

Umetco Minerals Corporation

40-8681

WHITE MESA MILL • P.O. BOX 689 • BLANDING, UTAH 84511
☎ (801) 678-2221

04008681280R

RETURN ORIGINAL TO PDR, HQ.

August 31, 1989

Mr Ramon E. Hall, Director
U. S. Nuclear Regulatory Commission
Region IV
Uranium Field Recovery Office
Box 25325
Denver, Colorado 80225

SEP 1989
RECEIVED

DOCKETED
SEP 11 1989
USNRC
MAIL SECTION
DOCKET CLERK

Re: Umetco Minerals Corporation
SUA-1358: Docket No. 40-8681
White Mesa Mill, Utah
Semi Annual Effluent Report

Dear Mr. Hall:

Attached are the Effluent and Semi Annual Reports for the period of
January 1, 1989 through June 30, 1989.

If I can answer any questions that you may have, please feel free to
contact me.

Sincerely yours,

Gary L. Swanson

Gary L. Swanson
Environmental Engineer

8912140191 890831
PDR ADOCK 04008681
C PNU

DESIGNATED ORIGINAL

Certified By *Mary C. Hood*

*DF02
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89-0964

1.0 Bioassays

1.1 Urinalysis

License Condition 38, Part D requires that bioassays exceeding 15 ug/l be investigated. Attachment 1 shows the results of 11 bioassay reports in which none exceeded the 150 ug/l reporting level.

2.0 Stack Sampling

Attachment 2 shows the results of stack sampling for the first and second quarters of 1989. The mill operated at or near tonnage capacity both quarters. No trends are apparent. Second quarter grizzly stack sampling data has been delayed from the laboratory and will be forwarded under separate cover.

3.0 Environmental, Radiological, and Effluent Monitoring Data

3.1 Environmental Radon

Environmental Radon concentrations are determined by Trak Etch detectors furnished by Terradex Corporation. There is one detector at each of the five environmental monitoring stations with a duplicate at BHV-2, the nearest residence. Figure 1 shows the locations of the environmental stations in and around the mill.

Table 1 and Graphs 1 through 5 show the results. Table 2 and Graph 6 are used for quality control purposes. Table 2 is the linear regression results comparing BHV-2 to BHV-6 (duplicate at BHV-2). The calculated r^2 is 0.06, a value little different from one generated by random selection. Graph 6 shows BHV-2 versus BHV-6 with the expected curve shown.

A significant trend has appeared at BHV-5. The corrected value at this location is below 25% MPC for an unrestricted area. However, it appears that this limit could be exceeded in the near future with no action on Umetco's part. Umetco has evaluated the condition and taken actions that should reverse this trend.

Radon at BHV-5 could be coming from the ore pad area, from ore carried onto the access road during muddy periods, from yellowcake stored on the property, or from the tailings area. The ore pad has been eliminated from consideration because the quantity of ore and the contained pounds stored there are less than during previous years.

It was possible though not likely, in Umetco's judgement, that the radon was coming from mud carried onto the access road (near BHV-5) from the ore pad by truck wheels during muddy periods. Umetco personnel performed a gamma scan and although the contamination was minimal, actions were taken to reduce the contamination to background levels.

3.2 Environmental Gamma

Gamma levels at the five environmental locations are determined by the Thermal Luminescent Dosimeters (TLDs) furnished by Eberline Instruments. The badges are exchanged quarterly and the data is presented in Tables 3 through 7 and Graph 7. There are no apparent trends in the data, with measured values in the range of previous values.

3.3 Vegetation Samples

Tables 8 through 10 and Graphs 8 through 10 show the results of the vegetation samples. No apparent trends appear in the data.

3.4 Environmental Air Monitoring

Air monitoring at the White Mesa Mill is accomplished by five high volume stations located around the periphery of the mill. See Figure 1. In all parameters with the exception of lead 210, BHV-5 registers the highest values. It is felt that this is the result of mud carried onto the mill access road by the ore haul trucks as they exit the mill yard. No other trends are apparent.

3.5 Groundwater Monitoring

The results of groundwater monitoring are shown in Tables 18 and 19 and Graphs 15 through 36. Table 20 can be used to evaluate the quality of analyses from the analytical laboratory. Three types of quality control samples have been submitted to the vendor laboratory: blanks, spikes, and duplicates,

all of which are "blind". No trends are apparent in the data.

3.6 Surface Water Monitoring

The results of surface water monitoring is presented in Table 21. Note that a request for License amendment has been submitted to drop Westwater Creek from monitoring requirements due to its being dry 15 out of the last 24 quarters. No apparent trends are visible.

4.0 Meteorological Data

The Semi-Annual Air Quality and Meteorology Monitoring Report provided by EnecoTech is attached as Appendix A.

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Investigation of Elevated Bioassay

January 5, 1989

A sample collected from a yellowcake precipitation operator on January 5, 1989 exceeded the 15 ug/l u-nat resample level at 24 ug/l uranium. An additional sample was collected on 1/19/89 prior to going on long change which showed bioassay levels at 45 ug/l u-nat. The operator was removed from yellowcake until bioassay levels returned to normal levels. A sample collected on 1/24/89 showed bioassay levels had returned to near normal levels at 8 ug/l uranium. The investigation of this incident is based on information gathered from discussions with the operator.

1. Airborne results from breathing zone and area airborne samplers were showing low concentrations both inside and outside the enclosures.
2. Samples collected from yellowcake operators during this same time period were all at normal levels. This suggests this incident was an isolated occurrence and not a condition prevalent throughout yellowcake.
3. Discussion held with the operator indicate the elevated reading was a result of ingestion of material at the centrifuge area. During some cleanup around the centrifuge the operator got splashed with material from the hose attached to the pots that feed the centrifuge.

With the frequency at which this operator's samples exceed the 15 ug/l u-nat level it is recommended that he be removed from yellowcake permanently.

S. L. Schierman

S. L. Schierman
Radiation Protection Officer

SLS/gp

Investigation of Elevated Bioassay

January 12, 1989

On 1/12/89 a sample collected from a yellowcake packaging operator exceeded the 15 ug/l resample level at 24 ug/l uranium. An additional sample collected on 1/21/89 shows bioassay levels had returned to normal levels. In discussions with the operator it appears the material was ingested during the cleanout of the yellowcake scrubber tank.

1. The yellowcake packaging and precipitation operator were assigned to cleanout the build-up in the yellowcake scrubber tank.
2. Build-up from the tank was transferred by bucket to 55 gallon drums to be reprocessed at a later date.
3. The remainder of the material is then washed back to a sump pump for reprocessing.

The operator removed his full-face respirator due to fogging to see how much build-up remained in the tank and was splashed causing the ingestion of some material.

4. Bioassay results from the other operator working on this job were at 2 ug/l or normal levels.

Nose cups are supplied to help prevent the fogging of full-face respirators which should prevent this from occurring in future jobs.

S. L. Schierman

S. L. Schierman
Radiation Protection Officer

SLS/gp

Investigation of Elevated Bioassay

January 20, 1989

A bioassay sample collected on 1/20/89 exceeded the 15 ug/l resample level at 17 ug/l uranium. Additional samples collected on 2/2/89 show bioassay levels had returned to normal at 2 ug/l uranium. The sample appears to have been contaminated as it was submitted one (1) day late. Discussions with the operator could not account for any explanation of elevated bioassay results.

The sample is considered to be contaminated prior to analysis due to being submitted late.

Discussions were held with the shifter and the operators about submitting samples in a timely manner. Any further problems of this nature could result in disciplinary action.

S. L. Schierman

S. L. Schierman
Radiation Protection Officer

SLS/gp

Investigation of Elevated Bioassay

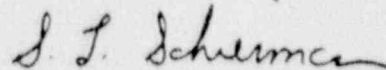
January 20, 1989

A bioassay sample collected on 1/20/89 exceeded the 15 ug/l u-nat action level at 38 ug/l uranium. An additional sample from 2/1/89 showed bioassay levels at normal levels of 5 ug/l uranium. The Maintenance Foreman was notified of the results and his mechanic was restricted from work at yellowcake until bioassay levels returned to normal.

The investigation of this incident comes to the following conclusions:

1. Samples submitted by the maintenance workers for RWP 558 were turned in after break at 9:00 A.M. Both employees had been at work since 7:00 A.M.
2. Bioassay levels from other people working on this job were below the 15 ug/l u-nat level.
3. Discussions with the employee indicate there were no unusual circumstances this was verified with the Radiation Tech. present during the job.

It is felt that this sample exceeded the 15 ug/l uranium level because of contamination of the sample due to being submitted late.



S. L. Schierman
Radiation Protection Officer

SLS/gp

Investigation of Elevated Bioassay

January 24, 1989

On 1/24/89 a sample collected from a yellowcake precipitation operator exceeded the 15 ug/l resample level at 29 ug/l uranium. An additional sample collected on 1/31/89 showed bioassay levels normal. Discussions with the operator have indicated this sample was contaminated due to late submittal. The following information was used to make this determination:

- 1) A sample collected on 1/21/89 was at normal levels of < 5 ug/l uranium.
- 2) The operator had no recollection of any circumstances that would have caused an elevated reading.
- 3) The sample was collected during the middle part of this operator's shift. The bioassay cup was put out for swing shift coming back from their long change. The sheet was read wrong and a cup put out for the wrong packaging operator.
- 4) The operator had been at work for approximately 2 hours before giving the sample. During this time he had barreled 2 drums of yellowcake.

Because the operator was not scheduled for a sample bottle he did not check prior to going to work. With the amount of time spent at the work location and the sample on 1/31/89 at normal levels, the sample is considered to be contaminated prior to analysis.

S. L. Schierman

S. L. Schierman
Radiation Protection Officer

SLS/gp

Investigation of Elevated Bioassay

January 31, 1989

On 1/31/89 a bioassay sample was collected from a vanadium operator that exceeded the 15 ug/l resample level at 30 ug/l uranium. An additional sample was collected on 2/7/89 which shows bioassay levels at 12 ug/l uranium. Discussions with the operator have little explanation as to why or how his bioassays would have exceeded 15 ug/l uranium.

The operator works at vanadium and has spent little or no time at yellowcake.

No explanation as to why the sample exceeded the 15 ug/l uranium is available. The only likely circumstances would be that the sample was contaminated. This, however, would have had to have been prior to analysis as both laboratory surfaces were scanned prior to analysis and little to no contamination was found. Samples being assayed around this sample were not spiked or known to have any elevated readings so splatter during evaporation is not likely.



S. L. Schierman
Radiation Protection Officer

SLS/gp

Investigation of Elevated Bioassay

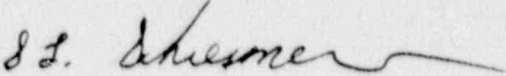
February 2, 1989

On 2/2/89 a sample was collected from a vanadium packaging operator which exceeded the 15 ug/l action level at 16 ug/l uranium. The sample was from a yellowcake operator that had been removed since 1/19/89 and assigned to vanadium. Samples collected on 2/17/89 show bioassay levels are at normal levels.

My evaluation of this incident is based on the following:

- 1) Monthly sampling at vanadium shows little airborne uranium.
- 2) Samples were submitted in a timely manner which minimizes contamination potential.
- 3) This operator had a frequent elevated bioassay history at yellowcake and was removed and it has been recommended that removal be permanent.
- 4) Discussions with the operator identified no potential explanation of why the sample exceeded 15 ug/l u-nat.
- 5) Laboratory analysis on the sample had good reproducibility and wipe tests for alpha contamination were negative.

Upon review of the data, how the sample was collected and submitted in a timely manner, no explanation as to why the sample is above 15 ug/l uranium can be given.


S. L. Schierman
Radiation Protection Officer

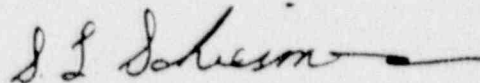
Investigation of Elevated Bioassay

February 16, 1989

A bioassay sample collected on 2/16/89 from an instrument man exceeded the 15 ug/l resample level at 59 ug/l uranium. Follow-up samples collected on 2/19/89 show bioassay levels were at < 5 ug/l or at normal levels. Interviews with the employee lead to the following conclusions:

- 1) The employee had worked on burners in the YC dryer enclosure for one (1) hour on 2/14/89. Additional time was spent working on burners on 2/15/89 about five (5) hours.
- 2) The job on the 15th shows the highest airborne concentrations but wearing a respirator would provide adequate protection.
- 3) Prior to submitting the sample on the 16th the employee had reported to work and filled the cup prior to changing into his work clothing. During discussions with the employee an accumulation of dust was observed on the hard hat with fingerprints on the bill. While submitting the sample the employee was wearing his hard hat. The hard hat was scanned later that day and the dust determined to be yellowcake.

Because the follow-up sample collected three (3) days after the initial sample of 59 ug/l shows no uranium content present. It is believed the sample was contaminated during collection by yellowcake from the hard hat. This is further evident by the fingerprints on the hat which would greatly increase the chance of contamination of the sample.



S. L. Schierman
Radiation Protection Officer

SLS/gp

BIOASSAY INVESTIGATION

March 24, 1989

A sample collected on 3/24/89 was in the 15 ug/l resample level. The sample was collected from a contractor doing refractory work to the Skinner dryer at yellowcake. A follow-up sample collected on 4/7/89 showed bioassay levels had returned to normal levels of 3 ug/l uranium.

Discussions with the employee and the following information indicate the material was ingested.

1. Airborne levels were not above protection levels for the type of respiratory protection used. Listed below are the airborne concentrations:

A.	3/21/89	2.5×10^{-10}	or	250% MPC
B.	3/22/89	3.9×10^{-11}	or	39% MPC
C.	3/23/89	1.1×10^{-10}	or	110% MPC
D.	3/24/89	1.8×10^{-9}	or	1800% MPC

Airline respirators were used for the duration of this job by the contractor.

2. After work each day the coveralls were laundered and showers were taken by the contractors.
3. Bioassay samples were collected on 3/20/89 as baseline samples all were below 5 ug/l uranium. Additional samples were taken mid-shift on 3/23/89 and all these samples were below 5 ug/l uranium.
4. Personal observations made during the construction were that respirators were removed frequently as only short durations of time could be spent in the Skinner dryer. It is my opinion that this is when the ingestion of material occurred. Discussion with the contractor could not identify an incident which would have lead to any elevated readings.

S. L. Schierman

S. L. Schierman
Radiation Protection Officer

SLS/gp

xc: W. W. Brice
G. G. Ray
D. K. Sparling
Central File

Investigation of Elevated Bioassay

May 2, 1989

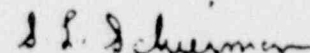
A bioassay sample collected on 5/25/89 exceeded the 15 ug/l resample level at 22 ug/l uranium content. Follow-up samples collected on 5/31/89 show uranium levels had returned to normal at 2 ug/l.

The cause of the initial elevated bioassay is based on information gathered from the employee and personal observations. My evaluation of this incident is listed below:

- 1) Area airborne and breathing zone samples show uranium airborne concentrations are low during the period prior to submitting the bioassay sample.
- 2) The employee has no recollection of an incident which would have caused an elevated bioassay reading.
- 3) Other operators during the same time period show no elevated bioassay results.
- 4) The sample submitted on 5/25/89 was turned in about two (2) hours late. With no recall of an incident by the employee and follow-up levels showing normal values it appears the sample was contaminated prior to analysis.
- 5) Both the sample prep. and fluorometric room alpha wipe tests show levels were below 25 dpm/100 cm².

It is felt the sample was contaminated by the employee during collection due to being submitted late and not indicating a true value of 22 ug/l uranium content.

Discussions have been held with the shifter and the employee about submitting samples prior to reporting to the work location.



S. L. Schierman
Radiation Protection Officer

SLS/gp

INVESTIGATION OF ELEVATED BIOASSAY SAMPLE

July 5, 1989

A bioassay sample collected on 6/21/89 exceeded the 15 ug/l action level. Follow-up samples collected on 6/28/89 show uranium levels had returned to normal levels. Discussions held with the operator suggest the sample was contaminated during collection. This is based on the following information supplied by the operator:

The sample was collected prior to reporting to his work location.

Because of the small amount submitted prior to work the operator filled the remainder of the specimen bottle at the end of his shift. This person was working as the yellowcake precipitation operator and submitted the sample prior to showering. Because of the above information, along with no recall of an incident by the operator, the sample is considered to be contaminated.

S. L. Schierman

S. L. Schierman
Radiation Protection Officer

SLS/gp

xc: W. W. Brice
G. G. Ray
D. K. Sparling
Central File

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UMETCO URANIUM MILL

DEMISTER STACK

June 10, 1989

Dry gas volume sampled	160.872	dscf		
Stack gas velocity	42.880	ft/sec		
Flow rate	6.512	dscm/sec		
Isokinetic variation	101	%		<u>LLDs</u>
U-nat emission	1.36×10^{-11}	$\mu\text{Ci/ml}$		5×10^{-13}
Ra-226 emission	1.71×10^{-13}	$\mu\text{Ci/ml} \pm$	6.59×10^{-14}	3×10^{-14}
Th-230 emission	6.37×10^{-13}	$\mu\text{Ci/ml} \pm$	2.41×10^{-13}	3×10^{-14}
Pb-210 emission	4.39×10^{-13}	$\mu\text{Ci/ml} \pm$	4.39×10^{-14}	8×10^{-14}
Uranium release rate	6.98×10^{-4}	Ci/qtr		
Uranium release rate	1033	grams/qtr	or	1.03 kg/qtr

UMETCO URANIUM MILL
YELLOW CAKE DRYER STACK
June 9, 1989

Dry gas volume sampled	141.096	dscf		
Stack gas velocity	31.793	ft/sec		
Flow rate	1.097	dscm/sec		
Isokinetic variation	98	%		<u>LLDs</u>
U-nat emission	8.68×10^{-10}	$\mu\text{Ci/ml}$		5×10^{-13}
Ra-226 emission	3.73×10^{-13}	$\mu\text{Ci/ml} \pm$	1.50×10^{-13}	3×10^{-14}
Th-230 emission	2.50×10^{-13}	$\mu\text{Ci/ml} \pm$	2.50×10^{-13}	3×10^{-14}
Pb-210 emission	7.01×10^{-13}	$\mu\text{Ci/ml} \pm$	5.01×10^{-14}	8×10^{-14}
Uranium release rate	3.88×10^{-3}	Ci/qtr		
Uranium release rate	5741	grams/qtr	or	5.7 kg/qtr

UMETCO URANIUM MILL

YELLOW CAKE DRYER STACK

March 29, 1989

Dry gas volume sampled	135.721	dscf	
Stack gas velocity	30.596	ft/sec	
Flow rate	1.056	dscm/sec	
Isokinetic variation	97	%	<u>LLDs</u>
U-nat emission	1.38×10^{-9}	μ	5×10^{-13}
Ra-226 emission	1.30×10^{-13}	μ ±	5.20×10^{-14} 3×10^{-14}
Th-230 emission	2.29×10^{-13}	ml ±	1.14×10^{-13} 3×10^{-14}
Pb-210 emission	7.27×10^{-13}	i/ml ±	7.81×10^{-14} 2×10^{-13}
Uranium release rate	7.19×10^{-3}	Ci/qtr	
Uranium release rate	10640	grams/qtr or	10.6 kg/qtr

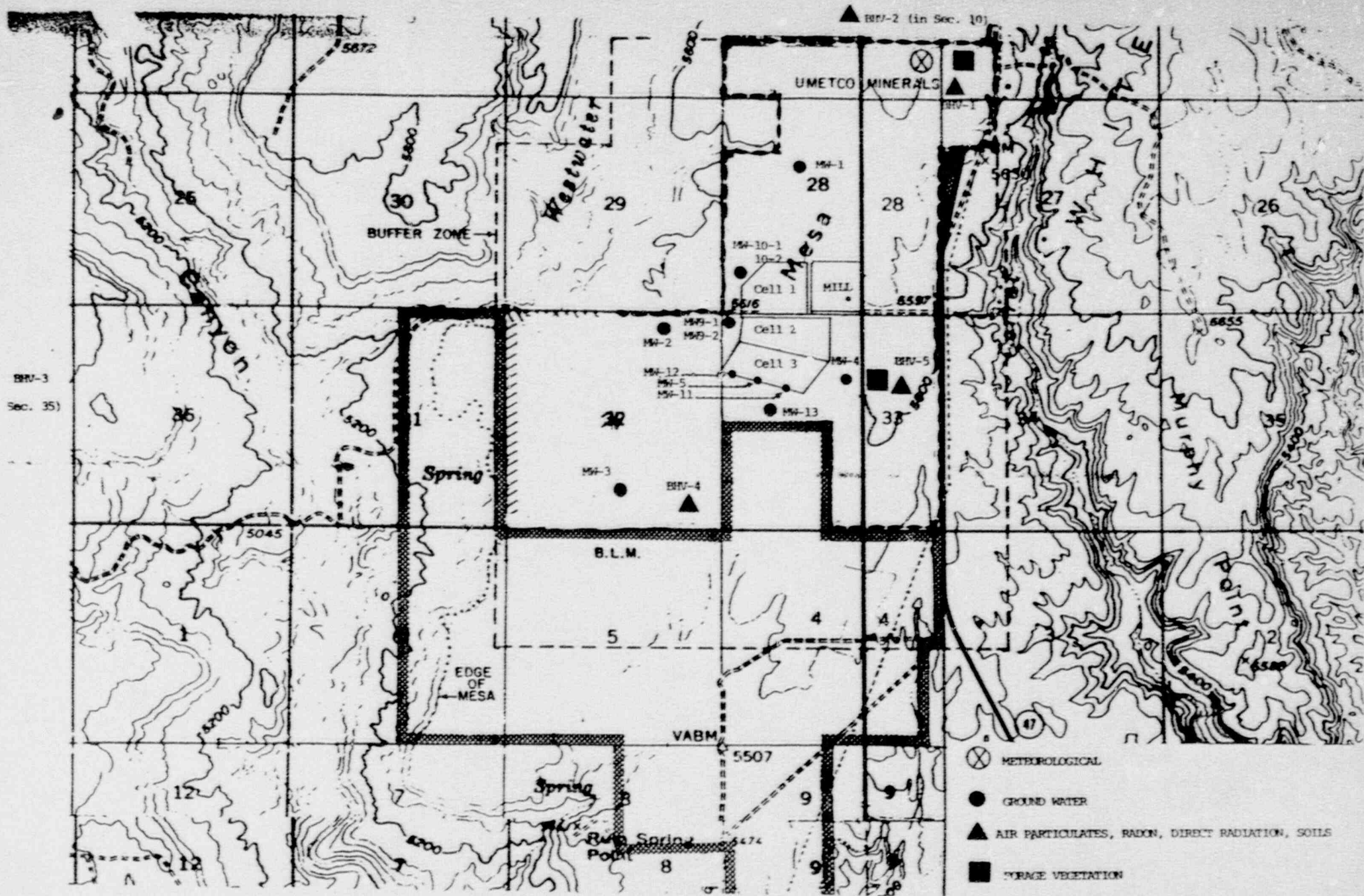


Figure 1

TABLE 1

UMETCO MINERALS CORPORATION
WHITE MESA MILL
AMBIENT RADON LEVELS
pCi/Liter

PERIOD ENDING	BHV-1	BHV-2	BHV-3	BHV-4	BHV-5	BHV-6 BHV-2 Duplicate
09-Sep-86	0.56	0.57	0.13	0.60	0.72	0.37
21-Dec-86	0.5	0.6	0.4	0.6	1.1	0.4
23-Mar-87	0.4	0.4	0.2	0.6	1.0	0.4
18-Jun-87	1.7	1.9	1.7	1.7	2.0	3.0
09-Sep-87	0.6	0.7	0.3	0.5	0.7	0.7
31-Dec-87	1.4	0.8	0.7	0.7	1.3	0.6
21-Apr-87	0.3	0.5	0.5	0.6	0.6	0.4
27-Jun-88	0.4	0.6	0.7	1.0	1.2	1.0
03-Oct-88	1.0	0.4	0.2	0.6	1.4	0.5
03-Jan-89	0.6	0.6	0.6	0.9	2.3	1.7
04-Apr-89	1.3	3.1	0.5	0.7	2.5	1.0
30-Jun-89	0.6	1.3	0.6	3.0	3.3	1.1
MEAN	0.78	0.96	0.54	0.96	1.51	0.93
Count	12	12	12	12	12	12
Std Dev	0.457	0.801	0.414	0.720	0.839	0.764

Note: Vendor laboratories were switched third quarter, 1986.

TABLE 2

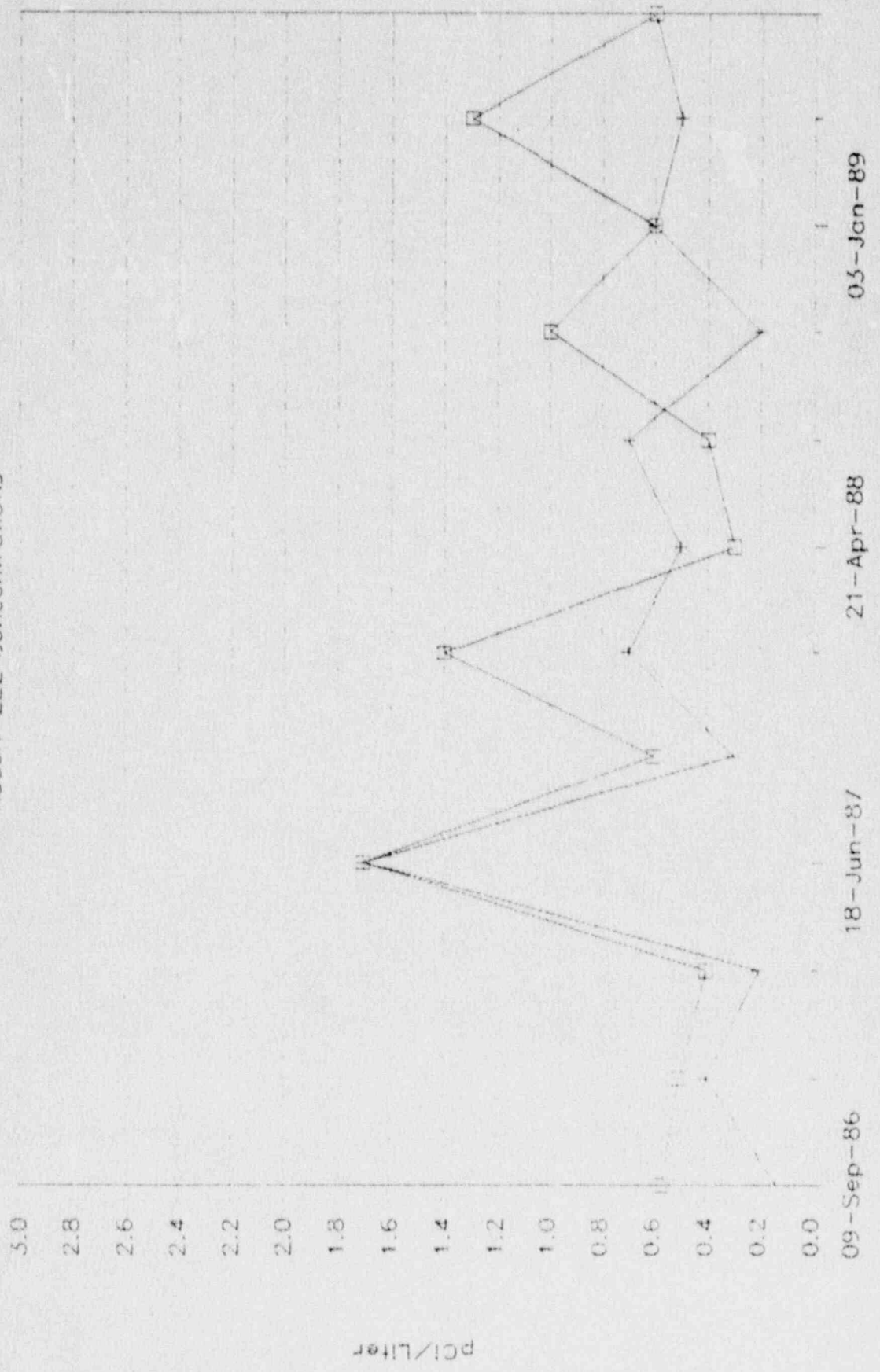
UMETCO MINERALS CORPORATION
WHITE MESA MILL
BHV-2 versus BHV-6

Regression Output:

Constant	0
Std Err of Est	0.7769
R Squared	0.0583
No. of Observations	12
Degrees of Freedom	11
X Coefficient(s)	0.8224
Std Err of Coef.	0.1895

UMETCO MINERALS CORPORATION

Radon-222 Concentrations



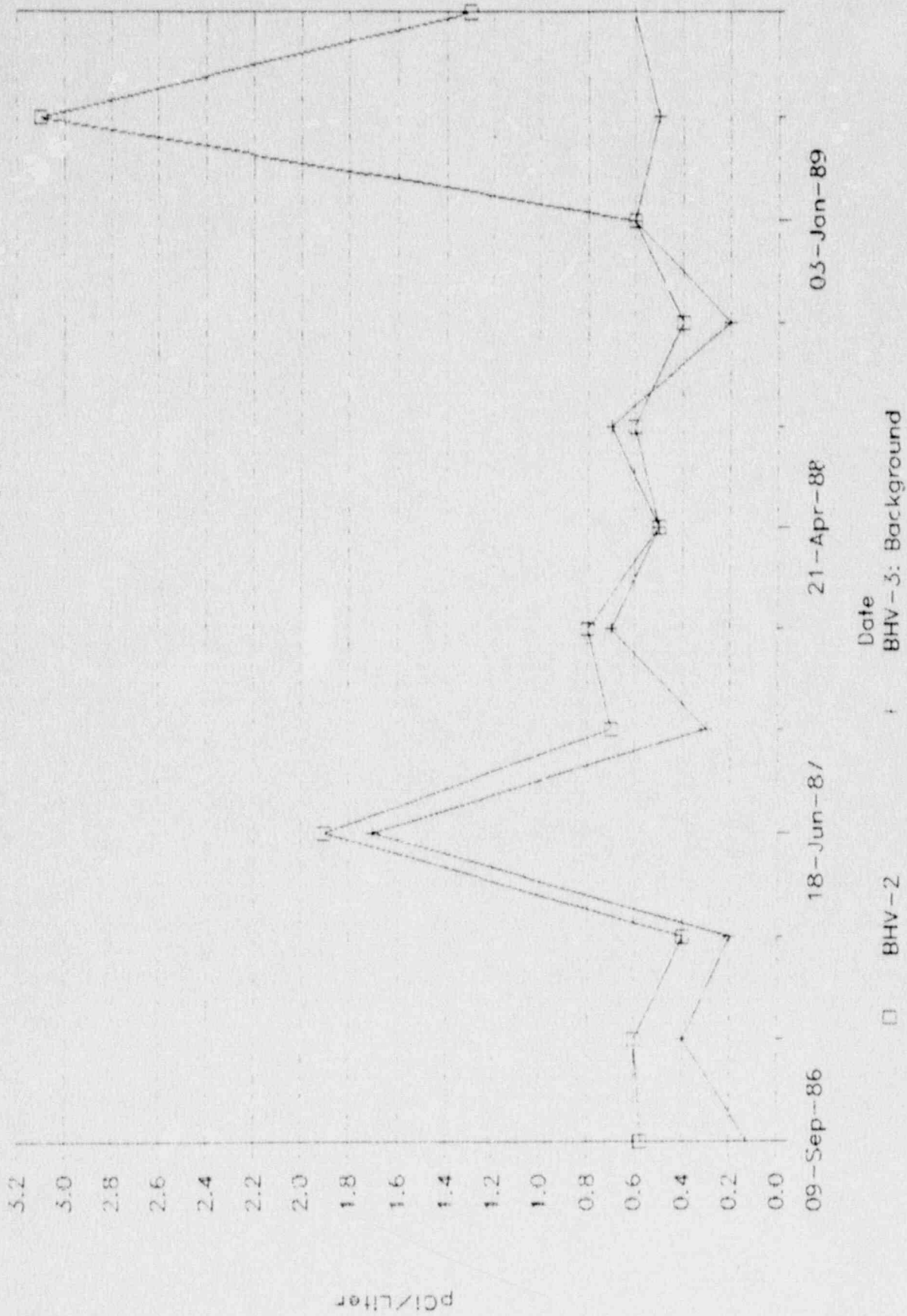
Date
 BHV-3: Background

BHV-1

Graph 1

UMETCO MINERALS CORPORATION

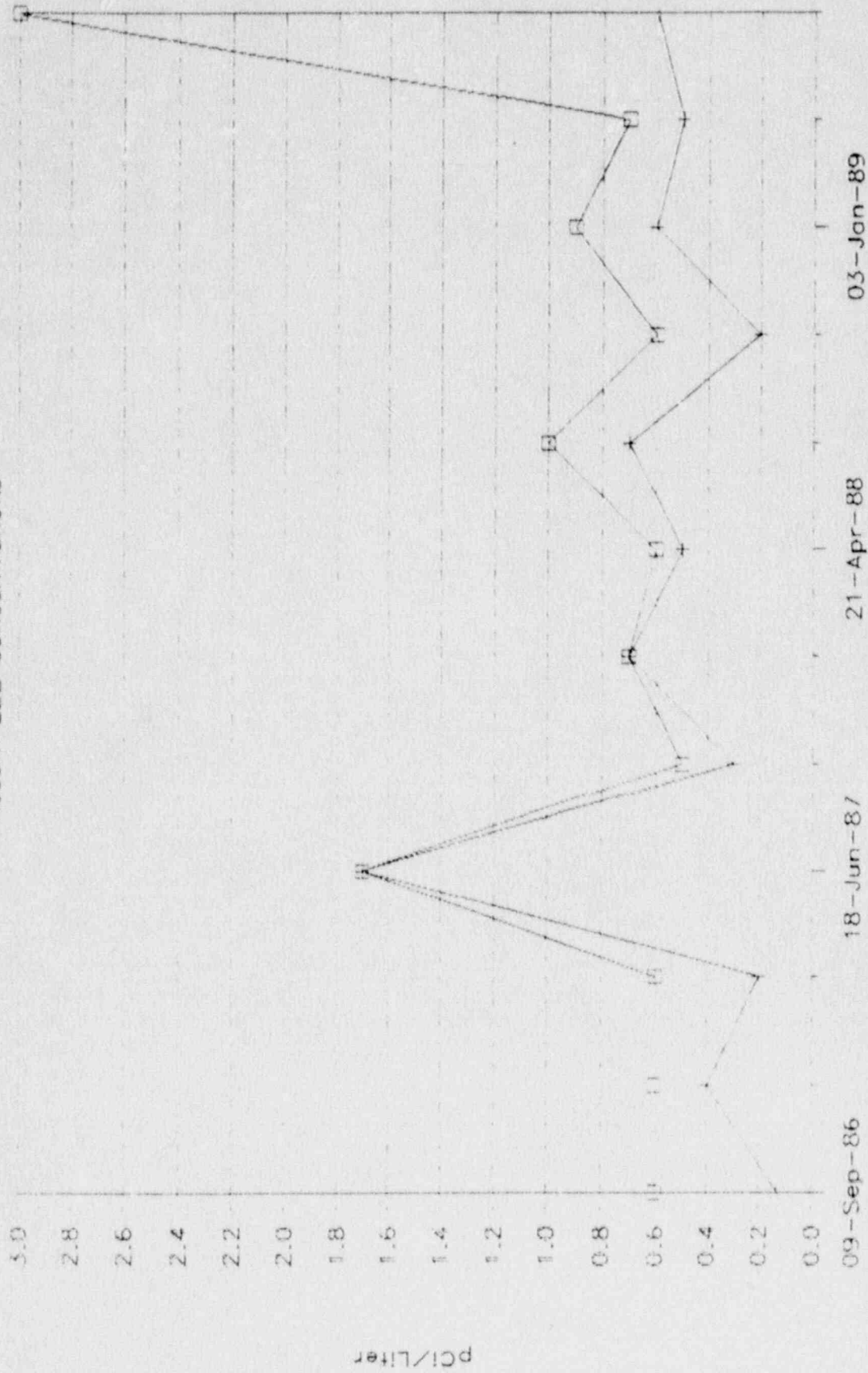
Radon-222 Concentrations



Graph 2

UMETCO MINERALS CORPORATION

Radon-222 Concentrations



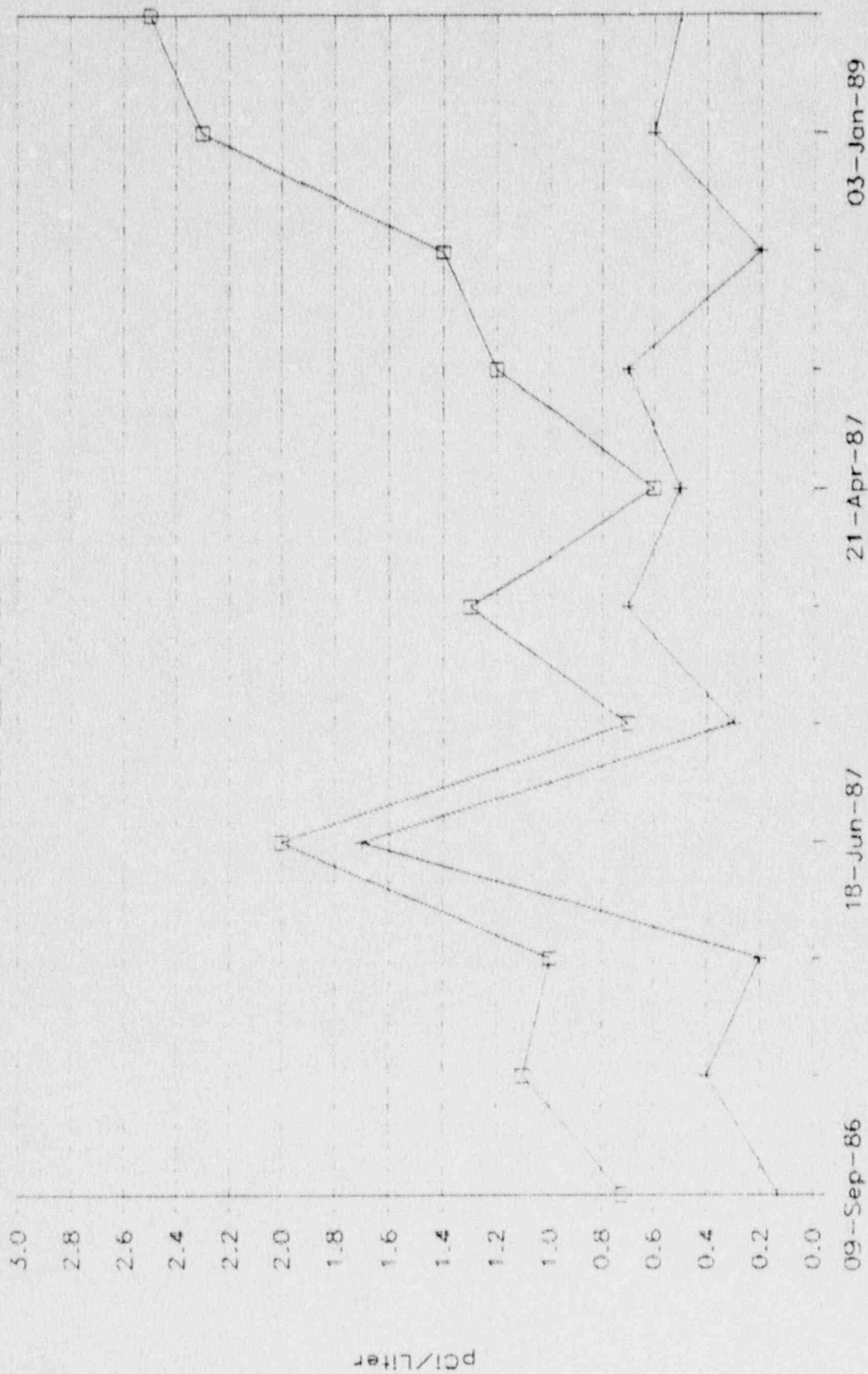
Date
BHV-5: Background

□ BHV-4

Graph 3

UMETCO MINERALS CORPORATION

Radon-222 Concentrations



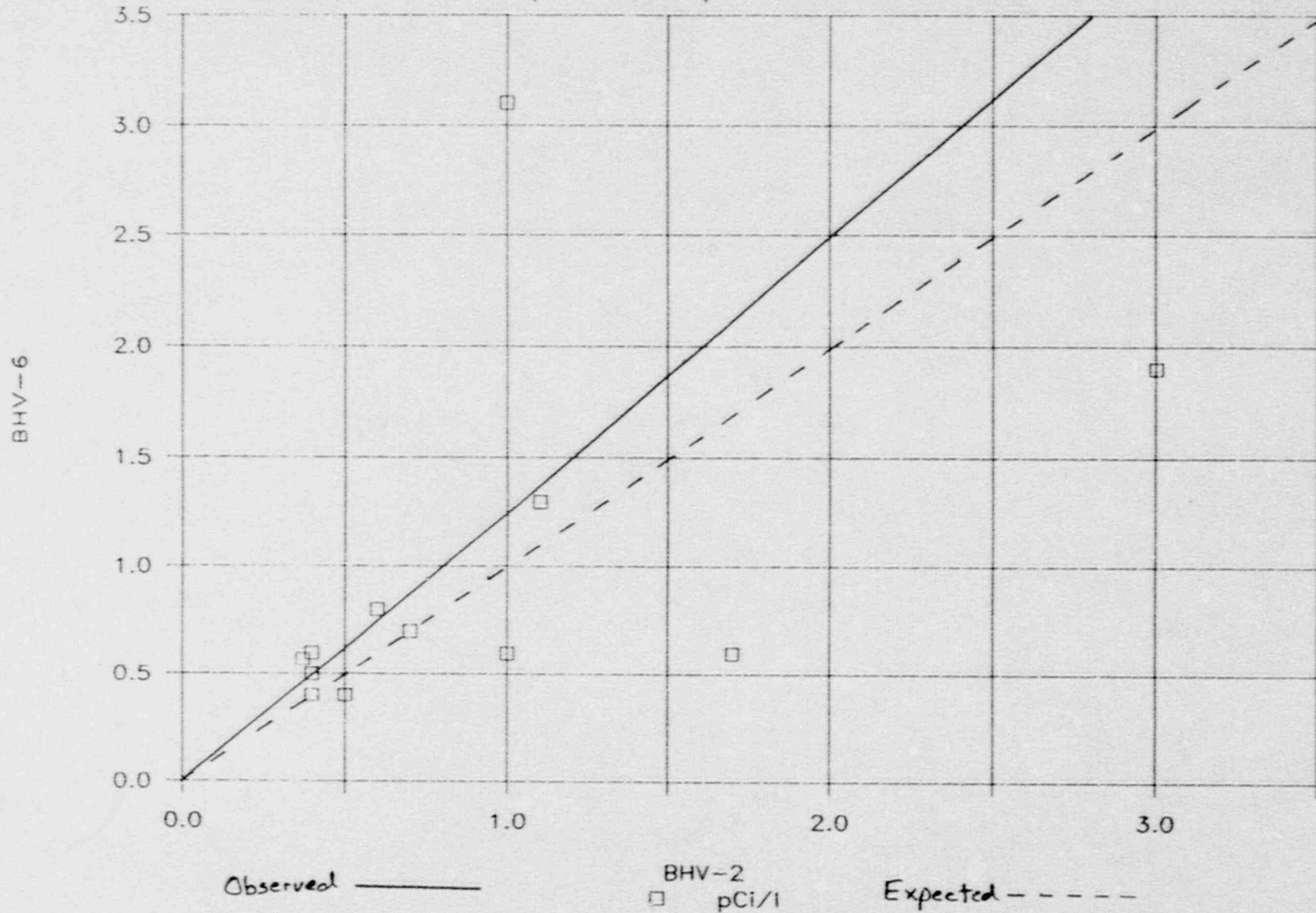
Date
BHV-5: Background

□ BHV-5

Graph 4

UMETCO MINERALS CORPORATION

Comparison of Duplicate BHV Values



BHV-2
□ pCi/l

Graph 6

TABLE 3

UMETCO MINERALS CORPORATION
WHITE MESA MILL

DIRECT RADIATION
MR/QTR

Location: BHV-1, Meterological Station

Period Ending	Total Exposure Rate	Counting Error	Net Exposure Rate	Net Error	Total Rate Mr/week	Counting Error Mr/week
30-Sep-81	23.66	0.00	3.90	0.00	1.82	
31-Dec-81	25.87	0.00	-2.21	0.00	1.99	
31-Mar-82	26.00	0.00	1.69	0.00	2.00	
30-Jun-82	24.05	0.00	-3.64	0.00	1.85	
01-Oct-82	25.35	0.00	3.12	0.00	1.95	
03-Jan-83	30.55	0.00	4.94	0.00	2.35	
04-Apr-83	22.49	0.00	-1.82	0.00	1.73	
05-Jul-83	32.11	0.00	7.54	0.00	2.47	
03-Oct-83	20.54	0.00	-1.43	0.00	1.58	
03-Jan-84	22.75	0.00	-0.91	0.00	1.75	
03-Apr-84	24.70	0.00	1.56	0.00	1.90	
02-Jul-84	22.49	0.00	1.69	0.00	1.73	
02-Oct-84	19.89	2.21	1.82	4.37	1.53	0.170
02-Jan-85	21.58	3.12	1.30	4.89	1.66	0.240
04-Apr-85	23.40	10.01	1.04	10.70	1.80	0.770
08-Jul-85	16.90	6.50	4.55	7.58	1.30	0.500
07-Oct-85	20.28	1.58	1.56	2.49	1.56	0.122
17-Jan-86	23.79	5.89	1.43	6.32	1.83	0.453
22-Apr-86	23.92	-0.70	0.91	0.92	1.84	-0.054
21-Jul-86	17.94	26.40	-6.37	30.31	1.38	2.031
03-Nov-86	19.63	0.09	-2.99	4.59	1.51	0.007
03-Feb-87	20.67	0.05	1.30	1.55	1.59	0.004
01-Apr-87	22.75	1.92	-8.19	2.09	1.75	0.148
01-Jul-87	Sample lost in the field					
09-Oct-87	17.94	0.03	1.95	1.07	1.38	0.002
14-Jan-88	20.80	1.58	-0.13	1.63	1.6	0.122
19-Apr-88	25.61	2.32	1.43	3.43	1.97	0.178
15-Jul-88	26.52	7.37	1.69	8.28	2.04	0.567
11-Oct-88	20.02	5.81	-0.39	5.81	1.54	0.447
19-Jan-89	23.14	2.61	-1.17	5.30	1.78	0.201
08-May-89	30.42	5.61	0.26	7.14	2.34	0.432
21-Jul-89	27.43	6.73	1.17	6.95	2.11	0.518

TABLE 4

UMETCO MINERALS CORPORATION
WHITE MESA MILL

DIRECT RADIATION
MR/QTR

Location: BHV-2, Nearset Residence

Period Ending	Total Exposure Rate	Counting Error	Net Exposure Rate	Net Error	Total Rate Mr/week	Counting Error Mr/week
30-Sep-81	19.11	0.00	-0.65	0.00	1.47	
31-Dec-81	24.57	0.00	-3.51	0.00	1.89	
31-Mar-82	27.04	0.00	2.73	0.00	2.08	
30-Jun-82	23.66	0.00	-4.03	0.00	1.82	
01-Oct-82	22.88	0.00	0.65	0.00	1.76	
03-Jan-83	25.61	0.00	0.00	0.00	1.97	
04-Apr-83	22.88	0.00	-1.43	0.00	1.76	
05-Jul-83	23.66	0.00	-0.91	0.00	1.82	
03-Oct-83	22.75	0.00	0.78	0.00	1.75	
03-Jan-84	29.38	0.00	5.72	0.00	2.25	
03-Apr-84	23.92	0.00	0.78	0.00	1.84	
02-Jul-84	20.02	0.00	-0.78	0.00	1.54	
02-Oct-84	18.72	3.12	0.65	4.89	1.44	0.24
02-Jan-85	22.23	3.38	1.95	5.06	1.71	0.26
04-Apr-85	9.10	3.77	-13.26	5.33	0.70	0.29
07-Jul-85	15.47	5.72	3.12	6.92	1.19	0.44
07-Oct-85	21.32	-0.12	2.60	1.93	1.64	-0.01
17-Jan-86	21.97	8.89	-0.39	9.18	1.69	0.68
22-Apr-86	29.51	9.90	6.50	9.92	2.27	0.76
21-Jul-86	25.35	7.30	1.04	16.59	1.95	0.56
03-Nov-86	22.88	0.09	0.26	4.59	1.76	0.01
03-Feb-87	29.25	-0.75	9.88	1.72	2.25	-0.06
01-Apr-87	22.88	0.82	-8.06	1.16	1.76	0.06
01-Jul-87	30.29	4.61	5.20	8.65	2.33	0.35
09-Oct-87	17.81	3.73	1.82	3.88	1.37	0.29
14-Jan-88	21.19	4.08	0.26	4.10	1.63	0.31
19-Apr-88	27.82	4.72	3.64	5.35	2.14	0.36
15-Jul-88	25.48	6.67	0.65	7.66	1.96	0.51
11-Oct-88	25.35	8.51	4.94	8.51	1.95	0.65
19-Jan-89	24.44	5.21	0.13	6.96	1.88	0.40
08-May-89	32.37	2.61	2.21	5.12	2.49	0.20
21-Jul-89	27.95	2.33	1.69	2.90	2.15	0.18

TABLE 5

UMETCO MINERALS CORPORATION
WHITE MESA MILLDIRECT RADIATION
MR/QTR

Location: BHV-3, Black Mesa (Background)

Period Ending	Total Exposure Rate	Counting Error	Net Exposure Rate	Net Error	Total Rate Mr/week	Counting Error Mr/week
30-Sep-81	19.76	0.00	0.00	0.00	1.52	
31-Dec-81	28.08	0.00	0.00	0.00	2.16	
31-Mar-82	24.31	0.00	0.00	0.00	1.87	
30-Jun-82	27.69	0.00	0.00	0.00	2.13	
01-Oct-82	22.23	0.00	0.00	0.00	1.71	
03-Jan-83	25.61	0.00	0.00	0.00	1.97	
04-Apr-83	24.31	0.00	0.00	0.00	1.87	
05-Jul-83	24.57	0.00	0.00	0.00	1.89	
03-Oct-83	21.97	0.00	0.00	0.00	1.69	
03-Jan-84	23.66	0.00	0.00	0.00	1.82	
03-Apr-84	23.14	0.00	0.00	0.00	1.78	
02-Jul-84	20.80	0.00	0.00	0.00	1.60	
02-Oct-84	18.07	3.77	0.00	5.33	1.39	0.29
02-Jan-85	20.28	3.77	0.00	5.33	1.56	0.29
04-Apr-85	22.36	3.77	0.00	5.33	1.72	0.29
07-Jul-85	12.35	3.90	0.00	5.52	0.95	0.30
07-Oct-85	18.72	1.93	0.00	2.73	1.44	0.15
17-Jan-86	22.36	2.29	0.00	3.24	1.72	0.18
22-Apr-86	23.01	0.60	0.00	0.85	1.77	0.05
21-Jul-86	24.31	14.90	0.00	21.07	1.87	1.15
03-Nov-86	22.62	4.59	0.00	6.49	1.74	0.35
03-Feb-87	19.37	1.55	0.00	2.19	1.49	0.12
01-Apr-87	30.94	0.82	0.00	1.16	2.38	0.06
01-Jul-87	25.09	7.32	0.00	10.35	1.93	0.56
09-Oct-87	15.99	-1.07	0.00	1.51	1.23	-0.08
14-Jan-88	20.93	-0.42	0.00	0.59	1.61	-0.03
19-Apr-88	24.18	2.52	0.00	3.56	1.86	0.19
15-Jul-88	24.83	3.77	0.00	5.33	1.91	0.29
11-Oct-88	20.41	0.21	0.00	0.30	1.57	0.02
19-Jan-89	24.31	4.61	0.00	6.52	1.87	0.35
08-May-89	30.16	4.41	0.00	6.24	2.32	0.34
21-Jul-89	26.26	1.73	0.00	2.45	2.02	0.13

TABLE 6

UMETCO MINERALS CORPORATION
WHITE MESA MILL

DIRECT RADIATION
MR/QTR

Location: BHV-4, South Tailings Area

Period Ending	Total Exposure Rate	Counting Error	Net Exposure Rate	Net Error	Total Rate Mr/week	Counting Error Mr/week
30-Sep-81	18.33	0.00	-1.43	0.00	1.41	
31-Dec-81	25.61	0.00	-2.47	0.00	1.97	
31-Mar-82		0.00	-24.31	0.00	0.00	
30-Jun-82		0.00	-27.69	0.00	0.00	
01-Oct-82	27.43	0.00	5.20	0.00	2.11	
03-Jan-83	37.31	0.00	11.70	0.00	2.87	
04-Apr-83	28.08	0.00	3.77	0.00	2.16	
05-Jul-83	25.09	0.00	0.52	0.00	1.93	
03-Oct-83	26.65	0.00	4.68	0.00	2.05	
03-Jan-84	31.46	0.00	7.80	0.00	2.42	
03-Apr-84	26.65	0.00	3.51	0.00	2.05	
02-Jul-84	26.39	0.00	5.59	0.00	2.03	
02-Oct-84	18.98	4.94	0.91	6.21	1.46	0.38
02-Jan-85	21.45	1.56	1.17	4.08	1.65	0.12
04-Apr-85	24.31	1.69	1.95	4.13	1.87	0.13
07-Jul-85	13.52	4.42	1.17	5.89	1.04	0.34
07-Oct-85	21.45	0.68	2.73	2.04	1.65	0.05
17-Jan-86	24.05	6.69	1.69	7.07	1.85	0.51
22-Apr-86	28.21	23.40	5.20	23.41	2.17	1.80
21-Jul-86	25.61	3.60	1.30	15.33	1.97	0.28
03-Nov-86	24.18	2.69	1.56	5.32	1.86	0.21
03-Feb-87	23.27	2.55	3.90	2.98	1.79	0.20
01-Apr-87	22.36	2.12	-8.58	2.27	1.72	0.16
01-Jul-87	26.26	14.71	1.17	16.43	2.02	1.13
09-Oct-87	20.15	-0.87	4.16	1.38	1.55	-0.07
14-Jan-88	22.36	2.68	1.43	2.71	1.72	0.21
19-Apr-88	26.13	-1.68	1.95	3.03	2.01	-0.13
15-Jul-88	27.69	1.77	2.86	4.16	2.13	0.14
11-Oct-88	23.40	2.81	2.99	2.82	1.80	0.22
19-Jan-89	24.18	3.91	-0.13	6.04	1.86	0.30
08-May-89	32.50	0.61	2.34	4.45	2.5	0.05
21-Jul-89	29.64	-0.57	3.38	1.82	2.28	-0.04

TABLE 7

UMETCO MINERALS CORPORATION
WHITE MESA MILL

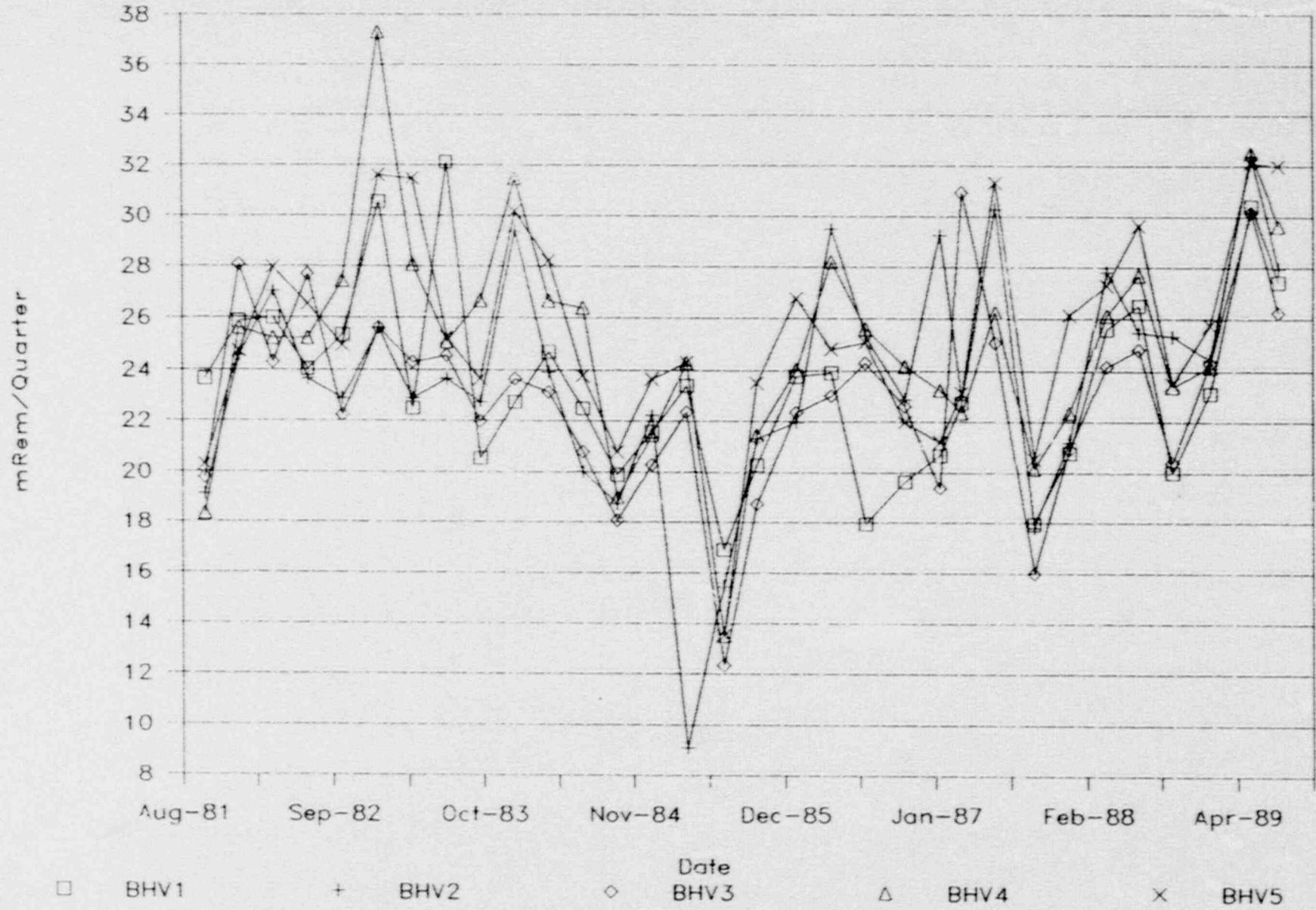
DIRECT RADIATION
MR/QTR

Location: BHV-5, East Tailings Area

Period Ending	Total Exposure Rate	Counting Error	Net Exposure Rate	Net Error	Total Rate Mr/week	Counting Error Mr/week
30-Sep-81	20.28	0.00	0.52	0.00	1.56	
31-Dec-81		0.00	-28.08	0.00	0.00	
31-Mar-82	27.95	0.00	3.64	0.00	2.15	
30-Jun-82	26.52	0.00	-1.17	0.00	2.04	
01-Oct-82	24.96	0.00	2.73	0.00	1.92	
03-Jan-83	31.59	0.00	5.98	0.00	2.43	
04-Apr-83	31.46	0.00	7.15	0.00	2.42	
05-Jul-83	25.22	0.00	0.65	0.00	1.94	
03-Oct-83	23.66	0.00	1.69	0.00	1.82	
03-Jan-84	30.16	0.00	6.50	0.00	2.32	
03-Apr-84	28.21	0.00	5.07	0.00	2.17	
02-Jul-84	23.79	0.00	2.99	0.00	1.83	
02-Oct-84	20.80	1.56	2.73	4.08	1.60	0.12
02-Jan-85	23.66	4.03	3.38	5.52	1.82	0.31
04-Apr-85	24.31	6.50	1.95	7.51	1.87	0.50
07-Jul-85	13.52	2.99	1.17	4.91	1.04	0.23
07-Oct-85	23.53	-0.92	4.81	2.14	1.81	-0.07
17-Jan-86	26.78	9.09	4.42	9.37	2.06	0.70
22-Apr-86	24.83	8.40	1.82	8.42	1.91	0.65
21-Jul-86	25.09	1.80	0.78	15.01	1.93	0.14
03-Nov-86	21.97	0.29	-0.65	4.60	1.69	0.02
03-Feb-87	21.19	1.65	1.82	2.26	1.63	0.13
01-Apr-87	23.14	9.52	-7.80	9.56	1.78	0.73
01-Jul-87	31.33	13.11	6.24	15.02	2.41	1.01
09-Oct-87	20.54	2.23	4.55	2.47	1.58	0.17
14-Jan-88	26.13	-1.22	5.20	1.29	2.01	-0.09
19-Apr-88	27.30	3.82	3.12	4.58	2.10	0.29
15-Jul-88	29.64	2.07	4.81	4.30	2.28	0.16
11-Oct-88	23.53	1.51	3.12	1.52	1.81	0.12
19-Jan-89	25.74	6.21	1.43	7.73	1.98	0.48
08-May-89	32.11	4.91	1.95	6.60	2.47	0.38
21-Jul-89	31.98	0.93	5.72	1.96	2.46	0.07

UMETCO MINERALS CORPORATION

Ambient Gamma Levels



Graph 7

TABLE 8

UMETCO MINERALS CORPORATION
WHITE MESA MILL
FORAGE RADIONUCLIDE DATA
NORTH EAST OF MILL

SAMPLED DATE	Ra-226 VALUE uCi/Kg	Ra-226 ERROR uCi/Kg	LLD uCi/Kg 5.00E-08	Pb-210 VALUE uCi/Kg	Po-210 ERROR uCi/Kg	LLD uCi/Kg 1.00E-06
27-Aug-81	3.90E-04	1.0E-05	5.0E-08	1.10E-03	1.0E-04	1.0E-06
20-Oct-81	1.40E-04	1.0E-05	5.0E-08	6.80E-04	8.0E-05	1.0E-06
15-Apr-82	1.31E-04	1.3E-05	1.0E-06	4.90E-04	7.0E-05	8.0E-05
01-Jul-82	1.60E-04	1.0E-05	5.0E-08	8.00E-04	1.7E-04	1.0E-07
30-Nov-82	2.67E-06	1.1E-06	1.0E-06	1.08E-04	9.0E-06	1.0E-05
13-Apr-83	9.36E-05	6.2E-06	8.0E-09	4.97E-04	9.3E-05	1.0E-04
01-Jul-83	1.12E-04	1.2E-05	6.0E-06	1.84E-04	1.2E-05	1.0E-06
30-Jan-84	1.09E-04	8.0E-06	4.0E-06	7.80E-04	6.2E-05	6.0E-05
28-Jun-84	3.47E-04	1.2E-05	2.0E-09	3.75E-03	1.6E-04	4.0E-08
14-Nov-84	5.61E-04	2.0E-04	2.0E-07	7.82E-03	3.3E-04	7.0E-08
27-Mar-85	1.05E-03	3.0E-05	2.0E-06	3.22E-03	1.4E-04	2.0E-05
15-Jul-85	8.20E-05	7.0E-06	3.0E-06	7.70E-04	1.3E-04	2.0E-04
09-Oct-85	1.15E-04	1.0E-05	3.0E-06	5.10E-04	3.0E-05	2.0E-05
24-Mar-86	5.72E-04	2.1E-05	4.0E-06	2.49E-03	1.0E-04	1.0E-05
10-Jul-86	5.01E-04	1.3E-05	3.0E-06	1.57E-03	1.7E-03	2.0E-04
18-Dec-86	8.70E-04	5.0E-05	3.0E-06	6.80E-04	3.0E-05	3.0E-06
20-Apr-87	5.90E-04	7.0E-05	5.0E-08	1.50E-03	1.0E-04	1.0E-06
05-Jun-87	1.60E-04	3.0E-05	5.0E-08	9.50E-04	4.0E-05	1.0E-06
22-Dec-87	2.10E-04	4.0E-05	5.0E-08	1.70E-03	1.0E-04	1.0E-06
19-Apr-88	4.50E-04	7.0E-05	5.0E-08	1.40E-03	1.0E-04	1.0E-06
28-Jul-88	3.20E-05	2.2E-05	5.0E-08	1.50E-04	4.4E-04	1.0E-06
07-Apr-89	5.60E-04	4.0E-05	***	1.10E-03	1.0E-01	***
06-Jun-89	1.50E-04	2.0E-05	***	2.30E-04	2.0E-05	***
# OBSERVED	23		23	23		23
MINIMUM	2.67E-06		2.00E-09	1.08E-04		4.00E-08
MAXIMUM	1.05E-03		6.00E-06	7.82E-03		2.00E-04
MEAN	3.21E-04		1.33E-06	1.41E-03		3.09E-05
STD. DEV.	2.74E-04		1.74E-06	1.65E-03		5.86E-05

TABLE 9

UMETCO MINERALS CORPORATION
WHITE MESA MILL
FORAGE RADIONUCLIDE DATA
NORTH WEST OF MILL

SAMPLED DATE	Ra-226 VALUE uCi/Kg	Ra-226 ERROR uCi/Kg	LLD uCi/Kg 5.00E-08	Pb-210 VALUE uCi/Kg	Pb-210 ERROR uCi/Kg	LLD uCi/Kg 1.00E-06
27-Aug-81	2.73E-03	5.0E-05	5.0E-08	7.10E-03	3.0E-04	1.0E-06
20-Oct-81	2.00E-04	1.0E-05	5.0E-08	8.30E-04	5.0E-05	1.0E-06
15-Apr-82	1.04E-04	9.0E-06	7.0E-06	6.40E-04	5.0E-05	4.0E-05
01-Jul-82	2.00E-05	1.0E-05	5.0E-08	2.20E-04	9.0E-05	1.0E-07
30-Nov-82	2.36E-06	9.5E-07	1.0E-06	8.00E-05	1.0E-05	1.0E-05
13-Apr-83	8.58E-05	1.4E-05	2.0E-08	3.53E-04	1.9E-05	1.0E-05
01-Jul-83	1.19E-04	1.1E-05	5.0E-06	1.58E-04	1.3E-05	1.0E-05
30-Jan-84	9.78E-05	7.0E-06	2.0E-06	2.16E-03	3.4E-04	3.0E-04
28-Jun-84	2.08E-04	1.0E-05	3.0E-09	1.60E-03	7.0E-05	3.0E-08
14-Nov-84	6.05E-04	1.6E-04	2.0E-07	2.58E-03	1.1E-04	3.0E-08
27-Mar-85	1.10E-04	8.0E-06	3.0E-06	8.63E-04	4.2E-05	3.0E-05
15-Jul-85	6.10E-05	6.0E-06	2.0E-06	5.40E-04	5.0E-05	5.0E-05
09-Oct-85	1.07E-04	6.0E-06	2.0E-06	3.80E-04	3.0E-05	2.0E-05
24-Mar-86	8.86E-04	1.8E-05	2.0E-06	4.40E-03	1.9E-04	3.0E-05
10-Jul-86	6.66E-04	1.8E-05	3.0E-06	4.78E-03	2.1E-04	6.0E-05
18-Dec-86	5.20E-04	1.0E-04	3.0E-06	1.70E-03	1.0E-04	6.0E-05
20-Apr-87	4.10E-04	1.0E-04	5.0E-08	1.60E-03	1.0E-04	1.0E-06
05-Jun-87	1.60E-04	3.0E-05	5.0E-08	5.50E-04	4.0E-05	1.0E-06
22-Dec-87	3.60E-04	5.0E-05	5.0E-08	1.80E-03	1.0E-04	1.0E-06
19-Apr-88	2.60E-04	5.0E-05	5.0E-08	1.90E-03	1.0E-04	1.0E-06
28-Jul-88	3.10E-05	1.9E-05	5.0E-08	1.60E-04	4.0E-05	1.0E-06
07-Apr-89	6.20E-04	5.0E-05	***	1.70E-03	1.0E-04	***
06-Jul-89	3.40E-04	3.0E-05	***	7.40E-04	3.0E-05	***
# OBSERVED	23		23	23		23
MINIMUM	2.36E-06		3.00E-09	8.00E-05		3.00E-08
MAXIMUM	2.73E-03		7.00E-06	7.10E-03		3.00E-04
MEAN	3.78E-04		1.33E-06	1.60E-03		2.73E-05
STD. DEV.	5.54E-04		1.83E-06	1.69E-03		6.14E-05

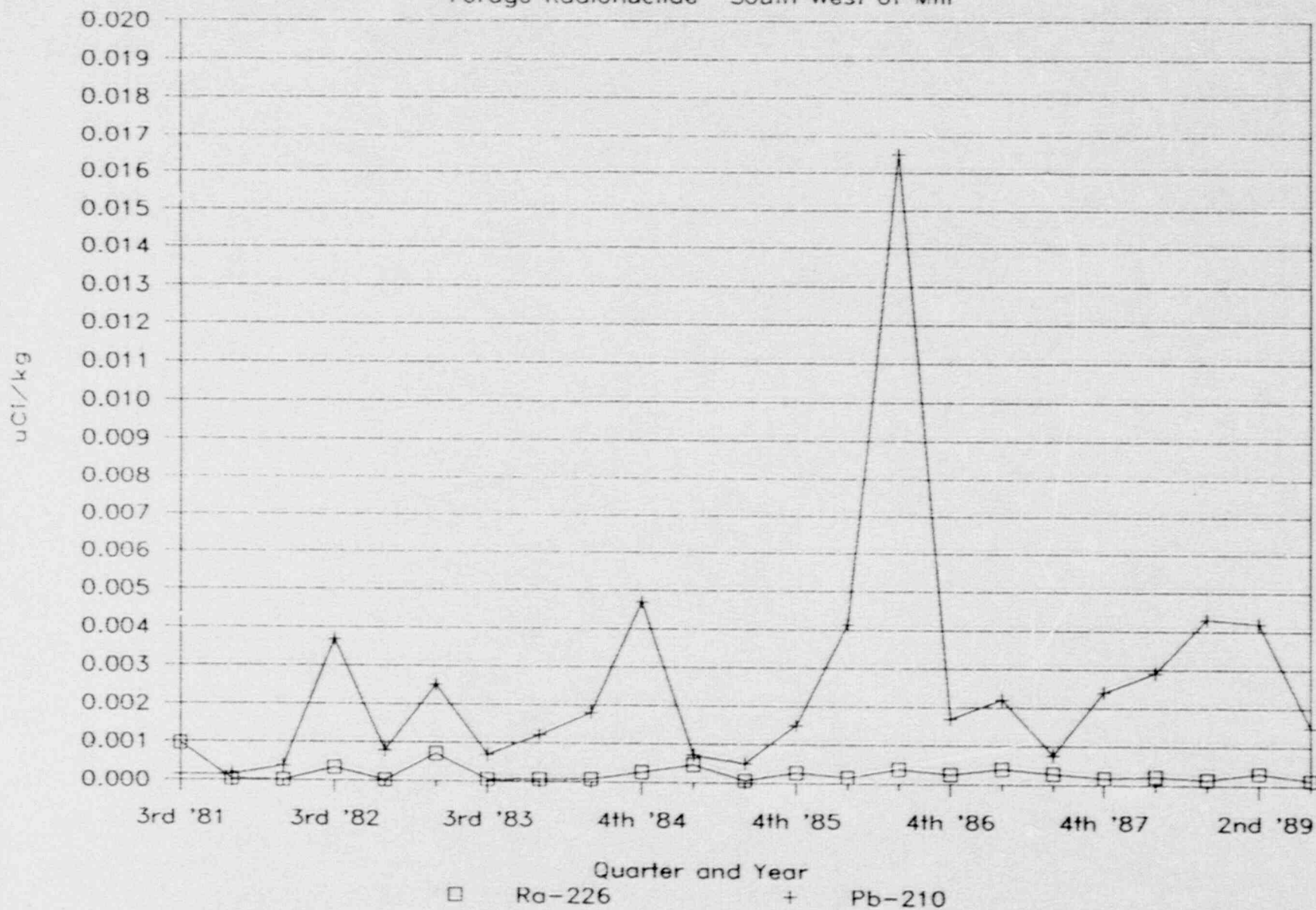
TABLE 10

UMETCO MINERALS CORPORATION
WHITE MESA MILL
FORAGE RADIONUCLIDE DATA
SOUTH WEST OF MILL

SAMPLED DATE	Ra-226 VALUE uCi/Kg	Ra-226 ERROR uCi/Kg	LLD uCi/Kg 5.00E-08	Pb-210 VALUE uCi/Kg	Pb-210 ERROR uCi/Kg	LLD uCi/Kg 1.00E-06
27-Aug-81	9.50E-04	2.0E-05	5.0E-08	1.50E-04	1.0E-05	1.0E-06
27-Oct-81	3.00E-05	3.0E-06	5.0E-08	1.50E-04	2.0E-05	1.0E-06
15-Apr-82	1.37E-05	3.0E-06	3.0E-06	3.80E-04	4.0E-05	4.0E-05
01-Jul-82	3.40E-04	2.0E-05	5.0E-08	3.68E-03	2.7E-04	1.0E-07
30-Nov-82	1.75E-05	3.0E-06	2.0E-06	7.92E-04	4.0E-06	2.0E-05
14-Apr-83	7.13E-04	7.3E-05	9.0E-08	2.51E-03	3.0E-04	3.0E-04
01-Jul-83	5.39E-05	4.5E-06	2.0E-06	6.88E-04	4.3E-05	4.0E-05
30-Jan-84	6.40E-05	7.0E-06	4.0E-06	1.20E-03	1.0E-04	4.0E-05
28-Jun-84	8.27E-05	6.3E-06	3.0E-09	1.80E-03	1.0E-04	9.0E-08
14-Nov-84	2.72E-04	1.5E-04	2.0E-07	4.70E-03	7.2E-04	3.0E-07
27-Mar-85	4.73E-04	1.6E-07	3.0E-06	7.07E-04	3.6E-05	3.0E-05
15-Jul-85	6.60E-05	7.0E-06	4.0E-06	4.90E-04	3.0E-05	3.0E-05
09-Oct-85	2.83E-04	2.0E-05	7.0E-06	1.50E-03	1.0E-04	7.0E-05
24-Mar-86	1.57E-04	1.0E-05	4.0E-06	4.14E-03	1.8E-04	3.0E-05
10-Jul-86	3.78E-04	1.0E-05	2.0E-06	1.65E-02	7.0E-04	1.0E-04
18-Dec-86	2.60E-04	2.0E-05	2.0E-06	1.70E-03	1.0E-04	1.0E-04
20-Apr-87	4.10E-04	7.0E-05	5.0E-08	2.20E-03	1.0E-04	1.0E-06
05-Jun-87	2.90E-04	4.0E-05	5.0E-08	7.50E-04	5.0E-05	1.0E-06
22-Dec-87	1.80E-04	3.0E-05	5.0E-08	2.40E-03	1.0E-04	1.0E-06
19-Apr-88	2.30E-04	5.0E-05	5.0E-08	2.90E-03	1.0E-04	1.0E-06
28-Jul-88	1.50E-04	3.0E-05	5.0E-08	4.30E-03	2.0E-04	1.0E-06
07-Apr-89	3.10E-04	4.0E-05	***	4.20E-03	1.0E-04	***
06-Jun-89	1.30E-04	2.0E-05	***	1.50E-03	1.0E-04	***
# OBSERVED	23		23	23		23
MINIMUM	1.37E-05		3.00E-09	1.50E-04		9.00E-08
MAXIMUM	9.50E-04		7.00E-06	1.65E-02		3.00E-04
MEAN	2.55E-04		1.46E-06	2.58E-03		3.51E-05
STD. DEV.	2.23E-04		1.88E-06	3.28E-03		6.41E-05

UMETCO MINERALS CORPORATION

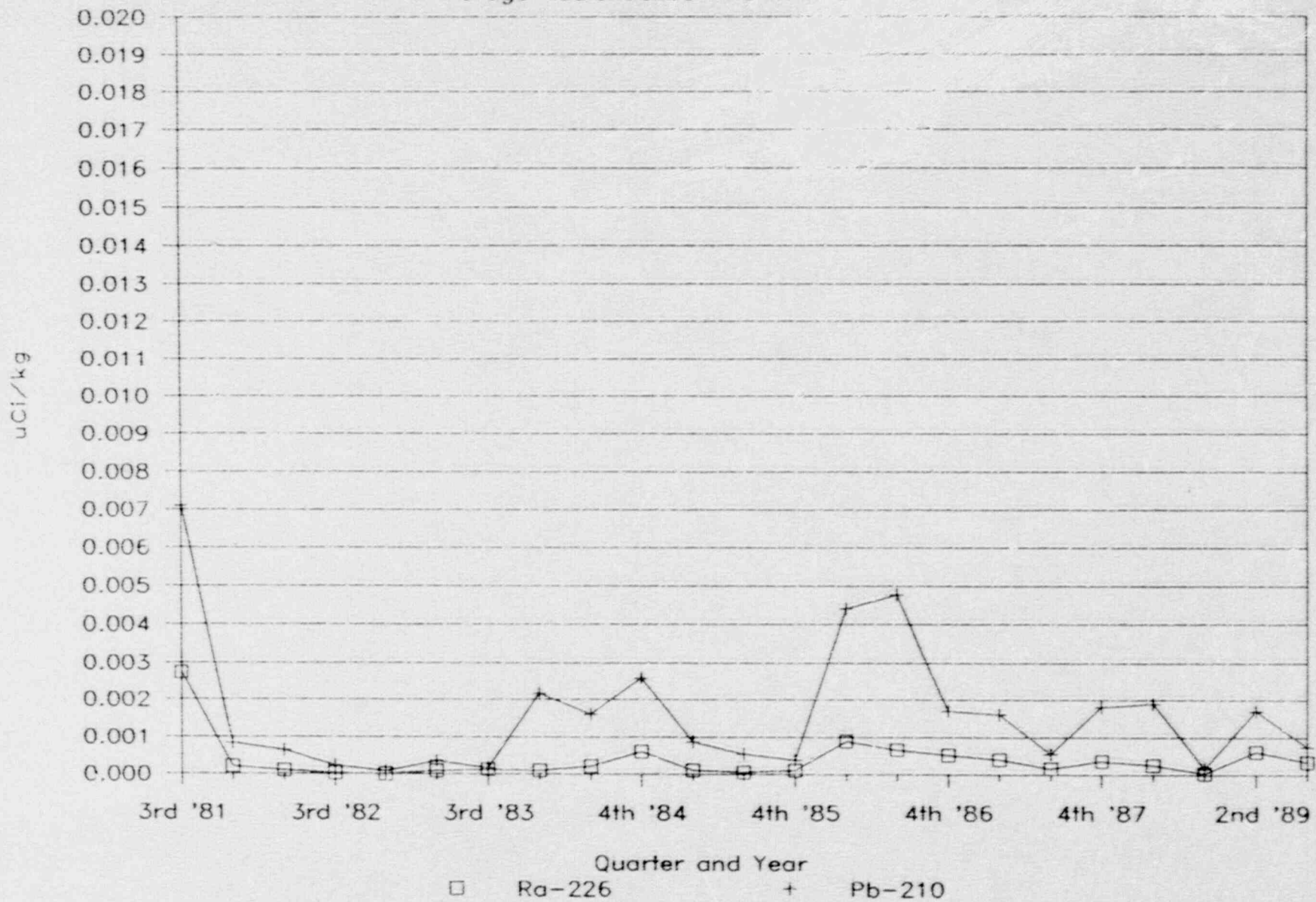
Forage Radionuclide- South West of Mill



Graph 8

UMETCO MINERALS CORPORATION

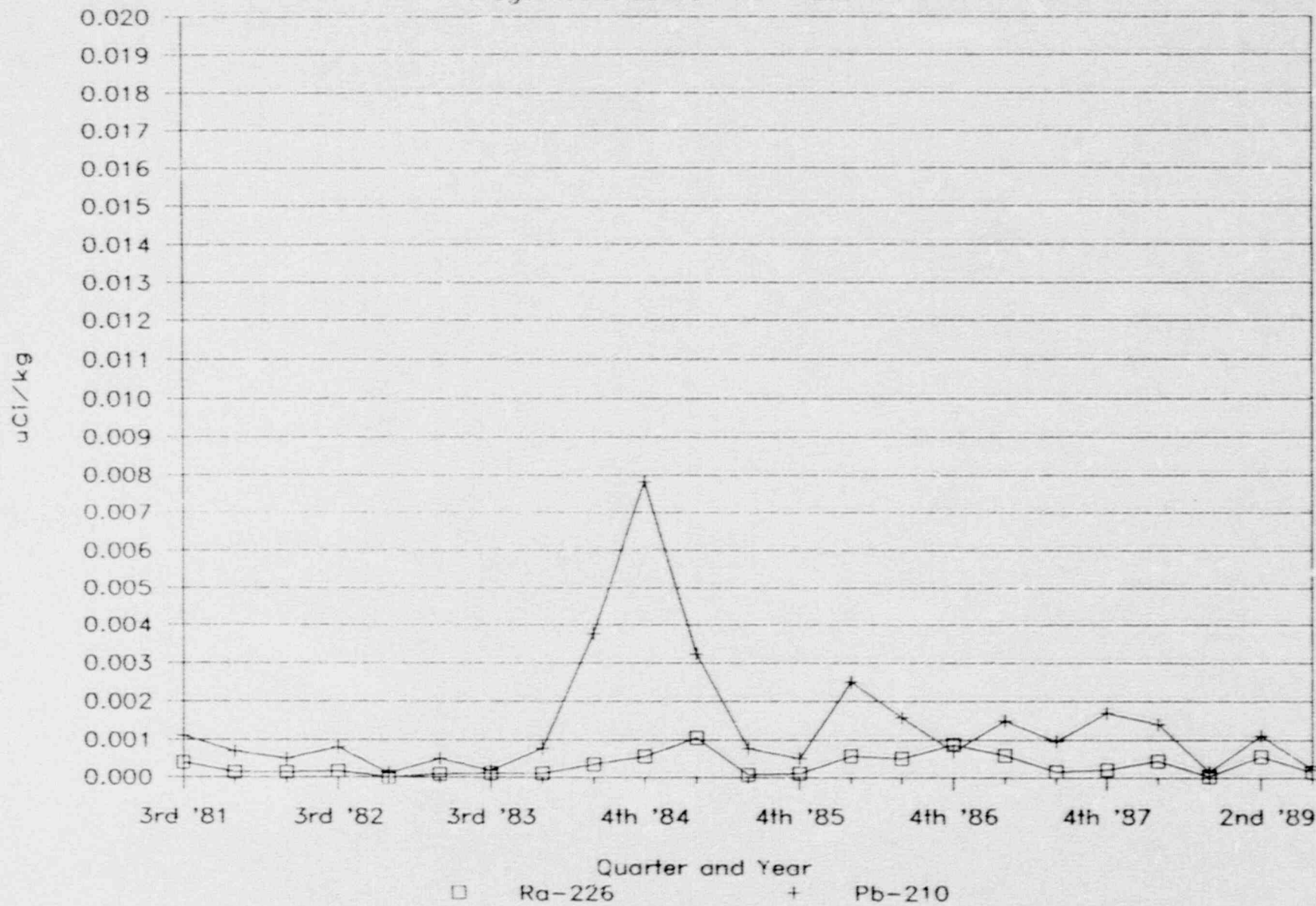
Forage Radionuclide - North West of Mill



Graph 9

UMETCO MINERALS CORPORATION

Forage Radionuclide- North East of Mill



Graph 10

TABLE 11

UMETCO MINERALS CORPORATION
WHITE MESA MILL
AMBIENT AIR RADIONUCLIDE PARTICULATES

UCI/mi

LOCATION: BHV-1

Current Quarter 1st 2nd 3rd 4th
% time operated 89.5% 87.4%
Air Volume, SCF x 10⁶ 5.10 4.48

URANIUM NAT.

THORIUM- 230

RADIUM- 226

LEAD -210

PERIOD ENDING	GROSS CONC.	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (2E-15)	% MPC
28-Sep-81	2.35E-15	5E-17	4.70E-02	7.82E-16	2.75E-16	1E-16	2.61E-01	1.06E-15	1.24E-16	1E-16	5.30E-02	2.57E-14	1.53E-15	2E-15	3.21E-01
14-Oct-81	1.56E-15	5E-17	3.12E-02	1.49E-15	2.10E-16	1E-16	4.97E-01	1.93E-15	3.34E-16	1E-16	9.65E-02	2.64E-14	2.28E-15	2E-15	3.30E-01
29-Mar-82	2.16E-15	9E-16	4.32E-02	2.93E-15	1.15E-15	3E-15	9.77E-01	1.16E-15	5.78E-16	4E-15	5.80E-02	2.09E-14	2.76E-15	2E-14	2.61E-01
30-Jun-82	4.69E-15	1E-16	9.38E-02	3.46E-15	3.28E-16	1E-16	1.15E-00	2.38E-15	4.77E-16	5E-16	1.19E-01	2.14E-14	3.70E-15	5E-15	2.68E-01
27-Sep-82	4.43E-15	1E-16	8.90E-02	3.29E-15	4.76E-16	1E-16	1.10E-00	3.23E-15	4.03E-16	1E-16	1.62E-01	1.99E-14	3.60E-15	2E-15	2.49E-01
03-Jan-83	4.39E-15	5E-17	8.78E-02	5.91E-16	1.34E-16	7E-17	1.97E-01	9.14E-16	1.03E-16	6E-17	4.57E-02	4.87E-14	2.70E-15	2E-15	6.09E-01
04-Apr-83	7.51E-16	5E-17	1.50E-02	2.13E-16	3.05E-17	2E-17	7.10E-02	3.20E-17	7.63E-17	5E-17	1.60E-02	1.88E-14	1.00E-15	9E-16	2.35E-01
30-Jun-83	2.68E-16	5E-17	5.36E-03	6.92E-16	1.32E-16	9E-17	2.31E-01	7.92E-16	1.32E-16	1E-16	3.96E-02	2.00E-14	2.00E-15	1E-15	2.50E-01
03-Oct-83	Sample Lost														
03-Jan-84	2.87E-15	1E-16	5.74E-02	1.14E-16	4.98E-17	8E-17	3.80E-02	1.79E-16	7.69E-17	1E-16	8.95E-03	1.06E-14	1.99E-15	2E-15	1.33E-01
02-Apr-84	1.59E-15	5E-17	3.18E-02	3.40E-16	1.01E-16	3E-17	1.13E-01	3.71E-16	7.80E-17	7E-17	1.86E-02	3.34E-14	1.59E-15	1E-15	4.18E-01
02-Jul-84	3.10E-15	6E-17	6.20E-02	1.00E-15	3.59E-16	3E-16	3.33E-01	2.09E-15	2.29E-16	1E-16	1.05E-01	1.88E-14	1.10E-15	9E-16	2.35E-01
01-Oct-84	6.42E-16	5E-17	1.28E-02	1.39E-16	1.17E-16	7E-17	4.63E-02	1.94E-16	1.11E-16	9E-17	9.70E-03	1.85E-14	1.39E-15	1E-15	2.31E-01
02-Jan-85	5.06E-16	5E-16	1.01E-02	4.56E-16	2.26E-16	2E-16	1.52E-01	3.49E-16	1.32E-16	1E-16	1.75E-02	3.03E-14	1.17E-15	7E-16	3.79E-01
01-Apr-85	0.00E+00	5E-17	0.00E+00	1.23E-15	2.52E-16	4E-17	4.10E-01	4.88E-16	1.09E-16	9E-17	2.44E-02	8.06E-15	8.99E-16	8E-16	1.01E-01
01-Jul-85	7.17E-16	5E-17	1.43E-02	0.00E+00	4.76E-14	1E-16	0.00E+00	1.05E-15	1.50E-16	7E-17	5.25E-02	2.15E-14	1.32E-15	8E-16	2.69E-01
30-Sep-85	6.13E-16	5E-16	1.23E-02	1.18E-16	1.18E-16	1E-16	3.95E-02	3.71E-16	8.56E-17	7E-17	1.95E-02	3.64E-15	6.61E-16	9E-16	4.55E-02
02-Jan-86	3.42E-15	9E-16	6.84E-02	4.74E-16	1.32E-16	2E-16	1.58E-01	1.22E-16	2.15E-15	2E-16	6.11E-03	5.00E-16	3.22E-16	2E-15	6.25E-03
01-Apr-86	3.98E-15	2E-18	7.96E-02	9.74E-16	2.05E-16	5E-18	3.25E-01	1.50E-15	2.07E-16	4E-18	7.51E-02	1.41E-14	4.06E-16	1E-16	1.76E-01
30-Jun-86	1.93E-15	1E-17	3.87E-02	3.22E-16	3.13E-17	2E-18	1.17E-01	1.37E-15	3.01E-17	4E-18	6.87E-02	1.23E-14	6.01E-16	5E-16	1.54E-01
15-Dec-86	1.67E-15	2E-18	3.98E-02	3.06E-16	8.00E-17	3E-18	1.02E-01	1.25E-15	1.00E-16	2E-18	6.25E-02	1.08E-14	2.00E-16	4E-18	1.71E-01
16-Mar-87	2.33E-15	3E-18	4.66E-02	4.30E-16	9.00E-17	6E-18	1.43E-01	5.98E-16	5.00E-17	4E-17	2.99E-02	1.37E-14	2.00E-16	3E-17	1.71E-01
11-May-87	2.36E-15	5E-18	4.72E-02	7.69E-16	1.60E-16	5E-18	2.56E-01	8.76E-16	1.00E-16	5E-18	9.60E-03	5.99E-14	1.00E-16	8E-18	6.99E-01
09-Sep-87	2.27E-15	1E-19	4.54E-02	2.44E-15	2.00E-16	6E-18	8.13E-01	8.51E-16	1.40E-16	4E-18	4.26E-02	3.14E-14	5.00E-16	3E-17	1.81E-01
16-Nov-87	2.75E-15	5E-17	5.50E-02	2.46E-15	3.00E-16	1E-17	8.20E-01	1.34E-15	2.00E-16	1E-17	6.70E-02	2.79E-14	1.00E-15	5E-17	3.49E-01
16-Feb-88	1.07E-15	5E-18	4.12E-02	1.47E-16	5.00E-17	2E-17	4.90E-02	4.44E-16	5.00E-17	3E-17	2.22E-02	4.01E-14	2.00E-16	3E-17	5.01E-01
18-May-88	1.98E-15	3E-18	3.96E-02	1.25E-15	1.00E-16	2E-17	4.17E-01	6.40E-16	7.00E-17	1E-17	3.20E-02	1.07E-14	1.00E-16	3E-17	1.34E-01
15-Aug-88	2.06E-15	3E-18	4.12E-02	3.41E-15	2.00E-16	1E-17	1.14E-00	5.08E-16	6.00E-17	2E-17	2.54E-02	1.62E-14	3.00E-16	2E-17	2.03E-01
14-Nov-88	3.94E-15	3E-18	7.88E-02	2.12E-15	1.00E-16	1E-17	7.07E-01	1.01E-15	5.00E-17	1E-17	5.05E-02	2.47E-14	1.00E-16	3E-17	3.09E-01
13-Feb-89	1.99E-15	4E-17	3.98E-02	5.73E-16	7.88E-17	1E-16	1.91E-01	5.99E-16	3.49E-17	2E-16	3.00E-02	3.23E-14	2.36E-16	5E-16	4.04E-01
15-May-89	1.70E-15	7E-18	3.40E-02	6.32E-16	7.00E-17	7E-18	2.11E-01	5.86E-15	5.00E-17	7E-18	2.93E-02	6.16E-15	1.00E-16	3E-17	7.70E-02

TABLE 12

UMETCO MINERALS CORPORATION
WHITE MESA MILL
AMBIENT AIR RADIONUCLIDE PARTICULATES

UCI/mi

LOCATION: BHV-2

Current Quarter 1st 2nd 3rd 4th
% time operated 81.3% 91.2%
Air Volume, SCF x 10⁶ 4.77 4.57

URANIUM NAT. THORIUM-230 RADIUM-226 LEAD-210

PERIOD ENDING	GROSS CONC.	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (2E-15)	% MPC
28-SEP-81	1.39E-15	1E-16	2.78E-02	3.69E-16	2.00E-16	1E-16	1.23E-01	5.92E-16	1.35E-16	1E-16	2.96E-02	1.67E-14	1.21E-15	2E-15	2.09E-01
14-DEC-81	4.62E-16	1E-16	9.24E-03	8.03E-16	3.03E-16	1E-16	2.68E-01	3.62E-16	1.72E-16	1E-16	1.81E-02	1.33E-14	2.28E-15	2E-15	1.66E-01
29-MAR-82	7.07E-16	9E-16	1.41E-02	1.10E-15	6.49E-16	3E-15	3.67E-01	7.27E-16	3.96E-16	4E-15	3.64E-02	1.52E-14	3.63E-15	2E-14	1.90E-01
30-JUN-82	8.84E-16	7E-17	1.77E-02	7.73E-16	2.39E-16	8E-17	2.58E-01	4.78E-16	1.69E-16	3E-16	2.39E-02	1.98E-14	1.79E-15	2E-15	2.48E-01
27-SEP-82	1.23E-15	1E-16	2.46E-02	3.60E-16	1.35E-16	1E-16	1.20E-01	8.73E-16	2.71E-16	1E-16	4.37E-02	2.35E-14	5.43E-15	2E-15	2.94E-01
03-JAN-83	2.64E-15	5E-17	5.28E-02	2.55E-16	1.03E-16	5E-17	8.50E-02	1.98E-16	5.66E-17	5E-17	9.90E-03	2.85E-14	2.50E-15	2E-15	3.56E-01
04-APR-83	2.14E-16	5E-17	4.28E-03	1.02E-16	3.96E-17	5E-17	3.40E-02	1.57E-16	7.63E-17	5E-17	7.85E-03	2.48E-14	1.19E-15	8E-16	3.10E-01
30-JUN-83	2.85E-16	5E-17	5.70E-03	2.06E-16	5.05E-17	8E-17	6.87E-02	2.24E-16	8.68E-17	1E-16	1.12E-02	1.79E-14	9.94E-16	8E-16	2.24E-01
03-OCT-83	2.70E-16	5E-17	5.40E-03	3.36E-16	6.49E-17	4E-17	1.12E-01	4.37E-16	9.81E-17	5E-17	2.19E-02	1.78E-14	1.09E-15	4E-16	2.23E-01
03-JAN-84	2.78E-15	1E-16	5.56E-02	1.20E-16	1.11E-16	1E-16	4.00E-02	6.64E-17	4.53E-18	6E-17	3.32E-03	9.14E-15	1.46E-15	2E-15	1.14E-01
02-APR-84	4.28E-16	5E-17	8.56E-03	1.75E-16	5.18E-17	5E-17	5.83E-02	4.57E-17	5.03E-17	8E-17	2.29E-03	3.55E-14	1.79E-15	2E-15	4.44E-01
02-JUL-84	2.78E-15	5E-17	5.56E-02	8.12E-16	3.35E-16	0E+00	2.71E-01	1.98E-16	1.00E-16	1E-16	9.90E-03	1.68E-14	1.20E-01	1E-15	2.10E-01
01-OCT-84	2.69E-16	5E-17	5.38E-03	2.65E-17	8.02E-17	1E-16	8.87E-03	0.00E+00	1.17E-16	1E-16	0.00E+00	1.77E-14	1.22E-15	9E-16	2.21E-01
01-APR-85	0.00E+00	5E-17	4.30E-03	7.55E-16	2.03E-16	9E-17	2.52E-01	2.87E-16	1.14E-16	1E-16	1.44E-02	3.19E-14	1.35E+00	1E-15	3.99E-01
01-JUL-85	3.70E-17	5E-17	7.40E-04	9.00E-16	4.76E-14	3E-16	3.00E-01	4.90E-17	1.05E-16	8E-17	3.38E-03	7.56E-15	8.83E-16	1E-15	1.64E-01
30-SEP-85	9.32E-17	5E-16	1.86E-03	2.18E-16	4.63E-17	3E-16	7.26E-02	3.71E-16	4.64E-17	7E-17	1.86E-02	3.64E-15	2.85E-16	2E-15	4.55E-02
02-JAN-86	1.56E-15	1E-15	3.12E-02	2.16E-16	1.12E-15	7E-16	7.20E-02	2.15E-17	2.31E-16	2E-16	1.08E-02	3.04E-16	1.71E-15	2E-15	3.80E-03
01-APR-86	1.31E-15	2E-18	2.61E-02	1.50E-16	7.18E-17	5E-18	5.00E-02	3.71E-16	8.45E-17	4E-18	1.85E-02	2.90E-15	2.10E-16	9E-17	3.63E-02
30-JUN-86	2.23E-16	1E-17	4.47E-03	1.32E-16	4.32E-17	2E-17	4.39E-02	7.09E-17	8.61E-18	4E-18	3.55E-03	2.53E-14	2.60E-15	3E-15	3.16E-01
17-OCT-86	6.41E-16	1E-18	1.28E-02	1.74E-16	4.00E-17	2E-18	5.80E-02	3.67E-16	1.00E-16	1E-18	1.84E-02	1.04E-14	2.00E-16	3E-18	1.30E-01
25-DEC-86	3.56E-16	3E-18	7.12E-03	0.00E+00	2.00E-17	2E-17	0.00E+00	1.05E-16	5.00E-17	3E-17	5.25E-03	7.81E-15	1.00E-16	3E-17	9.76E-02
16-MAR-87	5.31E-16	3E-18	1.06E-02	1.30E-16	4.00E-17	5E-18	4.33E-02	7.74E-17	3.00E-17	4E-18	3.87E-03	3.80E-14	1.00E-15	6E-18	4.75E-01
11-MAY-87	4.06E-16	4E-18	8.12E-03	6.63E-17	7.00E-17	4E-18	2.21E-02	1.34E-16	4.00E-17	2E-17	6.70E-03	1.10E-14	3.00E-16	2E-17	1.38E-01
09-SEP-87	2.74E-16	8E-18	5.48E-03	2.38E-16	5.00E-17	6E-17	7.93E-02	1.38E-16	6.00E-17	2E-17	9.15E-03	1.04E-14	3.00E-16	1E-16	1.30E-01
16-FEB-88	2.78E-15	1E-17	7.46E-03	2.31E-17	8.00E-17	6E-18	1.04E-01	1.83E-16	7.00E-17	6E-17	9.15E-03	1.17E-14	2.00E-16	3E-17	1.46E-01
18-MAY-88	4.63E-16	3E-18	9.26E-03	1.49E-16	5.00E-17	2E-17	4.97E-02	2.30E-16	6.00E-17	3E-17	6.00E-03	3.55E-14	2.00E-16	5E-17	4.44E-01
15-AUG-88	8.06E-16	3E-18	1.61E-02	8.69E-16	1.50E-16	1E-17	2.90E-01	1.80E-16	4.00E-17	2E-17	1.15E-02	1.18E-14	2.00E-16	4E-17	1.48E-01
14-NOV-88	4.34E-16	3E-18	8.68E-03	6.76E-16	6.00E-17	1E-17	2.25E-01	1.57E-16	3.00E-17	1E-17	7.85E-03	2.25E-14	2.00E-16	2E-17	1.78E-01
13-FEB-89	5.80E-16	4E-17	1.16E-02	2.85E-16	3.09E-17	4E-17	9.50E-02	1.55E-16	2.32E-17	2E-16	7.75E-03	2.80E-14	2.32E-16	5E-16	2.81E-01
15-MAY-89	5.06E-16	7E-18	1.01E-02	2.28E-16	7.00E-17	7E-18	7.60E-02	1.63E-16	3.00E-17	7E-18	8.15E-03	6.05E-15	1.00E-16	4E-17	7.56E-02

TABLE 13

UMETCO MINERALS CORPORATION
 WHITE MESA MILL
 AMBIENT AIR RADIONUCLIDE PARTICULATES
 (Ci/m)

LOCATION: BHV-3

Current Quarter 1st 2nd 3rd 4th
 % time operated 89.0% 87.3%
 Air Volume, SCF x 10⁶ 5.20 4.29

URANIUM NAT. THORIUM-230 RADIUM-226 LEAD-210

PERIOD ENDING	GROSS CONC.	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (2E-15)	% MPC
28-Sep-81	1.74E-15	1E-16	3.48E-02	9.03E-02	4.46E-16	1E-16	3.01E-01	2.87E-16	2.23E-16	1E-16	1.44E-02	1.54E-14	2.53E-15	2E-15	1.93E-01
14-Dec-81	1.59E-15	1E-16	3.18E-02	5.03E-02	3.09E-16	1E-16	1.69E-01	1.30E-16	1.38E-16	1E-16	6.50E-03	2.75E-14	2.13E-15	2E-15	2.81E-01
29-Mar-82	3.76E-16	9E-16	7.52E-03	5.35E-16	6.38E-16	3E-15	1.75E-01	4.08E-16	3.72E-16	4E-15	2.04E-02	1.96E-14	3.48E-15	2E-14	2.45E-01
30-Jun-82	3.83E-16	5E-17	7.66E-03	2.16E-16	2.24E-16	6E-17	7.20E-02	1.41E-15	1.03E-15	2E-16	7.05E-02	2.40E-14	2.10E-15	2E-15	3.00E-01
27-Sep-82	5.93E-16	1E-16	1.19E-02	1.44E-15	2.74E-16	1E-16	4.80E-01	5.36E-16	2.35E-16	1E-16	2.68E-02	1.43E-14	3.00E-15	2E-15	1.79E-01
03-Jan-83	2.05E-16	5E-17	4.10E-03	1.23E-16	3.11E-17	2E-17	4.10E-02	1.10E-16	5.52E-17	7E-17	5.50E-03	3.01E-14	2.10E-15	2E-15	3.76E-01
04-Apr-83	Lost in Lab														
30-Jun-83	3.06E-16	1E-16	6.12E-03	6.94E-17	2.31E-17	5E-17	2.31E-02	6.11E-17	5.95E-17	8E-17	3.06E-03	1.39E-14	1.00E-15	1E-15	1.74E-01
03-Oct-83	1.91E-16	1E-16	3.82E-03	3.05E-16	4.98E-17	2E-16	3.20E-02	2.08E-16	1.62E-16	2E-16	1.04E-02	1.70E-14	2.00E-15	2E-15	2.13E-01
03-Jan-84	3.01E-16	1E-16	6.02E-03	9.51E-17	6.19E-17	6E-18	1.02E-01	2.79E-16	5.73E-17	1E-17	1.40E-02	1.76E-14	4.83E-16	1E-16	2.20E-01
02-Apr-84	8.22E-16	5E-17	1.64E-02	7.52E-16	1.72E-16	1E-16	3.17E-02	0.00E+00	5.73E-17	1E-16	0.00E+00	9.17E-15	5.10E-16	5E-16	1.15E-01
02-Jul-84	5.29E-16	5E-17	1.06E-02	6.18E-16	7.89E-16	8E-16	2.06E-01	1.40E-16	9.15E-17	1E-16	2.60E-03	3.47E-14	1.70E-15	1E-15	4.34E-01
01-Oct-84	1.74E-16	5E-17	3.48E-03	7.10E-17	6.16E-17	4E-17	2.37E-02	0.00E+00	9.15E-17	1E-16	0.00E+00	1.08E-14	1.22E-15	1E-14	1.65E-01
02-Jan-85	1.00E-17	5E-16	2.00E-04	7.10E-17	1.27E-16	7E-17	2.37E-02	7.80E-17	9.35E-17	7E-17	3.90E-03	2.73E-14	1.26E-15	8E-16	3.41E-01
01-Apr-85	0.00E+00	5E-17	0.00E+00	2.76E-16	2.02E-16	7E-17	9.20E-02	4.10E-17	6.82E-17	6E-17	2.05E-03	1.12E-14	9.33E-16	8E-16	1.40E-01
01-Jul-85	1.04E-16	5E-17	2.08E-03	0.00E+00	4.76E-14	4E-16	0.00E+00	0.00E+00	9.36E-17	6E-17	0.00E+00	1.64E-14	1.24E-15	8E-16	2.05E-01
30-Sep-85	0.00E+00	5E-16	0.00E+00	1.00E-15	1.31E-16	7E-17	3.34E-01	0.00E+00	4.66E-17	7E-17	0.00E+00	1.73E-14	1.01E-15	8E-16	2.16E-01
02-Jan-86	1.03E-15	1E-15	2.06E-02	3.17E-16	3.71E-15	4E-15	1.06E-01	1.25E-16	4.49E-16	3E-16	6.25E-03	1.21E-17	3.51E-15	4E-15	1.51E-04
01-Apr-86	8.04E-16	2E-18	1.61E-02	1.93E-17	6.94E-17	6E-18	6.42E-03	1.54E-16	8.33E-17	4E-18	7.71E-03	1.69E-14	4.07E-16	1E-16	2.12E-01
30-Jun-86	4.29E-16	1E-17	8.58E-03	1.77E-16	2.18E-17	1E-17	5.89E-02	2.83E-16	1.72E-17	5E-18	1.42E-02	1.97E-14	1.50E-15	2E-15	2.46E-01
27-Oct-86	6.45E-16	1E-18	1.29E-02	9.89E-17	4.00E-17	2E-18	3.30E-02	4.16E-15	1.00E-16	2E-18	2.08E-01	1.64E-14	2.00E-16	4E-18	2.05E-01
15-Dec-86	1.31E-16	3E-18	2.62E-03	0.00E+00	2.00E-17	2E-17	0.00E+00	4.16E-17	4.00E-17	3E-17	2.08E-03	4.60E-15	1.00E-16	3E-17	2.00E-01
16-Mar-87	2.01E-16	3E-18	4.02E-03	1.20E-16	4.00E-17	5E-18	4.00E-02	5.73E-17	3.00E-17	4E-18	2.87E-03	1.60E-14	1.00E-15	6E-18	2.00E-01
11-May-87	2.16E-16	4E-18	4.32E-03	1.96E-16	9.00E-17	4E-18	6.53E-02	7.38E-17	3.00E-17	4E-18	3.69E-03	1.59E-14	2.00E-16	2E-17	1.99E-01
09-Sep-87	2.41E-16	2E-17	4.82E-03	2.18E-16	1.50E-16	2E-16	7.27E-02	3.52E-17	1.10E-16	7E-17	1.76E-03	1.46E-14	1.00E-15	1E-16	1.83E-01
02-Nov-87	2.44E-16	4E-17	4.88E-03	2.32E-16	6.00E-17	4E-18	7.73E-02	2.37E-17	3.00E-17	4E-17	1.18E-03	2.48E-14	5.00E-16	2E-17	1.70E-01
16-Feb-88	8.08E-16	6E-18	1.62E-02	2.55E-16	6.00E-17	2E-17	8.50E-02	3.42E-16	5.00E-17	3E-17	1.71E-02	5.61E-14	3.00E-16	6E-17	7.01E-01
18-May-88	1.14E-16	3E-18	2.28E-03	4.14E-17	1.00E-16	1E-17	1.38E-02	0.00E+00	4.00E-17	1E-17	0.00E+00	1.20E-14	1.00E-16	4E-17	1.50E-01
15-Aug-88	2.08E-16	3E-18	4.16E-03	3.06E-16	8.00E-17	1E-17	1.02E-01	3.65E-17	3.10E-17	2E-17	1.83E-03	1.36E-14	2.00E-16	2E-17	1.70E-01
14-Nov-88	4.21E-16	3.00E-18	8.42E-03	2.93E-16	3.00E-17	1.00E-17	9.77E-02	1.09E-16	2.00E-17	1.00E-17	5.45E-03	2.48E-14	1.00E-16	3.10E-01	3.10E-01
13-Feb-89	4.43E-16	4.0E-17	8.90E-03	4.78E-17	1.65E-17	1.02E-16	1.59E-02	2.47E-17	1.65E-17	1.02E-16	1.24E-03	3.34E-14	3.29E-16	5.10E-16	4.18E-01
15-May-89	1.05E-16	1.00E-18	2.10E-03	0.00E+00	1.60E-17	7.00E-18	0.00E+00	2.45E-17	1.40E-17	7.00E-18	1.23E-03	6.56E-15	1.00E-16	3.00E-17	8.20E-02

TABLE 14

UMETCO MINERALS CORPORATION
 WHITE MESA MILL
 AMBIENT AIR RADIONUCLIDE PARTICULATES
 UCI/ml
 LOCATION: BHV-4

Current Quarter
 % time operated 87.1% 71.5%
 Air Volume, SCF x 1e6 4.82 3.46

PERIOD ENDING	URANIUM NAT.			THORIUM- 230				RADIUM- 226				LEAD -210			
	GROSS CONC.	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (2E-15)	% MPC
28-Sep-81	5.20E-15	1E-16	1.04E-01	3.21E-15	5.70E-16	1E-16	1.07E+00	2.74E-15	6.15E-16	1E-16	1.37E-01	1.84E-14	2.72E-15	2E-15	2.30E-01
14-Dec-81	4.53E-15	1E-16	9.06E-02	2.93E-15	5.09E-16	1E-16	9.77E-01	2.29E-15	3.34E-16	1E-16	1.15E-01	2.54E-14	2.13E-15	2E-15	3.18E-01
29-Mar-82	1.06E-15	9E-16	2.12E-02	1.78E-15	1.12E-15	3E-15	5.93E-01	1.07E-15	4.71E-16	4E-15	5.35E-02	2.31E-14	4.16E-15	2E-14	2.89E-01
30-Jun-82	6.03E-15	6E-17	1.21E-01	1.42E-14	1.19E-15	6E-17	4.73E+00	2.62E-15	3.09E-16	3E-16	1.31E-01	2.25E-14	3.00E-15	2E-15	2.81E-01
27-Sep-82	1.26E-14	1E-16	2.52E-01	1.57E-14	7.17E-15	1E-16	5.23E+00	5.35E-15	5.47E-16	1E-16	2.68E-01	2.68E-14	3.69E-15	2E-15	3.35E-01
03-Jan-83	4.33E-15	5E-17	8.66E-02	7.58E-16	1.16E-16	5E-17	2.53E-01	6.04E-16	9.15E-17	6E-17	3.02E-02	2.57E-14	1.90E-15	2E-15	3.21E-01
04-Apr-83	1.25E-15	5E-17	2.50E-02	6.52E-16	5.55E-17	5E-17	2.17E-01	6.76E-16	1.36E-16	1E-16	3.38E-02	2.00E-14	1.09E-15	9E-16	2.50E-01
30-Jun-83	3.73E-16	1E-16	7.46E-03	7.17E-16	2.14E-16	2E-16	2.39E-01	4.13E-16	1.88E-16	2E-16	2.07E-02	1.20E-14	2.00E-15	2E-15	1.50E-01
03-Oct-83	2.54E-16	4E-17	5.08E-03	9.43E-16	1.13E-16	2E-17	3.14E-01	2.65E-16	5.73E-17	3E-17	1.33E-02	2.50E-14	1.14E-15	4E-16	3.13E-01
03-Jan-84	2.76E-15	1E-16	5.54E-02	1.51E-16	3.92E-17	4E-17	5.73E-02	1.05E-16	6.79E-17	9E-17	5.25E-03	1.59E-16	8.00E-16	6E-16	1.99E-03
02-Apr-84	4.77E-16	5E-17	8.54E-03	1.60E-16	9.05E-17	1E-16	5.33E-02	6.28E-16	9.83E-17	8E-17	3.14E-02	3.67E-14	1.79E-05	1E-15	4.59E-01
02-Jul-84	2.57E-15	5E-17	5.14E-02	2.33E-16	1.03E-16	8E-17	7.77E-02	1.11E-16	7.93E-17	1E-16	5.55E-03	1.58E-14	1.09E-15	1E-15	1.98E-01
01-Oct-84	4.18E-16	5E-17	8.36E-03	1.36E-16	6.57E-17	4E-17	4.53E-02	1.10E-17	9.55E-17	8E-17	5.50E-04	9.83E-15	1.43E-15	2E-15	1.23E-01
02-Jan-85	5.30E-17	5E-16	1.06E-03	3.54E-16	1.60E-16	5E-17	1.18E-01	7.00E-18	8.98E-17	7E-17	3.50E-04	2.57E-14	1.46E-15	1E-15	3.21E-01
01-Apr-85	0.00E+00	5E-17	0.00E+00	3.55E-17	1.97E-16	1E-16	1.18E-02	4.35E-17	6.66E-17	5E-17	2.18E-03	5.02E-15	8.76E+00	9E-16	6.28E-02
01-Jul-85	9.36E-16	5E-17	1.87E-02	6.00E-16	4.76E-14	6E-16	2.00E-01	2.36E-16	1.14E-16	7E-17	1.18E-02	7.48E-15	1.08E-15	9E-16	9.35E-02
30-Sep-85	1.46E-15	6E-16	2.91E-02	2.33E-16	8.01E-17	7E-17	7.78E-02	5.38E-16	1.09E-16	9E-17	2.69E-02	7.86E-15	7.50E-16	8E-16	9.83E-02
02-Jan-86	8.40E-15	2E-15	1.68E-01	7.69E-16	1.80E-15	1E-15	2.56E-01	2.99E-16	8.13E-16	3E-16	1.50E-02	2.12E-14	2.60E-14	5E-15	2.65E-01
01-Apr-86	5.79E-15	2E-18	1.16E-01	7.60E-16	9.96E-17	5E-18	2.53E-01	1.34E-15	5.50E-17	4E-18	6.71E-02	1.33E-14	3.08E-16	1E-16	1.66E-01
30-Jun-86	5.19E-15	1E-17	1.04E-01	5.80E-16	3.73E-17	4E-18	1.93E-01	2.20E-15	4.00E-17	5E-18	1.10E-01	7.14E-16	7.89E-16	1E-15	8.93E-03
27-Oct-86	4.60E-15	1E-18	9.20E-02	7.83E-16	1.10E-16	2E-18	2.61E-01	2.37E-15	1.00E-16	1E+16	1.19E-01	1.13E-14	2.00E-16	3E-18	1.41E-01
15-Dec-86	2.75E-15	3E-18	5.50E-02	4.67E-16	9.00E-17	2E-17	1.56E-01	9.39E-16	1.00E-16	4E-17	4.70E-02	1.20E-14	2.00E-16	4E-17	1.50E-01
16-Mar-87	4.64E-15	3E-18	9.28E-02	5.90E-16	1.20E-16	8E-18	1.97E-01	4.97E-16	1.00E-16	6E-18	2.49E-02	5.89E-14	1.00E-15	1E-17	7.36E-01
11-May-87	4.35E-15	6E-18	8.70E-02	1.18E-15	2.00E-16	6E-18	3.93E-01	1.13E-15	1.00E-16	6E-17	5.65E-02	2.21E-14	6.00E-16	3E-17	2.76E-01
09-Sep-87	6.39E-15	8E-18	1.28E-01	1.23E-14	1.00E-15	1E-16	4.10E+00	2.26E-15	2.00E-16	4E-17	1.13E-01	1.57E-14	1.00E-15	1E-16	1.96E-01
02-Nov-87	6.72E-15	6E-18	1.34E-01	1.50E-14	1.00E-15	4E-18	5.00E+00	2.20E-15	2.00E-16	6E-18	1.10E-01	2.55E-14	1.00E-15	3E-17	3.19E-01
16-Feb-88	1.91E-15	5E-18	3.82E-02	4.53E-16	7.00E-17	2E-17	1.51E-01	4.42E-16	6.00E-17	2E-17	2.21E-02	4.44E-14	2.00E-16	5E-17	5.55E-01
18-May-88	1.78E-14	3E-18	3.56E-01	1.35E-14	3.00E-16	2E-17	4.50E+00	4.92E-16	8.00E-17	2E-17	2.46E-02	1.38E-14	2.00E-16	4E-17	1.73E-01
15-Aug-88	7.56E-15	4E-18	1.51E-01	4.39E-14	1.00E-15	1E-17	1.46E+01	1.51E-15	1.00E-16	2E-17	7.55E-02	1.97E-14	2.00E-16	2E-17	2.46E-01
14-Nov-88	1.47E-14	4E-18	2.94E-01	3.31E-14	3.00E-16	1E-17	1.10E+01	2.57E-15	1.00E-16	1E-17	1.29E-01	2.12E-14	2.00E-16	3E-17	2.65E-01
13-Feb-89	2.47E-15	4.08E-17	4.94E-02	1.56E-15	1.02E-16	1.02E-16	5.20E-01	6.94E-16	5.10E-17	2.04E-16	3.47E-02	2.12E-14	3.06E-16	5.10E-16	2.65E-01
15-May-89	2.50E-16	1E-18	5.00E-03	3.14E-15	1.00E-16	7E-18	1.05E+00	9.03E-16	7.00E-17	7E-18	4.52E-02	8.05E-15	1.00E-16	4E-17	1.01E-01

TABLE 15

UMETCO MINERALS CORPORATION
 WHITE MESA MILL
 AMBIENT AIR RADIONUCLIDE PARTICULATES
 UCI/mi

LOCATION: BHV-5

Current Quarter 1st 2nd 3rd 4th
 % time operated 96.3% 99.9%
 Air Volume, SCF x 1e6 5.53 5.05

URANIUM NAT.

THORIUM- 230

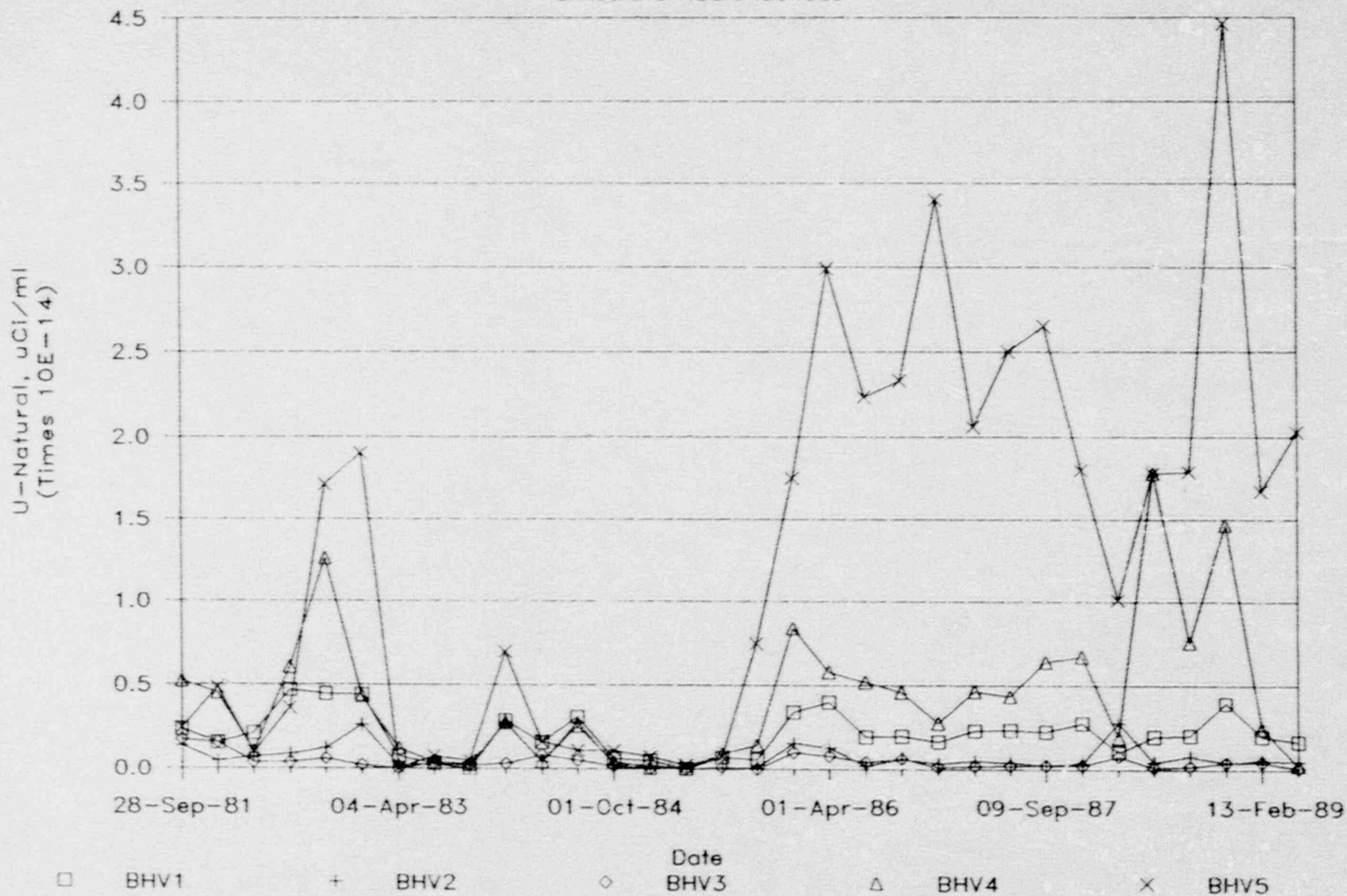
RADIUM- 226

LEAD -210

PERIOD ENDING	GROSS CONC.	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (1E-16)	% MPC	GROSS CONC.	COUNTING ERROR	LLD (2E-15)	% MPC
28-SEP-81	2.44E-15	1E-16	4.88E-02	1.53E-15	4.11E-16	1E-16	5.10E-01	7.54E-16	4.31E-16	1E-16	3.77E-02	1.69E-14	2.57E-15	2E-15	2.11E-01
14-DEC-81	4.84E-15	1E-16	9.68E-02	2.78E-15	3.56E-16	1E-16	9.27E-01	1.84E-15	2.84E-16	1E-16	9.20E-02	1.53E-14	2.28E-15	2E-15	1.91E-01
29-MAR-82	1.04E-15	9E-16	2.08E-02	2.62E-15	9.49E-16	3E-15	8.73E-01	1.11E-15	4.82E-16	4E-15	5.55E-02	2.92E-14	8.16E-15	2E-14	3.73E-01
30-JUN-82	3.61E-15	5E-17	7.22E-02	7.61E-15	9.40E-16	7E-17	2.54E+00	1.39E-15	2.19E-16	2E-16	6.95E-02	1.80E-15	1.89E-15	2E-15	2.25E-02
27-SEP-82	1.71E-14	1E-16	3.42E-01	9.46E-15	6.02E-16	1E-16	3.15E+00	3.80E-15	4.68E-16	1E-16	1.90E-01	2.35E-14	4.65E-15	2E-15	2.94E-01
03-JAN-83	1.90E-14	5E-17	3.80E-01	5.77E-15	1.99E-16	3E-17	1.92E+00	9.34E-17	3.10E-16	6E-17	4.67E-03	4.32E-14	2.80E-15	2E-15	5.40E-01
04-APR-83	LOST in LBD														
30-JUN-83	7.62E-16	5E-17	1.52E-02	3.25E-15	1.70E-16	6E-17	1.08E+00	6.28E-15	3.59E-16	1E-16	3.14E-01	2.69E-14	1.00E-15	1E-15	3.32E-01
03-OCT-83	4.86E-16	1E-16	9.72E-03	1.10E-15	3.09E-16	1E-16	3.67E-01	3.63E-16	1.08E-16	1E-16	1.82E-02	2.08E-14	1.13E-15	9E-16	2.60E-01
03-JAN-84	6.96E-15	1E-16	1.39E-01	9.59E-16	9.66E-17	5E-17	3.23E-01	9.60E-16	6.53E-17	1E-16	4.80E-02	1.83E-14	2.92E-15	2E-15	2.29E-01
02-APR-84	1.64E-15	5E-17	3.28E-02	1.34E-15	1.20E-16	7E-17	4.47E-01	3.88E-15	2.29E-16	5E-17	1.94E-01	4.67E-14	2.10E-01	1E-15	5.84E-01
02-JUL-84	1.12E-15	5E-17	2.24E-02	1.92E-15	1.69E-16	7E-17	6.40E-01	3.31E-15	2.70E-16	1E-16	1.66E-01	2.21E-14	1.20E-15	1E-16	2.76E-01
01-OCT-84	1.11E-15	5E-17	2.22E-02	3.13E-16	1.26E-16	5E-17	1.04E-01	4.21E-16	1.34E-16	1E-16	2.11E-02	1.57E-14	1.39E-15	1E-15	1.96E-01
02-JAN-85	7.32E-16	6E-16	1.46E-02	6.71E-16	1.66E-16	5E-17	2.24E-01	4.94E-16	1.35E-16	1E-16	2.47E-02	2.42E-14	1.26E-15	9E-16	3.03E-01
01-APR-85	2.36E-16	5E-17	4.72E-03	5.43E-16	2.18E-16	1E-16	1.81E-01	2.71E-16	9.00E-17	7E-17	1.36E-02	1.25E-14	1.02E-15	8E-16	1.56E-01
30-SEP-85	7.47E-15	5E-17	1.49E-01	1.16E-15	1.42E-16	8E-17	3.87E-01	6.90E-16	1.50E-16	9E-17	3.45E-02	2.15E-14	1.42E-15	9E-16	2.69E-01
02-JAN-86	1.75E-14	6E-16	3.50E-01	7.24E-15	2.20E-15	1E-15	2.41E+00	3.83E-15	3.83E-15	1E-16	1.92E-01	1.32E-16	1.11E-15	1E-15	1.15E-01
01-APR-86	2.99E-14	2E-18	5.98E-01	7.64E-15	6.30E-17	4E-18	2.55E+00	1.51E-14	5.03E-16	4E-18	7.57E-01	2.22E-14	5.04E-16	9E-17	2.78E-01
30-JUN-86	2.23E-14	1E-17	4.47E-01	5.19E-15	3.30E-16	2E-17	1.73E+00	1.03E-14	1.00E-16	4E-18	5.24E-01	2.16E-14	2.00E-15	2E-15	2.70E-01
27-OCT-86	2.33E-14	1E-18	4.66E-01	7.78E-15	3.00E-16	2E-18	2.59E+00	1.60E-14	1.00E-15	1E-18	8.00E-01	2.02E-14	2.00E-16	3E-18	2.53E-01
15-DEC-86	3.40E-14	3E-17	6.80E-01	5.33E-15	2.00E-16	2E-17	1.78E+00	1.47E-14	5.00E-16	4E-17	7.35E-01	2.82E-14	2.00E-16	3E-17	3.53E-01
16-MAR-87	2.06E-14	3E-18	4.12E-01	4.50E-15	3.00E-16	5E-18	1.50E+00	6.74E-15	2.00E-16	4E-18	3.37E-01	7.59E-14	1.00E-15	7E-18	9.11E-01
11-MAY-87	1.50E-14	5E-18	5.00E-01	8.54E-15	2.00E-16	5E-18	2.85E+00	8.15E-15	3.00E-16	5E-18	4.08E-01	3.28E-14	2.00E-16	2E-17	4.10E-01
09-SEP-87	2.65E-14	4E-18	3.30E-01	6.62E-15	3.00E-16	7E-17	2.21E+00	9.34E-15	3.00E-16	2E-17	4.67E-01	4.00E-14	4.00E-16	1E-16	3.46E-01
02-NOV-87	1.80E-14	4E-18	3.60E-01	7.09E-15	3.00E-16	4E-18	2.36E+00	7.20E-15	3.00E-16	4E-18	3.60E-01	1.77E-14	5.00E-15	2E-17	2.21E-01
16-FEB-88	1.01E-14	5E-18	2.02E-01	2.98E-15	1.00E-16	2E-17	9.93E-01	3.93E-15	1.00E-16	2E-17	1.07E-01	3.36E-14	2.00E-15	5E-17	4.20E-01
18-MAY-88	1.78E-14	3E-18	3.56E-01	8.14E-15	3.00E-16	2E-17	2.71E+00	7.43E-15	3.00E-16	2E-17	3.72E-01	2.22E-14	2.00E-16	4E-17	2.65E-01
15-AUG-88	1.79E-14	3E-18	3.58E-01	1.49E-14	1.00E-15	1E-17	4.97E+00	5.34E-15	2.00E-16	2E-17	2.67E-01	2.45E-14	3.00E-16	2E-17	3.06E-01
14-NOV-88	4.46E-14	3E-18	8.92E-01	1.39E-14	2.00E-15	1E-17	4.63E+00	1.17E-14	2.00E-16	1E-17	5.85E-01	3.43E-14	2.00E-16	3E-17	4.29E-01
13-FEB-89	1.67E-14	4E-17	3.34E-01	5.54E-15	1.03E-16	1E-16	1.85E+00	7.20E-15	1.40E-16	2E-16	3.60E-01	5.02E-14	2.10E-16	5E-16	6.28E-01
15-MAY-89	2.03E-14	1E-18	4.06E-01	7.05E-15	2.00E-16	6E-17	2.35E+00	9.56E-16	2.00E-16	6E-18	4.78E-02	1.43E-14	1.00E-16	3E-17	1.70E-01

UMETCO MINERALS CORPORATION

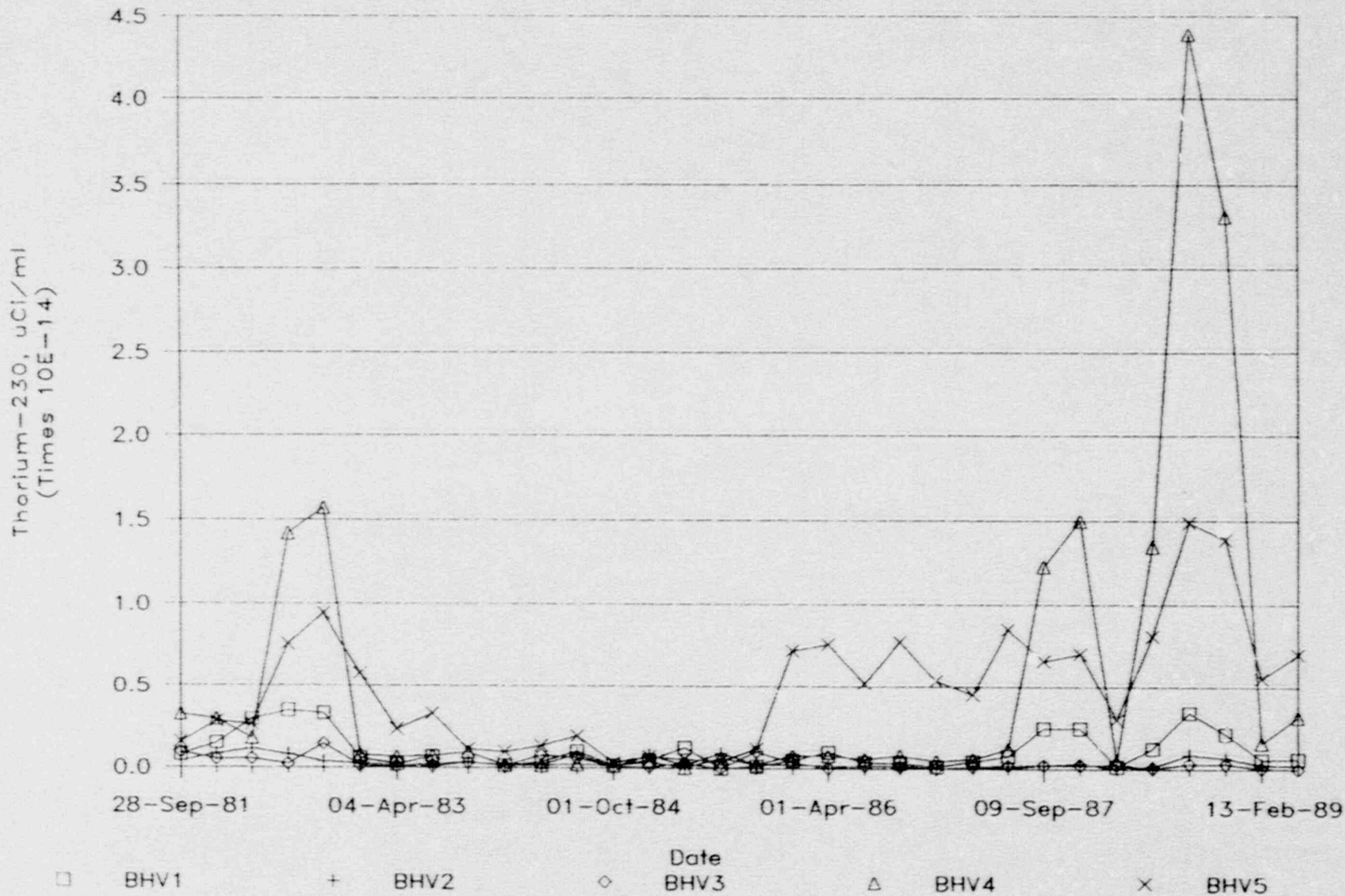
Particulate Radionuclides



Graph 11

UMETCO MINERALS CORPORATION

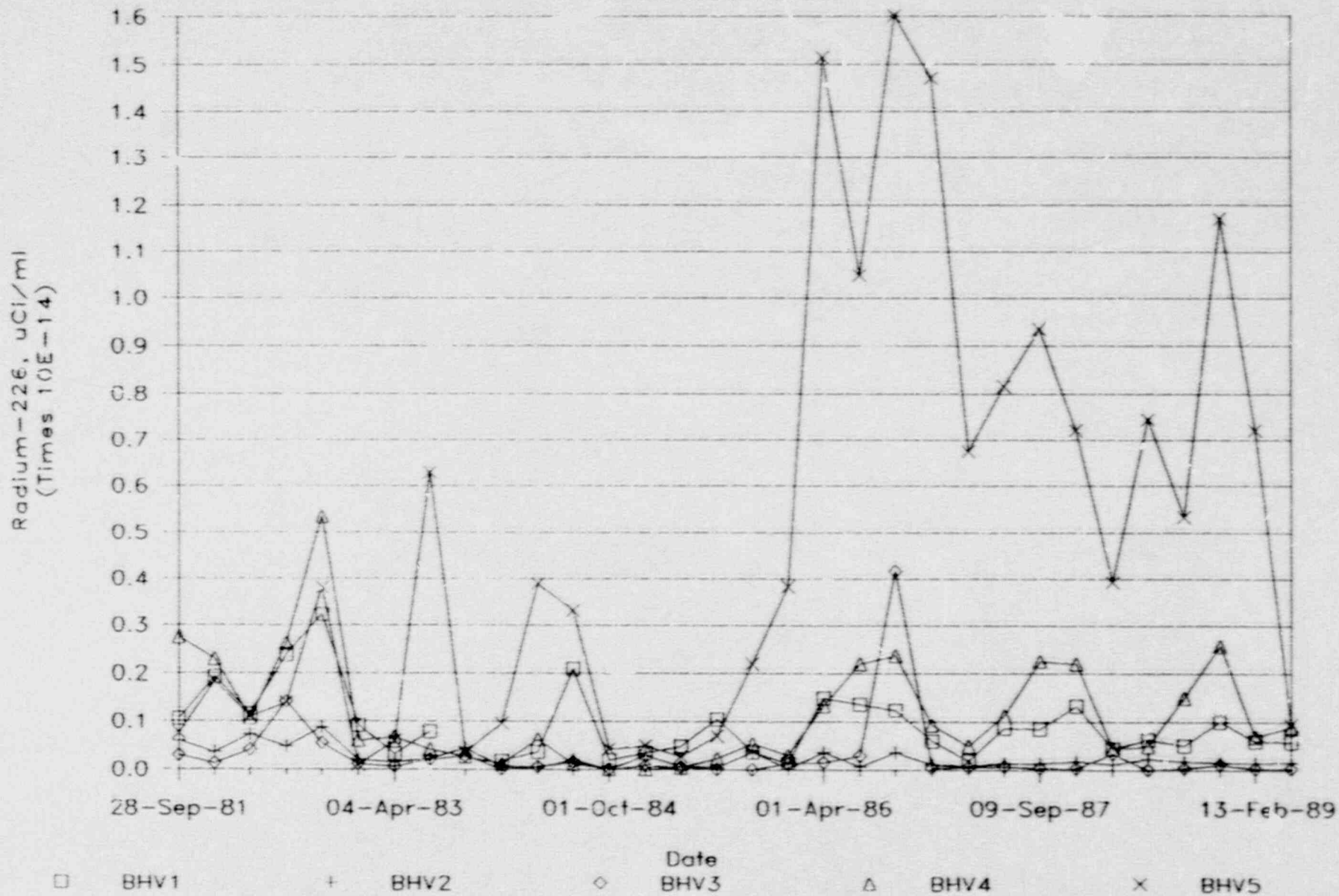
Particulate Radionuclides



Graph 12

UMETCO MINERALS CORPORATION

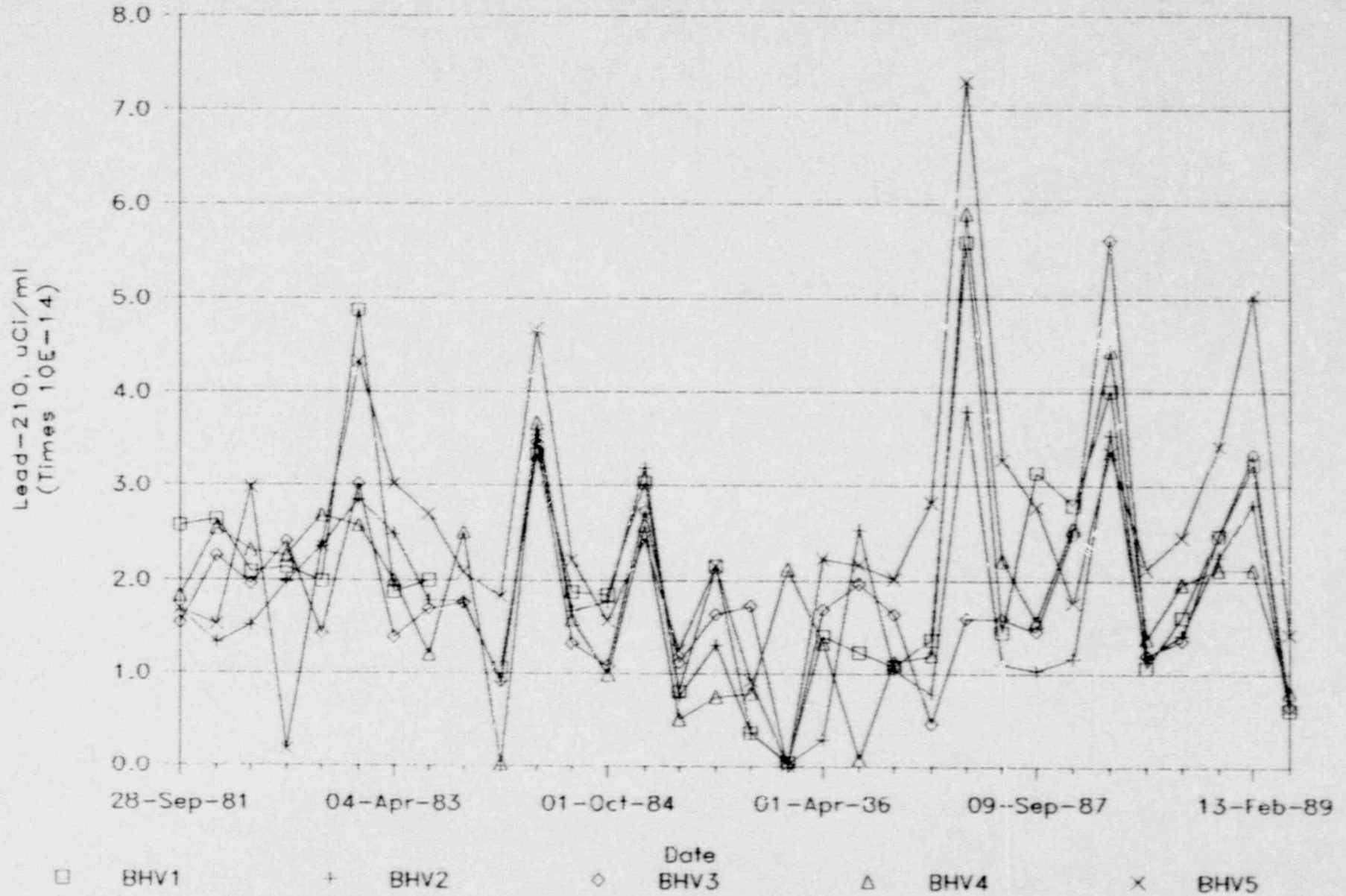
Particulate Radionuclides



Graph 13

UMETCO MINERALS CORPORATION

Particulate Radionuclides



Graph 14

TABLE 16

UMETCO MINERALS CORPORATION
WHITE MESA URANIUM MILL
SEMIANNUAL EFFLUENT AND MONITORING REPORT
Source Material License No. SUA-135B Docket No. 40-8681

AIR PARTICULATES

Sampling Period and Location	Radionuclide	Net Release From Site (Background Subtracted) $\mu\text{Ci}/\text{mi}$	Sampling Period	Radionuclide	Net Release From Site (Background Subtracted) $\mu\text{Ci}/\text{mi}$
11/15/88 - 2/13/89 Met. Station BHV-1	U-Nat.	1.55E-15	2/14/89 - 5/15/89 Met. Station BHV-1	U-Nat.	1.60E-15
	Th-230	5.25E-16		Th-230	6.32E-16
	Ra-226	5.74E-16		Ra-226	5.62E-16
	Pb-210	-1.10E-15		Pb-210	-4.00E-16
11/15/88 - 2/13/89 Nearest Residence BHV-2	U-Nat.	1.35E-16	2/14/89 - 5/15/89 Nearest Residence BHV-2	U-Nat.	4.01E-16
	Th-230	2.37E-16		Th-230	2.28E-16
	Ra-226	1.30E-16		Ra-226	1.39E-16
	Pb-210	-5.40E-15		Pb-210	-5.10E-16
11/15/88 - 2/13/89 South Tailing Area BHV-4	U-Nat.	2.03E-15	2/14/89 - 5/15/89 South Tailing Area BHV-4	U-Nat.	1.45E-16
	Th-230	1.51E-15		Th-230	3.14E-15
	Ra-226	6.69E-16		Ra-226	8.79E-16
	Pb-210	-1.22E-14		Pb-210	1.49E-15
11/15/88 - 2/13/89 S.E. Tailing Area BHV-5	U-Nat.	1.63E-14	2/14/89 - 5/15/89 S.E. Tailing Area BHV-5	U-Nat.	2.02E-14
	Th-230	5.49E-15		Th-230	7.05E-15
	Ra-226	7.18E-15		Ra-226	9.32E-16
	Pb-210	1.68E-14		Pb-210	7.74E-15

TABLE 17

UMETCO MINERALS CORPORATION
 WHITE MESA URANIUM MILL
 SEMIANNUAL EFFLUENT AND MONITORING REPORT
 Source Material License No. SUA-1358 Docket No. 40-8681

RADIOLOGICAL 50 YEAR DOSE COMMITMENT
 TO THE NEAREST RESIDENT FROM THE
 INHALATION OF AIRBORNE PARTICULATES
 FIRST QUARTER

Radio-nuclide	Net Concentration (Background Subtracted) uCi/ml	Dose mrem/Year		
		WHOLE BODY	BONE	LUNG
U-238	1.34E-16	0.0005	0.0138	0.1035
U-234	9.45E-19	0.0000	0.0001	0.0007
Th-230	2.37E-16	0.0009	0.0244	0.1830
Ra-226	1.30E-16	0.0005	0.0134	0.1004
Pb-210	0.00E+00	0.0000	0.0000	0.0000
TOTAL		0.0018	0.0516	0.3875

SECOND QUARTER

Radio-nuclide	Net Concentration (Background Subtracted) uCi/ml	Dose mrem/Year		
		WHOLE BODY	BONE	LUNG
U-238	3.98E-16	0.0001	0.0021	0.0629
U-234	2.81E-18	0.0000	0.0000	0.0005
Th-230	2.28E-16	0.0001	0.0001	0.0001
Ra-226	1.39E-16	0.0043	0.0430	0.9188
Pb-210	0.00E+00	0.0000	0.0000	0.0000
TOTAL		0.0045	0.0451	0.9823

TABLE 19

Umetco MINERALS CORPORATION
 WHITE MESA URANIUM MILL
 SEMI-ANNUAL EFFLUENT AND MONITORING REPORT
 Source Material License No. SUA-1358 Docket No. 40-8681

MONITOR WELLS
 WATER QUALITY ANALYSIS
 SECOND QUARTER
 GROUNDWATER

PARAMETER	MW#1	MW#2	MW#3	MW#4	MW#5	MW#11	MW#12	CULINARY
DATE OF SAMPLE	06/21/89	06/21/89	06/22/89	06/21/89	06/22/89	06/22/89	06/22/89	06/22/89
CASING ELEVATION, feet	5648.22	5613.49	5555.32	5622.57	5609.33	5611.08	5609.45	N/A
PHREATIC ELEVATION, feet	5572.12	5503.19	5471.62	5529.34	5501.24	5508.59	5500.22	N/A
pH FIELD	7.98	7.08	6.71	6.86	7.38	7.78	6.80	7.70
FIELD SP. COND. (umhos@T)	1694	3660	5660	3690	2710	2520	4000	550
TDS, (mg/l)	1280	3210	5450	3580	2020	1750	4030	316
CHLORIDE (mg/l)	11.3	6.4	66.9	45.9	54.6	32.4	60.8	5.2
SULFATES (mg/l)	718	2040	3500	2180	1180	1020	2500	65
ARSENIC (mg/l)	0.004	0.014	0.033	0.017	0.01	0.005	0.021	0.015
SELENIUM (mg/l)	0.001	0.002	0.003	0.003	0.004	0.004	0.001	0.001
U-NAT. (uCi/ml)	2.0E-09	6.8E-09	2.3E-08	1.2E-09	6.0E-10	8.0E-10	1.1E-08	6.0E-10
U-NAT. LLD. (uCi/ml)	2.0E-10	2.0E-10	2.0E-10	2.0E-10	2.0E-10	2.0E-10	2.0E-10	2.0E-10

Monitor Well 13 removed second quarter due to facility expansion.

TABLE 20
 UMETCO MINERALS CORPORATION
 WHITE MESA MILL
 QUALITY CONTROL DUPLICATE SAMPLES
 FIRST QUARTER 1989

	Monitor Well 2	Blind Duplicate	Per Cent Difference		Monitor Well 4	Blind Duplicate	Per Cent Difference
Arsenic	0.032	0.03	6.25%		0.033	0.027	18.18%
Selenium	0.017	0.019	-11.76%		0.019	0.02	-5.26%
Sodium	464	506	-9.05%		275	260	5.45%
TDS	3140	3140	0.00%		3530	3450	2.27%
Sulfate	1990	2010	-1.01%		2070	2160	-4.35%
Chloride	7.6	7.6	0.00%		45	44.4	1.33%
U-Natural	6	6.6	-10.00%		1.4	1.2	14.29%
Ra-226	0.2	0.2	0.00%		0.1	0.1	0.00%
Th-230	0	0.0	0.00%		0.1	0.3	-200.00%
Pb-210	0.8	0.2	75.00%		0.5	0.9	-80.00%

SECOND QUARTER 1989

	Monitor Well 11	Blind Duplicate	Per Cent Difference		Monitor Well 5	Blind Duplicate	Per Cent Difference
Arsenic							
Selenium							
Sodium							
TDS	1750	1770	-1.14%		2020	2010	0.50%
Sulfate	1020	1020	0.00%		1180	1190	-0.85%
Chloride	32.4	32.4	0.00%		54.6	54.6	0.00%
U-Natural	0.8	0.6	25.00%		0.6	0.4	33.33%
Ra-226							
Th-230							
Pb-210							

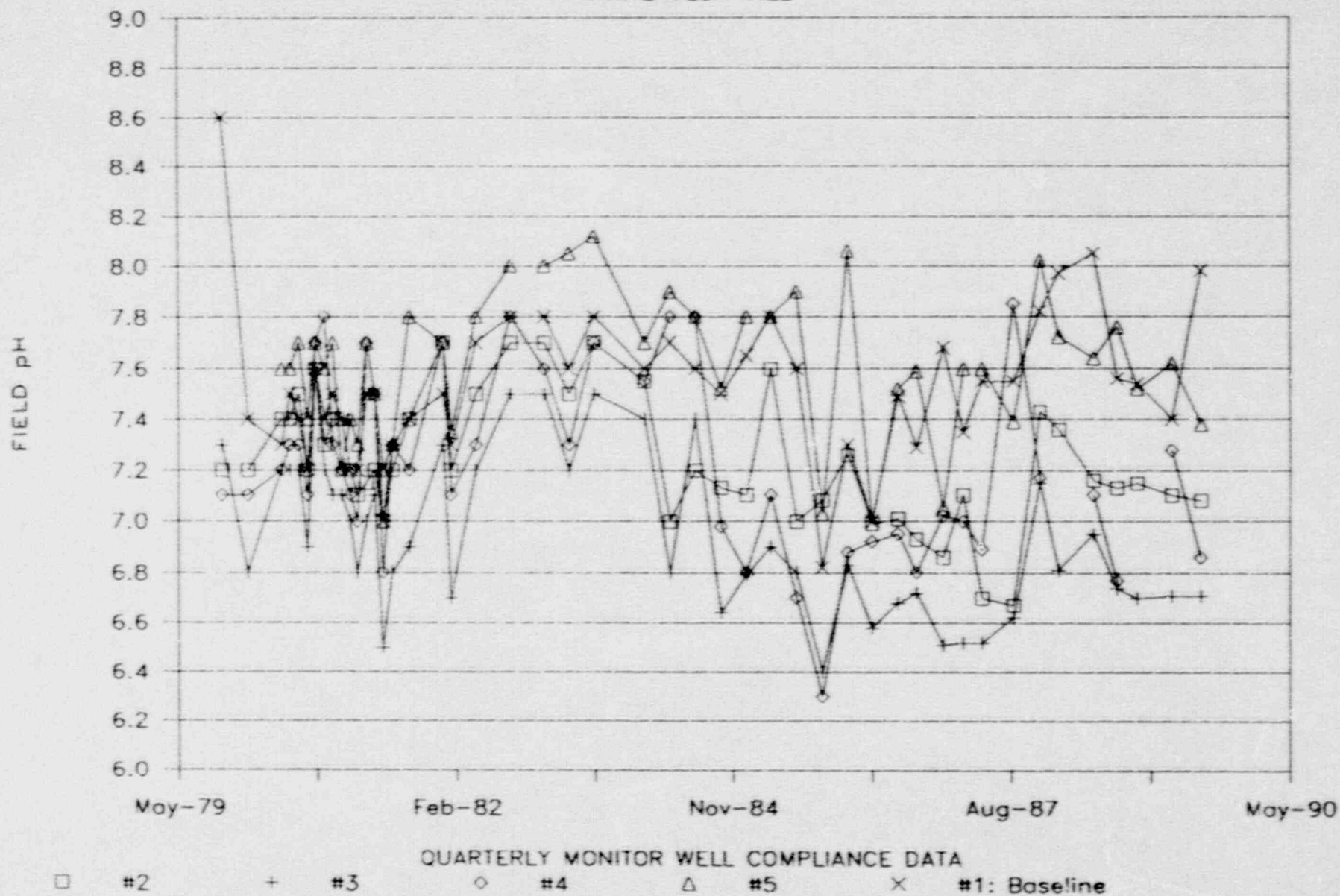
TABLE 21

UMETCO MINERALS CORPORATION
 WHITE MESA MILL
 SURFACE WATER ANALYSIS
 SEMIANNUAL EFFULENT REPORT

	Cottonwood		Westwater	
	1st 89	2nd 89	1st 89	2nd 89
Date of Sample	03/13/89	06/13/89	03/13/89	06/13/89
Field Temperature, C	9.0	22.4	DRY	DRY
Field pH	8.8	7.93	DRY	DRY
Field Sp.Cond.(umhos)	400	270	DRY	DRY
TDS (mg/l)	343	266	DRY	DRY
TSS (mg/l)	22	4720	DRY	DRY
Gross Alpha (pCi/l)	2.6	5.0	DRY	DRY
LLD (pCi/l)	1.0	1.0	DRY	DRY
Ra-226 dissolved (pCi/l)	0.1	na	DRY	DRY
Ra-226 suspended (pCi/l)	0.2	na	DRY	DRY
Ra-226 LLD (pCi/l)	0.2	na	DRY	DRY
Th-230 dissolved (pCi/l)	0.1	na	DRY	DRY
Th-230 suspended (pCi/l)	0.8	na	DRY	DRY
Th-230 LLD (pCi/l)	0.2	na	DRY	DRY
U-nat dissolved (mg/l)	0.0093	na	DRY	DRY
U-nat suspended (mg/l)	0.0023	na	DRY	DRY
U-nat LLD (ug/l)	0.3	na	DRY	DRY

UMETCO MINERALS CORPORATION

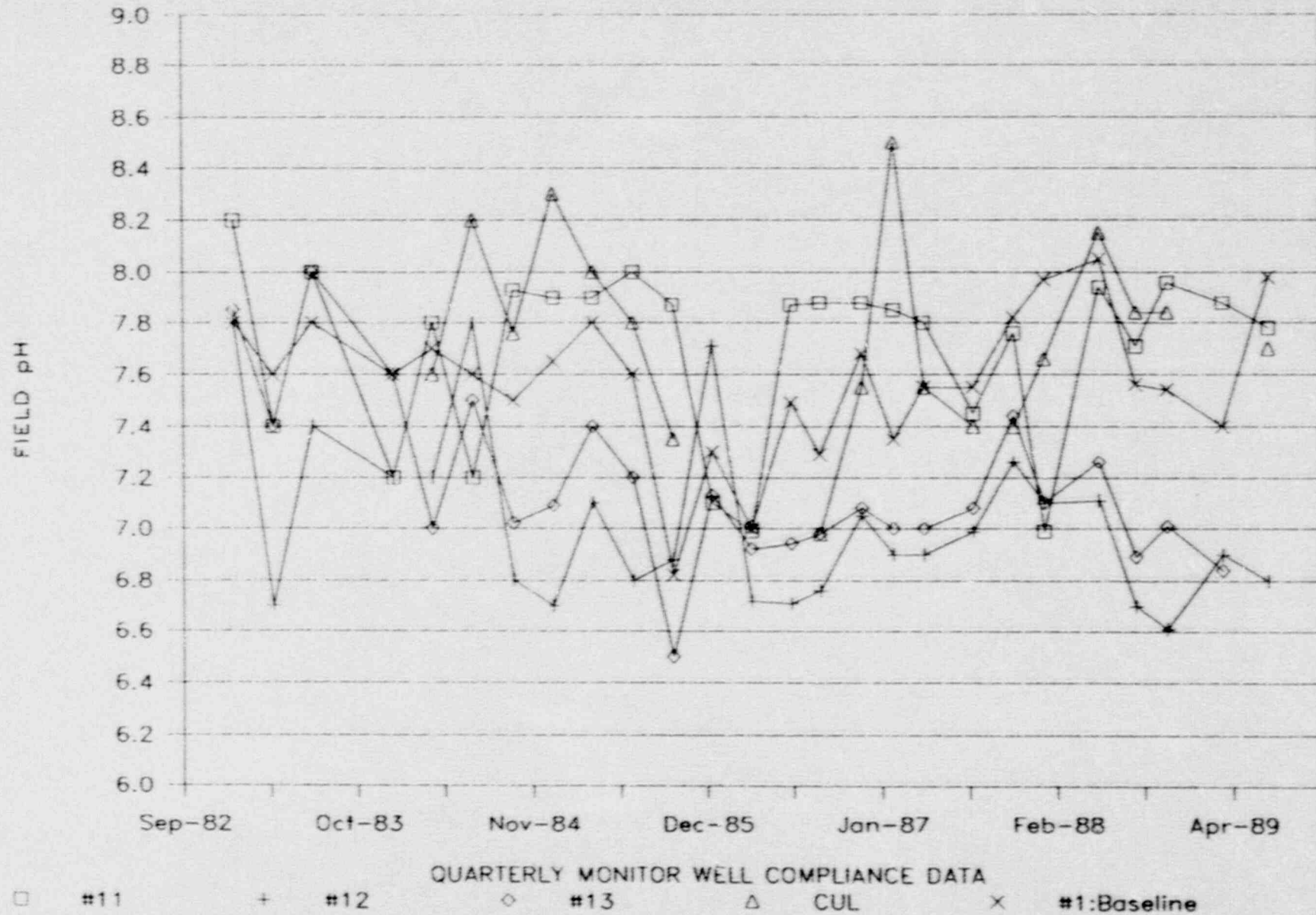
WHITE MESA MILL



Graph 15

UMETCO MINERALS CORPORATION

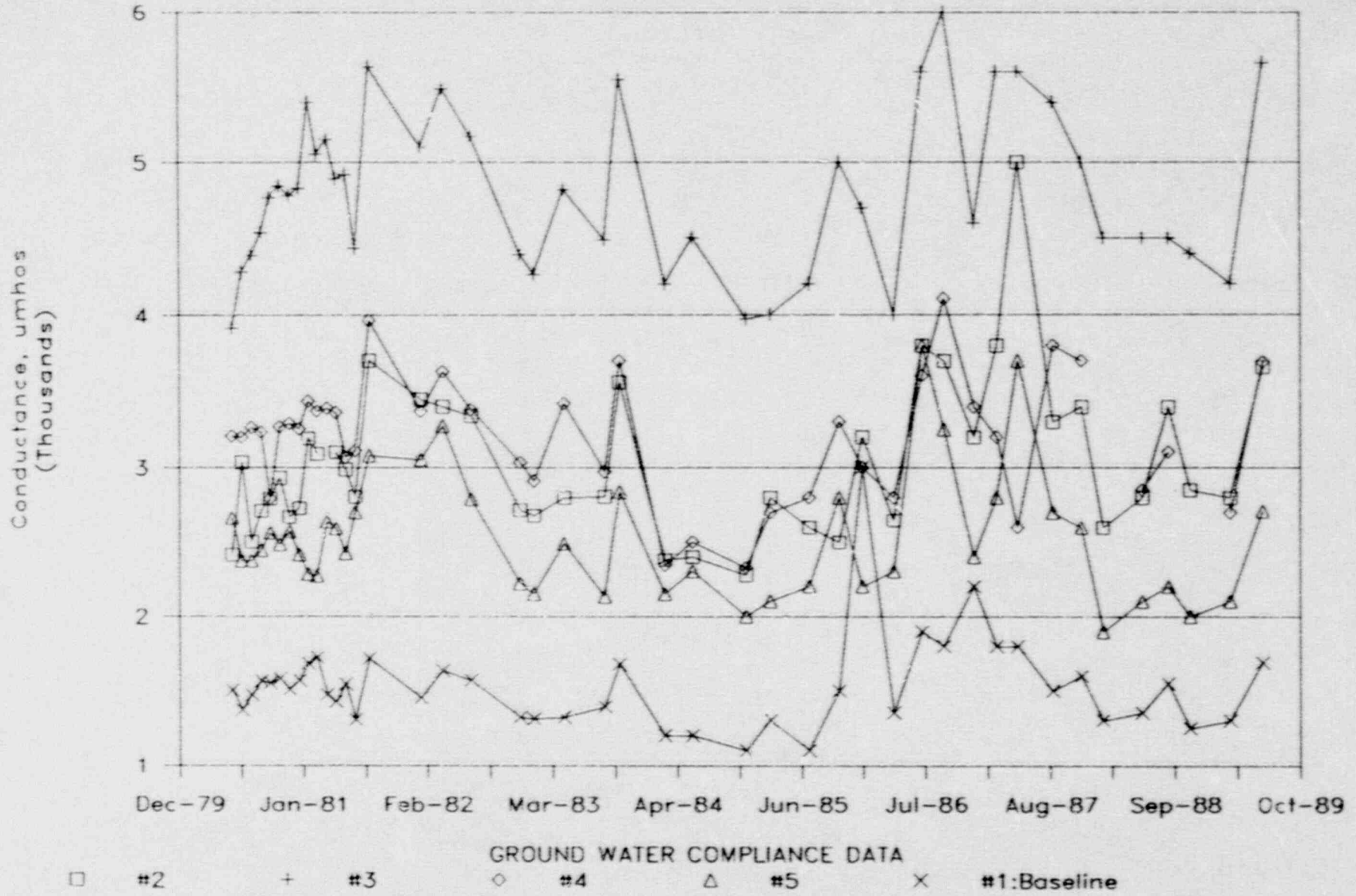
WHITE MESA MILL



Graph 16

UMETCO MINERALS CORPORATION

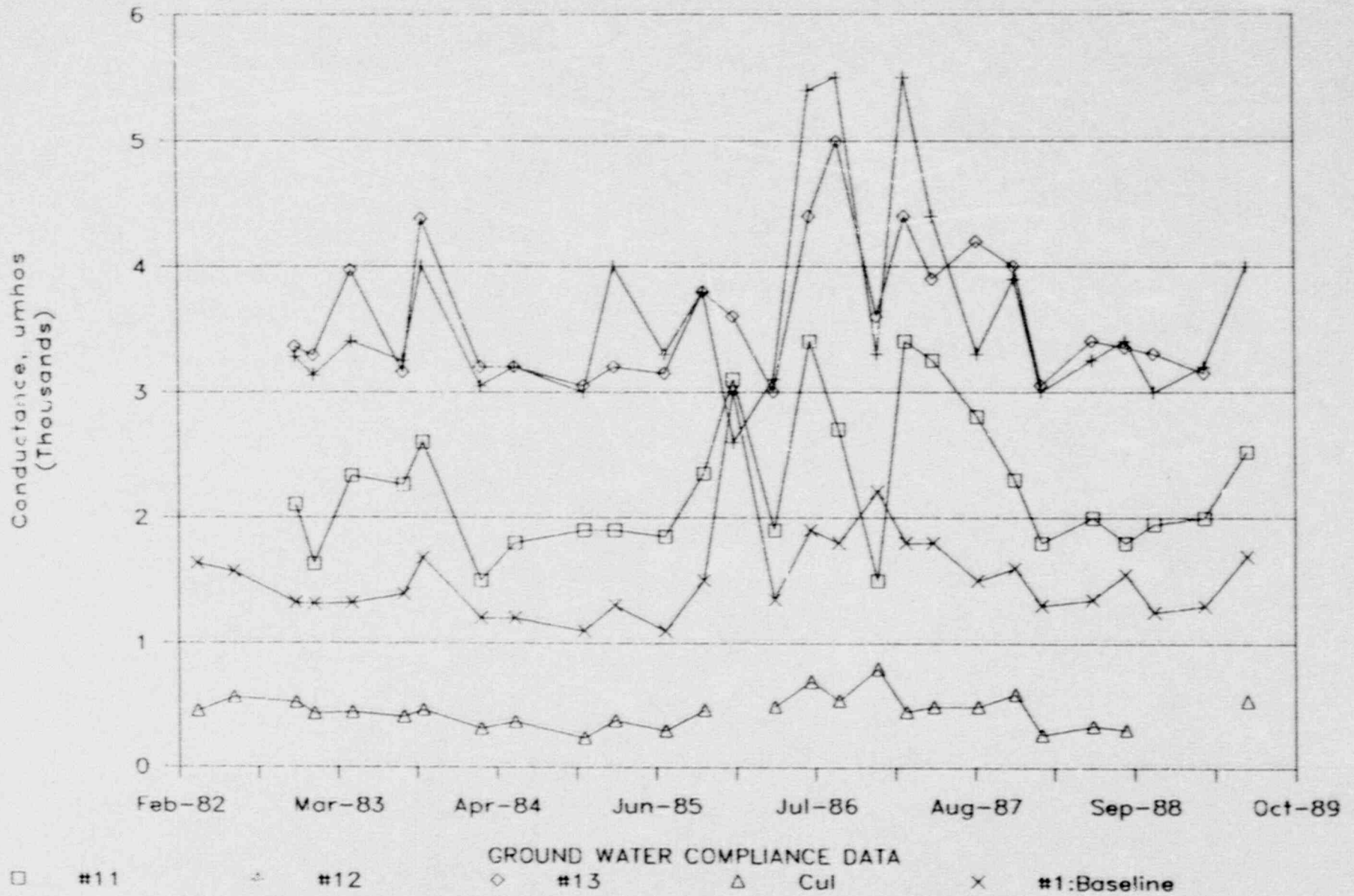
WHITE MESA MILL



Graph 17

UMETCO MINERALS CORPORATION

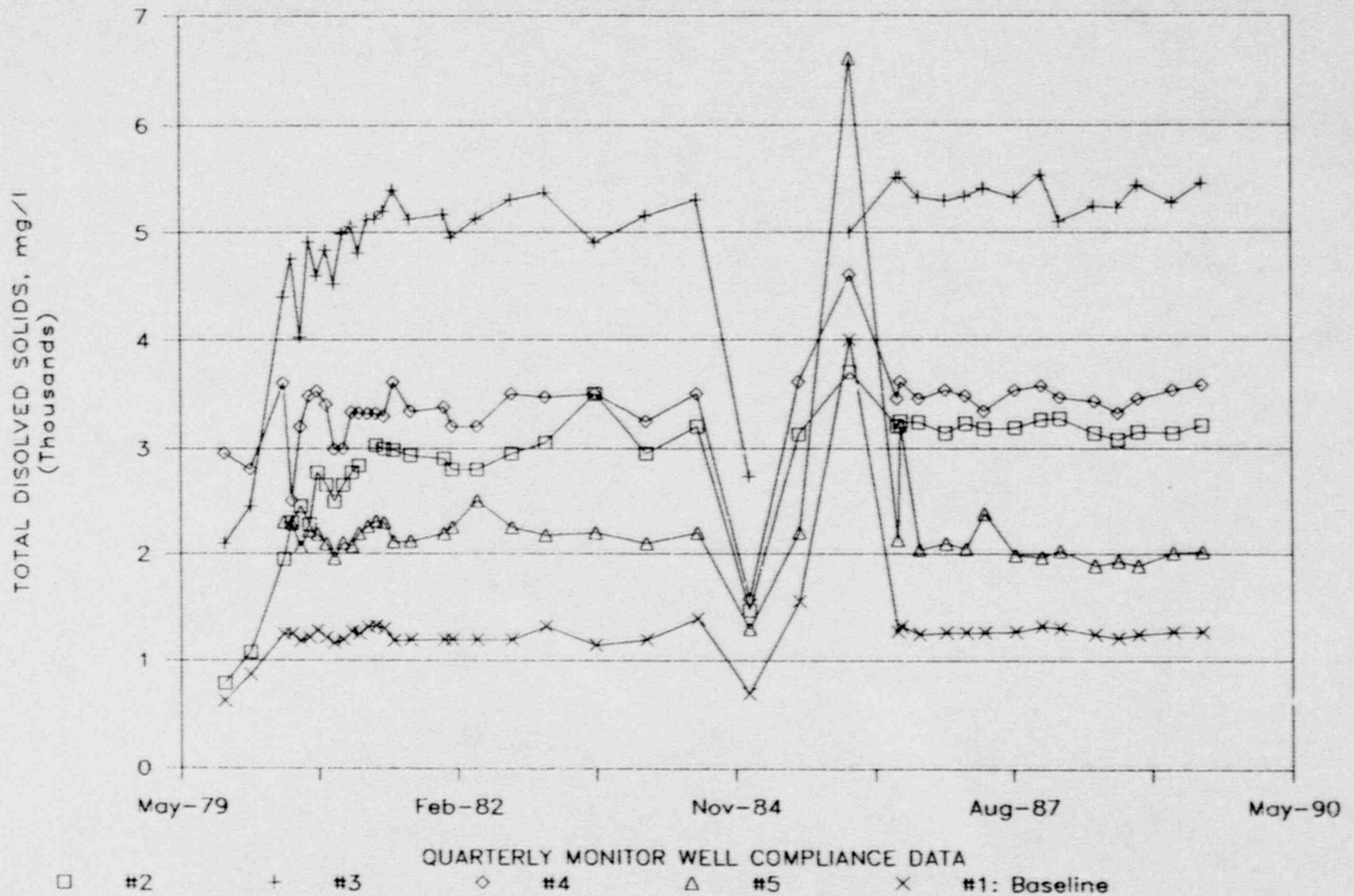
WHITE MESA MILL



Graph 18

UMETCO MINERALS CORPORATION

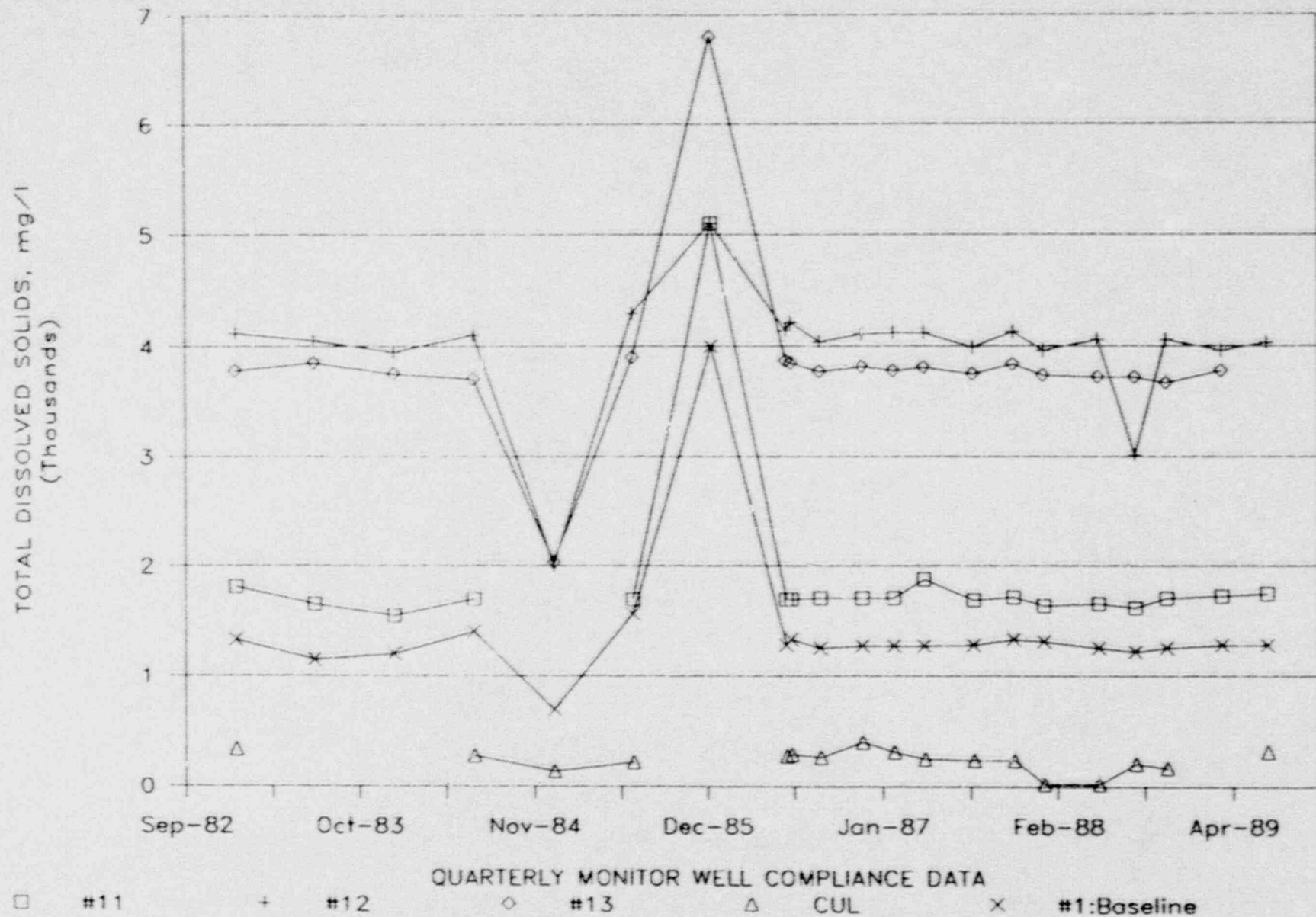
WHITE MESA MILL



Graph 19

UMETCO MINERALS CORPORATION

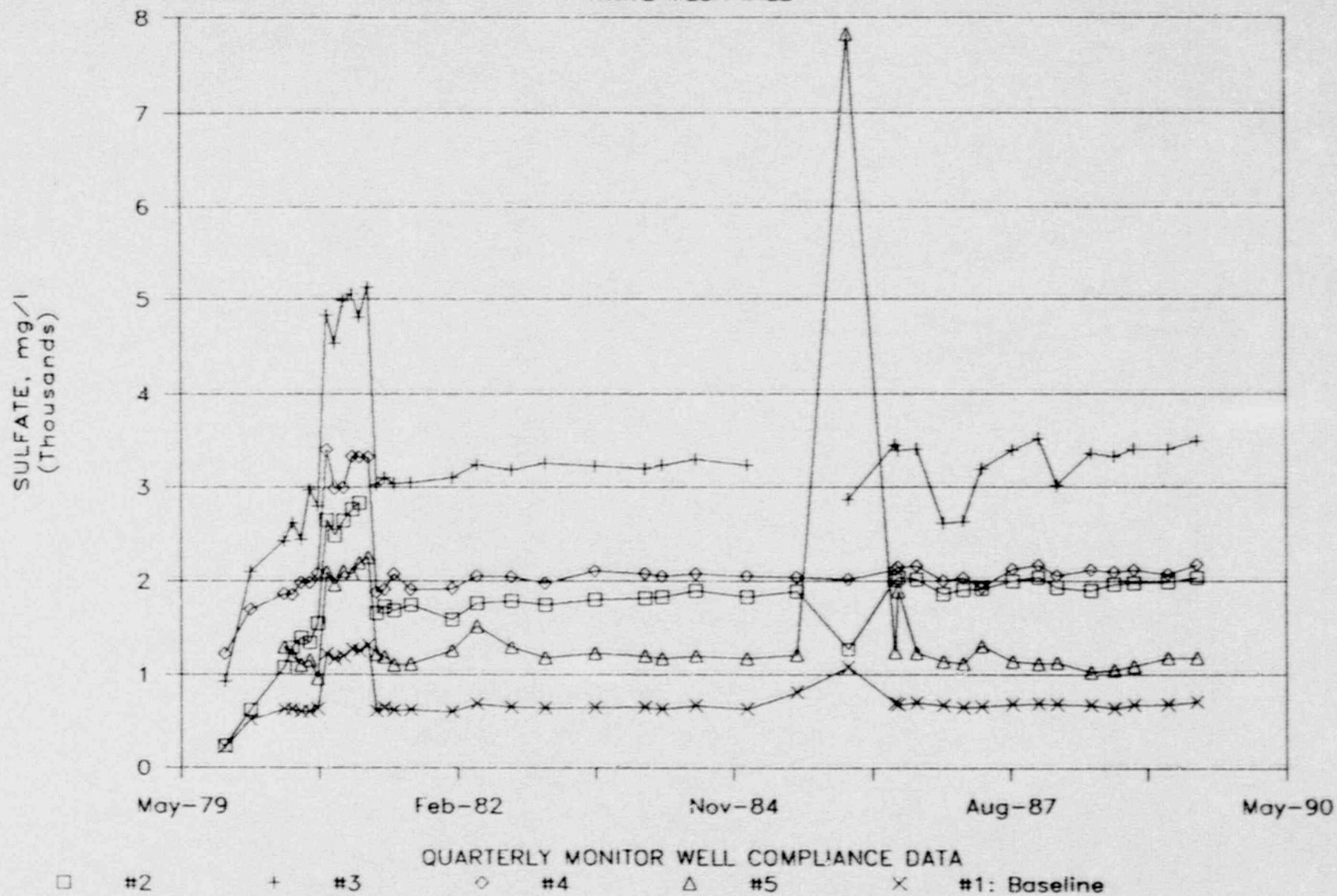
WHITE MESA MILL



Graph 20

UMETCO MINERALS CORPORATION

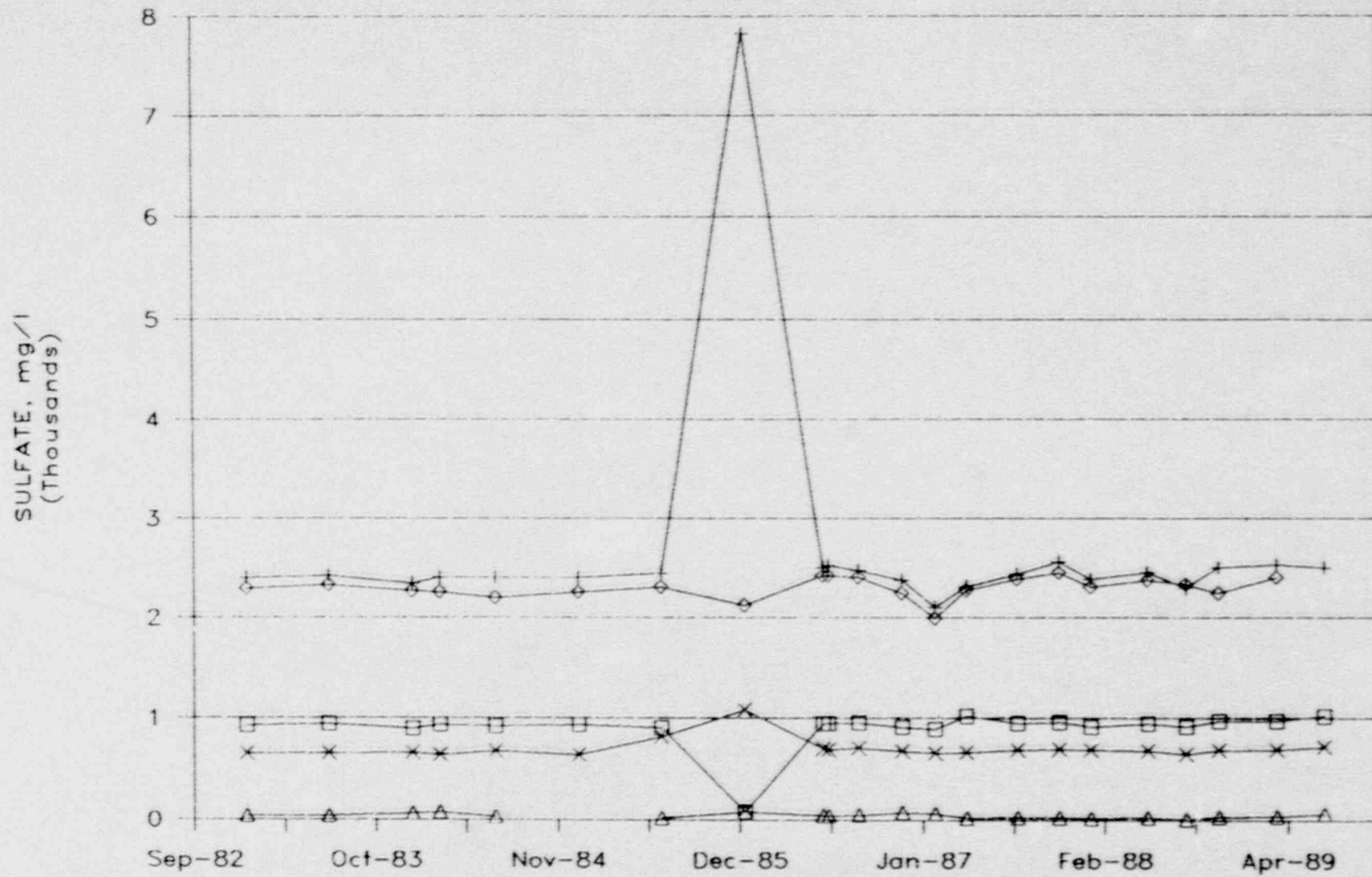
WHITE MESA MILL



Graph 21

UMETCO MINERALS CORPORATION

WHITE MESA MILL



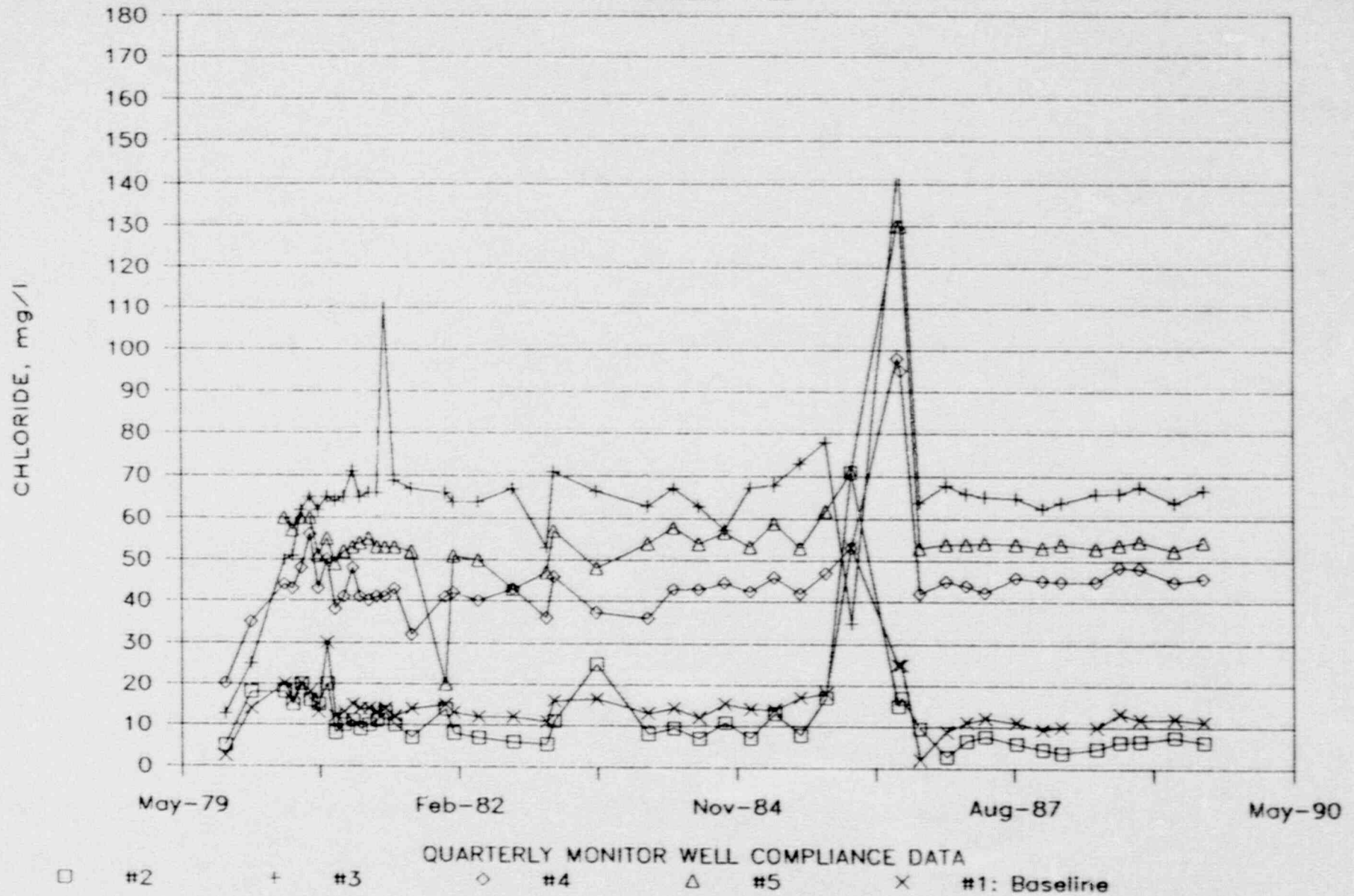
QUARTERLY MONITOR WELL COMPLIANCE DATA

□ #11 + #12 ◇ #13 △ CUL × #1:Baseline

Graph 22

UMETCO MINERALS CORPORATION

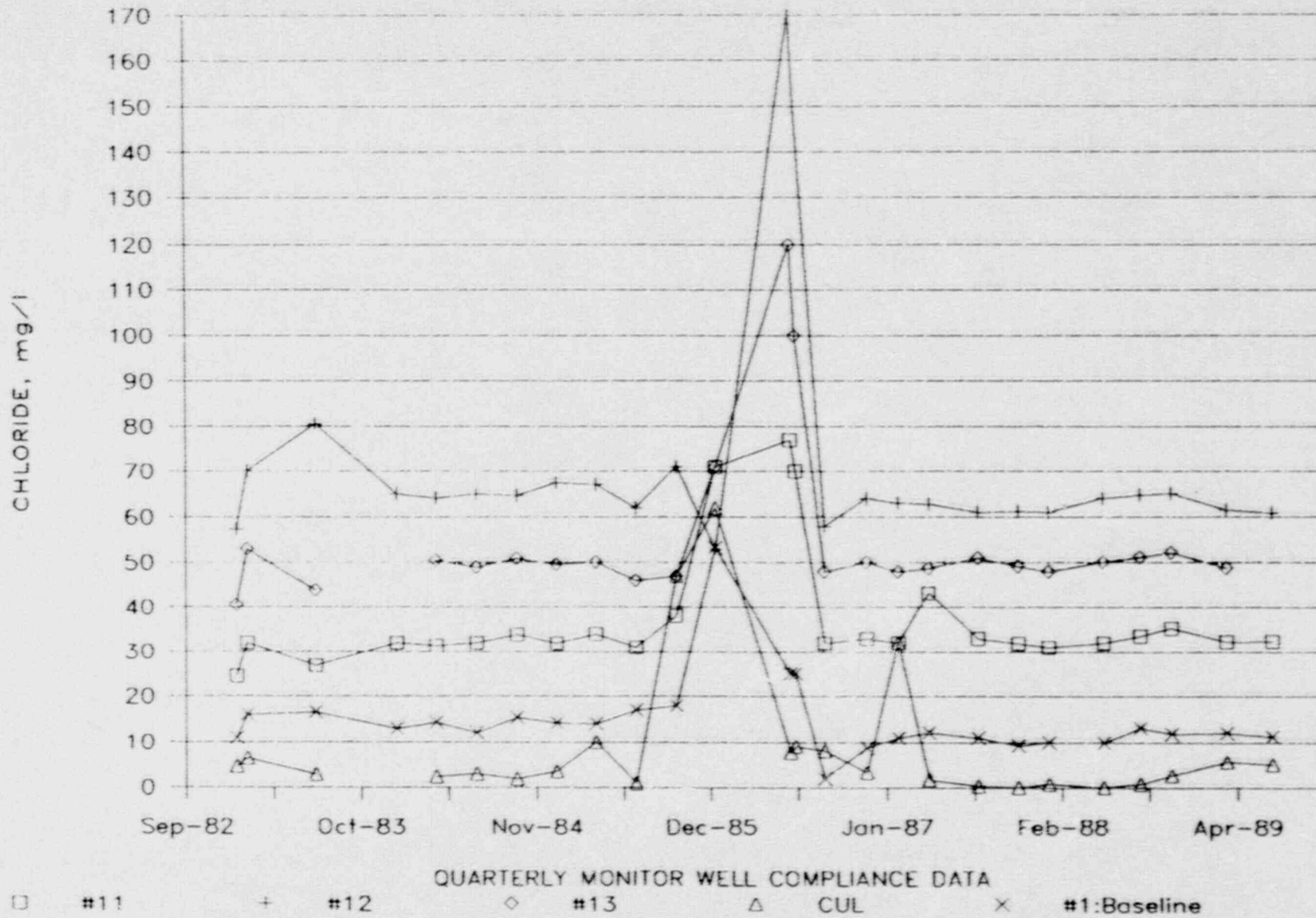
WHITE MESA MILL



Graph 23

UMETCO MINERALS CORPORATION

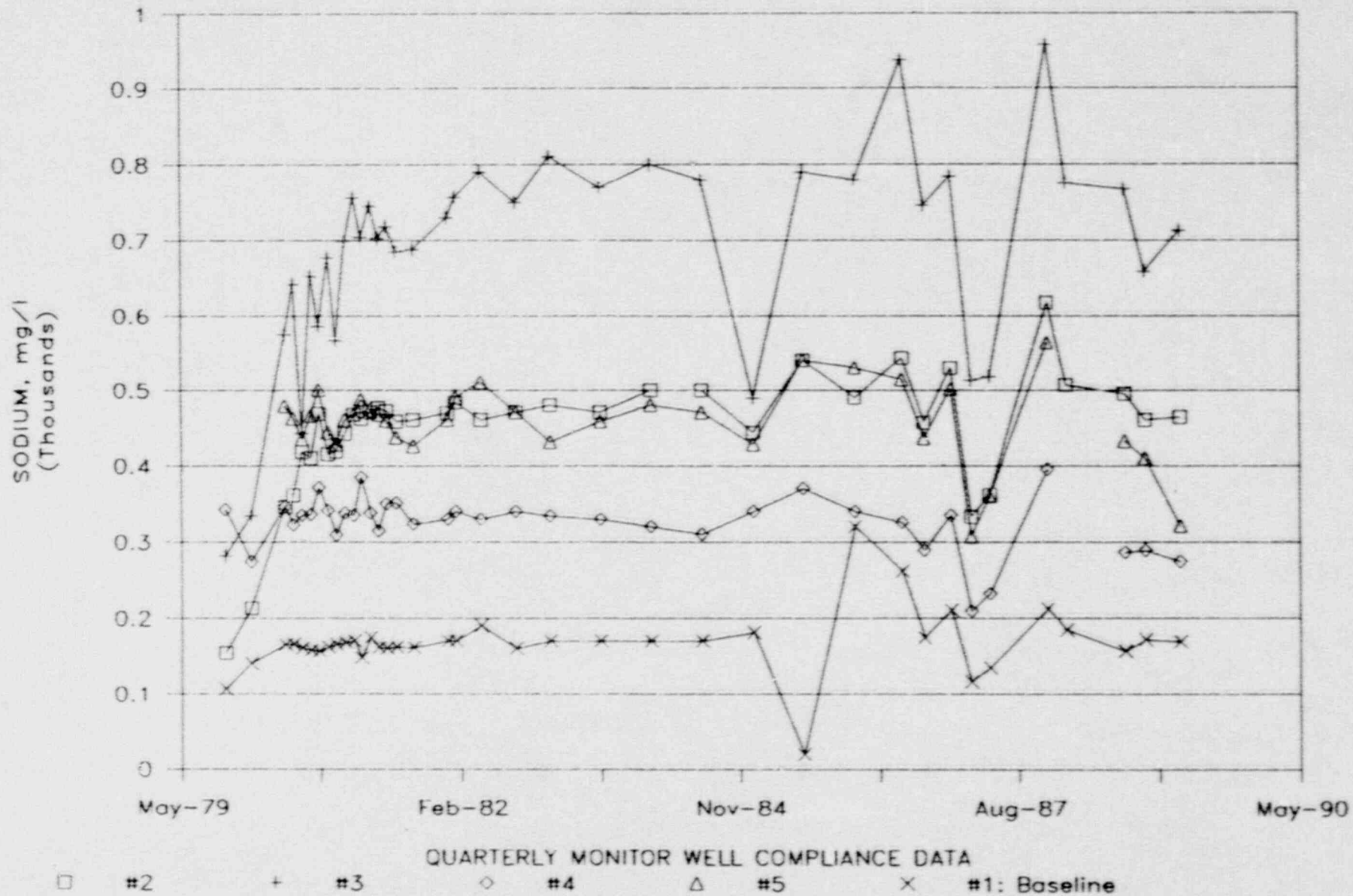
WHITE MESA MILL



Graph 24

UMETCO MINERALS CORPORATION

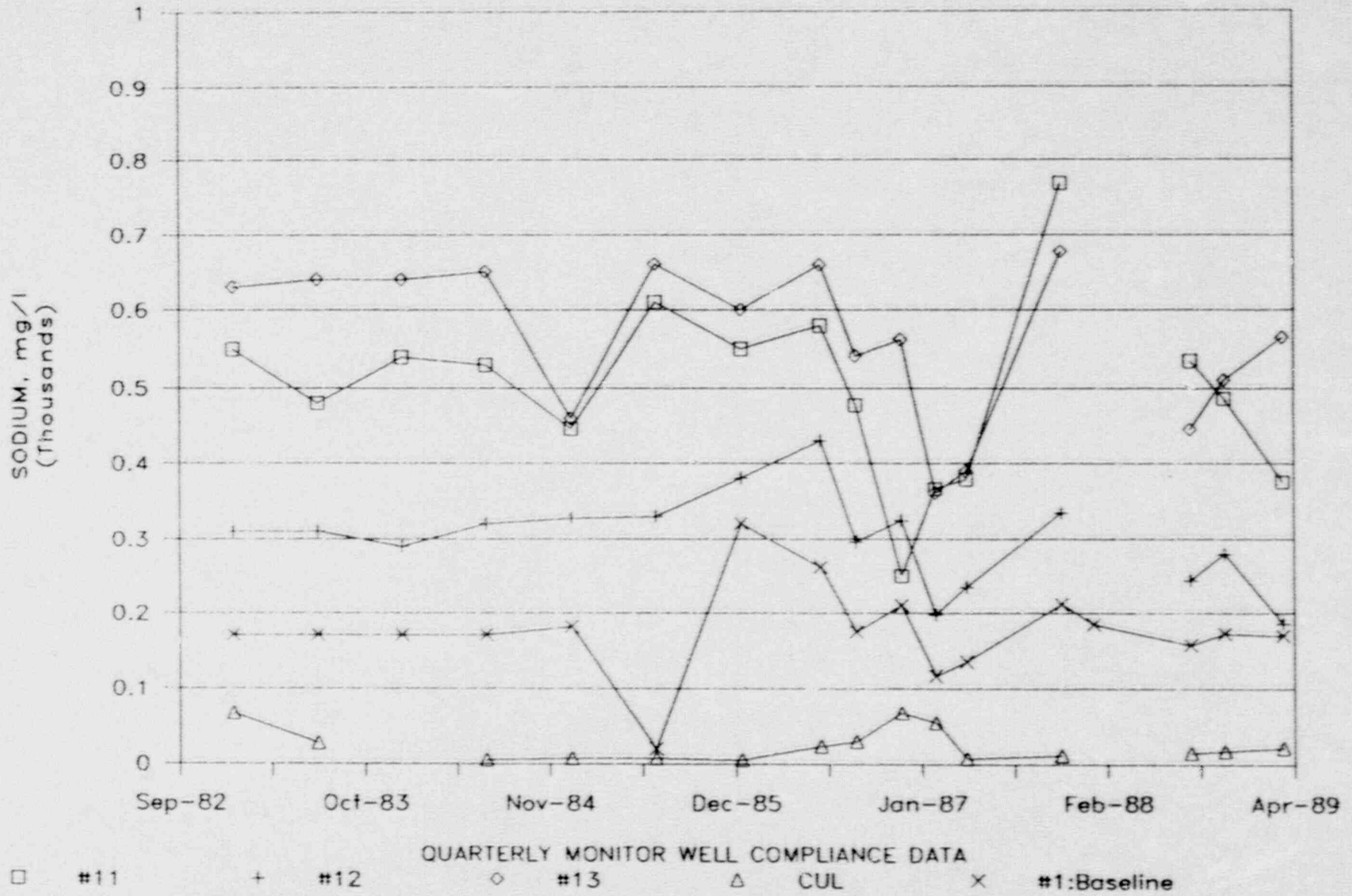
WHITE MESA MILL



Graph 25

UMETCO MINERALS CORPORATION

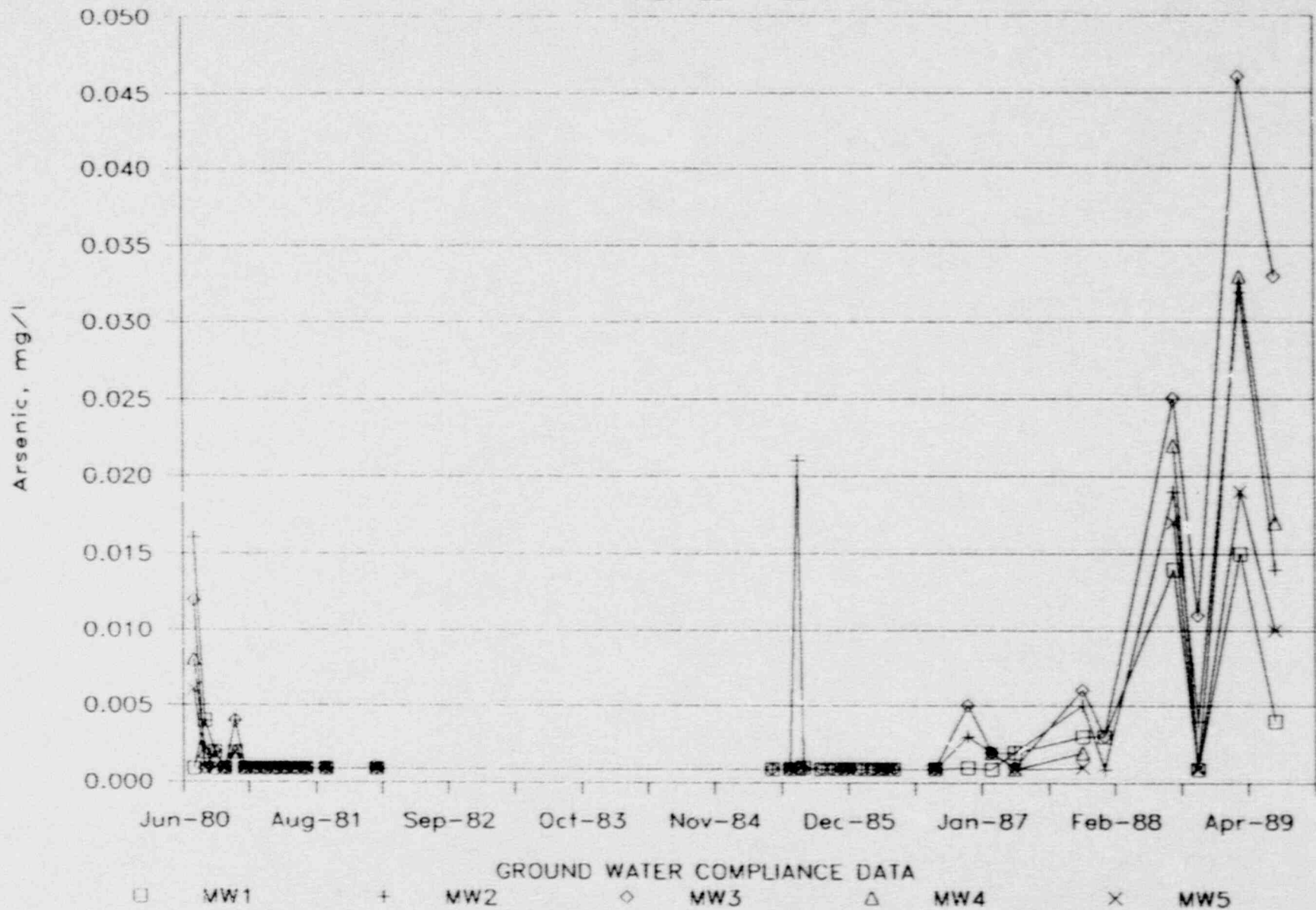
WHITE MESA MILL



Graph 26

Umetco MINERALS CORPORATION

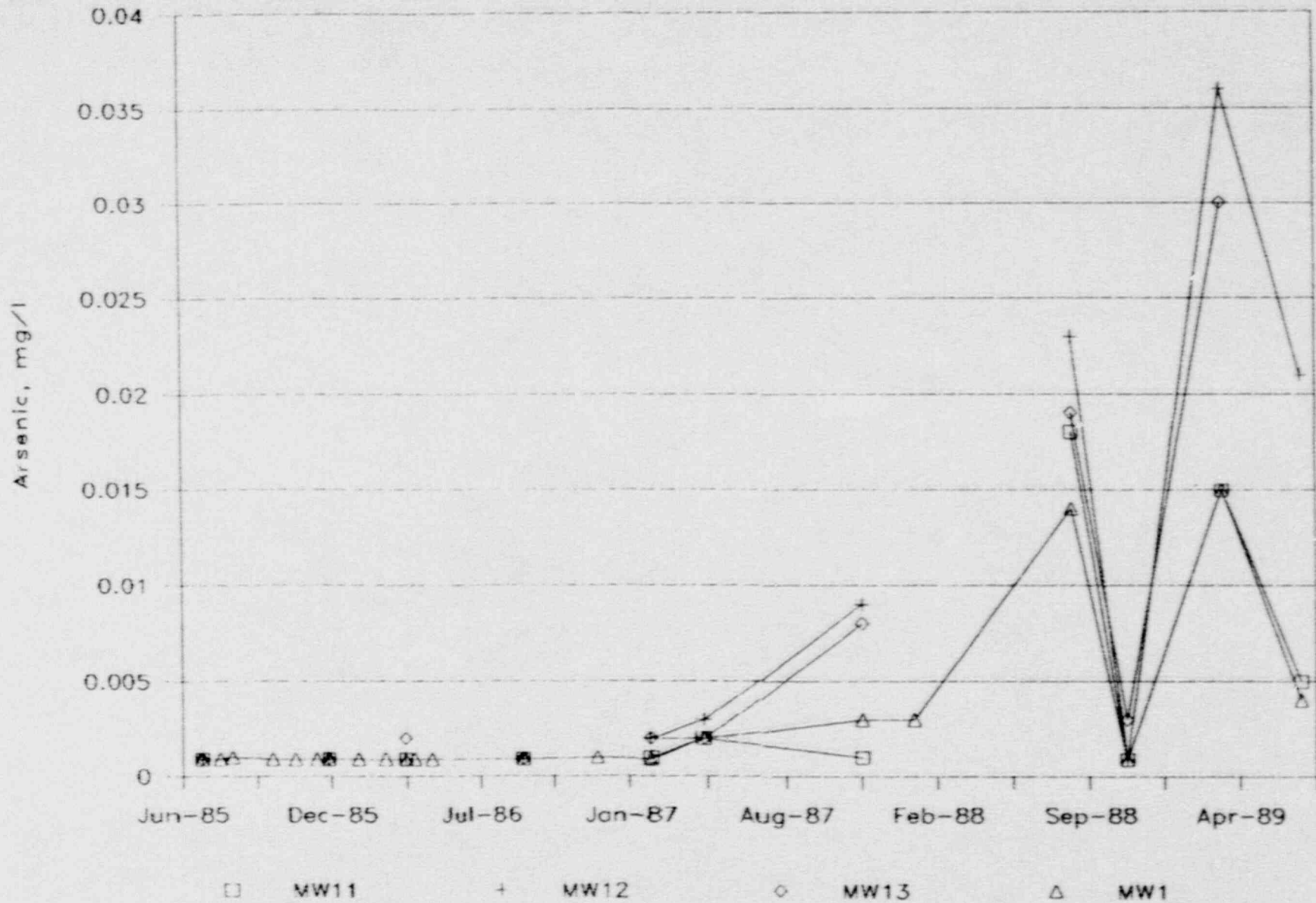
WHITE MESA MILL



Graph 27

UMETCO MINERALS CORPORATION

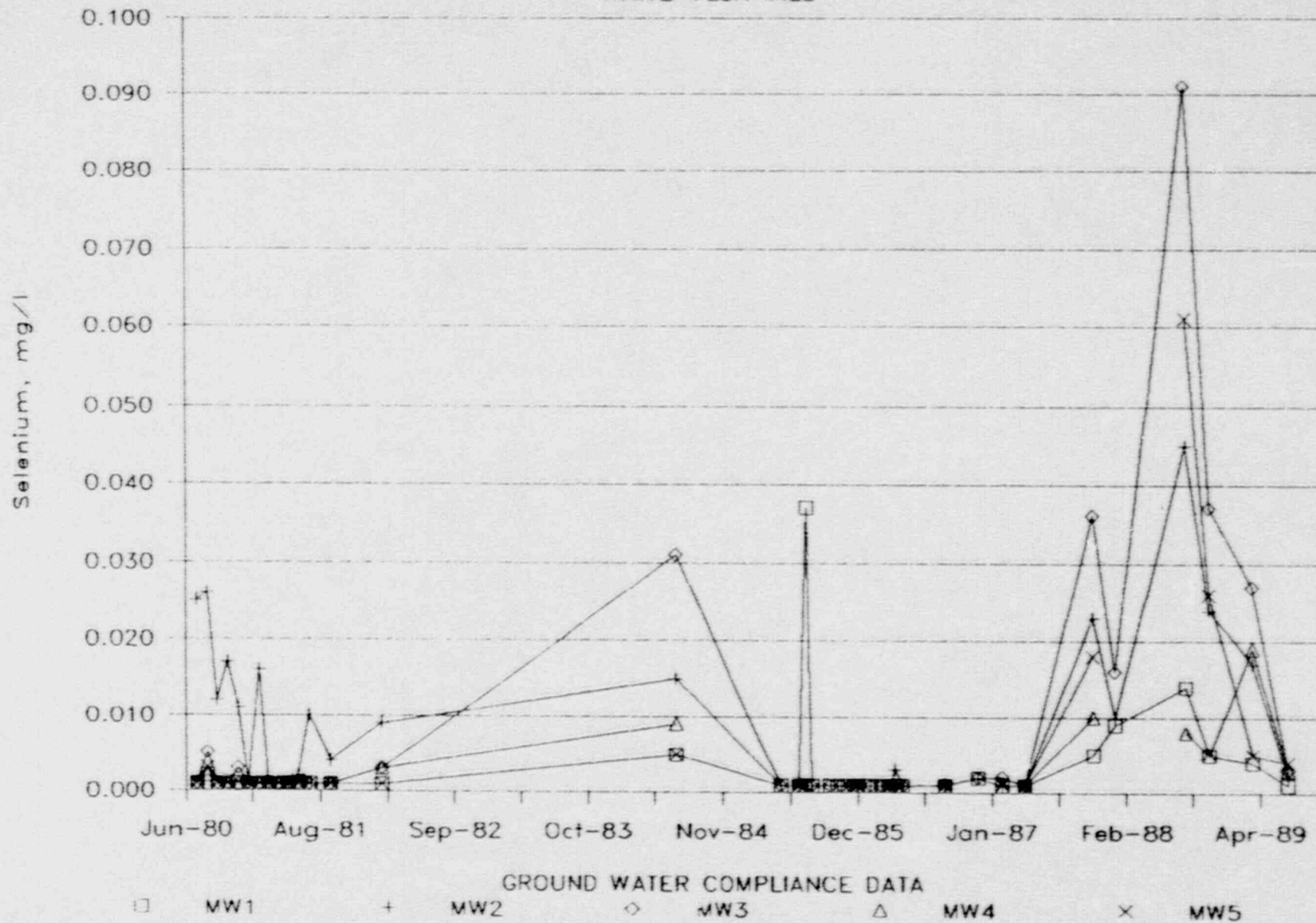
White Mesa Mill



Graph 28

Umetco MINERALS CORPORATION

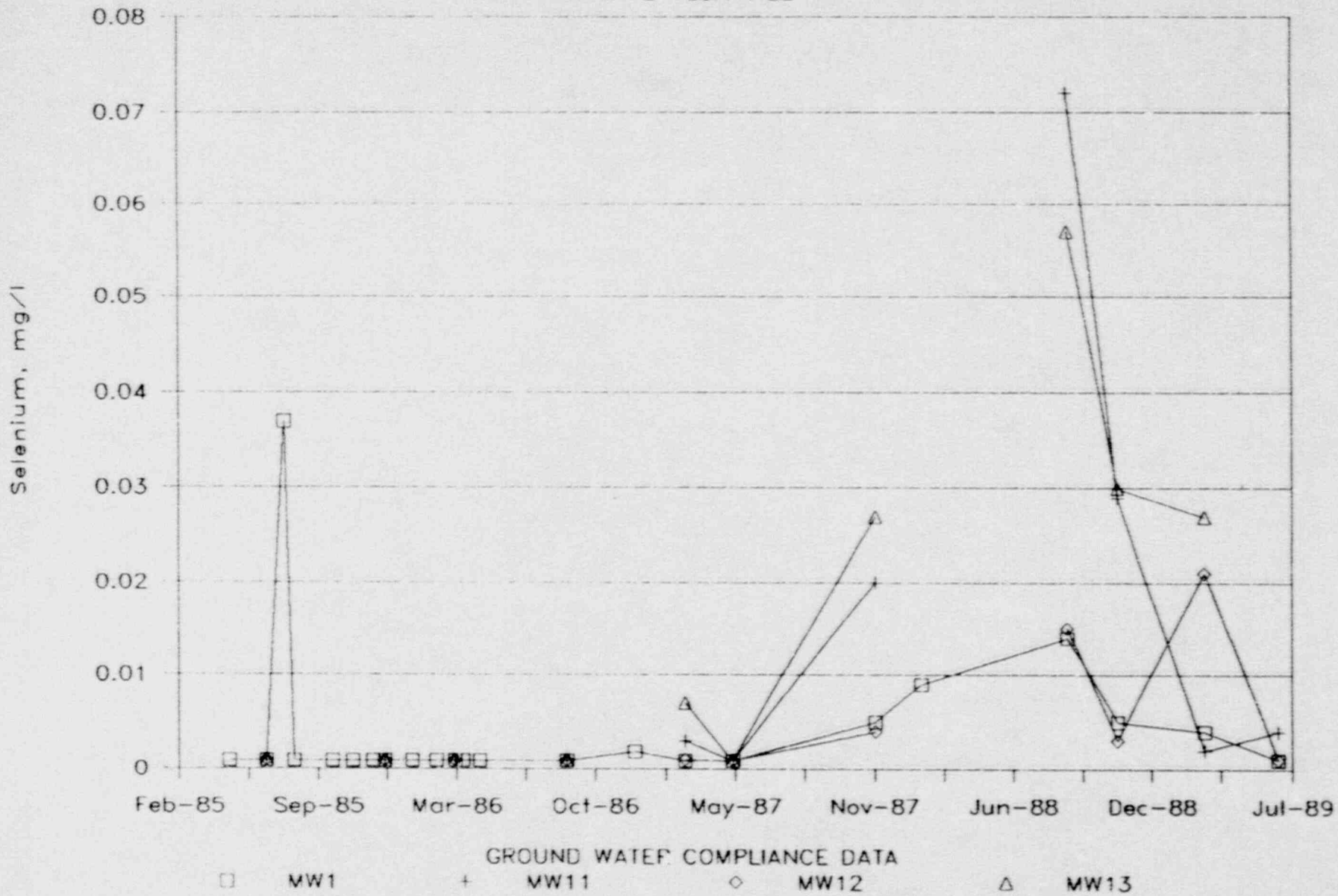
WHITE MESA MILL



Graph 29

Umetco MINERALS CORPORATION

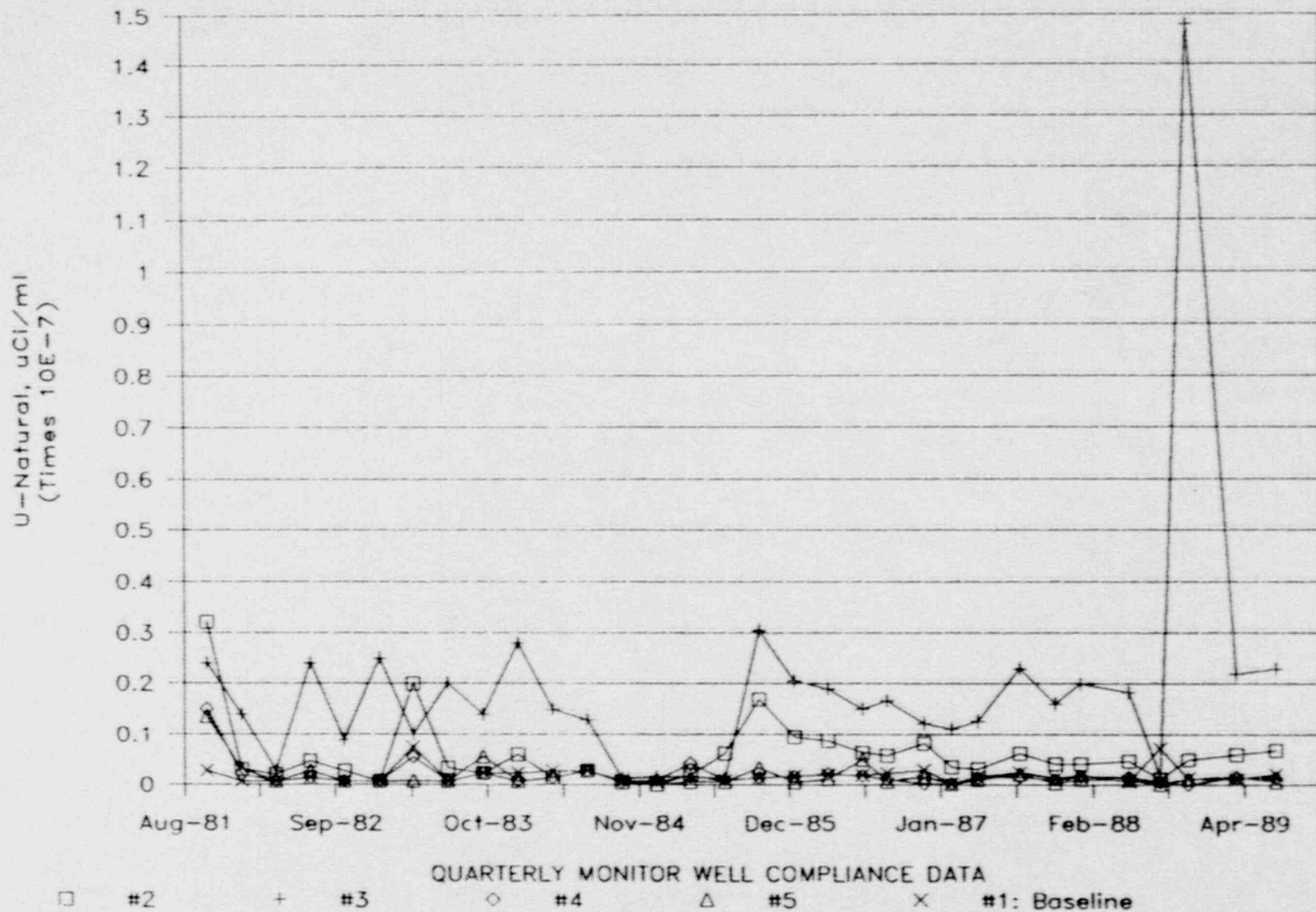
WHITE MESA MILL



Graph 30

UMETCO MINERALS CORPORATION

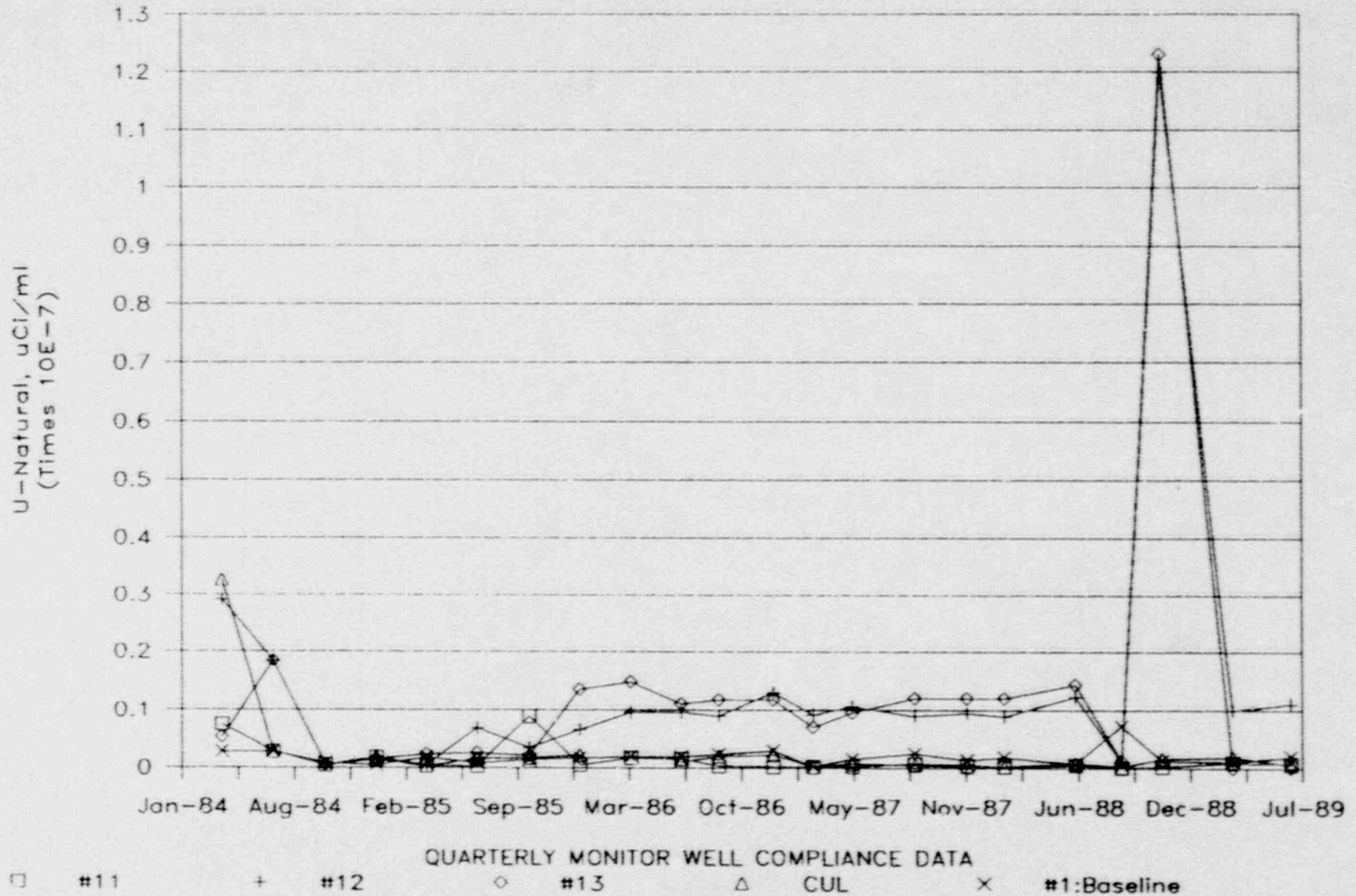
WHITE MESA MILL



Graph 31

UMETCO MINERALS CORPORATION

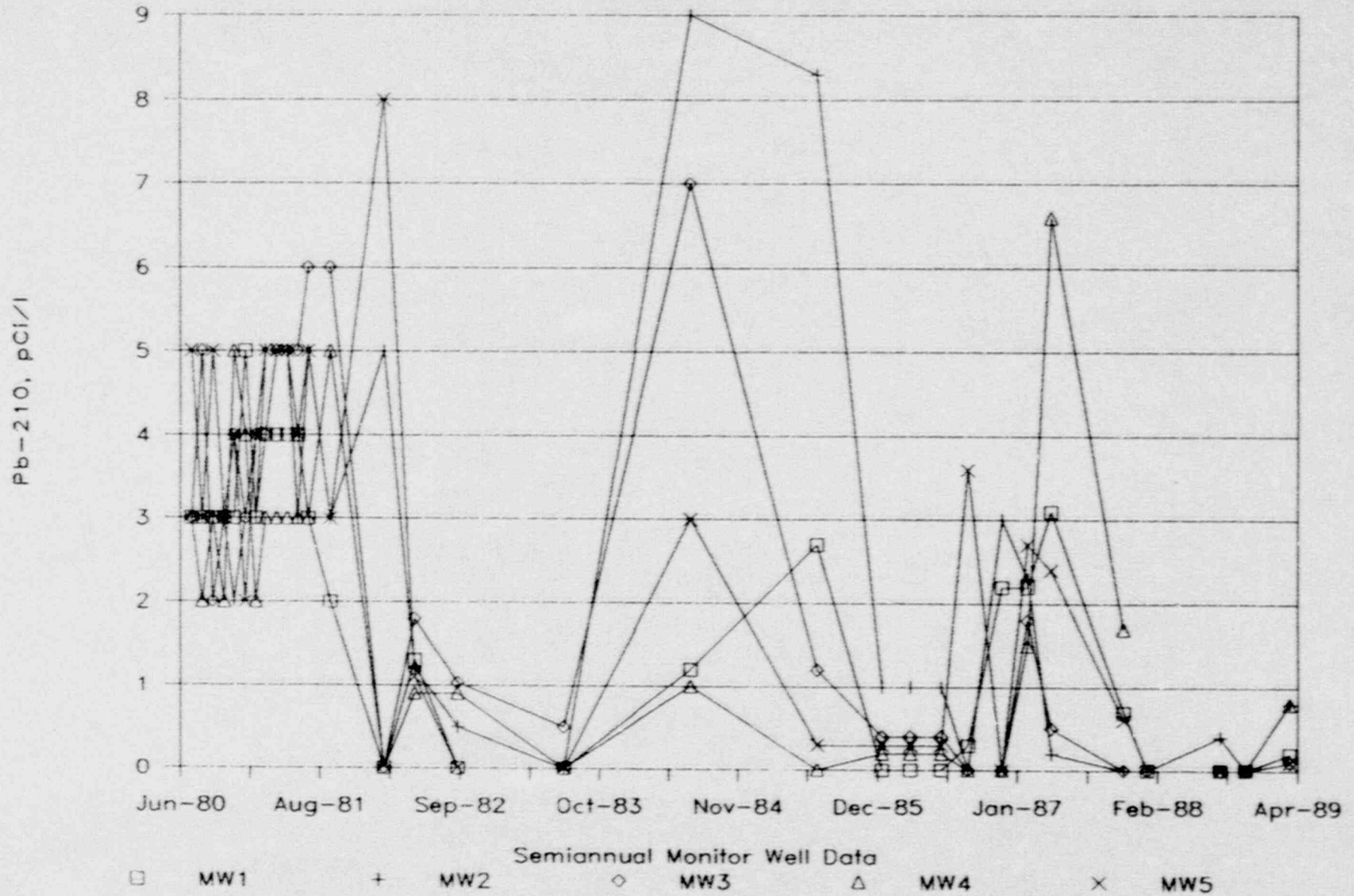
WHITE MESA MILL



Graph 32

UMETCO MINERALS CORPORATION

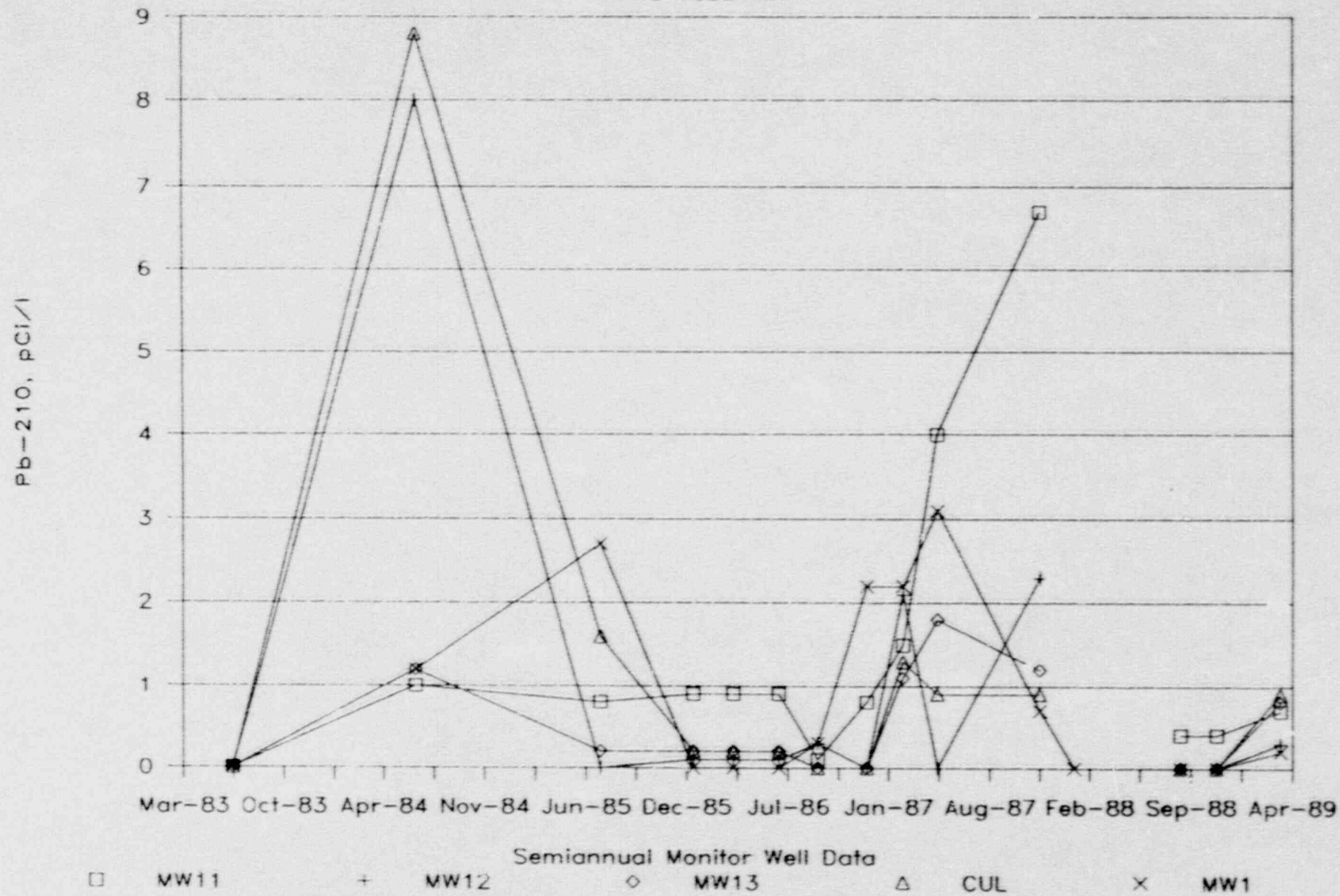
White Mesa Mill



Graph 33

UMETCO MINERALS CORPORATION

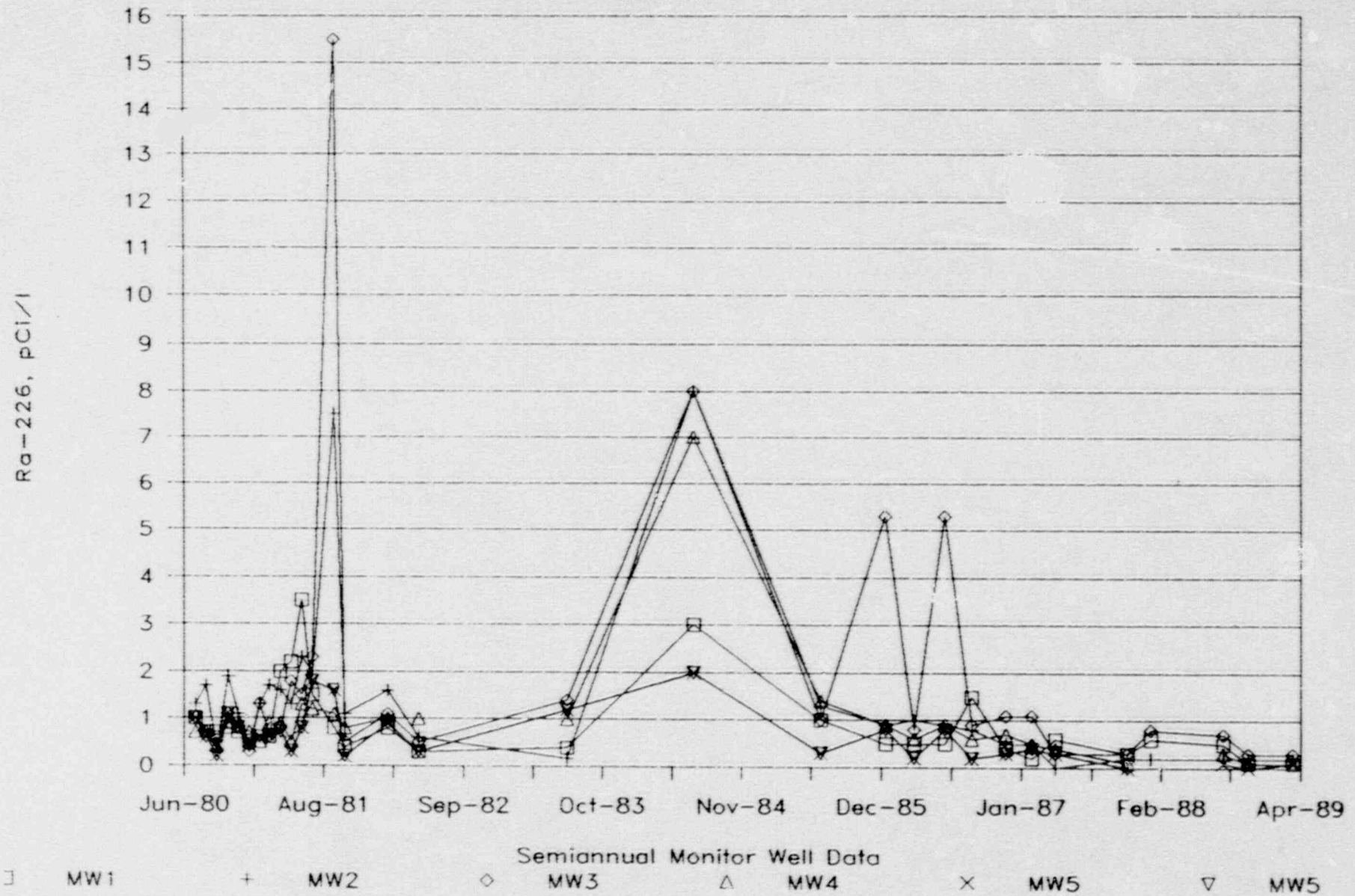
White Mesa Mill



Graph 34

UMETCO MINERALS CORPORATION

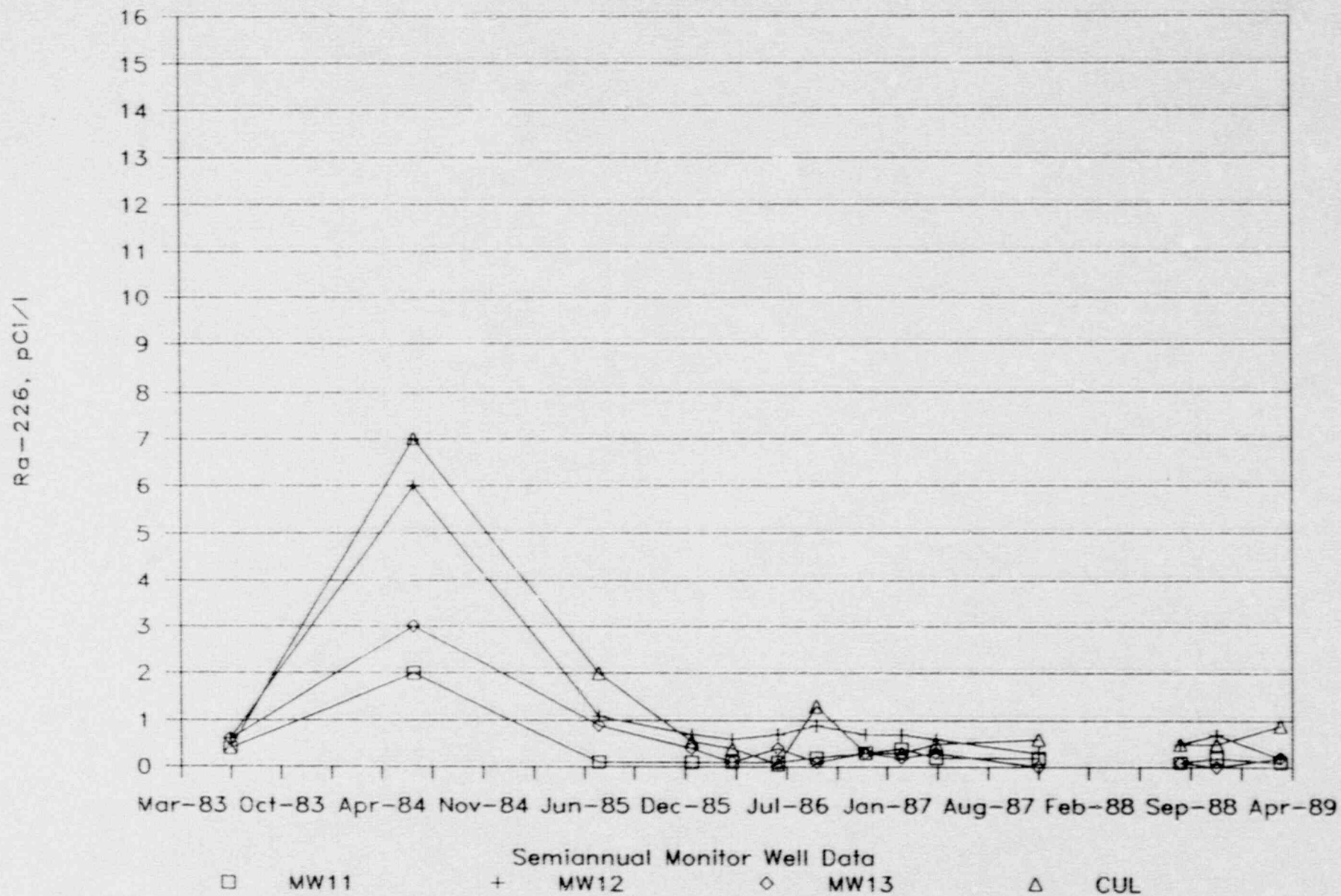
White Mesa Mill



Graph 35

UMETCO MINERALS CORPORATION

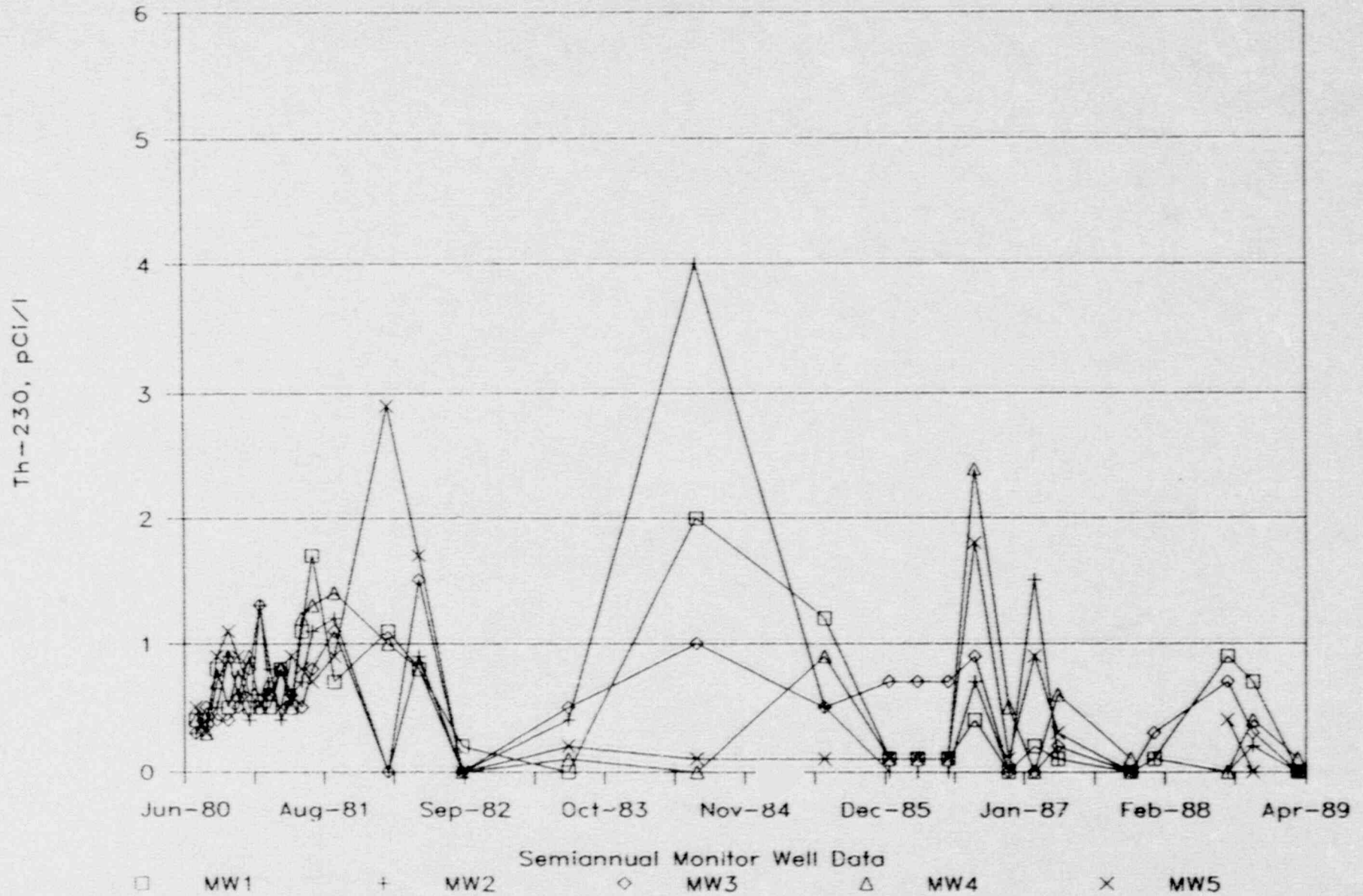
White Mesa Mill



Graph 36

UMETCO MINERALS CORPORATION

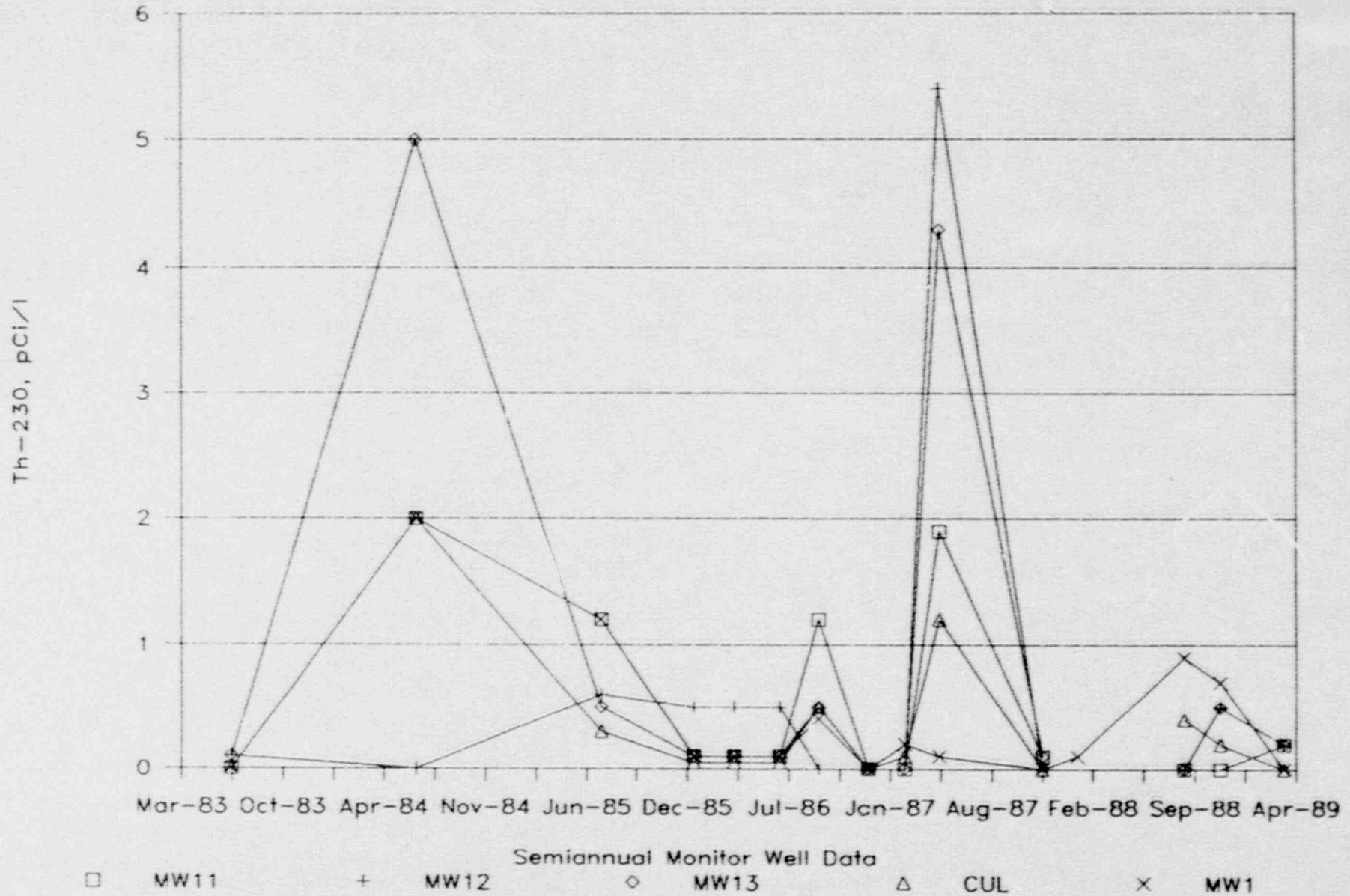
White Mesa Mill



Graph 37

UMETCO MINERALS CORPORATION

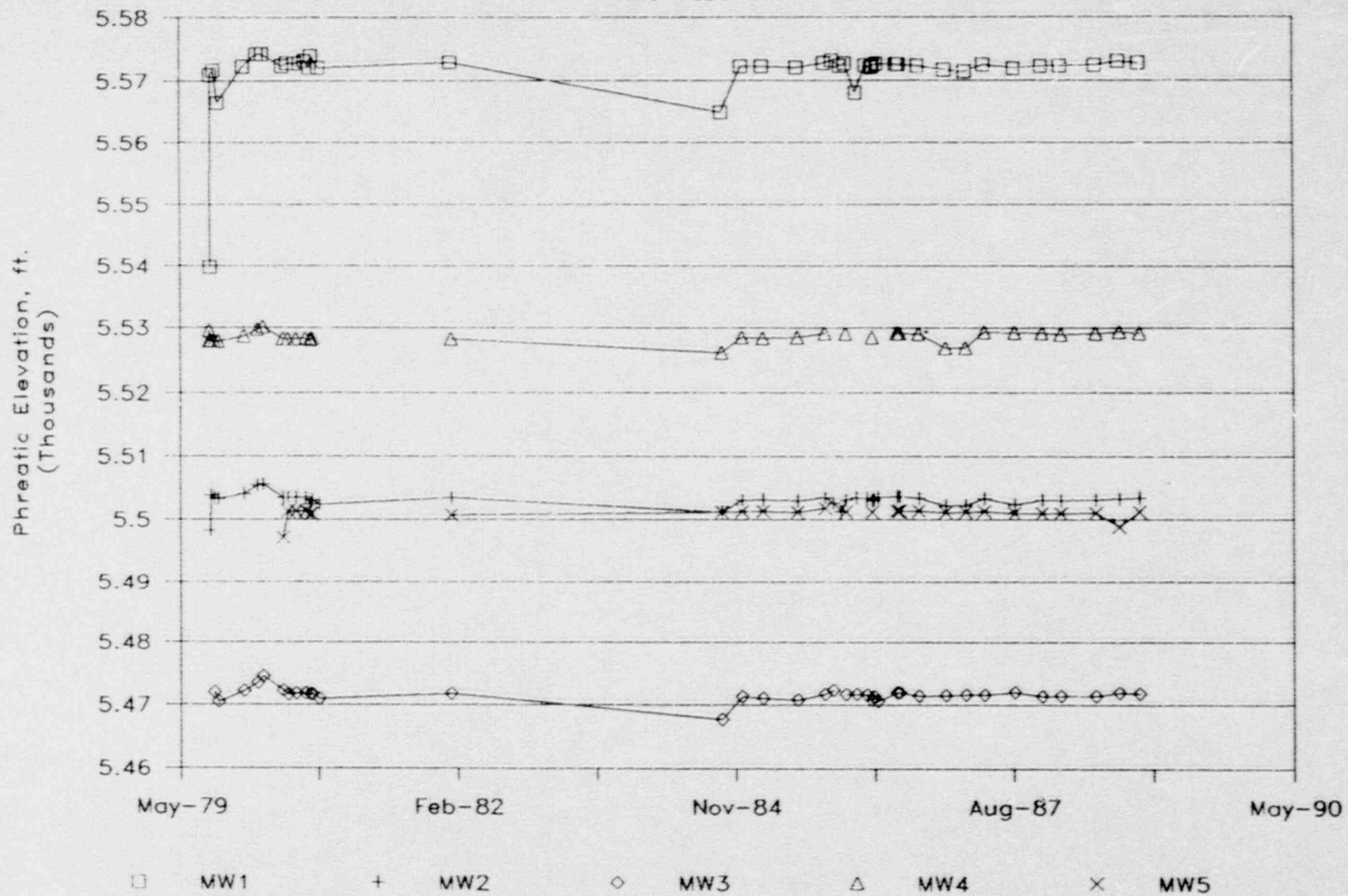
White Mesa Mill



Graph 38

Umetco Minerals Corporation

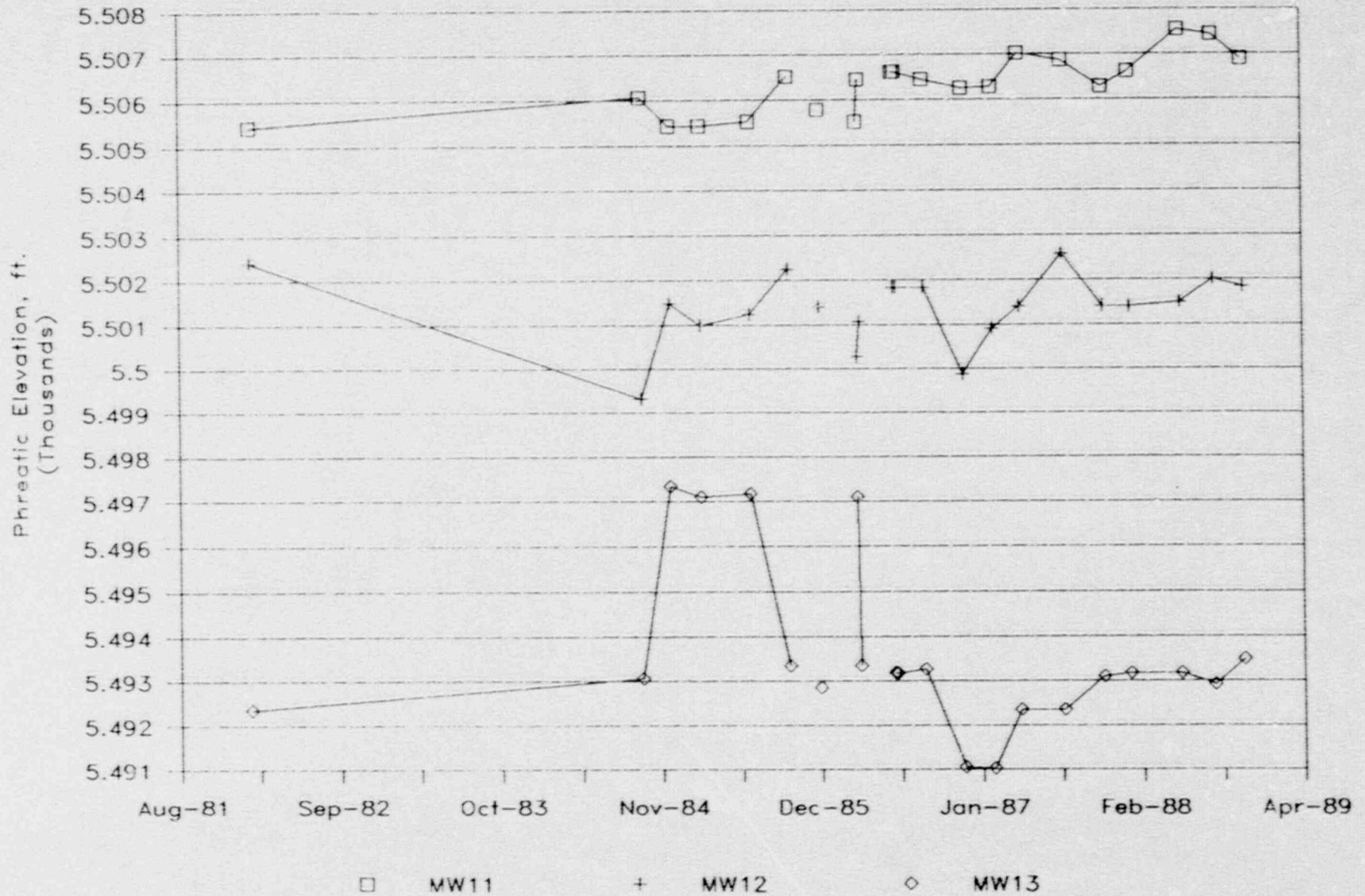
White Mesa Mill



Graph 39

Umetco Minerals Corporation

White Mesa Mill



Graph 40

APPENDIX A

**SEMI-ANNUAL
AIR QUALITY AND METEOROLOGY
MONITORING REPORT
FOR THE BLANDING PROJECT
JANUARY THROUGH JUNE 1989**

Prepared for:

UMETCO Minerals Corporation
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ENECOTECH

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1.0 INTRODUCTION

In 1977, a meteorological, air quality, and radiological monitoring program was started at the Blanding Uranium Mill. The purpose of this monitoring program was to document the regional atmospheric baseline and to provide adequate data to assess the potential air quality impacts resulting from the mill. The monitoring program is ongoing to provide compliance monitoring for the mill operations. This report summarizes the data collected from this monitoring program for the period January through June, 1989.

2.0 MONITORING PROGRAM DESCRIPTION

This section presents the site location and describes the daily activities at the site. Data reduction and analysis procedures are also discussed.

2.1 Site Description

The region encompassing the UMETCO Blanding Uranium Mill is shown in Figure 1. The mill is located in an area known as the White Mesa and is approximately five miles south of the town of Blanding, Utah, just west of State Highway 47. The air monitoring station, located on the northern property boundary of the mill, is situated in the southwest corner of Section 22, T37S, R22E at an elevation of 5660 feet MSL. The site was located for the purpose of compliance monitoring for operations at the mill. Pertinent meteorological parameters are measured at this monitoring site.

2.2 Monitoring Instrumentation

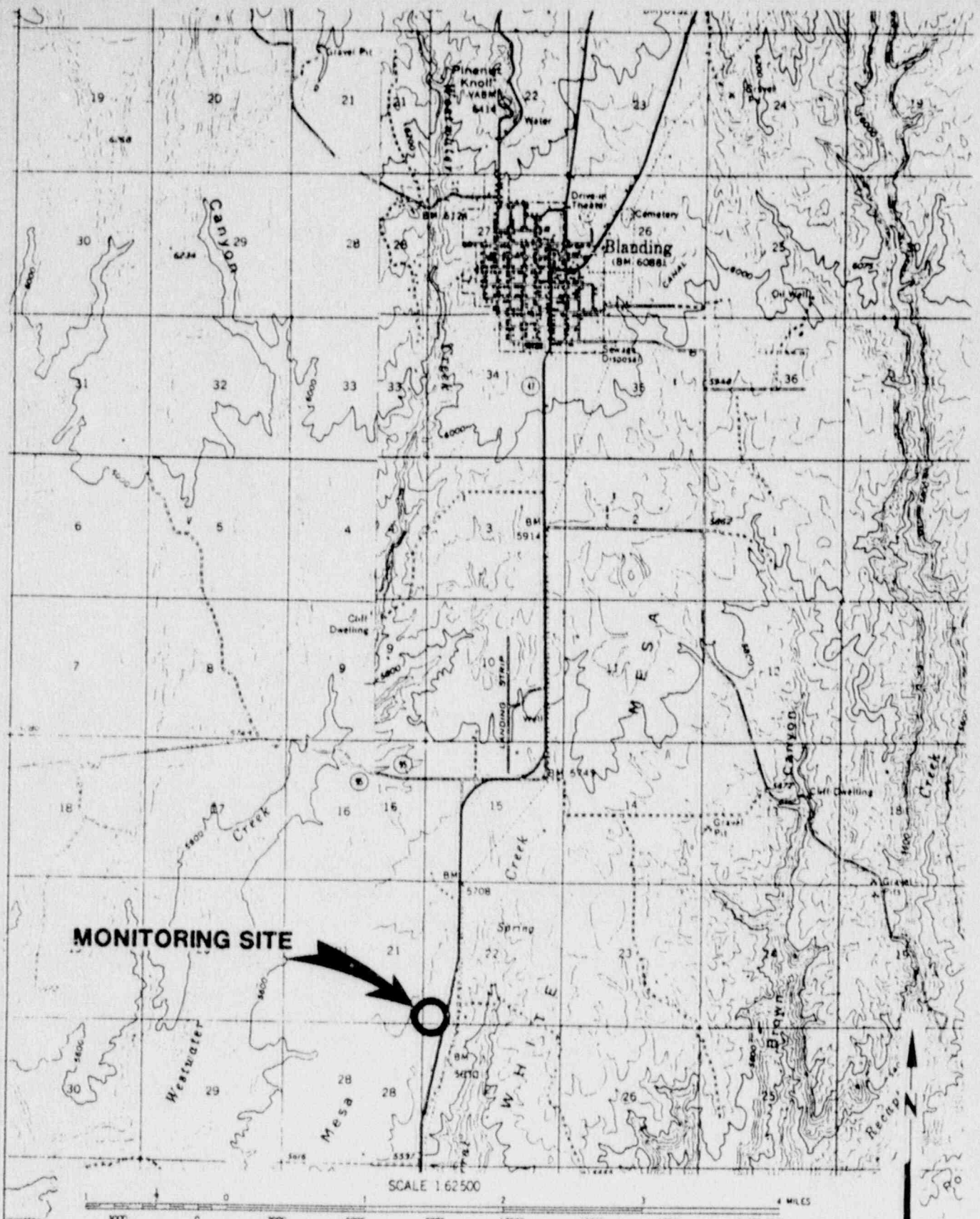
The instruments, sensor accuracies and sampling heights used in the monitoring program are shown in Table 2.1. Weathertronics wind speed and wind direction instrumentation, coupled with a Campbell Scientific CR-10 Data Logger, continuously record wind speed, wind direction and sigma theta (the standard deviation of wind direction) at the standard ten meter height. All meteorological data is stored in the data logger storage module and dumped to cassette tapes once a week. It should be noted that from January through approximately February of 1989, the original CR-5 system, which printed on paper charts, was utilized. It was replaced in March with the updated CR-10. Both systems give an hourly average reading for all parameters.

2.3 Data Reduction

From January through February, paper charts from the CR-5 were received at EnecoTech approximately once a month. The data was transferred to key-punch sheets and entered into the computer. From March on, cassette data tapes from the CR-10 were received at EnecoTech's Denver office also once a week and were subsequently downloaded onto a computer. Computer programs then process the newly created data file into the proper format for subsequent data analysis.

2.4 Quality Assurance

After the meteorological data is downloaded it is checked for any apparent anomalies. If any are discovered, the project manager is notified and the reasons for the erroneous data along with possible solutions to the problem are discussed. The site technician is then contacted and given instructions for any necessary repairs. If required, and the repairs cannot be implemented by the site technician, an EnecoTech scientist is dispatched to the site. Once the problem is discovered and fixed, the invalid data is corrected, if possible. If the erroneous data cannot be rectified it is left invalid in the data files.



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LOCATION OF THE UMETCO

BLANDING AIR MONITORING STATION

File No.:

109-005

Date:

JULY, 1989

Figure No.:

1

TABLE 2.1
 INSTRUMENT SPECIFICATIONS FOR THE
 UMETCO BLANDING PROGRAM

<u>Parameter</u>	<u>Instrument Reading Accuracy</u>	<u>Height</u>	<u>Manufacturer and Model Number</u>
Wind Speed	0.34 m/sec	10 m	Weathertronics 2030
Wind Direction	<u>+2.0°</u>	10 m	Weathertronics 2020
Data Logger (January-February)	-	-	Campbell Scientific CR-5
Data Logger (March-June)	-	-	Campbell Scientific CR-10

3.0 RESULTS

This section describes the programming results and statistical analysis of the meteorological data collected during the period of January 1 through June 30, 1989.

3.1 Meteorological Data

3.1.1 Hourly Data Presentation

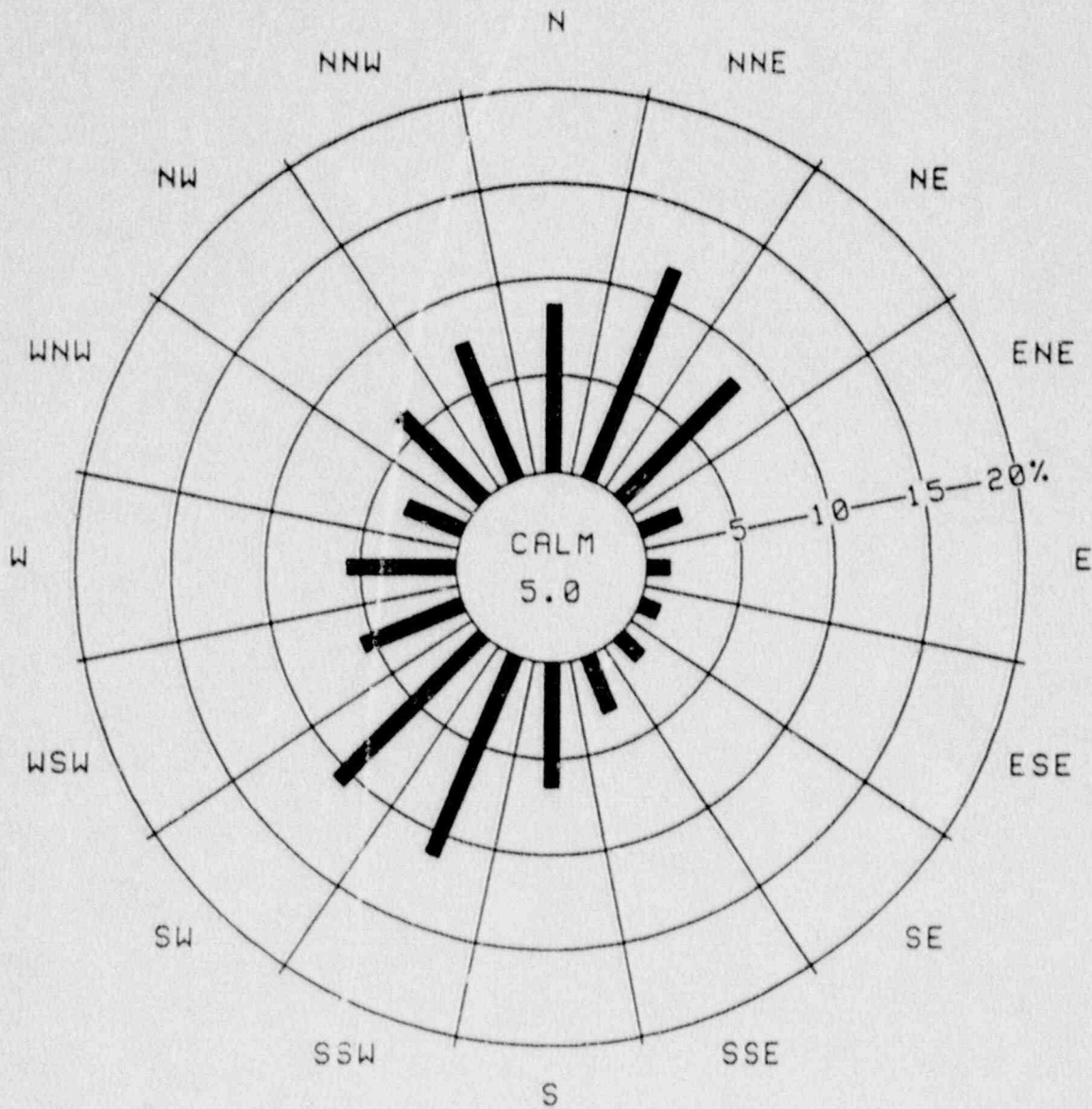
Hourly values of wind speed, wind direction, and sigma theta are presented in Appendix A in the Storage and Retrieval of Aerometric Data (SAROAD) format. This format is approved by the EPA as the standard method of presenting air quality/meteorological data. The SAROAD format also includes average monthly values for each hour, daily averages and monthly averages.

3.1.2 Wind Analysis

The standard wind rose (for all hours) from the reporting period is presented in Figure 2. To show the discussed wind patterns, semi-annual wind distributions in graphical form were developed for 4-hour segments throughout the day (midnight to 4:00 a.m., 4:00 a.m. to 8:00 a.m., etc.) and are presented in Figure 3. A distribution of wind direction by wind speed classes (joint frequency distribution) was also developed from the data collected at the site over the reporting period. This frequency distribution is presented in Table 3.1. The tabular joint frequency distributions for the Figure 3 wind roses are presented in Appendix B, Tables B-1 through B-6.

Figures 2 and 3 demonstrate that two dominant wind patterns exist at the site. One is the persistent local down-slope (drainage) flow from the higher elevations to the north to the lower elevations to the south-southeast through southwest. The other is an upslope wind (return flow) that blows towards the higher terrain. Figure 3 shows that the drainage flow develops just before sunset as shown by the 20-24 MST wind rose, and is most pronounced throughout the nighttime hours. In fact, Figure 3 shows that the winds were from the north-northwest through northeast sectors greater than 50 percent of the time between the hours 2000 through 0800 MST. During these hours, wind speeds of 2.6 to 4.2 m/sec (5.8 - 9.4 mph) were typical from these directions.

Figure 3 also shows, as daytime heating begins, that surface winds reversed from a predominate northeast drainage flow to a south-southwesterly upslope flow. As daytime heating progressed, over 51 percent of the winds were from the south through southwest during the hours of 0800-1600 MST. The speeds from these directions during this period typically ranged from 3.3 to 5.4 m/s (7.4 to 12.1 mph). The wind rose for the 1600 to 2000 MST time frame shows veering (changing in a clockwise direction) winds with over 48 percent of the flow from the southwest through west. Wind speeds ranged from 5.0 to 6.0 m/s (11.2 to 13.4 mph) during this four-hour block. However, for the entire reporting period, 64 percent of the wind speeds were between 1.5 and 5.0 m/s (3.4 and 11.2 mph) with the overall average at 3.8 m/s (8.5 mph). The strongest winds were out of the west-southwest while the weakest were out of the east. Calm winds occurred 5.0 percent of the time.



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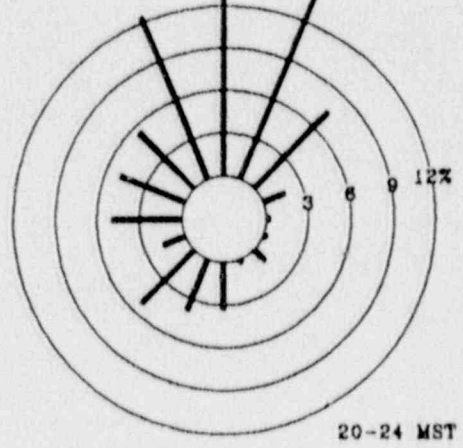
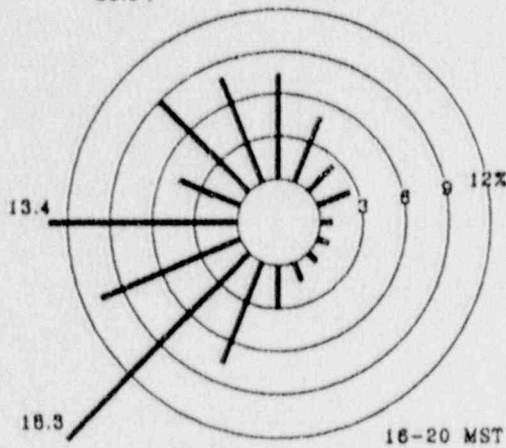
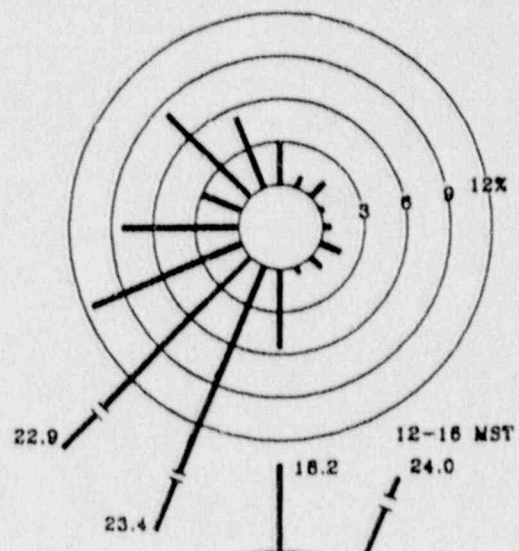
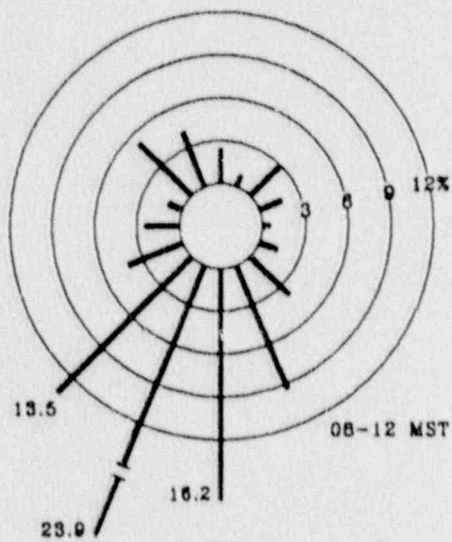
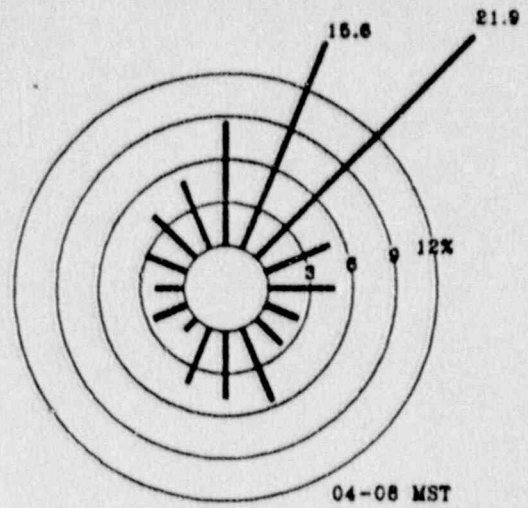
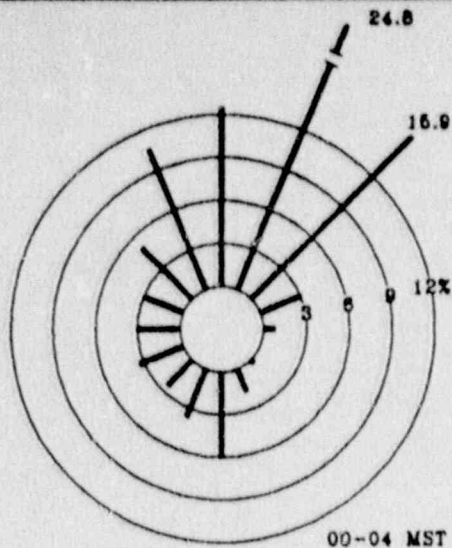
BLANDING SITE

WIND ROSE
ALL HOURS
JANUARY THROUGH JUNE, 1989

File No.: 109-005

Date: JULY, 1989

Figure No.: 2



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SEGMENTED WIND ROSES
BY HOUR OF THE DAY
JANUARY THROUGH JUNE, 1989

File No.: 109-005

Date: JULY, 1989

Figure No.: 3

TABLE 3.1

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR
 DATA PERIOD FIRST HALF 1989
 UMETCO - BLANDING
 TIME (MST): 0000-2400

DIRECTION	SPEED CLASS INTERVALS (M/S)						ALL	MEAN SPEED
	1<1.5	1.5< 3	3< 5	5< 8	8<11	>11		
N	.46	2.42	4.11	1.46	.18	.00	8.63	3.7
NNE	.55	5.03	5.62	.50	.00	.00	11.69	3.1
NE	.82	4.93	2.60	.23	.00	.00	8.59	2.7
ENE	.69	1.23	.32	.09	.00	.00	2.33	2.2
E	.37	.87	.05	.00	.00	.00	1.28	2.0
ESE	.18	.69	.18	.05	.00	.00	1.10	2.3
SE	.32	.82	.41	.05	.00	.00	1.60	2.6
SSE	.32	1.28	1.05	.18	.27	.00	3.11	3.5
S	.41	2.19	2.83	.91	.09	.00	6.44	3.4
SSW	1.01	1.60	4.11	2.88	1.19	.41	11.19	5.0
SW	.46	1.55	4.29	2.88	1.37	.14	10.69	5.0
WSW	.05	.87	1.78	1.87	1.10	.00	5.66	5.5
W	.18	1.19	1.64	1.92	.73	.05	5.71	5.0
WNW	.23	1.01	1.32	.64	.05	.00	3.24	3.7
NW	.18	1.14	2.38	2.28	.23	.00	6.21	4.6
NNW	.27	1.23	3.29	2.24	.50	.00	7.54	4.6
ALL	6.49	28.05	36.00	18.18	5.71	.59	95.02	4.0

CALM (less than meter per second) = 5.0
 PERIOD MEAN WIND SPEED = 3.8 M/S

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3.1.3 Atmospheric Stability

Atmospheric dispersion stability classifications in the standard Pasquill scheme have been estimated for the Blanding site using the Mitchell-Timbre sigma theta technique. In this technique, Pasquill stability classes are derived from the hourly sigma theta (standard deviation of wind direction), average wind speed and solar angle algorithm to differentiate daytime from nighttime conditions. The Pasquill stability classification scheme involves delineating stability into six classes, A through F. Classes A through C reflect unstable conditions with Class A being more unstable than Class B, which is more unstable than Class C. Stable conditions are represented by Classes E through F, with Class F being more stable than Class E. Neutral conditions are denoted by a D classification.

Typically, unstable conditions occur when there is good solar heating (clear days) and low wind speeds. Neutral conditions occur with cloudy skies and/or high wind speeds. Stable conditions typically occur when there is radiational cooling (clear nights) and low wind speeds. Usually, stable conditions result in the worst dispersion of atmospheric released pollutants.

Table 3.2 presents the frequency distribution of stability classes observed at the Blanding site throughout the reporting period. Neutral (D) conditions had the highest frequency of occurrence at 50.0 percent. Slightly stable (E) conditions were the next highest category at 14.5 percent, followed by extremely unstable (A) at 10.7 percent. Moderately unstable (B), slightly unstable (C), and moderately stable (F) all had an occurrence of approximately 8.0 percent. The extremely unstable category had a slightly higher frequency of occurrence than expected due to the higher data recovery in May and June relative to the other months for the period (see Appendix A and Section 3.2 for more information). This caused the May and June (the period of greatest solar heating) data to unfairly weigh the stability statistics of the period.

Figure 4 presents the individual wind distribution for each stability class. This figure shows that the atmospheric stability conditions track well with the local drainage/upslope pattern of the area. Unstable conditions (Classes A through C) are associated with winds from the south through southwest (upslope flow) since these winds typically occurring during the daylight hours. Also seen in Figure 3.3 stable conditions primarily occur with the nocturnal drainage (north through northeast) winds while the neutral category (D) contains both drainage as well as upslope type winds.

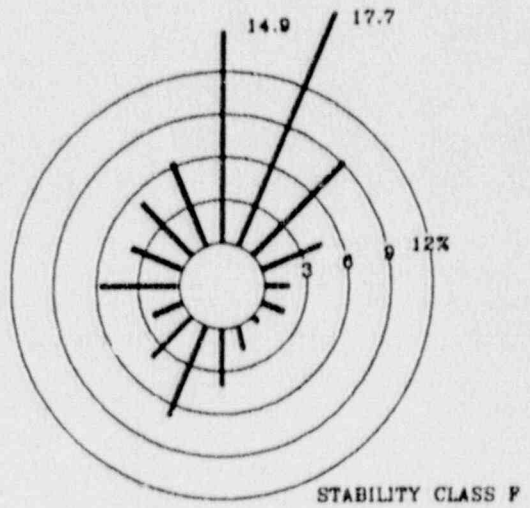
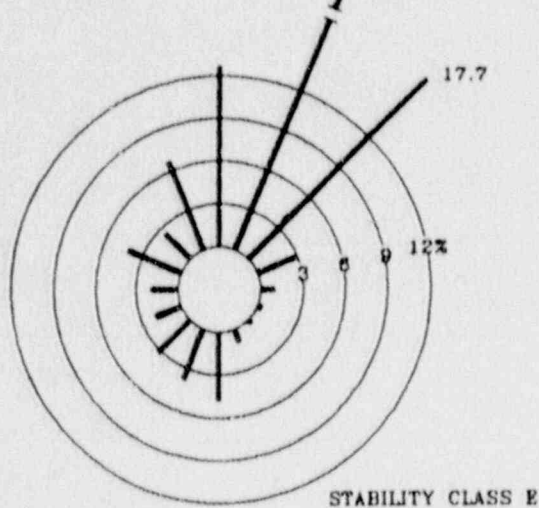
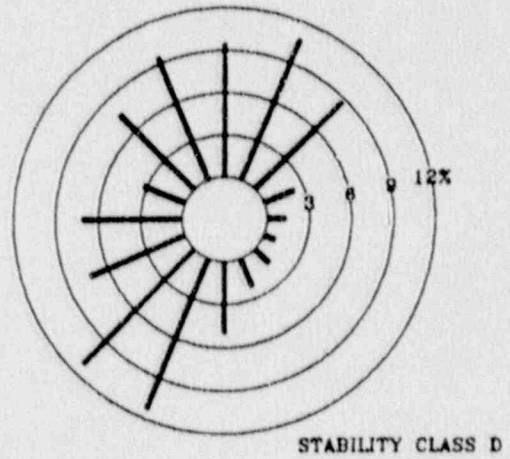
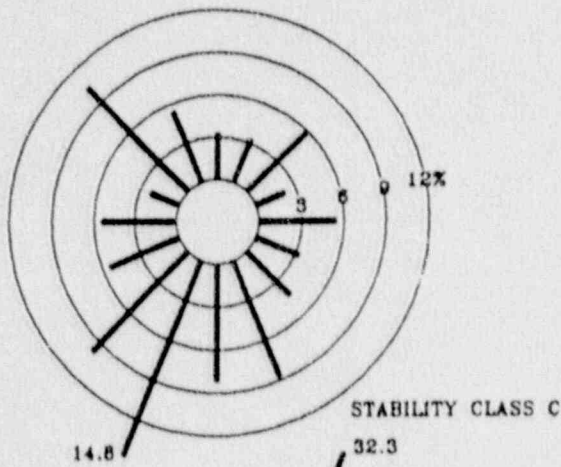
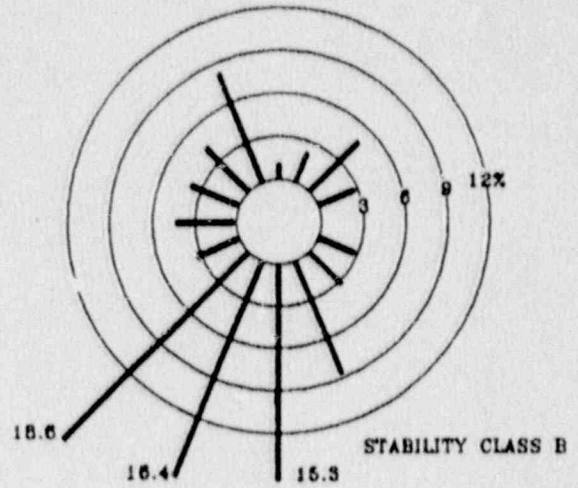
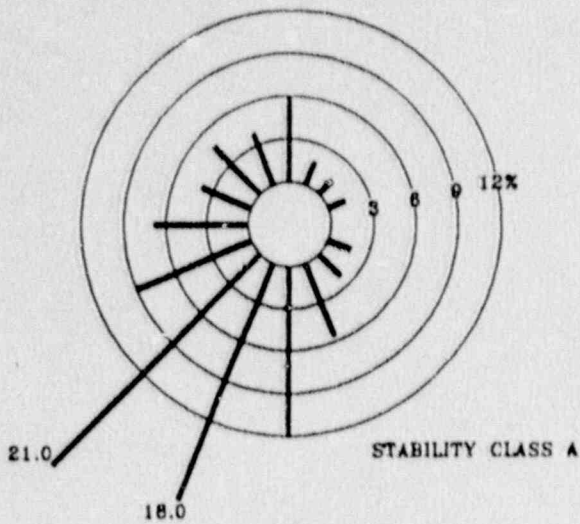
Table 3.3 presents a normalized distribution of Figure 4 along with the total percentage of calm winds so that the actual percentage of each stability class by wind direction may be observed. The highest frequency of occurrence was 5.4 percent and occurred with a north-northeast wind under D stability conditions.

The joint frequency distributions (JFD) of wind direction by wind speed class for each stability category are presented in Appendix C, Tables C-1 through C-7. These JFDs are presented in the Standard National Weather Service format with wind speed classes presented in knots. Thus, they are directly usable for any standard dispersion model requiring a JFD input. For reference, one knot equals 1.15 miles per hour.

TABLE 3.2

STABILITY CLASSIFICATION AND FREQUENCY OF OCCURRENCE
OF PASQUILL STABILITY CLASSES
BLANDING STATION
JANUARY THROUGH JUNE 1989

<u>Stability Classification</u>	<u>Pasquill Categories</u>	<u>Percent Occurrence</u>
Extremely Unstable	A	10.7
Moderately Unstable	B	8.4
Slightly Unstable	C	8.4
Neutral	D	50.0
Slightly Stable	E	14.5
Moderately Stable	F	8.0



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PERCENT OCCURRENCE OF WIND
DIRECTION BY STABILITY CLASS
JANUARY THROUGH JUNE, 1989

File No.: 109-005

Date: JULY, 1989

Figure No.: 4

TABLE 3.3

FREQUENCY OF WINDS BY STABILITY CLASS
 DATA RECORDED FROM JANUARY THROUGH JUNE 1988
 BLANDING - UTAH

DIRECTION	STABILITY CATEGORY						ALL
	A	B	C	D	E	F	
N	.65	.09	.28	4.70	1.84	1.20	8.76
NNE	.18	.18	.28	5.35	4.70	1.43	12.13
NE	.14	.41	.51	4.33	2.58	.74	8.71
ENE	.14	.23	.18	1.15	.41	.37	2.49
E	.00	.00	.46	.65	.14	.14	1.38
ESE	.18	.23	.28	.41	.05	.14	1.29
SE	.23	.28	.37	.69	.05	.05	1.66
SSE	.60	.74	.74	1.06	.14	.14	3.41
S	1.29	1.29	.69	2.49	.69	.32	6.78
SSW	1.94	1.38	1.24	5.62	.55	.55	11.30
SW	2.26	1.57	.83	5.58	.46	.32	11.02
WSW	.97	.28	.46	3.64	.28	.18	5.81
W	.74	.37	.46	3.55	.28	.46	5.86
WNW	.41	.32	.18	1.61	.60	.32	3.46
NW	.51	.37	.88	3.78	.37	.41	6.32
NNW	.41	.69	.46	4.70	.97	.51	7.75
ALL	10.65	8.44	8.30	49.33	14.11	7.28	98.11

Total calm (less than one knot)= 1.9

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3.2 Data Recovery

Table 3.4 summarizes the data recovery for this semi-annual reporting period. Data recoveries for wind direction, wind speed, and sigma theta were 52, 51, and 51, respectively. Data losses were due to chart jams, chart paper running out, and problems with the digital system. Due to equipment problems, the original CR-5 data logger, which prints on paper, was replaced in late March by a CR-10, which stores the data in digital format. However, the installed CR-10 did not operate properly and was sent back to Campbell for repair. In the interim, a substitute CR-10 was installed. The original repaired CR-10 was set up starting May 9, and since this time, recovery rates have been 100 percent.

TABLE 3.4

PERCENT DATA RECOVERY
JANUARY THROUGH JUNE 1989
UMETCO MINERALS - BLANDING

<u>PARAMETER</u>	<u>PERCENTAGE</u>
WIND SPEED	52.0
WIND DIRECTION	51.0
SIGMA	51.0
STABILITY	51.0

4.0 SUMMARY

Meteorological data was collected from January 1 through June 30, 1989 at the Blanding site with an overall recovery rate of 51 percent. Data losses were due to the CR-5 paper jams and system failure along with the CR-10 (the replacement system) initial set up problems. However, once the CR-10 was on-line commencing May 9, 1989, the data capture rate has been 100 percent.

The results of the meteorological data collected during this reporting period are representative of the monitoring location. The dominant feature in the wind data observed in the reporting period is a local nocturnal drainage flow from the higher elevations to the north and northeast along with a daytime upslope, return flow from the south through southwest. Stable, neutral and unstable atmospheric conditions occurred 22.5 percent, 50.0 percent, and 27.5 percent of the time, respectively. The relatively high occurrence of unstable conditions is probably due to the proportionally higher reliance of the May and June data, when solar heating was at a maximum for the period.

APPENDIX A
HOURLY DATA - SAROADS

HOURLY AVERAGED WIND SPEED
 DATA RECORDED IN JANUARY 1989
 BLANDING - UTAH
 UNITS ARE TENTHS OF A METER PER SECOND

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
3	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
4	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
5	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
6	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
7	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
8	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
9	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
10	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
11	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
12	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
13	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
14	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
15	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
16	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
17	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
18	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
19	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
20	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
22	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
23	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
24	37	21	28	27	25	19	14	10	11	11	15	26	27	16	7	8	30	19	13	11	6	2	11	9	17
25	7	5	1	3	18	16	18	4	4	9	6	12	35	30	22	21	12	12	9	19	16	11	9	16	13
26	23	27	28	28	21	45	30	47	38	30	44	30	16	24	35	36	22	27	39	31	**	18	13	30	30
27	29	22	30	23	20	21	29	60	30	20	29	32	21	21	34	37	25	35	34	23	22	20	21	21	27
28	21	10	13	24	25	16	11	30	32	24	30	29	41	44	55	31	41	33	38	29	31	31	34	**	29
29	14	15	21	26	23	19	24	26	11	18	21	19	29	28	27	21	11	5	8	**	17	11	10	15	18
30	12	13	17	12	13	17	3	10	10	5	5	16	15	18	25	13	12	11	6	**	**	8	18	22	13
31	26	23	26	20	15	15	18	14	3	1	10	9	18	17	15	9	10	**	1	28	23	18	19	29	16
AVERAGE	21	17	21	20	20	21	18	25	17	15	20	22	25	24	26	20	20	21	20	25	21	17	20	23	21

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY AVERAGED WIND DIRECTION
 DATA RECORDED IN JANUARY 1989
 BLANDING - UTAH
 UNITS ARE DEGREES AZIMUTH

HOURLY AVERAGED WIND DIRECTION

DAY	HOURLY AVERAGED WIND DIRECTION																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
3	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
4	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
5	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
6	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
7	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
8	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
9	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
10	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
11	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
12	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
13	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
14	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
15	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
16	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
17	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
18	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
19	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
20	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
22	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
23	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
24	339	43	24	23	9	58	62	63	41	35	109	128	144	185	286	152	166	80	67	45	61	2	358	19
25	358	316	334	343	2	24	252	288	354	97	174	196	180	178	193	225	132	168	221	319	340	345	337	7
26	1	2	2	15	35	16	31	38	37	125	109	121	106	39	50	83	68	46	21	30	**	17	357	30
27	29	262	350	320	277	6	27	28	50	240	241	289	297	219	214	210	212	261	357	51	23	52	68	31
28	30	339	71	42	35	4	49	33	22	320	5	163	306	297	311	311	319	322	296	275	283	296	321	**
29	51	21	36	25	20	5	16	360	343	224	214	213	221	220	198	197	205	198	29	**	16	1	15	17
30	87	41	31	22	27	31	23	296	320	300	270	234	227	215	199	213	199	187	17	**	**	40	31	19
31	25	29	23	20	14	1	4	16	9	283	220	188	174	216	211	330	18	**	271	6	28	54	46	45

* Indicates calibration of sensors

** Indicates invalid data

HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION
 DATA RECORDED IN JANUARY 1989
 BLANDING - UTAH
 UNITS ARE TENTHS OF A DEGREE

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
3	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
4	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
5	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
6	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
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8	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
9	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
10	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
11	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
12	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
13	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
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16	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
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18	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
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20	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
22	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
23	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
24	270	234	202	180	238	332	160	140	208	249	206	142	126	321	286	290	252	342	155	96	205	35	100	214	208
25	128	84	87	245	233	231	637	572	287	509	230	105	147	145	110	169	626	192	717	314	298	338	264	269	289
26	100	208	265	215	223	270	65	60	246	403	130	163	499	241	103	147	142	119	191	133	**	232	239	179	203
27	508	263	224	745	498	620	178	191	603	233	212	165	224	145	94	132	81	**	357	69	182	231	148	171	274
28	142	138	356	223	142	333	294	116	221	189	655	245	103	148	80	140	90	129	101	157	119	162	117	**	191
29	385	226	159	144	**	237	245	247	525	140	99	157	87	109	115	130	136	552	**	**	216	203	177	267	217
30	297	248	80	262	210	185	211	220	192	258	224	176	163	**	106	175	163	359	224	**	372	317	100	170	214
31	84	42	40	46	129	33	270	298	254	287	607	445	301	186	186	570	212	**	531	312	165	135	113	82	232
AVERAGE	251	180	177	258	239	280	258	231	317	284	298	200	206	172	152	238	193	247	315	190	232	240	178	228	231

* Indicates calibration of sensors
 ** Indicates invalid data

ENERGOTECH INC.
 SAROAD (V1.0) 0707/89

HOURLY AVERAGED WIND SPEED
 DATA RECORDED IN FEBRUARY 1989
 BLANDING - UTAH
 UNITS ARE TENTHS OF A METER PER SECOND

DAY	HOURLY AVERAGED WIND SPEED																								AVG	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	27	26	29	29	28	29	26	23	24	17	14	12	17	14	28	75	62	60	45	54	77	86	55	52	38	
2	49	50	58	54	39	35	28	26	62	71	78	65	63	67	57	63	63	**	**	45	39	34	44	40	52	
3	33	24	18	16	8	9	21	40	34	45	60	55	17	27	27	37	66	38	46	**	73	80	62	73	40	
4	83	80	75	66	36	59	70	34	59	64	86	89	114	130	142	159	161	147	83	67	**	43	42	35	84	
5	27	25	16	30	62	**	2	0	0	0	42	70	71	**	76	59	41	50	65	80	**	**	54	**	41	
6	**	54	**	**	**	**	**	**	**	**	9	**	15	18	18	19	**	48	38	23	20	**	13	15	**	24
7	**	**	21	**	**	**	**	**	**	**	**	**	8	25	28	23	12	**	**	10	5	7	6	3	3	13
8	**	**	3	6	3	7	12	7	9	6	21	14	11	**	4	11	12	8	13	6	12	10	6	11	9	
9	7	**	1	5	5	5	2	3	4	8	6	13	6	12	6	11	7	13	10	6	14	9	17	12	8	
10	9	11	6	14	9	6	14	7	12	2	4	11	5	15	10	17	13	13	4	3	4	10	9	9	9	
11	9	13	6	6	9	3	2	7	11	14	8	8	6	11	9	8	17	6	8	**	**	**	**	**	8	
12	**	**	**	**	**	**	**	**	**	**	**	**	5	36	30	28	23	**	**	**	**	**	**	**	**	24
13	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
14	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
15	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
16	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
17	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
18	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
19	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
20	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
22	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
23	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
24	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
25	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
26	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
27	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
28	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
AVERAGE	31	35	23	25	22	19	20	16	24	24	35	30	32	35	36	44	49	41	31	32	32	32	31	29	31	

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY AVERAGED WIND DIRECTION
 DATA RECORDED IN FEBRUARY 1989
 BLANDING - UTAH
 UNITS ARE DEGREES AZIMUTH

DAY	HOUR OF THE DAY																								
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	46	40	39	42	43	32	35	54	52	45	178	161	154	118	181	198	194	203	183	183	182	190	176	181	
2	181	179	186	189	195	190	196	177	188	195	197	198	200	212	213	207	194	**	192	187	194	196	185	184	
3	186	178	176	183	67	119	190	193	191	195	201	208	290	245	234	227	227	225	222	207	218	227	227	229	
4	228	229	239	245	243	239	239	223	204	198	211	214	213	215	206	205	206	217	333	326	**	322	317	301	
5	279	246	259	321	335	**	106	54	352	220	310	310	308	310	323	342	329	320	322	321	322	**	334	**	
6	321	322	**	**	**	**	**	**	**	**	35	214	212	206	188	215	**	73	65	305	295	**	30	44	**
7	**	**	40	304	**	**	**	**	**	**	**	**	302	210	200	198	207	**	196	208	240	204	200	296	256
8	**	**	287	321	324	261	287	197	215	32	199	209	209	233	329	217	231	242	201	165	196	213	197	186	
9	208	**	279	263	27	147	252	330	241	186	227	181	156	133	189	215	286	244	218	233	195	21	24	192	
10	317	224	15	181	178	200	27	169	196	141	50	166	358	38	41	214	231	193	213	67	22	279	211	285	
11	259	205	316	201	236	311	242	218	220	192	201	239	181	203	223	138	148	154	114	136	146	150	157	193	
12	201	160	174	194	193	191	190	190	187	191	190	187	175	180	193	187	**	**	**	**	**	**	**	**	
13	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
14	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
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16	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
17	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
18	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
19	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
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21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
22	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
23	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
24	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
25	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
26	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
27	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	
28	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY AVERAGED WIND SPEED
 DATA RECORDED IN MARCH 1989
 BLANDING - UTAH
 UNITS ARE TENTHS OF A METER PER SECOND

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
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9	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
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11	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
12	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
13	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
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21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
22	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
23	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
24	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
25	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
26	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
27	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
28	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
29	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
30	**	**	**	**	**	**	**	**	**	**	26	30	34	56	43	62	51	50	44	44	38	34	32	42	
31	17	28	21	13	21	31	32	23	15	17	32	33	37	39	45	64	62	55	41	14	9	13	20	30	30
AVERAGE	17	28	21	13	21	31	32	23	15	17	32	30	34	37	51	54	62	53	46	29	27	26	27	31	34

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY AVERAGED WIND DIRECTION
 DATA RECORDED IN MARCH 1989
 BLANDING - DYAB
 UNITS ARE DEGREES AZIMUTH

DAY	HOUR OF THE DAY																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
2	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
3	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
4	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
5	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
6	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
7	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
8	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
9	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
10	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
11	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
12	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
13	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
14	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
15	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
16	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
17	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
18	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
19	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
20	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
21	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
22	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
23	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
24	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
25	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
26	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
27	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
28	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
29	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
30	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00		
31	352	23	4	84	13	17	18	14	274	229	208	191	182	300	330	328	208	321	339	347	347	213	347	360	339	344

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION
 DATA RECORDED IN MARCH 1989
 BLANDING - OTJAH
 UNITS ARE TENTHS OF A DEGREE

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
AVG	348	185	601	626	111	157	87	232	355	333	312	201	265	390	230	164	159	141	97	255	170	308	157	165	236

* Indicates calibration of sensors

** Indicates invalid data

A\MARBAR.PRT

HOURLY AVERAGED WIND SPEED
 DATA RECORDED IN APRIL 1989
 BLANDING - UTAH
 UNITS ARE TENTHS OF A METER PER SECOND

DAY	HOUR OF THE DAY																								AVG	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	18	27	18	29	32	42	41	32	17	13	23	53	59	34	57	90	67	68	52	28	34	41	26	17	38	
2	29	21	34	30	27	34	29	23	22	32	50	60	79	80	70	86	86	86	60	28	25	35	82	58	49	
3	31	22	21	34	41	33	35	34	31	33	32	52	63	73	73	64	78	79	64	45	38	48	56	83	48	
4	72	42	36	24	35	37	46	36	25	44	36	40	40	45	45	38	51	56	40	43	44	49	43	38	42	
5	25	22	27	33	38	20	15	13	19	21	22	33	34	38	46	65	67	34	32	35	28	38	47	47	33	
6	55	55	59	48	53	49	28	16	50	77	96	89	101	90	107	94	56	50	32	33	27	28	37	24	56	
7	31	23	57	58	21	21	24	15	15	29	35	43	33	28	45	48	60	61	41	29	44	55	49	32	37	
8	40	12	15	48	27	27	34	41	77	59	68	73	66	55	50	47	59	47	28	40	38	53	62	49	16	
9	56	50	47	37	48	56	49	46	49	42	40	48	50	62	77	81	78	69	62	32	42	56	65	73	55	
10	58	41	41	47	42	30	24	21	54	37	24	25	40	39	31	31	35	33	30	15	28	29	26	26	34	
11	23	26	25	24	21	24	22	14	40	54	70	64	67	59	60	64	66	53	54	53	44	47	42	30	44	
12	27	45	38	36	13	27	24	47	55	43	45	40	64	57	40	45	39	60	48	48	49	51	46	53	43	
13	33	31	35	20	24	27	21	20	29	28	24	28	32	34	36	42	44	44	35	33	33	29	20	23	30	
14	26	29	27	21	14	6	10	14	15	29	35	40	47	57	52	38	50	43	44	44	37	25	30	31	32	
15	36	35	20	15	19	21	12	13	21	22	33	36	43	58	81	97	89	85	67	44	43	65	61	41	44	
16	19	31	29	23	24	22	24	14	19	26	37	37	68	85	67	56	50	40	34	20	30	40	34	40	36	
17	25	24	21	14	9	24	27	19	13	25	37	38	42	55	70	62	65	62	37	39	51	46	33	45	37	
18	39	53	52	36	24	22	20	20	23	33	29	29	45	35	34	32	31	18	23	27	43	38	31	48	33	
19	38	18	27	31	34	36	17	19	15	28	29	30	32	44	47	39	34	33	26	10	27	30	39	25	30	
20	24	39	38	35	40	33	25	14	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	31
21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	56	78	63	59	67	74	45	43	36	22	54
22	26	16	14	6	17	10	16	22	41	60	66	61	69	99	83	85	78	71	77	61	48	53	53	44	49	
23	23	27	19	27	21	11	7	19	36	50	66	79	93	110	109	95	106	96	69	65	60	57	67	39	56	
24	31	17	49	25	21	16	20	29	46	84	95	**	**	**	**	**	**	**	**	**	**	**	**	**	**	39
25	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
26	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
27	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
28	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
29	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
30	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
AVERAGE	34	31	33	30	28	27	25	24	32	40	45	46	56	59	61	63	61	57	46	38	39	43	45	40	42	

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY AVERAGED WIND DIRECTION
 DATA RECORDED IN APRIL 1989
 BLANDING - UTAH
 UNITS ARE DEGREES AZIMUTH

DAY	HOUR OF THE DAY																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	235	188	44	40	47	33	28	39	104	25	268	272	314	268	278	274	310	290	292	271	340	20	5	7
2	17	21	22	20	32	33	27	43	148	169	203	230	266	264	254	261	258	252	259	239	240	273	337	346
3	6	172	252	230	241	280	292	304	312	326	333	328	326	318	309	296	313	345	351	334	334	321	321	339
4	338	313	334	287	290	313	5	9	348	343	350	4	340	340	358	352	355	355	6	6	347	343	335	324
5	360	10	339	358	12	356	300	202	210	222	212	236	241	222	292	335	9	1	341	14	346	8	349	355
6	356	348	352	339	323	324	308	246	321	339	355	338	1	337	343	360	351	352	9	3	355	342	13	234
7	333	268	316	319	92	42	34	71	173	164	170	194	282	176	287	316	343	339	326	317	336	344	346	21
8	340	190	193	283	294	282	297	339	350	345	332	325	320	325	300	263	288	300	321	336	2	1	350	348
9	340	343	9	357	359	350	306	315	317	322	311	314	329	339	317	318	328	337	340	328	354	2	357	352
10	354	343	318	324	327	351	334	38	63	52	61	196	203	231	198	198	165	161	169	113	35	27	27	33
11	77	94	69	69	55	29	30	266	325	340	337	328	338	332	343	325	339	358	360	5	15	9	9	2
12	16	2	1	4	43	34	358	334	326	323	329	320	18	323	23	48	51	23	10	350	356	7	3	349
13	12	351	340	136	38	37	26	116	155	187	183	200	184	201	212	232	221	216	222	3	350	341	355	22
14	40	29	18	16	42	79	22	326	166	177	190	195	201	213	227	212	216	251	338	13	347	18	19	21
15	12	345	14	44	344	304	2	201	169	176	182	195	201	222	244	251	261	257	259	253	287	339	352	351
16	48	20	7	286	39	41	30	85	172	204	211	227	284	260	259	276	317	276	265	271	27	21	27	32
17	32	4	11	52	118	51	44	79	130	165	186	201	203	269	268	278	260	265	277	335	347	329	349	11
18	7	340	335	351	52	40	12	31	60	188	191	203	242	236	251	346	17	74	97	30	353	21	46	23
19	26	22	20	31	28	13	35	162	124	138	151	134	177	198	207	215	230	188	199	129	24	20	20	38
20	49	33	33	27	27	26	44	86	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
21	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
22	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
23	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
24	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
25	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
26	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
27	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
28	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
29	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
30	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY AVERAGED WIND SPEED
 DATA RECORDED IN MAY 1989
 BLANDING - UTAH
 UNITS ARE TENTHS OF A METER PER SECOND

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
3	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
4	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
5	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
6	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
7	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
8	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
9	**	**	**	**	**	**	**	**	13	10	14	47	63	32	60	84	71	49	31	22	49	48	32	25	39
10	41	37	69	90	93	94	98	92	94	89	104	98	104	103	102	92	95	85	86	81	66	55	44	35	81
11	38	38	26	33	30	18	17	35	47	74	90	66	66	56	108	130	105	84	56	57	26	26	33	16	53
12	18	11	27	49	40	13	13	35	39	44	43	48	46	38	40	42	48	48	54	28	5	13	30	36	34
13	29	21	24	24	32	30	21	15	23	30	32	38	37	39	29	32	35	28	20	31	27	38	23	34	29
14	35	33	40	33	68	26	24	53	57	40	23	38	34	76	30	30	37	38	36	30	30	21	34	36	38
15	44	33	40	16	13	38	63	54	28	45	44	55	65	47	27	35	36	53	36	39	34	27	27	27	39
16	22	23	37	26	18	15	10	13	28	40	38	39	50	51	28	34	28	37	38	44	41	50	55	37	33
17	21	29	19	25	26	19	10	15	35	27	29	20	27	30	23	40	68	70	66	47	42	36	38	30	33
18	35	36	25	27	20	10	9	12	35	31	37	**	71	74	74	55	55	74	58	39	18	29	47	39	40
19	42	44	42	24	13	16	12	16	25	28	33	60	79	74	64	51	54	47	38	24	33	40	36	38	39
20	29	42	47	37	21	10	12	7	15	27	35	48	46	59	64	49	50	56	52	27	21	13	19	14	33
21	17	17	21	13	12	16	20	11	14	34	50	74	83	81	78	84	83	70	63	37	19	19	26	37	41
22	20	20	15	18	18	24	19	21	40	35	42	35	40	47	46	40	45	47	37	22	23	26	20	8	30
23	13	5	13	22	30	32	25	19	33	49	52	59	70	77	99	97	96	91	76	77	68	72	68	73	55
24	82	51	39	39	38	43	15	44	66	79	83	75	76	66	75	78	75	80	84	79	50	53	46	16	60
25	35	32	25	34	25	17	31	24	17	27	26	44	60	61	64	59	59	63	59	59	49	29	24	14	39
26	30	23	27	35	43	25	20	17	40	30	28	22	29	34	24	42	29	24	16	12	15	35	38	40	28
27	35	33	30	32	27	17	17	42	59	49	56	59	70	76	88	96	78	57	90	78	65	67	65	58	56
28	49	36	25	18	18	19	27	63	79	97	90	106	107	95	105	107	100	95	86	64	37	44	60	58	66
29	57	62	51	37	31	21	54	79	77	96	90	92	93	115	121	110	110	117	111	99	93	93	75	61	81
30	47	45	31	29	35	29	45	71	76	81	89	95	89	97	100	94	100	84	87	77	52	30	12	26	63
31	22	16	21	24	18	21	9	15	20	25	34	31	32	31	31	33	27	31	36	25	35	43	42	39	28
AVERAGE	35	31	32	31	30	25	26	33	42	47	51	57	62	63	64	66	65	62	57	48	39	39	39	35	45

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY AVERAGED WIND DIRECTION
 DATA RECORDED IN MAY 1989
 BLANDING - UTAH
 UNITS ARE DEGREES AZIMUTH

HOOR OF THE DAY

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		
1	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**		
2	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**		
3	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**		
4	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**		
5	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**		
6	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**		
7	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**		
8	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**		
9	**	**	**	**	**	**	**	**	**	331	295	263	357	209	218	237	232	248	292	10	55	83	141	144	134	138
10	148	157	162	157	154	156	152	152	149	173	198	209	218	215	214	216	215	218	220	216	209	214	215	215	175	
11	179	196	196	197	199	144	49	160	180	208	211	196	206	187	202	262	266	263	246	275	294	327	245	58		
12	274	36	288	230	251	289	125	164	216	205	215	237	233	234	227	242	242	263	248	280	302	273	316	354		
13	321	322	4	36	25	34	49	107	148	175	176	204	228	237	253	207	224	229	61	35	19	193	32	354		
14	331	13	34	43	240	152	164	194	204	220	262	267	263	208	275	306	314	318	296	327	20	28	325	326		
15	29	33	31	44	70	201	174	188	155	165	179	189	188	177	215	203	191	191	106	131	270	8	28	357		
16	7	345	36	40	281	320	10	141	144	167	191	202	311	348	5	171	204	76	107	61	6	9	33	360		
17	332	330	42	32	19	37	40	351	312	159	355	335	359	349	29	360	332	330	342	337	349	331	333	359		
18	27	18	11	30	26	31	50	150	215	193	219	**	251	246	253	271	247	249	260	270	281	291	285	279		
19	281	272	276	281	236	319	168	127	142	160	248	240	231	253	280	276	286	281	295	320	16	35	32	19		
20	24	15	20	14	336	117	47	161	168	175	220	230	211	240	237	217	240	247	268	284	283	41	28	56		
21	211	214	213	66	61	69	44	68	142	194	201	260	265	258	264	265	262	268	279	269	261	9	316	325		
22	61	25	61	49	50	47	44	182	199	193	202	200	213	224	213	212	220	222	256	276	285	321	347	33		
23	331	45	59	46	41	44	47	113	167	187	215	208	208	223	230	241	242	247	267	266	251	243	227	232		
24	242	271	286	283	267	265	191	240	259	257	256	273	272	260	259	258	254	275	278	277	291	288	306	332		
25	345	322	15	340	30	19	343	338	186	213	215	241	255	278	258	286	300	311	318	334	346	357	11	35		
26	345	8	353	344	338	354	342	51	57	74	4	25	98	210	204	221	215	223	213	186	47	22	21	19		
27	29	41	41	41	40	90	159	169	164	181	193	206	201	203	223	226	233	246	236	224	227	231	231	231		
28	226	205	177	60	57	33	161	194	158	198	198	206	209	207	207	208	211	222	215	204	186	189	197	193		
29	191	197	177	181	161	169	181	197	202	199	207	199	204	215	209	204	211	213	204	212	208	208	205	210		
30	208	209	199	186	192	181	195	194	198	204	195	200	201	213	230	235	234	270	285	288	296	306	320	299		
31	279	14	36	31	29	38	24	86	226	184	224	230	229	217	224	228	218	304	311	330	359	18	358	353		

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION
 DATA RECORDED IN MAY 1989
 BLANDING - UTAH
 UNITS ARE TENTHS OF A DEGREE

HOOR OF THE DAY

DAY	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	AVG
1	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
2	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
3	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
4	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
5	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
6	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
7	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
8	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
9	**	**	**	**	**	**	**	294	372	406	365	256	179	378	193	445	233	276	135	423	135	93	69	100	257
10	82	99	87	90	103	94	91	98	111	184	144	138	131	159	161	123	139	108	91	73	66	70	102	145	112
11	231	63	156	93	115	636	171	143	218	141	129	165	144	323	159	193	108	154	159	84	347	620	67	476	212
12	608	191	502	136	177	299	376	279	246	209	180	173	169	217	198	179	195	172	216	89	230	180	192	200	234
13	152	305	560	90	50	52	224	340	335	316	314	359	371	303	296	406	347	357	391	90	326	372	195	423	291
14	411	214	90	66	520	769	344	86	139	235	540	276	400	319	335	455	234	147	160	315	92	326	246	140	286
15	216	68	135	237	630	200	132	126	201	177	196	212	194	259	358	266	225	347	257	165	472	209	182	210	236
16	258	275	72	94	320	297	392	542	186	187	260	189	559	206	482	418	384	465	445	168	271	275	69	330	298
17	373	233	281	141	195	198	301	673	177	647	536	426	445	406	421	370	176	143	131	85	56	132	136	234	288
18	114	75	419	82	471	298	184	328	160	259	242	**	225	194	206	192	159	162	106	114	179	101	73	82	194
19	87	92	107	600	605	702	677	351	372	425	448	171	132	170	171	189	194	187	138	233	203	64	100	61	270
20	142	118	41	56	439	533	84	455	315	235	224	218	257	255	198	211	200	118	115	128	83	155	91	179	202
21	203	259	568	151	152	184	72	120	417	193	216	321	149	163	186	138	171	131	125	83	198	159	92	247	196
22	175	161	326	164	184	86	103	396	147	177	199	238	185	257	185	218	168	128	190	181	130	103	128	193	184
23	677	205	106	120	64	55	111	370	173	179	212	180	180	253	165	175	130	141	99	95	90	106	78	82	169
24	90	95	86	106	96	100	551	254	153	123	129	207	167	209	182	184	175	140	101	99	82	83	228	452	171
25	127	175	394	192	79	171	145	308	640	492	314	258	312	303	248	196	213	165	151	71	113	454	563	598	278
26	192	207	216	156	46	207	280	463	225	424	544	356	579	549	452	235	304	310	378	360	207	37	42	43	284
27	48	145	81	48	86	299	234	137	141	180	151	216	185	198	147	163	151	191	99	73	65	73	73	75	136
28	54	141	542	117	202	112	547	136	116	116	155	144	126	183	147	141	133	104	108	71	60	74	67	65	153
29	87	77	60	66	82	196	85	119	128	114	171	144	149	121	114	124	131	99	97	73	72	76	69	71	105
30	54	94	96	87	65	83	126	106	115	126	136	181	159	173	175	145	136	128	116	85	96	198	595	123	142
31	157	273	184	97	81	91	307	510	448	386	360	360	462	438	393	322	591	269	253	75	152	282	242	215	290
AVERAGE	206	162	232	136	216	257	252	288	241	258	268	236	255	262	242	239	215	193	177	141	162	184	162	206	216

* Indicates calibration of sensors

** Indicates invalid data

KNECOTECH INC.
 SAROAD (V1.0) 07/24/89

HOURLY AVERAGED WIND SPEED
 DATA RECORDED IN JUNE 1989
 BLANDING - UTAH
 UNITS ARE TENTHS OF A METER PER SECOND

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	41	31	26	39	38	30	18	13	27	31	31	43	45	39	44	39	37	32	31	21	38	51	46	46	35
2	30	22	34	35	30	21	12	16	13	21	36	44	49	56	54	55	47	28	28	43	31	43	48	47	35
3	34	27	17	13	27	25	14	25	37	39	38	38	46	66	71	19	45	21	9	7	16	31	32	30	30
4	33	37	41	30	34	35	26	36	30	26	21	28	37	51	58	49	51	39	15	8	6	31	34	25	33
5	30	32	28	31	37	29	29	41	38	34	34	47	49	49	47	56	64	55	50	51	47	22	13	15	39
6	11	44	26	11	12	13	16	23	37	46	45	50	54	52	50	51	59	73	51	37	37	41	48	44	39
7	48	44	20	11	12	12	10	13	22	23	25	30	28	39	30	37	38	34	25	23	15	39	41	50	28
8	42	49	62	49	23	32	22	31	29	30	48	57	42	97	100	75	66	47	44	36	33	50	40	36	48
9	36	34	37	30	30	31	22	26	24	26	33	37	33	33	33	43	81	70	62	26	28	32	22	21	35
10	13	21	16	17	33	26	18	25	35	45	36	37	37	43	102	89	87	41	21	23	31	46	39	40	38
11	26	27	34	27	24	19	14	15	22	29	34	34	29	27	31	38	39	48	50	40	25	45	45	47	32
12	41	49	45	50	33	19	33	62	63	51	46	65	54	28	67	53	46	64	63	49	42	39	47	25	47
13	22	23	29	37	50	36	29	27	24	38	68	67	63	69	78	80	67	66	58	41	38	42	40	48	48
14	39	38	38	40	35	44	28	28	56	56	49	39	28	27	23	34	22	47	50	39	37	42	42	42	38
15	28	38	32	36	34	19	23	38	32	29	29	33	28	28	37	45	32	34	28	31	23	22	25	37	31
16	20	13	26	28	21	17	14	38	66	70	70	68	89	88	77	89	81	75	67	68	50	45	52	39	53
17	30	19	23	31	34	25	19	25	24	23	30	34	38	39	32	33	41	39	39	35	21	40	50	48	32
18	41	36	26	35	26	29	23	31	29	30	33	31	29	41	40	47	39	43	29	26	39	38	28	31	33
19	38	30	34	20	37	28	21	22	33	40	31	47	69	67	81	74	72	84	84	78	75	80	61	39	52
20	27	36	20	14	18	14	21	17	38	51	64	90	101	105	107	105	93	99	90	70	54	36	27	87	58
21	105	105	72	58	54	60	52	43	32	23	33	48	69	62	56	35	53	64	52	52	51	45	52	55	55
22	56	49	40	21	25	20	24	45	72	66	40	25	27	29	35	45	56	53	38	19	12	28	40	36	38
23	34	40	30	30	25	14	27	37	48	48	42	40	47	47	53	68	90	91	85	85	77	53	23	24	48
24	14	21	38	38	39	35	21	12	19	43	46	49	63	59	53	58	73	80	65	59	35	16	21	32	41
25	31	12	31	16	18	27	18	48	46	57	56	59	67	56	64	46	83	71	82	58	59	45	31	22	46
26	25	27	34	18	20	23	17	19	23	31	30	36	41	37	48	42	46	50	48	37	21	37	42	33	33
27	21	21	22	38	31	25	19	13	27	39	43	43	41	66	61	67	73	69	66	38	32	22	25	27	39
28	28	26	14	22	27	40	32	22	25	33	37	46	73	60	50	68	62	72	85	18	13	24	33	35	39
29	39	26	27	32	22	27	22	30	20	29	26	46	66	60	56	46	44	59	37	43	31	43	39	32	38
30	19	37	16	28	26	20	23	26	32	27	33	48	62	59	47	54	56	57	55	37	20	23	28	21	36
AVERAGE	33	34	31	30	29	27	22	28	34	38	40	45	50	53	56	55	58	57	50	40	35	38	37	37	40

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY AVERAGED WIND DIRECTION
 DATA RECORDED IN JUNE 1989
 BLANDING - UTAH
 UNITS ARE DEGREES AZIMUTH

DAY	HOOR OF THE DAY																							
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	357	355	26	339	326	308	283	222	166	171	177	181	209	212	204	201	217	236	290	341	347	3	354	340
2	355	35	340	310	3	26	80	150	63	144	188	219	217	229	217	209	221	239	269	278	311	347	7	1
3	341	318	250	27	37	3	340	180	205	209	217	245	354	320	144	173	236	226	166	105	44	26	26	53
4	48	40	35	37	39	35	58	129	150	169	183	215	255	219	219	216	230	230	234	334	26	30	8	96
5	38	35	43	46	47	48	114	171	171	208	226	193	205	201	194	219	219	220	229	227	230	226	63	47
6	180	258	286	68	359	354	48	167	199	223	234	245	255	320	312	310	311	318	315	10	15	24	15	22
7	31	16	26	352	272	5	46	106	99	214	255	227	188	232	208	228	221	221	213	177	70	22	51	53
8	14	7	351	346	54	32	18	126	134	169	186	219	251	341	323	321	323	309	307	331	5	105	37	22
9	38	34	37	40	46	41	64	129	146	157	176	223	211	220	232	228	220	228	269	282	316	280	302	29
10	156	257	22	47	29	34	79	171	158	171	190	194	259	249	274	321	351	6	334	14	61	50	30	5
11	324	30	17	24	354	33	78	188	179	195	222	209	256	5	322	263	227	259	276	272	318	347	343	330
12	338	340	321	7	30	53	291	227	227	222	218	204	202	75	338	1	34	50	58	44	47	55	41	17
13	23	2	53	27	44	41	35	49	204	356	330	326	326	319	324	335	12	23	15	21	20	9	12	19
14	3	348	15	13	2	8	22	80	156	153	178	166	134	106	104	303	314	21	26	20	18	7	16	22
15	20	18	27	16	6	87	120	143	160	181	166	171	204	208	214	224	234	261	273	329	26	36	336	235
16	214	305	39	41	59	53	85	183	191	210	220	241	243	245	243	245	255	266	259	266	279	283	281	295
17	286	323	21	8	11	5	85	87	67	109	249	254	240	226	240	207	249	249	276	271	310	30	32	28
18	23	24	56	27	40	43	44	158	140	155	162	161	165	222	231	224	235	223	223	306	346	7	28	17
19	11	48	333	37	30	37	48	140	172	201	194	200	212	210	253	254	245	254	233	253	228	234	259	274
20	255	254	154	74	64	120	53	89	176	193	214	215	224	247	245	231	254	269	268	275	279	288	335	339
21	340	336	335	314	335	331	344	340	319	302	272	302	325	335	322	327	310	321	359	352	353	12	17	10
22	18	16	350	292	315	335	320	44	48	47	42	38	274	276	248	236	223	216	230	257	66	40	25	30
23	34	27	38	42	66	59	169	154	162	173	180	197	215	214	221	208	245	229	229	316	340	357	32	16
24	295	49	24	31	29	4	12	200	180	203	207	227	222	208	222	226	226	233	234	236	253	275	171	176
25	194	184	180	245	60	47	68	200	199	217	218	210	202	195	208	217	250	256	254	260	317	21	352	350
26	22	8	349	346	40	41	56	155	179	211	228	238	209	194	209	238	210	238	258	263	300	30	23	33
27	11	25	15	31	38	39	48	87	177	202	197	230	226	221	240	228	254	221	193	201	252	269	19	350
28	346	34	31	54	43	35	45	99	144	180	203	215	214	222	191	216	226	198	194	249	40	42	24	25
29	20	26	29	33	41	27	86	163	175	168	224	226	222	215	237	244	224	258	254	289	332	15	16	11
30	14	247	19	12	27	46	33	105	166	183	209	221	211	201	222	213	214	232	220	223	229	357	24	341

* Indicates calibration of sensors
 ** Indicates invalid data

HOURLY HORIZONTAL WIND DIRECTION STANDARD DEVIATION
 DATA RECORDED IN JUNE 1969
 BLANDING - UTAH
 UNITS ARE TENTHS OF A DEGREE

DAY	HOUR OF THE DAY																								AVG
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
1	222	236	187	100	71	156	200	402	255	242	264	264	253	246	299	379	299	298	329	208	104	301	203	53	232
2	340	277	483	178	158	414	680	302	441	372	301	240	220	234	247	266	226	462	250	91	217	63	242	152	286
3	291	481	563	411	53	208	363	254	137	207	206	425	248	259	259	478	253	345	429	152	257	33	51	178	273
4	169	104	49	81	75	64	122	234	241	292	372	415	441	380	228	241	177	143	467	517	354	115	557	623	269
5	469	170	159	65	48	67	355	136	183	206	321	290	299	371	272	258	186	190	150	106	64	127	537	469	229
6	313	143	305	392	588	621	210	264	221	276	282	330	465	204	266	219	204	145	279	163	93	53	86	62	258
7	44	222	227	635	323	310	253	436	409	400	490	376	717	311	492	404	256	329	342	155	646	60	113	144	338
8	273	299	223	108	152	81	551	260	305	255	242	307	662	179	128	166	170	170	165	133	275	141	302	208	240
9	59	54	42	95	77	64	271	172	285	345	357	344	441	621	462	287	213	320	98	247	169	107	283	286	237
10	611	333	423	149	57	114	331	211	190	205	361	290	637	283	154	164	183	214	261	591	98	62	239	184	264
11	462	101	88	213	227	372	602	392	249	276	238	323	565	500	572	338	267	233	164	69	174	180	320	93	292
12	220	241	364	218	116	506	304	131	149	184	236	208	240	740	209	230	99	96	80	76	86	73	131	392	222
13	181	749	180	122	89	135	126	177	437	415	182	180	187	181	166	180	268	172	116	126	77	273	240	45	209
14	290	225	126	87	192	193	70	571	129	165	203	234	472	573	625	353	705	385	132	53	42	179	71	40	255
15	145	45	146	156	216	665	220	124	229	209	274	352	570	493	358	285	422	268	260	200	200	238	345	422	285
16	641	497	99	84	125	128	424	149	91	153	183	250	136	179	211	170	158	132	140	116	81	73	76	89	183
17	216	208	435	230	254	187	648	419	405	582	368	454	430	549	423	394	454	233	201	89	407	79	50	47	323
18	37	137	409	55	96	99	274	158	220	235	258	277	376	350	315	323	301	222	260	511	60	253	124	54	225
19	115	166	469	131	66	92	86	430	184	224	270	215	170	147	176	186	253	189	106	140	104	162	173	148	183
20	191	280	204	558	313	327	189	466	146	141	129	117	173	170	177	129	186	113	105	94	85	82	261	97	197
21	90	92	99	140	126	89	101	247	198	445	358	205	119	137	136	291	202	132	276	168	168	151	94	151	176
22	65	96	195	295	158	391	291	145	110	131	374	534	735	491	332	234	148	167	139	160	550	164	66	71	252
23	55	48	87	104	164	496	381	200	183	201	241	227	335	293	284	187	140	170	136	411	116	190	368	213	218
24	534	229	310	127	172	292	417	724	440	240	273	249	195	215	266	287	174	139	95	84	69	571	227	153	270
25	351	573	403	771	145	66	516	115	189	187	169	260	190	212	231	306	163	128	114	103	381	229	255	368	268
26	186	262	204	258	83	55	164	301	311	287	420	488	369	481	380	357	221	215	170	106	206	121	52	161	244
27	496	311	134	30	52	74	131	502	203	213	223	344	353	193	256	178	158	236	244	305	94	116	307	254	225
28	233	90	281	93	79	50	101	236	347	214	286	308	223	231	242	151	314	149	112	568	150	177	54	38	197
29	52	184	138	60	63	60	445	179	281	290	406	255	218	208	292	388	301	203	165	131	280	261	41	105	209
30	420	414	290	161	249	102	65	339	192	321	281	217	191	225	254	288	190	164	119	84	415	333	40	405	240
AVERAGE	259	242	244	204	153	216	296	289	245	264	286	299	354	322	290	271	243	212	197	199	201	166	197	190	243

* Indicates calibration of sensors

** Indicates invalid data

ENCOTECH INC.
 BAROAD (V1.0) 07/07/69

APPENDIX B
DIURNAL WIND SUMMARIES - TABULAR

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B-5	Frequency of Winds by Direction and Speed for 1600-2000 MST
B-6	Frequency of Winds by Direction and Speed for 2000-2400 MST

TABLE B-1

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR
 DATA PERIOD FIRST HALF 1989
 UMETCO - BLANDING
 TIME (MST): 0000-0400

DIRECTION	SPEED CLASS INTERVALS (M/S)						ALL	MEAN SPEED
	1<1.5	1.5< 3	3< 5	5< 8	8<11	>11		
N	.25	5.29	5.57	1.39	.00	.00	12.53	3.3
NNE	.84	12.53	11.14	.28	.00	.00	24.79	3.0
NE	1.11	8.91	5.85	.00	.00	.00	15.88	2.6
ENE	1.39	1.67	.00	.00	.00	.00	3.06	1.7
E	.56	.28	.00	.00	.00	.00	.84	1.7
ESE	.00	.00	.00	.00	.00	.00	.00	.0
SE	.00	.28	.00	.00	.00	.00	.28	2.0
SSE	.28	.28	.56	.28	.28	.00	1.67	4.5
S	1.11	1.95	1.39	1.39	.00	.00	5.85	3.2
SSW	.28	1.11	1.65	.28	.00	.00	3.62	3.2
SW	.28	.84	.84	.00	.56	.00	2.51	4.0
WSW	.00	1.67	.84	.56	.28	.00	3.34	3.9
W	.00	1.95	.84	.28	.00	.00	3.06	3.0
WNW	.28	1.39	1.11	.00	.00	.00	2.79	2.9
NW	.28	1.67	1.95	1.11	.00	.00	5.01	3.7
NNW	.56	1.67	5.85	1.95	.56	.00	10.58	4.2
ALL	7.24	41.50	37.88	7.52	1.67	.00	95.82	3.2

CALM (less than meter per second) = 4.2
 PERIOD MEAN WIND SPEED = 3.1 M/S

ENECOTECH INC.
 WIND 7/24/89

TABLE B-2

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR
 DATA PERIOD FIRST HALF 1989
 UMETCO - BLANDING
 TIME (MST): 0400-0800

DIRECTION	SPEED CLASS INTERVALS (M/S)						ALL	MEAN SPEED
	1<1.5	1.5< 3	3< 5	5< 8	8<11	>11		
N	1.39	4.17	2.78	.28	.00	.00	8.61	2.6
NNE	1.39	8.61	5.28	.28	.00	.00	15.56	2.7
NE	1.67	15.56	4.44	.28	.00	.00	21.94	2.5
ENE	1.94	3.06	.00	.00	.00	.00	5.00	1.7
E	1.39	3.33	.00	.00	.00	.00	4.72	1.8
ESE	.83	1.67	.00	.00	.00	.00	2.50	1.9
SE	.56	1.11	.83	.00	.00	.00	2.50	2.4
SSE	.56	2.22	1.67	.00	1.11	.00	5.56	3.9
S	.00	2.78	1.11	.83	.00	.00	4.72	3.2
SSW	.83	.28	1.94	1.11	.00	.00	4.17	4.0
SW	.56	.00	.28	.28	.00	.00	1.11	3.0
WSW	.00	.56	1.11	.83	.00	.00	2.50	4.4
W	.56	.56	.83	.00	.00	.00	1.94	2.5
WNW	.83	1.11	1.11	.00	.00	.00	3.06	2.4
NW	.28	1.67	1.94	.28	.00	.00	4.17	3.2
NNW	.56	1.67	1.67	1.11	.00	.00	5.00	3.5
ALL	13.33	48.33	25.00	5.28	1.11	.00	93.06	2.8

CALM (less than meter per second) = 6.9
 PERIOD MEAN WIND SPEED = 2.6 M/S

ENECOTECH INC.
 WIND 7/24/89

TABLE B-3

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR
 DATA PERIOD FIRST HALF 1989
 UMETCO - BLANDING
 TIME (MST): 0800-1200

DIRECTION	SPEED CLASS INTERVALS (M/S)						ALL	MEAN SPEED
	1<1.5	1.5< 3	3< 5	5< 8	8<11	>11		
N	.27	.55	1.10	.27	.27	.00	2.47	4.3
NNE	.27	.27	.27	.00	.00	.00	.82	2.2
NE	.55	.82	1.10	.55	.00	.00	3.02	3.4
ENE	.00	.82	.55	.27	.00	.00	1.65	3.3
E	.27	.27	.00	.00	.00	.00	.55	1.8
ESE	.00	.82	.55	.00	.00	.00	1.37	2.6
SE	.55	2.75	.55	.00	.00	.00	3.85	2.4
SSE	.55	4.40	3.30	.82	.27	.00	9.34	3.3
S	.55	5.77	8.79	.82	.27	.00	16.21	3.4
SSW	1.10	3.30	9.89	6.04	3.57	.00	23.90	5.0
SW	.55	2.75	7.14	2.47	.55	.00	13.46	4.0
WSW	.00	.82	1.92	1.10	.27	.00	4.12	4.5
W	.00	.82	.55	1.10	.00	.00	2.47	4.4
WNW	.27	.27	.55	.00	.00	.00	1.10	2.8
NW	.27	.27	3.30	1.37	.00	.00	5.22	4.3
NNW	.27	.55	.82	2.20	.27	.00	4.12	5.3
ALL	5.49	25.27	40.38	17.03	5.49	.00	93.68	4.0

CALM (less than meter per second) = 6.3
 PERIOD MEAN WIND SPEED = 3.8 M/S

ENECOTECH INC.
 WIND 7/24/89

TABLE B-4

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR
 DATA PERIOD FIRST HALF 1989
 UMETCO - BLANDING
 TIME (MST): 1200-1600

DIRECTION	SPEED CLASS INTERVALS (M/S)						ALL	MEAN SPEED
	1<1.5	1.5< 3	3< 5	5< 8	8<11	>11		
N	.00	.80	1.33	.27	.53	.00	2.93	4.8
NNE	.00	.27	.27	.27	.00	.00	.80	4.2
NE	.27	.53	.53	.00	.00	.00	1.33	2.6
ENE	.00	.27	.00	.00	.00	.00	.27	2.8
E	.00	.27	.27	.00	.00	.00	.53	3.3
ESE	.27	1.33	.00	.00	.00	.00	1.60	1.9
SE	.27	.53	.00	.27	.00	.00	1.06	3.5
SSE	.00	.53	.00	.00	.00	.00	.53	2.3
S	.00	2.13	2.66	.80	.00	.00	5.59	3.3
SSW	1.06	3.46	9.04	6.38	2.13	1.33	23.40	5.4
SW	.53	2.93	10.11	5.85	2.93	.53	22.87	5.2
WSW	.00	.80	3.72	3.99	2.93	.00	11.44	6.1
W	.00	.53	1.60	3.99	1.86	.27	8.24	6.4
WNW	.00	.53	1.33	1.06	.00	.00	2.93	4.4
NW	.00	.00	1.33	6.12	.80	.00	8.24	6.2
NNW	.00	.00	1.33	2.93	1.06	.00	5.32	6.1
ALL	2.39	14.89	33.51	31.91	12.23	2.13	97.07	5.3

CALM (less than meter per second) = 2.9
 PERIOD MEAN WIND SPEED = 5.2 M/S

ENECOTECH INC.
 WIND 7/24/89

TABLE B-5

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR
 DATA PERIOD FIRST HALF 1989
 UMETCO - BLANDING
 TIME (MST): 1600-2000

DIRECTION	SPEED CLASS INTERVALS (M/S)						ALL	MEAN SPEED
	1<1.5	1.5< 3	3< 5	5< 8	8<11	>11		
N	.00	.27	3.81	3.00	.27	.00	7.36	4.7
NNE	.27	1.09	2.18	1.36	.00	.00	4.90	4.0
NE	.27	.54	1.36	.27	.00	.00	2.45	3.6
ENE	.27	.82	1.09	.27	.00	.00	2.45	3.4
E	.00	.82	.00	.00	.00	.00	.82	2.1
ESE	.00	.27	.54	.00	.00	.00	.82	3.0
SE	.54	.00	.27	.00	.00	.00	.82	2.0
SSE	.27	.27	.82	.00	.00	.00	1.36	2.5
S	.54	.27	1.36	.82	.00	.00	3.00	3.6
SSW	1.63	1.36	.82	1.91	.82	1.09	7.63	5.5
SW	.82	1.91	6.27	5.45	3.54	.27	18.26	5.4
WSW	.27	1.09	2.18	4.09	3.00	.00	10.63	6.0
W	.00	1.91	4.09	4.90	2.45	.00	13.35	5.6
WNW	.00	.82	1.63	1.91	.27	.00	4.63	4.9
NW	.00	1.91	2.45	4.09	.54	.00	8.99	4.9
NNW	.00	.82	3.27	3.54	.27	.00	7.90	5.0
ALL	4.90	14.17	32.15	31.61	11.17	1.36	95.37	5.0

CALM (less than meter per second) = 4.6
 PERIOD MEAN WIND SPEED = 4.8 M/S

ENECOTECH INC.
 WIND 7/24/89

TABLE B-6

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR
 DATA PERIOD FIRST HALF 1989
 UMETCO - BLANDING
 TIME (MST): 2000-2400

DIRECTION	SPEED CLASS INTERVALS (M/S)						ALL	MEAN SPEED
	1<1.5	1.5< 3	3< 5	5< 8	8<11	>11		
N	.83	3.58	10.19	3.58	.00	.00	18.18	3.8
NNE	.55	7.71	14.88	.83	.00	.00	23.97	3.3
NE	1.10	3.58	2.48	.28	.00	.00	7.44	2.7
ENE	.55	.83	.28	.00	.00	.00	1.65	1.8
E	.00	.28	.00	.00	.00	.00	.28	2.5
ESE	.00	.00	.00	.28	.00	.00	.28	5.0
SE	.00	.28	.83	.00	.00	.00	1.10	3.9
SSE	.28	.00	.00	.00	.00	.00	.28	1.3
S	.28	.28	1.65	.83	.28	.00	3.31	4.5
SSW	1.10	.00	.83	1.38	.55	.00	3.86	4.8
SW	.00	.83	.83	3.03	.55	.00	5.23	5.7
WSW	.00	.28	.83	.55	.00	.00	1.65	4.4
W	.55	1.38	1.93	1.10	.00	.00	4.96	3.2
WNW	.00	1.93	2.20	.83	.00	.00	4.96	3.5
NW	.28	1.38	3.31	.55	.00	.00	5.51	3.5
NNW	.28	2.75	6.89	1.65	.83	.00	12.40	4.2
ALL	5.79	25.07	47.11	14.88	2.20	.00	95.04	3.7

CALM (less than meter per second) = 5.0
 PERIOD MEAN WIND SPEED = 3.6 M/S

ENECOTECH INC.
 WIND 7/24/89

APPENDIX C
JOINT FREQUENCY DISTRIBUTION
FOR STABILITY CLASSES

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<u>Table</u>	<u>Description</u>
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C-2	Frequency of Winds by Direction and Speed for Stability Class B
C-3	Frequency of Winds by Direction and Speed for Stability Class C
C-4	Frequency of Winds by Direction and Speed for Stability Class D
C-5	Frequency of Winds by Direction and Speed for Stability Class E
C-6	Frequency of Winds by Direction and Speed for Stability Class F
C-7	Frequency of Winds by Direction and Speed for All Stability Classes

TABLE C-1

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR STABILITY CLASS A
 DATA RECORDED FROM JANUARY THROUGH JUNE 1989
 BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS (KNOTS)						ALL	MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21		
N	.43	2.15	2.58	.86	.00	.00	6.01	7.0
NNE	.00	.43	1.29	.00	.00	.00	1.72	6.9
NE	.43	.43	.43	.00	.00	.00	1.29	5.2
ENE	.00	.86	.43	.00	.00	.00	1.29	5.8
E	.00	.00	.00	.00	.00	.00	.00	.0
ESE	.43	1.29	.00	.00	.00	.00	1.72	4.3
SE	.86	1.29	.00	.00	.00	.00	2.15	4.2
SSE	.43	3.86	1.29	.00	.00	.00	5.58	5.5
S	.86	4.72	6.01	.43	.00	.00	12.02	6.1
SSW	.86	3.43	12.88	.86	.00	.00	18.03	6.8
SW	.43	3.00	15.45	2.15	.00	.00	21.03	7.6
WSW	.00	1.72	6.87	.43	.00	.00	9.01	7.3
W	.43	2.15	3.43	.86	.00	.00	6.87	6.7
WNW	.86	.43	2.15	.43	.00	.00	3.86	6.3
NW	.00	.86	3.00	.86	.00	.00	4.72	8.2
NDW	.86	.43	2.15	.43	.00	.00	3.86	6.5
ALL	6.87	27.04	57.94	7.30	.00	.00	99.14	6.8

Calm (less than one knot) = .9%
 Period mean wind speed = 6.7 knots
 Percent occurrence for A stability class 10.7%

ENECOTECH INC.
 SBWIND(1.0) 7/24/89

TABLE C-2

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR STABILITY CLASS B
 DATA RECORDED FROM JANUARY THROUGH JUNE 1989
 BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS (KNOTS)						ALL	MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21		
N	.00	.55	.00	.55	.00	.00	1.09	8.4
NNE	1.09	.00	.55	.55	.00	.00	2.19	6.7
NE	.55	2.19	2.19	.00	.00	.00	4.92	5.7
ENE	.55	1.64	.55	.00	.00	.00	2.73	4.6
E	.00	.00	.00	.00	.00	.00	.00	.0
ESE	.55	1.09	1.09	.00	.00	.00	2.73	4.9
SE	1.09	2.19	.00	.00	.00	.00	3.28	4.4
SSE	1.64	3.83	3.28	.00	.00	.00	8.74	5.3
S	.55	6.01	8.20	.55	.00	.00	15.30	6.4
SSW	2.19	2.19	7.10	4.92	.00	.00	16.39	8.2
SW	1.64	1.09	6.01	9.84	.00	.00	18.58	9.6
WSW	.55	.55	1.64	.55	.00	.00	3.28	7.4
W	.55	.55	1.64	1.09	.55	.00	4.37	10.0
WNW	.00	1.09	2.19	.55	.00	.00	3.83	7.9
NW	.00	.00	3.83	.55	.00	.00	4.37	8.1
NNW	.00	.55	2.19	4.92	.55	.00	8.20	11.0
ALL	10.93	23.50	40.44	24.04	1.09	.00	100.00	7.7

Calm (less than one knot) = .0%
 Period mean wind speed = 7.7 knots
 Percent occurrence for B stability class = 8.4%

ENECOTECH INC.
 SBWIND(1.0) 7/24/89

TABLE C-3

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR STABILITY CLASS C
 DATA RECORDED FROM JANUARY THROUGH JUNE 1989
 BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS (KNOTS)						ALL	MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21		
N	.00	.00	2.19	1.09	.00	.00	3.28	9.5
NNE	.55	1.64	.55	.55	.00	.00	3.28	5.6
NE	1.64	2.19	1.64	.55	.00	.00	6.01	5.6
ENE	.00	.55	1.09	.55	.00	.00	2.19	7.8
E	1.09	3.83	.55	.00	.00	.00	5.46	4.3
ESE	1.09	1.64	.55	.00	.00	.00	3.28	4.8
SE	.00	3.28	1.09	.00	.00	.00	4.37	5.6
SSE	2.19	2.19	3.28	1.09	.00	.00	8.74	5.5
S	2.19	2.73	1.64	1.64	.00	.00	8.20	6.0
SSW	2.73	3.83	2.73	5.46	.00	.00	14.75	7.9
SW	2.19	2.19	1.64	3.83	.00	.00	9.84	7.6
WSW	.00	.55	2.19	1.09	1.64	.00	5.46	11.8
W	.55	.00	2.19	1.64	1.09	.00	5.46	10.8
WNW	1.09	.00	1.09	.00	.00	.00	2.19	4.7
NW	.00	1.09	3.83	4.37	1.09	.00	10.38	10.7
NNW	.00	.55	1.64	3.28	.00	.00	5.46	10.0
ALL	15.30	26.23	27.87	25.14	3.83	.00	98.36	7.6

Calm (less than one knot) = 1.6%
 Period mean wind speed = 7.5 knots
 Percent occurrence for C stability class = 8.4%

ENECOTECH INC.
 SBWIND(1.0) 7/24/89

TABLE C-4

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR STABILITY CLASS D
 DATA RECORDED FROM JANUARY THROUGH JUNE 1989
 BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS (KNOTS)						ALL	MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21		
N	.46	1.10	5.23	2.20	.37	.00	9.37	8.6
NNE	.28	3.58	6.15	.64	.00	.00	10.65	6.7
NE	.83	5.23	2.39	.18	.00	.00	8.63	5.5
ENE	.92	1.10	.18	.09	.00	.00	2.30	4.2
E	.55	.73	.00	.00	.00	.00	1.29	3.6
ESE	.37	.37	.09	.00	.00	.00	.83	3.9
SE	.46	.37	.46	.09	.00	.00	1.38	5.5
SSE	.28	.73	.37	.18	.55	.00	2.11	9.0
S	.46	1.56	1.65	1.10	.18	.00	4.96	7.5
SSW	.46	1.29	3.40	3.76	2.20	.92	12.03	12.2
SW	.28	1.47	3.58	3.40	2.20	.28	11.20	11.4
WSW	.18	.55	1.47	3.49	1.56	.00	7.25	12.3
W	.09	.92	1.74	3.21	1.01	.09	7.07	11.2
WNW	.00	.73	1.38	1.01	.09	.00	3.21	8.5
NW	.18	1.47	2.66	3.12	.09	.00	7.53	9.3
NNW	.28	1.10	4.32	2.85	.63	.00	9.37	9.7
ALL	6.06	22.31	35.08	25.34	9.09	1.29	99.17	9.2

Calm (less than one knot) = .8%

Period mean wind speed = 9.1 knots

Percent occurrence for D stability class 50.0%

ENECOTECH INC.
 SBWIND(1.0) 7/24/89

TABLE C-5

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR STABILITY CLASS E
 DATA RECORDED FROM JANUARY THROUGH JUNE 1989
 BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS (KNOTS)						ALL	MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21		
N	1.27	6.01	5.38	.00	.00	.00	12.66	5.3
NNE	1.58	16.46	14.24	.00	.00	.00	32.28	5.9
NE	1.90	11.71	4.11	.00	.00	.00	17.72	4.9
ENE	1.58	.27	.00	.00	.00	.00	2.85	3.1
E	.00	.95	.00	.00	.00	.00	.95	4.1
ESE	.32	.00	.00	.00	.00	.00	.32	2.9
SE	.00	.32	.00	.00	.00	.00	.32	3.5
SSE	.32	.63	.00	.00	.00	.00	.95	3.8
S	.95	1.27	2.22	.63	.00	.00	4.75	5.8
SSW	1.90	.32	1.58	.00	.00	.00	3.80	4.7
SW	1.27	.63	1.27	.00	.00	.00	3.16	4.7
WSW	.00	1.27	.63	.00	.00	.00	1.90	4.8
W	.00	1.58	.32	.00	.00	.00	1.90	4.8
WNW	.63	2.53	.95	.00	.00	.00	4.11	5.1
NW	.32	1.27	.63	.32	.00	.00	2.53	6.0
NNW	.63	1.58	4.43	.00	.00	.00	6.65	6.5
ALL	12.66	67.78	35.76	.63	.00	.00	96.84	5.4

Calm (less than one knot) = 3.2%

Period mean wind speed = 5.2 knots

Percent occurrence for E stability class 14.5%

ENECOTECH INC.

SBWIND(1.0) 7/24/89

TABLE C-6

FREQUENCY OF WINDS BY DIRECTION AND SPEED
 FOR STABILITY CLASS F
 DATA RECORDED FROM JANUARY THROUGH JUNE 1989
 BLANDING - UTAH

DIRECTION	SPEED CLASS INTERVALS (KNOTS)						ALL	MEAN SPEED
	1,<3	3,<6	6,<10	10,<16	16,<21	>21		
N	1.71	19.14	.00	.00	.00	.00	14.86	4.2
NNE	6.86	10.86	.00	.00	.00	.00	17.71	3.3
NE	3.43	5.71	.00	.00	.00	.00	9.14	3.5
ENE	2.86	1.71	.00	.00	.00	.00	4.57	2.8
E	1.71	.00	.00	.00	.00	.00	1.71	2.0
ESE	1.71	.00	.00	.00	.00	.00	1.71	2.1
SE	.00	.57	.00	.00	.00	.00	.57	3.9
SSE	1.71	.00	.00	.00	.00	.00	1.71	2.1
S	2.29	1.71	.00	.00	.00	.00	4.00	3.1
SSW	6.86	.00	.00	.00	.00	.00	6.86	1.8
SW	2.86	1.14	.00	.00	.00	.00	4.00	2.2
WSW	.00	2.29	.00	.00	.00	.00	2.29	3.7
W	2.29	3.43	.00	.00	.00	.00	5.71	3.1
WNW	2.29	1.71	.00	.00	.00	.00	4.00	3.5
NW	2.86	2.29	.00	.00	.00	.00	5.14	3.1
NNW	1.14	5.14	.00	.00	.00	.00	6.29	4.0
ALL	40.57	49.71	.00	.00	.00	.00	90.29	3.2

Calm (less than one knot) = 9.7%

Period mean wind speed = 3.0 knots

Percent occurrence for F stability class 8.0%

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