Technical Report 83-2

SEISMIC ACTIVITY NEAR THE V. C. SUMMER NUCLEAR STATION

For the Period

April - June

1983

by

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INTRODUCTION

This report presents a summary of seismic activity near the V. C. Summer Nuclear Power Station in South Carolina for a three month period from April 1 through June 30, 1983. During this period a total of 181 locatable events were recorded, 64 in the immediate Monticello Reservoir area and 117 in the Newberry, S. C. area approximately 15 miles west. Three events greater than 2.0 occurred during this period, one in the Monticello Reservoir area and two near Newberry. Twenty-five events had magnitudes between 1.0 and 2.0 and the remaining events were small (M_L < 1.0).

SEISMIC NETWORK

The report is based on the data recorded by a four-station network operated by S.C.E. and G. In addition, data from a permanent station (JSC) of the South Carolina seismographic network are also used. Location of all these stations is shown in Figure 1, and their coordinates are listed in Appendix I.

DATA ANALYSIS

Location of the events is determined using HYPO71 program (Lee and Lahr, 1972) and the velocity model given in Appendix II. The event magnitude (M_L) is determined from signal duration at station JSC, using the following relation:

$$M_L = -1.83 + 2.04 \text{ Log } D$$

where D is the signal duration (seconds).

An estimate of daily energy release is determined using a simplified magnitude (M_L) energy (E) relation by Gutenberg and Richter, 1956.

$$\log_{10} E = 11.8 + 1.5 M_L$$

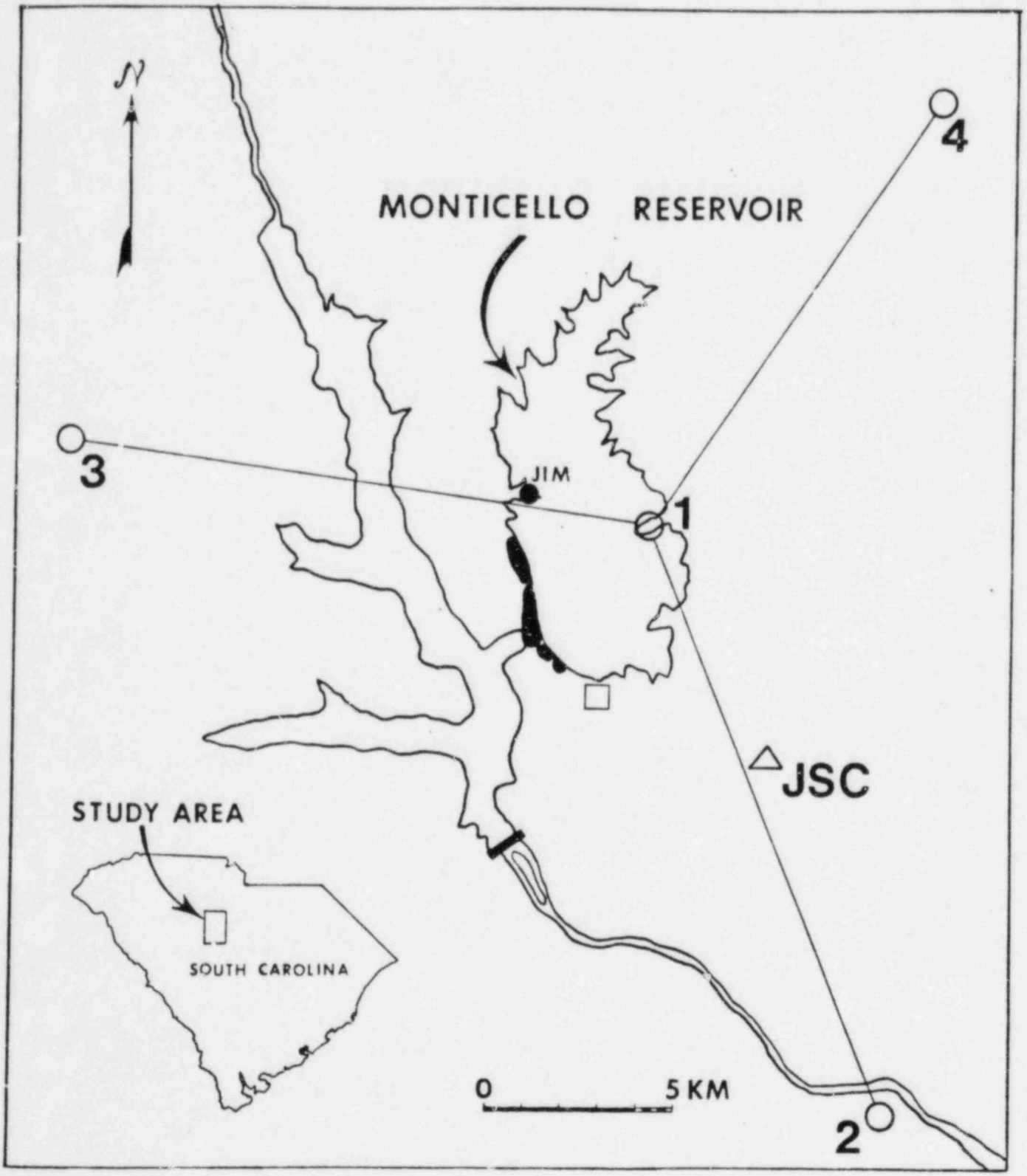

N
MONTICELLO RESERVOIR
JIM
1
2
3
4
JSC
STUDY AREA
SOUTH CAROLINA
0
5 KM

Figure 1

RESULTS

The 181 events located during this reporting period are listed in Appendix III. Of the three events larger than magnitude 2.0, one occurred in the Monticello Reservoir area (June 11, M_L = 2.2), and two near Newberry, S. C., approximately 15 miles west (April 28, M_L = 2.2; May 7, M_L = 2.45). The 25 events with magnitudes between 1.0 and 2.0 are listed in Table 1. Depth estimates for the Monticello Reservoir associated events indicate approximately 61% of the activity was within 2.0 km of the surface, 9% between 2.0 and 3.0 km depth, and 30% at depths greater than 3.0 km. Figure 2 shows the percentage of events occurring in 0.5 km depth increments for the first six months of this year in comparison with the previous five years based on A and B quality events. Most of the activity occurs between 1.5 and 2.0 km depth, and the percentage of events occurring at depths greater than 3.0 km is about the same as in 1982. However, as stated in previous reports, when past events were relocated using magnetic tape data, the depths were found to be shallower. No depth statistics were carried out on the Newberry area earthquakes.

A cumulative plot of epicenters of events located around Monticello Reservoir during this period is shown in Figure 3, a cross section in Figure 4, a monthly breakdown of epicentral locations in Figures 5-7, and a cumulative plot of Monticello Reservoir and Newberry epicentral locations in Figure 8.

RESERVOIR WATER LEVEL AND ITS COMPARISON WITH SEISMICITY

Monticello Reservoir is a pumped storage facility. Any decrease in reservoir level associated with power generation is recovered when water is pumped back into the reservoir. There can be variations up to about

TABLE 1

EVENTS WITH MAGNITUDES BETWEEN 1.0 AND 2.0

Date	Time (U.T.C.)	Magnitude	Location
April 3	0954	1.27	Monticello Reservoir (M. R.)
April 3	1040	1.27	M. R.
April 11	1100	1.15	M. R.
April 21	0403	1.42	M. R.
April 28	0243	1.72	Newberry
April 28	0708	1.15	Newberry
April 28	0900	1.15	Newberry
April 28	1031	1.80	Newberry
April 28	1139	1.12	Newberry
April 28	2039	1.50	Newberry
April 28	2249	1.65	Newberry
April 28	2302	1.44	Newberry
April 28	2311	1.06	Newberry
May 7	0355	1.18	Newberry
May 8	0336	1.52	Newberry
May 8	1155	1.81	Newberry
May 9	0425	1.62	Newberry
May 9	0426	1.15	Newberry
May 9	0655	1.32	Newberry
May 9	0655	1.46	Newberry
May 16	1506	1.09	Newberry
May 16	1511	1.18	Newberry
June 2	0509	1.32	Newberry
June 10	1901	1.78	M. R.
June 25	1602	1.32	M. R.

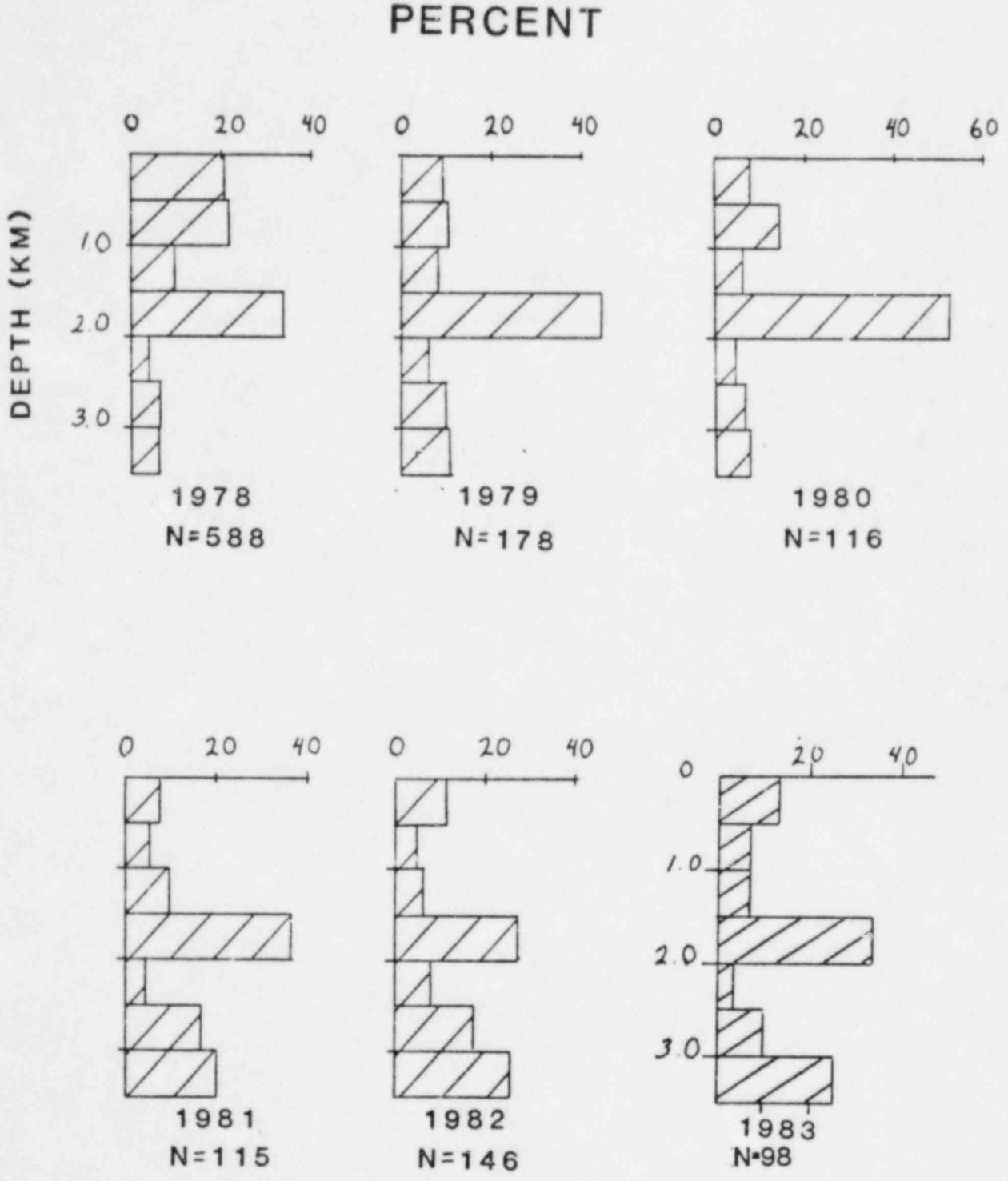

PERCENT
DEPTH (KM)
0
20
40
60
1.0
2.0
3.0
1978
N=588
1979
N=178
1980
N=116
1981
N=115
1982
N=146
1983
N=98

Figure 2

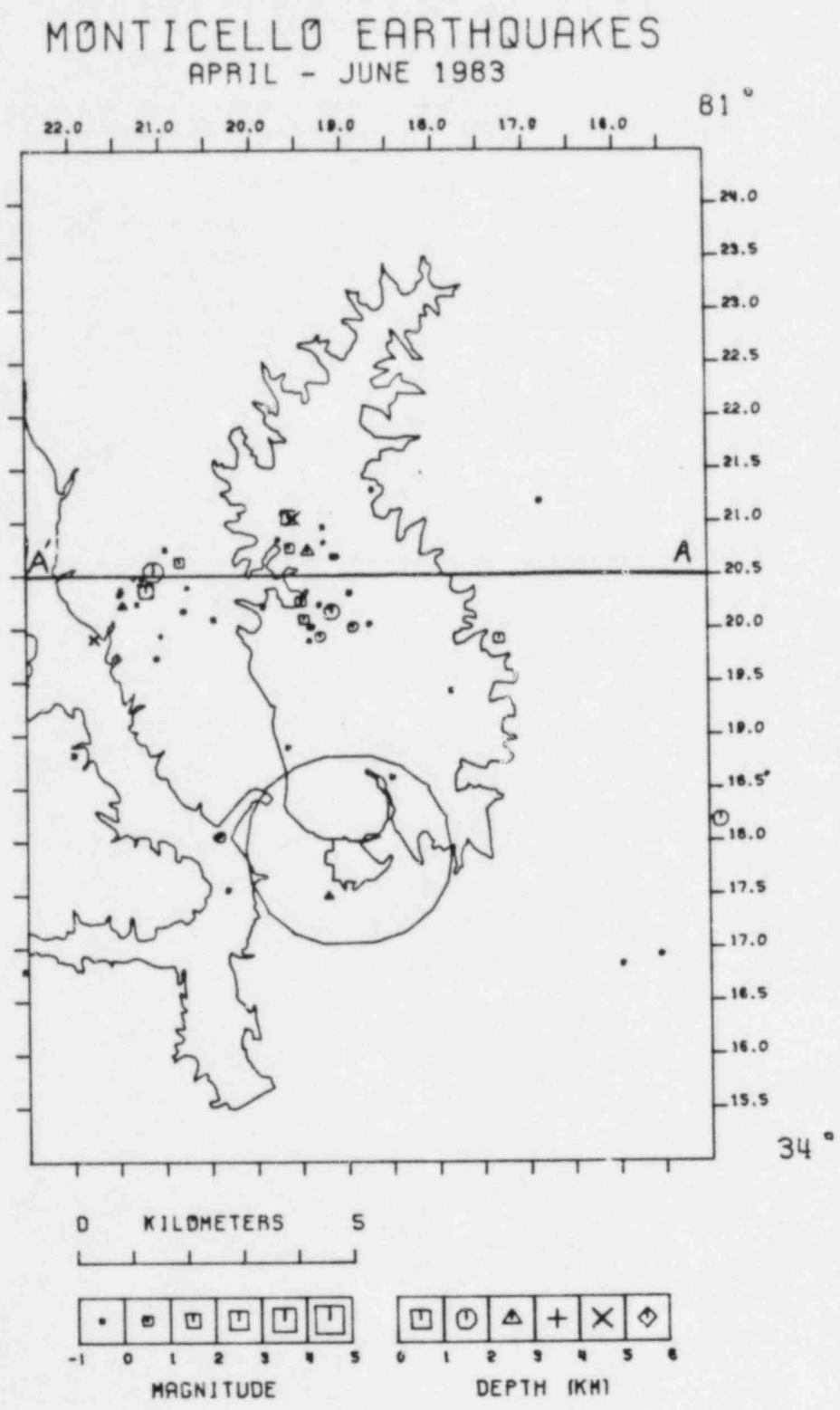

MONTICELLO EARTHQUAKES
APRIL - JUNE 1983
81°
34°
22.0
21.0
20.0
19.0
18.0
17.0
16.0
24.0
23.5
23.0
22.5
22.0
21.5
21.0
20.5
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
16.0
15.5
A
A'
0 KILOMETERS 5
-1 0 1 2 3 4 5
MAGNITUDE
0 1 2 3 4 5 6
DEPTH (KM)

Figure 3

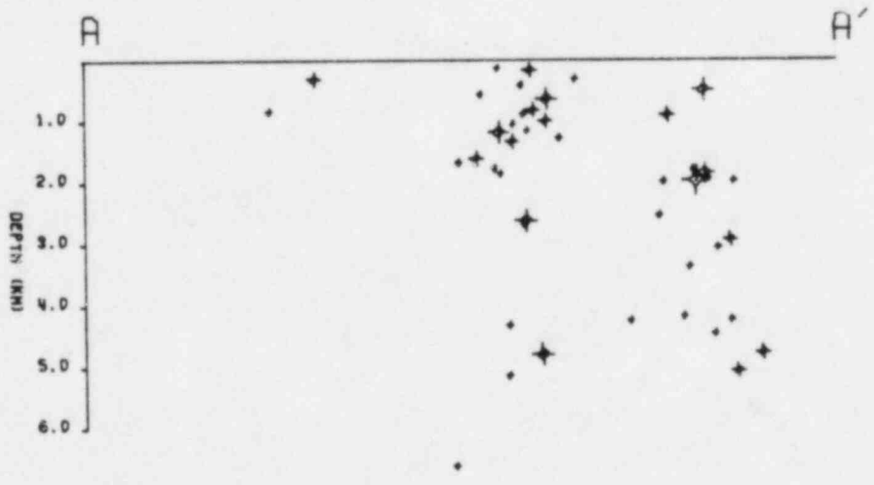


Figure 4

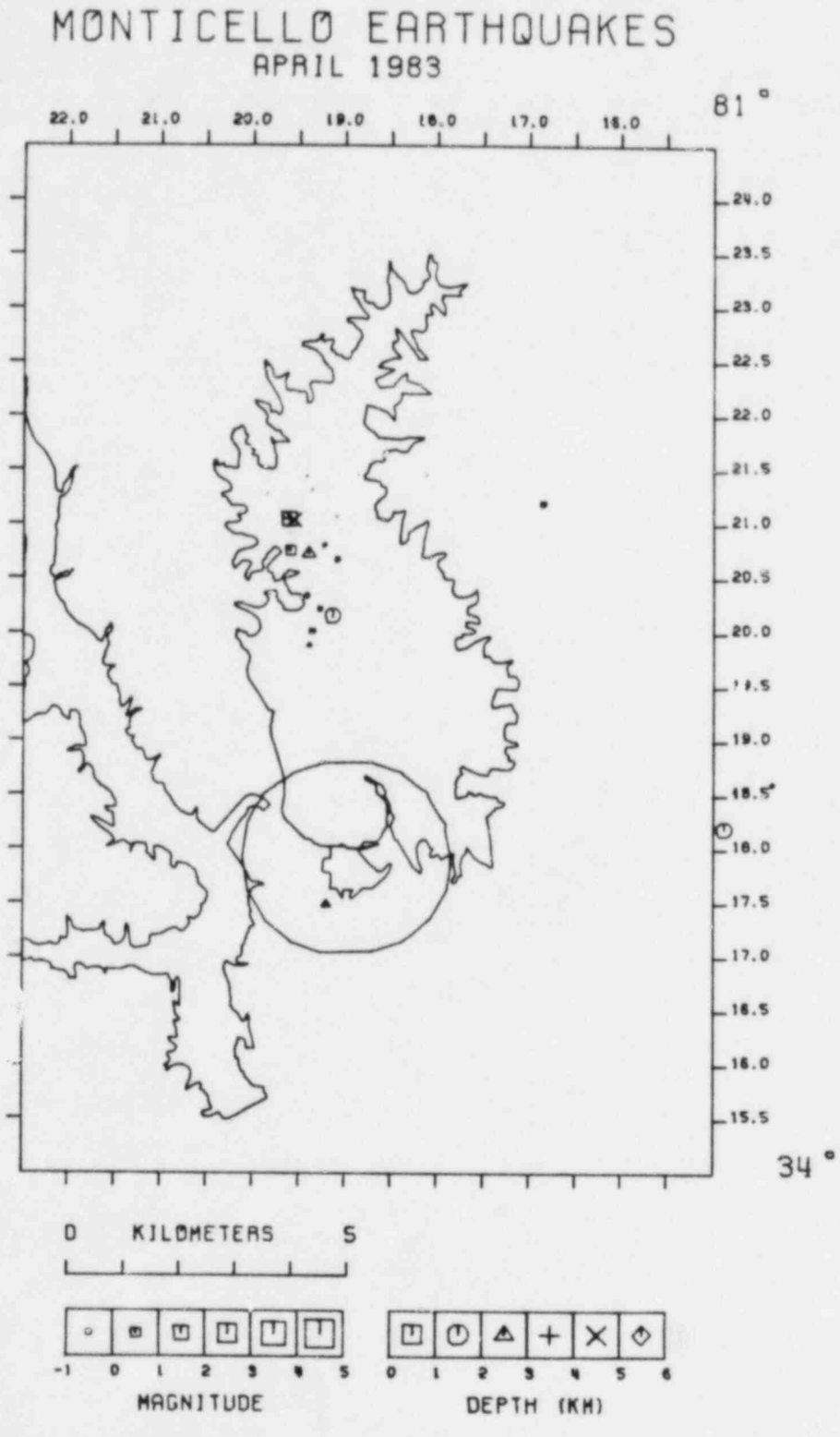

MONTICELLO EARTHQUAKES
APRIL 1983
81°
34°
22.0
21.0
20.0
19.0
18.0
17.0
16.0
24.0
23.5
23.0
22.5
22.0
21.5
21.0
20.5
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
16.0
15.5
0 KILOMETERS 5
-1 0 1 2 3 4 5
MAGNITUDE
0 1 2 3 4 5 6
DEPTH (KM)

Figure 5

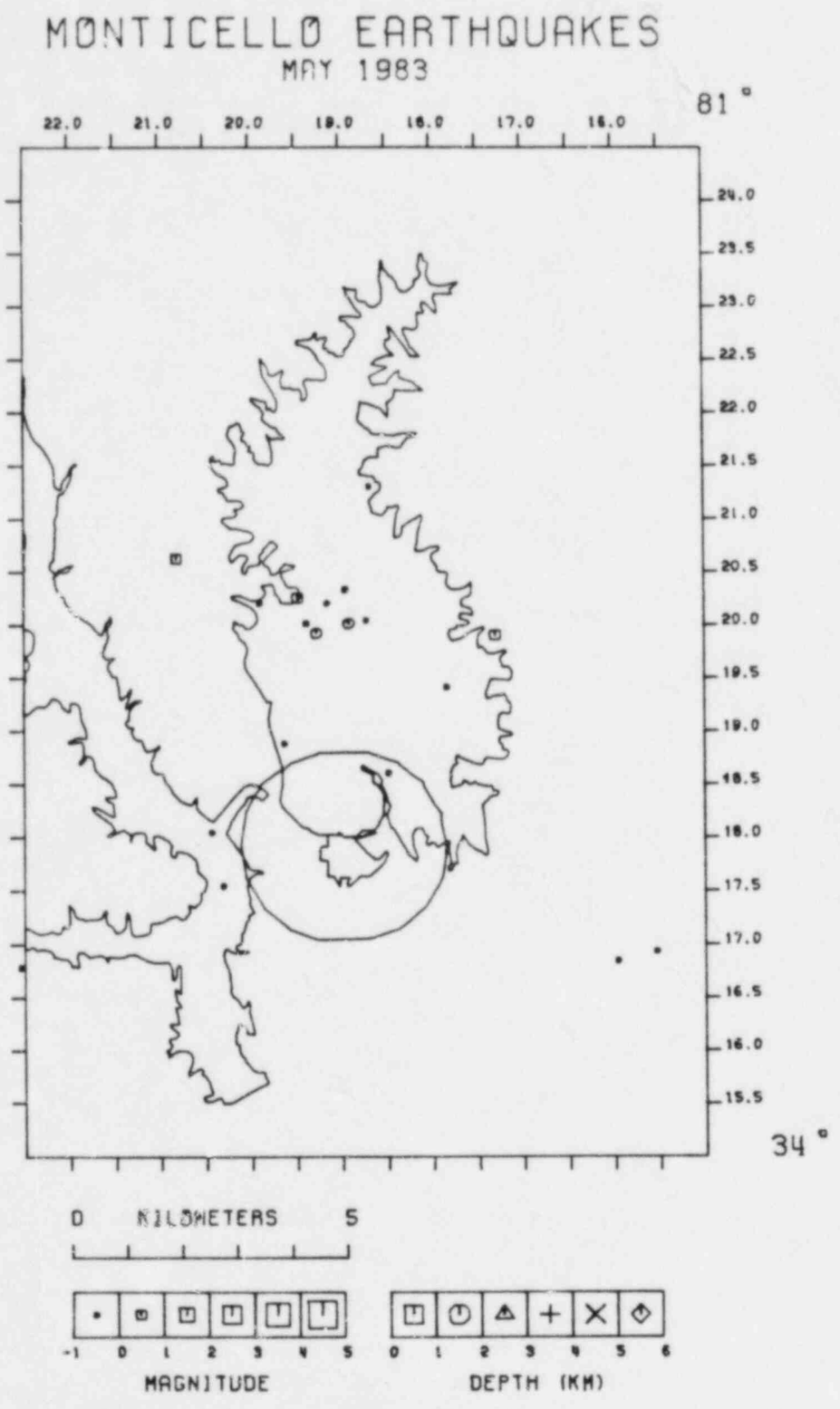

MONTICELLO EARTHQUAKES
MAY 1983
81°
34°
22.0
21.0
20.0
19.0
18.0
17.0
16.0
24.0
23.5
23.0
22.5
22.0
21.5
21.0
20.5
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
16.0
15.5
0 KILOMETERS 5
-1 0 1 2 3 4 5
MAGNITUDE
0 1 2 3 4 5 6
DEPTH (KM)

Figure 6

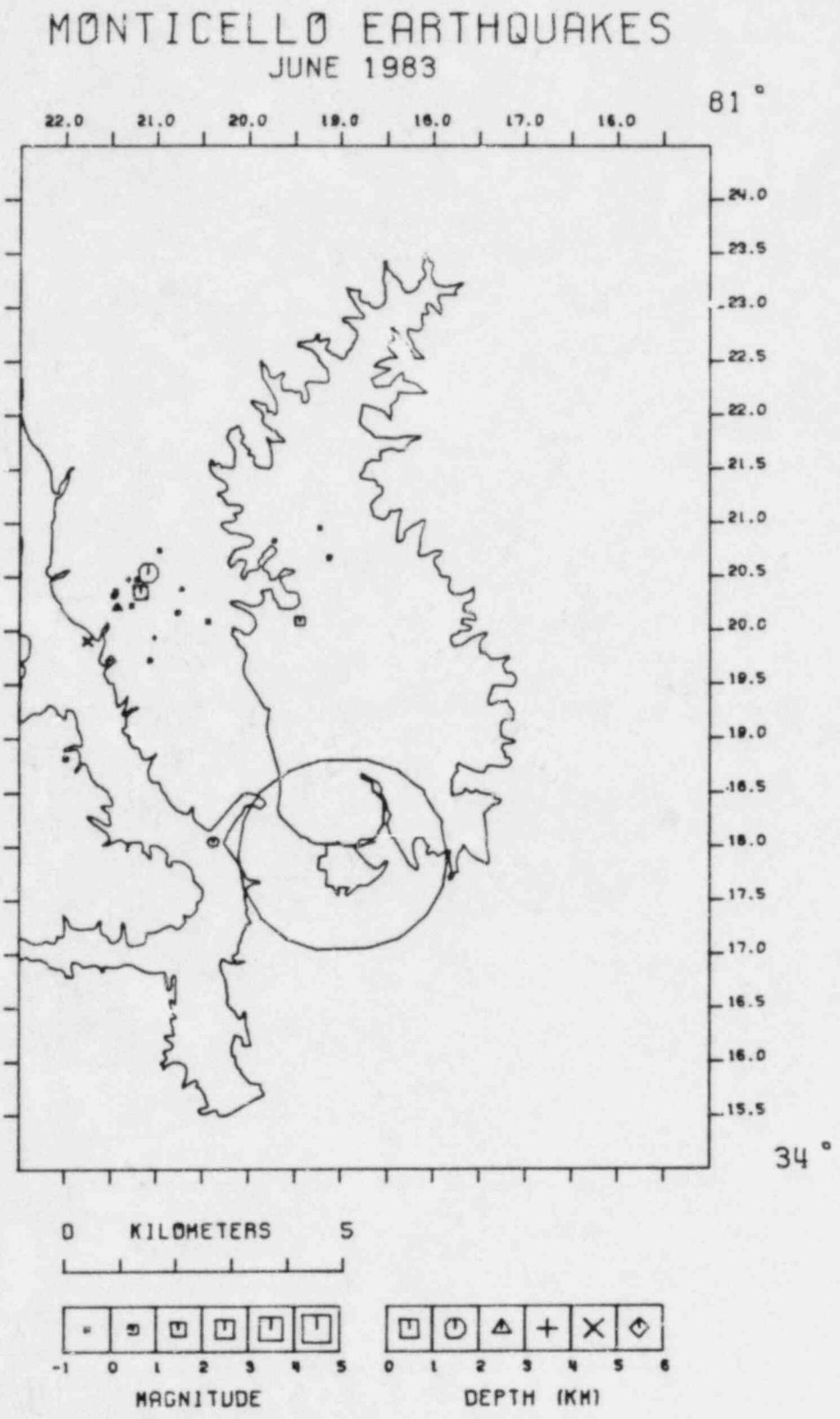
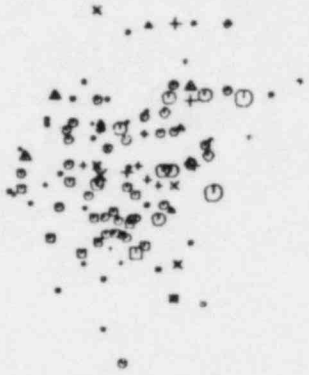

MONTICELLO EARTHQUAKES
JUNE 1983
81 °
22.0
21.0
20.0
19.0
18.0
17.0
16.0
24.0
23.5
23.0
22.5
22.0
21.5
21.0
20.5
20.0
19.5
19.0
18.5
18.0
17.5
17.0
16.5
16.0
15.5
34 °
0 KILOMETERS 5
-1 0 1 2 3 4 5
MAGNITUDE
0 1 2 3 4 5 6
DEPTH (KM)

Figure 7

NEWBERRY
EARTHQUAKES



MONTICELLO EARTHQUAKES
APRIL - JUNE 1983

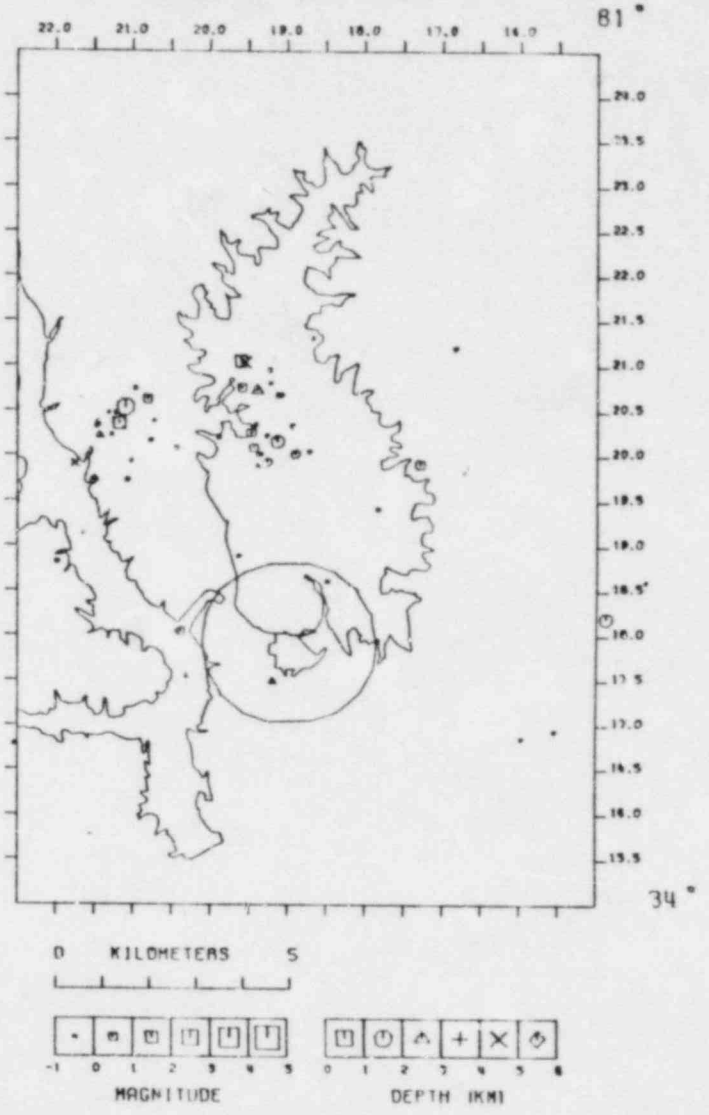


Figure 8

5 feet per day between the maximum and minimum water level. We have been monitoring this water level to see if there is any correlation between the daily or seasonal changes in the reservoir level and the local seismicity. Figure 9 shows the comparison of water level to seismicity. The top two graphs show the water level and the change of water level per day. The number of events per day and log of energy released per day are shown on the lower two graphs. The histograms showing events per day and log of energy release include the unlocated events around the reservoir.

CONCLUSIONS

Seismic activity in the Monticello Reservoir area during the April through June, 1983 reporting period indicates a continuation of the long term trend of swarms and quiet periods established over the past years. Figure 10 is a histogram of the number of events per month from December, 1977 through June, 1983 which suggests discrete swarms separated by relatively quiet periods. The April - June level is consistent with this trend in suggesting the end of a swarm preceding a quiet period. The majority of depths for the three month period continue to be in the 1.5 to 2.0 km range. Seismic activity in the Newberry area should continue to be monitored due to the undetermined cause and the possible impact of increased activity on the Monticello Reservoir area.

REFERENCES

Gutenberg, B. and Richter, C. F. (1956). Magnitude and energy of earthquakes, Ann. Geof. 9, p. 1-15.

Lee, W. H. K. and Lahr, J. C. (1972). A computer program for determining hypocenter, magnitude and first motion pattern of local earthquakes, Revisions of HYPO 71, U.S.G.S. Open-File Report, 100 pp.

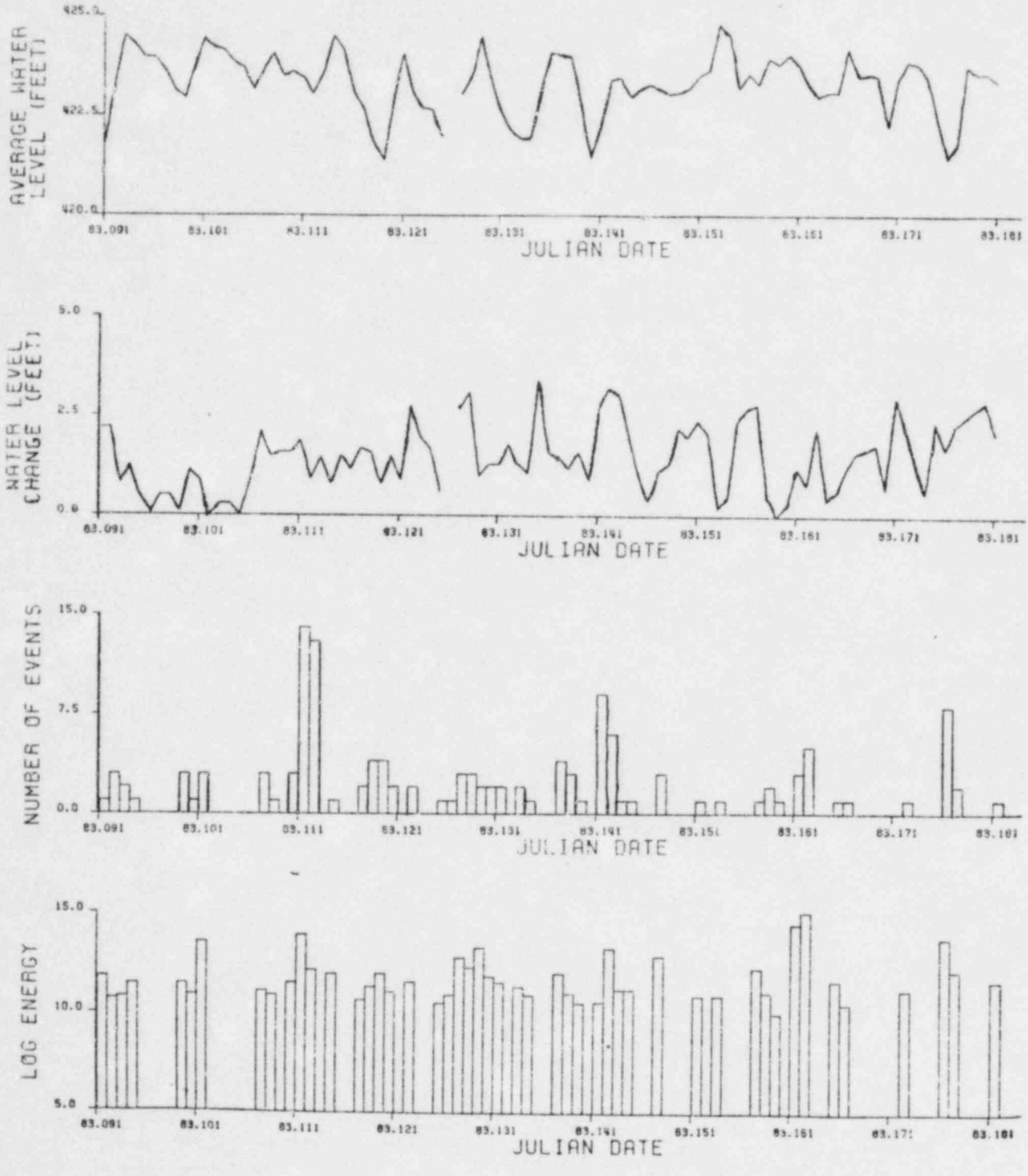
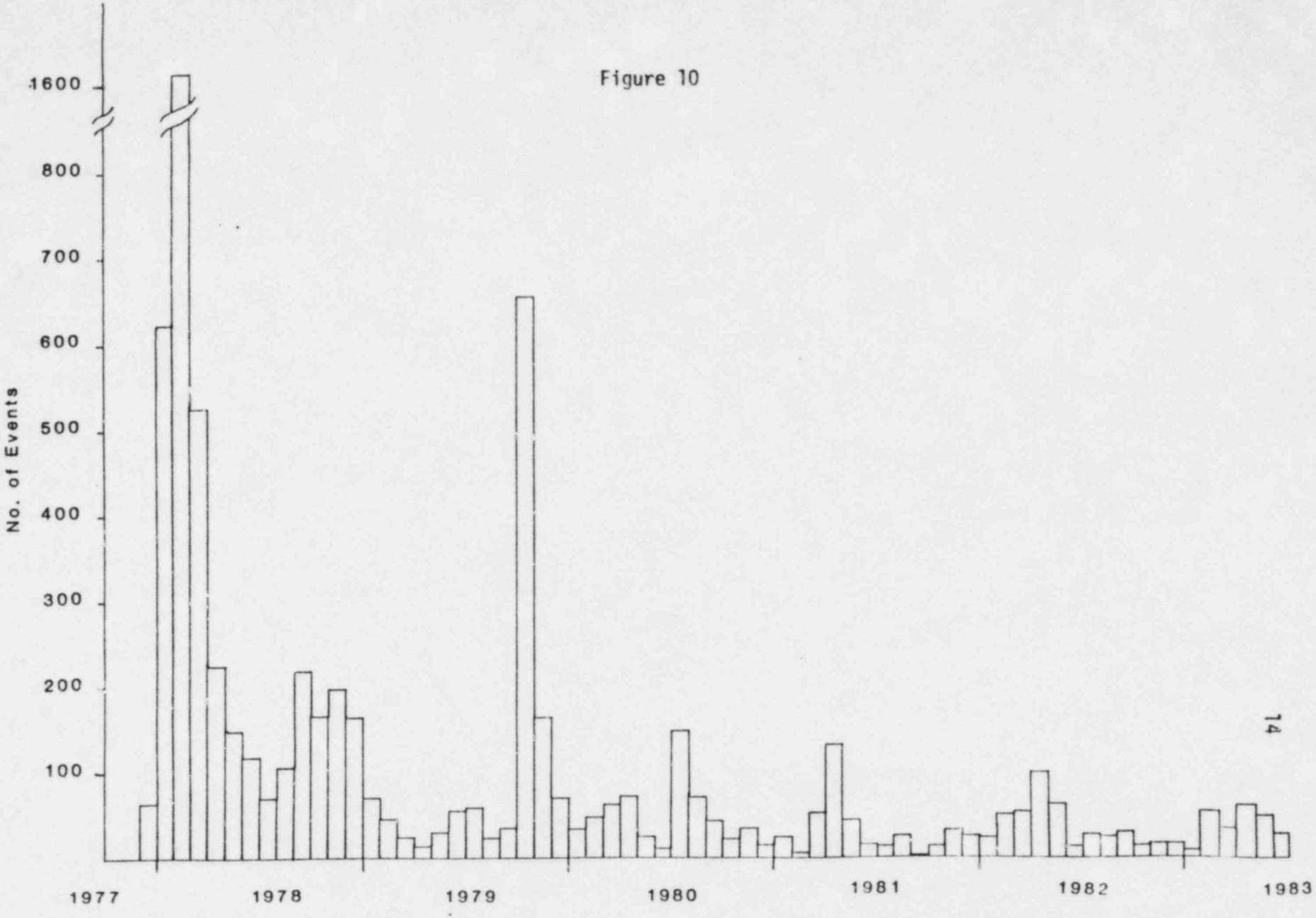

AVERAGE WATER LEVEL (FEET)
425.0
422.5
420.0
83.091
83.101
83.111
83.121
83.131
83.141
83.151
83.161
83.171
83.181
JULIAN DATE
WATER LEVEL CHANGE (FEET)
5.0
2.5
0.0
JULIAN DATE
NUMBER OF EVENTS
15.0
7.5
0.0
JULIAN DATE
LOG ENERGY
15.0
10.0
5.0
JULIAN DATE

Figure 9

Figure 10


1600
800
700
600
500
400
300
200
100
No. of Events
1977
1978
1979
1980
1981
1982
1983

APPENDICES

APPENDIX I

STATION LOCATION

NO.	STN.	LAT. N.	LONG. W.
1	001	34°19.91'	81°17.74'
2	002	34°11.58'	81°13.81'
3	003	34°21.09'	81°27.41'
4	004	34°25.72'	81°12.99'
5	JSC	34°16.80'	81°15.60'
6	008	34°24.53'	81°24.55'

APPENDIX II

MONTICELLO RESERVOIR

VELOCITY MODEL

Velocity km/sec	Depth km
1.00	0.00
5.40	0.03
5.90	0.18
6.10	0.46
6.30	0.82
8.10	30.00

APPENDIX III

DATE	ORIGIN	LAT N	LONG W	DEPTH	MAG	NO	GAP	DMIN	RMS	ERH	ERZ	QM
830401	1014 50.97	34-20.75	81-19.60	0.99	0.01	10	135	3.3	0.09	0.4	3.0	B1
830403	954 29.80	34-21.04	81-19.61	0.64	1.27	7	139	10.0	0.08	0.4	2.7	C1
830403	1040 29.51	34-20.72	81-19.40	2.62	1.27	6	134	9.3	0.00	0.0	0.2	B1
830404	933 5.67	34-21.19	81-16.85	0.83	-0.24	8	185	2.7	0.09	1.6	42.9	D1
830409	1758 49.17	34-20.80	81-19.23	5.14	-0.40	9	134	2.8	0.07	0.3	0.6	B1
830409	2126 44.71	34-18.61	81-14.36	5.13	-0.86	5	200	3.8	0.05	1.0	1.4	C1
830410	1317 1.41	34-20.67	81-19.09	1.76	-0.60	10	132	2.5	0.08	0.3	0.8	B1
830411	11 0 24.67	34-21.03	81-19.56	4.80	1.15	9	139	3.5	0.07	0.3	0.5	B1
830417	1119 9.59	34-20.01	81-19.36	0.41	-0.60	8	128	2.5	0.08	0.4	1.4	B1
830421	4 3 57.50	34-20.15	81-19.14	1.18	1.42	9	125	2.2	0.08	0.3	1.8	B1
830421	17 1 54.75	34-18.19	81-14.88	1.94	-1.22	4	192	2.8	0.01			C1
830422	1644 41.10	34-17.48	81-19.21	2.83	0.21	7	244	5.0	0.05	0.9	0.9	C1
830427	240 30.72	34-18.80	81-33.41	0.96	0.91	10	311	10.1	0.09	0.8	113.7	D1
830427	1235 42.63	34-19.40	81-31.80	4.47	0.37	6	292	7.4	0.08	1.2	1.5	C1
830427	1735 16.98	34-20.35	81-32.67	1.90	-0.60	11	299	8.2	0.08	0.7	2.5	C1
830427	23 0 17.72	34-19.35	81-33.78	0.90	0.91	9	301	10.3	0.05	0.5	62.2	D1
830427	23 2 23.46	34-19.18	81-32.16	0.80	-0.86	7	324	8.1	0.03	2.5	9.3	D1
830428	135 53.74	34-19.14	81-32.96	1.97	-0.24	9	297	9.3	0.09	0.9	3.9	C1
830428	243 49.26	34-20.20	81-31.92	5.91	1.72	8	311	7.1	0.07	0.8	1.4	C1
830428	318 25.00	34-18.85	81-32.68	1.94	0.51	8	308	9.1	0.09	1.1	4.7	C1
830428	435 17.91	34-20.01	81-32.72	4.41	-0.60	6	314	8.4	0.06	0.9	1.3	C1
830428	6 1 4.68	34-19.90	81-31.33	2.84	-0.86	7	309	6.4	0.03	0.4	0.6	C1
830428	624 33.90	34-19.96	81-32.19	3.69	0.37	10	311	7.6	0.07	0.6	1.0	C1
830428	626 4.96	34-21.09	81-32.40	1.96	-0.86	8	301	7.7	0.06	0.7	2.0	C1
830428	7 8 40.75	34-19.51	81-32.75	4.36	1.15	10	312	8.7	0.09	0.9	1.4	C1
830428	712 23.59	34-19.46	81-32.14	3.55	0.01	8	310	7.9	0.08	0.9	1.6	C1
830428	724 28.02	34-18.46	81-32.01	0.69	-0.60	7	301	8.6	0.09	3.1	11.6	D1
830428	730 17.39	34-18.78	81-32.80	0.55	-0.60	7	312	9.3	0.09	8.2	32.1	D1
830428	734 31.66	34-17.87	81-38.41	1.03	-0.40	5	336	17.9	0.09	2.5	186.8	D1
830428	735 5.09	34-20.54	81-32.96	4.56	-0.11	7	313	8.6	0.09	1.3	1.4	C1
830428	737 11.90	34-19.32	81-31.30	1.90	2.20	9	303	6.8	0.09	0.8	4.7	C1
830428	738 39.88	34-20.34	81-32.79	1.99	0.73	6	328	8.4	0.09	1.5	3.6	C1
830428	739 57.02	34-19.52	81-33.78	1.93	0.91	10	315	10.2	0.08	0.8	4.1	C1
830428	743 53.54	34-20.00	81-33.19	1.88	0.12	12	300	9.1	0.07	0.6	2.9	C1
830428	745 15.93	34-19.32	81-33.93	0.71	-0.24	11	301	10.5	0.08	2.3	8.2	D1

830428	751	34.74	34-19.19	81-33.66	0.65	-0.86	10	314	10.2	0.08	4.0	14.5 D1
830428	832	0.64	34-19.18	81-31.93	1.97	0.01	9	305	7.8	0.09	0.9	3.3 C1
830428	850	16.13	34-18.96	81-32.38	0.72	0.29	9	307	8.6	0.05	1.6	6.1 D1
830428	856	48.36	34-19.03	81-32.84	0.92	0.21	10	296	9.2	0.08	0.7	104.4 D1
830428	9 0	0.95	34-20.37	81-31.86	1.84	1.15	8	311	7.0	0.09	1.0	5.4 D1
830428	9 2	10.16	34-19.97	81-31.98	1.95	0.12	9	311	7.3	0.09	0.9	2.9 C1
830428	9 6	38.20	34-19.61	81-32.80	4.46	0.51	6	313	8.7	0.08	1.3	1.8 C1
830428	914	44.44	34-18.63	81-33.00	0.86	0.87	10	296	9.7	0.06	0.4	87.7 D1
830428	942	18.01	34-18.22	81-33.31	0.60	-0.11	5	324	10.5	0.05	16.1	60.6 D1
830428	1031	40.63	34-19.56	81-31.83	1.98	1.80	10	292	7.4	0.08	0.7	4.7 C1
830428	1032	9.47	34-19.15	81-33.29	1.95	0.78	5	329	9.7	0.05	1.4	4.8 C1
830428	1051	6.51	34-19.80	81-32.66	1.96	0.44	9	312	8.4	0.07	0.7	2.7 C1
830428	1111	18.31	34-20.07	81-32.75	2.57	0.44	9	298	8.4	0.04	0.4	1.1 C1
830428	1139	35.88	34-19.54	81-32.41	3.45	1.12	9	295	8.2	0.05	0.4	1.8 C1
830428	12 0	7.42	34-19.28	81-32.91	1.93	0.51	9	297	9.1	0.09	0.9	3.5 C1
830428	1226	2.74	34-19.00	81-32.52	1.89	0.44	10	295	8.7	0.08	0.7	3.3 C1
830428	1310	51.27	34-19.61	81-32.98	3.43	0.29	11	298	9.0	0.09	0.8	1.7 C1
830428	1312	29.38	34-21.19	81-31.11	5.20	0.12	6	328	5.7	0.04	1.3	0.8 C1
830428	1556	49.23	34-18.52	81-32.98	1.10	-0.40	7	313	9.8	0.05	0.7	7.2 D1
830428	16 8	25.79	34-18.76	81-31.59	1.88	-0.24	8	300	7.7	0.06	0.6	2.5 C1
830428	1632	33.67	34-18.14	81-31.81	6.10	0.01	5	315	8.7	0.01	0.1	0.1 C1
830428	1729	53.67	34-20.07	81-32.86	3.44	-0.86	6	314	8.6	0.08	1.1	1.8 C1
830428	1833	43.03	34-18.86	81-32.56	0.85	0.01	10	294	8.9	0.07	0.6	95.9 D1
830428	1849	35.20	34-18.08	81-31.43	0.80	-0.60	4	312	8.3	0.03		C1
830428	1948	45.09	34-17.41	81-32.48	1.92	0.12	8	310	10.3	0.08	1.0	5.7 D1
830428	1948	54.05	34-21.19	81-31.55	3.38	-0.11	7	312	6.4	0.08	1.2	1.3 C1
830428	1956	57.34	34-19.91	81-32.85	1.90	-0.60	5	328	8.6	0.01	0.2	0.7 C1
830428	2039	34.97	34-20.49	81-31.59	2.74	1.50	9	294	6.5	0.08	0.7	2.4 C1
830428	2246	28.29	34-20.77	81-31.66	3.72	-0.40	6	311	6.6	0.07	1.3	1.3 C1
830428	2249	45.83	34-19.64	81-31.59	5.72	1.65	9	309	7.0	0.06	0.7	0.7 C1
830428	2258	1.92	34-19.03	81-32.30	1.90	0.68	10	294	8.4	0.05	0.5	2.2 C1
830428	23 2	6.57	34-20.34	81-31.58	3.44	1.44	9	294	6.5	0.06	0.5	1.5 C1
830428	23 9	40.26	34-19.43	81-32.77	1.93	0.12	8	313	8.8	0.05	0.5	2.2 C1
830428	2311	49.30	34-19.12	81-31.84	2.67	0.29	8	308	7.7	0.03	0.4	0.8 C1
830428	2311	57.43	34-19.02	81-32.00	1.96	1.06	5	322	8.0	0.04	1.2	3.4 C1
830428	2331	22.95	34-20.01	81-32.76	5.35	0.12	9	313	8.5	0.06	0.6	0.8 C1
830429	041	9.18	34-19.04	81-32.70	1.95	0.82	11	295	9.0	0.06	0.5	2.5 C1
830429	156	49.33	34-18.72	81-32.18	0.75	0.68	11	292	8.5	0.06	1.4	5.3 D1
830429	213	53.78	34-19.39	81-32.41	1.89	0.99	10	311	8.3	0.07	0.7	2.8 C1

830429	453	58.41	34-18.35	81-32.72	0.82	-0.24	8	305	9.6	0.05	0.5	76.1	D1
830429	518	54.22	34-18.84	81-32.47	1.95	0.37	10	294	8.8	0.05	0.5	2.1	C1
830429	814	55.26	34-19.77	81-32.66	5.26	-0.11	6	312	8.4	0.07	1.3	1.6	C1
830429	9 2	11.86	34-18.76	81-32.79	0.87	0.01	9	308	9.3	0.09	0.8	118.2	D1
830429	925	53.53	34-19.40	81-32.00	3.51	0.12	8	309	7.7	0.08	0.8	1.5	C1
830429	1033	16.31	34-19.29	81-33.87	7.34	-0.40	6	315	10.5	0.07	1.4	1.7	C1
830429	1122	55.22	34-17.79	81-32.72	1.60	-0.11	7	302	10.2	0.09	0.7	4.5	C1
830429	1134	23.68	34-20.22	81-19.28	1.04	-0.11	8	126	2.4	0.07	0.3	1.4	B1
830429	1930	36.21	34-19.93	81-30.84	3.85	-0.11	7	288	12.9	0.07	0.9	2.8	C1
830429	23 4	35.87	34-18.81	81-32.42	1.94	0.12	7	306	8.8	0.07	0.8	2.9	C1
830430	319	53.08	34-20.34	81-19.42	1.15	-0.60	8	128	2.7	0.09	0.4	1.8	B1
830430	735	48.19	34-19.88	81-19.39	2.68	-0.86	6	129	2.5	0.02	0.1	0.3	B1
830430	755	4.26	34-19.39	81-33.47	2.82	-0.40	6	314	9.8	0.07	1.2	3.0	C1
830501	1135	3.15	34-19.43	81-33.15	0.80	0.91	12	298	9.3	0.09	2.4	8.8	D1
830502	657	36.06	34-21.33	81-32.79	4.49	0.21	11	303	8.3	0.08	0.6	0.9	C1
830502	7 6	20.91	34-20.12	81-33.45	1.68	-0.60	11	301	9.4	0.07	0.5	3.1	C1
830502	2124	20.19	34-18.53	81-32.49	2.00	-0.86	8	311	9.1	0.09	1.0	4.2	C1
830503	2147	21.49	34-20.04	81-18.73	1.67	-0.86	12	124	1.5	0.03	0.1	0.2	B1
830504	1142	23.93	34-19.59	81-32.39	1.98	-0.11	12	295	8.1	0.04	0.3	1.2	C1
830504	1830	1.22	34-20.06	81-33.45	1.93	-0.40	12	301	9.5	0.05	0.4	2.0	C1
830505	016	35.59	34-19.78	81-33.80	2.10	-0.40	12	302	10.1	0.07	0.6	2.8	C1
830505	456	19.82	34-20.35	81-33.11	0.56	-0.40	12	301	8.9	0.03	0.8	3.0	C1
830505	5 6	36.67	34-19.52	81-33.27	1.95	-0.24	12	299	9.4	0.07	0.5	2.7	C1
830506	635	44.35	34-19.62	81-33.16	1.94	0.63	12	299	9.2	0.07	0.6	3.0	C1
830506	1859	24.83	34-19.02	81-32.35	1.91	0.68	12	294	8.5	0.07	0.5	2.6	C1
830507	124	41.86	34-20.01	81-18.91	1.61	0.21	10	125	1.8	0.07	0.3	0.6	B1
830507	255	14.02	34-20.01	81-19.39	0.88	-0.24	12	128	2.5	0.06	0.2	1.8	B1
830507	3 9	32.15	34-19.92	81-19.27	1.33	0.21	12	128	2.4	0.03	0.1	0.4	B1
830507	355	57.26	34-19.70	81-33.73	2.69	1.18	12	301	10.0	0.05	0.4	1.4	C1
830507	5 1	0.21	34-20.37	81-30.91	1.72	2.45	12	290	5.5	0.07	0.5	1.6	C1
830507	16 9	40.16	34-19.61	81-32.27	3.58	0.82	12	295	7.9	0.08	0.6	1.2	C1
830508	0 0	13.81	34-20.15	81-32.19	1.86	0.01	11	296	7.5	0.09	0.8	3.0	C1
830508	114	26.38	34-19.99	81-31.80	1.93	0.82	11	294	7.0	0.08	0.6	3.9	C1
830508	336	23.21	34-21.19	81-31.77	3.80	1.52	10	298	6.7	0.09	0.9	1.1	C1
830508	1155	37.77	34-20.40	81-31.40	1.95	1.81	10	293	6.3	0.09	0.8	4.2	C1
830508	2142	35.91	34-20.51	81-31.81	1.85	0.87	9	295	6.8	0.07	0.6	3.6	C1
830508	2223	51.31	34-16.50	81-25.97	7.78	-0.11	7	280	14.1	0.08	0.9	1.3	C1
830509	425	20.72	34-19.41	81-32.80	1.89	1.62	11	297	8.8	0.08	0.7	5.9	D1
830509	426	42.28	34-19.56	81-31.95	1.88	1.15	11	293	7.5	0.09	0.8	5.4	D1

830509	438	15.17	34-20.03	81-31.72	2.81	0.91	12	293	6.9	0.09	0.7	1.5	C1
830509	650	7.12	34-20.08	81-33.11	1.89	0.87	11	300	9.0	0.08	0.7	3.2	C1
830509	655	3.77	34-19.62	81-31.54	3.72	1.32	11	291	6.9	0.09	0.7	2.1	C1
830509	655	57.46	34-20.02	81-32.50	1.98	1.46	10	297	8.1	0.09	0.9	5.5	D1
830509	7 8	38.34	34-19.89	81-32.42	1.91	0.68	12	296	8.0	0.08	0.6	2.6	C1
830509	1136	54.84	34-19.97	81-32.20	3.52	-0.11	11	295	7.6	0.08	0.6	1.2	C1
830509	1357	15.08	34-20.25	81-19.48	0.82	0.95	11	126	2.7	0.07	0.3	89.0	C1
830509	1433	39.94	34-20.22	81-32.16	3.52	-0.11	9	312	7.5	0.08	0.8	1.3	C1
830510	411	45.35	34-20.20	81-19.15	1.85	-0.40	12	125	2.2	0.08	0.3	0.7	B1
830510	1041	46.63	34-20.09	81-32.41	5.40	-0.11	11	297	7.9	0.09	0.7	1.0	C1
830510	2156	8.25	34-14.13	81-26.98	7.32	-0.11	11	254	12.9	0.07	0.4	0.8	C1
830511	16 7	59.32	34-18.88	81-19.64	1.78	-0.86	7	167	3.5	0.09	0.5	1.7	B1
830513	445	6.33	34-17.83	81-25.79	2.83	-0.40	7	241	6.5	0.08	1.0	2.0	C1
830513	630	29.64	34-20.33	81-18.95	0.56	-0.86	6	170	2.0	0.07	0.5	1.4	B1
830513	2227	49.80	34-20.56	81-30.19	1.83	-0.24	9	302	4.4	0.06	0.6	1.1	C1
830515	031	34.61	34-20.41	81-30.56	0.31	-0.60	5	304	5.0	0.01	0.2	0.4	C1
830515	320	47.89	34-21.19	81-29.04	1.72	-0.60	8	297	2.5	0.08	0.7	1.2	C1
830515	616	11.21	34-19.84	81-31.41	1.89	0.29	10	307	6.6	0.09	0.8	2.2	C1
830516	15 6	5.87	34-19.73	81-31.36	5.15	1.09	8	325	6.6	0.08	1.1	1.0	C1
830516	1511	29.53	34-18.64	81-32.30	0.93	1.18	7	321	8.8	0.08	1.1	115.4	D1
830516	1512	39.65	34-19.10	81-32.59	0.20	0.78	8	326	8.8	0.09	10.5	27.2	D1
830517	1442	13.61	34-17.15	81-23.52	6.97	-0.11	7	228	9.4	0.03	0.1	0.2	C1
830517	1835	57.05	34-16.78	81-22.54	7.10	-0.40	7	227	9.4	0.09	1.0	1.6	C1
830518	527	39.71	34-20.20	81-19.90	0.31	-0.86	6	236	3.4	0.09	1.1	1.2	C1
830518	1821	9.84	34-14.10	81-26.29	1.00	-0.24	8	279	13.0	0.09	0.8	122.7	D1
830519	756	25.48	34-20.45	81-31.12	1.99	0.01	7	325	5.8	0.09	1.3	2.5	C1
830519	8 2	21.81	34-21.30	81-18.68	6.62	-0.86	4	256	2.9	0.05			C1
830520	2044	52.26	34-24.00	81-34.46	4.49	-0.11	5	328	12.1	0.03	0.8	1.6	C1
830521	2224	43.26	34-16.84	81-15.97	1.00	-1.22	3	237	0.6	0.05			C1
830521	23 0	23.21	34-16.93	81-15.54	1.00	-1.83	3	234	0.3	0.07			C1
830522	8 6	46.78	34-18.04	81-20.44	1.91	-0.24	9	191	5.4	0.09	0.5	2.3	C1
830522	1156	47.86	34-20.62	81-20.82	0.90	0.95	8	143	4.9	0.03	0.2	4.7	C1
830522	1419	30.33	34-18.60	81-18.49	0.69	-0.60	4	259	2.7	0.07			C1
830523	16 6	27.86	34-18.68	81-23.66	6.32	-0.40	6	202	7.3	0.08	0.8	1.5	C1
830527	326	3.38	34-19.90	81-17.30	0.31	0.68	9	124	0.7	0.04	0.2	0.5	B1
830527	327	11.79	34-19.41	81-17.84	1.99	-0.86	5	189	0.9	0.08	99.4	32.7	D1
830527	1614	9.49	34-17.30	81-26.78	6.49	-0.24	5	259	7.1	0.04	0.7	1.0	C1
830531	2 9	1.45	34-21.19	81-31.54	2.63	-0.11	7	325	6.3	0.04	0.5	0.7	C1
830531	1133	16.26	34-17.54	81-20.31	1.00	-0.60	3	301	5.9	0.07			C1

830601	1529	0.24	34-18.52	81-31.76	4.50	0.73	5	317	8.2	0.02	0.6	0.8	C1
830602	5 9	12.92	34-20.38	81-33.34	2.79	1.32	8	329	9.2	0.03	0.4	0.8	C1
830602	10 4	48.57	34-21.16	81-32.13	2.10	0.51	8	326	7.2	0.06	0.7	1.5	C1
830602	1333	44.47	34-20.67	81-19.13	0.13	-0.60	8	132	2.6	0.04	0.2	0.5	B1
830606	1240	41.74	34-20.08	81-19.45	0.17	0.29	8	143	2.6	0.03	0.1	0.4	B1
830610	359	25.82	34-20.47	81-21.23	1.93	-0.40	8	136	5.5	0.06	0.3	1.5	B1
830610	1818	41.30	34-20.36	81-21.45	4.24	-0.60	9	134	5.8	0.05	0.2	0.5	B1
830610	19 1	28.84	34-20.35	81-21.18	1.84	1.78	8	134	5.3	0.02	0.1	0.8	B1
830611	127	17.35	34-20.21	81-21.44	2.93	0.57	10	136	5.7	0.04	0.2	0.5	B1
830611	128	18.10	34-20.53	81-21.10	1.97	2.20	10	130	4.0	0.06	0.3	1.2	B1
830611	2 7	28.54	34-20.47	81-21.32	3.06	-0.40	10	132	4.3	0.05	0.4	0.9	B1
830611	210	53.33	34-20.83	81-19.73	1.27	-0.11	11	120	2.6	0.05	0.2	0.6	B1
830611	228	50.20	34-20.74	81-20.9.	4.18	-0.11	9	139	5.2	0.04	0.2	0.5	B1
830614	18 7	6.72	34-20.16	81-20.77	1.98	-0.86	9	133	4.7	0.03	0.2	0.6	B1
830615	1344	44.61	34-20.08	81-20.44	4.25	-0.86	9	133	4.2	0.03	0.2	0.3	B1
830621	1713	32.02	34-19.89	81-33.17	1.90	0.63	8	313	9.1	0.07	0.8	3.4	C1
830621	1936	23.88	34-19.93	81-21.03	3.37	-0.40	8	138	4.8	0.07	0.7	1.5	B1
830625	449	51.82	34-19.72	81-21.08	1.79	-0.86	9	141	5.1	0.06	0.3	1.3	B1
830625	453	4.23	34-20.38	81-20.73	2.53	-0.60	9	133	4.7	0.09	0.4	1.3	B1
830625	1259	2.84	34-20.95	81-19.23	4.32	-0.40	10	136	3.0	0.05	0.2	0.4	B1
830625	1448	37.60	34-20.32	81-21.48	1.97	-0.60	5	153	9.2	0.04	0.4	4.5	C1
830625	16 2	58.63	34-20.35	81-21.18	0.49	1.32	7	134	5.3	0.03	0.2	0.7	B1
830625	16 9	38.36	34-19.72	81-21.51	5.08	0.57	9	144	5.8	0.04	0.2	0.4	B1
830625	1629	47.56	34-19.90	81-21.75	4.78	0.01	9	143	6.2	0.03	0.1	0.3	B1
830626	349	40.40	34-18.81	81-21.99	0.94	-0.60	6	186	6.8	0.04	4.5	105.3	D1
830626	934	56.38	34-18.04	81-20.38	1.24	0.21	10	158	5.3	0.04	0.2	2.0	C1
830628	721	15.80	34-19.29	81-32.31	0.49	0.01	4	309	8.2	0.02			C1
830630	4 8	46.21	34-18.69	81-32.63	3.67	-0.11	9	307	9.2	0.06	0.5	1.2	C1
830630	439	25.92	34-20.23	81-21.28	4.46	-0.11	9	135	5.5	0.04	0.2	0.5	B1

TECHNICAL REPORT 83-1

SEISMIC ACTIVITY NEAR THE V.C. SUMMER NUCLEAR STATION

For the Period January - March 1983

by
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Contract No. N301315