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March 31, 1983
4410-83-L-0057

TMI Program Office
Attn: Mr. L. H. Barrett, Deputy Program Director
US Nuclear Regulatory Commission
c/o Three Mile Island Nuclear Station
Middletown, PA 17057-0191

Dear Sir:

Three Mile Island Nuclear Station, Unit 2 (TMI-2)
Operating License No. DPR-73
Docket No. 50-320
Groundwater Monitoring Program

This is the periodic report presenting results of the program to detect radioactive water leakage to the groundwater of TMI-2. As there have been numerous changes in the program since its inception, the following paragraphs which summarize the current groundwater sampling program have been included.

At present, several monitoring and observation stations (MS-1, MS-2, MS-3, OS-10, OS-16, and OS-17) are sampled on a weekly basis. Gamma scans and tritium analyses are performed on the samples by Unit 2 Chemistry. Once a month, samples are obtained from all of the groundwater stations and are sent to an off-site laboratory for radiological analyses. Split samples from MS-1, MS-2, MS-3, OS-10, OS-16, and OS-17 are analyzed by Unit 2 Chemistry.

Groundwater Monitoring

The following groundwater monitoring data is attached:

1. Individual computer graphs (Figure 1) of tritium concentrations for each monitoring station, observation station, and the East Dike Catch Basin (EDCB) up to and including January 11, 1983. MS-1, MS-2, MS-3, OS-10, OS-16, and OS-17 include data through February 8, 1983.
2. Individual computer graphs (Figure 2) of water levels within the monitoring stations up to and including February 8, 1983.

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3. A graph (Figure 3) depicts gamma scan data from Monitoring Station (MS-2) sample analysis.
4. Composite Sr-89 and Sr-90 groundwater results for the third and fourth quarters of 1982 (Tables 1 and 2). The third quarter Sr-90 concentration for the EDCB has been changed from the last report due to an error that was discovered in the previously reported data. The new value is close to LLD and is considered a statistical aberration.
5. A composite drawing showing all monitoring locations with a graph of the tritium concentrations reported in each station.

Gamma results from the November 2, 1982, sampling date were LLD for MS-3 and MS-4. Ra-226 was detected in MS-1, MS-2, OS-16, and OS-17. K-40 was found in MS-2, OS-16, and OS-17. TH-232 was detected in OS-16. (Ra-226, K-40, and TH-232 are all naturally occurring radionuclides.)

The December 13, 1982, gamma results were LLD for MS-6, MS-7, MS-8, OS-10, OS-13B, and OS-14. Ra-226 was detected in MS-1, MS-3, OS-16, and OS-17 samples. K-40 was found in MS-2. Results from MS-4 and MS-5 have not been received.

The January 11, 1983, gamma results were LLD for MS-1, MS-2, MS-3, and OS-10. Ra-226 was detected in an OS-17 sample while K-40 was detected in OS-16. Results from MS-4, MS-5, MS-6, MS-7, MS-8, OS-13B, OS-14, OS-16, and OS-17 have not been received. A positive Cs-137 concentration was reported for the MS-2 sample analyzed by Unit 2 Chemistry; however, the off-site laboratory reported an LLD value.

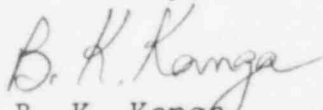
Gamma results (from Unit 2 Chemistry) for selected stations, MS-1, MS-2, MS-3, OS-10, OS-16, and OS-17 were LLD for the first three weeks of February, 1983.

Some additional strontium results from the third and fourth quarter reports of 1982 are included. The third quarter strontium results for MS-2 have not been received; this will be provided in a future report. The positive numbers were very close to, or below, the calculated LLD values. Due to the uncertainty of measurements, which are near the LLD, the positive Sr-90 numbers are considered to be a result of statistical aberrations. (The 1982 second quarter strontium reanalysis of MS-8 was reported as less than .883 pCi/l.)

Based on the groundwater data collected to date, past leaks of the Unit 2 BWST are responsible for the elevated tritium concentrations in the Unit 2 power block area. Since mid 1982, tritium concentrations in the samples from stations in the Unit 2 BWST vicinity have trended downward, indicating no leakage has occurred from the tank since January, 1982.

If you have any questions, please call Mr. J. J. Byrne of my staff.

Sincerely,


B. K. Kanga
Director, TMI-2

CC: Dr. B. J. Snyder, Program Director - TMI Program Office

LIST OF ATTACHMENTS

Figures

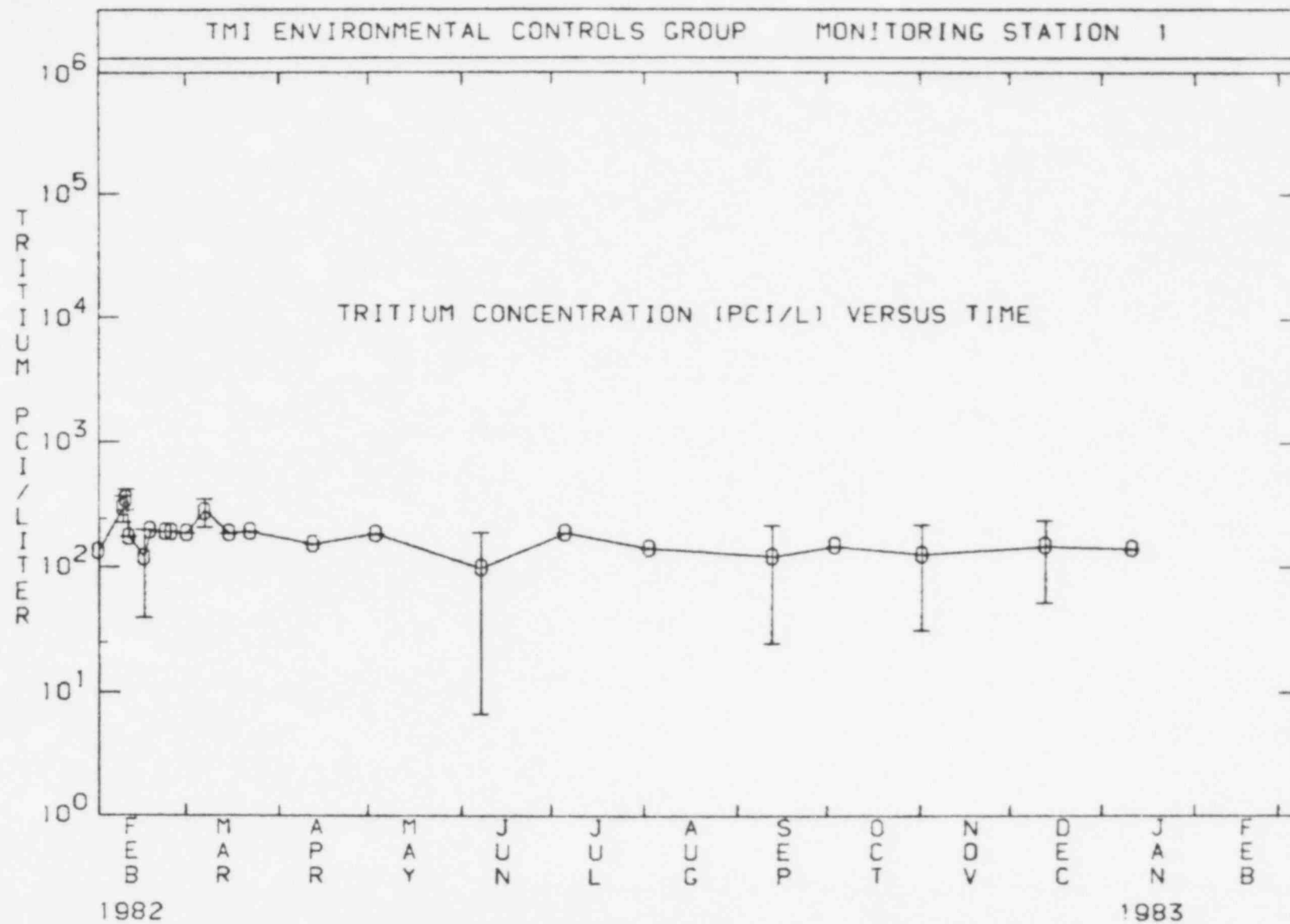
- Figure 1 Graphs of Tritium Concentrations of Monitoring Stations and East Dike Catch Basin Samples Versus Time
- Figure 2 Graphs of Water Levels in Monitoring Stations Versus Time
- Figure 3 Gamma Scan Results for Monitoring Station MS-2 Versus Time

Tables

- Table 1 Third Quarter Composite Sr-89 Groundwater Results
- Table 2 Third Quarter Composite Sr-90 Groundwater Results
- Table 3 Fourth Quarter Composite Sr-89 Groundwater Results
- Table 4 Fourth Quarter Composite Sr-90 Groundwater Results

Drawing

Groundwater Tritium Concentrations at Site Liquid Monitoring Stations



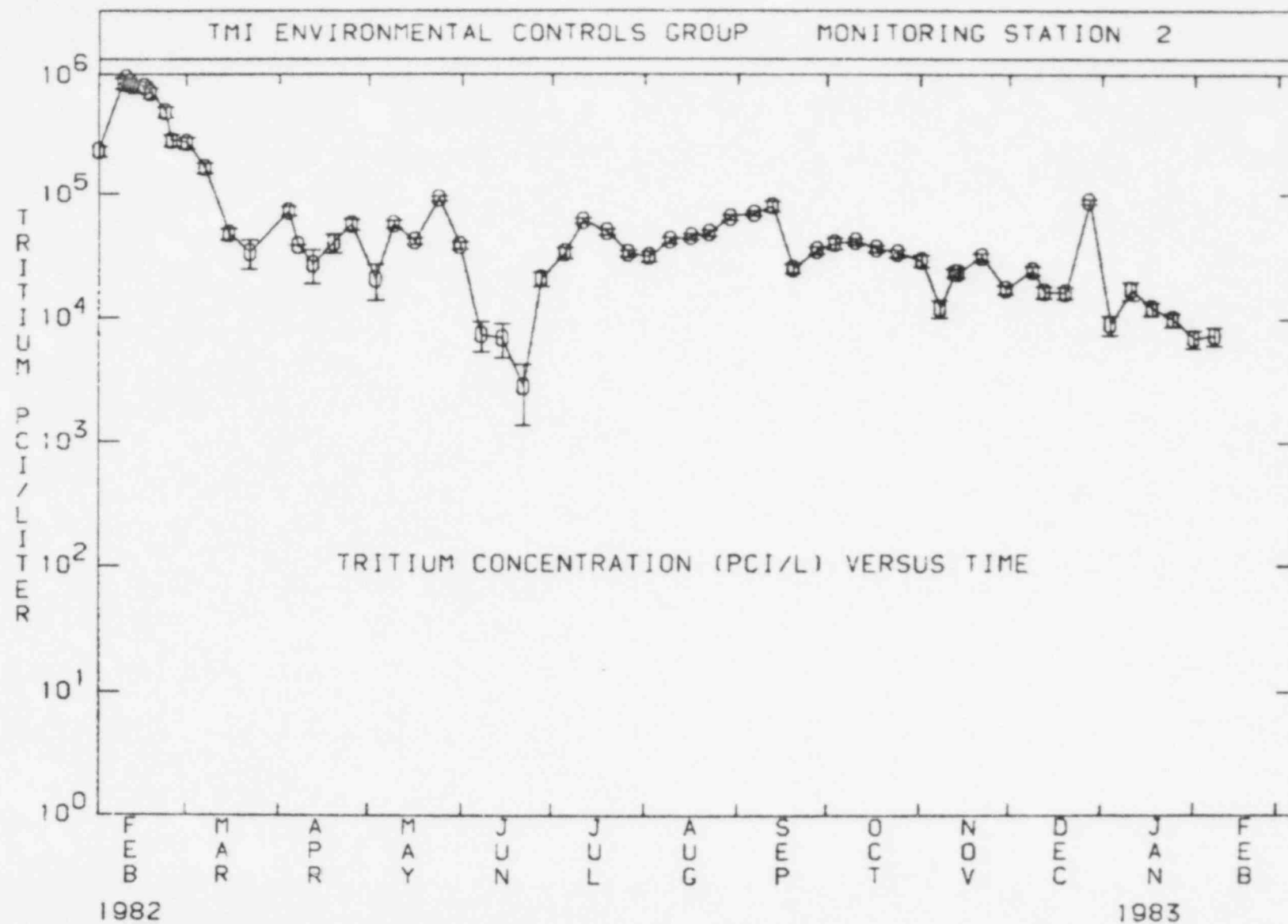
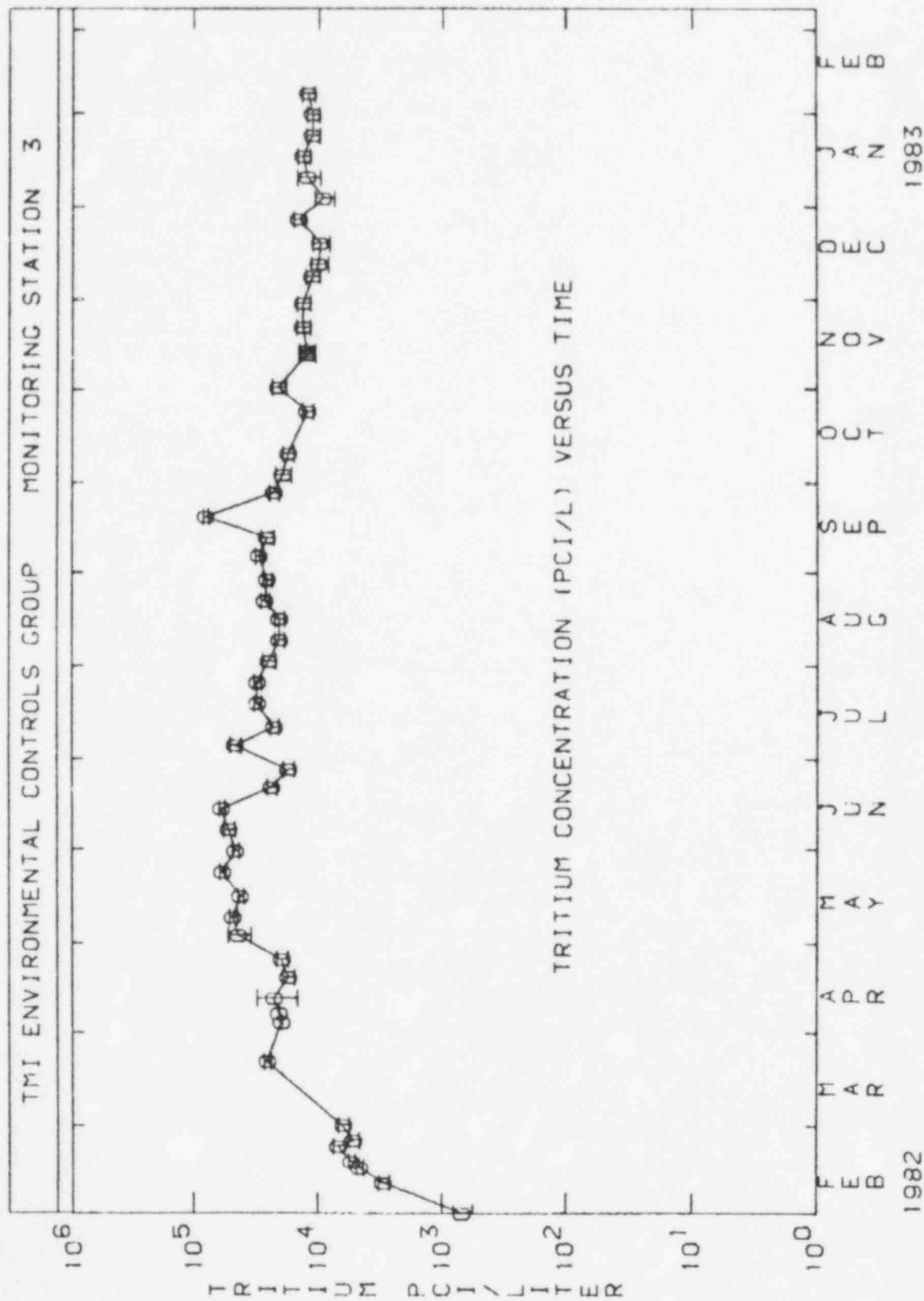
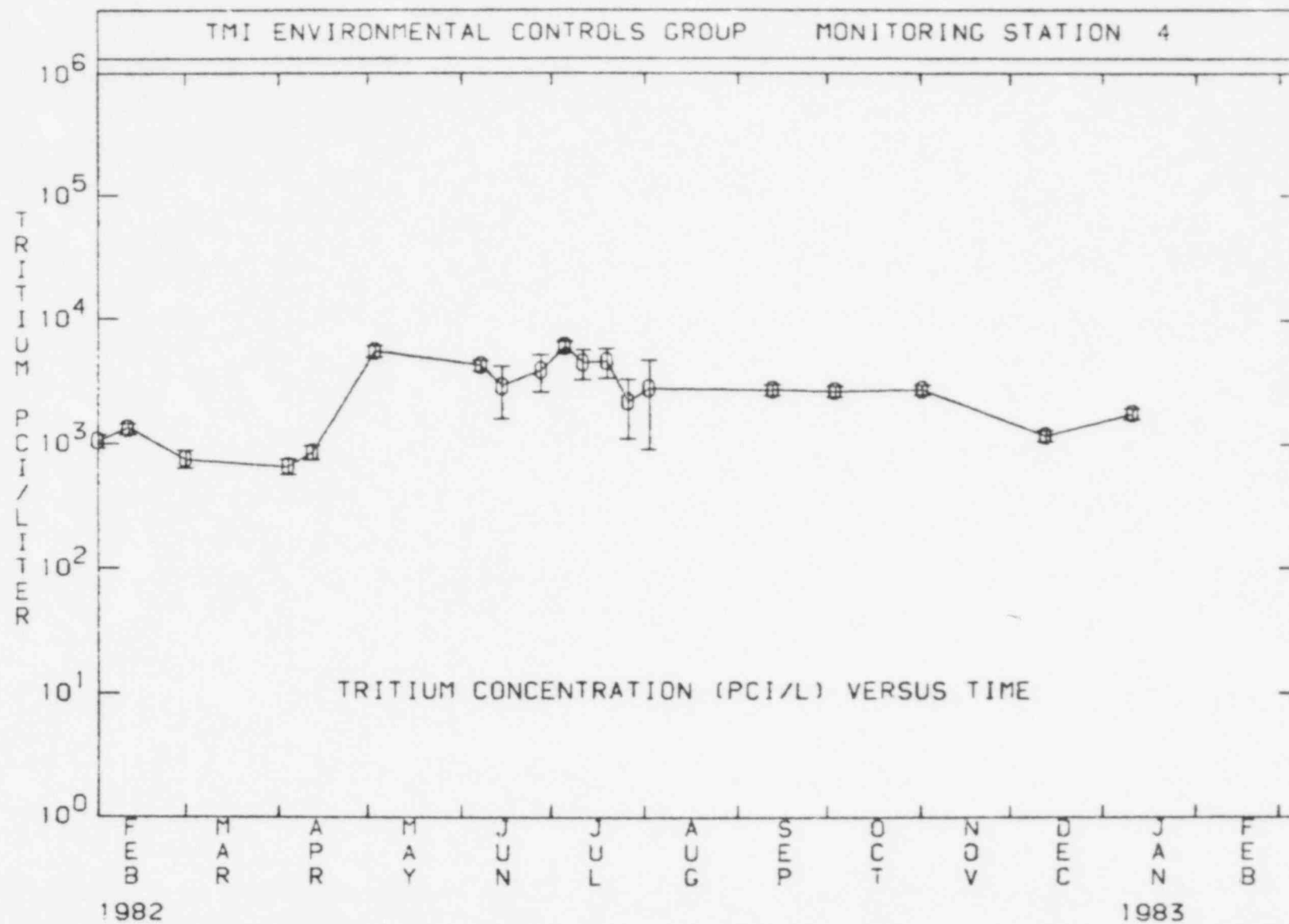
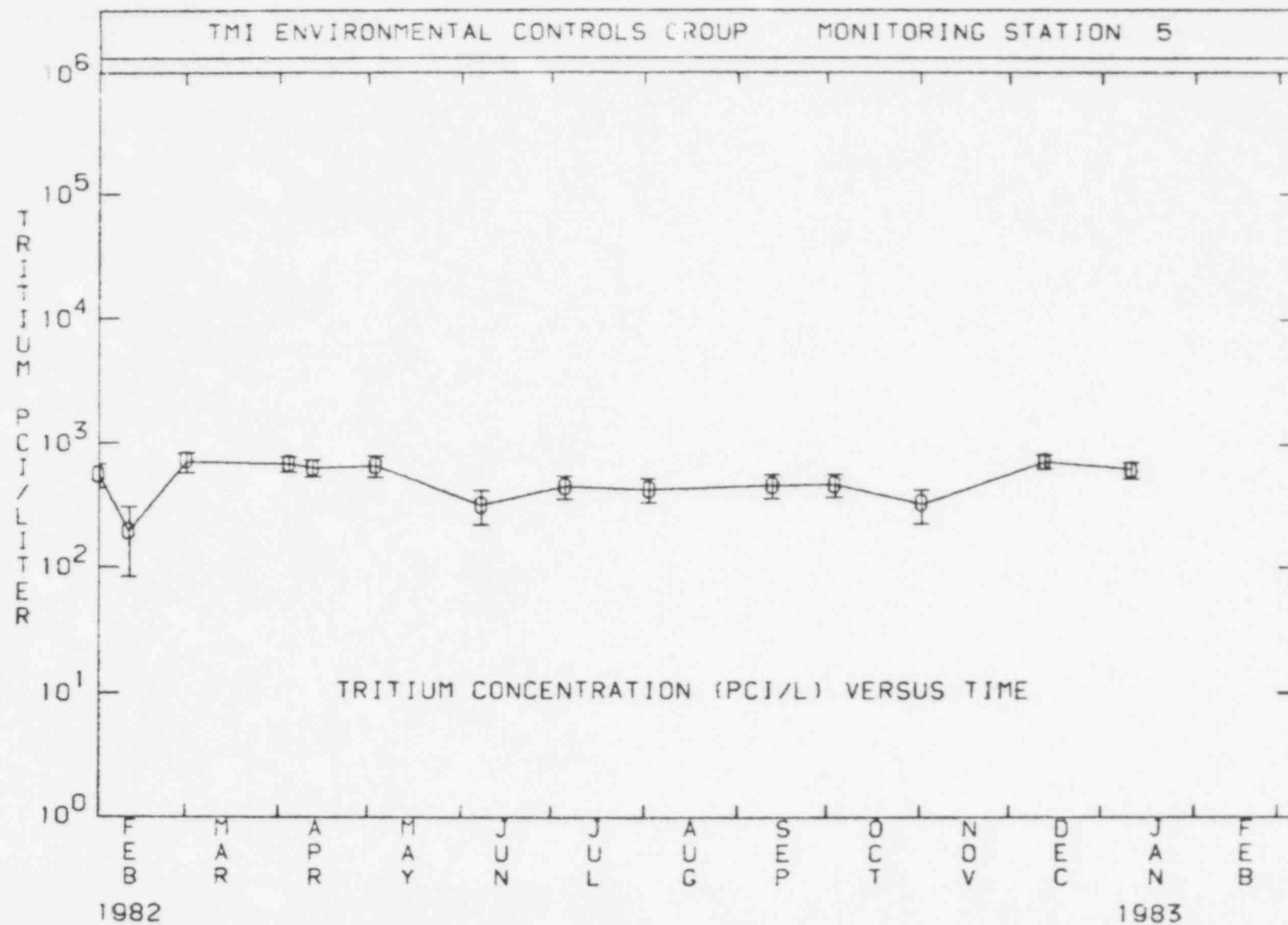
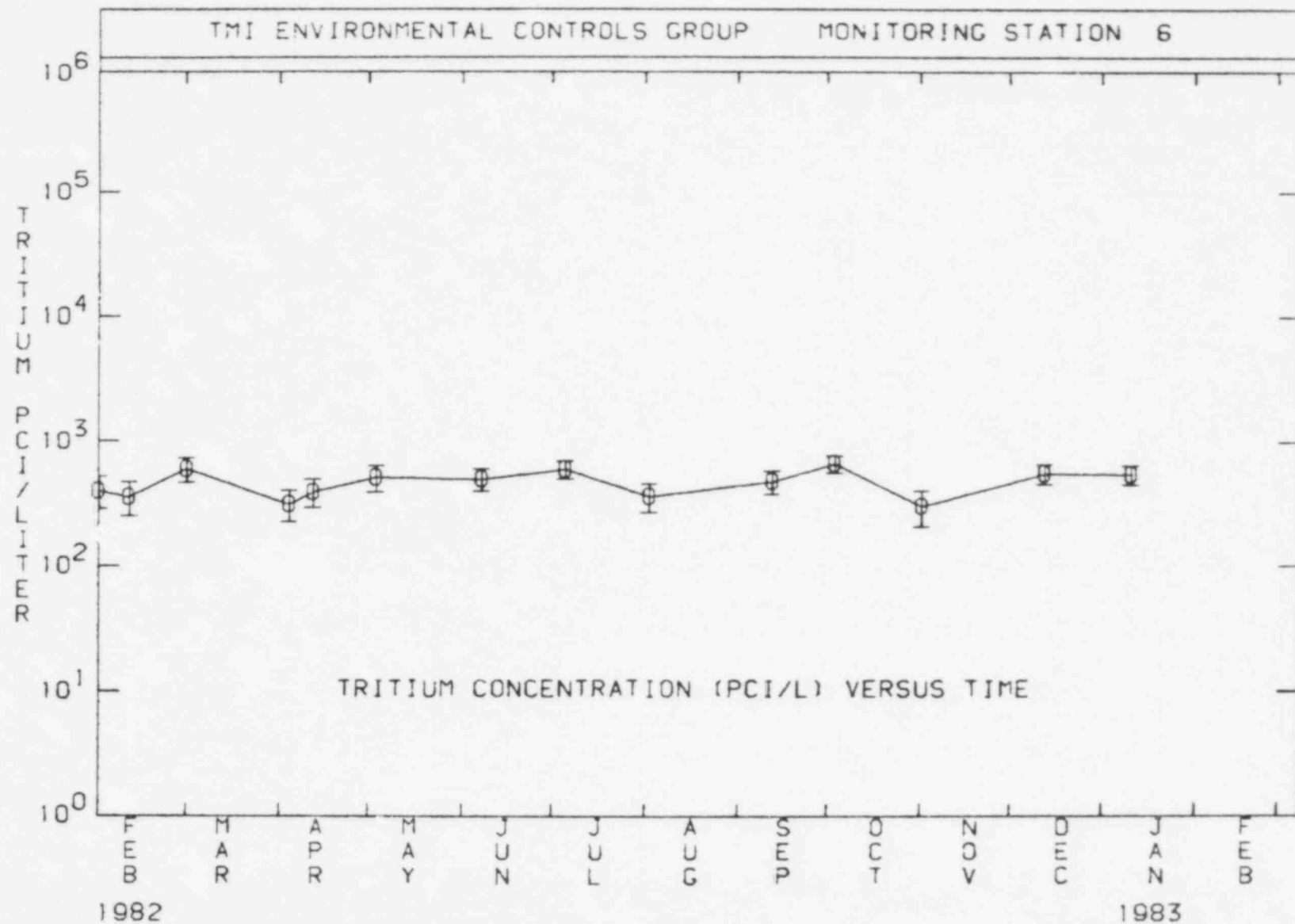


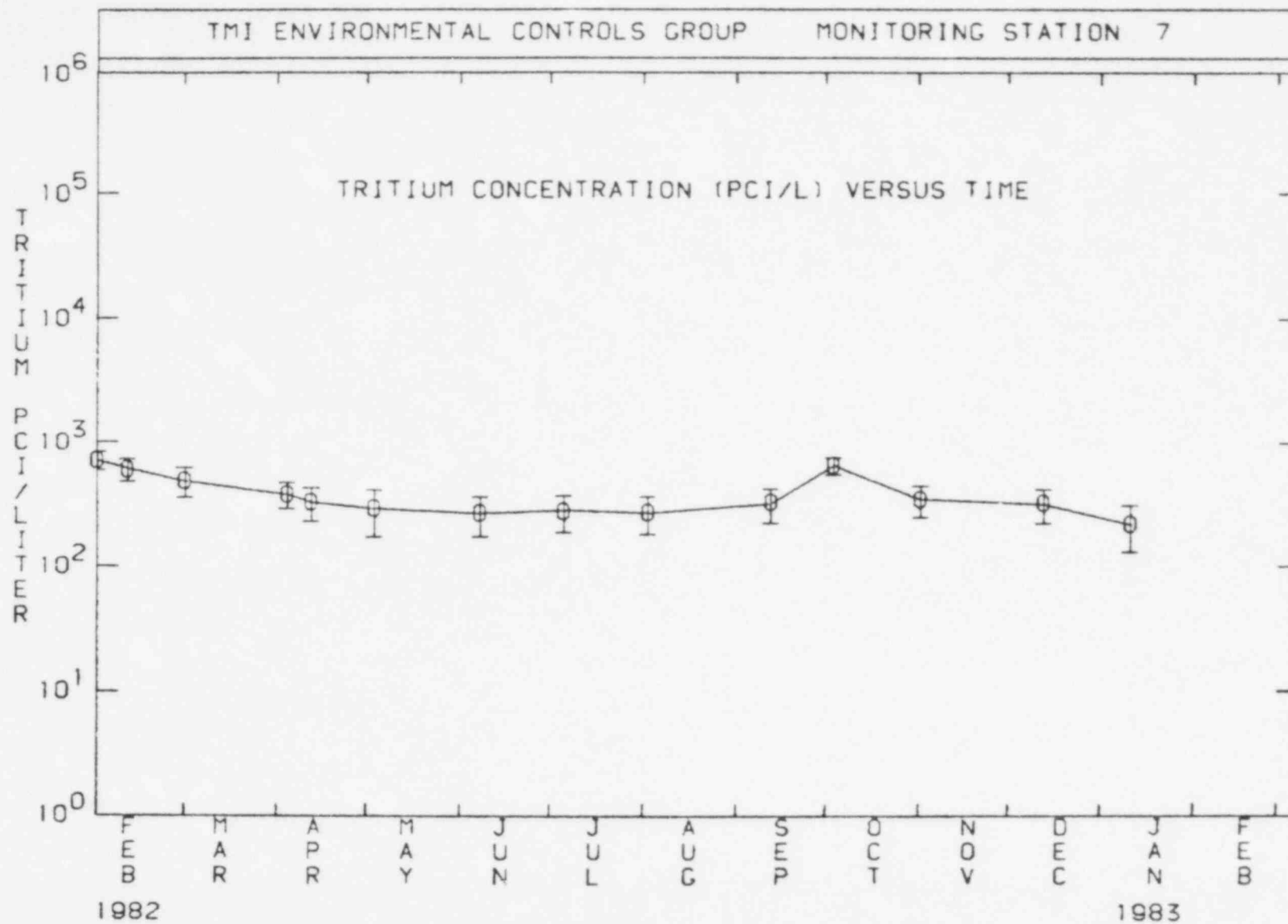
Figure 1
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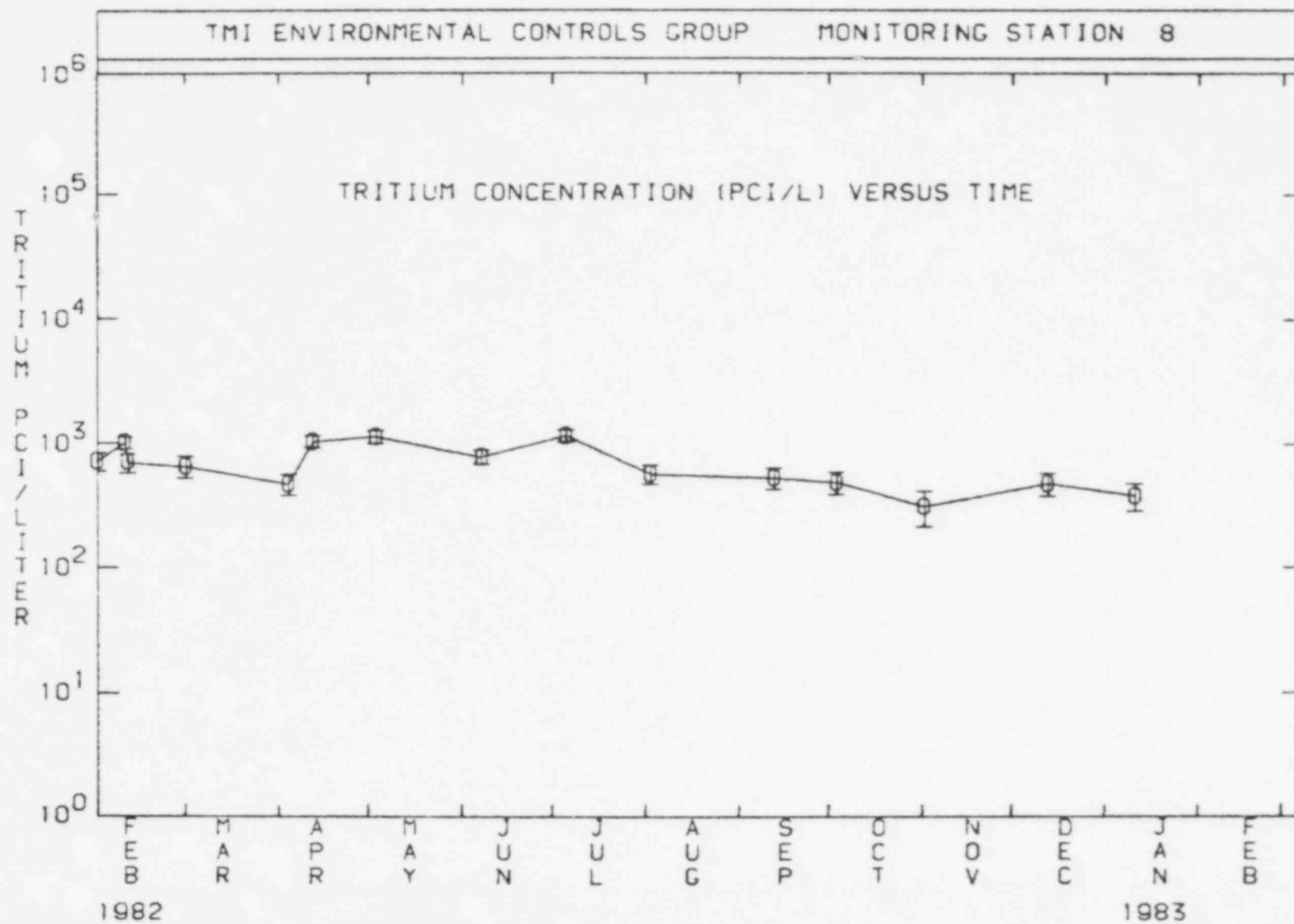


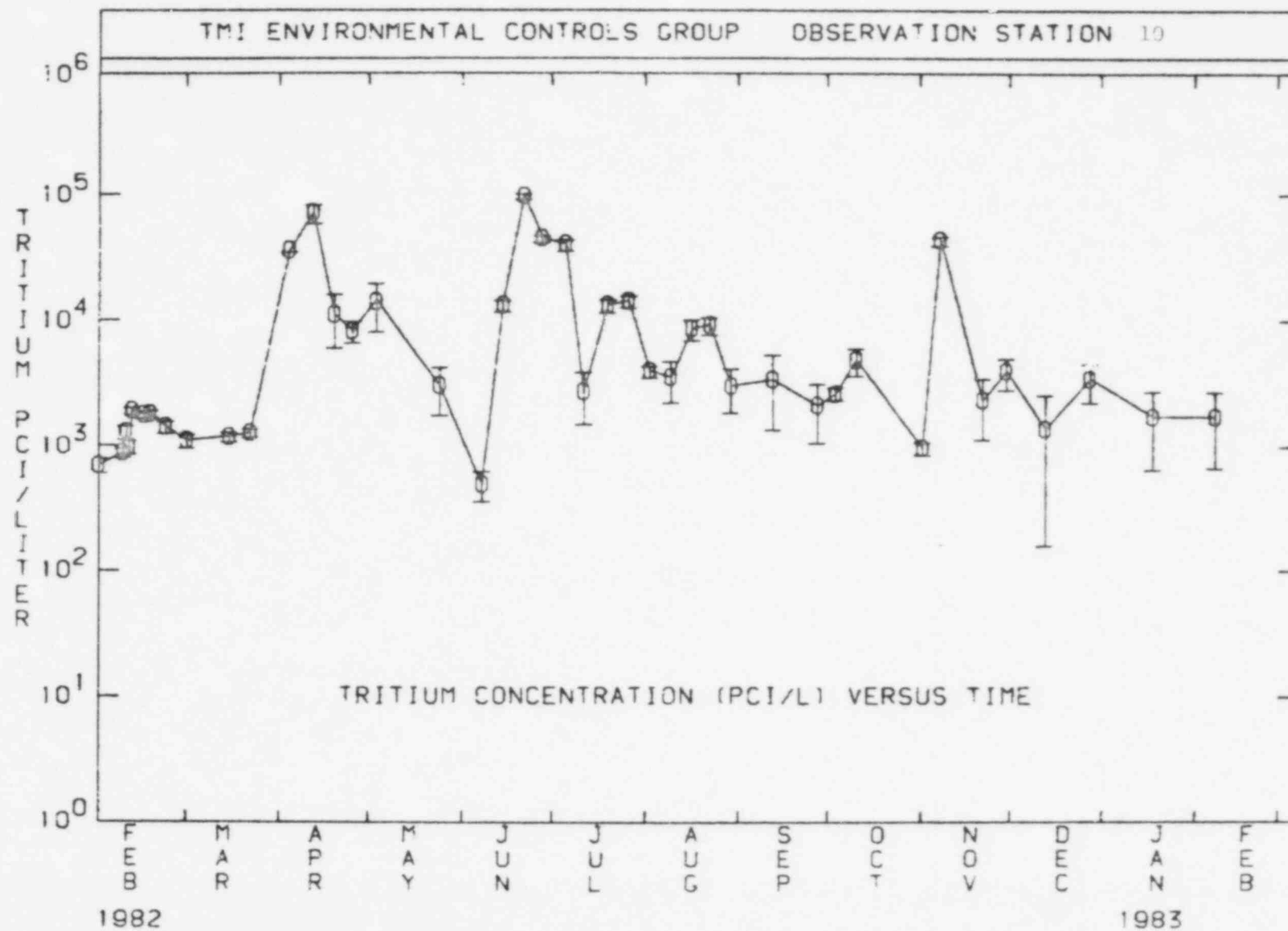


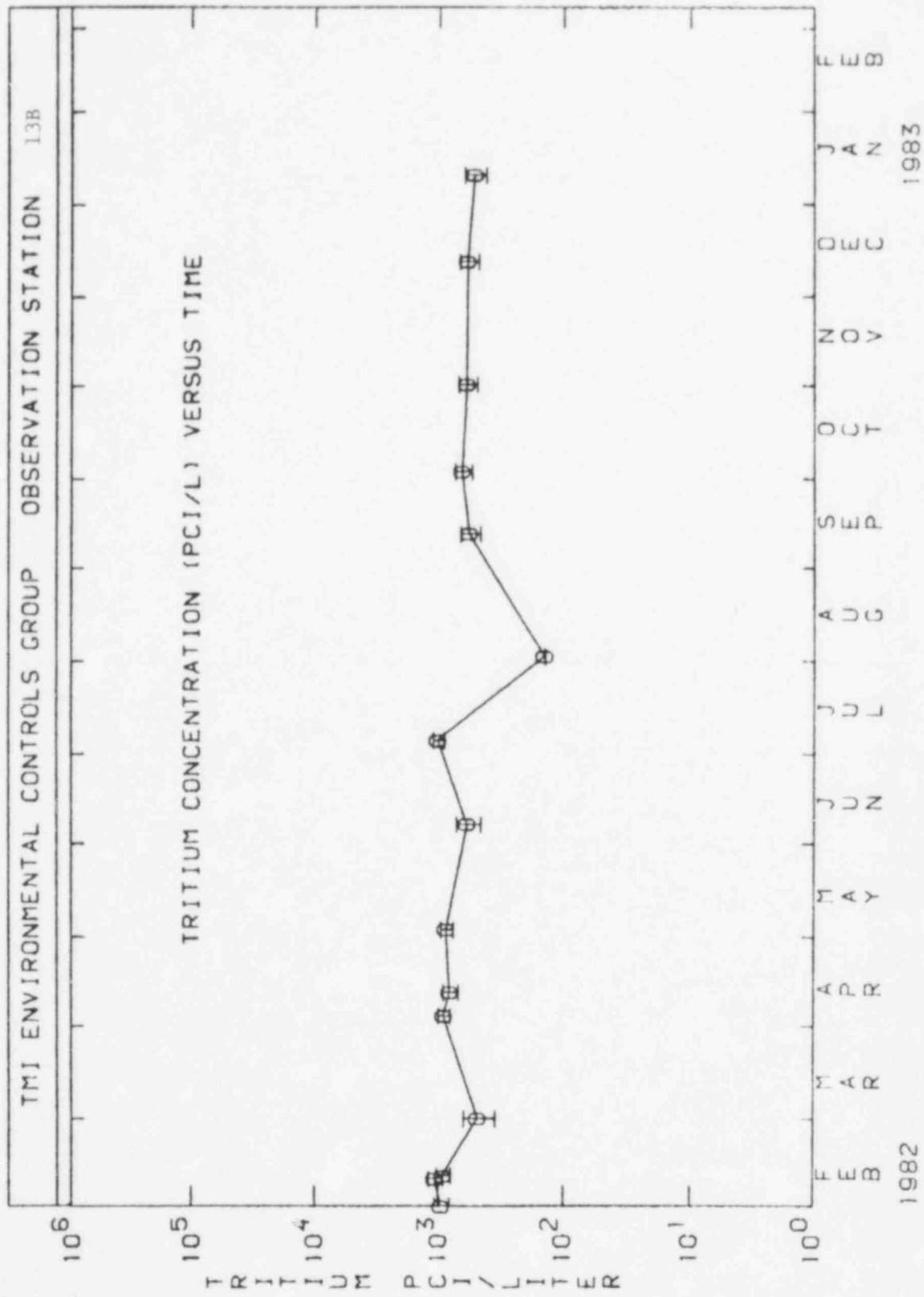


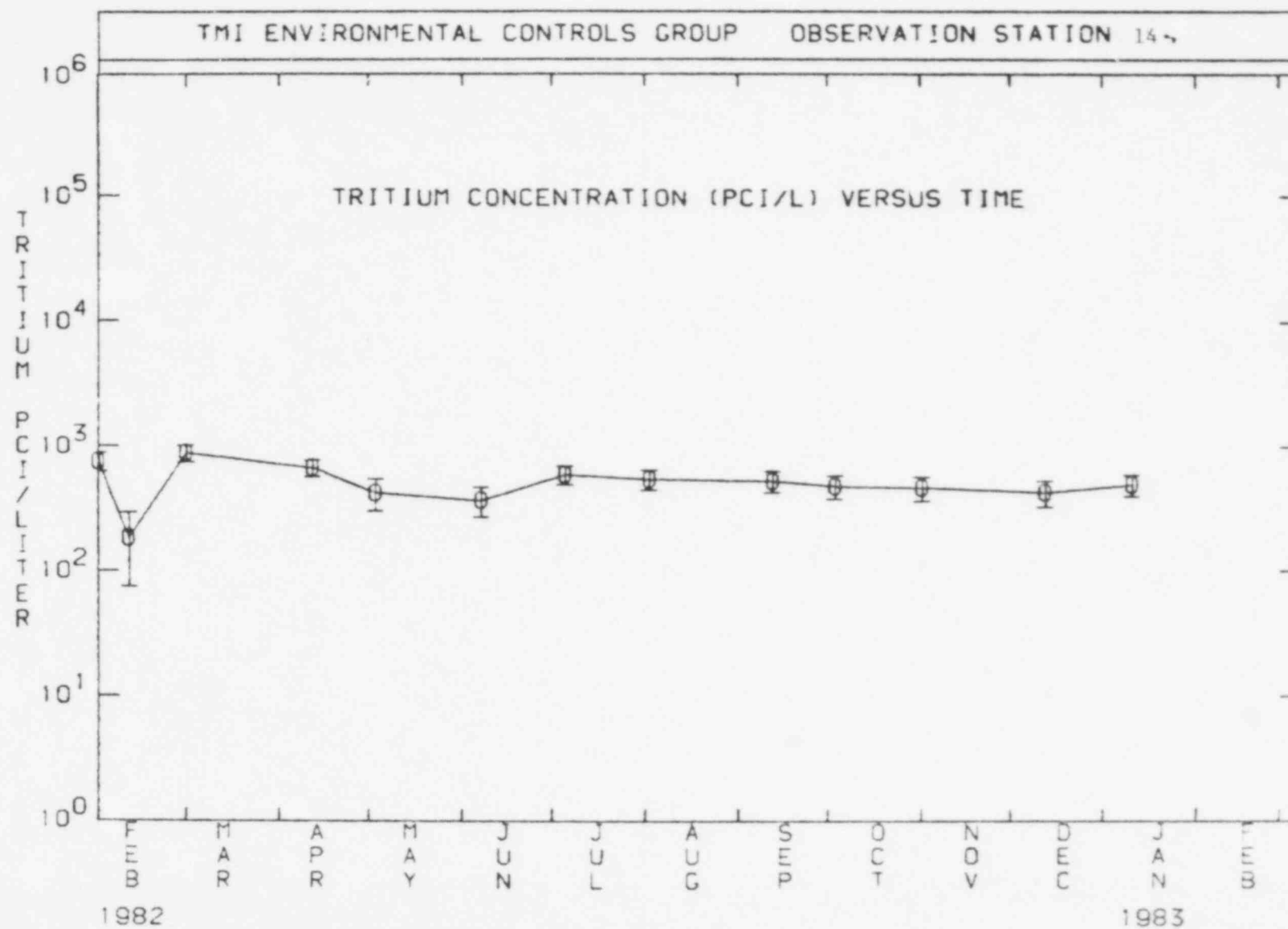


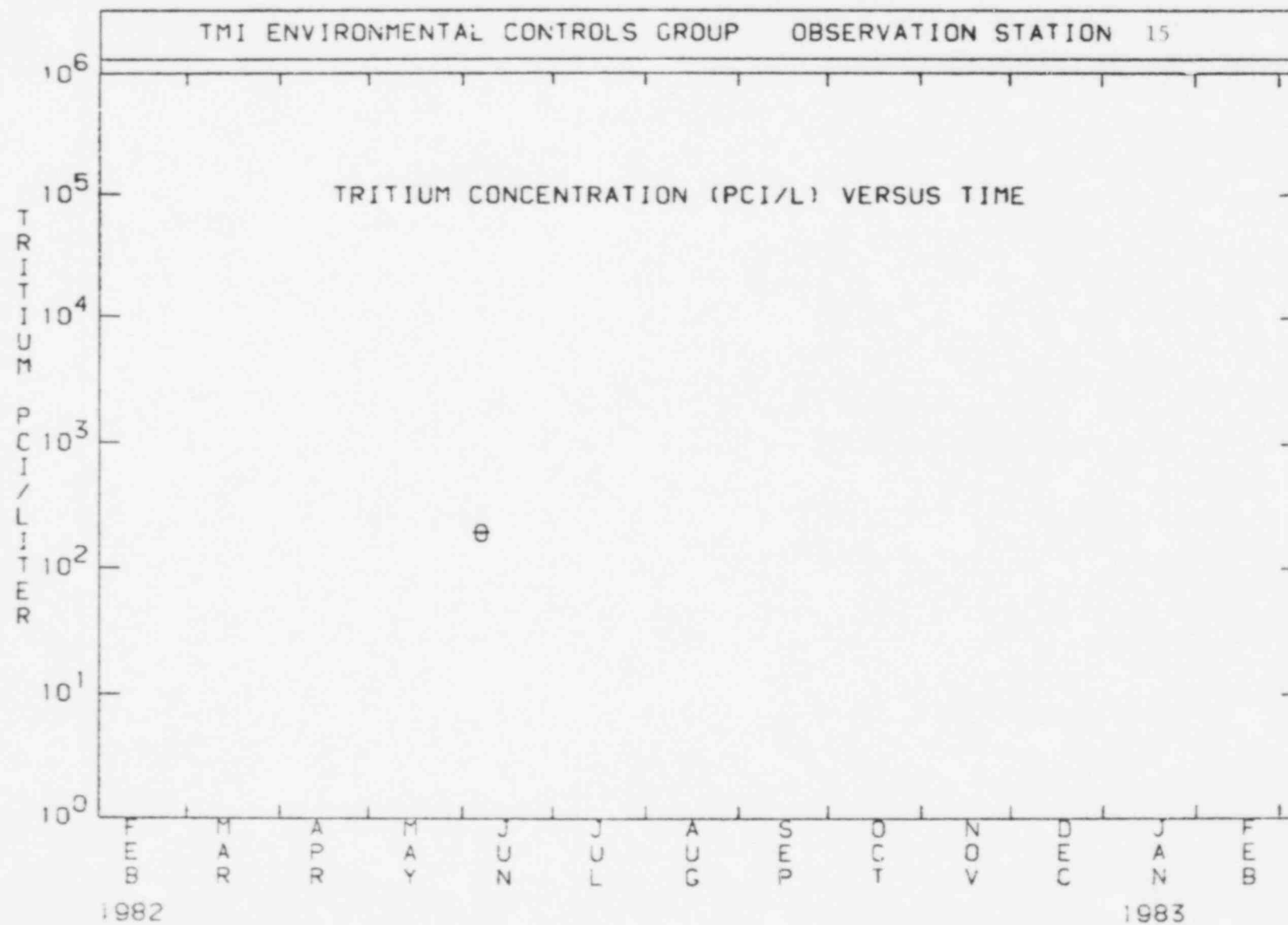


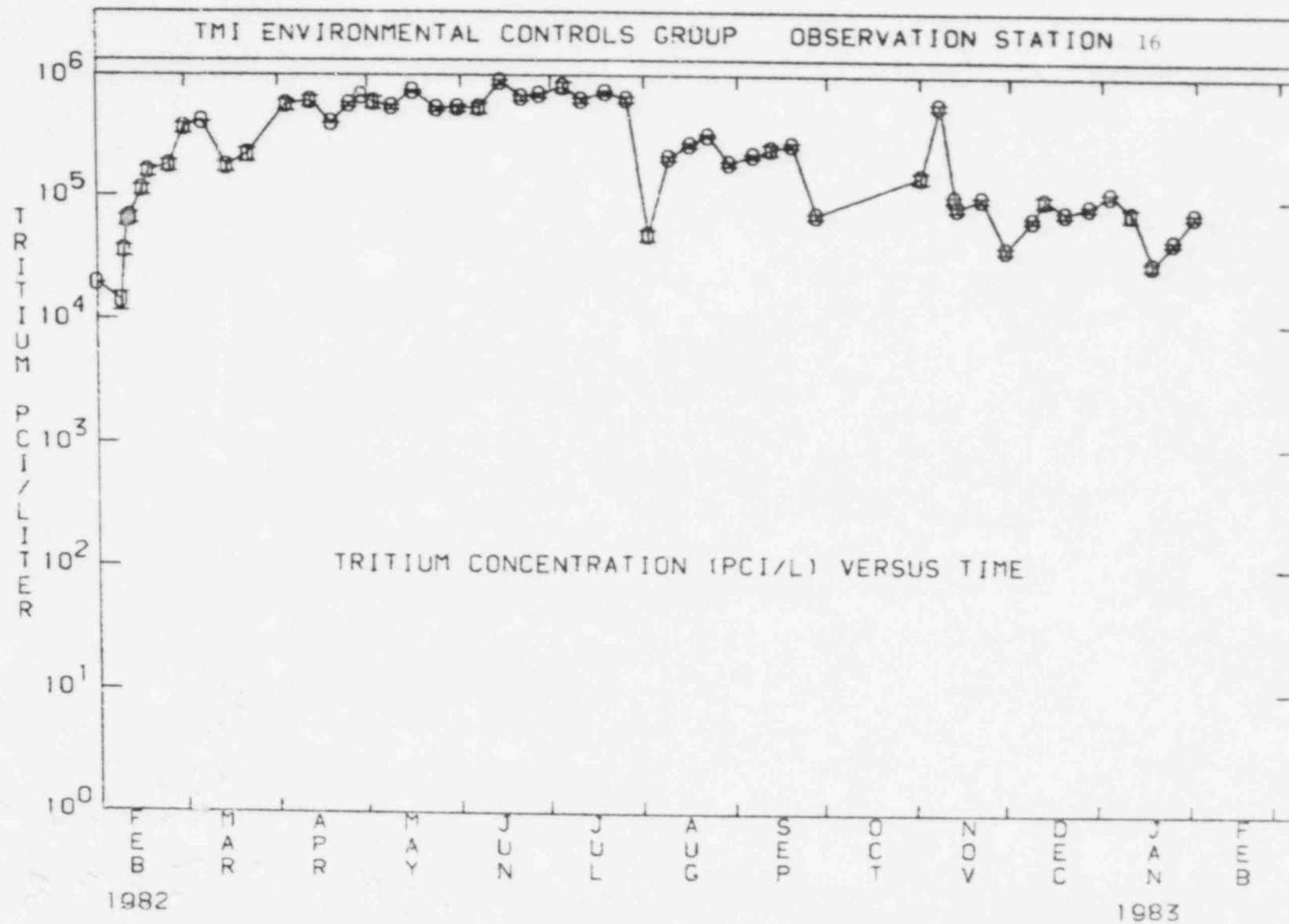


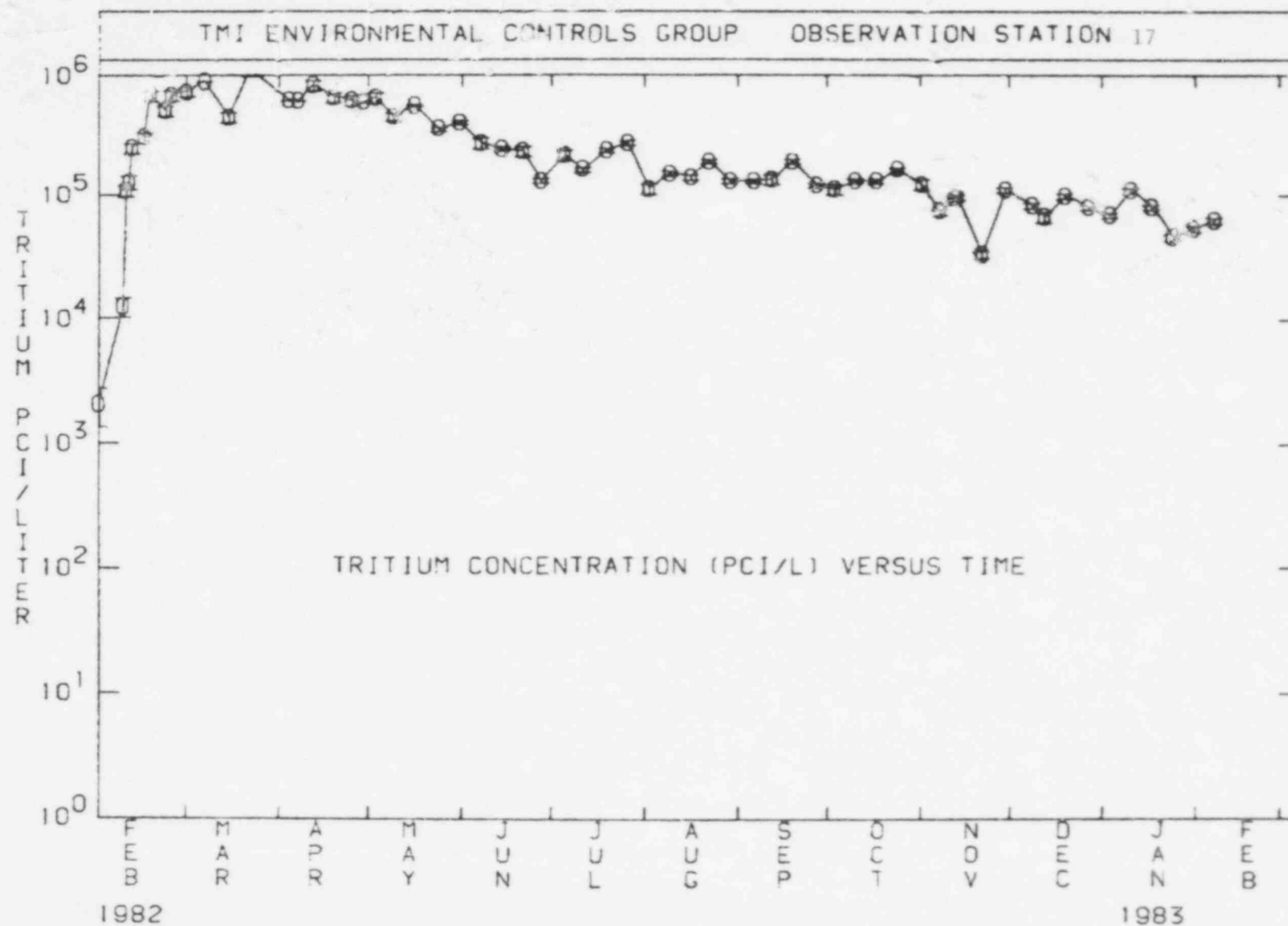


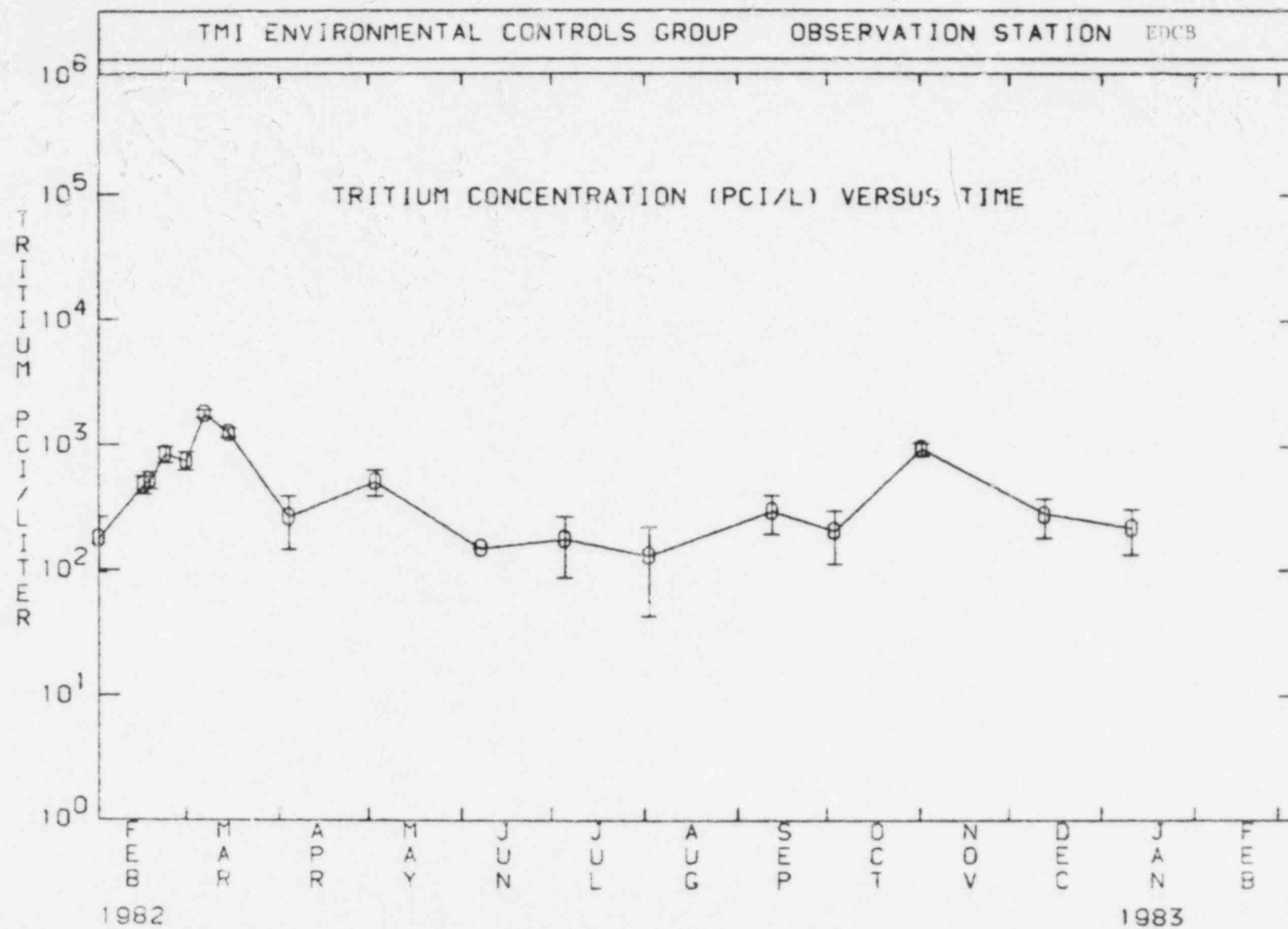


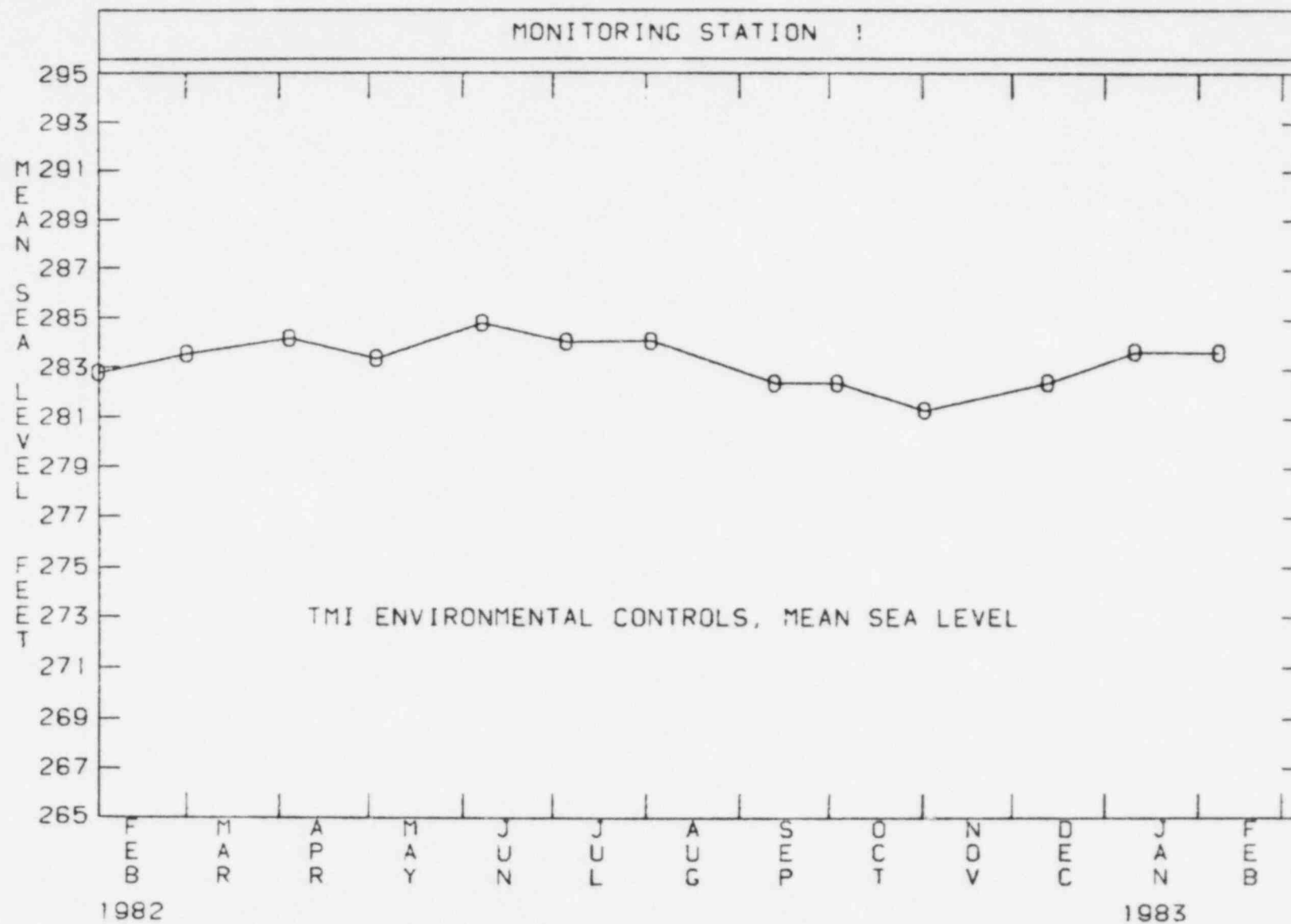


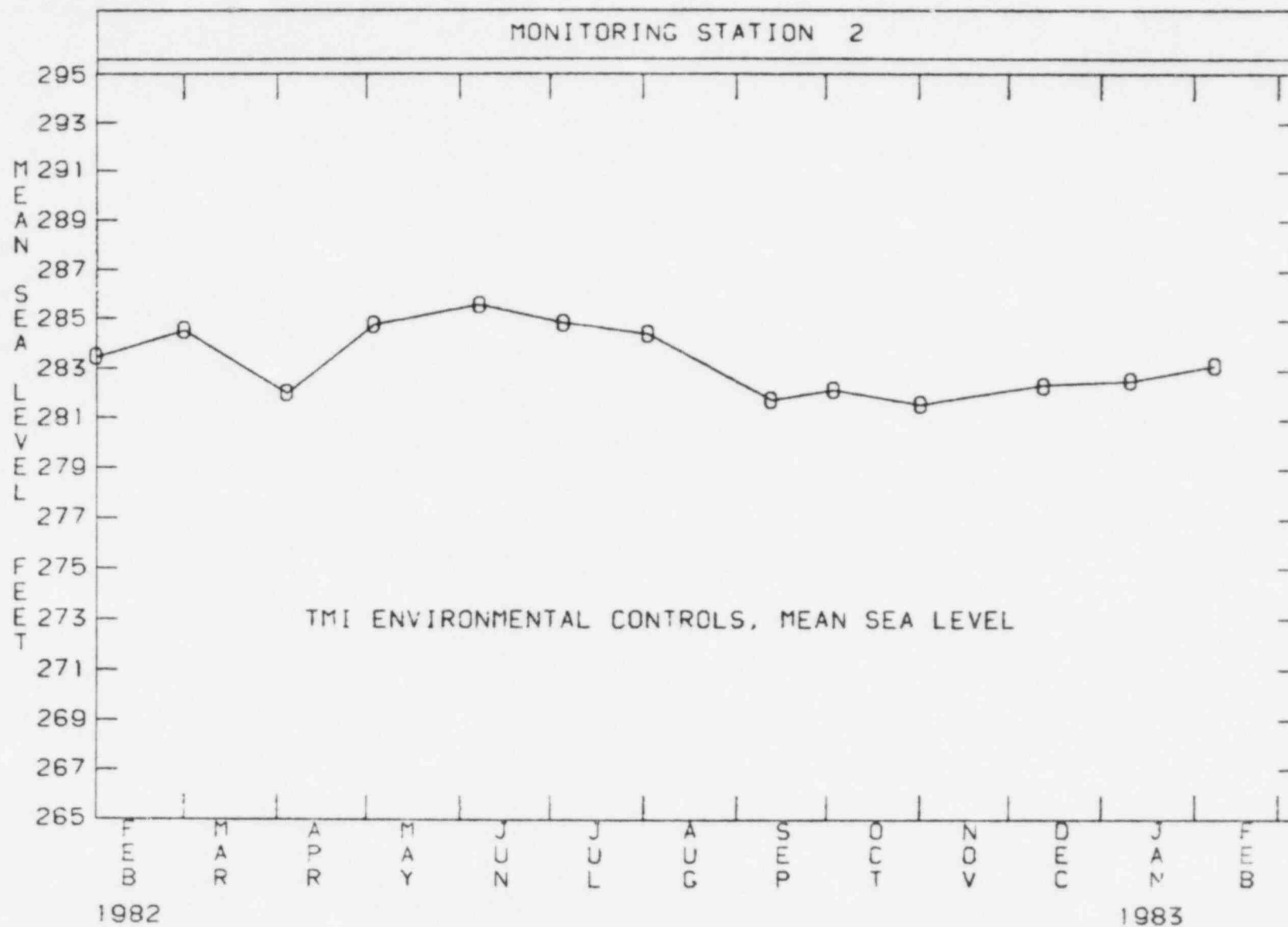












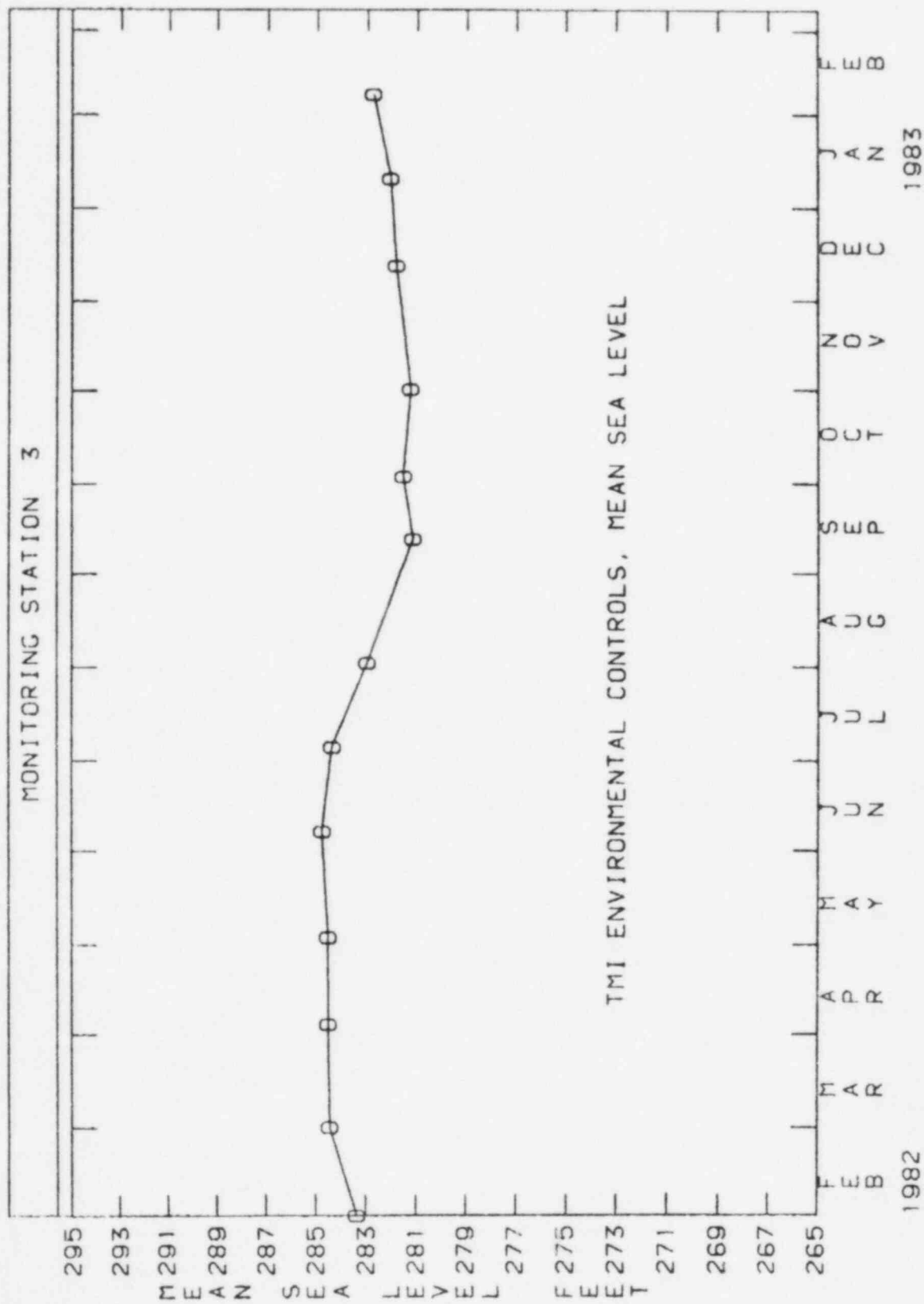
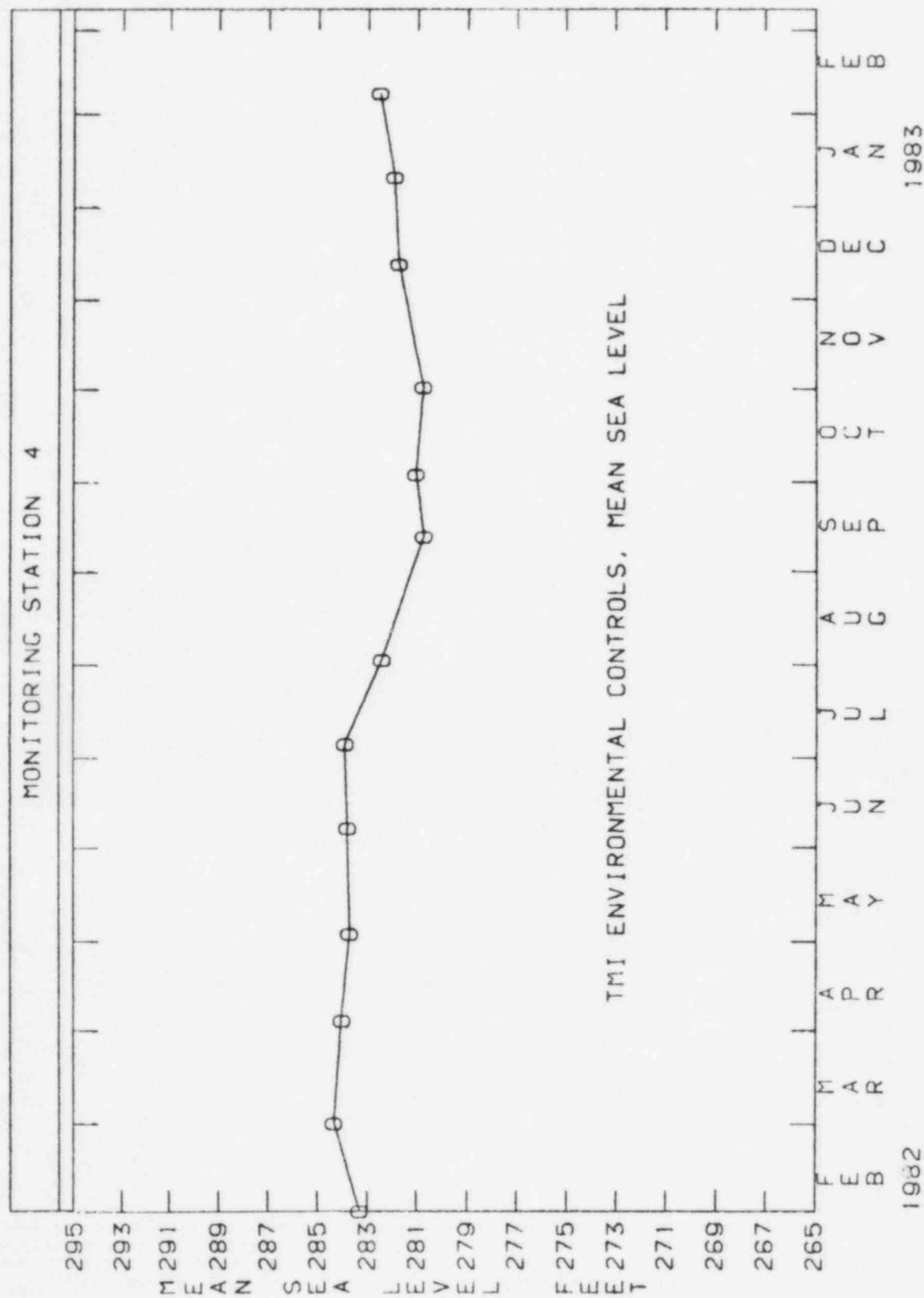
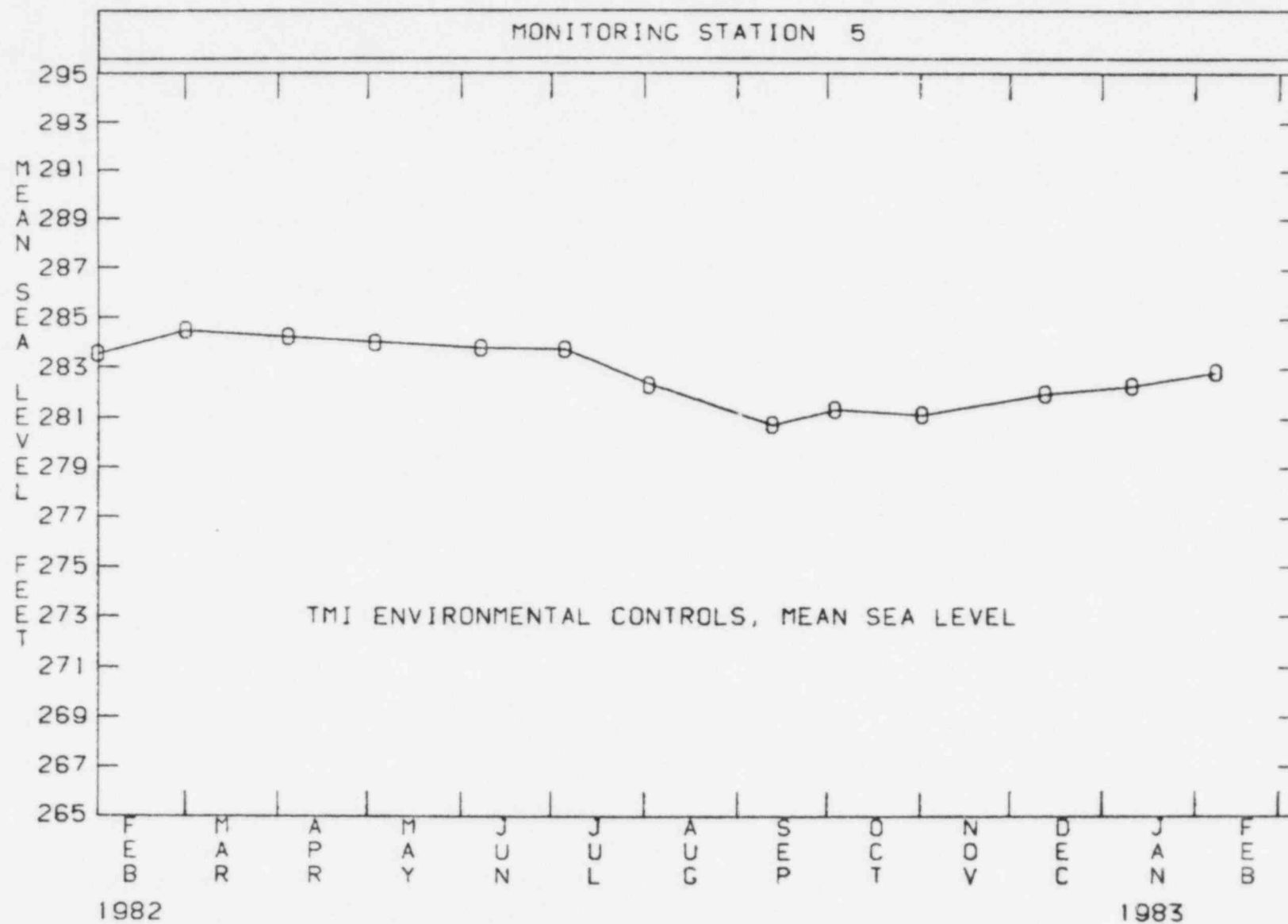
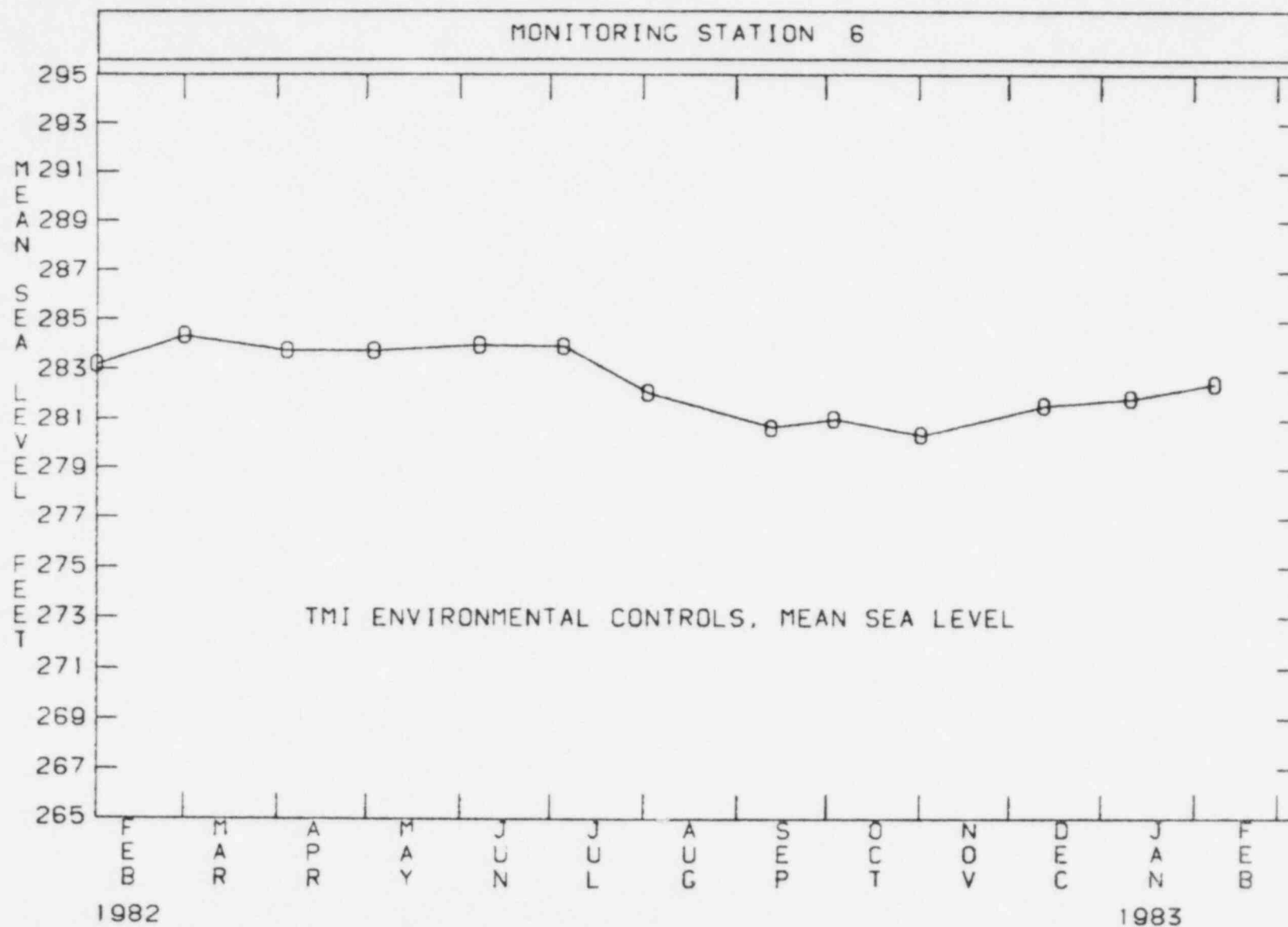
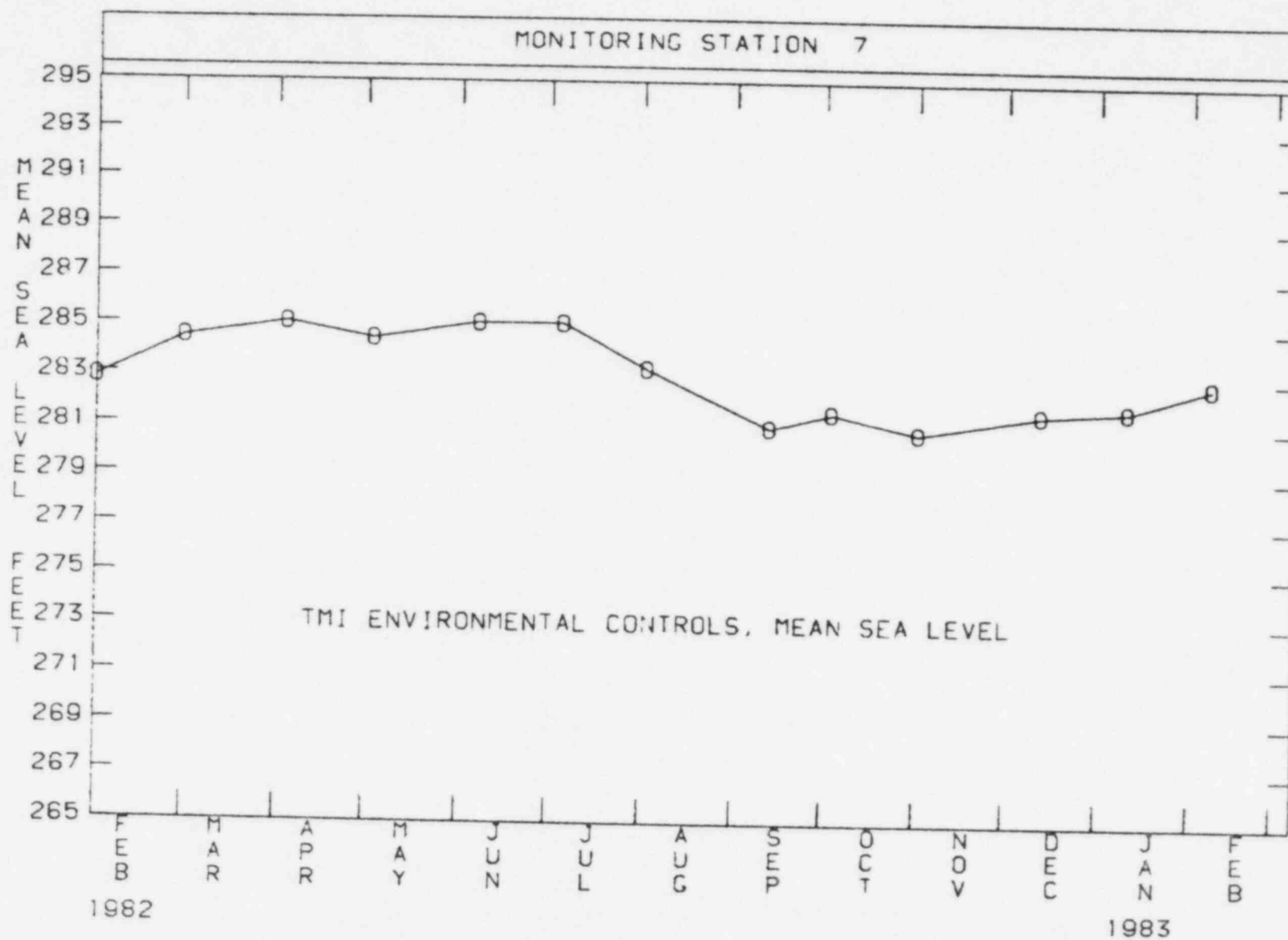


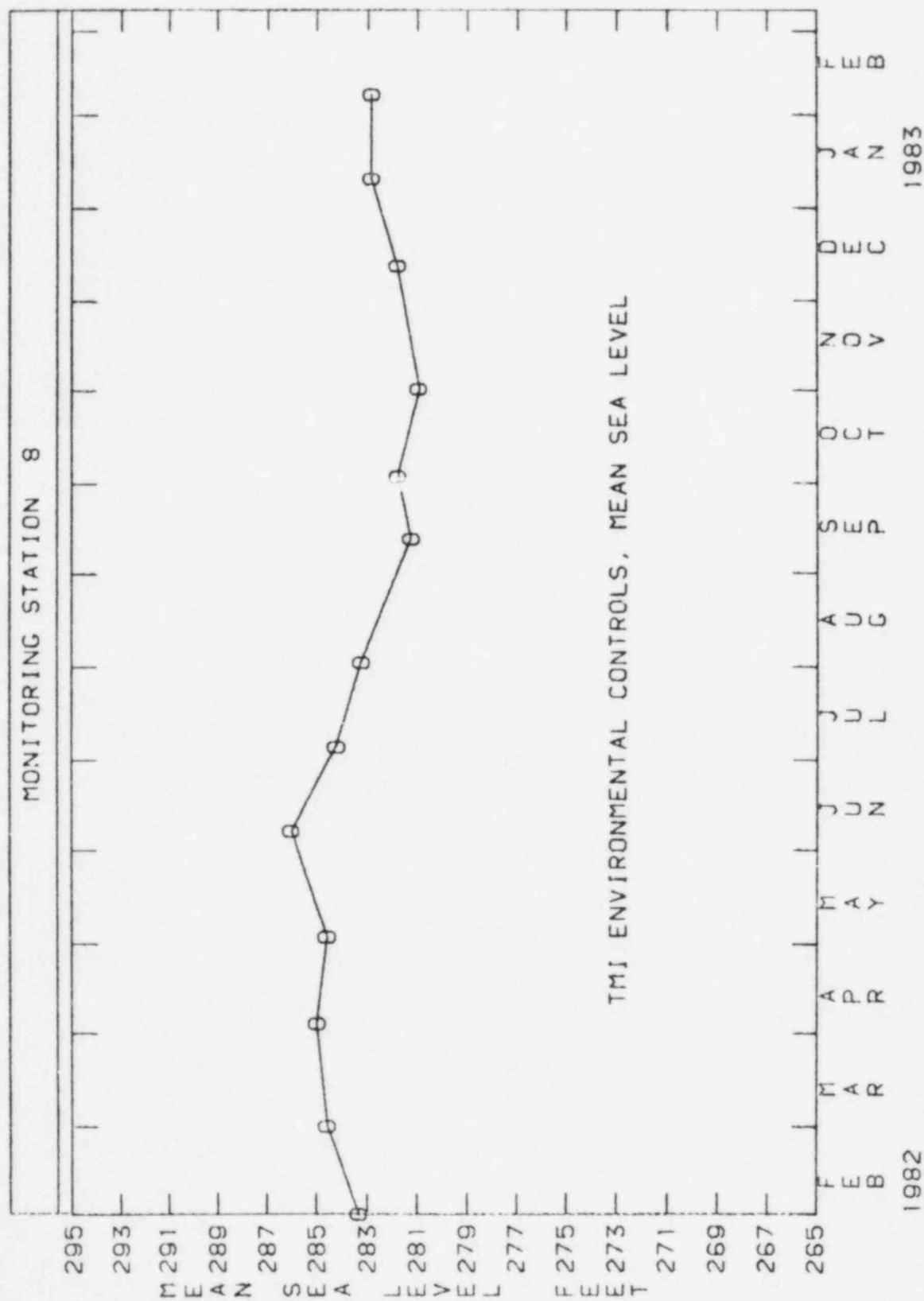
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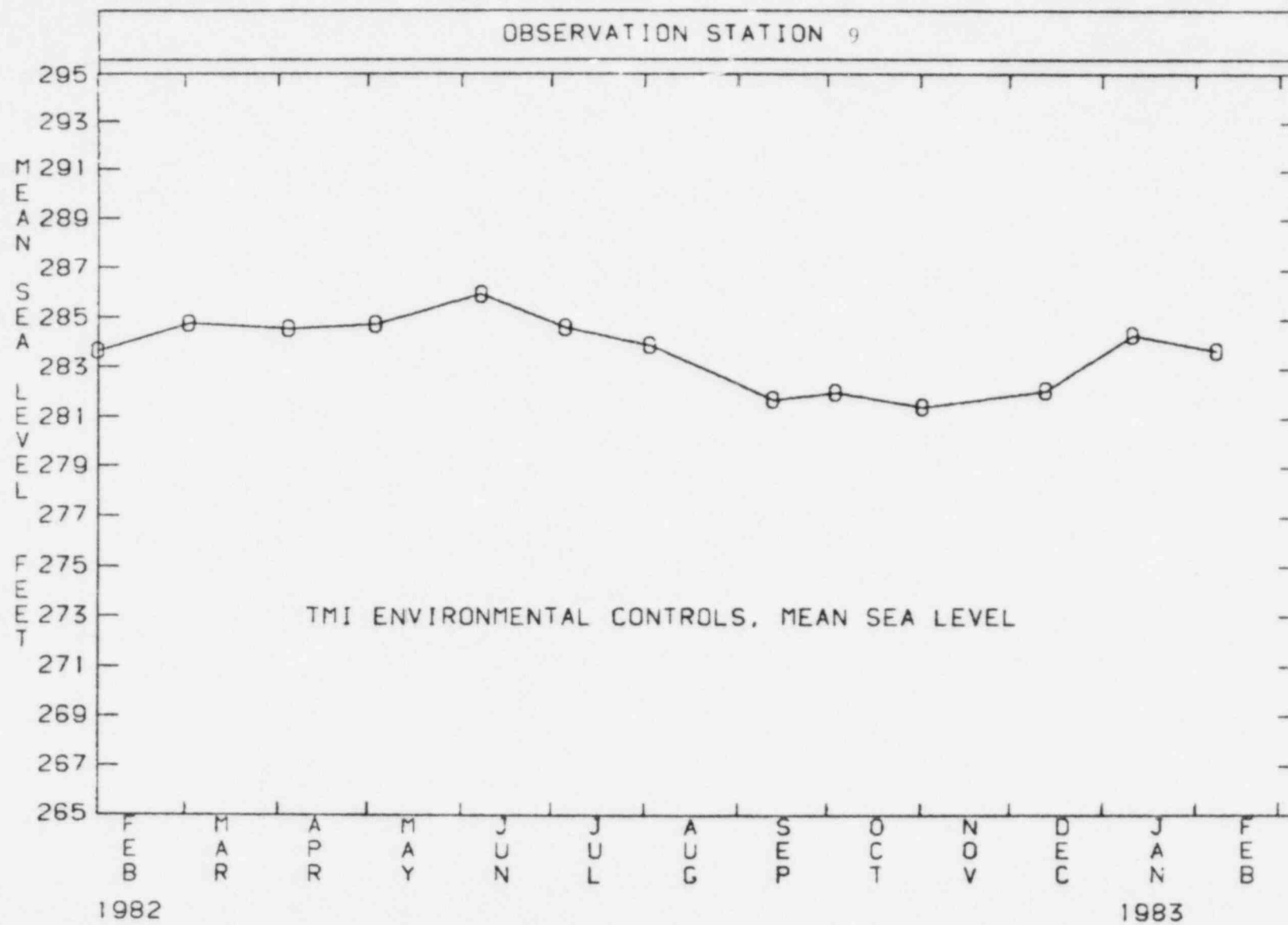


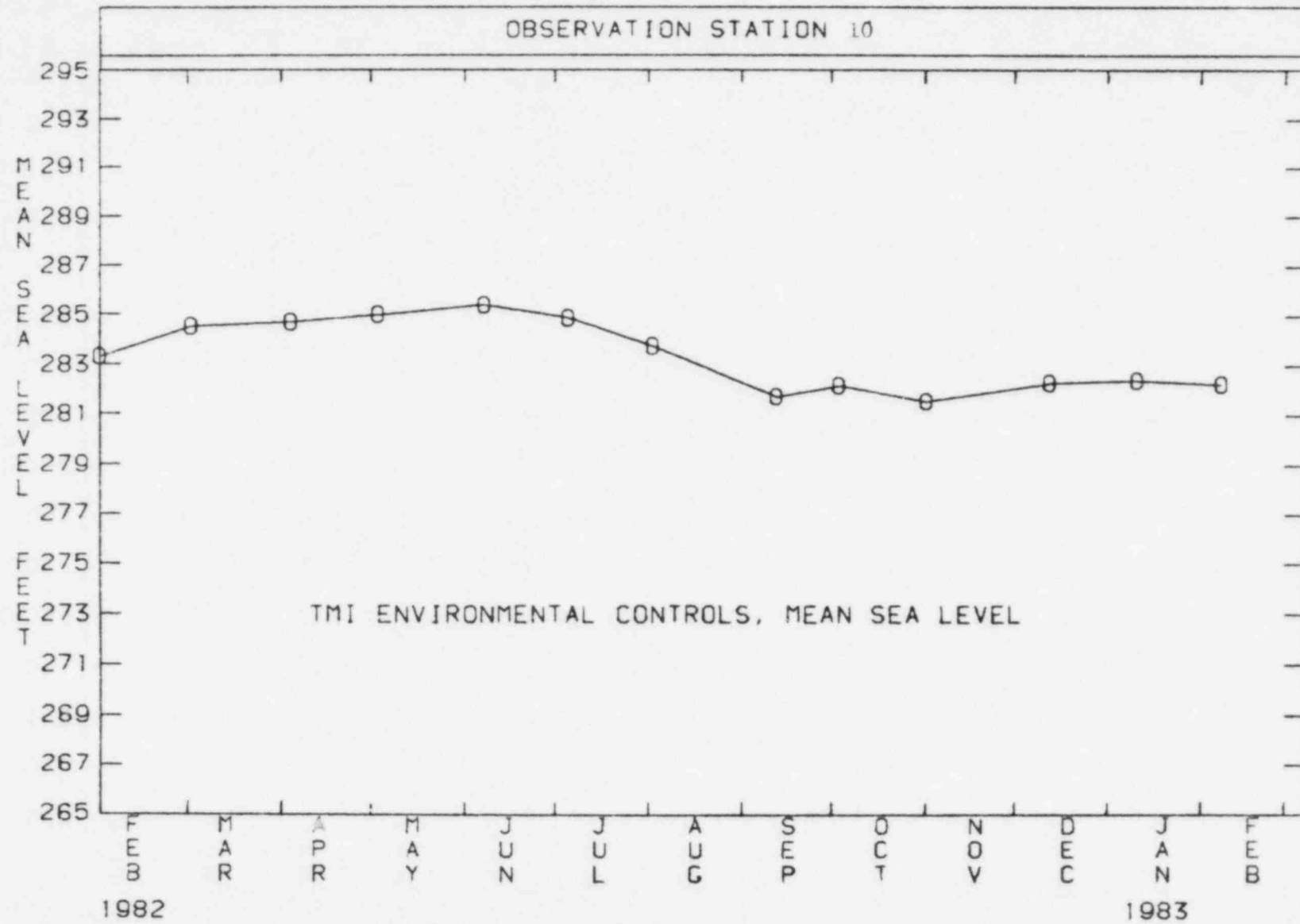


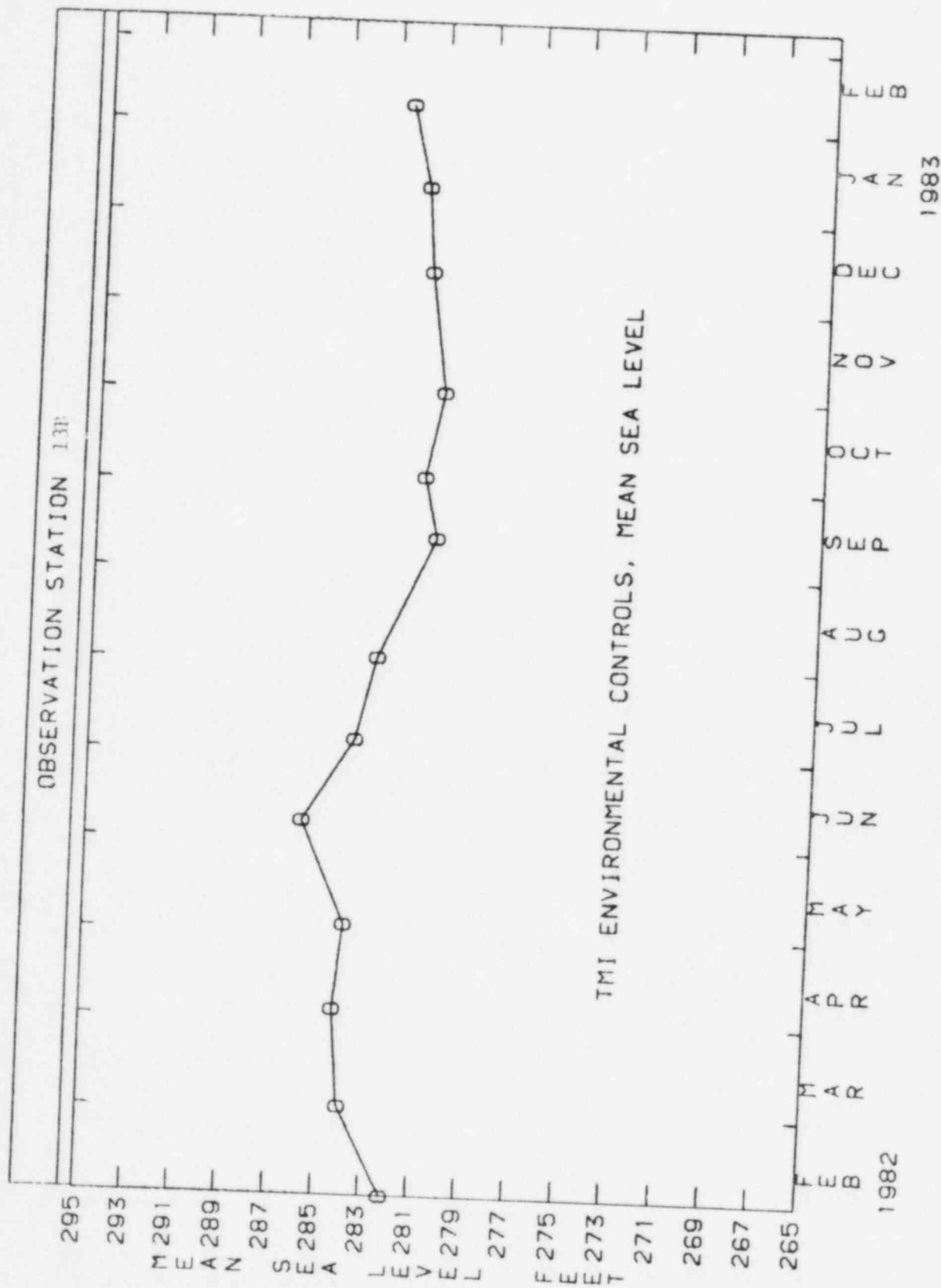


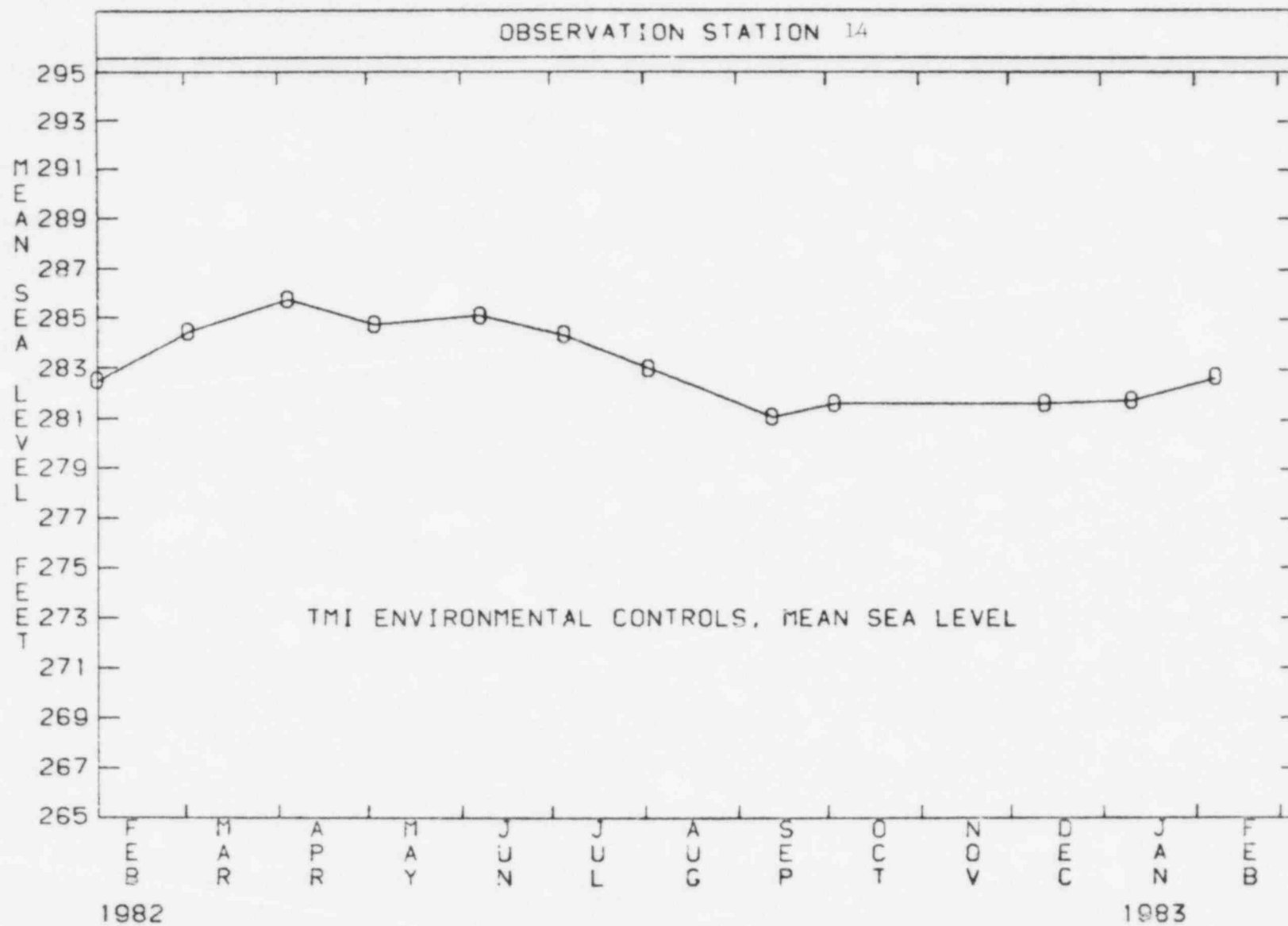


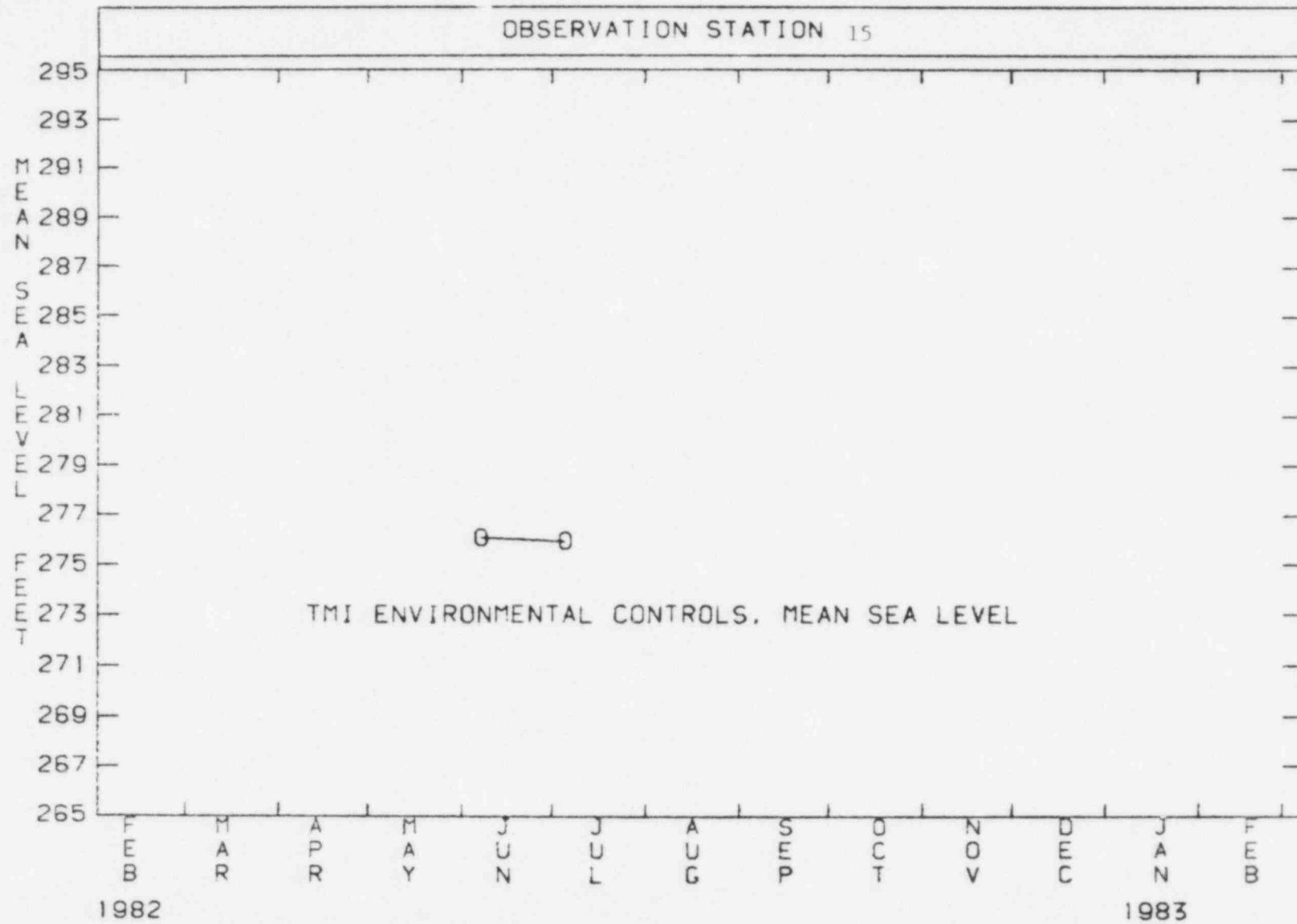


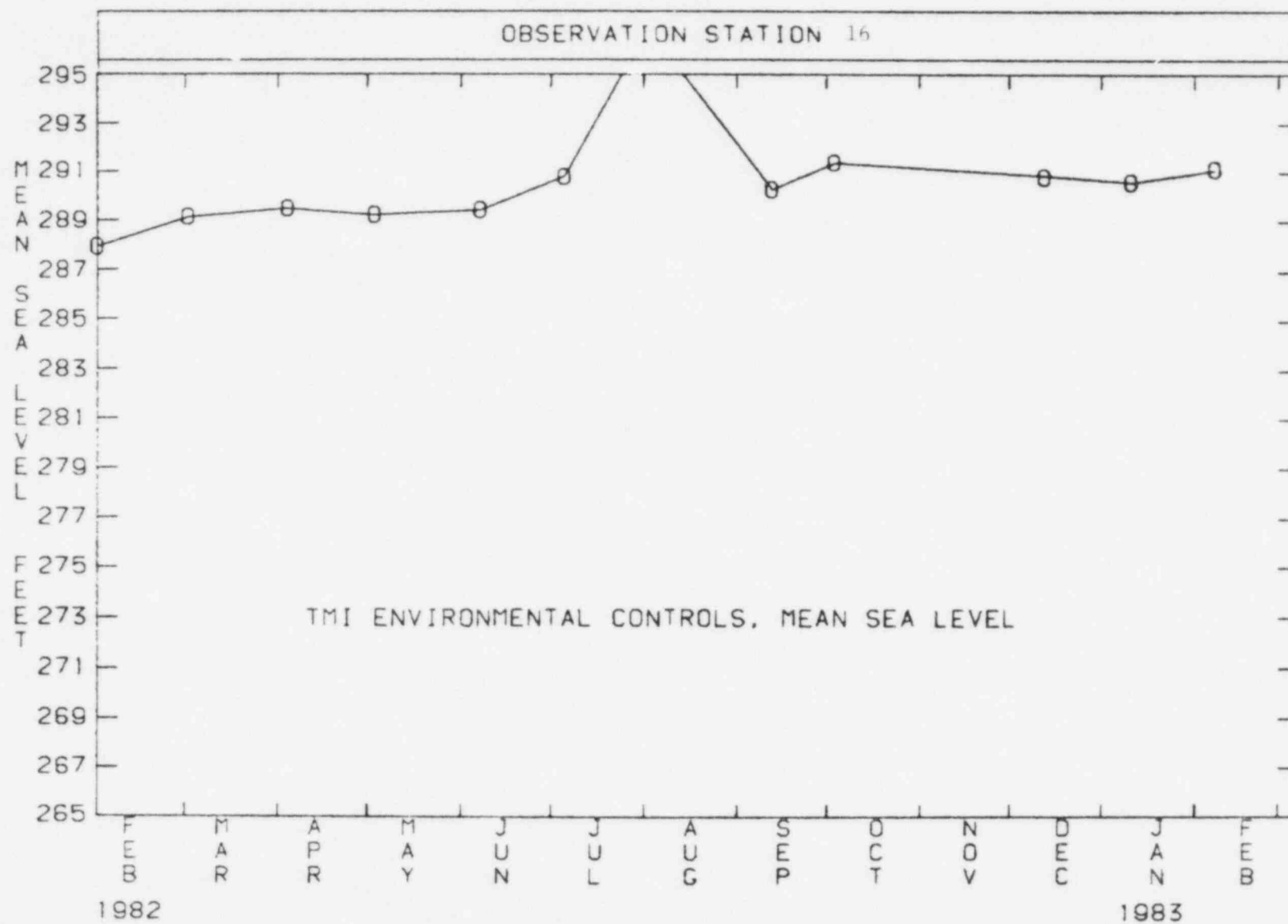












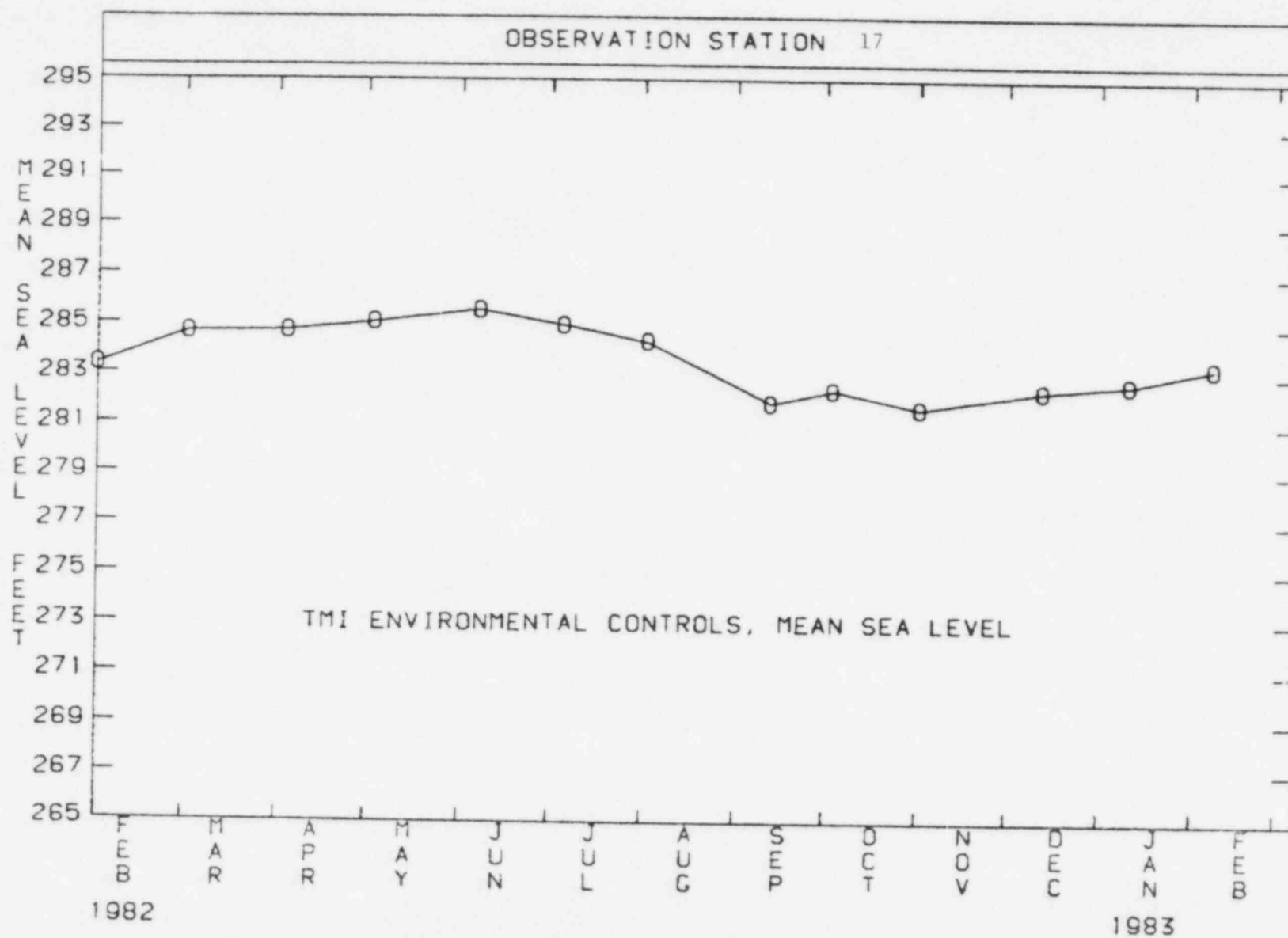


Figure 3

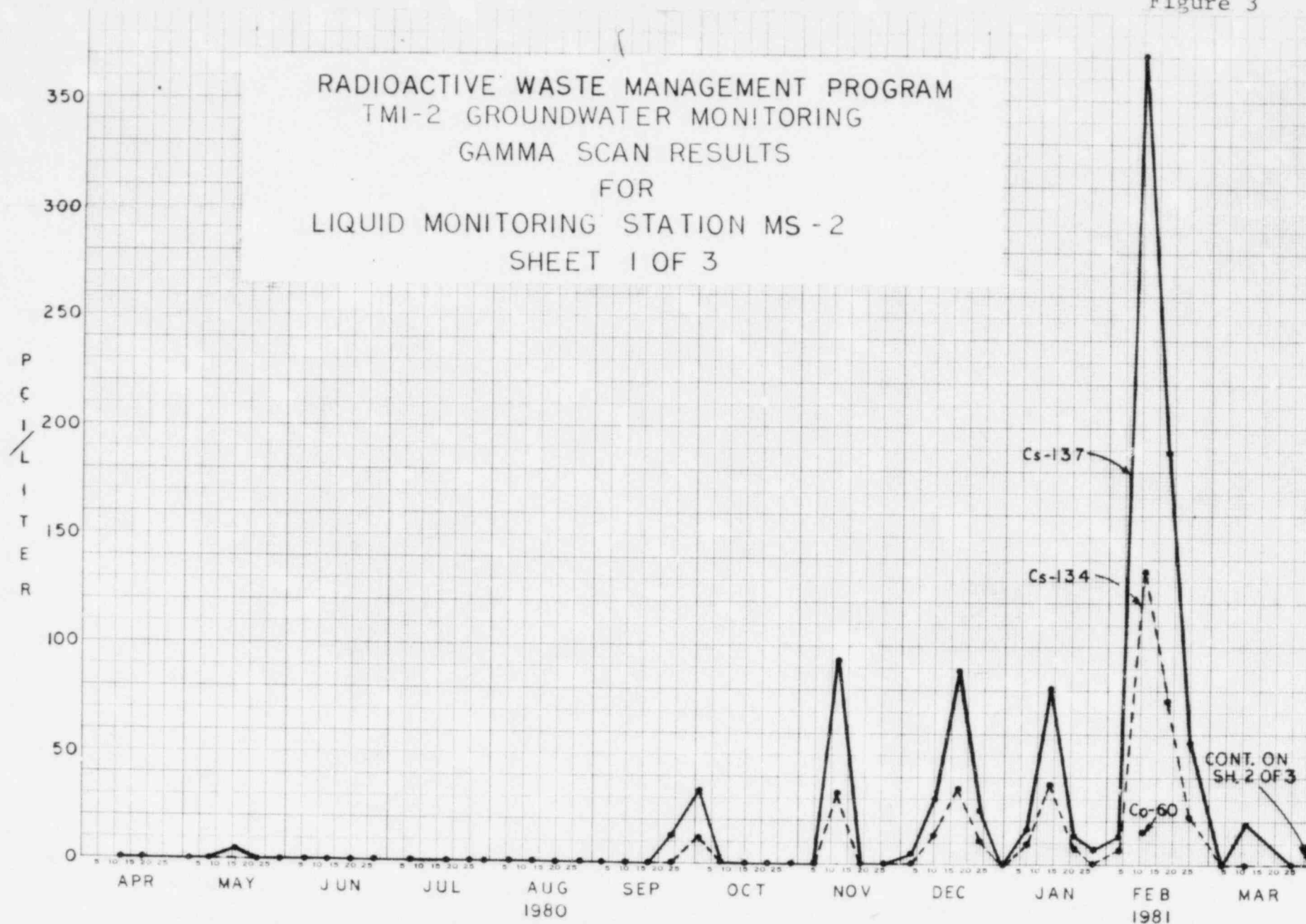


Figure 3

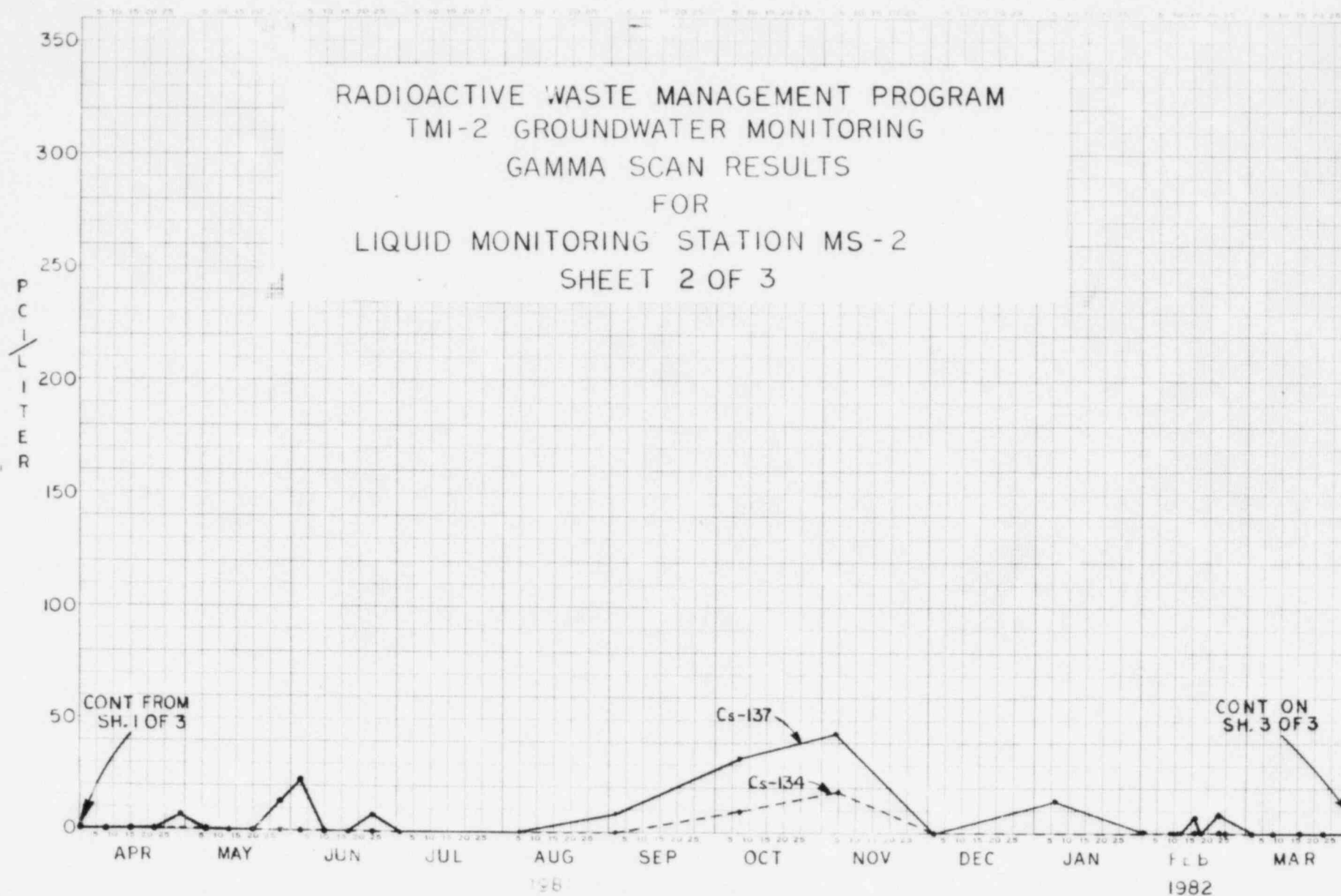
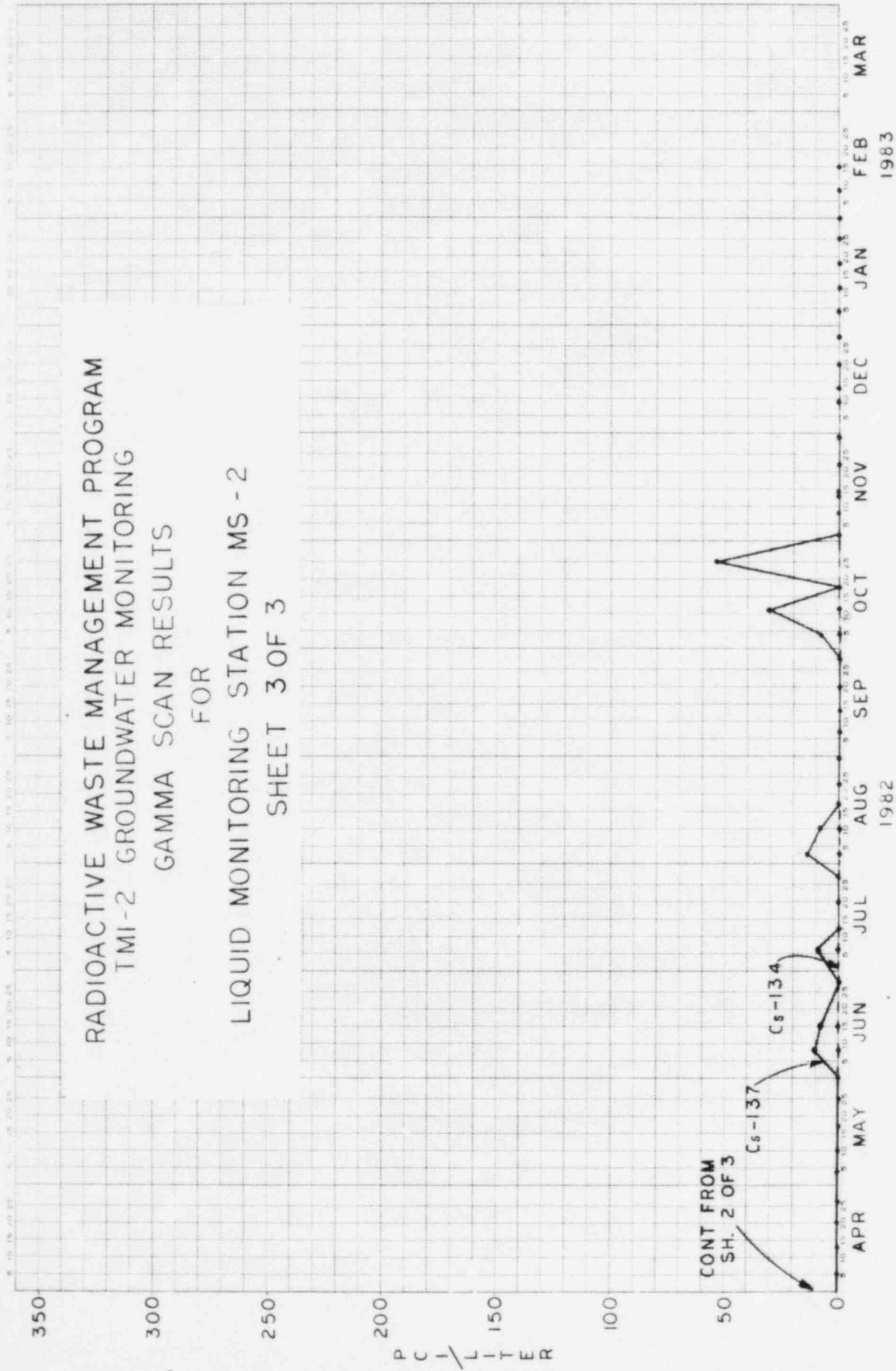


Figure 3



1982 3rd Quarter Sr-89 Results *

<u>Station</u>	<u>Sr-89 **</u>
MS-1	<.613
MS-2	
MS-3	<.665
MS-4	<.647
MS-5	<.724
MS-6	.370 \pm .350
MS-7	<.306
MS-8	<.660
OS-10	<.722
OS-13B	<.629
OS-14	<.810
OS-16	<.633
OS-17	<1.27
EDCB	<2.30

* Composite sample from July 6, 1982 to September 13, 1982.

** Concentrations are listed in pCi/l.

1982 3rd Quarter Sr-90 Results *

<u>Station</u>	<u>Sr-90 Result **</u>	<u>Sr-90 LLD **</u>
MS-1	<.481	<.481
MS-2	<.800	<.800
MS-3	.515 \pm .22	<.289
MS-4	.266 \pm .24	<.352
MS-5	<.510	<.510
MS-6	<.421	<.421
MS-7	<.515	<.515
MS-8	<.536	<.536
OS-10	.313 \pm .26	<.386
OS-13B	<.489	<.489
OS-14	<.611	<.611
OS-16	.312 \pm .22	<.320
CS-17	.566 \pm .44	<.655
EDCB	.682 \pm .30	<.413

* Composite sample from July 6, 1982 to September 13, 1982.

** Concentrations are listed in pCi/l.

1982 4th Quarter Sr-89 Results

<u>Station</u>	<u>Sr-89*</u>
MS-1	
MS-2	
MS-3	
MS-4	<.977
MS-5	<.855
MS-6	<.980
MS-7	<1.02
MS-8	<.880
OS-10	
OS-13B	<4.86
OS-14	<3.08
OS-16	
OS-17	
EDCB	<.736

* Concentrations are listed in pCi/l.

1982 4th Quarter Sr-90 Results

<u>Station</u>	<u>Sr-90 Result *</u>	<u>Sr-90 LLD *</u>
MS-1		
MS-2		
MS-3		
MS-4	<.457	<.457
MS-5	.338 \pm .280	<.418
MS-6	.551 \pm .320	<.464
MS-7	<.496	<.496
MS-8	<.434	<.434
OS-10		
OS-13B		
OS-14		
OS-16		
OS-17		
EDCB	<.310	<.310

* Concentrations are listed in pCi/l.