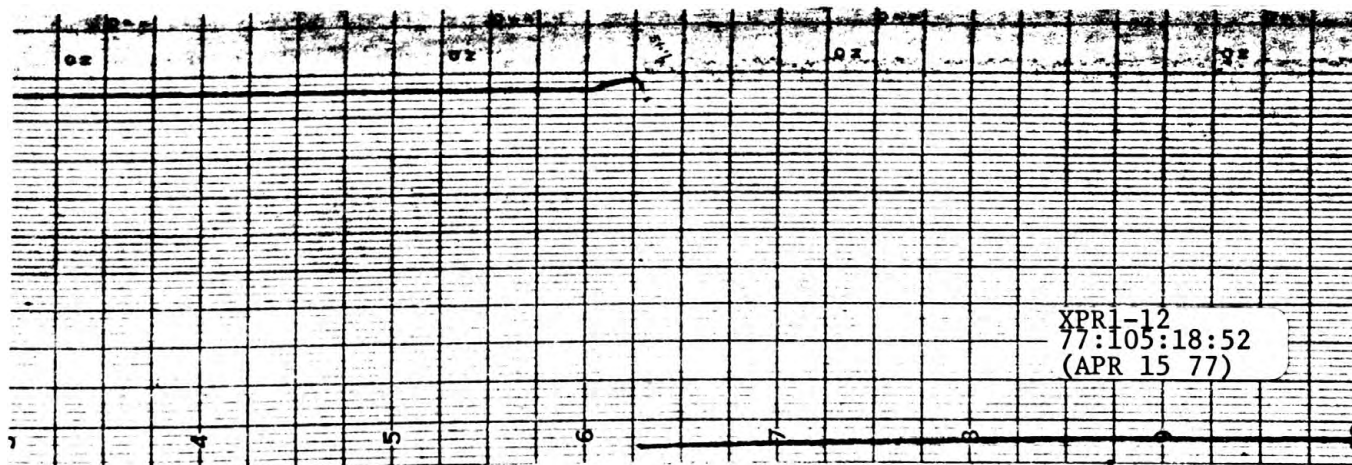
^{1/} Prob. rainfall

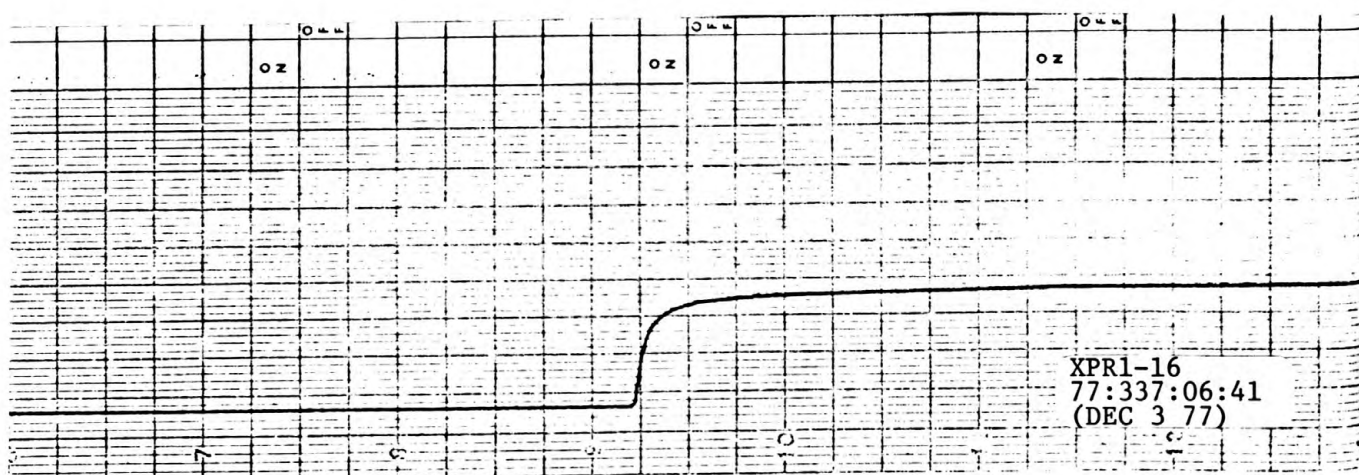
* Refer to Annual Plot









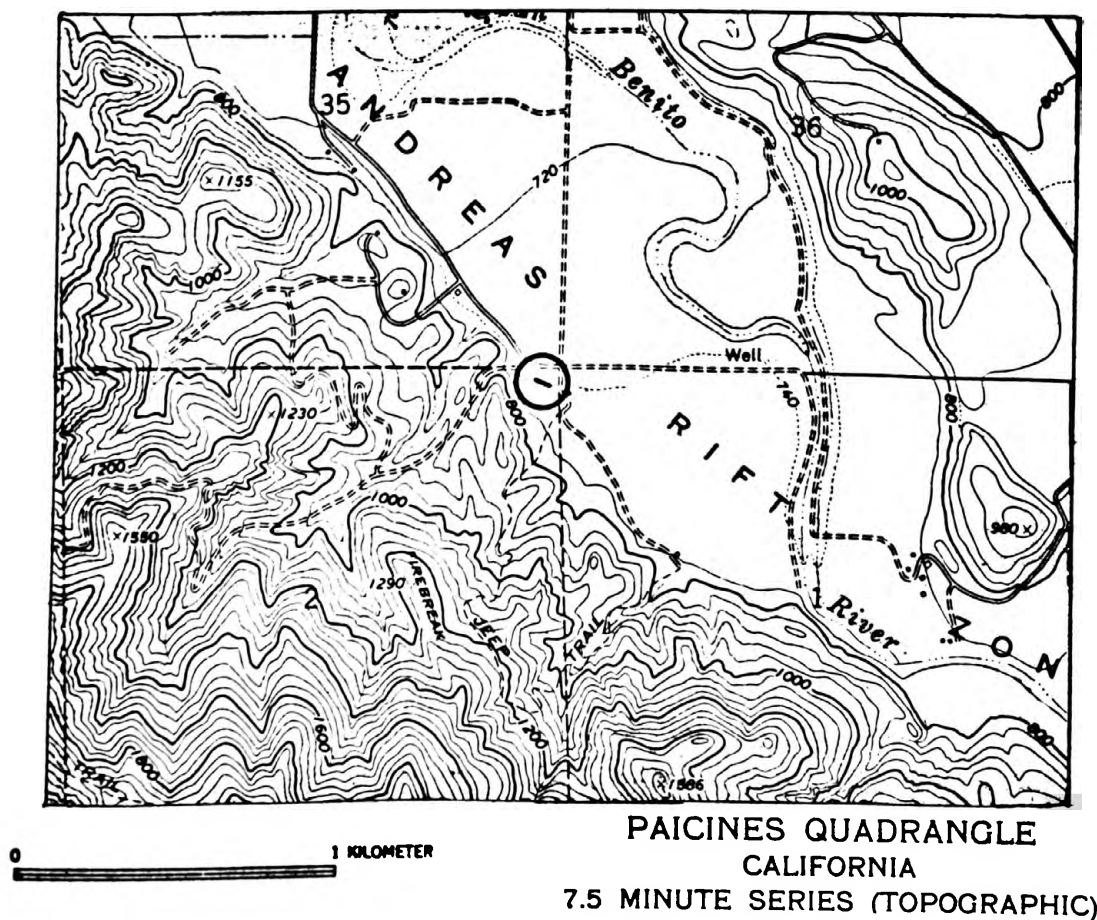


STATION XFL1

Latitude 36 39.9'
 Longitude 121 16.3'

Position 339.4 km
 27 meter wire, $\phi=30$

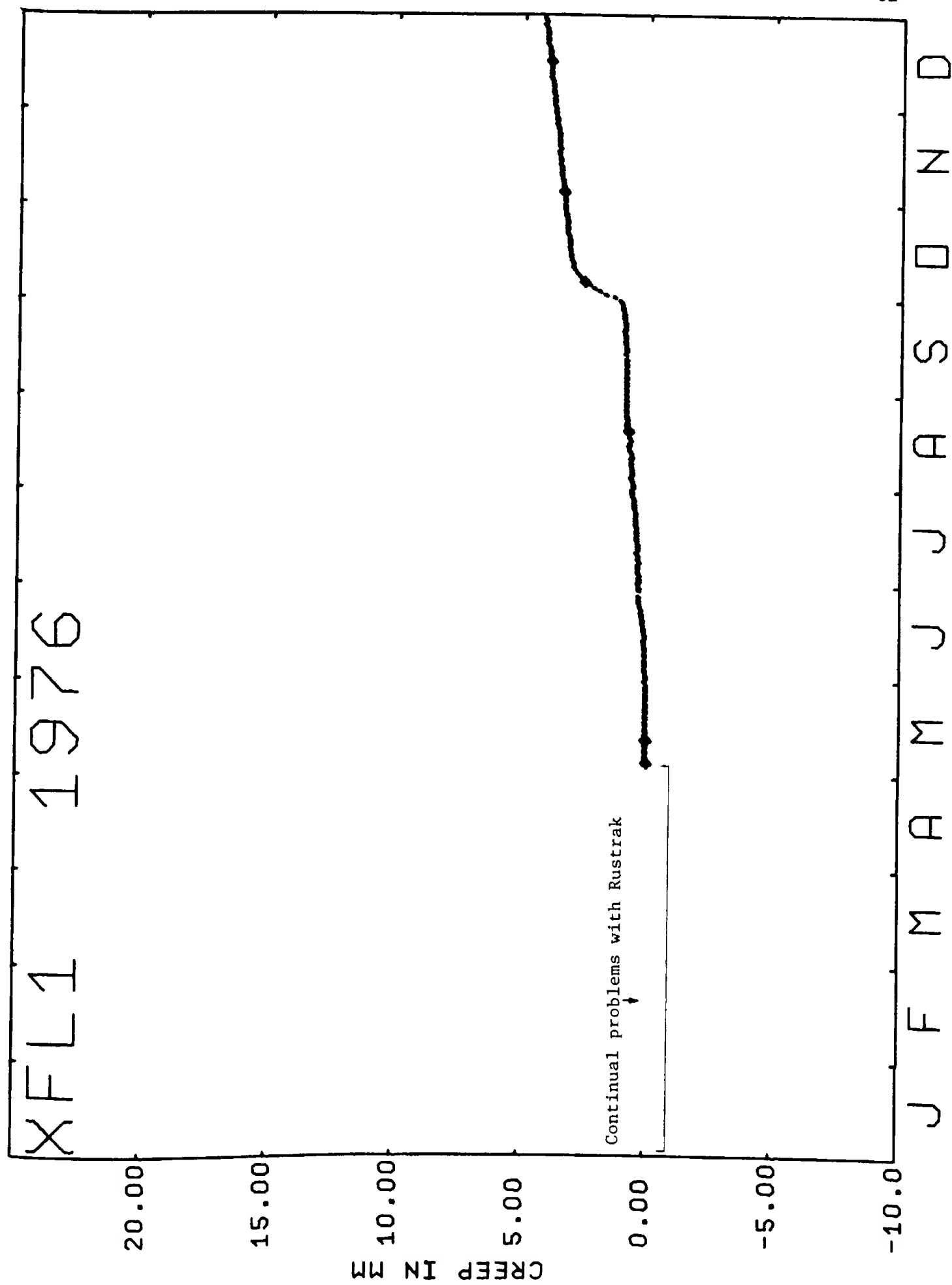
The Lewis Ranch creepmeter was installed during April, 1973, on the San Andreas fault at a site 30.3 km southeast of San Juan Bautista. The installation consists of a single wire entrenched about 1 meter below the surface across a prominent scarp on the northeast side of a bedrock pressure ridge, adjacent to the southwest edge of an abandoned river channel. Creep activity at this site is composed of distinct, slow events of several days duration and up to about 3 mm in amplitude, superimposed on a background of low- to moderate-rate steady slip. The average creep rate is about 10 mm/yr.



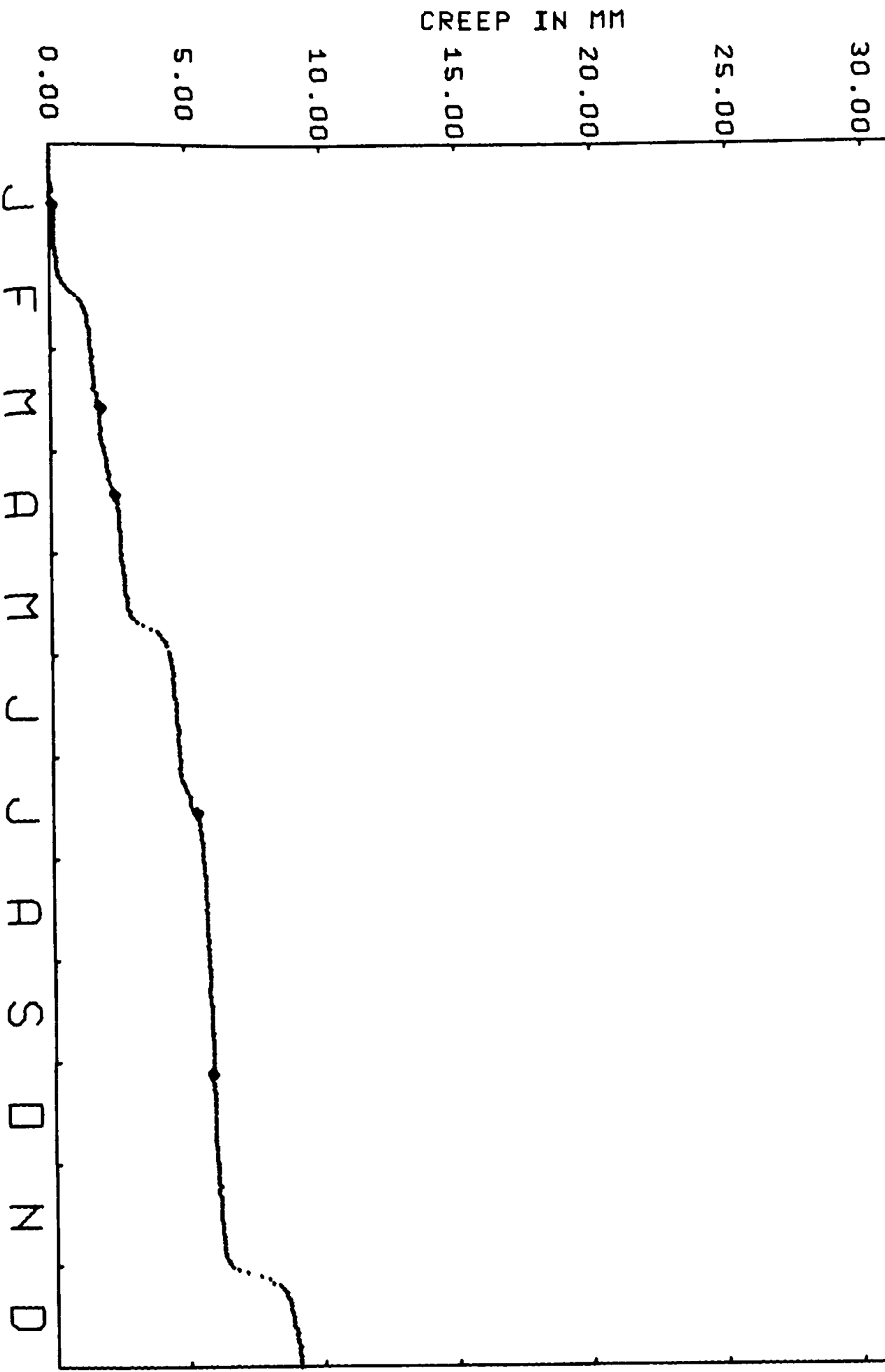
XFL1 CORRECTED CREEPMETER READINGS (mm)

60

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					21.23	
FEB 10	0.57		0.57		21.80	
MAY 5	3.42		3.99		25.22	
MAY 12	0.00		3.99		25.22	
AUG 19	0.78		4.77		26.00	
OCT 6	1.82		6.59		27.82	
NOV 4	0.81		7.40		28.63	
DEC 16	0.59		7.99		29.22	
<u>1977</u>						
JAN 18	0.33		0.33		29.55	
MAR 19	1.75		2.08		31.30	
APR 14	0.48		2.56		31.78	
JUL 18	2.99		5.55		34.77	
AUG 12	-0.27		5.28		34.50	
OCT 4	0.81		6.09		35.31	
NOV 16	0.27		6.36		35.58	



XFL1 1977



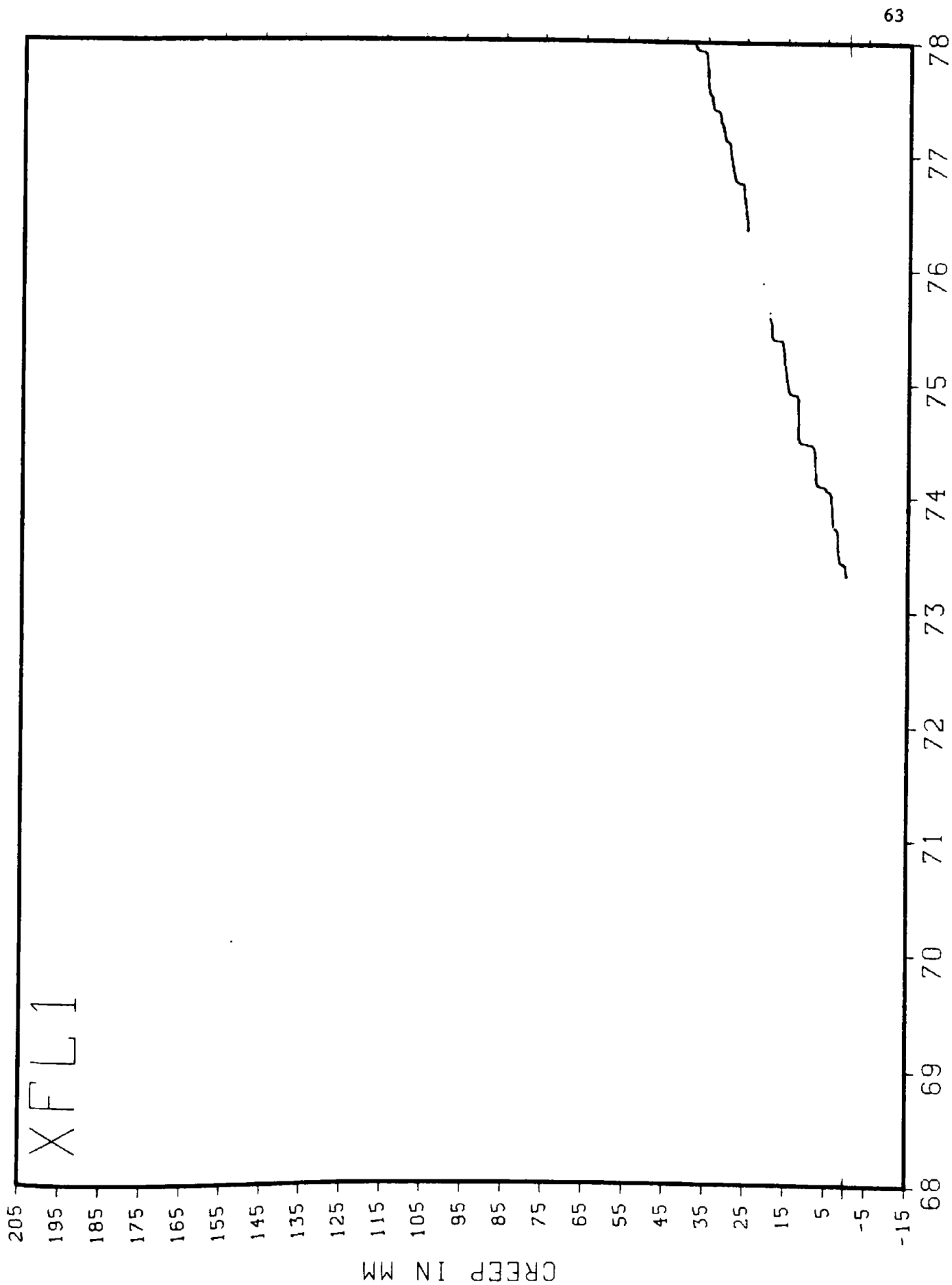


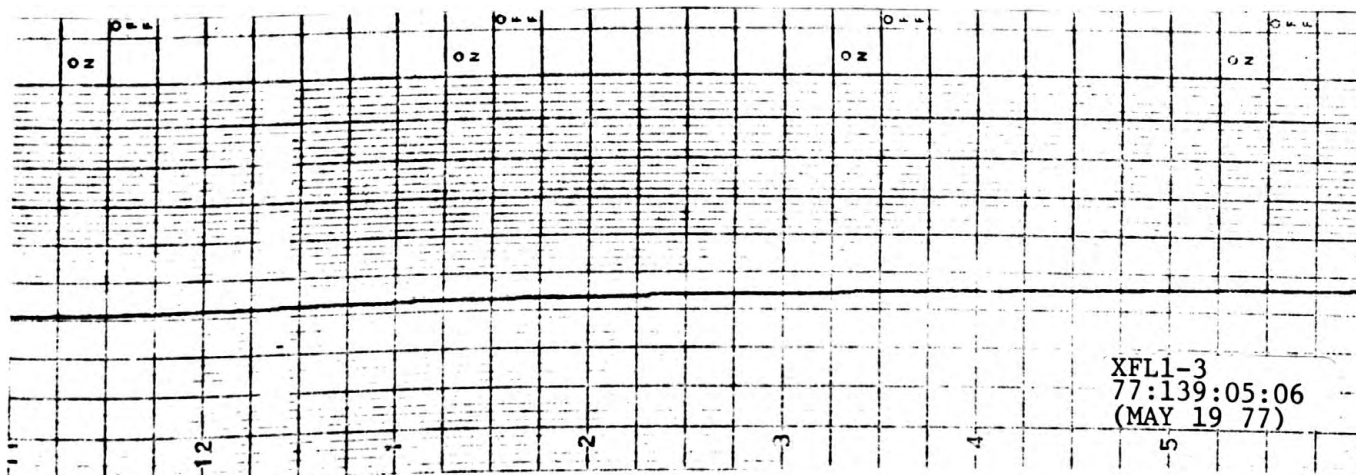
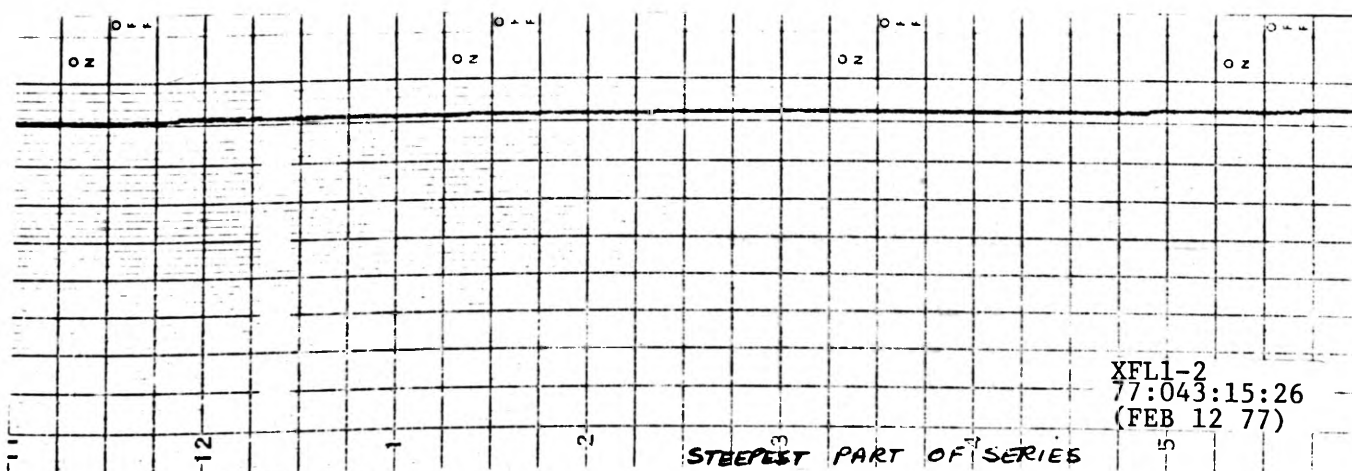
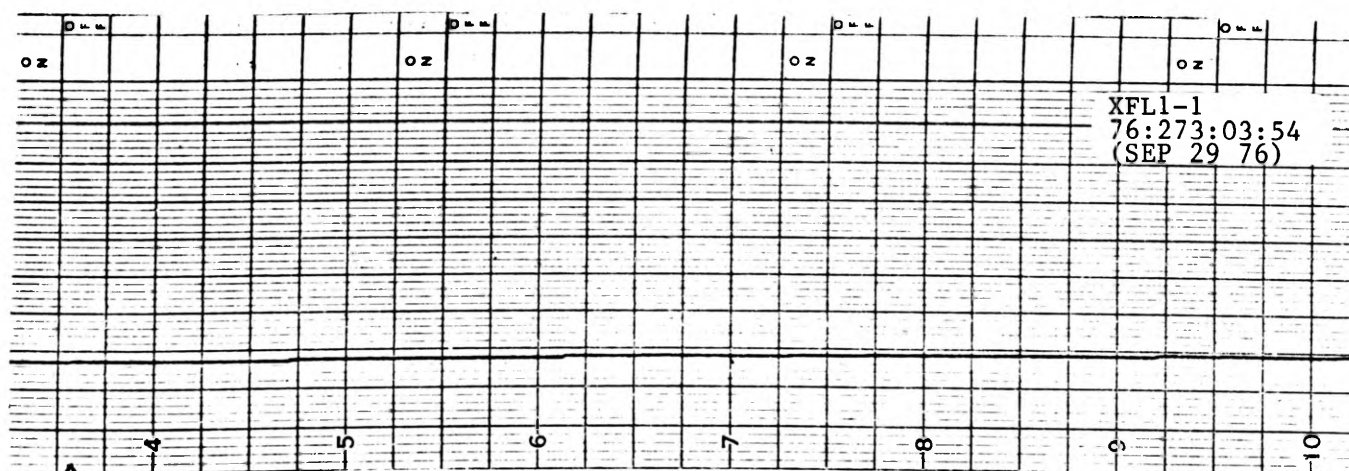
Table of XFL1 Events

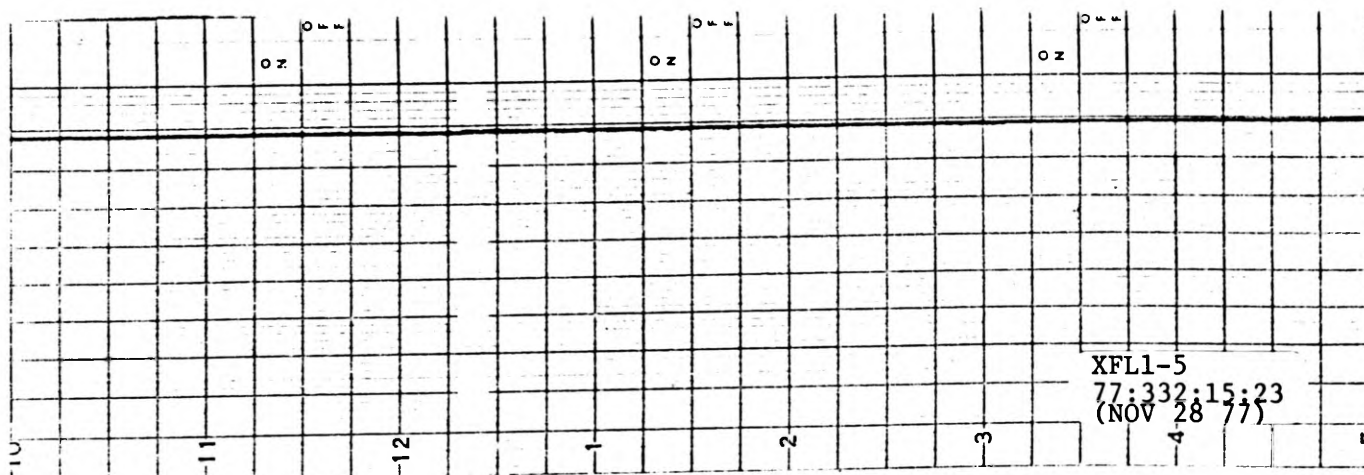
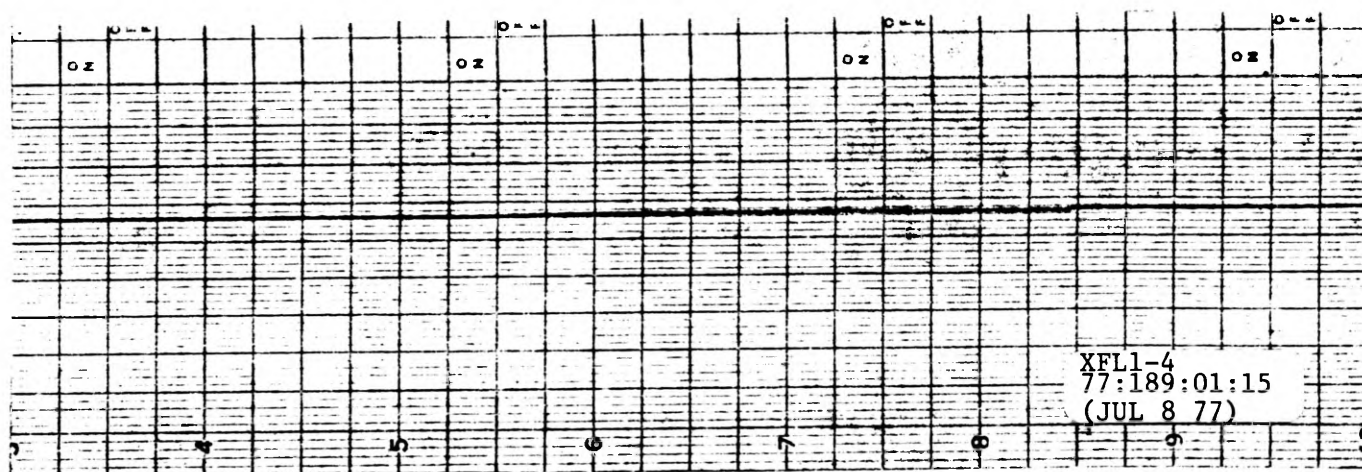
64

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	273	Sep. 29	0354	1.94	1 (onset & steepest part of 10-day event)	1	.5976
1977	043	Feb. 12	1526	0.32 ^{1/}	2,* (Steepest part)	1	.5990
	139	May 19	0506	1.49	3,*	1	.6046
	189	Jul. 8	0115	0.38	4,*	1	.6046
	332	Nov. 28	1523	2.16	5,* (Total over 11-day period)	1	.6064

^{1/} Total of whole series = 0.99

* Refer to annual plot





STATION XFL2

67

Latitude 36° 39.9'

Position 339.4 km

Longitude 121° 16.3'

10 meter wire, $\theta=45^\circ$

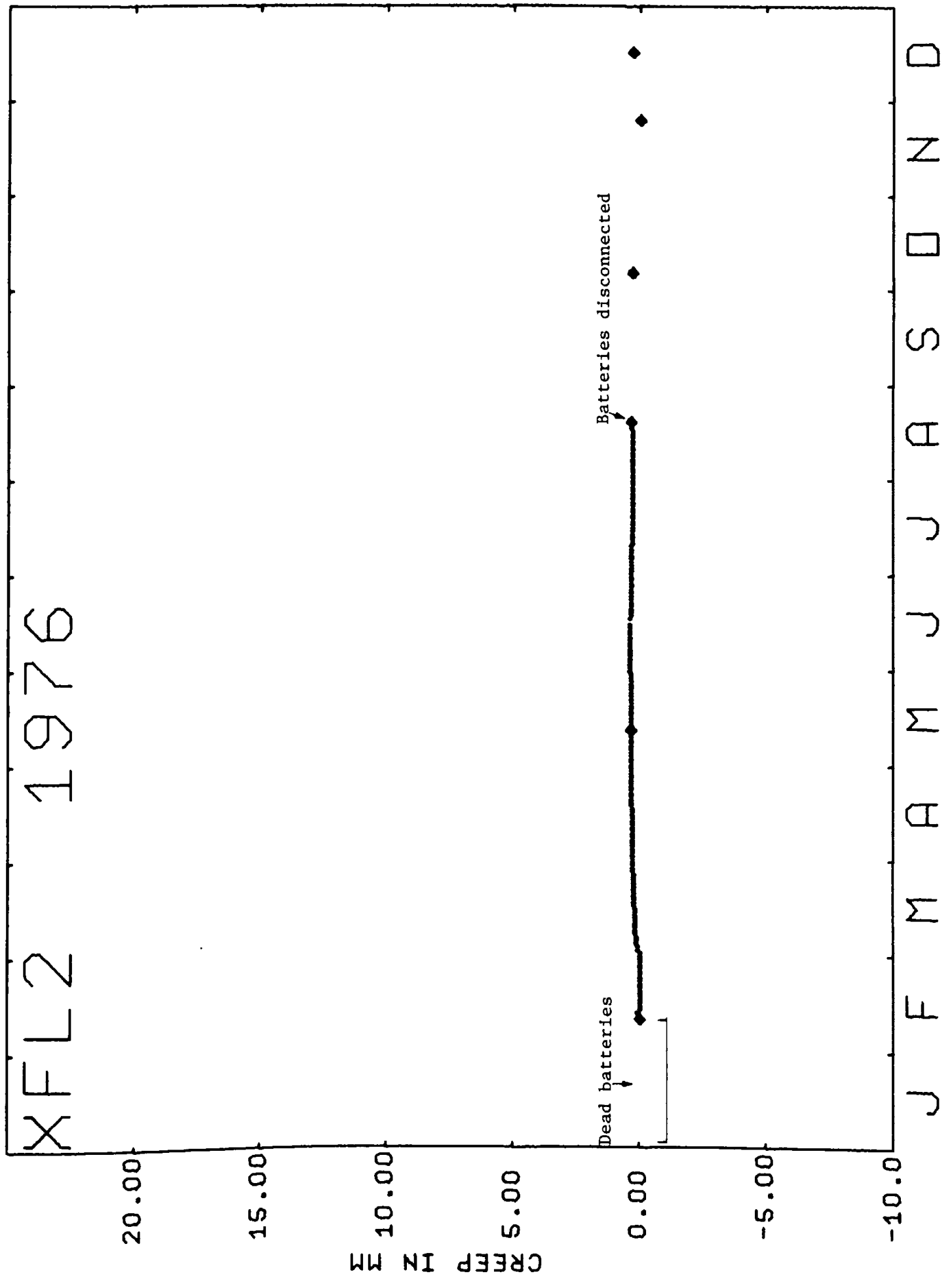
The Lewis Ranch strainmeter was installed during April, 1973, on the southwest side of a pressure ridge, about 63 meters south of XFL1 (see XFL1 station description). The installation consists of a single wire entrenched in a N-S orientation about 1 meter below the surface in alluvium and weathered bedrock. The instrument was designed to monitor near-field strain changes associated with slip on the adjacent slip zone, but infrequent, low-amplitude creep events of up to 0.05 mm recorded at the site indicate that XFL2 is within part of a wide shear zone that is undergoing permanent deformation at very low rates. The site was abandoned on April 20, 1978.

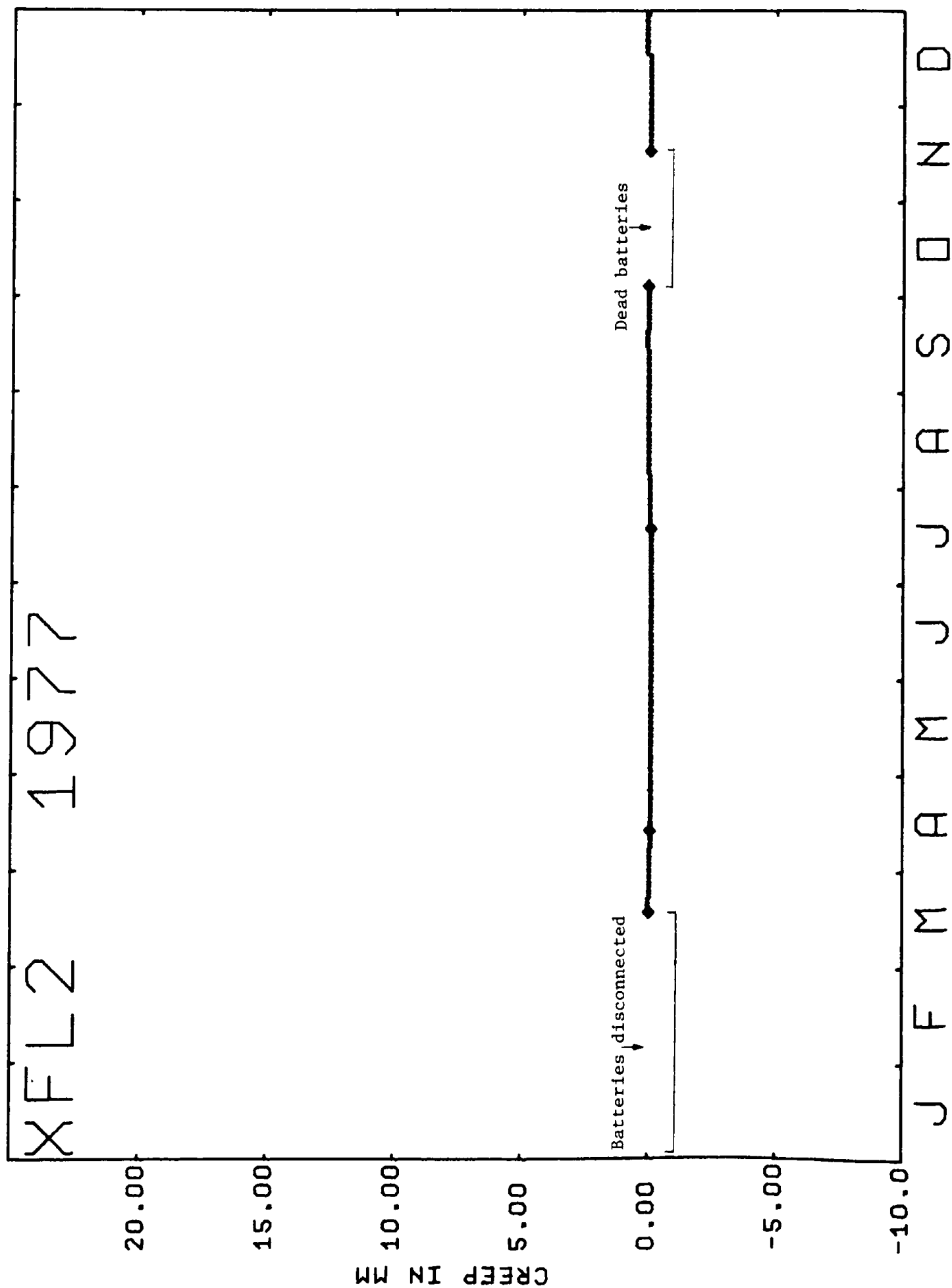
7.5 MINUTE SERIES (TOPOGRAPHIC)

XFL2 CORRECTED CREEPMETER READINGS (mm)

68

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					-1.41	
FEB 10	-0.03		-0.03		-1.44	
MAY 12	0.32		0.29		-1.12	
AUG 19	0.01		0.30		-1.11	
OCT 6	-0.04		0.26		-1.15	
NOV 4	0.00		0.26		-1.15	
DEC 16	0.00		0.26		-1.15	
<u>1977</u>						
JAN 18	0.07		0.07		-1.08	
MAR 19	-0.05		0.02		-1.13	
APR 14	-0.08		-0.06		-1.21	
JUL 18	0.02		-0.04		-1.19	
AUG 12	0.11		0.07		-1.08	
OCT 4	-0.01		0.06		-1.09	
NOV 16	-0.06		0.00		-1.15	





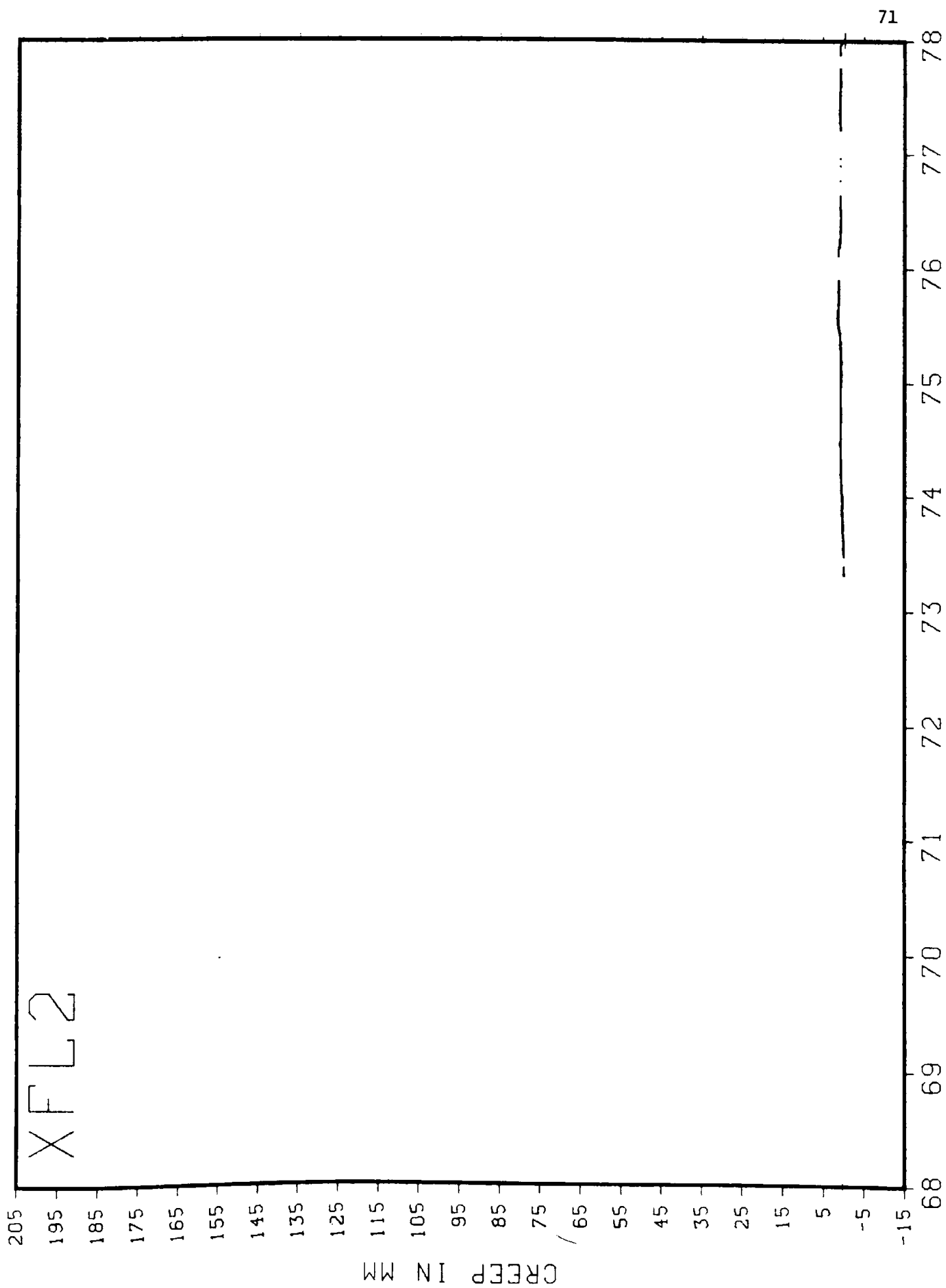
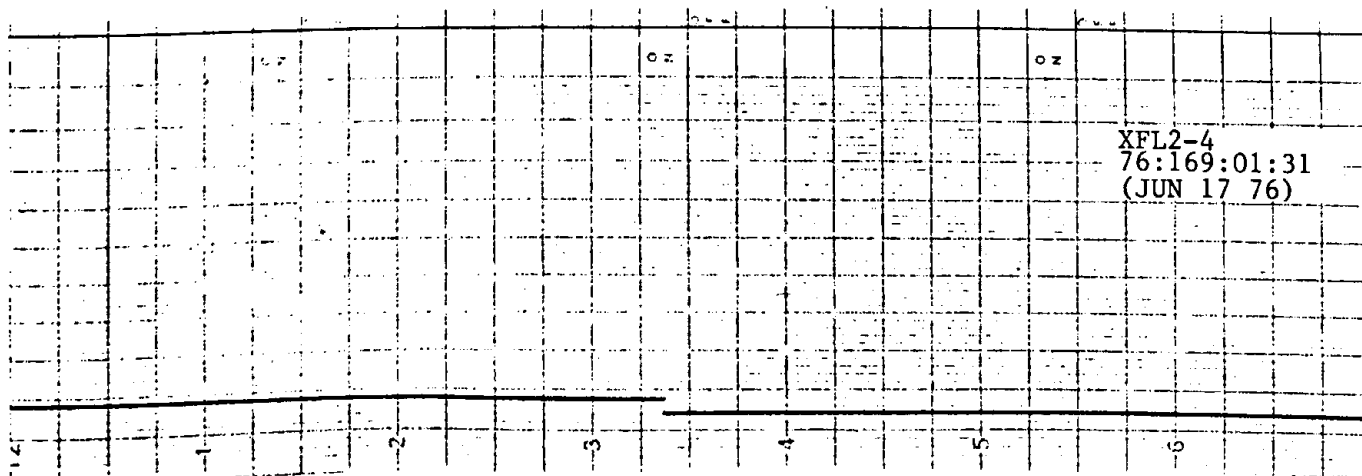
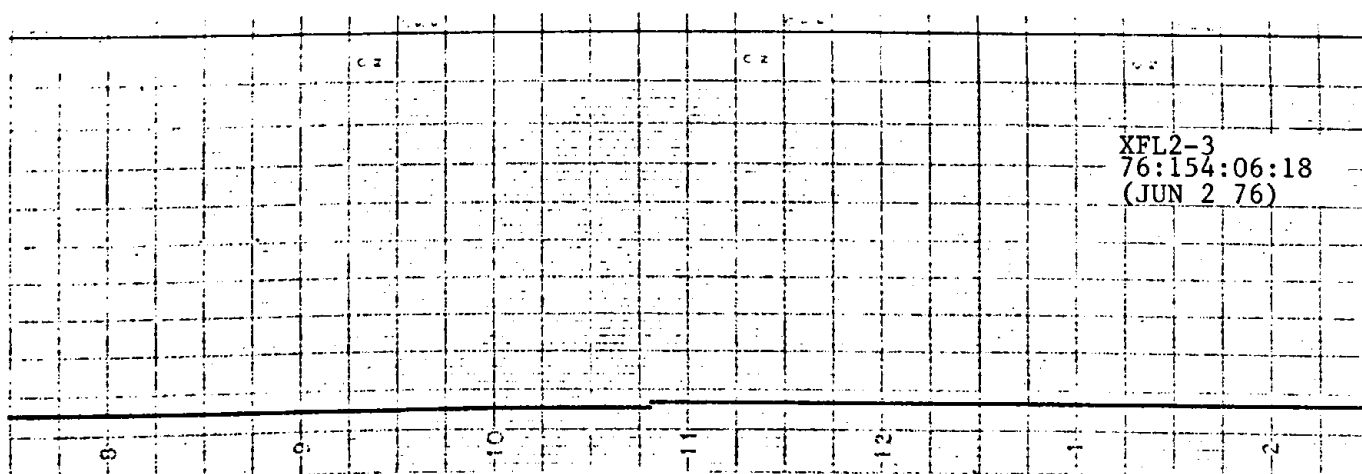
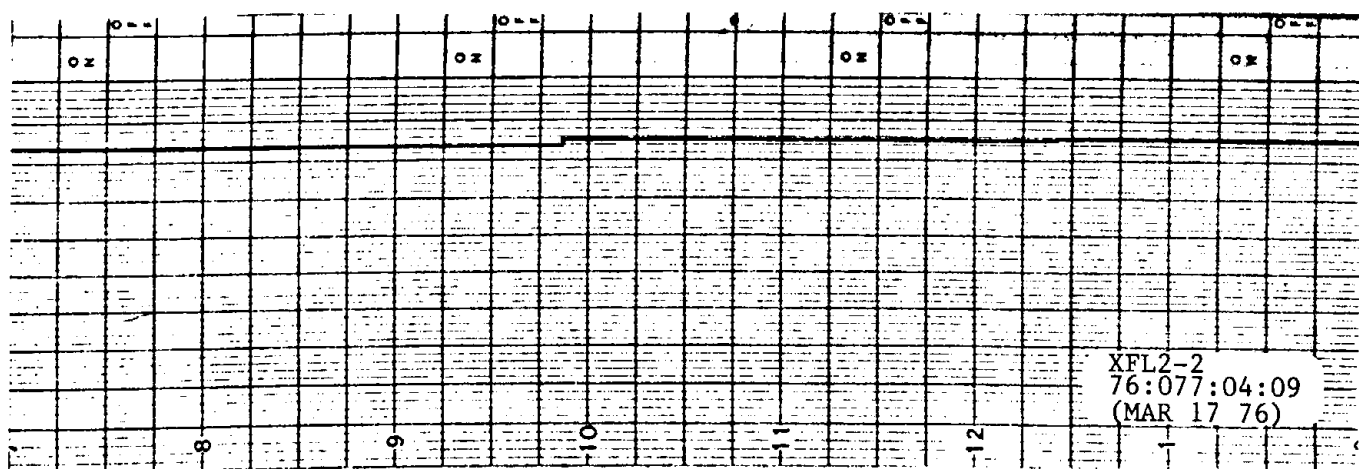
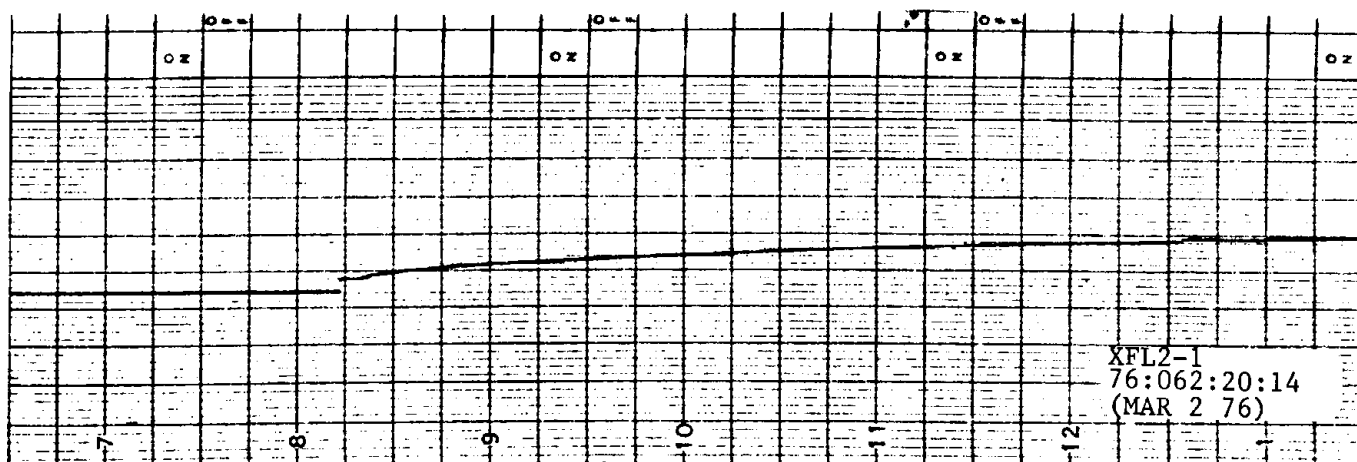


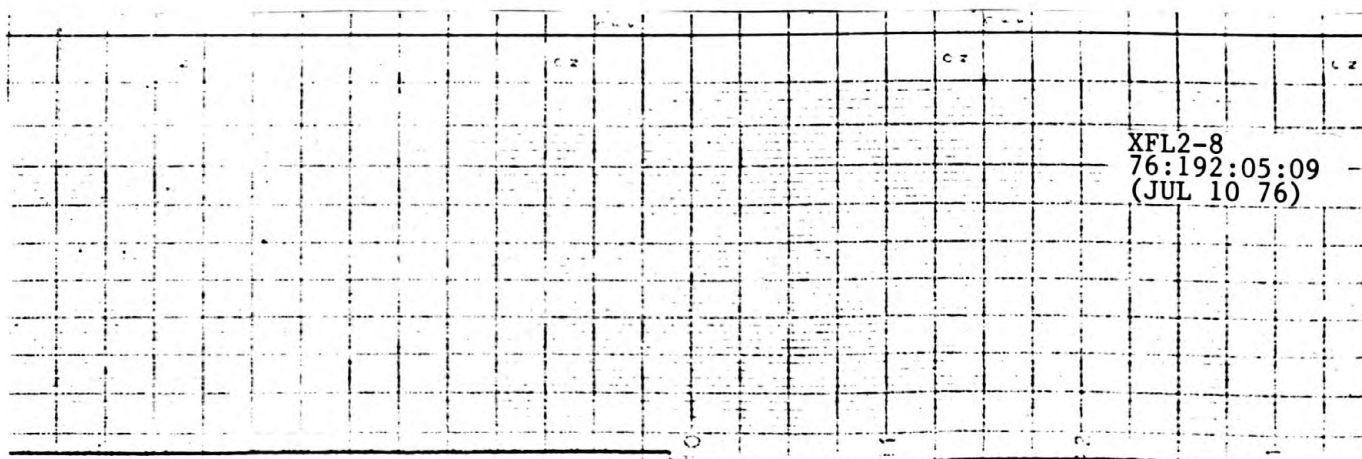
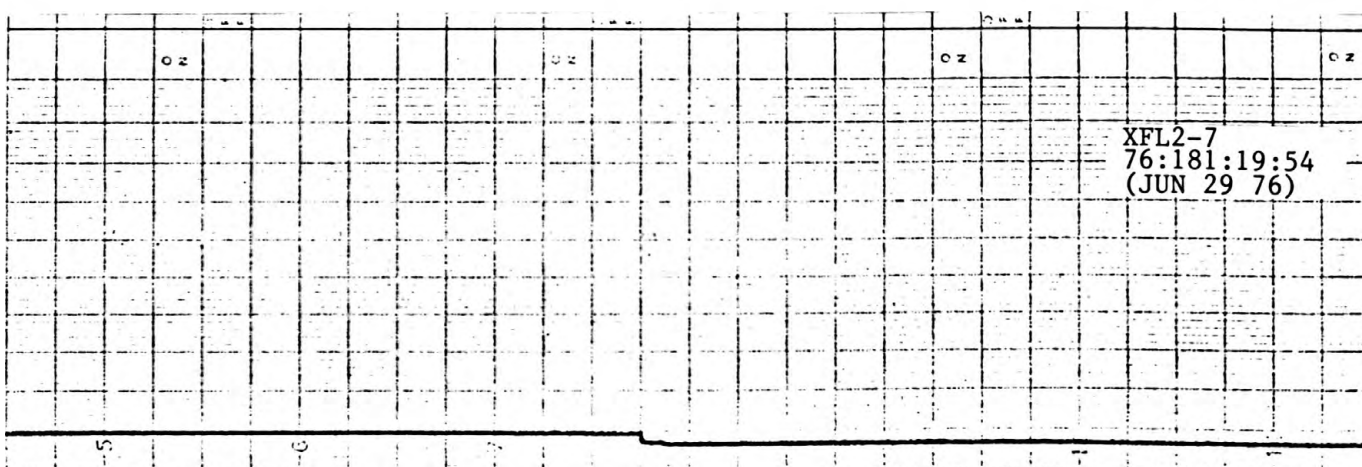
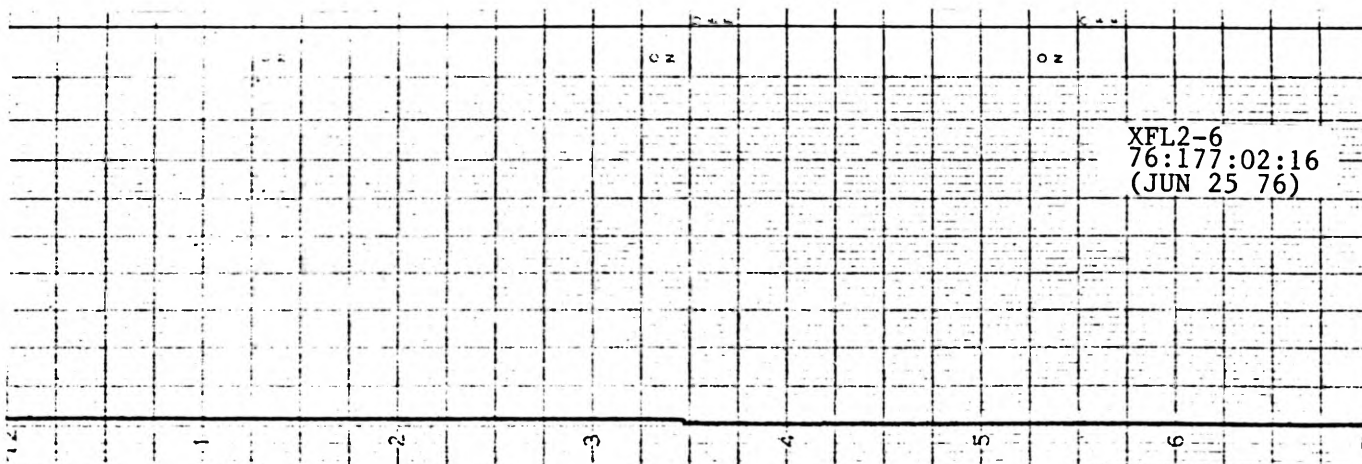
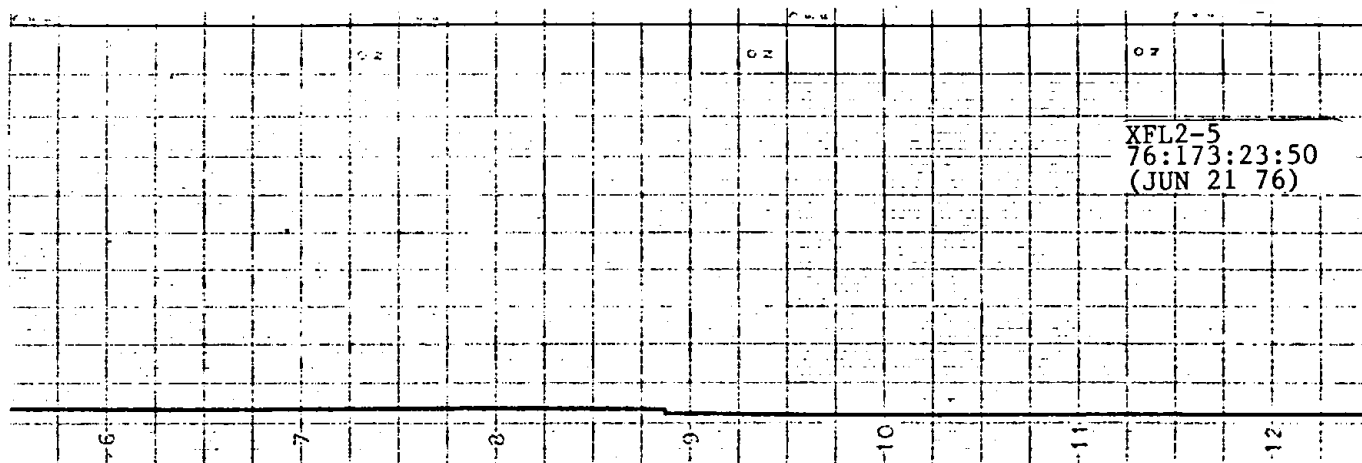
Table of XFL2 Events

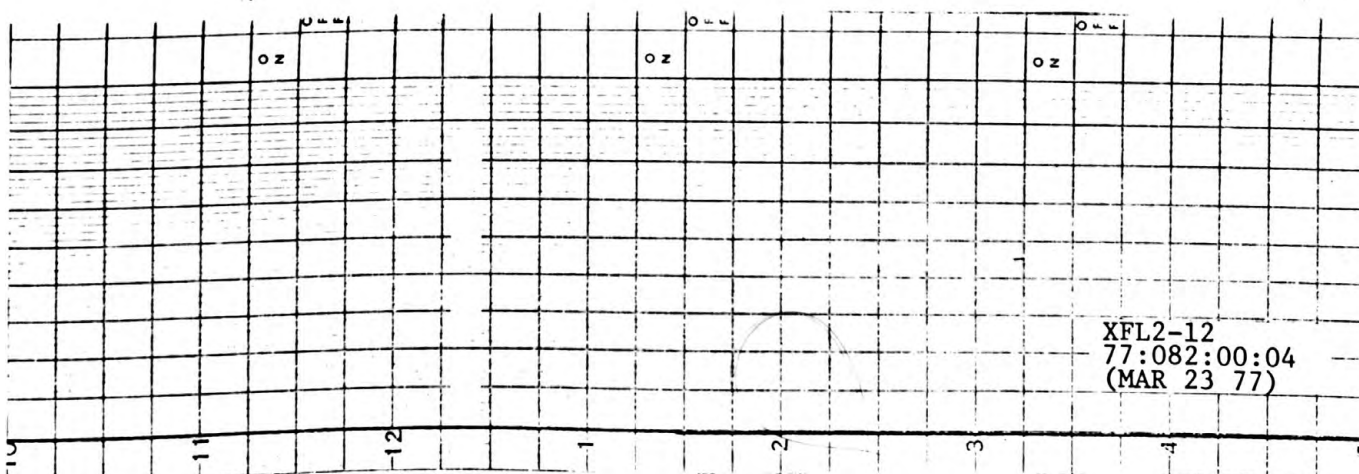
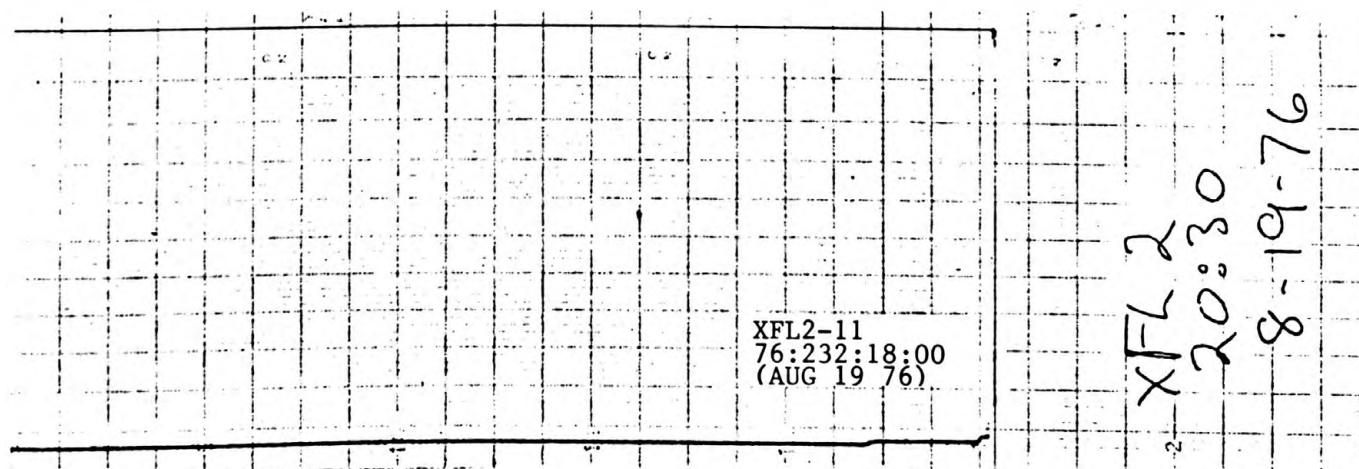
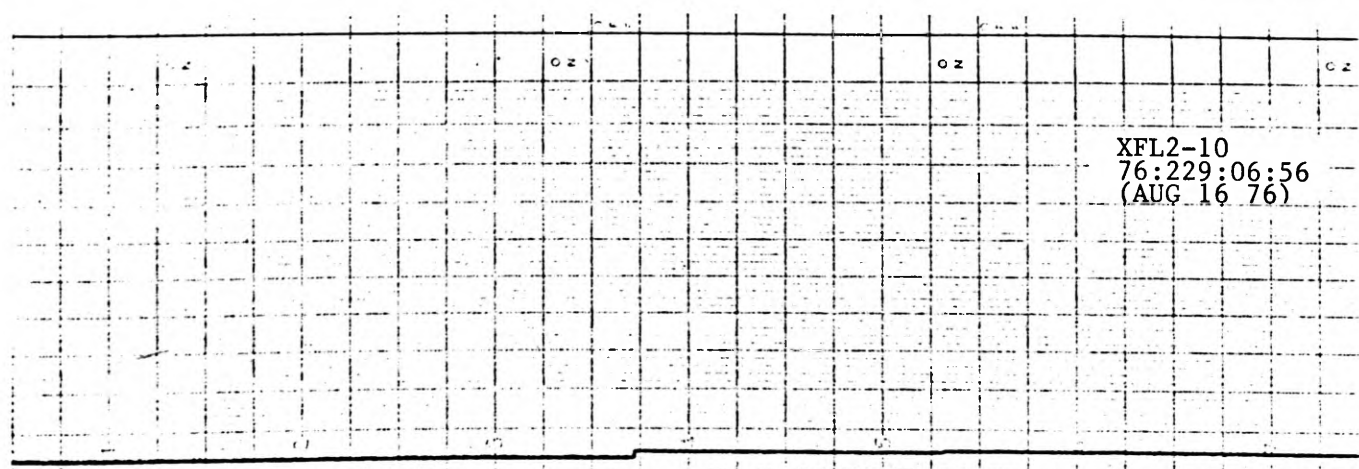
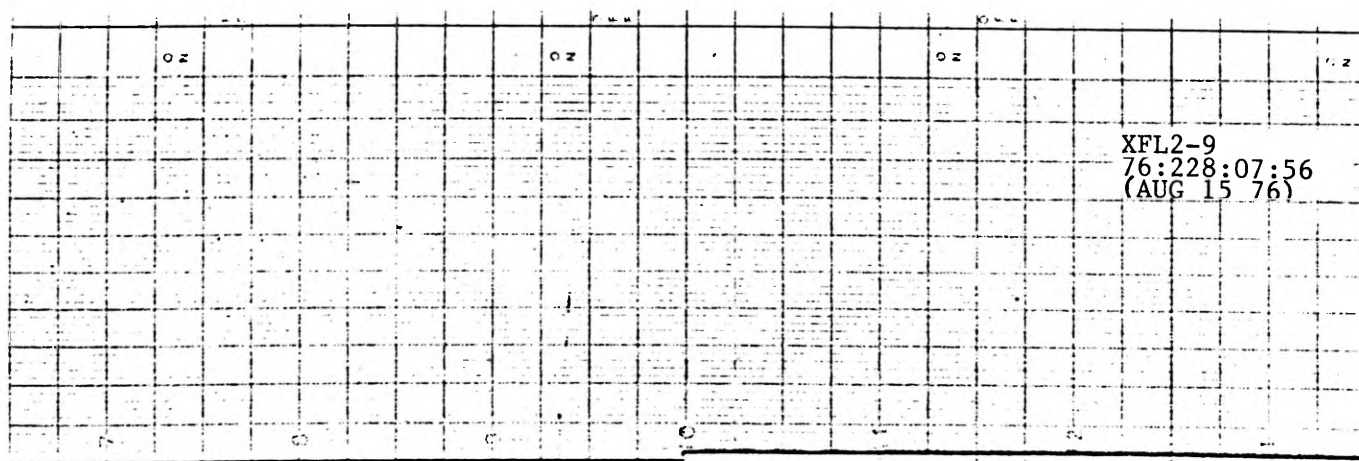
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	N-S <u>Extension</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	062	Mar. 2-5	2014	+0.19	1,* (onset & steepest part)	1.0	.048
	077	Mar. 17	0409	+0.01	2	1.0	.048
	154	Jun. 2	0618	+0.01	3	1.0	.04
	169	Jun. 17	0131	-0.02	4	1.0	.04
	173	Jun. 21	2350	-0.01	5	1.0	.04
	177	Jun. 25	0216	-0.01	6	1.0	.04
	181	Jun. 29	1954	-0.01	7	1.0	.04
	192	Jul. 10	0509	-0.01	8	1.0	.04
	228	Aug. 15	0756	.01	9	1.0	.04
	229	Aug. 16	0656	.01	10	1.0	.04
	232	Aug. 19	1800	.02	11	1.0	.04
1977	082	Mar. 23	0004	-0.002	12	1.0	.05
	088	Mar. 29	0059	-0.006	13	1.0	.05
	089	Mar. 30	0522	-0.007	14	1.0	.05
	093	Apr. 3	0727	-0.03	15	1.0	.05
	097	Apr. 7	1013	-0.006	16	1.0	.05
	098	Apr. 8	2131	-0.007	17	1.0	.05
	351	Dec. 17 ^{1/}	2103	0.13	18	1.0	.05

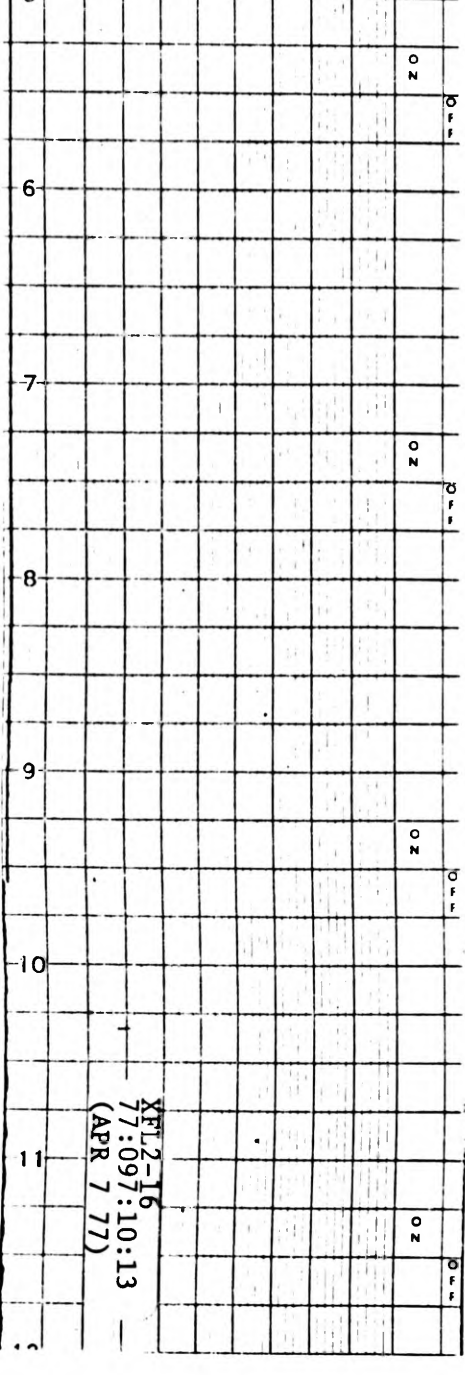
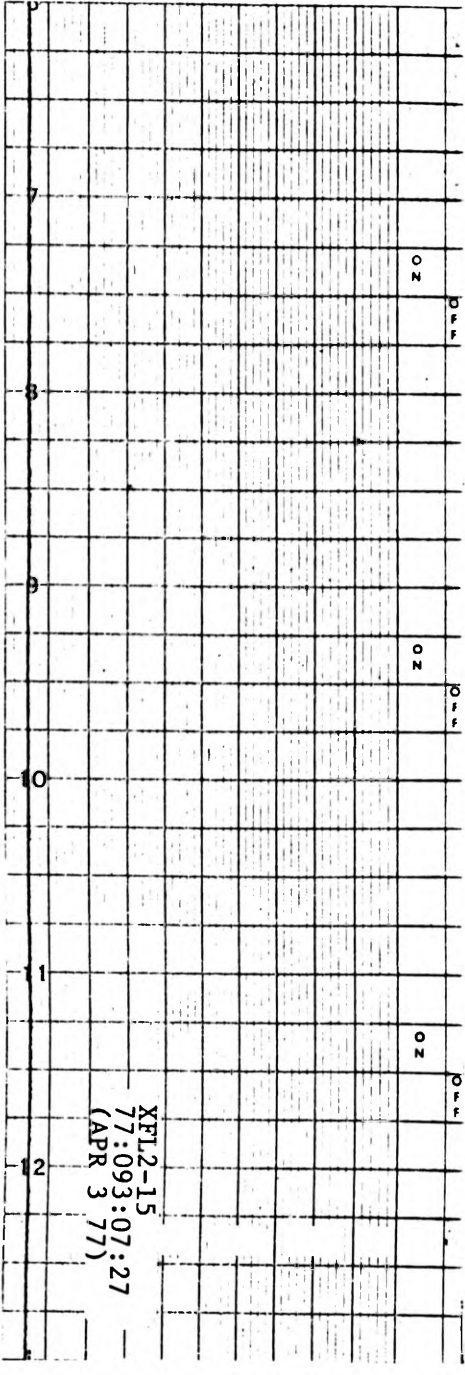
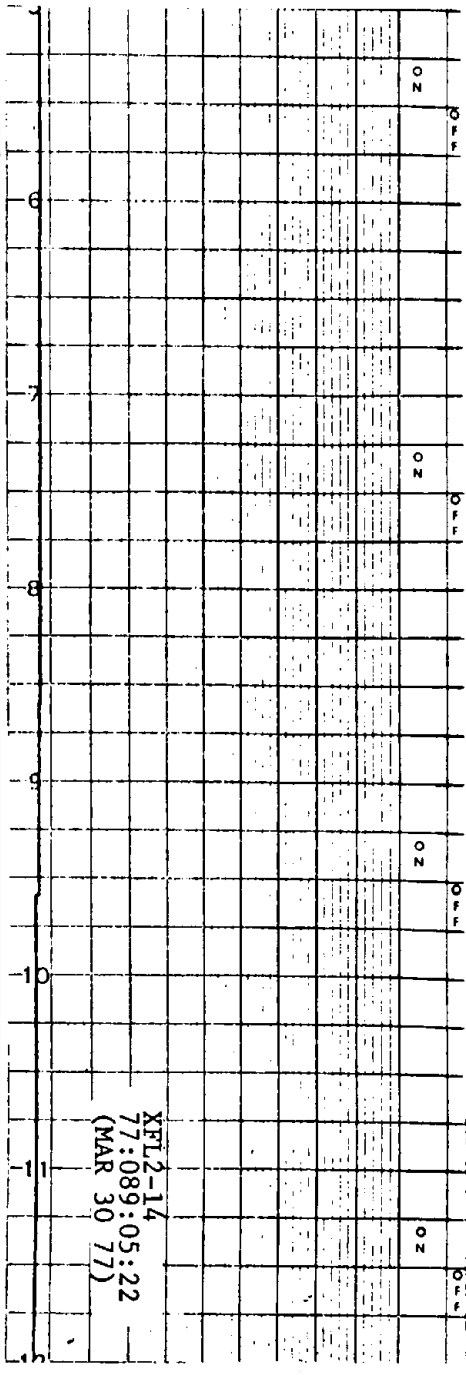
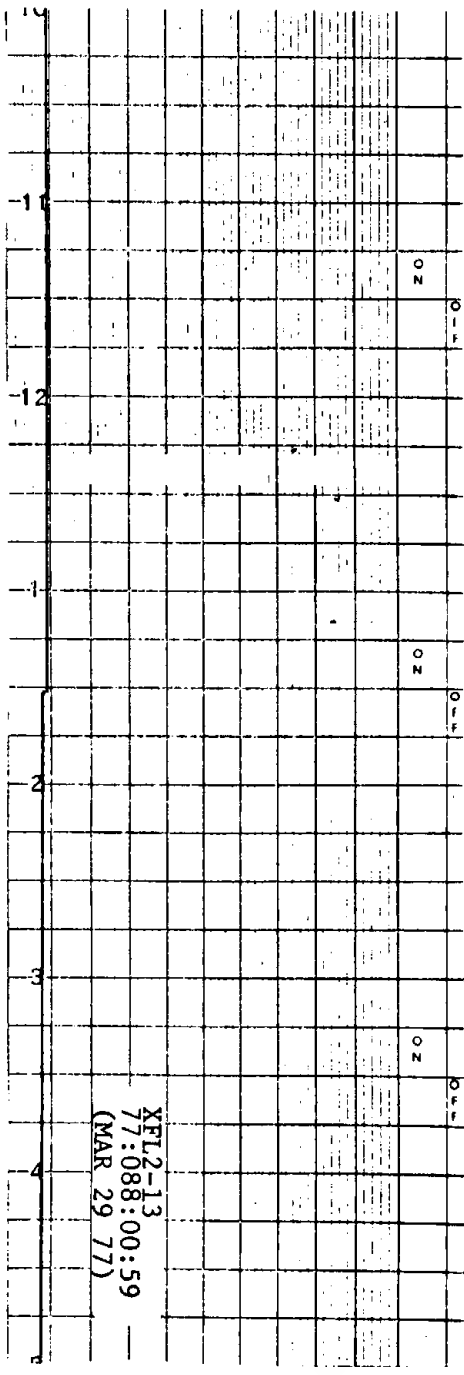
^{1/} Rainfall

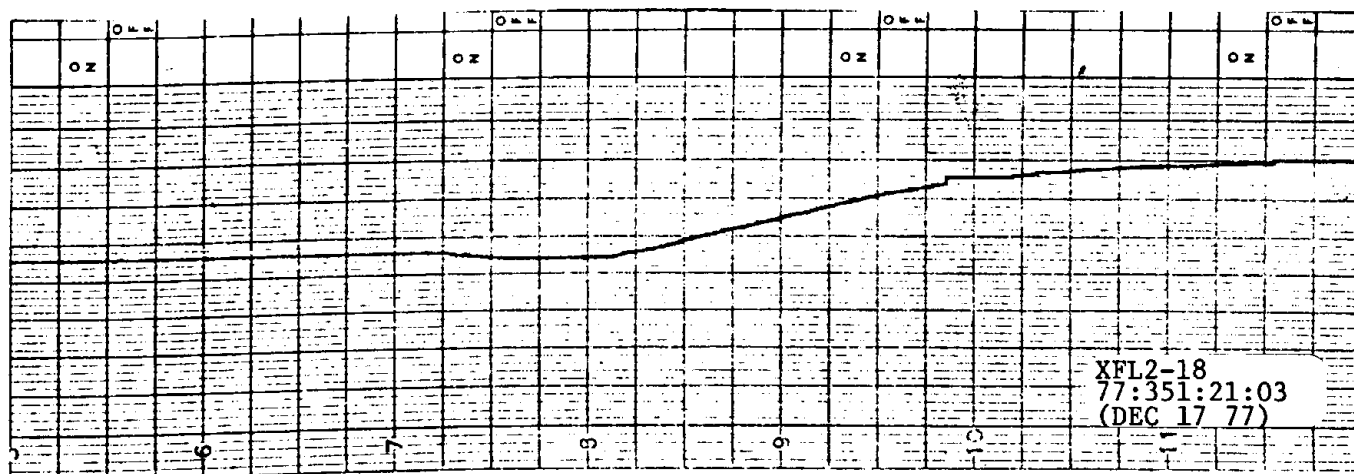
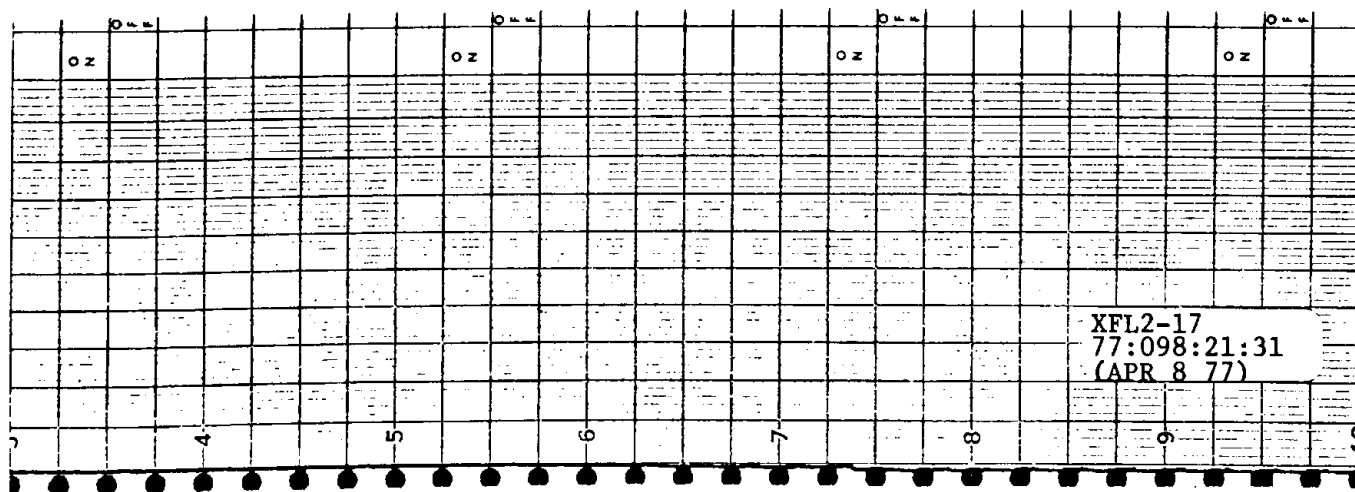
*Figure shows step-like onset and highest rate of slip at beginning of event.
See annual plot for fall event.











STATION SCN

Latitude $36^{\circ} 38.2'$

Position 344.2 km

Longitude. $121^{\circ} 14.3'$ 12 meter rods, $\theta=45^{\circ}$

The Stone Canyon (101 Ranch) North creepmeters were installed during September, 1972, on the San Andreas fault at a site 35.1 km southeast of San Juan Bautista. The installation consists of a pair of crossed rods buried a few centimeters below a nearly flat surface in alluvium. Creep activity at this site is composed of nearly steady-state slip at an average rate of about 19 mm/yr.

7.5 MINUTE SERIES (TOPOGRAPHIC)

SCN1 CORRECTED CREEPMETER READINGS (mm)

79

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					54.73	
FEB 10	3.68		3.68		58.41	
APR 13	1.56		5.24		59.97	
APR 13	0.99		6.23		60.96	
MAY 11	0.56		6.79		61.52	
AUG 18	3.18		9.97		64.70	
NOV 4	2.33		12.30		67.03	
<u>1977</u>						
APR 14	5.59		5.59		72.62	
JUL 19	-3.18		2.41		69.44	
AUG 12	7.07		9.48		76.51	
NOV 17	-2.62		6.86		73.89	

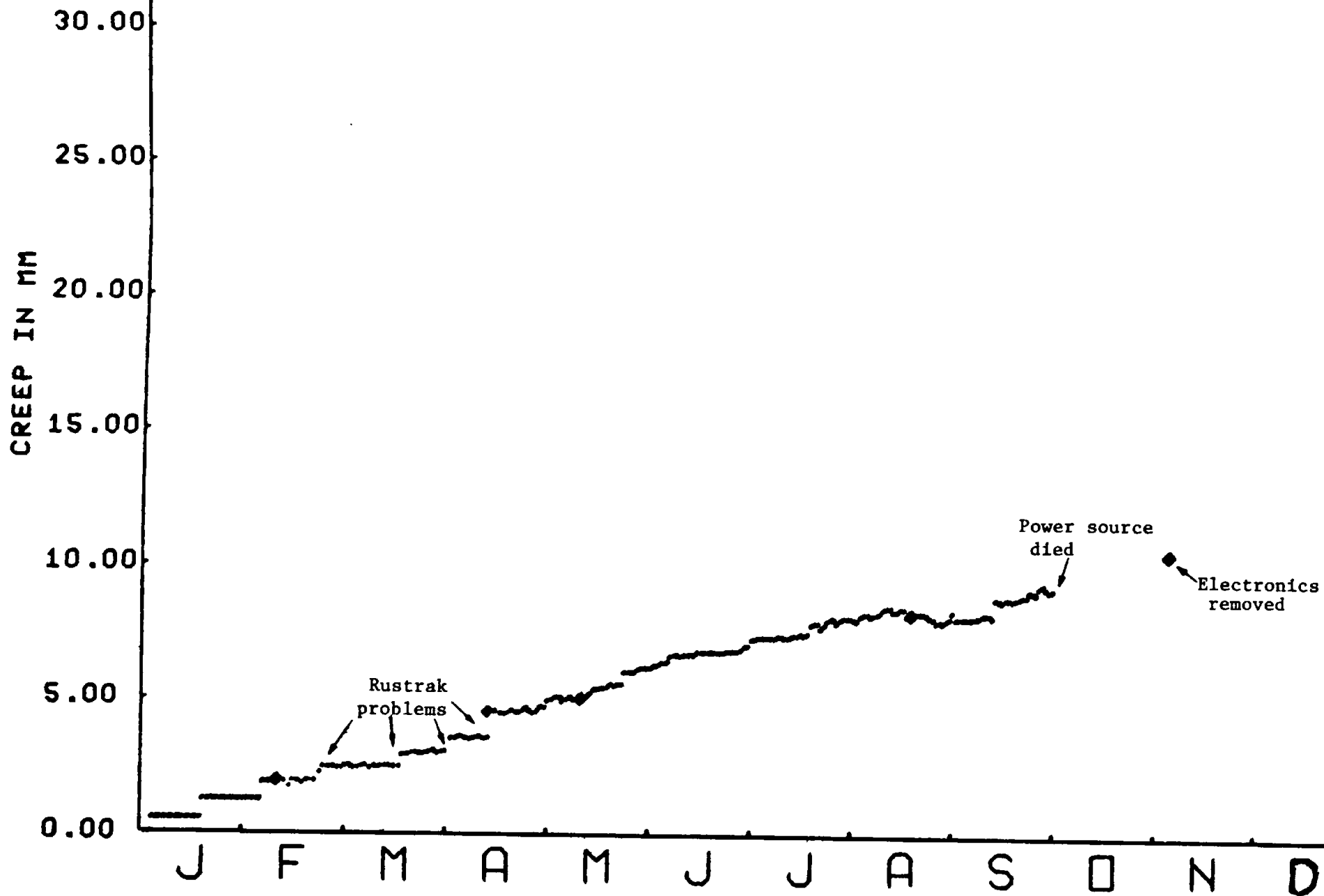
SCN9 CORRECTED CREEPMETER READINGS (mm)

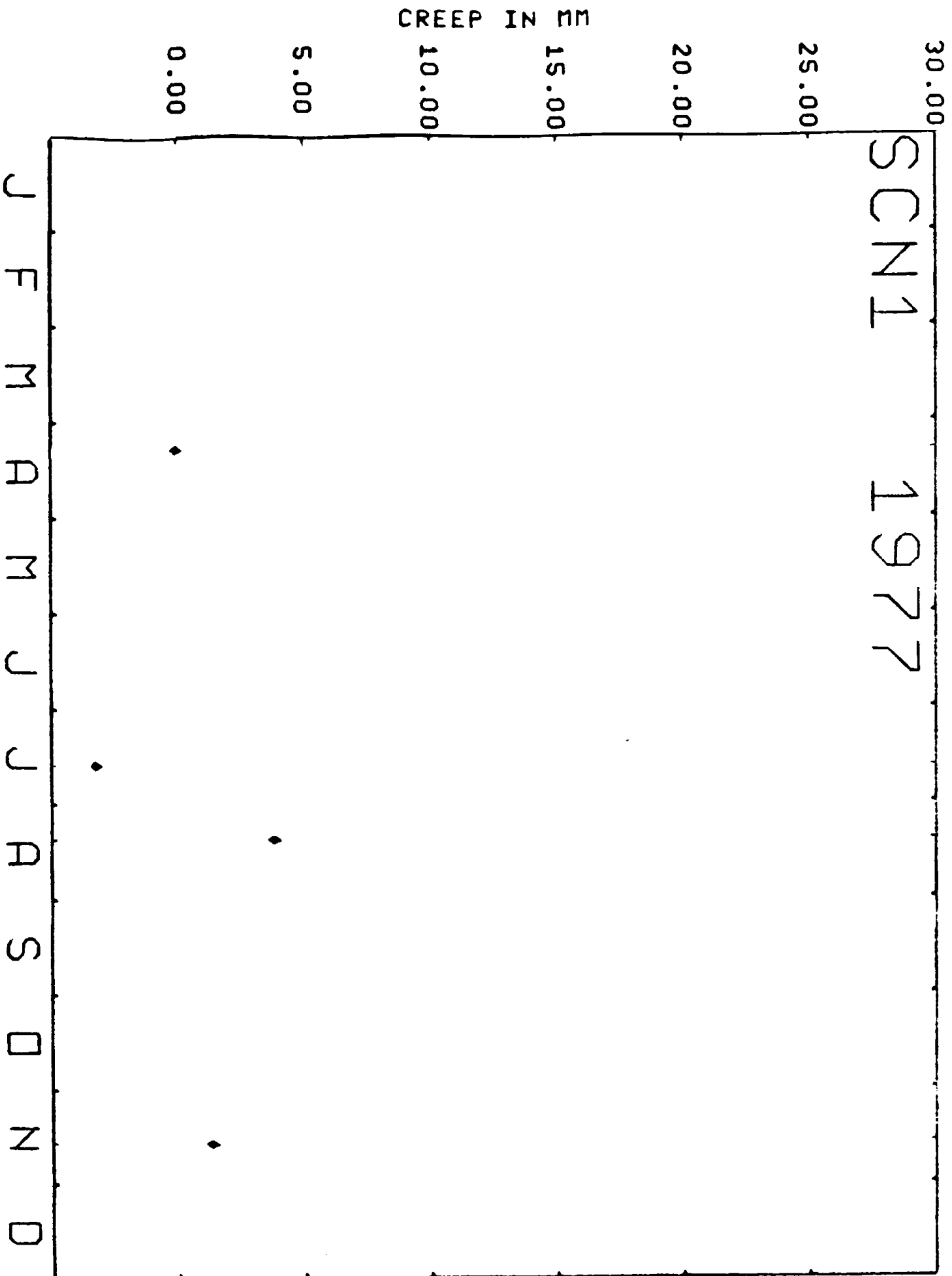
80

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					1.20	
FEB 10	-0.10		-0.10		1.10	
AUG 18	-0.88		-0.98		0.22	
NOV 4	-0.07		-1.05		0.15	
<u>1977</u>						
APR 14	-0.15		-0.15		0.00	
JUL 19	6.70		6.55		6.70	
AUG 12	-7.00		-0.45		-.30	
NOV 17	-0.22		-0.67		-.52	

SCN1

1976





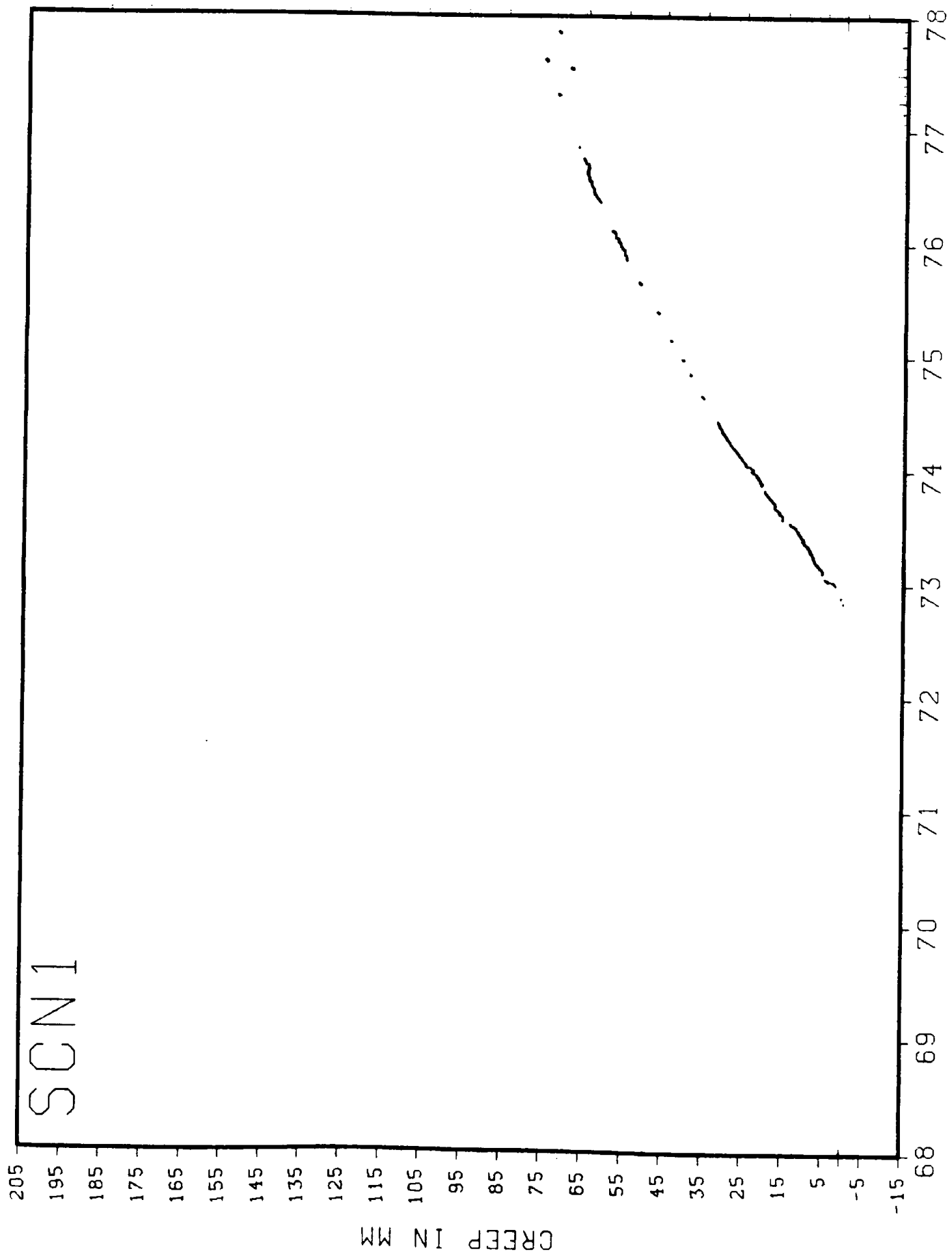


Table of SCN1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	003	Jan. 3 ^{1/2/}		0.52	*		
	017	Jan. 17 ^{1/2/}		0.68	*		
	037	Feb. 6 ^{2/}		0.62	*		
	145	May 24		0.42	*		
	158	Jun. 6		0.20	*		
	180-183	Jun. 28- Jul. 1		0.48	*		
	200-201	Jul 18-19		0.42	*		
	244	Aug. 31		0.23	*		
	245	Sep. 1		-0.30	*		
	257	Sep. 13		0.61	*		

^{1/} Date approximate

^{2/} May be due to instrument friction.

* Refer to annual plot

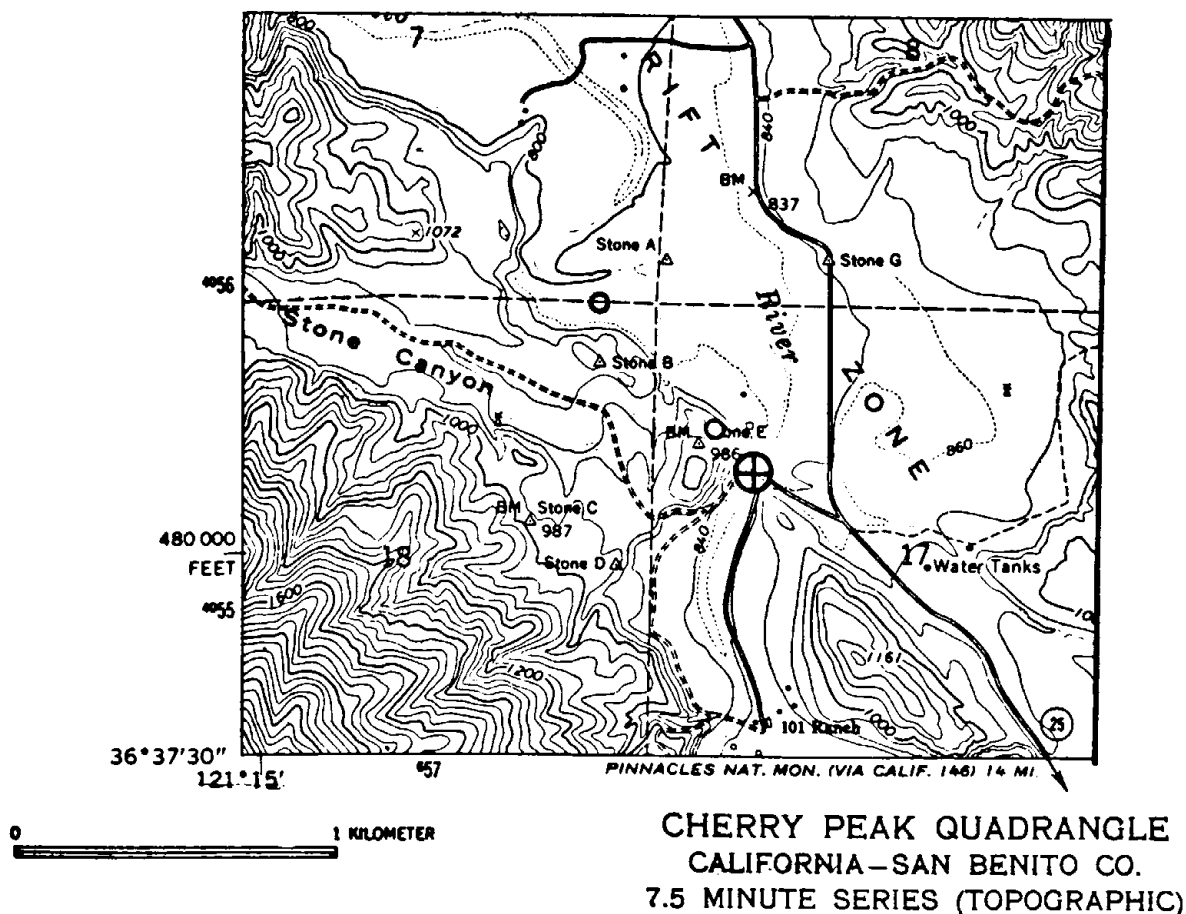
STATION SCRI

Latitude $36^{\circ} 37.9'$

Position 344.9 km

Longitude $121^{\circ} 13.9'$ 10 meter rods, $\theta=45^{\circ}$

The Stone Canyon (101 Ranch) River creepmeters were installed during September, 1970, on the San Andreas fault at a site 35.8 km southeast of San Juan Bautista. The installation consists of a pair of crossed rods buried a few centimeters below a nearly flat surface on a river terrace of the San Benito river. Creep activity at this site is composed of almost steady-state slip at an average rate of about 13 mm/yr, with a distinct seasonal variation.

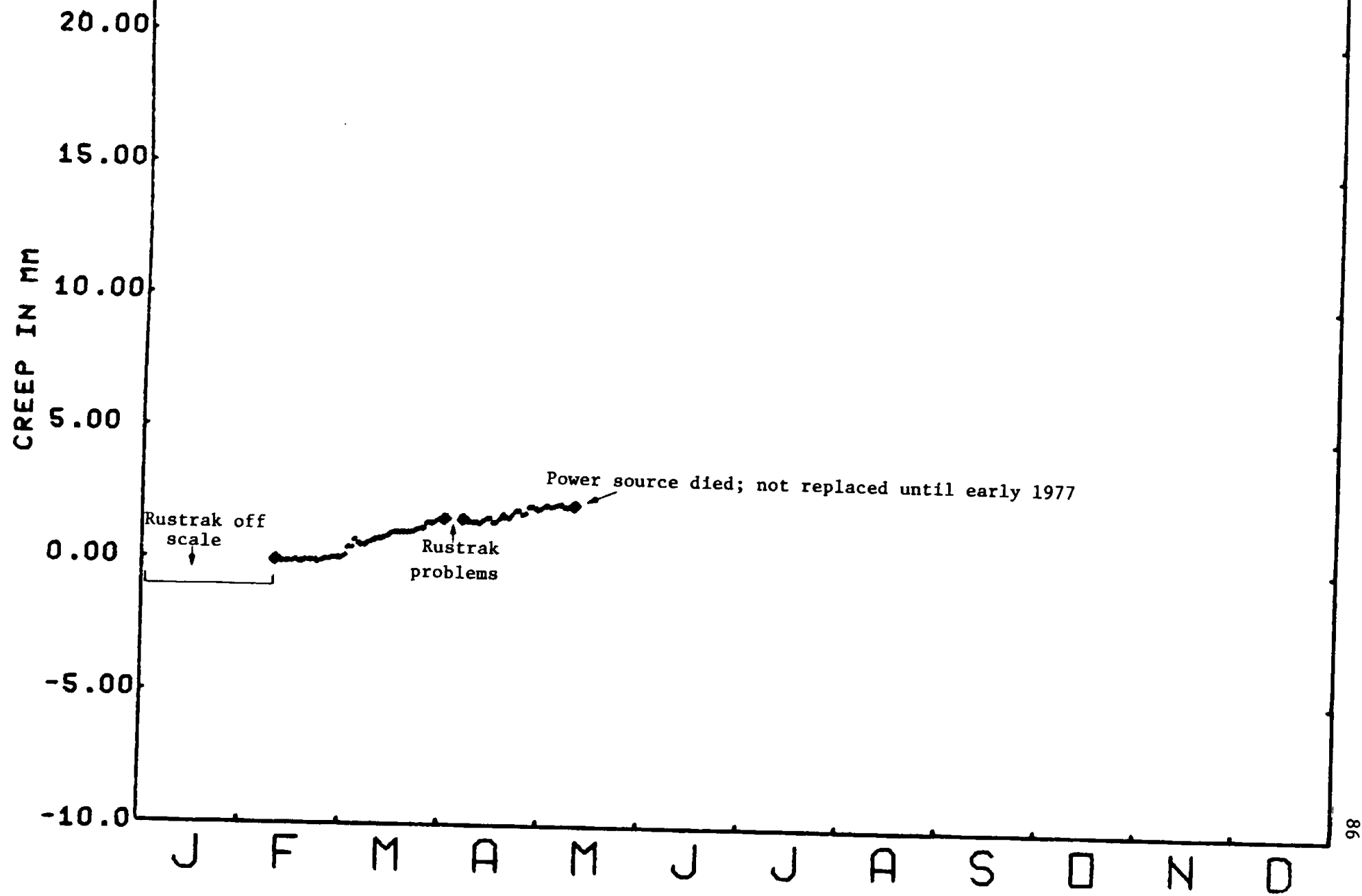


SCR CORRECTED CREEPMETER READINGS (mm)

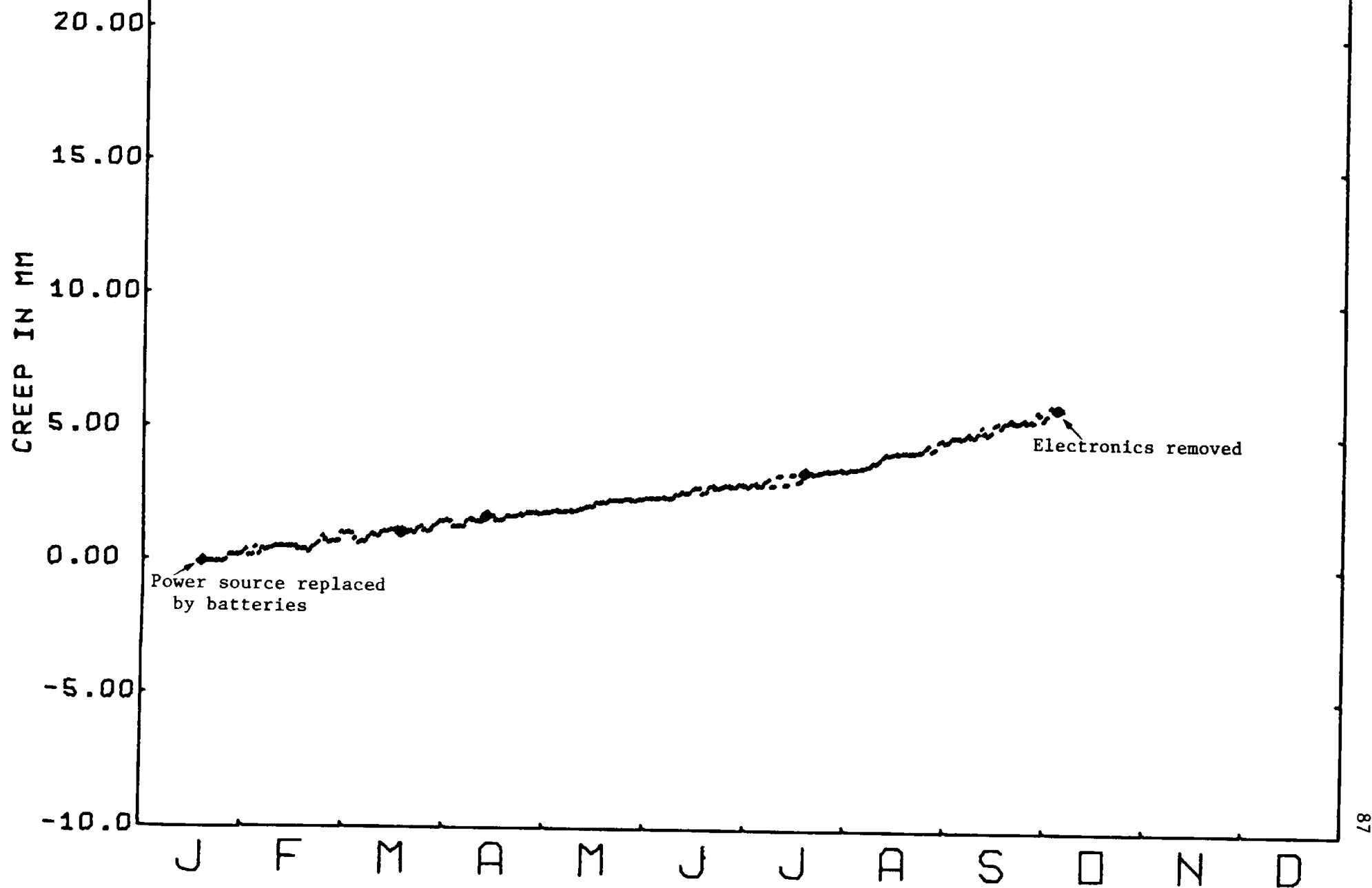
85

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					64.23	41.54
FEB 10	2.40		2.40		66.63	
MAY 11	2.12		4.52		68.75	
AUG 18	1.63	0.18	6.15	0.18	70.38	41.72
NOV 4	2.83	0.01	8.98	0.19	73.21	41.73
DEC 13	0.92		9.90		74.13	
DEC 28	0.00		9.90		74.13	
<u>1977</u>						
JAN 18	0.57		0.57		74.70	
MAR 19	1.13		1.70		75.83	
APR 14	0.64		2.34		76.47	
JUL 19	1.76		4.10		78.23	
AUG 12	0.78		4.88		79.01	
OCT 4	1.70		6.58		80.71	
NOV 17	0.98		7.56		81.69	

SCR1 1976



SCR1 1977



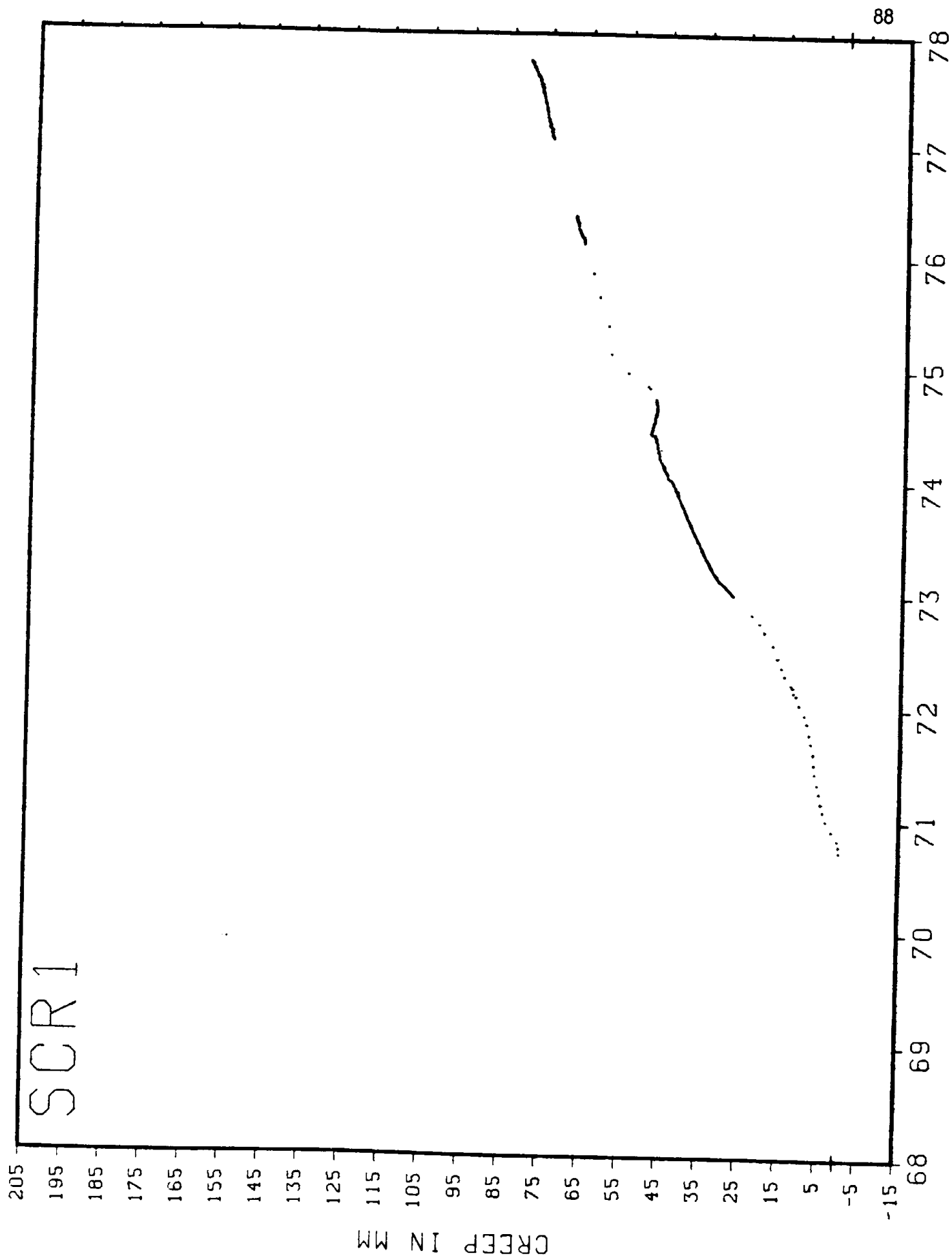


Table of SCR1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	060-063	Feb. 29- Mar. 3		0.74	*		
	063-065	Mar. 3-5		-0.20	*		
	086	Mar. 26	2006	0.26	*		

*Refer to annual plot

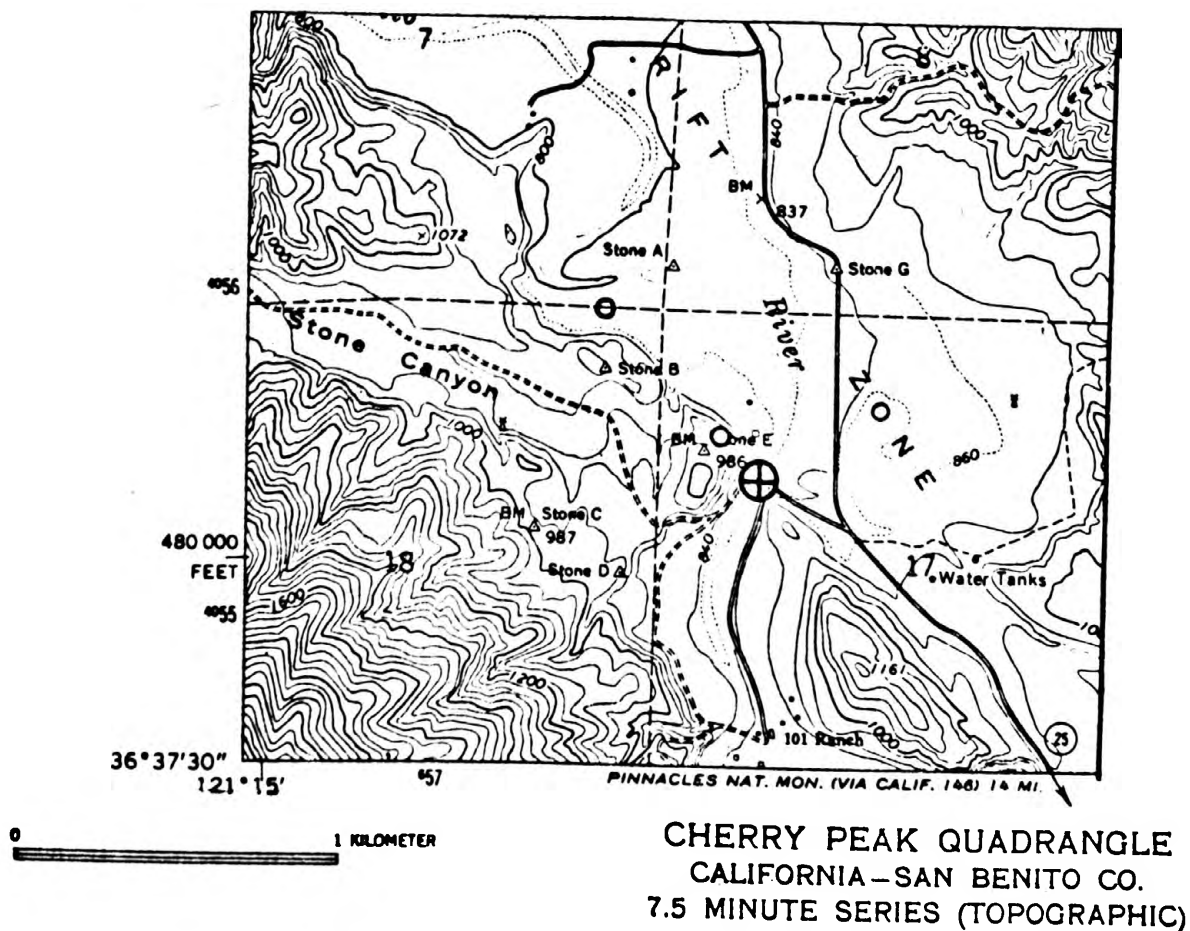
STATION SCR3

90

Latitude $36^{\circ} 37.9'$
Longitude $121^{\circ} 13.9'$

Position 344.9 km
23 meter rod, $\phi=45^{\circ}$

The Stone Canyon (101 Ranch) long-rod creepmeter was installed during October, 1972, on the San Andreas fault at a site 35.8 km southeast of San Juan Bautista. The installation consists of a single rod adjacent to the extension rod of SCR1, buried a few centimeters below the surface (see description of SCR1 for other details). Creep activity at this site is composed of almost steady-state slip at an average rate of about 16 mm/yr, with a possible seasonal variation.

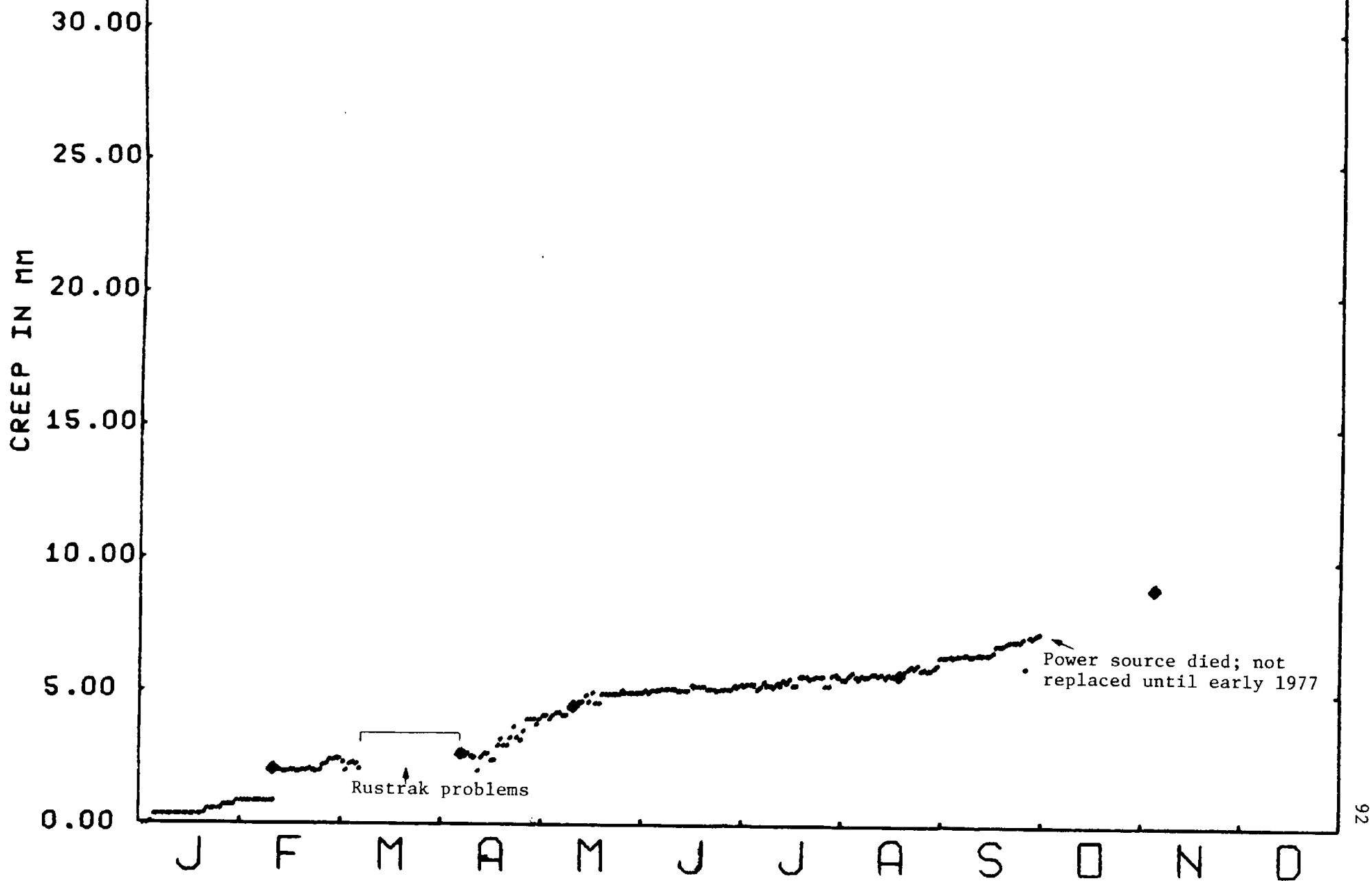


SCR3 CORRECTED CREEPMETER READINGS (mm)

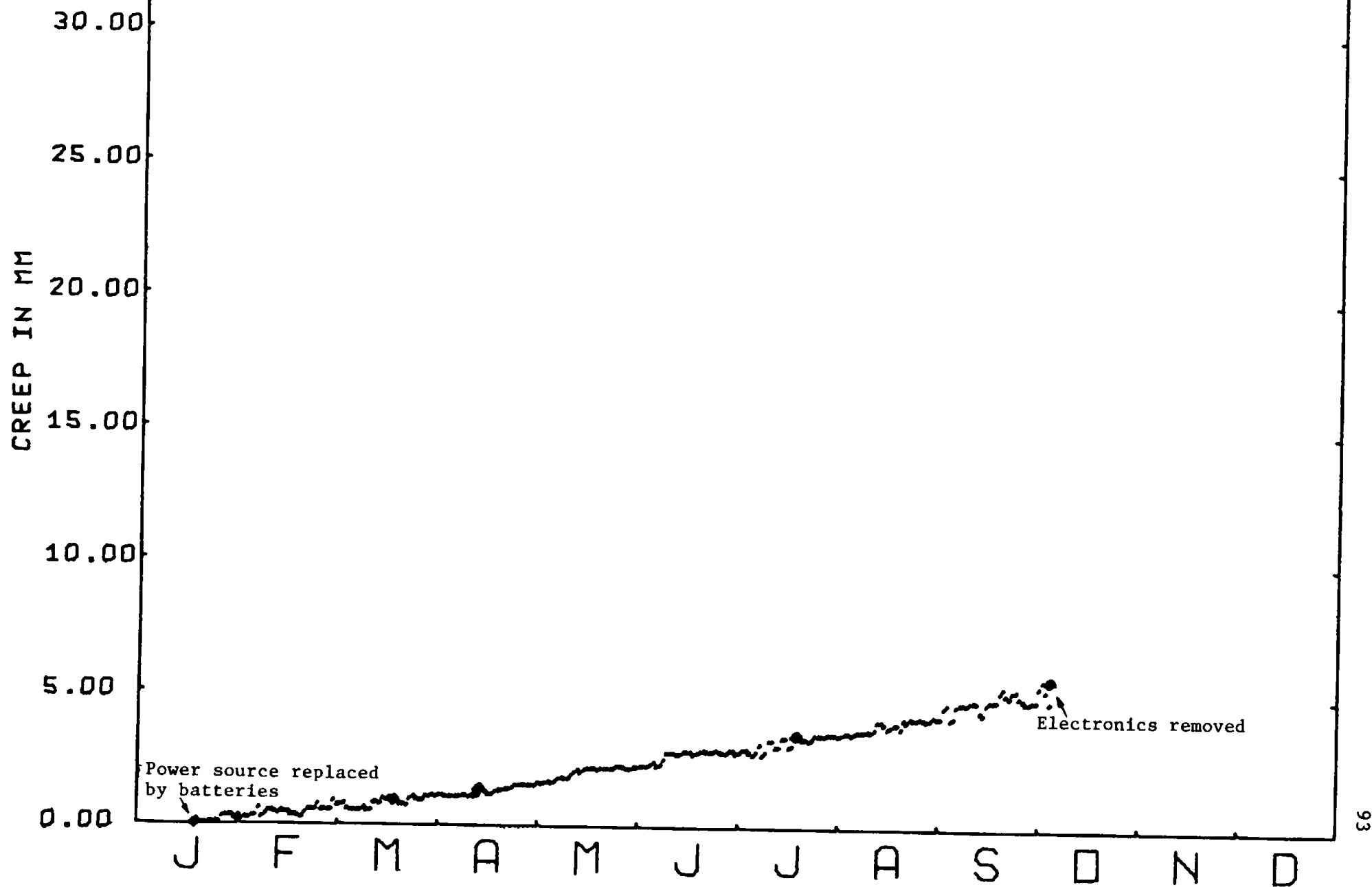
91

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					51.05	
FEB 10	2.83		2.83		53.88	
MAY 11	2.41		5.24		56.29	
AUG 18	1.20		6.44		57.49	
NOV 4	3.25		9.69		60.74	
DEC 13	0.21		9.90		60.95	
DEC 28	0.00		9.90		60.95	
DEC 29	0.00		9.90		60.95	
<u>1977</u>						
JAN 18	0.85		0.85		61.80	
MAR 19	0.99		1.84		62.79	
APR 14	0.43		2.27		63.22	
JUL 19	2.12		4.39		63.34	
AUG 12	0.42		4.81		65.76	
OCT 4	1.70		6.51		67.46	
NOV 17	2.12		8.63		69.58	

SCR3 1976



SCR3 1977



SCR3

205

195

185

175

165

155

145

135

125

115

105

95

85

75

65

55

45

35

25

15

5

-5

-15

CREEP IN MM

68

69

70

71

72

73

74

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94

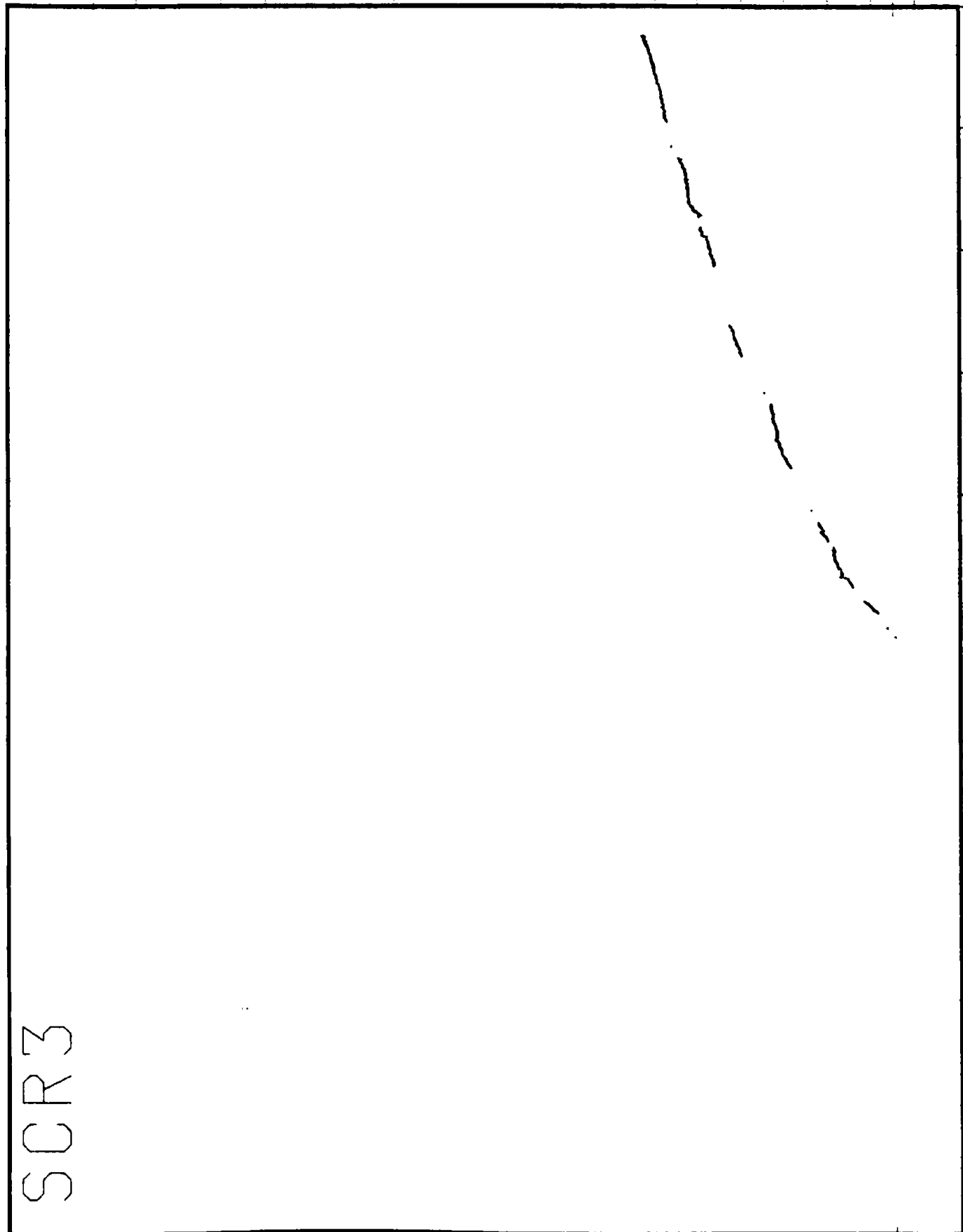


Table of SCR3 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	004	Jan. 4 <u>1/2/</u>	0200 <u>1/</u>	0.35	*		
	021	Jan. 21		0.23	*		
	026	Jan. 26		0.18	*		
	030	Jan. 30		0.20	*		
	041	Feb. 10 <u>3/</u>		1.15	*		
	055-057	Feb. 24-26		0.45	*		
	061-062	Mar. 1-2		-0.40	*		
	062-063	Mar. 2-3		0.33	*		
	242-244	Aug. 29-31		0.47	*		
	260-261	Sep. 16-17		0.40	*		

1/ Timing approximate.

2/ May be due to instrument friction.

3/ Friction step during chart change and reading.

* Refer to annual plot.

STATION WLC

96

Latitude 36° 35.8'
Longitude 121° 11.5'

Position 350.0 km
19 meter rods, $\theta=45^\circ$

The Willow Creek creepmeters were installed during November, 1972, on the San Andreas fault at a site 40.9 km southeast of San Juan Bautista. The installation consists of a pair of crossed rods buried a few centimeters below the surface on sloping ground near the bottom of Willow Creek. Creep activity at this site is composed of nearly steady-state slip at an average rate of about 17 mm/yr, with a slight seasonal variation.

GLE

7.5 MINUTE SERIES (TOPOGRAPHIC)

WLC1, WLC9 CORRECTED CREEPMETER READINGS (mm)

97

Date	Change		Yearly Commulative		Cum to Date	
	X	C	X	C	X	C
<u>1976</u>					55.44	-1.80
Mar 4	1.27		1.27		56.71	
Mar 4	0.28		1.55		56.99	
May 11	- 1.70	0.05	-14.57	0.05	40.87	-1.75
May 22	-14.72		-12.87		42.57	
Aug 18	4.27	1.06	-10.30	1.11	45.14	-0.69
Nov 4	1.95	1.04	-8.35	2.15	47.09	0.35
<u>1977</u>						
Jan 18	5.09	1.15	5.09	1.15	52.18	1.50
Mar 19	2.41	0.00	7.50	1.15	54.59	1.50
Apr 14	1.41	-2.90	8.91	-1.75	56.00	-1.40
Jul 19	3.11	3.55	12.02	1.80	59.11	2.15
Aug 12	0.99	0.05	13.01	1.85	60.10	2.20
Oct 4	1.98	0.00	14.99	1.85	62.08	2.20
Nov 17	3.42	0.60	18.41	2.45	65.50	2.80

WLC1

1976

CREEP IN MM

20.00

15.00

10.00

5.00

0.00

-5.00

-10.00

Electronics
reconnected

Rustrak problems

J

F

M

A

M

J

J

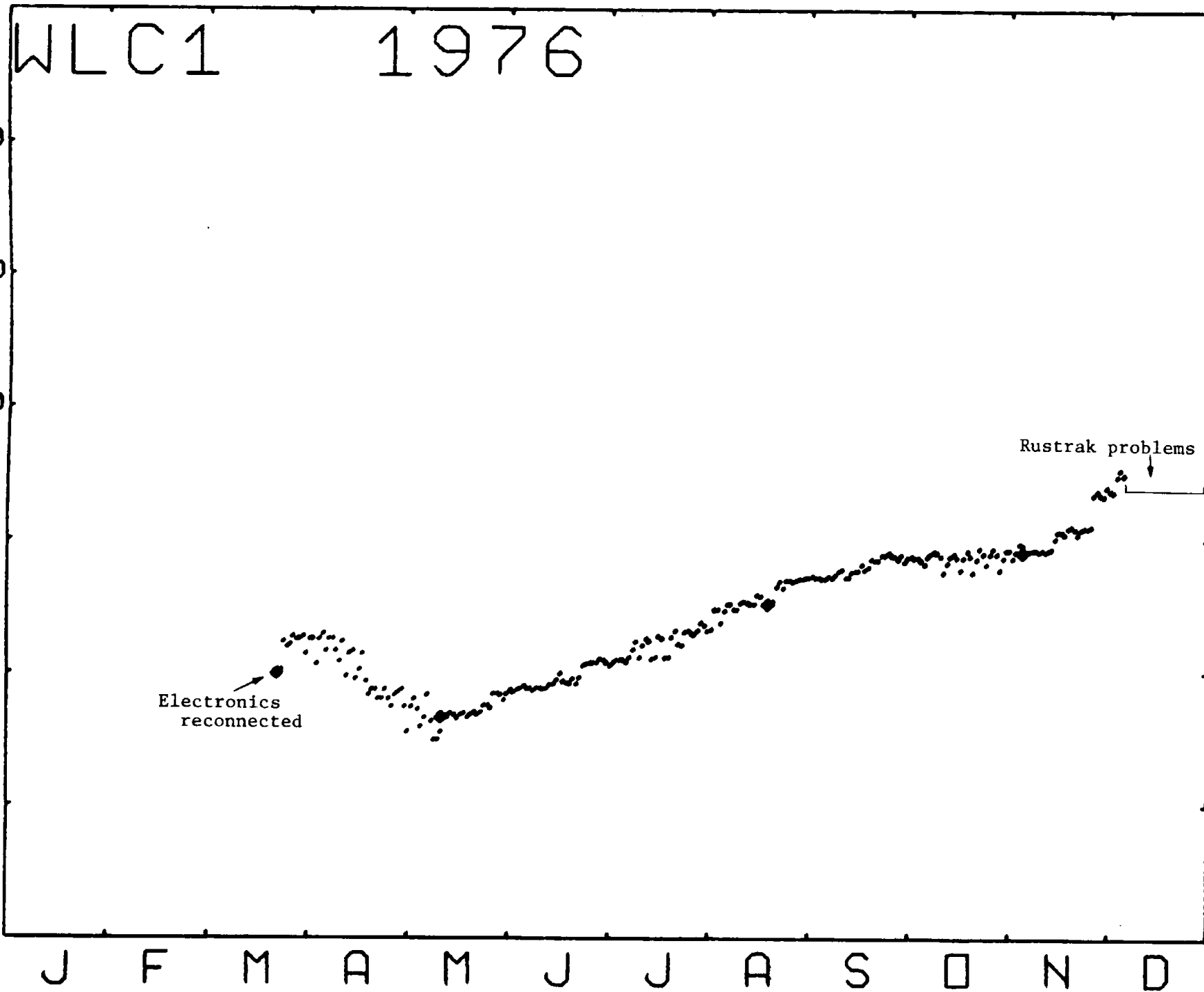
A

S

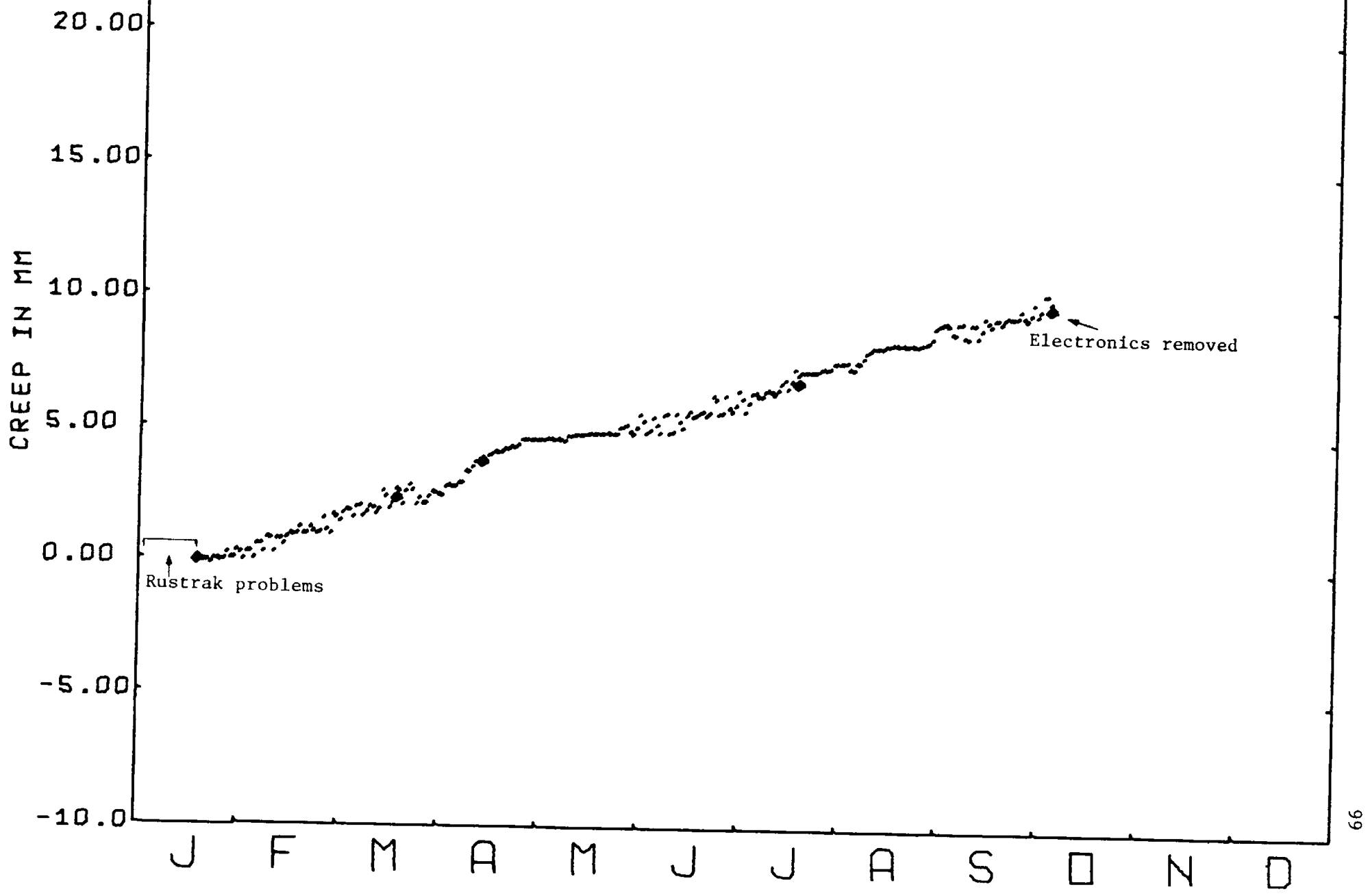
O

N

D



WLC1 1977



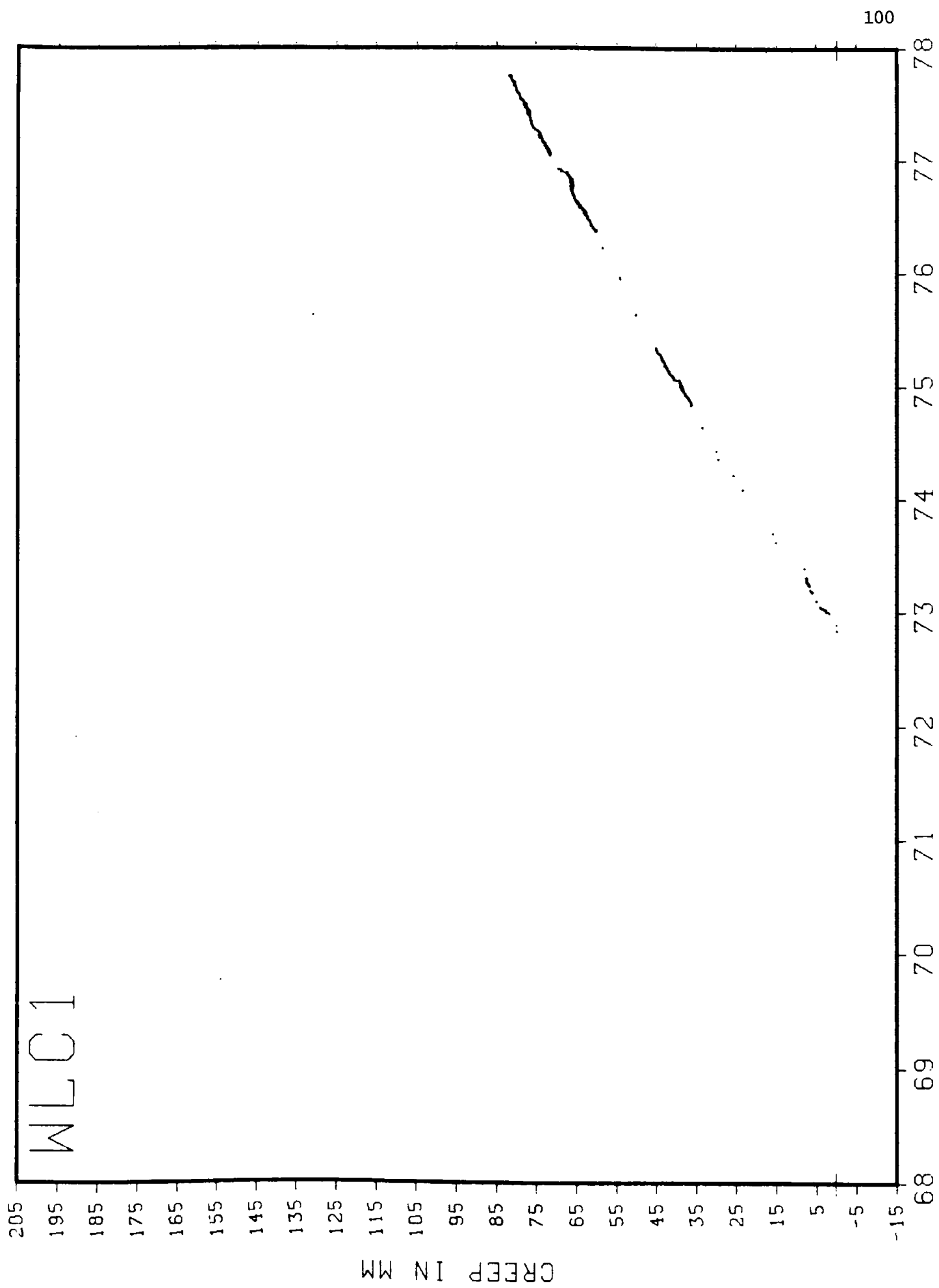
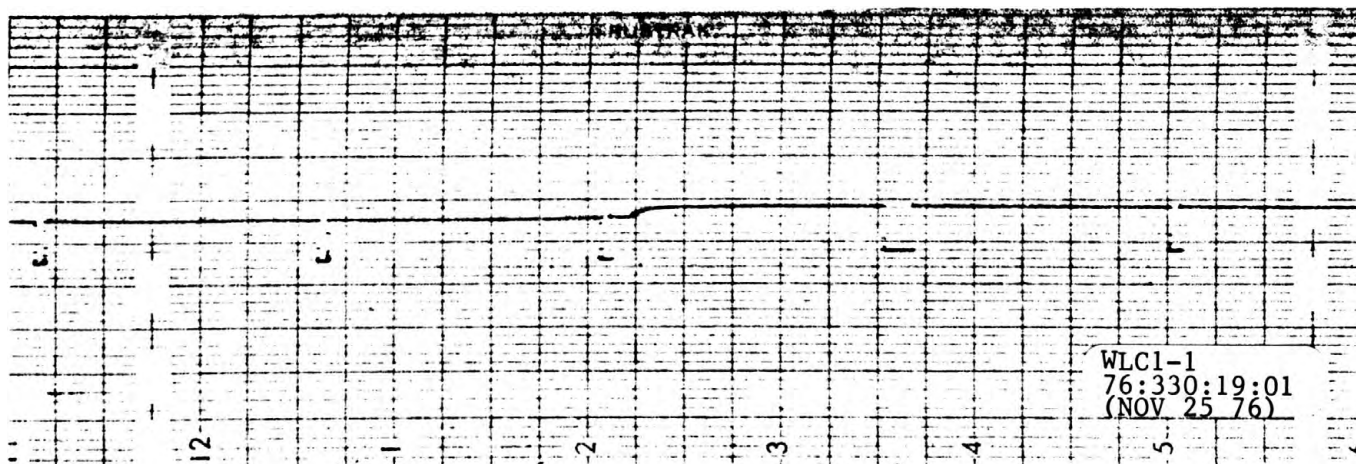


Table of WLC1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	144-148	May 23-27		0.77	*		
	173-174	Jun. 21-22		0.69	*		
	233-235	Aug. 20-22		0.78	*		
	319-320	Nov. 14-15		0.80	*		
	330	Nov. 25	1901	1.53	1	1.02	5.27

*Refer to annual plot.



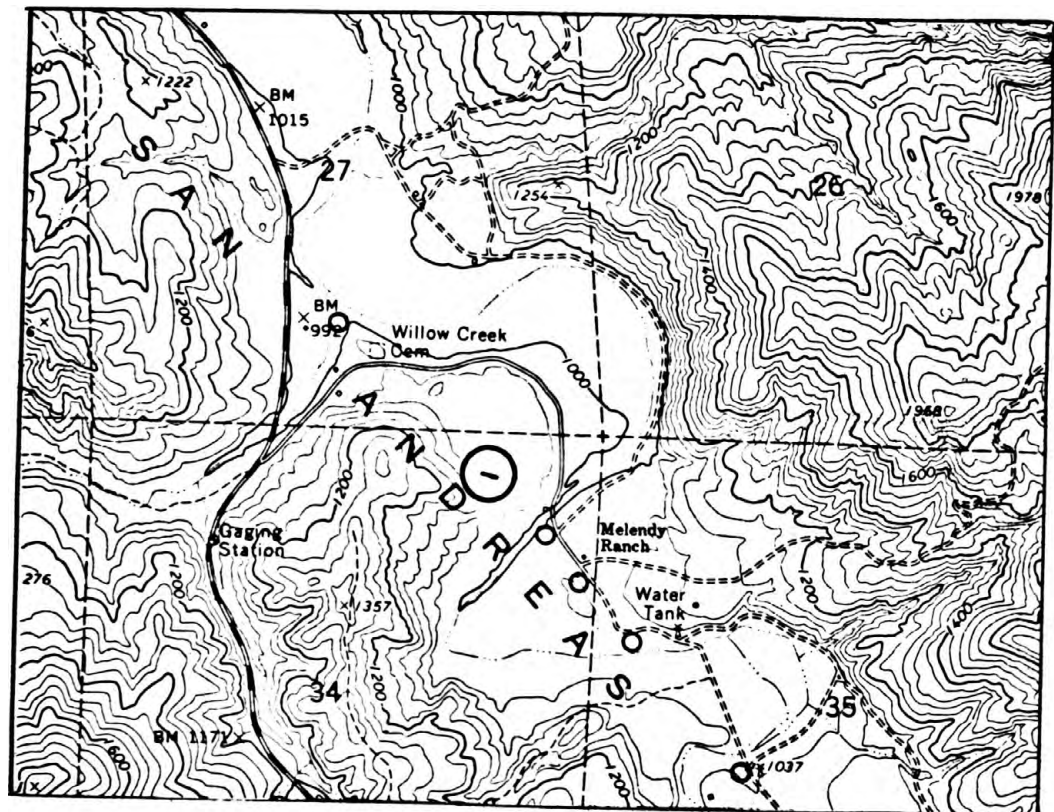
STATION XMRI

103

Latitude $36^{\circ} 35.7'$
Longitude $121^{\circ} 11.2'$

Position 350.8 km
10 meter wire, $\theta=30^{\circ}$

The Melendy Ranch (North) creepmeter was installed during June, 1969, on the San Andreas fault at a site 41.7 km southeast of San Juan Bautista. The installation consists of a single wire buried a few centimeters below the surface on the crest of a low pressure ridge between a small sag pond and an old river terrace. Creep activity at this site is composed of regular creep events of up to about 3.5 mm amplitude, superimposed on a variable background of right-lateral slip at near-zero to moderate rates. The average creep rate is about 21 mm/yr, with a significant seasonal variation.

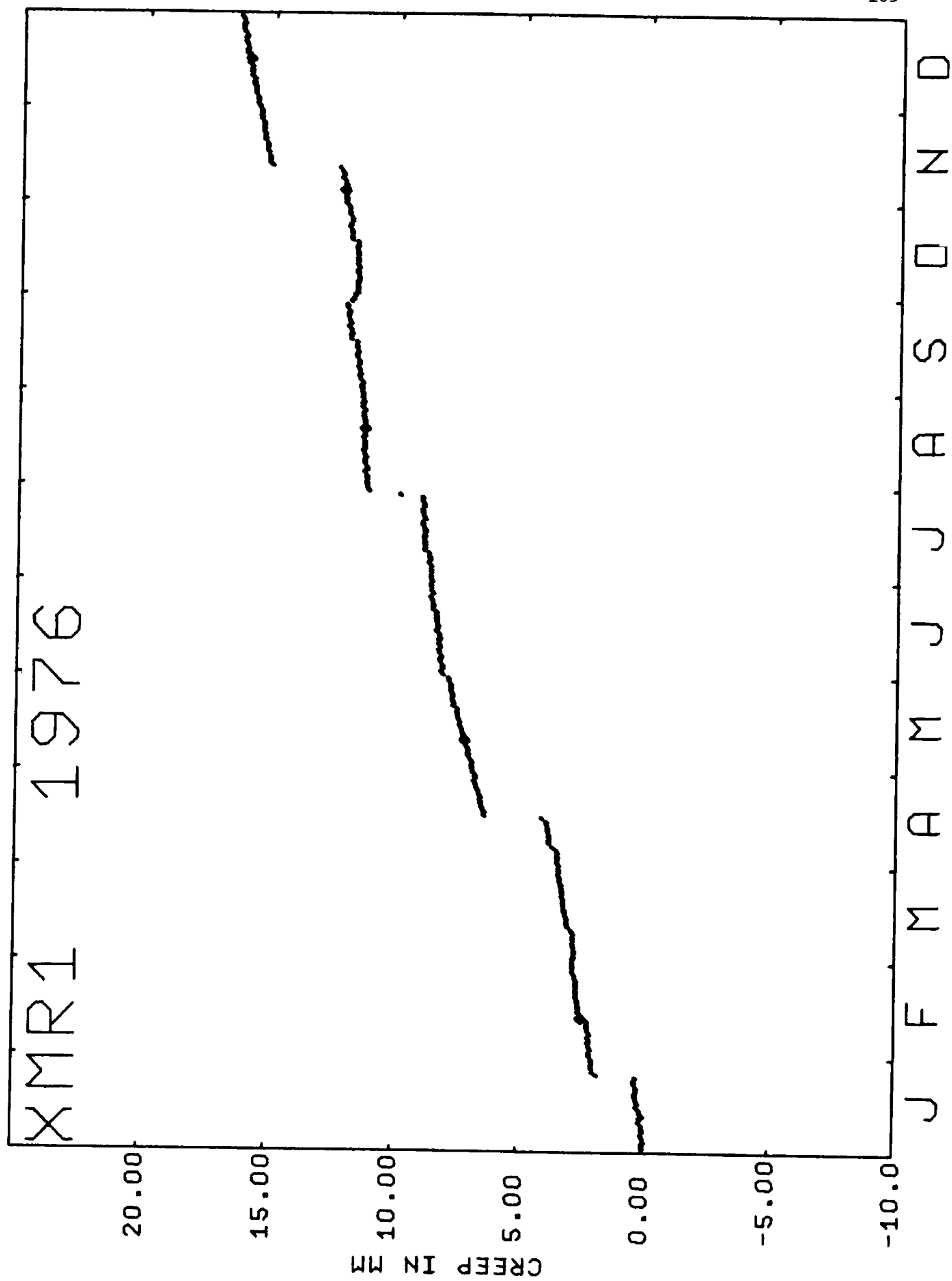


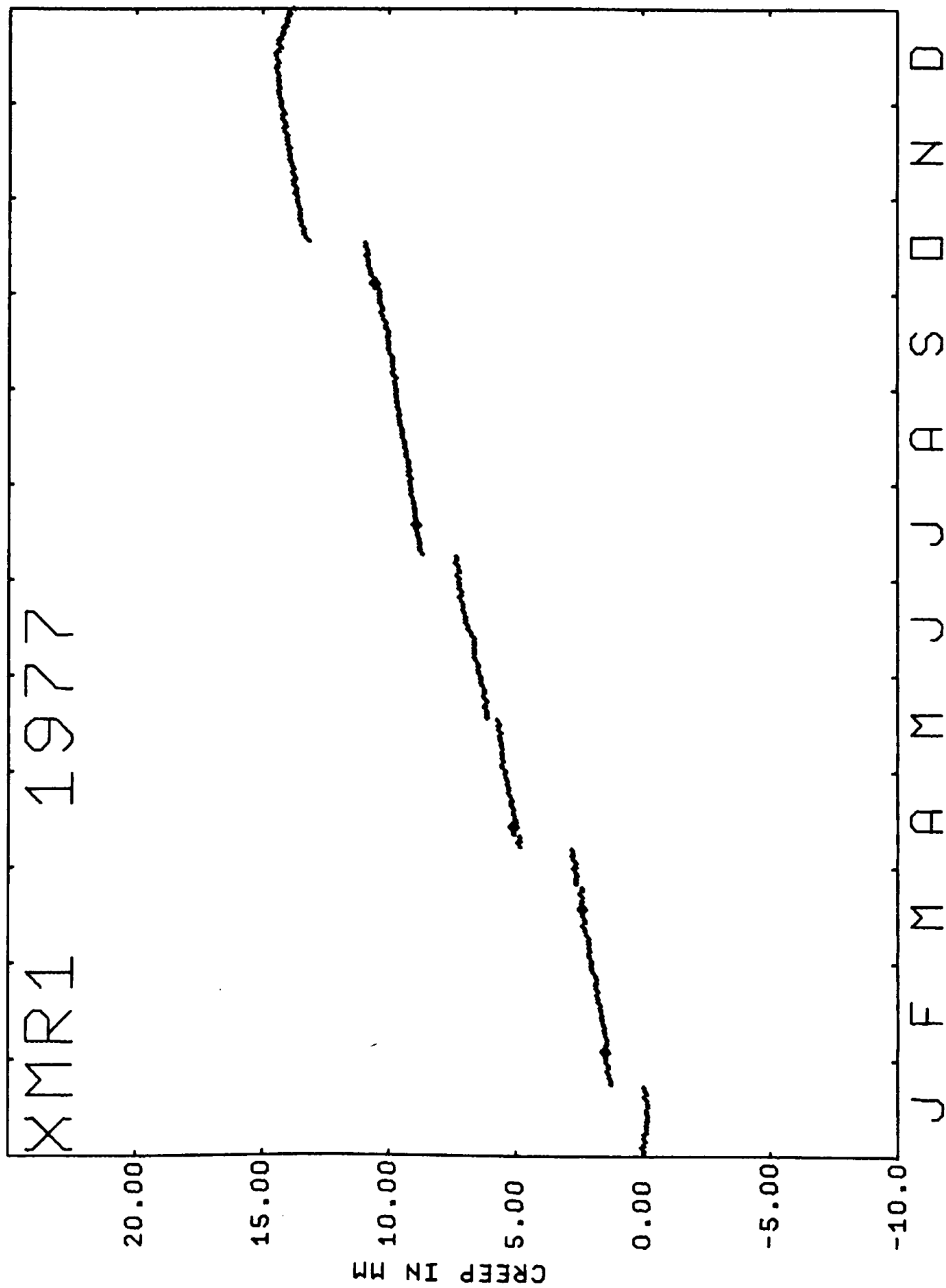
BICKMORE CANYON QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

XMR1 CORRECTED CREEPMETER READINGS (mm)

104

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					131.01	
FEB 12	2.97		2.97		133.98	
MAY 11	4.77		7.74		138.75	
JUL 23	1.72		9.46		140.47	
AUG 19	2.37		11.83		142.84	
NOV 4	0.89		12.72		143.73	
DEC 16	3.80		16.52		147.53	
<u>1977</u>						
FEB 2	1.78		1.78		149.31	
MAR 19	0.92		2.70		150.23	
APR 14	2.68		5.38		152.91	
JUL 19	3.89		9.27		156.80	
AUG 12	-0.06		9.21		156.74	
OCT 4	1.71		10.92		156.45	
NOV 16	3.42		14.34		161.87	





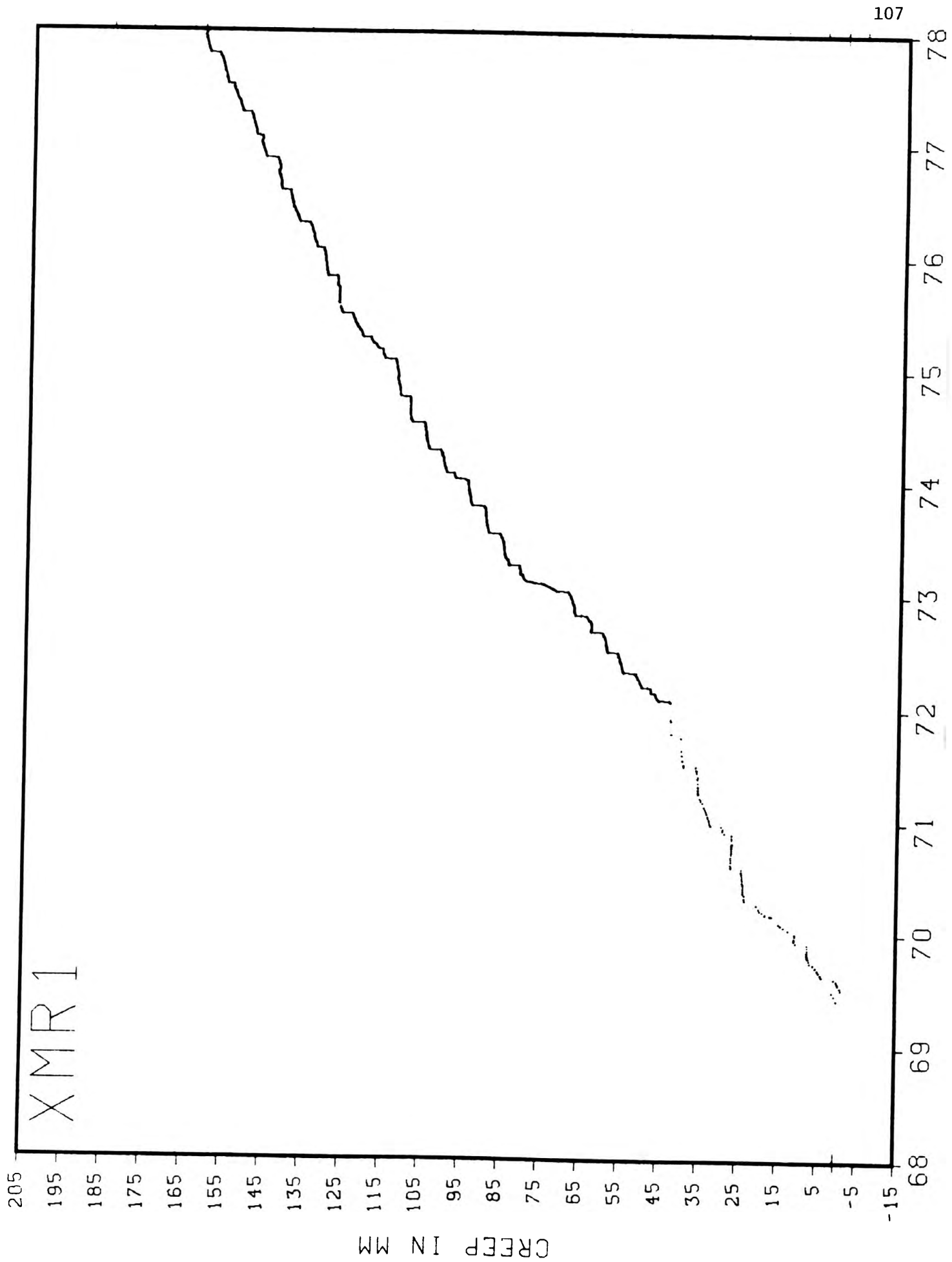


Table of XMRI Events

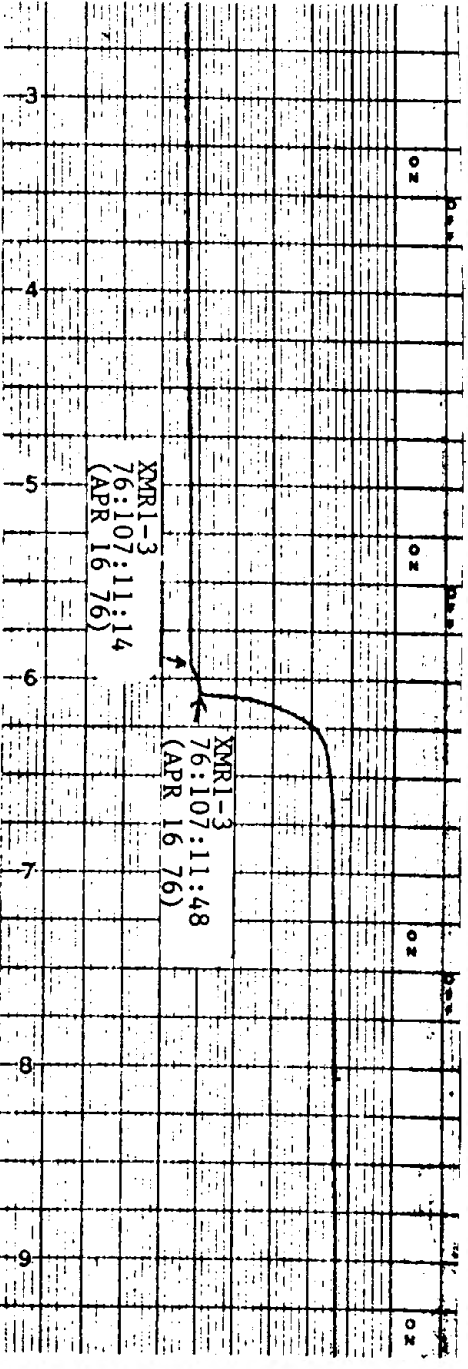
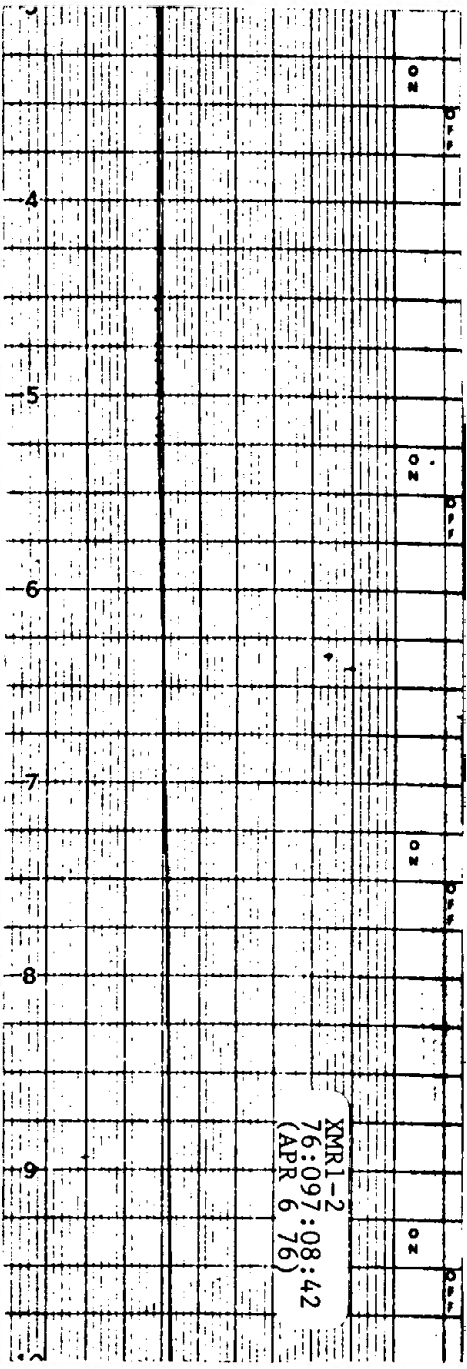
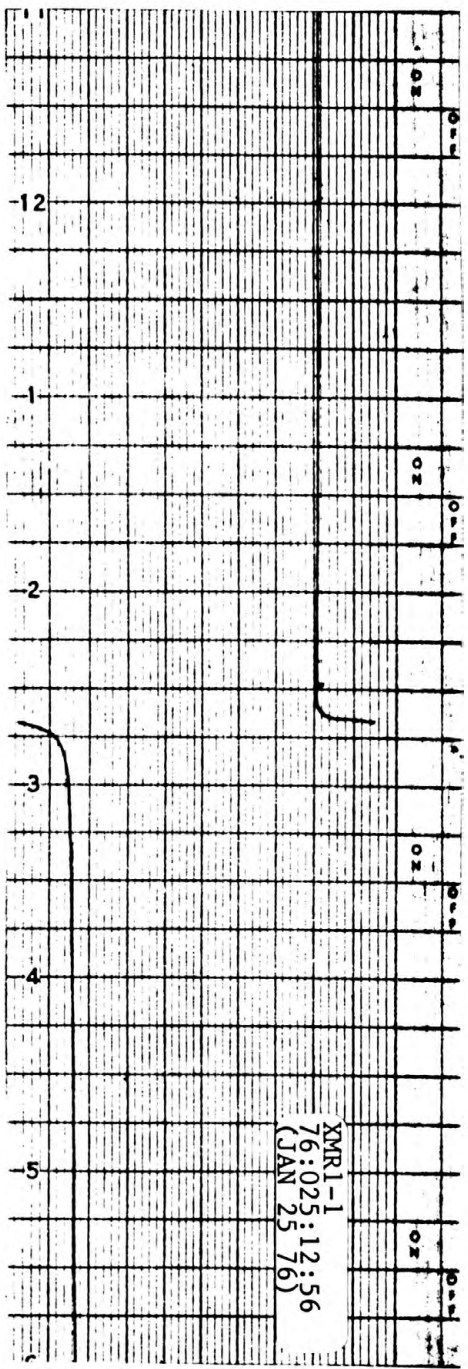
108

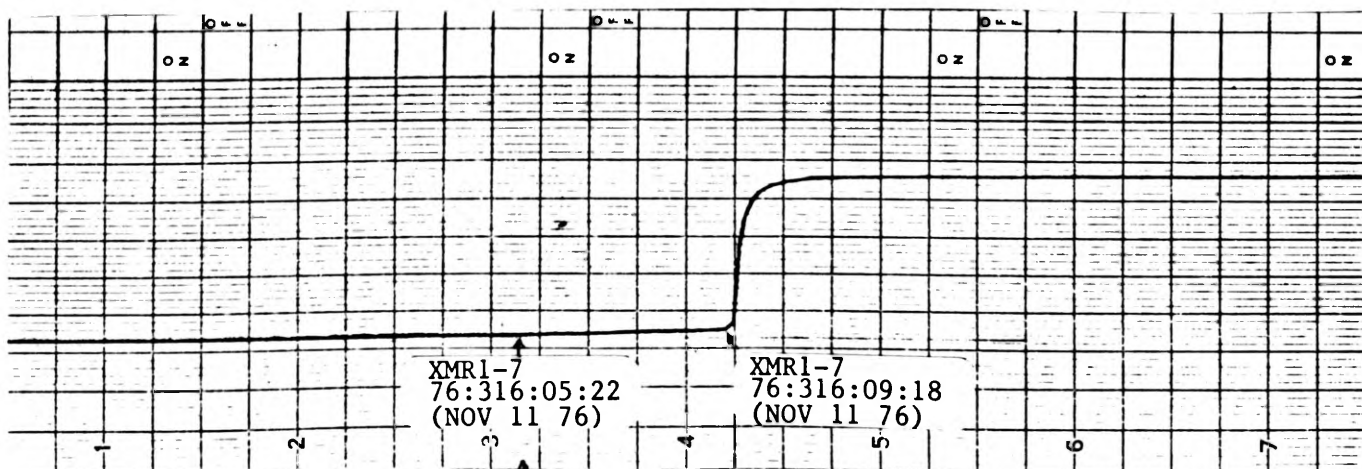
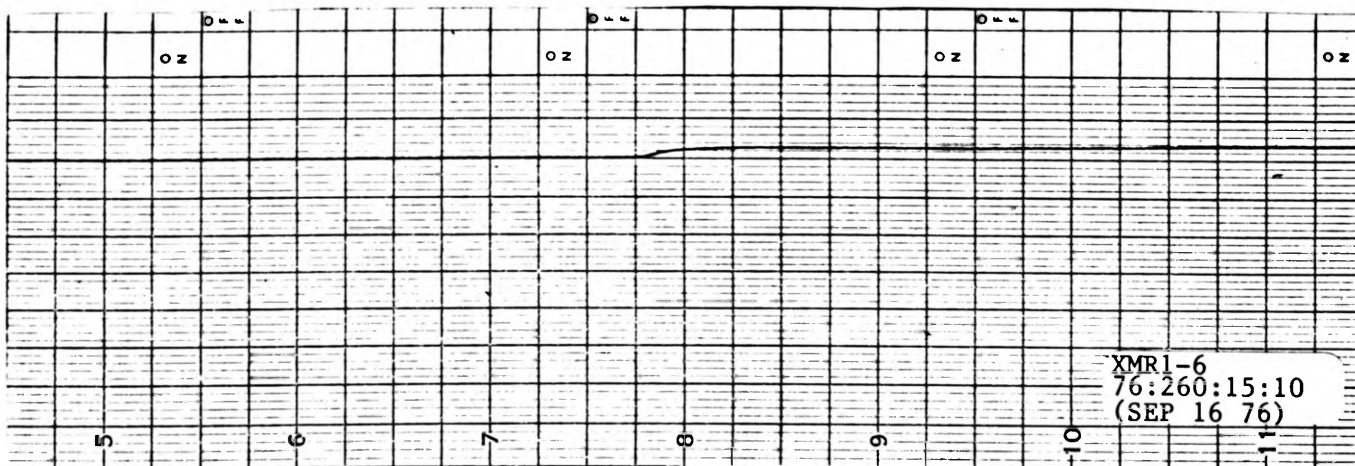
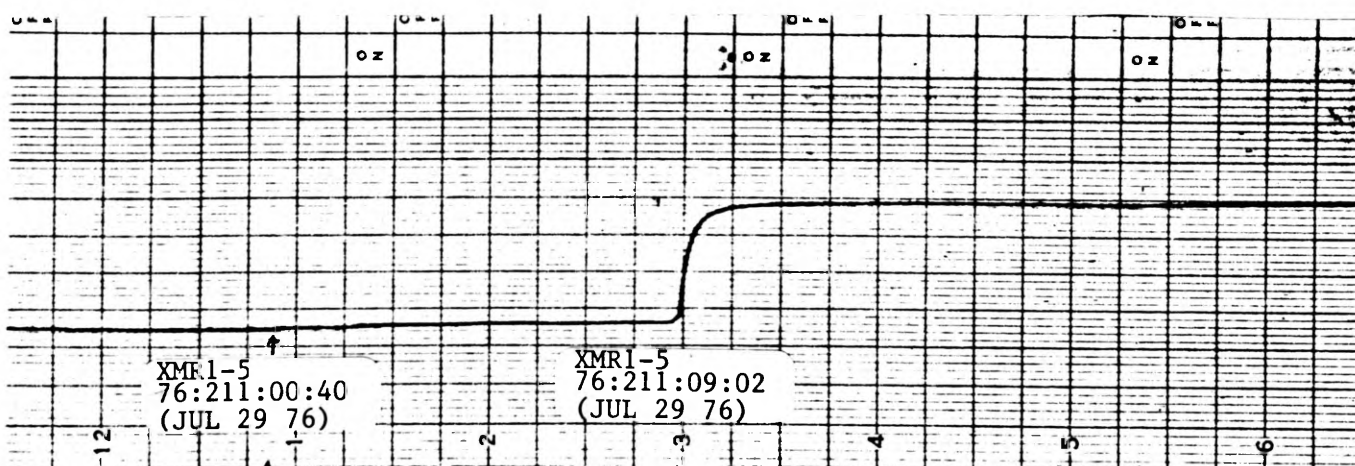
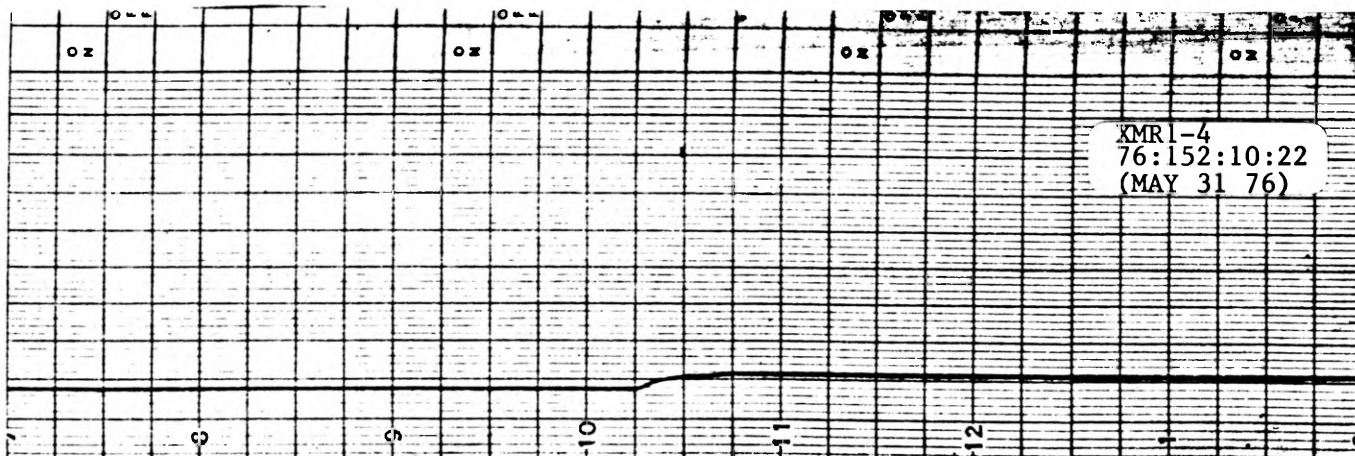
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. No.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	025	Jan. 25	1256	1.73	1	1.00	0.600
	069-072	Mar. 9-12		0.25	*		
	097	Apr. 6	0842	0.34	2	1.00	0.5906
	107	Apr. 16	1114	0.22	3	1.00	0.5906
	107	Apr. 16	1148	2.31	3	1.00	0.5906
	152	May 31	1022	0.23	4	1.00	0.6142
	192	Jul. 10		0.20	*		
	211	Jul. 29	0040	0.12	5	1.00	0.6142
	211	Jul. 29	0902	2.08	5	1.00	0.6142
	260	Sep. 16	1510	0.24	6	1.00	0.5685
	272	Sep. 28 ^{1/}		-0.47	*		
	293	Oct. 19		0.22	*		
	316	Nov. 11	0522	0.14	7	1.00	0.6145
	316	Nov. 11	0918	2.64	7	1.00	0.6145
1977	022	Jan. 22	1738	1.24	8	1.00	0.6145
	097	Apr. 7	1635	2.23 Total	9	1.00	0.6150
	098	Apr. 8	0125		9	1.00	0.6150
	098	Apr. 8 (onset of main event)	0239		9	1.00	0.6150
	098	Apr. 8	1243		9	1.00	0.6150
	138	May 18	1102	0.41	10	1.00	0.6070
	191	Jul. 10	0036	1.06	11	1.00	0.6070
	290	Oct. 17	2320	2.36	12	1.00	0.6145
	351	Dec. 17 ^{2/}	1536	-0.19	13	1.00	0.6145

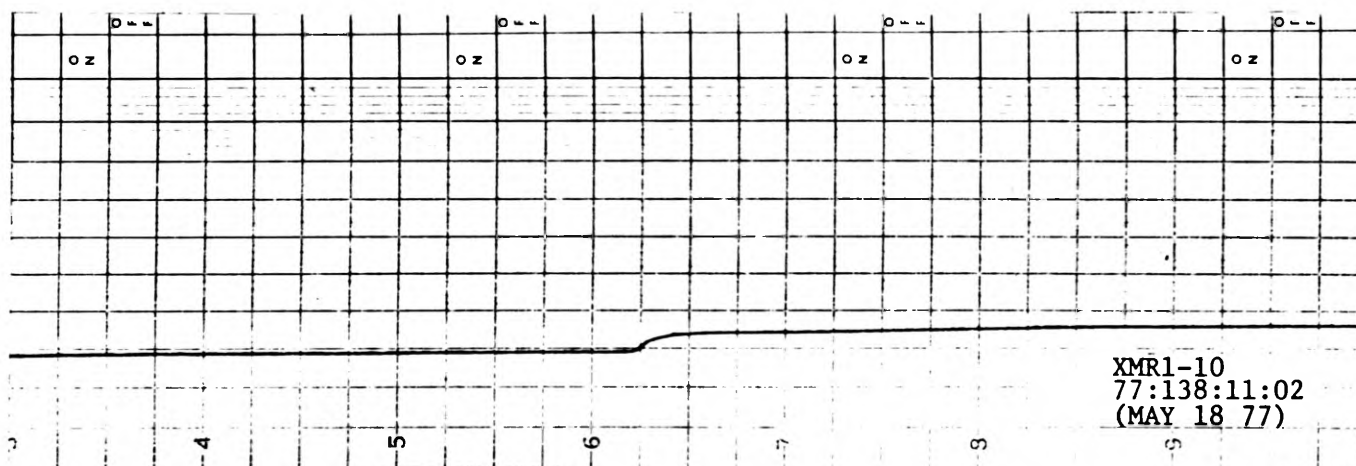
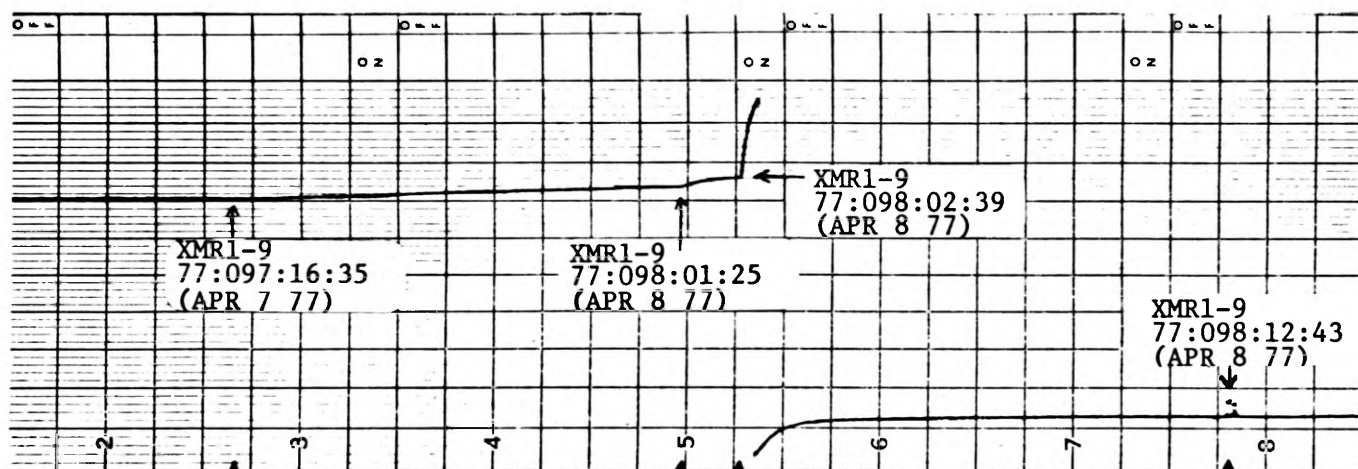
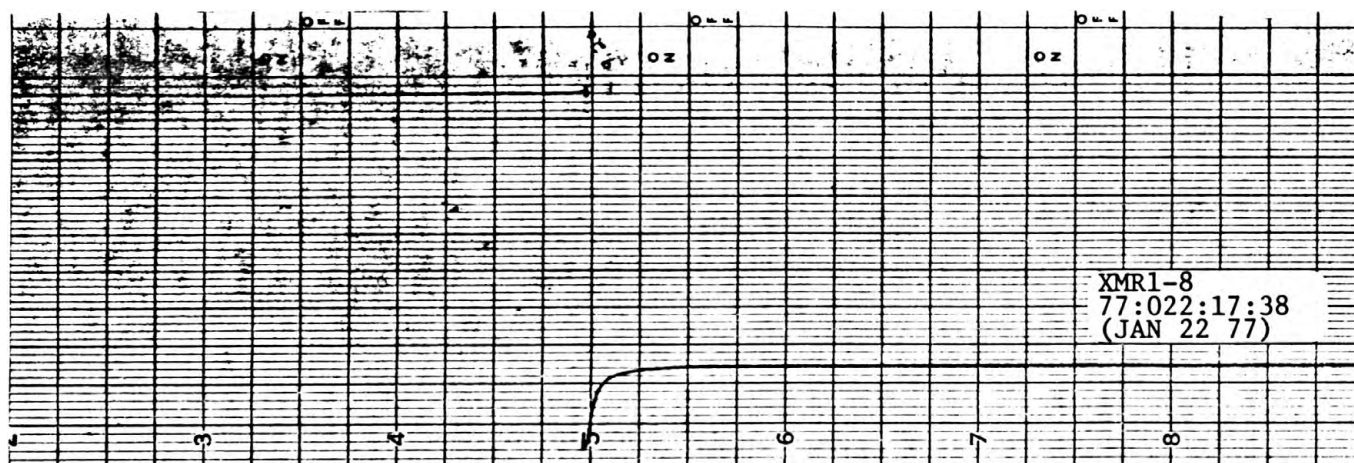
1/ Onset of 8-day period of apparent left-lateral slip. The onset was approximately coincident with beginning of rainfall.

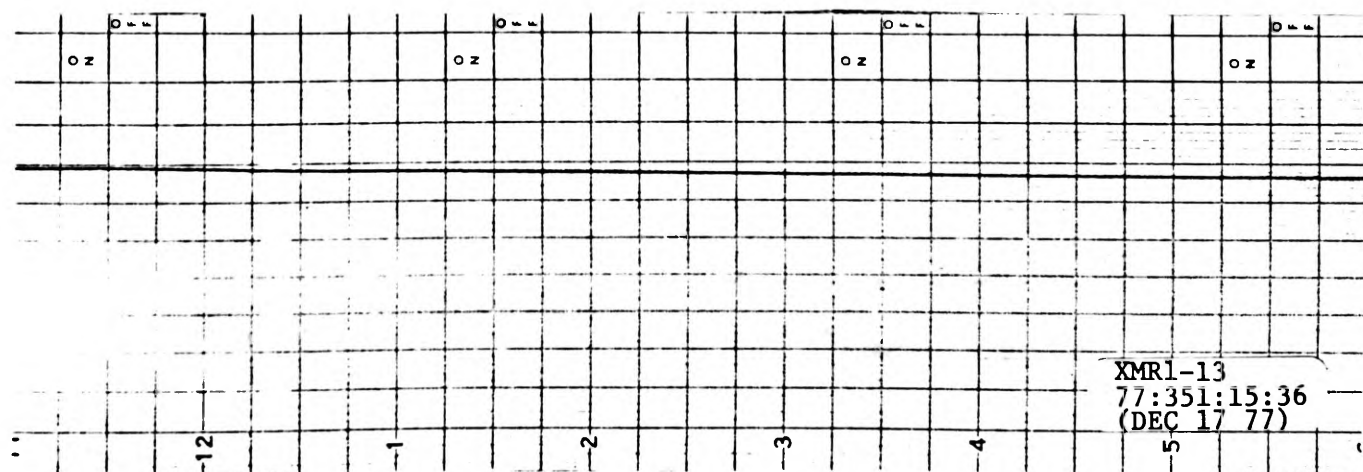
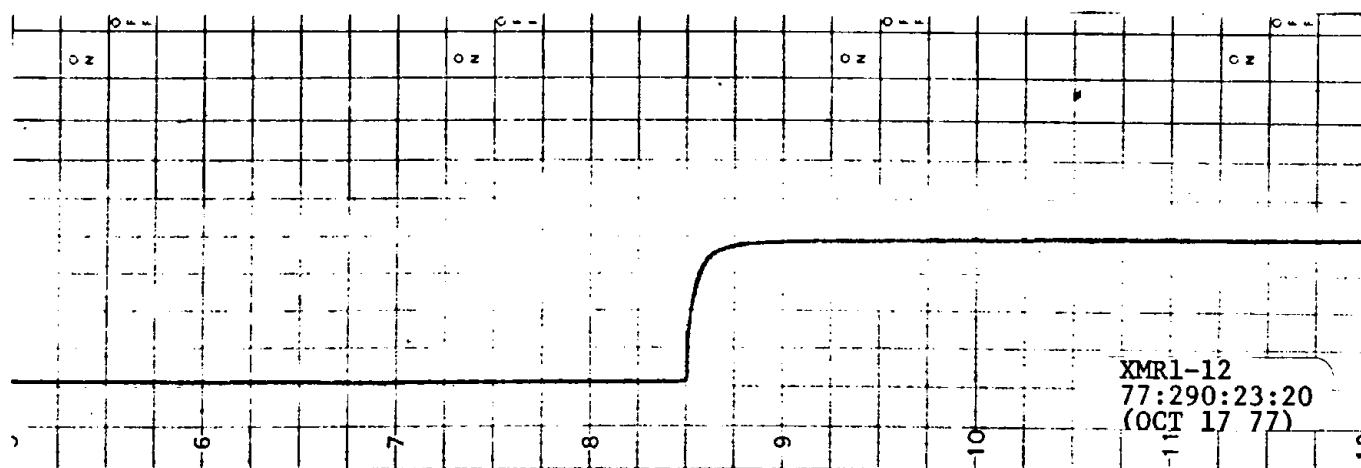
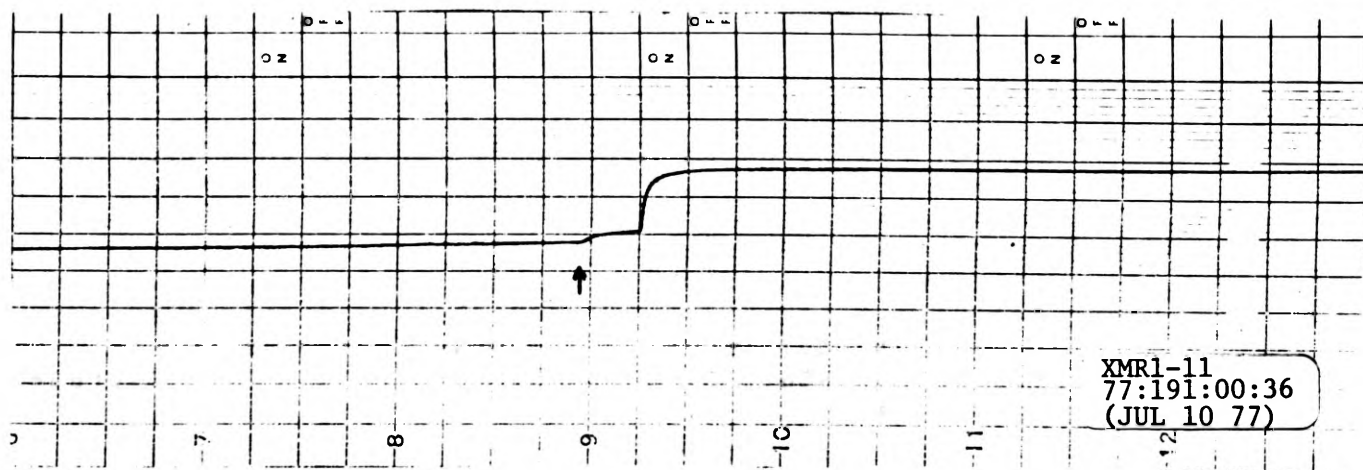
2/ Rainfall

* Refer to annual plot









STATION MRC

Latitude $36^{\circ} 35.5'$

Position 351.2 km

Longitude $121^{\circ} 11.1'$ 15 meter rod, $\theta=45^{\circ}$

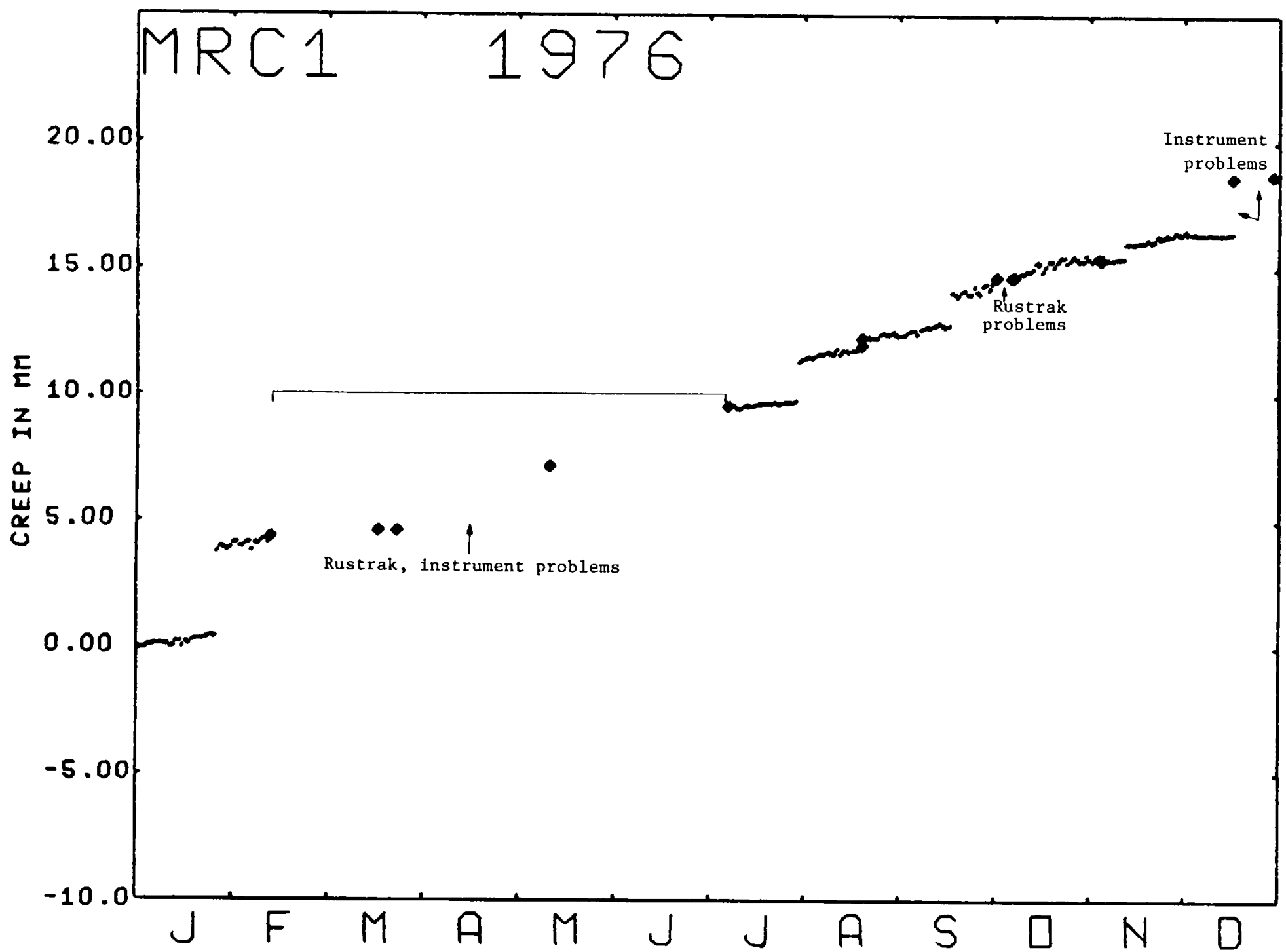
The Melendy Ranch Corral creepmeter was installed during September, 1970, on the San Andreas fault at a site 42.1 km southeast of San Juan Bautista. The installation consists of a single rod buried a few centimeters below the surface of gently sloping, recent river deposits. Creep activity at this site is composed of distinct events of up to 4.1 mm amplitude, superimposed on a background of nearly steady-state slip at moderate rates. The average creep rate is about 23 mm/yr.

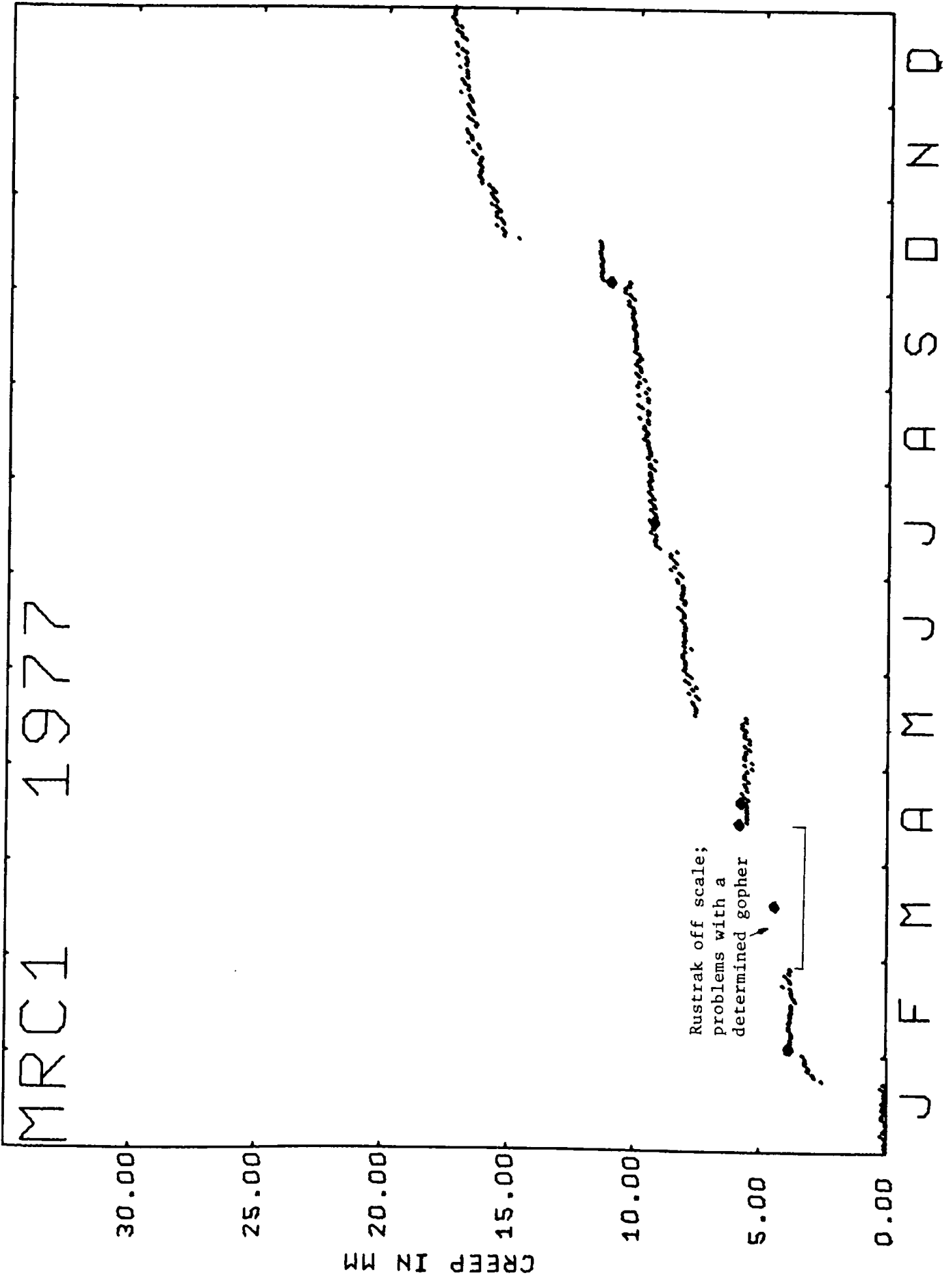
7.5 MINUTE SERIES (TOPOGRAPHIC)

MRC CORRECTED CREEPMETER READINGS (mm)

114

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					117.51	
FEB 12	4.95		4.95		122.46	
MAR 17	0.28		5.23		122.74	
MAY 11	2.55		7.78		125.29	
AUG 18	4.98		12.76		130.27	
AUG 19	0.11		12.87		130.38	
OCT 1	2.40		15.27		132.78	
NOV 4	0.71		15.98		133.49	
DEC 16	3.25		19.23		136.74	
<u>1977</u>						
FEB 3	3.96		3.96		140.70	
MAR 19	0.57		4.53		141.27	
APR 14	1.41		5.94		142.68	
APR 21	-0.03		5.91		142.65	
JUL 19	3.47		9.38		146.12	
AUG 11	0.56		9.94		146.48	
OCT 4	1.27		11.21		147.95	
NOV 17	5.17		16.38		153.12	





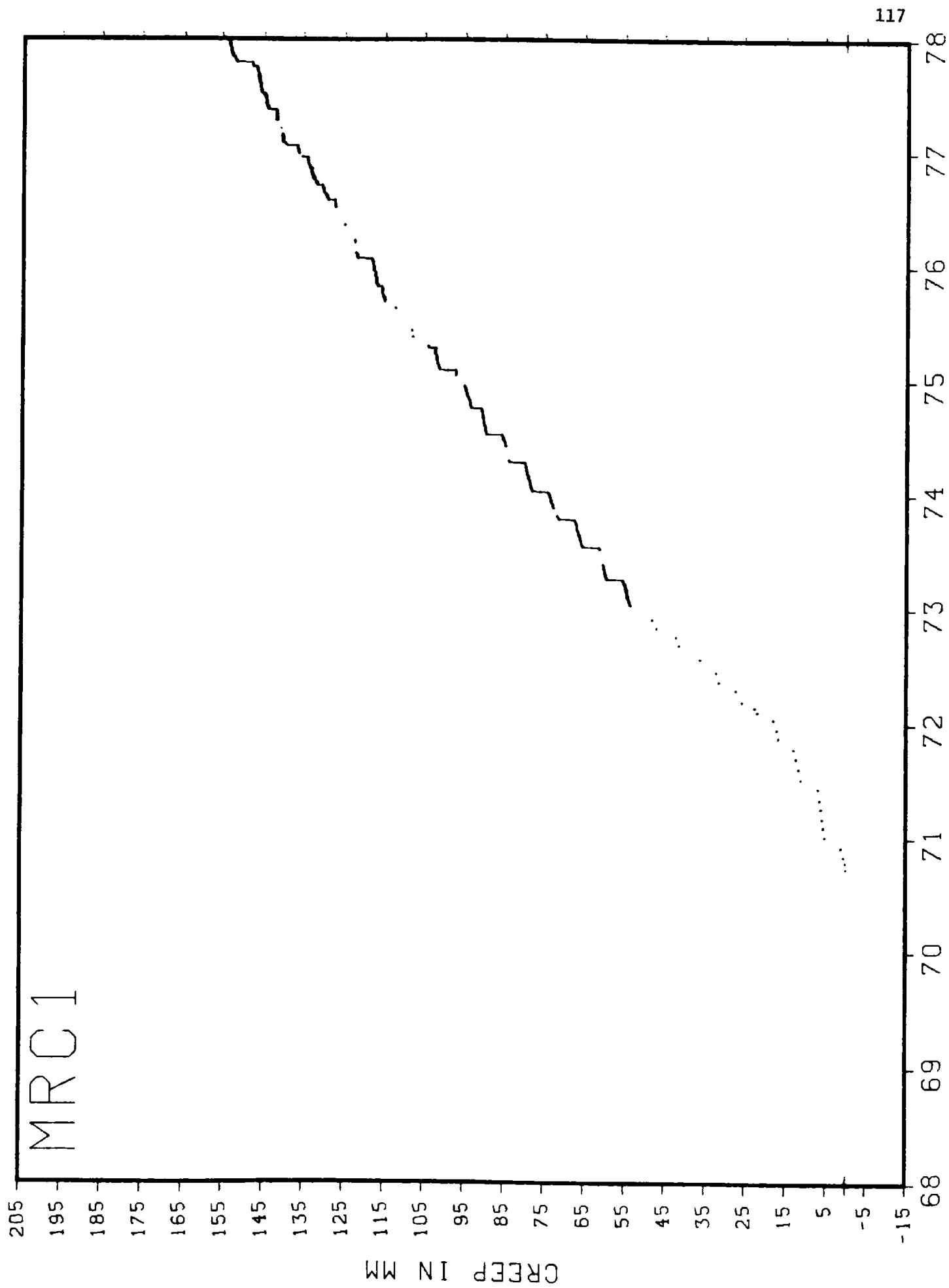


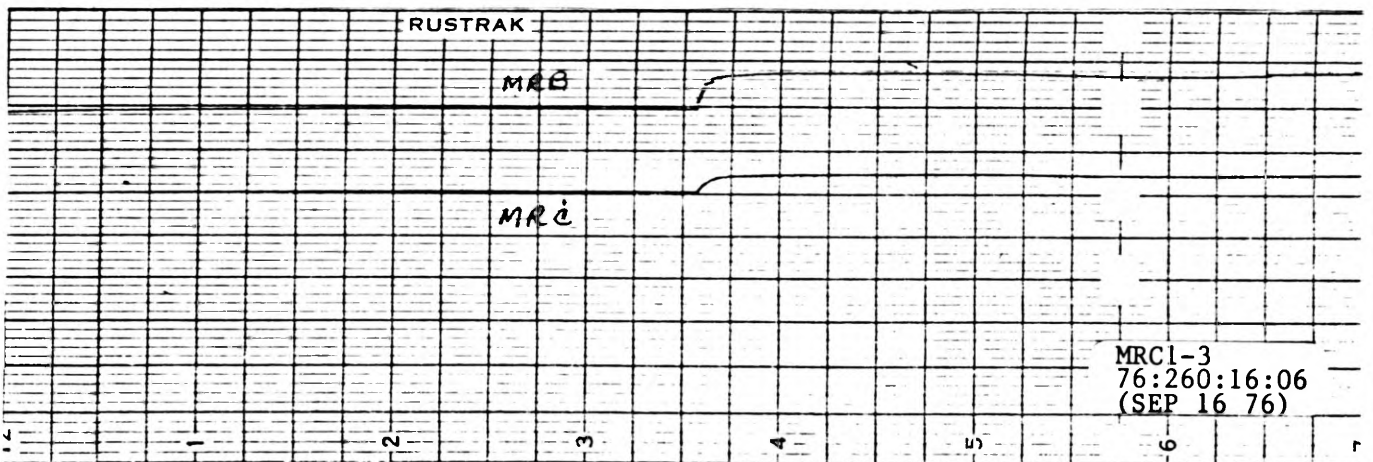
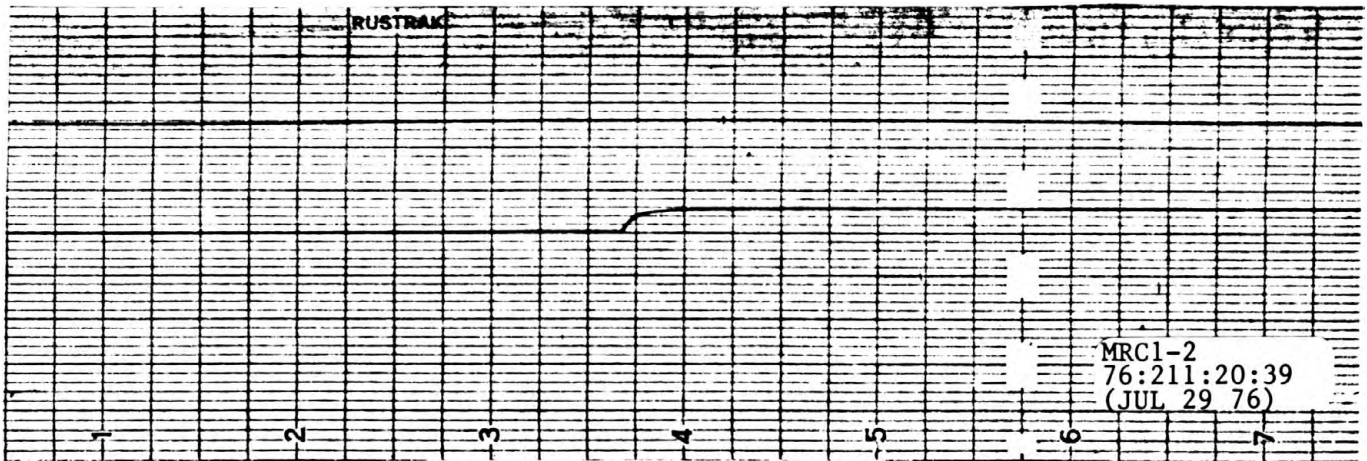
Table of MRC1 Events

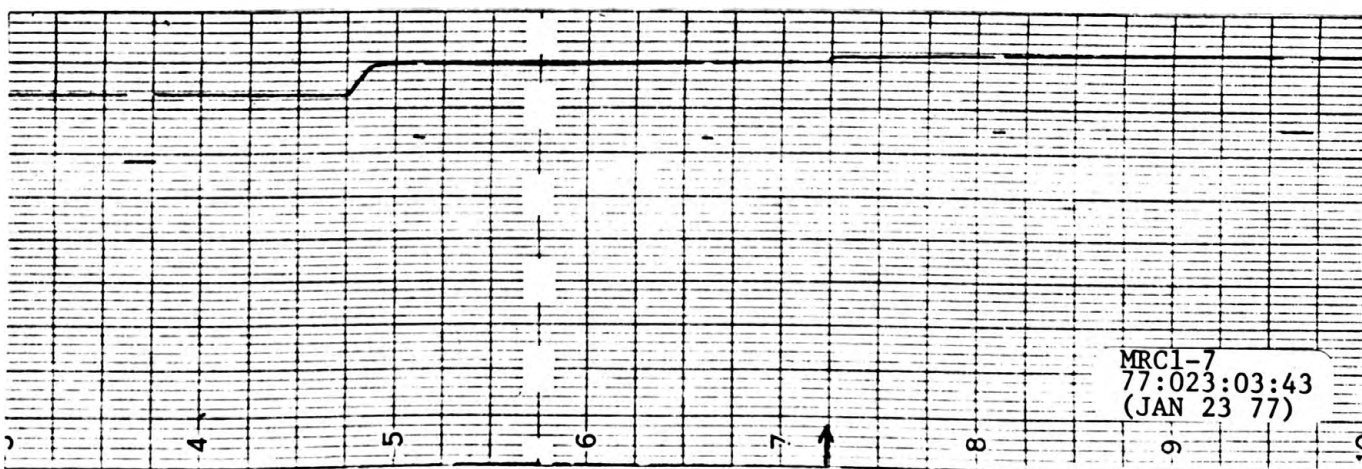
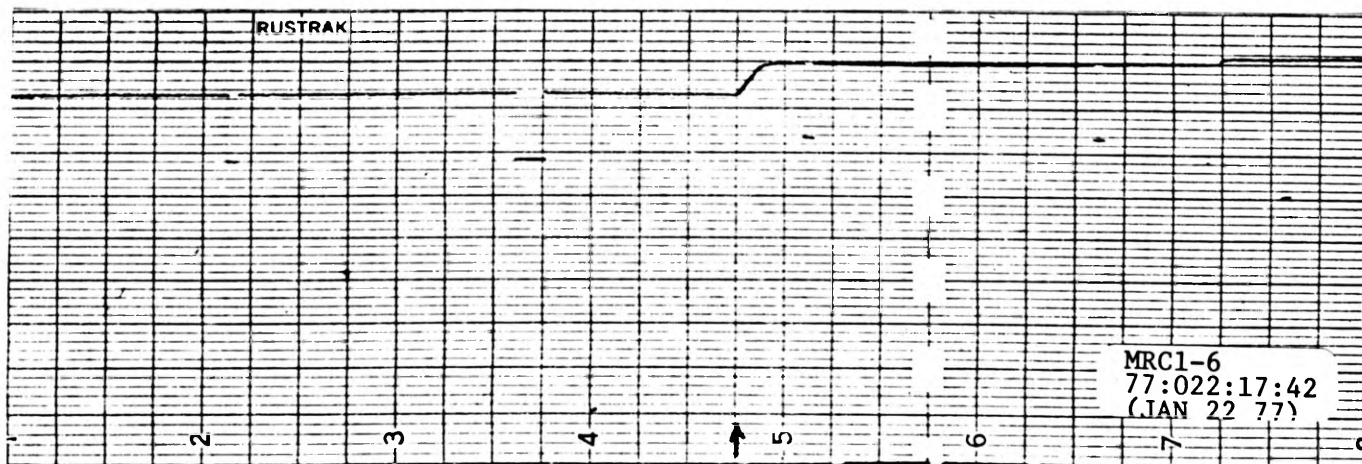
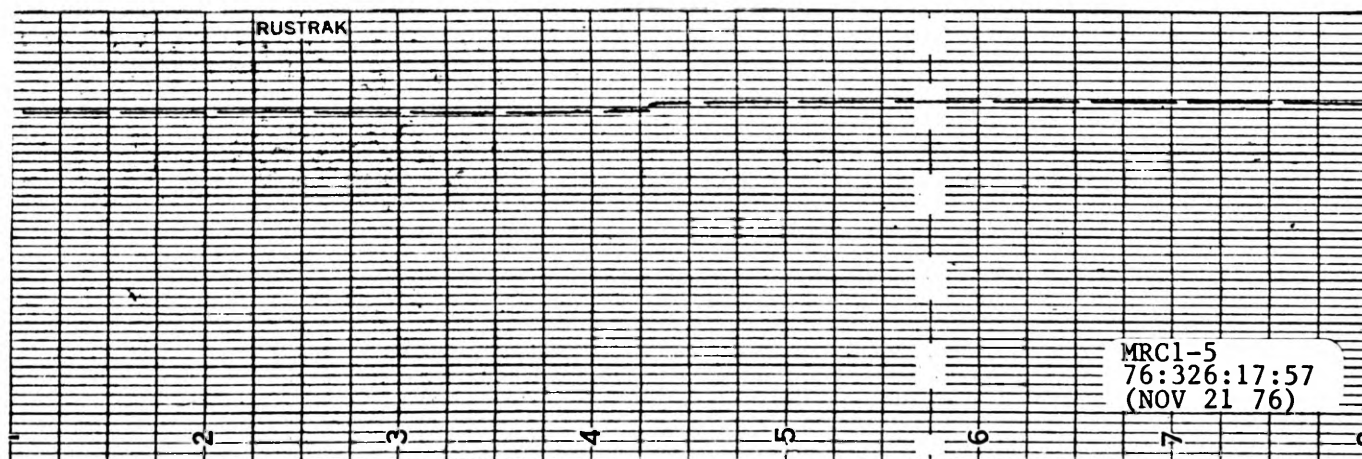
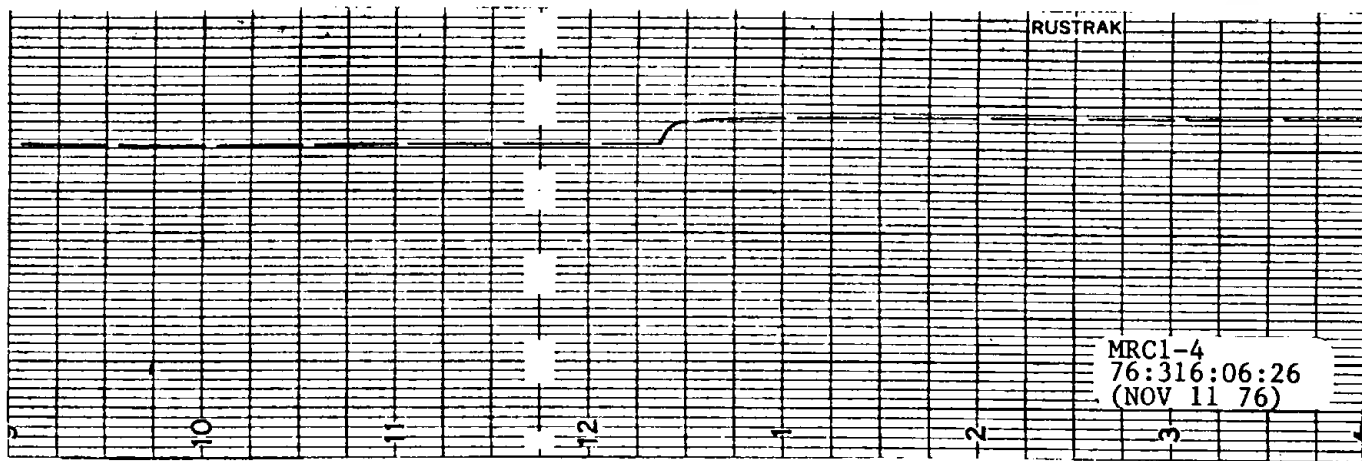
118

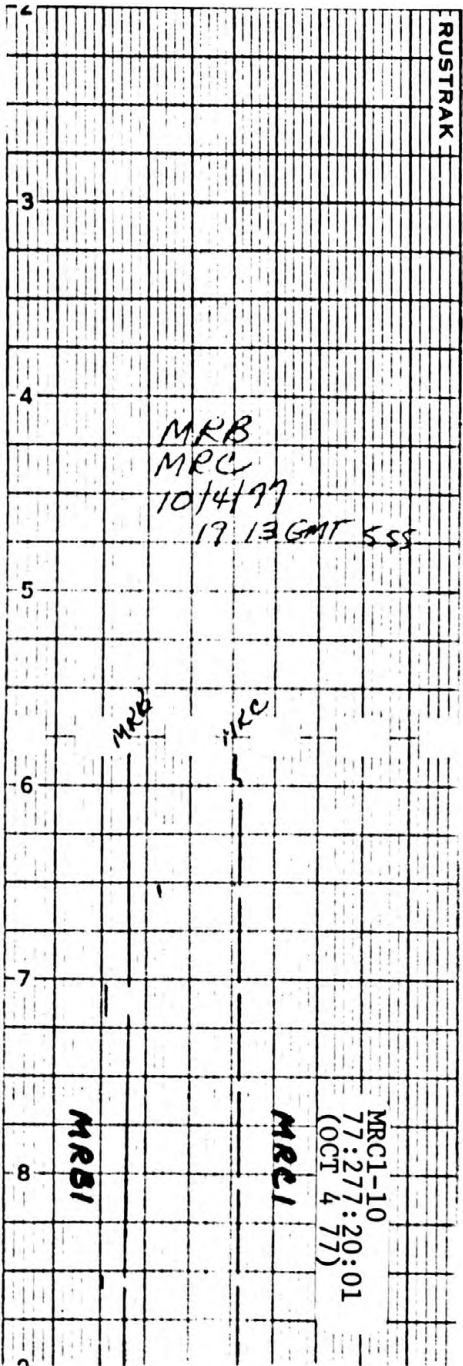
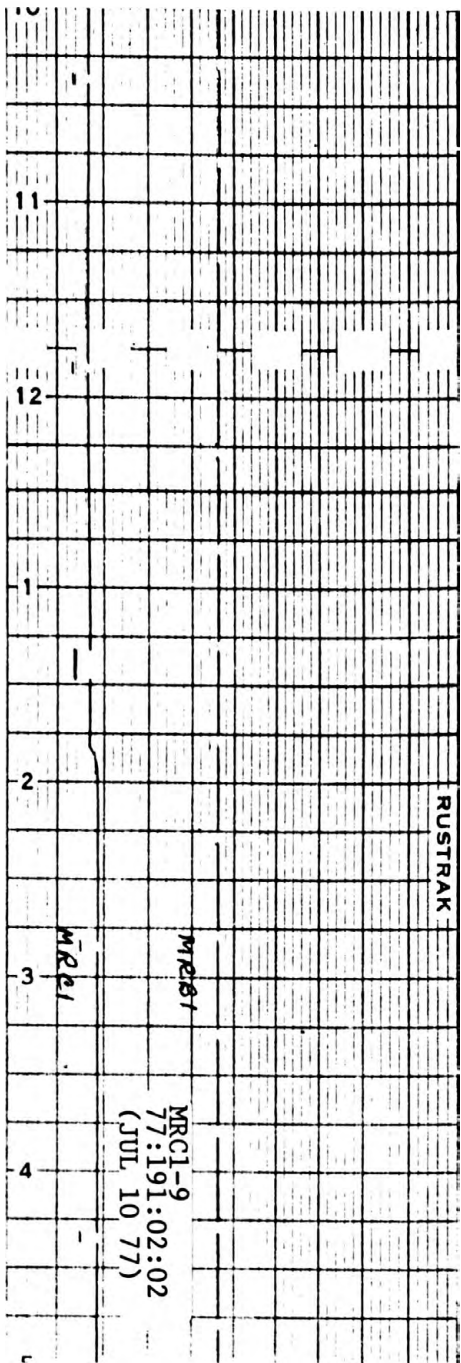
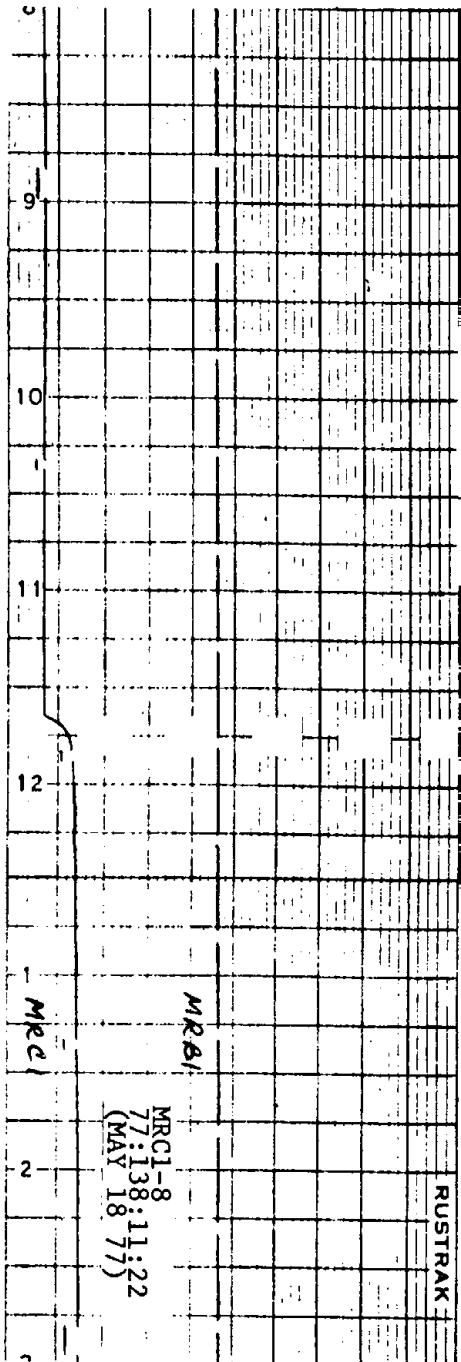
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	025	Jan. 25	(Approx) (1630)	3.42	1	1.35	1.04
	211	Jul. 29	2039	1.82	2	0.94	2.93
	260	Sep. 16	1606	1.29	3	0.95	2.86
	316	Nov. 11	0626	0.58	4	0.98	0.84
	326	Nov. 21	1757	0.22	5	0.98	0.84
	352	Dec. 17 ^{1/}		2.18	*		
1977	022	Jan. 22	1742	2.14	6	1.01	3.24
	023	Jan. 23	0343	0.68	7	1.01	3.24
	138	May 18	1122	1.72	8	1.01	2.44
	191	Jul. 10	0202	0.20	9	1.01	2.44
	277	Oct. 4	2001	0.40	10	1.01	2.83
	290	Oct. 17	2323	3.96	11	1.01	2.83
	291	Oct. 18	1016	0.37	11	1.01	2.83
	308	Nov. 4	1516	0.28	12	1.01	2.83

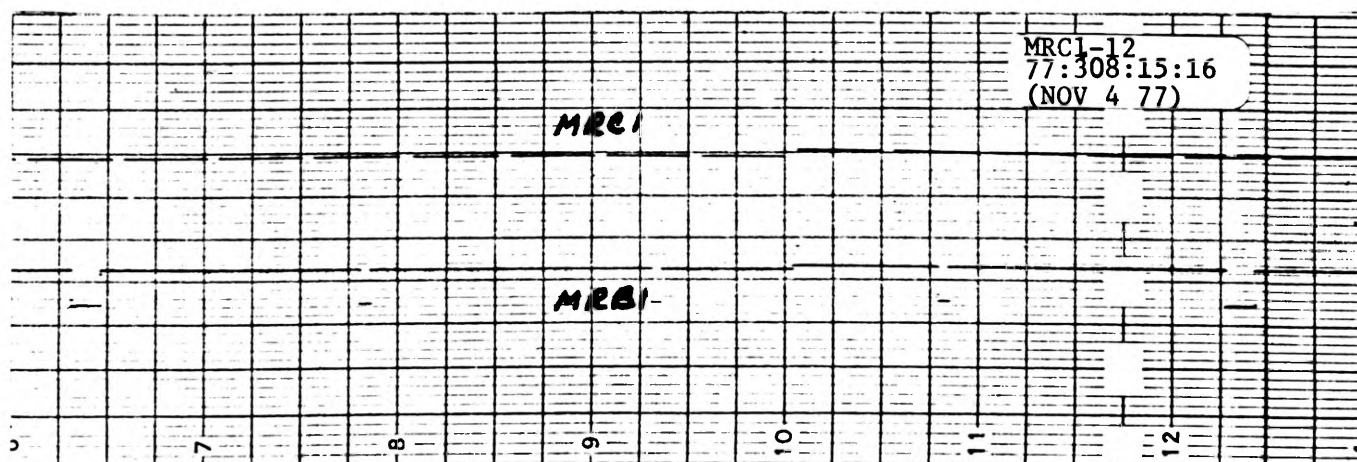
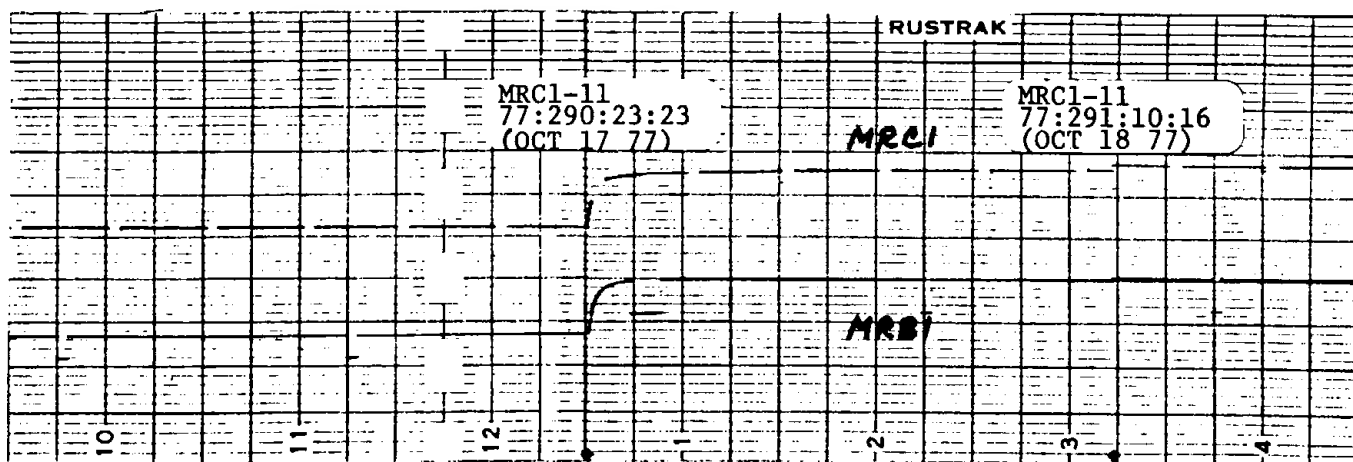
^{1/}Instrument friction step during reading.

* Refer to annual plot.







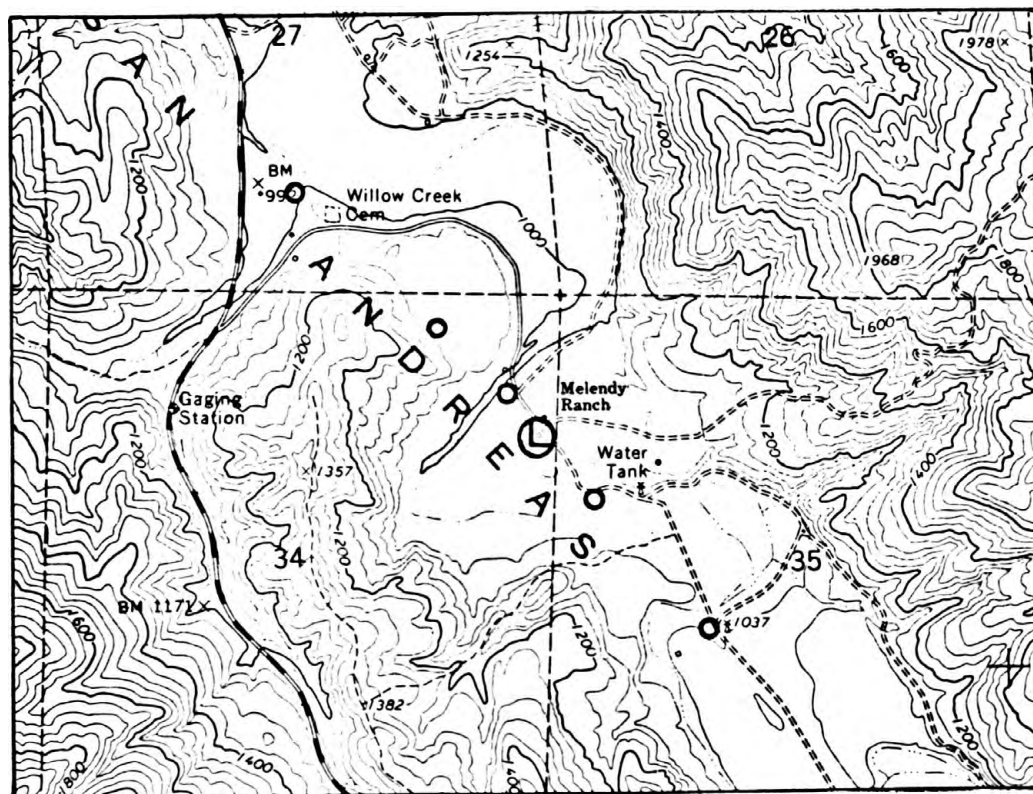


STATION MRB

Latitude $36^{\circ} 35.4'$
 Longitude $121^{\circ} 11.0'$

Position 351.4 km
 12 meter rods, $\theta=45^{\circ}$

The Melendy Ranch Barn creepmeters were installed during June, 1969, on the San Andreas fault at a site 42.3 km southeast of San Juan Bautista. The installation consists of a pair of rods in a "V" configuration, buried a few centimeters below the surface in river terrace deposits across a prominent northeast-facing scarp. Creep activity at this site is composed of distinct events of up to 4.2 mm amplitude, superimposed on a background of nearly steady-state slip at moderate rates. The average creep rate is about 21 mm/yr, with a slight seasonal variation. MRB2, the rod measuring contraction on the fault, was abandoned in August, 1975.



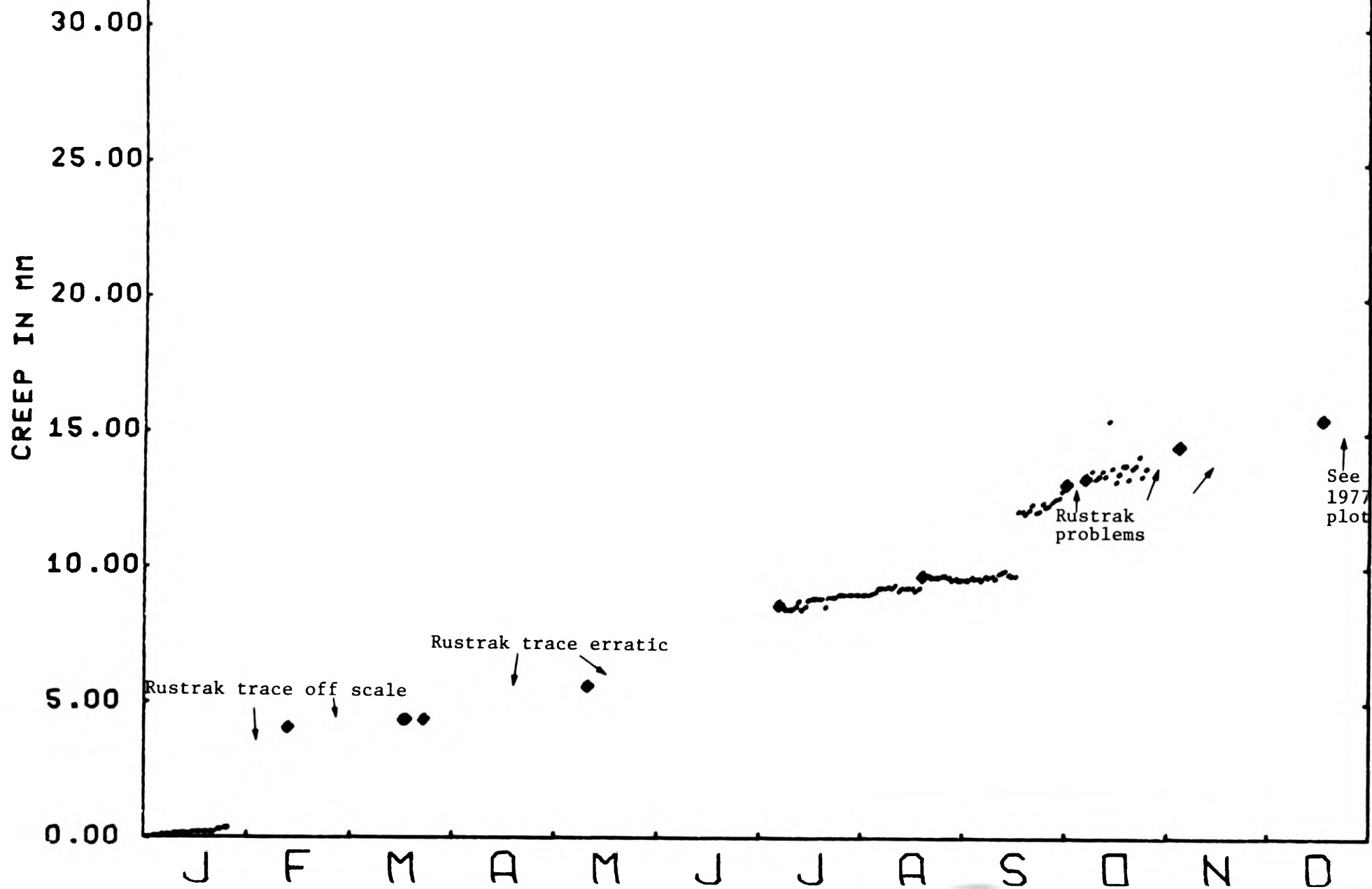
BICKMORE CANYON QUADRANGLE
 CALIFORNIA
 7.5 MINUTE SERIES (TOPOGRAPHIC)

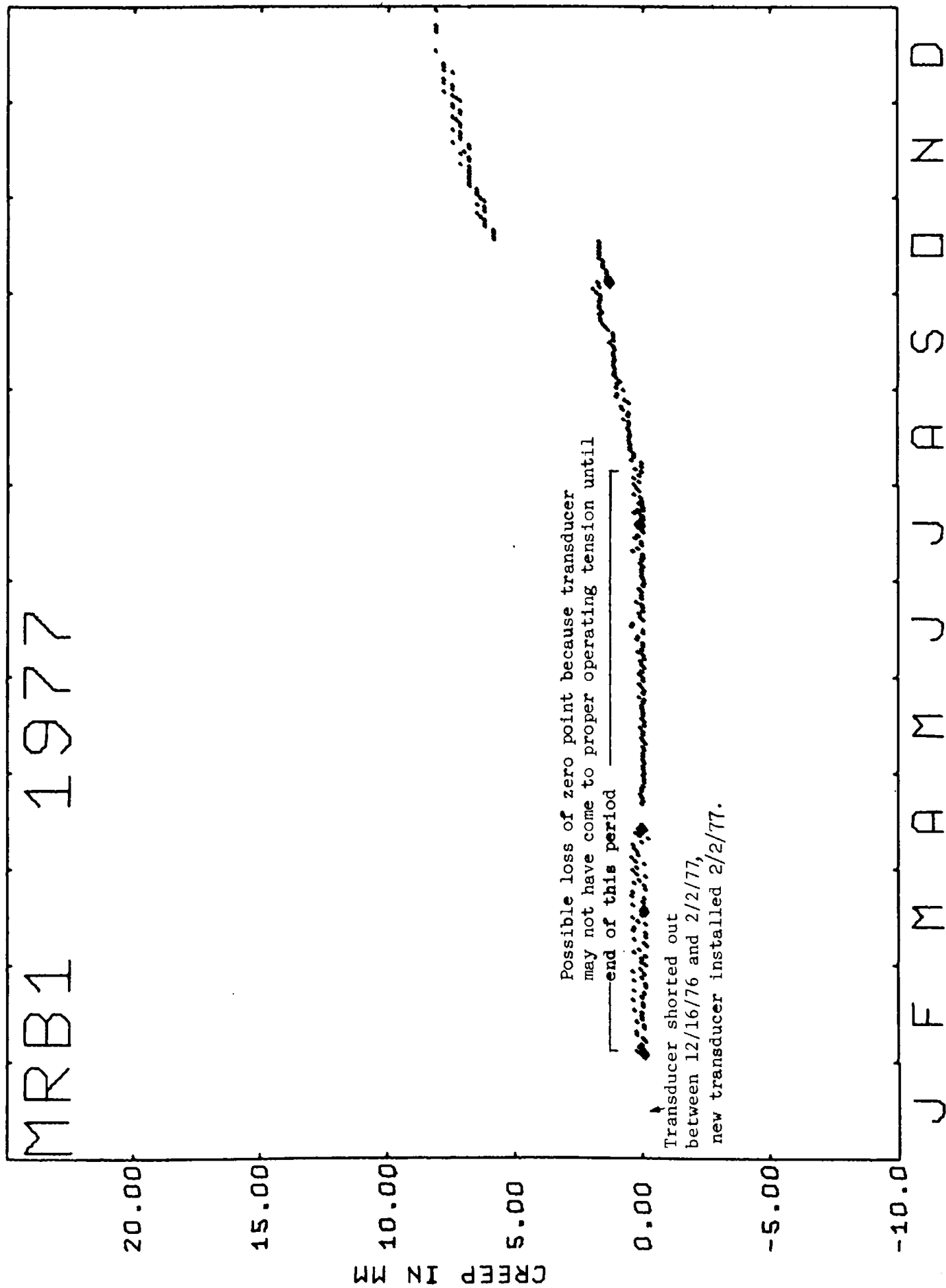
MRB CORRECTED CREEPMETER READINGS (mm)

124

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					128.51	
FEB 12	4.24		4.24		132.75	
MAR 17	0.28		4.52		133.03	
MAY 11	1.27		5.79		134.30	
AUG 18	3.49		9.28		137.79	
AUG 19	0.61		9.89		138.40	
OCT 1	3.40		13.29		141.80	
OCT 7	0.21		13.50		142.01	
NOV 4	1.21		14.71		143.22	
DEC 17	0.99		15.70		144.21	
<u>1977</u>						
FEB 2	-2.41		-2.41		141.80	
MAR 19	0.00		-2.41		141.80	
APR 14	0.10		-2.31		141.90	
JUL 19	0.04		-2.27		141.94	
AUG 12	0.43		-1.84		142.37	
OCT 4	0.78		-1.06		143.15	
NOV 17	5.61		4.55		148.76	

MRB1 1976





MRB 1

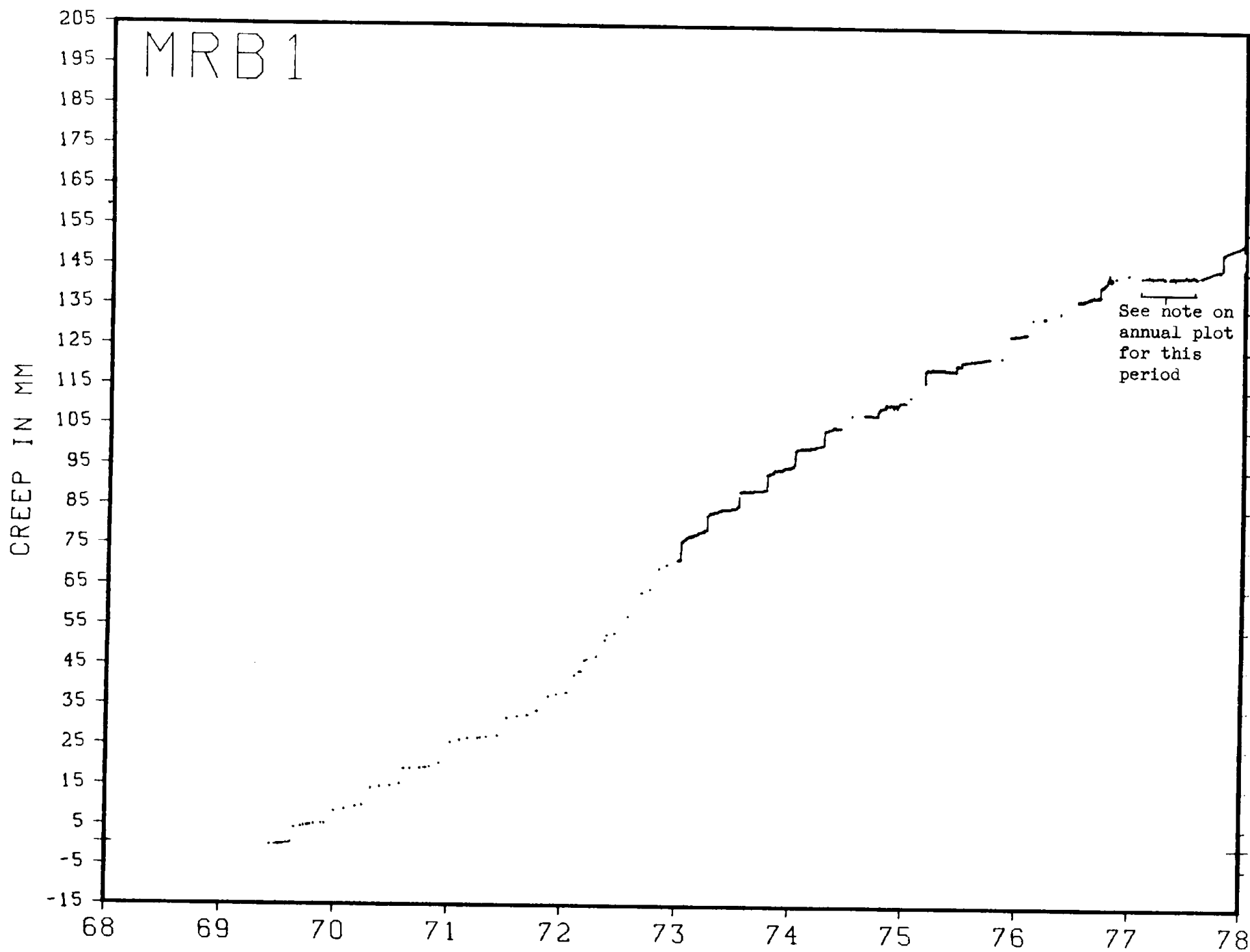
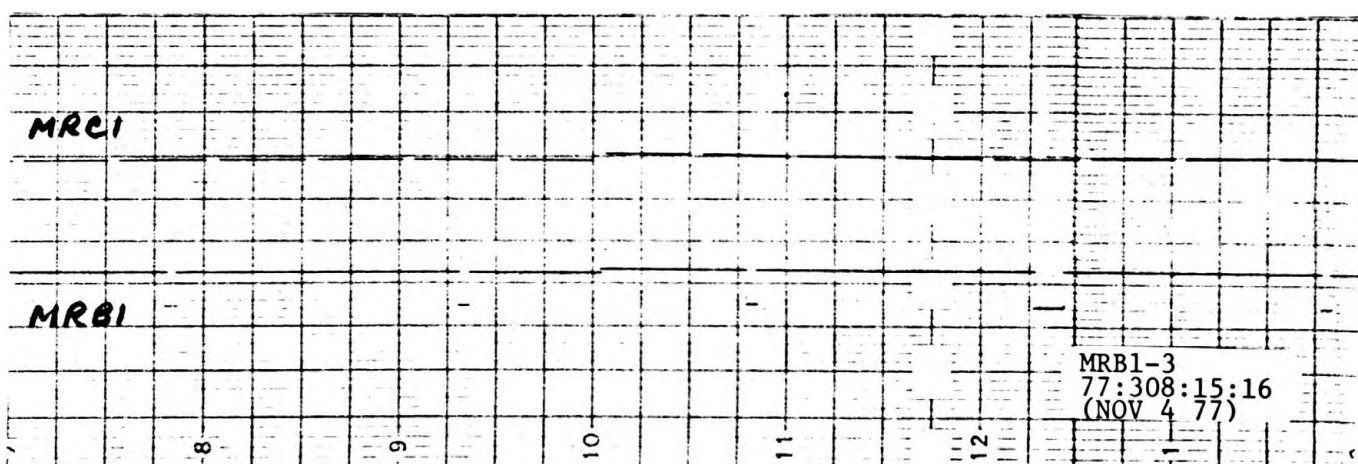
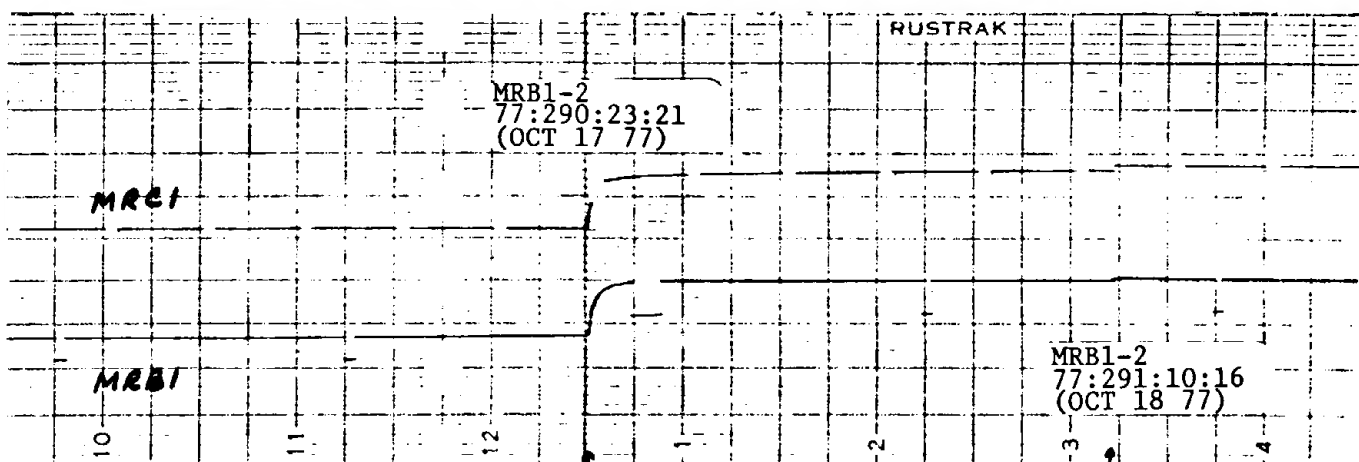
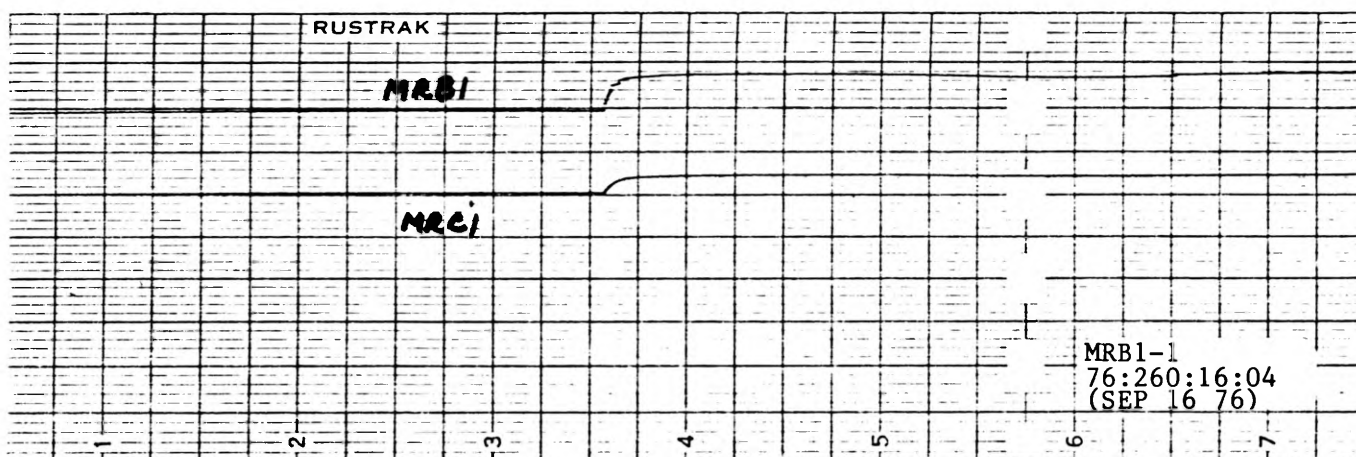


Table of MRB1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	193-194	Jul. 11-12		0.32	*		
	218-219	Aug. 5-6		0.26	*		
	232	Aug. 19 <u>1/</u>		0.46	*		
	260	Sep. 16	1604 (Approx)	2.36	1	0.95	2.87
1977	290	Oct. 17	2321	3.68	2	1.01	2.83
	291	Oct. 18	1016	0.06	2	1.01	2.83
	308	Nov. 4	1516	0.28	3	1.01	2.83

1/ Instrument friction step during chart change & reading.

*Refer to annual plot.



STATION MRR

Latitude $36^{\circ} 35.3'$
Longitude $121^{\circ} 10.9'$

Position 351.5 km
24 meter rods, $\phi=45^{\circ}$

The Melendy Ranch River creepmeters were installed during October, 1972, on the San Andreas fault at a site 42.4 km southeast of San Juan Bautista. The installation consists of a pair of crossed rods buried a few centimeters below the surface in gently sloping river terrace deposits. Creep activity at this site is composed of distinct events of up to 4.4 mm amplitude, superimposed on a background of nearly steady-state slip at low to moderate rates. The average creep rate is about 21 mm/yr, with a slight seasonal variation.

0 1 KILOMETER



CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

MRR CORRECTED CREEPMETER READINGS (mm)

131

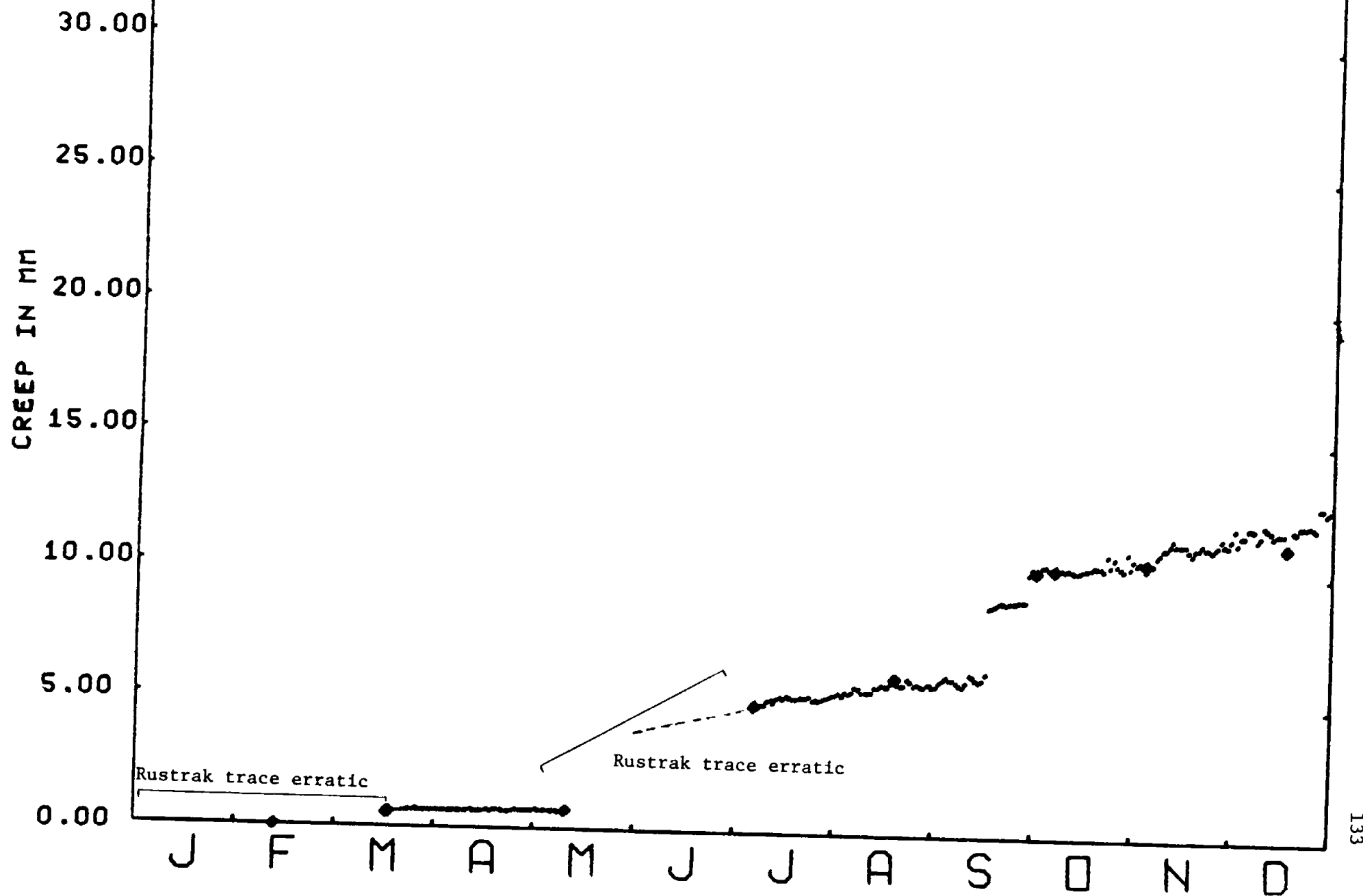
<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					69.30	51.53
FEB 12	6.08	0.77	6.08	0.77	75.38	52.30
MAR 17	0.57	4.37	6.65	5.14	75.95	56.67
MAY 11	0.14	0.76	6.79	5.90	76.09	57.43
AUG 19	5.23		12.02		81.32	
OCT 1	4.10		16.12		85.42	
OCT 7	0.14	8.64	16.26	14.54	85.56	66.07
NOV 4	0.30	7.62	16.56	22.16	85.86	73.69
DEC 17	0.69	-6.72	17.25	15.44	86.55	66.97
<u>1977</u>						
FEB 2	4.95	3.48	4.95	3.48	91.50	70.46
MAR 19	0.57		5.52		92.07	
APR 14	0.14	0.87	5.66	4.35	92.21	71.33
JUL 19	4.52		10.18		96.73	
AUG 12	0.14		10.32		96.87	
OCT 4	1.21		11.53		98.08	
NOV 16		7.72		12.07		79.05
NOV 17	5.51		17.04		103.59	

MRR9 CORRECTED CREEPMETER READINGS (mm)

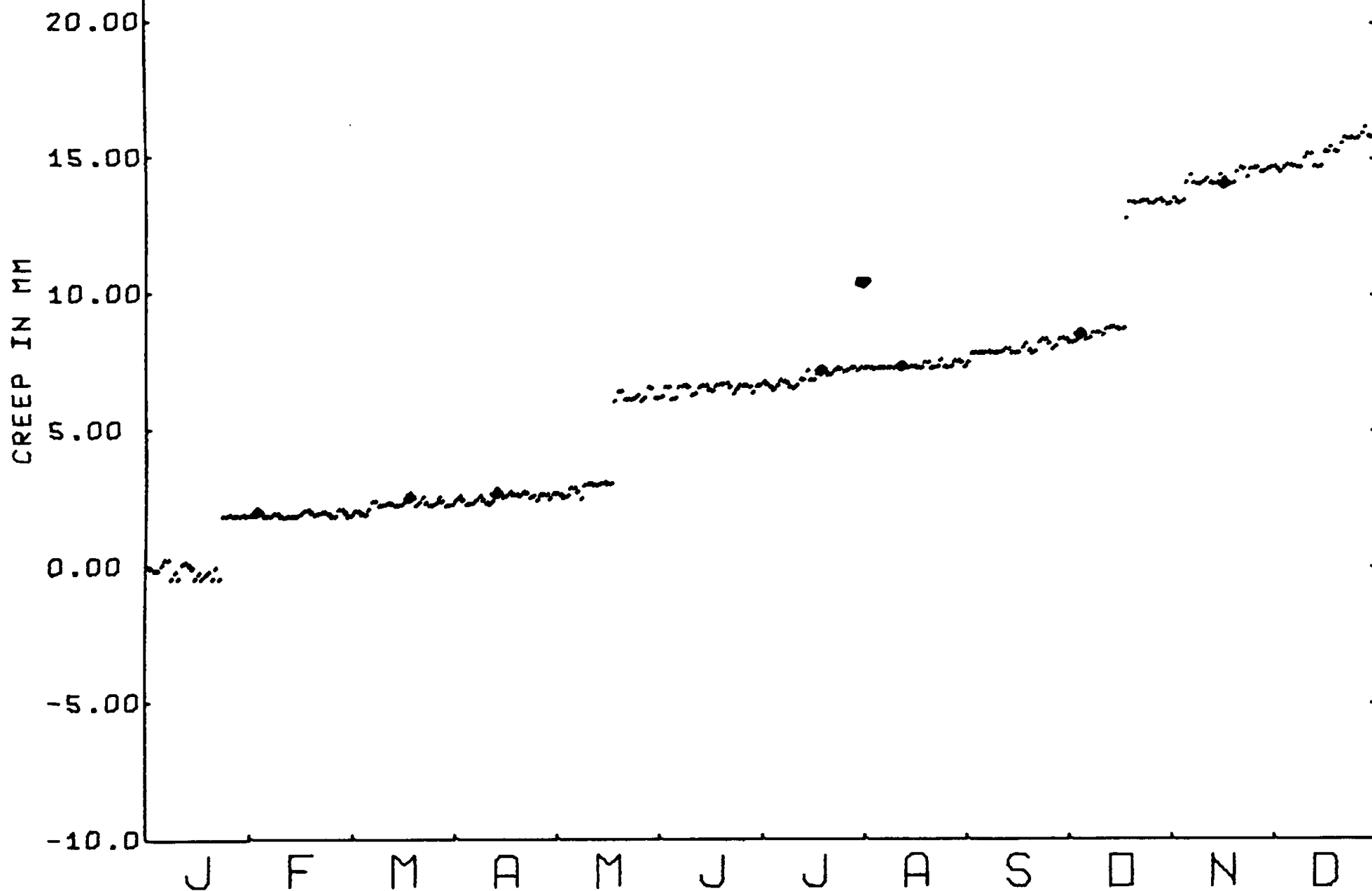
132

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					-.80	
FEB 2	0.00		0.00		-.80	
MAR 17	-0.10		-0.10		-.90	
MAR 23	0.10		0.00		-.80	
APR 14	0.00		0.00		-.80	
MAY 11	0.00		0.00		-.80	
AUG 19	-0.10		-0.10		-.90	
OCT 1	-0.20		-0.30		-1.10	
OCT 7	0.10		-0.20		-1.00	
NOV 4	0.00		-0.20		-1.00	
DEC 17	0.10		-0.10		-.90	
<u>1977</u>						
FEB 2	0.00		0.00		-.90	
MAR 19	-0.10		-0.10		-1.00	
APR 14	0.10		0.00		-.90	
JUL 19	-0.10		-0.10		-1.00	
AUG 12	-0.20		-0.30		-1.20	
NOV 17	0.20		-0.10		-1.00	

MRR1 1976



MRR1 1977



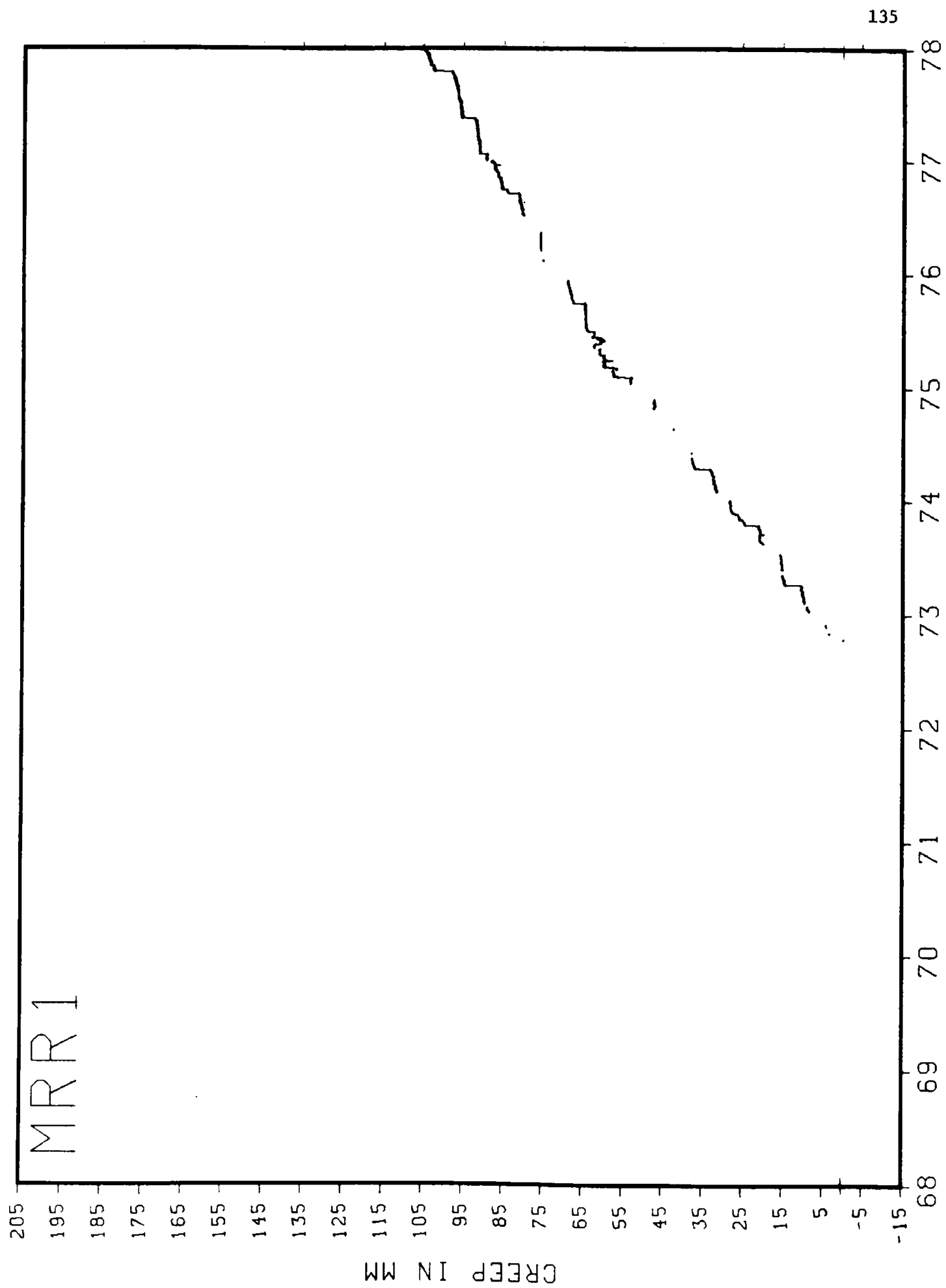


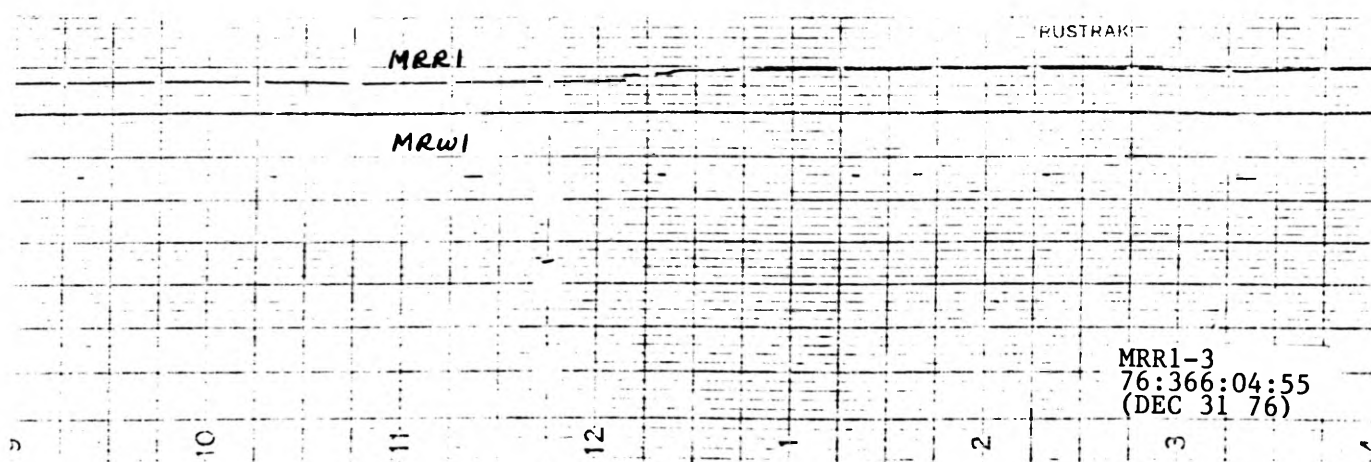
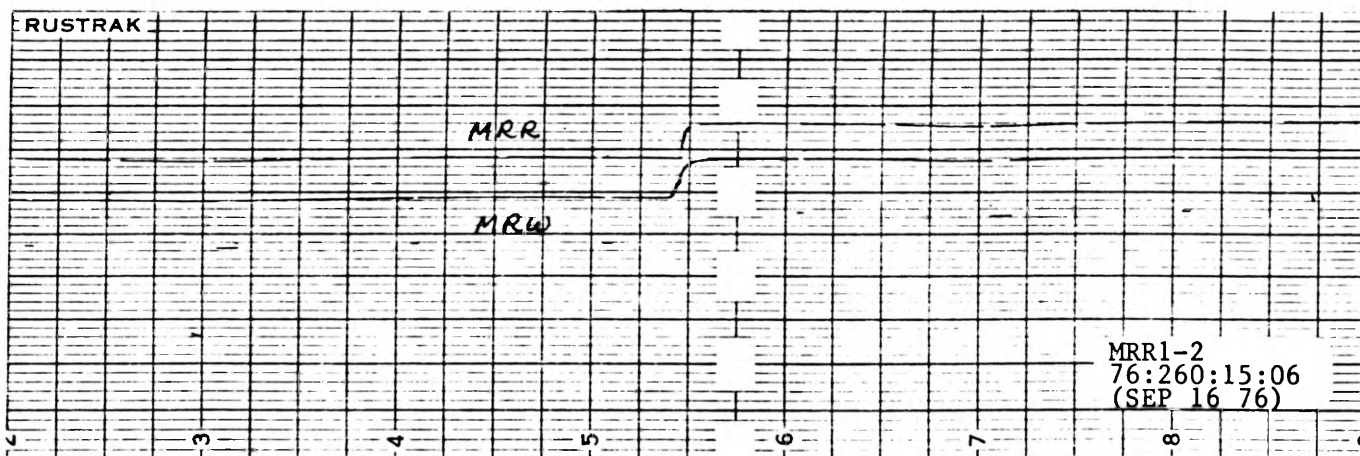
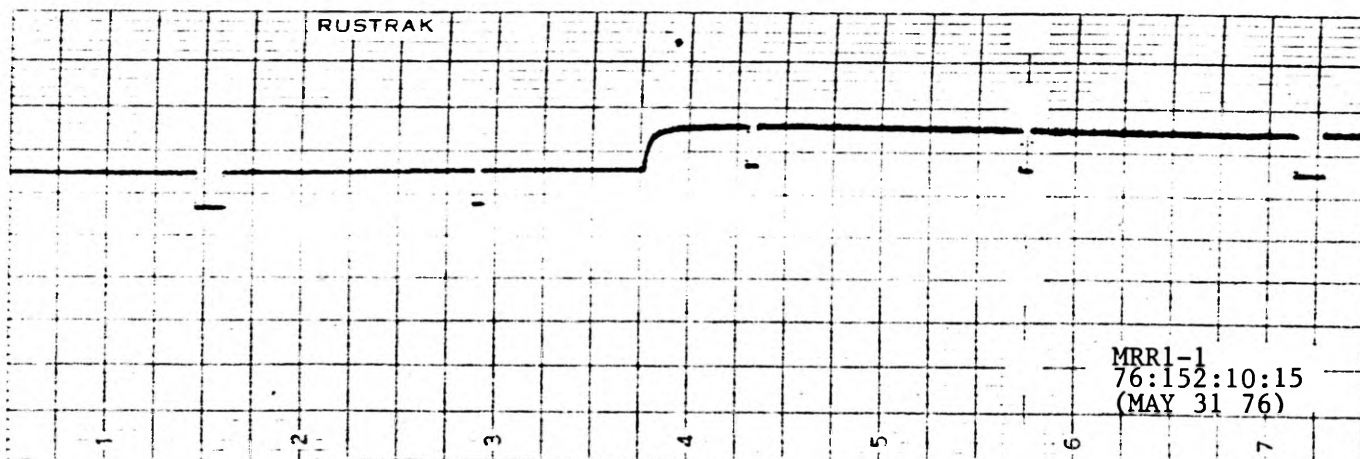
Table of MRR1 Events

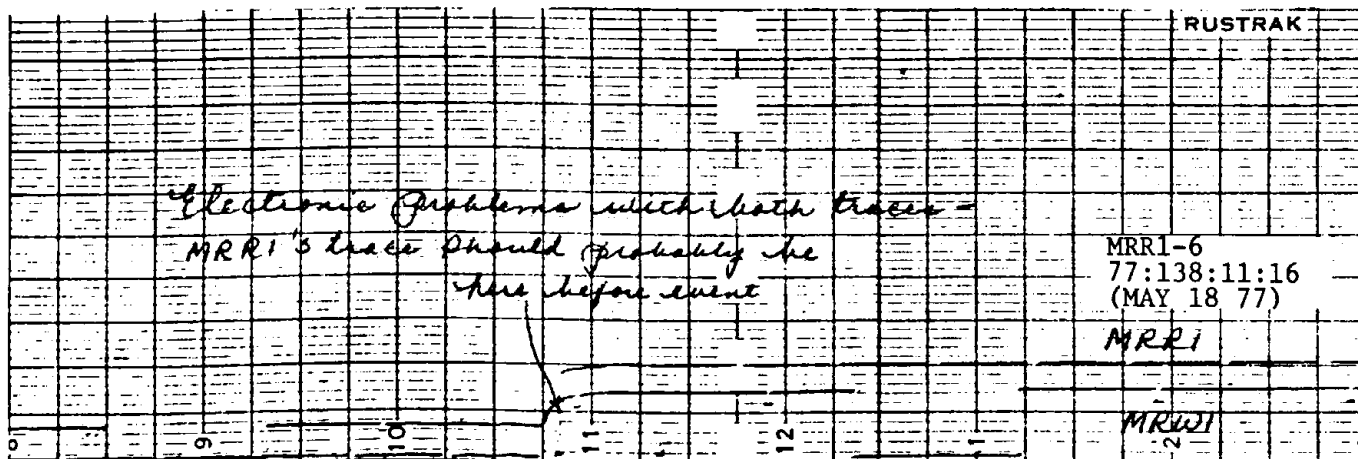
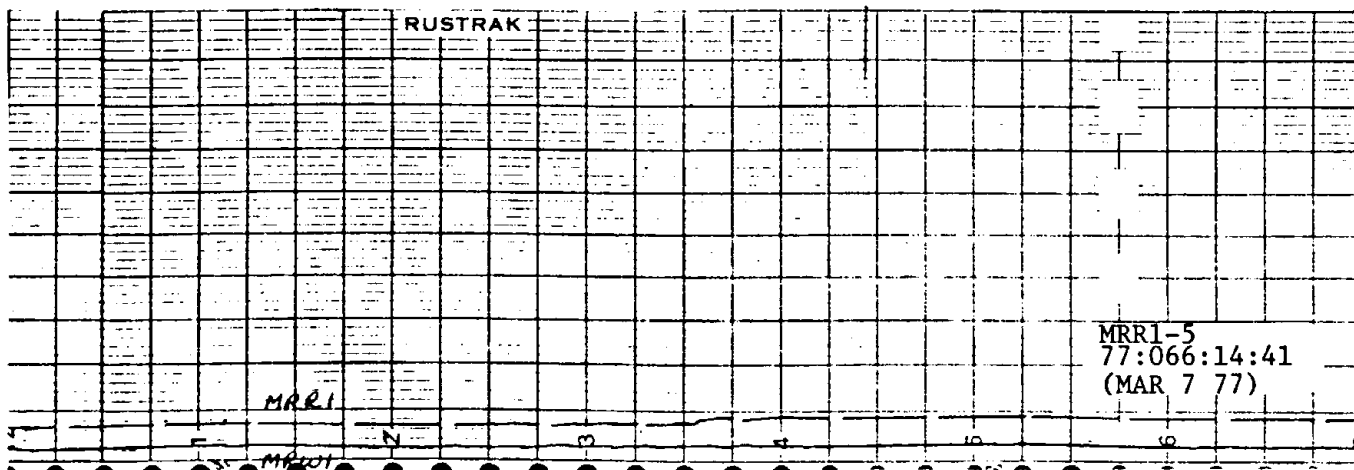
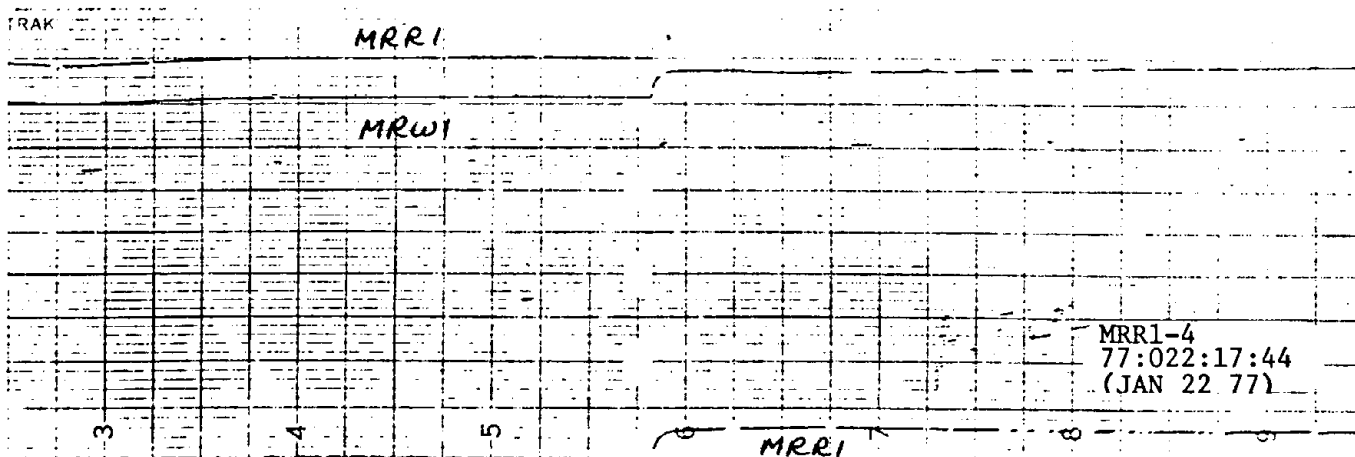
136

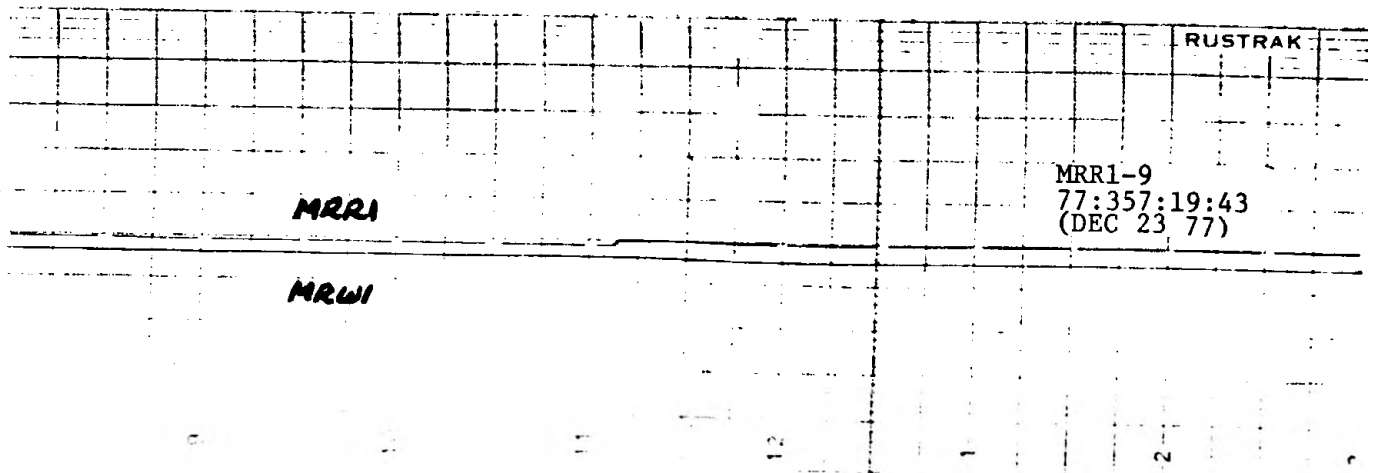
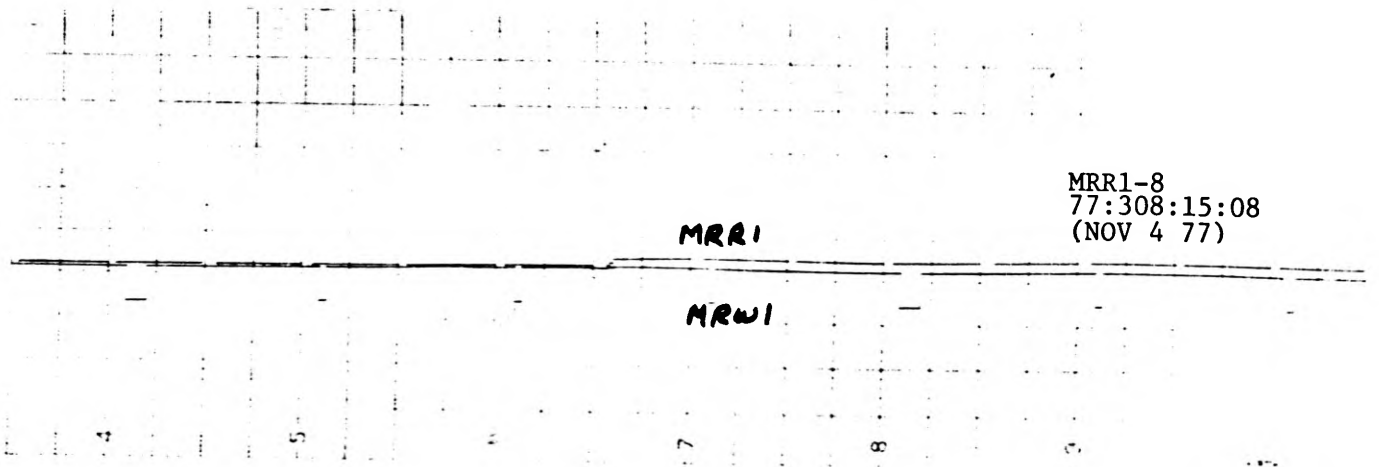
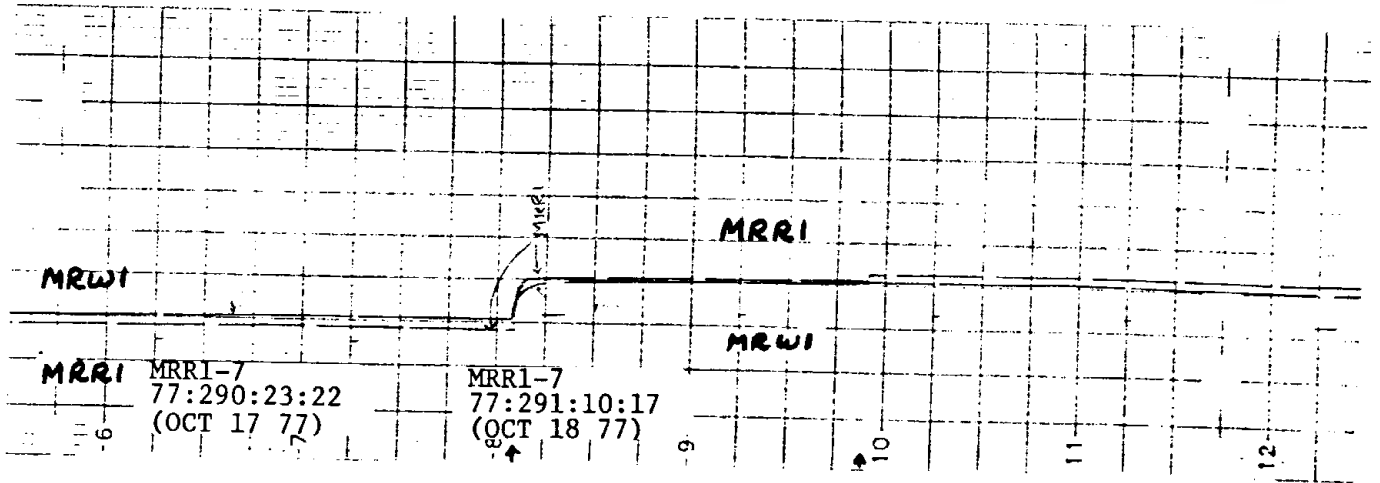
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	152	May 31	1015	≈ 3.50	1	1.06	3.20
	260	Sep. 16	1506	2.63	2	1.51	3.17
	273	Sep. 29 ^{1/}	2102	1.00	*		
	312-316	Nov. 7-11		0.70	*		
	362	Dec. 27 ^{1/}		0.80	*		
	366	Dec. 31	0455	1.16	3	1.50	4.00
1977	022	Jan. 22	1744	1.56	4	1.51	4.00
	066	Mar. 7	1441	0.40	5	1.51	2.86
	138	May 18	1116	≈ 3.75	6	1.50	3.00
	290	Oct. 17	2322	3.71	7	1.50	3.28
	291	Oct. 18	1017	0.31	7	1.50	3.28
	308	Nov. 4	1508	0.51	8	1.50	3.28
	357	Dec. 23	1943	0.40	9	1.50	3.28

^{1/}Possible diurnal effect

* Refer to annual plot







STATION MRW

Latitude $36^{\circ} 35.1'$ Longitude $121^{\circ} 10.6'$

Position 352.1 km

23 meter rods, $\theta=45^{\circ}$

The Melendy Ranch Windmill creepmeters were installed during October, 1972, on the San Andreas fault at a site 43.0 km southeast of San Juan Bautista. The installation consists of a pair of crossed rods buried a few centimeters below the surface in nearly flat river terrace deposits. Creep activity at this site is composed of distinct events of up to 3.8 mm amplitude, superimposed on a background of nearly steady-state slip at low to moderate rates. The average creep rate is about 21 mm/yr, with a slight seasonal variation.



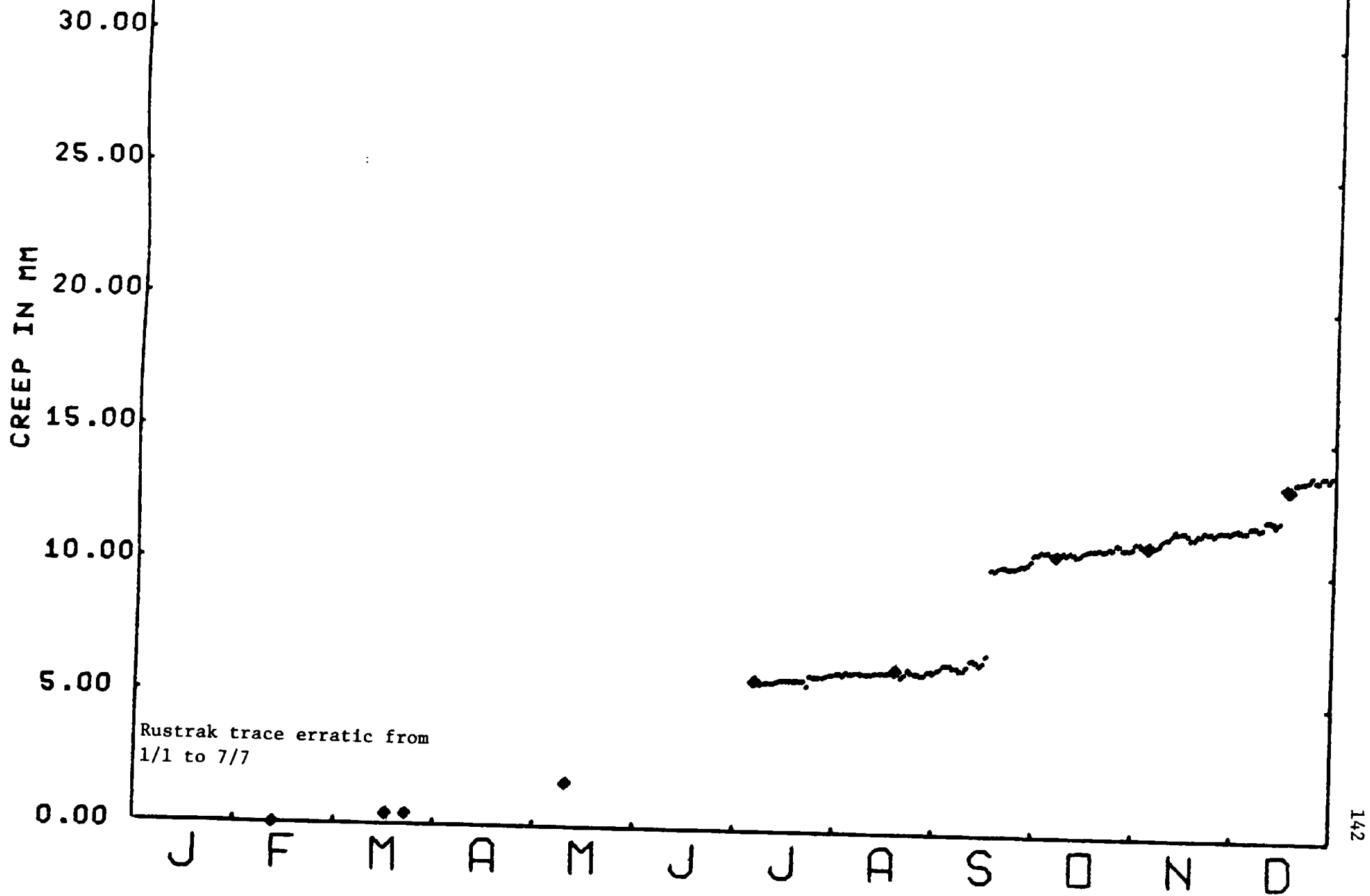
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

MRW CORRECTED CREEPMETER READINGS (mm)

141

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	<u>X</u>	<u>C</u>	<u>X</u>	<u>C</u>	<u>X</u>	<u>C</u>
<u>1976</u>					70.97	55.45
FEB 12	5.09	-17.65	5.09	-17.65	76.06	37.80
MAR 17	0.42		5.51		76.48	
MAY 11	1.27	2.22	6.78	-15.43	77.75	40.02
AUG 18	4.46		11.24		82.21	
AUG 19	0.03		11.27		82.24	
OCT 7	4.43	8.02	15.70	-7.41	86.67	48.04
NOV 4	0.42	0.35	16.12	-7.06	87.09	48.39
DEC 17	2.26	1.80	18.38	-5.26	89.35	50.19
<u>1977</u>						
FEB 2	3.39	2.84	3.39	2.84	92.74	53.03
MAR 19	1.28		4.67		94.02	
APR 14	0.35	1.64	5.02	4.48	94.37	54.67
JUL 19	4.17	1.09	9.19	5.57	98.54	55.76
AUG 12	0.00	0.00	9.19	5.57	98.54	55.76
OCT 4	3.26	0.00	12.45	5.57	101.80	55.76
NOV 17	4.49	0.00	16.94	5.57	106.29	55.76

MRW1 1976



20.00

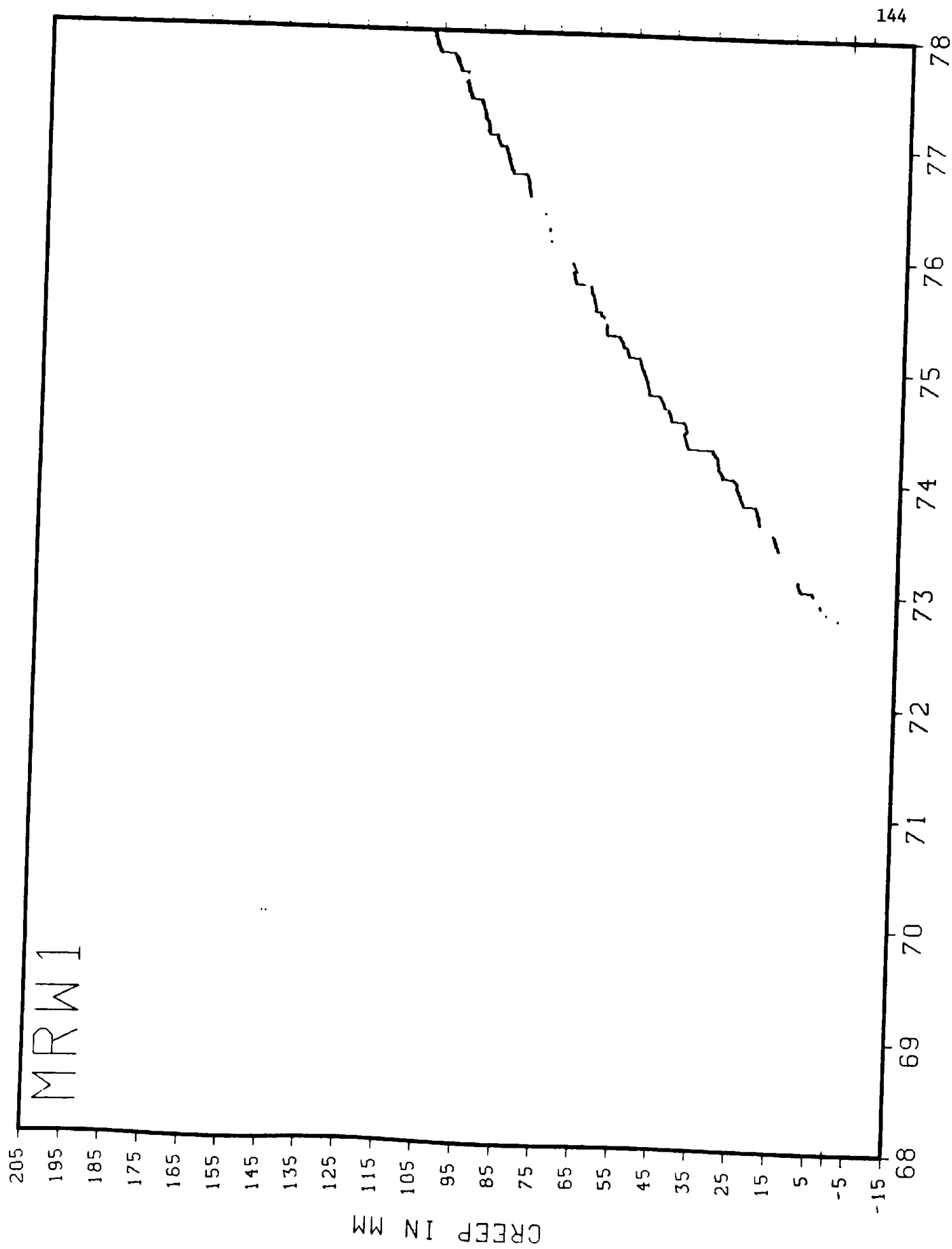
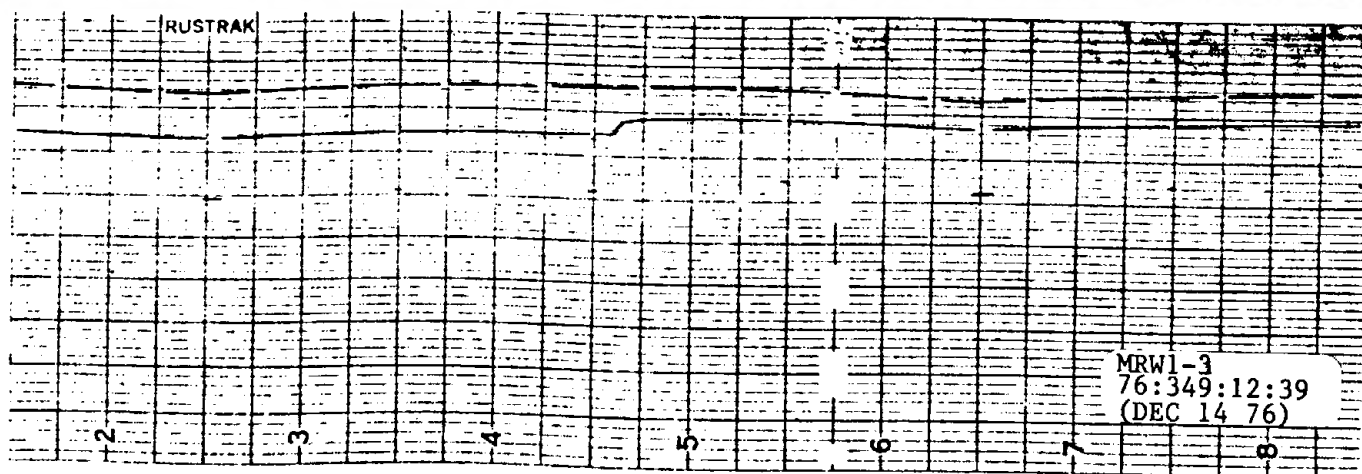
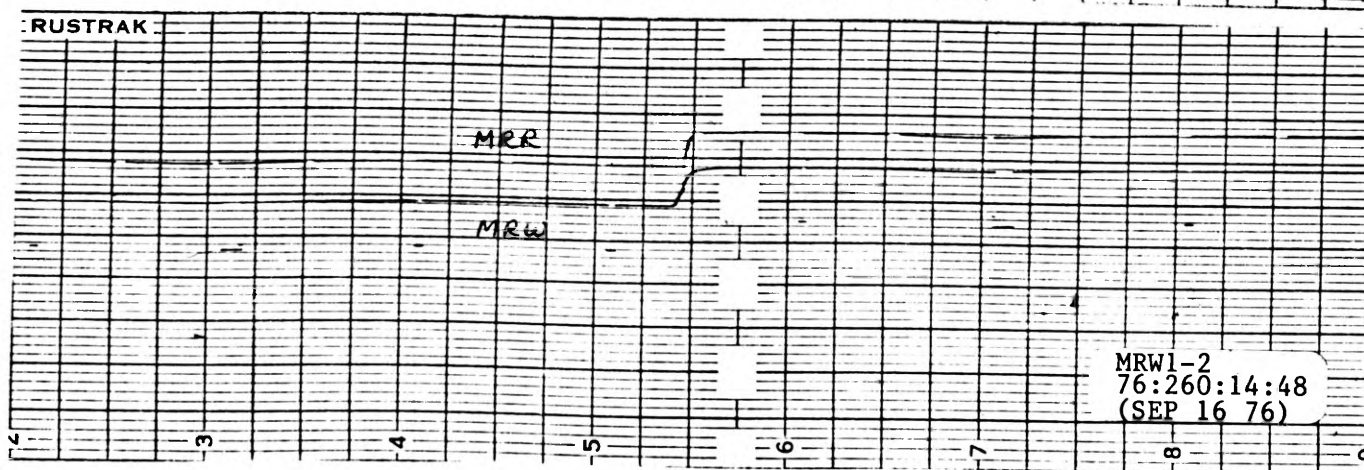
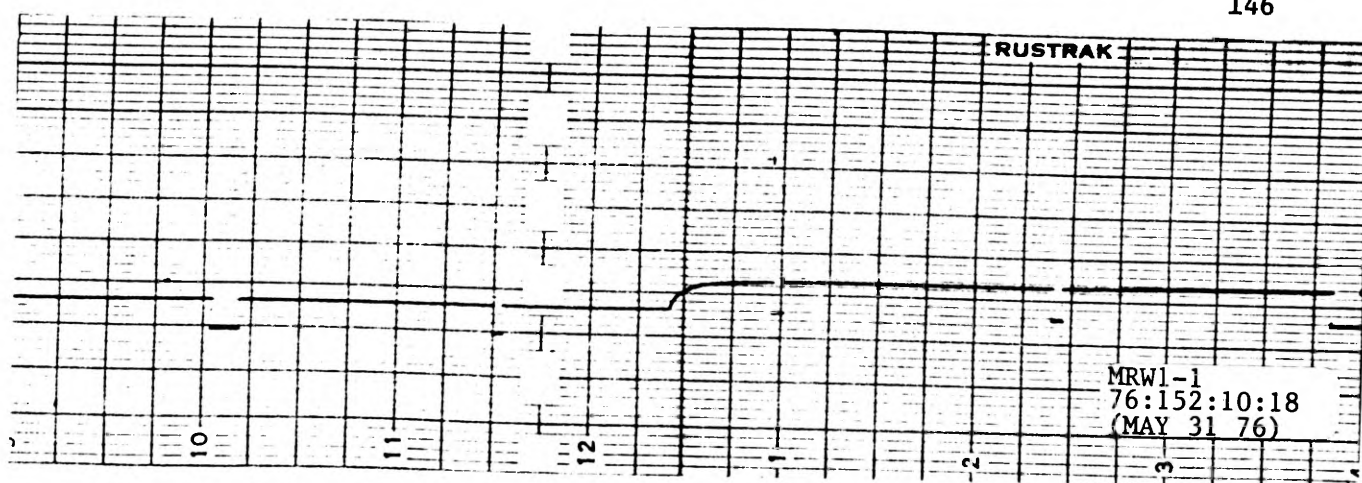


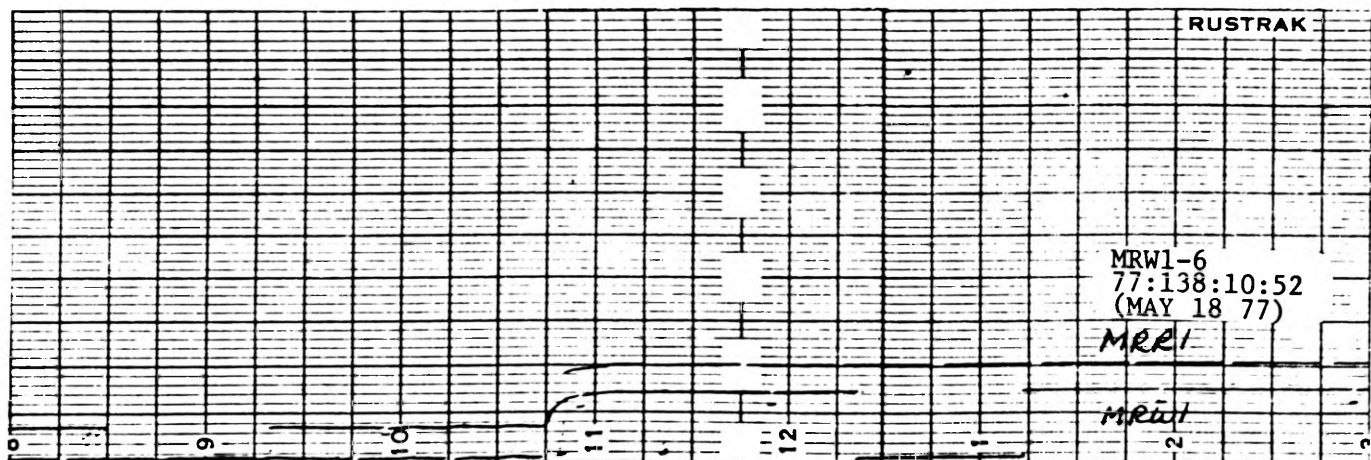
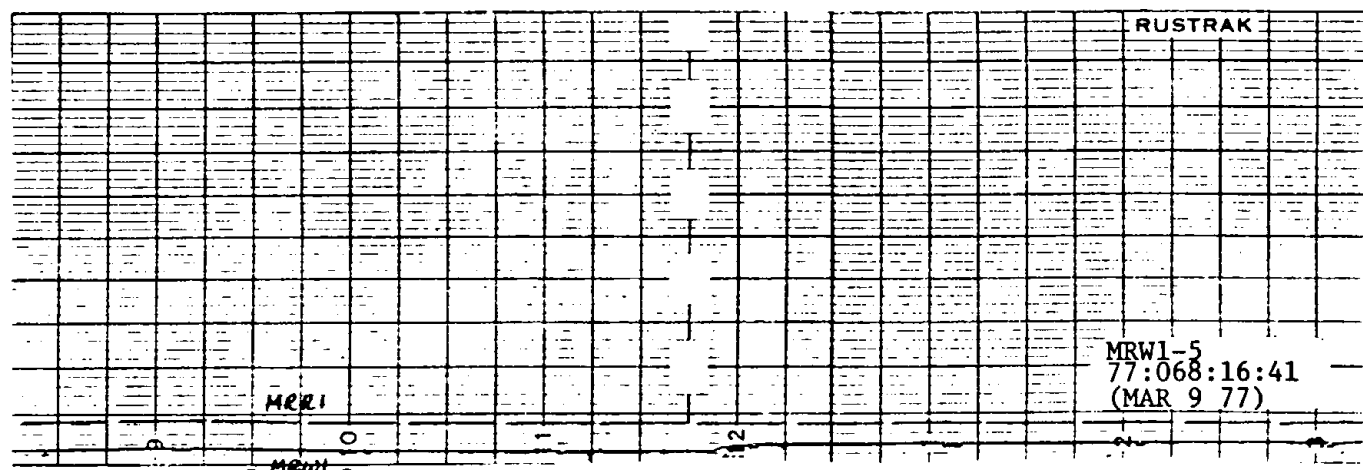
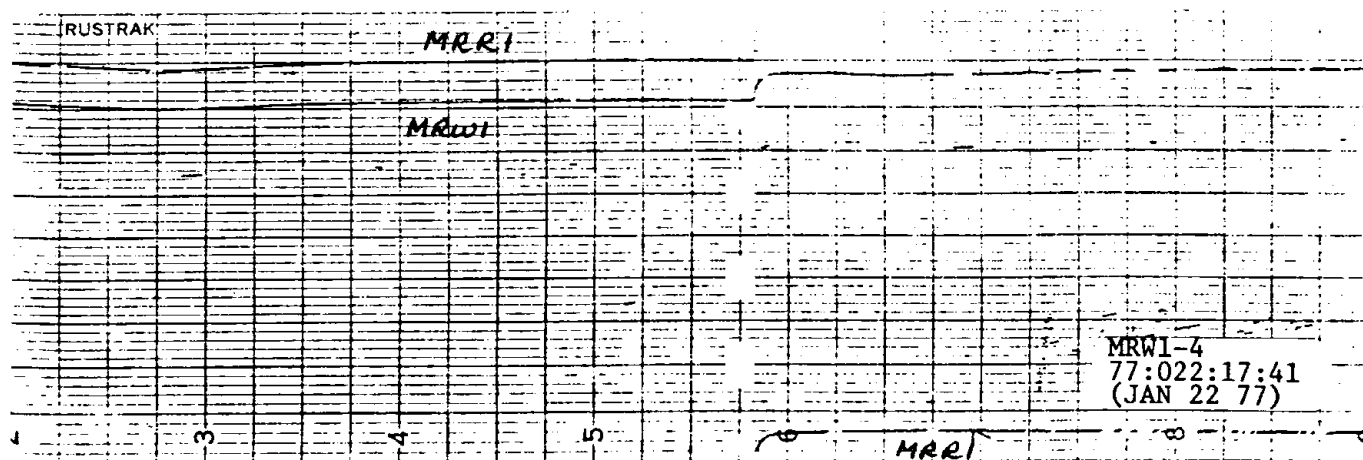
Table of MRW1 Events

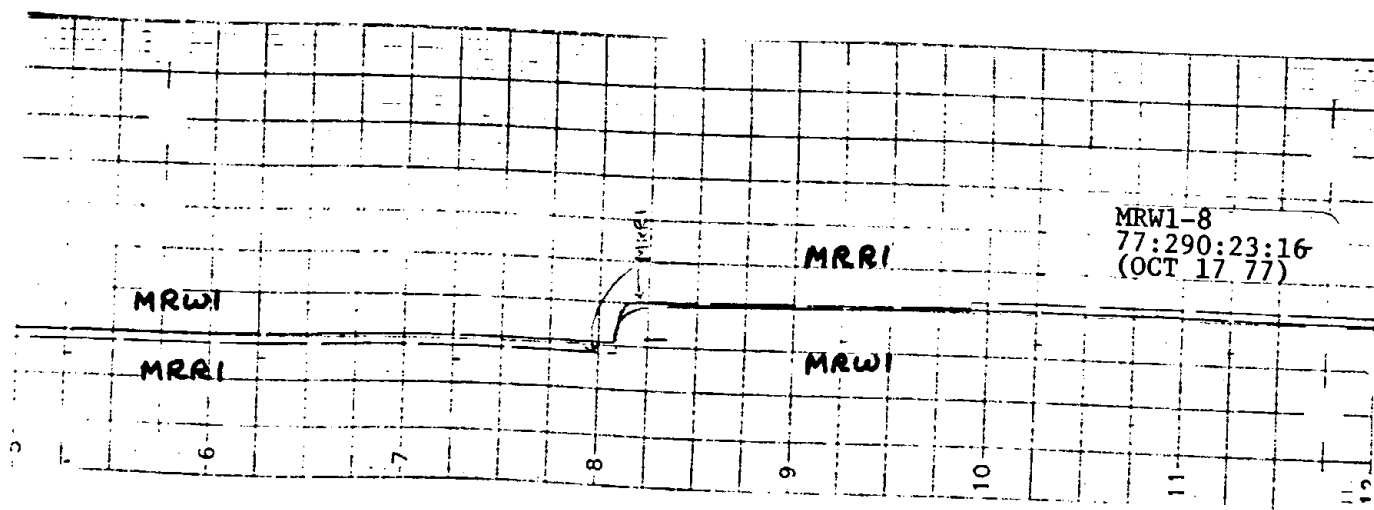
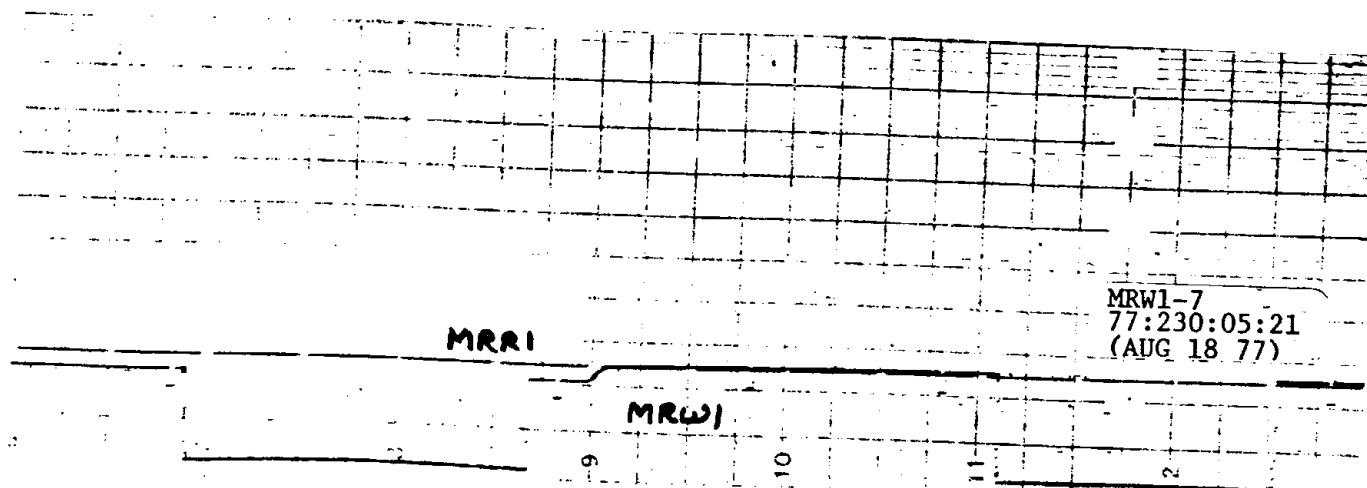
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	152	May 31	1018	2.40	1	1.04	3.20
	205	Jul. 23 ^{1/}		0.20	*		
	260	Sep. 16	1448	3.21	2	1.51	3.35
	272-273	Sep. 28-29		0.54	*		
	313-317	Nov. 8-12		0.52	*		
	349	Dec. 14	1239	1.31	3	1.51	3.20
1977	022	Jan. 22	1741	2.01	4	1.51	3.20
	068	Mar. 9	1641	0.45	5	1.50	2.83
	138	May 18	1052	2.49	6	1.50	3.48
	230	Aug. 18	0521	1.34	7	1.51	2.67
	290	Oct. 17	2316	2.83	8	1.50	3.28

^{1/} Rustrak trace thinned down at this point from a previously excessive thickness; not an event.

*Refer to annual plot.







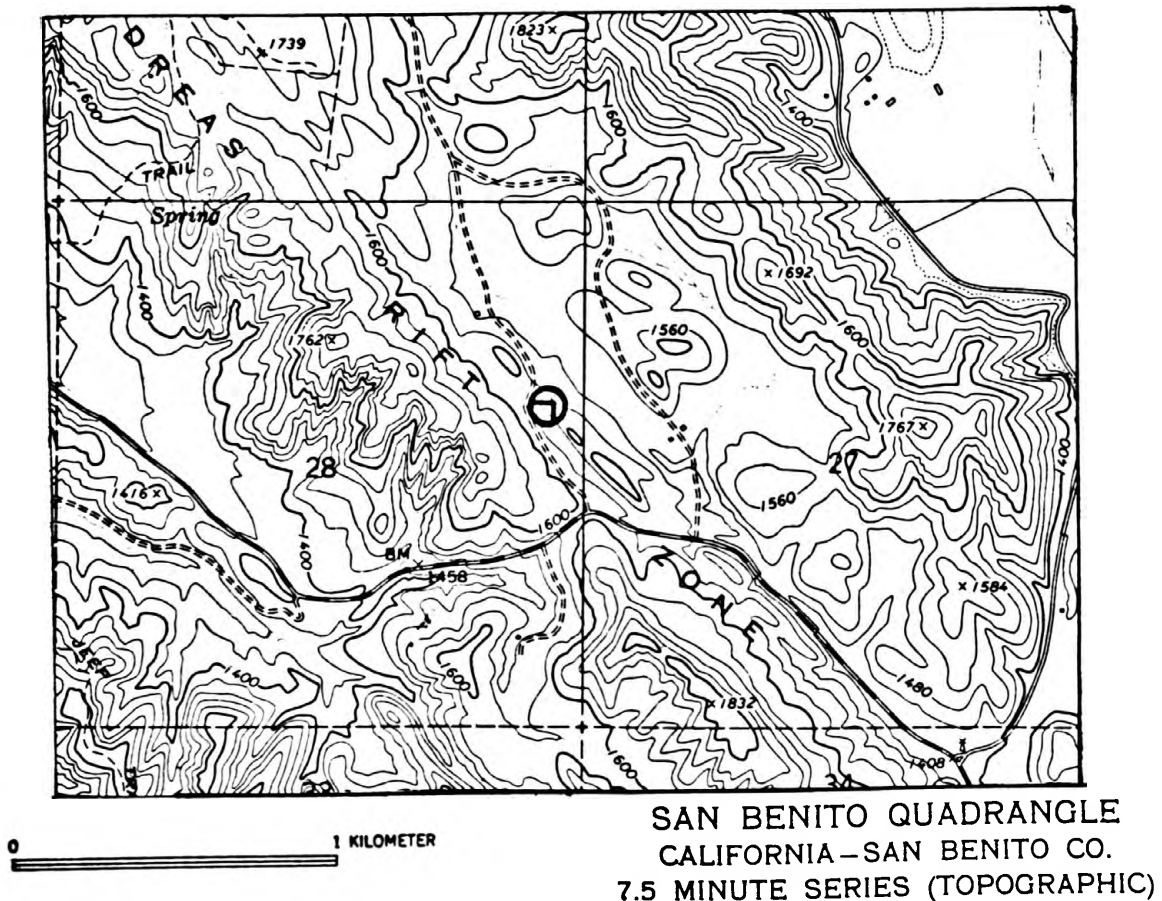
STATION SBN

149

Latitude $36^{\circ} 30.8'$
Longitude $121^{\circ} 06.0'$

Position 362.2 km
12 meter rods, $\theta=45^{\circ}$

The San Benito creepmeters were installed during June, 1969, on the San Andreas fault at a site 53.1 km southeast of San Juan Bautista. The installation consists of a pair of rods in a "V" configuration buried a few centimeters below the surface in clay-rich sag pond sediments. Creep activity at this site is composed of infrequent events of up to 2.7 mm amplitude, superimposed on a background of nearly continuous slip with a strong seasonal variation. The average creep rate is about 21 mm/yr. SBN2, the instrument measuring contraction on the fault, was abandoned in August, 1976.

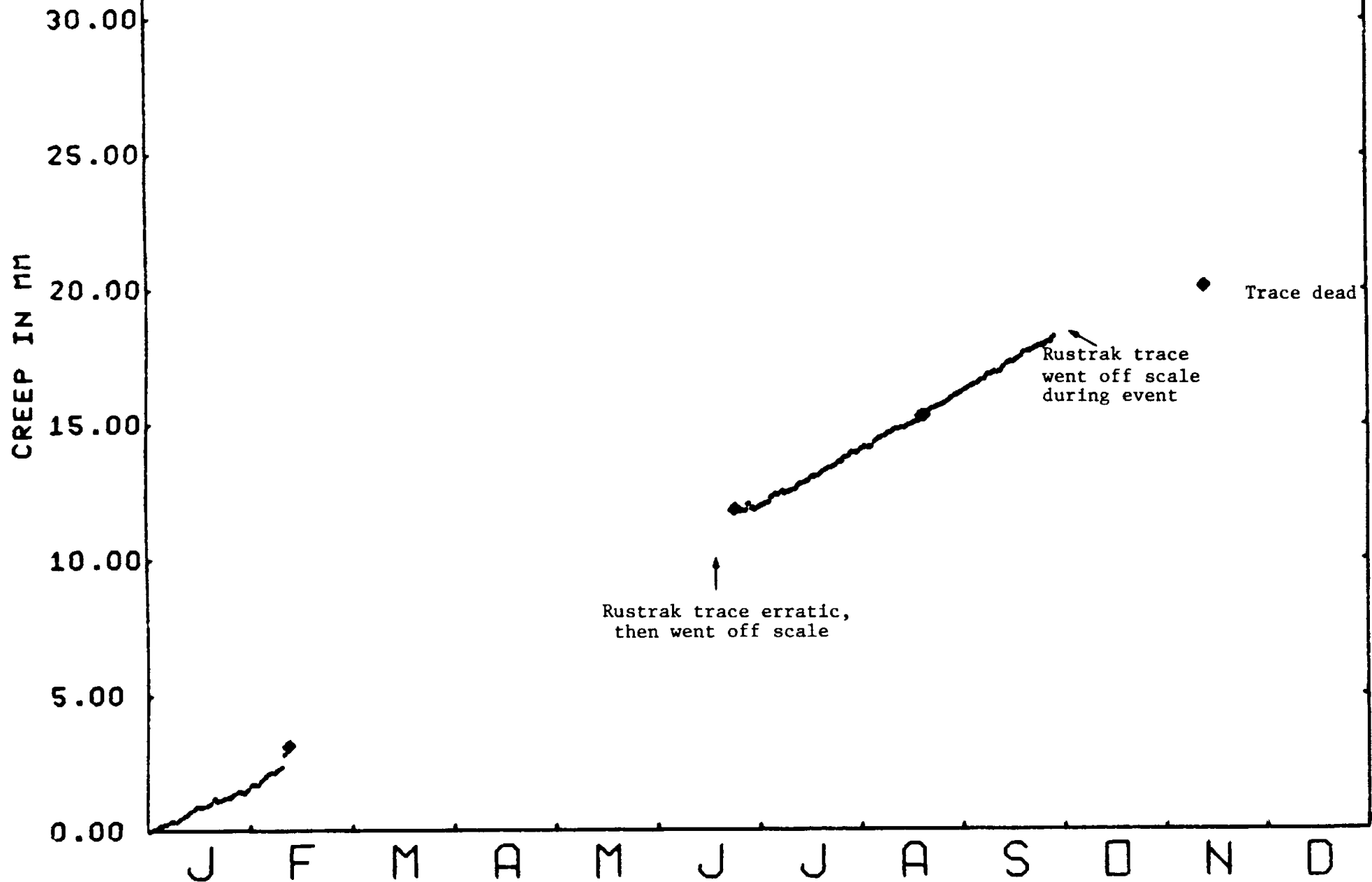


SBN CORRECTED CREEPMETER READINGS (mm)

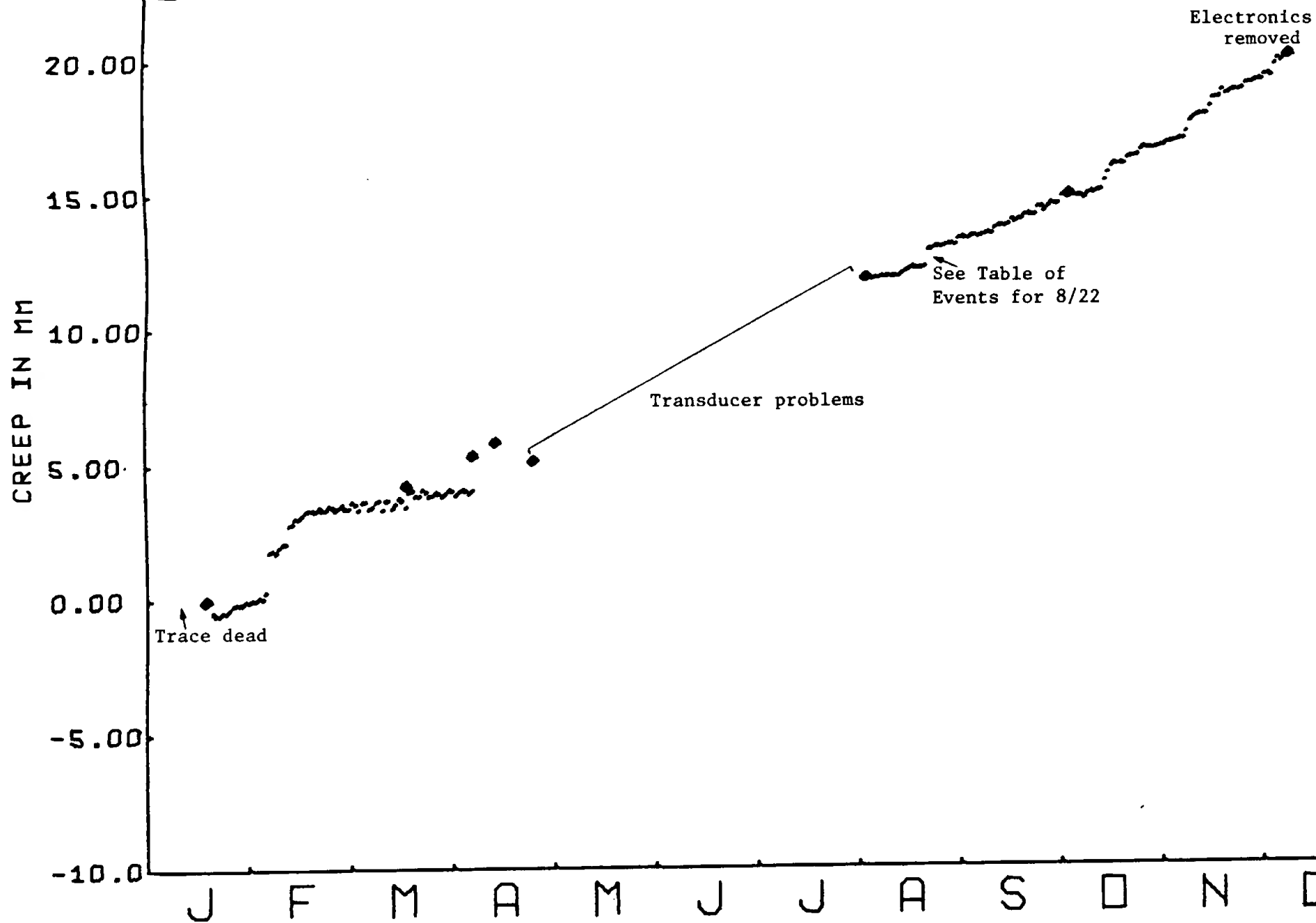
150

Date	Change		Yearly Cumulative		Cum to Date	
	X	C	X	C	X	C
<u>1976</u>					113.25	127.27
FEB 11	4.29	2.63	4.29	2.63	117.54	129.90
MAY 5	5.49	3.62	9.78	6.25	123.03	133.52
JUN 24	3.25		13.03		126.28	
AUG 19	3.42	6.45	16.45	12.70	129.70	139.97
NOV 12	4.81		21.26		134.51	
<u>1977</u>						
JAN 18	3.88		3.88		138.39	
MAR 19	4.26		8.14		142.65	
APR 8	1.13		9.27		143.78	
APR 15	0.48		9.75		144.26	
APR 26	-0.68		9.07		143.58	
APR 28	6.62		15.69		150.20	
JUL 19	4.71		20.40		154.91	
JUL 27	0.44		20.84		155.35	
AUG 4	-5.09		15.75		150.26	
OCT 4	3.04		18.79		153.30	

SBN1 1976



SBN1 1977



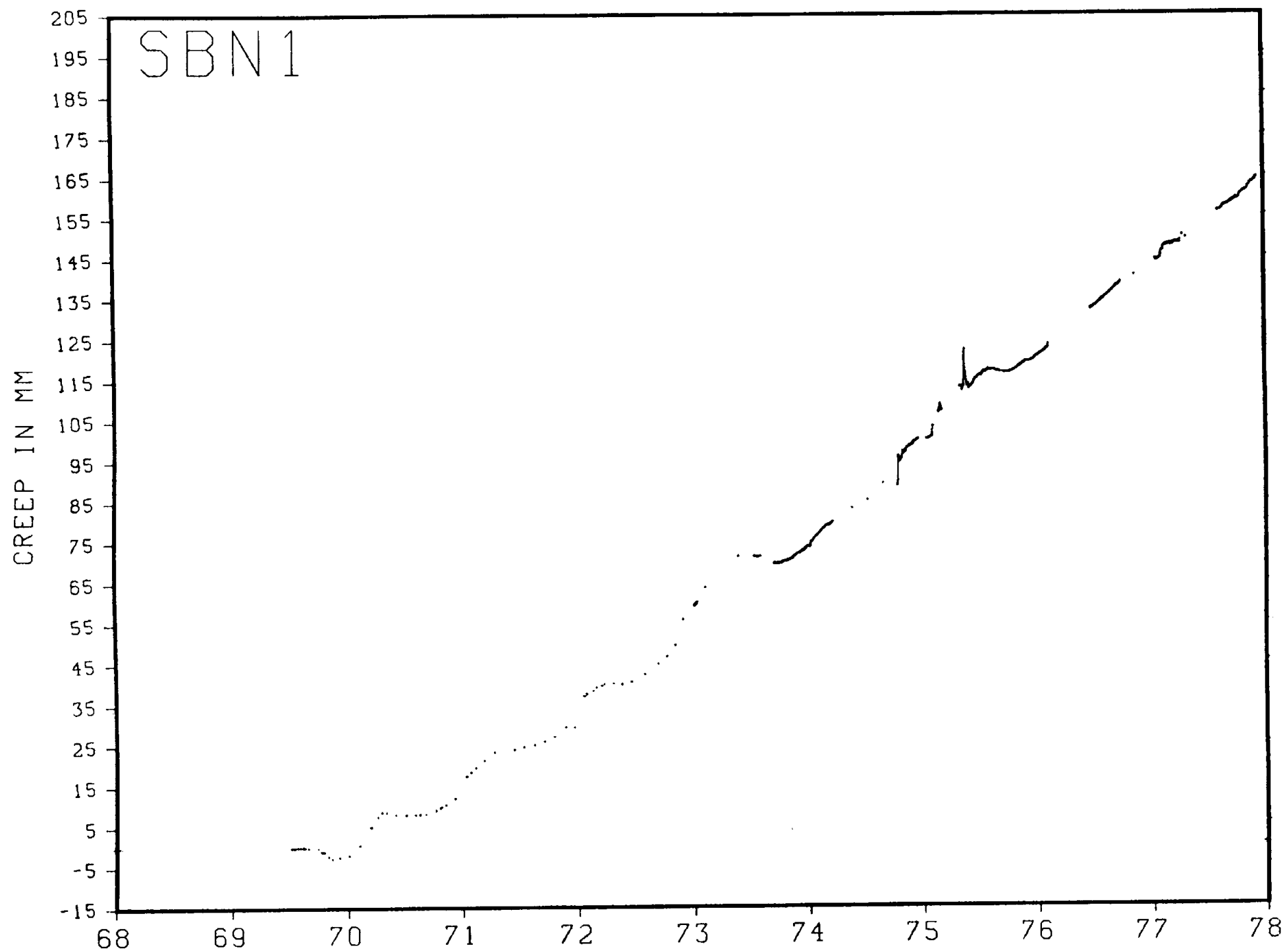


Table of SBN1 Events

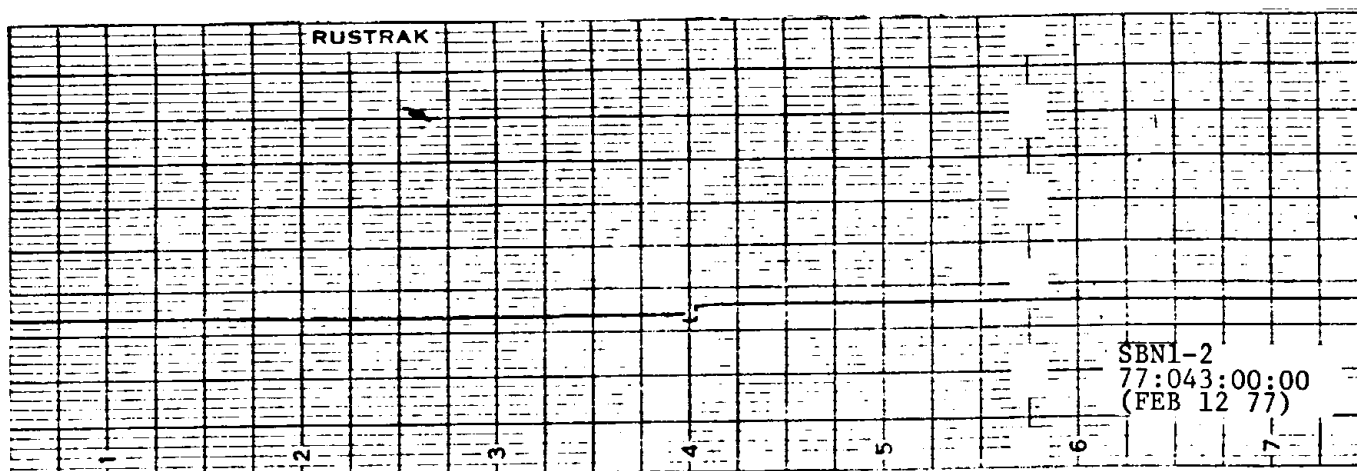
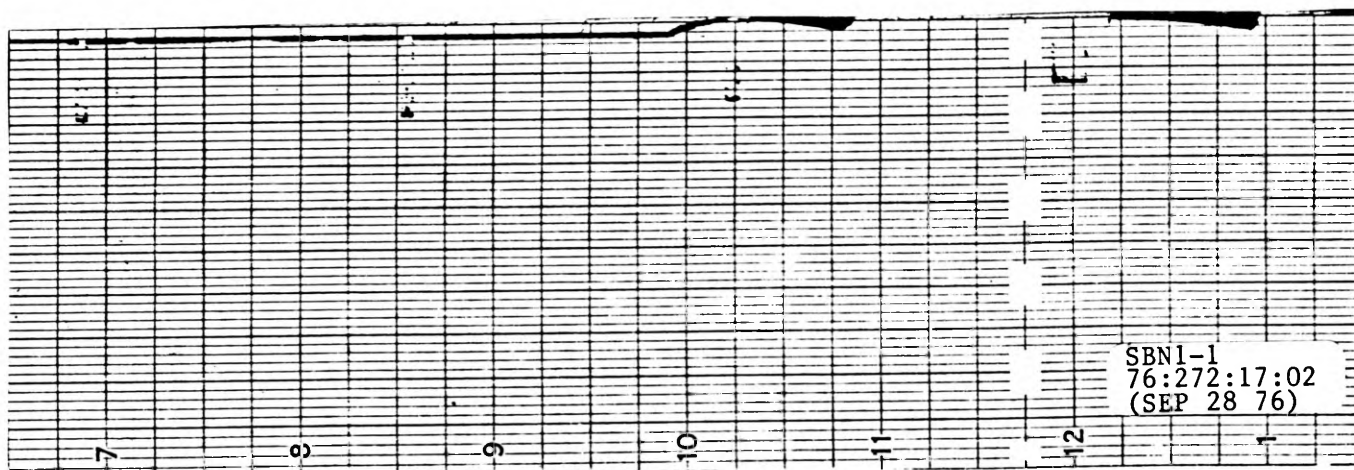
154

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	041	Feb. 10					
	272	Sep. 28 ^{1/}	1702	0.42 0.59	* 1	0.89	0.99
1977	036	Feb. 5	0509	≈ 2.00	*		
	043	Feb. 12	0000 (Approx.)	0.34	2	0.90	1.60
	234	Aug. 22 ^{2/}			*		
	288	Oct. 15	0052	0.65	*		
	312	Nov. 8	1633	0.71	*		
	318	Nov. 14	2040	0.34	*		
	340	Dec. 6	0052	0.91	*		

^{1/} Total slip estimated from projection of offscale portion of event.

^{2/} Movement not tectonic; time marks start again and trace jumps to right.

* Refer to annual plot



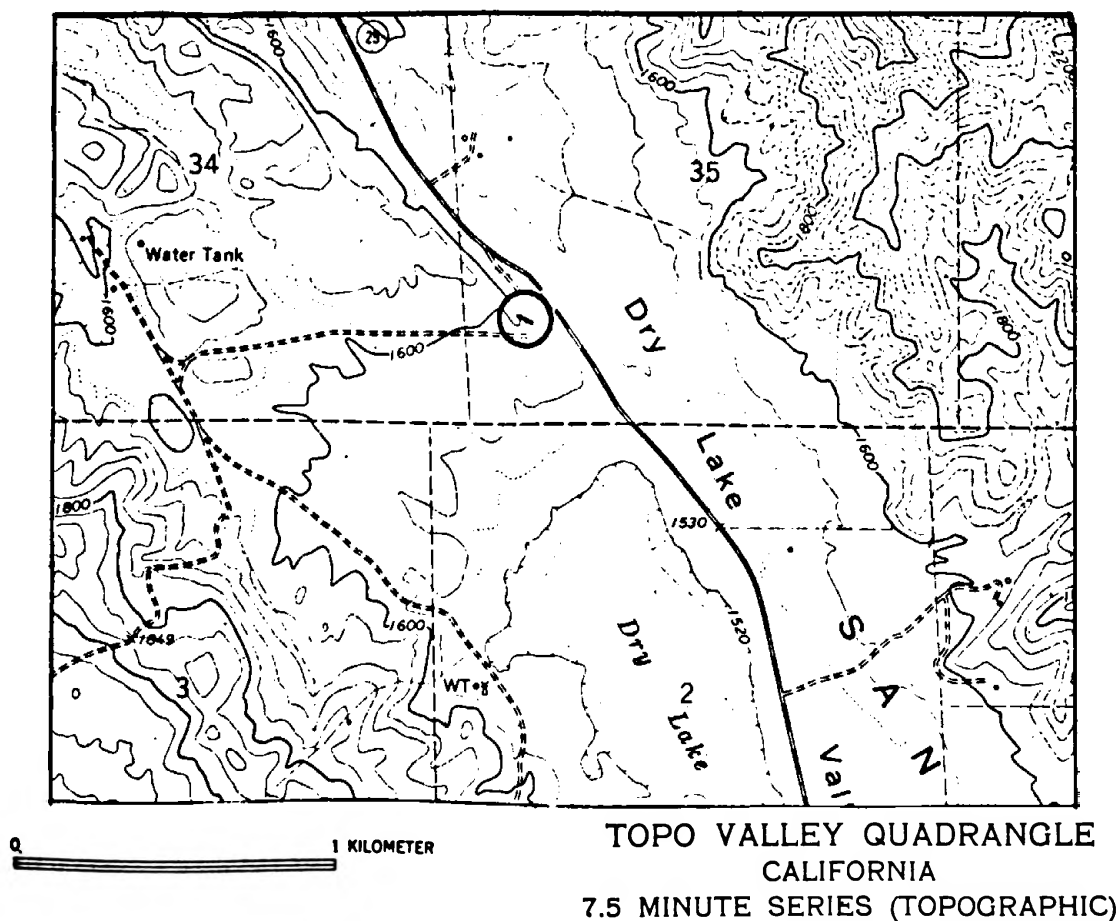
STATION XDL2

Latitude $36^{\circ} 29.5'$

Position 365.7 km

Longitude $121^{\circ} 04.7'$ 12 meter wire, $\phi=30^{\circ}$

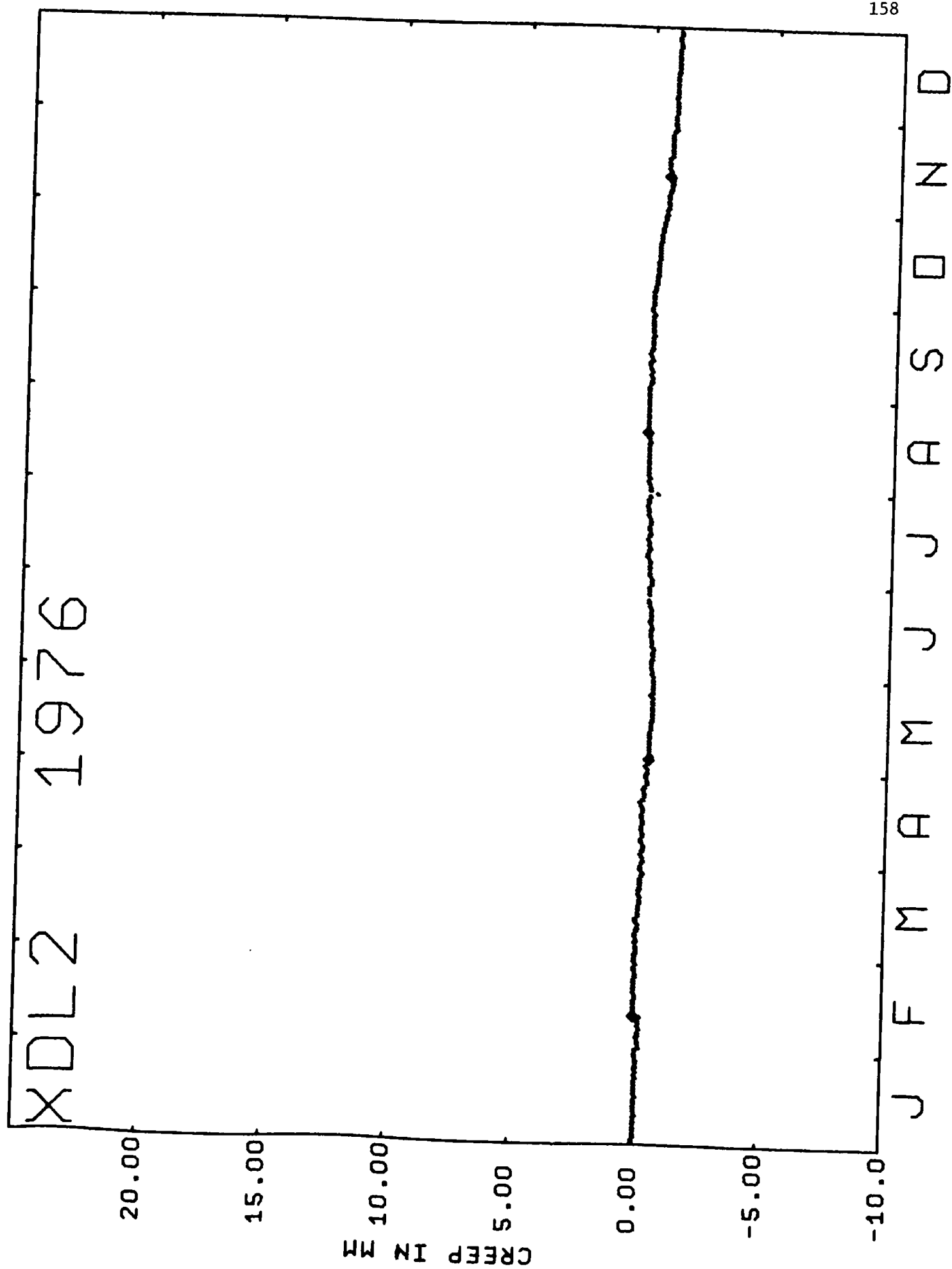
The Dry Lake 2 creepmeter (or near-field strainmeter) was installed during August, 1973, on the San Andreas fault at a site 56.6 km southeast of San Juan Bautista, as a replacement for XDL1. The installation consists of a single wire entrenched a few centimeters below the surface on a northeast-facing scarp near the crest of a low ridge. Activity at this site is composed of frequent negative events (contraction between piers) and occasional creep events of up to 1.5 mm amplitude, superimposed on a background of gradual positive and negative changes showing a strong seasonal pattern.



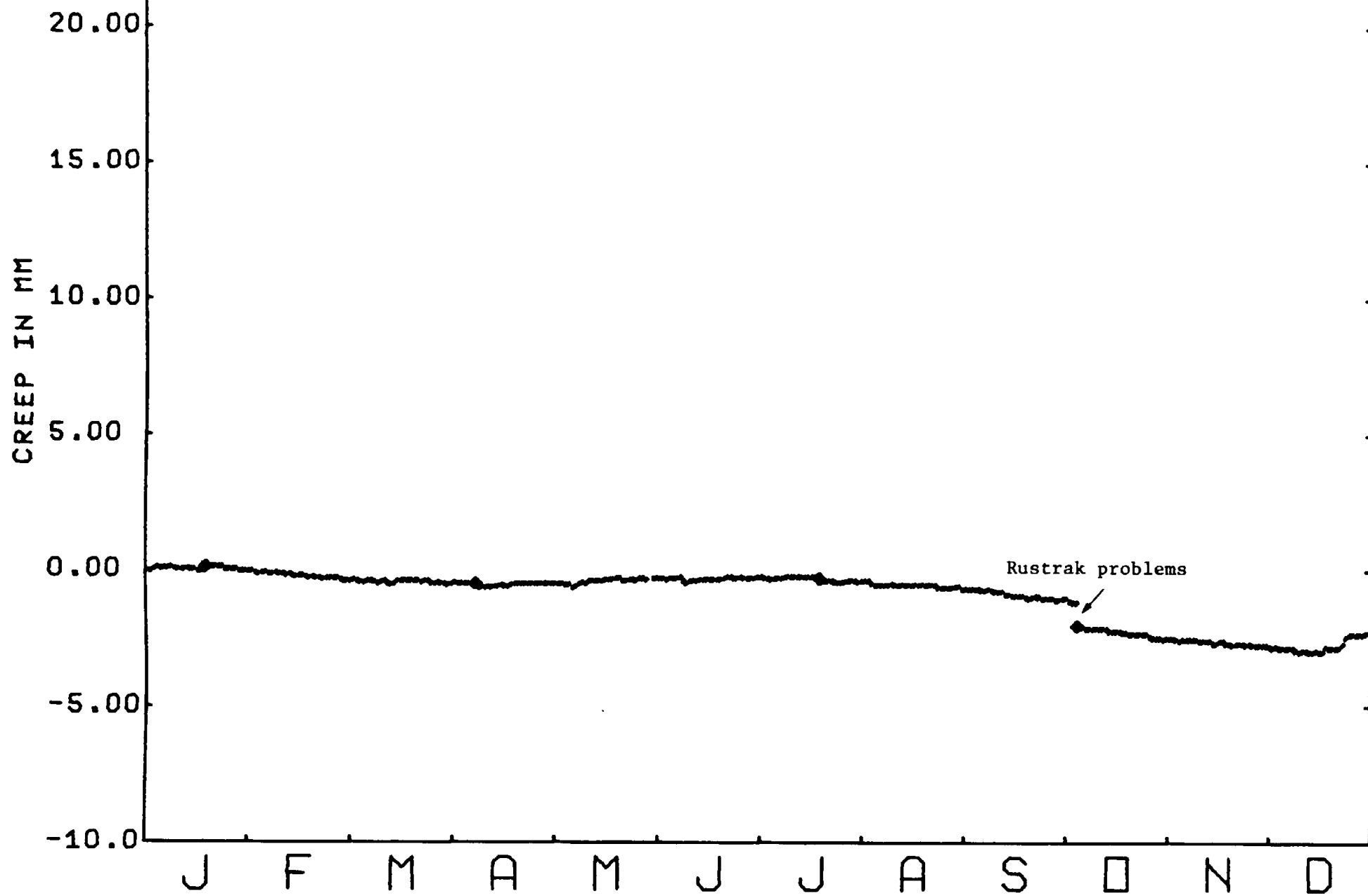
XDL2 CORRECTED CREEPMETER READINGS (mm)

157

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					0.69	
FEB 11	-0.16		-0.16		0.53	
MAY 5	-0.36		-0.52		0.17	
AUG 20	0.67		0.15		0.84	
NOV 12	-0.98		-0.83		-0.14	
<u>1977</u>						
JAN 18	-0.06		-0.06		-.20	
APR 8	-0.63		-0.69		-.83	
JUL 19	0.24		-0.45		-.59	
OCT 4	-1.76		-2.21		-2.35	



XDL2 1977

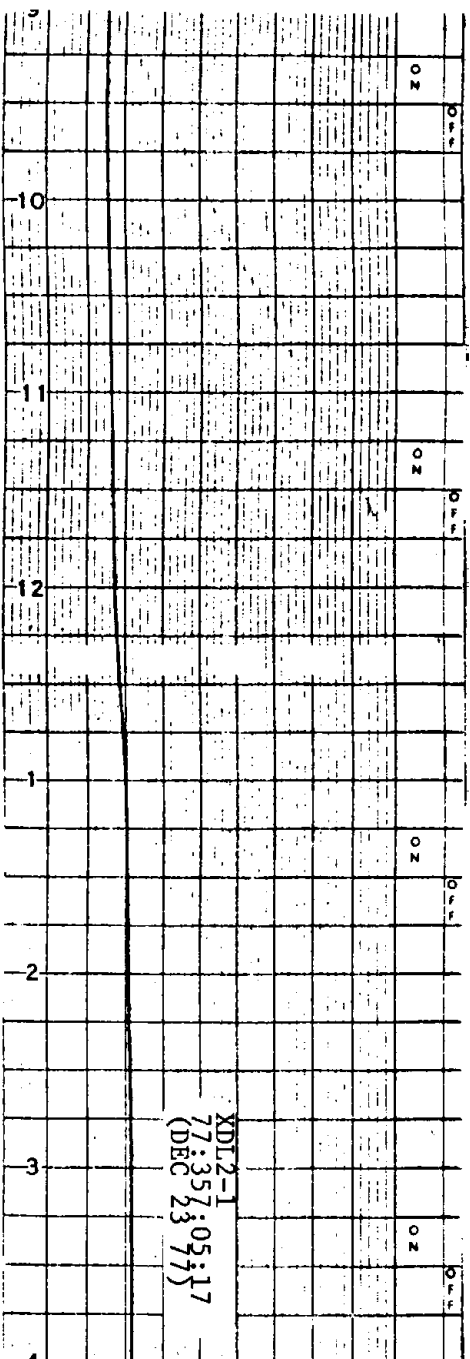


1

CREEP IN MM

Table of XDL2 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1977	357	Dec. 23	0517	0.36	1	1	.6397
		Dec. 17		0.08	**		



STATION BIT

Latitude $36^{\circ} 23.9'$

Position 379.1 km

Longitude $120^{\circ} 58.9'$ 18 meter rod, $\theta=45^{\circ}$

The Bitterwater Valley creepmeter was installed during June, 1969, on the San Andreas fault at a site 70.0 km southeast of San Juan Bautista. The installation consists of a single rod buried a few centimeters below the surface in alluvium. Creep activity at this site is composed of distinct events of up to 2.9 mm amplitude, superimposed on a background of gradual right-lateral movement at low to moderate rates, and occasional slight left-lateral drift. The average creep rate is about 19 mm/yr, with a distinct seasonal variation.

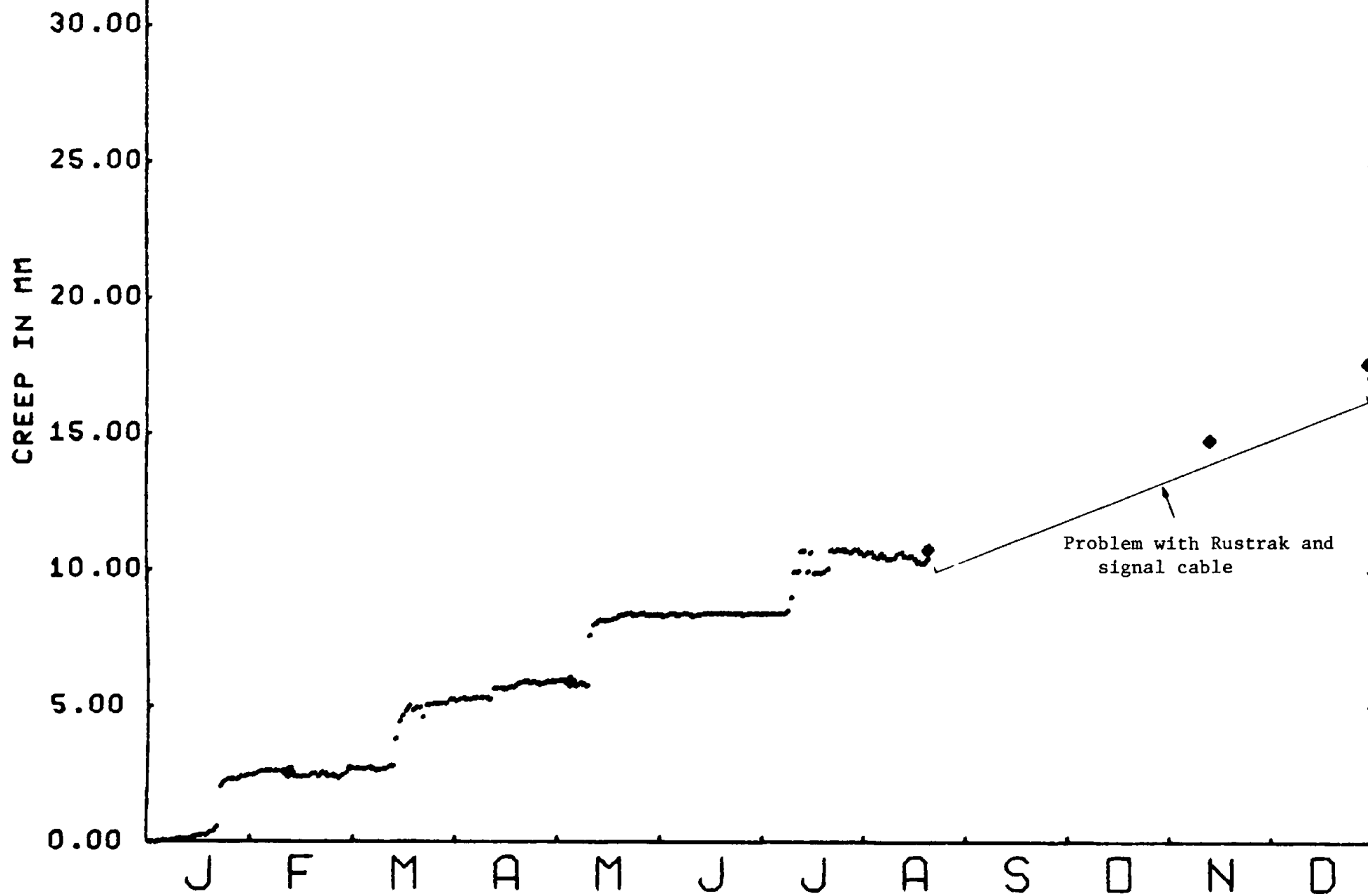
7.5 MINUTE SERIES (TOPOGRAPHIC)

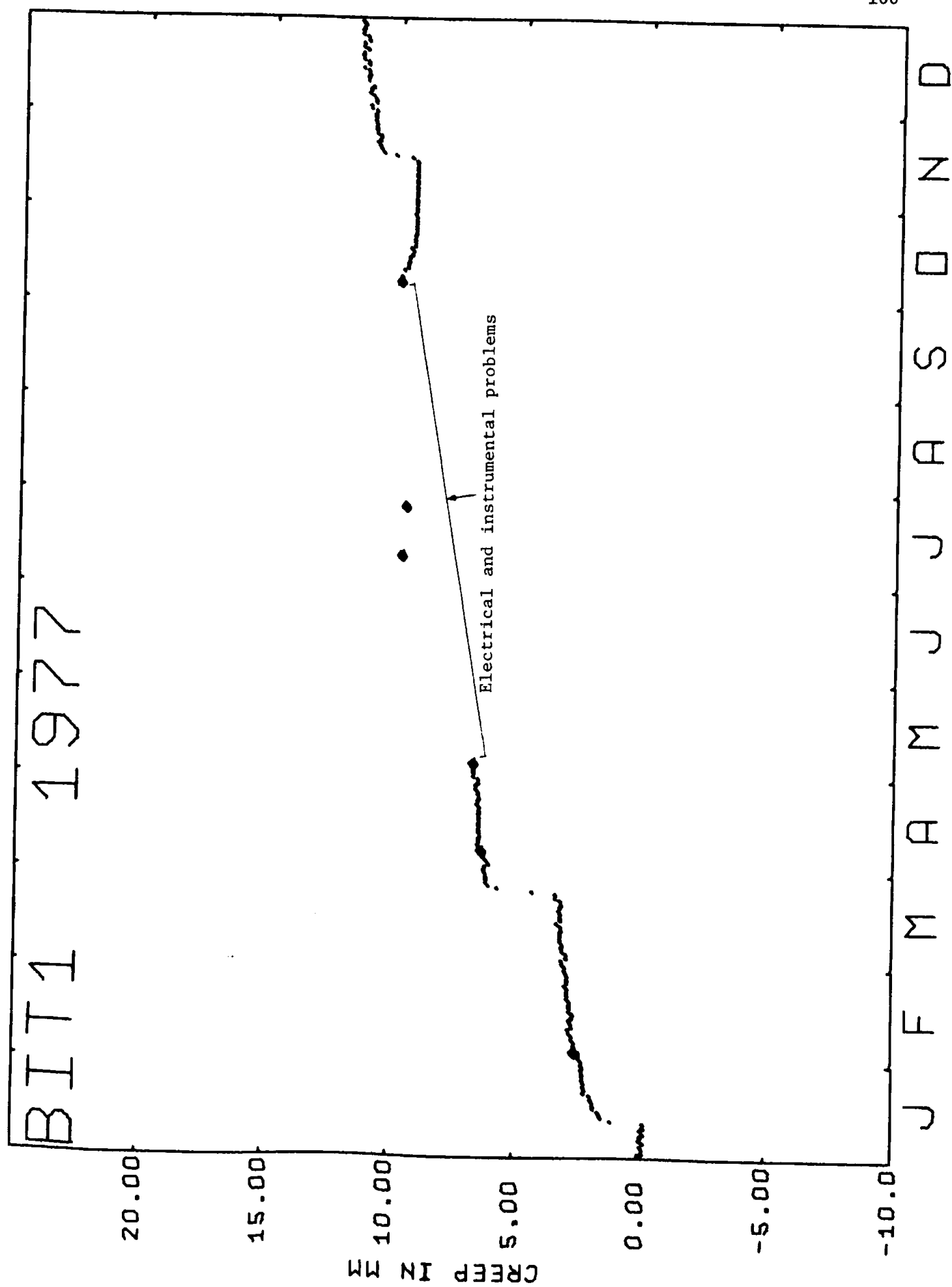
BIT CORRECTED CREEPMETER READINGS (mm)

164

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					110.15	
FEB 10	2.79		2.79		112.94	
MAY 5	3.32		6.11		116.26	
AUG 20	4.88		10.99		121.14	
NOV 12	4.04		15.03		125.18	
DEC 29	2.86		17.89		128.04	
<u>1977</u>						
FEB 3	2.17		2.17		130.21	
APR 8	3.80		5.97		134.01	
JUL 11	3.28		9.25		137.29	
JUL 27	-0.13		9.12		137.16	
OCT 6	0.36		9.48		137.52	

BIT1 1976





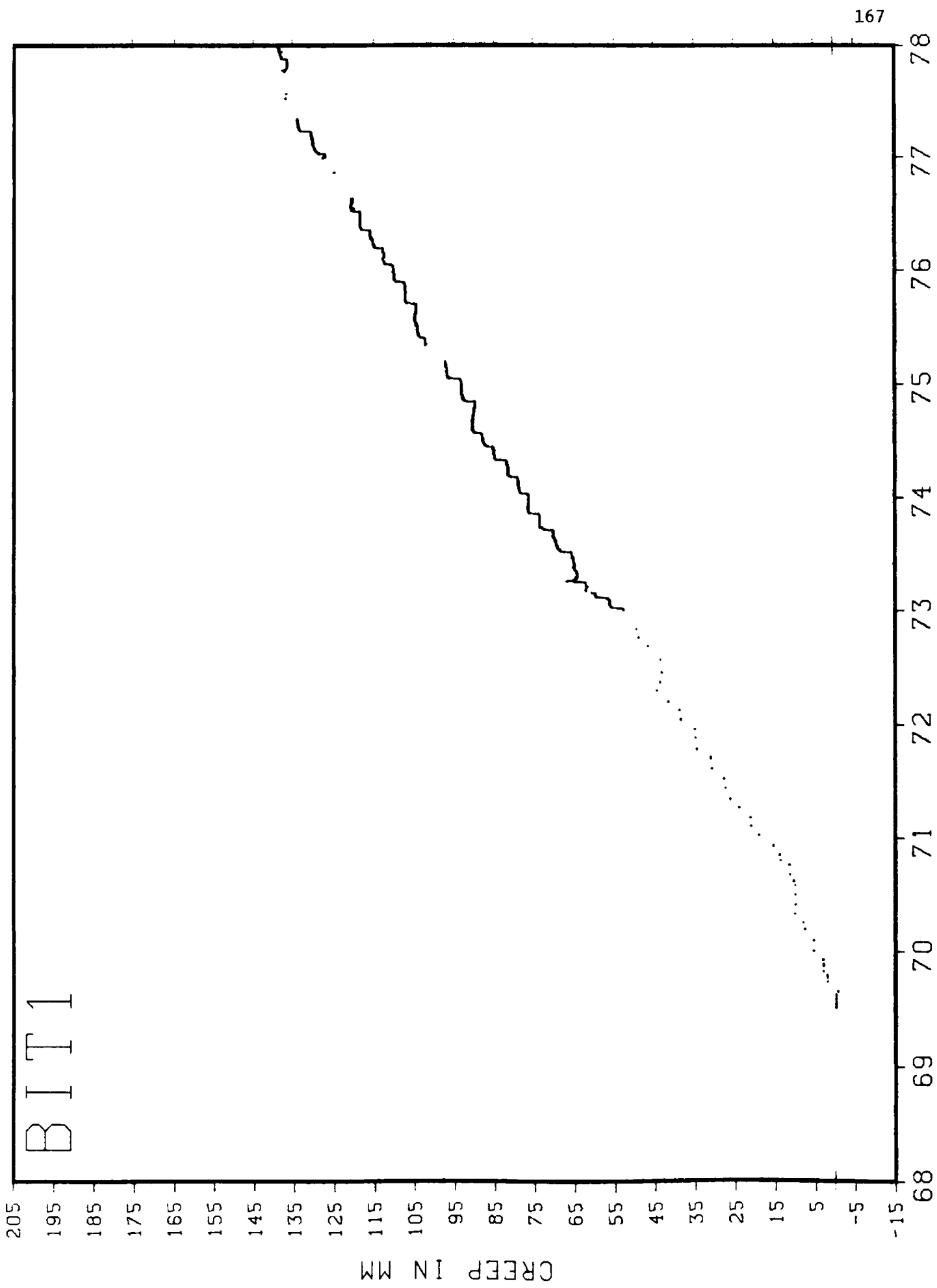


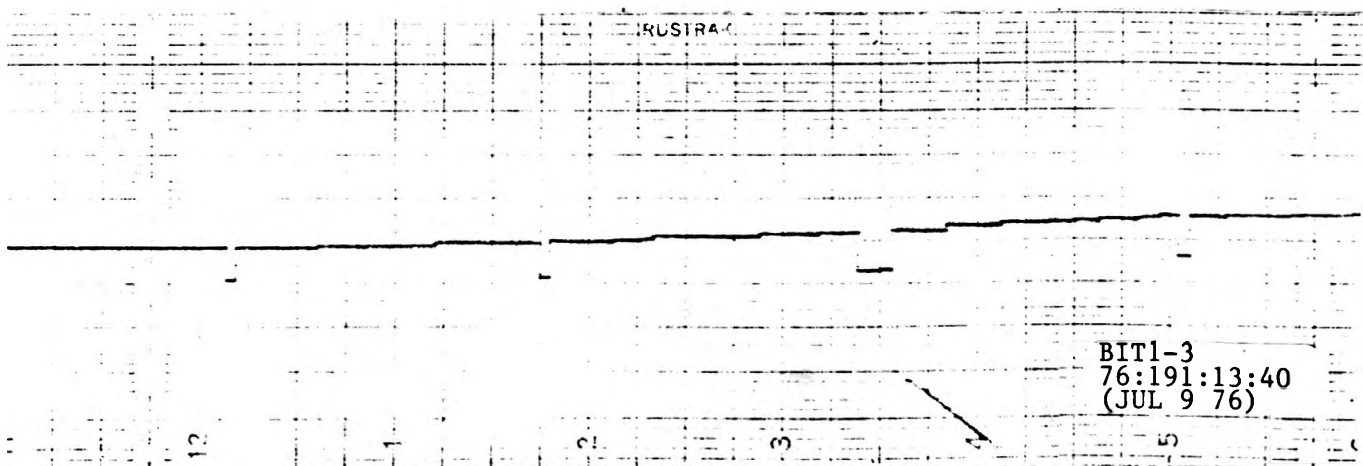
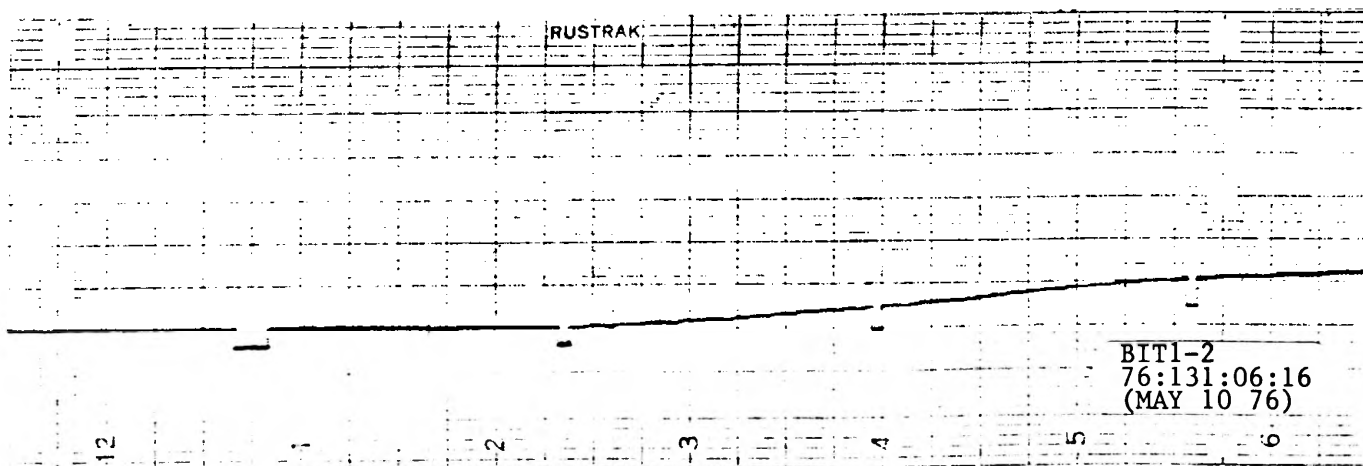
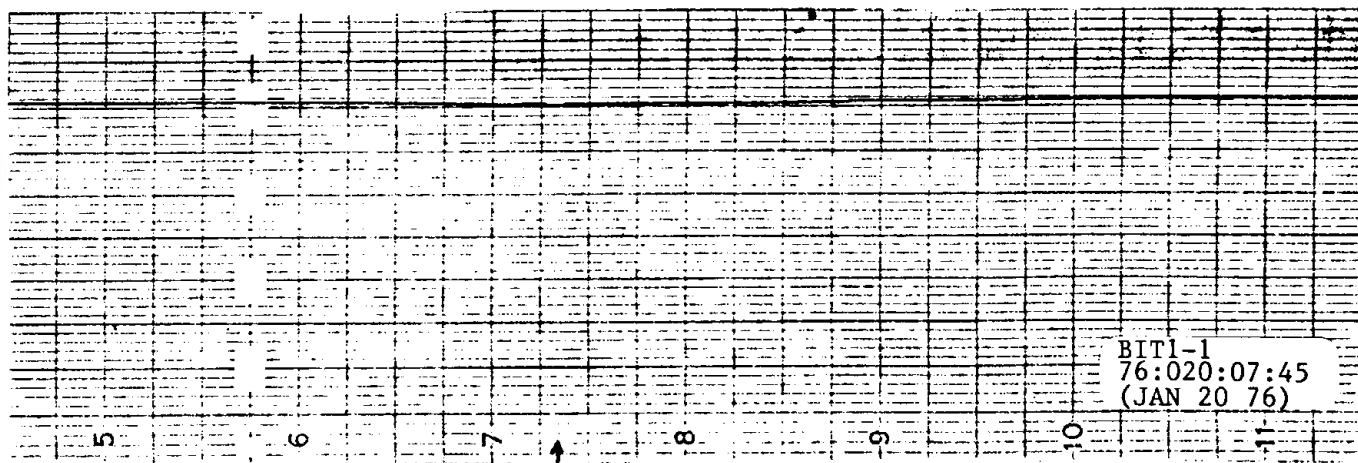
Table of BIT1 Events

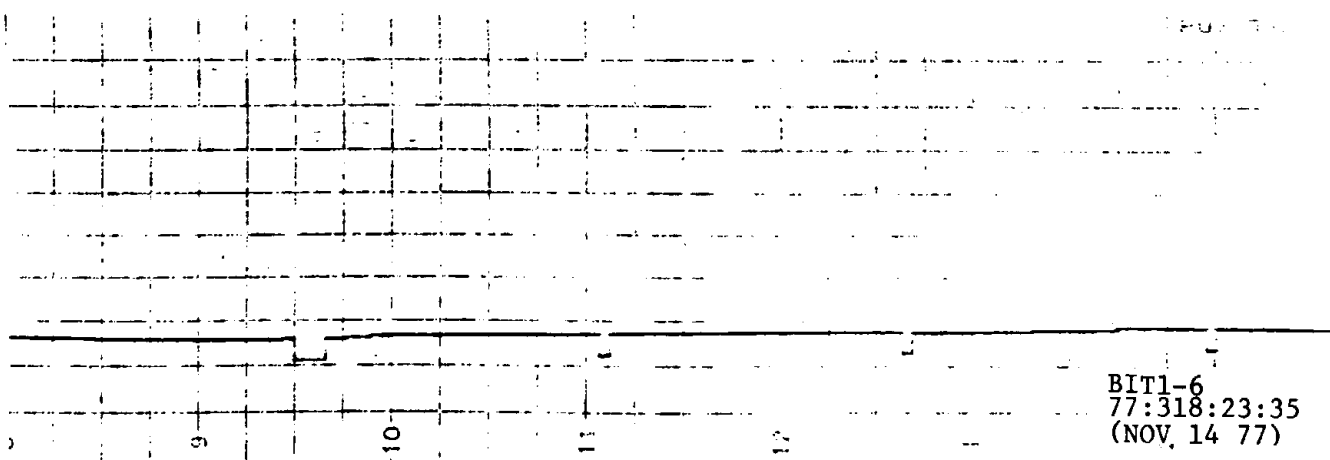
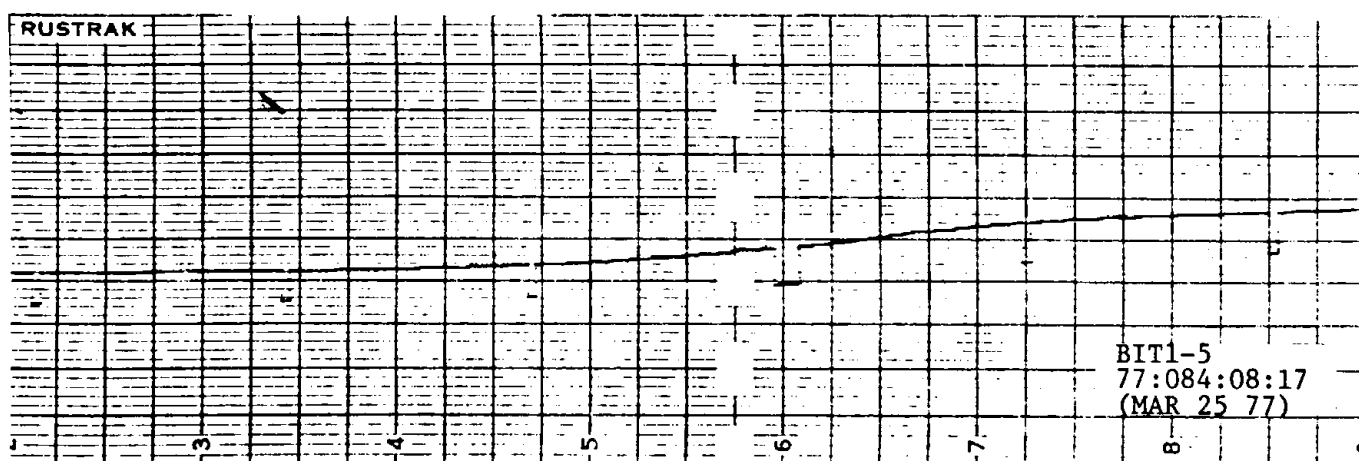
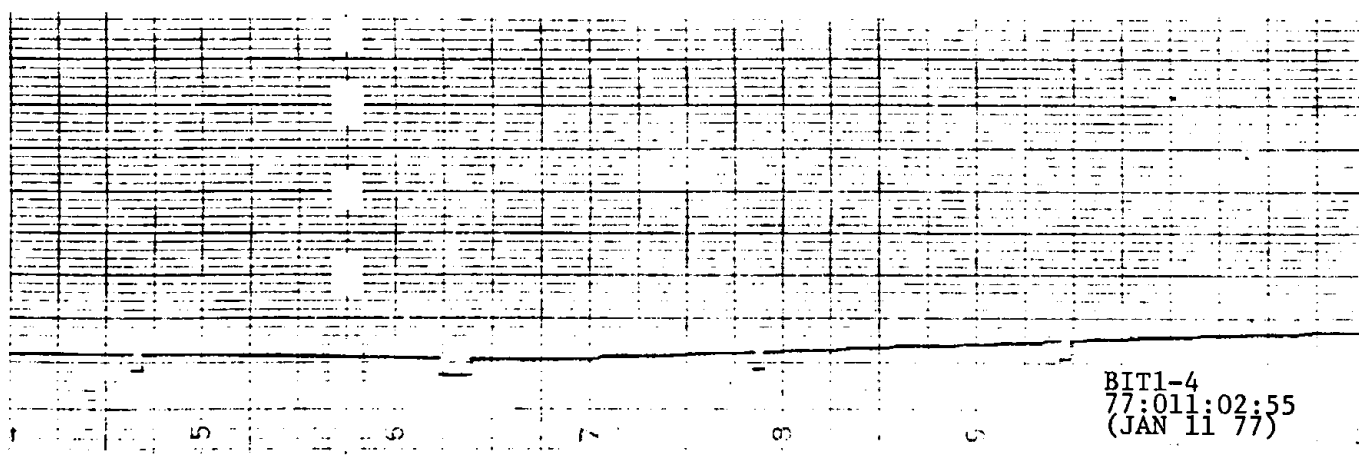
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	020	Jan. 20	(Approx) 0745@	1.91	1	(no time marks)	1.47
	056-059	Feb. 25-28		0.35	*		
	072-078	Mar. 12-18 ^{1/}	1200@	2.24	*		
	102	Apr. 11 ^{1/}	0000@	0.40	*		
	109-111	Apr. 18-20		0.29	*		
	131	May 10	0616	2.26	2	0.92	1.48
	139-141	May 18-20		0.21	*		
	191	Jul. 9	1340	1.46	3	0.92	1.48
	201-202	Jul. 20-21		0.82	*		
1977	011	Jan. 11	0255	2.11	4	0.94	1.85
	084	Mar. 25	0817	3.17	5	1.17	1.58
	318	Nov. 14	2335	1.48	6	0.96	1.42

@ Time marks were put in by hand and are approximate.

^{1/} Probable electronic problems.

*Refer to annual plot.





STATION XSR1

Latitude $36^{\circ} 23.0'$
Longitude $120^{\circ} 58.0'$

Position 381.0 km
10 meter wire, $\phi=30^{\circ}$

The Smith Ranch 1 (NE) creepmeter (or near-field strain-meter) was installed during June, 1969, on the San Andreas fault at a site 71.9 km southeast of San Juan Bautista. The installation consists of a single wire buried a few centimeters below the surface on a gently-sloping bench about 30 meters northeast of the main fault trace. Activity at this site is composed of zero to slight right- or left-lateral drift with no obvious events.

SEE XSR2 STATION DESCRIPTION FOR MAP

XSRI CORRECTED CREEPMETER READINGS (mm)

172

<u>Date</u>	<u>Change</u>	<u>Yearly Cumulative</u>	<u>Cum to Date</u>
	X C	X C	X C
<u>1976</u>			2.61
FEB 11	-0.08		2.53
MAY 5	0.15		2.68
AUG 20	-0.36		2.32

The instrument was abandoned in winter, 1976, due to flooding.

STATION XSR2

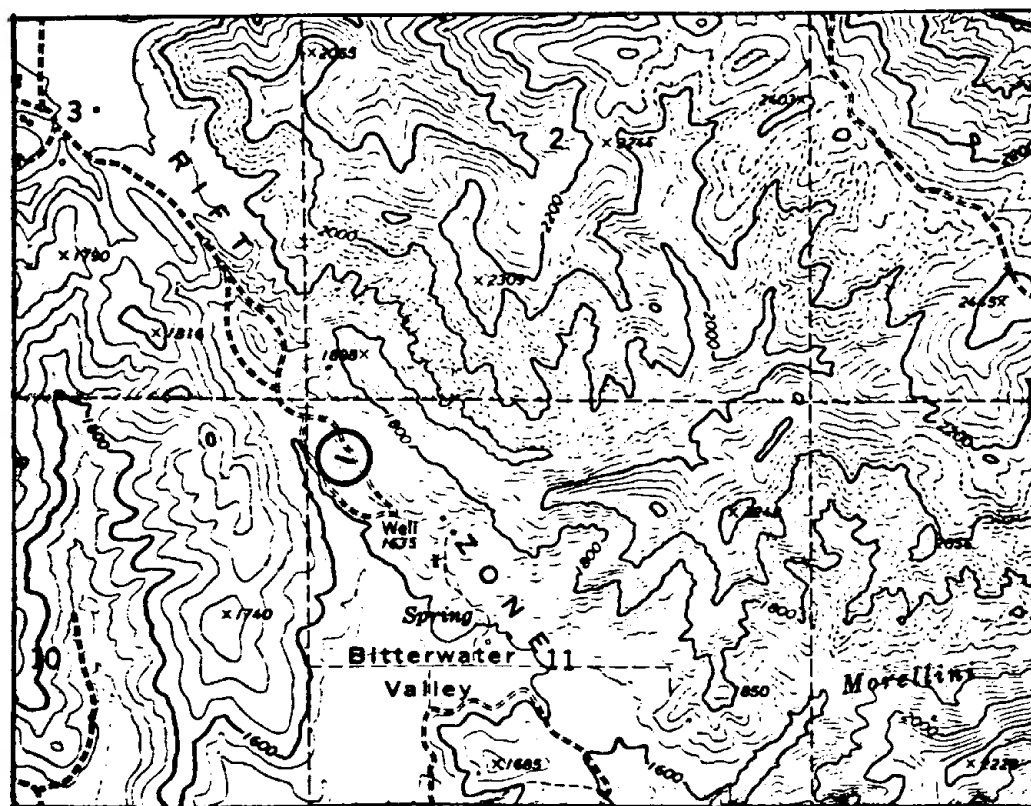
173

Latitude $36^{\circ} 23.0'$

Position 381.0 km

Longitude $120^{\circ} 58.0'$ 10 meter wire, $\phi=30^{\circ}$

The Smith Ranch 2 (SW) creepmeter was installed during June, 1969, on the San Andreas fault at a site 71.9 km southeast of San Juan Bautista. The installation consists of a single wire buried a few centimeters below the surface at the crest of a steep, southwest-facing fault scarp. Creep activity at this site is composed of long-term surges of accelerated right-lateral slip superimposed on a background of otherwise steady-state movement with infrequent minor events of up to 0.3 mm and rare events as large as 2.5 mm. The average creep rate is about 28 mm/yr, with a distinct seasonal variation.



ROCK SPRING PEAK QUADRANGLE
CALIFORNIA-SAN BENITO CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

XSR2 CORRECTED CREEPMETER READINGS (mm)

174

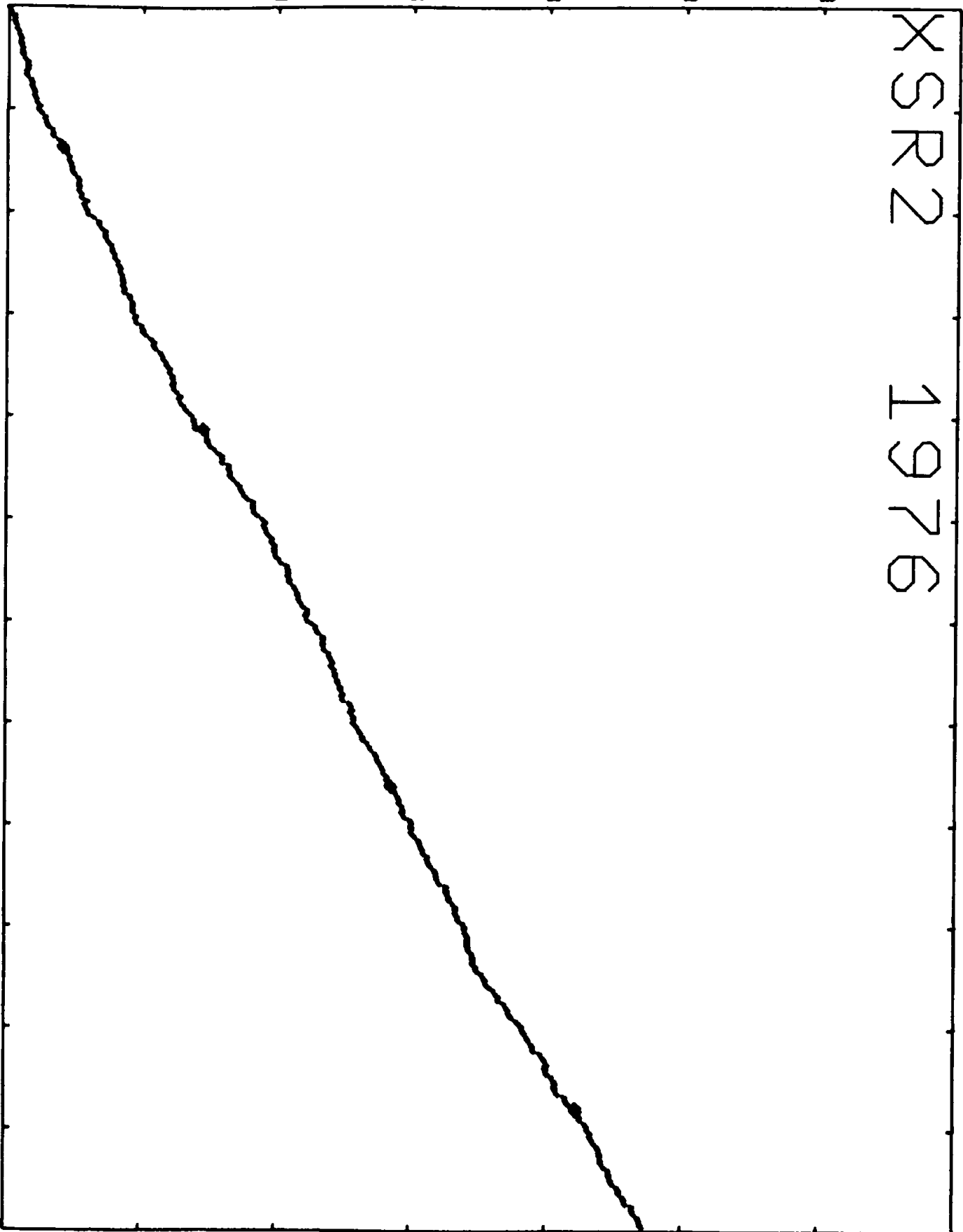
<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					175.80	
FEB 11	3.07		3.07		178.87	
MAY 5	5.25		8.32		184.12	
AUG 20	6.99		15.31		191.11	
NOV 25	6.84		22.15		197.95	
 <u>1977</u>						
FEB 3	4.09		4.09		202.03	
APR 8	6.01		10.01		208.04	
JUL 11	6.27		16.37		214.31	
OCT 6	5.20		21.57		219.51	

XSR2 1976

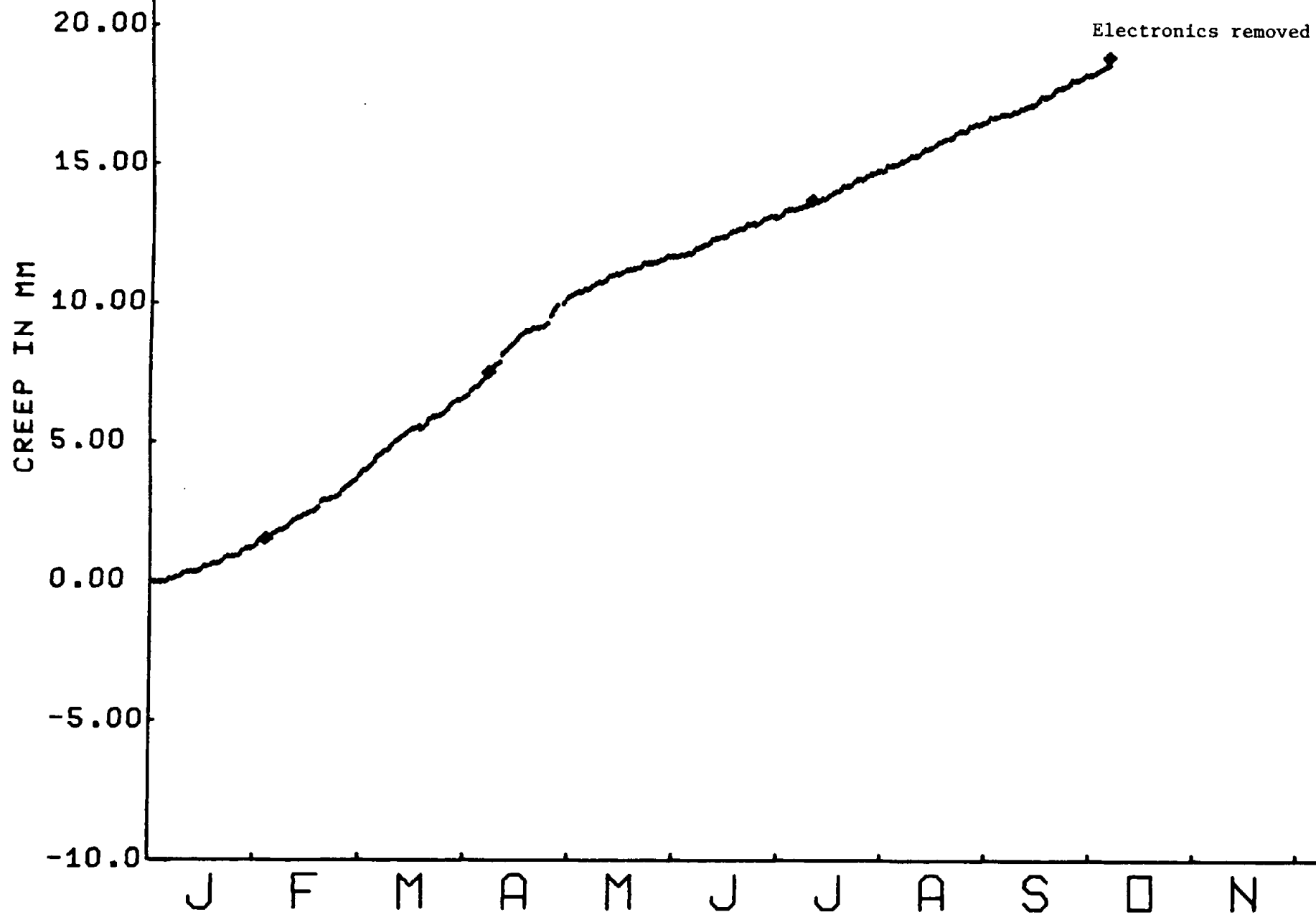
CREEP IN MM

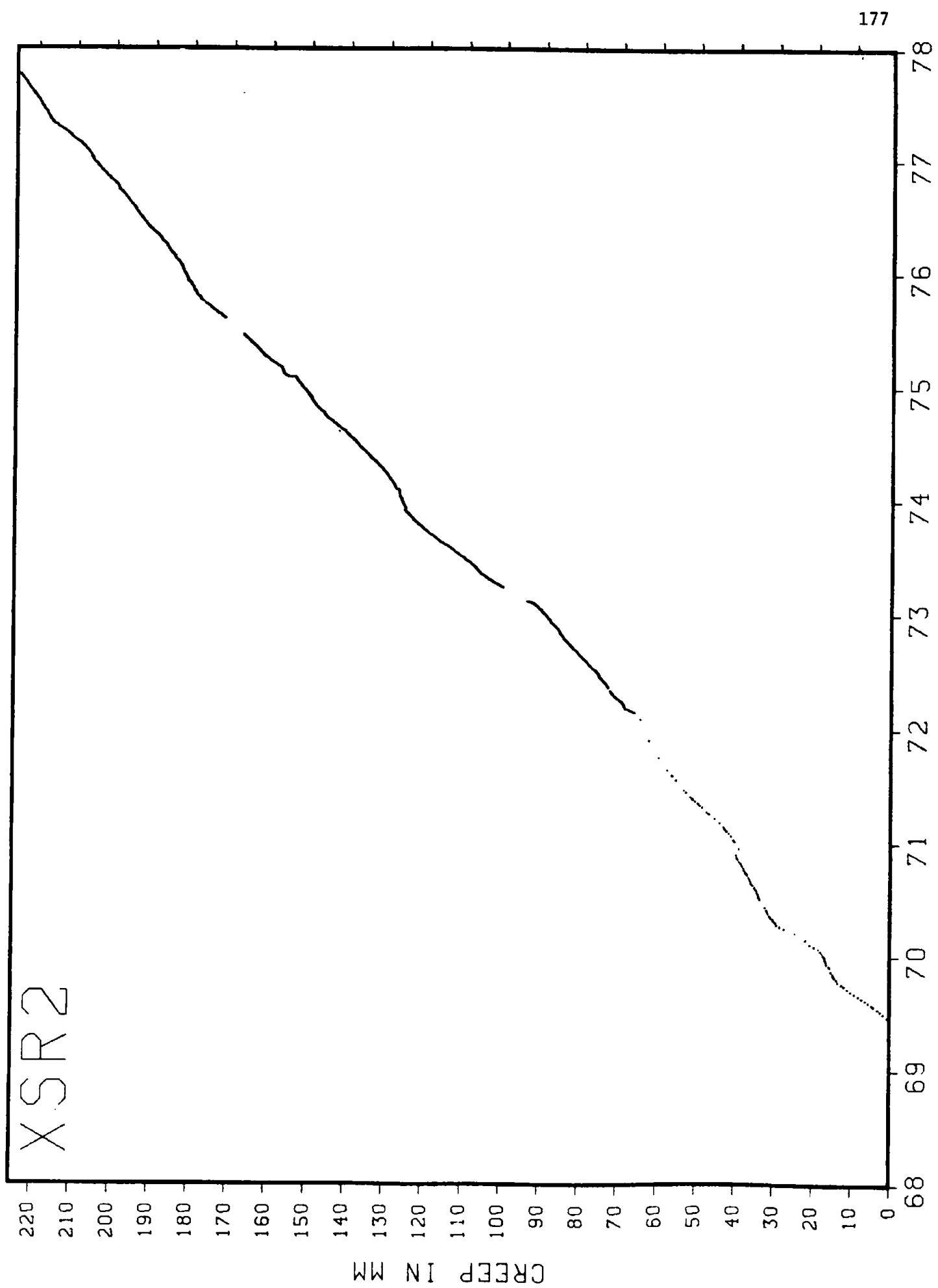
30.00
25.00
20.00
15.00
10.00
5.00
0.00

J F M A M J J A S O N D



XSR2 1977





STATION XMP1

178

Latitude 36° 12.8'

Position 405.1 km

Longitude 120° 47.9'

10 meter wire, $\phi=30^\circ$

The Monarch Peak creepmeter was installed during June, 1969, on the San Andreas fault at a site 96.0 km southeast of San Juan Bautista, and 71.0 km northwest of Cholame. The installation consists of a single wire buried a few centimeters below the surface in alluvium. Creep activity at this site is composed of occasional minor events of up to 1.3 mm amplitude, superimposed on a background of nearly steady-state slip. The average creep rate is about 13 mm/yr, with a slight seasonal variation.

1 KILOMETER
1

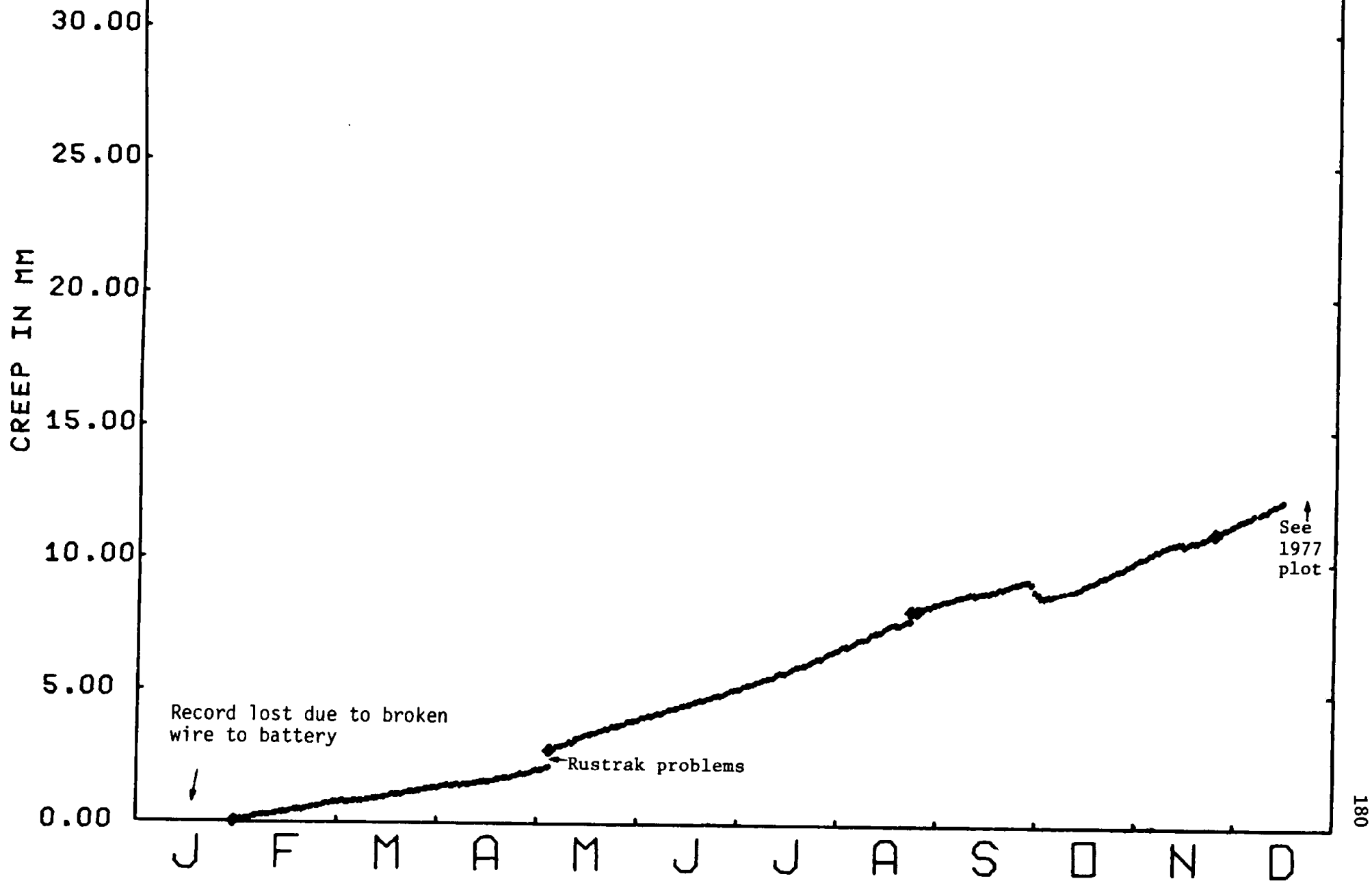
MONARCH PEAK QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

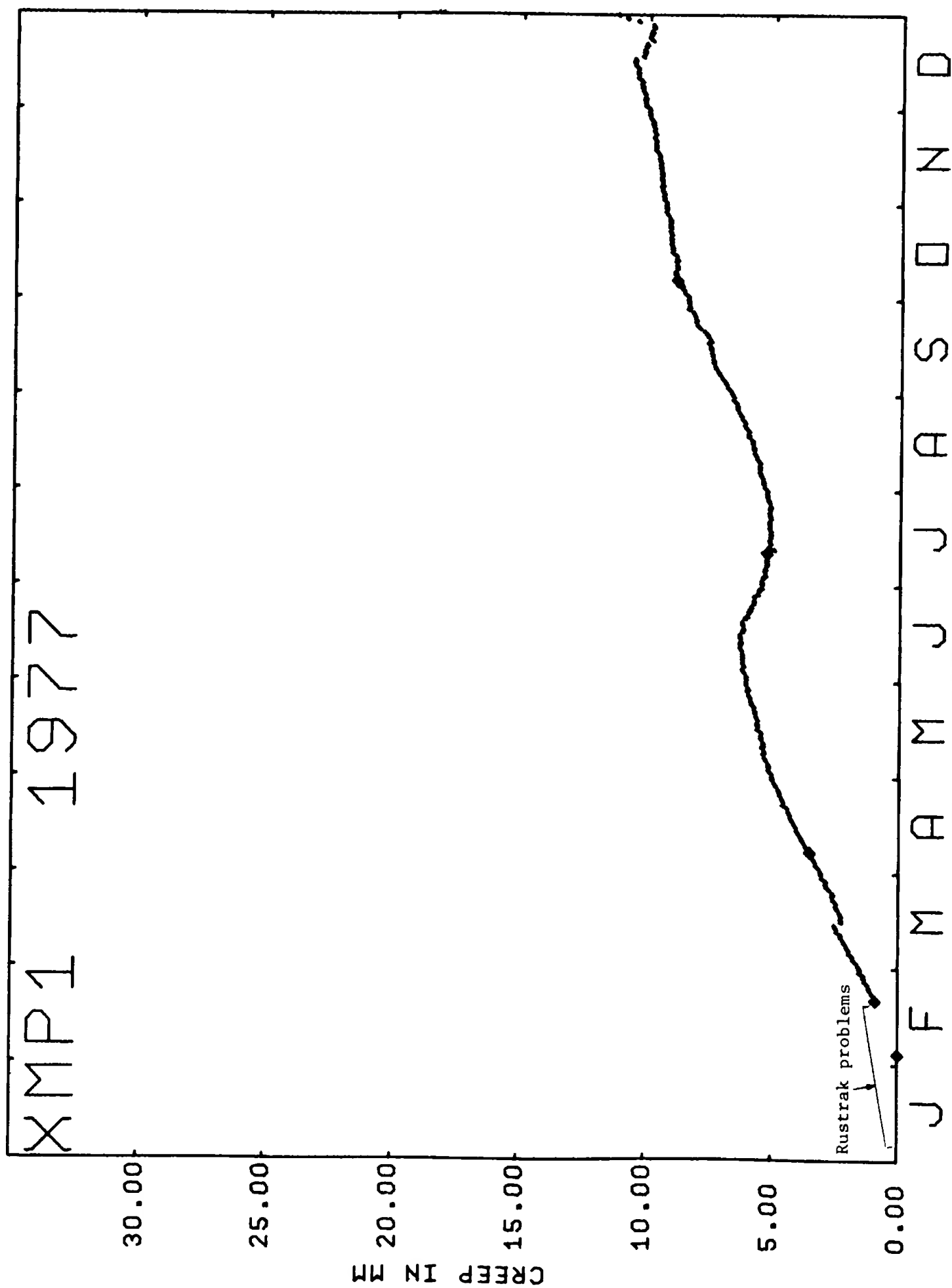
XMP1 CORRECTED CREEPMETER READINGS (mm0

179

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					91.40	
JAN 30	1.89		1.89		93.29	
MAY 5	2.77		4.66		96.06	
AUG 24	5.36		10.02		101.42	
NOV 24	3.02		13.04		104.44	
<u>1977</u>						
FEB 3	2.63		2.63		107.07	
FEB 20	0.90		3.53		107.97	
APR 8	2.63		6.16		110.60	
JUL 12	1.72		7.88		112.32	
OCT 7	3.61		11.49		115.93	

XMP1 1976





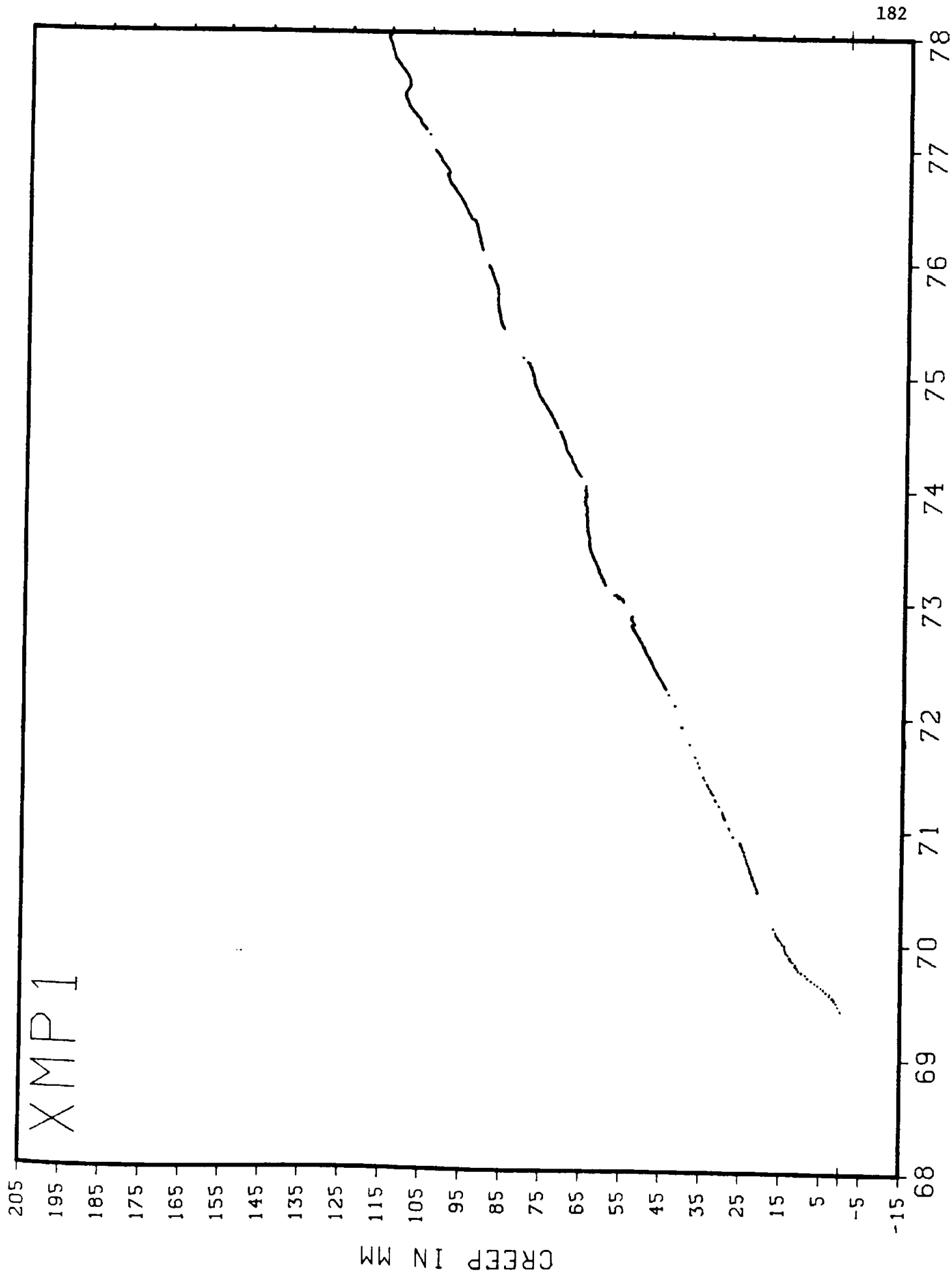
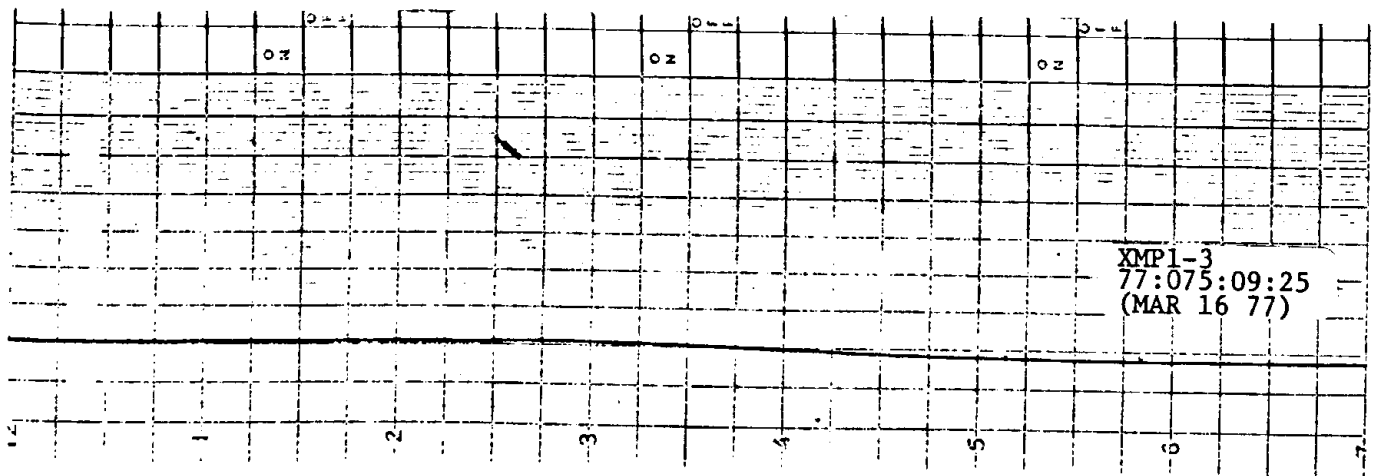
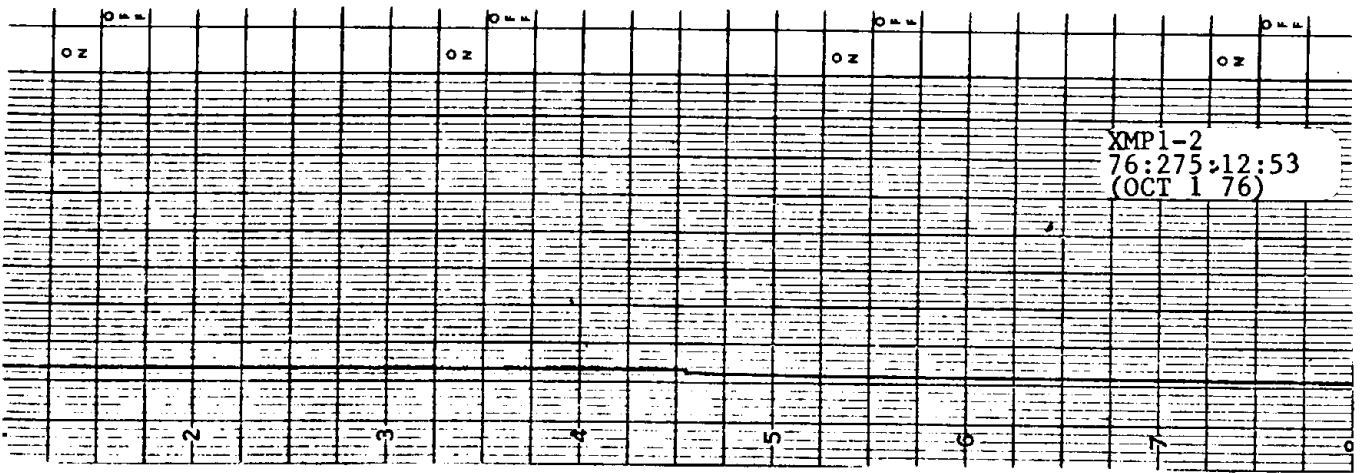
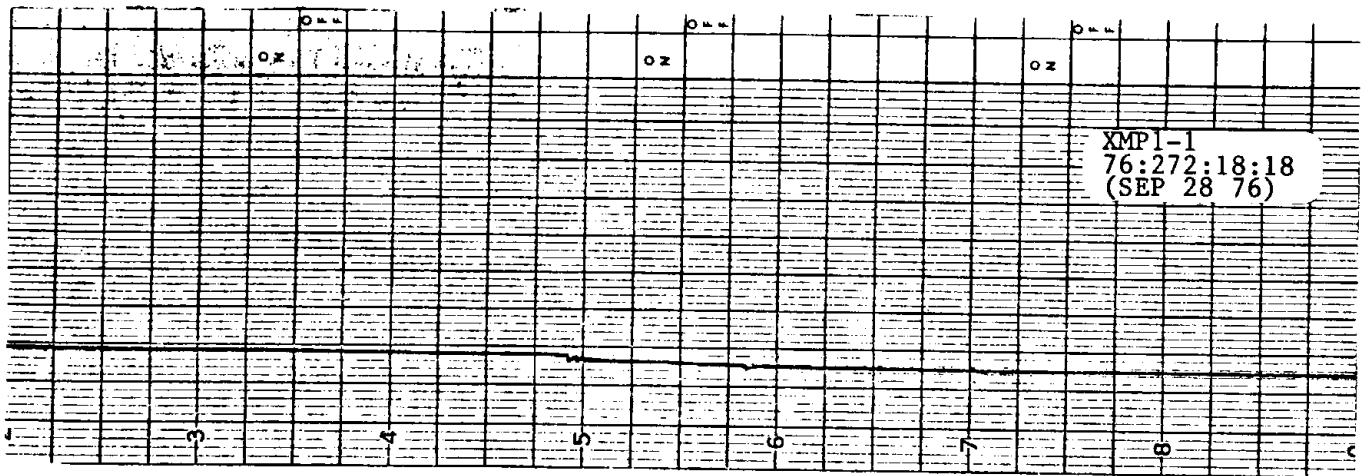


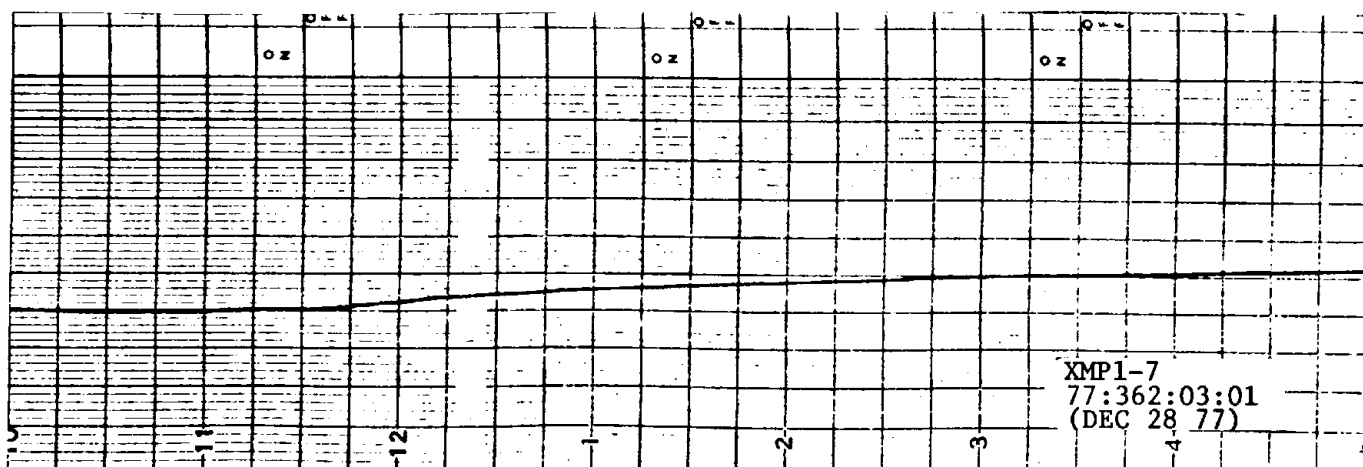
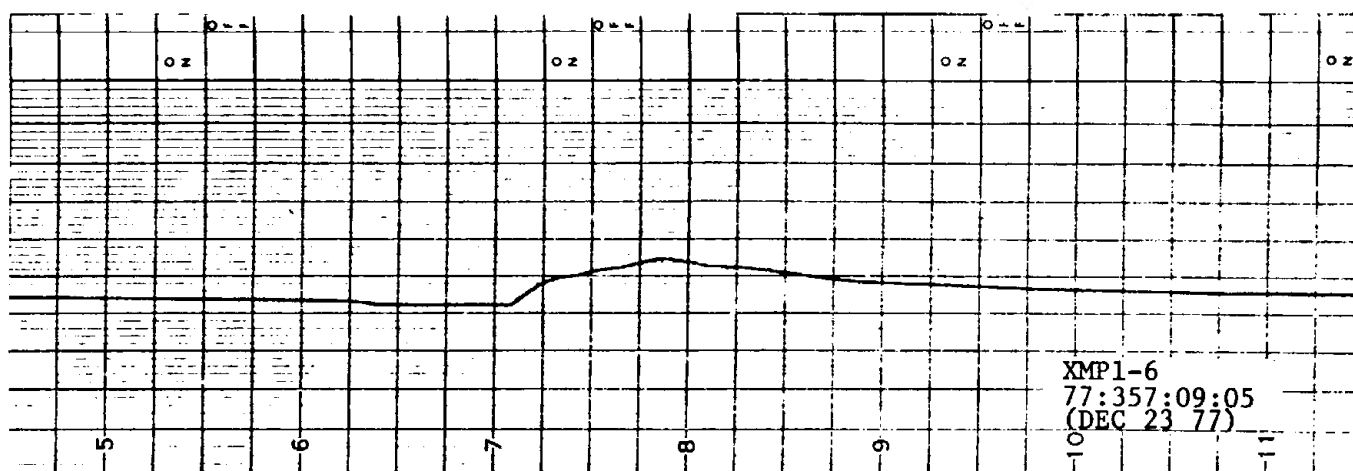
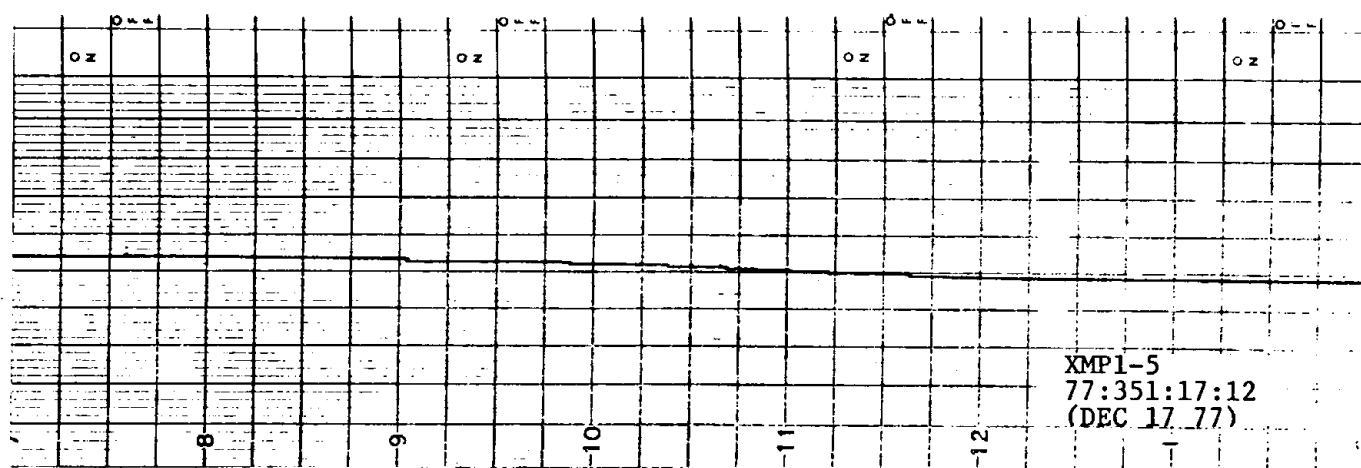
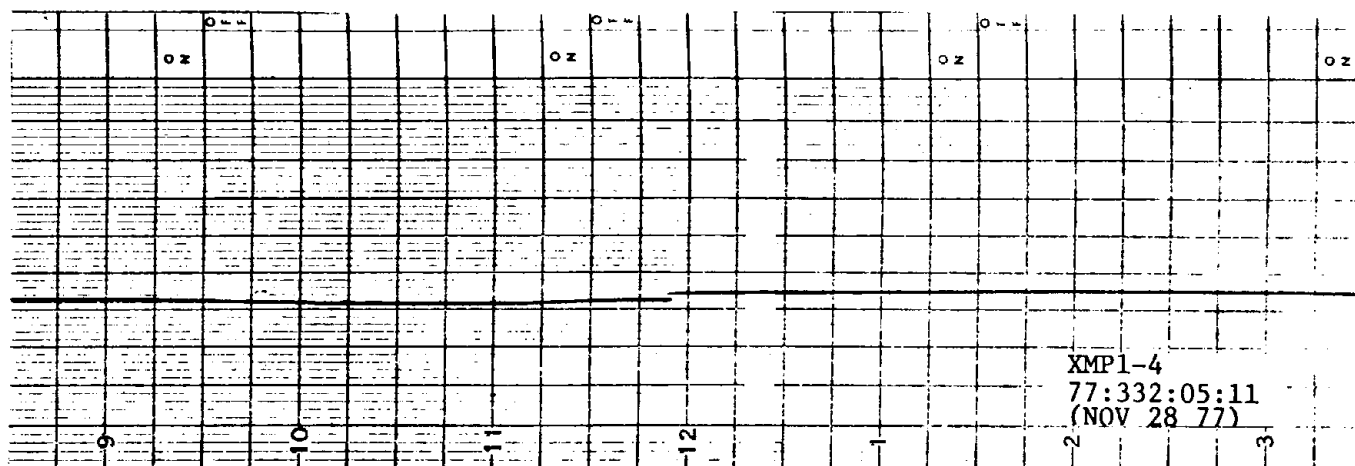
Table of XMP1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	272	Sep. 28 <u>1/</u>	1818	-.48	1	1.00	.7506(na)
	275	Oct. 1	1253	-.15	2	1.00	.7506(na)
1977	075	Mar. 16	0925	-0.23	3	1.00	.7505
	332	Nov. 28	0511	0.13	4	1.00	.5823
	351	Dec. 17	1712	-0.33	**5	1.00	.5823
	357	Dec. 23	0905		6	1.00	.5823
	362	Dec. 28	0301	5.61	7	1.00	.5823
				(Total over 1 month period)			

** rainfall?

1/ Onset of 4-day period of apparent left-lateral (-.85 mm) slip. The onset was near the time of the beginning of rainfall.





STATION XSC1

186

Latitude 36° 03.9'
Longitude 120° 37.7'

Position 427.6 km
10 meter wire, $\theta=30^\circ$

The Slack Canyon creepmeter was installed during June, 1969, on the San Andreas fault at a site 48.5 km northwest of Cholame, and 118.5 km southeast of San Juan Bautista. The installation consists of a single wire buried a few centimeters below the surface in weathered bedrock. Creep activity at this site is composed of steady-state right-lateral slip at a rate of about 25 mm/yr, with a slight seasonal variation.

0 1 KILOMETER



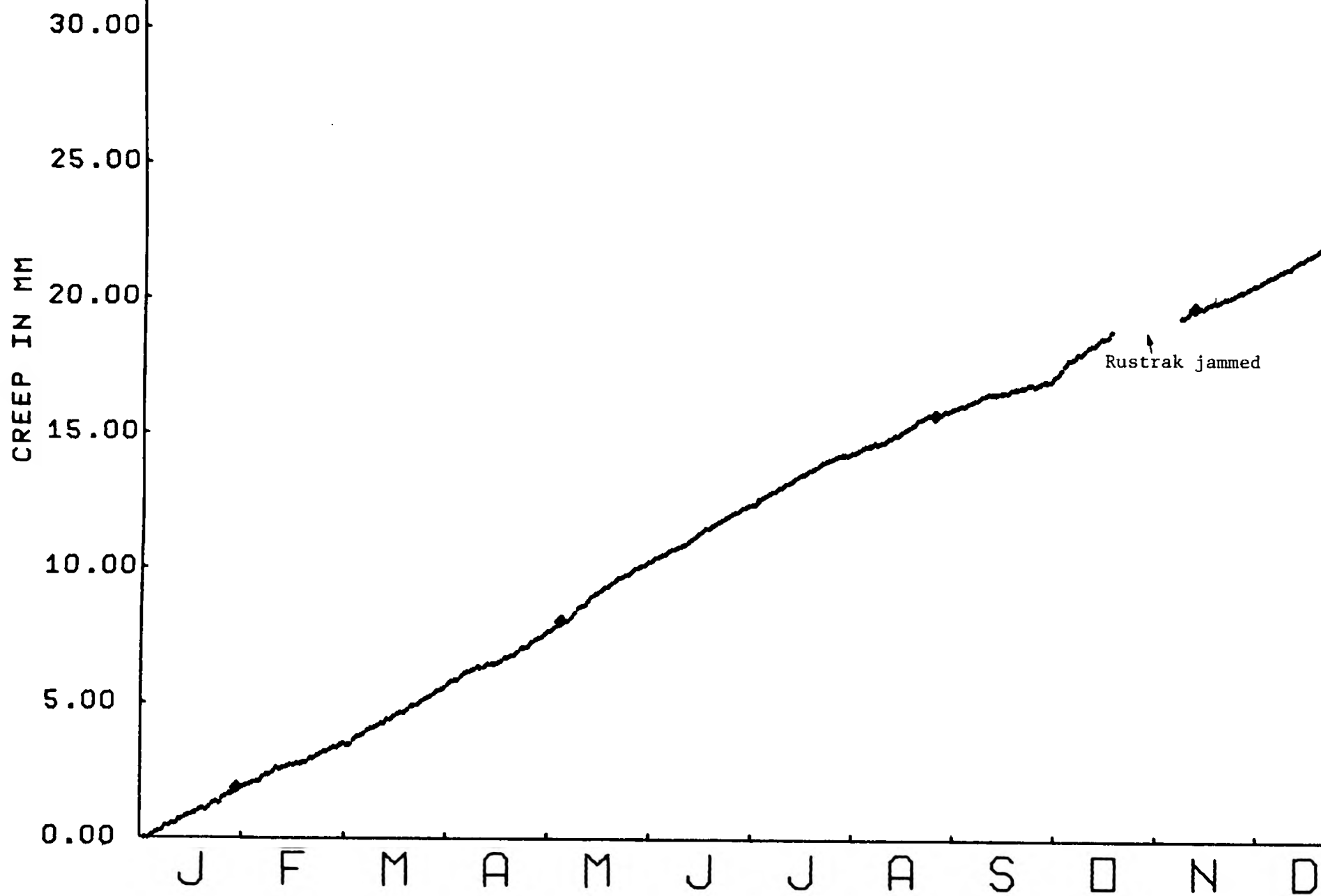
SLACK CANYON QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

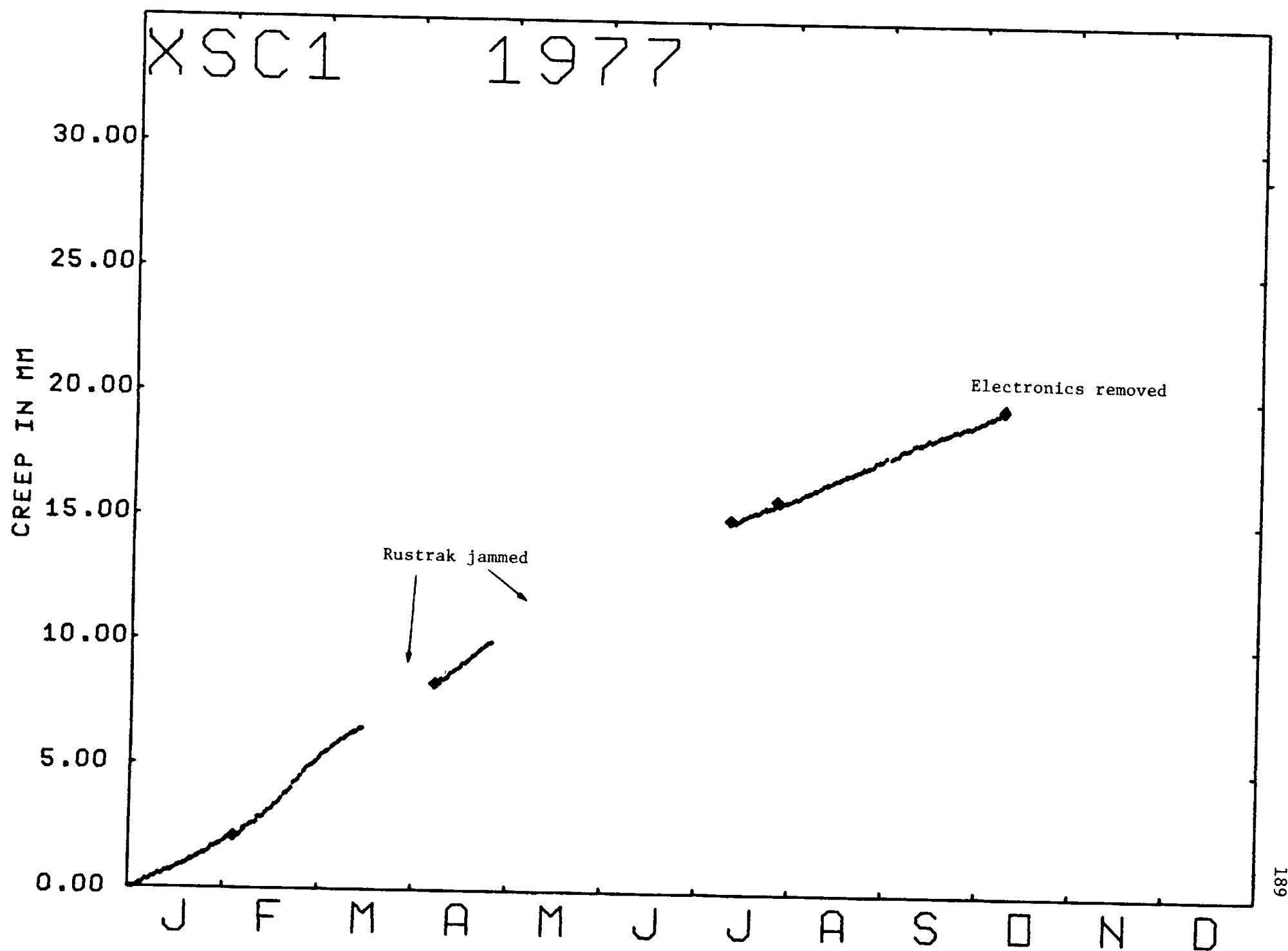
XSC1 CORRECTED CREEPMETER READINGS (mm)

187

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					154.41	
JAN 29	3.74		3.74		158.15	
MAY 5	6.21		9.95		164.36	
AUG 25	6.72		16.67		171.08	
NOV 11	5.03		21.70		176.11	
<u>1977</u>						
FEB 3	5.26		5.26		181.37	
APR 8	6.21		11.47		187.58	
JUL 12	6.68		18.15		194.26	
JUL 27	0.78		18.93		195.04	
OCT 7	7.08		26.01		202.12	

XSC1 1976





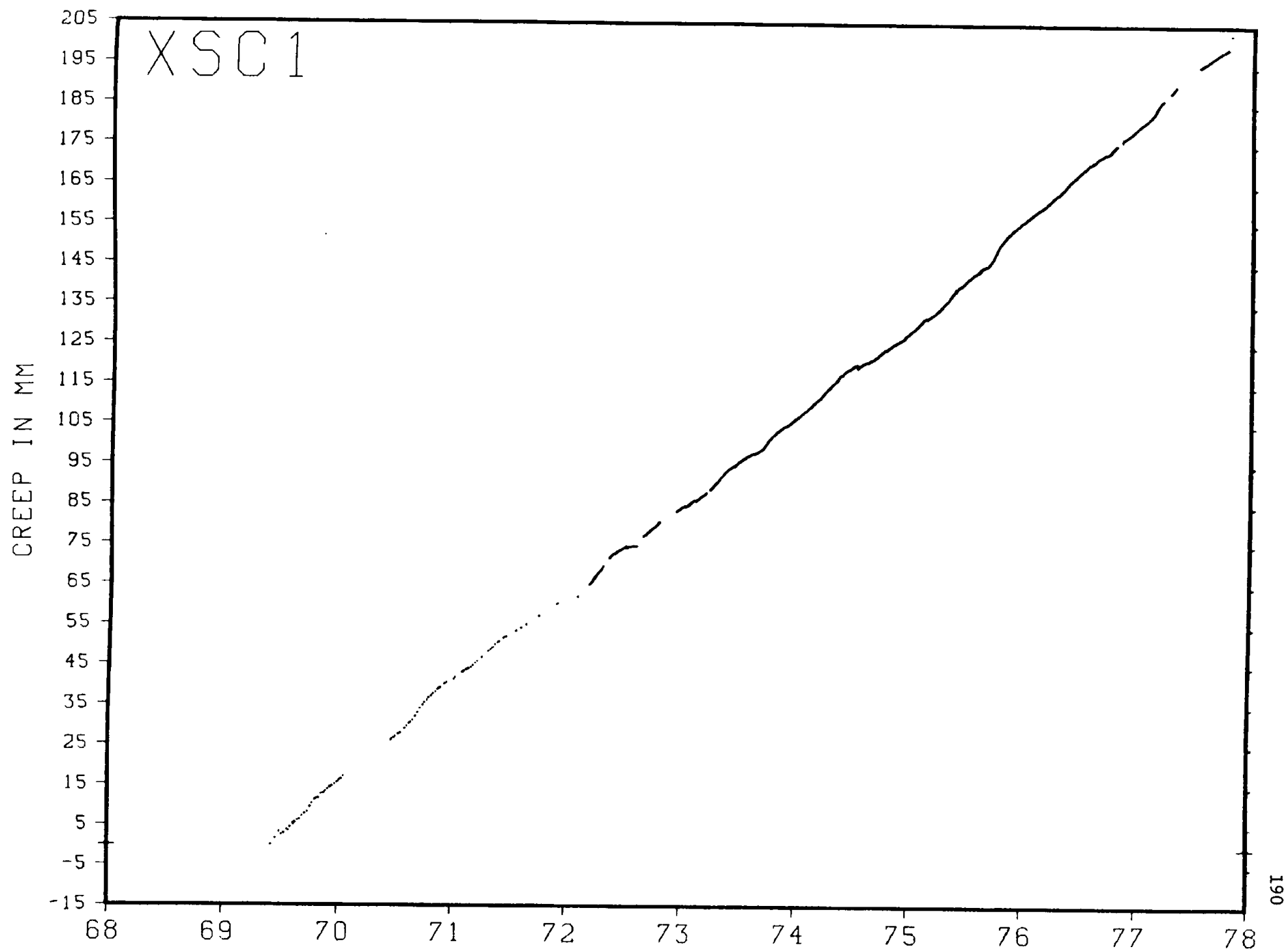
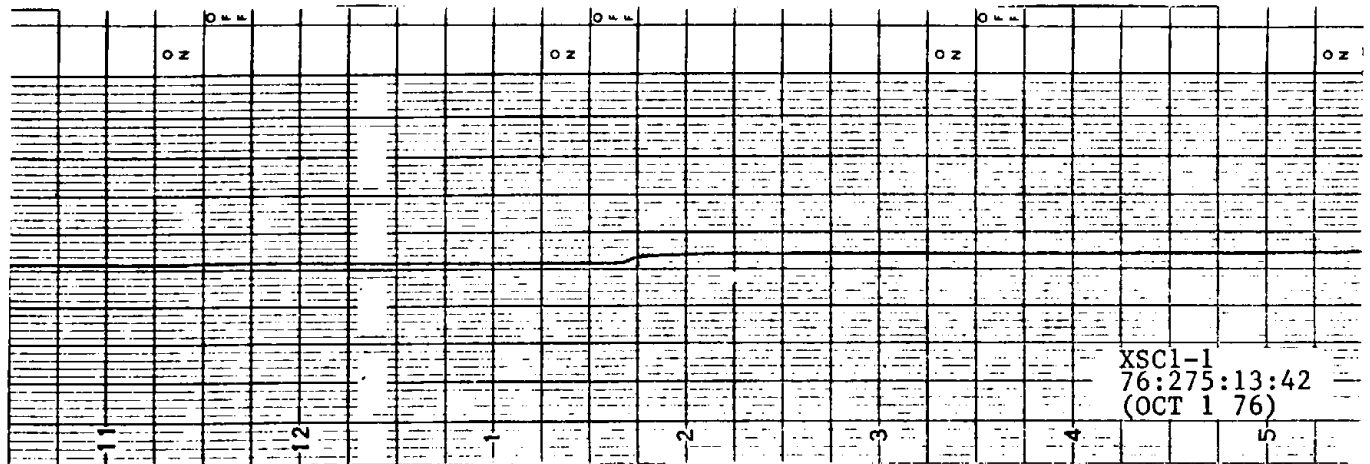


Table of XSC1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	273	Sep. 29 ^{1/}		≈1.00	*		
	275	Oct. 1	1342	0.23	1	1.0	.6203

^{1/} Onset of 14-day period of accelerated right-lateral slip. The onset was near the time of the beginning of rainfall.

*Refer to annual plot.



STATION XDR1

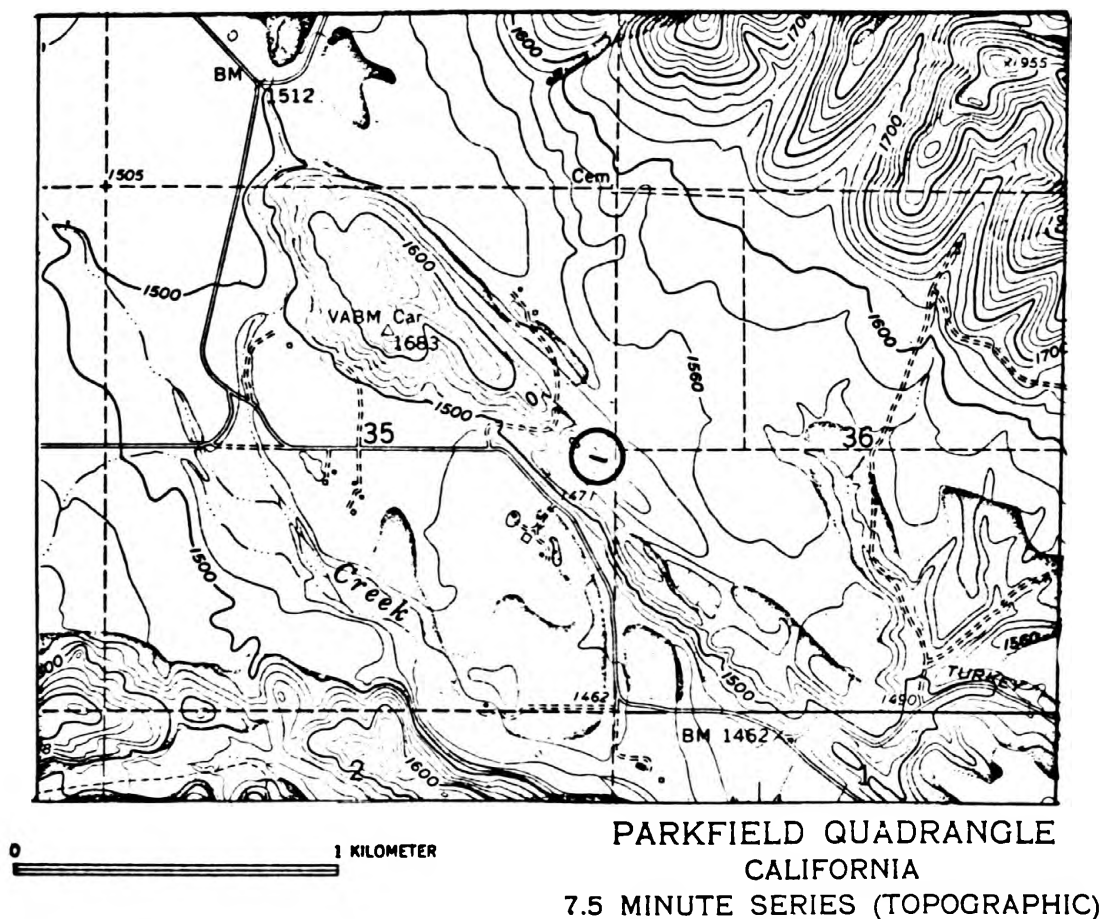
193

Latitude $35^{\circ} 53.0'$

Position 454.8 km

Longitude $120^{\circ} 25.2'$ 10 meter wire, $\phi=30^{\circ}$

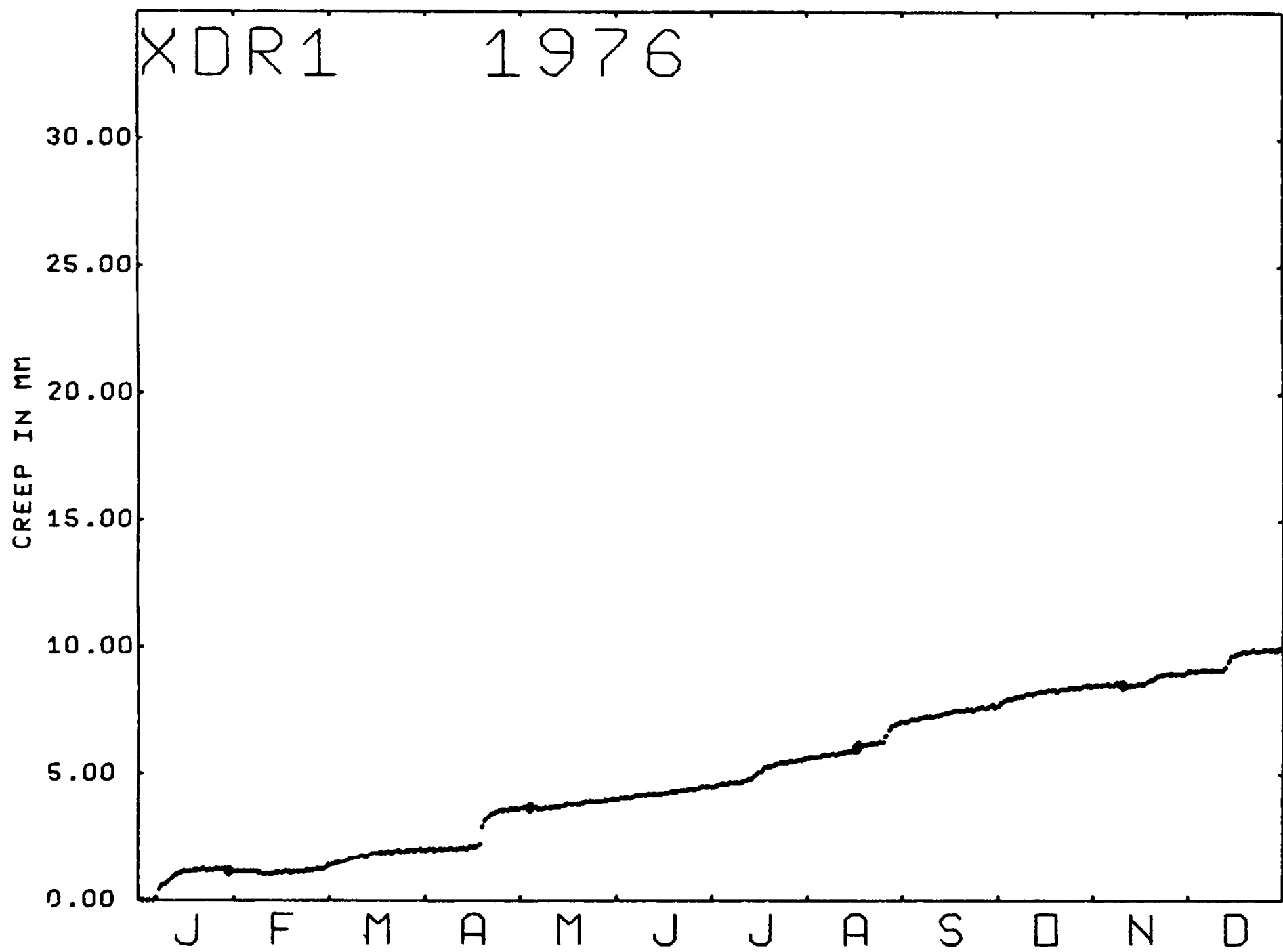
The Durham Ranch creepmeter was installed during June, 1969, on the San Andreas fault at a site 21.3 km northwest of Cholame. The installation consists of a single wire buried a few centimeters below the surface on the northeast side of a ridge. Creep activity at this site is composed of occasional minor right-lateral events and left-lateral surges of up to 12 mm amplitude superimposed on a background of gradual right- and left-lateral drift. The average creep rate is about 10 mm/yr, with a distinct seasonal variation consisting of onsets of left-lateral events and negative drift during periods of heavy rainfall.



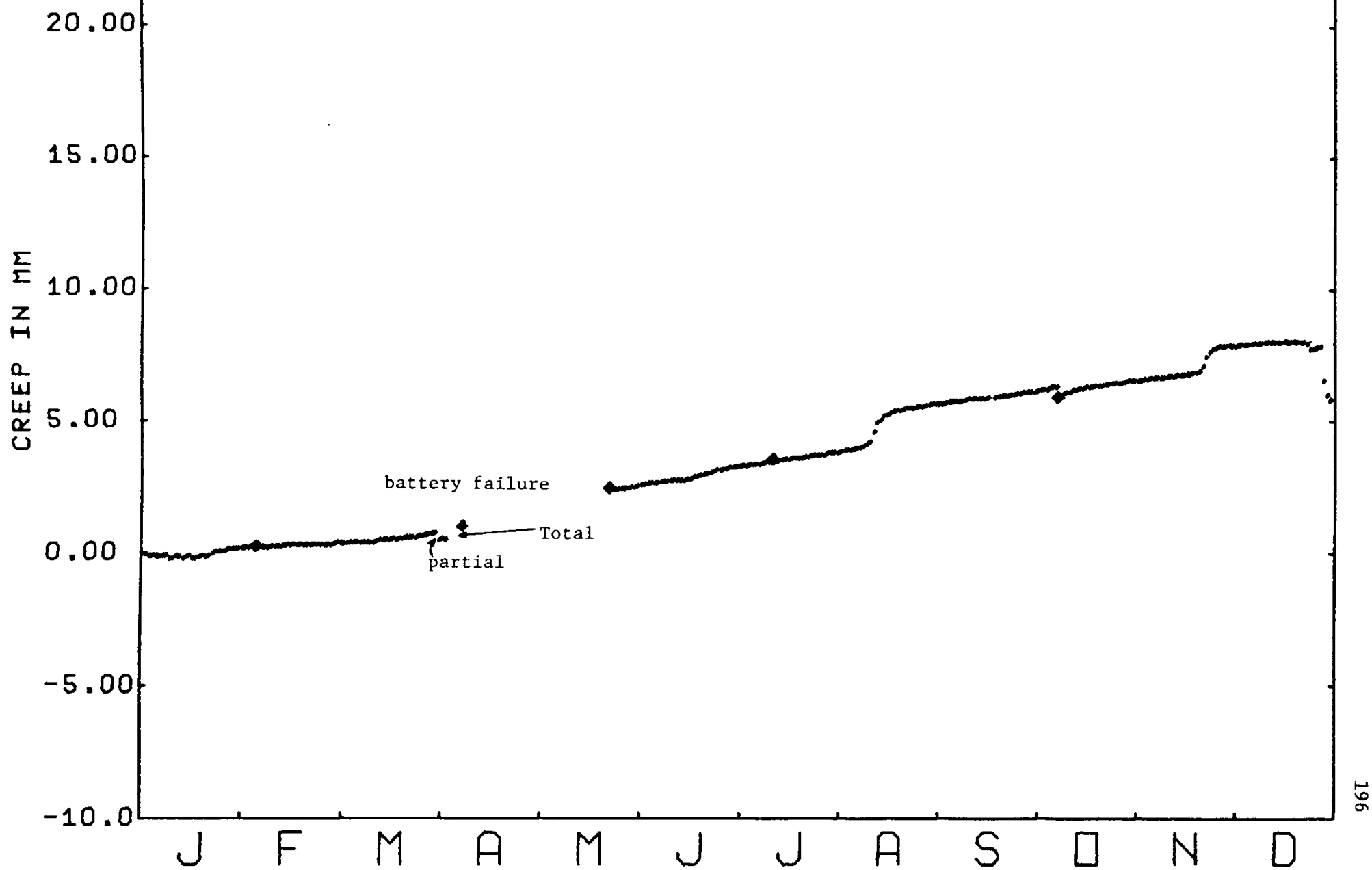
XDR1 CORRECTED CREEPMETER READINGS (mm)

194

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					85.29	
JAN 29	1.51		1.51		86.80	
MAY 4	2.52		4.03		89.32	
AUG 17	0.13		4.16		89.45	
NOV 10	2.42		6.58		91.87	
<u>1977</u>						
FEB 4	1.76		1.76		95.94	
FEB 9	0.05		1.81		95.99	
APR 8	0.71		2.52		96.70	
MAY 23	1.42		3.94		98.12	
JUL 12	1.10		5.04		99.22	
OCT 7	2.38		7.42		101.60	



XDR1 1977



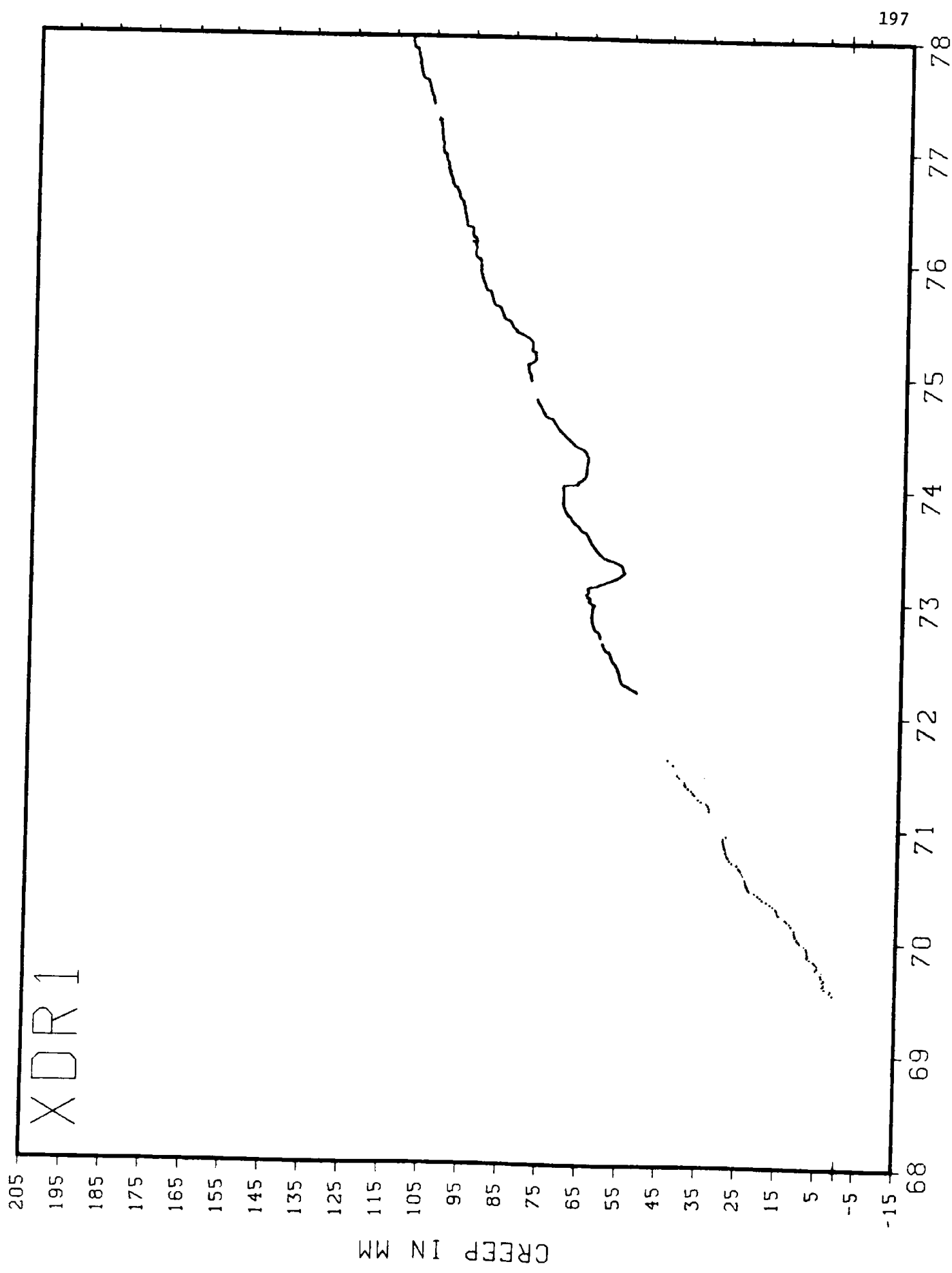


Table of XDR1 Events

198

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	006-012	Jan. 6-12	0926	1.23	1 ^{1/}	1	.5138
	109	Apr. 18	0357	1.20	2	1	.5696
	193-201	Jul. 11-19 ^{2/}		0.50	*		
	238	Aug. 25	1453	0.77	3	1	.5730
	273	Sep. 29 ^{3/}		-0.18	*		
	275	Oct. 1		0.23	*		
	319	Nov. 14	1533	0.07	4	1	.5826
	323	Nov. 18	1608	0.23	5	1	.5826
	348	Dec. 13	0756	0.69	6 ^{1/}	1	.5826
1977	021	Jan. 21	2013	0.20	7	1.00	.5826
	223	Aug. 11	1707	1.11	8	1.00	.5696
	324	Nov. 20	1417	0.97	9	1.00	.5445
	357	Dec. 23	1100	-0.31	**10	1.00	.5445
	361	Dec. 27	1718	-2.38	**11	1.00	.5445

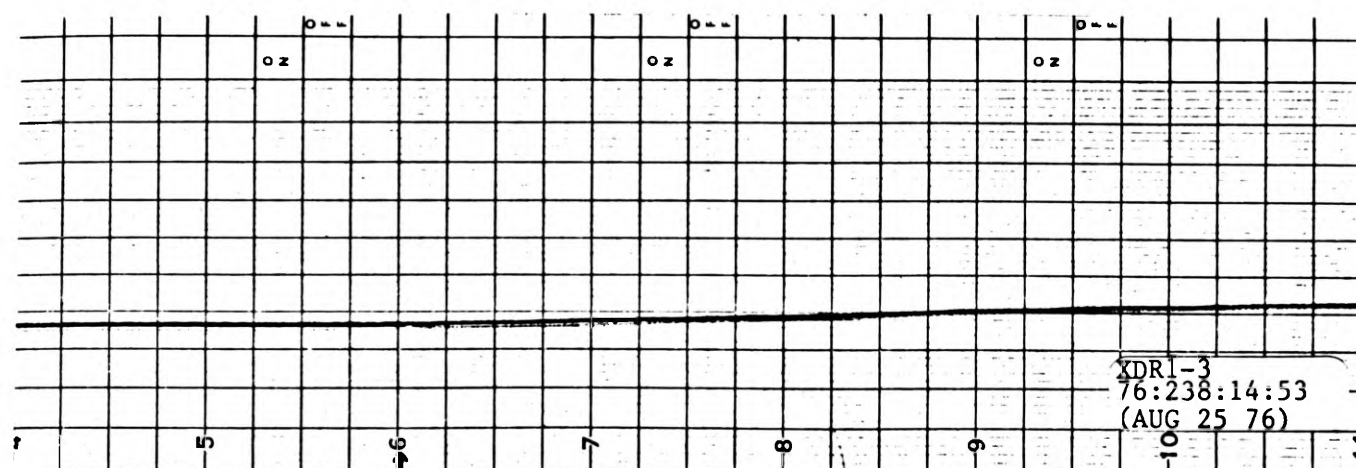
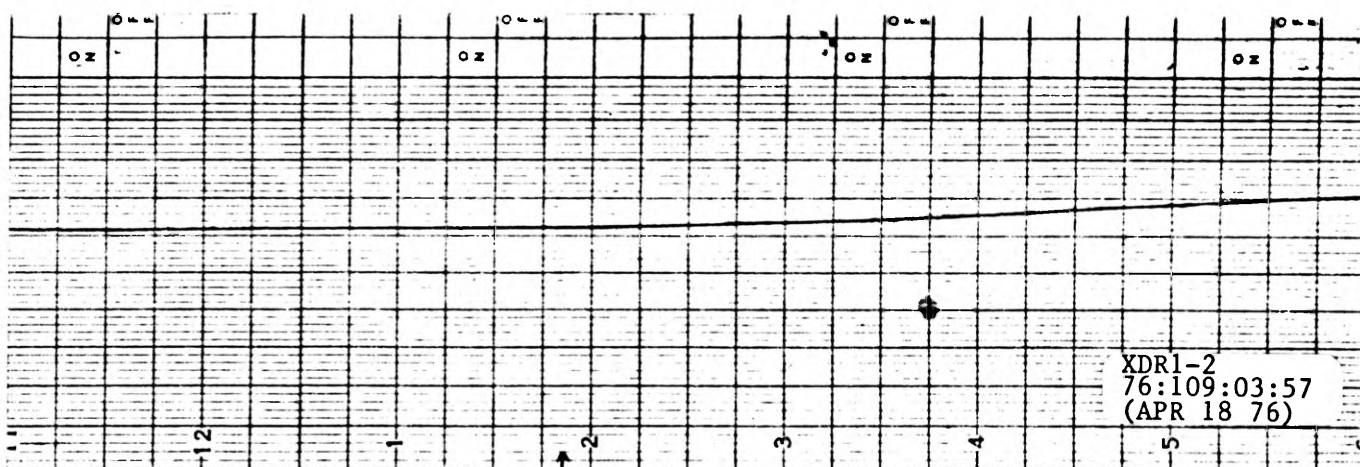
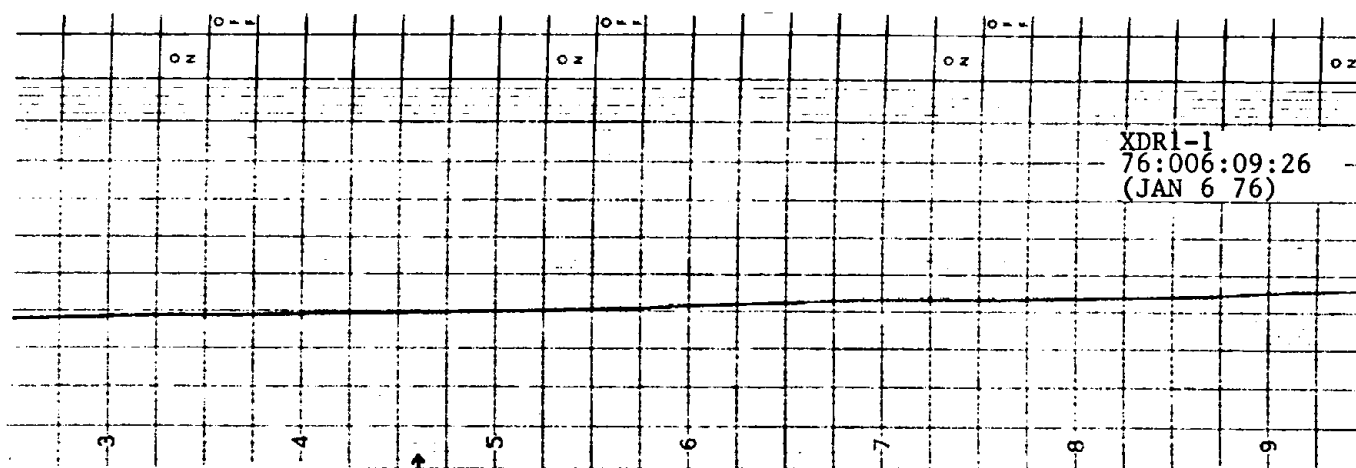
^{1/} Onset and steepest part.

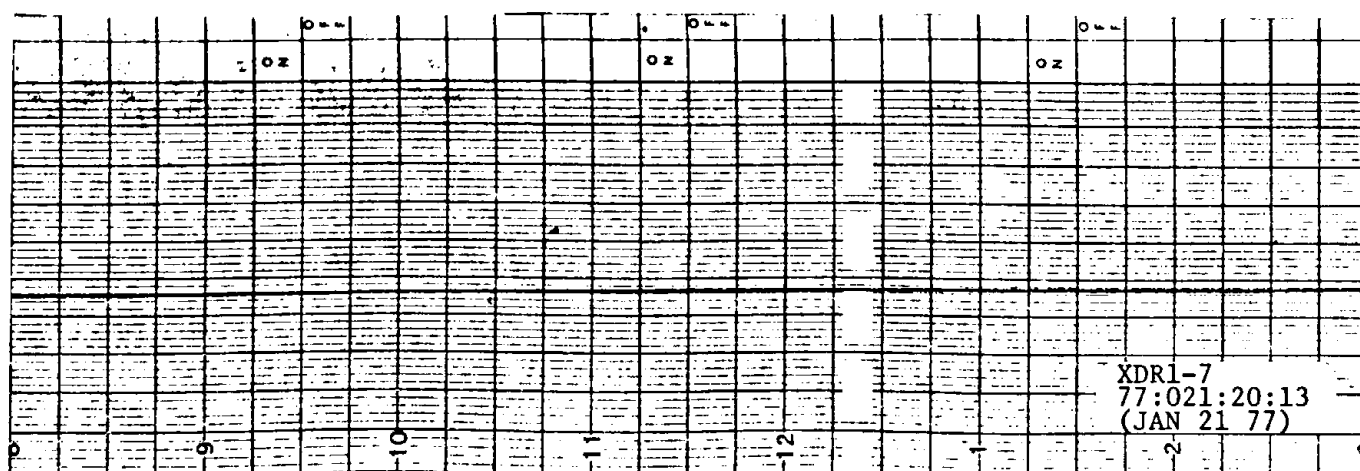
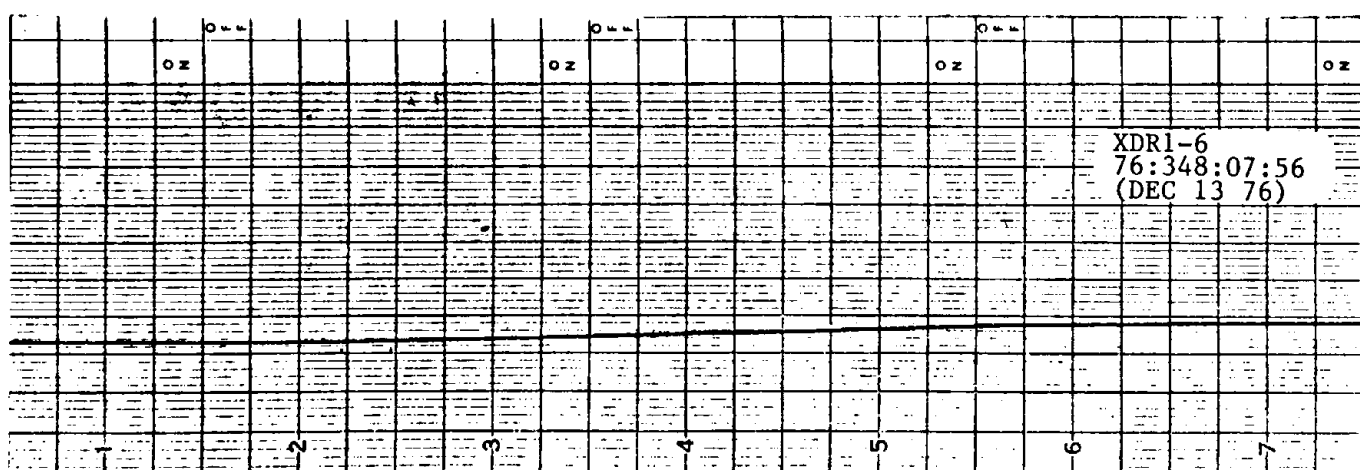
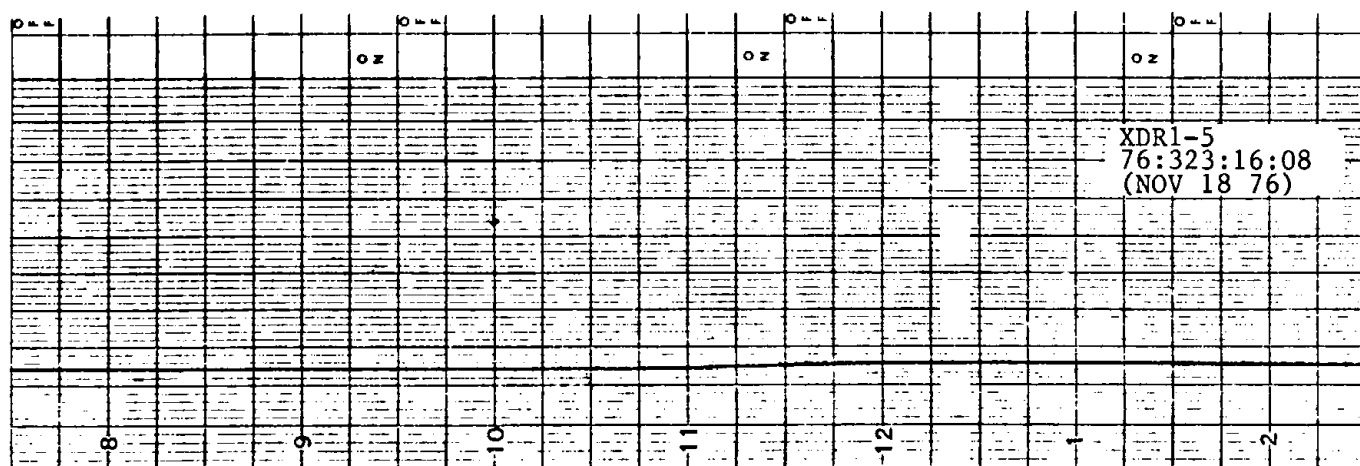
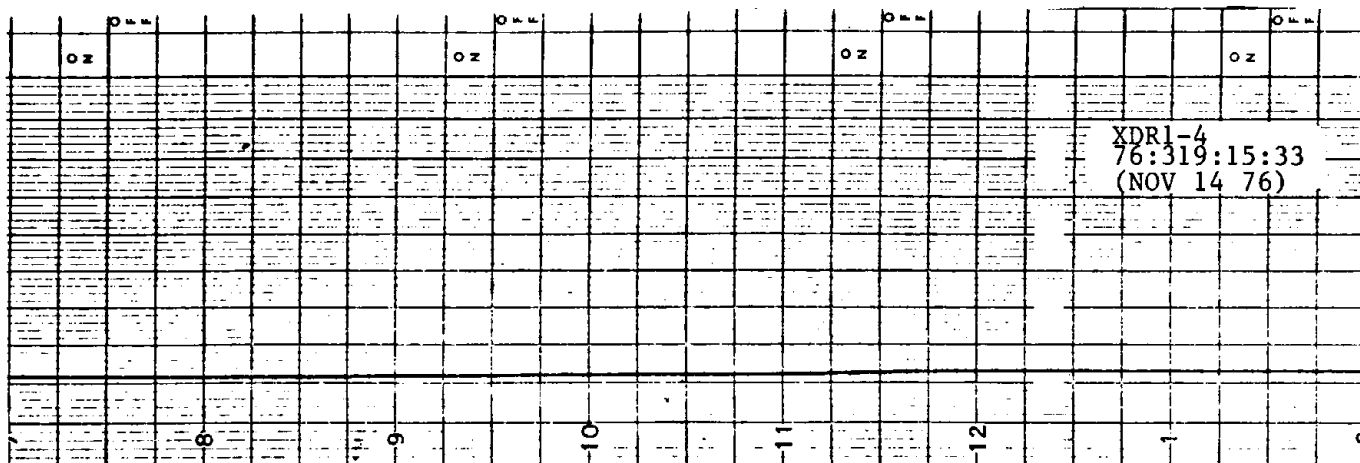
^{2/} Surge of accelerated right-lateral movement.

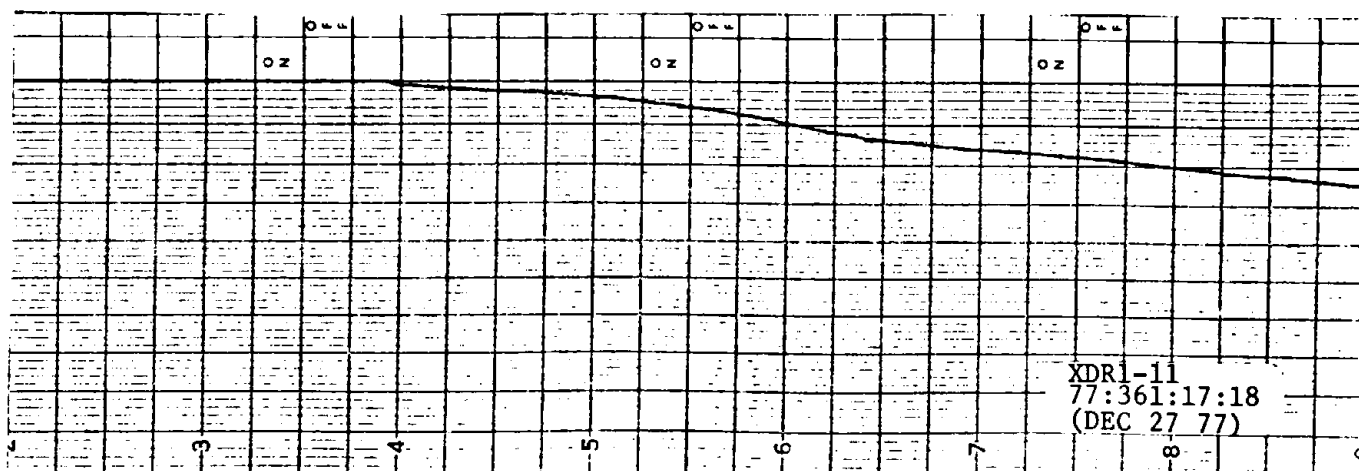
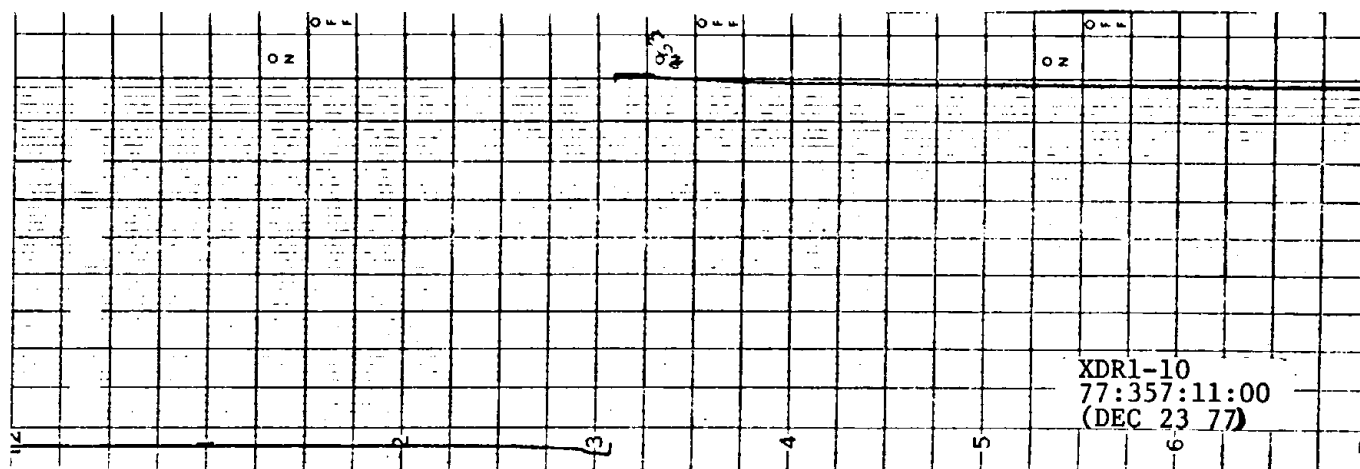
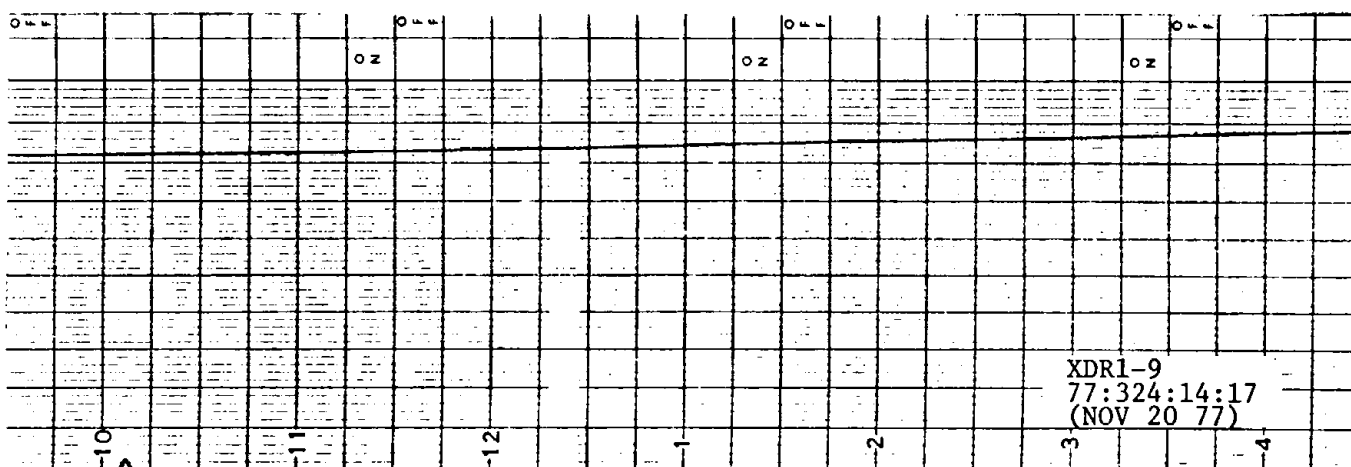
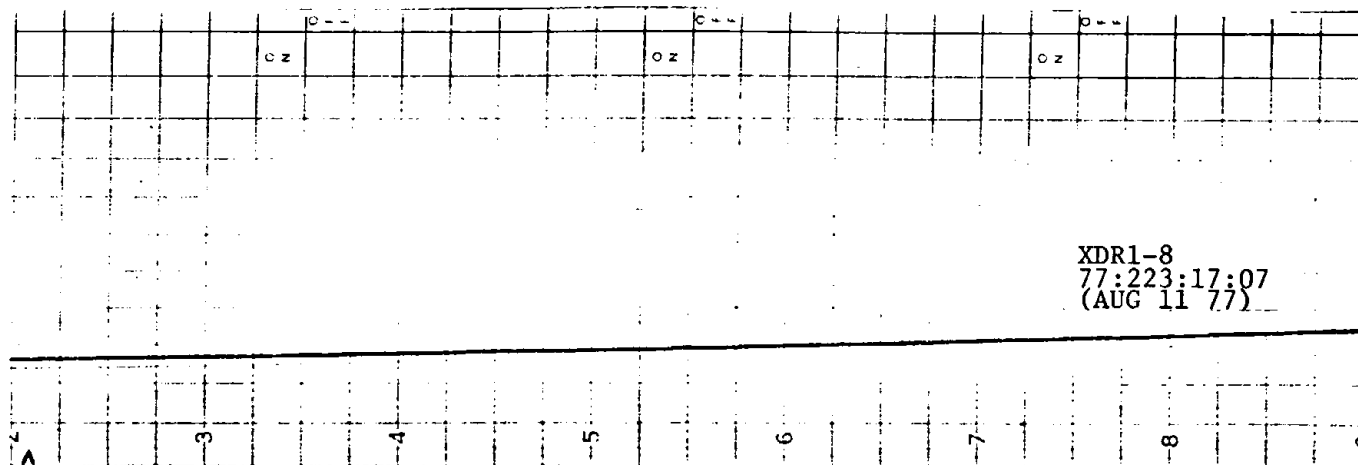
^{3/} Onset of 2-day period of apparent left-lateral slip. The onset was approximately coincident with beginning of rainfall.

* Refer to annual plot.

** Rainfall?







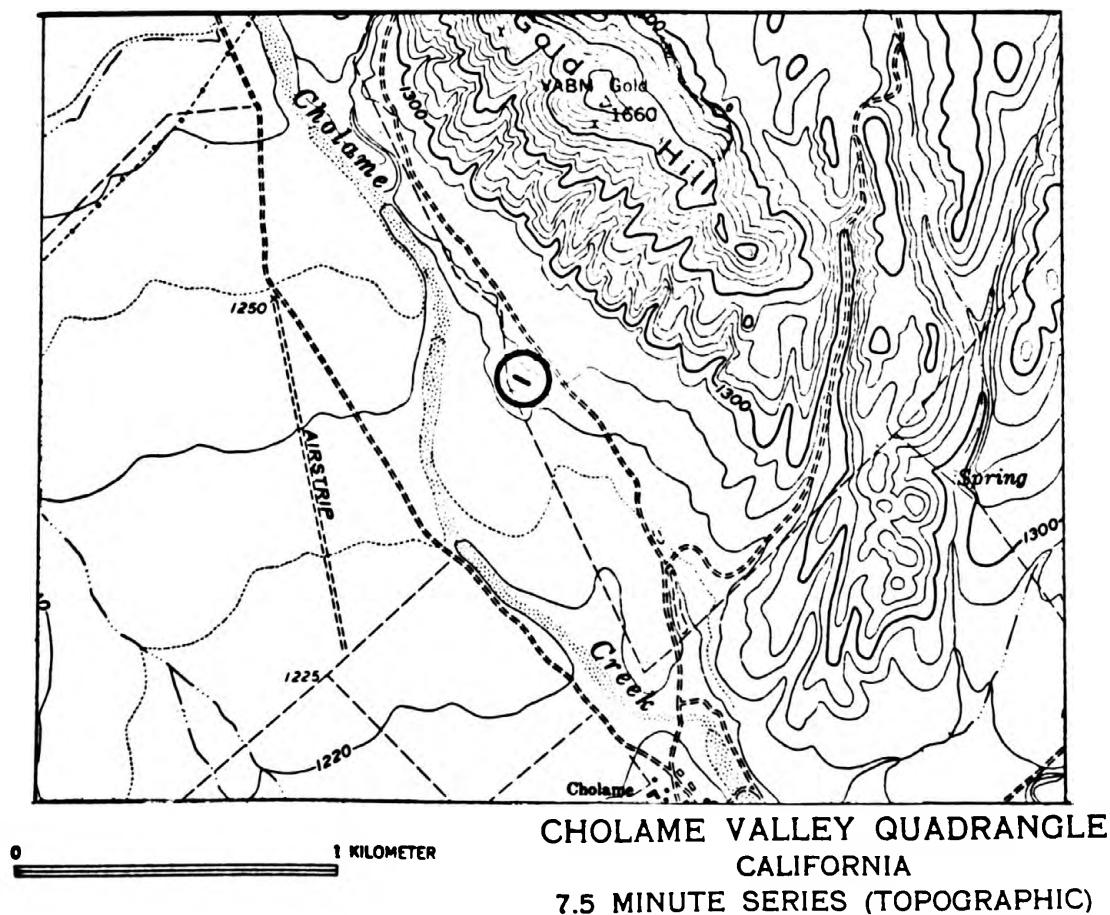
STATION XGH1

Latitude $35^{\circ} 49.2'$

Position 463.8 km

Longitude $120^{\circ} 20.9'$ 10 meter wire, $\phi=30^{\circ}$

The Gold Hill creepmeter was installed during June, 1969, on the San Andreas fault at a site 12.3 km northwest of Cholame. The installation consists of a single wire buried a few centimeters below the surface on a low bench on the northeast side of Cholame Creek. Creep activity at this site is composed of infrequent events of up to 1.8 mm amplitude, superimposed on a background of slight right- and left-lateral drift. The average creep rate is about 2 mm/yr, with a slight seasonal variation.



XGH1 CORRECTED CREEPMETER READINGS (mm)

203

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					14.32	
JAN 29	0.09		0.09		14.41	
MAY 4	2.61		2.70		17.02	
AUG 17	0.06		2.76		17.08	
NOV 10	0.30		3.06		17.38	
<u>1977</u>						
FEB 4	2.13		2.13		19.51	
MAR 9	0.17		2.30		19.68	
APR 8	0.05		2.35		19.73	
JUL 12	0.95		3.30		20.68	
OCT 7	0.50		3.80		21.18	

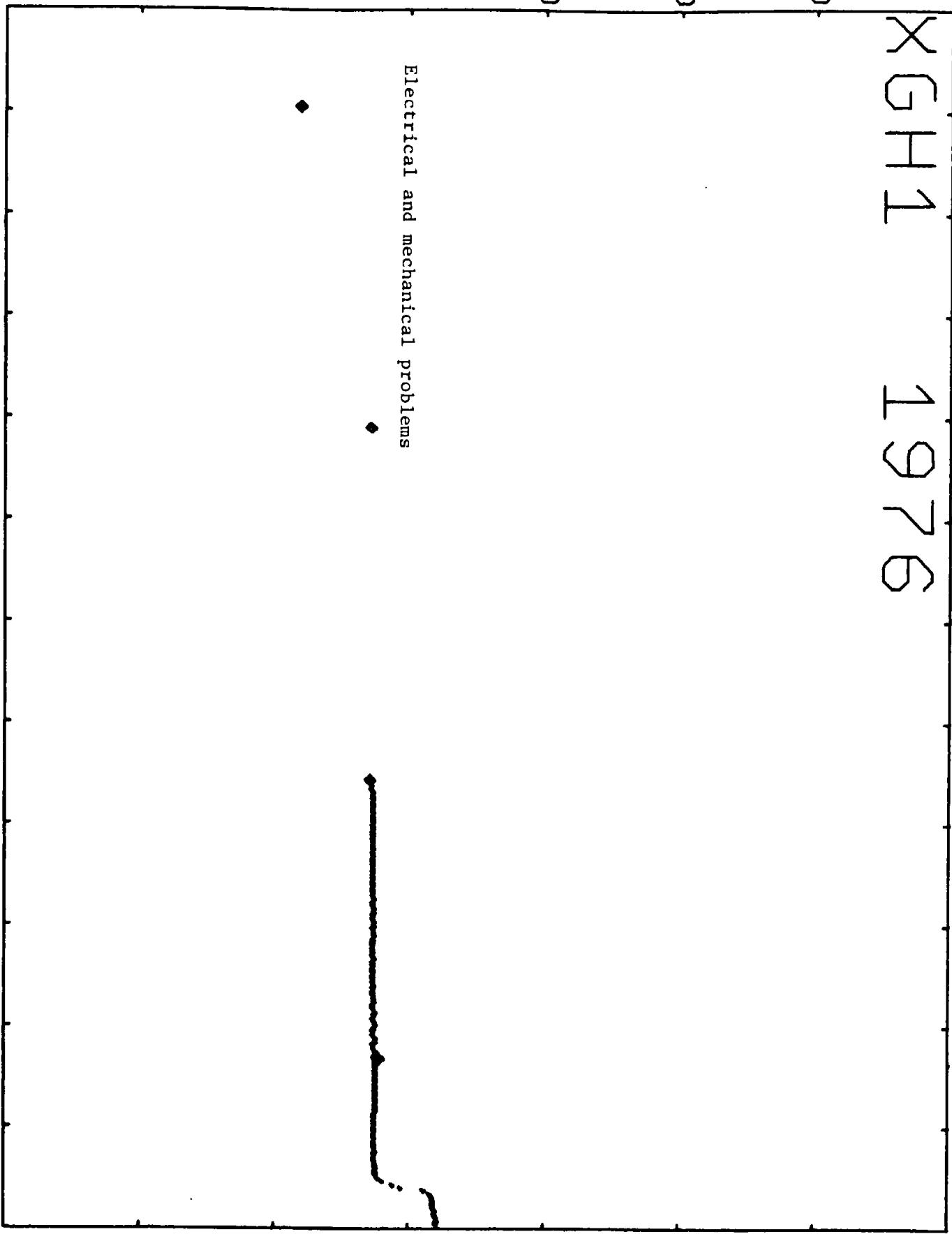
XGHI 1976

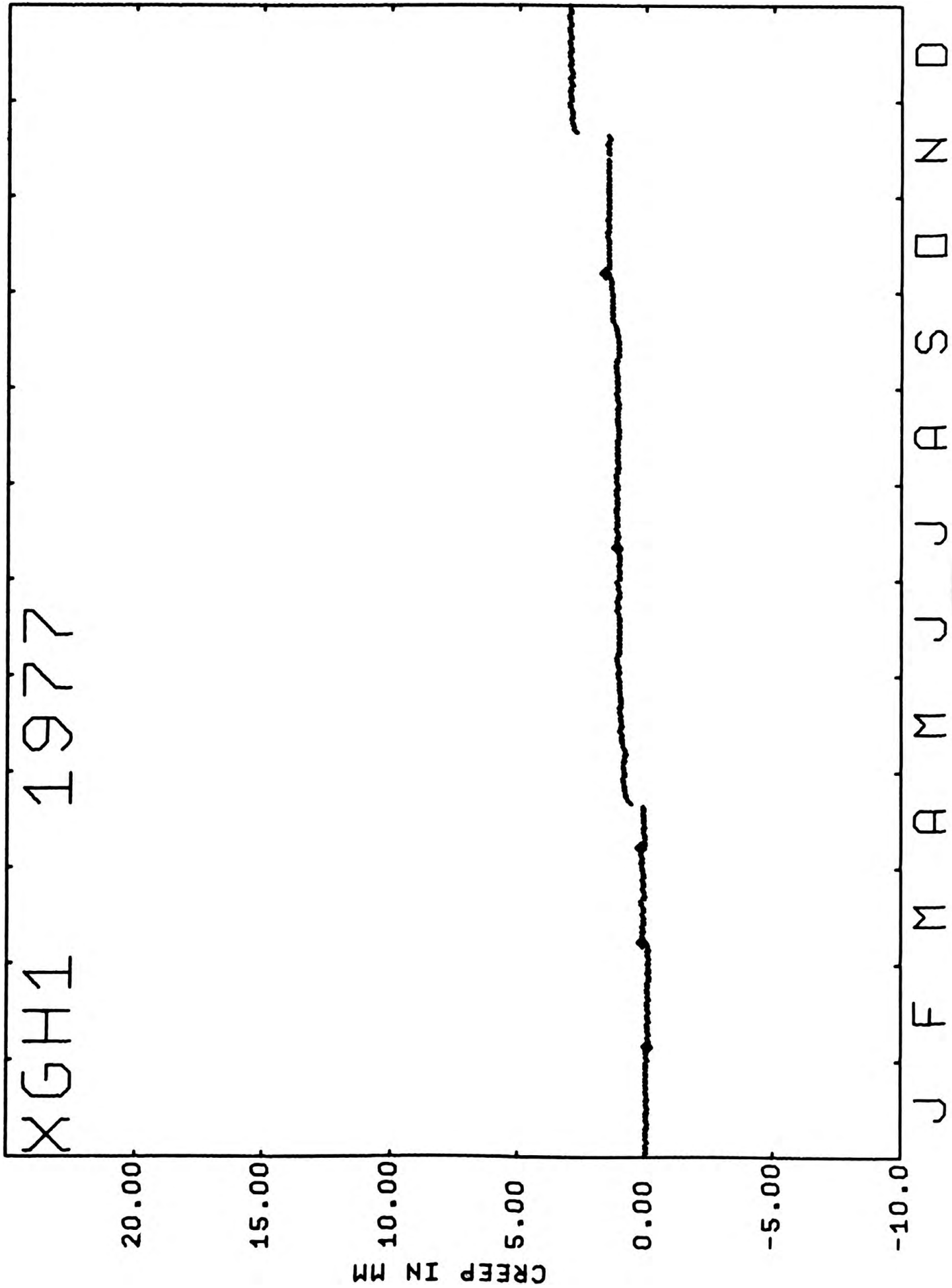
CREEP IN MM

20.00
15.00
10.00
5.00
0.00
-5.00
-10.00

Electrical and mechanical problems

J F M A M J J A S O N D





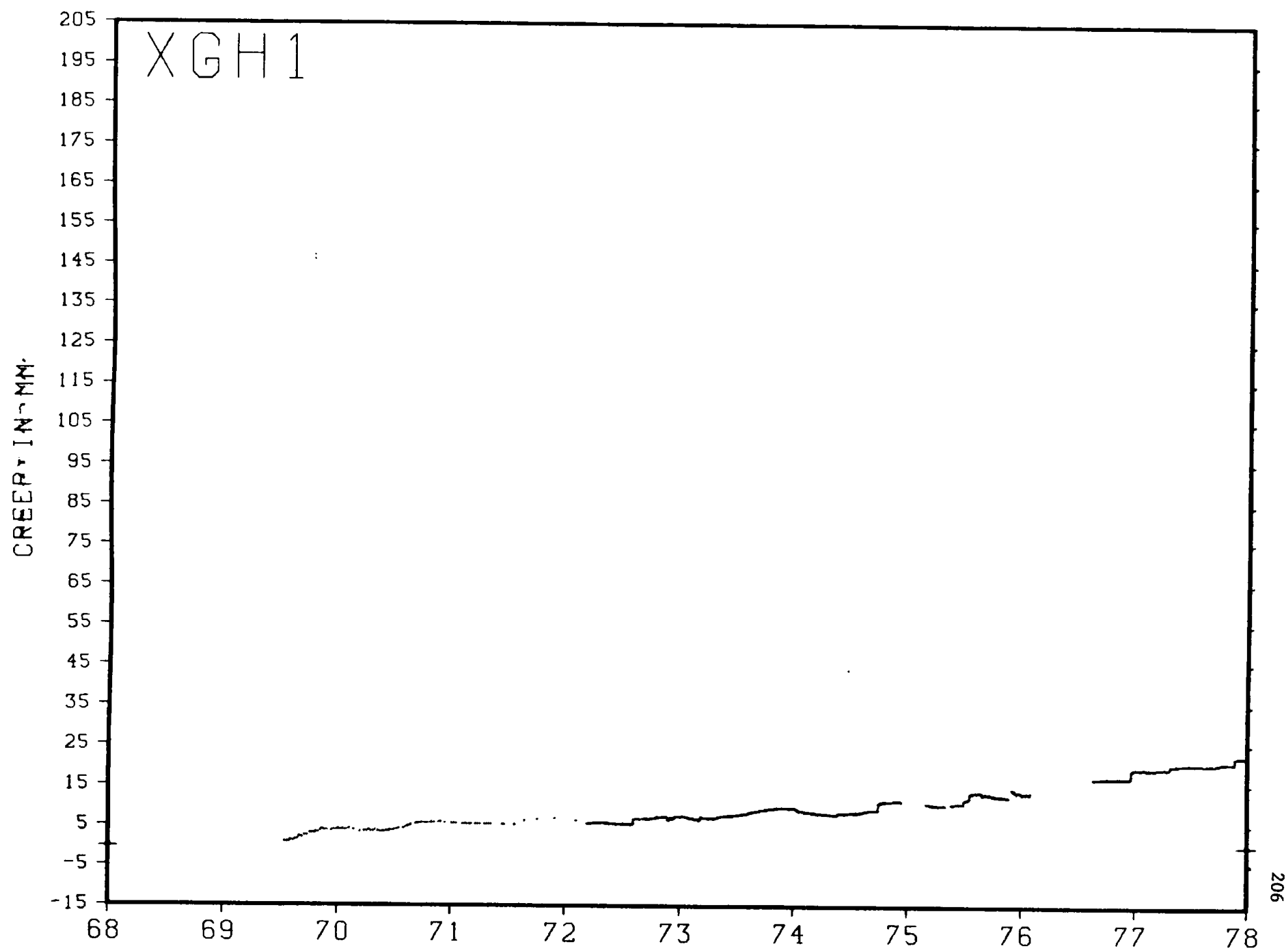
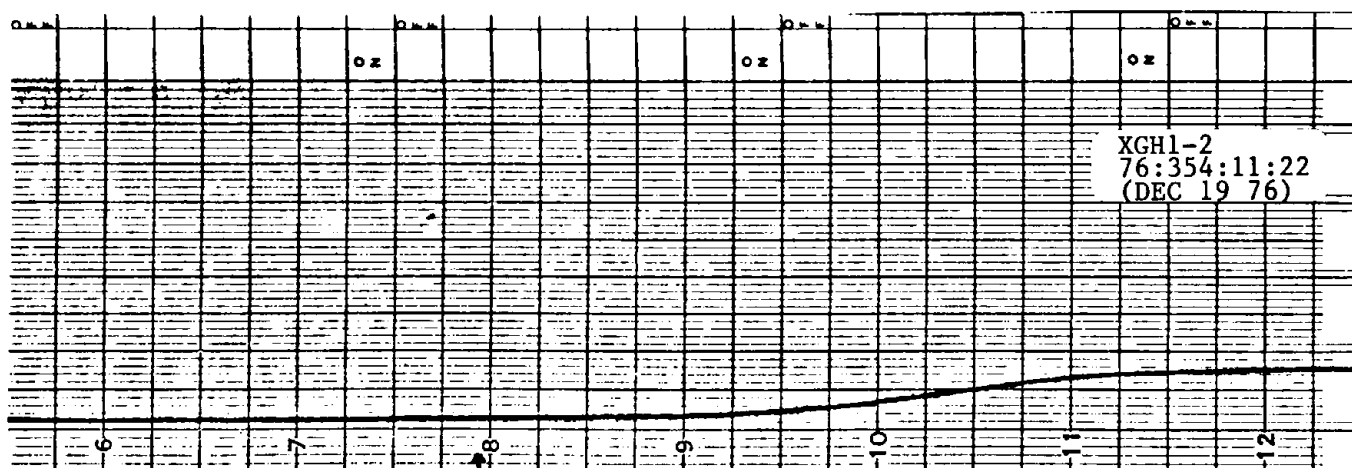
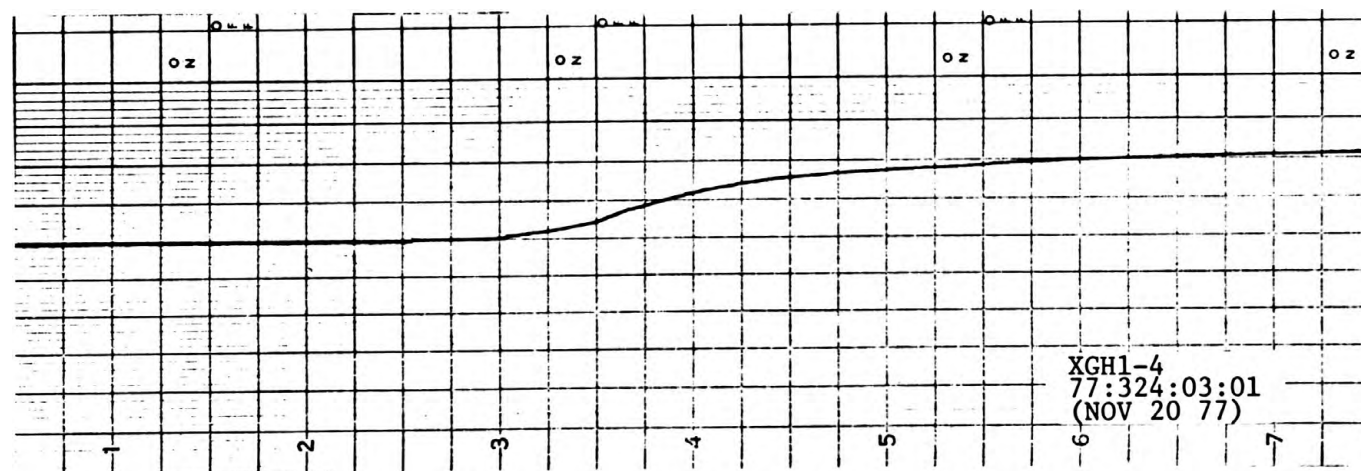
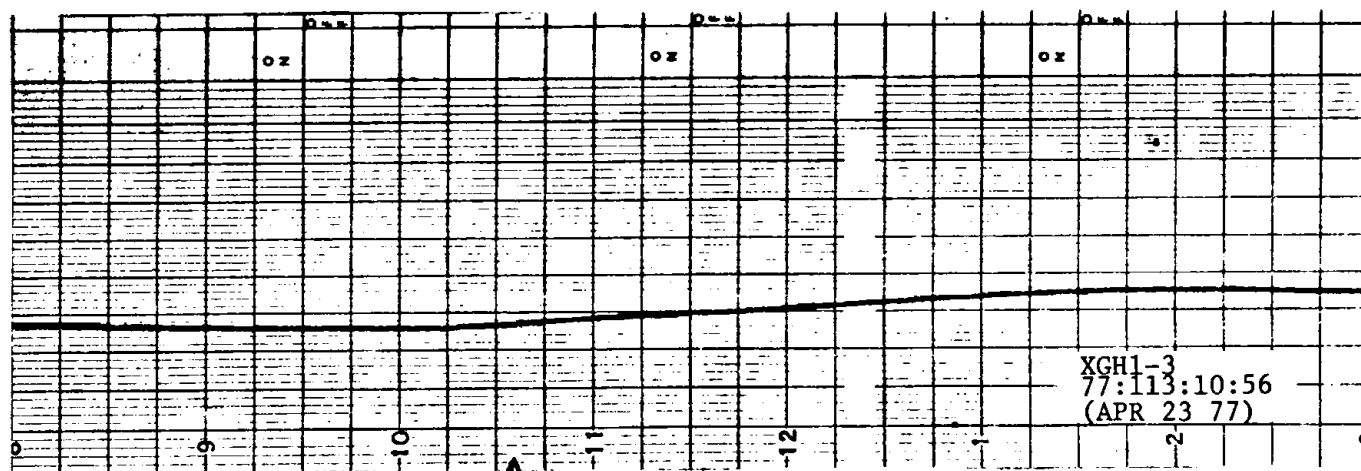


Table of XGH1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	351	Dec. 16	1943	0.95	1	1.00	.6865
	354	Dec. 19	1122	1.11	2	1.00	.6865
1977	113	Apr. 23	1056	0.43	3	1.00	.6188
	324	Nov. 20	0301	1.35	4	1.00	.5945





STATION XWT1

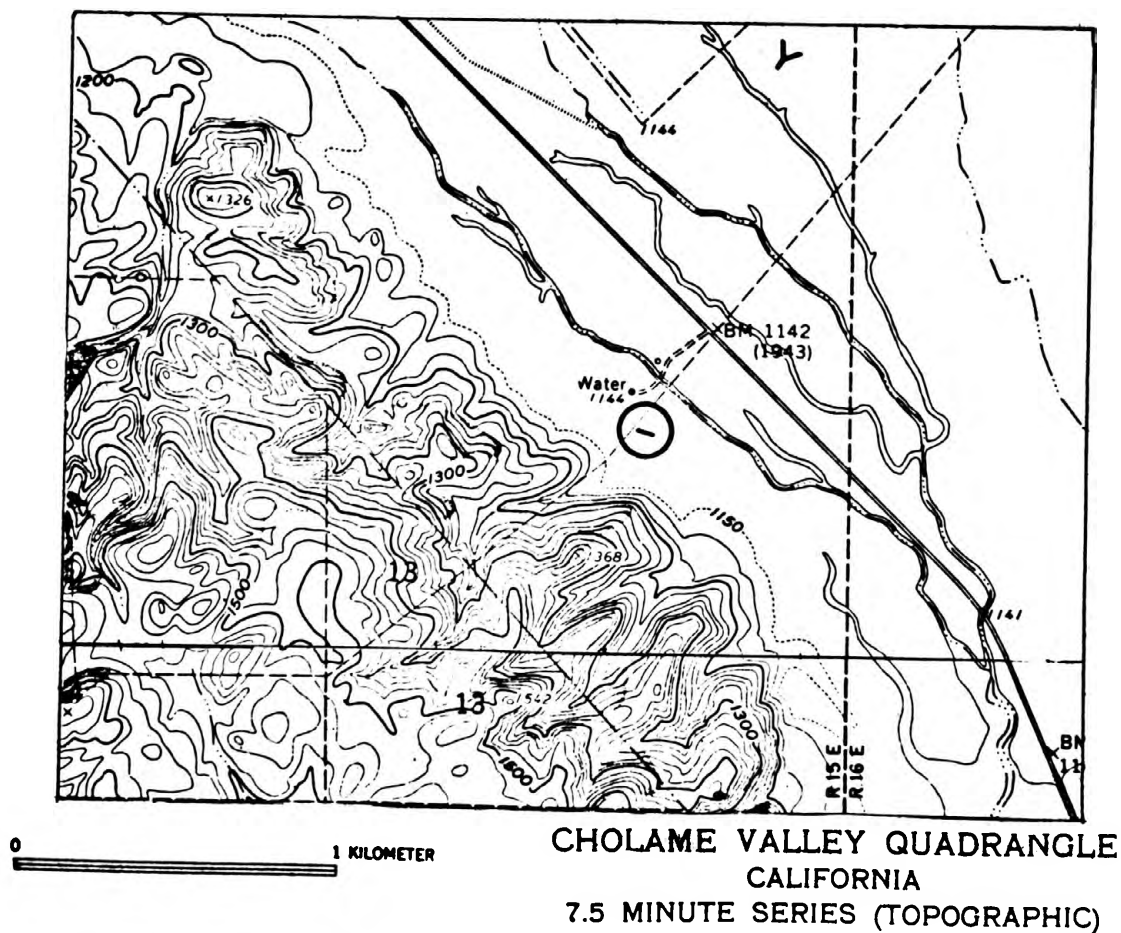
210

Latitude $35^{\circ} 45.4'$ Longitude $120^{\circ} 18.5'$

Position 472.6 km

10 meter wire, $\theta=30^{\circ}$

The Water Tank creepmeter was installed during June, 1969, on the San Andreas fault at a site 3.5 km northwest of Cholame. The installation consists of a single wire buried a few centimeters below the surface on a broad, low alluvial fan. Creep activity at this site is composed of infrequent events of up to 9 mm amplitude, superimposed on a background of zero to slight right- and left-lateral drift. The average creep rate is about 2 mm/yr.

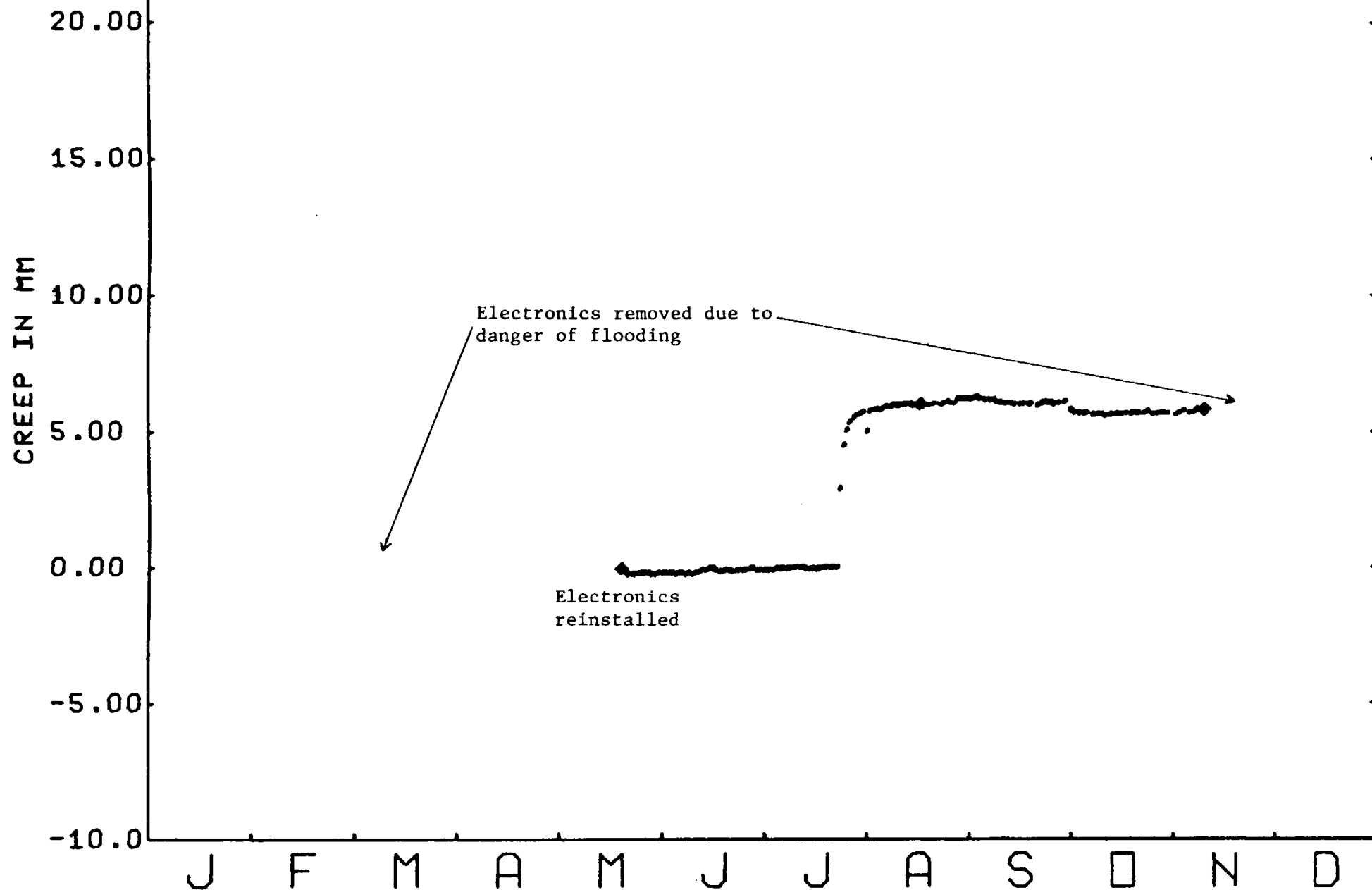


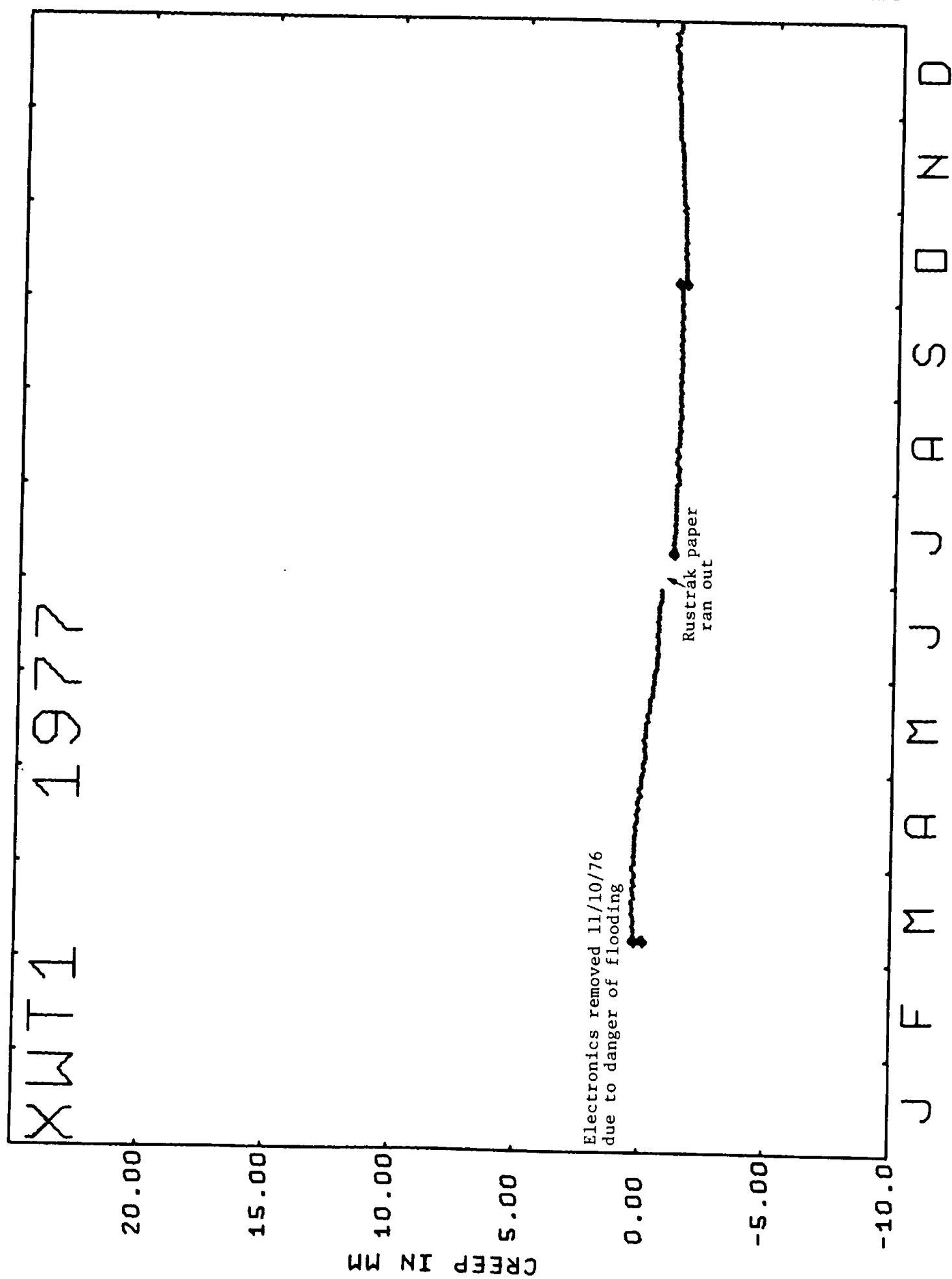
XWT1 CORRECTED CREEPMETER READINGS (mm)

211

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>						27.93
MAY 4	0.45		0.45			28.38
MAY 20	-0.05		0.40			28.33
AUG 17	6.02		6.42			34.35
SEP 1	-0.63		5.79			33.72
NOV 10	-0.77		5.02			32.95
<u>1977</u>						
FEB 4	0.74		0.74			34.85
MAR 9	0.02		0.76			34.87
JUL 12	-1.09		-0.33			33.78
OCT 7	-0.02		-0.35			33.76

XWT1 1976





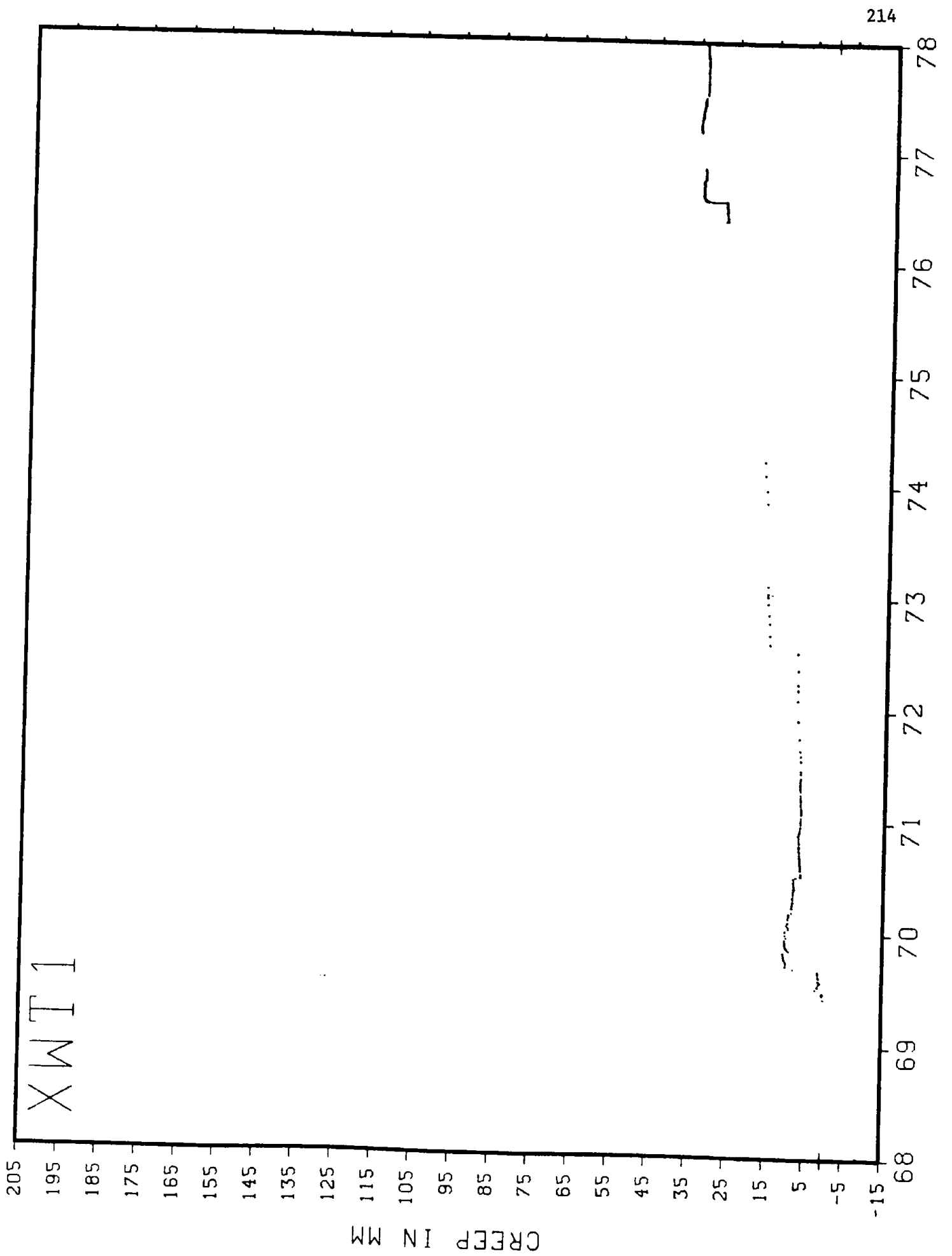


Table of XWT1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	162-167	Jun. 10-15		0.20	*		
	167-170	Jun. 15-18		-0.10	*		
	205	Jul. 23	1503	5.63 ^{1/} total	1	1.0	.6918
	208	Jul. 26	1446		2	1.0	.6918
	273	Sep. 29 ^{2/}		0.08	*		
	274-280	Sep. 30-Oct. 6		-0.49	*		
	275	Oct. 1	1229	-0.35	3	1.0	.6918

^{1/}Total over 8 days; 6 mm by Aug. 11, 1976.

^{2/}Onset of 8-day period of anomalous slip activity, including 0.49 mm apparent left-lateral movement, Sep. 30-Oct. 6. The onset was approximately coincident with start of rainfall.

*Refer to annual plot.

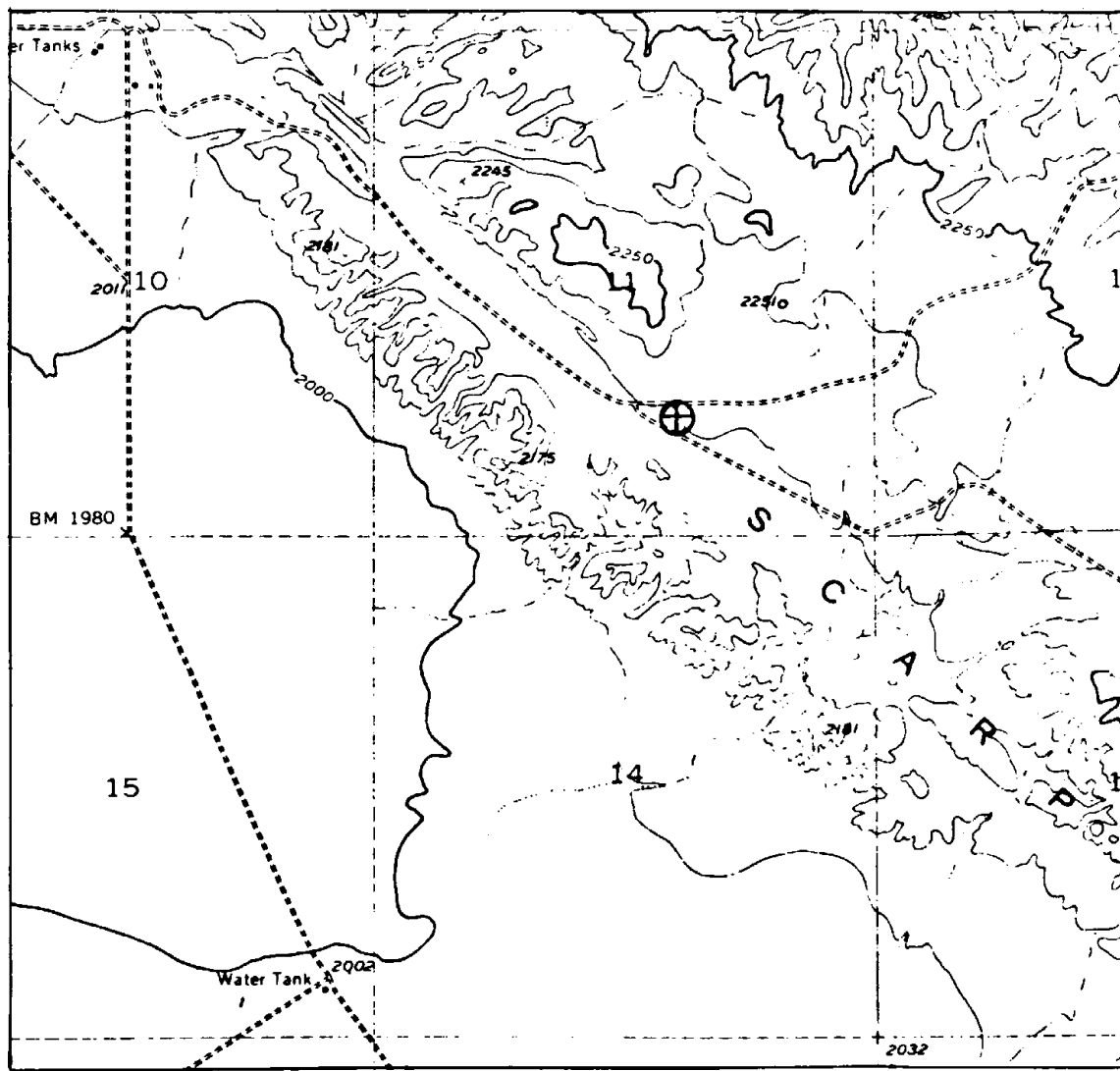
STATION XPH1

Latitude $35^{\circ} 08.9'$

Position 563.7 km

Longitude $119^{\circ} 41.5'$ 20 meter wire, $\phi=30^{\circ}$

The Panorama Hills creepmeter was installed during August, 1977, on the San Andreas fault at a site 80.7 km southeast of Cholame, California. The installation consists of a single wire entrenched about 1 meter below the surface across a low scarp in ponded alluvium on the 1857 surface rupture. No significant creep activity has been detected to date.



PANORAMA HILLS, CALIF.

N3507.5—W11937.5/7.5

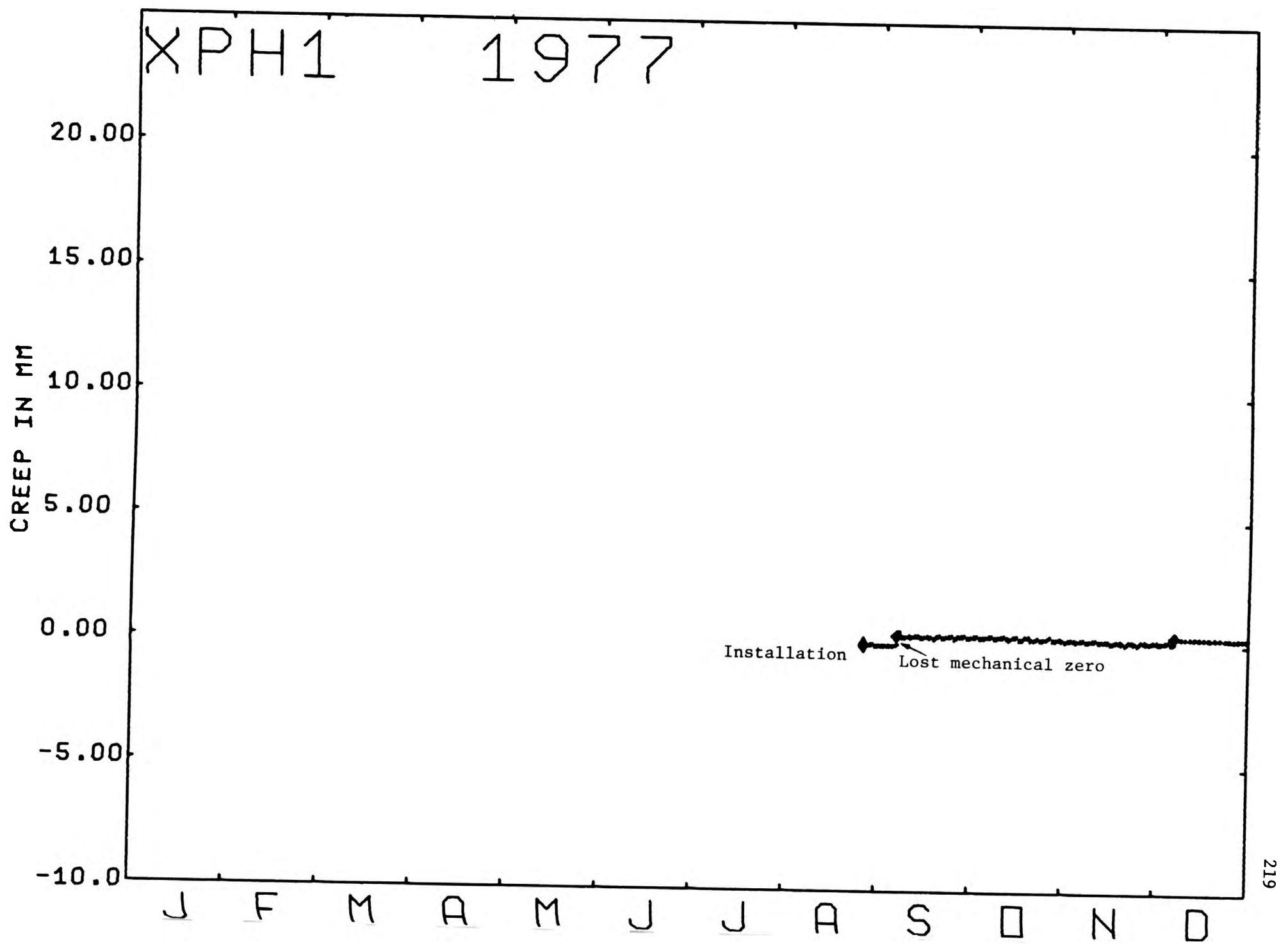
1954

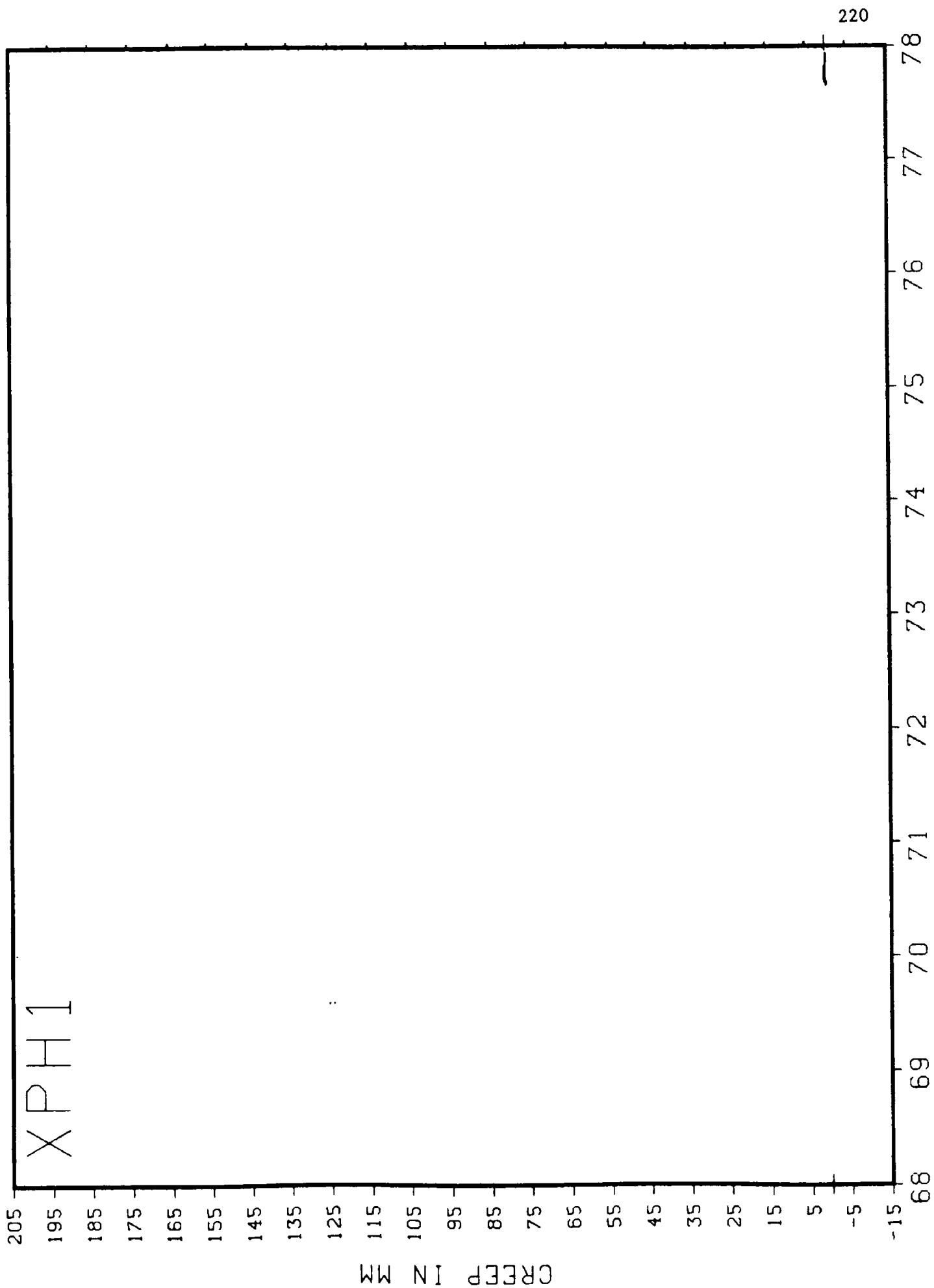
AMS 2054 II NW SERIES V895

XPH1 CORRECTED CREEPMETER READINGS (mm)

218

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1977</u>	INSTALLATION					
AUG 27	0.00		0.00		0.00	
SEP 7	0.26		0.26		0.26	
DEC 7	0.06		0.32		0.32	





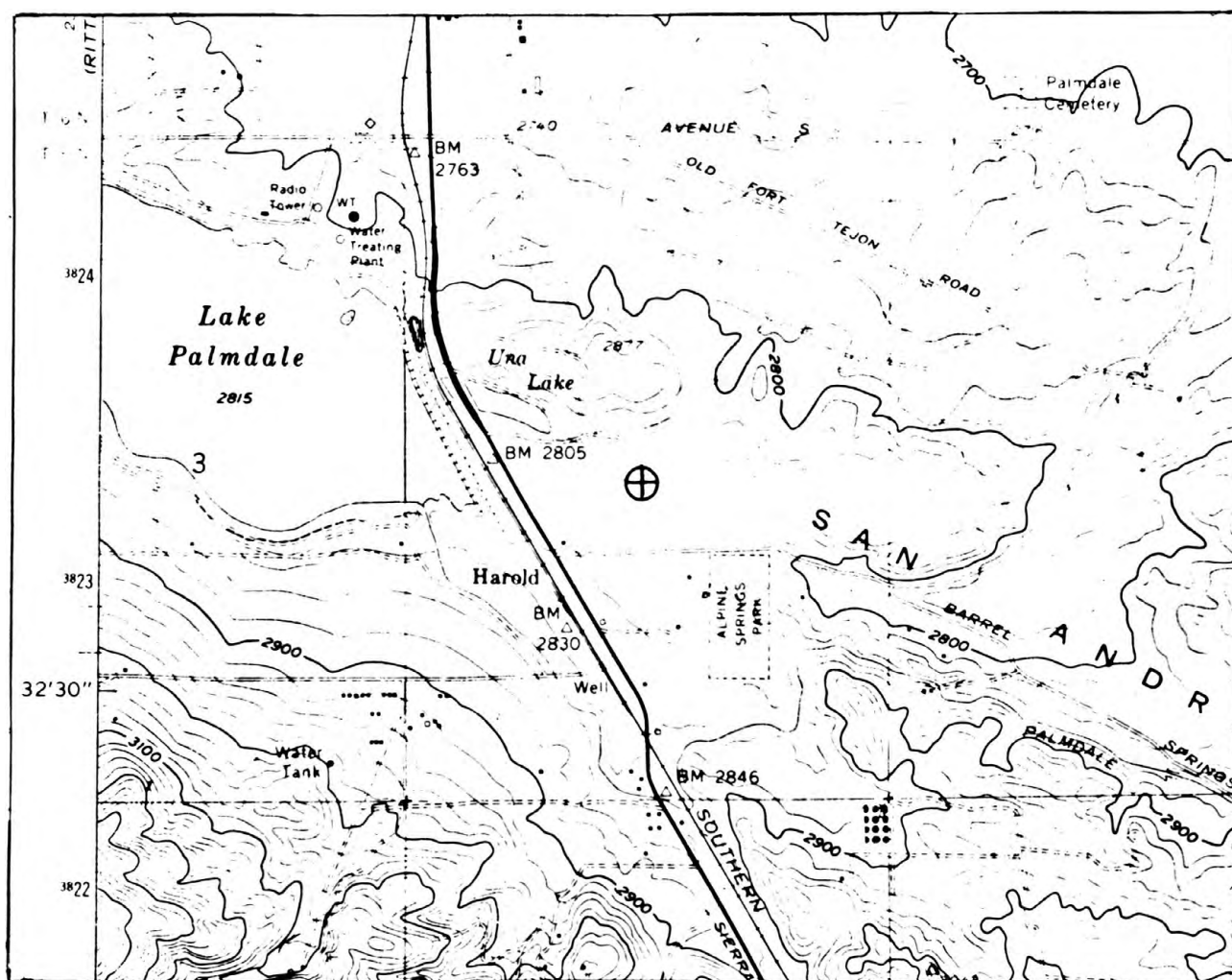
STATION XUL1

Latitude $34^{\circ} 32.9'$

Position 720.5 km

Longitude $118^{\circ} 06.4'$ 22 meter wire, $\phi=30^{\circ}$

The Una Lake creepmeter was installed during October, 1977, on the San Andreas fault at a site about 3.5 km south of the center of Palmdale, California. The installation consists of a single wire entrenched about 1 meter below the surface in ponded alluvium near the southeast end of a prominent southwest-facing scarp. Creep activity at this site is composed of frequent minor events of about 0.01 mm in amplitude, superimposed on a background of very slight (thermal) drift.



0 1 KILOMETER

PALMDALE, CALIF.

SE/4 LANCASTER 15 QUADRANGLE
N3430—W11800/7.5

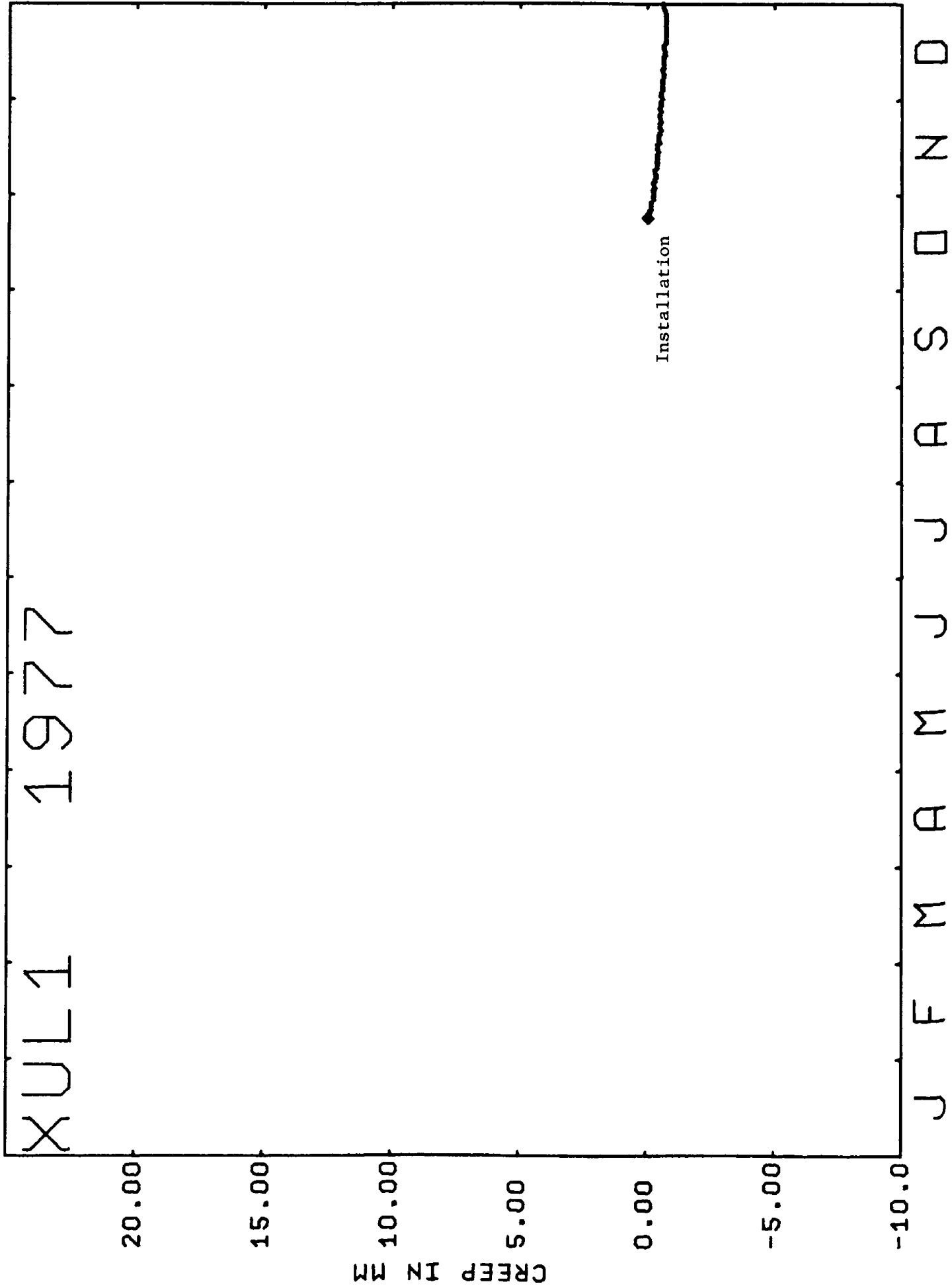
1958

AMS 2353 II SE—SERIES V895

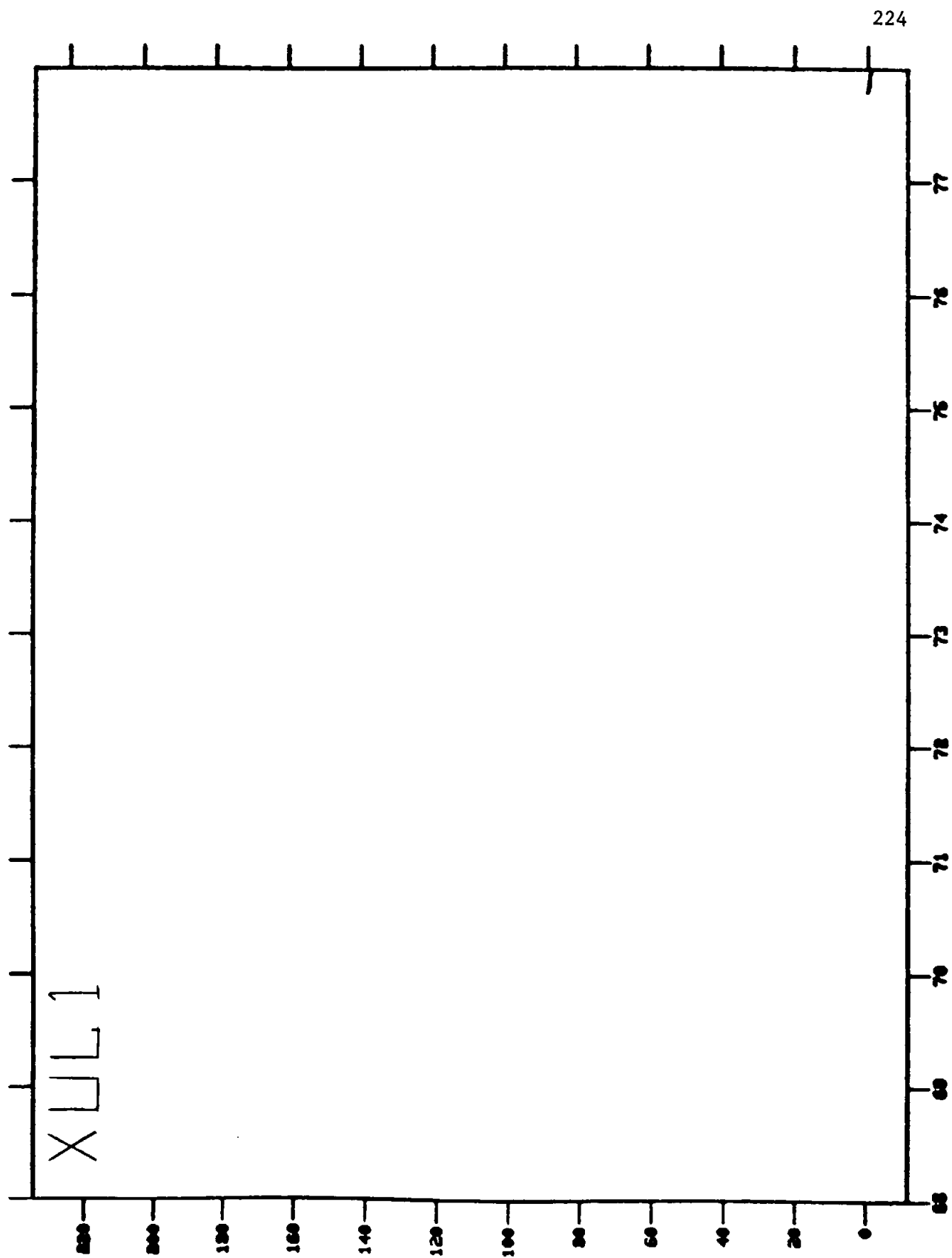
XUL1 CORRECTED CREEPMETER READINGS (mm)

222

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1977</u>	INSTALLATION					
OCT 24	0.00		0.00		0.00	



CREEP IN MM



Vertical scale: 6.25 mm = 10 mm of creep

Table of XUL1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1977	298	Oct. 25	0209	0.12	1	1.00	.5934

XUL1-1
77:298:02:09
(OCT 25 77)

STATION XWR1

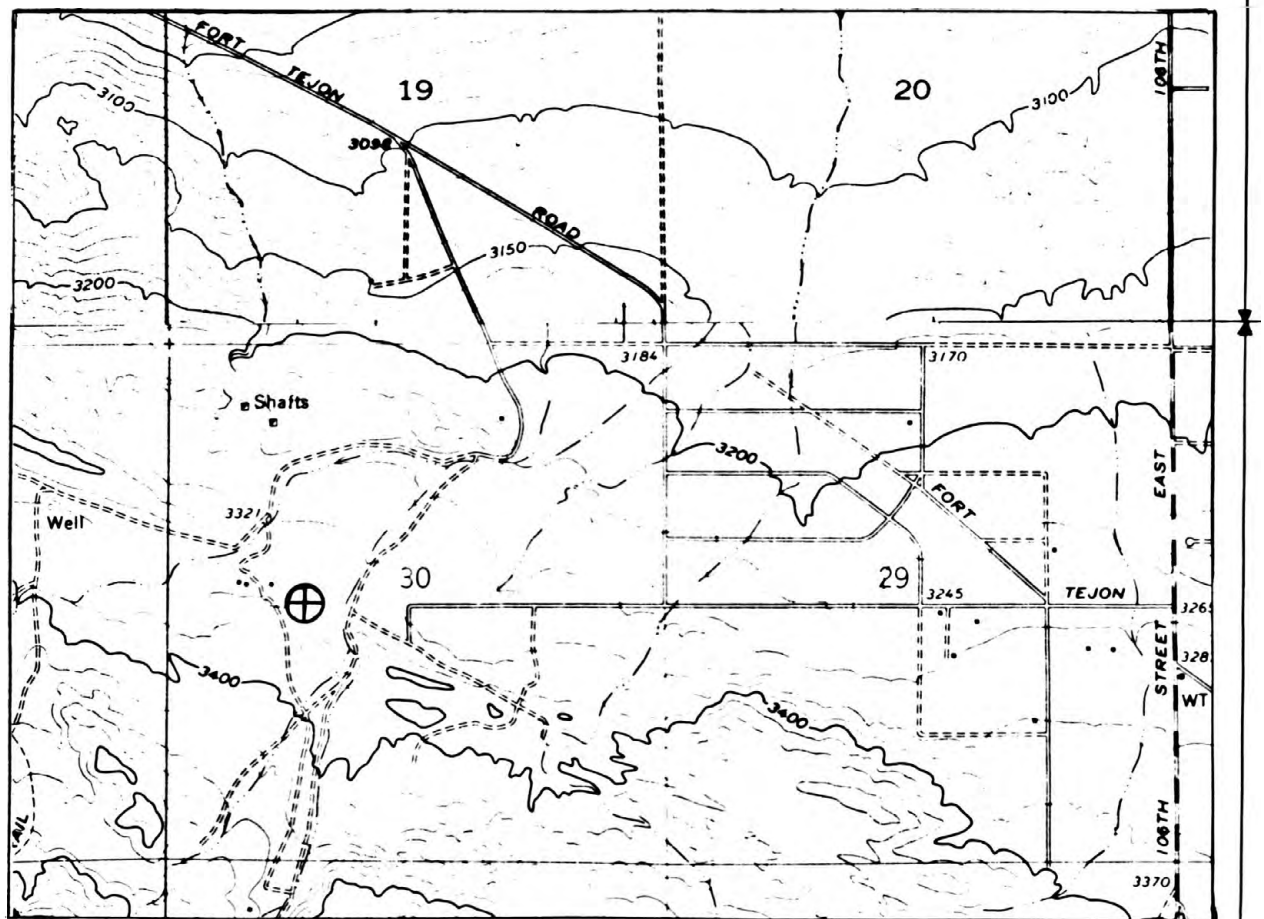
Latitude 34° 29.6'
Longitude 117° 58.2'

Position 733.2 km
22 meter wire, $\theta=30^\circ$

The Webe Ranch creepmeter was installed during October, 1977, on the San Andreas fault at a site 17.2 km southeast of Palmdale, California. The installation consists of a single wire entrenched about 1 meter below the surface across a low southwest-facing scarp in coarse fan deposits and weathered bedrock. Creep activity at this site is composed of infrequent minor events of up to about 0.06 mm in amplitude, superimposed on a background of very slight (thermal) drift.

LITTLEROCK, CALIF.
N3430—W11752.5/7.5

1937



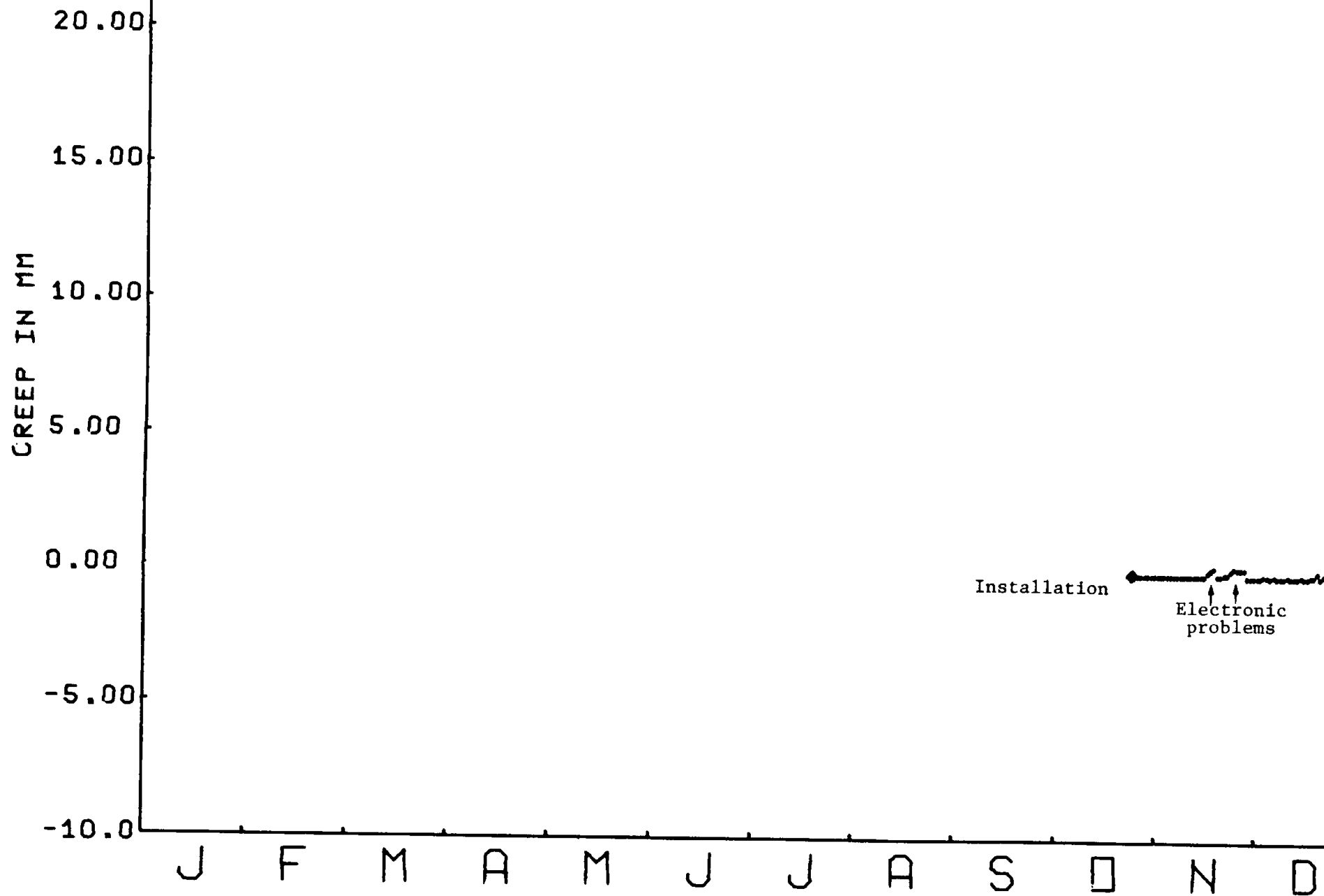
JUNIPER HILLS QUADRANGLE
CALIFORNIA-LOS ANGELES CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)
NW/4 VALVERMO 15' QUADRANGLE

XWR1 CORRECTED CREEPMETER READINGS (mm)

228

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1977</u>	INSTALLATION					
OCT 24	0.00		0.00		0.00	

XWR1 1977



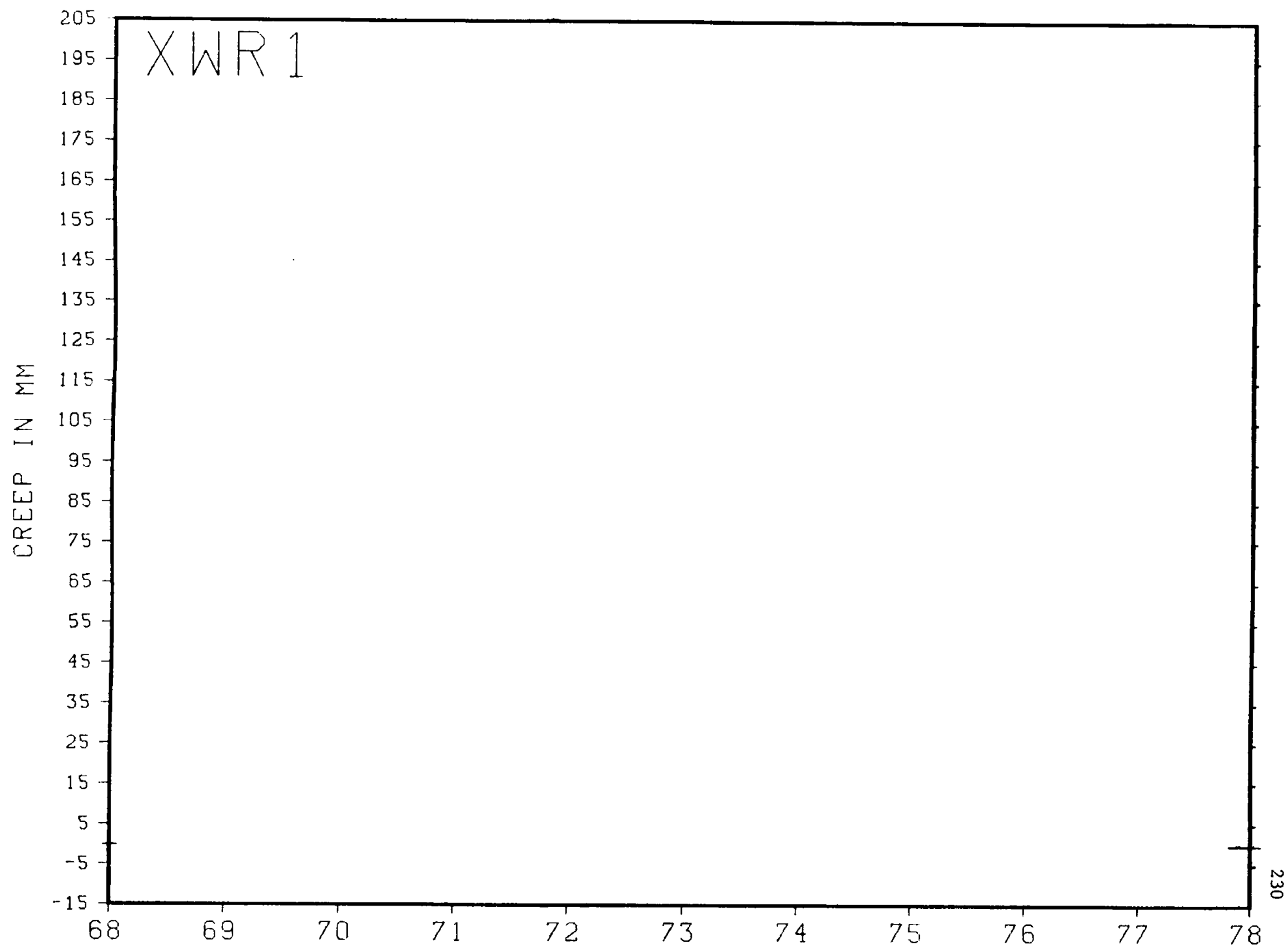
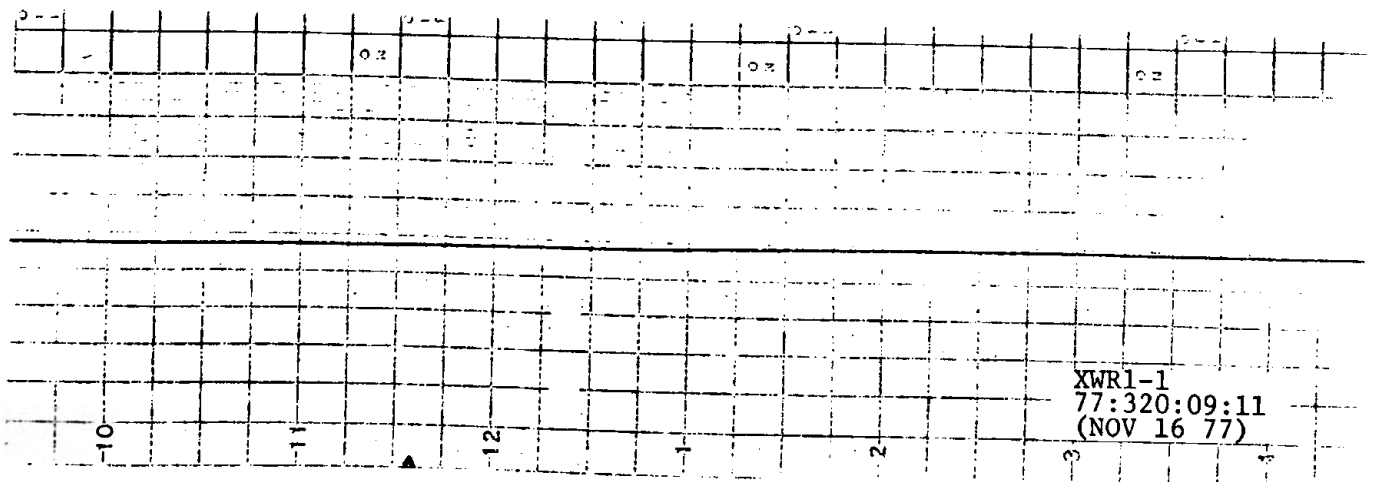


Table of XWR1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1977	320	Nov. 16	0911	0.27	1	1.00	.6093



STATION HWR

Latitude $37^{\circ} 40.8'$

Position 42.6 km

Longitude $122^{\circ} 05.4'$ 12 meter rods, $\phi=45^{\circ}$

The Hayward (Rose Street) creepmeters were installed during April, 1968 (contraction) and June, 1969 (extension) on the Hayward fault at a site 42.6 km southeast of Pinole Point on San Pablo Bay. The installation consists of a pair of crossed rods buried a few centimeters below the surface of the Rose Street pavement. Creep activity at this site is composed of gradual right-lateral movement at about 3.5 mm/yr, with a distinct seasonal variation. No distinct events have been observed.

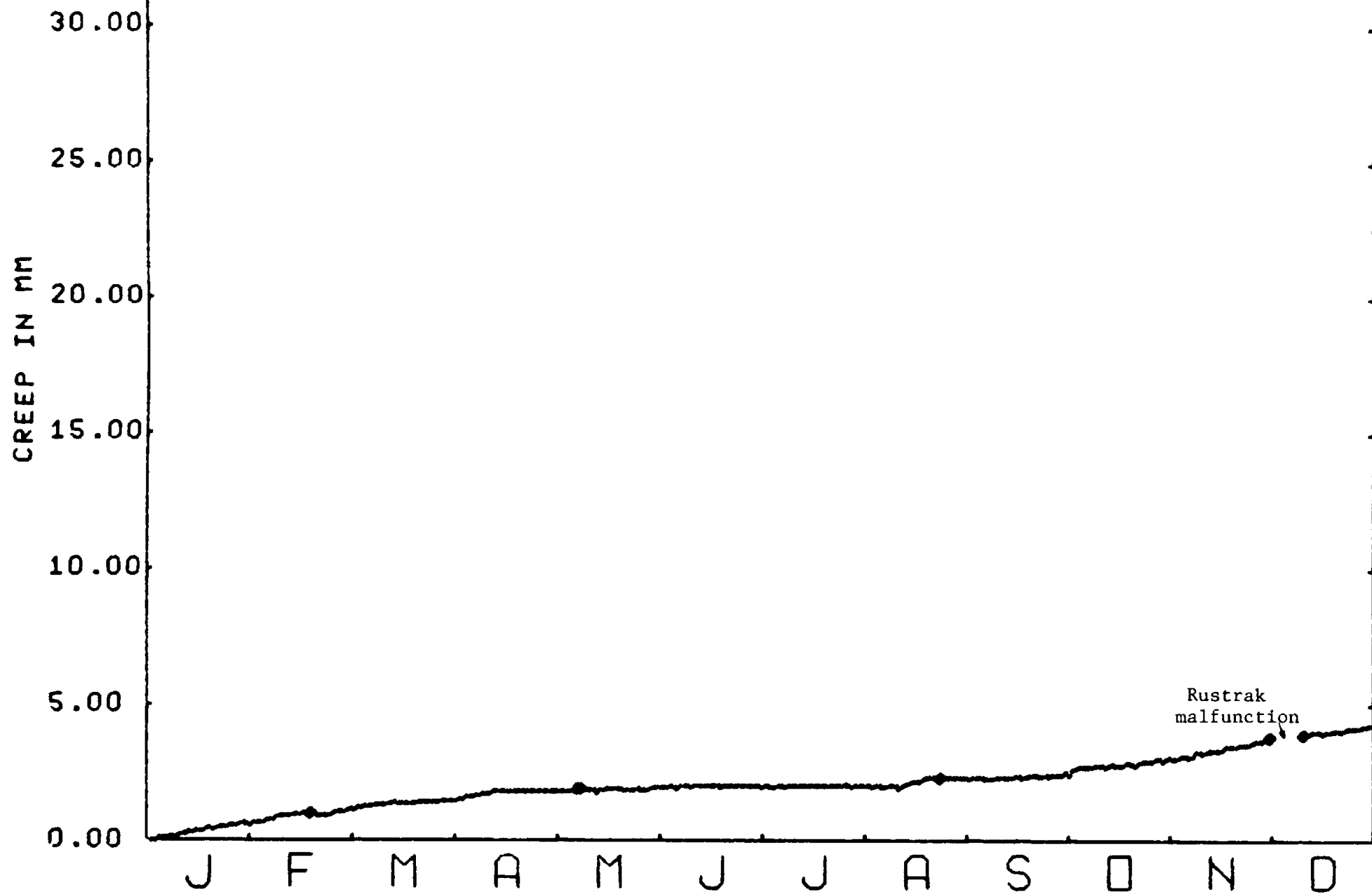
7.5 MINUTE SERIES (TOPOGRAPHIC)

HWR CORRECTED CREEPMETER READINGS (mm)

234

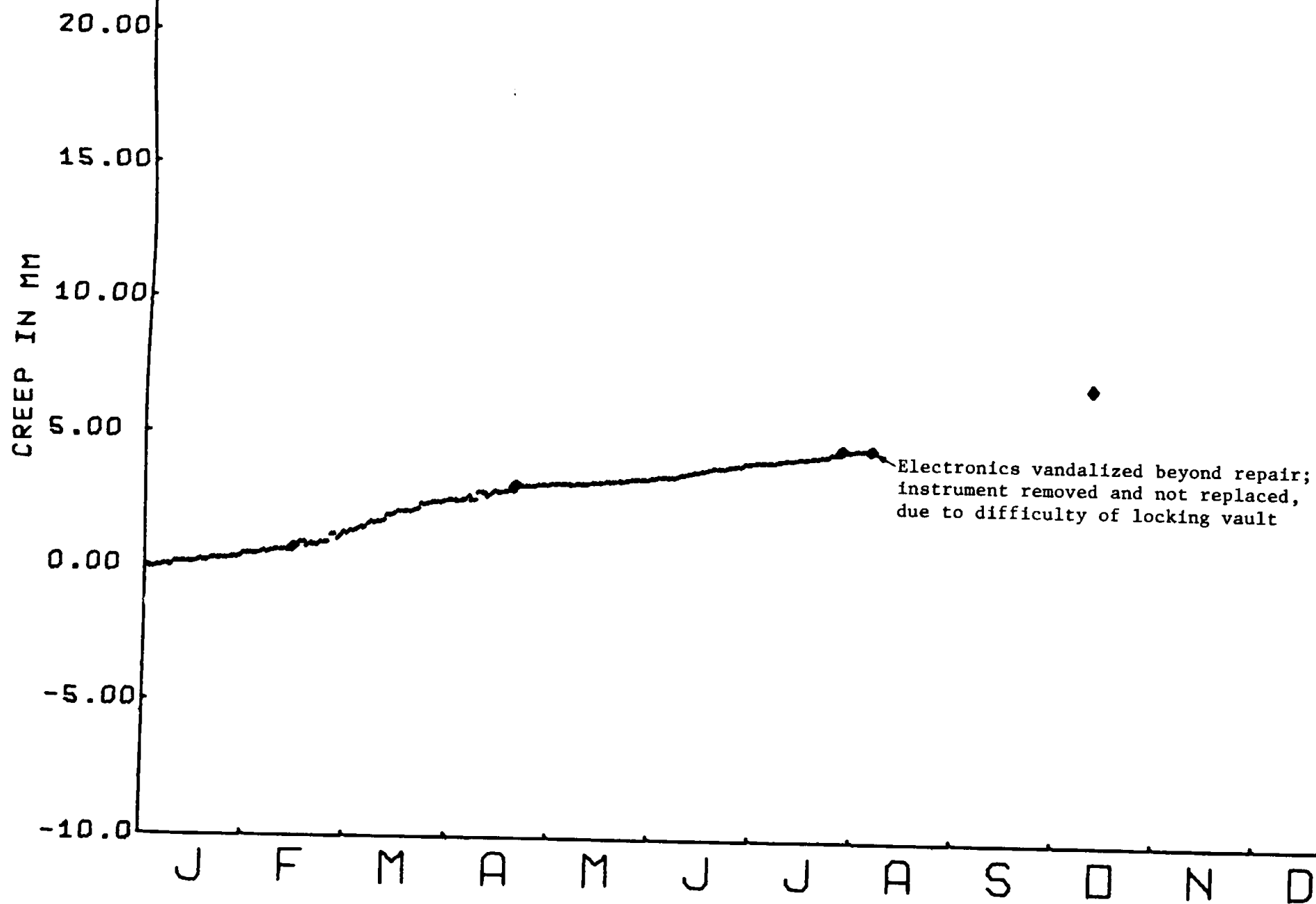
<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					24.13	
FEB 18	1.70		1.70		25.83	
MAY 7	0.92		2.62		26.75	
AUG 23	0.40		3.02		27.15	
NOV 30	1.48		4.50		28.63	
DEC 10	0.11		4.61		28.74	
<u>1977</u>						
FEB 14	1.23		1.23		29.97	
APR 21	2.42		3.55		32.39	
JUL 28	1.47		5.12		33.86	
OCT 11	2.50		7.62		36.36	

HWR1 1976



HWR1

1977



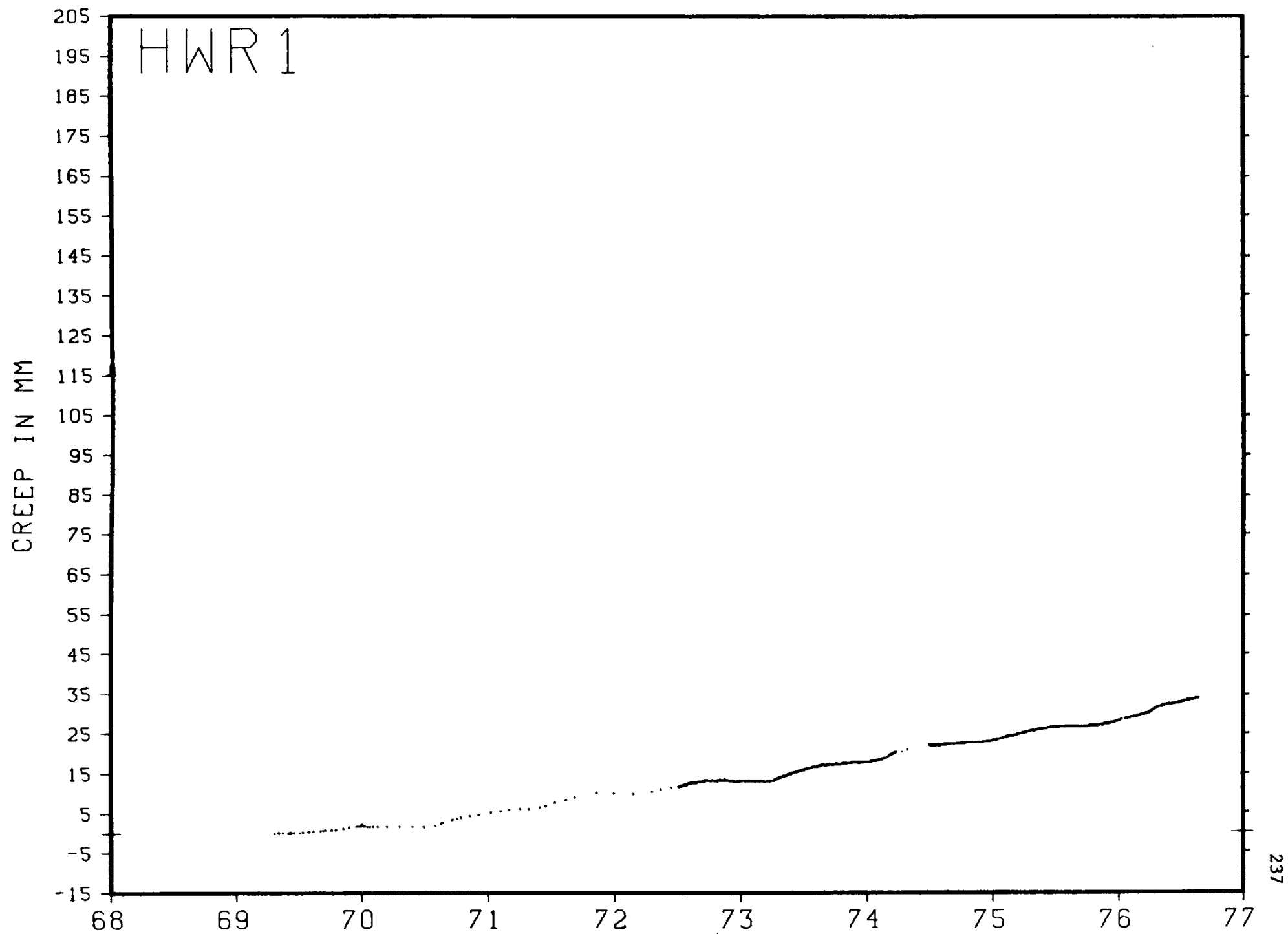
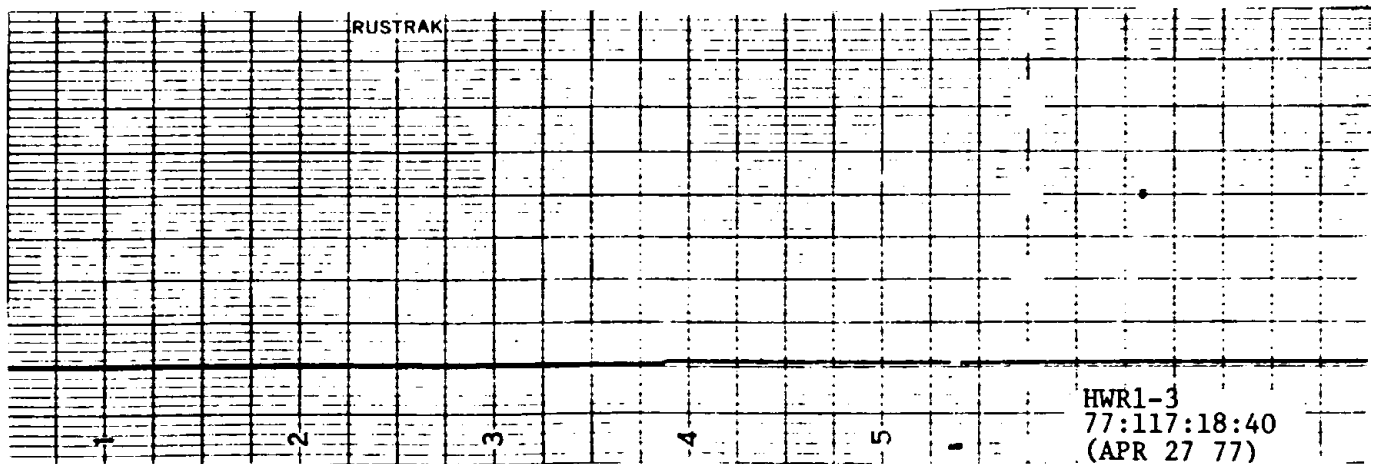
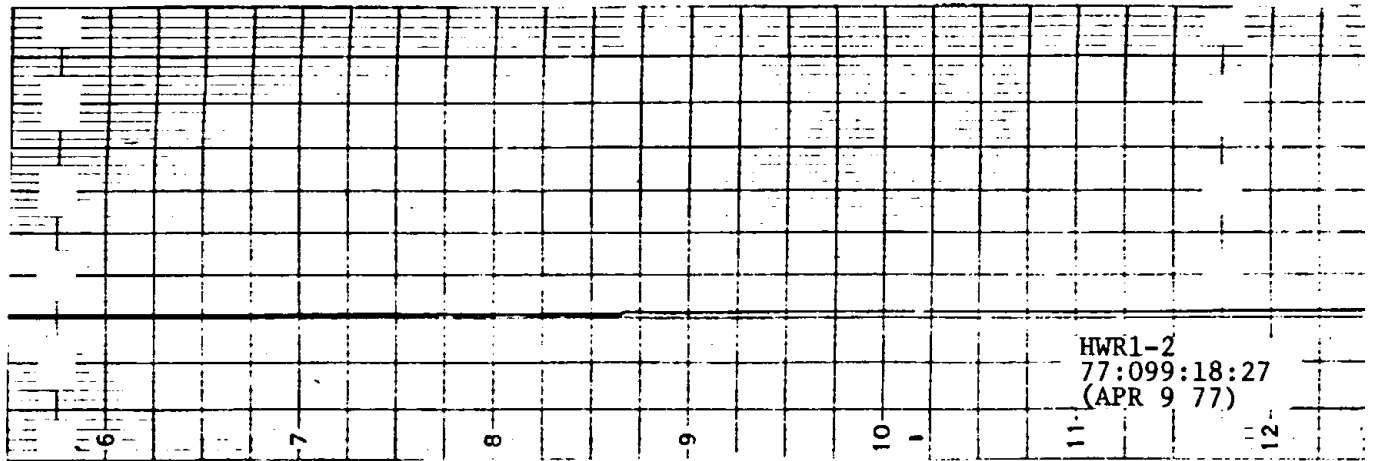
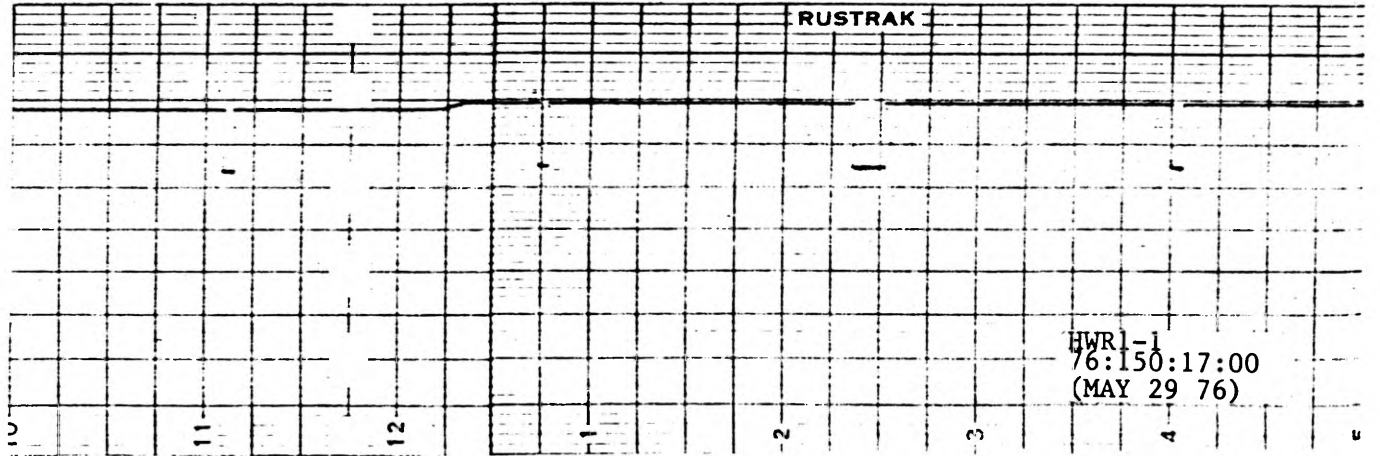


Table of HWR1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	150	May 29	1700	0.26	1	0.92	1.88
	223-232	Aug. 10-19 (10-day surge)		0.35	*		
	273-276	Sep. 29-Oct. 2	≈ 0600	0.32	*		
1977	099	Apr. 9	1827	0.11	2	0.93	1.41
	117	Apr. 27	1840	0.05	3	0.92	.4791

*Refer to annual plot.



STATION HWE

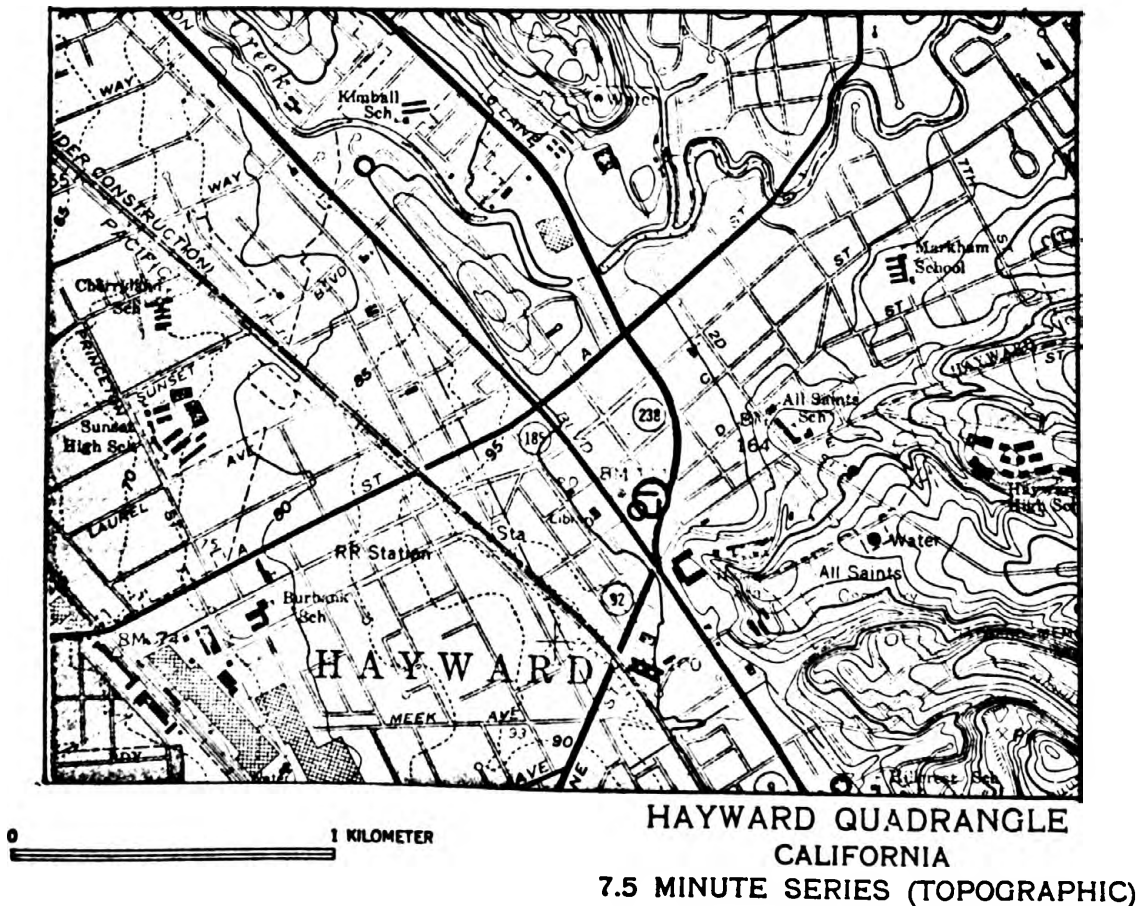
240

Latitude $37^{\circ} 40.2'$

Position 44.0 km

Longitude $122^{\circ} 04.8'$ 14 meter rods, $\theta=45^{\circ}$

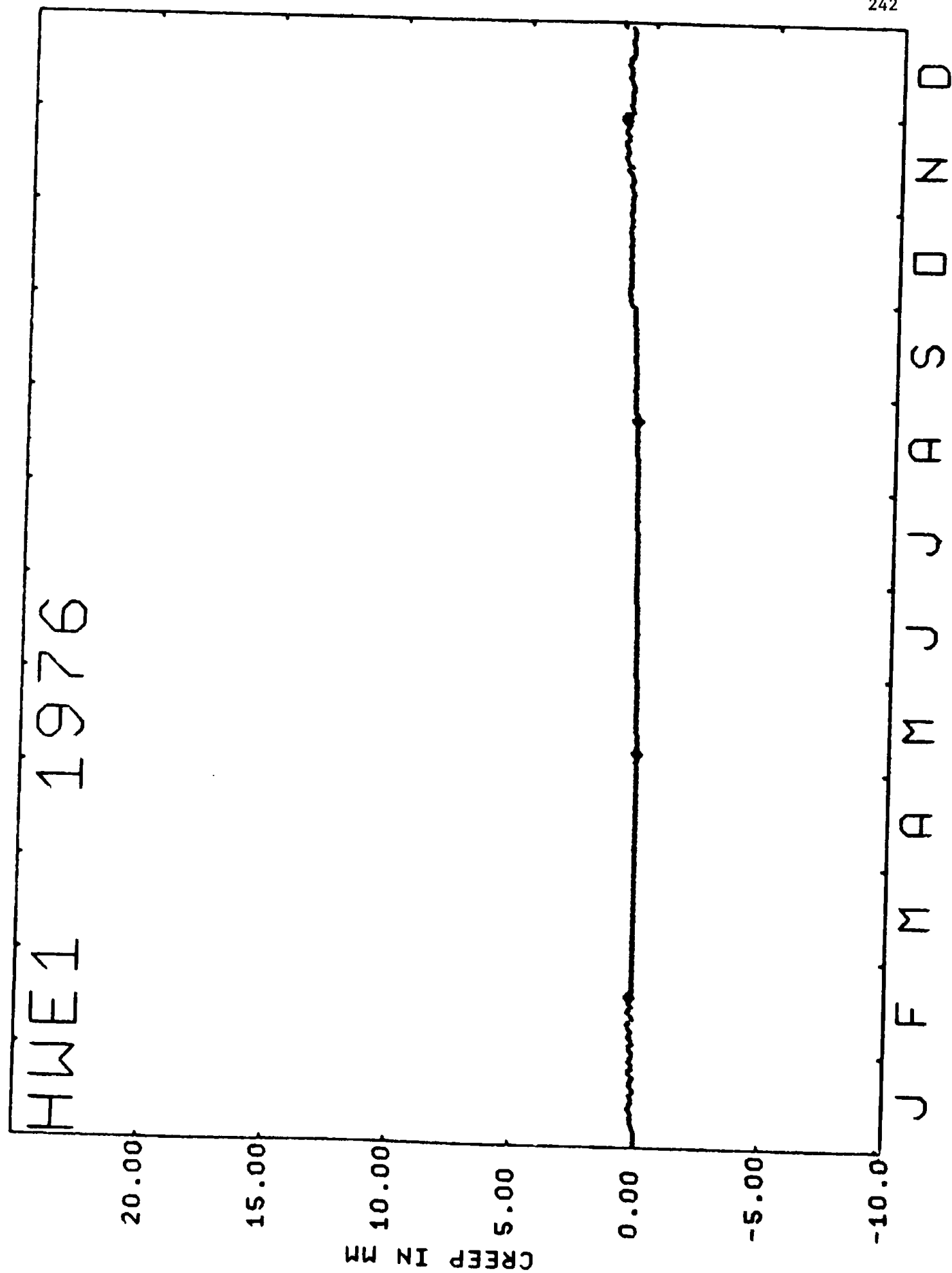
The Hayward (D Street) East creepmeters were installed during April, 1968 (contraction), and June, 1969 (extension), on the Hayward fault at a site 44.0 km southeast of Pinole Point on San Pablo Bay. The installation consists of a pair of rods in a "V" configuration buried a few centimeters below the surface of the D Street pavement. The Hayward fault zone is split into two distinct traces about 50 meters apart along D Street, and the HWE rods are installed across the northeastern trace. Creep activity at this site is composed of gradual right-lateral movement of about 1.4 mm/yr, with a distinct seasonal variation. No distinct events have been observed.



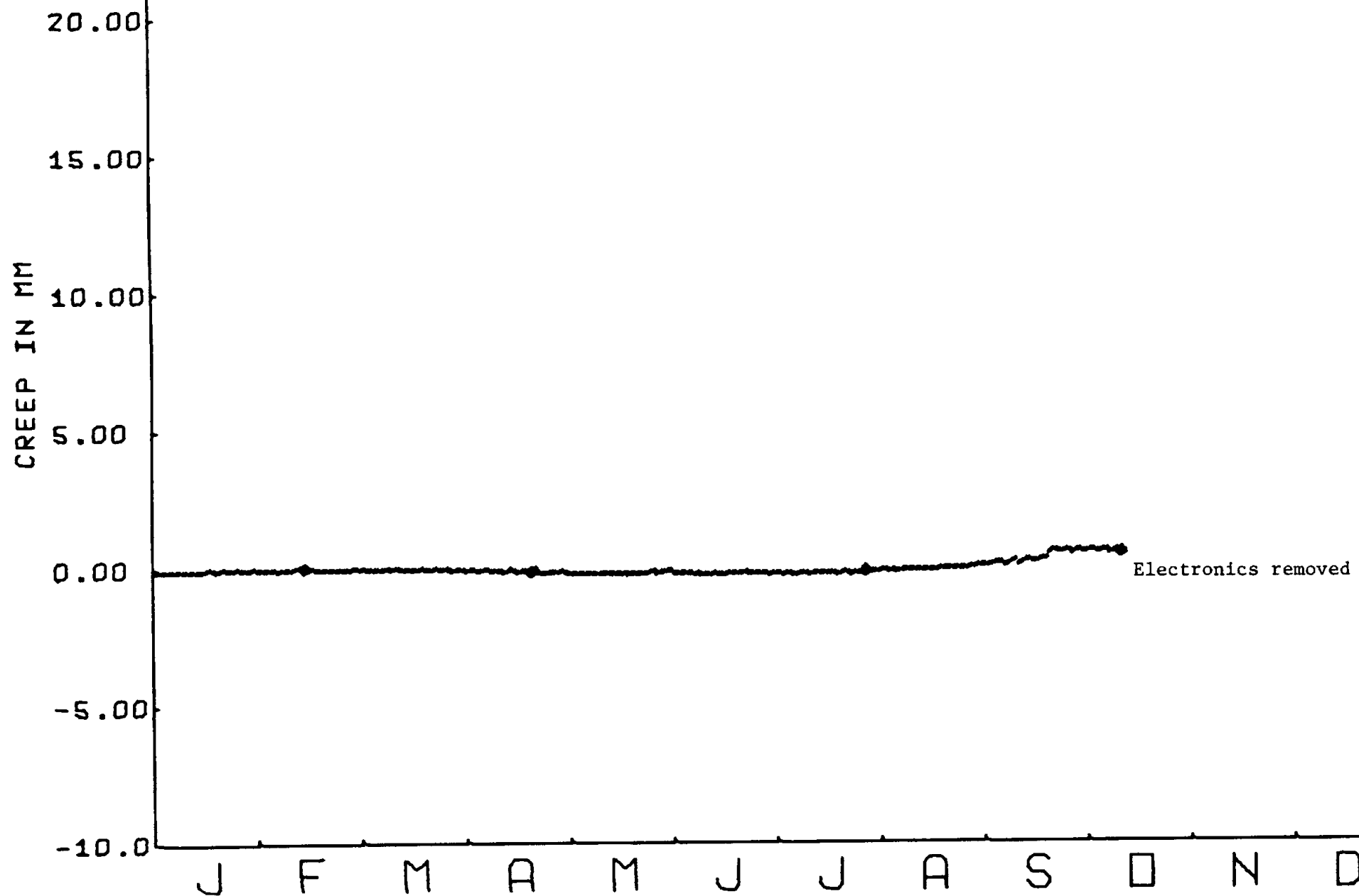
HWE CORRECTED CREEPMETER READINGS (mm)

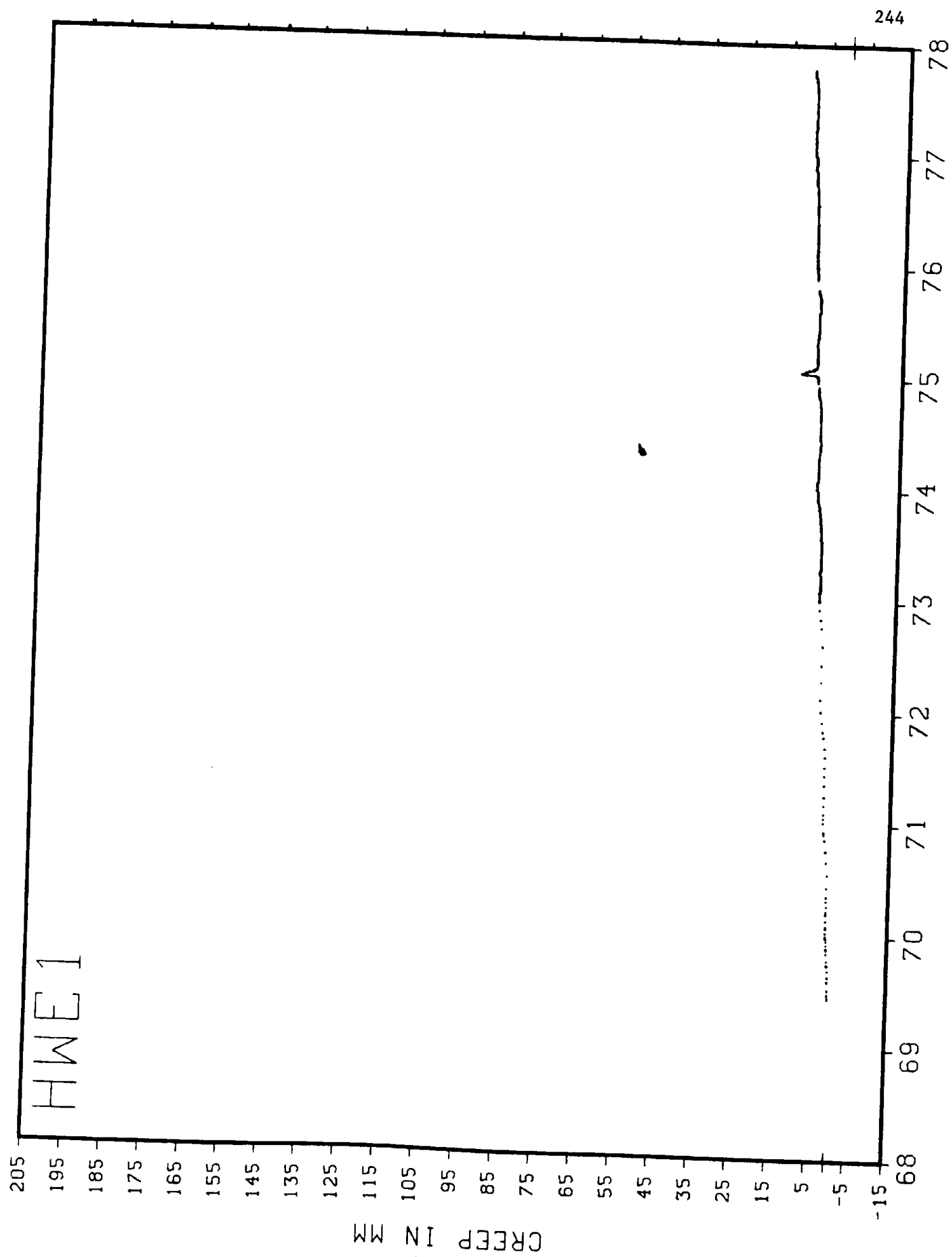
241

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					7.35	9.26
FEB 18	0.38	0.14	0.38	0.14	7.73	9.40
MAY 7	-0.10	0.28	0.28	0.42	7.63	9.68
AUG 23	0.23	0.64	0.51	1.06	7.86	10.32
NOV 29	0.69		1.20		8.55	
<u>1977</u>						
FEB 14	0.31		0.31		8.87	
APR 21	-0.17		0.14		8.70	
JUL 28	0.01		0.15		8.71	
OCT 11	0.64	2.50	0.79	2.50	9.35	12.82



HWE1 1977





STATION HWW

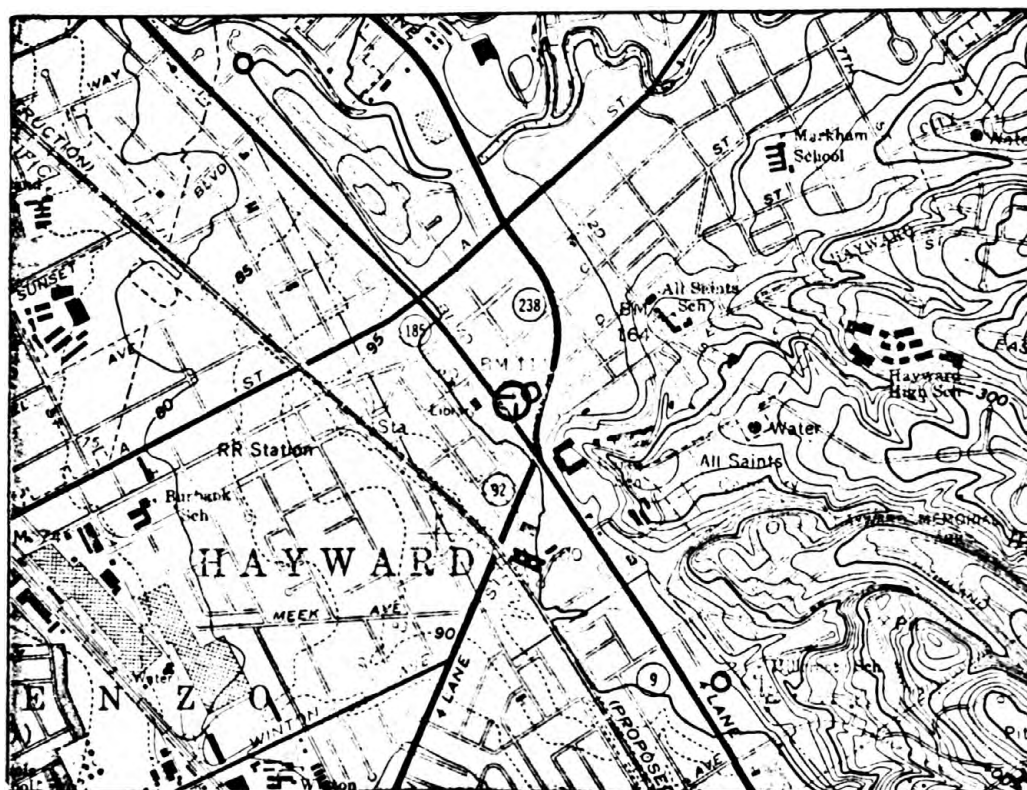
245

Latitude $37^{\circ} 40.2'$

Position 44.0 km

Longitude $122^{\circ} 04.8'$ 12 meter rods, $\theta=45^{\circ}$

The Hayward (D Street) West creepmeters were installed during April, 1968 (contraction), and June, 1969 (extension), on the Hayward fault at a site 44.0 km southeast of Pinole Point on San Pablo Bay. The installation consists of a pair of rods in a "V" configuration buried a few centimeters below the surface of the D Street and adjacent parking lot pavements. The Hayward fault zone is split into two distinct traces about 50 meters apart along D Street, and the HWW rods are installed across the southwestern trace. Creep activity at this site is composed of occasional minor events of up to about 1 mm in amplitude, superimposed on a background of gradual right-lateral slip. The average creep rate is about 2.3 mm/yr, with a distinct seasonal variation.



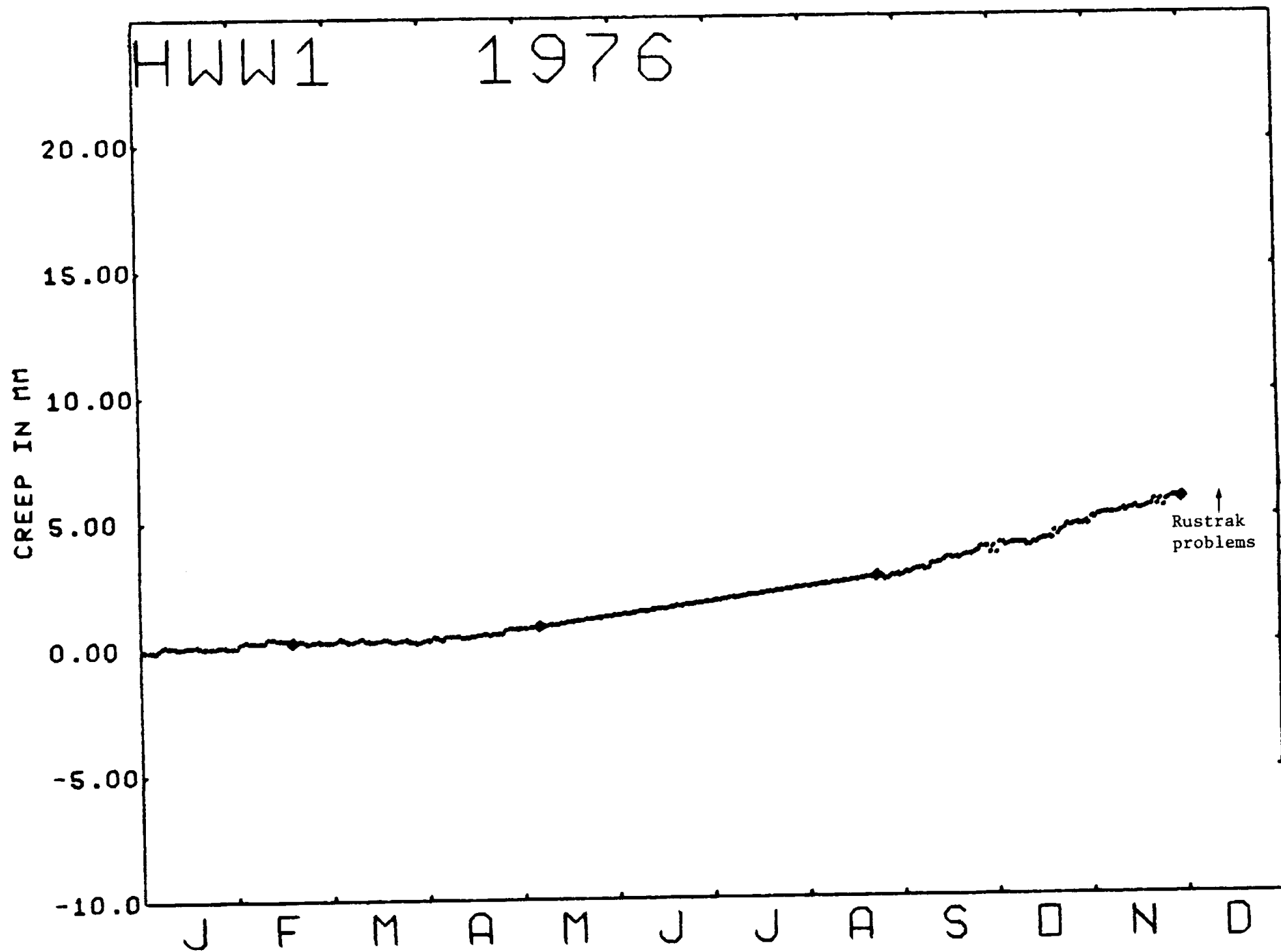
0 1 KILOMETER

HAYWARD QUADRANGLE
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

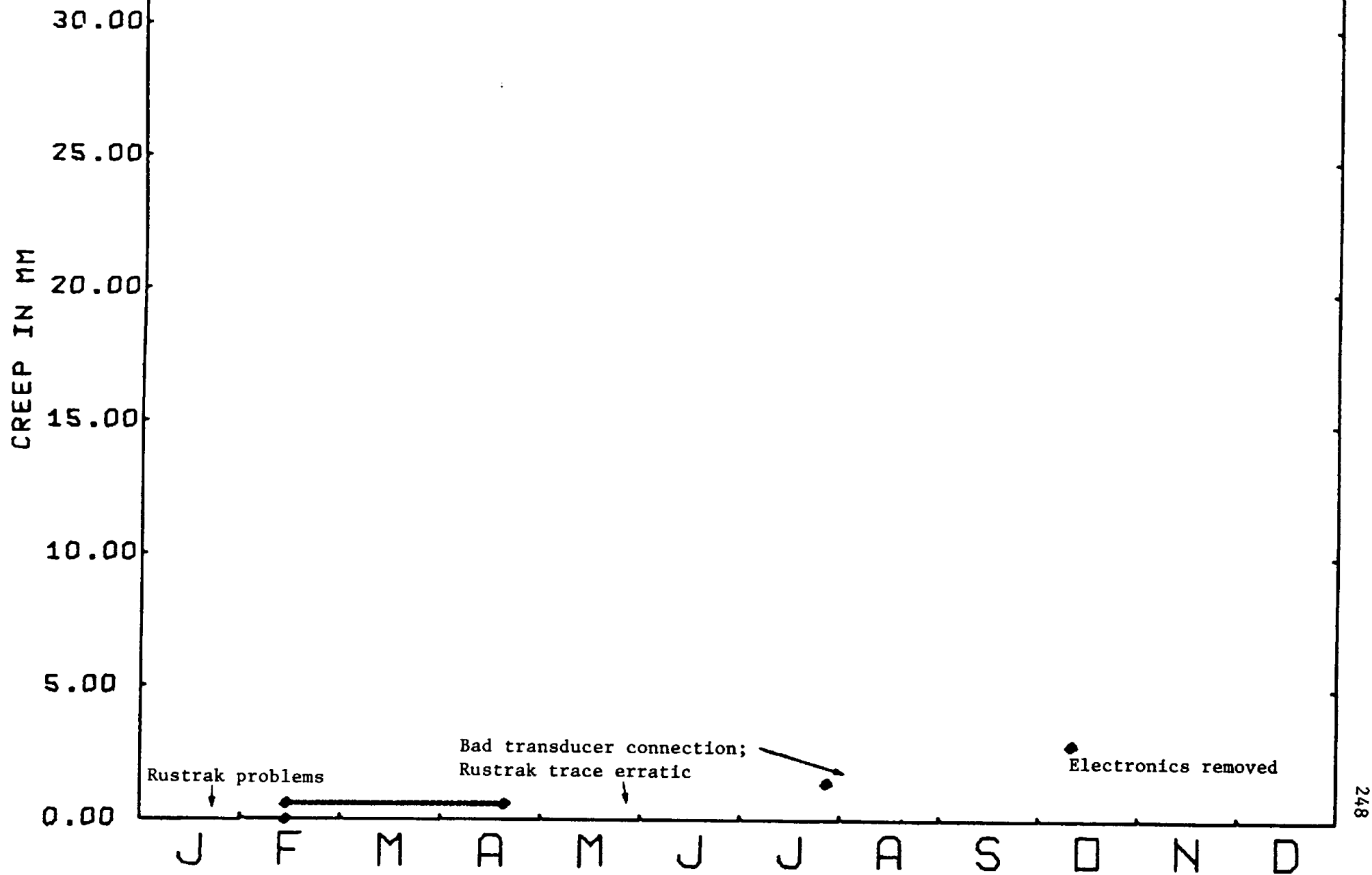
HWV CORRECTED CREEPMETER READINGS (mm)

246

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	<u>X</u>	<u>C</u>	<u>X</u>	<u>C</u>	<u>X</u>	<u>C</u>
<u>1976</u>						
					14.40	20.96
FEB 18	0.52	0.17	0.52	0.17	14.92	21.13
MAY 7	0.59	0.40	1.11	0.57	15.51	21.53
AUG 23	1.84	0.42	2.95	0.99	17.35	21.95
NOV 30	3.01		5.96		20.36	
<u>1977</u>						
FEB 14	-0.92		-0.92		19.45	
APR 21	0.01		-0.91		19.46	
JUL 28	1.39	0.96	0.48	0.96	20.85	22.91
OCT 11	1.48	1.68	1.98	2.64	22.33	24.59



HWW1 1977



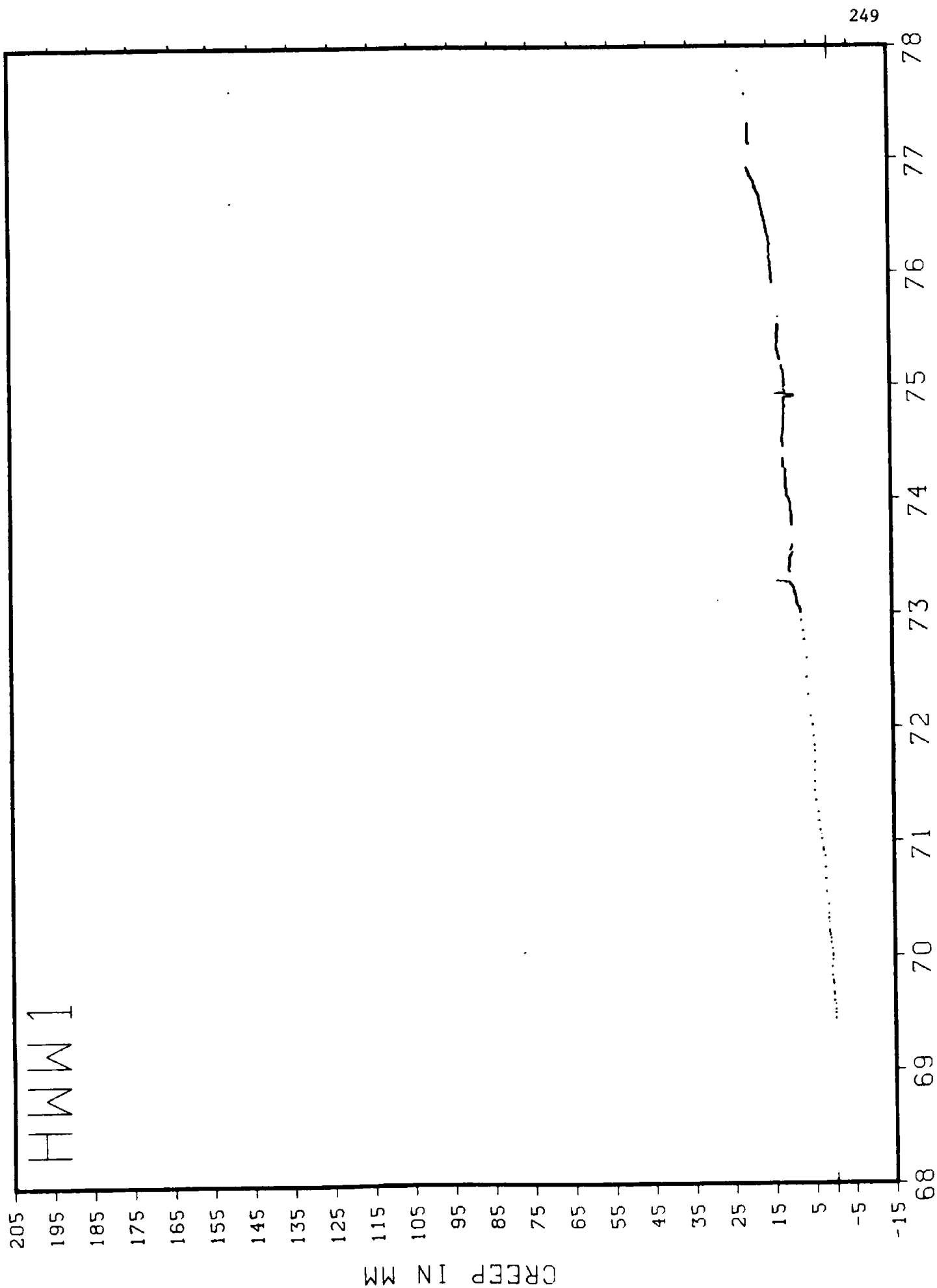


Table of HWI Events

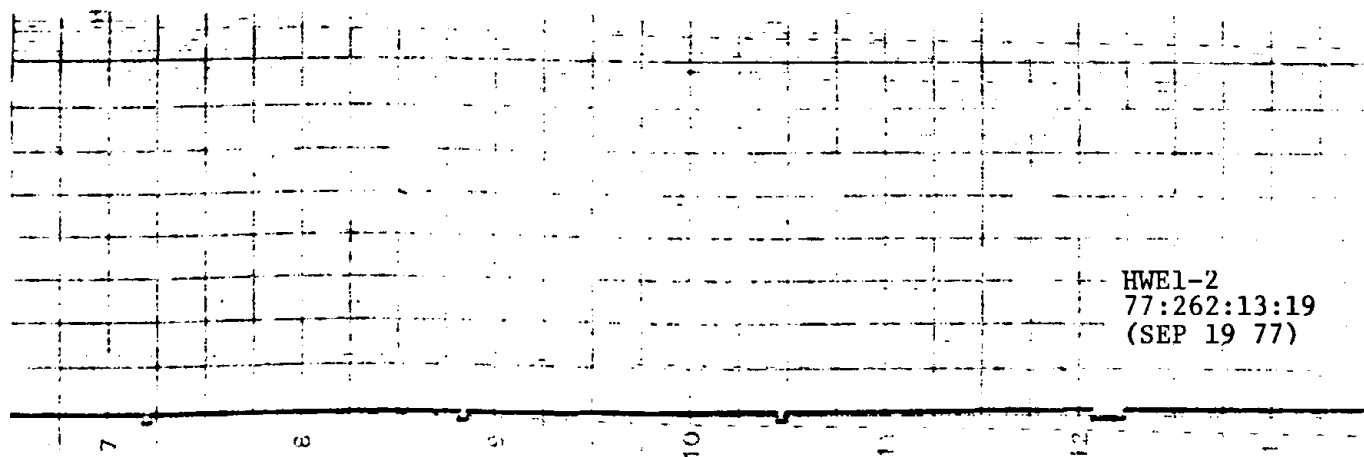
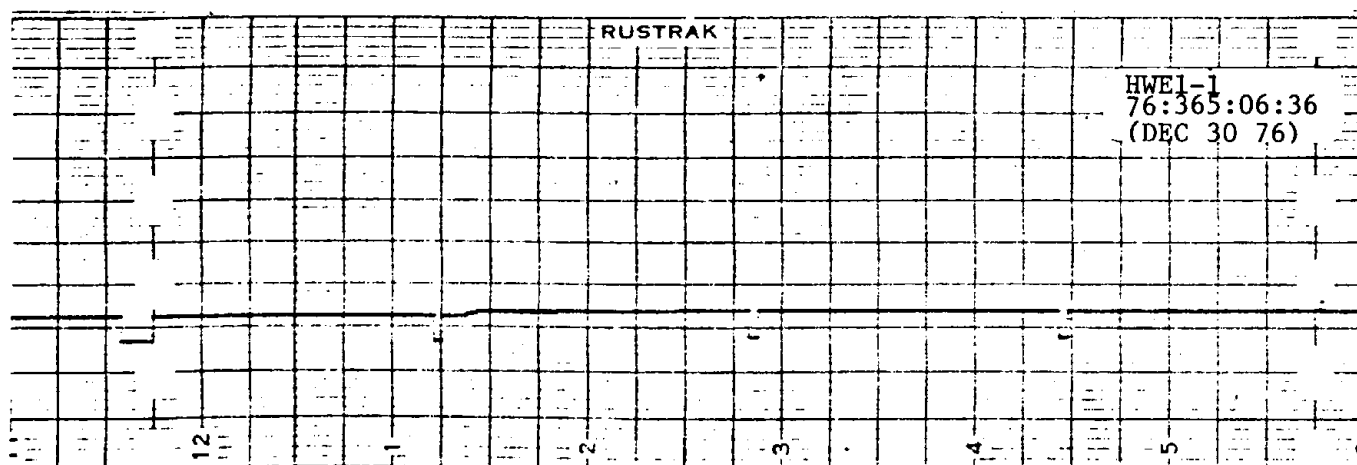
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>
1976	005-008	Jan. 5-8		.22	*
	032-035	Feb. 1-4		.26	*
	040-041	Feb. 9-10		.20	*
	116	Apr. 25		.22	*

*Refer to annual plot.

Table of HWE1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	272	Sep. 28 (series of microsteps)	≈ 2300	0.23	*		
	365	Dec. 30	0636	0.33	1	0.93	2.22
1977	262	Sep. 19	1319	0.27	2	0.92	1.67

*Refer to annual plot.



STATION HWP

Latitude	37 ⁰ 39.8'	Position	45.0 km
Longitude	122 ⁰ 04.5'		12 meter rods, Ø=45 ⁰

The Hayward (Palisade Street) creepmeters were installed during May, 1970, on the Hayward fault at a site 45.0 km southeast of Pinole Point on San Pablo Bay. The installation consists of a pair of crossed rods buried a few centimeters below the surface of the Palisade Street pavement. Creep activity at this site is composed of gradual right-lateral movement at about 2.6 mm/yr, with a distinct seasonal variation. No distinct events have been observed.

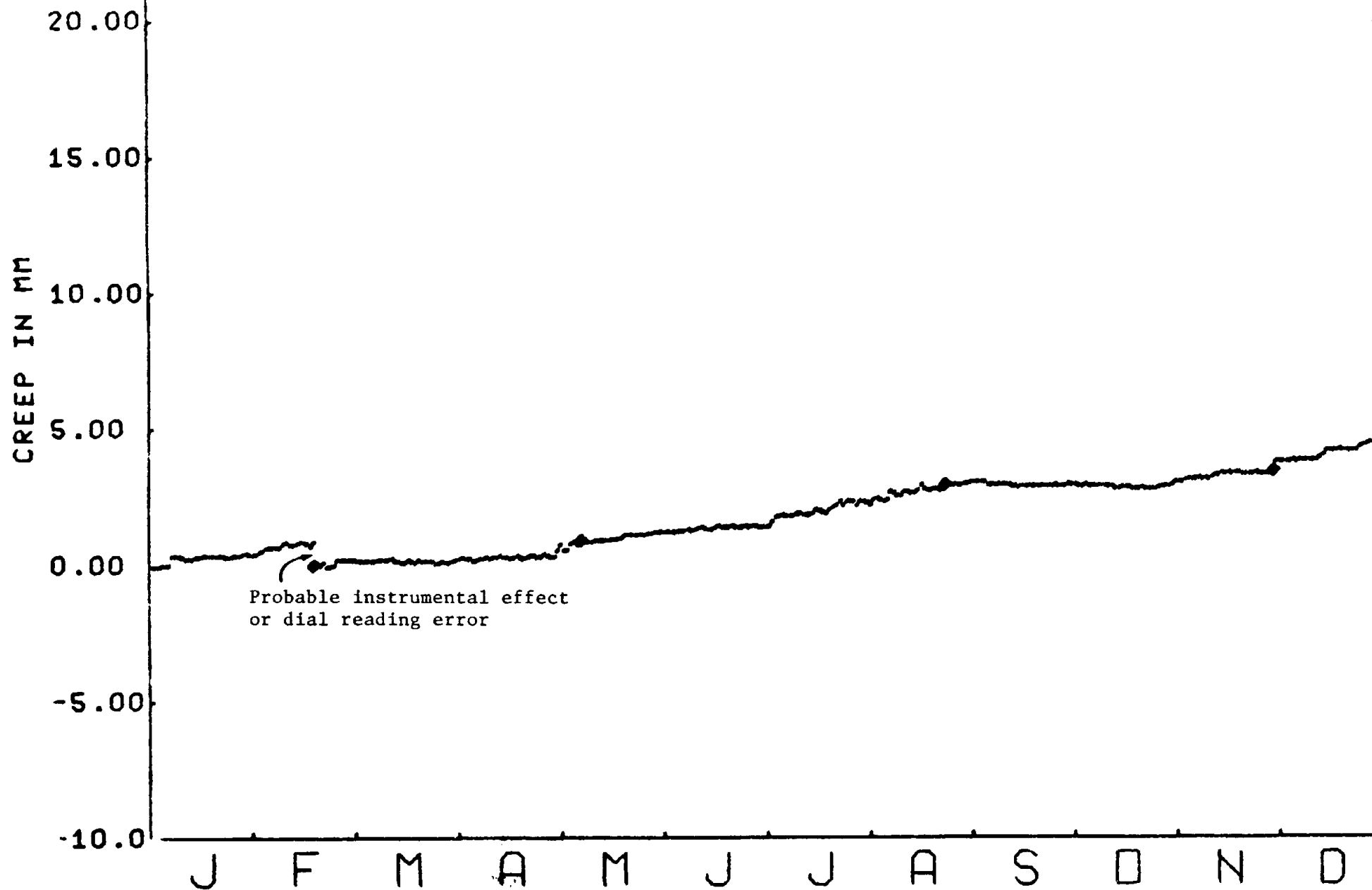
7.5 MINUTE SERIES (TOPOGRAPHIC)

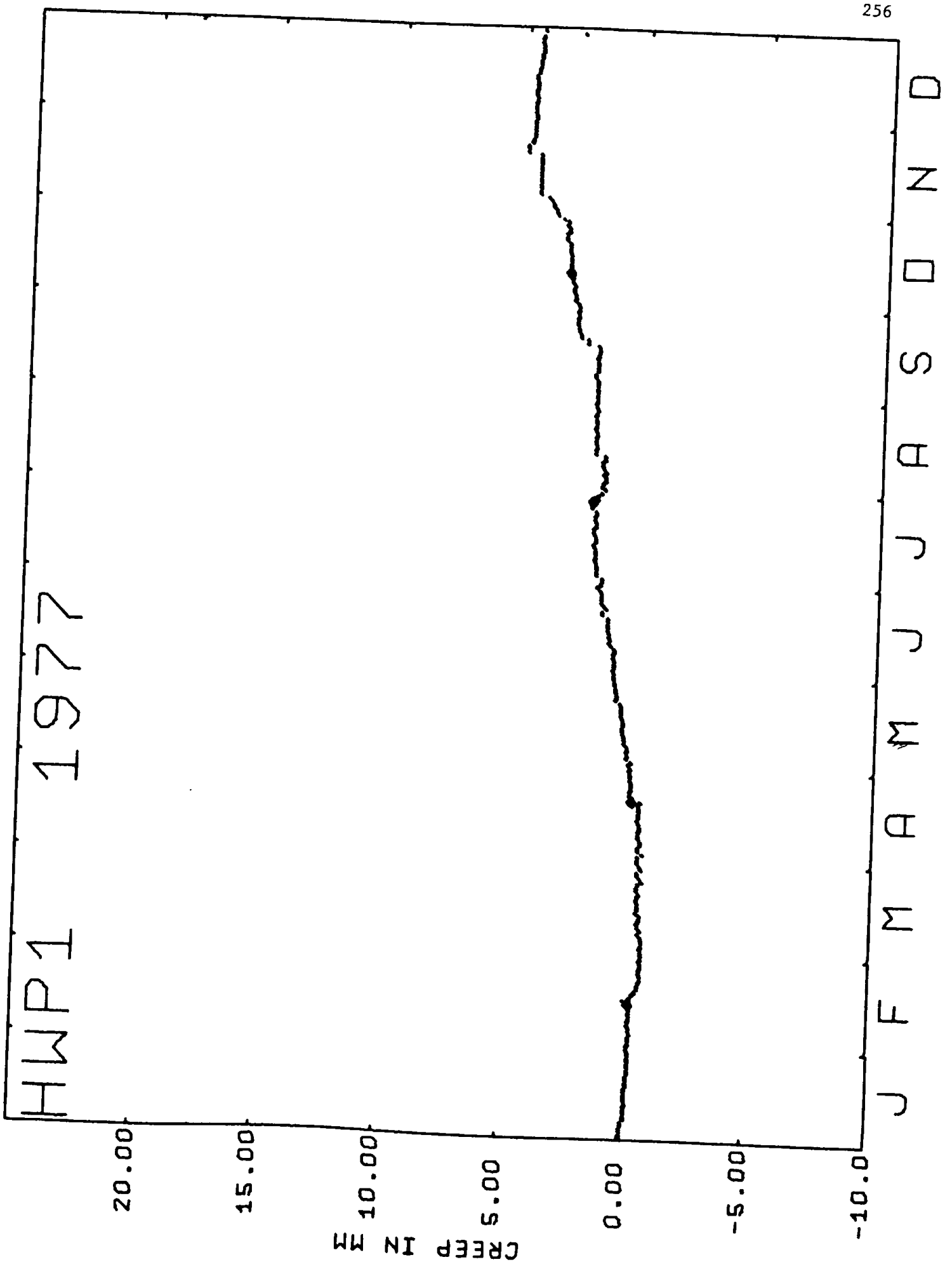
HWP CORRECTED CREEPMETER READINGS (mm)

254

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>						
					13.32	16.01
FEB 18	0.81	1.13	0.81	1.13	14.13	17.14
MAY 7	0.86	1.17	1.67	2.30	14.99	18.31
AUG 23	2.05		3.72		17.04	
NOV 29	0.54	-0.11	4.26	2.19	17.58	18.20
<u>1977</u>						
FEB 14	0.83		0.83		18.41	
APR 21	0.10		0.93		18.51	
JUL 28	1.97		2.90		20.48	
OCT 11	1.17		4.07		21.65	

HWP1 1976





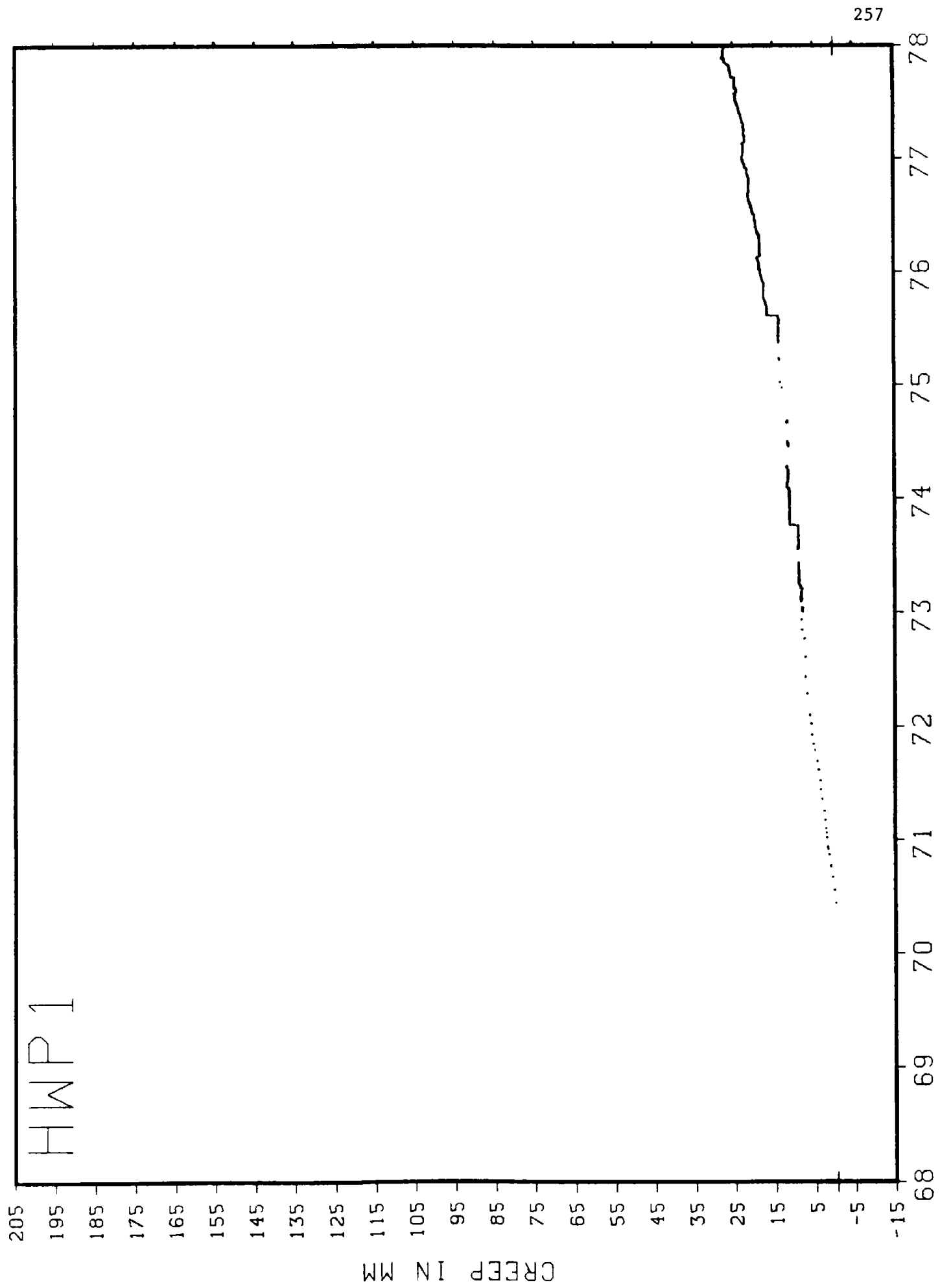
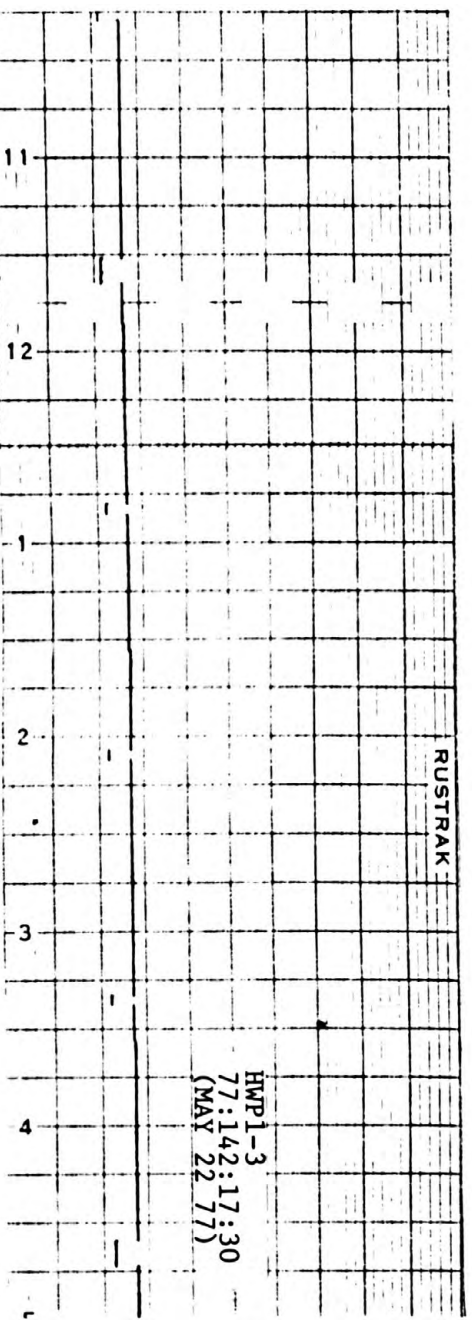
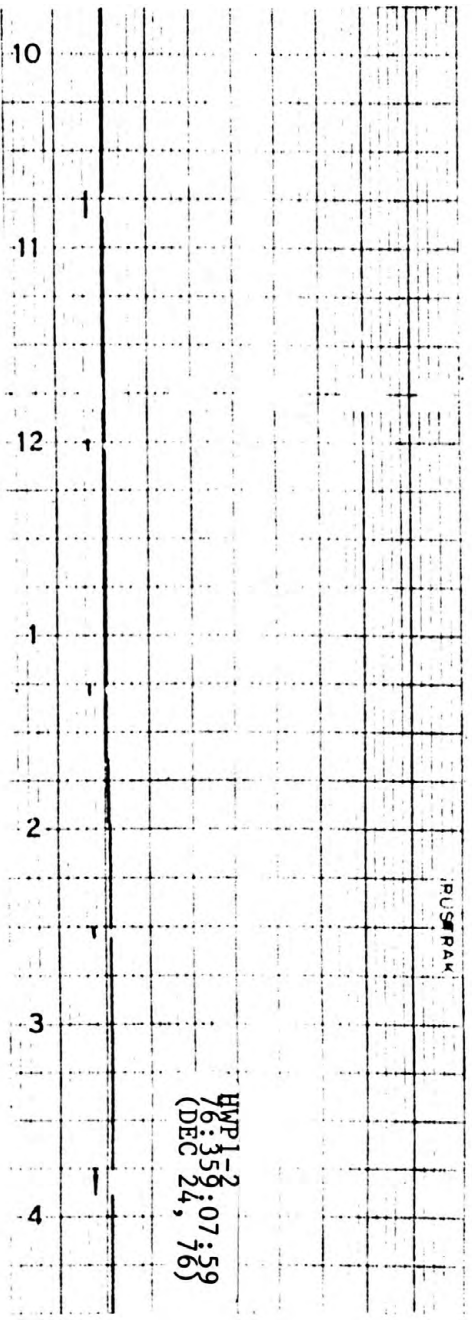
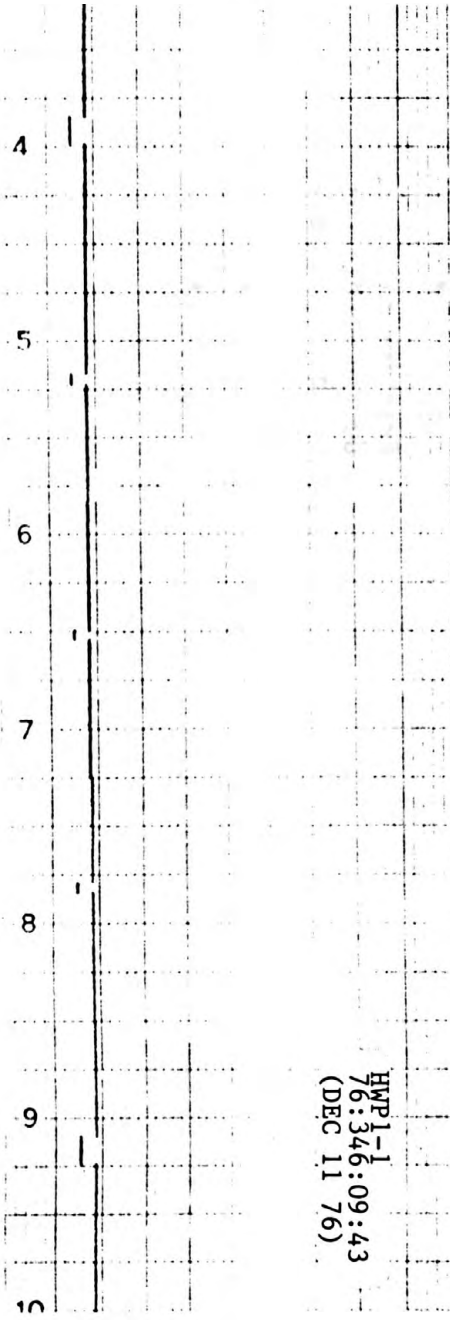
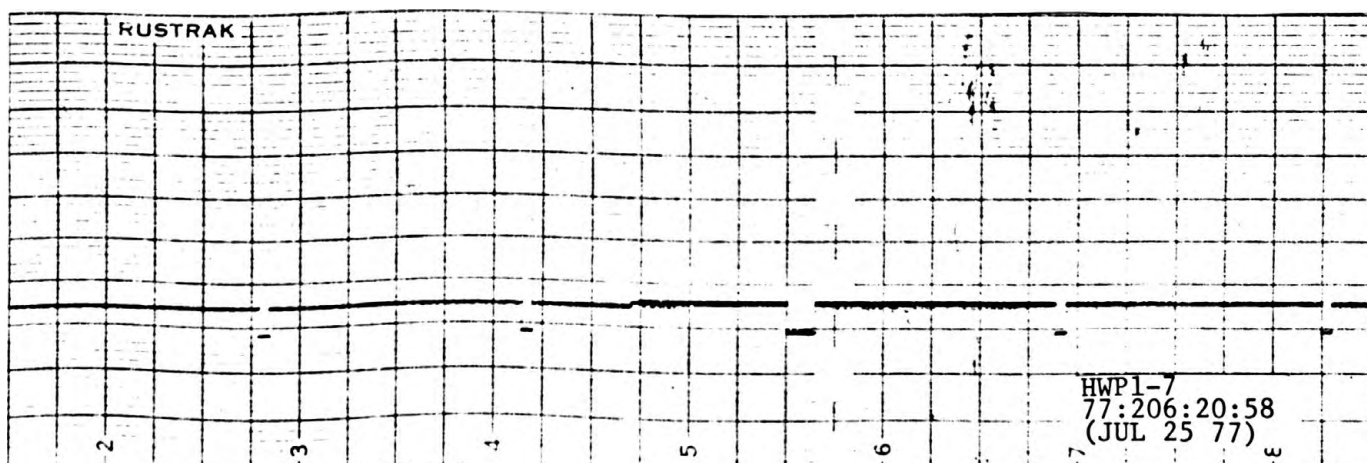
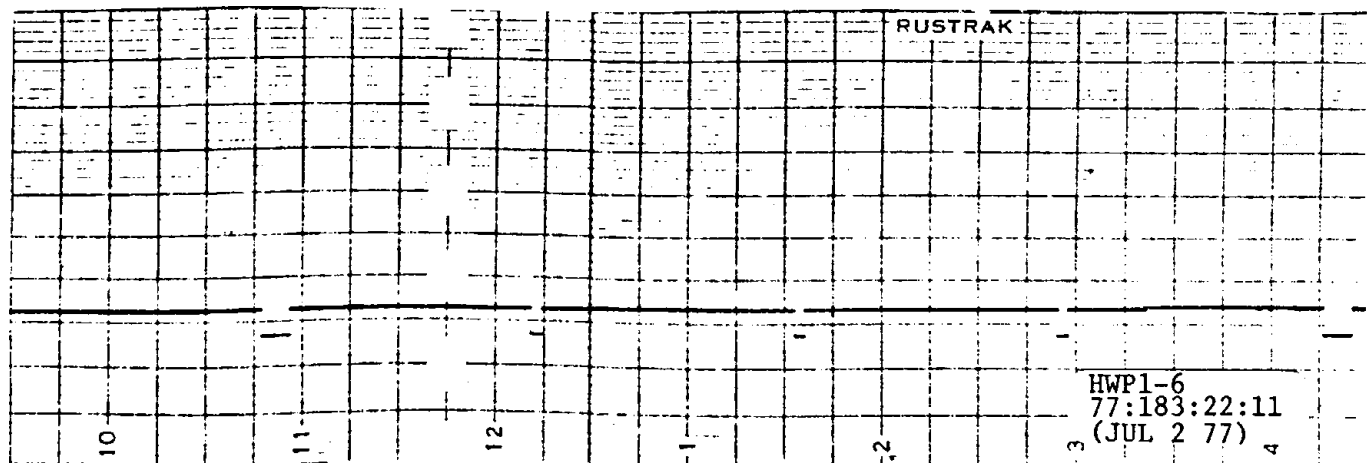
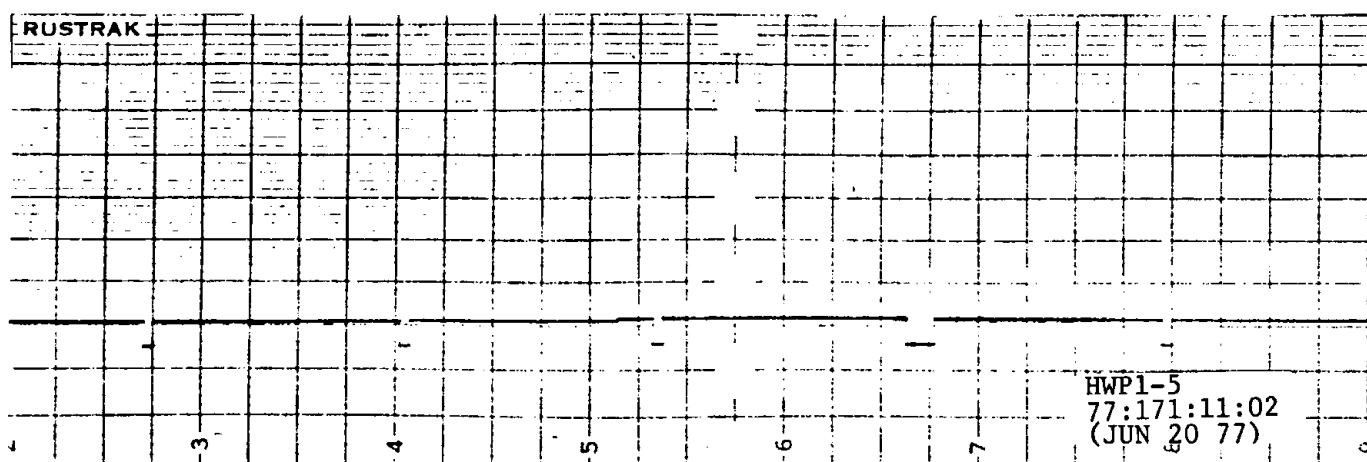
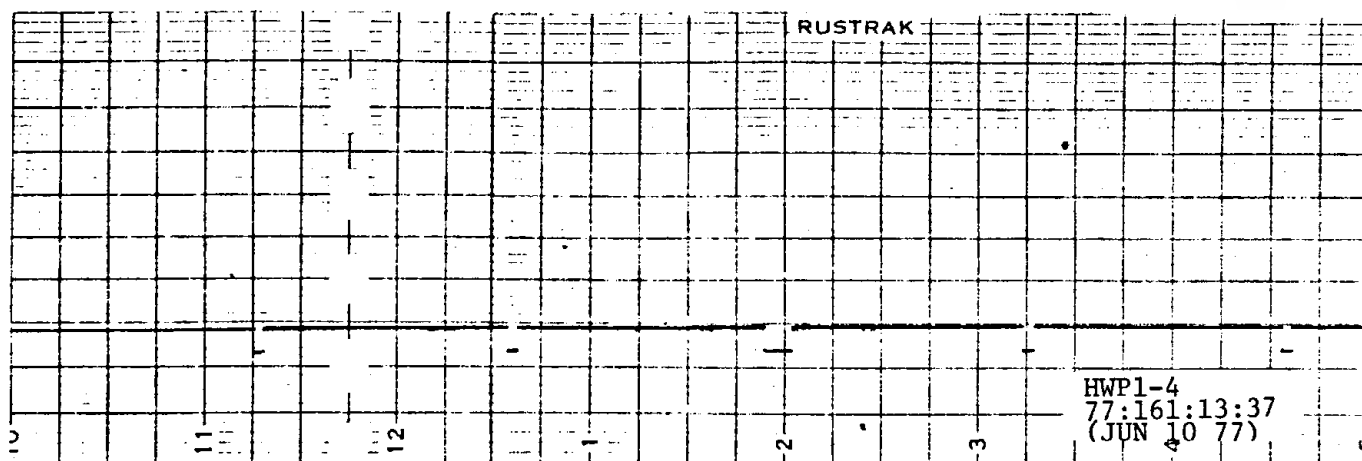


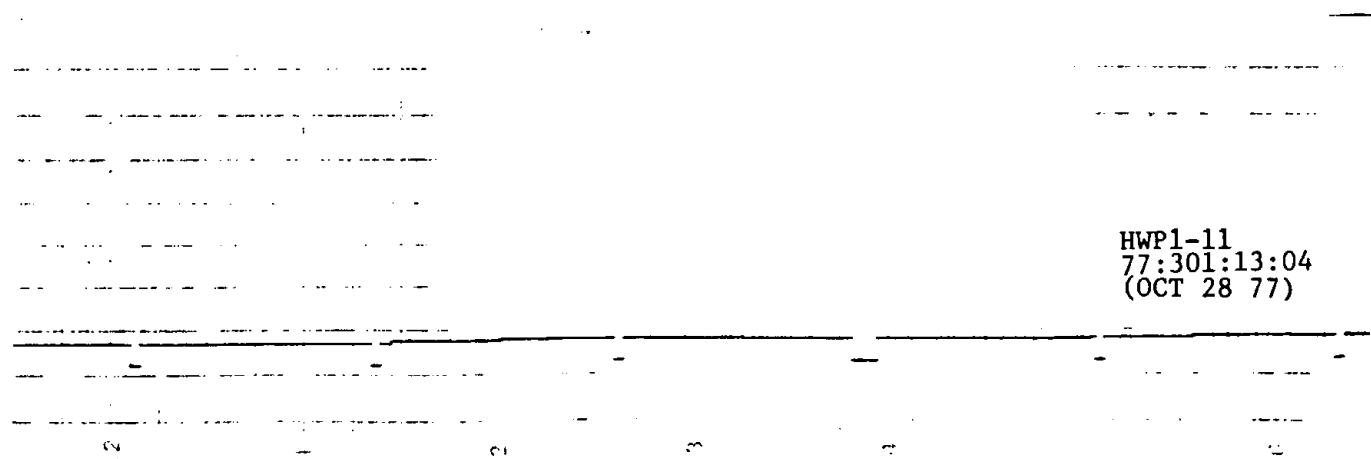
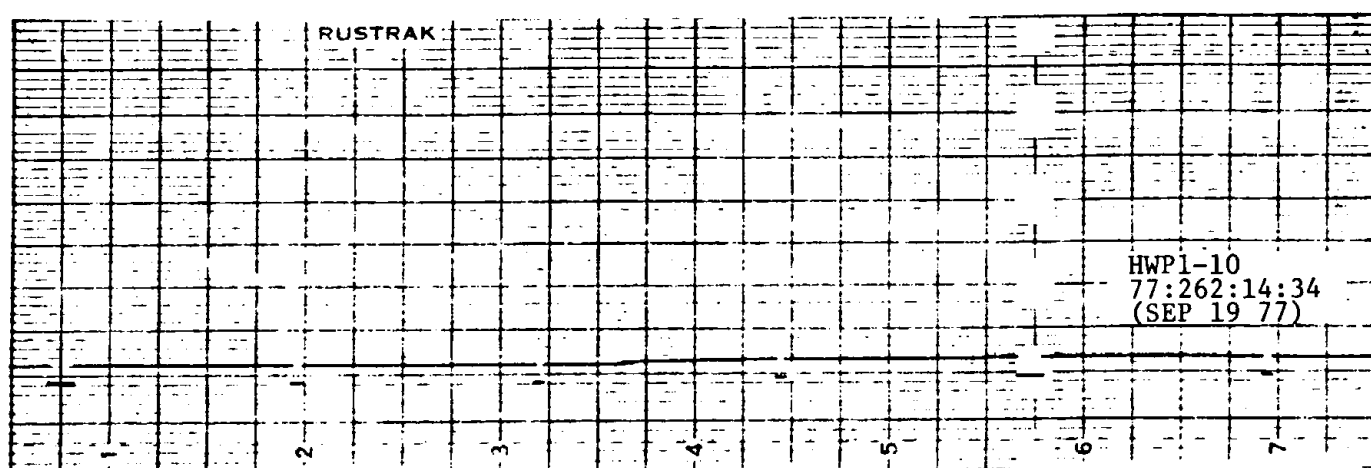
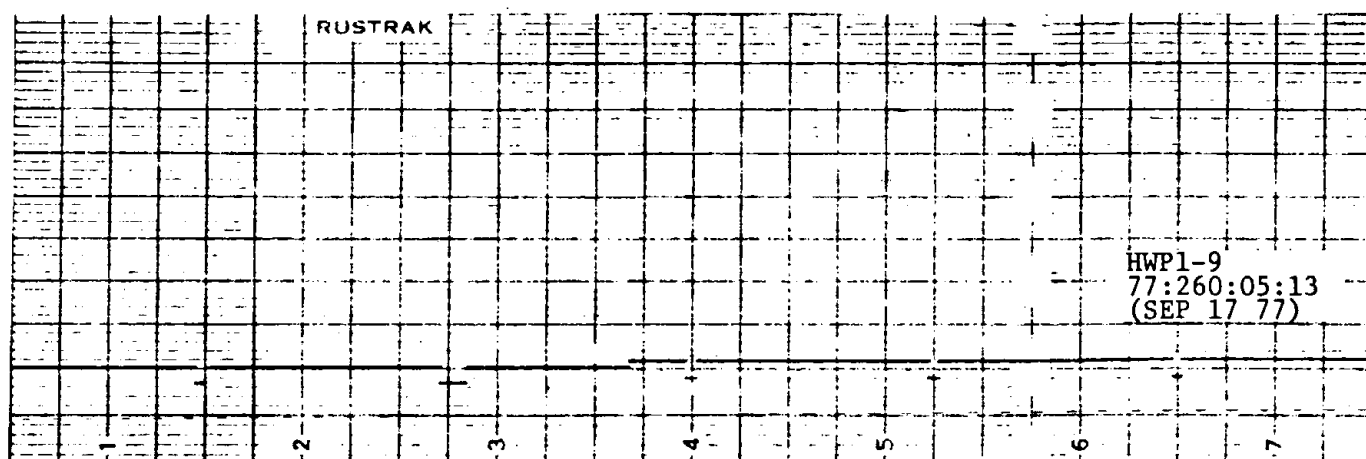
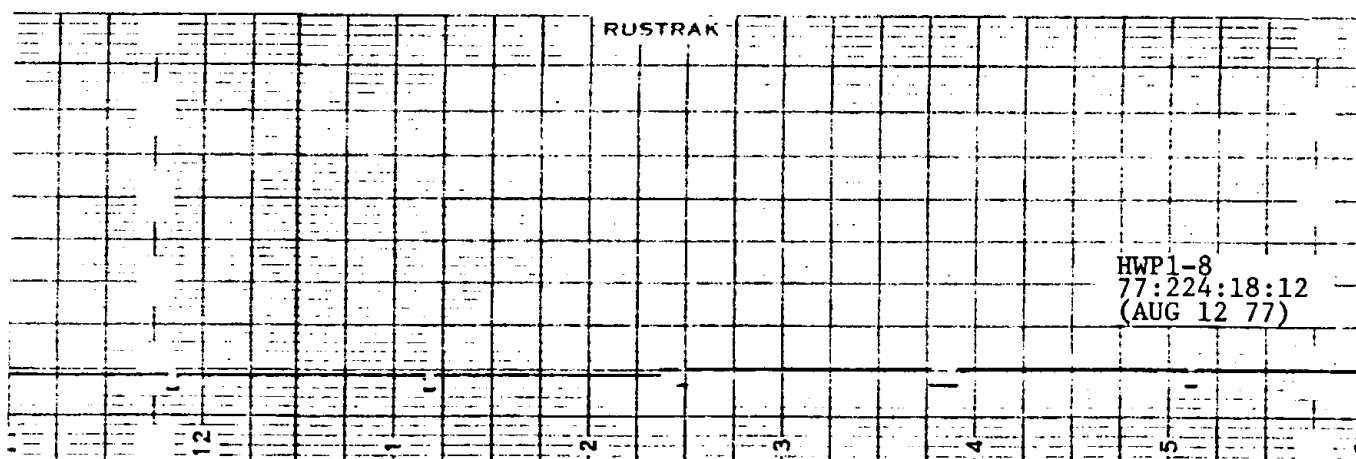
Table of HWP1 Events

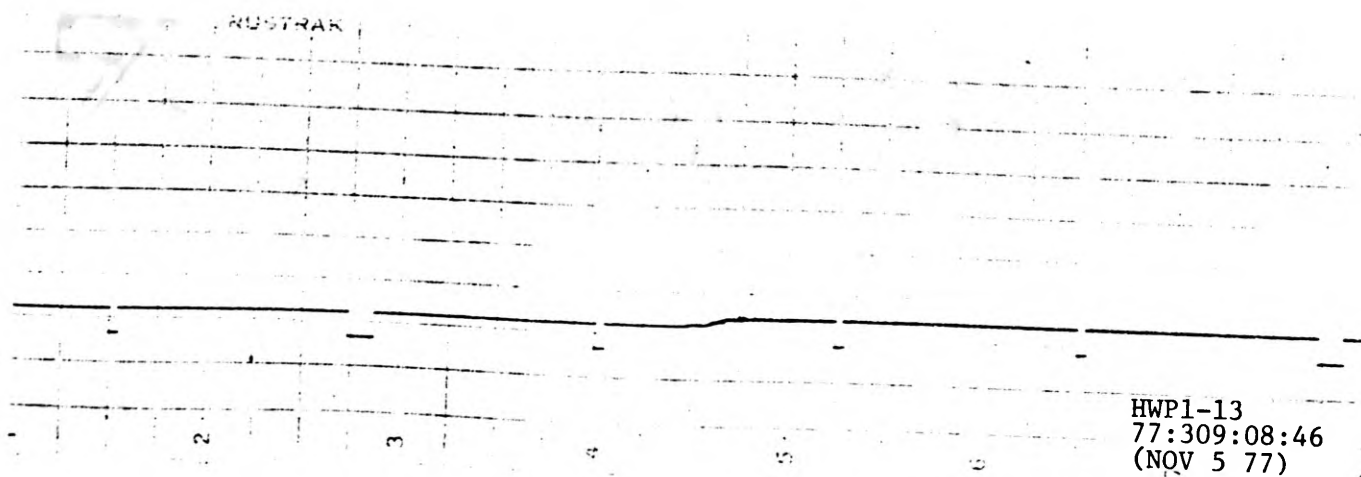
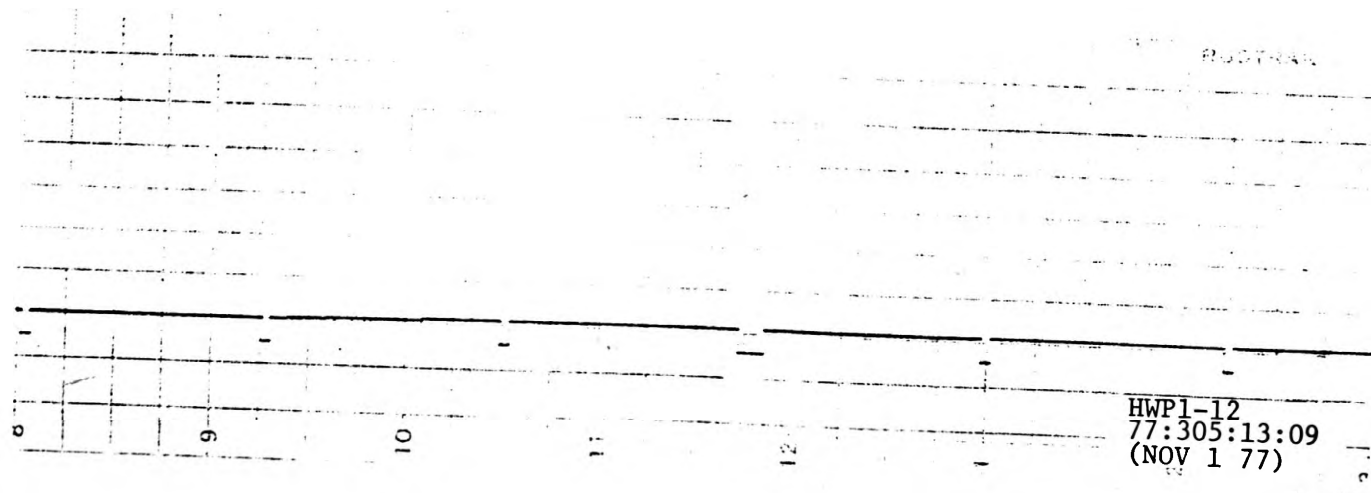
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	006	Jan. 6	2042	0.40	*		
	047	Feb. 16					
				Friction step produced by instrument during mechanical reading and chart change. (probably not a dial reading error).			
	055	Feb. 24		0.28	*		
	120-124	Apr. 29-May 3		0.46	*		
	183-185	Jul. 1-3		0.43	*		
	335	Nov. 30		Electronic problems - artificial step.			
	346	Dec. 11	0943	0.32	1	1.14	1.70
	359	Dec. 24	0759	0.32	2	1.19	1.70
	1977	142	May 22	1730	0.28	3	1.18
161		Jun. 10	1337	0.23	4	1.15	1.51
171		Jun. 20	1102	0.27	5	1.15	1.51
183		Jul. 2	2211	0.27	6	1.10	1.51
206		Jul. 25	2058	0.20	7	1.10	1.51
224		Aug. 12	1812	0.32	8	1.13	2.30
260		Sep. 17	0513	0.39	9	1.20	2.30
262		Sep. 19	1434	0.32	10	1.21	2.30
301		Oct. 28	1304	0.49	11	1.21	1.65
305		Nov. 1	1309	0.15	12	1.22	1.65
309		Nov. 5	0846	0.33	13	1.20	1.65

*Refer to annual plot.





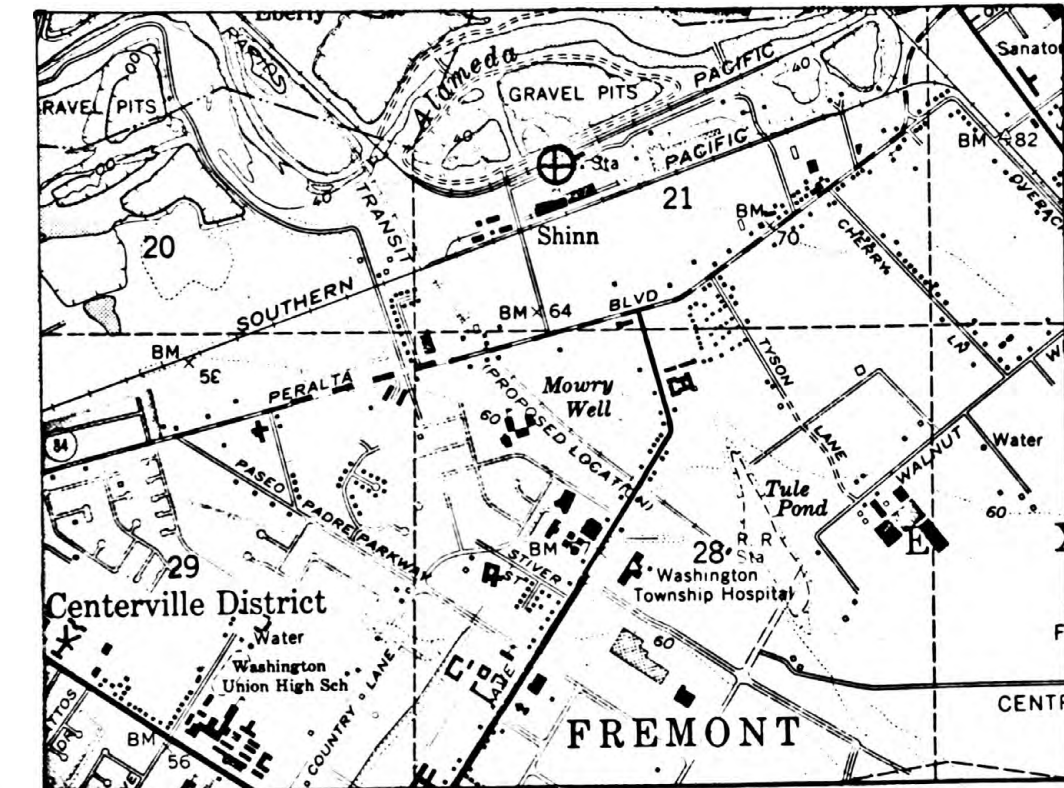




Latitude $37^{\circ} 34.1'$
 Longitude $121^{\circ} 58.9'$

Position 58.2 km
 12 meter rods, $\theta=45^{\circ}$

The Fremont (Shinn Station) creepmeters were installed during August, 1970, on the Hayward fault at a site 58.2 km southeast of Pinole Point on San Pablo Bay. The installation consists of a pair of crossed rods buried a few centimeters below a nearly flat surface in alluvium. Creep activity at this site is composed of occasional events of up to 2 mm in amplitude, superimposed on a background of zero to slight right-lateral slip. The average creep rate is about 2 mm/yr.

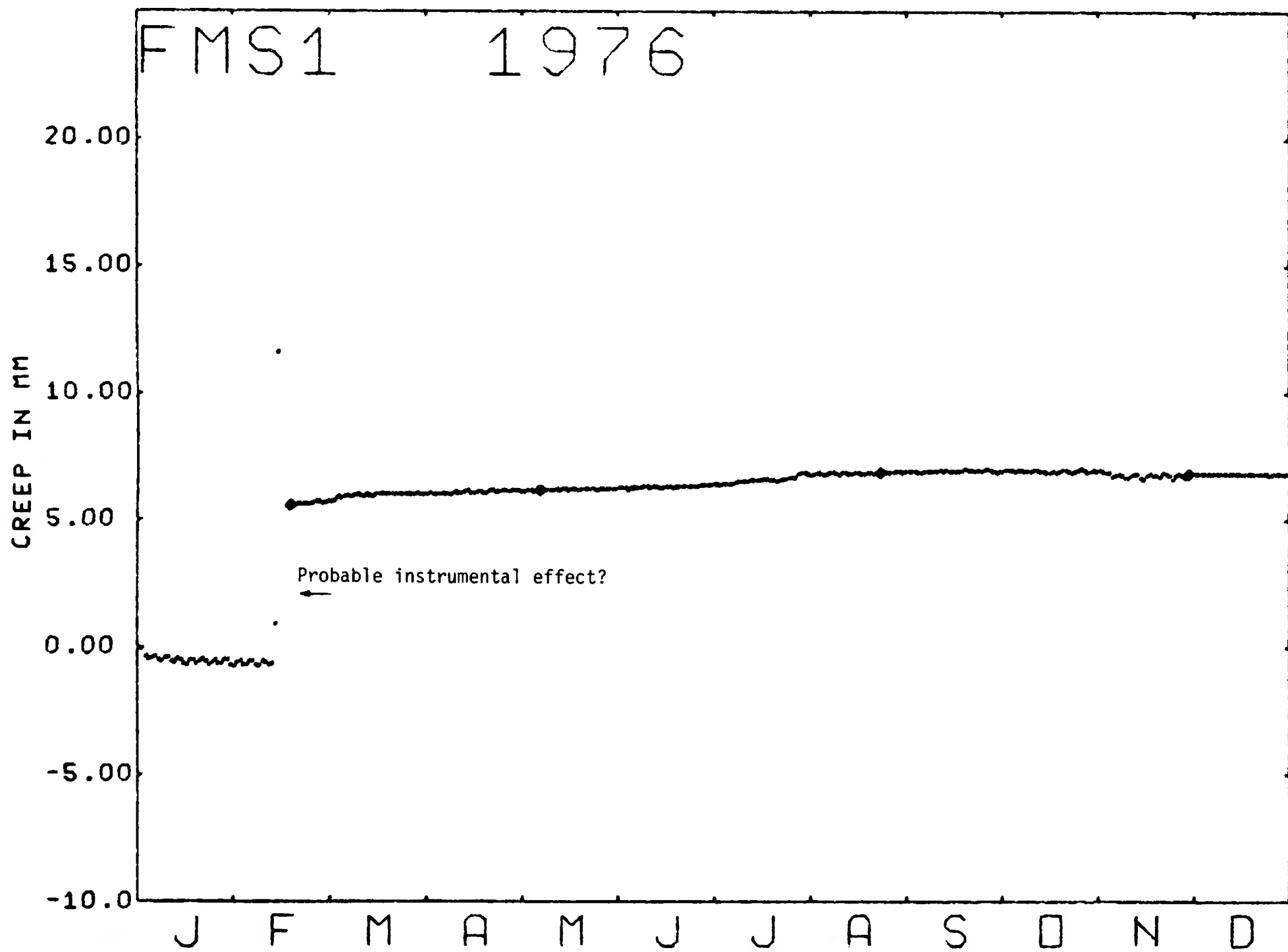


NILES QUADRANGLE
 CALIFORNIA-ALAMEDA CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)

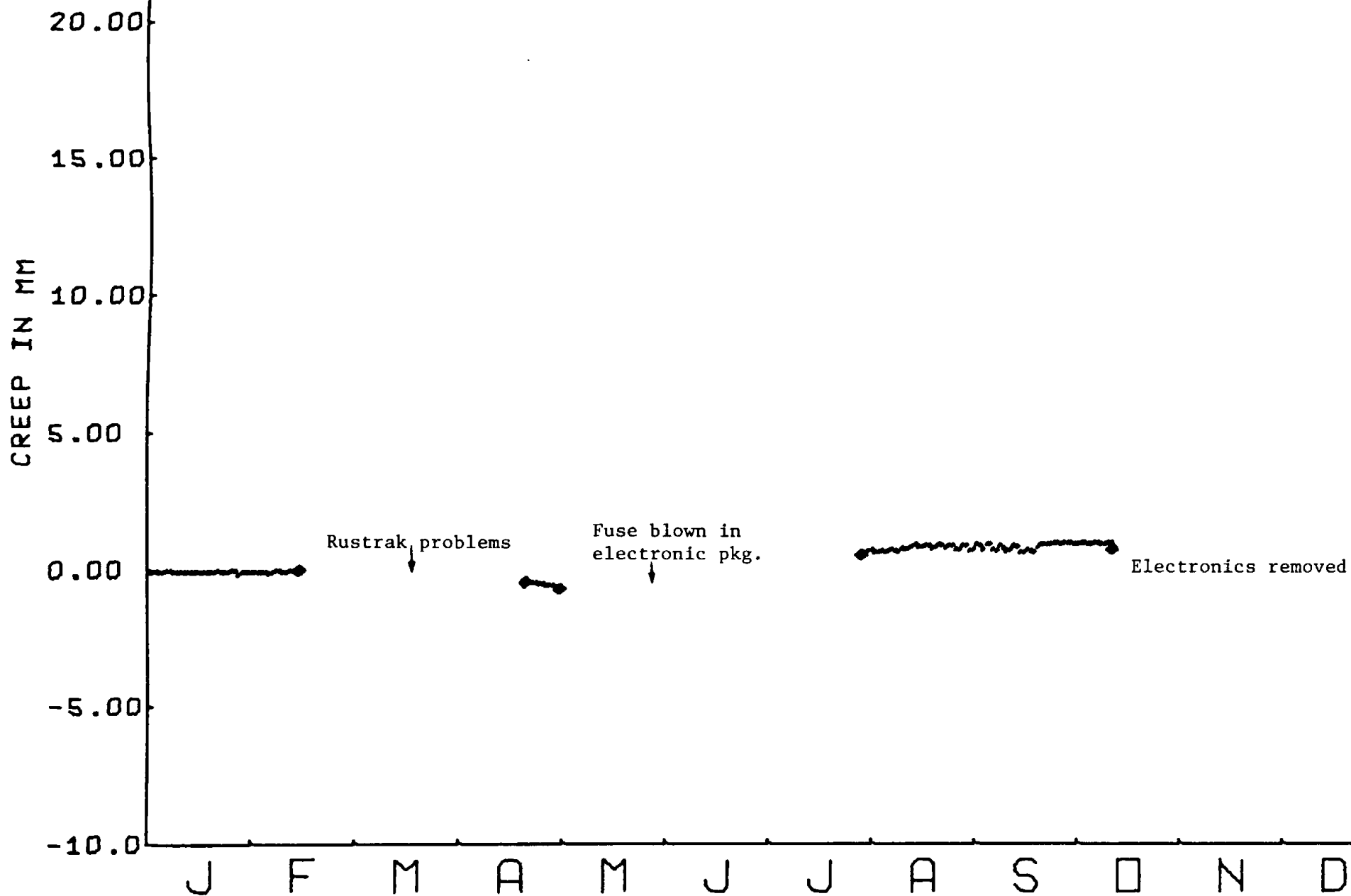
FMS CORRECTED CREEPMETER READINGS (mm)

264

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>						
					15.40	8.95
FEB 18	5.71	5.74	5.71	5.74	21.11	14.69
MAY 7	0.57	0.57	6.28	6.31	21.68	15.26
AUG 23	0.73	0.14	7.01	6.45	22.41	15.40
NOV 29	-0.06		6.95		22.35	
<u>1977</u>						
FEB 14	-0.02		-0.02		22.34	
APR 21	-0.43		-0.45		21.91	
JUL 29	0.93		0.48		22.84	
OCT 11	0.23		0.71		23.07	



FMS1 1977



205

195

185

175

165

155

145

135

125

115

105

95

85

75

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55

45

35

25

15

5

-5

-15

CREEP IN M

FMS1

68

69

70

71

72

73

74

75

76

77

78

267

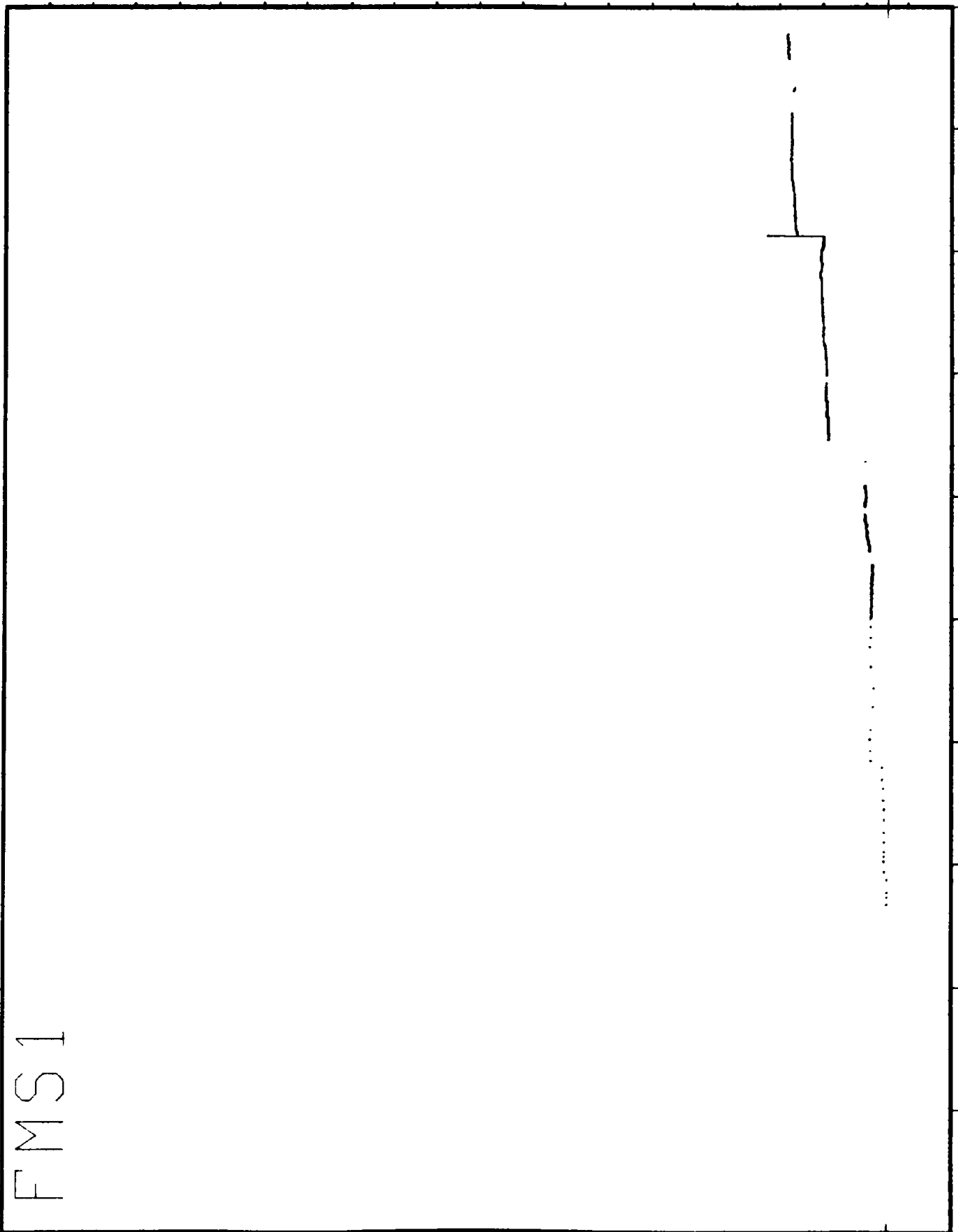
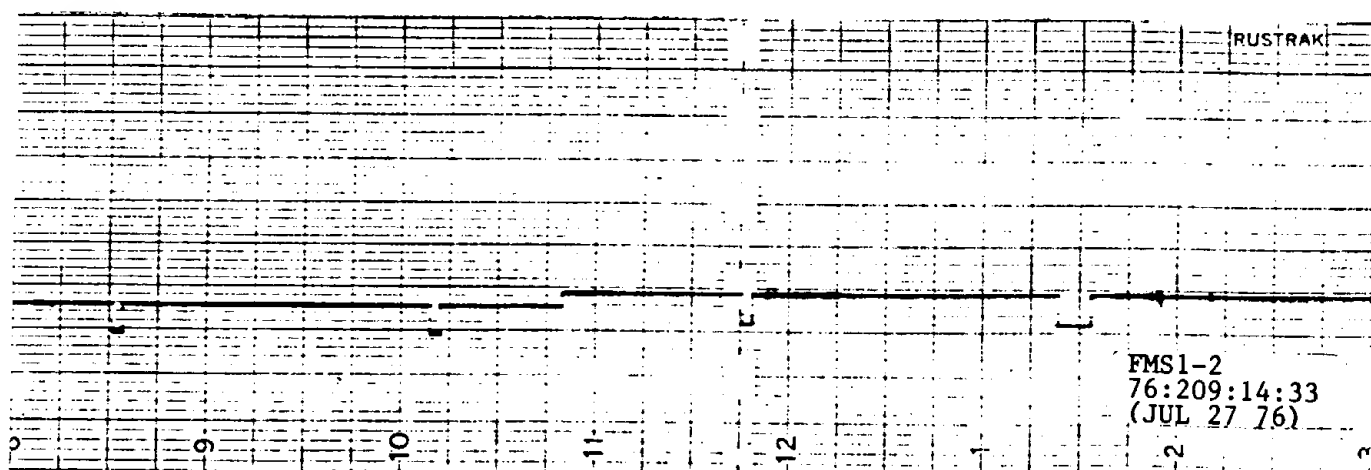
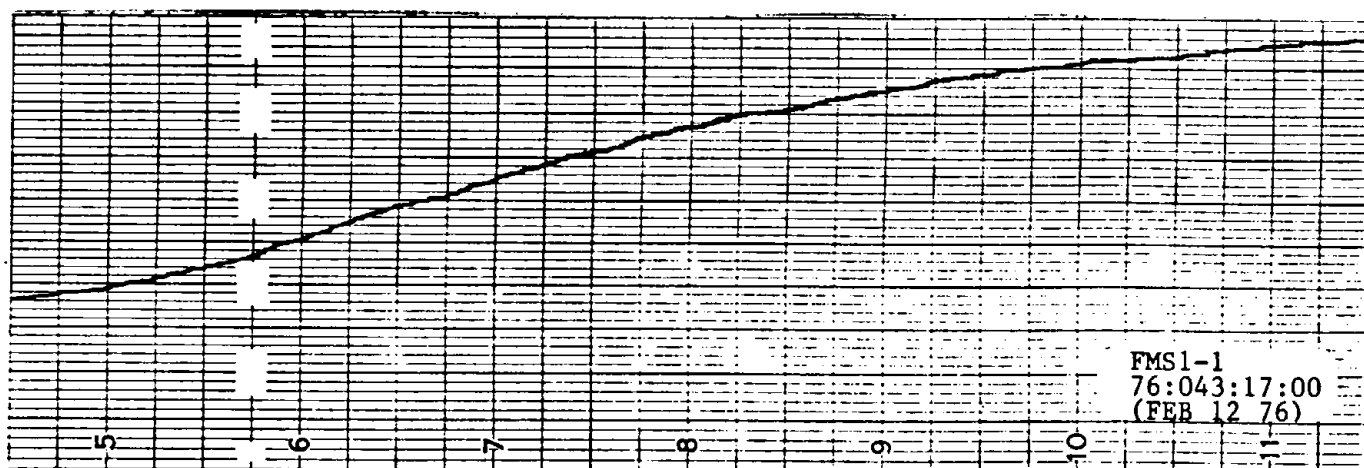


Table of FMSI Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	003	Jan. 3 ^{1/}		-.35	*		
	043	Feb. 12 (steepest part)	1700 ($\pm$ 1 day)	6.22	1	0.94 (approx)	.7859
	062-064	Mar. 2-4	1434	0.21	*		
	209	Jul. 27	1433	0.17	2	0.92	.5613

^{1/}Oscillatory pattern of trace on annual plot for January - February and November 1976 probably caused by "wobble" of strip chart near end of record.

*Refer to annual plot.

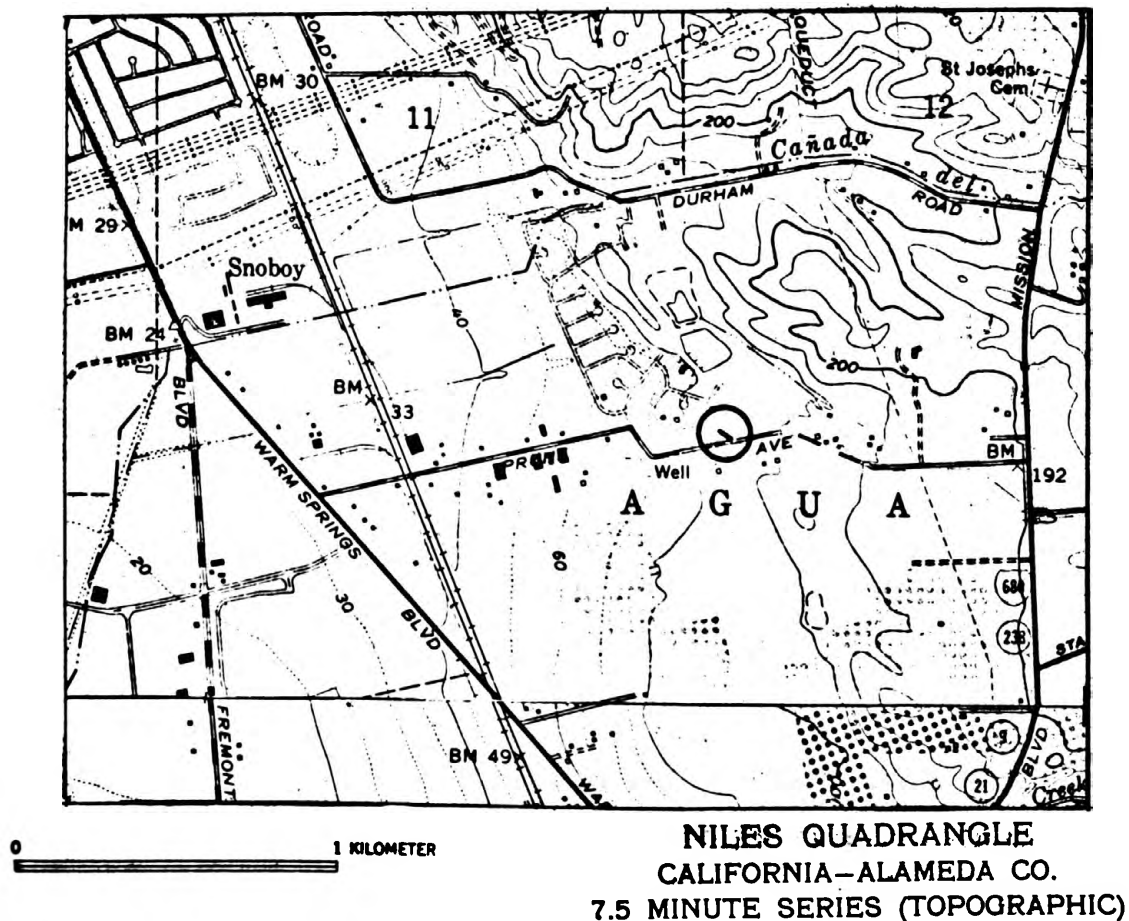


Latitude $37^{\circ} 30.4'$

Position 66.3 km

Longitude $121^{\circ} 55.8'$ 10 meter wire, $\theta=30^{\circ}$

The Fremont (Prune Avenue) creepmeter was installed during June, 1969, on the Hayward fault at a site 66.3 km southeast of Pinole Point on San Pablo Bay. The installation consists of a single wire buried a few centimeters below the surface on a broad, southwest-facing scarp. Creep activity at this site is composed of wild seasonal fluctuations of up to 20 mm in amplitude, superimposed on a background of gradual right-lateral slip. The average creep rate is about 3 mm/yr. The instrument crosses a subsidiary fracture with a broad slip zone that is dominated by activity on a separate fault trace about 20 meters to the southeast. Occasional events of both right- and left-lateral offset are occasionally observed.



XFP1 CORRECTED CREEPMETER READINGS (mm)

271

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					6.91	
FEB 18	1.02		1.02		7.93	
MAY 7	-4.63		-3.61		3.30	
AUG 23	-1.24		-4.85		2.06	
NOV 29	-1.11		-5.96		0.95	
<u>1977</u>						
FEB 14	-0.94		-0.94		0.01	
APR 21	-1.36		-2.30		-1.35	
JUL 29	0.75		-1.55		-0.60	
NOV 15	-0.51		-2.06		-1.11	

XFP1

1976

CREEP IN MM

20.00

15.00

10.00

5.00

0.00

-5.00

-10.00

J

F

M

A

M

J

J

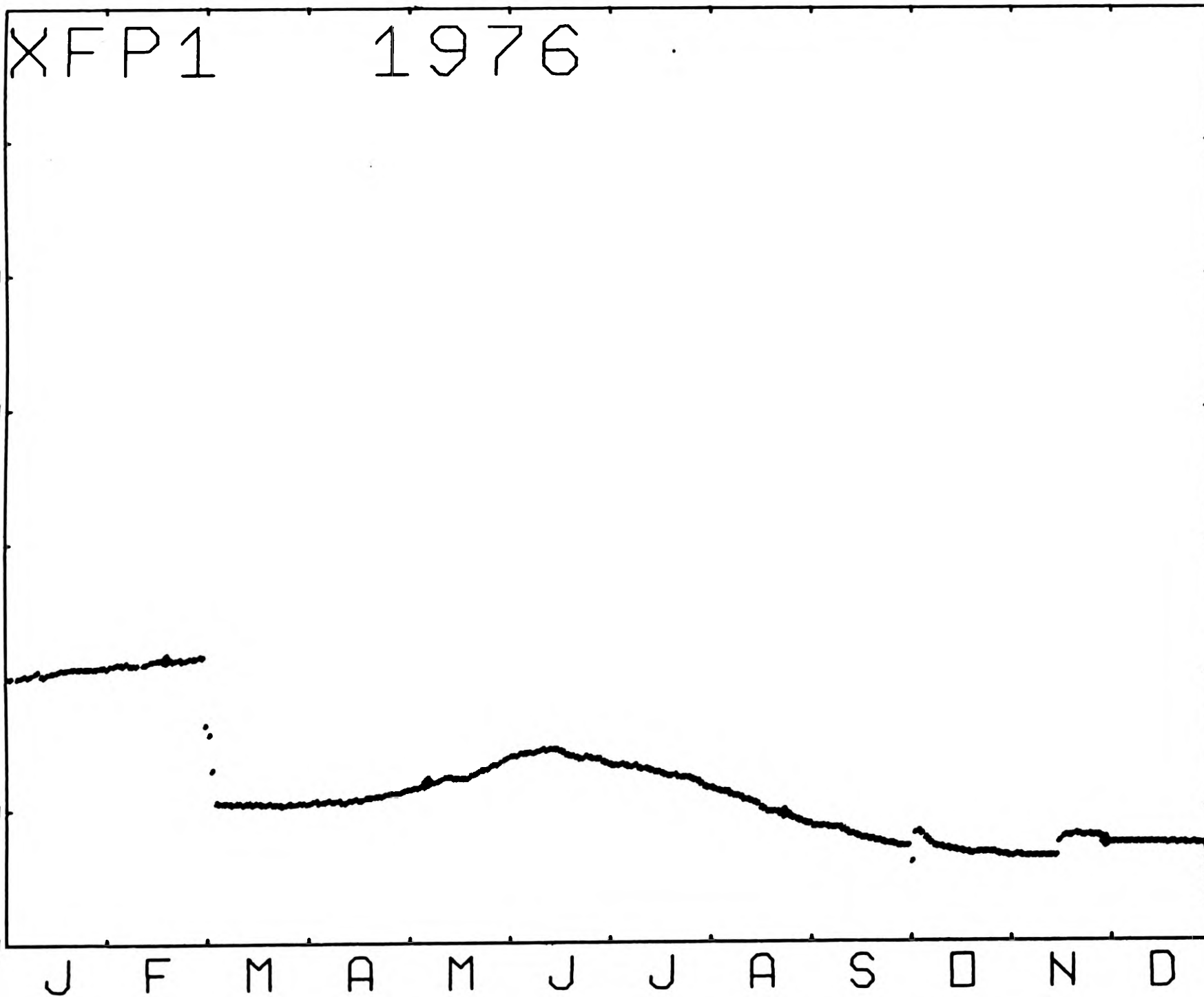
A

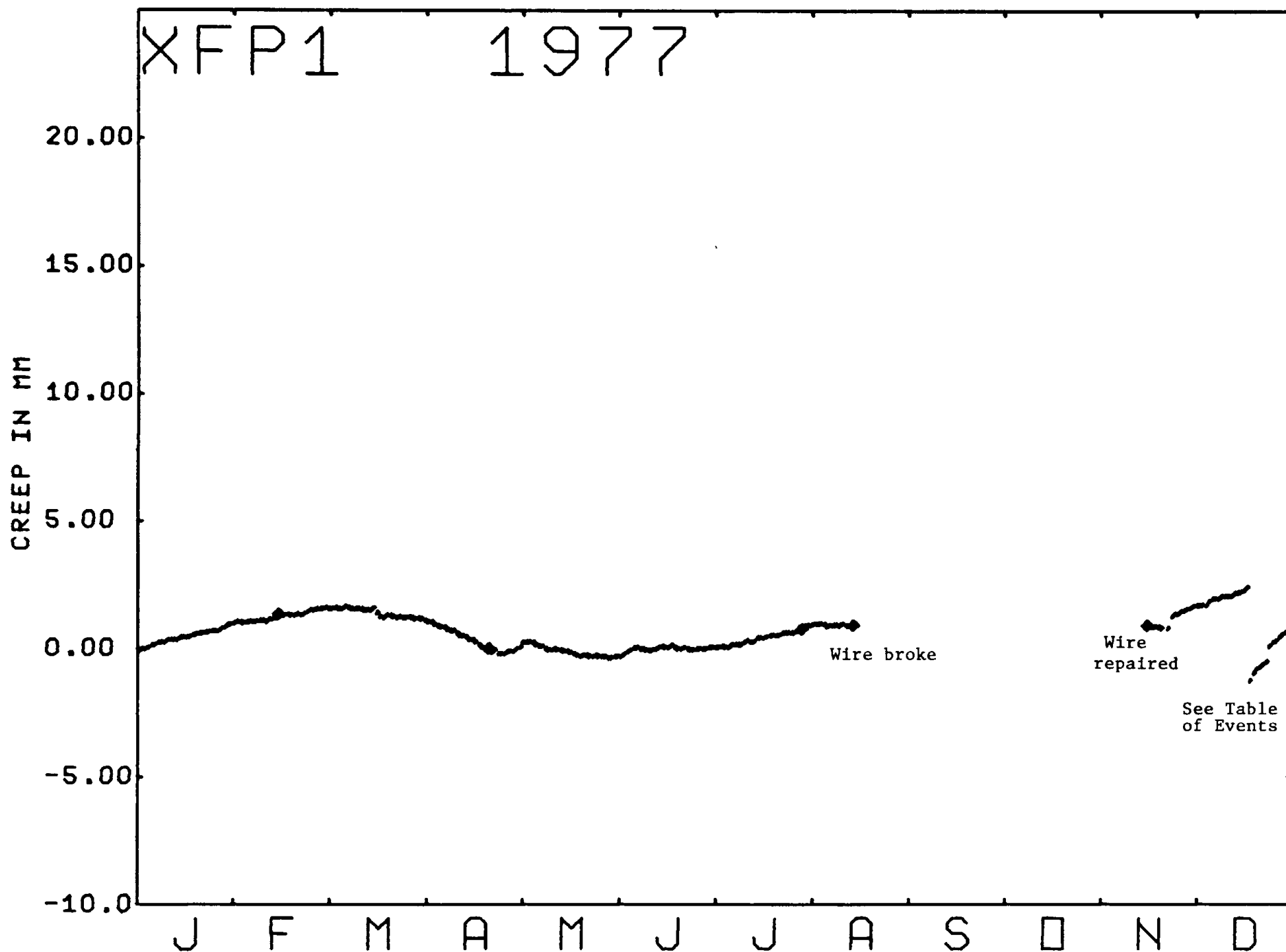
S

O

N

D





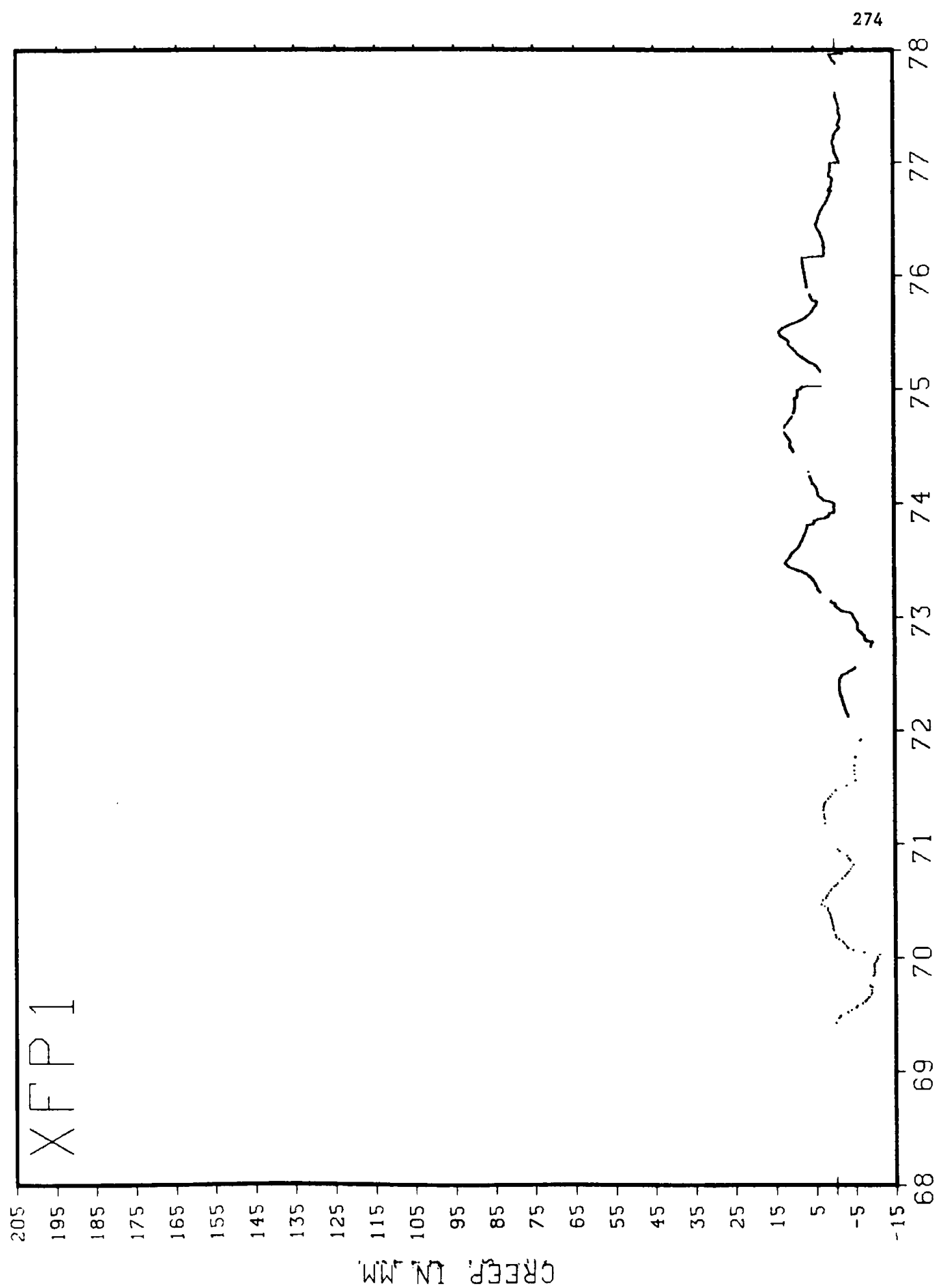


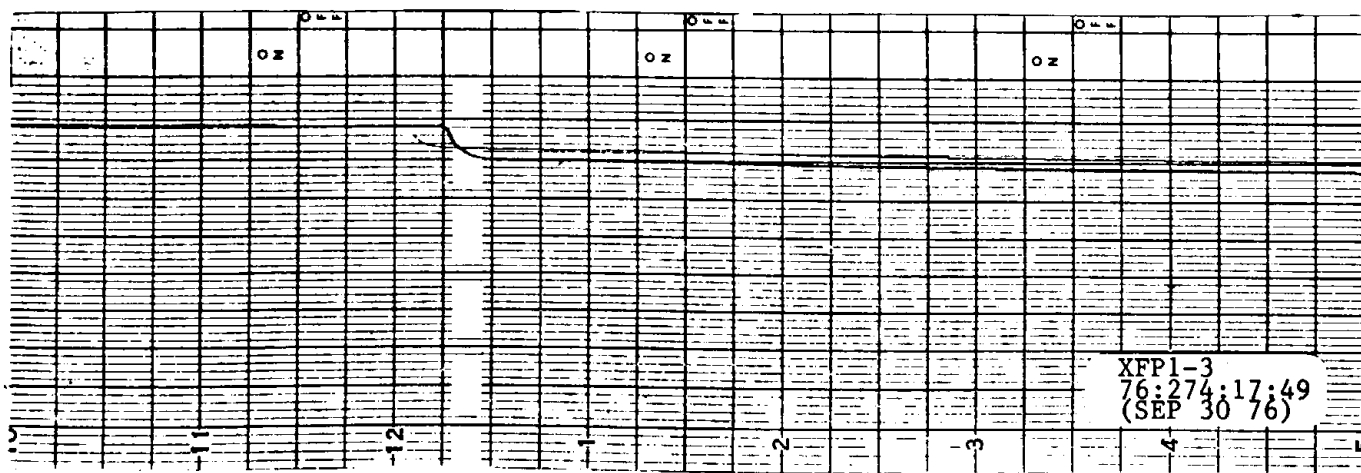
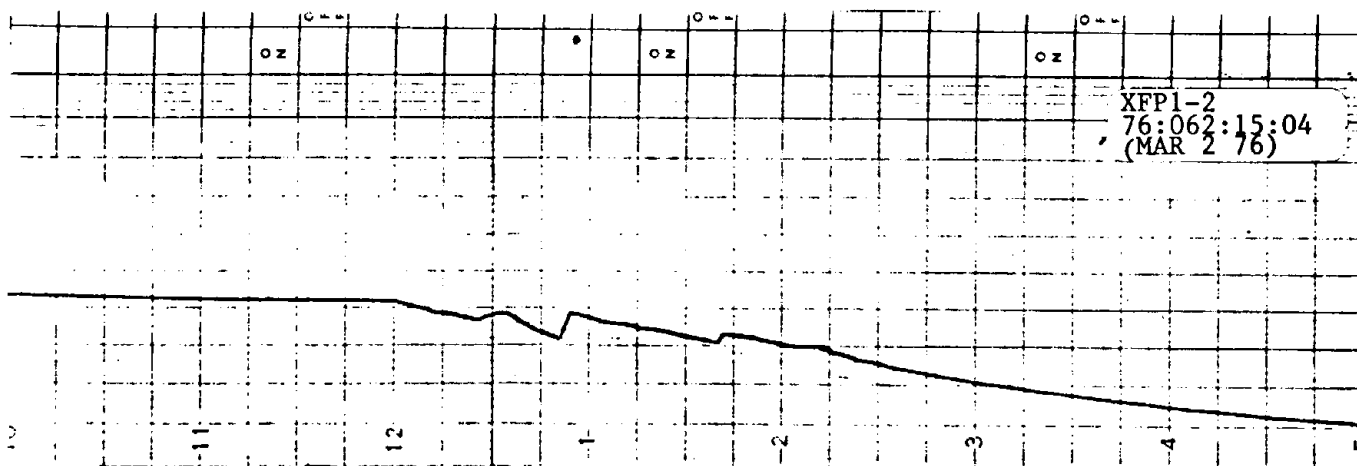
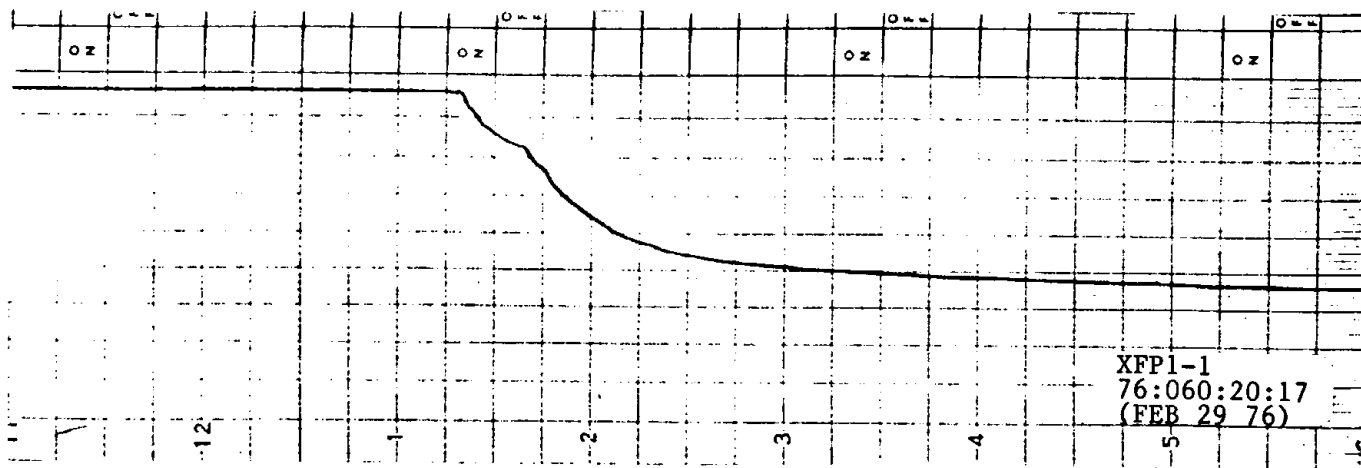
Table of XFPI Events

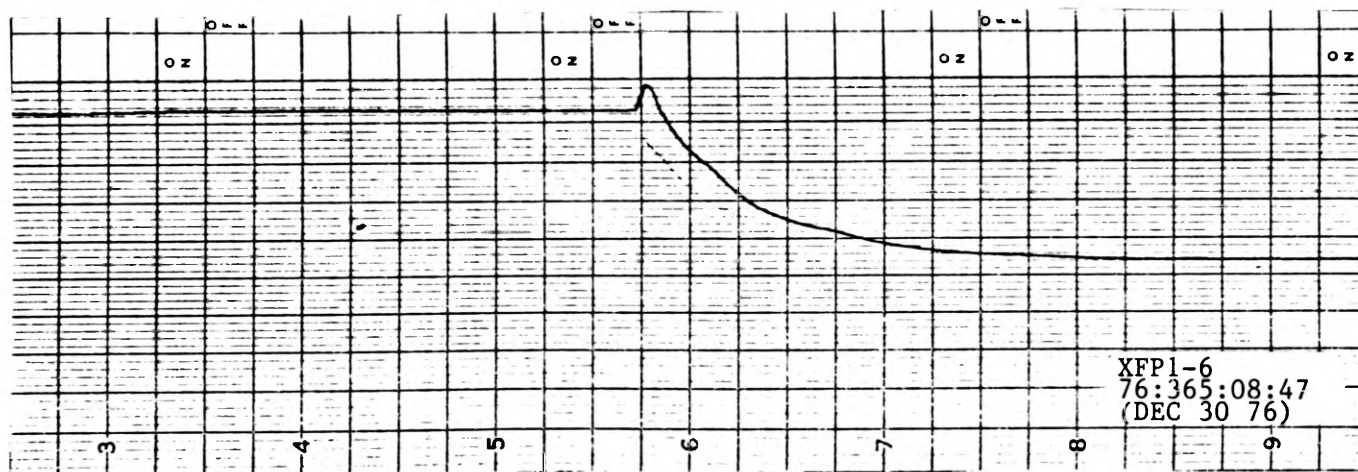
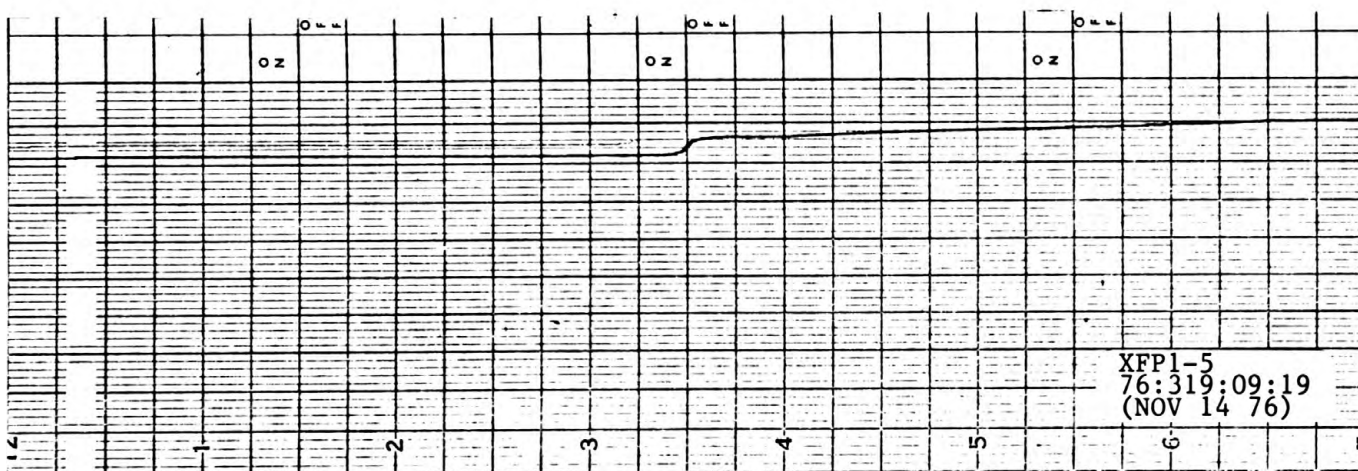
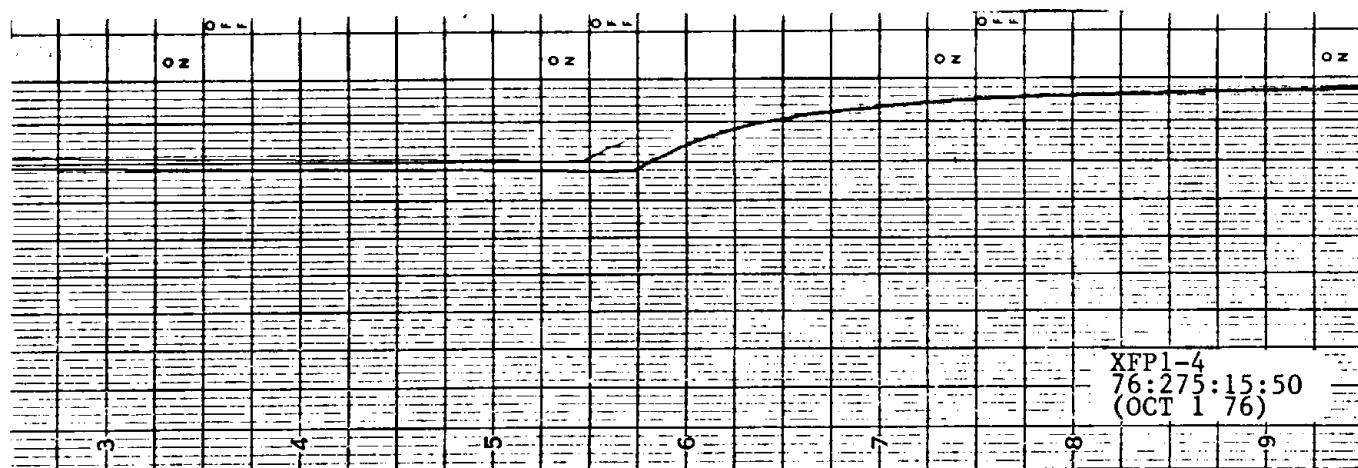
275

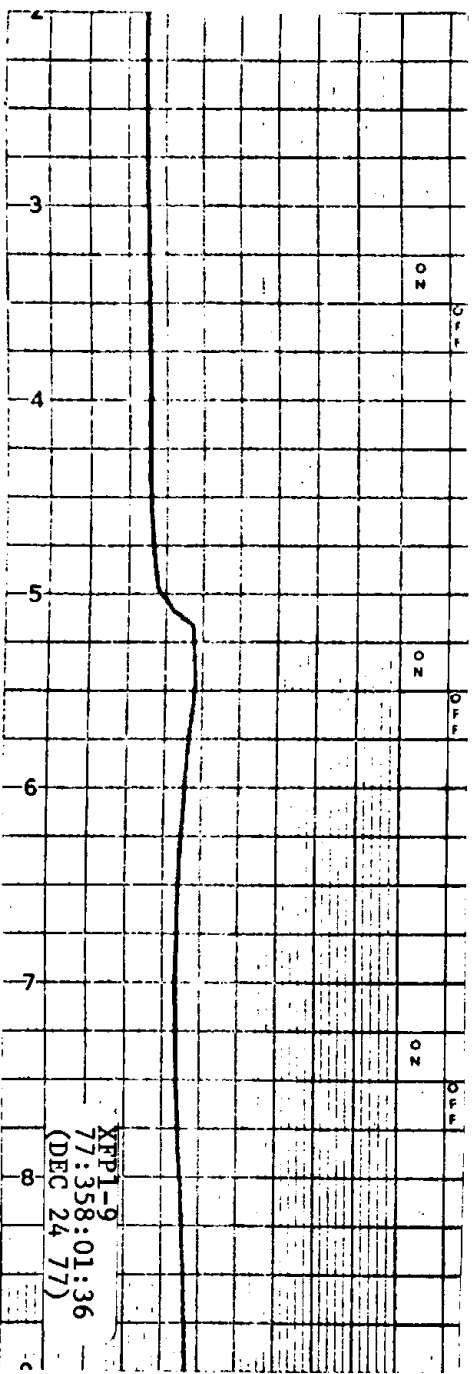
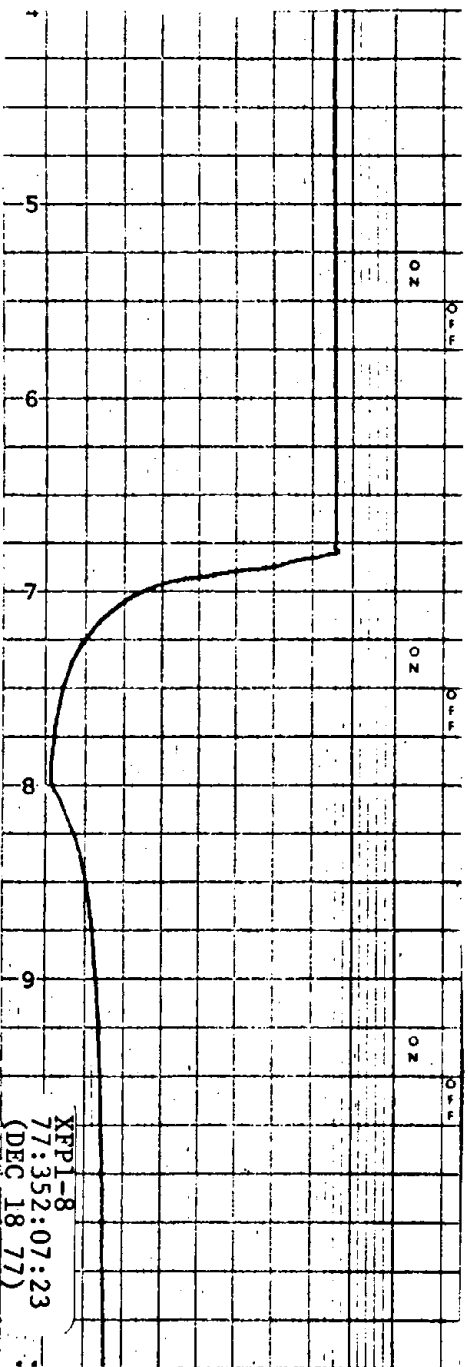
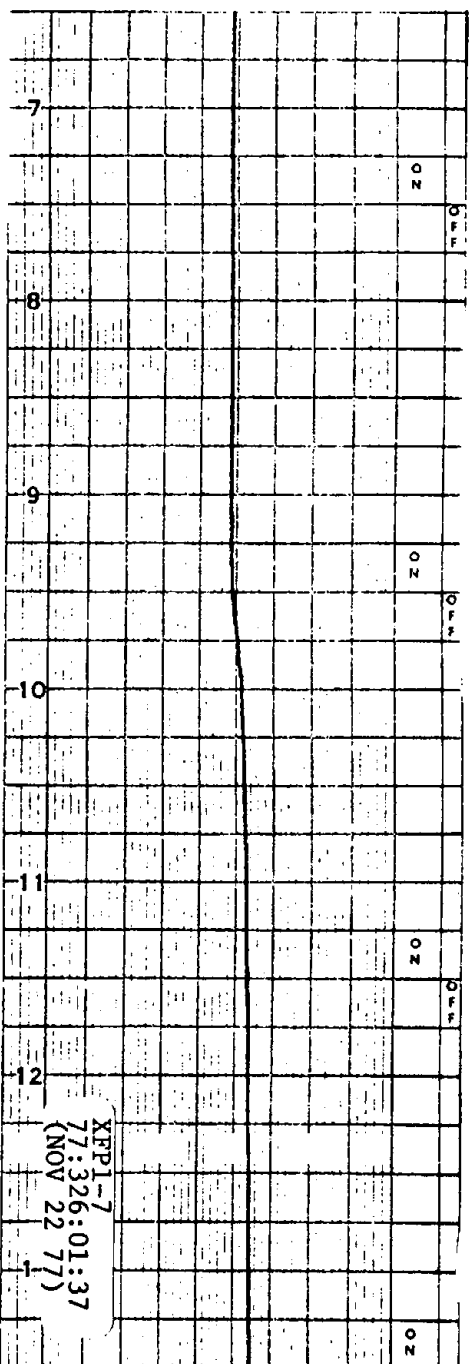
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	060	Feb. 29	2017	-3.04	1	1.00	.5715
	062	Mar. 2	1504	-2.40	2	1.00	.5715
	274	Sep. 30 ^{1/}	1749	-0.56	3	1.00	.6815
	275	Oct. 1	1550	1.17	4	1.00	.6815
	319	Nov. 14	0919	0.71	5	1.00	.6815
	365	Dec. 30	0847	-2.22	6	1.00	.5304
1977	326	Nov. 22	0137	0.55	7	1.00	.5773
	352	Dec. 18	0723	-3.47	**8	1.00	.5773
	358	Dec. 24	0136	0.47	**9	1.00	.5773

^{1/} Apparent left-lateral slip event onset is approximately coincident with beginning of rainfall.

** Rainfall







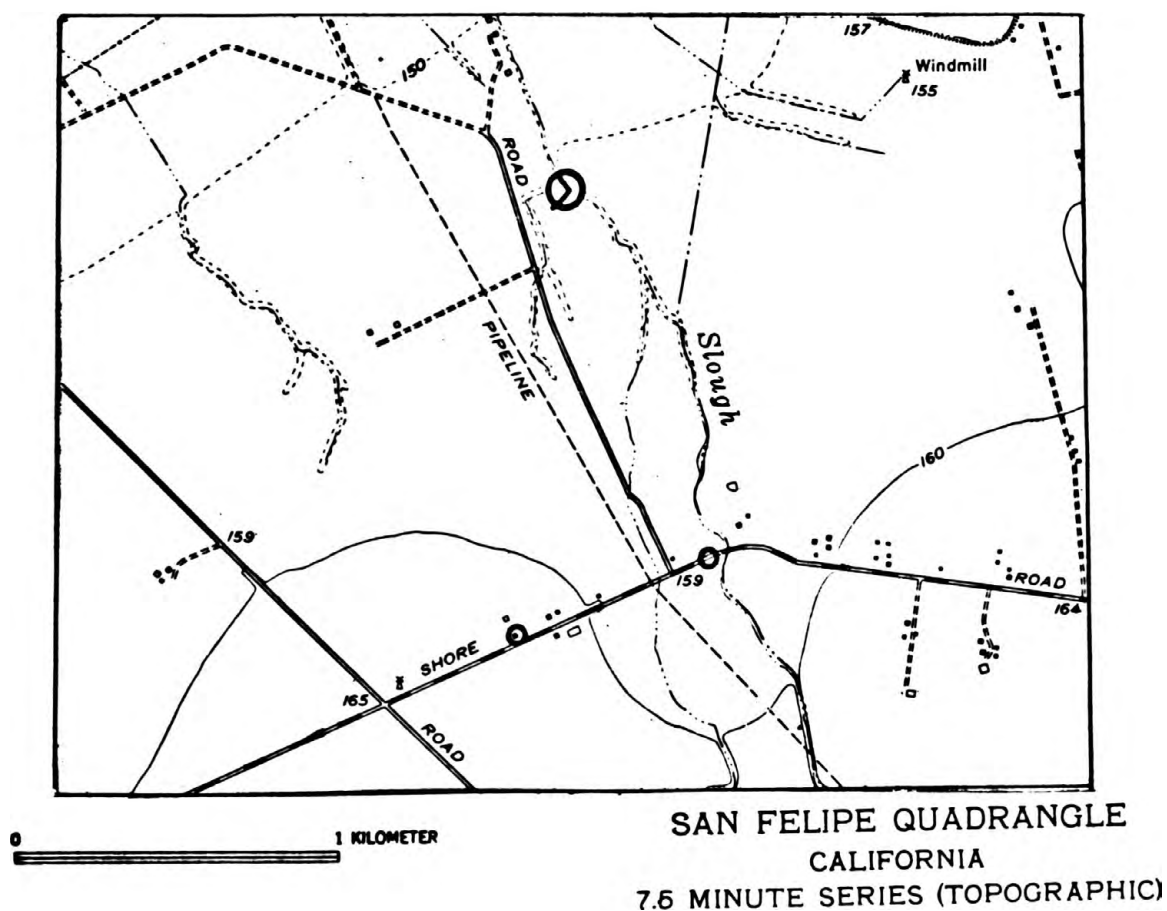
STATION LKE

279

Latitude $36^{\circ} 57.2'$
Longitude $121^{\circ} 26.9'$

Position 107.9 km
12 meter rods, $\theta=45^{\circ}$

The Lake Road creepmeters were installed during June, 1969, on the Calaveras fault at a site 107.9 km southeast of Danville, California, and 12.1 km northwest of Hollister. The installation consists of a pair of rods in a "V" configuration and an extra (extension) rod (3 rods, total) buried a few centimeters below the surface in alluvium, on the southwest side of a narrow sag pond. Creep activity at this site is composed of occasional, distinct events of up to 8.5 mm in amplitude, superimposed on a background of gradual right- and left-lateral drift with a seasonal variation. The average creep rate is about 9 mm/yr on the first pair ("V") of rods, and about 14 mm/yr on the additional extension rod. The instruments were destroyed during excavation work for draining the adjacent sag pond during the spring of 1976.



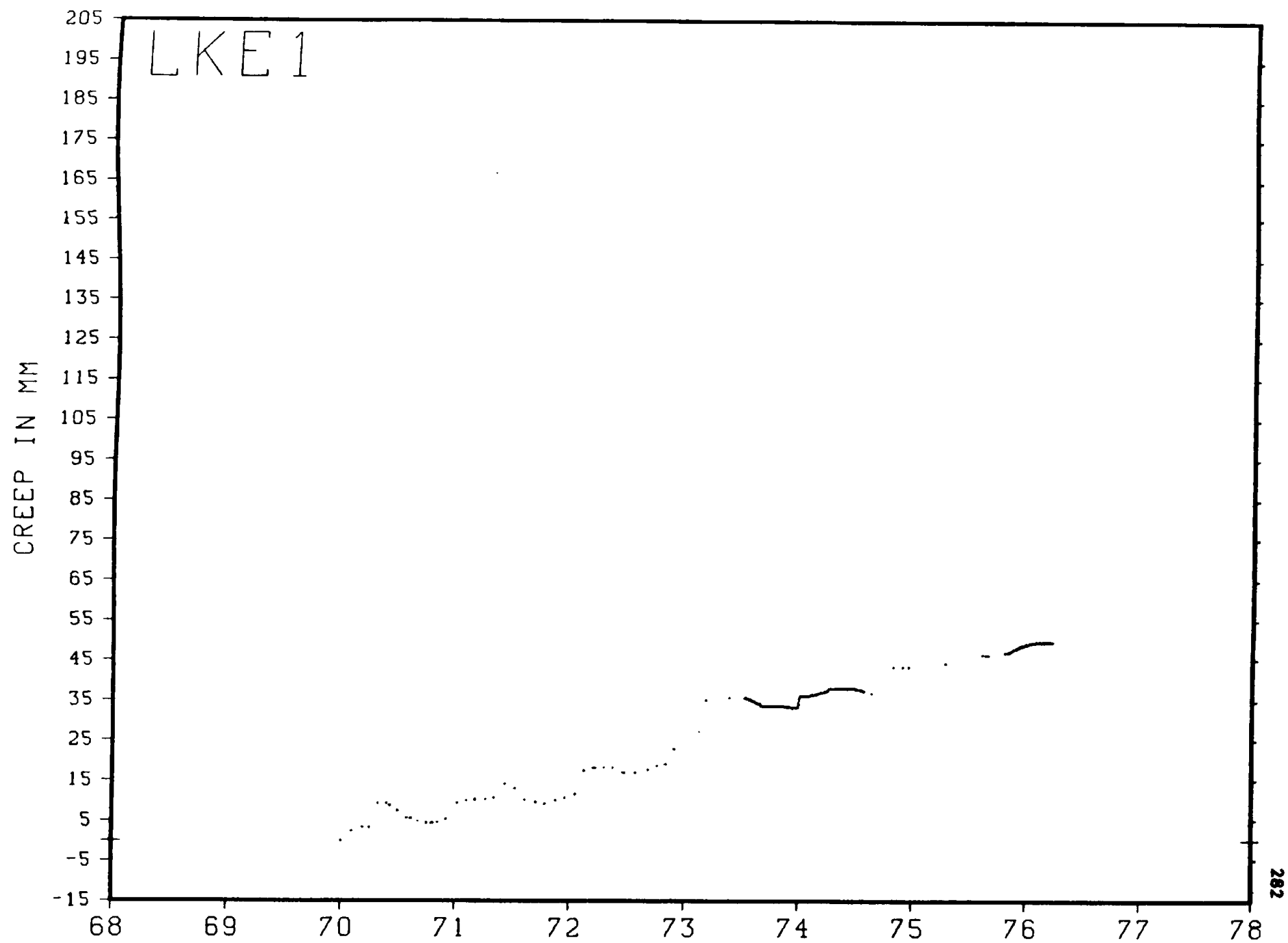
280

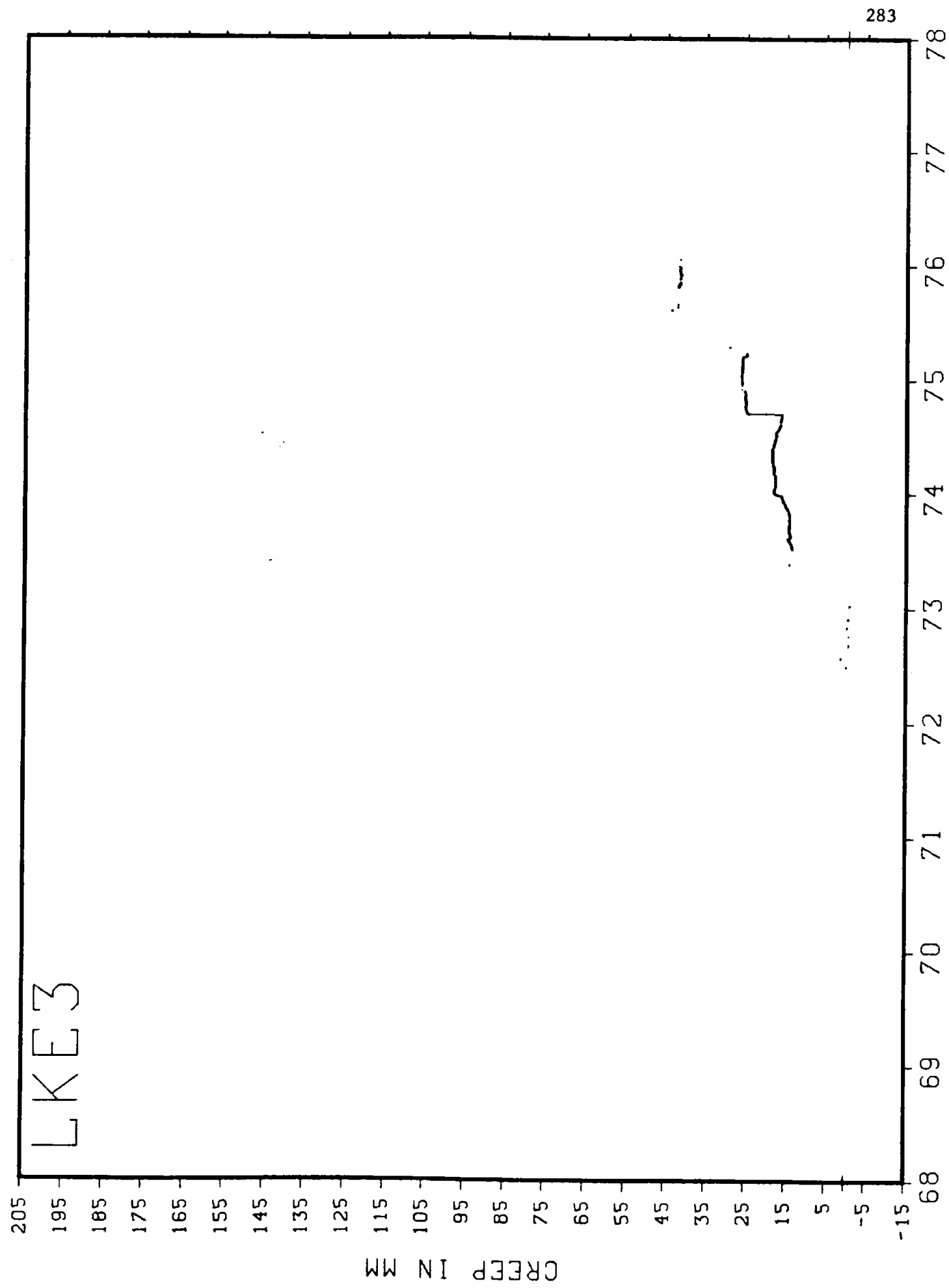
<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					47.91	55.02
JAN 20	1.65		1.65		49.56	
MAR 23	0.16	5.261	1.81	5.261	49.72	60.28
(Station Destroyed)						

LKE3 CORRECTED CREEPMETER READINGS (mm)

281

<u>Date</u>	<u>Change</u>	<u>Yearly Cumulative</u>	<u>Cum to Date</u>
	X C	X C	X C
<u>1976</u>			41.88
JAN 20	0.00	0.00	41.88
MAR 23	-12.205	-12.205	29.67
(Station Destroyed)			





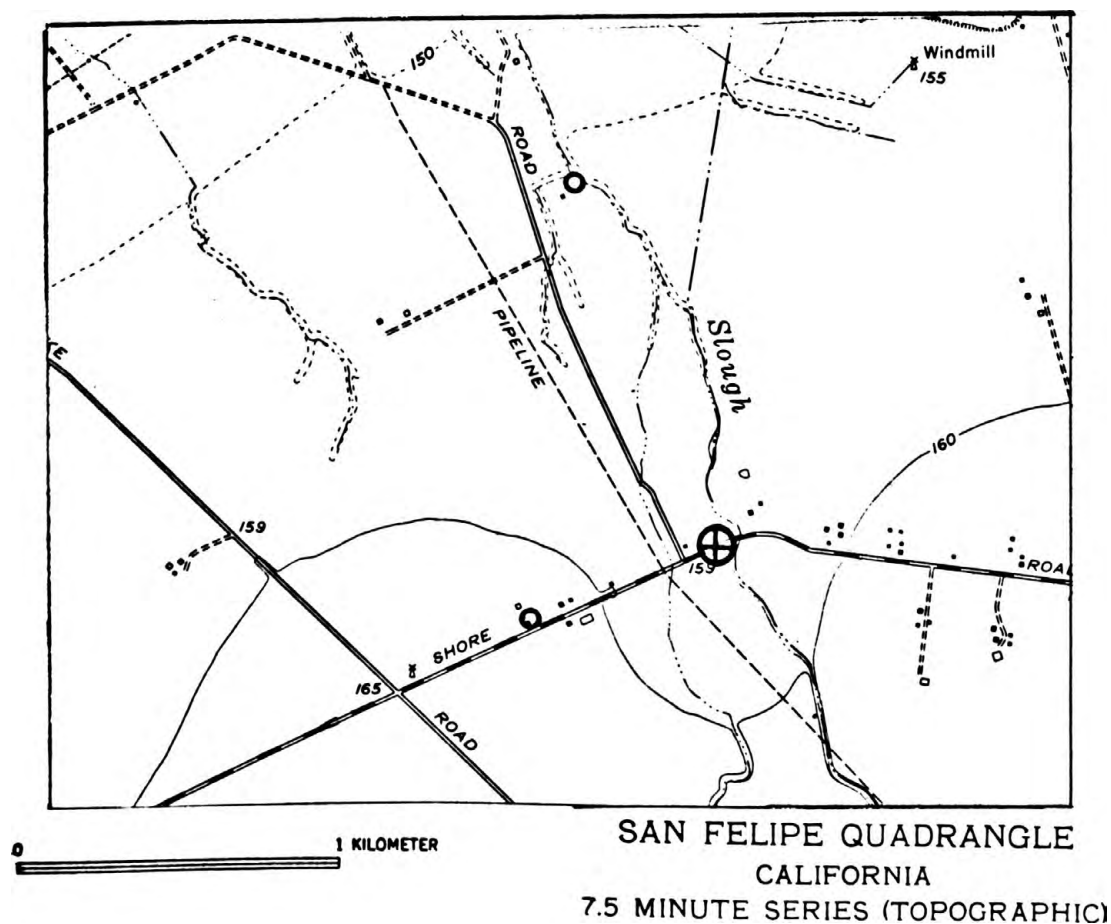
STATION SHR

Latitude $36^{\circ} 56.6'$

Position 109.1 km

Longitude $121^{\circ} 26.7'$ 6 meter rods, $\theta=45^{\circ}$

The Shore Road creepmeters were installed during June, 1971, on the Calaveras fault at a site 10.9 km northwest of Hollister, California. The installation consists of a pair of crossed rods buried a few centimeters below the surface of the pavement and shoulder of Shore Road in Hollister Valley. Creep activity at this site is composed of distinct events of up to 9 mm in amplitude, superimposed on a background of zero to slight right-lateral slip. The average creep rate is about 12 mm/yr.

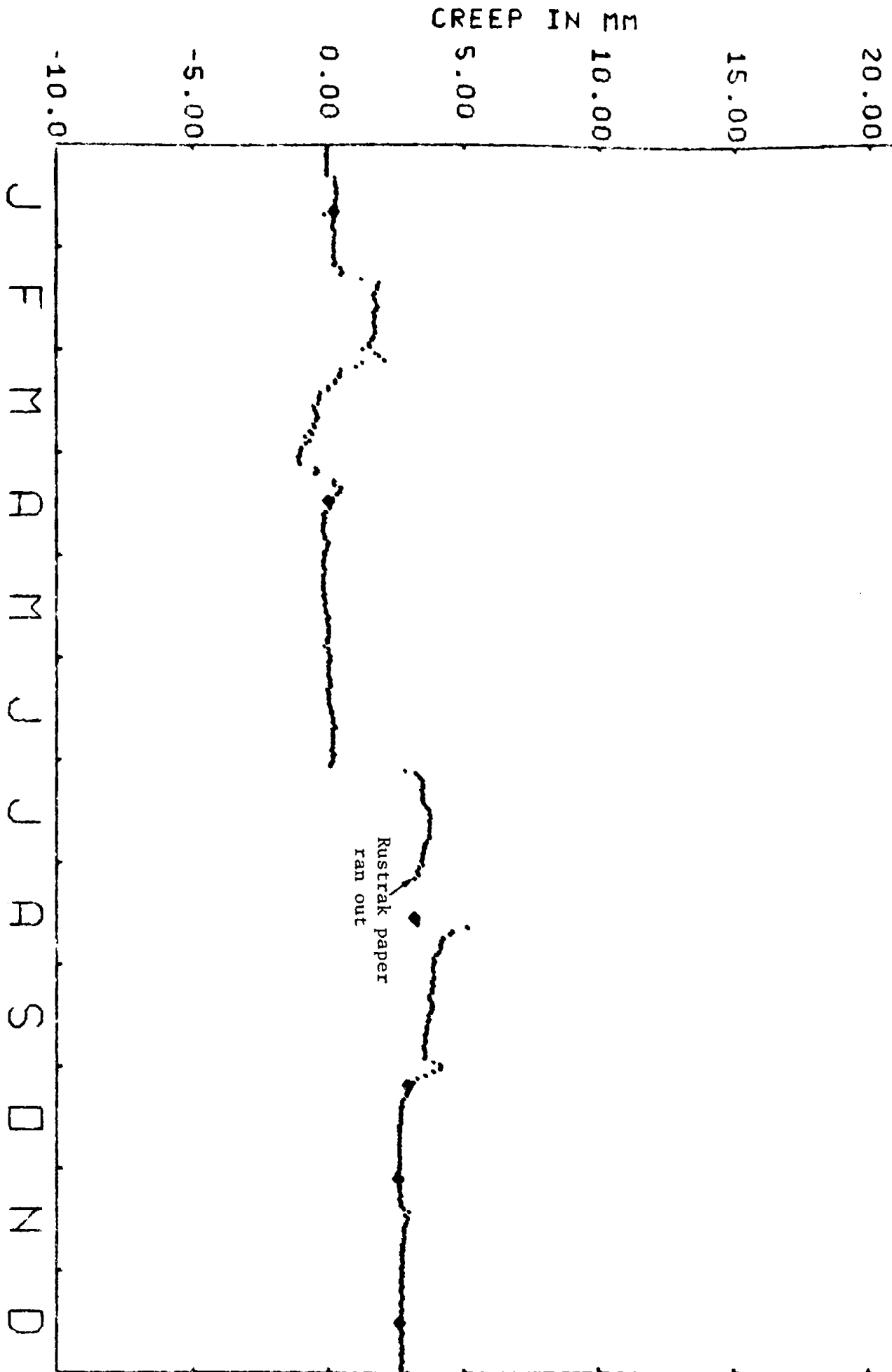


SHR CORRECTED CREEPMETER READINGS (mm)

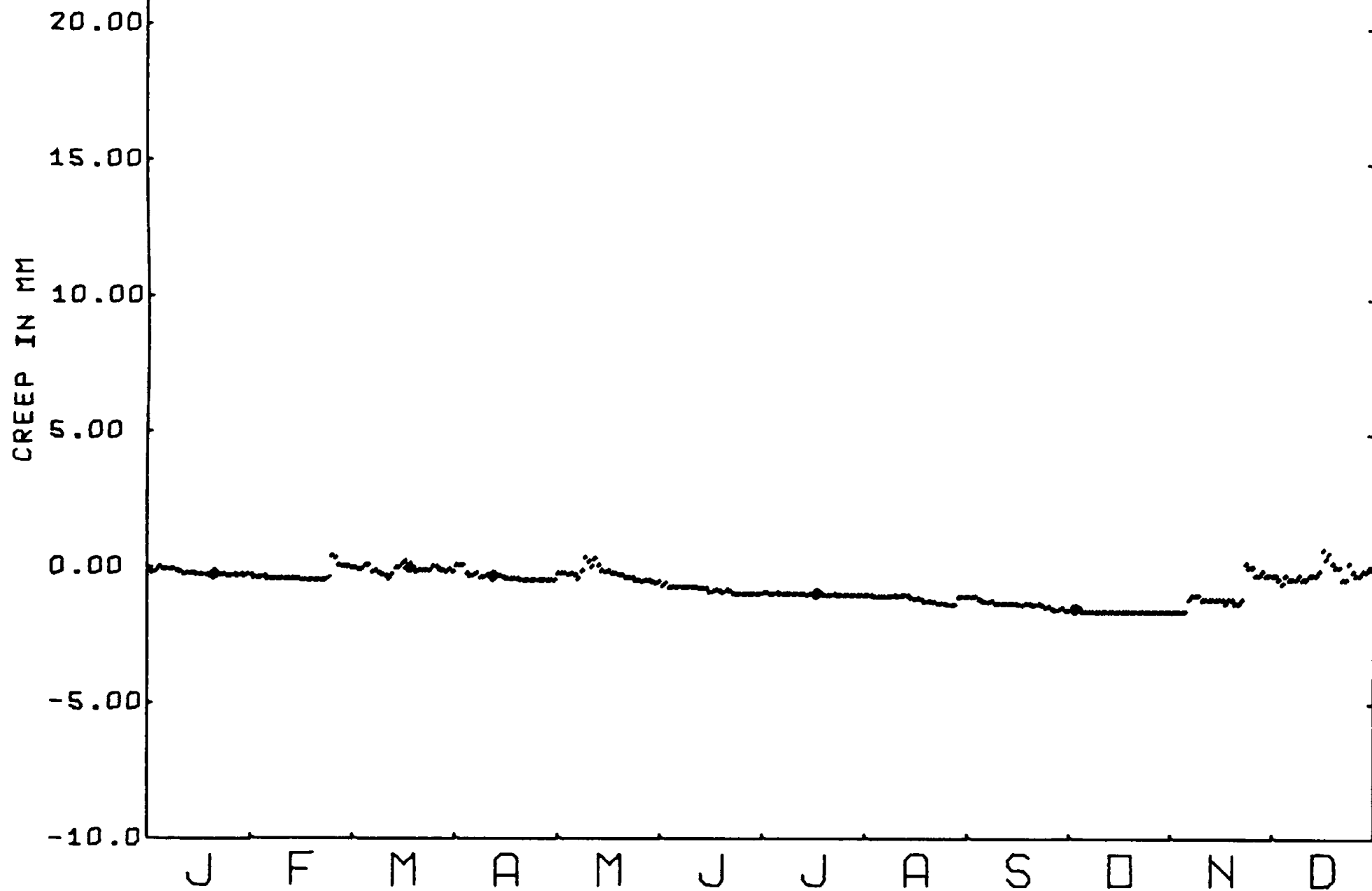
285

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					48.99	50.03
JAN 20	0.22	-0.25	0.22	-0.25	49.21	49.78
APR 15	-0.18		0.04		49.03	
JUN 25	0.35		0.39		49.38	
AUG 17	2.79	2.01	3.18	1.76	52.17	51.79
OCT 6	-0.25	3.22	2.93	4.98	51.92	55.01
NOV 3	-0.35	0.25	2.58	5.23	51.57	55.26
DEC 16	0.07	0.16	2.65	5.39	51.64	55.42
<u>1977</u>						
JAN 20	0.16	0.31	0.16	0.31	51.79	55.73
MAR 19	0.24		0.40		52.03	
APR 13	-0.31	0.11	0.09	0.42	51.72	55.84
JUN 15	-0.54	0.09	-0.45	0.51	51.18	55.93
JUN 20	0.00		-0.45		51.18	
JUN 23	-0.13		-0.58		51.05	
JUN 28	0.00		-0.58		51.05	
JUL 9	-0.01		-0.59		51.04	
JUL 13	-0.04		-0.63		51.00	
JUL 18	0.10	0.64	-0.53	1.15	51.10	56.57
AUG 11	-0.19	0.31	-0.72	1.46	50.91	56.88
OCT 3	-0.39	0.90	-1.11	2.36	50.52	57.78
OCT 9	0.00		-1.11		50.52	
NOV 16	0.33	0.79	-0.78	3.15	50.85	58.57

SHR1 1976



SHR1 1977



205

195

185

175

165

155

145

135

125

115

105

95

85

75

65

55

45

35

25

15

5

-5

-15

SHR1

CREEP IN MM

68

69

70

71

72

73

74

75

76

77

78

288

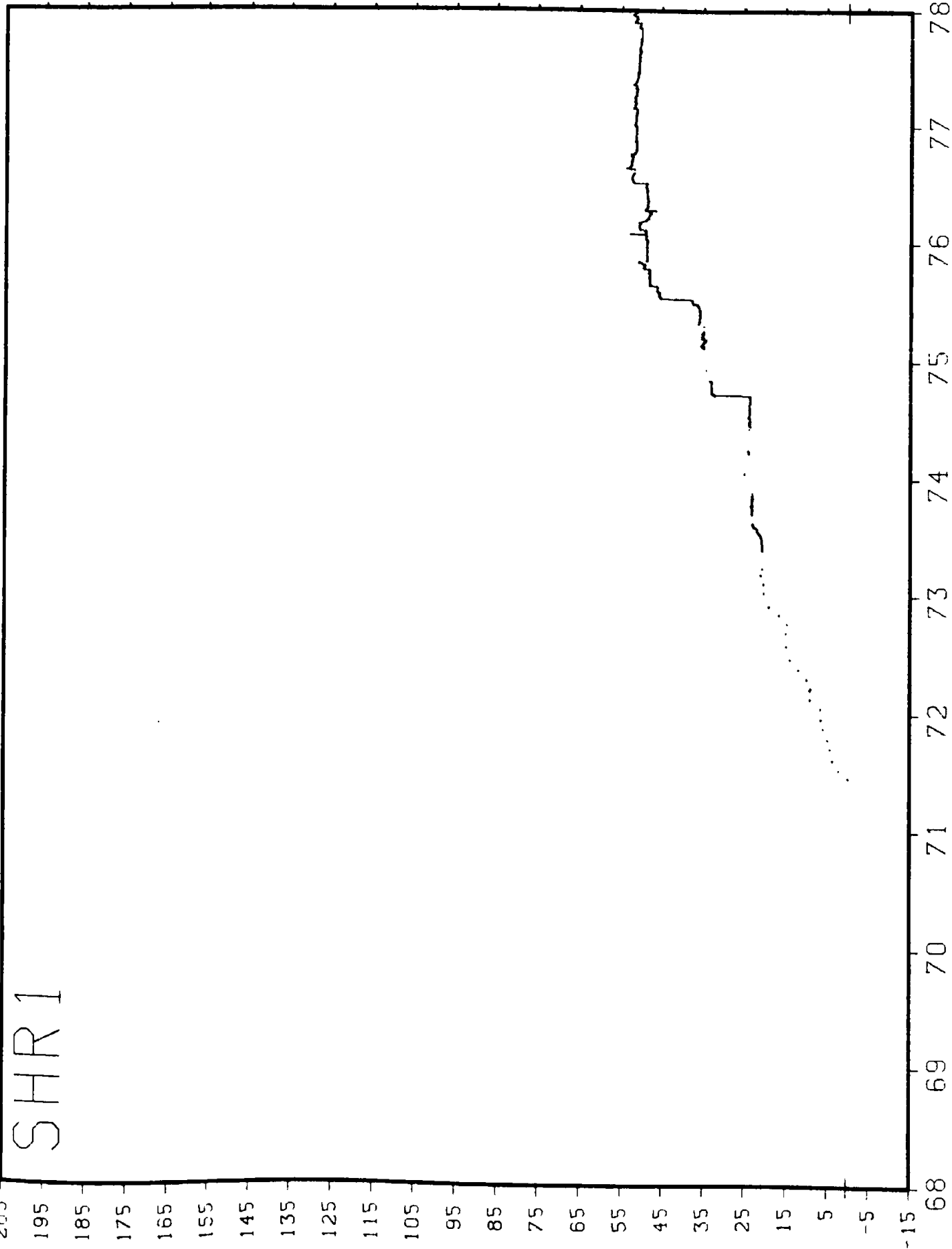


Table of SHRI Events

289

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	009	Jan. 9	1113	0.32	*		
	037	Feb. 6		0.27	*		
	039-041	Feb. 8-10	1902	1.40	*		
	060	Feb. 29	2007	-0.26	*		
	061-064	Mar. 1-4	0211	0.79	*		
	064-066	Mar. 4-6	1415	-1.62	*		
	095	Apr. 4	0323	0.62	*		
	099	Apr. 8	1328	0.64	*		
	101	Apr. 10		0.27	*		
	185	Jul. 3	1448	3.38	1	0.90	1.41
	194-197	Jul. 12-15		0.30	*		
	232	Aug. 19	0215	1.92	2	0.90	1.60
	233-242	Aug. 20-29 (10-day surge)	2025	-1.20	*		
	233	Aug. 20 (part of above 10-day surge)	2025	-0.86	3	0.90	1.60
	272-273	Sep. 28-29 ^{1/}	1642	0.43	4	0.90	1.60
	275-285	Oct. 1-11		-1.50	*		
	316	Nov. 11	1923	0.32	5	0.90	0.54
	319	Nov. 14	1757	0.11	6	0.91	0.54

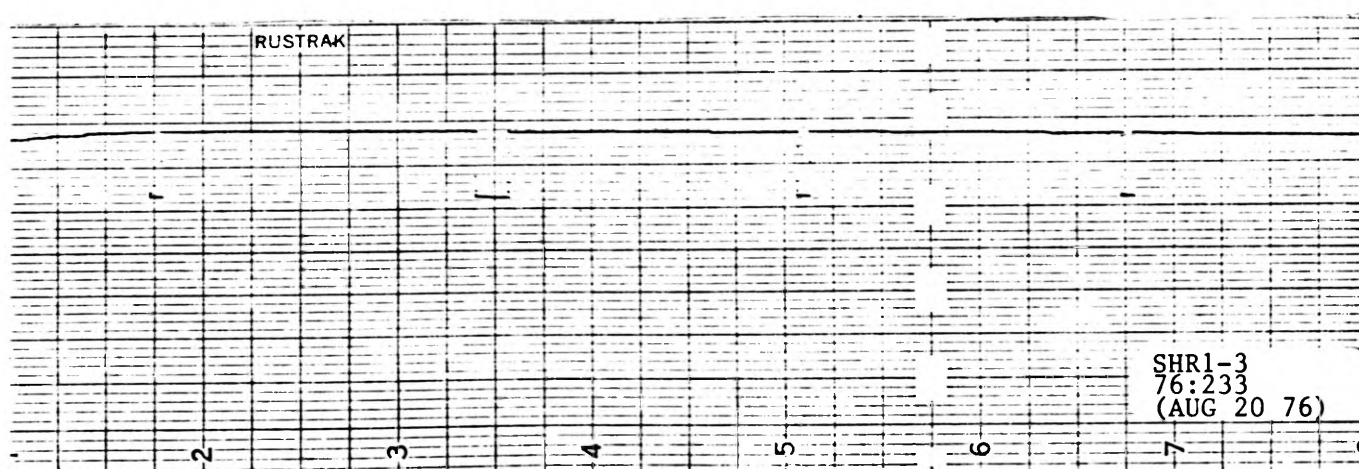
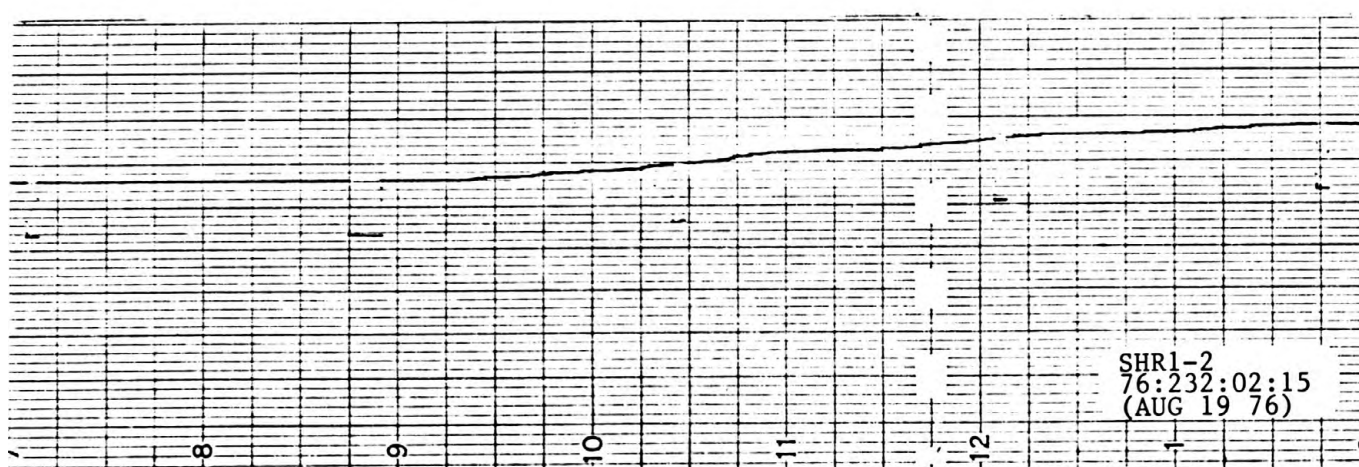
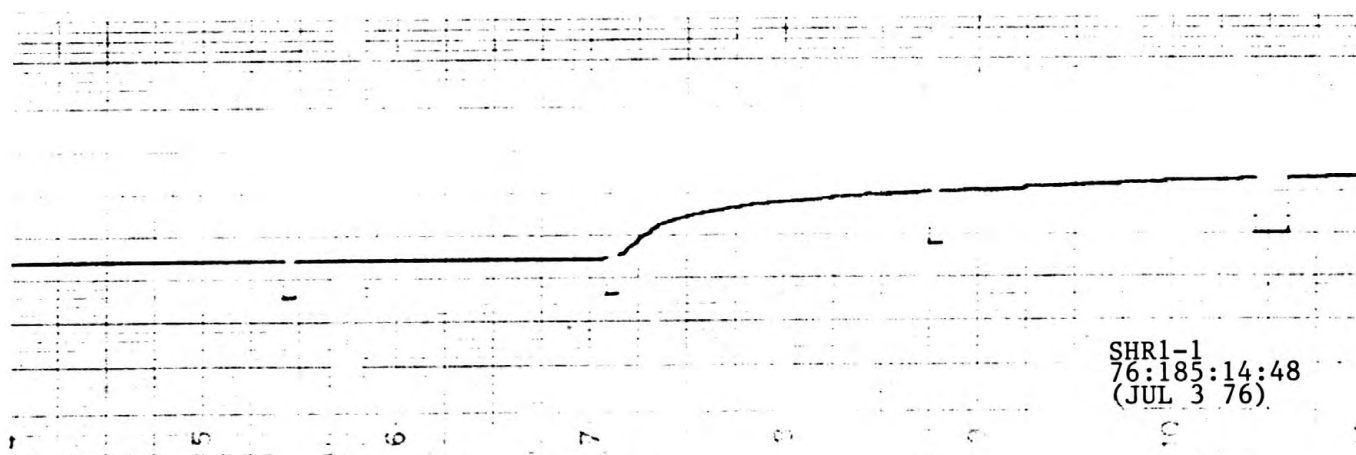
^{1/} Onset of event approximately coincident with beginning of rainfall.

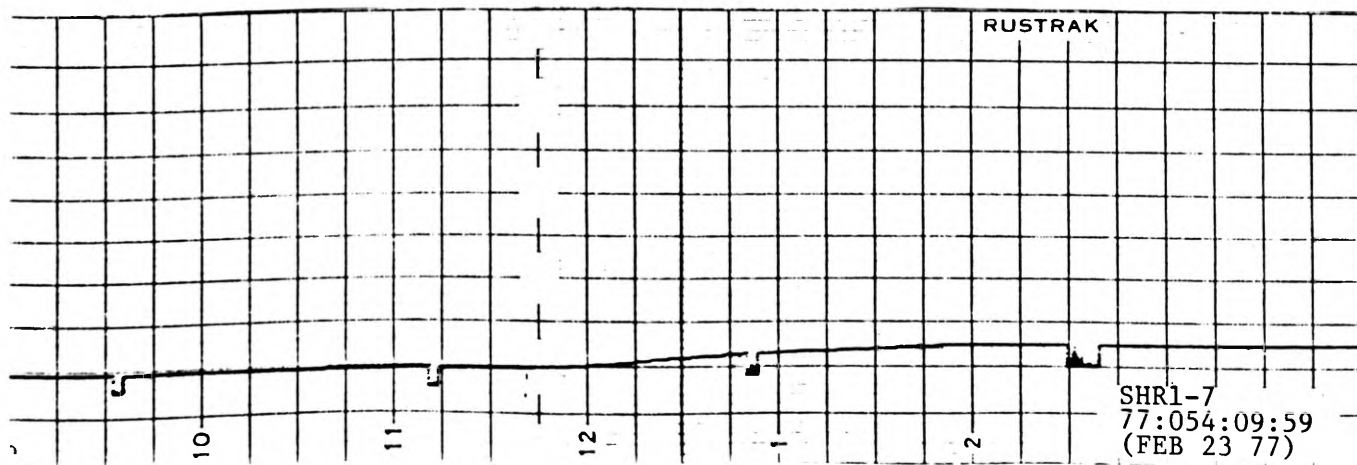
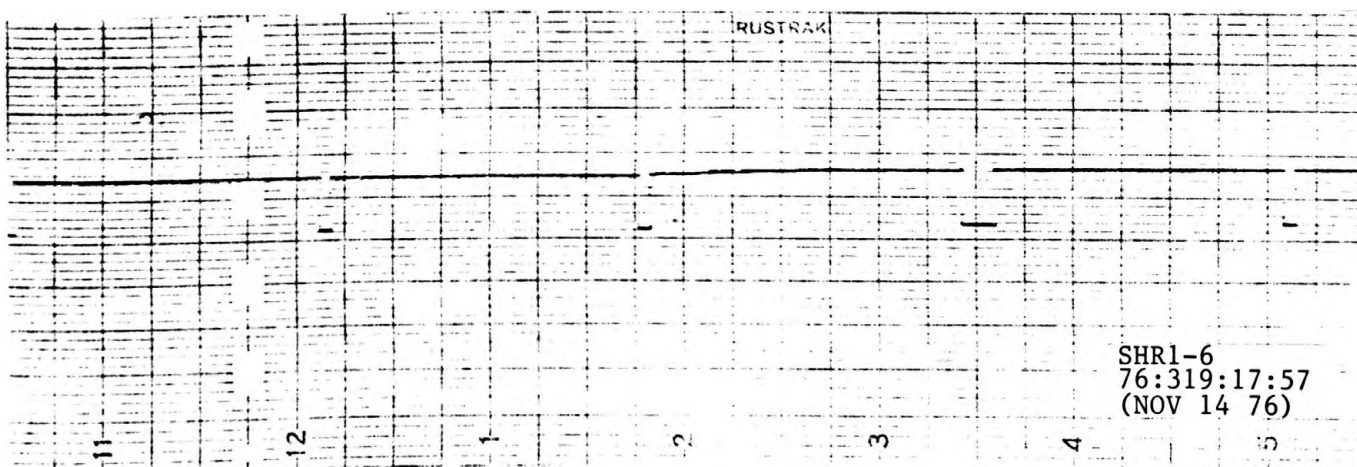
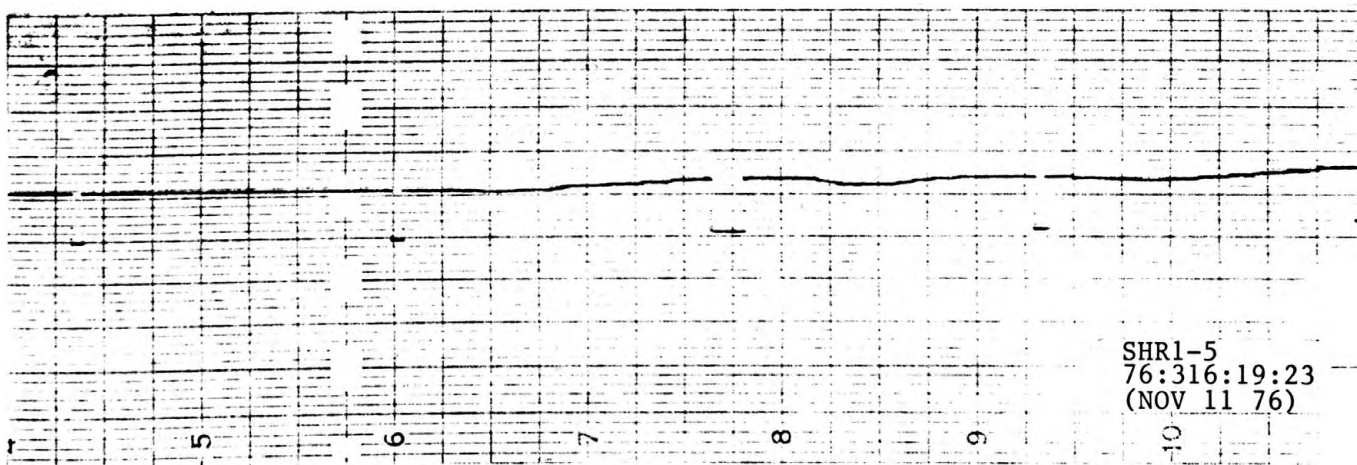
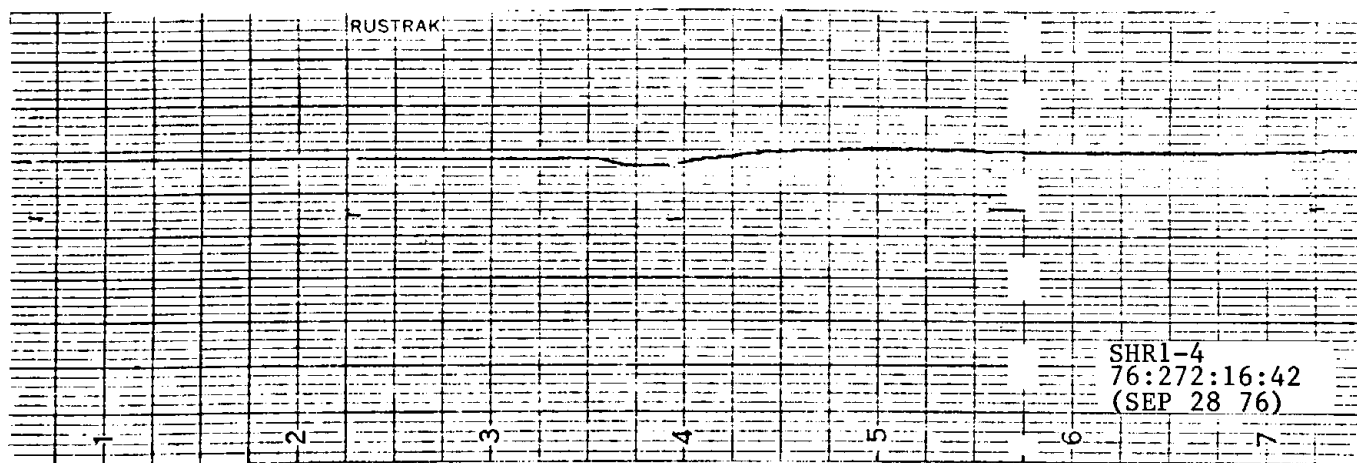
* Refer to annual plot

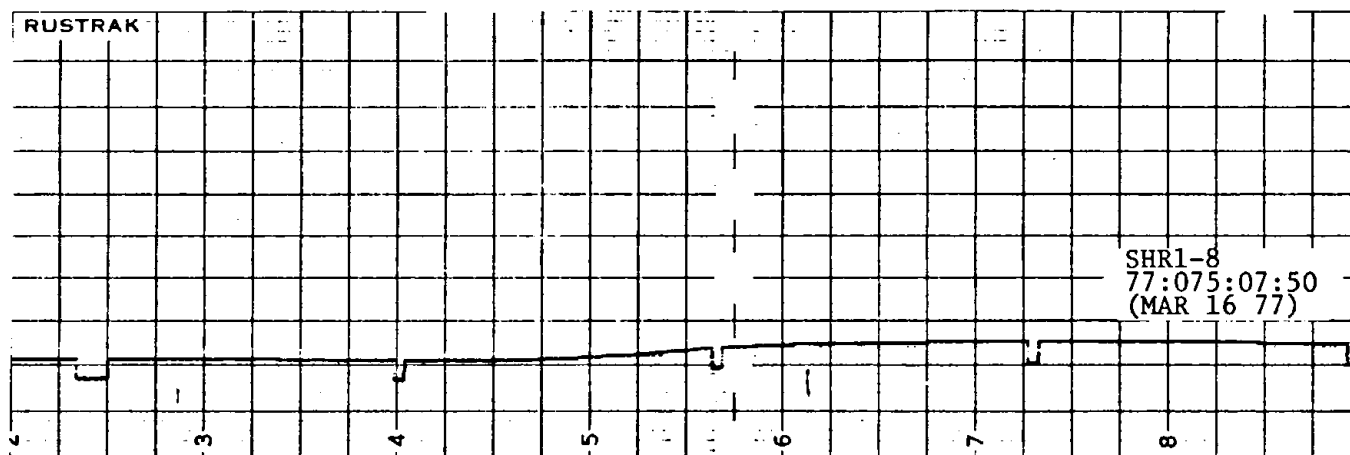
Table of SHRI Events (continued)

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig.no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1977	054	Feb. 23	0959	0.68	7	0.91	1.414
	075	Mar. 16	0750	0.47	8	0.91	1.414
	121	May 1	0102	0.28	9	0.90	1.30
	128	May 8	2141	0.66	10	0.91	1.30
	131	May 11	2229	-.17	11	0.91	1.30
	131	May 11	2342	0.59	11	0.91	1.30
	240	Aug. 28	1106	0.31	12	0.90	1.53
	309	Nov. 5	1137	0.58	13	0.91	1.53
	326	Nov. 22	0519	1.47	14	0.92	1.53
	349	Dec. 15	0848	0.64	15	0.91	1.53
	351	Dec. 17*	0750	0.26	16	0.91	1.53

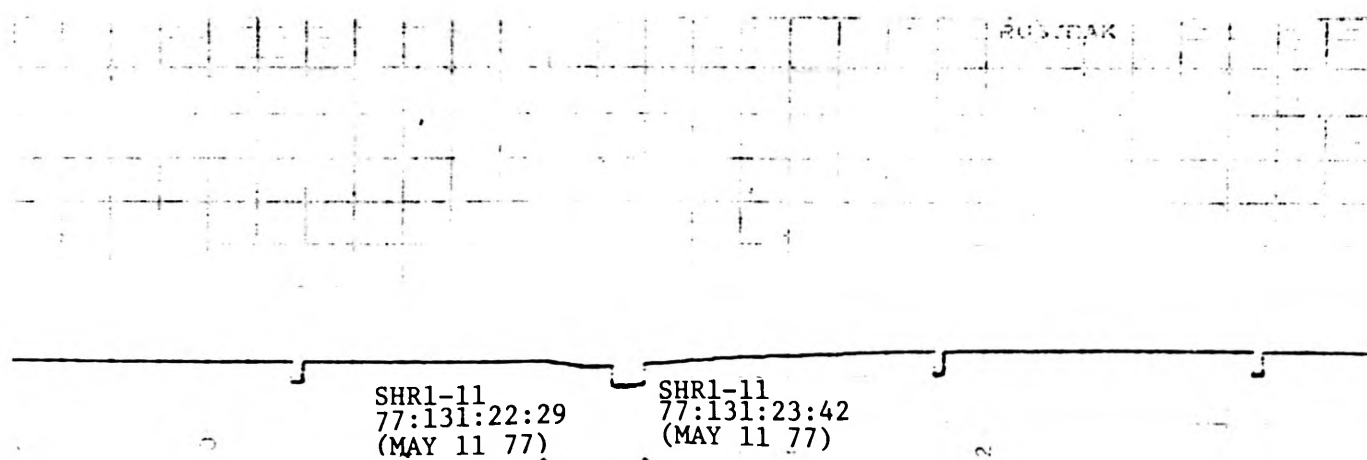
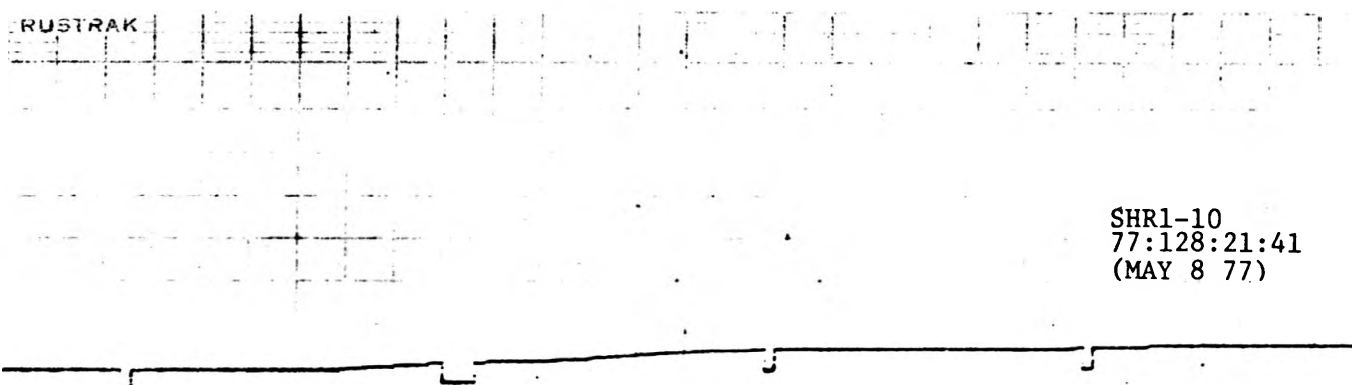
*Rainfall

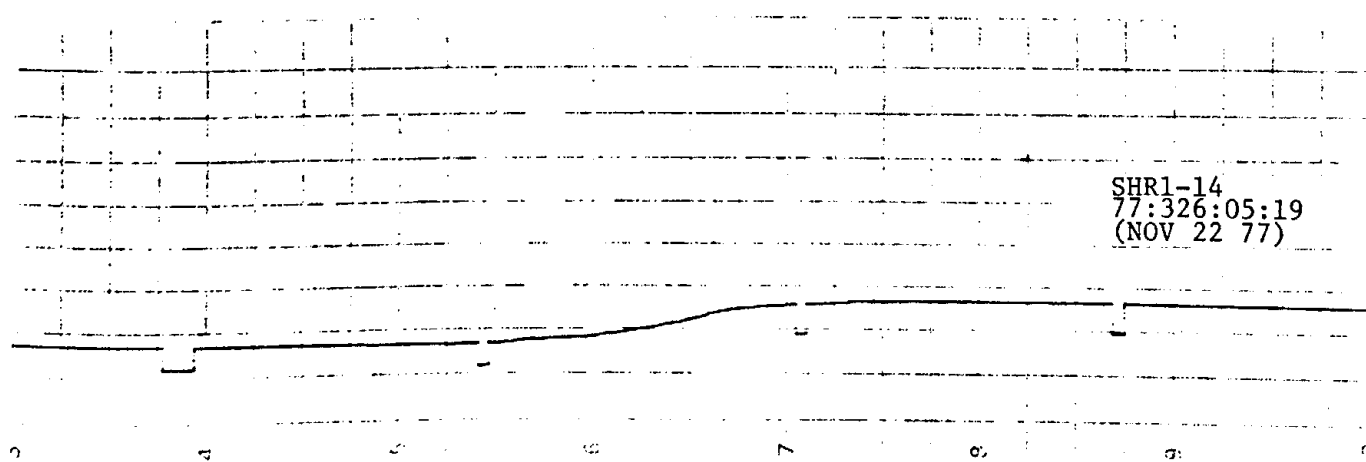
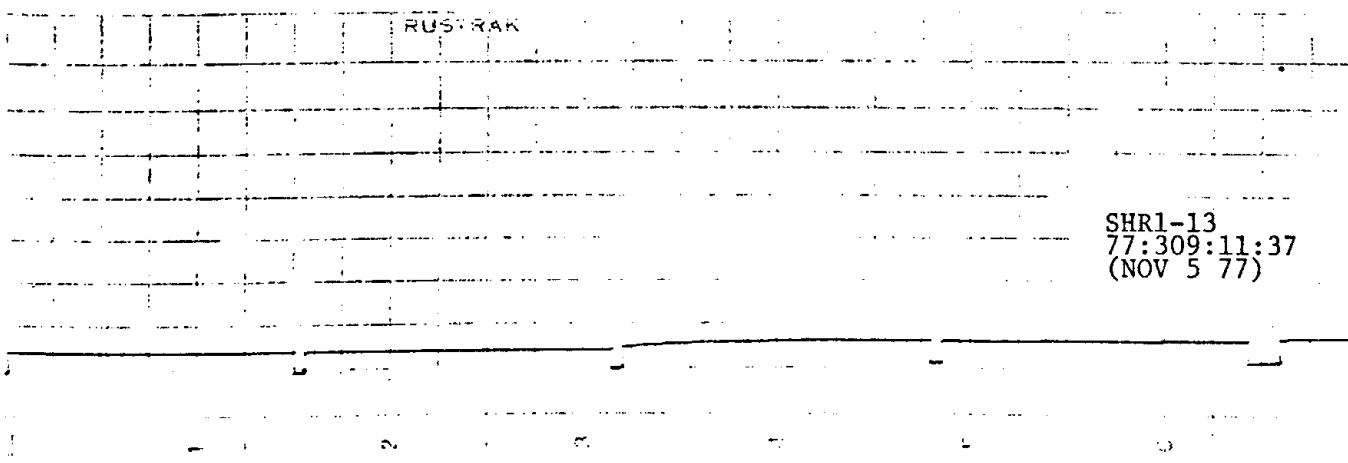
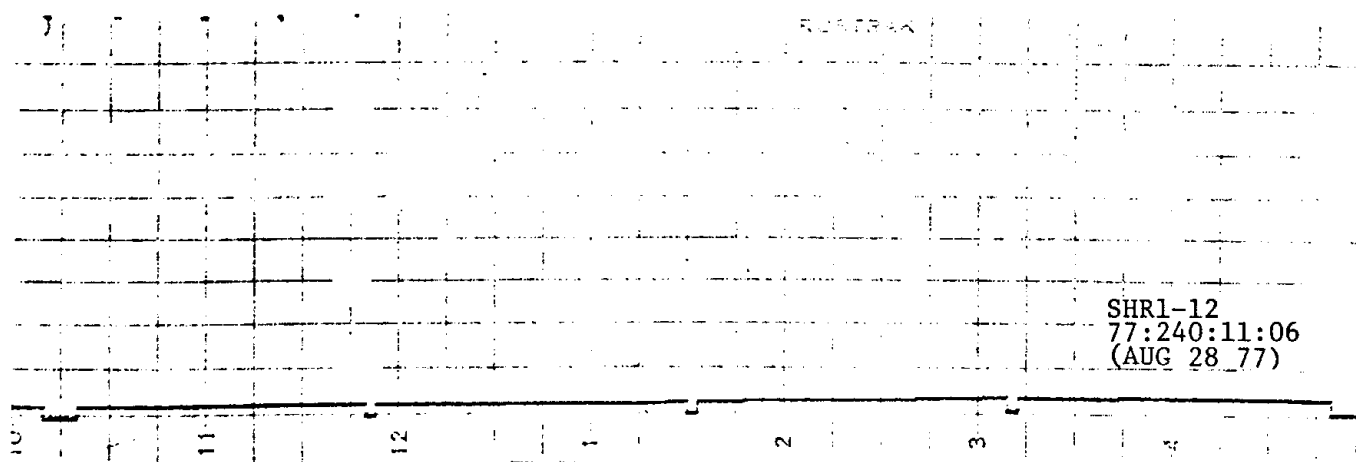


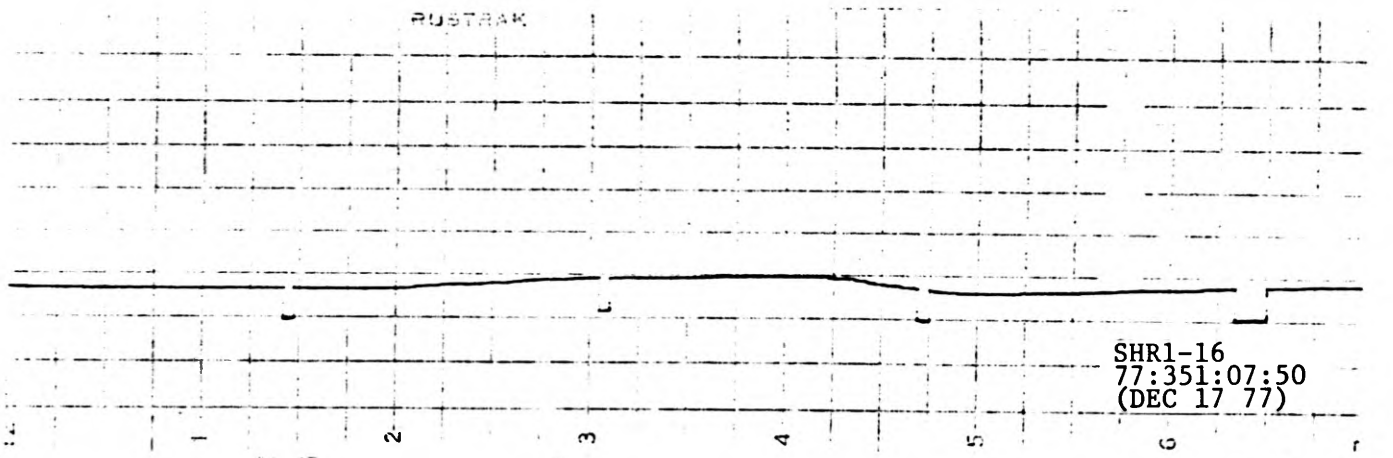
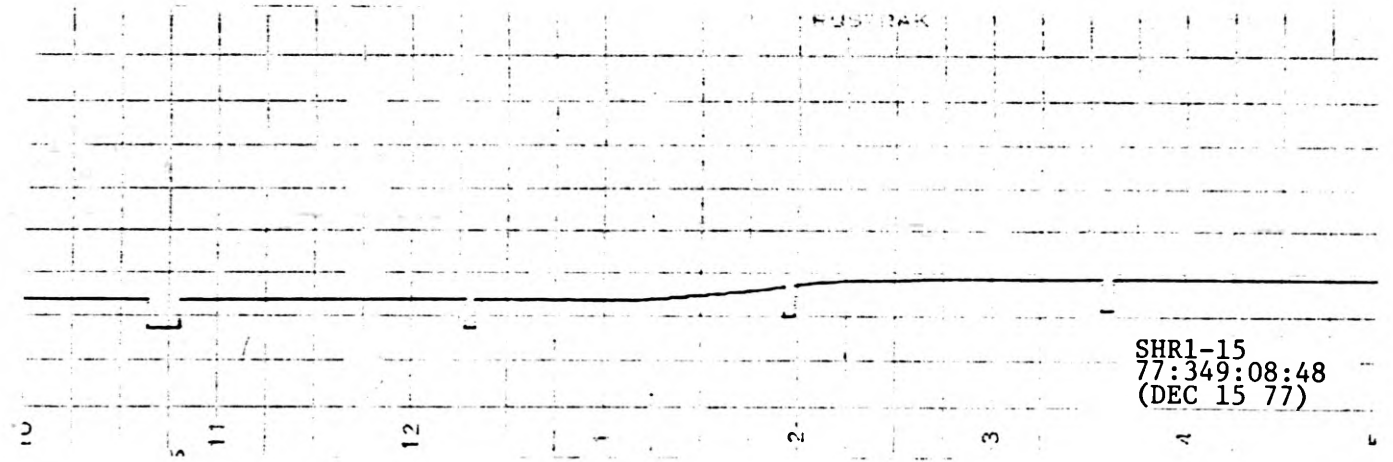




SHR1-9
77:121:01:02
(MAY 1 77)







STATION XCD1

296

Latitude $36^{\circ} 55.5'$

Position 111.1 km

Longitude $121^{\circ} 26.2'$ 34 meter wire, $\phi=42^{\circ}$

The Costa Dairy creepmeter was installed during August, 1976, on the Calaveras fault at a site 8.9 km northwest of Hollister. The installation consists of a single wire entrenched about 1 meter below the surface across a prominent northeast-facing scarp in alluvium. Creep activity at this site is composed of right- and left-lateral events of up to 5 mm in amplitude, superimposed on a background of rapid right-lateral slip, with distinct seasonal variations. The average creep rate is about 15 mm/yr. The instrument was abandoned in winter, 1977, due to flooding.

1955

PHOTOGRAPHED 1971
AMS 1757 IV NW-SERIES V895

XCD1 CORRECTED CREEPMETER READINGS (mm)

297

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					0.00	
JUL 30	0.00		0.00		0.00	
AUG 9	1.25		1.25		1.25	
AUG 18	5.24		6.49		6.49	
AUG 19	0.33		6.82		6.82	
OCT 6	3.05		9.87		9.87	
NOV 3	-3.02		6.85		6.85	
DEC 16	-0.76		6.09		6.09	
<u>1977</u>						
FEB 13	-0.16		-0.16		5.93	
APR 13	3.26		3.10		9.19	
APR 28	1.59		4.69		10.78	
JUN 15	0.80		5.49		11.58	
JUN 29	1.13		6.62		12.71	
JUN 29	0.11		6.73		12.82	
JUL 18	-0.09		6.64		12.73	
AUG 11	5.51		12.15		18.24	
SEP 8	3.80		15.95		22.04	
OCT 3	0.36		16.31		22.40	
NOV 16	-0.18		16.13		22.22	

XCD1

1976

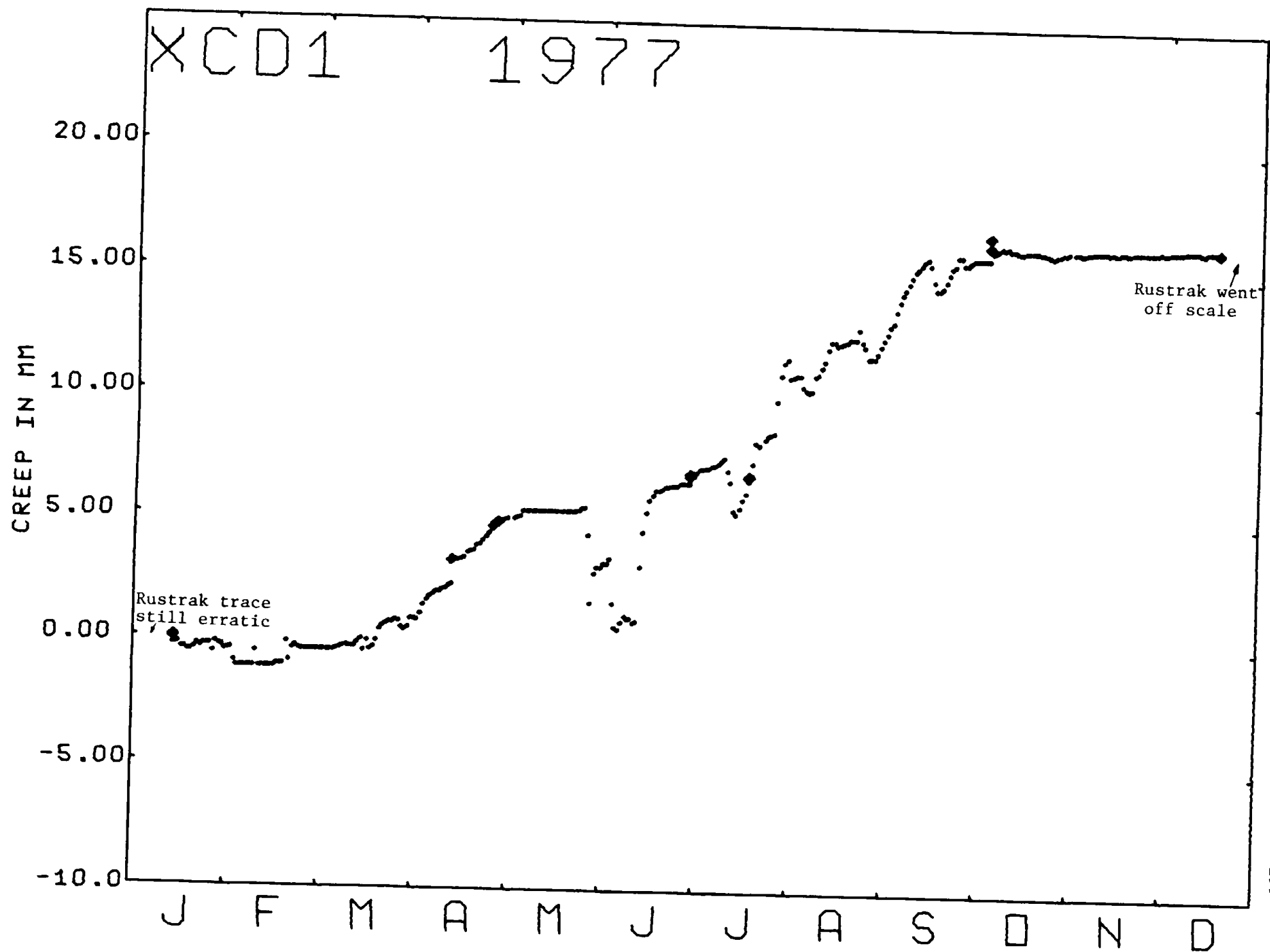
CREEP IN MM

20.00
15.00
10.00
5.00
0.00
-5.00
-10.00

Installation

Rustrak trace
extremely
erratic

J F M A M J J A S O N D



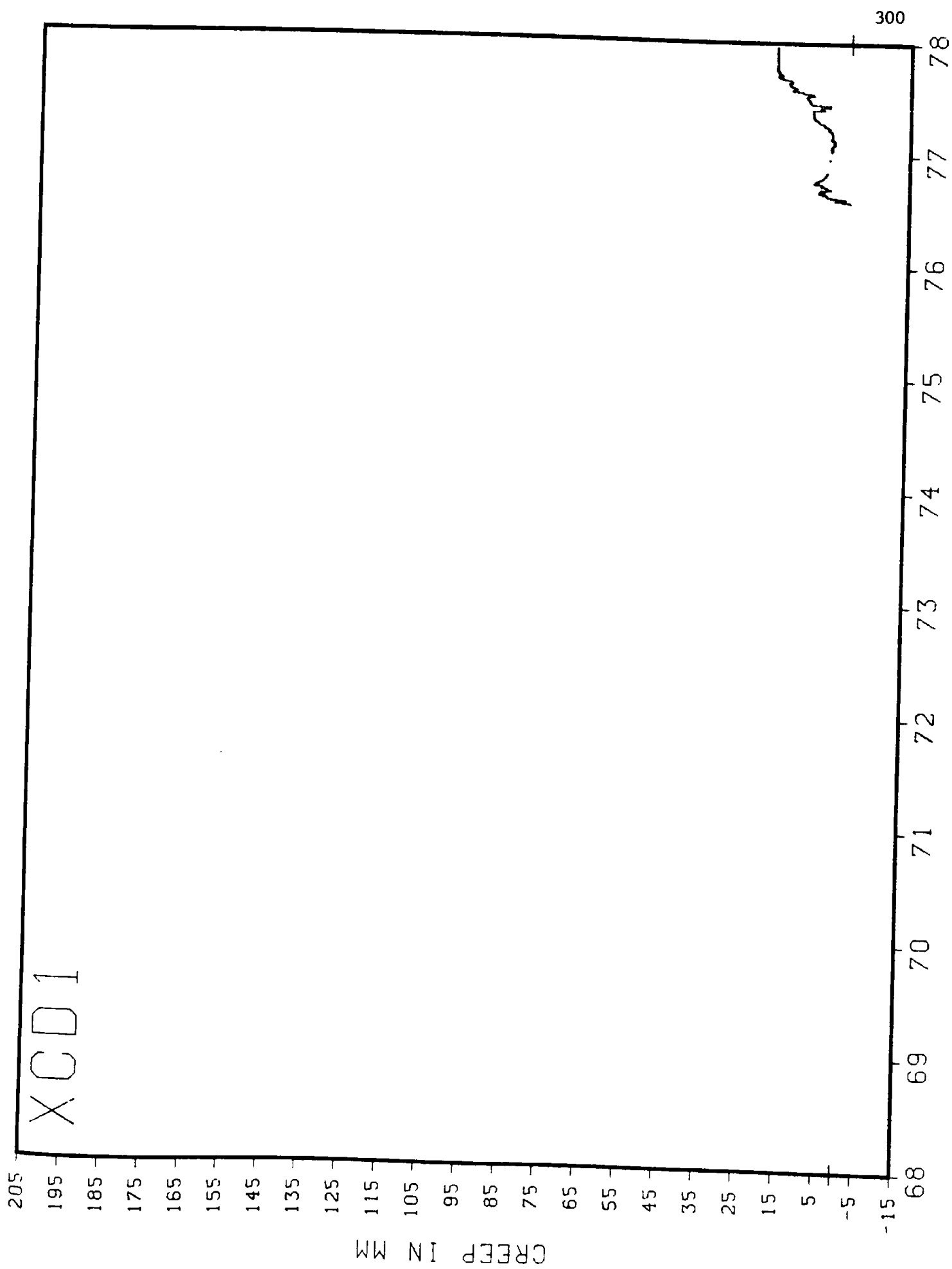


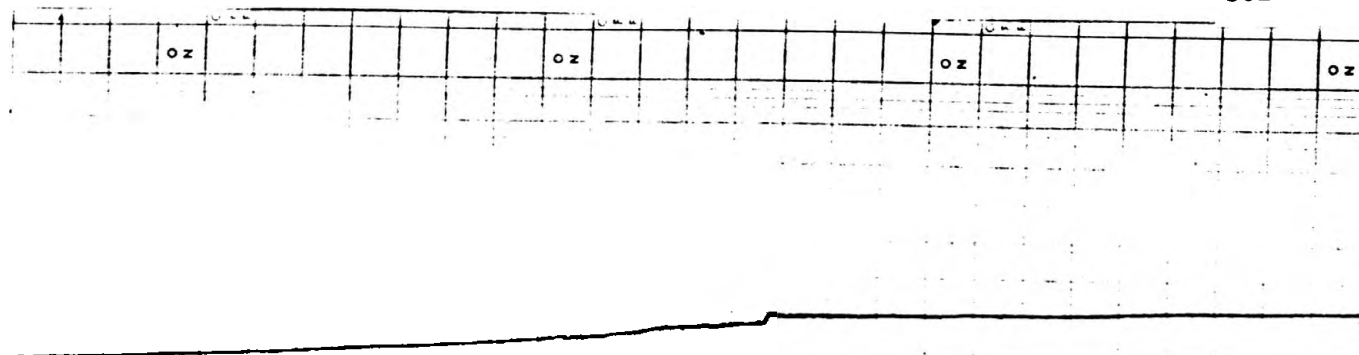
Table of XCDI Events

301

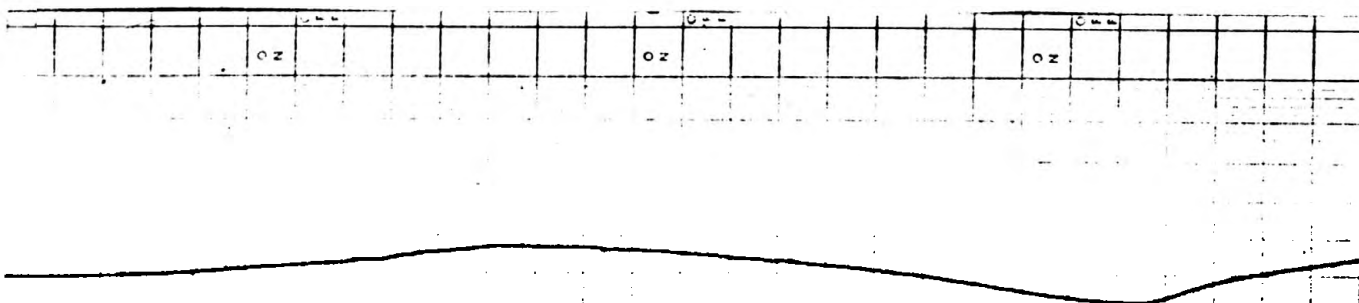
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	215-216	Aug. 2-3		1.80	1	1.0	.6262
	217	Aug. 4	2214	-1.00	2	1.0	.6262
	217	Aug. 4		1.00	*		
	218	Aug. 5	1129	2.57	3	1.0	.6262
	220-221	Aug. 7-8		-3.00	4	1.0	.6262
					(partial)		
	222-238	Aug. 9-25		6.20	*		
					(R.L. surge)		
	238	Aug. 25	0622	0.79	5	0.99	.6994
	246	Sep. 2	2348	-1.62	6	1.0	.6924
	248	Sep. 4	0241	1.79	7	1.0	.6924
	249	Sep. 5	1753	-0.89	8	1.0	.6924
	253	Sep. 9	0324	-3.41	9	1.0	.6924
	253-257	Sep. 9-13		2.24	10	1.0	.6924
	256	Sep. 12	1847				
					(Steepest part of 4-day event)		
	257	Sep. 13	1735	-0.81	11	1.0	.6924
	259	Sep. 15	1714	0.78	12	1.0	.6924
	262-266	Sep. 18-22		1.57	13	1.0	.6924
	262	Sep. 18	1853				
					(Onset of 4-day event and steepest part)		
	266	Sep. 22	0720	-0.52	14	1.0	.6924
	269-274	Sep. 25-30		2.47	15	1.0	.6924
	272	Sep. 28 ^{1/}	0819				
					(Steepest part of 6-day event)		
	275-351	Oct. 1-Dec. 15		-4.55	16	1.0	.6987
	281	Oct. 7	0629				
					(Part of 2-1/2 month left-lateral surge. Refer to annual plot.)		

^{1/} Onset of rapid right-lateral rise was approximately coincident with beginning of rainfall.

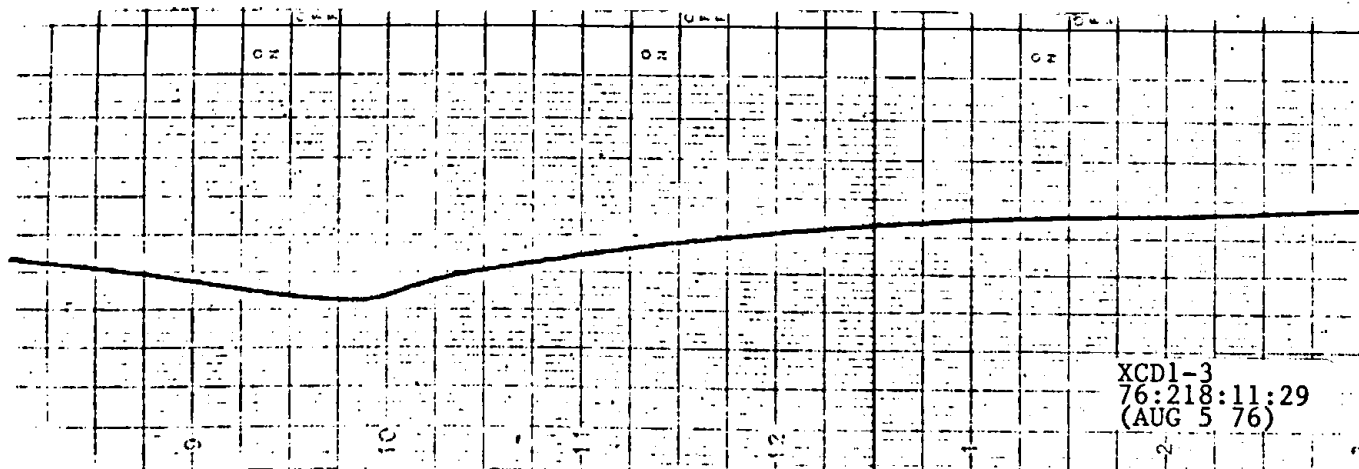
* Refer to annual plot.



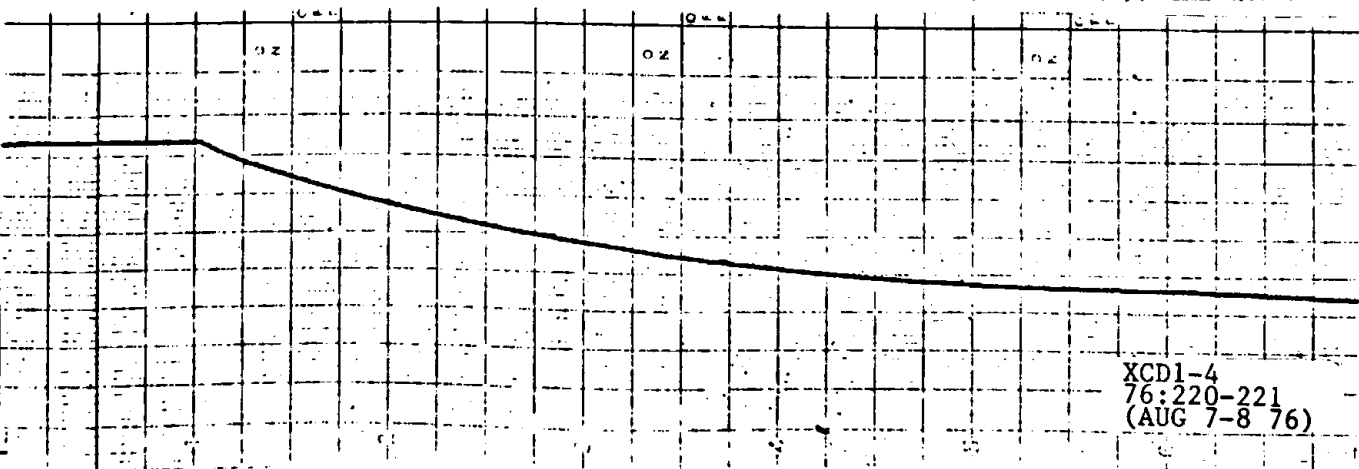
XCD1-1
76:215-216
(AUG 2-3 76)



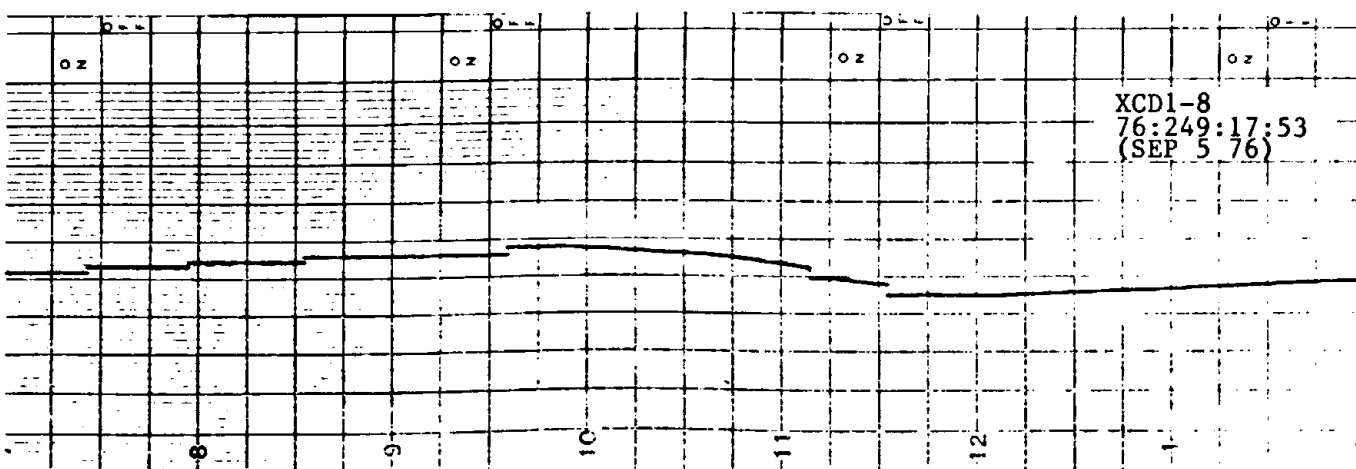
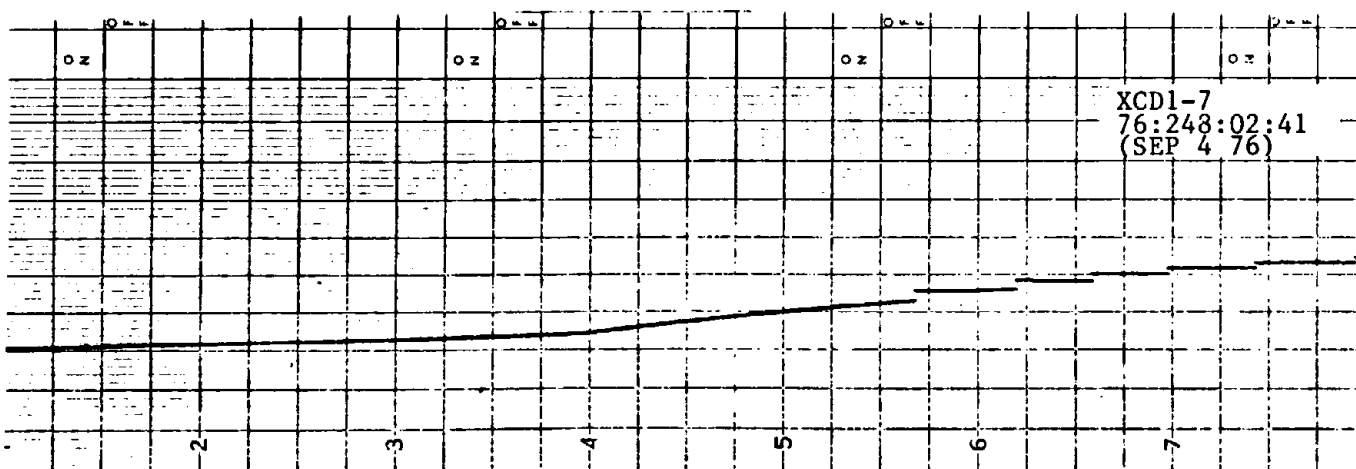
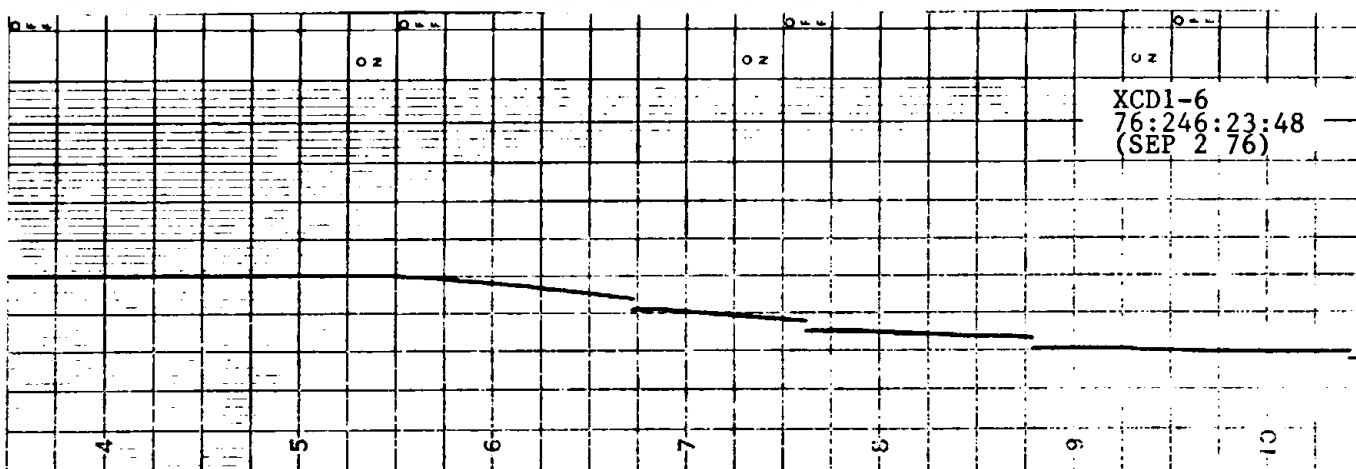
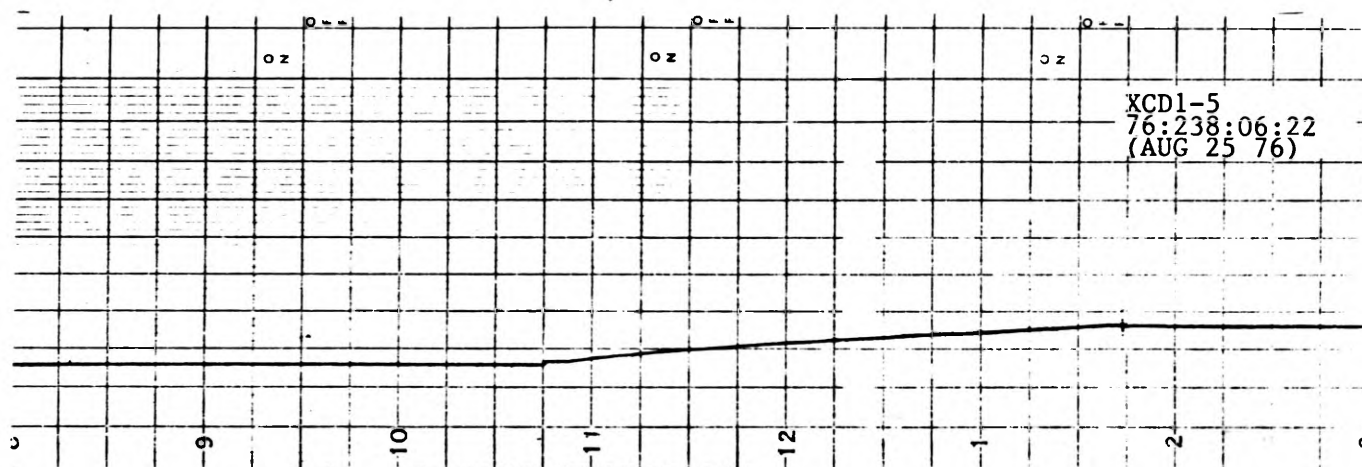
XCD1-2
76:217:22:14
(AUG 4 76)

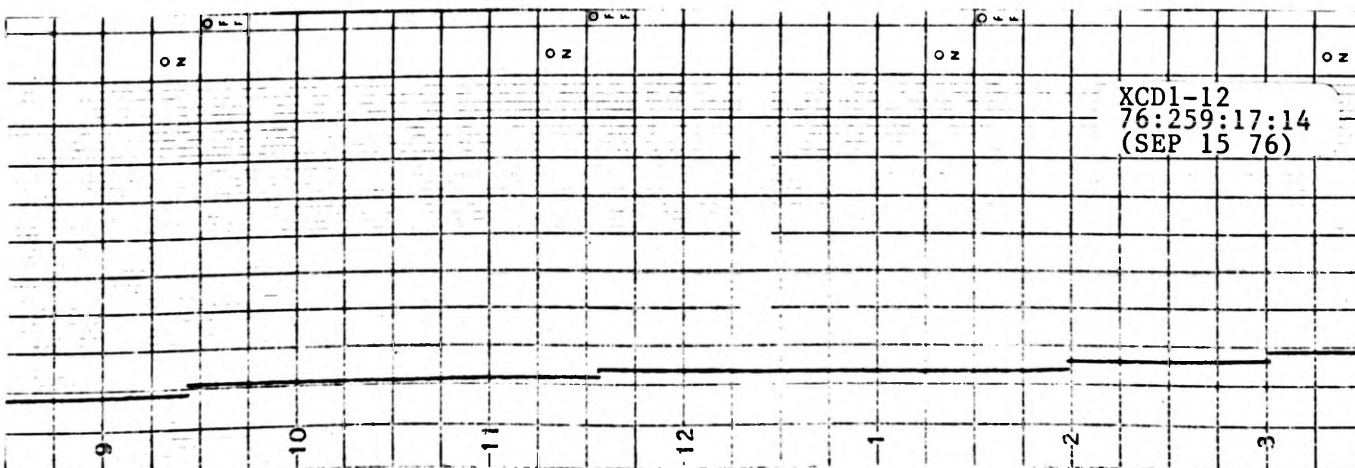
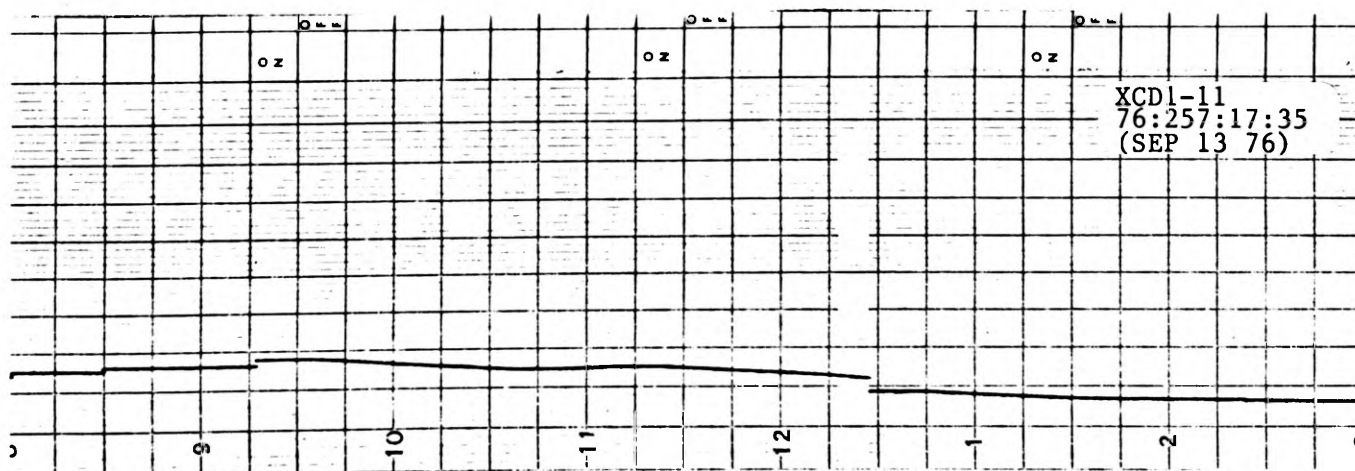
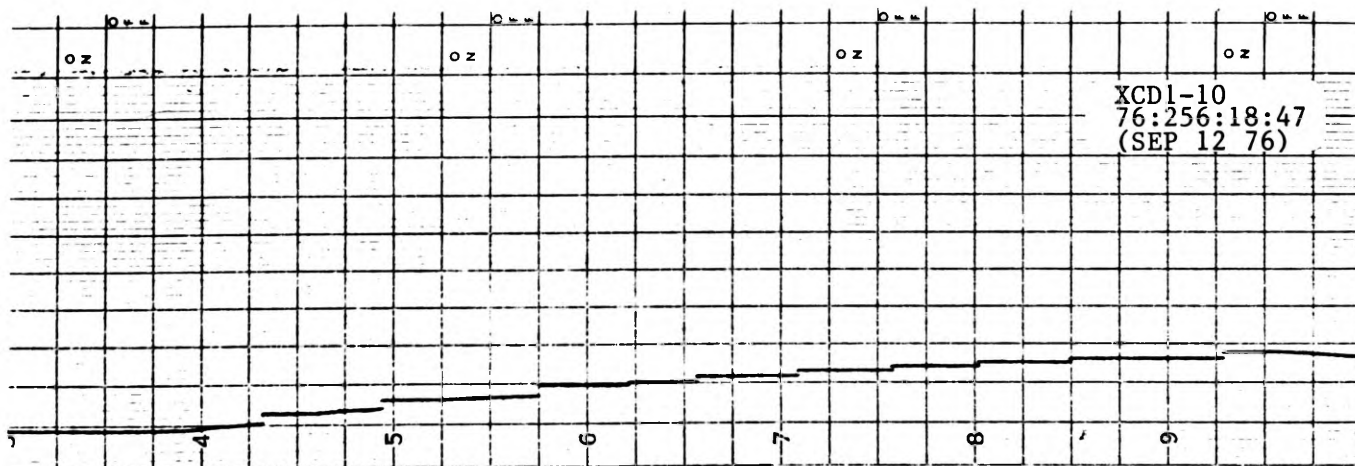
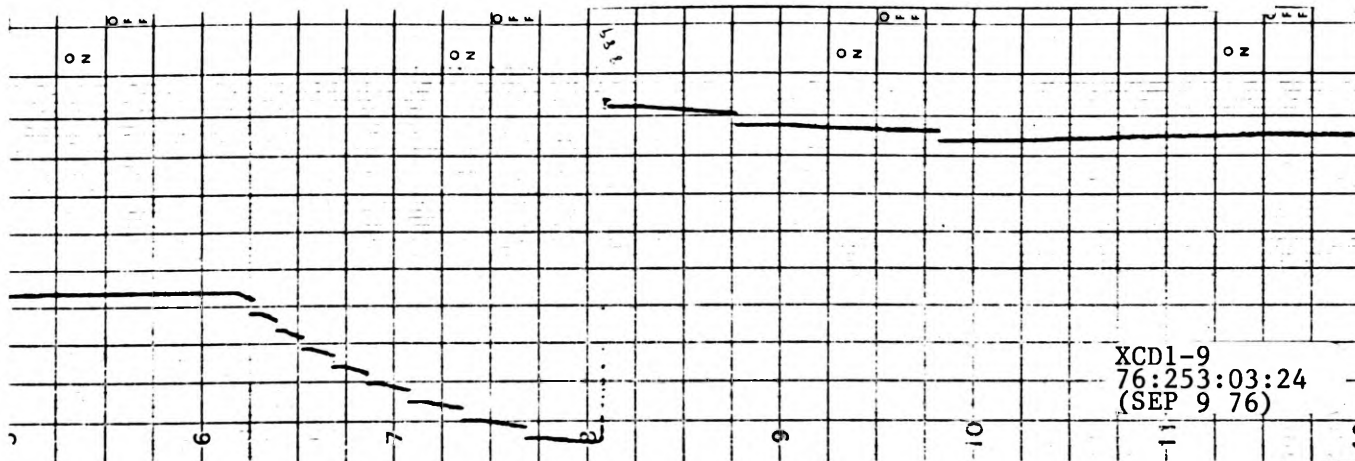


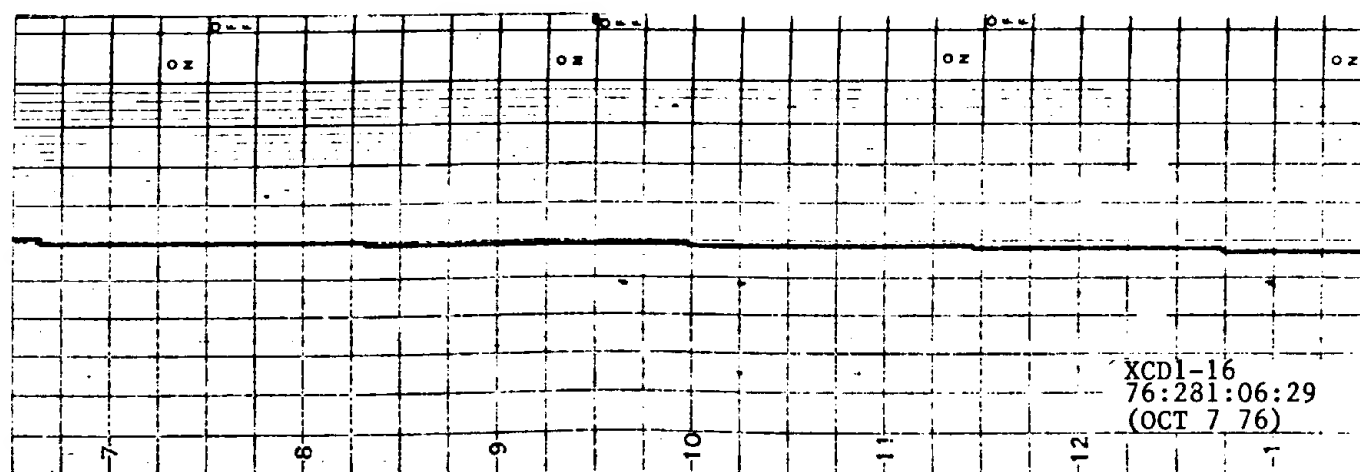
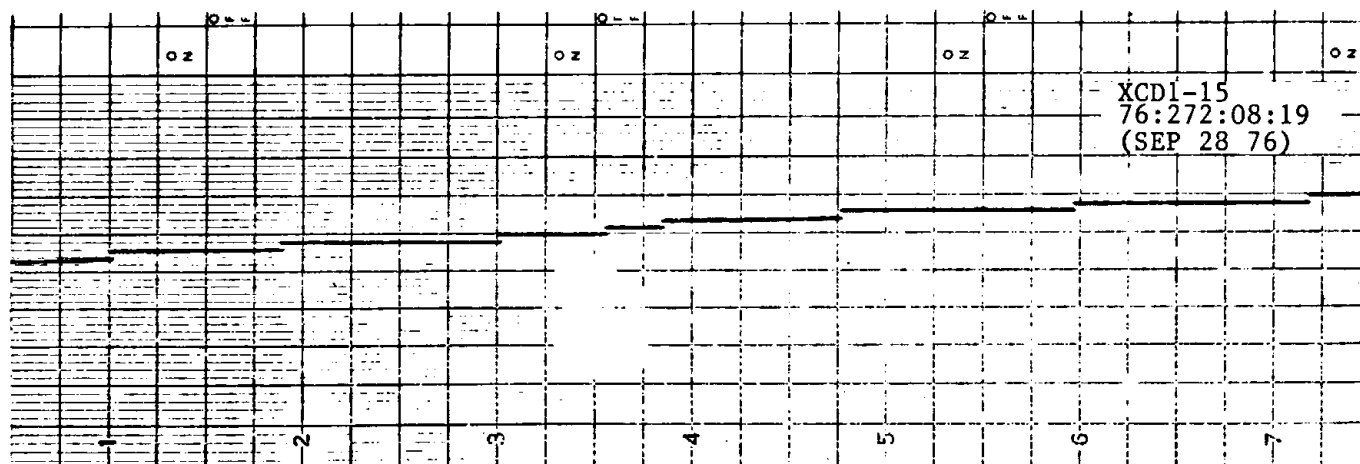
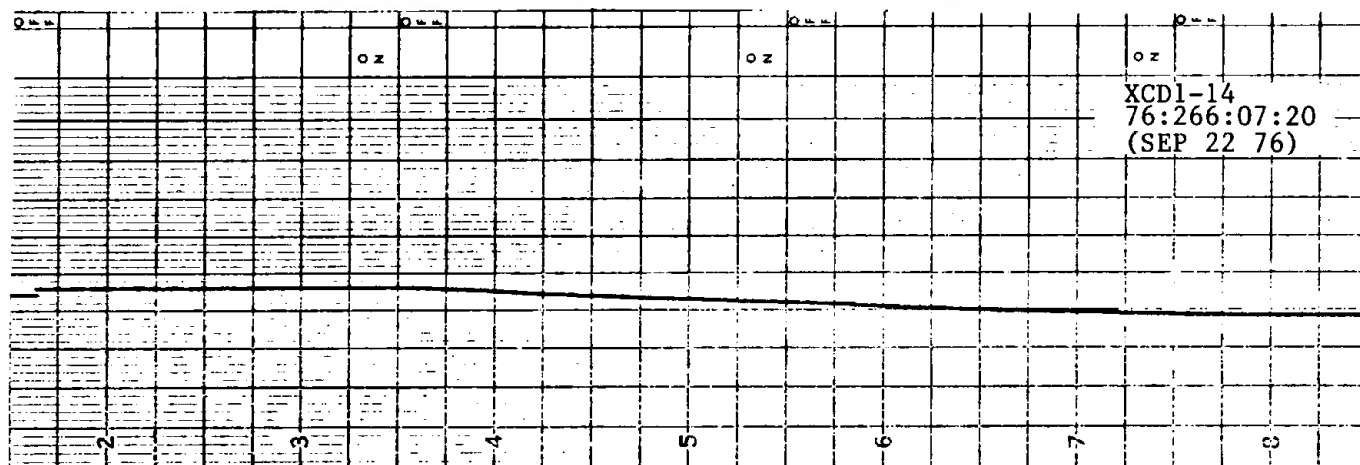
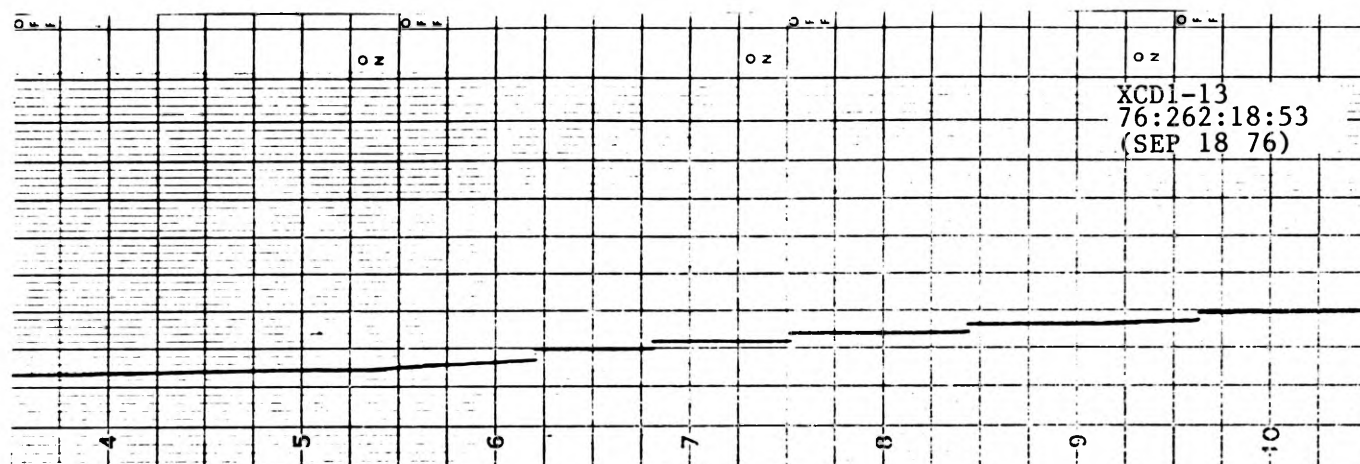
XCD1-3
76:218:11:29
(AUG 5 76)



XCD1-4
76:220-221
(AUG 7-8 76)







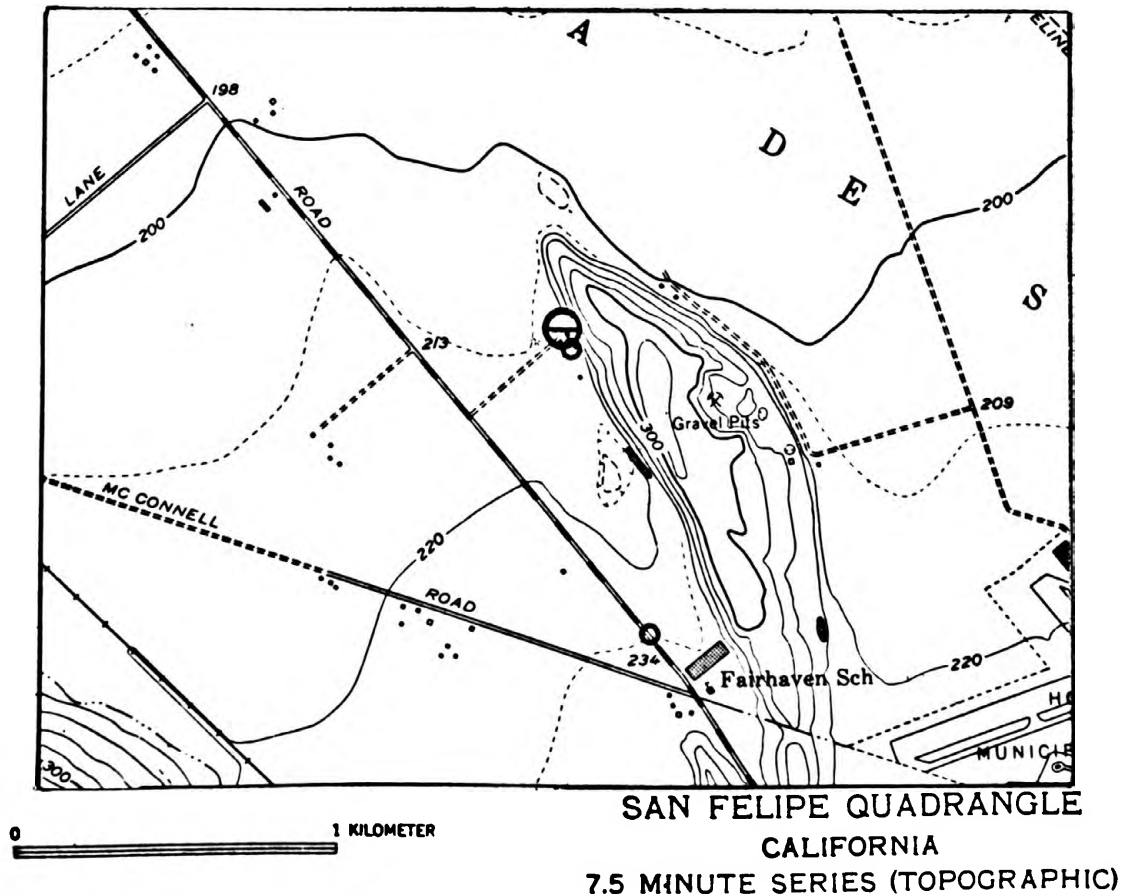
STATION BTH

306

Latitude $36^{\circ} 54.1'$
Longitude $121^{\circ} 25.6'$

Position 114.0 km
10 meter rod, $\phi=45^{\circ}$

The Bertuccio Farm (House) creepmeter was installed during June, 1971, on the Calaveras fault at a site 6.0 km northwest of Hollister. The installation consists of a single (extension) rod buried a few centimeters below a sloping surface in alluvium near the base of a prominent southwest-facing scarp. Creep activity at this site is composed of distinct events of up to 7 mm in amplitude, superimposed on a background of right- and left-lateral drift at moderate rates. The average creep rate is about 3 mm/yr, with a strong seasonal variation. Some minor left-lateral events have occurred during periods of heavy rainfall.

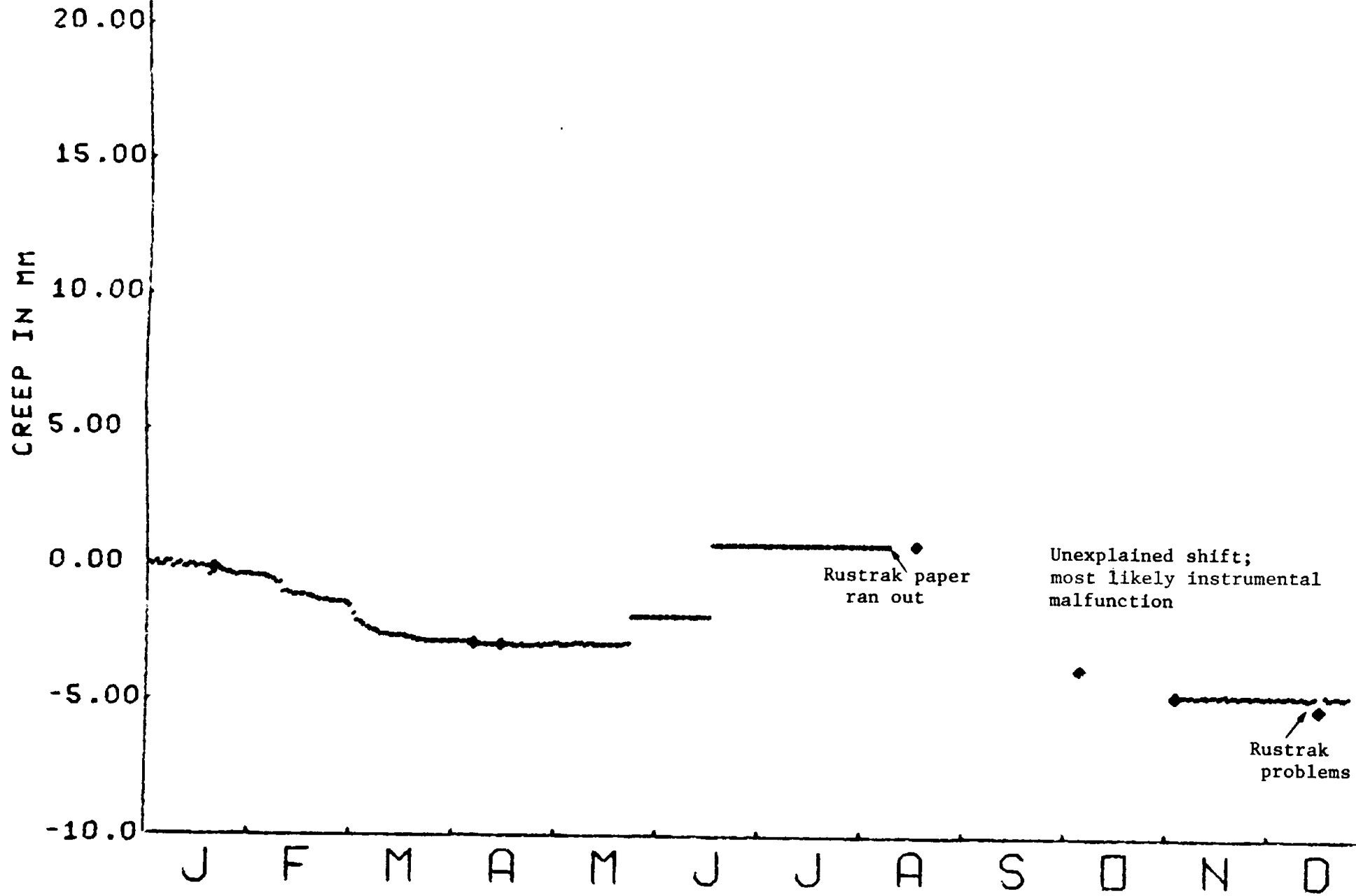


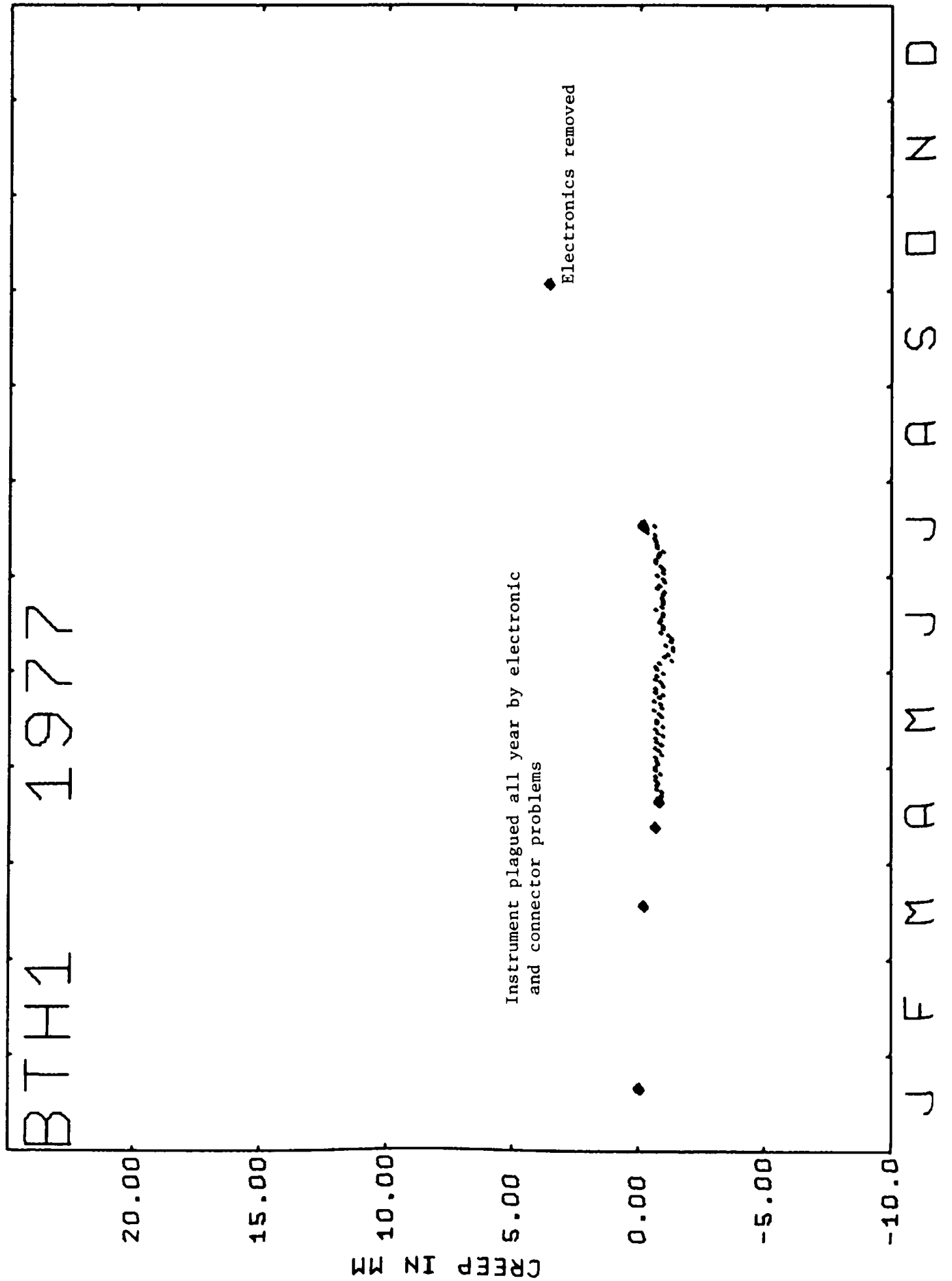
BTH CORRECTED CREEPMETER READINGS (mm)

307

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					21.79	
JAN 20	-0.58		-0.58		21.21	
APR 15	-2.76		-3.34		18.45	
JUN 25	4.48		1.14		22.93	
AUG 17	-0.79		0.35		22.14	
OCT 5	-4.55		-4.20		17.59	
NOV 3	-0.93		-5.13		16.66	
DEC 16	-0.48		-5.61		16.18	
<u>1977</u>						
JAN 20	0.00		0.00		16.18	
MAR 19	-0.18		-0.18		16.00	
APR 13	-0.44		-0.62		15.56	
APR 21	-0.16		-0.78		15.40	
JUN 15	0.41		-0.37		15.81	
JUL 13	0.38		0.01		16.19	
JUL 18	-0.12		-0.11		16.07	
JUL 27	4.27		4.16		20.34	
AUG 11	0.31		4.47		20.35	
OCT 3	-0.86		3.61		19.79	
NOV 16	-1.83		1.78		17.96	

BTH1 1976





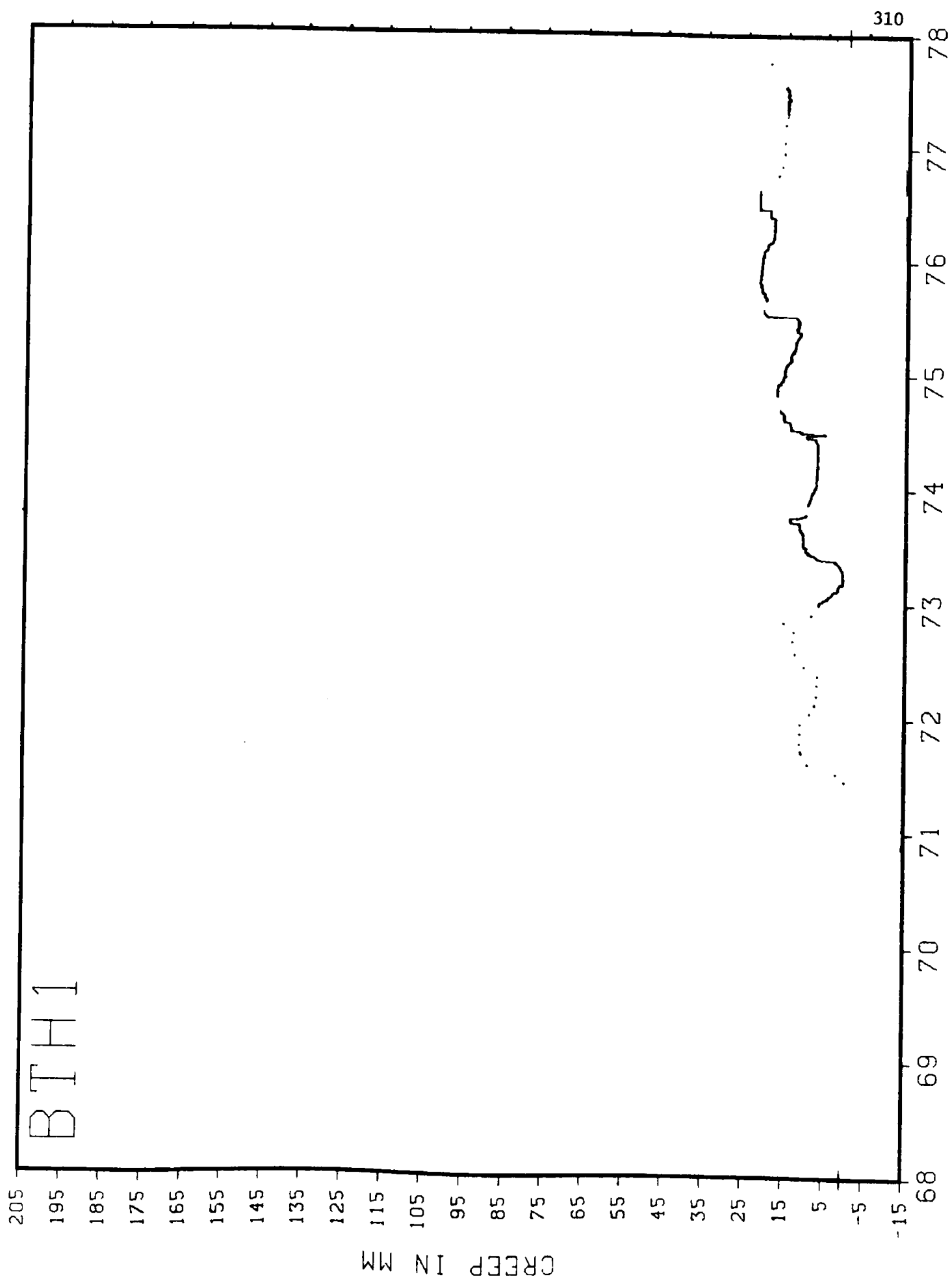
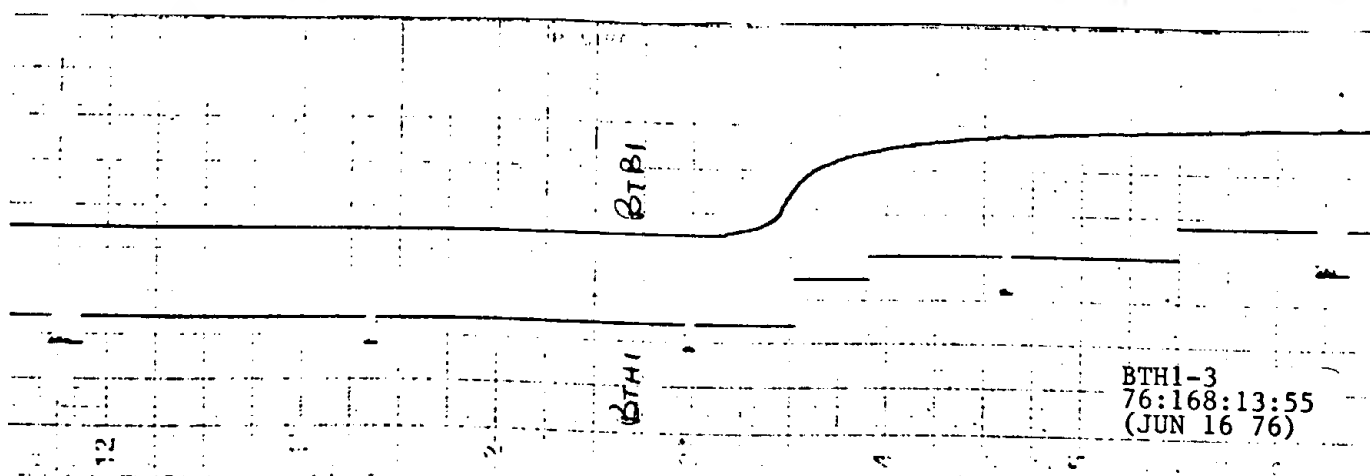
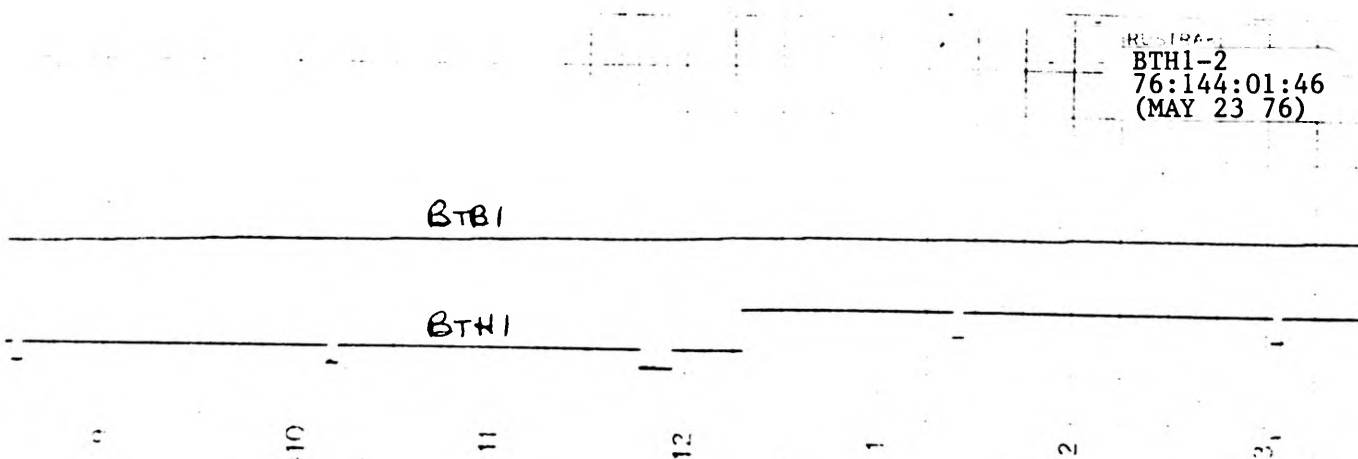
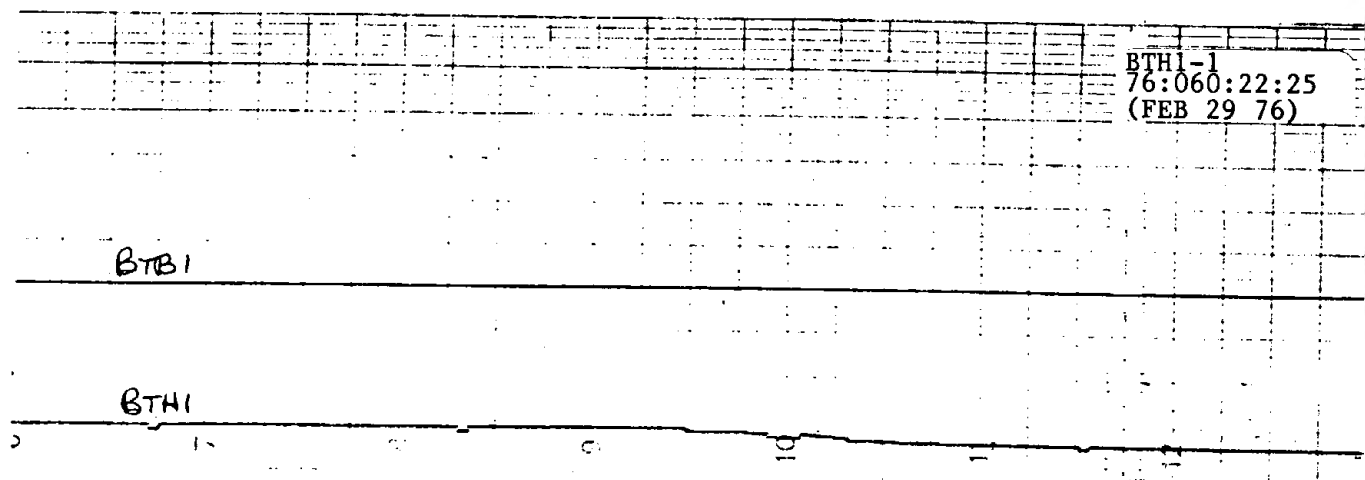


Table of BTHI Events

311

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	040	Feb. 9	0134	-0.30	*		
	060-069	Feb. 29-Mar. 9	2225	-1.19	1	0.93	1.37
	144	May 23	0146	1.01	2	0.92	1.11
	168	Jun. 16	1355	2.65	3	0.92	1.11

* Refer to annual plot



Latitude 36° 54.1'
Longitude 121° 25.6'

Position 114.1 km
12 meter rods, $\theta=45^\circ$

The Bertuccio Farm (Barn) creepmeters were installed during June, 1971, on the Calaveras fault at a site 5.9 km northwest of Hollister. The installation consists of a pair of crossed rods buried a few centimeters below a sloping surface in alluvium near the base of a prominent southwest-facing scarp. Creep activity at this site is composed of distinct events of up to 4 mm in amplitude, superimposed on a background of right- and left-lateral drift at moderate rates. The average creep rate is about 10 mm/yr, with a strong seasonal variation. Some minor left-lateral events have occurred during periods of heavy rainfall.

0 1 KILOMETER



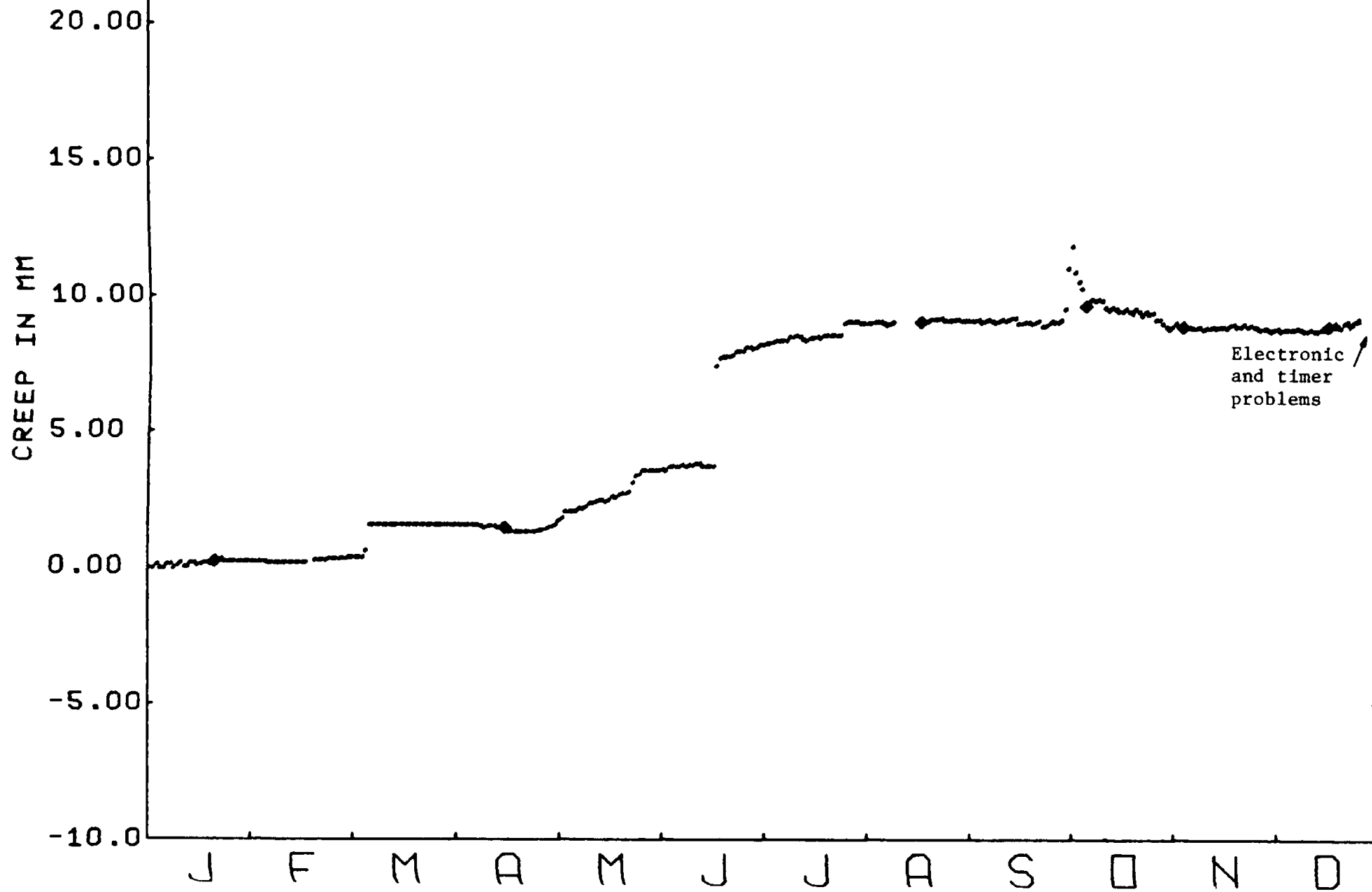
CALIFORNIA
7.5 MINUTE SERIES (TOPOGRAPHIC)

BTB CORRECTED CREEPMETER READINGS (mm)

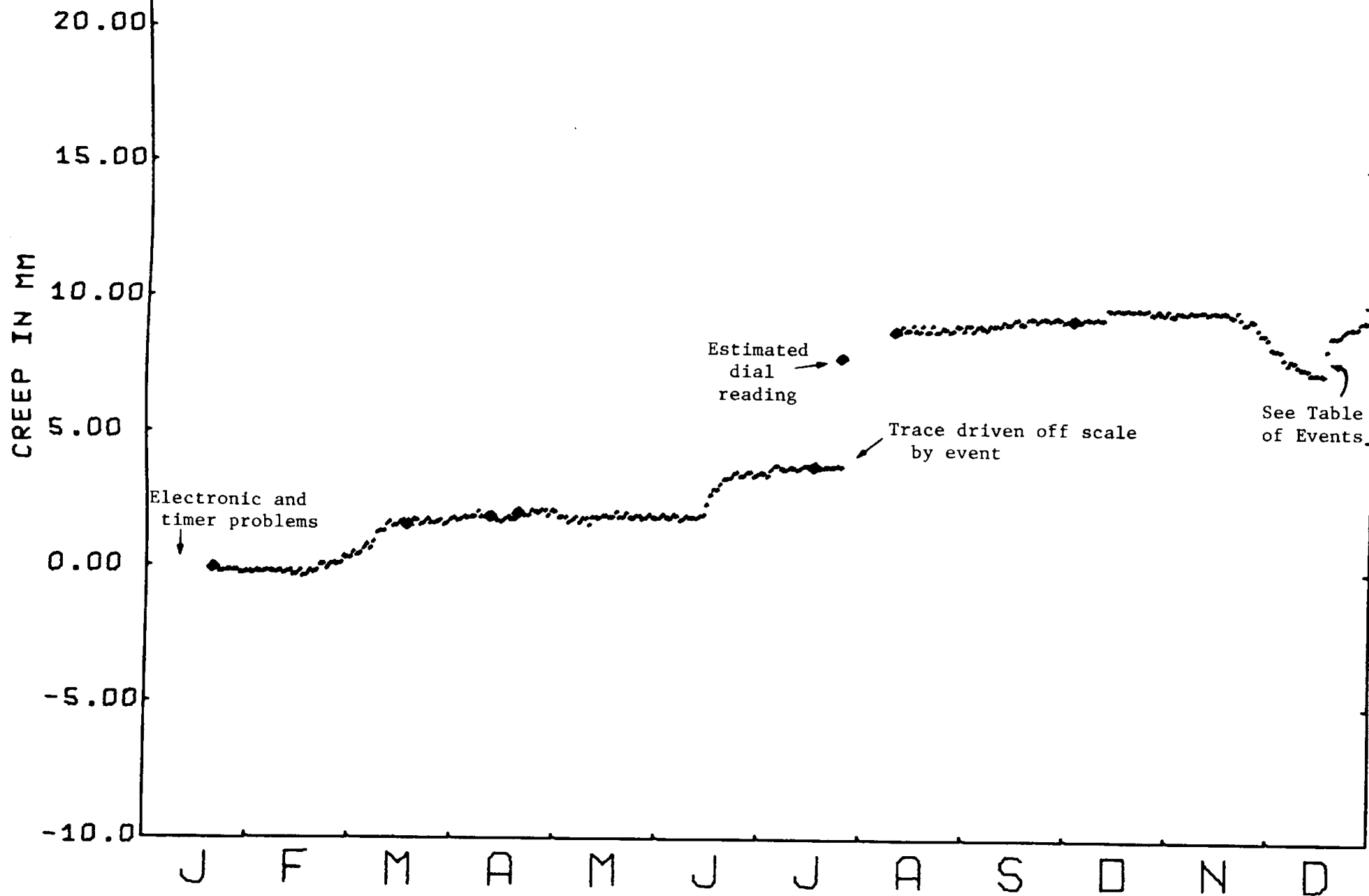
314

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					45.26	40.79
JAN 20	6.49		6.49		51.75	
APR 13	1.23	-2.98	7.72	-2.98	52.98	37.81
JUN 25	6.34		14.06		59.32	
AUG 17	1.27	5.76	15.33	2.78	60.59	43.57
OCT 5	0.61	1.50	15.94	4.28	61.20	45.07
NOV 3	-0.78	-0.31	15.16	3.97	60.42	44.76
DEC 16	0.03	-0.40	15.19	3.57	60.45	44.36
<u>1977</u>						
JAN 20	0.26	-0.45	0.26	-0.45	60.70	43.90
MAR 19	1.64		1.90		62.34	
APR 13	0.28	0.15	2.18	-0.30	62.62	44.05
APR 21	0.13		2.31		62.75	
JUN 15	0.25	0.14	2.56	-0.16	63.00	44.19
JUL 13	1.47		4.03		64.47	
JUL 18	0.05	1.07	4.08	0.91	64.52	45.26
AUG 11	5.07	2.82	9.15	3.73	69.59	48.08
OCT 3	0.41	0.24	9.56	3.97	70.00	48.32
NOV 16	0.29	0.06	9.85	4.03	70.29	48.38

BTB1 1976



BTB1 1977



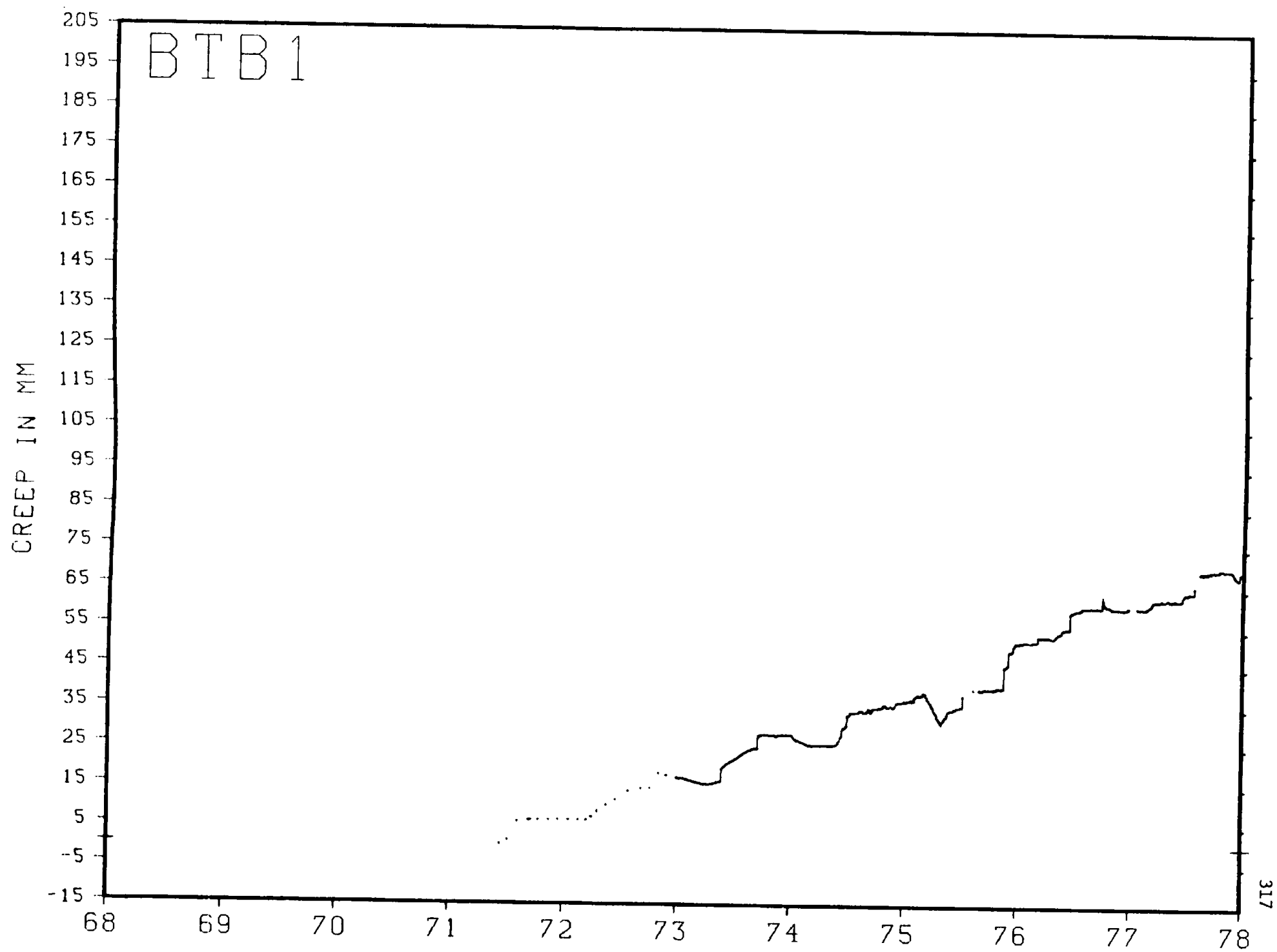


Table of BTB1 Events

318

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	064-065	Mar. 4-5		1.23	*		
	065	Mar. 5 (part of previous event)	1641	0.95	1	0.96	1.48
	114-123	Apr. 23-May 2		0.75	*		
	143-147	May 22-26		0.82	*		
	143	May 22 (part of previous event)	1141	0.58	2	0.92	1.45
	168	Jun. 16	1223	3.96	3	0.92	1.45
	206	Jul. 24		0.48	*		
	272-274	Sep. 28-30 <u>1/</u>	1927	2.85	4	0.94	1.89
	275	Oct. 1-6	1353	-1.90	5	0.93	1.89
	301-305	Oct. 27-31		-0.52	*		
1977	051	Feb. 20	0154	0.28	6	0.92	1.47
	058	Feb. 27	0209	0.25	7	0.92	1.47
	067	Mar. 8	1149	0.62	8	0.92	1.47
	071	Mar. 12	0055	0.32	9	0.92	1.47
	167	Jun. 16	0755	0.55	10	0.94	1.39
	170	Jun. 19	1828	0.36	11	0.94	1.39
	185	Jul. 4	1150	0.27	#12	0.93	1.39
	207	Jul. 26	1219	4.05	13	0.95	1.57
	285	Oct. 12	1800	0.33	14	1.07	1.44
	351	Dec. 17	1356	1.44	**15	1.07	1.44

*Refer to annual plot

1/ Event onset was approximately coincident with beginning of rainfall.

frictional step

** rainfall

TRUSTRAK

БТБ

BTB1-1
76:065:16:41
(MAR 5 76)

ВТН

BTB1-2
76:143:11:41
(MAY 22 76)

БТВ

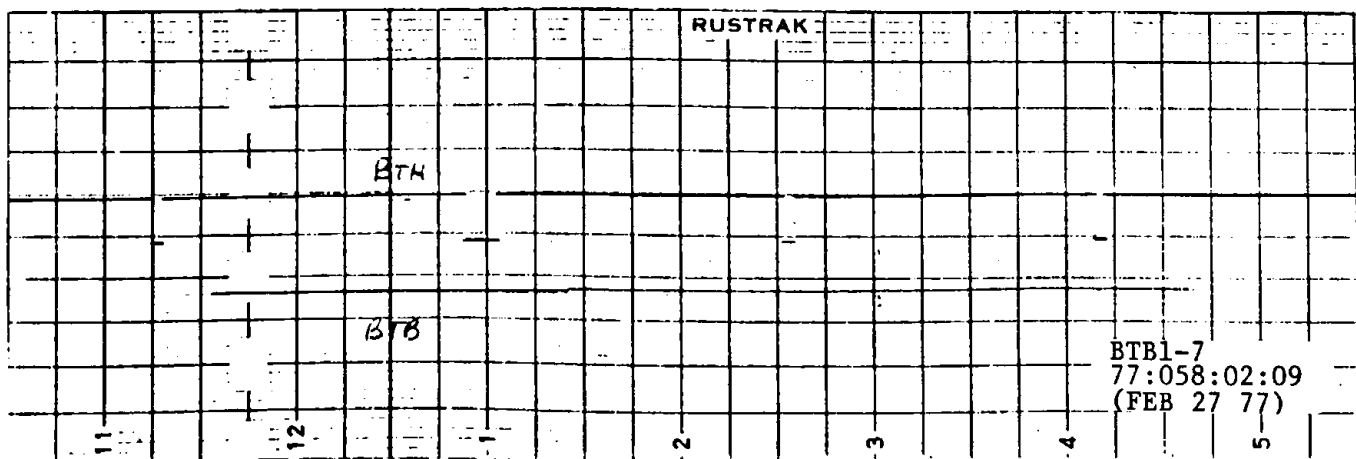
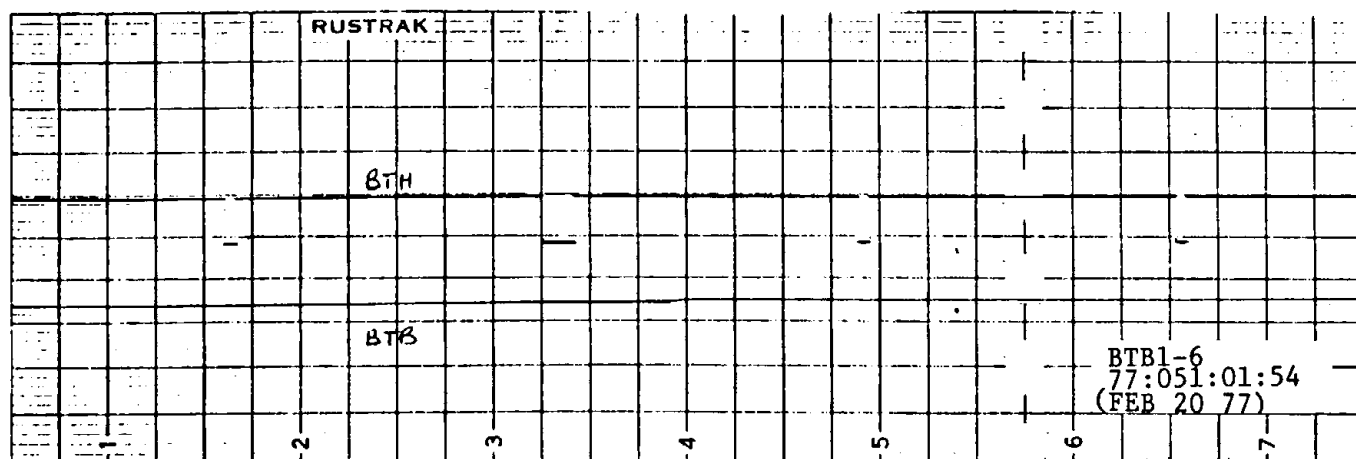
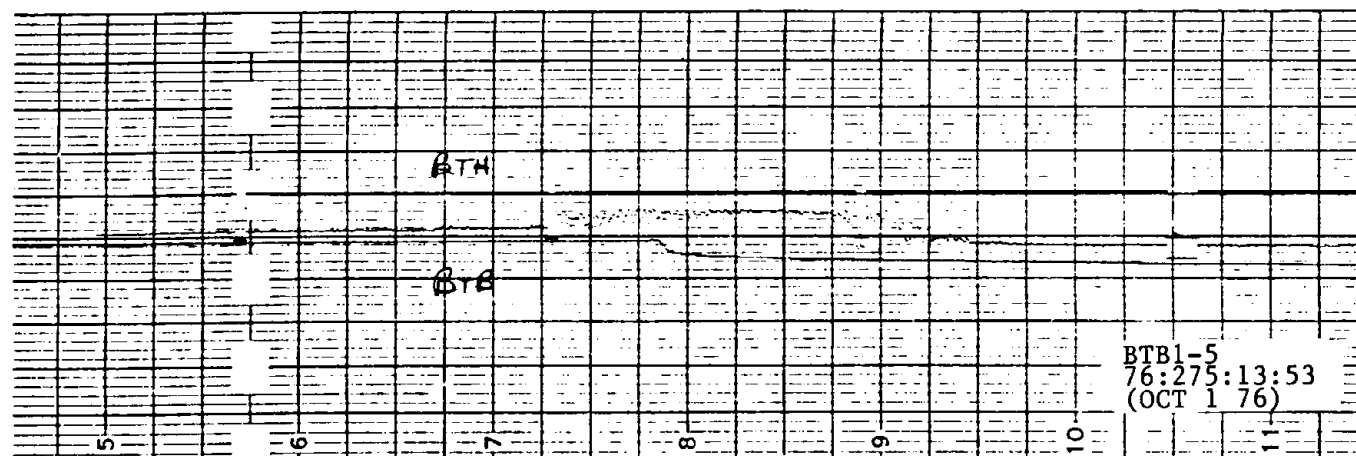
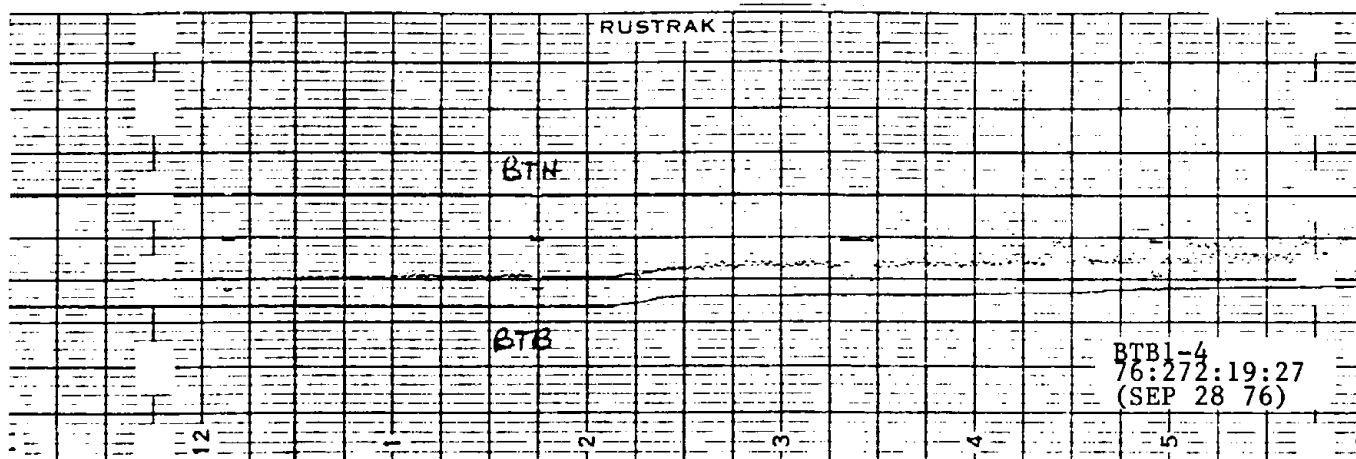
BTN

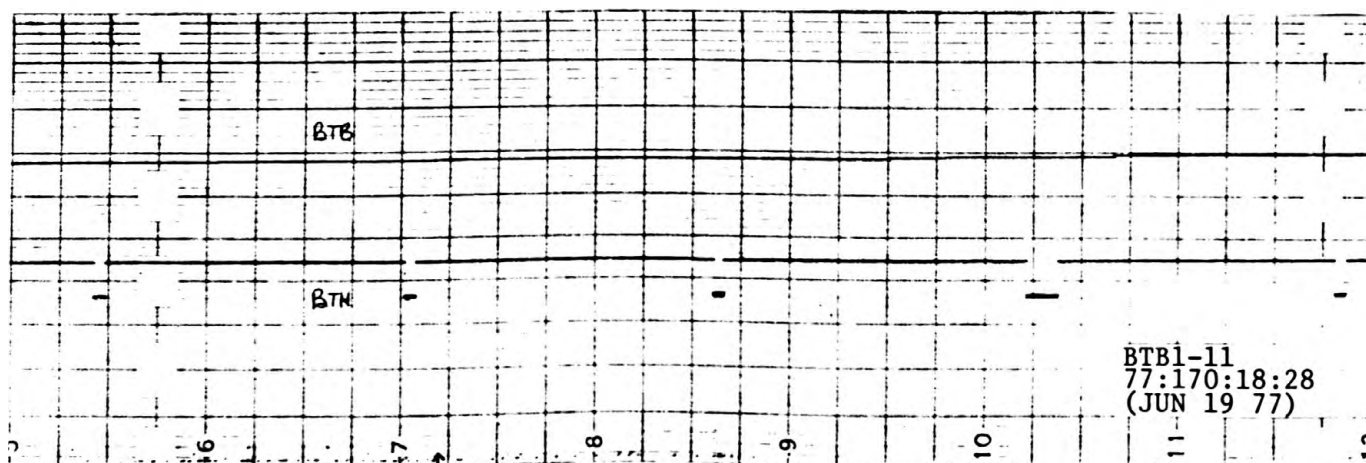
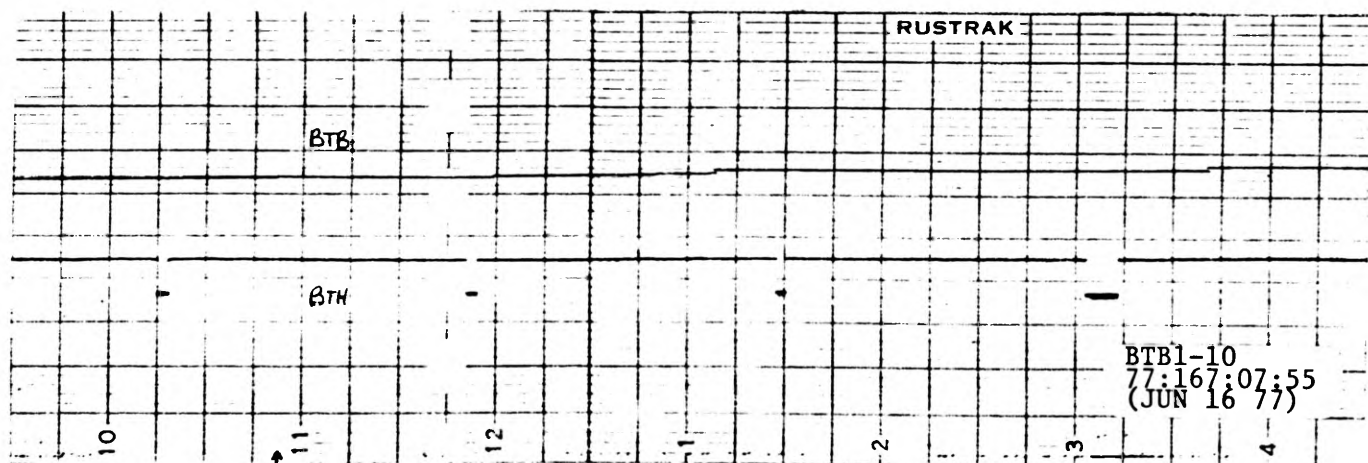
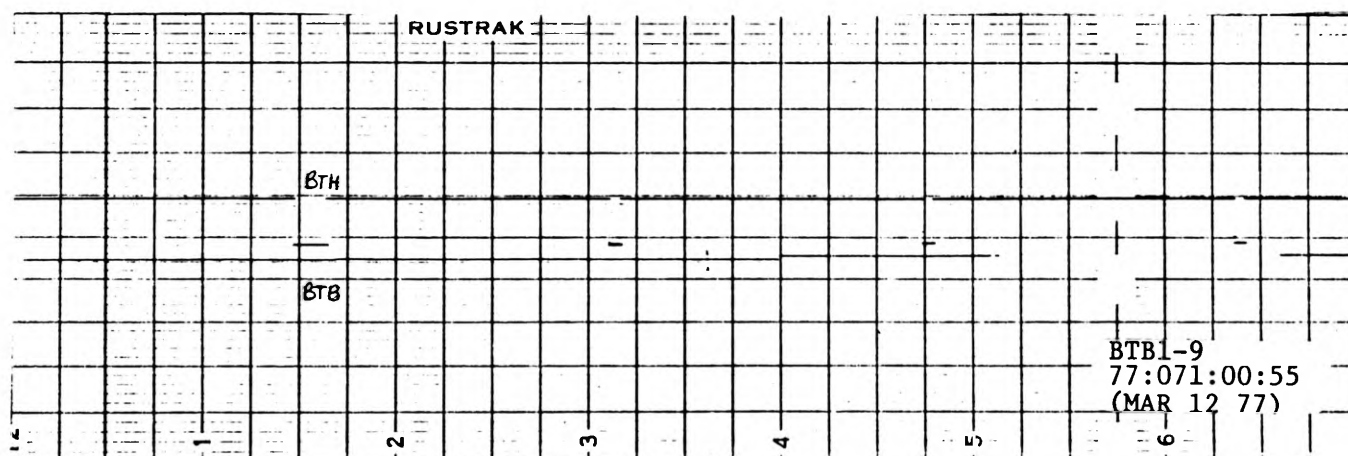
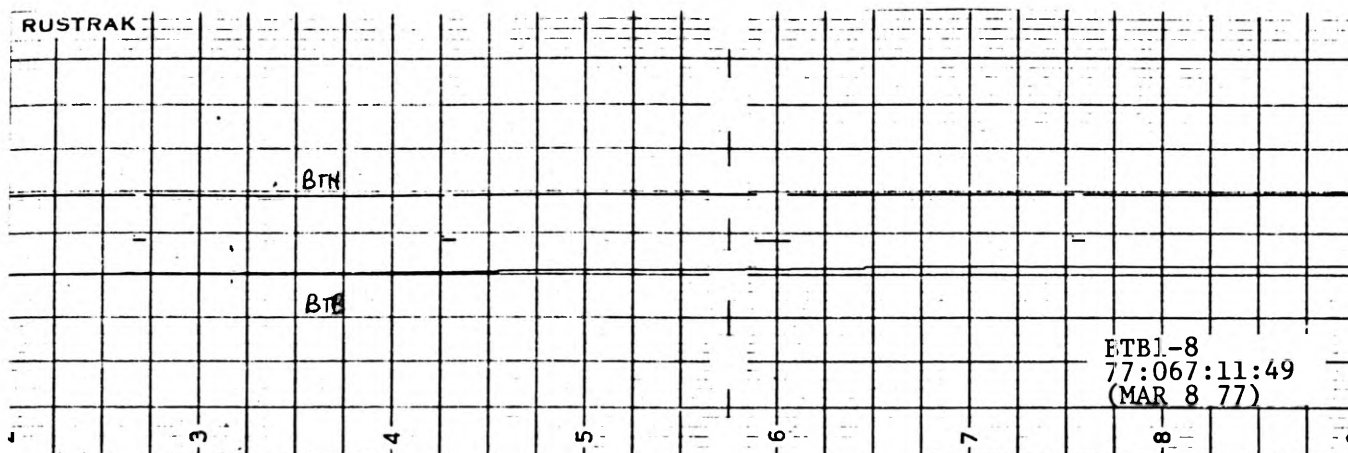
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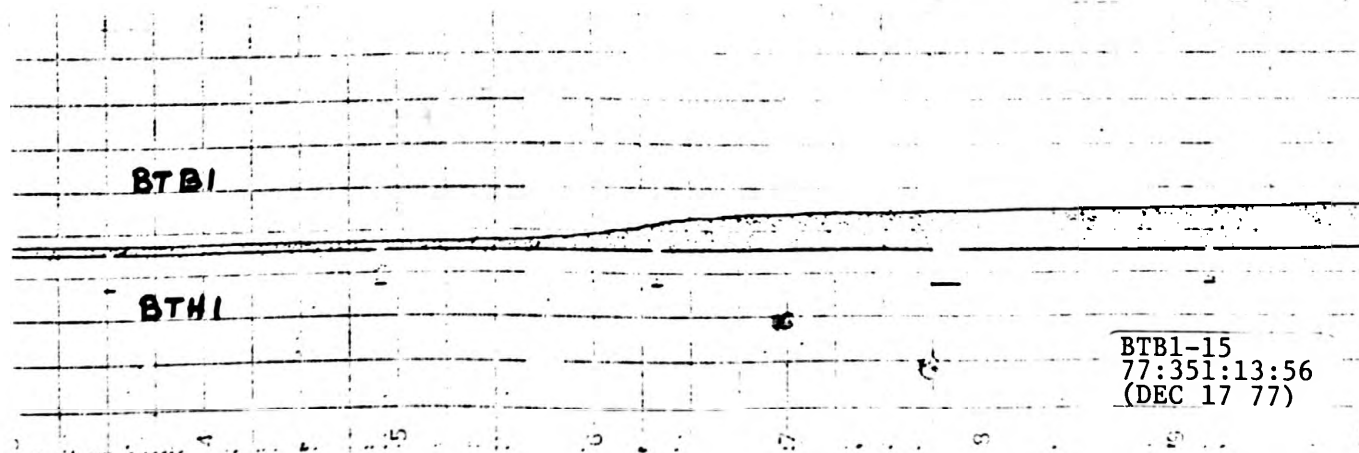
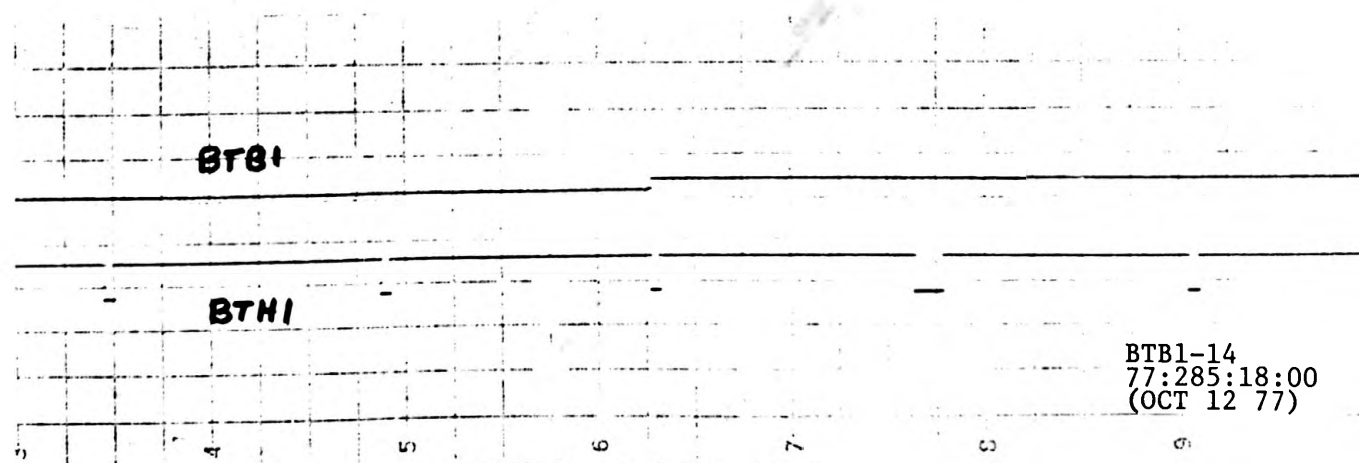
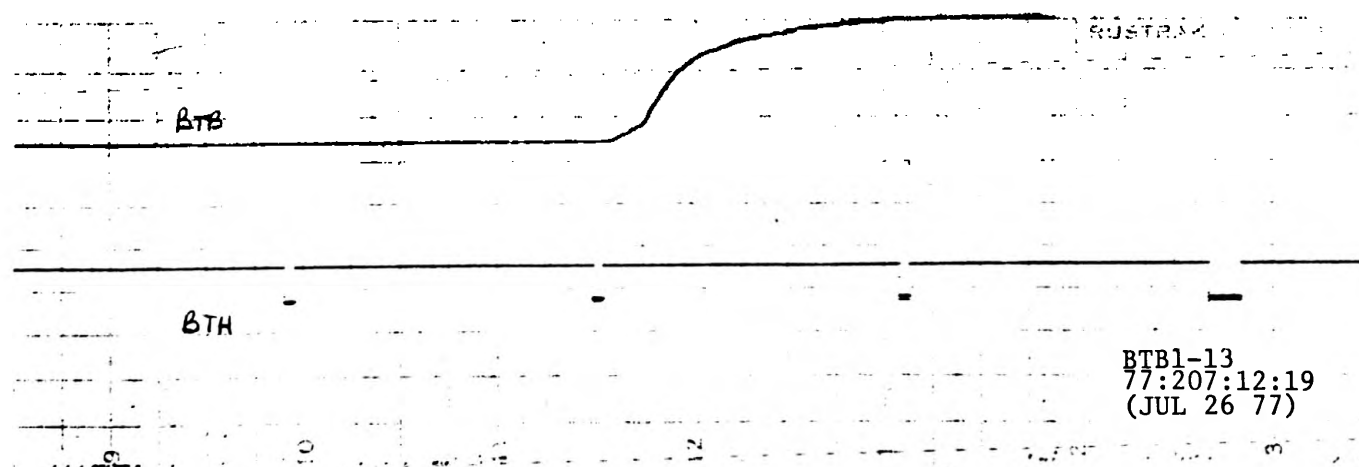
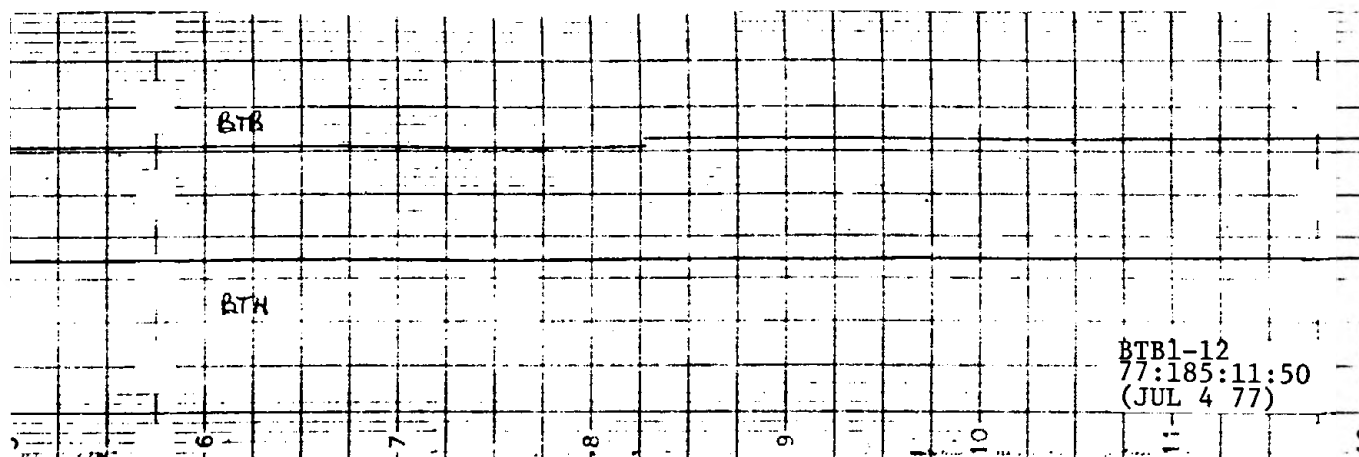
ВТВ

BTN

BTB1-3
76:168:12:23
(JUN 16 76)







STATION BLS

Latitude 36⁰ 53.6'
Longitude 121⁰ 25.4'

Position 114.9 km
30 meter rod, $\theta=22^0$

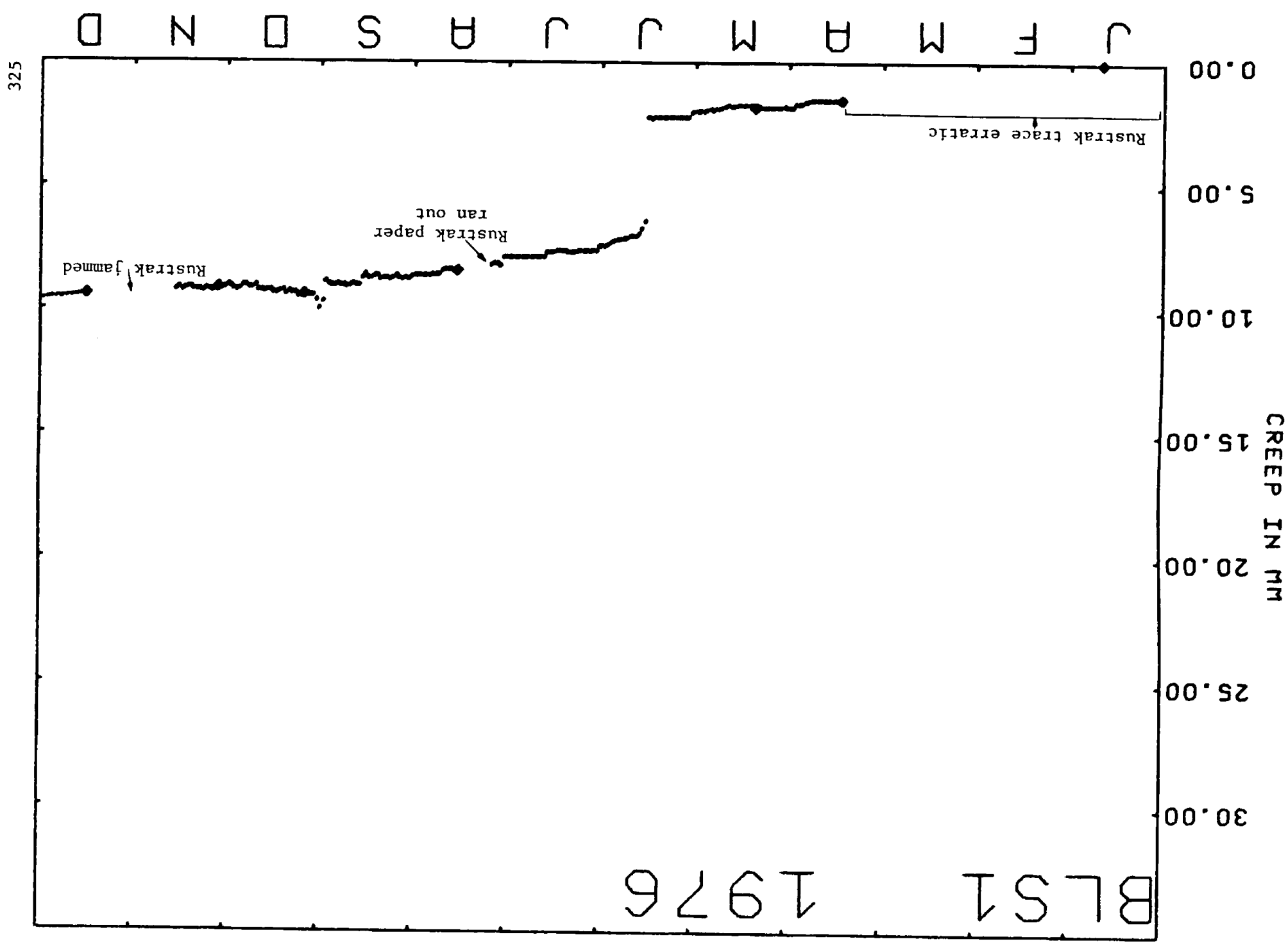
The Bolsa Road creepmeter was installed during June, 1971, on the Calaveras fault at a site 5.1 km northwest of Hollister. The installation consists of a single (extension) rod buried a few centimeters below a nearly flat surface in alluvium at the edge of a plowed, irrigated field. Creep activity at this site is composed of distinct events of up to 4.7 mm in amplitude, superimposed on a background of zero to slight right- and left-lateral slip. The average creep rate is about 5 mm/yr. Approximately 80% of the slip-zone width indicated by development of an echelon cracks in the adjacent pavement is covered by the instrument.

7.5 MINUTE SERIES (TOPOGRAPHIC)

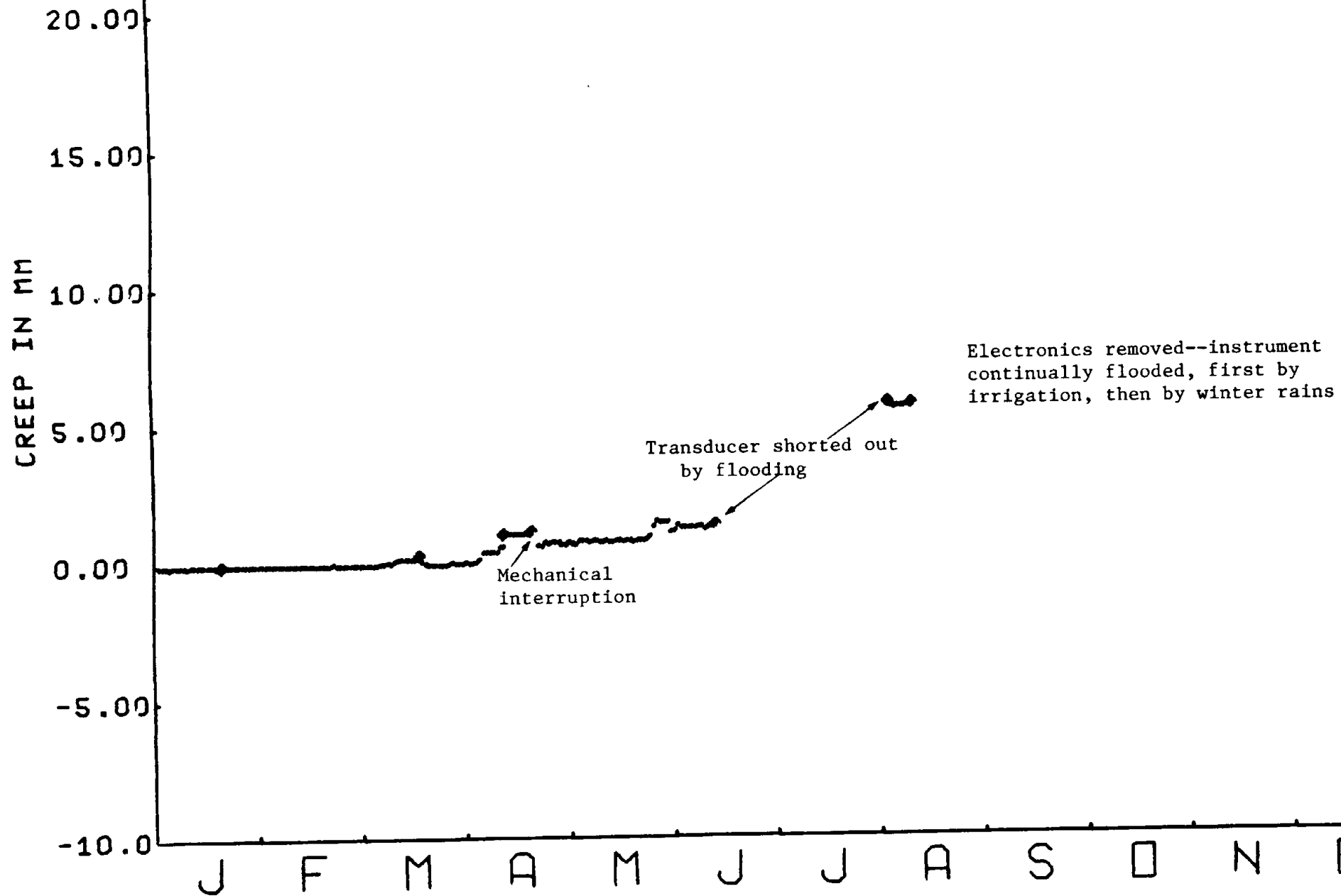
BLS CORRECTED CREEPMETER READINGS (mm)

324

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					24.14	
JAN 20	1.73		1.73		25.87	
APR 13	1.49		3.22		27.36	
APR 14	0.03		3.25		27.39	
JUN 25	5.49		8.74		32.88	
AUG 17	1.41		10.15		34.29	
OCT 6	0.97		11.12		35.26	
NOV 3	-0.26		10.86		35.00	
DEC 16	0.28		11.14		35.28	
<u>1977</u>						
JAN 20	0.12		0.12		35.40	
MAR 19	0.30		0.42		35.70	
APR 13	0.78		1.20		36.48	
APR 21	0.08		1.28		36.56	
JUN 15	0.88		2.16		37.44	
JUL 18	0.00		2.16		37.44	
JUL 28	3.31		5.47		40.75	
AUG 4	0.41		5.88		41.16	
AUG 11	-0.06		5.82		41.10	
AUG 18	0.00		5.82		41.10	
OCT 3	0.26		6.08		41.36	



BLS1 1977



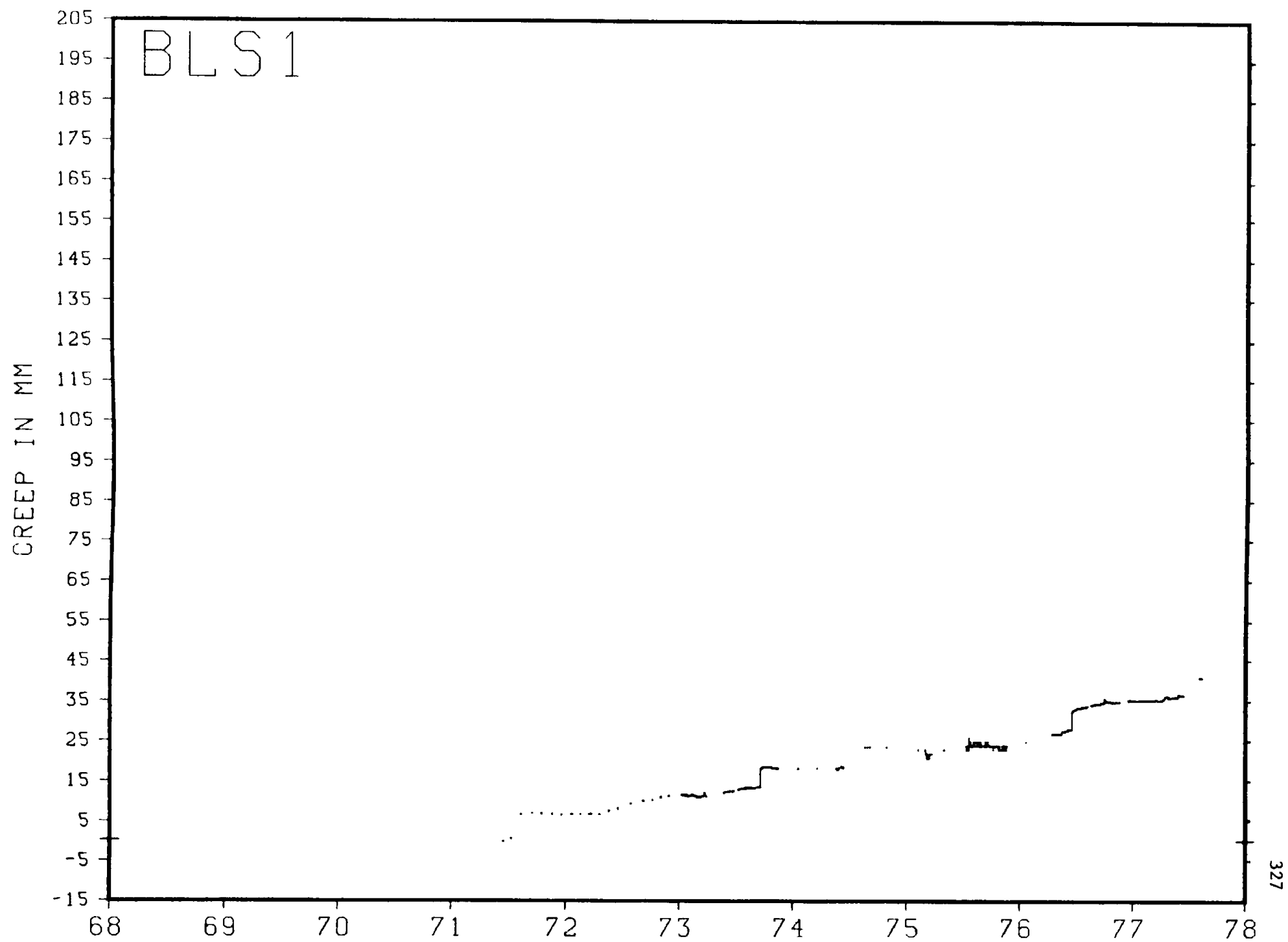


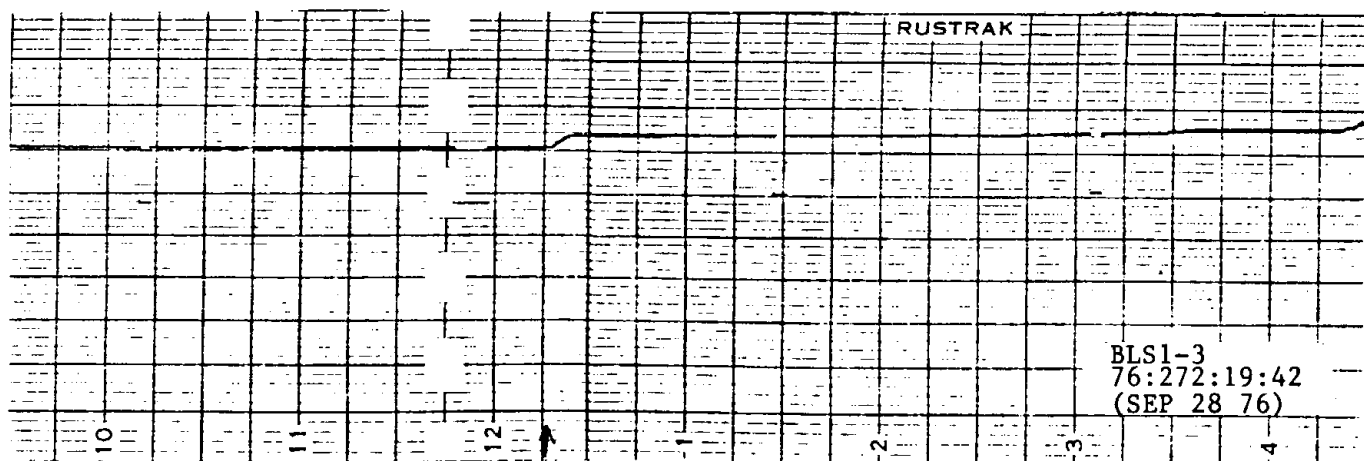
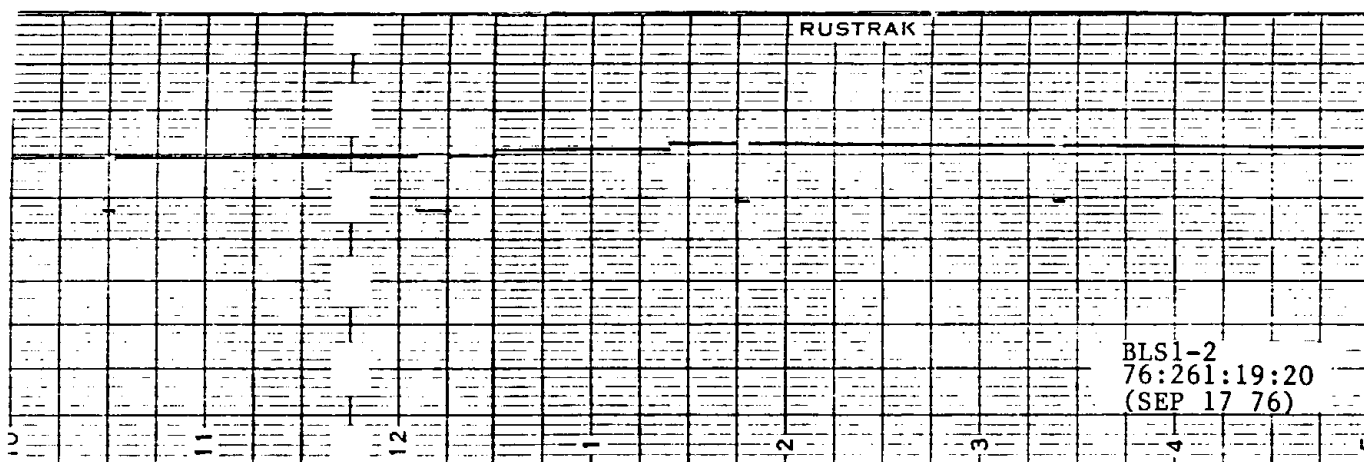
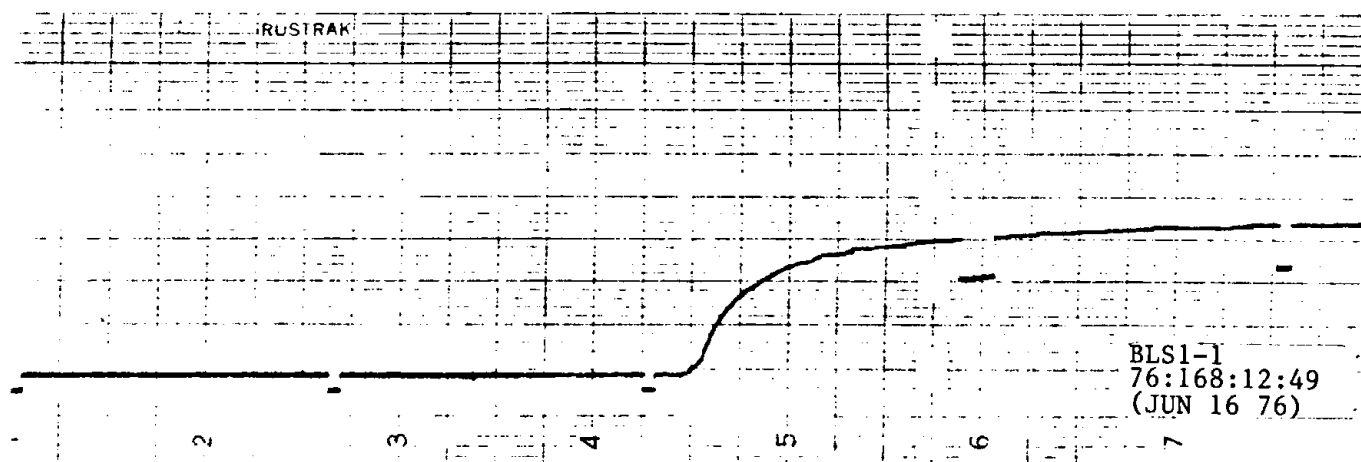
Table of BLS1 Events

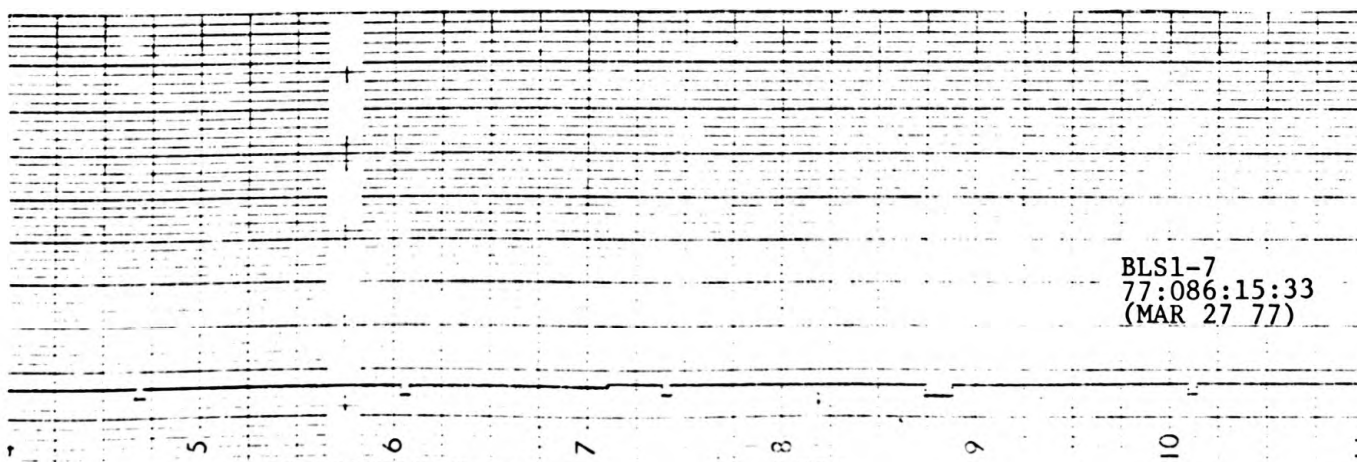
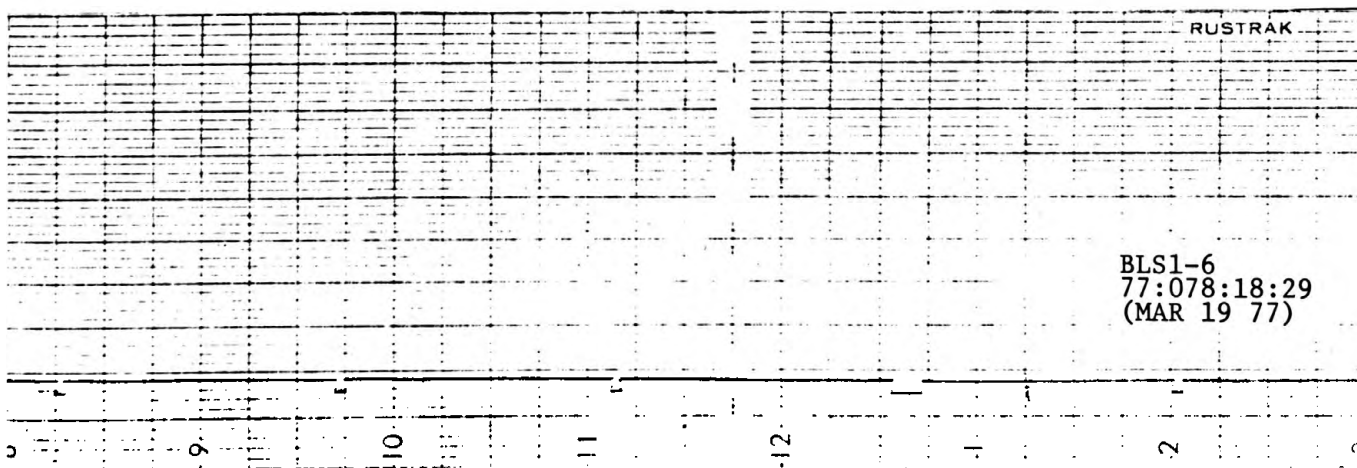
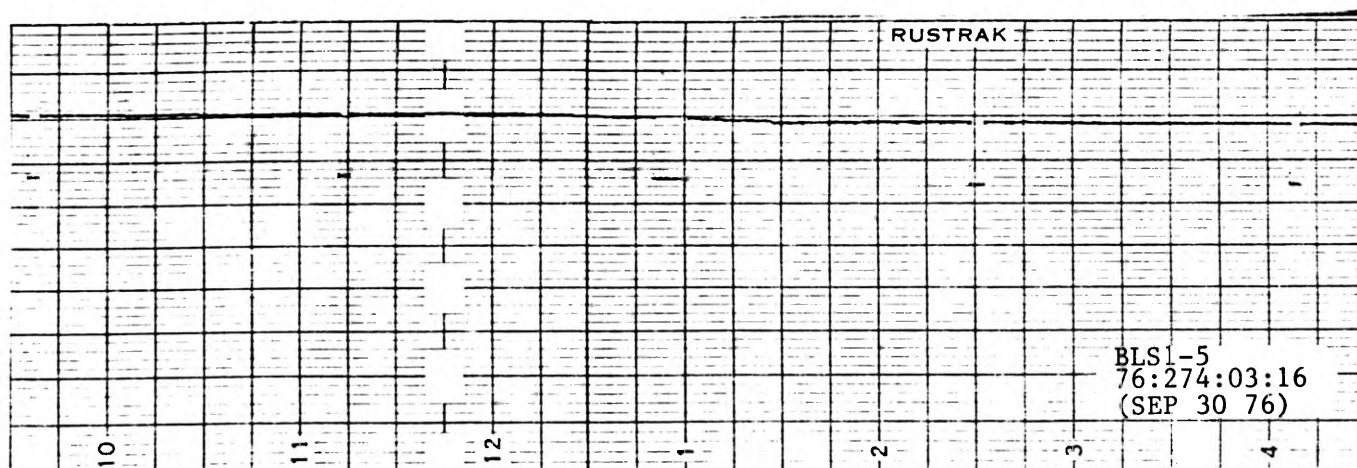
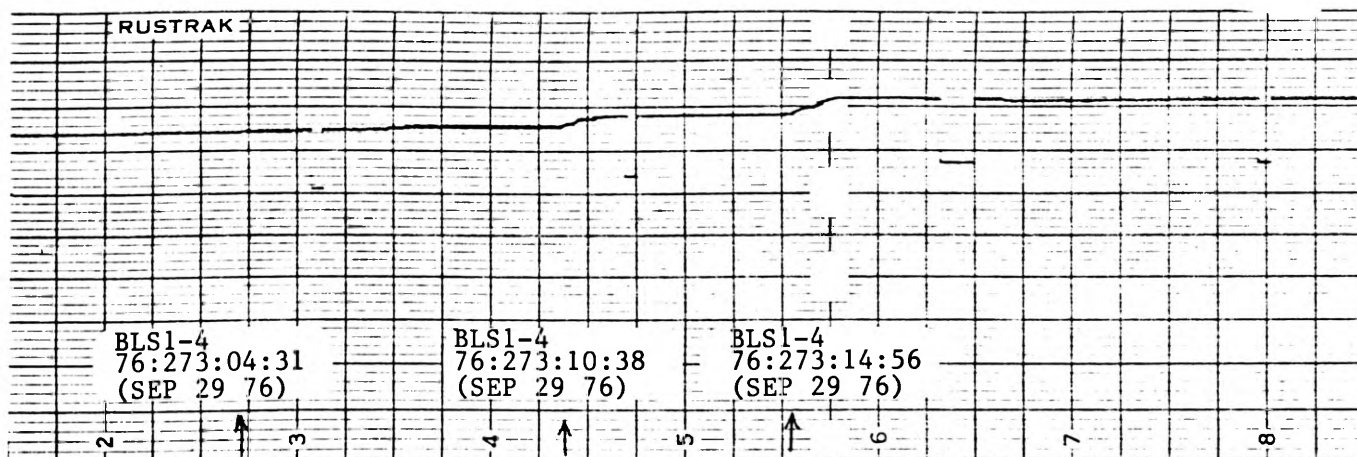
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	115-120	Apr. 24-29		0.32	*		
	154-155	Jun. 2-3		0.29	*		
	168	Jun. 16	1249	4.77	1	0.92	1.18
	184	Jul. 2	2239	0.25	*		
	201	Jul. 19	1056	0.20	*		
	216	Aug. 3		0.33	*		
	260-262	Sep. 16-18		0.41	*		
	261	Sep. 17	1920	0.29	2	0.92	1.11
	272-273	Sep. 28-29 ^{1/}		1.22	*		
	272	Sep. 28 ^{1/}	1942	0.37	3	0.92	1.11
	273	Sep. 29	0431	0.19	4	0.92	1.11
	273	Sep. 29	1038	0.27		0.92	1.11
	273	Sep. 29	1456	0.39		0.92	1.11
	274	Sep. 30	0316	-0.65	5	0.92	1.11
1977	078	Mar. 19	1829	0.19	6	1.04	1.18
	086	Mar. 27	1533	0.09	7	1.10	1.18
	095	Apr. 5	0230	0.06	8	1.13	1.18
	096	Apr. 6	1836	0.27	9	1.10	1.18
	101	Apr. 11	1505	0.18	10	1.14	1.18
	146	May 26	0027	0.28	11	1.10	1.17
	147	May 27	0629	0.39	12	1.11	1.17

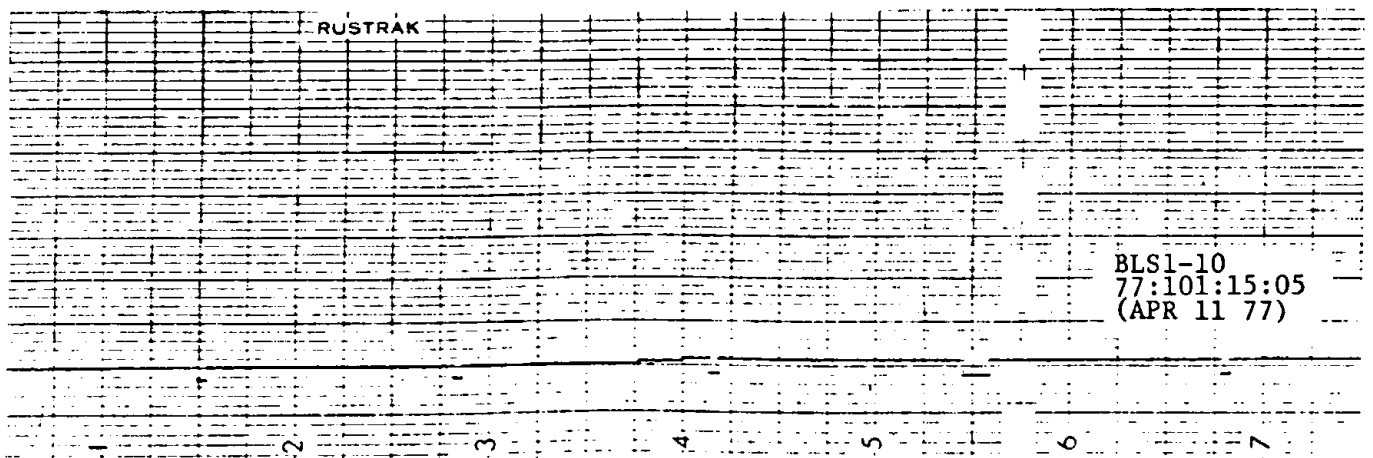
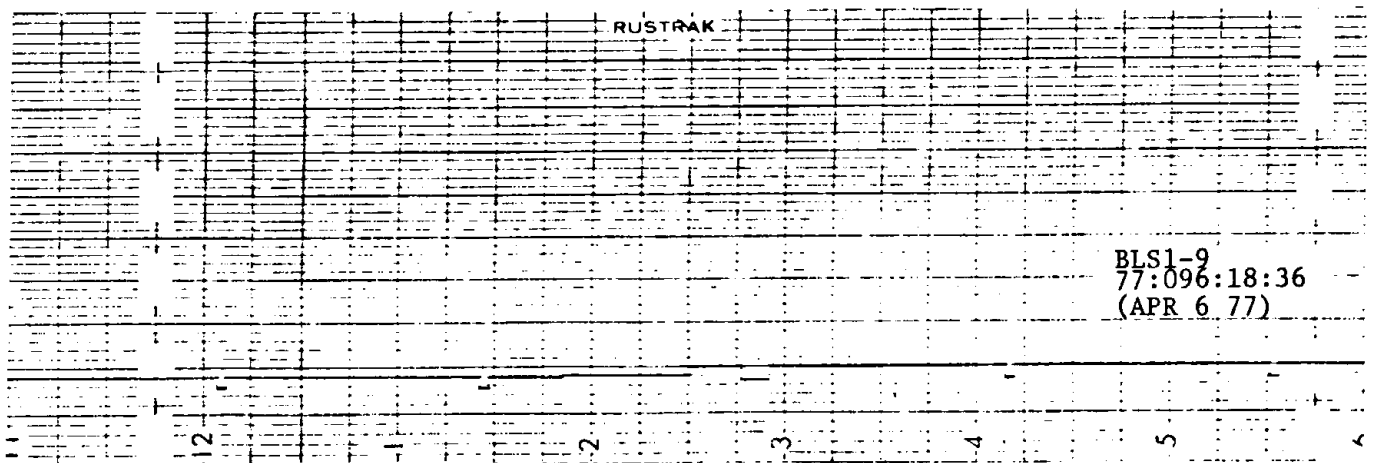
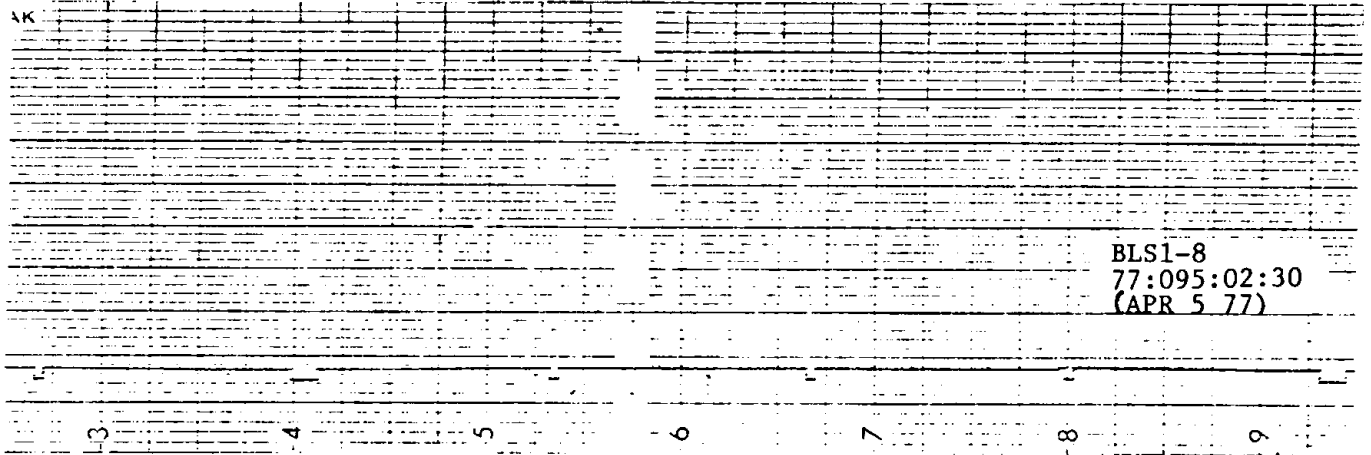
^{1/} Onset of rapid right-lateral rise was approximately coincident with beginning of rainfall.

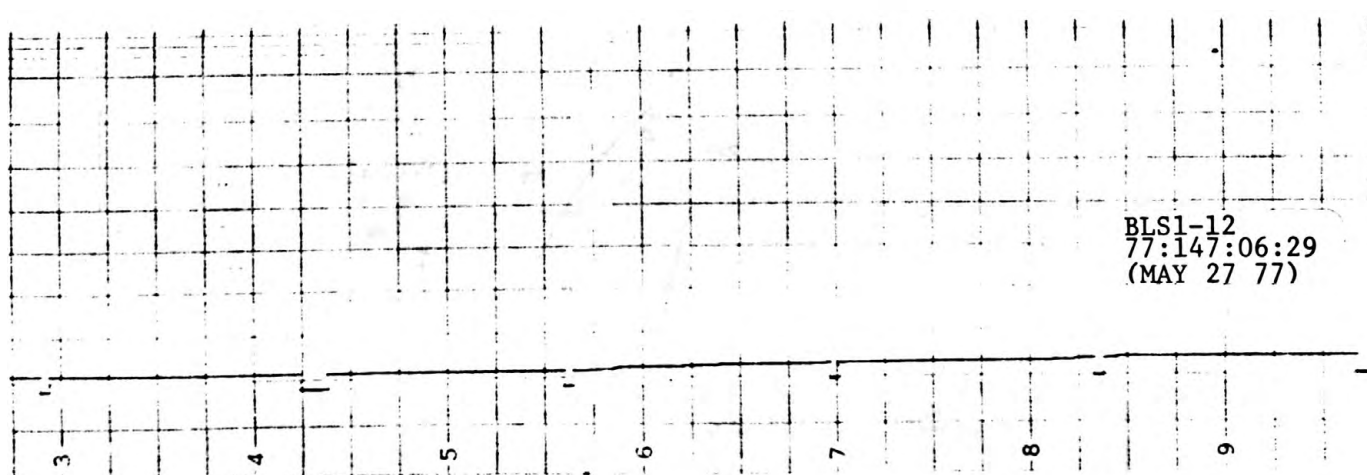
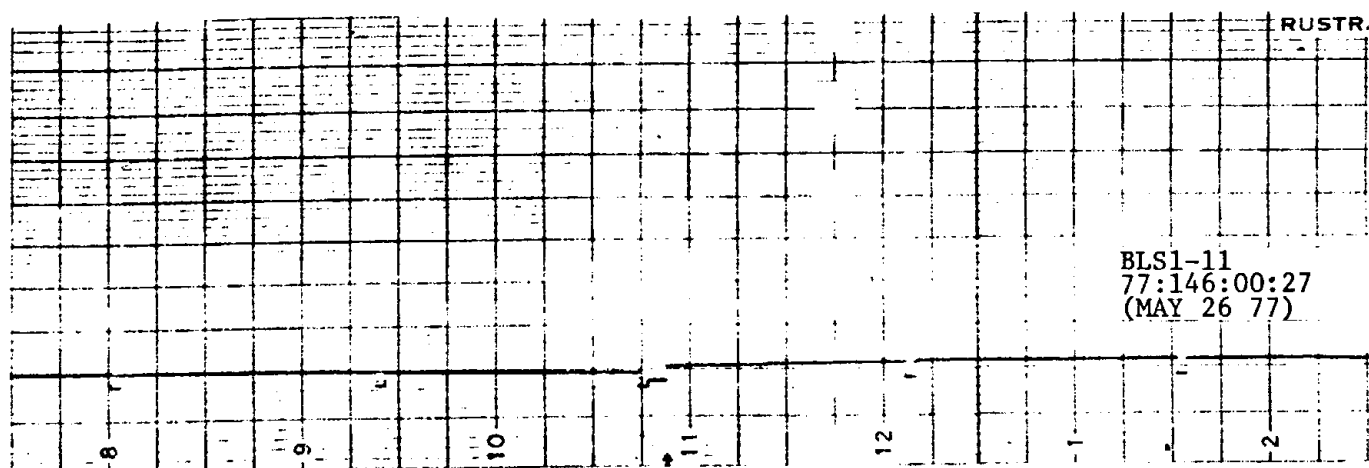
*Refer to annual plot.

NOTE: Time marks on first four figures are considerably off; corrected times are given.







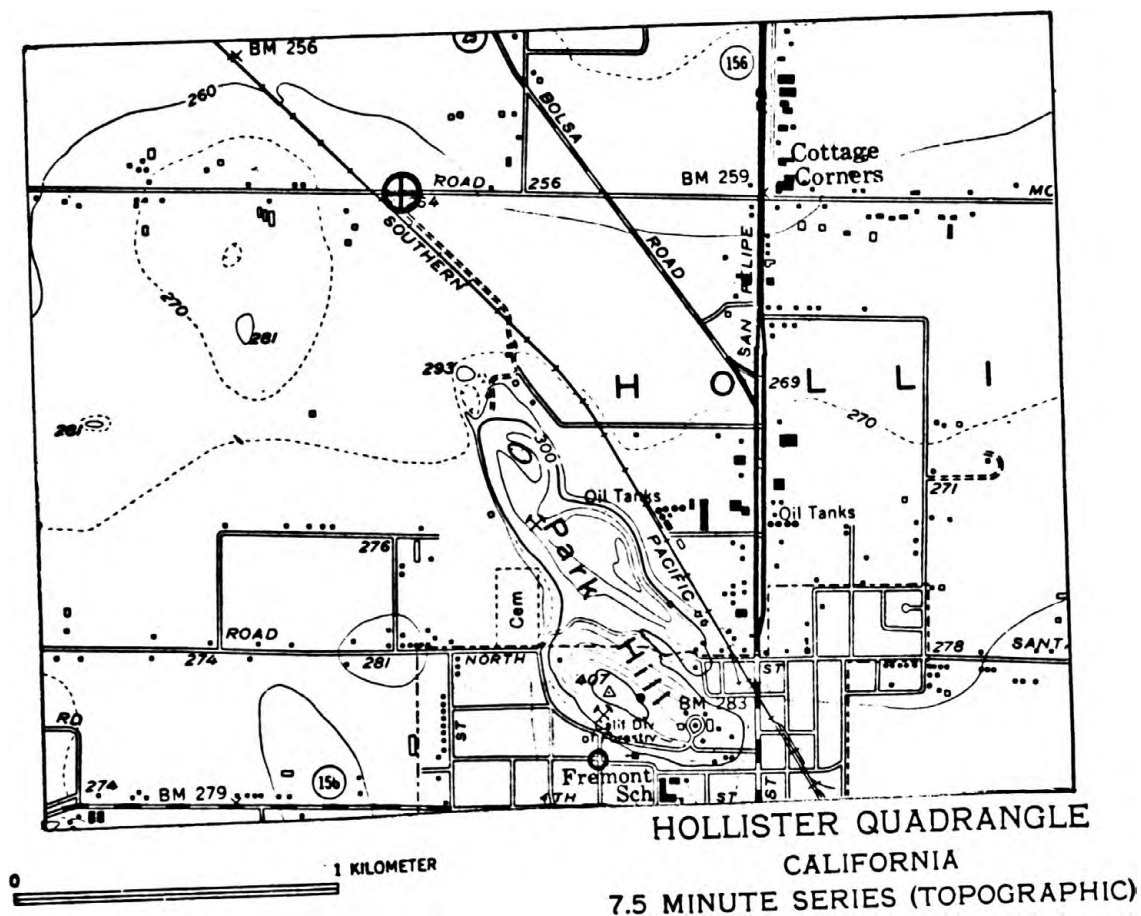


STATION WRT

Latitude $36^{\circ} 52.2'$
 Longitude $121^{\circ} 24.8'$

Position 117.7 km
 12 meter rods, $\theta=45^{\circ}$

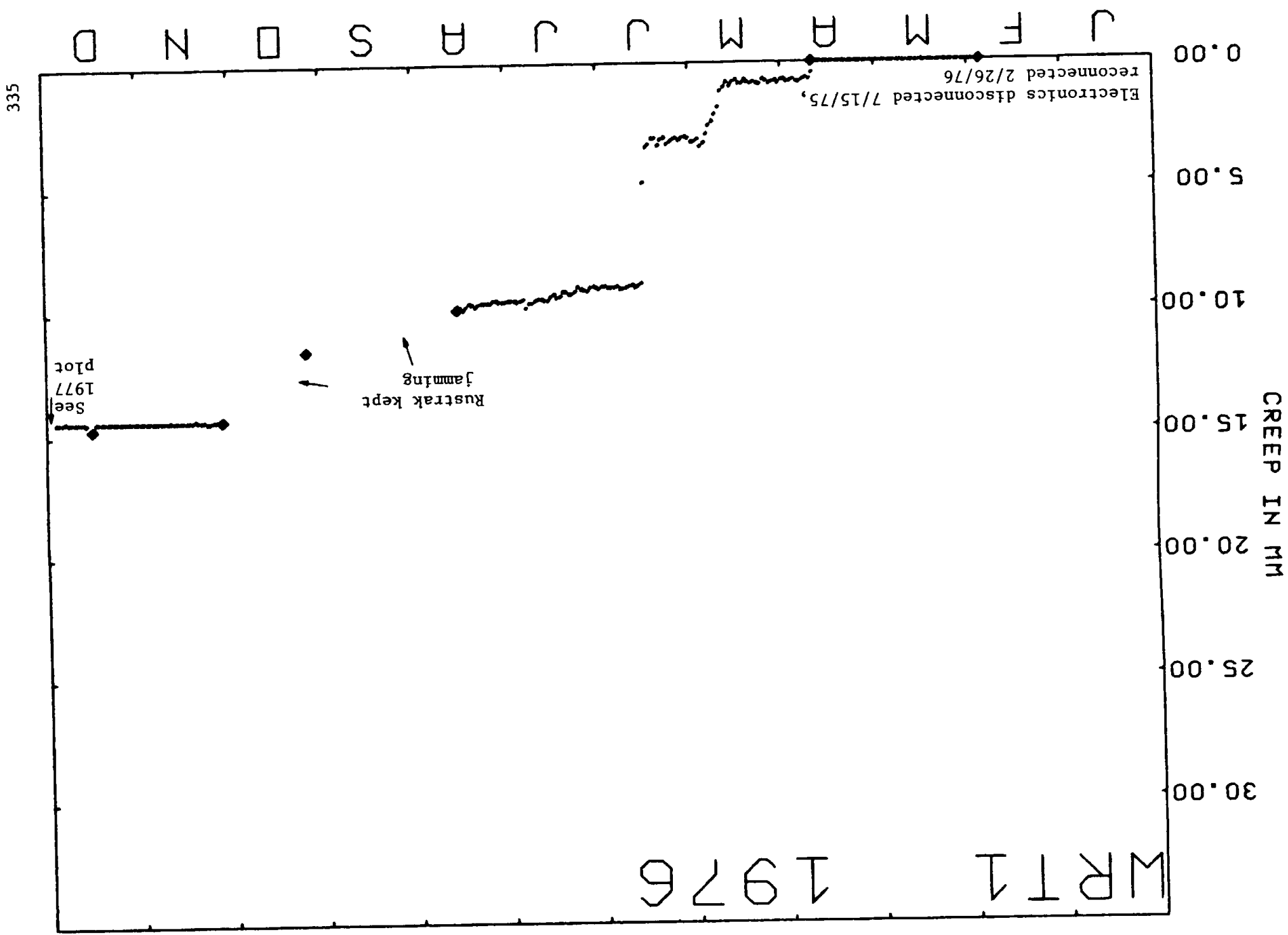
The Wright Road creepmeters were installed during June, 1971, on the Calaveras fault at a site 2.3 km northwest of Hollister. The installation consists of a pair of crossed rods buried a few centimeters below a nearly flat surface in alluvium beneath the pavement and adjacent north shoulder of Wright Road. Creep activity at this site is composed of distinct events of up to 8.8 mm in amplitude, superimposed on a background of zero to slight right-lateral slip. The average creep rate is about 14 mm/yr.

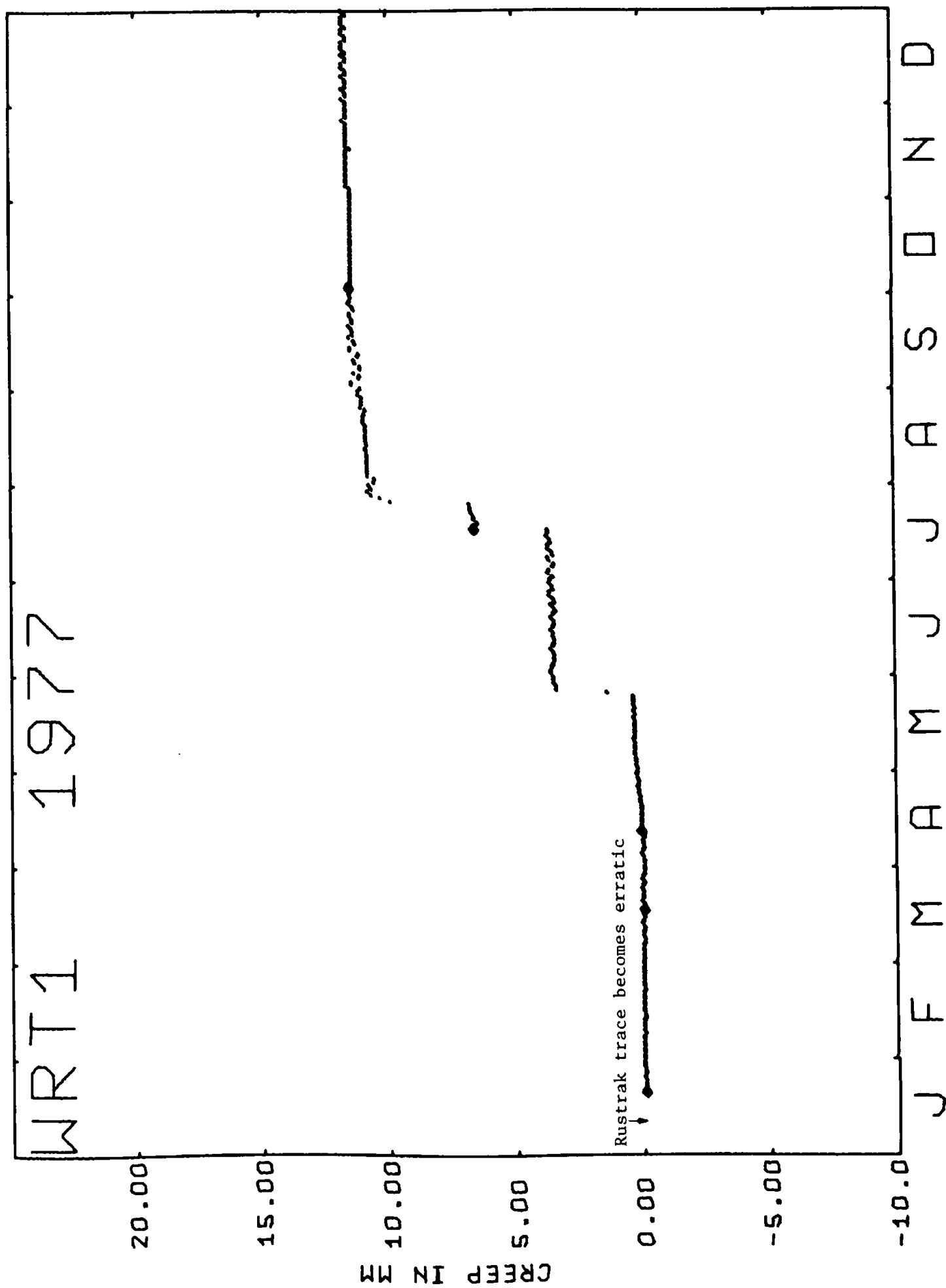


WRT CORRECTED CREEPMETER READING (mm)

334

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					57.23	0.93
FEB 26	0.00	2.38	0.00	2.38	57.23	3.31
APR 21	0.00	1.90	0.00	4.28	57.23	5.21
AUG 17	9.97		9.97		67.20	
OCT 6	1.66		11.63		68.86	
NOV 3	2.80	10.42	14.43	14.70	71.66	15.63
DEC 16	0.28	-0.26	14.71	14.34	71.94	15.37
<u>1977</u>						
JAN 20	-0.14	0.54	-0.14	0.54	71.80	15.91
MAR 19	0.00		-0.14		71.80	
APR 13	0.07	0.13	-0.07	0.67	71.87	16.04
JUN 15	6.01	2.60	5.94	3.27	77.88	18.64
JUL 18	0.57	-0.10	6.51	3.17	78.45	18.54
JUL 28	3.81		10.32		82.26	
AUG 4		0.00		3.17		18.54
AUG 11	0.29	0.13	10.61	3.30	82.55	18.67
OCT 3	0.70	-0.55	11.31	2.75	83.25	18.12
NOV 16	0.00	0.83	11.31	3.58	83.25	18.95





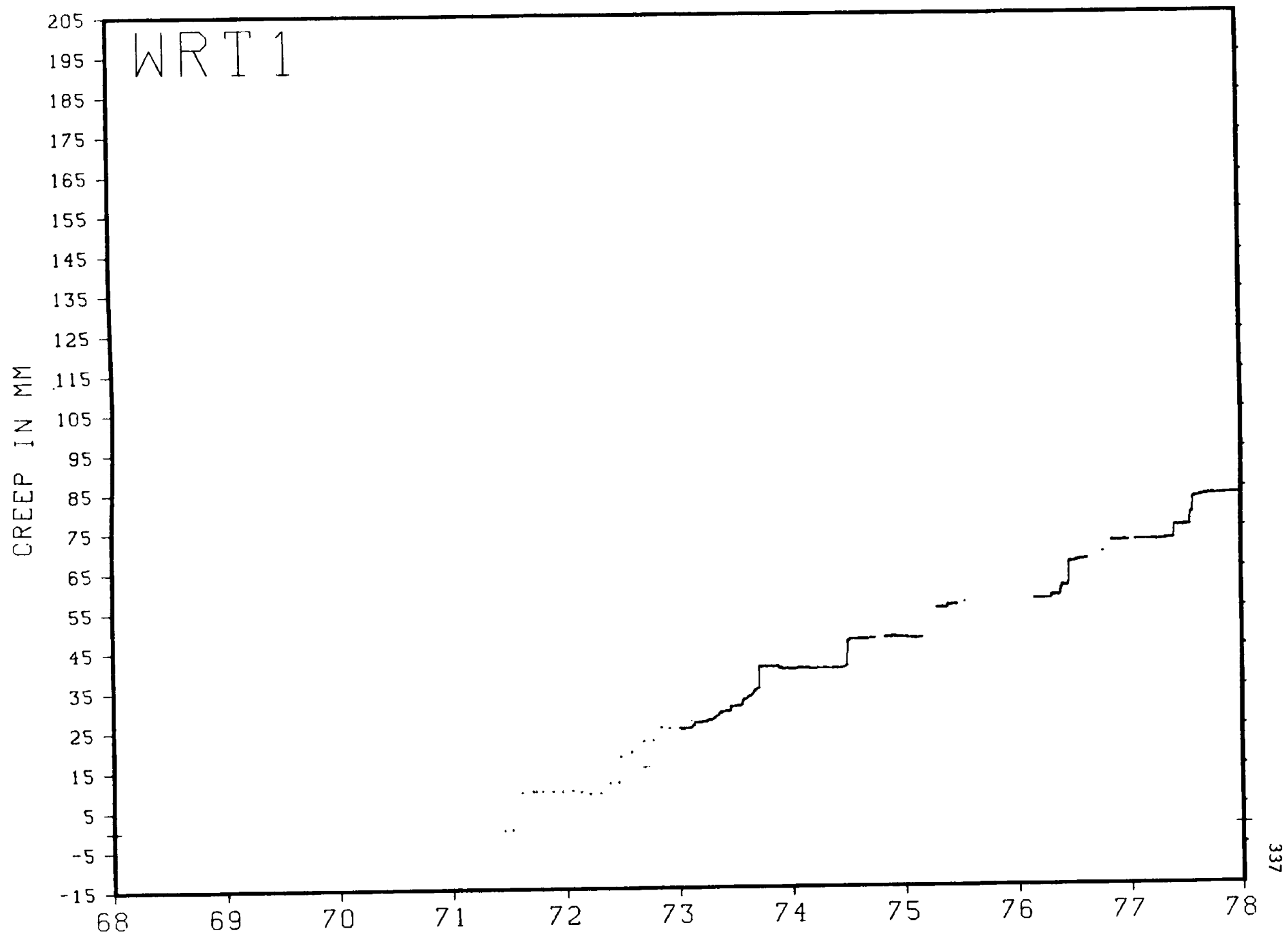


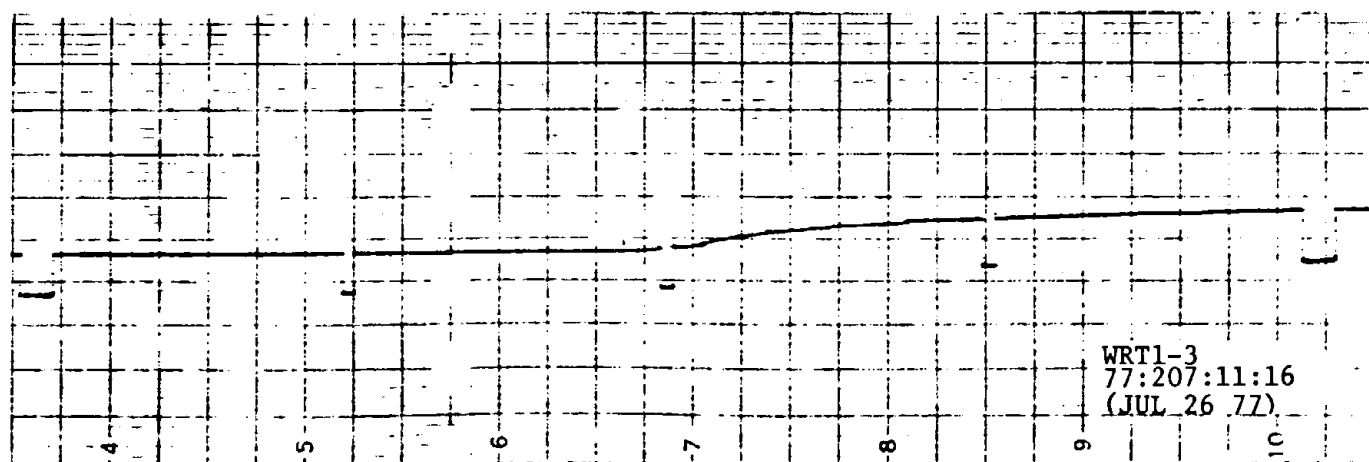
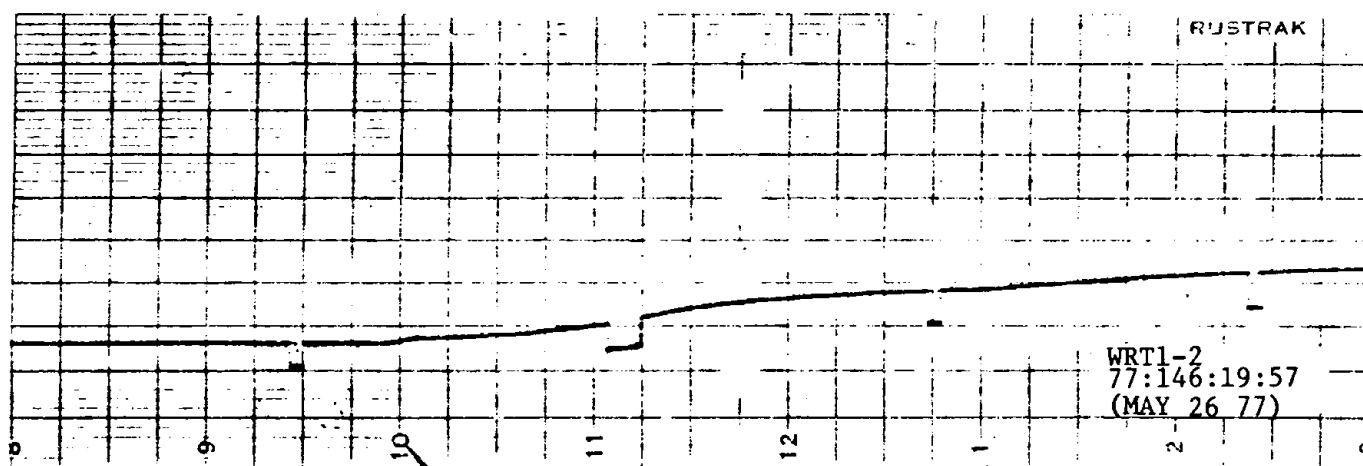
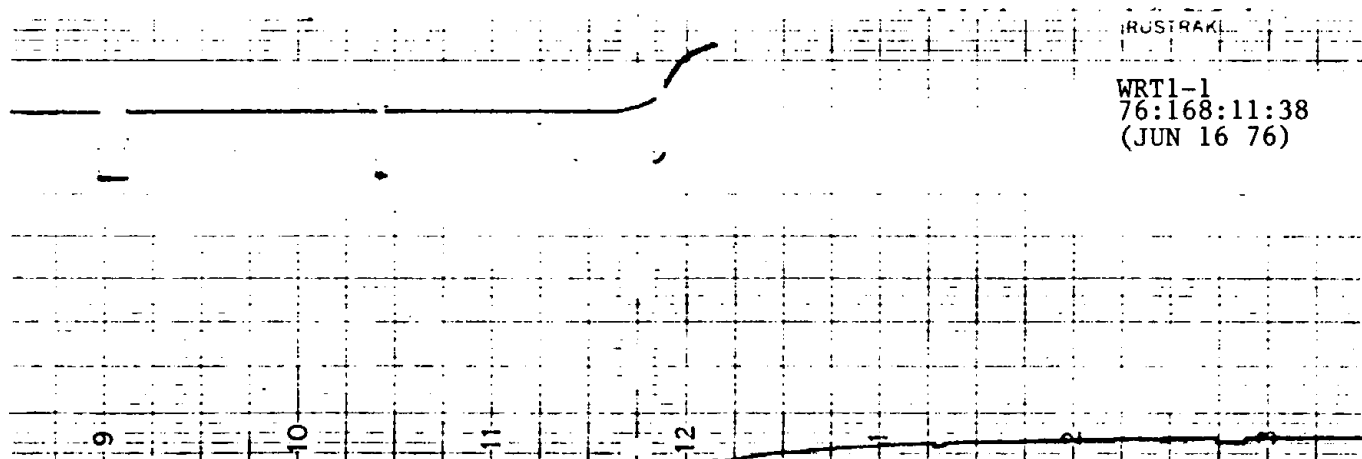
Table of WRT1 Events

338

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	112-113	Apr. 21-22	0138	0.80	*		
	141-148	May 20-28	0225	2.54	*		
	149-153	May 28-Jun 1		-0.30	*		
	168	Jun. 16	1138	6.00	1	1.04	2.92
	205	Jul. 24		0.20	*		
	206	Jul. 25		-0.40	*		
	229-307	Aug. 17-Nov. 3	Recorder down				
1977	146	May 26	1957	3.11	2	0.92	1.68
	199	Jul. 18			***		
	207	Jul. 26	1116	3.34	3	0.91	2.91

* Refer to annual plot

*** possible mechanical disturbance during reading



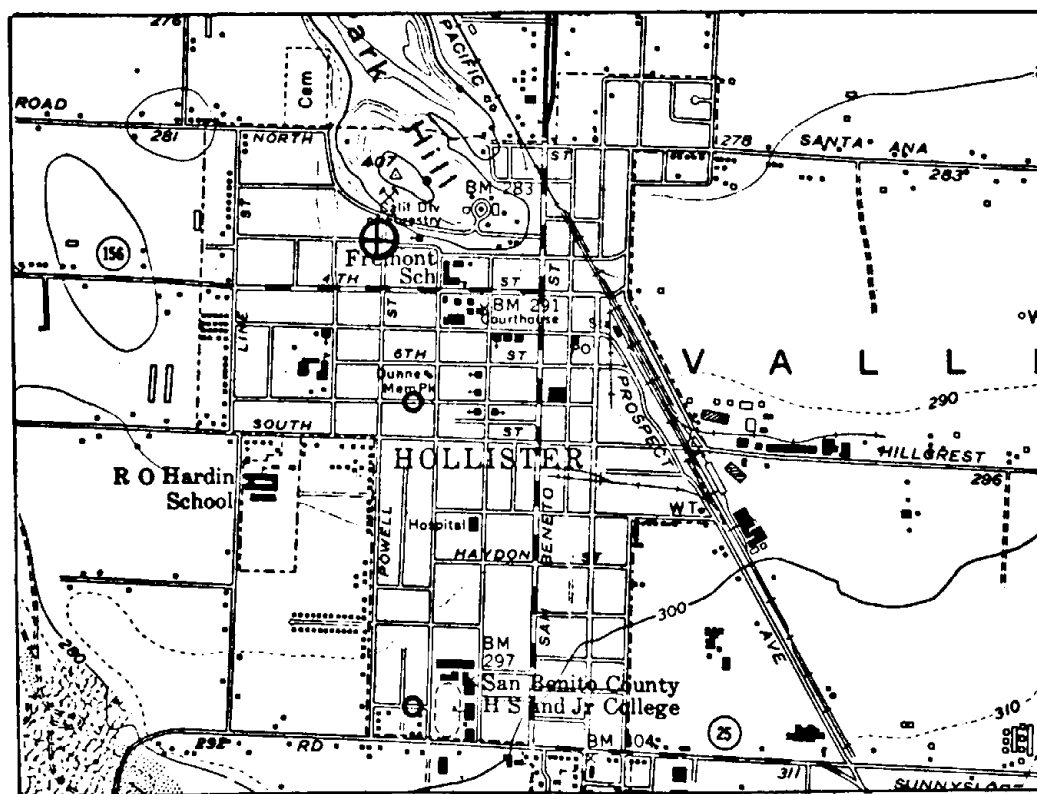
STATION HLC

340

Latitude $36^{\circ} 51.4'$
 Longitude $121^{\circ} 24.3'$

Position 119.5 km
 12 meter rods, $\theta=45^{\circ}$

The Hollister (Central Avenue) creepmeters were installed during April, 1970, on the Calaveras fault at a site 0.5 km northwest of the center of Hollister. The installation consists of a pair of crossed rods buried a few centimeters below the surface beneath the pavement and adjacent north curb of Central Avenue. Creep activity at this site is composed of distinct events of up to 9.4 mm in amplitude, superimposed on a background of slight right- and left-lateral drift. The average creep rate is about 9 mm/yr.



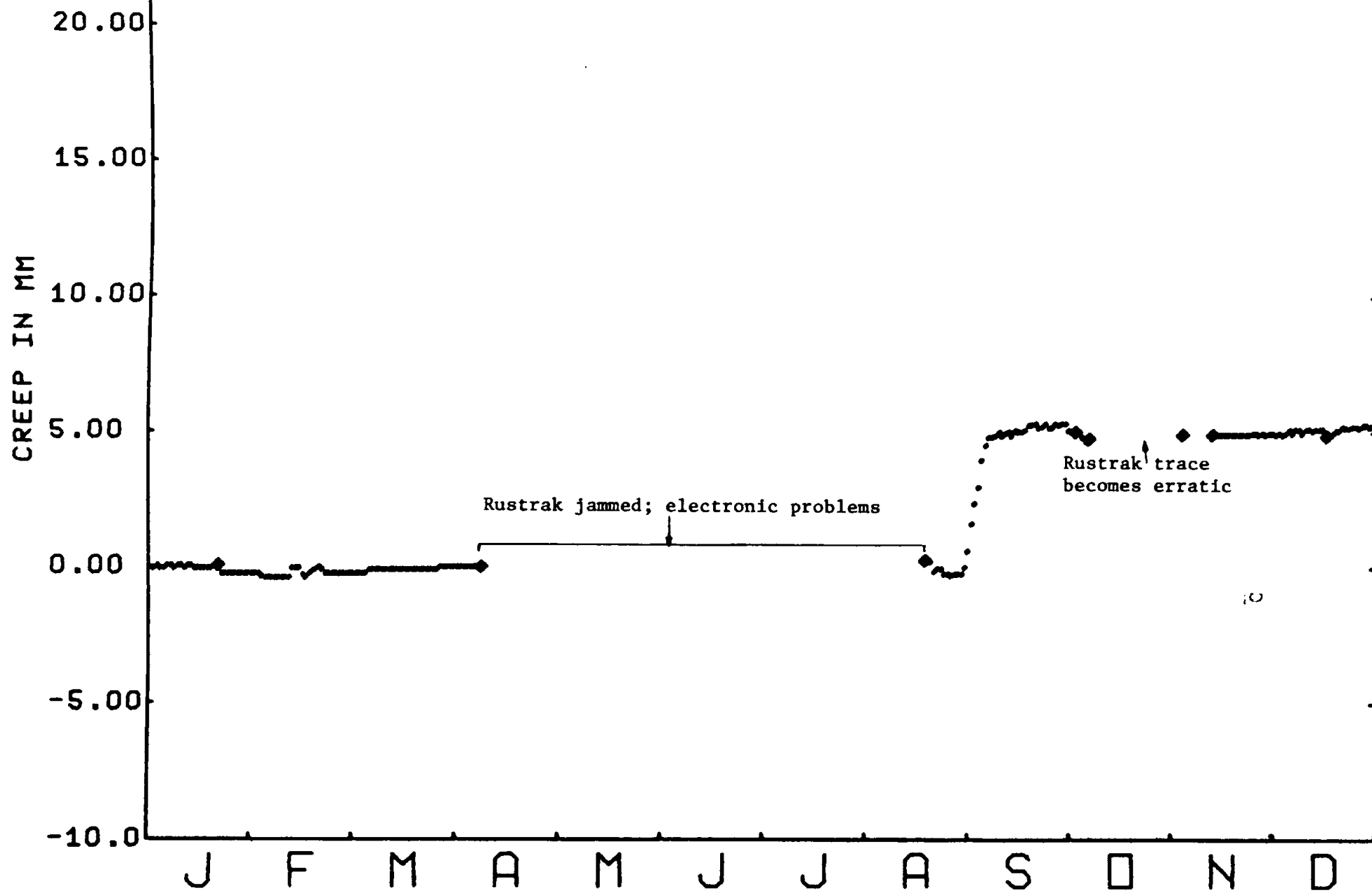
HOLLISTER QUADRANGLE
 CALIFORNIA
 7.5 MINUTE SERIES (TOPOGRAPHIC)

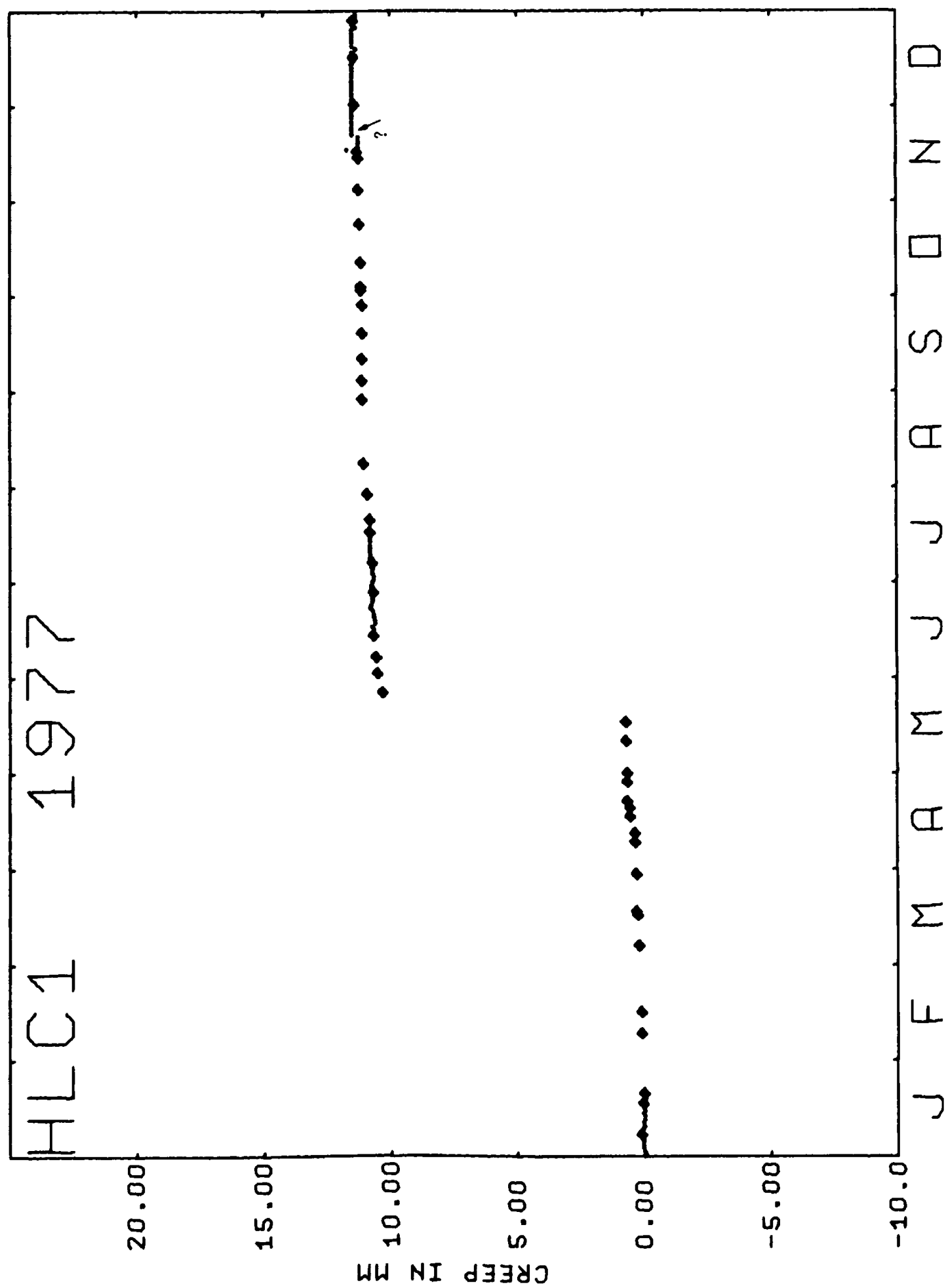
HLC CORRECTED CREEPMETER READINGS (mm)

341

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					56.19	45.50
JAN 21	0.41	0.09	0.41	0.09	56.60	45.59
APR 22	-0.05	-0.01	0.36	0.08	56.55	45.58
MAY 12	-0.14	0.00	0.22	0.08	56.41	45.58
AUG 18	0.41	0.37	0.63	0.45	56.82	45.95
OCT 2	4.71	4.91	5.34	5.36	61.53	50.86
OCT 6	-0.25		5.09		61.28	
NOV 3	0.18	0.01	5.27	5.37	61.46	50.87
DEC 16	-0.04	-0.13	5.23	5.24	61.42	50.74
<u>1977</u>						
JAN 20	0.34	0.13	0.34	0.13	61.76	50.87
MAR 19	0.28		0.62		62.04	
APR 13	0.07	0.23	0.69	0.36	62.11	51.10
APR 21	0.17		0.86		62.28	
APR 29	0.13		0.99		62.41	
JUN 15	9.97		10.96		72.38	
JUL 18	0.17		11.13		72.55	
JUL 27	0.03		11.16		72.58	
AUG 11	0.22		11.38		72.80	
OCT 3	0.10		11.48		72.90	
NOV 16	0.17		11.65		73.07	

HLC1 1976





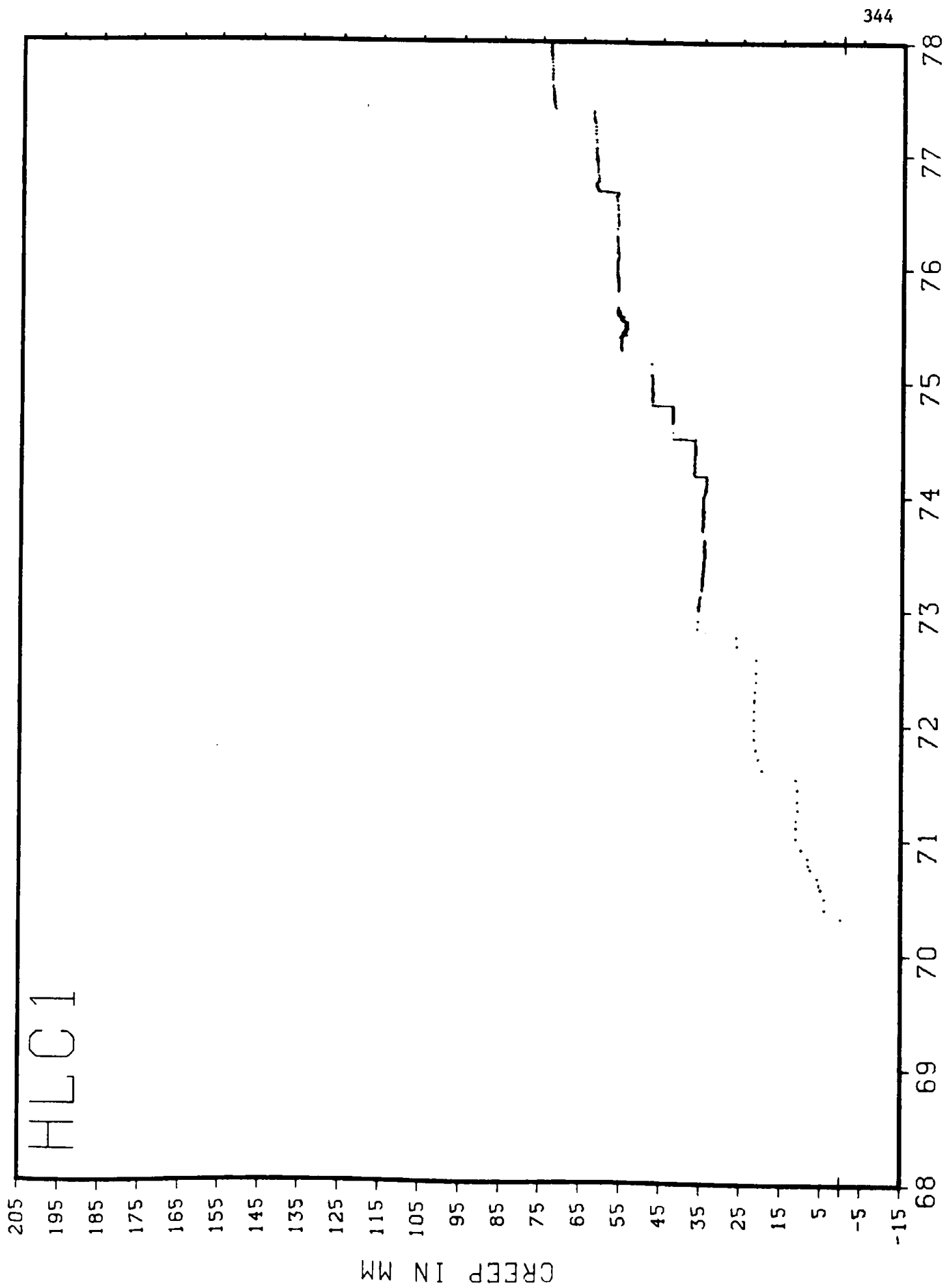


Table of HLC1 Events

345

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. No.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	233	Aug. 20		-0.40	*		
	237	Aug. 24		-0.23	*		
	242	Aug. 29 <u>1/</u>	0152	5.30	1	0.74	1.33
	272	Sep. 29 <u>2/</u>	(approx.)	-0.28	*		
1977	147	May 27		9.50	*		

*Refer to annual plot

1/ Beginning of 11-day movement.

2/ Onset of 8 to 15-day period of 0.8 mm apparent left-lateral movement was approximately coincident with beginning of rainfall.

HLC1-1
76:242:01:52
(AUG 29 76)

RUSTR

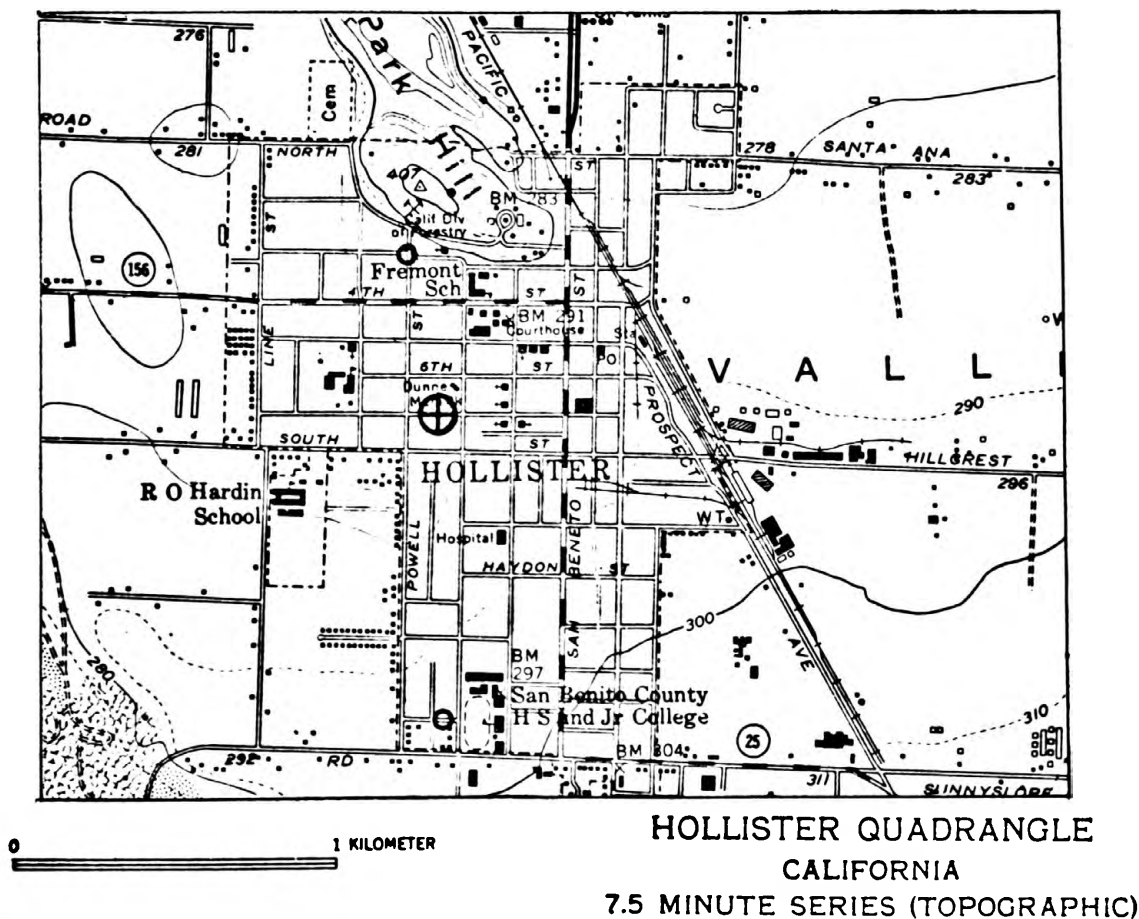
STATION HLS

347

Latitude $36^{\circ} 51.1'$
Longitude $121^{\circ} 24.2'$

Position 120.0 km
12 meter rods, $\theta=45^{\circ}$

The Hollister (Seventh Street) creepmeters were installed during April, 1970, on the Calaveras fault near the center of the City of Hollister. The installation consists of a pair of crossed rods buried a few centimeters below the surface beneath the pavement and adjacent north curb of Seventh Street. Creep activity at this site is composed of distinct events of up to 5.6 mm in amplitude, superimposed on a background of gradual right- and left-lateral drift. The average creep rate is about 8 mm/yr, with a slight seasonal variation.

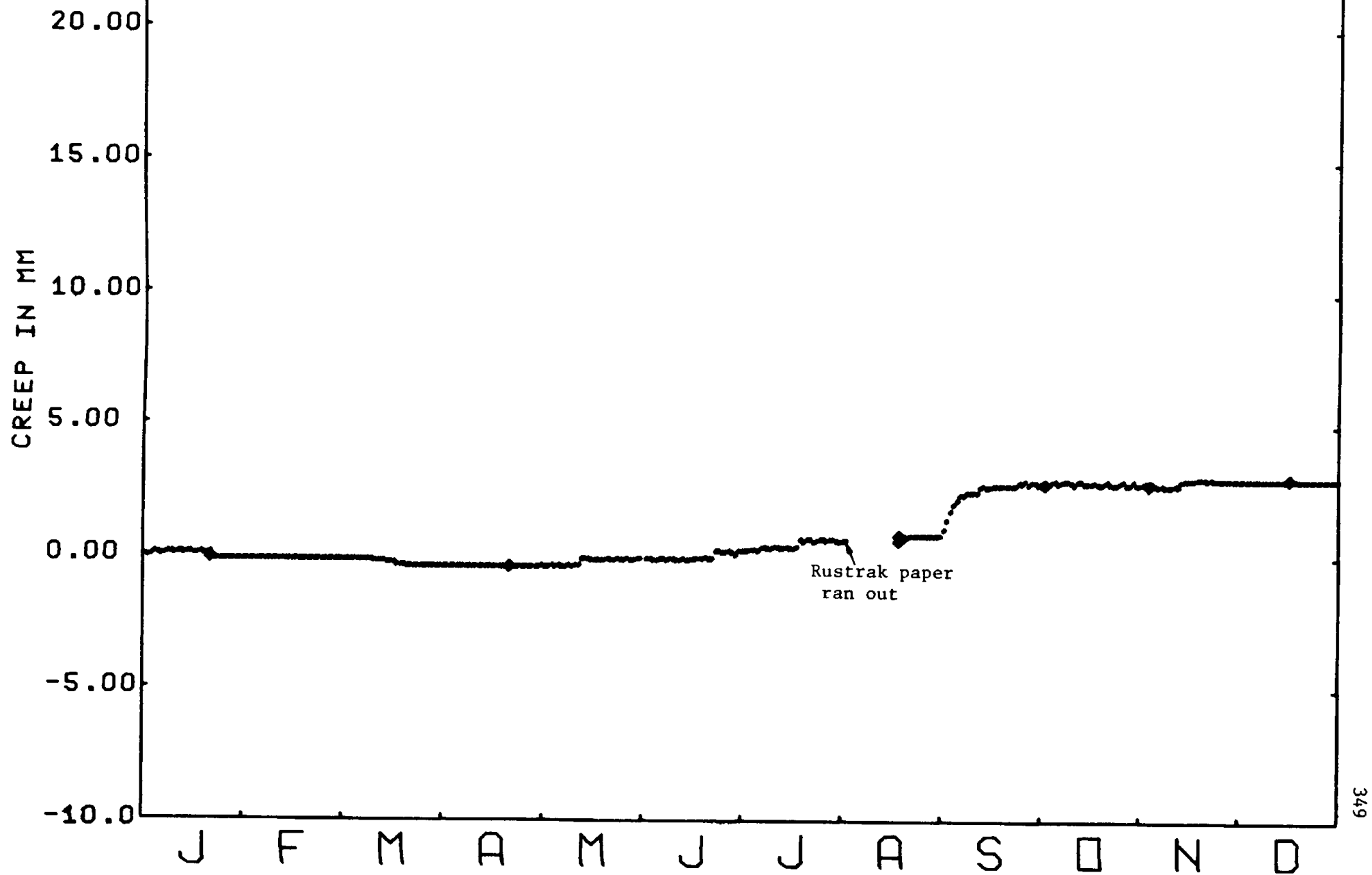


HLS CORRECTED CREEPMETER READINGS (mm)

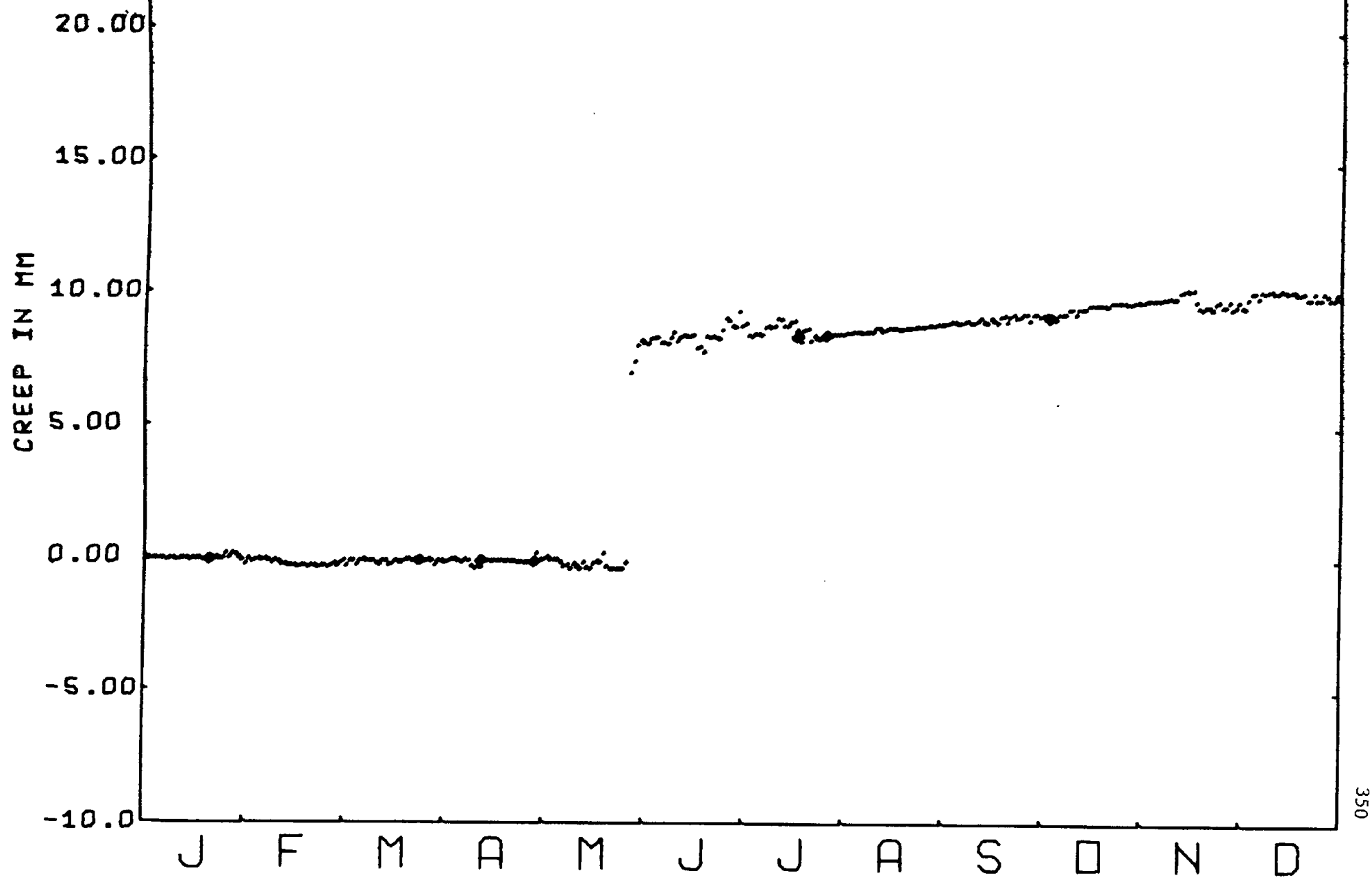
348

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					46.44	32.00
JAN 21	0.07	-0.34	0.07	-0.34	46.51	31.66
APR 21	-0.28	0.59	-0.21	0.25	46.23	32.25
MAY 12	0.18	0.42	-0.03	0.67	46.41	32.67
AUG 18	0.99	0.07	0.96	0.74	47.40	32.74
OCT 2	1.97	1.36	2.93	2.10	49.37	34.10
NOV 3	-0.03	0.10	2.90	2.20	49.34	34.20
DEC 16	0.26	0.00	3.16	2.20	49.60	34.20
<u>1977</u>						
JAN 20	-0.10	0.05	-0.10	0.05	49.50	34.25
MAR 25	0.00	-0.05	-0.10	0.00	49.50	34.20
APR 13	0.01	0.17	-0.09	0.17	49.51	34.37
APR 29	-0.03		-0.12		49.48	
JUN 15	7.61	6.09	7.49	6.26	57.09	40.46
JUL 18	0.93	0.55	8.42	6.81	58.02	41.01
JUL 27	0.06	-0.48	8.48	6.33	58.08	40.53
AUG 11	0.20	1.08	8.68	7.41	58.28	41.61
OCT 3	0.48	0.22	9.16	7.63	58.76	41.83
NOV 16	0.48		9.64		59.24	

HLS1 1976



HLS1 1977



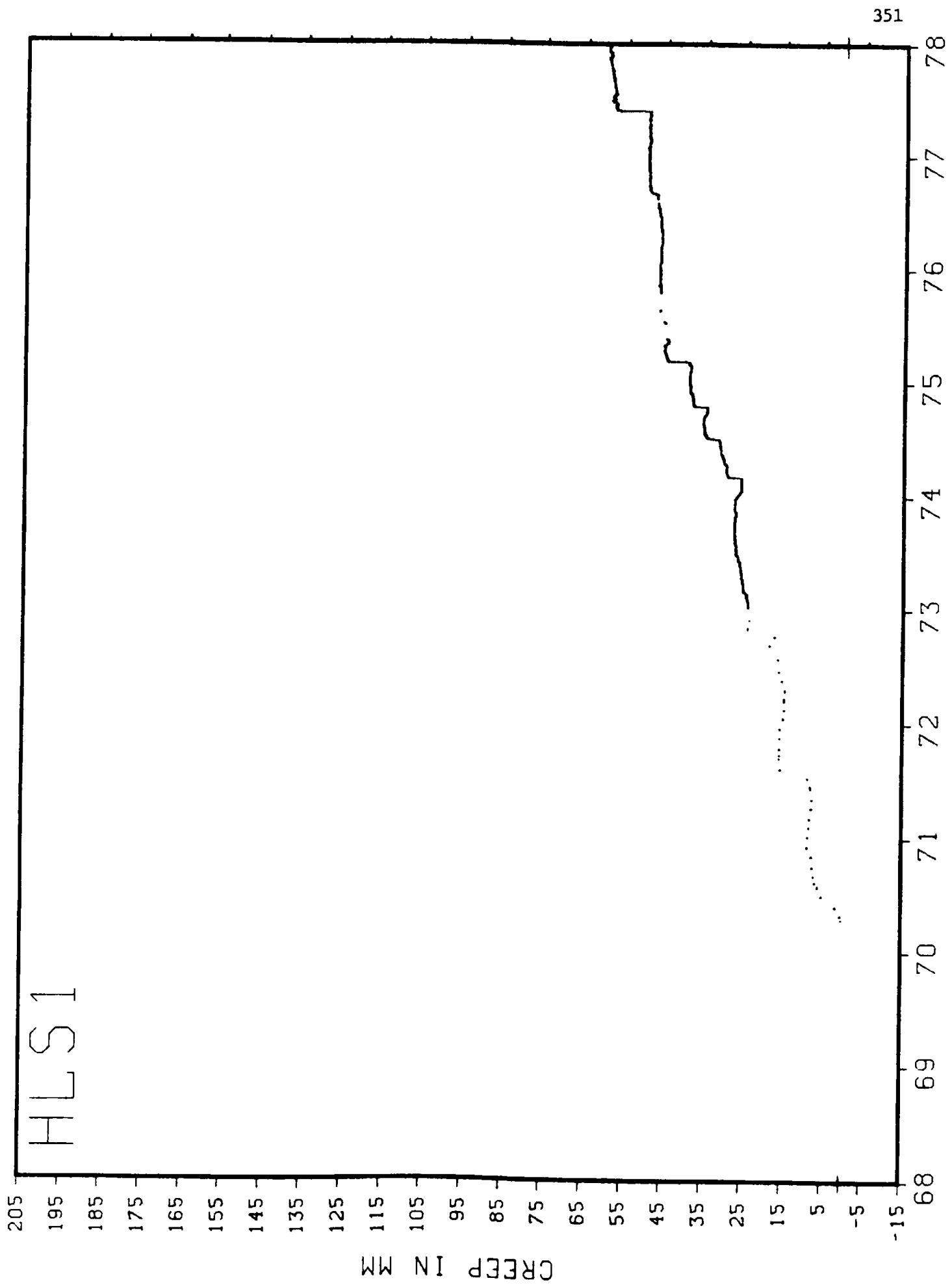


Table of HLSI Events

352

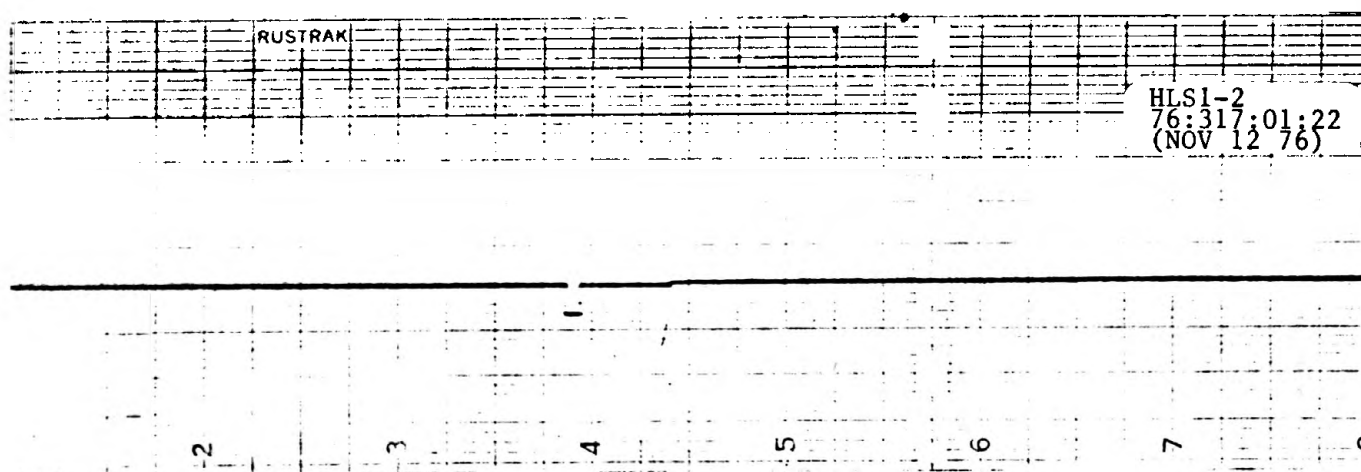
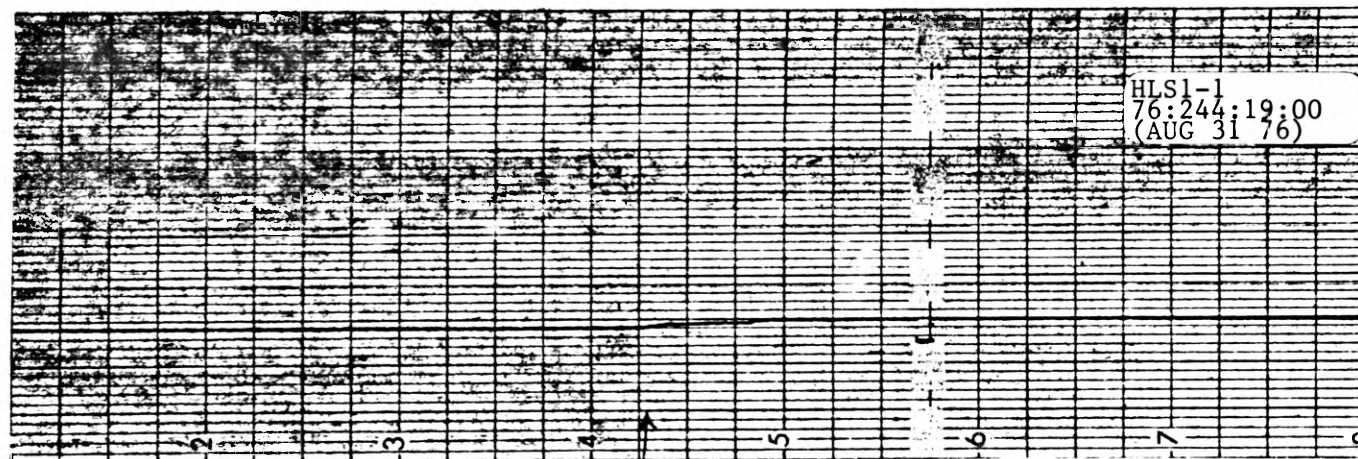
<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1976	133	May 12		0.24	*		
	174-175	Jun. 22-23	2029	0.30	*		
	200-201	Jul. 18-19	1810	0.28	*		
	244	Aug. 31 ^{1/}	1900	1.84	1	0.79	1.57
	317	Nov. 12	0122	0.21	2	0.80	1.41
1977	029	Jan. 29			***		
	147	May 27	0243	9.21	3	0.81	1.25
	200	Jul. 19	1900	0.77	4	0.80	1.88
	315	Nov. 11		0.28	*		
	321	Nov. 17			****		
	337	Dec. 3			***		

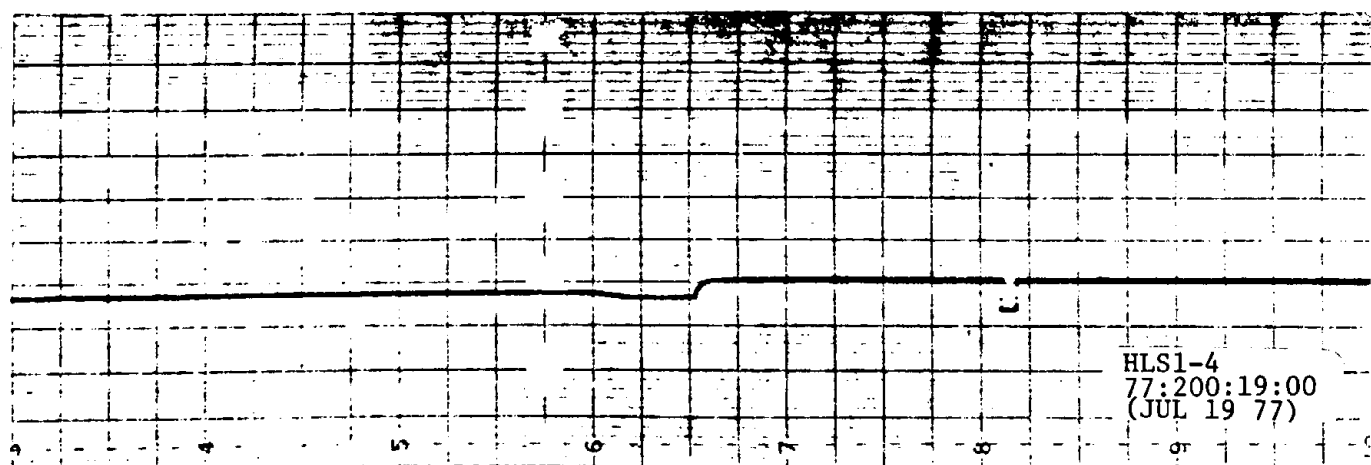
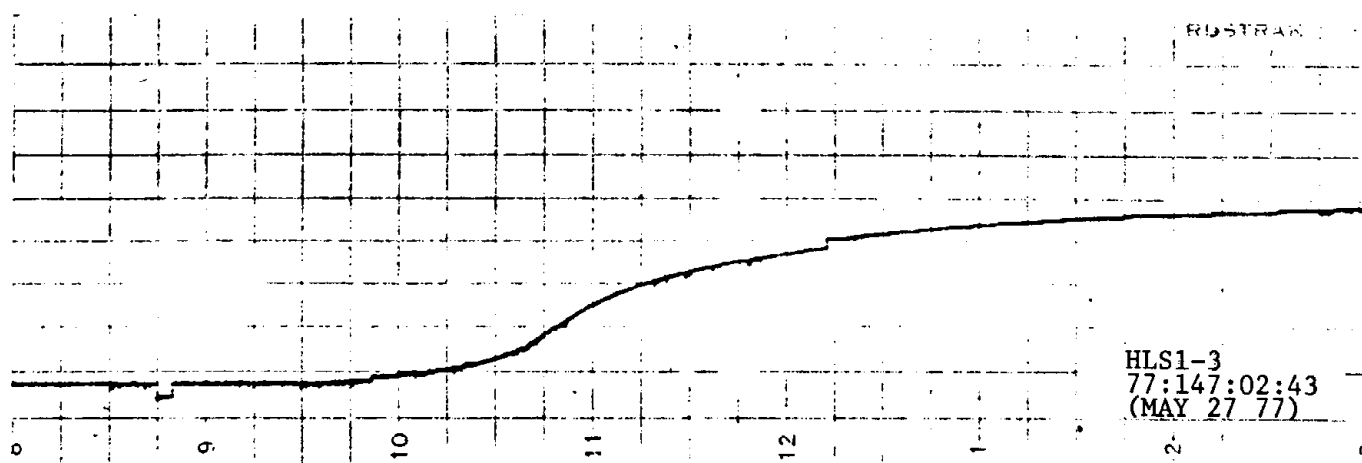
* Refer to annual plot.

*** Electronic problems

**** Mechanical interruption.

^{1/} Beginning of 10-day movement.





Latitude $36^{\circ} 50.5'$

Position 121.0 km

Longitude $121^{\circ} 24.2'$ 12 meter rod, $\theta=45^{\circ}$

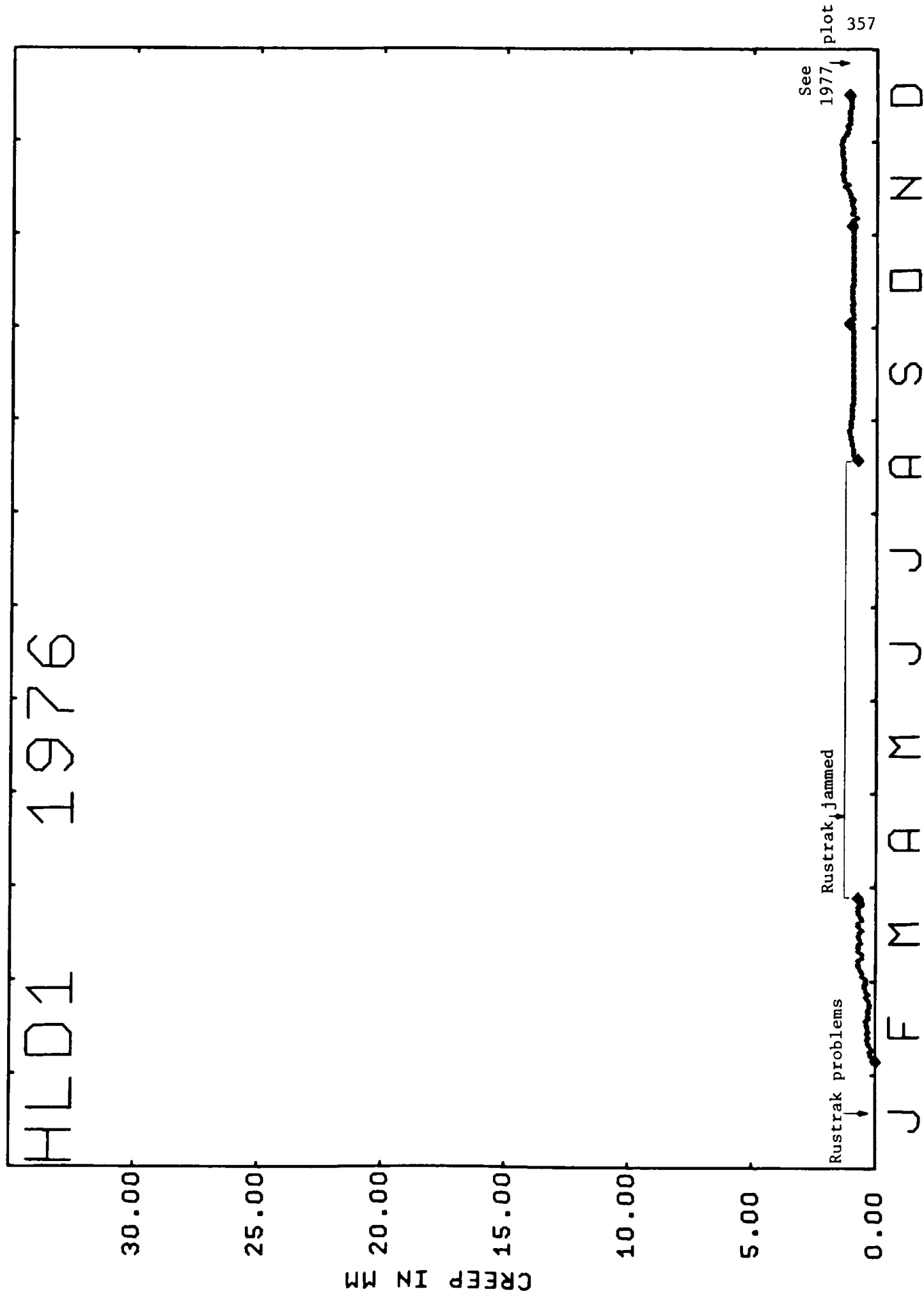
The Hollister (D Street) creepmeter was installed during April, 1970, on the Calaveras fault at a site 1.0 km southeast of the center of Hollister. The installation consists of a single rod buried a few centimeters below the surface of the pavement of D Street. Creep activity at this site is composed of minor events of up to 1.9 mm in amplitude, superimposed on a background of gradual right-lateral slip. The average creep rate is about 2 mm/yr, with a slight seasonal variation. The instrument may span only about 30% of the slip-zone width.

7.5 MINUTE SERIES (TOPOGRAPHIC)

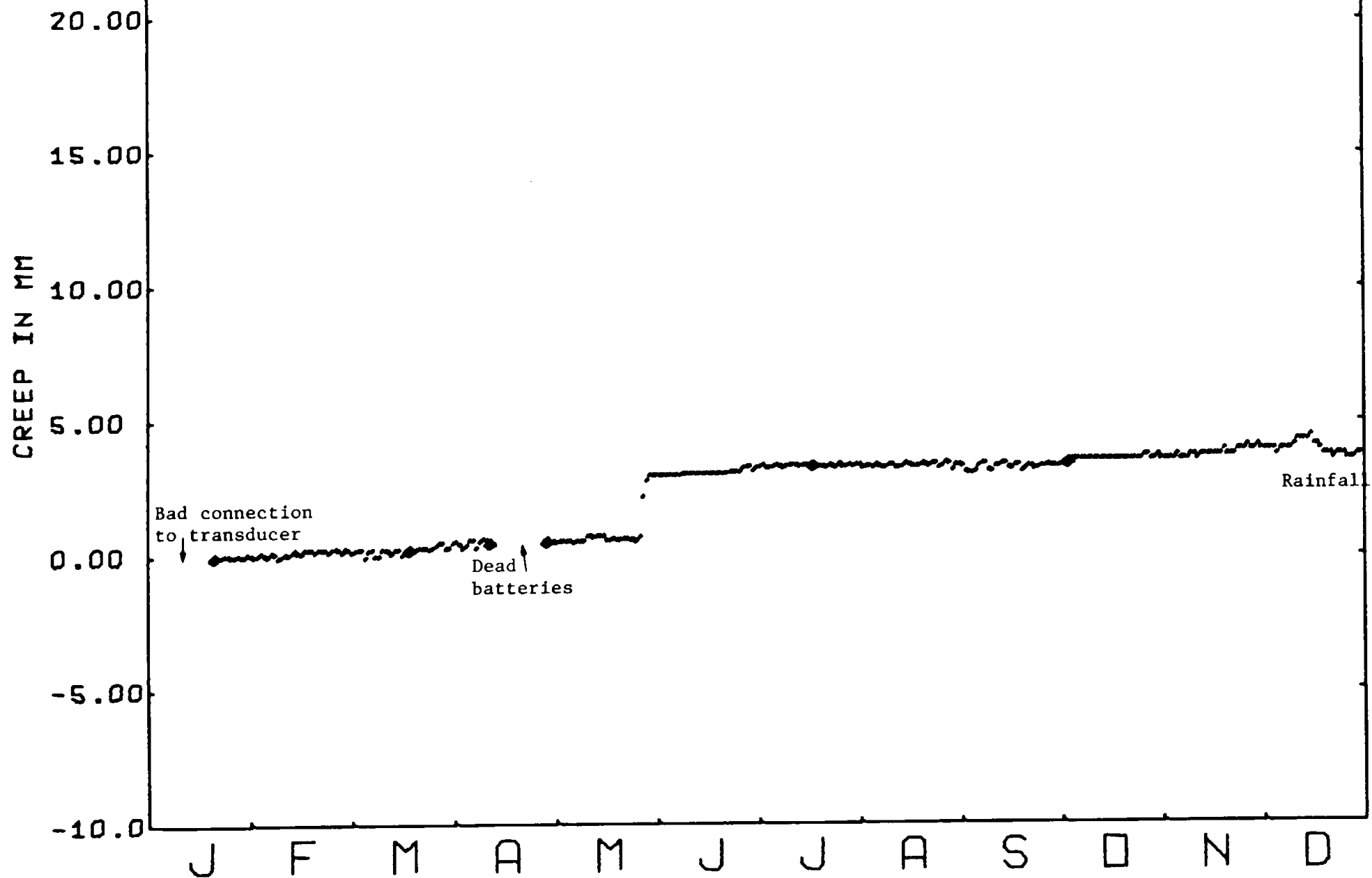
HLD CORRECTED CREEPMETER READINGS (mm)

356

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1976</u>					12.19	
JAN 21	0.24		0.24		12.43	
FEB 4	0.00		0.24		12.43	
APR 22	0.71		0.95		13.14	
MAY 12	0.11		1.06		13.25	
JUN 24	-0.04		1.02		13.21	
JUN 29	-0.01		1.01		13.20	
AUG 18	0.03		1.04		13.23	
OCT 2	0.35		1.39		13.58	
NOV 3	-0.13		1.26		13.45	
DEC 16	0.08		1.34		13.53	
<u>1977</u>						
JAN 20	0.10		0.10		13.63	
MAR 19	0.21		0.31		13.84	
APR 13	0.26		0.57		14.10	
APR 29	0.04		0.61		14.14	
JUN 15	4.02		4.63		18.16	
JUL 18	-1.20		3.43		17.01	
AUG 11	0.05		3.48		16.96	
OCT 3	0.06		3.54		17.07	
NOV 16	0.18		3.72		17.25	



HLD1 1977



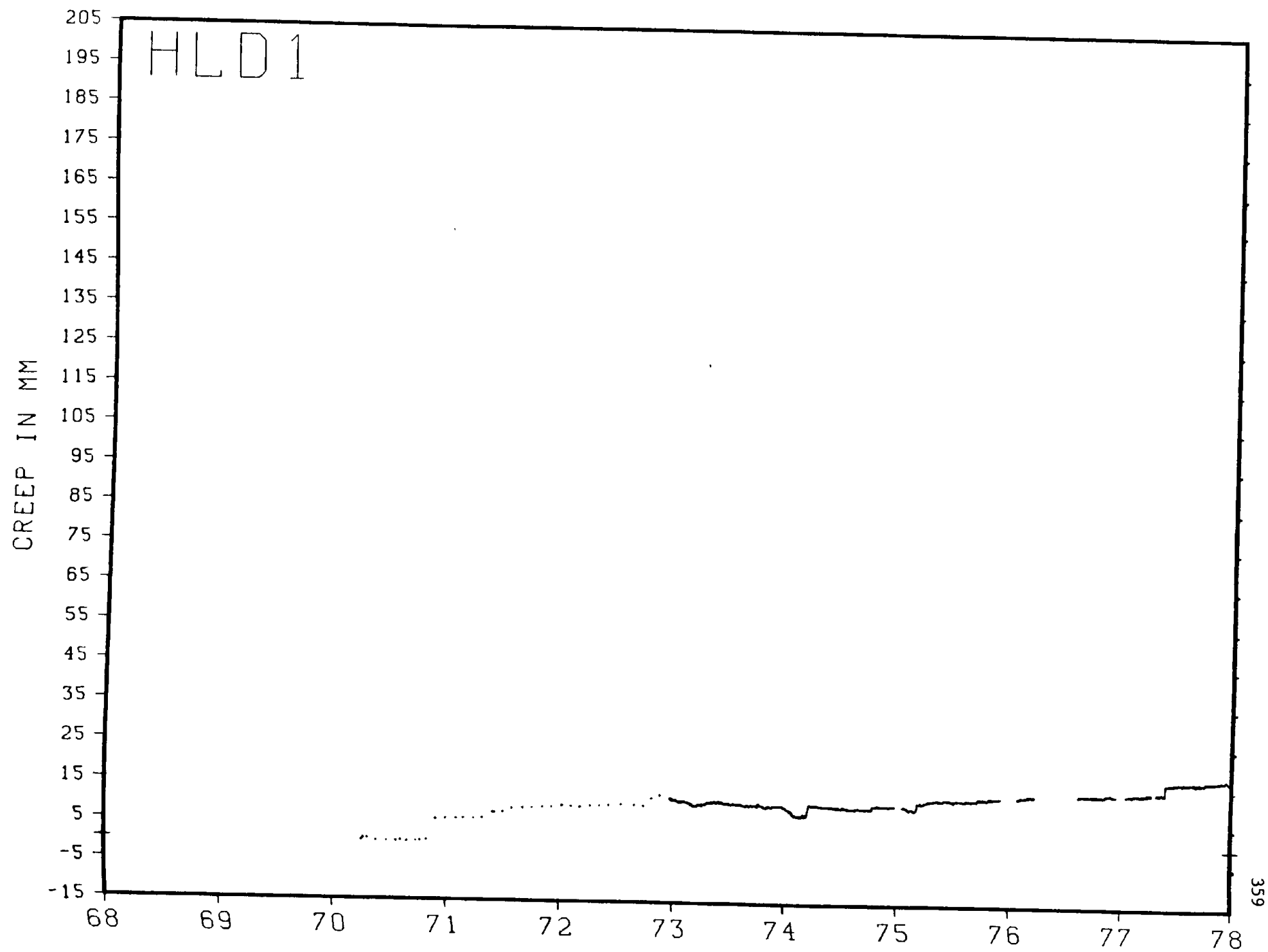


Table of HLD1 Events

360

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig. no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1977	146	May 26	2213	2.22	1	0.96	2.09

HLD1-1
77:146:22:13
(MAY 26 77)

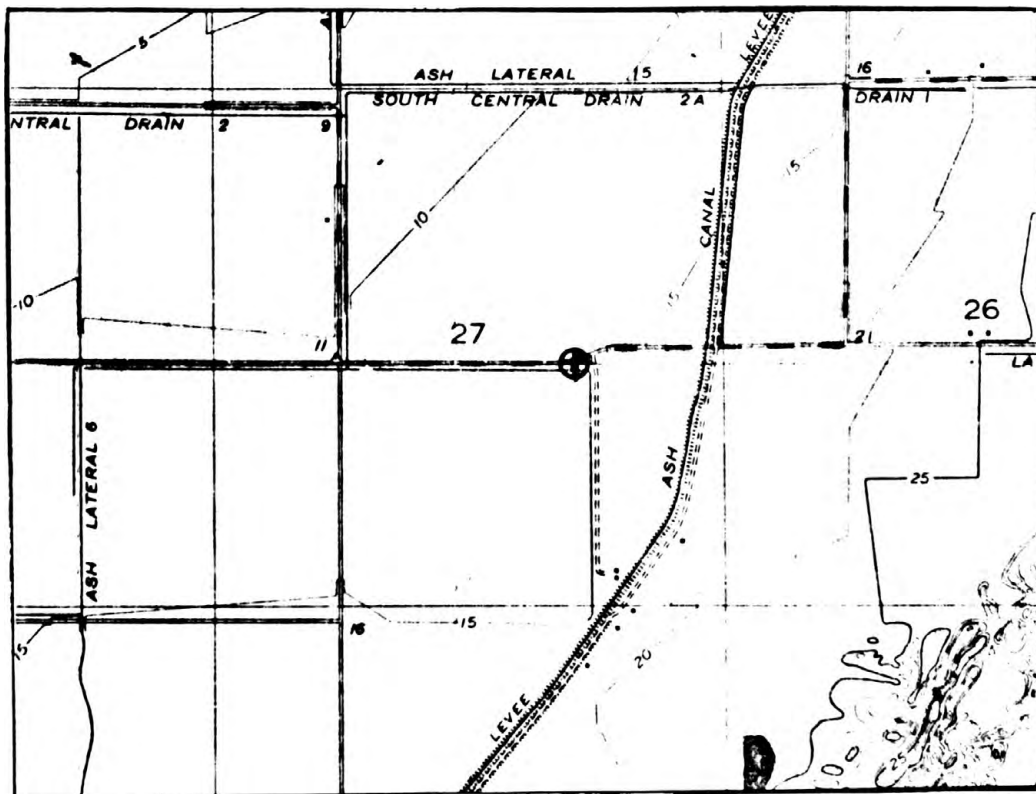
STATION XHB1

362

Latitude $32^{\circ} 43.8'$
 Longitude $115^{\circ} 24.3'$

Position 7.6 km
 20 meter wire, $\phi=46^{\circ}$

The Heber Road creepmeter was installed during October, 1975, on the Imperial fault (1940 surface break) at a site 7.6 km northwest of the U.S.-Mexico border. The installation consists of a single wire entrenched about 1 meter below the surface in alluvium. The instrument was established and is maintained in cooperation with the California Institute of Technology. Creep activity at this site is composed of clusters of large events of up to 15 mm amplitude, superimposed on a background of zero to slight right-lateral drift. NOTE: The 1975 data for this station were inadvertently omitted from the previous catalog of creepmeter data for 1973 through 1975 (U.S. Geological Survey Open-File Report 77-31) and, accordingly, are included herein. The data after Sept. 1977 have not yet been received from California Institute of Technology, and thus do not appear here.



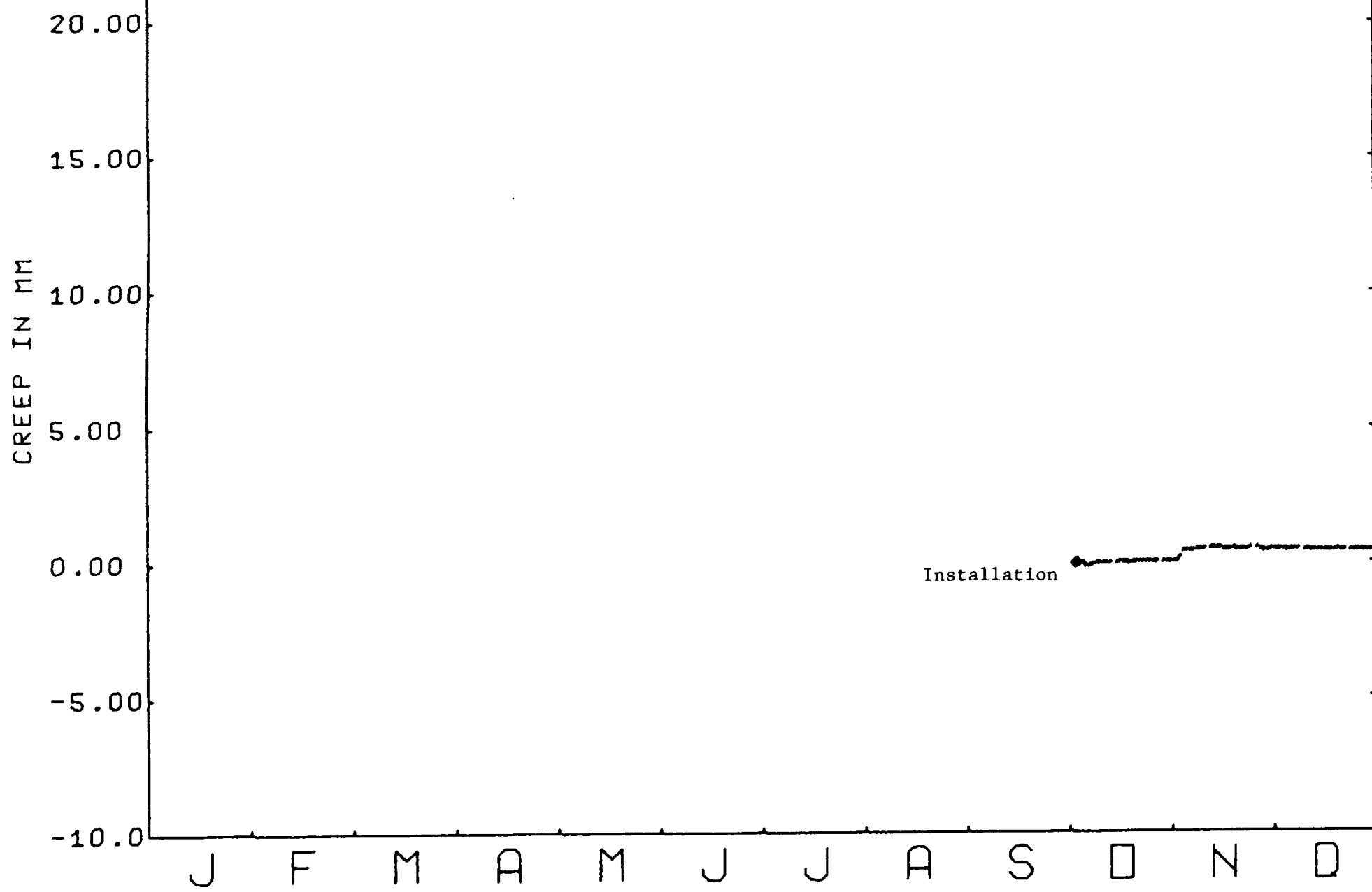
CALEXICO QUADRANGLE
 CALIFORNIA-IMPERIAL CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC)
 NW 4 CALEXICO 15' QUADRANGLE

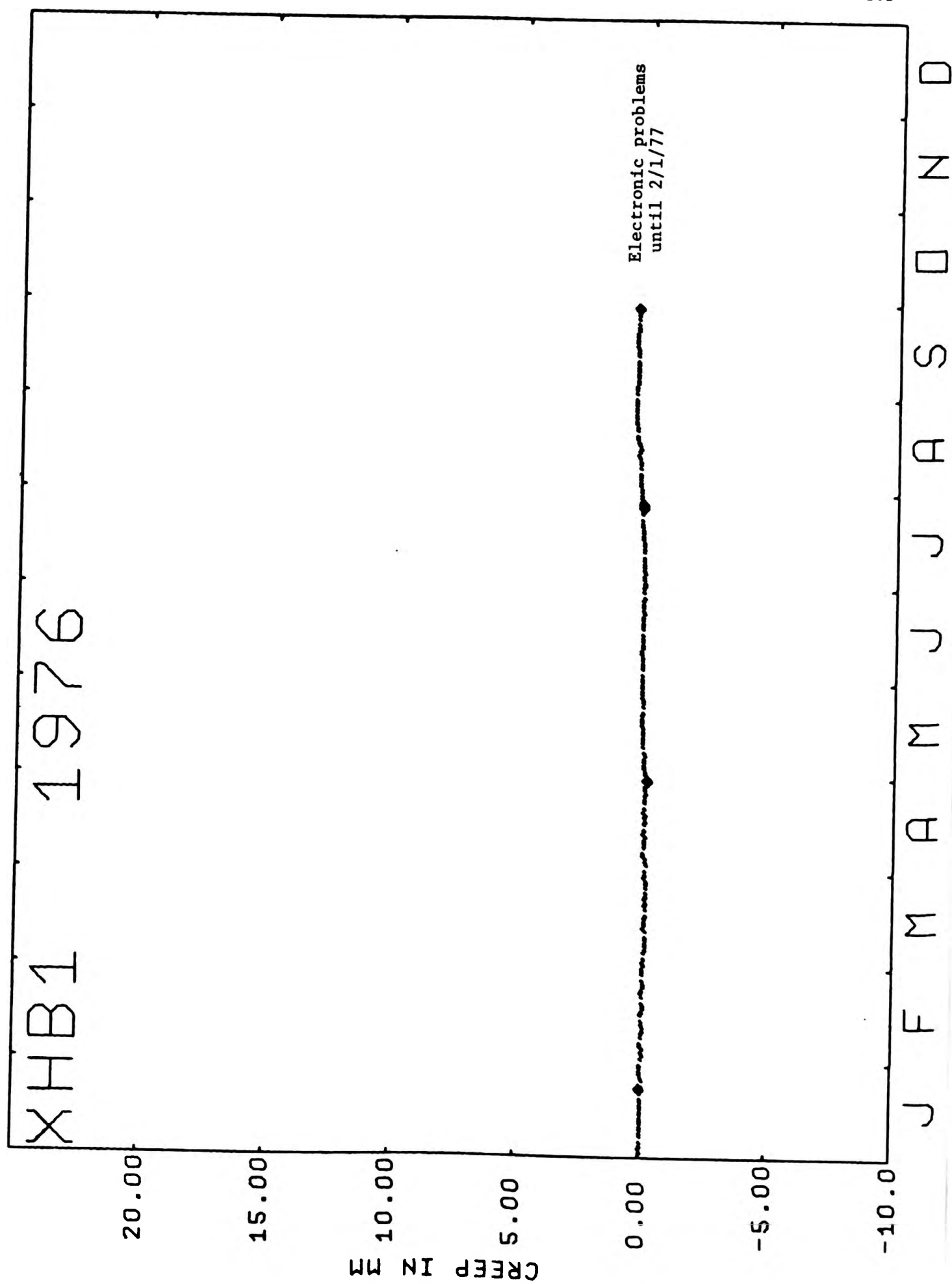
XHB1 CORRECTED CREEPMETER READINGS (mm)

363

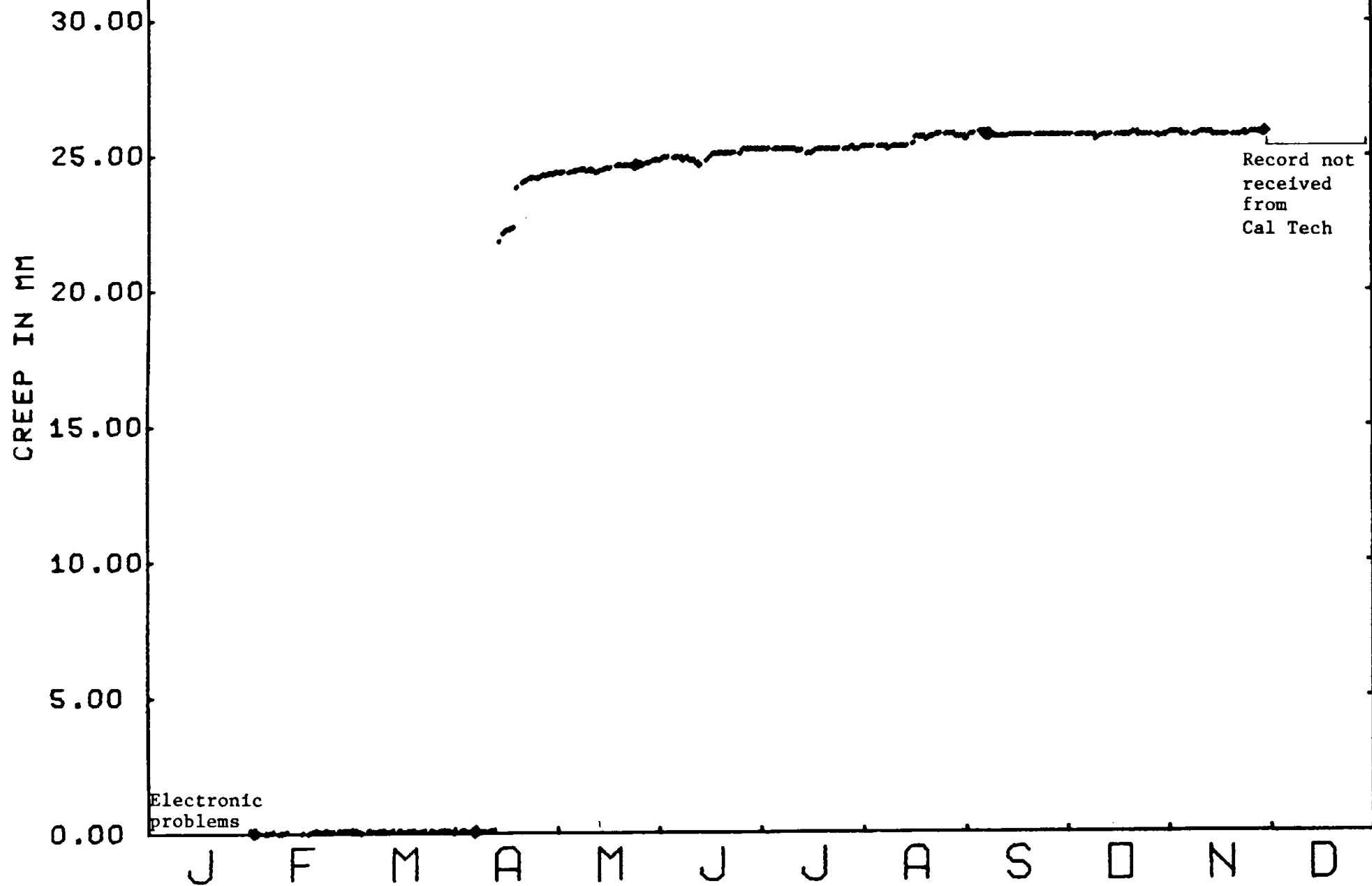
<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1975</u>					0.00	
OCT 1	0.00		0.00		0.00	
OCT 26	0.02		0.02		0.02	
DEC 2	0.46		0.48		0.48	
<u>1976</u>						
JAN 22	-0.04		-0.04		0.44	
APR 30	-0.12		-0.16		0.32	
JUL 27	0.27		0.11		0.59	
SEP 29	0.30		0.41		0.89	
<u>1977</u>						
FEB 1	0.26		0.26		1.16	
APR 7	0.06		0.32		1.22	
MAY 26	24.63		24.95		25.85	
SEP 7	1.08		26.03		26.93	
SEP 8	0.00		26.03		26.93	

XHB1 1975





XHB1 1977



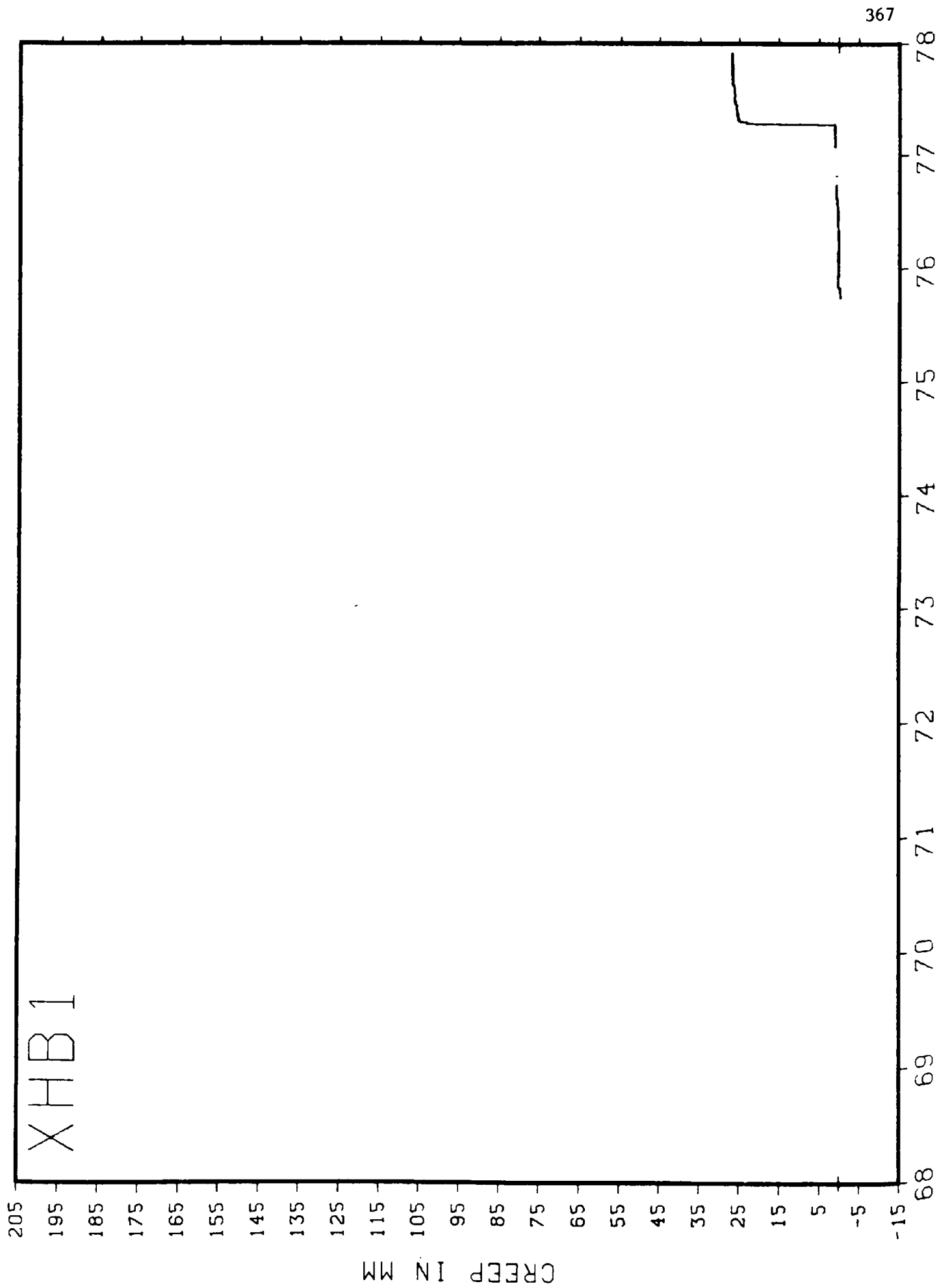
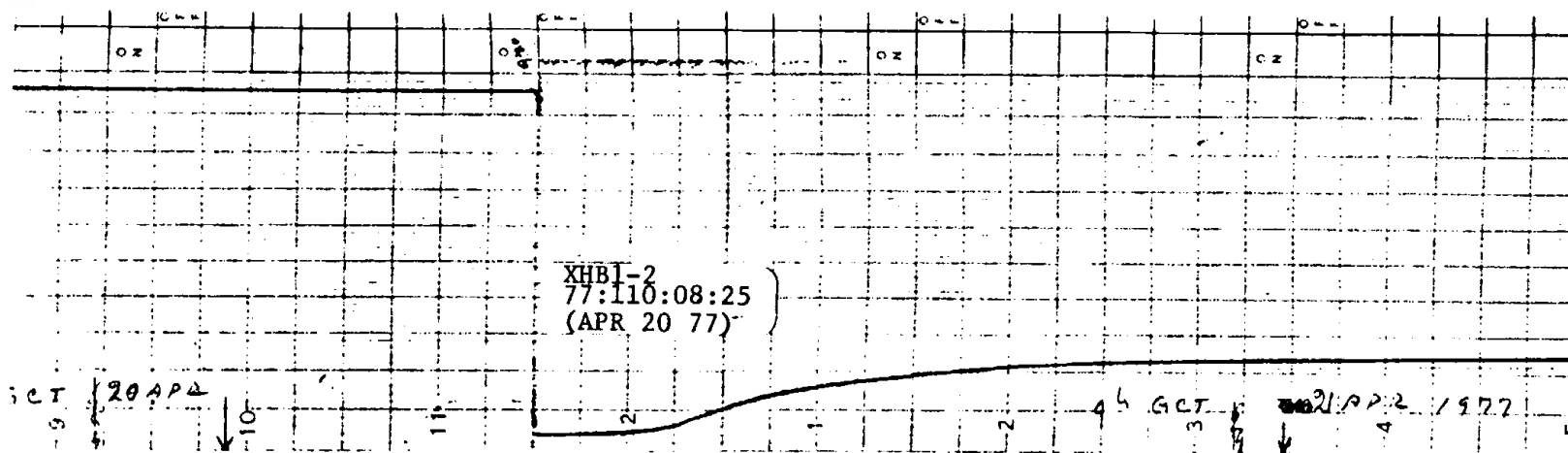
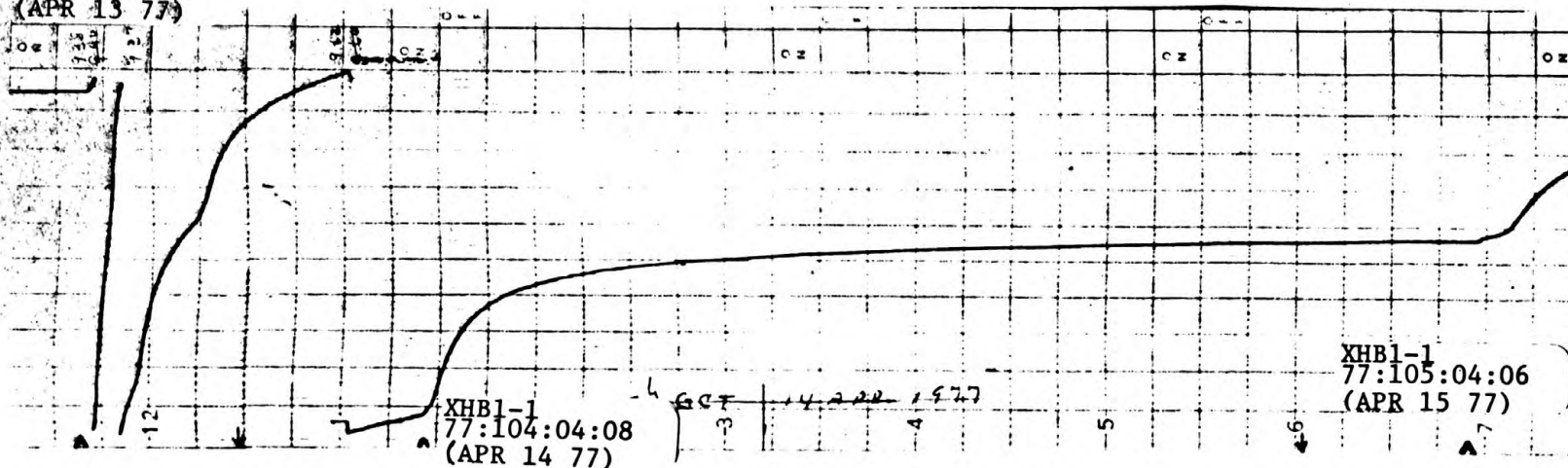


Table of XHB1 Events

<u>Year</u>	<u>JD</u>	<u>Month, Day</u>	<u>Time</u>	<u>Slip</u>	<u>Fig.no.</u>	<u>Hr/div</u>	<u>mm/div</u>
1977	103	Apr. 13	2035	15.34	1	1.08	.7789
	104	Apr. 14	0408	3.77		1.08	.7700
	105	Apr. 15	0406	3.08		1.08	.7700
	110	Apr. 20	0825	<u>1.90</u>	2	1.08	.7755

24.09 mm total of 4 'events'.

XHB1-1
77:103:20:35
(APR 13 77)



STATION XTR1

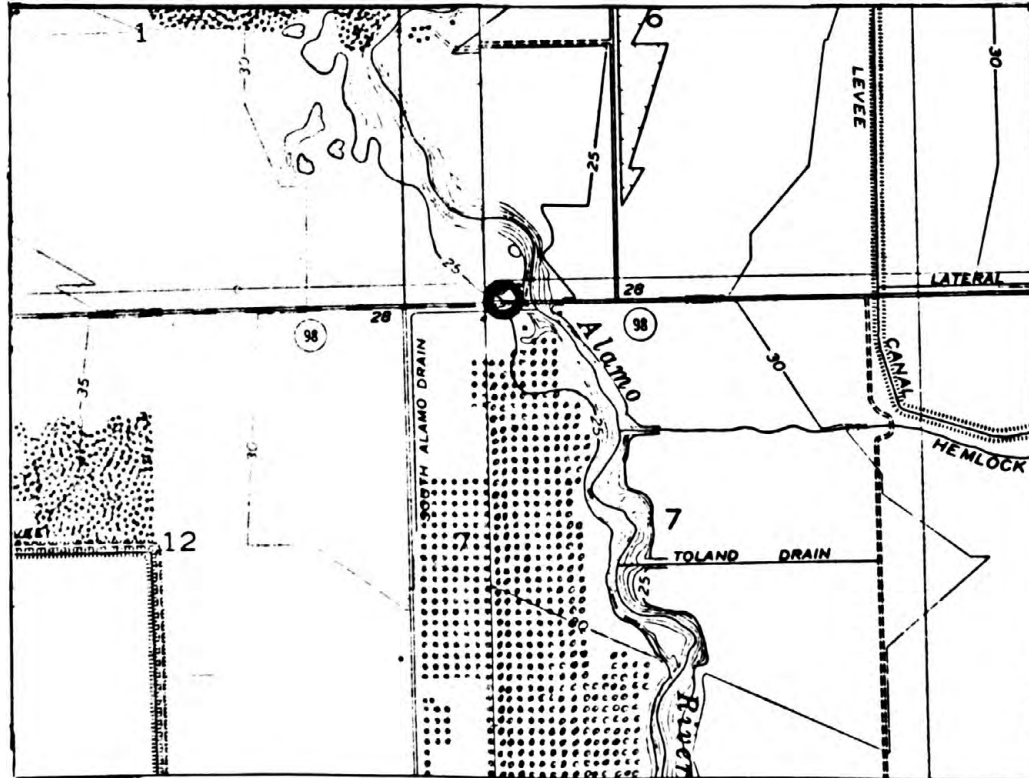
370

Latitude $32^{\circ} 41.6'$
 Longitude $115^{\circ} 24.3'$

Position 2.7 km
 20 meter wire, $\phi=46^{\circ}$

The Tuttle Ranch creepmeter was installed during October, 1975, on the Imperial fault (1940 surface break) at a site 2.7 km northwest of the U.S.-Mexico border. The installation consists of a single wire entrenched about 1 meter below the surface in thin-layered sediments. A vertical offset in the strata was encountered within about 1 meter of the trench mid-point (northeast side down). The instrument was established and is maintained in cooperation with the California Institute of Technology. The records show slight right- and left-lateral (thermal) drift, with no significant creep activity to date.

NOTE: The 1975 data for this station were inadvertently omitted from the previous catalog of creepmeter data for 1973 through 1975 (U.S. Geological Survey Open-File Report 77-31) and, accordingly, are included herein. The data after Sept. 1977 have not yet been received from California Institute of Technology, and thus do not appear here.



CALEXICO QUADRANGLE —|— BONDS CORNER, CALIF.
 CALIFORNIA—IMPERIAL CO.
 7.5 MINUTE SERIES (TOPOGRAPHIC) NE/4 CALEXICO 15' QUADRANGLE
 N3237.5—W11515/7.5

1957

0 1 KILOMETER

XTR1 CORRECTED CREEPMETER READINGS (mm)

371

<u>Date</u>	<u>Change</u>		<u>Yearly Cumulative</u>		<u>Cum to Date</u>	
	X	C	X	C	X	C
<u>1975</u>					0.00	
SEP 30	0.00		0.00		0.00	
OCT 26	0.73		0.73		0.73	
DEC 1	0.48		1.21		1.21	
<u>1976</u>						
JAN 22	0.40		0.40		1.61	
APR 30	0.49		0.89		2.10	
JUL 27	-0.71		0.18		1.39	
SEP 30	0.06		0.24		1.45	
<u>1977</u>						
FEB 1	1.07		1.07		2.86	
APR 7	0.13		1.20		2.99	
MAY 26	-0.60		0.60		2.39	
SEP 8	0.00		0.60		2.39	
SEP 21	0.40		1.00		2.79	
NOV 29	1.19		2.19		3.98	

XTR1 1975

CREEP IN MM

20.00
15.00
10.00
5.00
0.00
-5.00
-10.00

J F M A M J J A S O N D

Installation

372

XTR1 1976

CREEP IN MM

30.00
25.00
20.00
15.00
10.00
5.00
0.00

J F M A M J J A S O N D

XTR1 1977

