QUARTERLY REPORT - 4th QUARTER 1987
O-SAND IN-SITU URANIUM R&D PROJECT

Converse County, Wyoming

NRC Source Material License SUA-1387
NRC Docket No. 40-8768
Wyoming DEQ LQD - License 13RD

Project Status

Leaching operations continued as scheduled during the fourth quarter 1987. Fluid production and injection during the period totaled 19.1 million gallons and 18.2 million gallons, respectively. Overrecovery during the period totaled 0.8 million gallons. Waste water from the O-sand project routed to the evaporation ponds during the quarter totaled 72,509 gallons. Production, 3rd Quarter 1984 through report period has averaged approximately 142 gallons per minute.

Excursion Monitoring

There were no wellfield excursions detected during the Quarter. Excursion monitoring data is presented in both tabular and graphical form in Attachment A. Monitor well fluid level data is presented in tabular and graphical forms in Attachment B.

Excursion parameter data indicate confinement of the leach solutions, therefore, no significant change in the control program is anticipated.

Water Quality Data

The required analyses for the evaporation ponds and bleed stream samples are included as Attachments C-1 and C-2, respectively.

Radon Survey

The quarterly sample for Radon 222, obtained from a continuous passive radon detector at the downwind location was 1.90 pCi/L.

Direct Gamma Survey

Operational direct gamma surveys conducted for the 4th Quarter, 1987, are as follows:

	uR/Hr.
Upwind Radon Sample Location	10
Downwind Radon Sample Location	11
Pregnant Surge Tank Area	34
Evaporation Pond Area	19

Sediment/Soil Surveys

Operational surveys for Radium 226 in the sediment in the Bill Smith Mine water treatment system drainage are as follows:

	pCi Ra226/g
Outfall From Final Treatment	1.4 +/- 0.2
At Ross Road	1.4 +/- 0.2
1-1/2 Miles Below Discharge Point	2.8 +/- 0.6

Water Survey

The operational survey for Radium 226 and Thorium 230 at the outfall of the final treatment unit consist of composite samples for Radium 226 and a grab sample for Thorium 230. The Radium 226, as shown on the attached NPDES report, varied from a minimum of 0.2 pCi/L to a maximum of 3.8 pCi/L, and averaged 1.4 pCi/L. A grab sample, taken at the outfall on November 11, 1987, contained 8.1 +/- 2.8 pCi/L Thorium 230.

NPDES

A copy of the quarterly report required under NPDES Permit No. WY-0022411 is included in Attachment D.

ATTACHMENT A

Monitor Well Excursion Parameter Analyses

Monitor well excursion parameter analyses data and upper control limit (UCL) values for the monitor wells are presented in tabular form in Tables A-1 through A-6, and are presented in graphical form in Figures A-1 through A-24.

There were no excursions during the report period.

TABLE A-1
MONITOR WELL OM-1,OM-2 EXCURSION PARAMETER DATA
O-SAND ISL PROJECT SPRB, WYOMING

DATE	OM-1 (1) HCO3	CL	SO4	SP.COND	*	OM-2 HCO3	CL	SO4	SP.COND
UCL	283	17	345	1018	*	304	18	345	1032
01-Jan-86	166	6	300	861	*	168	5	310	883
15-Jan-86	151	6	300	849	*	150	6	300	870
05-Feb-86	224	6	280	840	*	239	5	275	882
18-Feb-86	207	5	280	896	*	206	5	310	896
05-Mar-86	238	5	290	835	*	240	5	270	865
19-Mar-86	238	5	275	840	*	238	5	295	862
02-Apr-86	244	5	280	830	*	240	5	290	842
16-Apr-86	238	5	290	810	*	238	5	290	853
07-May-86	250	5	290	821	*	247	5	300	845
21-May-86	250	5	295	850	*	253	5	300	897
04-Jun-86	250	5	300	828	*	247	5	290	859
18-Jun-86	250	5	300	882	*	247	5	295	892
02-Jul-86	252	5	295	840	*	252	5	290	851
16-Jul-86	257	5	290	850	*	257	5	280	840
06-Aug-86	260	5	290	860	*	257	4	285	880
20-Aug-86	253	5	275	865	*	249	5	265	867
03-Sep-86	244	5	280	864	*	250	4	260	864
17-Sep-86	250	4	260	838	*	250	5	280	849
08-Oct-86	251	5	250	848	*	245	4	280	848
22-Oct-86	245	6	270	816	*	245	5	280	858
05-Nov-86	249	8	252	880	*	234	10	265	890
19-Nov-86	244	7	240	890	*	249	7	246	900
04-Dec-86	248	5	280	862	*	248	5	290	880
17-Dec-86	242	5	290	829	*	242	5	300	839
07-Jan-87	237	6	250	806	*	237	5	275	847
21-Jan-87	244	8	211	920	*	244	8	227	920
04-Feb-87	269	5	260	833	*	262	5	280	853
18-Feb-87	259	6	290	849	*	250	6	300	890
04-Mar-87	256	7	260	919	*	256	7	275	929
18-Mar-87	244	6	254	860	*	249	7	262	870
01-Apr-87	244	6	270	820	*	244	7	290	874
15-Apr-87	255	6	275	861	*	255	7	260	872
06-May-87	252	6	290	858	*	249	6	295	879
20-May-87	258	6	300	844	*	249	6	300	887
03-Jun-87	248	5	275	861	*	245	5	275	861
17-Jun-87	254	5	260	849	*	251	5	255	869
08-Jul-87	254	5	275	846	*	245	5	275	857
22-Jul-87	254	5	290	788	*	245	5	275	851
12-Aug-87	262	7	274	860	*	256	7	264	880
26-Aug-87	252	5	270	834	*	255	5	285	877
09-Sep-87	253	4	290	846	*	249	5	275	841
23-Sep-87	249	5	280	877	*	249	5	280	866
07-Oct-87	249	5	260	776	*	242	5	265	826
21-Oct-87	249	5	260	833	*	253	5	250	864
04-Nov-87	246	5	275	773	*	240	5	290	820
18-Nov-87	251	2.3	270	890	*	244	2.9	276	890
02-Dec-87	243	4	275	859	*	243	4	290	883
16-Dec-87	239	3.3	266	856	*	239	3.4	287	871

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

TABLE A-2
MONITOR WELL OM-3,OM-4 EXCURSION PARAMETER DATA
O-SAND ISL PROJECT SPRB, WYOMING

DATE	OM-3					OM-4			
	(1) HCO3	CL	SO4	SP.COND	* *	HCO3	CL	SO4	SP.COND
UCL	287	17	334	1020	* *	275	20	334	952
01-Jan-86	167	5	300	840	*	166	5	275	862
15-Jan-86	144	5	275	849	*	145	5	290	849
05-Feb-86	235	5	270	862	*	238	4	270	862
18-Feb-86	204	5	285	853	*	203	5	340	896
05-Mar-86	217	5	230	744	*	244	5	290	855
19-Mar-86	226	5	280	809	*	235	5	270	830
02-Apr-86	238	5	255	796	*	244	5	270	830
16-Apr-86	238	5	265	821	*	232	4	280	810
07-May-86	240	5	265	809	*	250	4	270	821
21-May-86	250	5	290	838	*	250	5	280	873
04-Jun-86	238	5	260	787	*	244	5	290	828
18-Jun-86	244	5	260	832	*	244	5	290	852
02-Jul-86	246	5	250	818	*	252	5	290	818
16-Jul-86	260	5	250	820	*	254	4	280	840
06-Aug-86	254	5	275	820	*	251	5	275	860
20-Aug-86	236	5	250	795	*	256	5	260	856
03-Sep-86	232	4	260	780	*	241	4	275	832
17-Sep-86	234	5	240	776	*	213	4	240	725
08-Oct-86	229	5	240	790	*	242	5	245	828
22-Oct-86	229	5	250	774	*	242	5	280	795
05-Nov-86	215	8	246	830	*	234	8	230	860
19-Nov-86	244	8	236	850	*	244	7	234	880
03-Dec-86	232	5	250	820	*	235	5	280	830
17-Dec-86	242	5	260	779	*	242	5	260	899
07-Jan-87	231	5	250	785	*	234	4	250	806
21-Jan-87	229	8	218	890	*	205	7	176	790
04-Feb-87	245	5	260	813	*	240	4	260	793
18-Feb-87	232	6	275	870	*	226	5	260	797
04-Mar-87	232	7	275	897	*	210	6	225	771
18-Mar-87	234	6	262	850	*	224	7	230	780
01-Apr-87	226	6	290	830	*	238	7	250	808
15-Apr-87	233	6	280	882	*	211	7	240	756
06-May-87	233	5	290	879	*	236	6	250	825
20-May-87	218	5	275	876	*	218	5	230	792
03-Jun-87	229	5	290	861	*	235	5	240	798
17-Jun-87	229	5	310	869	*	232	5	240	777
08-Jul-87	235	5	325	857	*	242	5	250	824
22-Jul-87	245	4	295	820	*	248	5	290	799
12-Aug-87	256	8	285	855	*	244	11	272	825
26-Aug-87	249	5	255	866	*	249	5	285	856
09-Sep-87	246	5	260	830	*	243	5	250	810
23-Sep-87	249	5	270	856	*	240	5	260	834
07-Oct-87	236	5	250	800	*	240	5	255	814
21-Oct-87	243	5	240	853	*	246	6	250	853
04-Nov-87	246	5	260	797	*	246	5	260	820
18-Nov-87	237	2.3	252	834	*	233	3.2	246	825
02-Dec-87	236	5	250	812	*	217	4	240	741
16-Dec-87	229	3.5	254	826	*	232	3.2	260	811

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

TABLE A-3
MONITOR WELL OM-5,OMS-1 EXCURSION PARAMETER DATA
O-SAND ISL PROJECT SPRB, WYOMING

	OM-5					OMS-1			
DATE	(1) HCO3	CL	SO4	SP.COND	* *	HCO3	CL	SO4	SP.COND
UCL	306	19	328	1012	* *	359	22	276	1007
01-Jan-86	168	4	310	904	*	199	11	225	862
15-Jan-86	142	5	325	912	*	166	12	230	870
05-Feb-86	239	5	300	914	*	124	13	225	967
18-Feb-86	203	5	340	938	*	230	11	225	896
05-Mar-86	238	5	310	885	*	287	12	230	845
19-Mar-86	238	5	320	883	*	287	11	230	851
02-Apr-86	240	4	300	888	*	287	11	230	854
16-Apr-86	238	5	300	874	*	284	9	225	832
07-May-86	244	5	300	880	*	296	11	230	857
21-May-86	247	4	225	909	*	290	11	235	885
04-Jun-86	253	5	320	890	*	289	11	225	839
18-Jun-86	250	5	310	892	*	288	11	220	843
02-Jul-86	252	5	300	840	*	309	11	225	840
16-Jul-86	260	4	295	880	*	298	13	230	800
06-Aug-86	254	5	290	890	*	305	13	225	840
20-Aug-86	256	5	275	877	*	246	12	230	847
03-Sep-86	250	4	290	884	*	300	11	240	832
17-Sep-86	238	4	260	844	*	294	11	235	828
08-Oct-86	244	5	255	867	*	289	11	225	809
22-Oct-86	245	4	260	837	*	292	13	250	785
05-Nov-86	239	7	255	890	*	278	12	205	890
19-Nov-86	244	6	296	930	*	288	12	208	880
03-Dec-86	245	5	280	872	*	280	12	235	851
17-Dec-86	245	5	280	859	*	280	13	225	779
07-Jan-87	247	5	260	837	*	273	12	225	837
21-Jan-87	234	9	232	910	*	273	12	192	910
04-Feb-87	262	5	260	843	*	312	12	275	833
18-Feb-87	256	6	300	900	*	299	13	250	890
04-Mar-87	250	6	300	929	*	293	12	250	887
18-Mar-87	244	6	288	860	*	283	10	210	850
01-Apr-87	238	6	300	853	*	281	10	230	842
15-Apr-87	249	6	300	904	*	295	11	240	851
06-May-87	243	6	300	911	*	292	12	235	836
20-May-87	249	5	275	897	*	274	11	240	845
03-Jun-87	248	5	260	872	*	280	11	220	804
17-Jun-87	260	5	290	869	*	299	13	215	849
08-Jul-87	248	5	275	879	*	292	12	225	813
22-Jul-87	245	6	300	840	*	283	12	220	840
12-Aug-87	256	14	310	905	*	305	18	218	850
26-Aug-87	245	5	290	909	*	287	10	215	856
09-Sep-87	249	5	295	841	*	292	11	225	831
23-Sep-87	253	5	294	888	*	295	12	220	823
07-Oct-87	249	5	295	864	*	289	12	220	826
21-Oct-87	249	4	265	895	*	279	12	220	843
04-Nov-87	256	5	300	867	*	288	12	225	832
18-Nov-87	253	1.7	282	880	*	291	8.3	228	866
02-Dec-87	243	5	280	824	*	286	11.5	235	848
16-Dec-87	244	2.4	302	901	*	286	9	229	841

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

TABLE A-4
MONITOR WELL OMW-1,OMM-1 EXCURSION PARAMETER DATA
O-SAND ISL PROJECT SPRB, WYOMING

DATE	OMW-1 (1) HCO3	CL	SO4	SP.COND	*	OMM-1 HCO3	CL	SO4	SP.COND
UCL	238	16	55	418	*	214	16	104	534
01-Jan-86	111	4	14	347	*	111	6	70	452
15-Jan-86	95	5	16	297	*	98	6	75	424
05-Feb-86	159	5	14	357	*	161	7	66	504
18-Feb-86	132	4	15	352	*	129	6	72	459
05-Mar-86	165	4	17	322	*	171	6	69	382
19-Mar-86	166	4	17	336	*	165	6	68	462
02-Apr-86	168	4	16	353	*	165	6	80	455
16-Apr-86	168	4	15	331	*	165	8	68	427
07-May-86	174	4	18	345	*	171	7	72	440
21-May-86	171	4	15	371	*	174	5	75	460
04-Jun-86	177	4	15	320	*	177	6	68	456
18-Jun-86	171	5	14	357	*	174	6	70	456
02-Jul-86	180	4	15	300	*	186	5	70	442
16-Jul-86	171	4	18	385	*	171	5	70	440
06-Aug-86	178	4	18	300	*	174	6	68	430
20-Aug-86	183	4	19	336	*	190	6	62	439
03-Sep-86	172	4	18	343	*	178	6	68	416
17-Sep-86	181	4	17	342	*	169	6	64	404
08-Oct-86	172	4	14	313	*	175	5	60	419
22-Oct-86	172	4	18	335	*	172	5	62	408
05-Nov-86	171	7	17	330	*	173	9	63	410
19-Nov-86	171	6	17	340	*	173	7	60	420
03-Dec-86	168	5	20	315	*	172	6	65	463
17-Dec-86	172	5	18	350	*	175	6	60	409
07-Jan-87	167	4	16	330	*	167	6	66	429
21-Jan-87	171	7	17	400	*	171	8	52	490
04-Feb-87	177	4	18	317	*	180	6	64	407
18-Feb-87	177	5	20	342	*	171	6	72	445
04-Mar-87	177	5	22	338	*	177	6	68	443
18-Mar-87	171	7	19	300	*	168	7	64	380
01-Apr-87	171	6	18	327	*	177	7	66	470
15-Apr-87	180	6	18	336	*	180	7	60	420
06-May-87	174	5	20	300	*	174	6	70	407
20-May-87	174	5	20	348	*	174	6	72	443
03-Jun-87	178	4	18	331	*	172	6	65	430
17-Jun-87	181	4	18	320	*	178	7	62	435
08-Jul-87	175	4	18	308	*	178	7	70	440
22-Jul-87	175	4	18	315	*	178	7	65	399
12-Aug-87	183	7	18	295	*	195	9	58	395
26-Aug-87	174	4	18	346	*	174	7	70	412
09-Sep-87	177	4	18	327	*	174	6	65	405
23-Sep-87	174	4	18	336	*	187	6	66	433
07-Oct-87	177	4	19	344	*	184	6	65	451
21-Oct-87	177	3	19	333	*	180	6	60	437
04-Nov-87	171	4	20	334	*	180	6	70	451
18-Nov-87	173	1.7	30.5	319	*	178	2.8	66	403
02-Dec-87	164	4	22	353	*	184	5	65	436
16-Dec-87	134	2.2	18.1	308	*	173	10.5	59.2	398

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

TABLE A-5
MONITOR WELLS OMO-1, OT-1
EXCURSION PARAMETER DATA
O-SAND ISL PROJECT SPRB, WYOMING

DATE	(1) OMO-1					OT-1			
	HCO3	CL	SO4	SP.COND	*	HCO3	CL	SO4	SP.COND
01-Jan-86	126	5	215	683	*				
15-Jan-86	107	5	225	679	*	134	5	290	870
05-Feb-86	180	5	200	715	*				
18-Feb-86	149	5	210	704	*	250	5	340	1002
05-Mar-86	183	4	210	624	*				
19-Mar-86	183	4	200	640	*	244	6	260	799
02-Apr-86	189	4	220	683	*				
16-Apr-86	183	5	215	661	*	238	5	260	821
07-May-86	183	5	225	655	*				
21-May-86	192	4	210	696	*	256	5	260	850
04-Jun-86	186	4	210	663	*				
18-Jun-86	189	4	200	714	*	247	5	290	853
02-Jul-86	205	5	220	640	*				
16-Jul-86	203	4	225	660	*	431	5	310	1060
06-Aug-86	203	4	220	670	*				
20-Aug-86	200	4	220	673	*	541	31	310	1285
03-Sep-86	194	4	225	665	*	263	7	280	895
17-Sep-86	178	3	240	673	*	288	8	290	911
08-Oct-86	184	4	200	655	*				
22-Oct-86	184	4	225	638	*	248	5	275	847
05-Nov-86	188	8	195	700	*				
19-Nov-86	188	7	195	710	*	307	13	270	1020
03-Dec-86	188	4	240	662	*				
17-Dec-86	181	4	220	629	*	298	7	300	879
07-Jan-87	186	5	210	649	*	359	15	290	1057
21-Jan-87	183	8	174	760	*	239	8	244	950
04-Feb-87	198	4	220	635	*				
18-Feb-87	189	5	230	704	*	250	4	290	859
04-Mar-87	195	5	240	707	*				
18-Mar-87	173	6	199	660	*	244	17	294	880
01-Apr-87	183	6	220	656	*				
15-Apr-87	187	6	200	694	*	249	9	290	840
06-May-87	174	5	200	643	*				
20-May-87	180	4	190	676	*	236	5	250	845
03-Jun-87	181	4	200	662	*				
17-Jun-87	191	4	200	662	*	254	4	290	849
08-Jul-87	191	5	200	660	*				
22-Jul-87	191	4	225	641	*	242	4	300	840
12-Aug-87	287	6	215	660	*	268	13	284	860
26-Aug-87	187	4	210	672	*	252	7	290	888
09-Sep-87	203	4	215	633	*	253	5	290	831
23-Sep-87	197	4	220	660	*	253	5	290	812
07-Oct-87	180	4	220	651	*	259	5	260	826
21-Oct-87	167	4	180	666	*	253	4	260	874
04-Nov-87	190	4	215	633	*	253	5	300	797
18-Nov-87	190	2.4	204	687	*	267	2.8	282	894
02-Dec-87	190	4	210	648	*	233	5	290	706
16-Dec-87	195	3.4	208	668	*	241	2.7	284	886

(1) All analysis in mg/l except
Sp. Cond. which is umhos/cm

TABLE A-6

MONITOR WELL WW-109

EXCURSION PARAMETER DATA

(1)

DATE	HCO3	CL	SO4	Sp.Cond.
18-Jun-85	298	14	74	580
04-Oct-85	298	10	87	690
27-Mar-86	386	45	120	940
10-Apr-86	390	38	125	950
15-Aug-86	278	26	39	680
27-Oct-86	337	24	113	750
09-Feb-87	346	32	119	910
12-May-87	434	41	191	1110
31-Aug-87	400	23	144	952
11-Nov-87	331	16.4	111	775

(1)

ALL ANALYSIS IN MG/L EXCEPT SP.COND. WHICH IS UMHOS/CM

FIGURE A-1

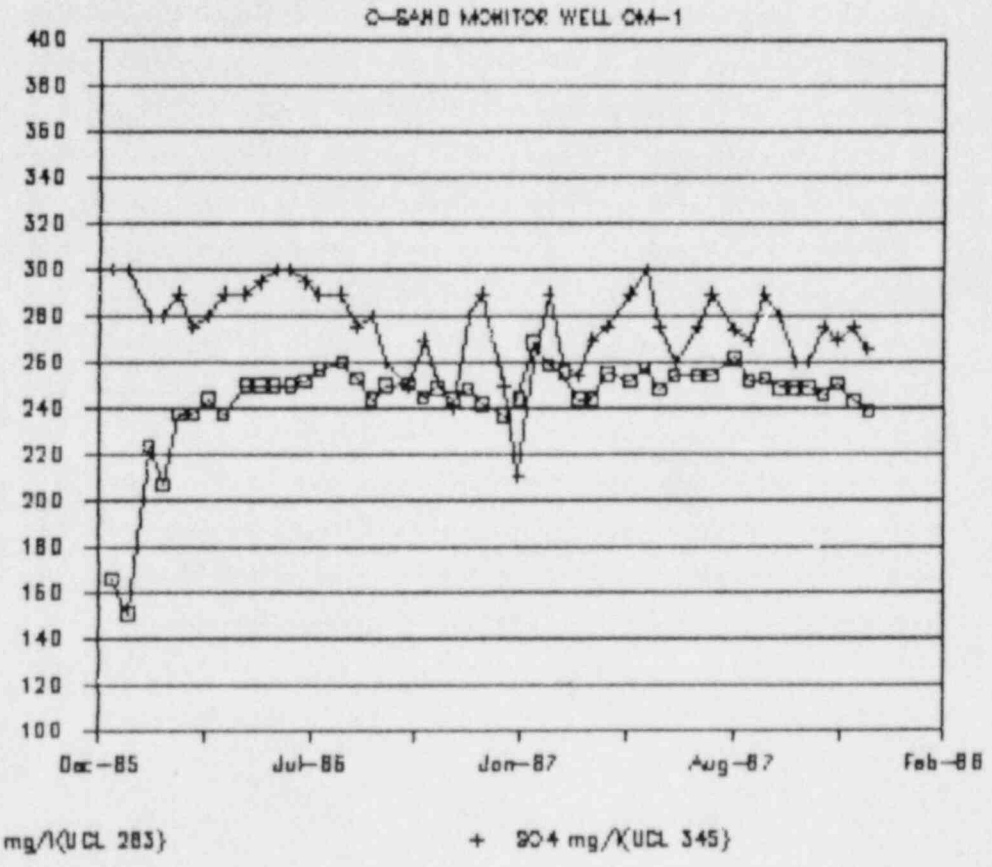


FIGURE A-2

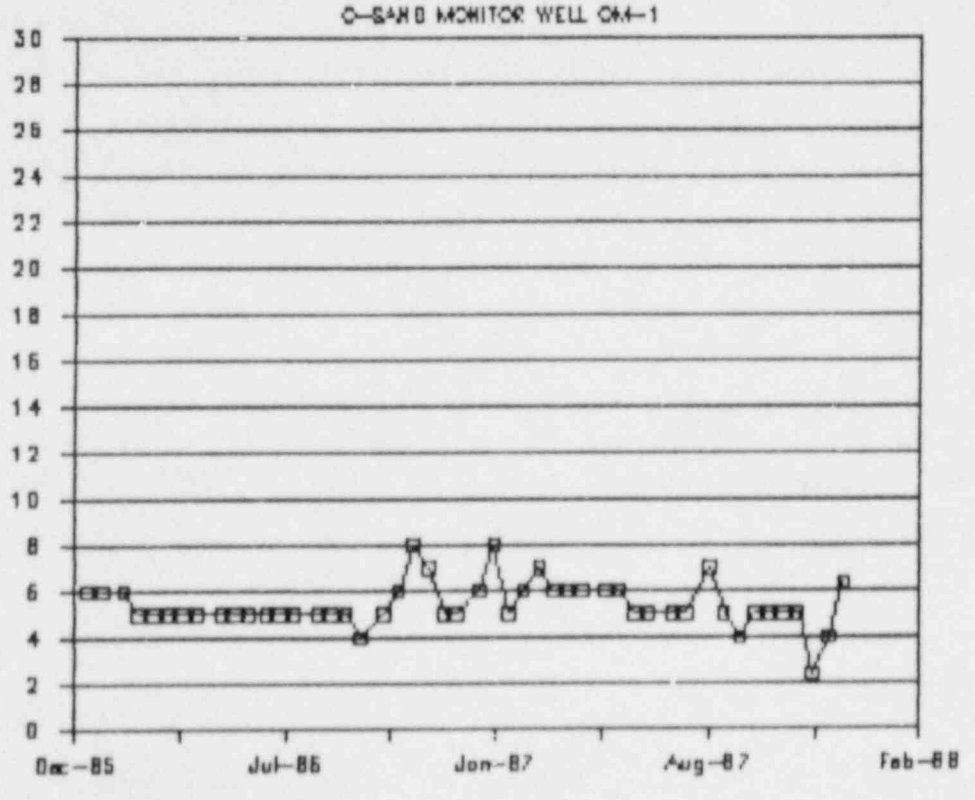


FIGURE A-3

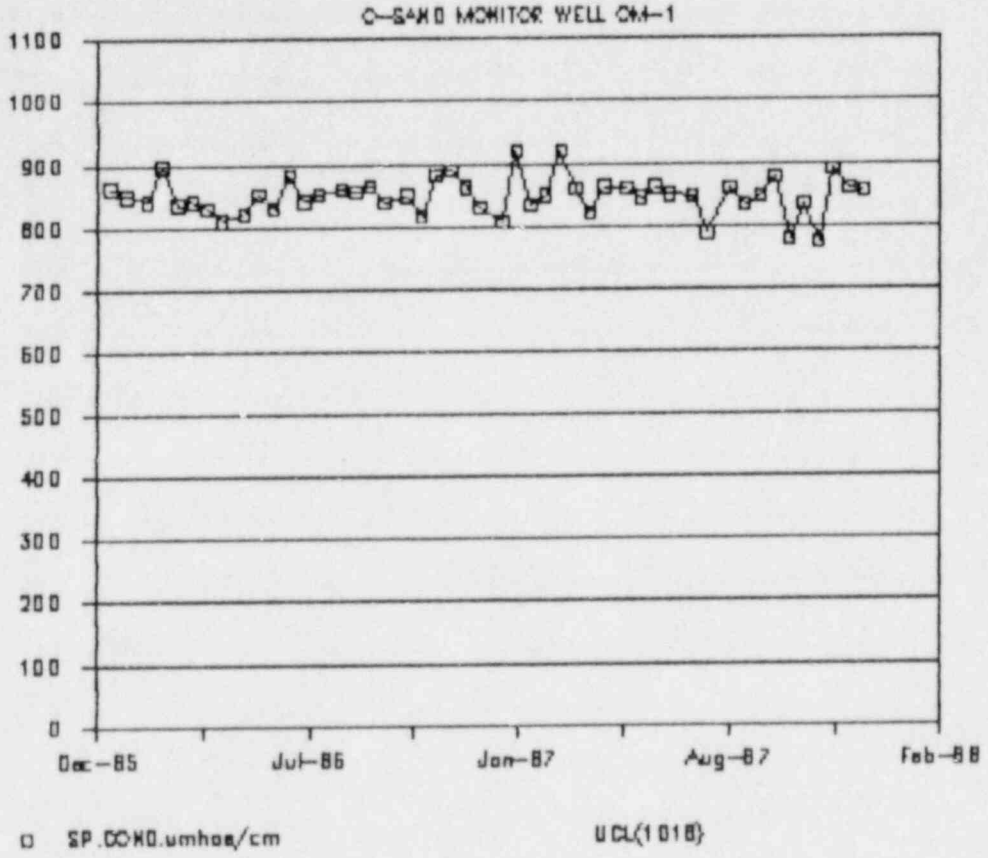


FIGURE A-4

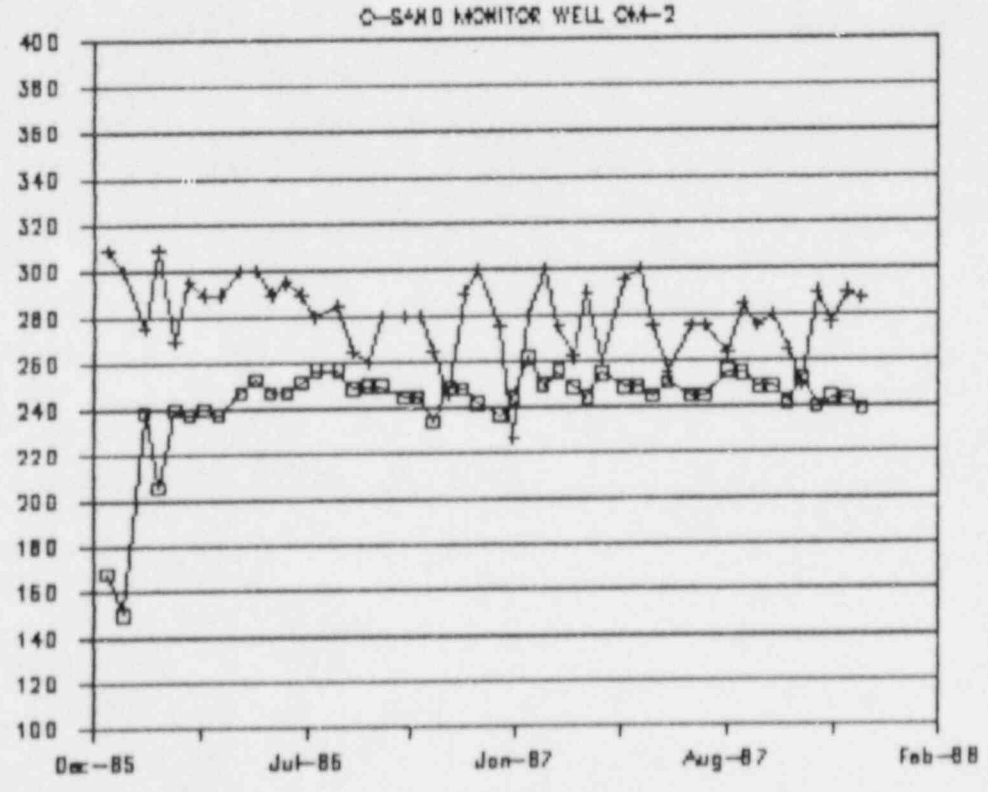


FIGURE A-5

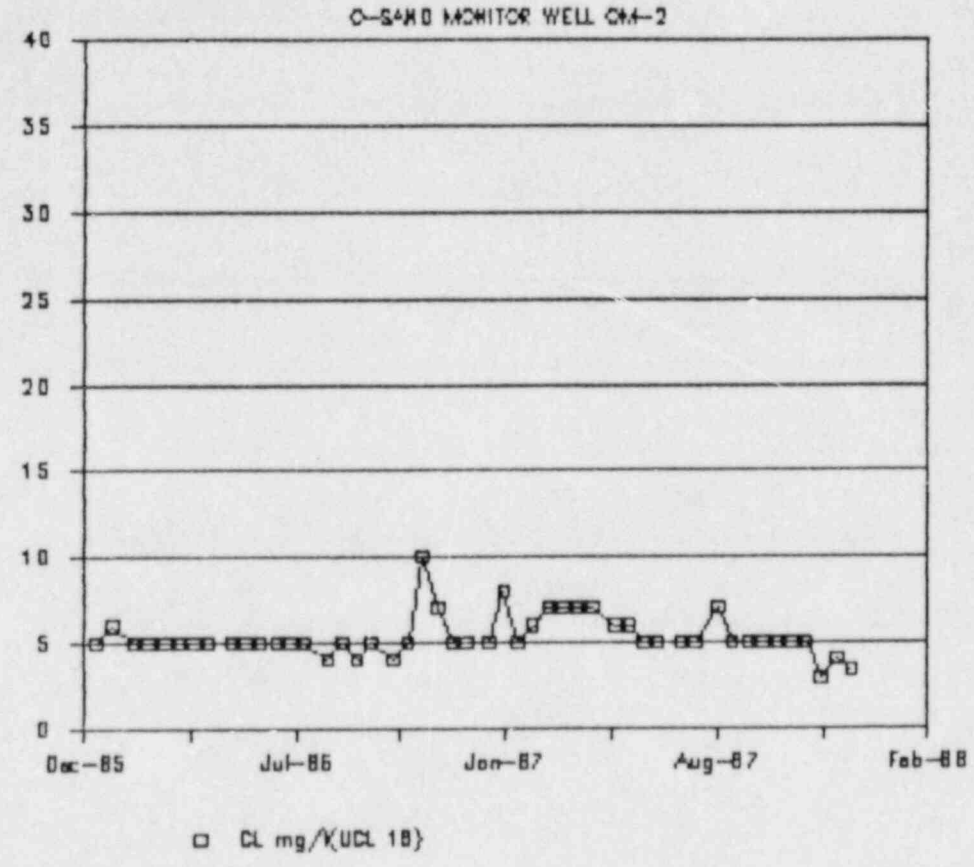


FIGURE A-6

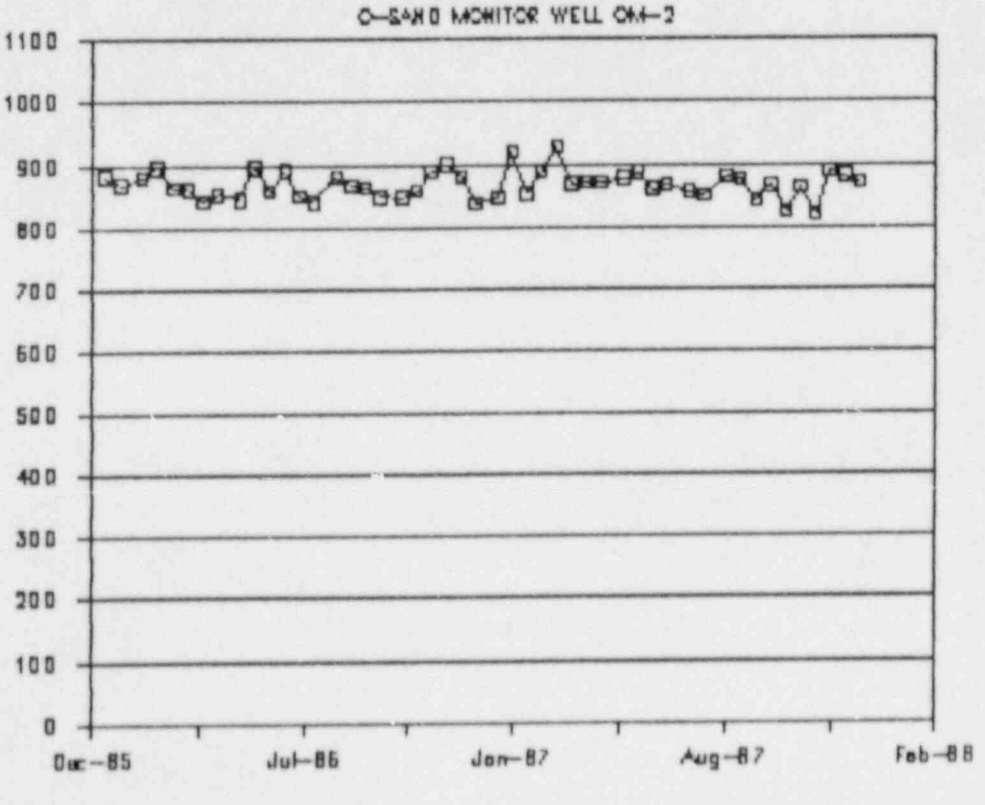


FIGURE A-7

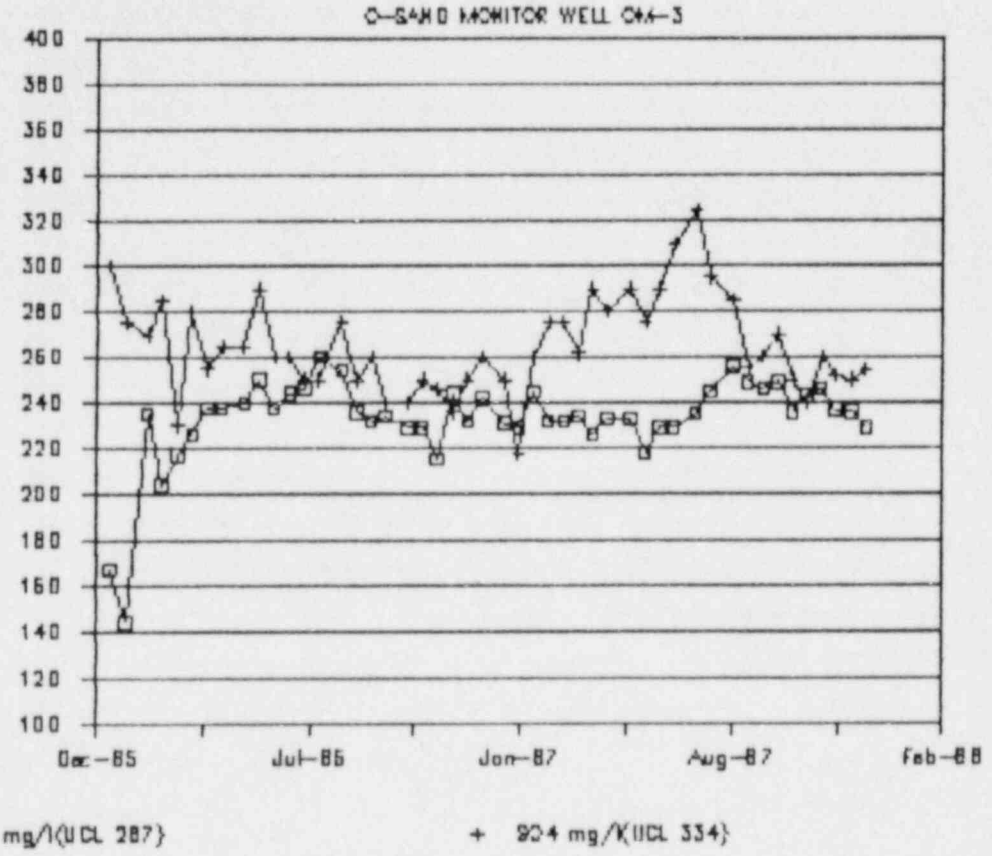


FIGURE A-8

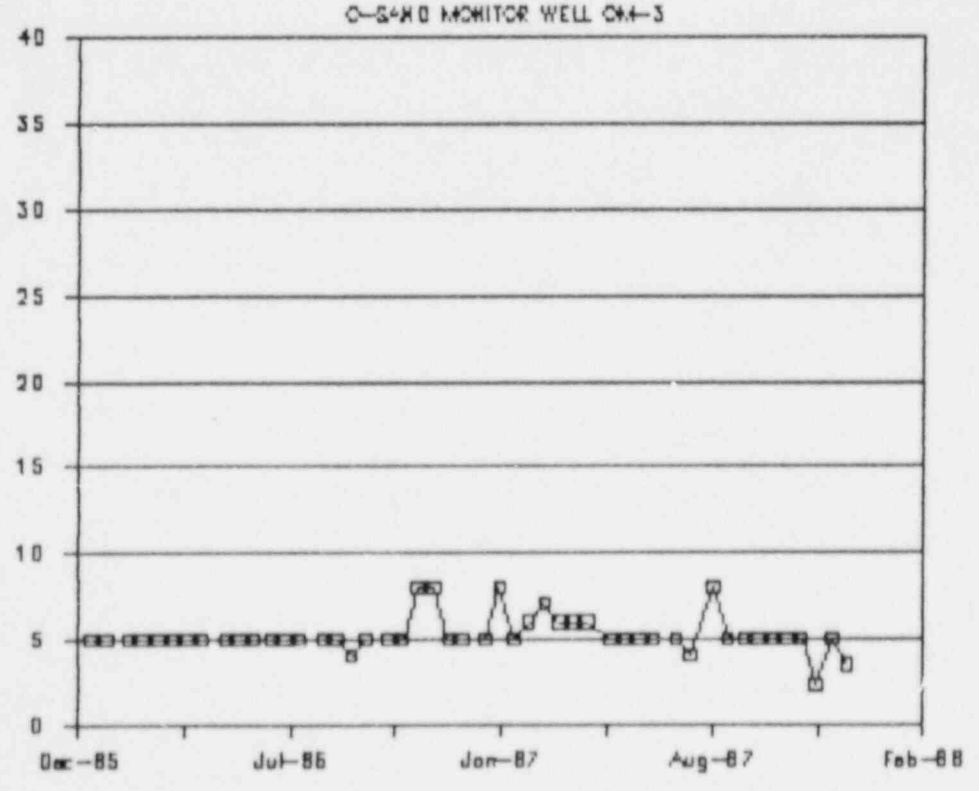


FIGURE A-9

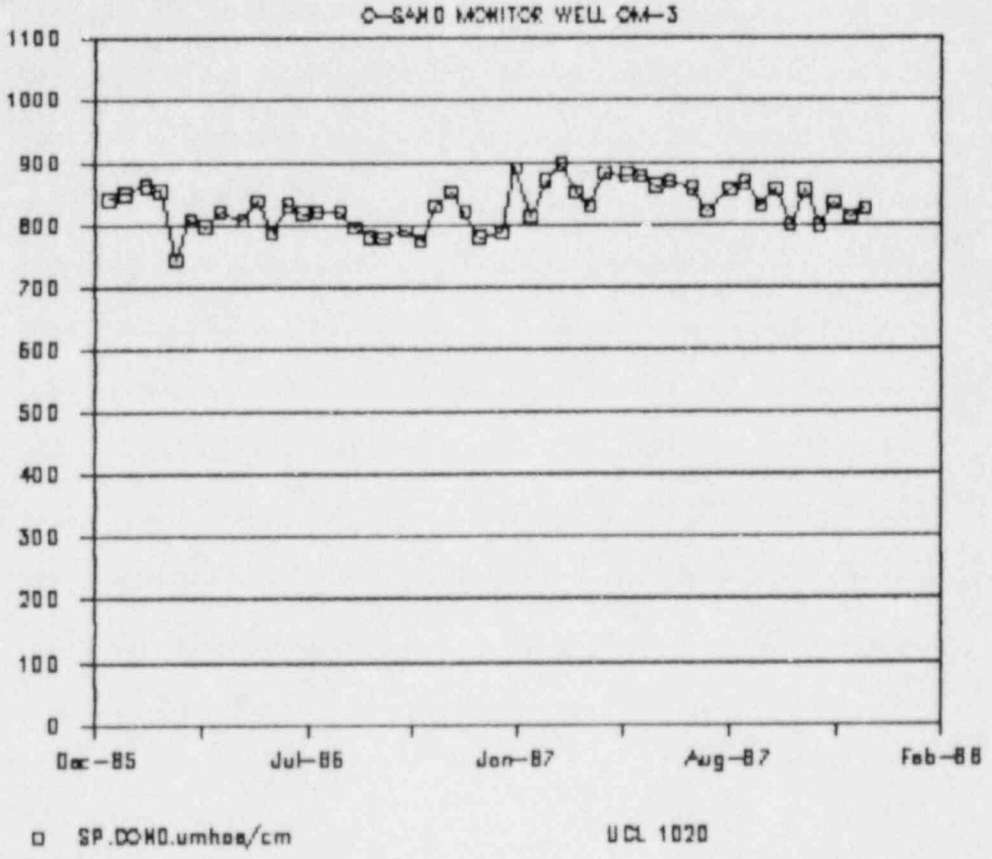


FIGURE A-10

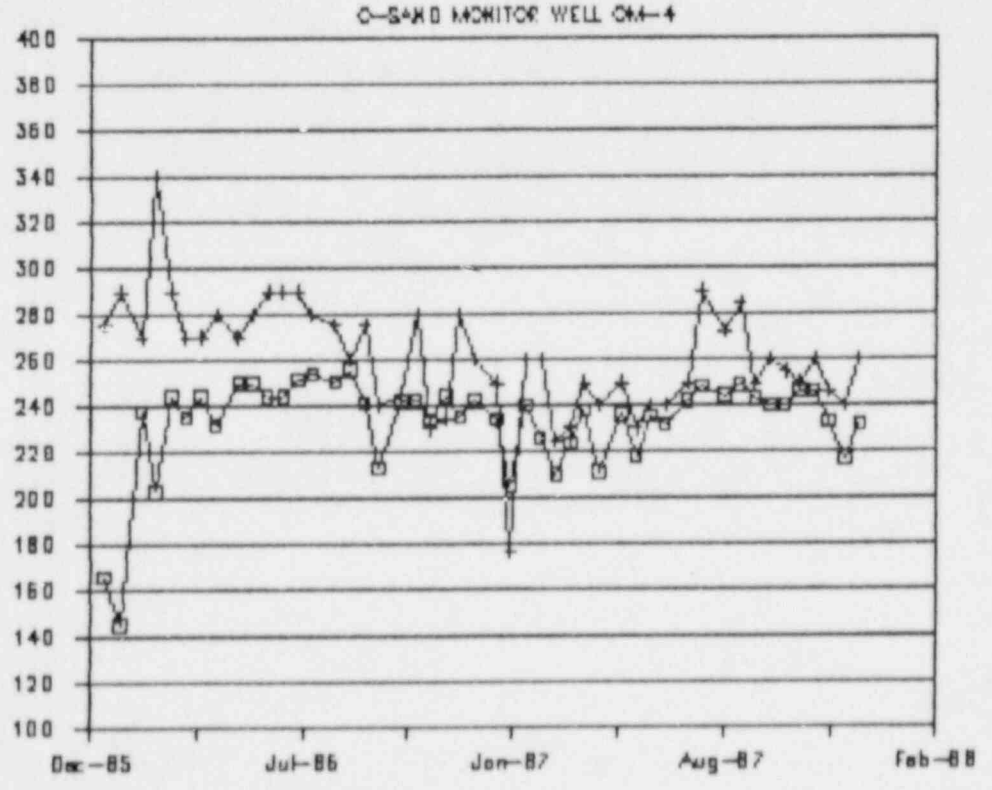


FIGURE A-11

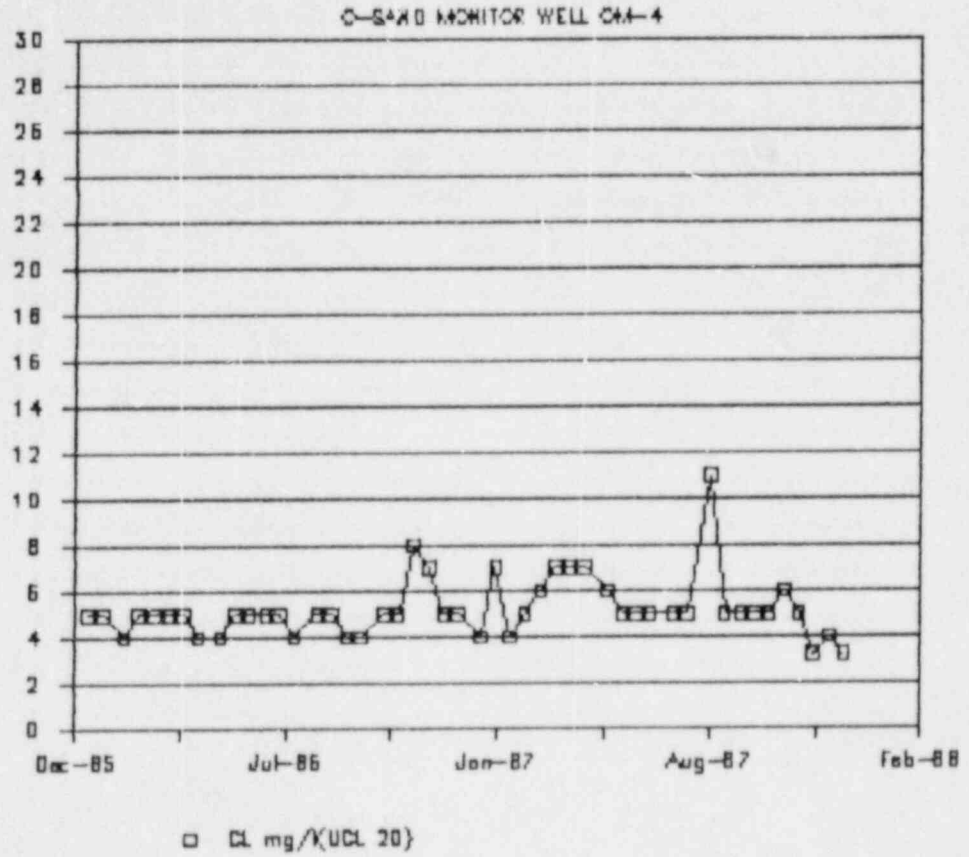


FIGURE A-12

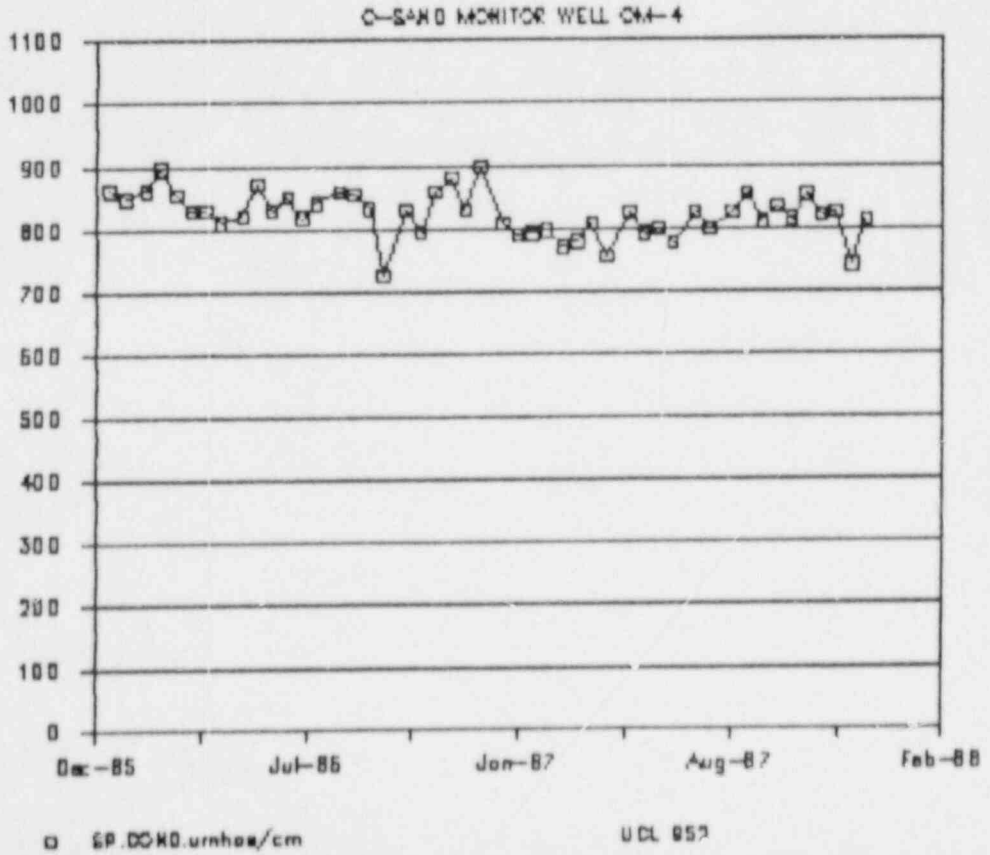
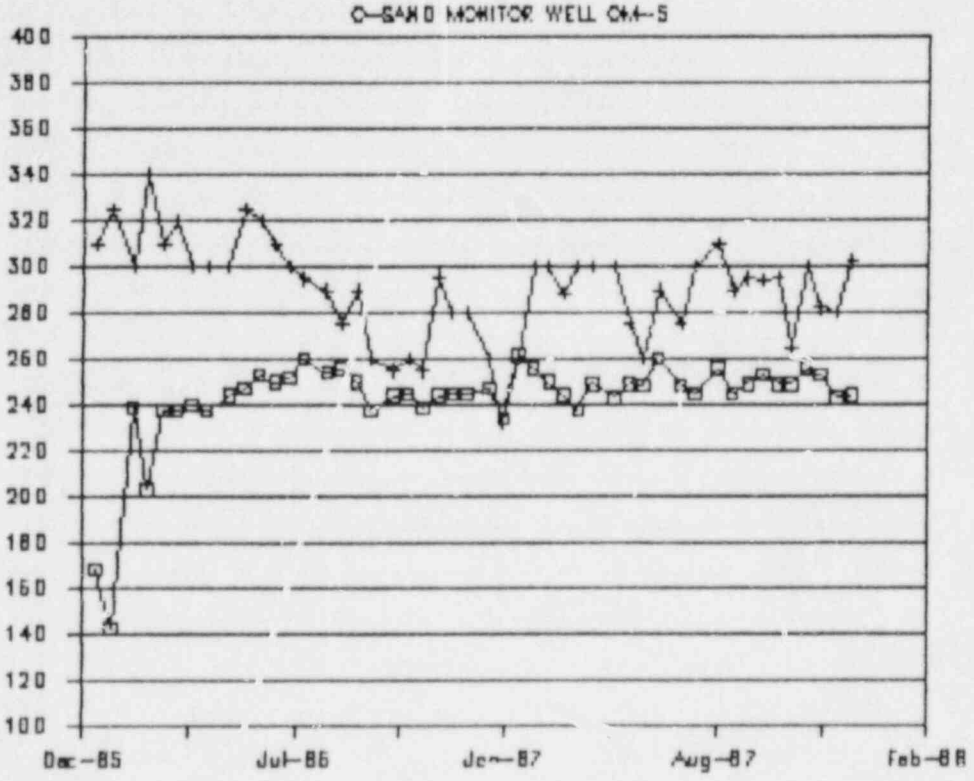
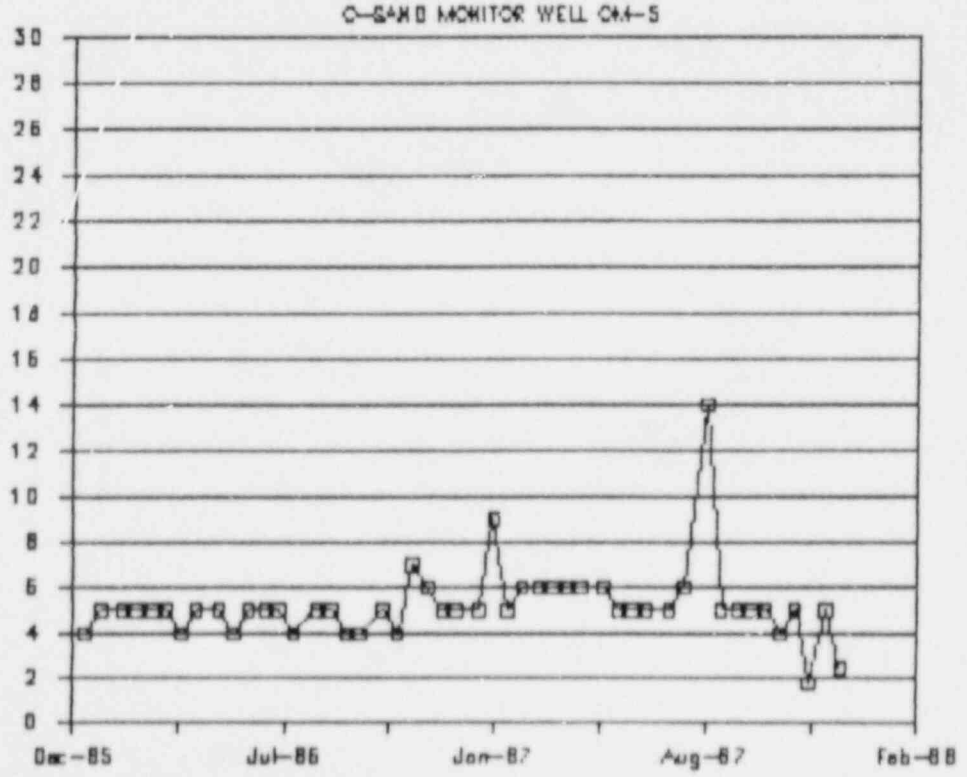


FIGURE A--13



□ HCO3 mg/l(UCL 306) + SO4 mg/l(UCL 328)

FIGURE A-14



□ CL mg/l(UCL 19)

FIGURE A–15

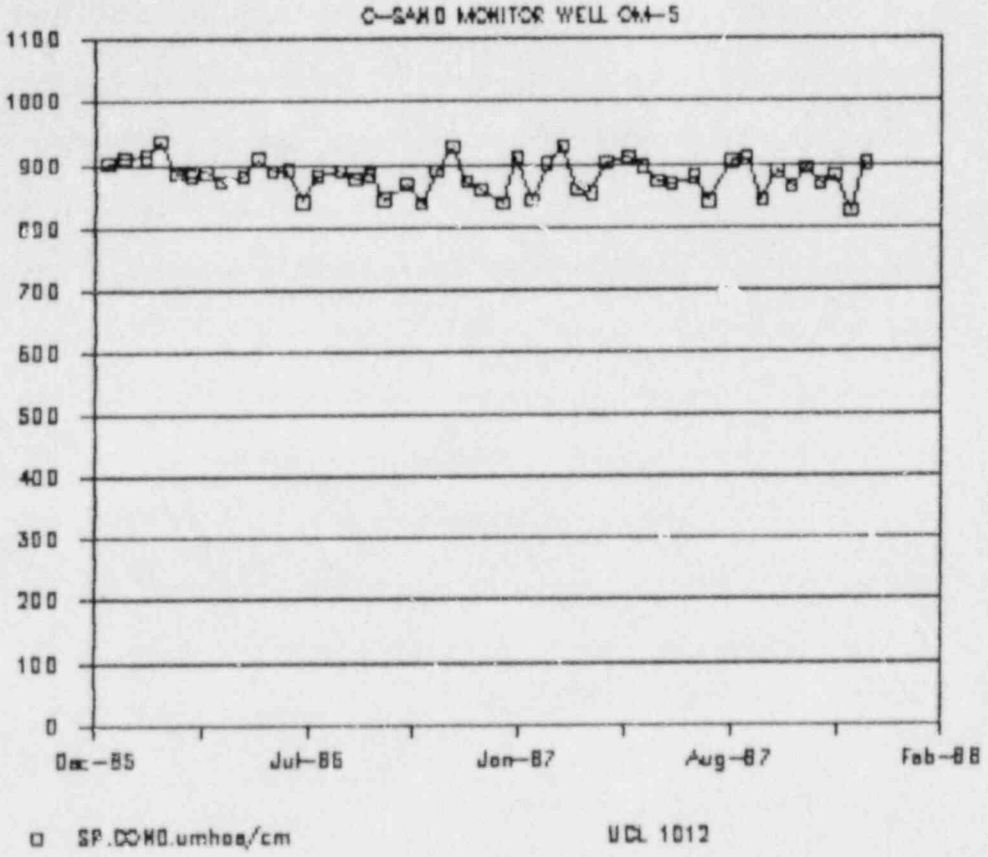


FIGURE A–16

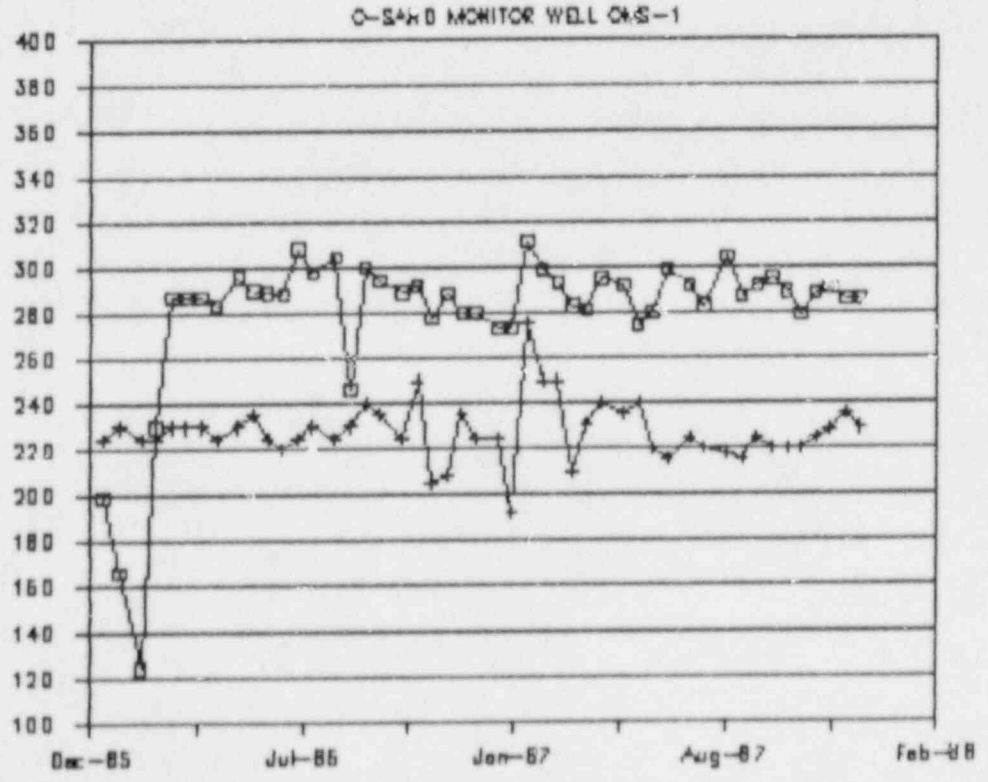


FIGURE A-17

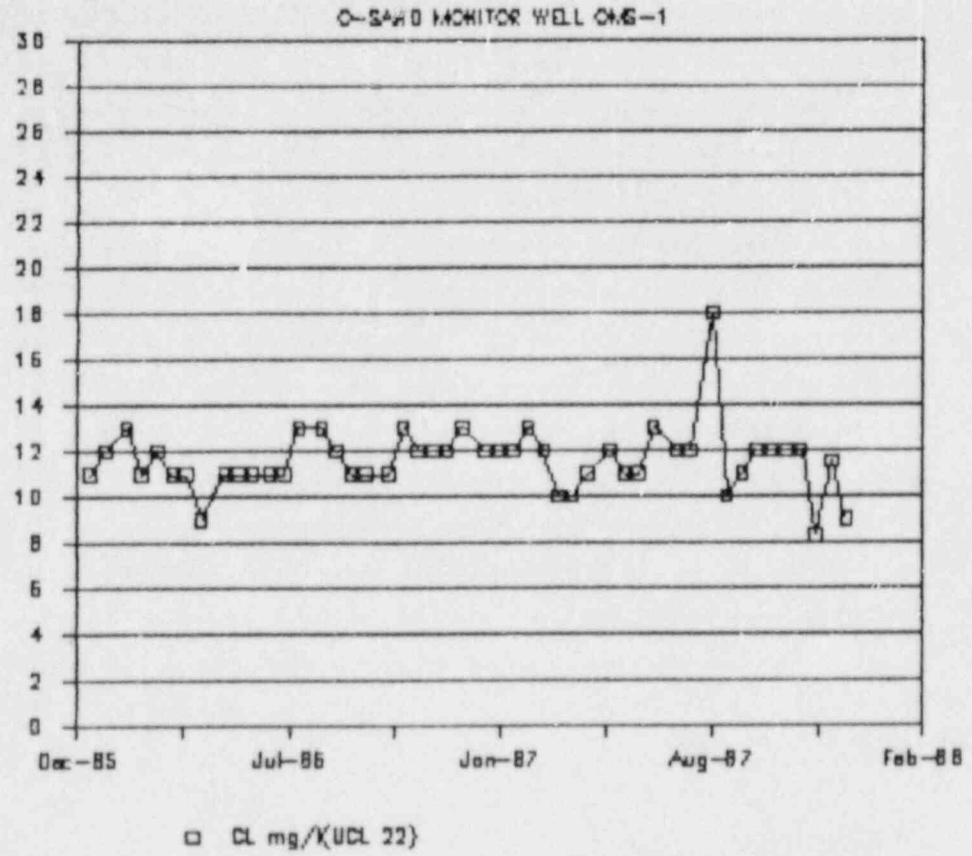


FIGURE A-18

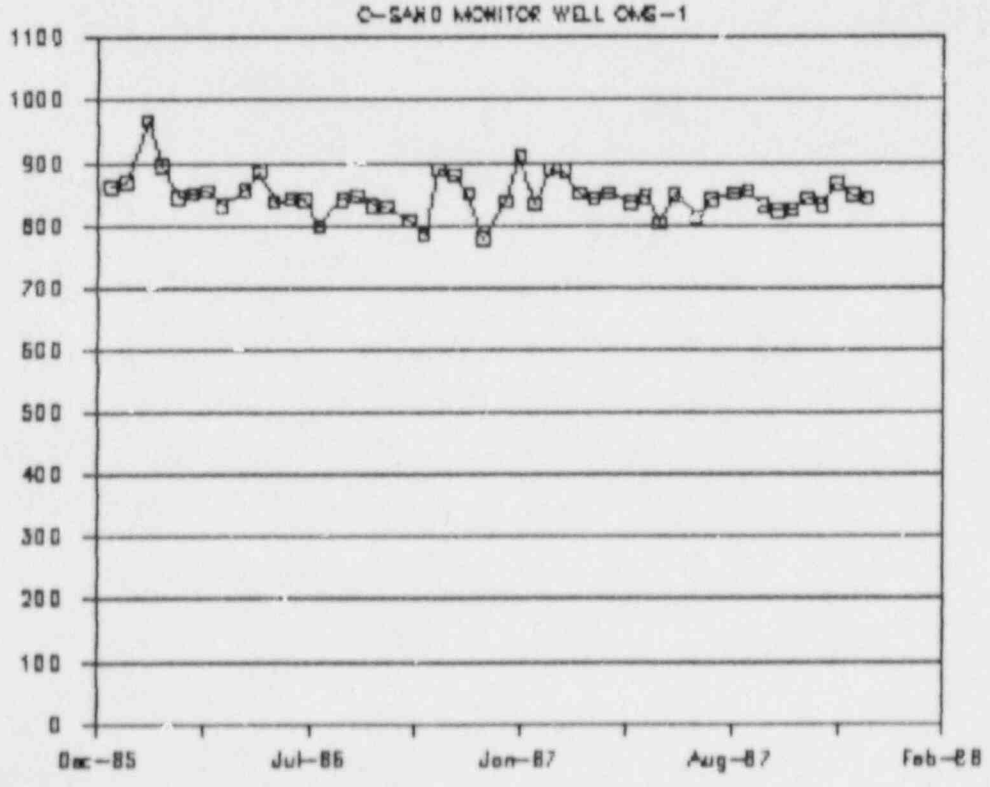


FIGURE A-19

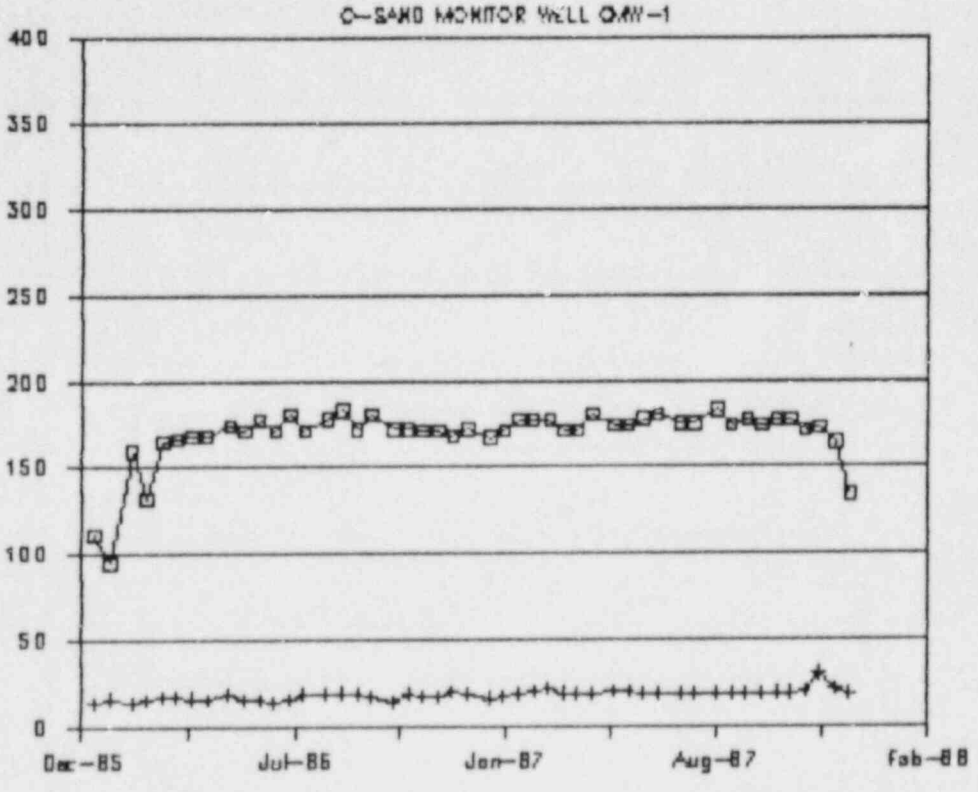


FIGURE A-20

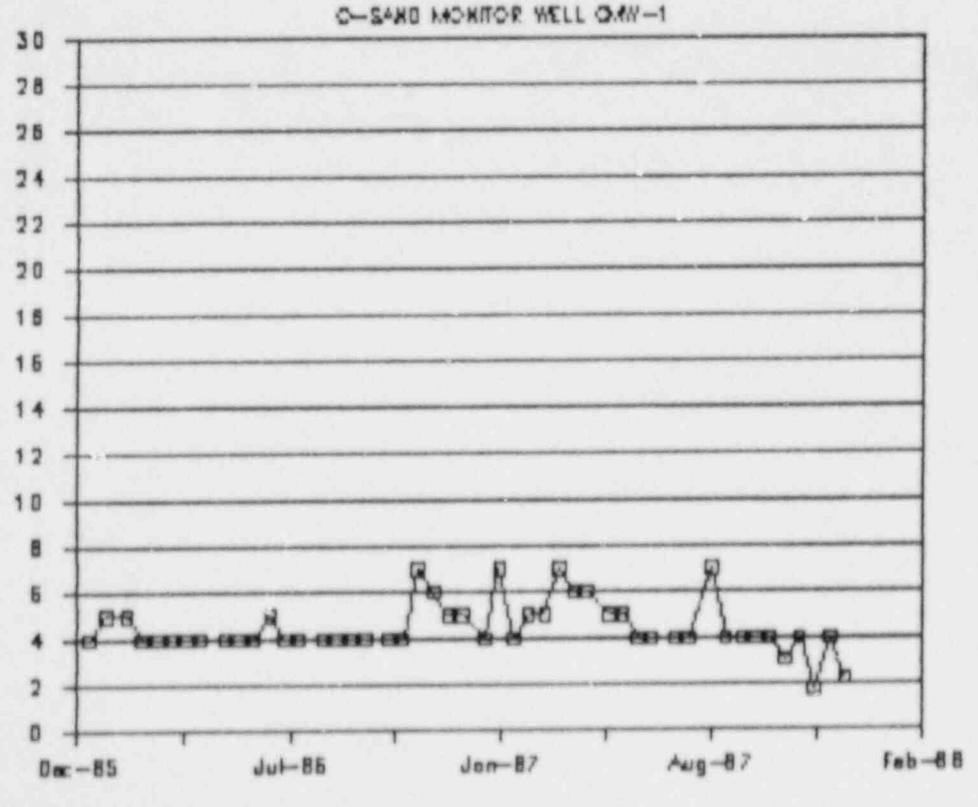


FIGURE A-21

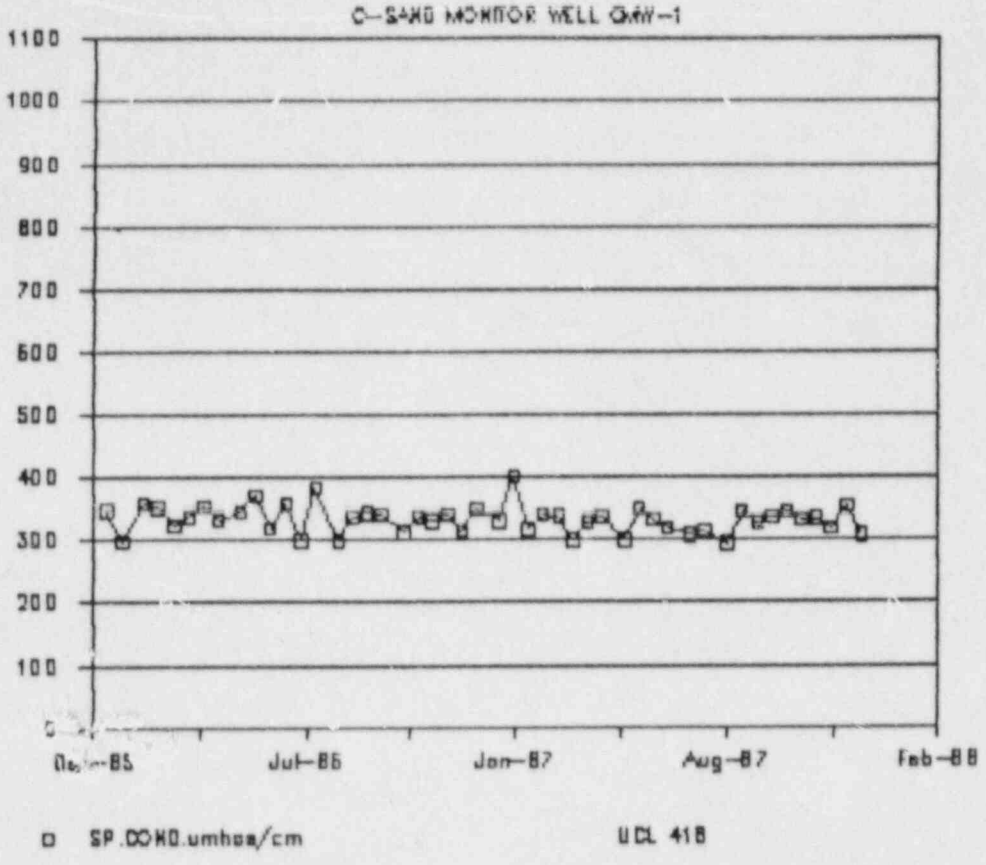


FIGURE A-22

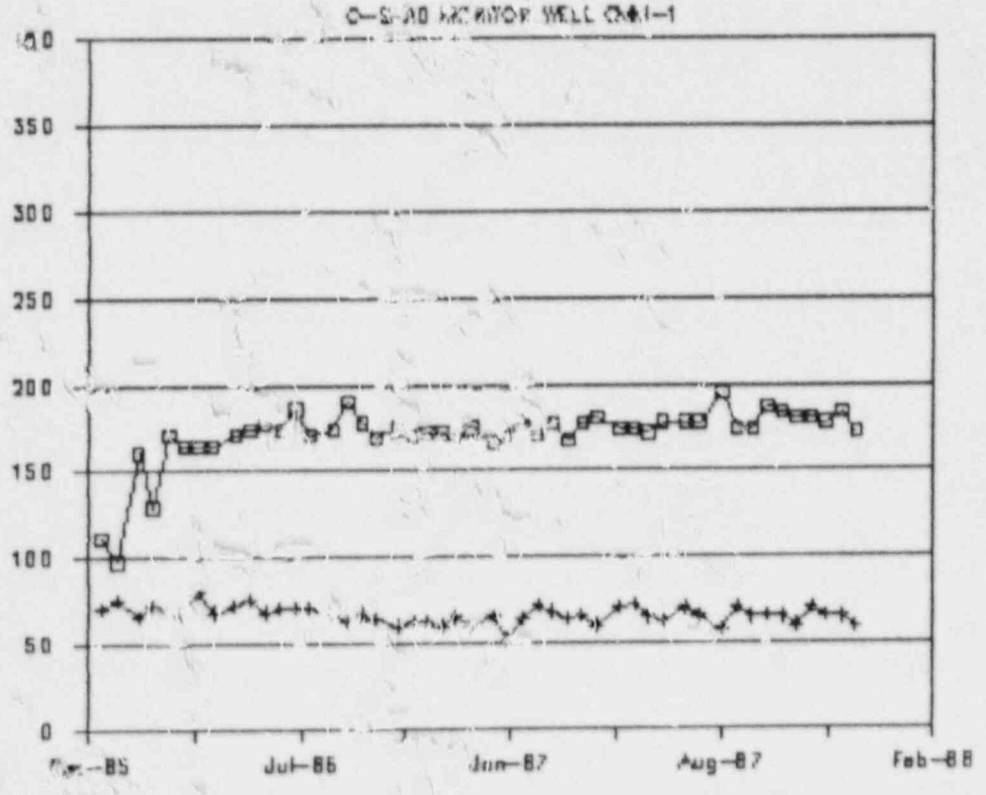


FIGURE A-23

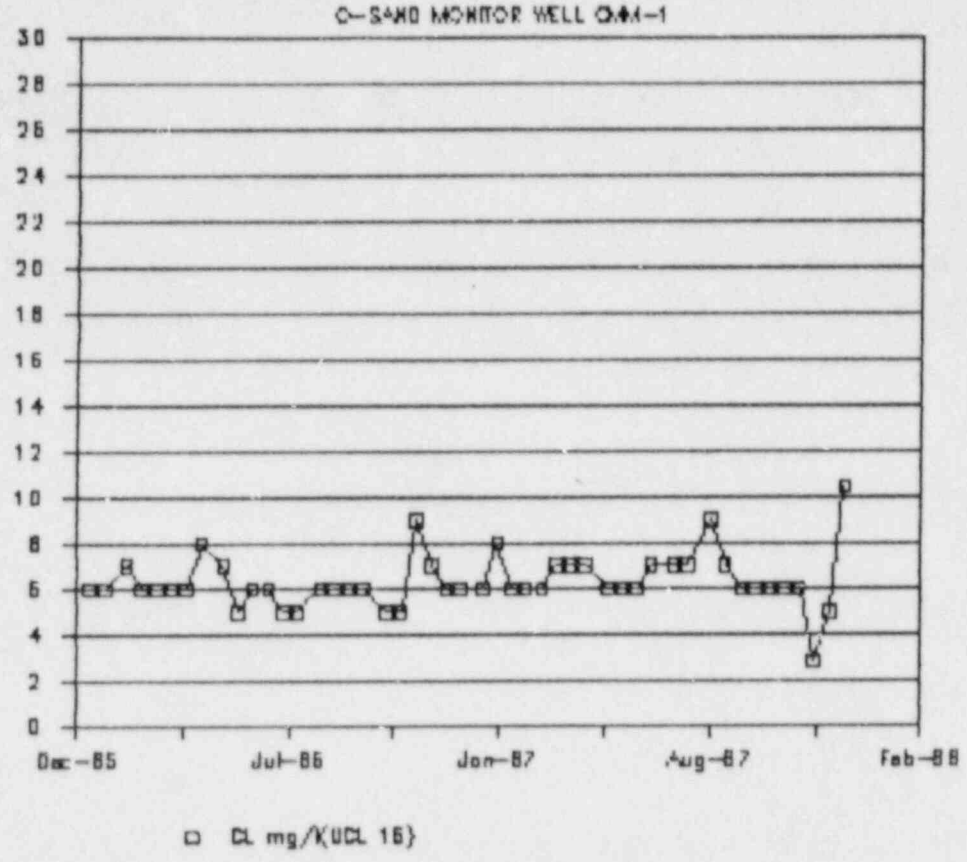
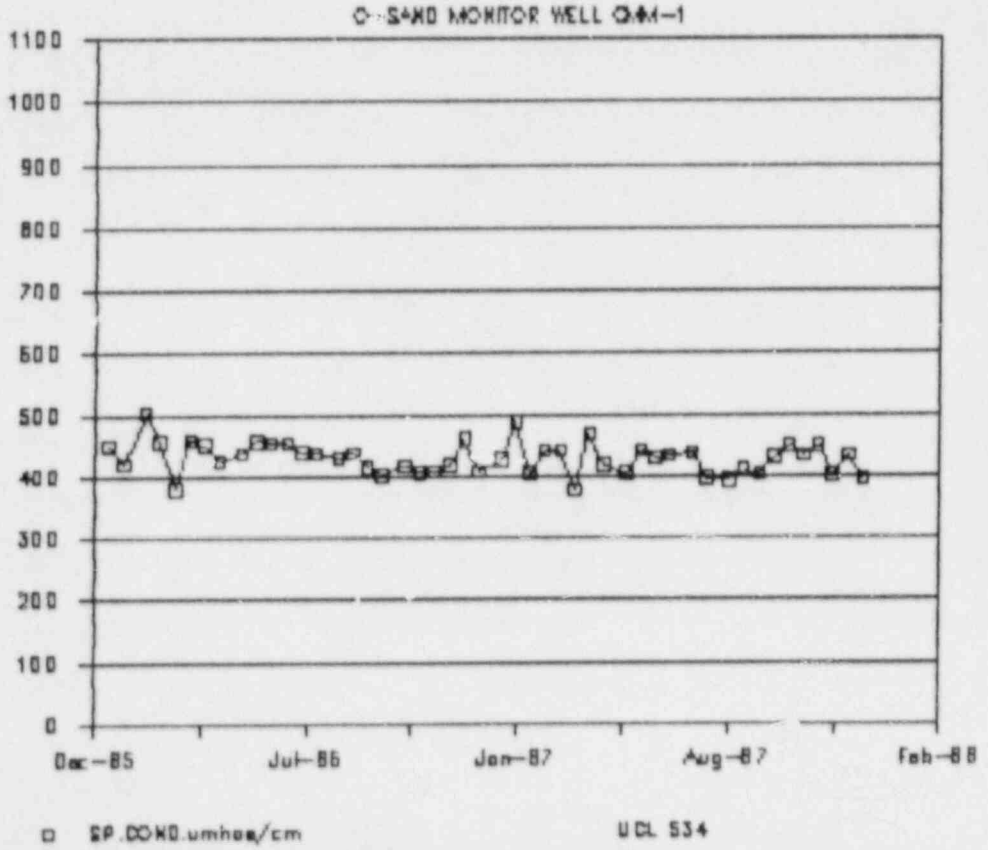


FIGURE A-24



ATTACHMENT B

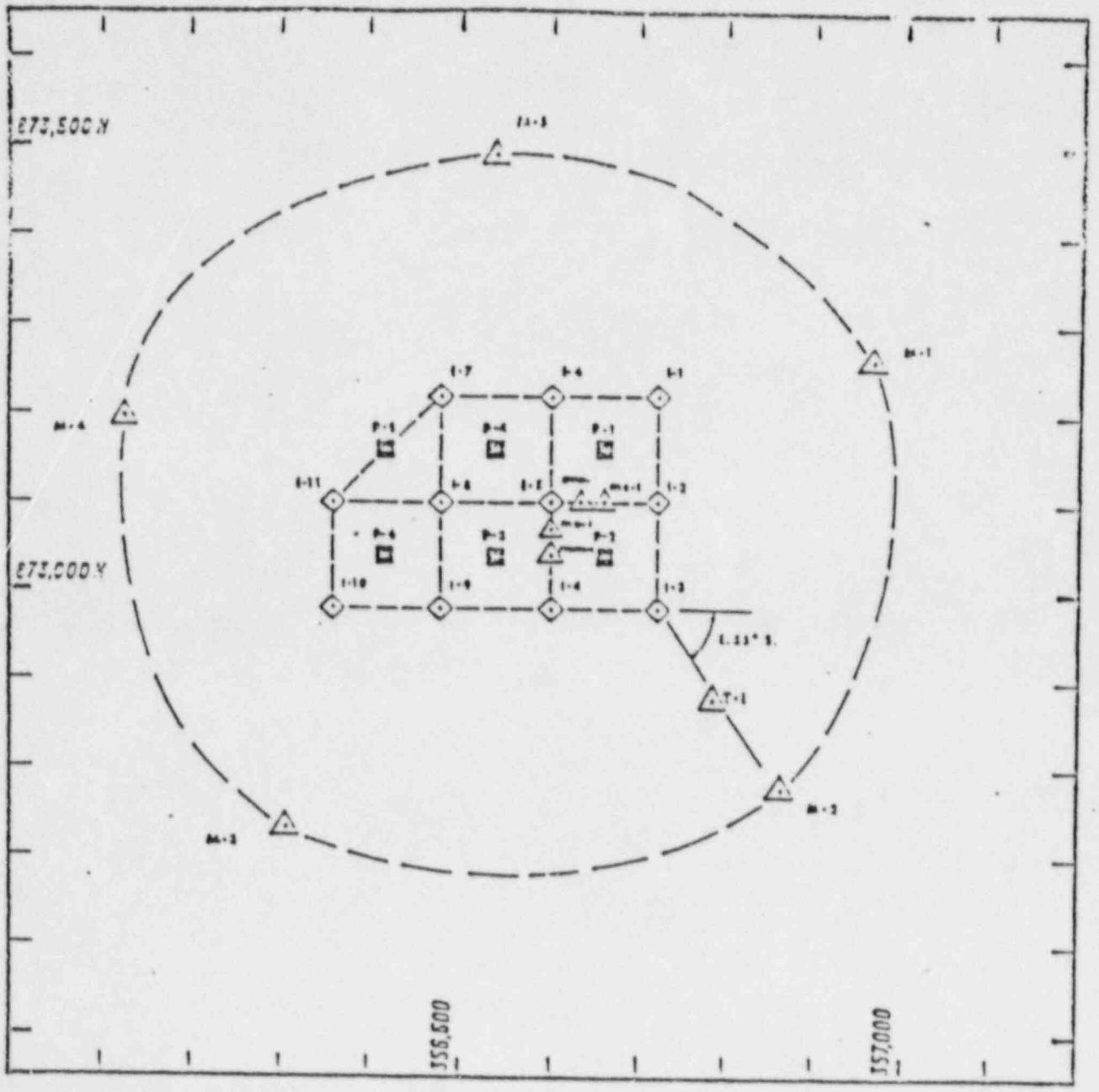
Monitor Well Fluid Level Data

Monitor well fluid level data is presented in tabular form in Table B-1 and in graphical form in Figures B-1 through B-8. Net production and barometric pressure are also presented in tabular form in Table B-1 and in graphical form in Figures B-9 and B-10. Baseline water levels are recorded on the left margin of Figures B-1 through B-8.

FIGURE B-1

"O" SAND WELL PATTERN

Section 26, T-36N; R-74W



Legend

- Monitor Well
- Production Well
- Injection Well
- Upper Zone Monitor Wells
- Lower Zone Monitor Wells

120 ft Spacing Between Injection Wells

NORTH

TABLE B-1
O-SAND ISL MONITOR WELL FLUID LEVEL DATA
FEET ABOVE MSL

DATE	(1) OM-1	OM-2	OM-3	OM-4	OM-5	OT-1	OMM-1
17-Jul-85	5164.27	5143.57	5163.98	5165.25	5165.33	5145.45	5187.22
06-Aug-85		5162.76				5162.41	
21-Aug-85	5165.26	5164.23	5165.26	5166.57	5166.02	5163.88	5187.88
18-Sep-85	5164.69	5163.97	5166.05	5167.46	5166.04	5164.18	5189.02
23-Sep-85		5167.78				5165.06	
30-Sep-85		5163.30				5163.75	
16-Oct-85	5164.53	5163.96	5164.74	5165.92	5165.25	5163.16	5189.93
20-Nov-85	5168.28	5164.75	5168.43	5169.48	5169.48	5167.83	5189.63
18-Dec-85	5168.88	5168.41	5166.04	5170.70	5168.37	5168.41	5190.90
15-Jan-86	5170.18	5164.11	5171.09	5172.46	5172.15	5170.72	5192.17
18-Feb-86	5172.28	5172.07	5172.56	5173.84	5173.12	5172.02	5193.06
19-Mar-86	5172.34	5172.07	5172.71	5173.79	5173.22	5172.02	5194.27
16-Apr-86	5174.02	5173.71	5174.56	5175.54	5175.05	5173.75	5195.45
21-May-86	5176.22	5175.80	5175.84	5176.80	5176.77	5175.56	5196.60
18-Jun-86	5177.59	5177.22	5177.50	5178.81	5178.31	5177.53	5197.20
16-Jul-86	5177.94	5177.42	5178.40	5178.56	5178.00	5177.63	5198.27
20-Aug-86	5177.24	5175.57	5176.23	5178.45	5177.84	5176.09	5198.29
17-Sep-86	5177.94	5176.65	5177.70	5179.04	5178.38	5177.53	5199.02
22-Oct-86	5179.56	5178.65	5178.96	5180.33	5180.15	5178.35	5198.62
19-Nov-86	5181.52	5181.12	5181.52	5182.80	5182.43	5181.08	5199.67
17-Dec-86	5183.35	5182.78	5183.66	5184.10	5184.12	5182.76	5200.14
21-Jan-87	5185.74	5183.72	5185.55	5185.54	5185.08	5185.52	5201.13
18-Feb-87	5186.59	5185.92	5186.55	5187.66	5187.06	5185.63	5202.32
18-Mar-87	5187.99	5187.57	5188.00	5189.31	5188.62	5187.53	5203.42
15-Apr-87	5189.43	5188.95	5189.84	5190.82	5190.22	5188.84	5204.02
20-May-87	5191.02	5190.52	5190.39	5191.74	5191.68	5188.63	5205.42
17-Jun-87	5190.62	5189.96	5190.00	5191.74	5191.62	5189.91	5205.42
22-Jul-87	5189.83	5189.14	5189.95	5190.83	5191.75	5189.23	5206.10
26-Aug-87	5189.95	5189.17	5190.22	5191.51	5191.64	5188.99	5205.30
23-Sep-87	5186.34	5185.97	5186.24	5187.91	5187.38	5185.41	5206.79
21-Oct-87	5187.29	5186.35	5186.80	5188.56	5188.23	5187.18	5206.02
18-Nov-87	5188.57	5187.79	5188.59	5189.80	5189.55	5187.85	5205.83
16-Dec-87	5189.29	5188.64	5189.35	5190.61	5190.14	5187.51	5206.19

(1) FLUID LEVEL DATA IS PRESENTED GRAPHICALLY ON FIGURES B-1 THROUGH B-9

TABLE B1 continued

DATE	CMS-1	OMW-1	OMO-1	BAROMETRIC PRESSURE In. Hg	NET PRODUCTION GPM
17-Jul-85	5299.37	5391.86	5164.25	30.04	7.6
21-Aug-85	5299.30	5393.32	5164.50	29.92	8.0
18-Sep-85	5299.18	5391.86	5164.84	29.82	9.5
16-Oct-85	5299.52	5393.42	5166.00	29.90	21.0
20-Nov-85	5298.78	5391.30	5167.99	29.94	6.5
18-Dec-85	5297.43	5391.03	5166.79	30.07	8.9
15-Jan-86	5299.15	5391.74	5170.79	29.70	14.8
18-Feb-86	5297.16	5392.10	5173.25	30.02	11.5
19-Mar-86	5299.35	5391.96	5174.59	29.96	22.3
16-Apr-86	5299.23	5392.06	5174.30	29.68	20.8
21-May-86	5299.17	5392.07	5176.29	29.68	41.6
18-Jun-86	5299.84	5392.81	5177.51	29.91	10.4
16-Jul-86	5300.16	5391.64	5177.59	29.86	14.0
20-Aug-86	5299.85	5391.78	5176.81	30.30	3.2
17-Sep-86	5299.74	5392.54	5177.44	29.94	6.5
22-Oct-86	5298.94	5391.66	5178.69	29.91	3.9
19-Nov-86	5299.89	5392.26	5181.41	29.66	5.9
17-Dec-86	5299.16	5391.58	5183.47	29.90	5.7
21-Jan-87	5300.11	5391.71	5185.54	29.86	0.4
18-Feb-87	5299.56	5392.01	5186.51	29.84	11.2
18-Mar-87	5299.84	5392.21	5188.14	29.41	3.0
15-Apr-87	5299.41	5391.84	5189.13	29.80	4.9
20-May-87	5299.71	5391.44	5186.32	29.72	20.3
17-Jun-87	5299.53	5391.36	5190.85	29.92	8.5
22-Jul-87	5299.87	5391.74	5189.47	29.85	7.7
26-Aug-87	5299.65	5391.45	5188.55	30.04	2.8
23-Sep-87	5299.55	5392.06	5186.59	30.01	7.2
21-Oct-87	5299.86	5392.01	5187.57	29.78	6.7
18-Nov-87	5299.47	5391.79	5188.19	29.89	1.9
16-Dec-87	5299.57	5392.01	5189.25	29.74	32.2

(1)FLUID LEVEL DATA IS PRESENTED GRAPHICALLY ON FIGURES B-1 THROUGH B-9

FIGURE B-1

MONITOR WELL OM-1 FLUID LEVEL

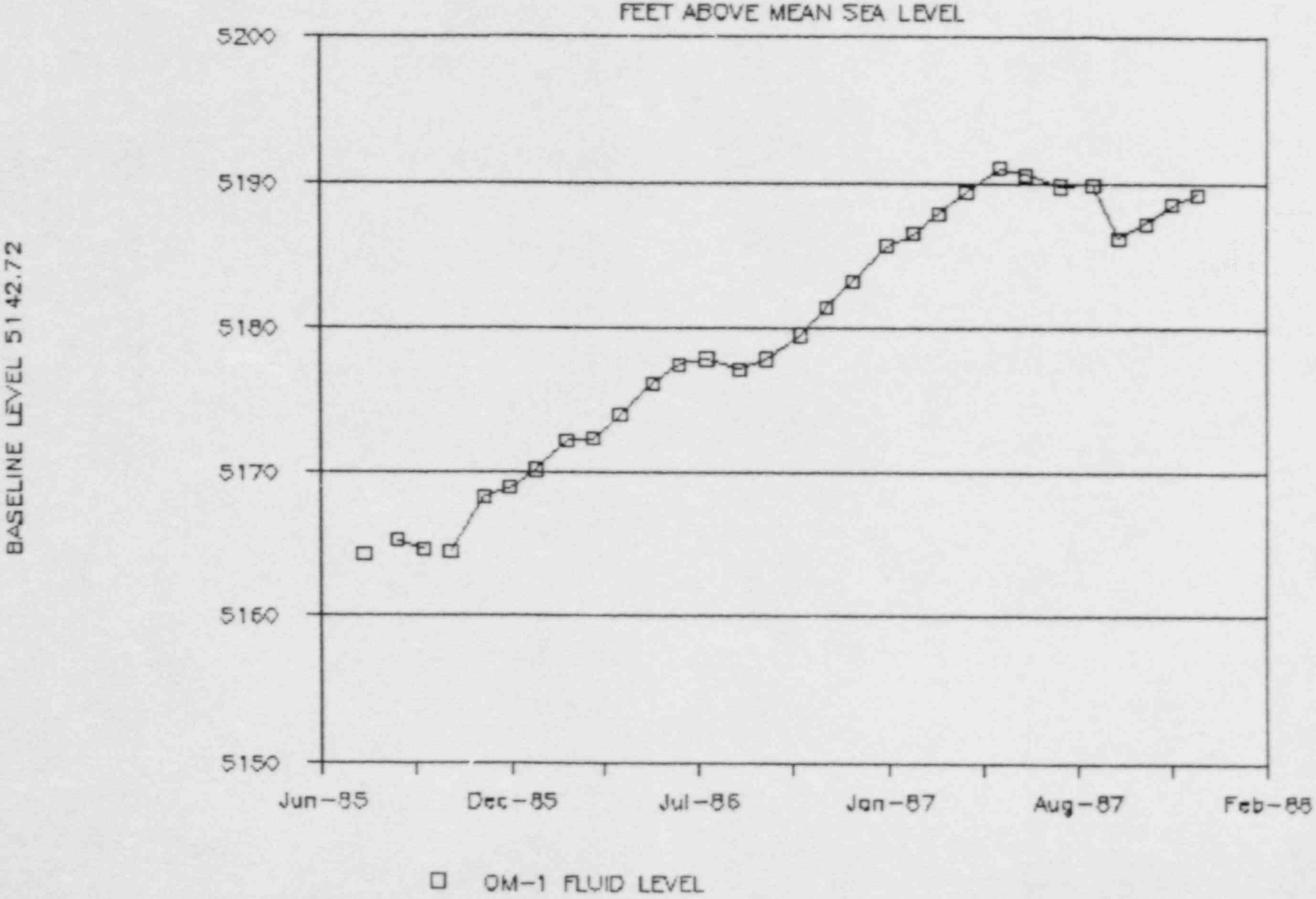


FIGURE B-2

MONITOR WELL OM-2 FLUID LEVEL

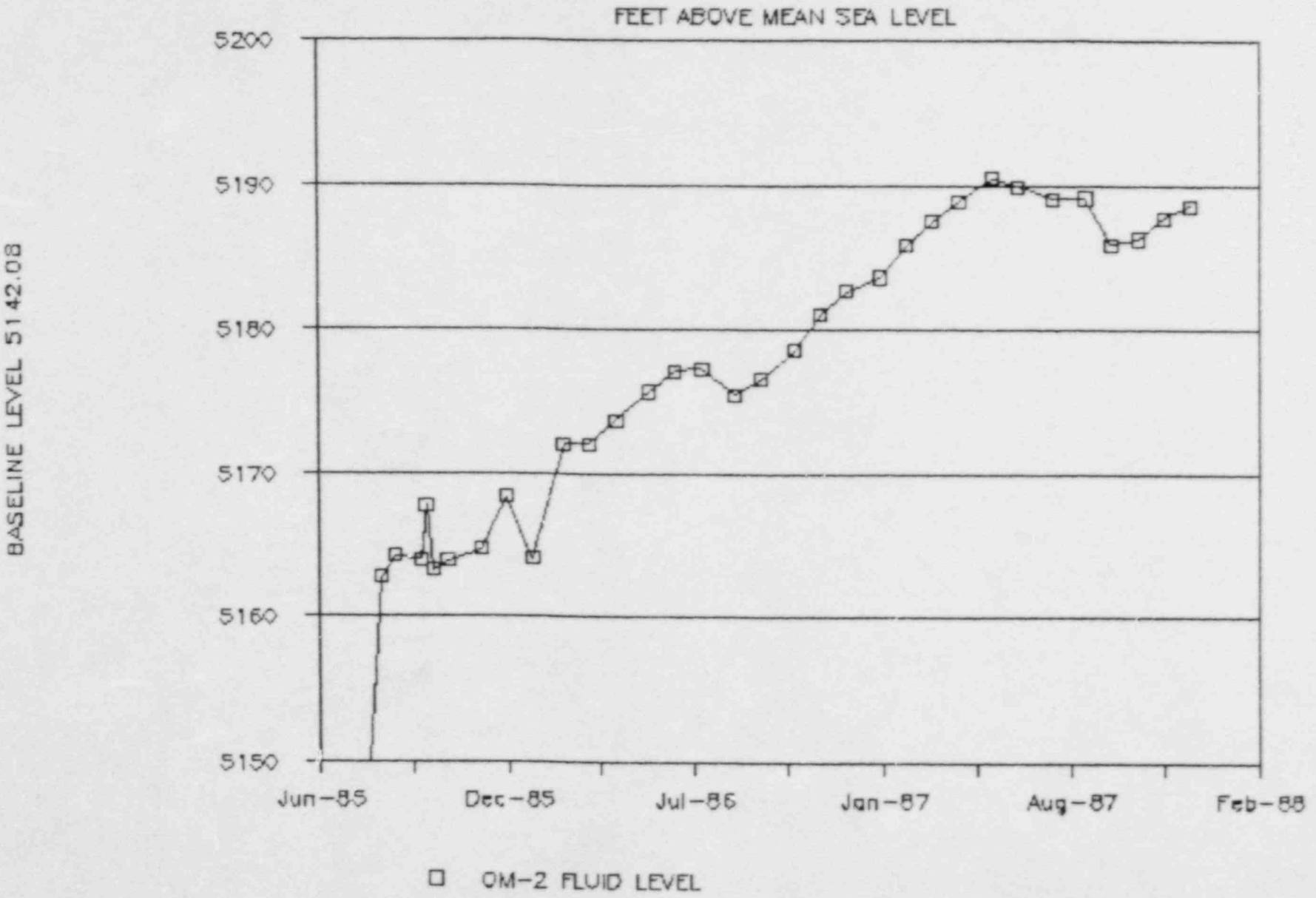


FIGURE B-3

MONITOR WELL OM-3 FLUID LEVEL

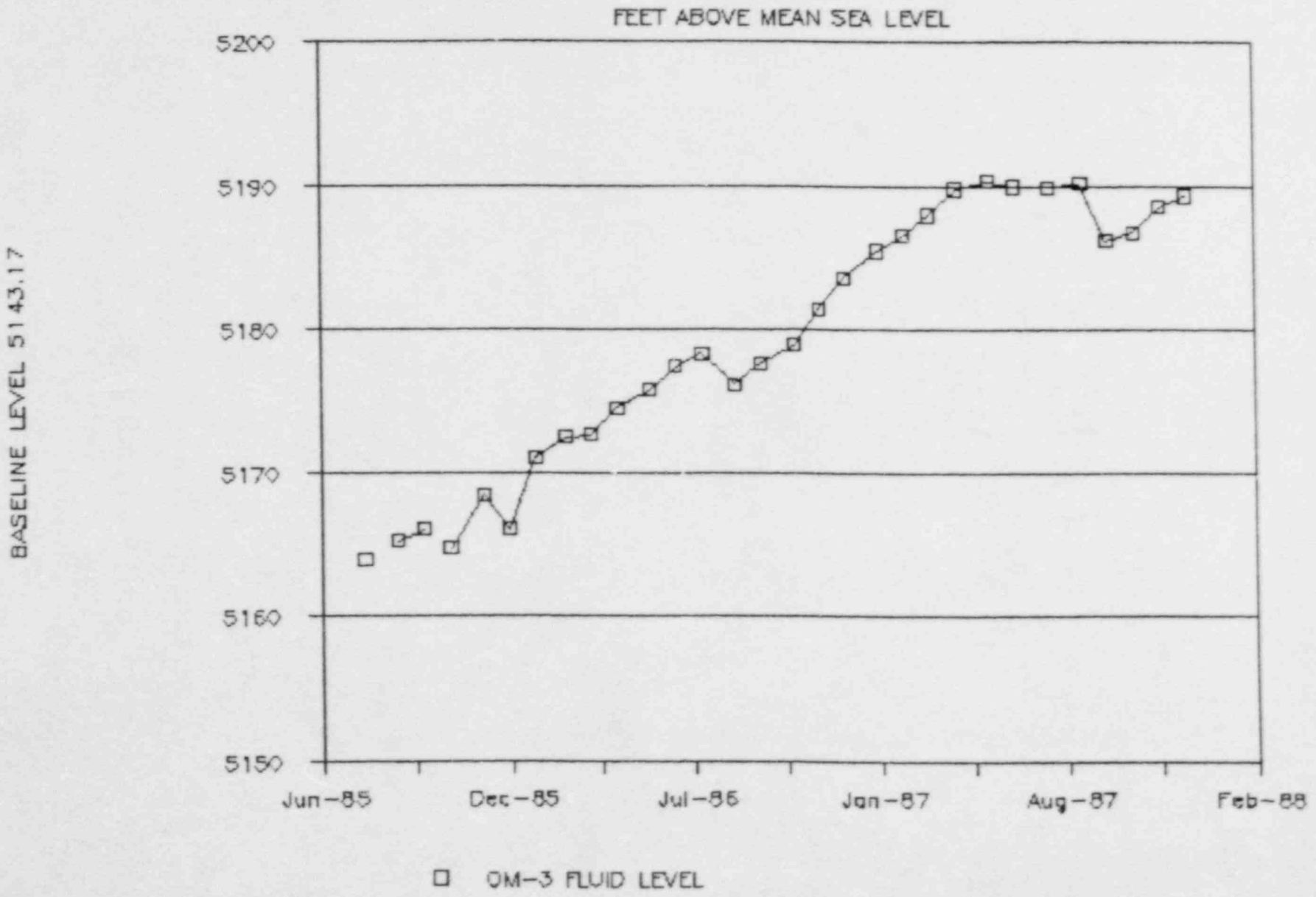


FIGURE B-4

MONITOR WELL OM-4 FLUID LEVEL

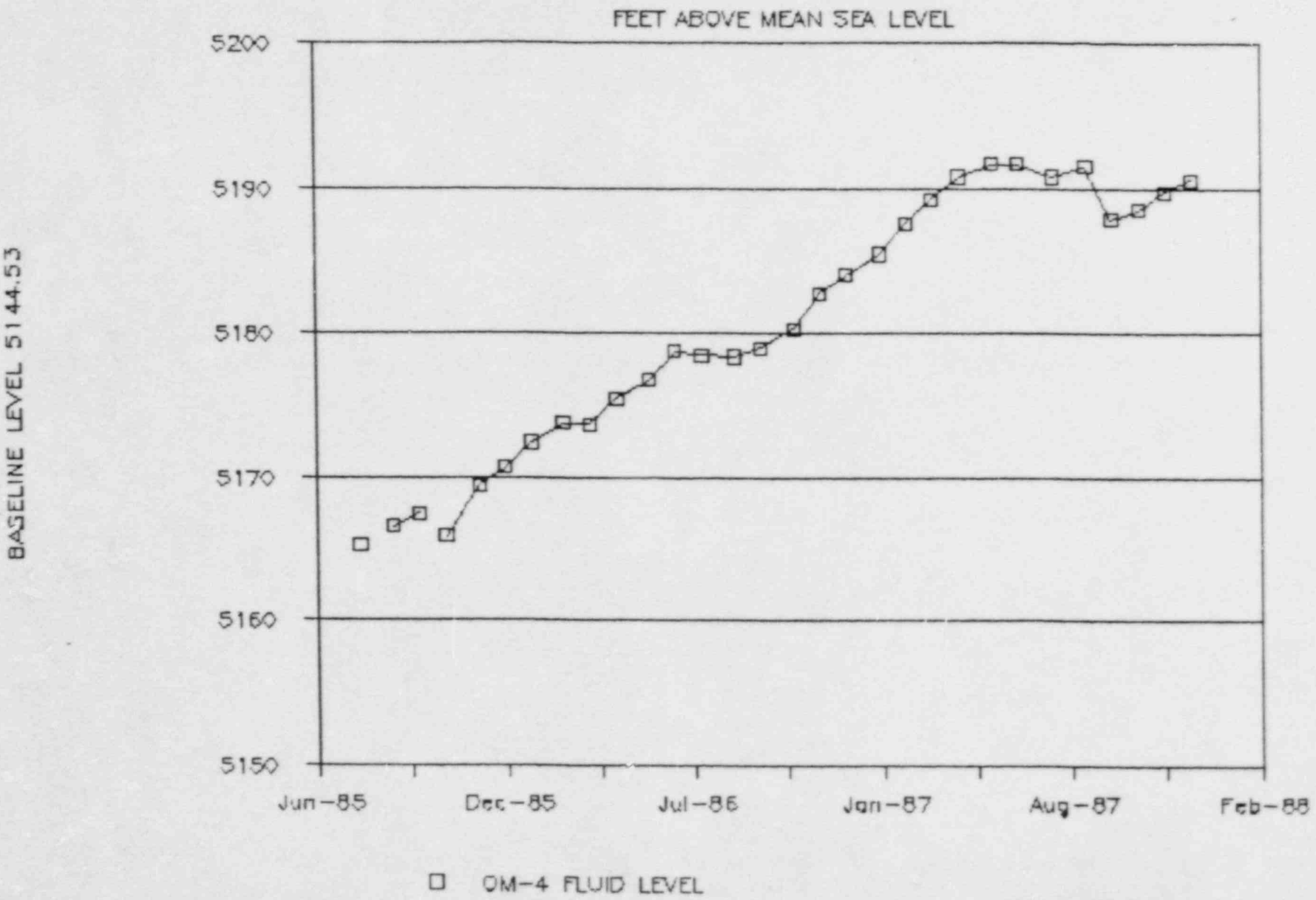


FIGURE B-5

MONITOR WELL OM-5 FLUID LEVEL

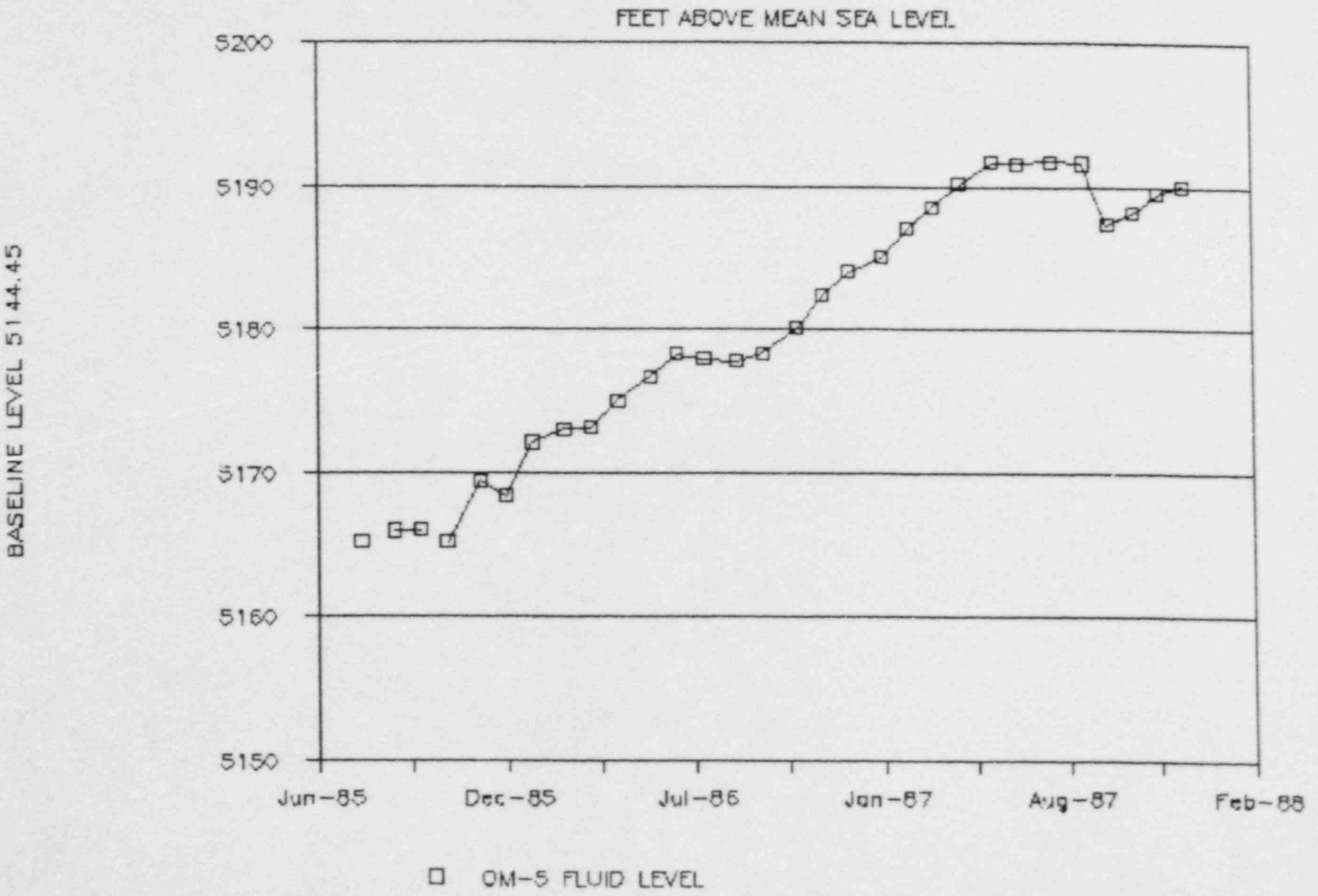


FIGURE B-6

MONITOR WELL OMM-1 FLUID LEVEL

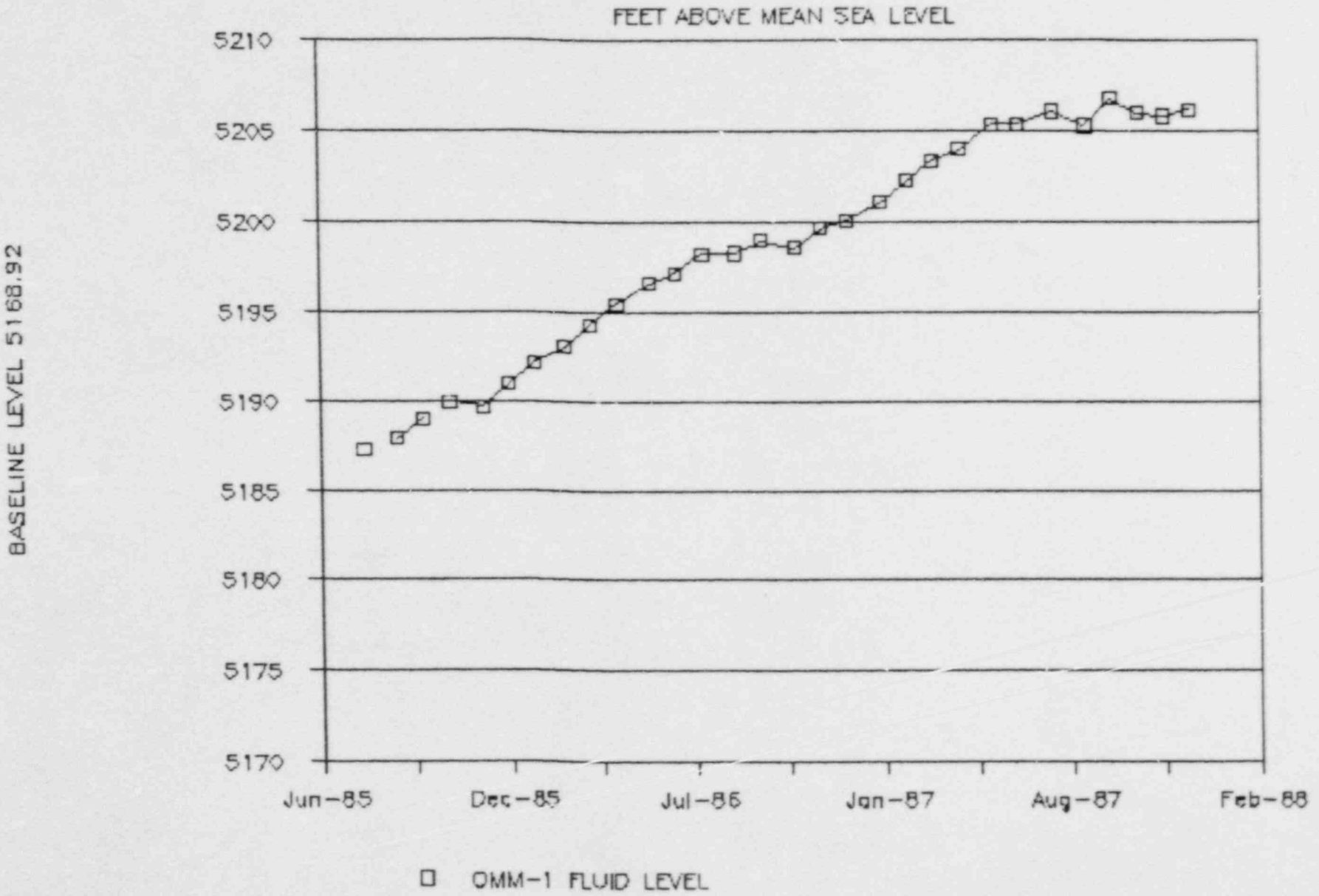


FIGURE B-7

MONITOR WELL OMS-1 FLUID LEVEL

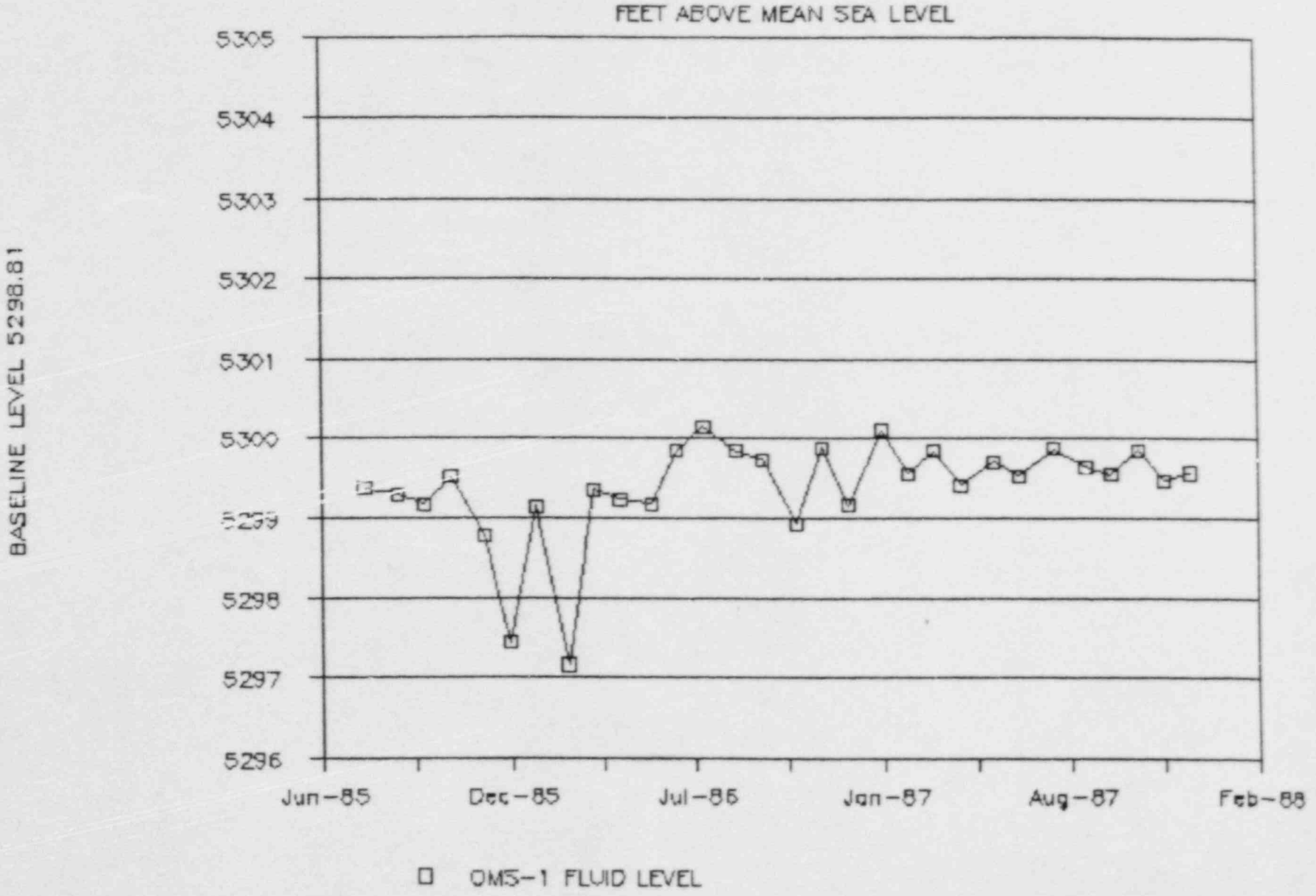


FIGURE B-8

MONITOR WELL OMW-1 FLUID LEVEL

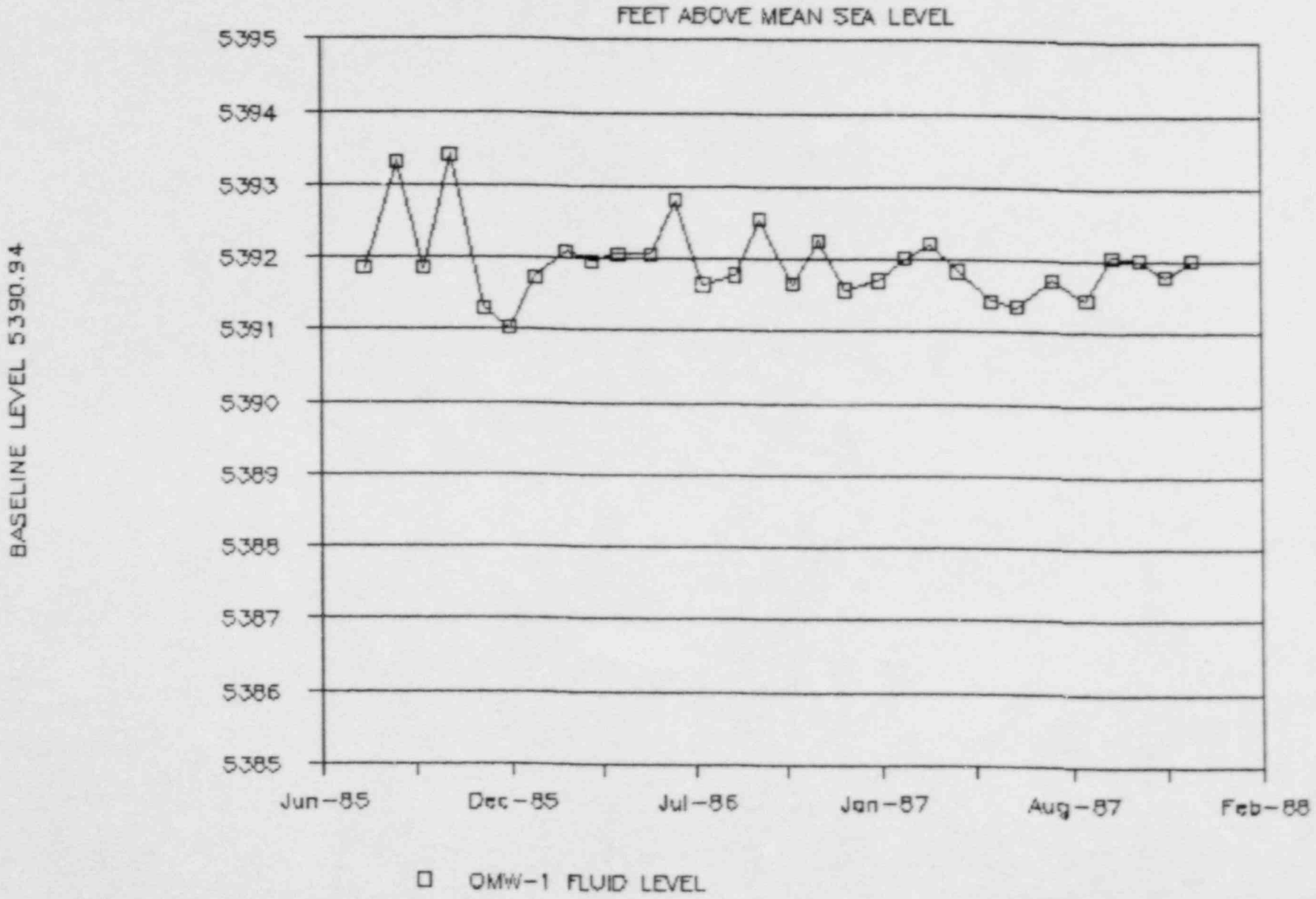


FIGURE B-9

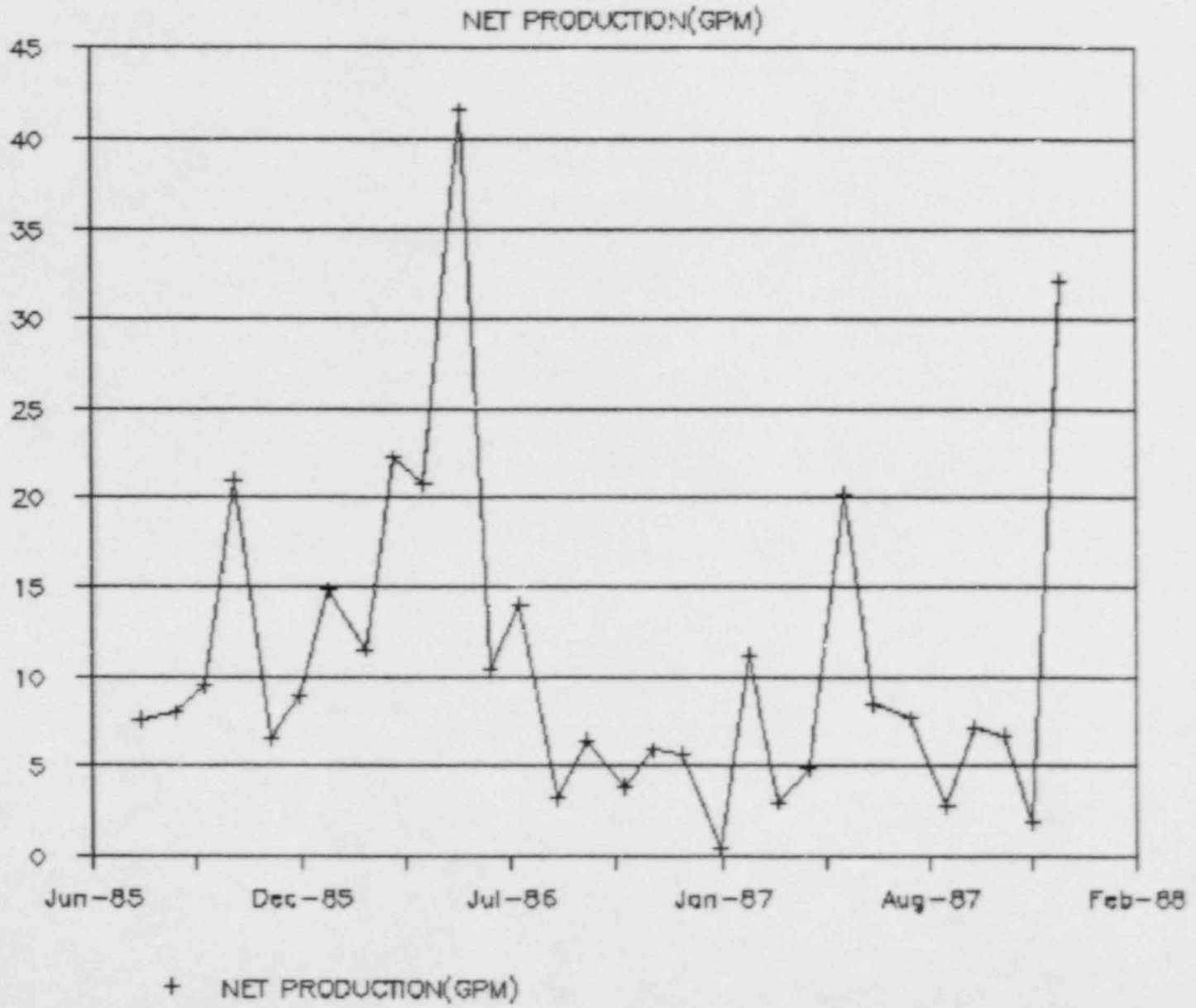
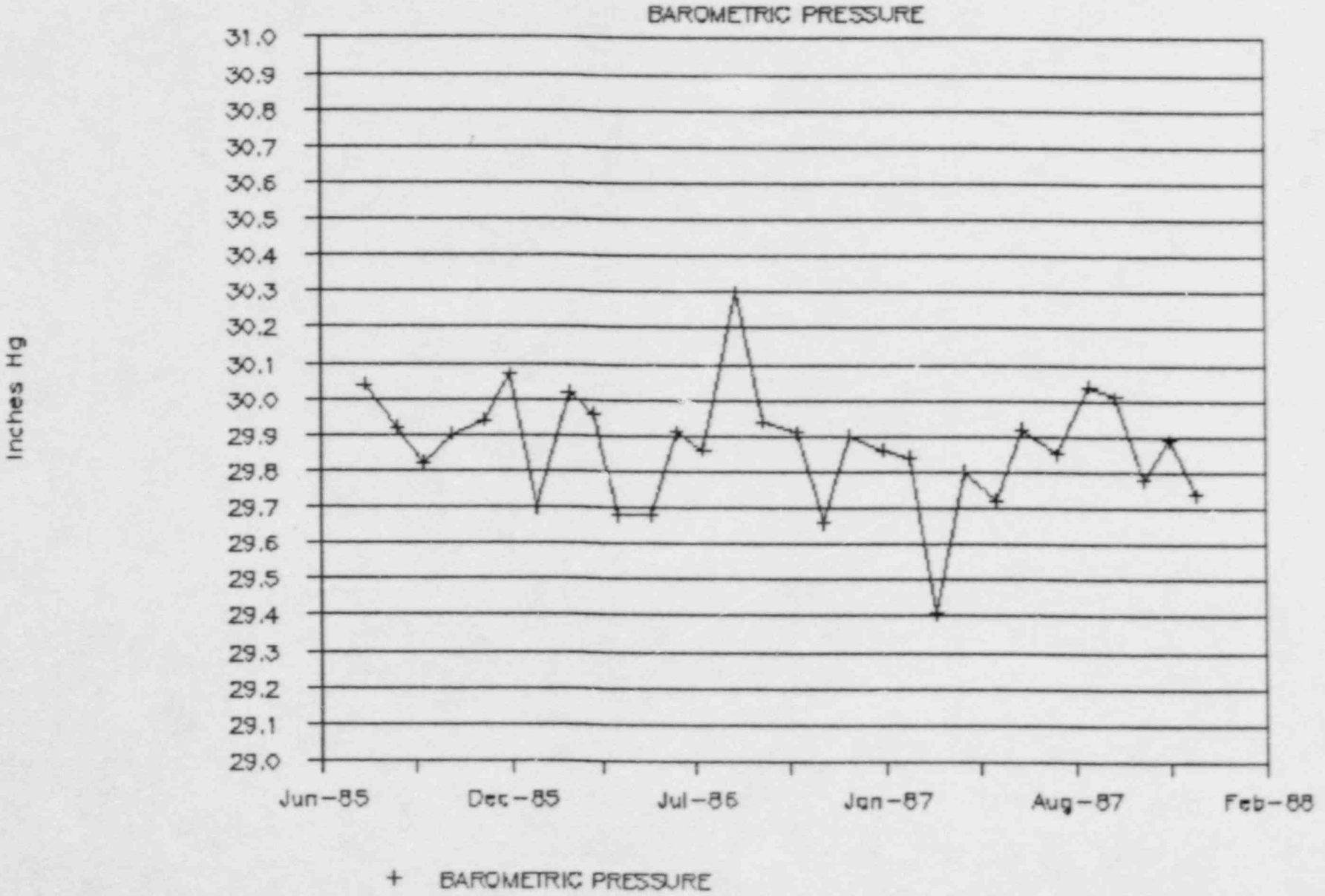

NET PRODUCTION(GPM)
45
40
35
30
25
20
15
10
5
0
Jun-85
Dec-85
Jul-86
Jan-87
Aug-87
Feb-88
+ NET PRODUCTION(GPM)

FIGURE B-10


BAROMETRIC PRESSURE
Inches Hg
31.0
30.9
30.8
30.7
30.6
30.5
30.4
30.3
30.2
30.1
30.0
29.9
29.8
29.7
29.6
29.5
29.4
29.3
29.2
29.1
29.0
Jun-85
Dec-85
Jul-86
Jan-87
Aug-87
Feb-88
+ BAROMETRIC PRESSURE

ATTACHMENT C

Water Quality Data

Analyses of the evaporation pond water samples are shown on Tables C-1 and analyses of the bleed stream samples are shown on Table C-2. A total of 72,509 gallons was routed to the evaporation ponds during this quarter.

TABLE C-1

Evaporation Pond Water Analyses
ISL Pilot

Parameter	Units	East Pond 12-16-87	West Pond 12-16-87
Chloride	g/l	35.0	89.0
Sodium	g/l	28.2	38.7
TDS	g/l	79.8	183.2
Uranium	g/l	0.402	0.466
Arsenic	mg/l	0.013	0.235
Sulfate	mg/l	2070	2900
Alkalinity	meq/l	175.9	38.0
Radium	pCi/l	649 +/- 20.8	163 +/- 10.4

TABLE C-2

Bleed Stream Water Analyses (2)
ISL Project

Parameter (1)	10-14-87	11-18-87	12-16-87
Bicarbonate	1537	1490	1587
Carbonate	0	0	0
Chloride	160	178	184
Selenium	0.015	1.254	1.702
Sodium	432	48.9	433
Sulfate	620	765	796
Uranium	4.240	2.541	2.757
TDS	2764	2198	2222
Radium 226	-	761 +/- 5.2	-
Thorium	-	14.1 +/- 3.4	-

(1) All units are mg/l except radium and thorium which are pCi/L.

(2) Samples prior to mine water barium chloride treatment system.

ATTACHMENT D

NPDES Permit No. WY-0022411

Attached are copies of the discharge monitoring reports submitted to the Wyoming Department of Environmental Quality for the 4th Quarter, 1987. The report titled "Location 003" shows an average flow of 0.010 million gallons per day (MGD) from the two leaching projects to the minewater treatment system. All parameters for this flow are within the control limits.

SEQUOYAH FUELS CORPORATION

P. O. BOX 1120 • GLENROCK, WYOMING 82637

January 18, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

John Wagner
Department of
Environmental Quality
Water Quality Division
Herschler Building
122 West 25th Street
Cheyenne, WY 82002

RE: NPDES Reports
Permit 0022411

Dear Mr. Wagner:

Enclosed are the discharge monitoring reports for the Bill Smith Mine, Permit WY 0022411, for the quarterly report period ending December 31, 1987.

Pursuant to your request, we are sampling the 001 discharge point for total selenium. The results for the fourth quarter are attached as an addendum to the regular quarterly monitoring report.

Sincerely,

Calvin Fletcher

Calvin D. Fletcher
Environmental Services

CDF/dw

Attachments: Discharge Monitoring Reports
Addendum

cc: U. S. EPA
Attn: Enforcement-Permits
One Denver Place
999 18th Street, Suite 1300
Denver, CO 80202-2413

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME SEQUOYAH FUELS CORPORATION

ADDRESS P. O. BOX 1120

GLENROCK, WY 82637

FACILITY CONVERSE COUNTY

LOCATION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-0004
Expires 2-29-84

(2-16) PERMIT NUMBER: WY0022411

(17-19) DISCHARGE NUMBER: 001

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	87	10	01	TO	87	12	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW IN CONDUIT 50050 1 0 EFFLUENT	SAMPLE MEASUREMENT	0.31	0.43	MGD	N/A	N/A	N/A	N/A	0	CONT	D.T.
	PERMIT REQUIREMENT	N/A	N/A	MGD	N/A	N/A	N/A			CONT	D.T.
SOLIDS TOTAL SUSP 00530 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	0.4	1.4	2.8	MG/L	0	13/90	GR.
	PERMIT REQUIREMENT	N/A	N/A		N/A	20	45	MG/L		1/7	GRAB
ZINC TOTAL (ASZN) 01092 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	< 0.005	0.02	0.05	MG/L	0	3/90	GR
	PERMIT REQUIREMENT	N/A	N/A		N/A	0.5	1.5	MG/L		1/90	GRAB
RADIUM 226 DIS 09503 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	0.2	1.4	3.8	PCI/L	0	5/90	COMP
	PERMIT REQUIREMENT	N/A	N/A		N/A	3	15	PCI/L		1/30	COMP
URANIUM TOTAL 22708 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	1.04	1.11	1.22	MG/L	0	3/90	COMP
	PERMIT REQUIREMENT	N/A	N/A		N/A	2.0	6.0	MG/L		1/30	COMP
OIL & GREASE VISU 84066 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	NONE VISIBLE			MG/L	0	CONT	VISL
	PERMIT REQUIREMENT	N/A	N/A		N/A	N/A	10	MG/L		CONT	VISL
PH 00400 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	7.6	7.9	8.1	S.U.	0	2/90	GR
	PERMIT REQUIREMENT	N/A	N/A		6.0	N/A	9.0	S.U.		1/90	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

JAMES RANDOLPH
PRESIDENT

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years)

Calvin D. Hamilton

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 307 NUMBER 358-3744

DATE: YEAR 88 MO 01 DAY 18

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SAMPLES SHALL BE COLLECTED AT THE OUTFALL OF THE FINAL TREATMENT UNIT AND PRIOR TO ADMIXTURE WITH DILUENT WATERS OR RECEIVING STREAM

EPA Form 3320-1 (Rev. 10-79) PREVIOUS EDITION TO BE USED (REPLACES EPA FORM T-40 WHICH MAY NOT BE USED.)

PAGE OF

PERMITTEE NAME/ADDRESS (Include Facility Name/Location if different)

NAME SEQUOYAH FUELS CORP-BILL SMITH

ADDRESS P. O. BOX 1120

CLEARCK, WY 82637

FACILITY CONVERSE

LOCATION

NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES)

DISCHARGE MONITORING REPORT (DMR)

Form Approved
OMB No. 2040-000
Expires 2-29-84

(2-16) PERMIT NUMBER: WY0022411

(17-19) DISCHARGE NUMBER: 003

MONITORING PERIOD

	YEAR	MO	DAY		YEAR	MO	DAY
FROM	87	10	01	TO	87	12	31
	(20-21)	(22-23)	(24-25)		(26-27)	(28-29)	(30-31)

NOTE: Read instructions before completing this form.

PARAMETER (32-37)		(3 Card Only) QUANTITY OR LOADING (46-53) AVERAGE	(54-61) MAXIMUM	UNITS	(4 Card Only) QUALITY OR CONCENTRATION (38-45) MINIMUM	(46-53) AVERAGE	(54-61) MAXIMUM	UNITS	NO. EX (62-63)	FREQUENCY OF ANALYSIS (64-68)	SAMPLE TYPE (69-70)
FLOW 50050 1 0 EFFLUENT	SAMPLE MEASUREMENT	0.010	0.047	MGD	N/A	N/A	N/A	N/A	0	CONT	D.T.
	PERMIT REQUIREMENT	N/A	N/A	MGD	N/A	N/A	N/A			CONT	D.T.
SODIUM, TOTAL 00929 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	49	304	433	MG/L	0	3/90	GR
	PERMIT REQUIREMENT	N/A	N/A		N/A	N/A	1500	MG/L		1/30	GRAB
BICARBONATE ION 00440 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	1490	1538	1587	MG/L	0	3/90	GR
	PERMIT REQUIREMENT	N/A	N/A		N/A	N/A	4500	MG/L		1/30	GRAB
CHLORIDE 00940 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	160	174	184	MG/L	0	3/90	GR
	PERMIT REQUIREMENT	N/A	N/A		N/A	N/A	750	MG/L		1/30	GRAB
ARSENIC 01252 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	0.008	0.008	0.008	MG/L	0	1/90	GR
	PERMIT REQUIREMENT	N/A	N/A		N/A	N/A	N/A	MG/L		1/90	GRAB
SELENIUM TOTAL 01147 1 0 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	0.015	0.86	1.70	MG/L	0	1/90	GR
	PERMIT REQUIREMENT	N/A	N/A		N/A	N/A	N/A	MG/L		1/90	GRAB
PH 00400 10 EFFLUENT	SAMPLE MEASUREMENT	N/A	N/A	N/A	7.1	7.1	7.1	S.U.	0	1/90	GR
	PERMIT REQUIREMENT	N/A	N/A		6.0	N/A	9.0	S.U.		1/90	GRAB

NAME/TITLE PRINCIPAL EXECUTIVE OFFICER

JAMES RANDOLPH
PRESIDENT

TYPED OR PRINTED

I CERTIFY UNDER PENALTY OF LAW THAT I HAVE PERSONALLY EXAMINED AND AM FAMILIAR WITH THE INFORMATION SUBMITTED HEREIN AND BASED ON MY INQUIRY OF THOSE INDIVIDUALS IMMEDIATELY RESPONSIBLE FOR OBTAINING THE INFORMATION I BELIEVE THE SUBMITTED INFORMATION IS TRUE ACCURATE AND COMPLETE I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT SEE 18 USC § 1001 AND 33 USC § 1319 (Penalties under these statutes may include fines up to $10,000 and/or maximum imprisonment of between 6 months and 5 years)

Carrie D. Fillerton

SIGNATURE OF PRINCIPAL EXECUTIVE OFFICER OR AUTHORIZED AGENT

TELEPHONE: AREA CODE 307, NUMBER 358-3744

DATE: YEAR 88, MO 01, DAY 18

COMMENT AND EXPLANATION OF ANY VIOLATIONS (Reference all attachments here)

SAMPLES SHALL BE COLLECTED AT THE OUTFALL OF THE FINAL TREATMENT UNIT AND PRIOR TO ADMIXTURE WITH DILUENT WATERS OR RECEIVING STREAM

1 1

ADDENDUM TO
QUARTERLY NPDES REPORT

Bill Smith Mine
Permit No. WY 0022411
Discharge No. 001

Monitoring Period:
10-1-87 to 12-31-87

Date	Total Selenium (mg/L)
10-7-87	0.013
10-14-87	0.010
10-21-87	0.058
10-28-87	0.057
11-4-87	0.058
12-9-87	0.062
12-16-87	0.066
12-29-87	0.045

0400876871OE

40-8768

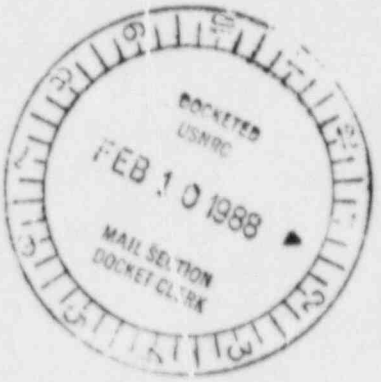
SEQUOYAH FUELS CORPORATION

POST OFFICE BOX 25861 • OKLAHOMA CITY, OKLAHOMA 73125

February 8, 1988

RETURN ORIGINAL TO PDR, HQ.

CERTIFIED MAIL
RETURN RECEIPT REQUESTED



Mr. Ed Hawkins, Chief
Licensing Branch I
Uranium Recovery Field Office
Region IV
U. S. Nuclear Regulatory Commission
P. O. Box 25323
Denver, Colorado 80225-0325

ATTN: Mr. Scott Grace

RE: NRC License SUA-1387; Docket 40-8768
WDEQ License 13RD

Dear Mr. Hawkins:

Attached is the Fourth Quarter 1987 report for Sequoyah Fuels O-Sand in-situ R&D project in Converse County, Wyoming. This report is submitted in accordance with Condition 52 of the referenced license. Copies of the attached documents have been sent to the Wyoming Department of Environmental Quality (WDEQ) under separate cover.

Sincerely,

Marvin D. Freeman, Director
Chemical Mining Department

MDF/jlm
Attachments

cc: R. Shaffer, WDEQ Land Quality Division (Attn: R. Spears)
D. Alberts
J. Stauter

FEE NOT REQUIRED
Report

DESIGNATED ORIGINAL

Certified By Mary C. Hood

88-0442

SEQUOYAH FUELS CORPORATION

POST OFFICE BOX 25861 • OKLAHOMA CITY OKLAHOMA 73125

February 8, 1988

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Roger Shaffer, Administrator
Land Quality Division
Department of Environmental Quality
State of Wyoming
Herschler Building - Third Floor
122 West 25th
Cheyenne, Wyoming 82002

ATTN: Mr. Roy Spears

RE: LQD License 13RD
(O-Sand ISL Pilot)
NRC License SUA-1387

Dear Mr. Shaffer:

Attached is the Fourth Quarter 1987 report for the Sequoyah Fuels O-Sand in-situ R&D project in Converse County, Wyoming. This O-Sand report is submitted in accordance with Section 9.7 of Sequoyah Fuels' license application.

A copy of the attached report has been sent to NRC under separate cover.

Sincerely,

Marvin D. Freeman, Director
Chemical Mining Department

MDF/jlm
Attachments

cc: E. Hawkins, USNRC, Denver, Colorado (Attn: S. Grace)
D. Alberts
J. C. Stauter