

**WEST BUTLER UNIT NO. 1  
WATERFLOOD EOR PROJECT**

**ANNUAL REPORT FOR 2013**

**March 3, 2014**

**Tundra Oil and Gas Partnership**

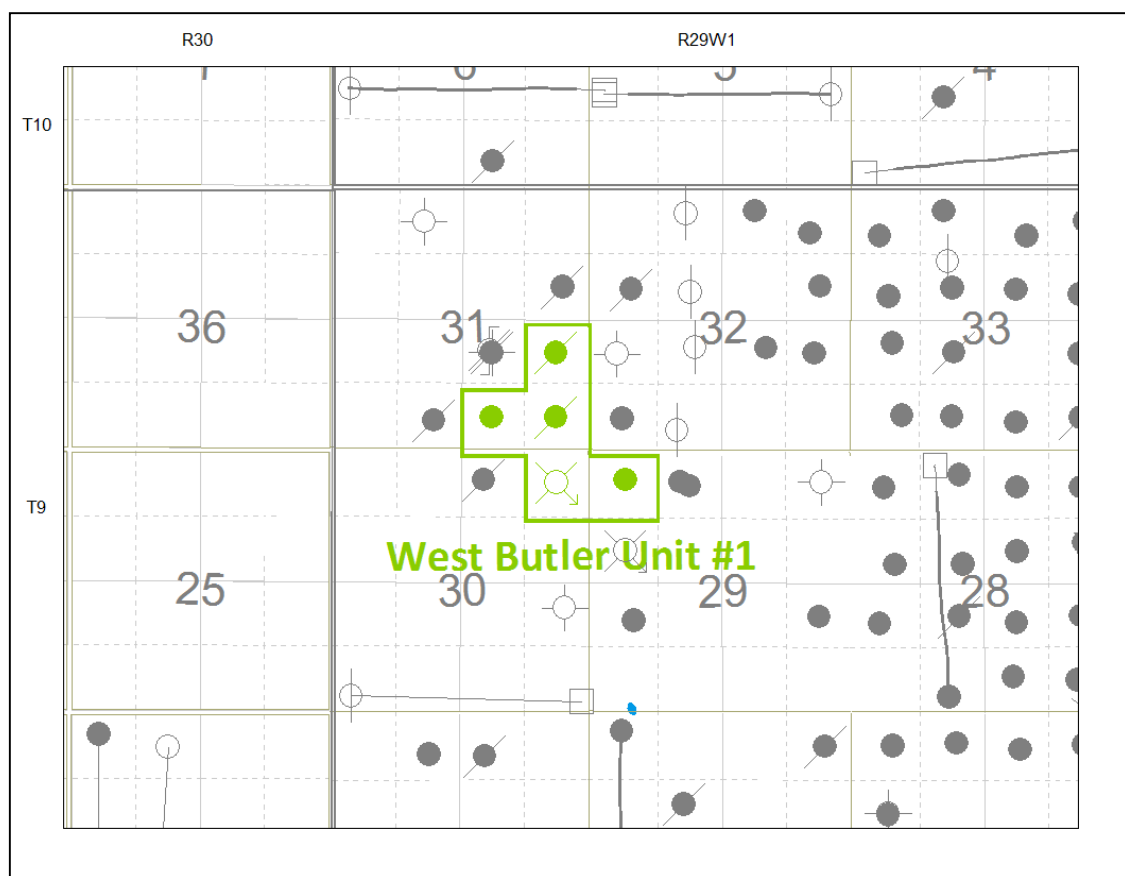
## Table of Contents

INTRODUCTION .....	3
DISCUSSION.....	4
Production History .....	4
Waterflood History .....	5
Waterflood EOR Operating Strategy and Performance .....	6
Water Source and Quality .....	6
Injection Wellhead Pressures.....	6
Reservoir Pressure .....	6
Well Servicing .....	6
Voidage Replacement.....	6
Waterflood Performance Discussion.....	6
List of Appendices.....	7
Appendix A: Well List and Well Status	
Appendix B: West Butler Unit No. 1 Injection Pattern Summary	
Appendix C: Injector Pattern Production/Injection Rates, Cumulative and VRRs, plots and tables	

## **INTRODUCTION**

West Butler Unit No. 1 Enhanced Oil Recovery (EOR) Waterflood Project was approved under Unitization Order No. 14 effective September 1972 with Enerplus ECT Resources Ltd. as Operator. Rideau Petroleums Ltd. acquired the unit from Enerplus ECT Resources Ltd. and became operator in September 1985. Tundra acquired the unit from Rideau in 2007 and is the current operator of the unit. The EOR project area contains 5 wells in 5 LSDs in Township 9, Range 29 W1 as shown in the figure below. Well list and well status is available in Appendix A.

**Figure 1: West Butler Unit No. 1 Area Outline**



In accordance with Section 73 of the Manitoba Drilling and Production Regulation, Tundra hereby submits the 2013 Annual Progress Report for West Butler Unit No. 2 as required by Board Order No. PM 21.

## DISCUSSION

### Production History

For the wells included in West Butler Unit No. 1, production started November 1955 with 00/01-13-009-29W1/0 well. Oil production peaked at 20.74 m<sup>3</sup>/d in May 1956, when all five wells were producing. Average production in 2013 was 0.32 m<sup>3</sup>/d of oil and 0.01 m<sup>3</sup>/d of water and a WOR of 0.02 m<sup>3</sup>/m<sup>3</sup>. The oil production rate, injection rate, and WOR during each month for each injection pattern and for whole project are presented in Appendix C. The rates and WOR are plotted in Figure 2.

**Figure 2: West Butler Unit No. 1 Production/Injection Rates and WOR vs. Time**

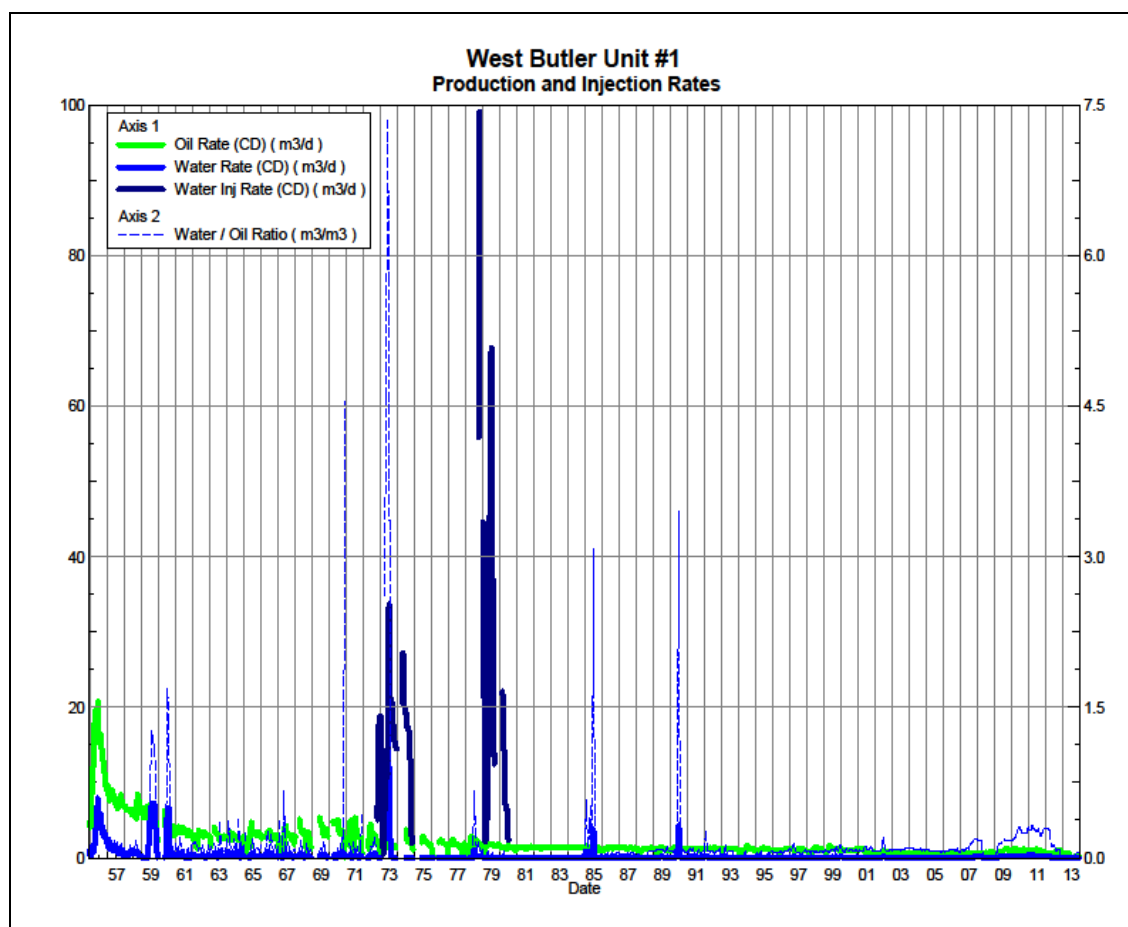
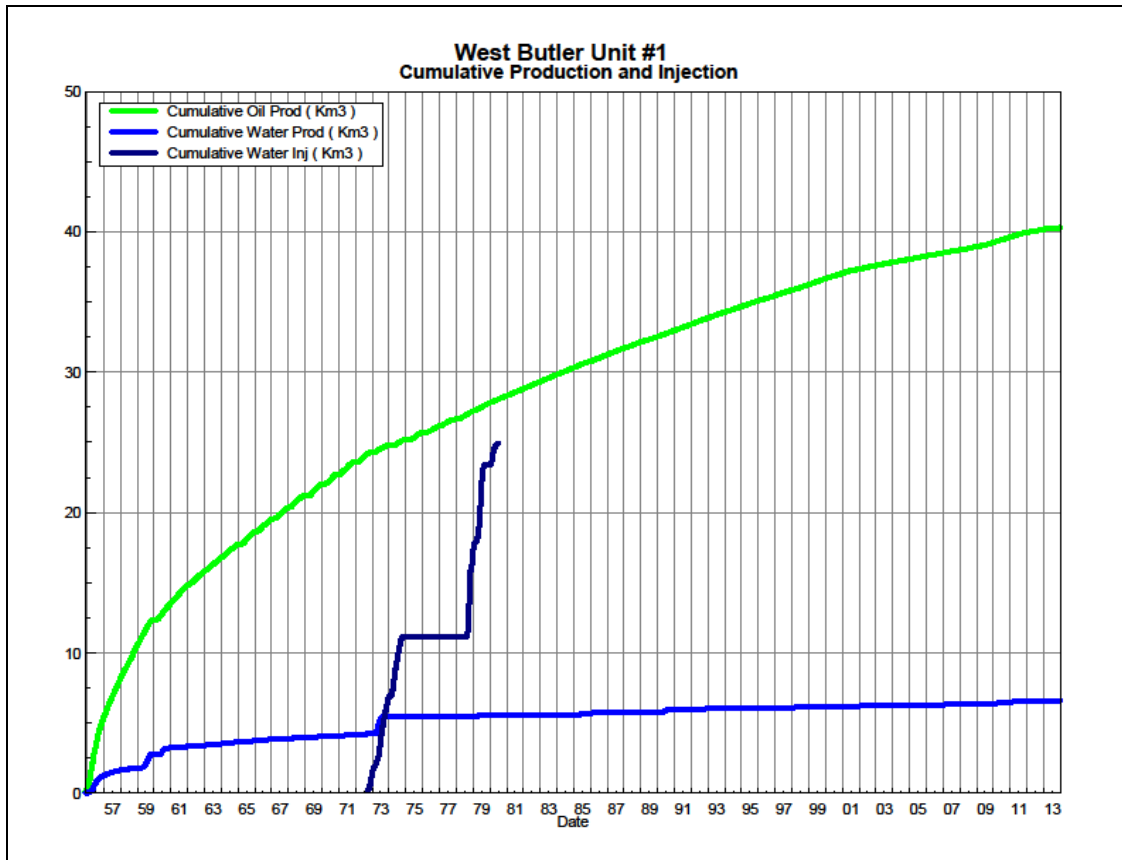


Figure 3 shows the cumulative production for West Butler Unit No. 1 to the end of December 2013 as 40.3 E<sup>3</sup>m<sup>3</sup> of oil, and 6.6 E<sup>3</sup>m<sup>3</sup> of water. The cumulative water injected is 25.0 E<sup>3</sup>m<sup>3</sup>. The cumulative volume of oil, and water produced and fluid injected for each injection pattern and for the whole project for each injection well is presented in Appendix C.

**Figure 3: West Butler Unit No. 1 Cum. Oil, Water and Water Injected vs. Time**



### **Waterflood History**

As of December 2013 the Unit has no active injector. Water was injected into the unit from June 1973 until June 1980.

Any future revisions to the waterflood development or surveillance plan would be based on new production or performance response data, technical studies, or observed reservoir behavior and reserves recovery interpretations.

## **Waterflood EOR Operating Strategy and Performance**

### **Water Source and Quality**

There is currently no injection in West Butler Unit No. 1.

### **Injection Wellhead Pressures**

No Injection Wellhead Pressure is available for this unit.

### **Reservoir Pressure**

No reservoir pressure measurements were taken at West Butler Unit No. 1 in 2013.

### **Well Servicing**

No maintenance was required on 5 wells in West Butler Unit No. 1 in 2013.

### **Voidage Replacement**

Cumulative voidage for the West Butler Unit No. 1 was 0.502 in December 2013. Calculation, plots and tables of the Voidage replacement ratio on a monthly and cumulative basis for each injection pattern and for the project area are presented in Appendix C.

### **Waterflood Performance Discussion**

The original oil-in-place (OOIP) of the Unit is estimated at 309.0 E<sup>3</sup>m<sup>3</sup>. In 2013, the recovery factor of the Unit is 13.0% based on 40.3 E<sup>3</sup>m<sup>3</sup> of cumulative oil recovered to date. The ultimate expected recoverable reserve based on decline analysis is 40.0 E<sup>3</sup>m<sup>3</sup> or an ultimate recovery factor of 12.9%.

The overall performance of this waterflood has been very poor due to lack of waterflood response and very low cumulative VRR. Currently no water injection is taking place. Trends in production are stable and extremely mature. No changes in trends are anticipated. The Unit may be located in very marginal reservoir. Optimization of the Unit and secondary recovery feasibility will be considered with future development of the area.

## **List of Appendices**

Appendix A: Well List and Well Status

Appendix B: West Butler Unit No. 1 Injection Pattern Summary

Appendix C: Injector Pattern Production/Injection Rates, Cumulative and VRRs  
Plots and Tables

## Appendix A

UWI	Well Status
100/13-29-009-29W1/00	Capable of OIL Prod
100/16-30-009-29W1/00	ABD WTR Injection
100/01-31-009-29W1/00	ABD Producer
100/02-31-009-29W1/00	Capable of OIL Prod
100/08-31-009-29W1/00	ABD Producer



**Appendix B****West Butler Unit 1 Pattern Summary as of December 2013**

Pattern Name	Injector Location (009-29W1)	Status	Supported Wells (009-29W1)	No. of Supported Wells	Allocation Factor	Pattern Prod Start Month	Inj Start Month	Inj End Month	Oil Rate (m³/d)	Water Rate (m³/d)	WOR (m³/m³)	Water Injection (m³/d)	Cum Oil (E³m³)	Cum Water (E³m³)	Cum Inj Water (E³m³)	Monthly VRR	Cum VRR
00/16-30-009-29W1 Injector	00/16-30	ABD WTR Injection	01-31, 02-31, 08-31, 13-29, 16-30	5	1	Apr 1965	Sep 1972	Jun 1980	0.21	0.01	0.05	0.0	40.3	6.6	25.0	0.0	0.50

**Appendix C**  
**Rates and VRR**  
**Plots and Tables**

# Pattern: 16-30-09-29 Set: WestButlerUnit#1

Oil Formation Vol Factor : 1.07100 m<sup>3</sup>/m<sup>3</sup>

Water Formation Vol Factor : 1.00150 m<sup>3</sup>/m<sup>3</sup>

Water / Oil Ratio : 0.05 m<sup>3</sup>/m<sup>3</sup>

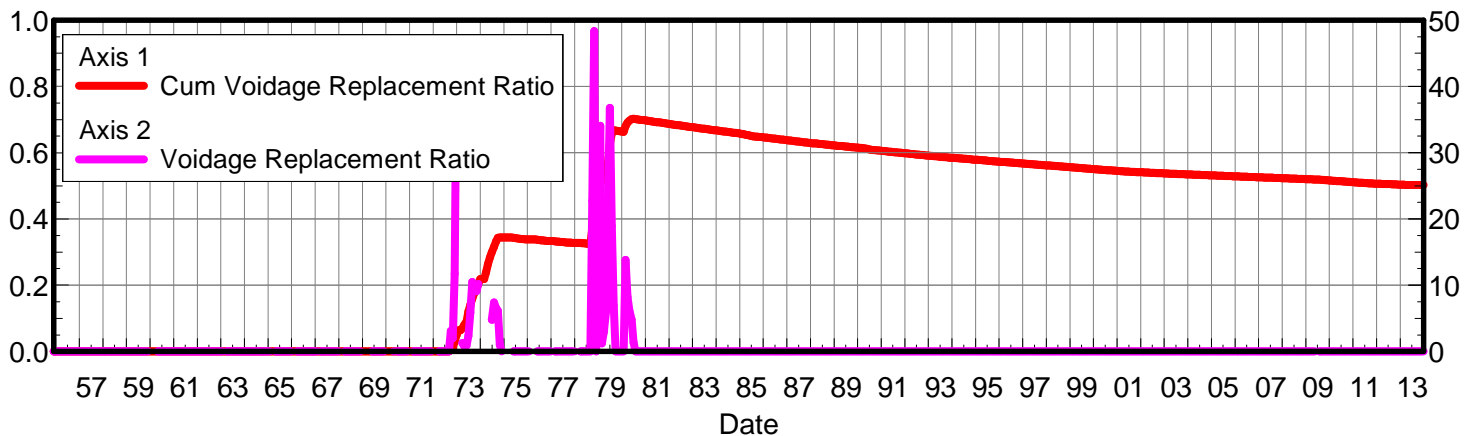
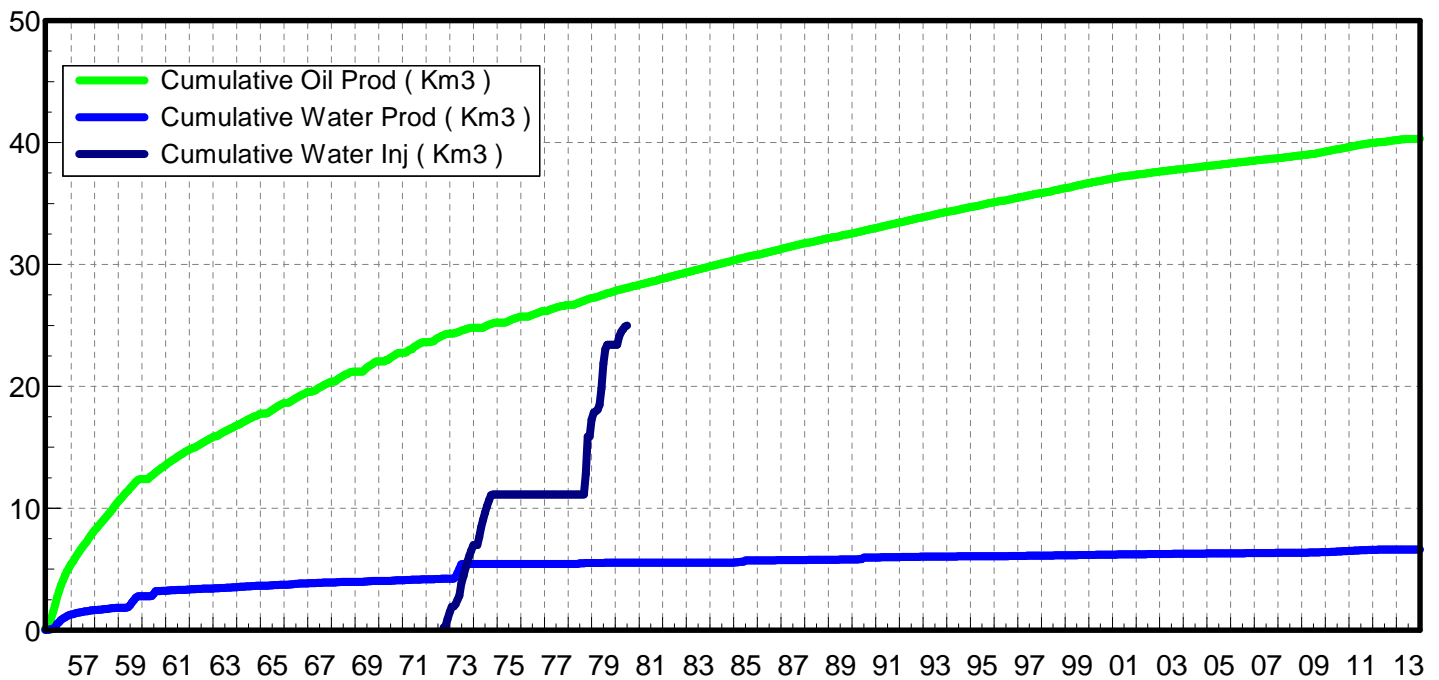
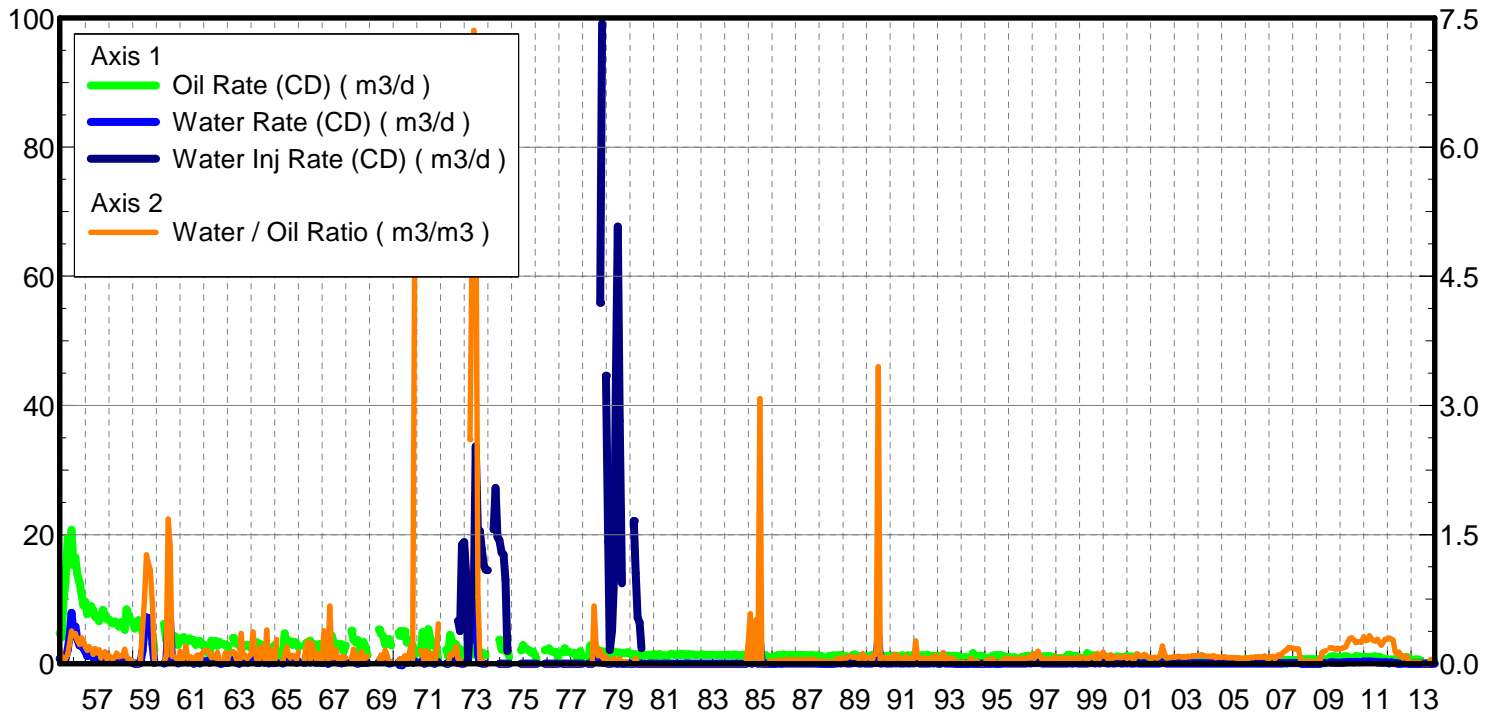
February 26, 2014

Operator: Tundra\_O&G\_Prtnshp

Oil Rate (CD) : 0.21 m<sup>3</sup>/d

Water Rate (CD) : 0.01 m<sup>3</sup>/d

Water Inj Rate (CD) : 2.37 m<sup>3</sup>/d



Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
11/30/1955	4.72	0.80	0.17		0.14	0.02	0.00	0.000	0.000
12/31/1955	4.09	0.25	0.06		0.27	0.03	0.00	0.000	0.000
1/31/1956	9.92	0.71	0.07		0.58	0.05	0.00	0.000	0.000
2/29/1956	12.54	0.77	0.06		0.94	0.08	0.00	0.000	0.000
3/31/1956	19.52	2.14	0.11		1.54	0.14	0.00	0.000	0.000
4/30/1956	18.20	4.31	0.24		2.09	0.27	0.00	0.000	0.000
5/31/1956	20.74	7.89	0.38		2.73	0.52	0.00	0.000	0.000
6/30/1956	15.23	5.00	0.33		3.19	0.67	0.00	0.000	0.000
7/31/1956	16.45	5.73	0.35		3.70	0.84	0.00	0.000	0.000
8/31/1956	13.83	3.82	0.28		4.13	0.96	0.00	0.000	0.000
9/30/1956	12.62	2.81	0.22		4.51	1.05	0.00	0.000	0.000
10/31/1956	10.85	3.28	0.30		4.84	1.15	0.00	0.000	0.000
11/30/1956	9.05	2.40	0.27		5.12	1.22	0.00	0.000	0.000
12/31/1956	9.60	1.88	0.20		5.41	1.28	0.00	0.000	0.000
1/31/1957	7.67	1.21	0.16		5.65	1.32	0.00	0.000	0.000
2/28/1957	8.24	1.63	0.20		5.88	1.36	0.00	0.000	0.000
3/31/1957	8.94	1.53	0.17		6.16	1.41	0.00	0.000	0.000
4/30/1957	8.29	0.89	0.11		6.41	1.44	0.00	0.000	0.000
5/31/1957	7.22	1.27	0.18		6.63	1.48	0.00	0.000	0.000
6/30/1957	7.29	0.92	0.13		6.85	1.50	0.00	0.000	0.000
7/31/1957	6.58	1.05	0.16		7.05	1.54	0.00	0.000	0.000
8/31/1957	7.16	0.49	0.07		7.28	1.55	0.00	0.000	0.000
9/30/1957	8.32	1.02	0.12		7.53	1.58	0.00	0.000	0.000
10/31/1957	7.52	1.04	0.14		7.76	1.61	0.00	0.000	0.000
11/30/1957	6.91	0.37	0.05		7.97	1.63	0.00	0.000	0.000
12/31/1957	6.86	0.66	0.10		8.18	1.65	0.00	0.000	0.000
1/31/1958	6.45	0.46	0.07		8.38	1.66	0.00	0.000	0.000
2/28/1958	6.25	0.37	0.06		8.55	1.67	0.00	0.000	0.000
3/31/1958	6.53	0.49	0.08		8.76	1.69	0.00	0.000	0.000
4/30/1958	6.37	0.78	0.12		8.95	1.71	0.00	0.000	0.000
5/31/1958	5.73	0.48	0.08		9.12	1.72	0.00	0.000	0.000
6/30/1958	6.46	0.57	0.09		9.32	1.74	0.00	0.000	0.000
7/31/1958	6.22	0.59	0.09		9.51	1.76	0.00	0.000	0.000
8/31/1958	5.24	0.87	0.17		9.67	1.79	0.00	0.000	0.000
9/30/1958	8.44	0.68	0.08		9.93	1.81	0.00	0.000	0.000
10/31/1958	7.38	0.27	0.04		10.16	1.81	0.00	0.000	0.000
11/30/1958	6.71	0.30	0.05		10.36	1.82	0.00	0.000	0.000
12/31/1958	6.45	0.16	0.03		10.56	1.83	0.00	0.000	0.000
1/31/1959	5.45	0.02	0.00		10.73	1.83	0.00	0.000	0.000
2/28/1959	5.79	0.00	0.00		10.89	1.83	0.00	0.000	0.000
3/31/1959	6.74	0.00	0.00		11.10	1.83	0.00	0.000	0.000
4/30/1959	6.22	0.09	0.02		11.28	1.83	0.00	0.000	0.000
5/31/1959	4.80	2.01	0.42		11.43	1.89	0.00	0.000	0.000
6/30/1959	7.12	5.35	0.75		11.64	2.06	0.00	0.000	0.000
7/31/1959	5.67	7.17	1.27		11.82	2.28	0.00	0.000	0.000
8/31/1959	5.47	6.38	1.17		11.99	2.48	0.00	0.000	0.000
9/30/1959	6.52	7.11	1.09		12.19	2.69	0.00	0.000	0.000
10/31/1959	4.53	3.05	0.67		12.33	2.78	0.00	0.000	0.000

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
11/30/1959	2.15	0.09	0.04		12.39	2.79	0.00	0.000	0.000
4/30/1960	6.16	0.08	0.01		12.58	2.79	0.00	0.000	0.000
5/31/1960	3.69	0.35	0.09		12.69	2.80	0.00	0.000	0.000
6/30/1960	3.69	6.21	1.68		12.80	2.99	0.00	0.000	0.000
7/31/1960	4.85	6.63	1.37		12.95	3.19	0.00	0.000	0.000
8/31/1960	4.08	0.37	0.09		13.08	3.20	0.00	0.000	0.000
9/30/1960	4.32	0.35	0.08		13.21	3.21	0.00	0.000	0.000
10/31/1960	4.13	0.29	0.07		13.33	3.22	0.00	0.000	0.000
11/30/1960	2.91	0.07	0.03		13.42	3.22	0.00	0.000	0.000
12/31/1960	3.75	0.53	0.14		13.54	3.24	0.00	0.000	0.000
1/31/1961	3.96	0.20	0.05		13.66	3.25	0.00	0.000	0.000
2/28/1961	4.13	0.30	0.07		13.78	3.25	0.00	0.000	0.000
3/31/1961	3.35	0.68	0.20		13.88	3.28	0.00	0.000	0.000
4/30/1961	3.47	0.22	0.06		13.98	3.28	0.00	0.000	0.000
5/31/1961	3.95	0.33	0.08		14.11	3.29	0.00	0.000	0.000
6/30/1961	3.60	0.25	0.07		14.22	3.30	0.00	0.000	0.000
7/31/1961	3.70	0.00	0.00		14.33	3.30	0.00	0.000	0.000
8/31/1961	2.92	0.24	0.08		14.42	3.31	0.00	0.000	0.000
9/30/1961	3.46	0.35	0.10		14.52	3.32	0.00	0.000	0.000
10/31/1961	3.51	0.04	0.01		14.63	3.32	0.00	0.000	0.000
11/30/1961	2.94	0.34	0.12		14.72	3.33	0.00	0.000	0.000
12/31/1961	2.97	0.41	0.14		14.81	3.34	0.00	0.000	0.000
1/31/1962	2.06	0.32	0.15		14.88	3.35	0.00	0.000	0.000
2/28/1962	2.59	0.39	0.15		14.95	3.36	0.00	0.000	0.000
3/31/1962	1.22	0.16	0.13		14.99	3.37	0.00	0.000	0.000
4/30/1962	3.58	0.25	0.07		15.10	3.38	0.00	0.000	0.000
5/31/1962	2.88	0.29	0.10		15.18	3.38	0.00	0.000	0.000
6/30/1962	3.51	0.24	0.07		15.29	3.39	0.00	0.000	0.000
7/31/1962	2.81	0.37	0.13		15.38	3.40	0.00	0.000	0.000
8/31/1962	3.37	0.06	0.02		15.48	3.41	0.00	0.000	0.000
9/30/1962	3.15	0.03	0.01		15.58	3.41	0.00	0.000	0.000
10/31/1962	2.98	0.10	0.03		15.67	3.41	0.00	0.000	0.000
11/30/1962	2.97	0.37	0.13		15.76	3.42	0.00	0.000	0.000
12/31/1962	2.82	0.09	0.03		15.84	3.42	0.00	0.000	0.000
1/31/1963	1.61	0.20	0.12		15.89	3.43	0.00	0.000	0.000
3/31/1963	4.04	0.56	0.14		16.02	3.45	0.00	0.000	0.000
4/30/1963	3.18	0.35	0.11		16.12	3.46	0.00	0.000	0.000
5/31/1963	3.20	0.09	0.03		16.21	3.46	0.00	0.000	0.000
6/30/1963	2.85	0.02	0.01		16.30	3.46	0.00	0.000	0.000
7/31/1963	2.39	0.83	0.35		16.37	3.49	0.00	0.000	0.000
8/31/1963	2.53	0.19	0.08		16.45	3.49	0.00	0.000	0.000
9/30/1963	2.94	0.28	0.10		16.54	3.50	0.00	0.000	0.000
10/31/1963	2.74	0.17	0.06		16.63	3.51	0.00	0.000	0.000
11/30/1963	2.87	0.25	0.09		16.71	3.51	0.00	0.000	0.000
12/31/1963	2.43	0.26	0.11		16.79	3.52	0.00	0.000	0.000
1/31/1964	2.39	0.88	0.37		16.86	3.55	0.00	0.000	0.000
2/29/1964	2.30	0.40	0.17		16.93	3.56	0.00	0.000	0.000
3/31/1964	3.31	0.15	0.04		17.03	3.56	0.00	0.000	0.000

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemnt Ratio
4/30/1964	3.10	0.10	0.03		17.12	3.57	0.00	0.000	0.000
5/31/1964	3.00	0.57	0.19		17.22	3.59	0.00	0.000	0.000
6/30/1964	2.75	0.27	0.10		17.30	3.59	0.00	0.000	0.000
7/31/1964	2.55	0.14	0.06		17.38	3.60	0.00	0.000	0.000
8/31/1964	2.27	0.88	0.39		17.45	3.63	0.00	0.000	0.000
9/30/1964	2.50	0.07	0.03		17.52	3.63	0.00	0.000	0.000
10/31/1964	2.32	0.36	0.16		17.59	3.64	0.00	0.000	0.000
11/30/1964	2.45	0.10	0.04		17.67	3.64	0.00	0.000	0.000
12/31/1964	2.87	0.12	0.04		17.76	3.65	0.00	0.000	0.000
1/31/1965	0.62	0.17	0.28		17.78	3.65	0.00	0.000	0.000
4/30/1965	1.33	0.04	0.03		17.82	3.65	0.00	0.000	0.000
5/31/1965	4.72	0.51	0.11		17.96	3.67	0.00	0.000	0.000
6/30/1965	3.30	0.64	0.19		18.06	3.69	0.00	0.000	0.000
7/31/1965	3.30	0.32	0.10		18.16	3.70	0.00	0.000	0.000
8/31/1965	3.50	0.24	0.07		18.27	3.70	0.00	0.000	0.000
9/30/1965	2.92	0.28	0.10		18.36	3.71	0.00	0.000	0.000
10/31/1965	3.38	0.30	0.09		18.47	3.72	0.00	0.000	0.000
11/30/1965	3.17	0.15	0.05		18.56	3.73	0.00	0.000	0.000
12/31/1965	2.59	0.36	0.14		18.64	3.74	0.00	0.000	0.000
3/31/1966	2.75	0.15	0.05		18.73	3.74	0.00	0.000	0.000
4/30/1966	3.18	0.60	0.19		18.82	3.76	0.00	0.000	0.000
5/31/1966	3.37	0.88	0.26		18.93	3.79	0.00	0.000	0.000
6/30/1966	3.60	0.19	0.05		19.03	3.79	0.00	0.000	0.000
7/31/1966	2.44	0.57	0.24		19.11	3.81	0.00	0.000	0.000
8/31/1966	3.02	0.35	0.12		19.20	3.82	0.00	0.000	0.000
9/30/1966	2.79	0.16	0.06		19.29	3.83	0.00	0.000	0.000
10/31/1966	2.59	0.31	0.12		19.37	3.84	0.00	0.000	0.000
11/30/1966	3.09	0.14	0.05		19.46	3.84	0.00	0.000	0.000
12/31/1966	2.92	0.09	0.03		19.55	3.84	0.00	0.000	0.000
1/31/1967	0.45	0.17	0.38		19.56	3.85	0.00	0.000	0.000
3/31/1967	2.13	0.02	0.01		19.63	3.85	0.00	0.000	0.000
4/30/1967	0.75	0.50	0.67		19.65	3.86	0.00	0.000	0.000
5/31/1967	4.38	0.31	0.07		19.79	3.87	0.00	0.000	0.000
6/30/1967	3.39	0.24	0.07		19.89	3.88	0.00	0.000	0.000
7/31/1967	2.88	0.47	0.16		19.98	3.90	0.00	0.000	0.000
8/31/1967	3.09	0.19	0.06		20.08	3.90	0.00	0.000	0.000
9/30/1967	2.59	0.18	0.07		20.15	3.91	0.00	0.000	0.000
10/31/1967	3.02	0.06	0.02		20.25	3.91	0.00	0.000	0.000
11/30/1967	1.88	0.16	0.09		20.30	3.91	0.00	0.000	0.000
12/31/1967	2.84	0.20	0.07		20.39	3.92	0.00	0.000	0.000
3/31/1968	5.11	0.28	0.06		20.55	3.93	0.00	0.000	0.000
4/30/1968	3.74	0.63	0.17		20.66	3.95	0.00	0.000	0.000
5/31/1968	3.34	0.23	0.07		20.77	3.95	0.00	0.000	0.000
6/30/1968	3.67	0.01	0.00		20.88	3.95	0.00	0.000	0.000
7/31/1968	2.85	0.10	0.03		20.96	3.96	0.00	0.000	0.000
8/31/1968	0.94	0.13	0.14		20.99	3.96	0.00	0.000	0.000
9/30/1968	3.36	0.16	0.05		21.09	3.97	0.00	0.000	0.000
10/31/1968	2.61	0.17	0.07		21.17	3.97	0.00	0.000	0.000

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
11/30/1968	1.25	0.11	0.09		21.21	3.98	0.00	0.000	0.000
5/31/1969	5.32	0.30	0.06		21.38	3.98	0.00	0.000	0.000
6/30/1969	4.60	0.47	0.10		21.52	4.00	0.00	0.000	0.000
7/31/1969	4.20	0.27	0.06		21.65	4.01	0.00	0.000	0.000
8/31/1969	2.97	0.47	0.16		21.74	4.02	0.00	0.000	0.000
9/30/1969	3.45	0.32	0.09		21.84	4.03	0.00	0.000	0.000
10/31/1969	3.82	0.07	0.02		21.96	4.03	0.00	0.000	0.000
11/30/1969	2.84	0.05	0.02		22.04	4.03	0.00	0.000	0.000
4/30/1970	4.71	0.14	0.03		22.19	4.04	0.00	0.000	0.000
6/30/1970	5.04	0.46	0.09		22.34	4.05	0.00	0.000	0.000
7/31/1970	3.28	0.11	0.03		22.44	4.06	0.00	0.000	0.000
8/31/1970	3.61	0.36	0.10		22.55	4.07	0.00	0.000	0.000
9/30/1970	3.53	0.72	0.20		22.66	4.09	0.00	0.000	0.000
10/31/1970	2.78	0.16	0.06		22.74	4.09	0.00	0.000	0.000
11/30/1970	0.09	0.39	4.54		22.75	4.11	0.00	0.000	0.000
2/28/1971	1.66	0.24	0.14		22.79	4.11	0.00	0.000	0.000
3/31/1971	4.92	0.51	0.10		22.94	4.13	0.00	0.000	0.000
4/30/1971	2.74	0.00	0.00		23.03	4.13	0.00	0.000	0.000
5/31/1971	1.02	0.15	0.15		23.06	4.13	0.00	0.000	0.000
6/30/1971	5.35	0.26	0.05		23.22	4.14	0.00	0.000	0.000
7/31/1971	3.78	0.22	0.06		23.34	4.15	0.00	0.000	0.000
8/31/1971	2.95	0.35	0.12		23.43	4.16	0.00	0.000	0.000
9/30/1971	2.75	0.00	0.00		23.51	4.16	0.00	0.000	0.000
10/31/1971	2.77	0.25	0.09		23.60	4.17	0.00	0.000	0.000
11/30/1971	0.50	0.23	0.46		23.61	4.17	0.00	0.000	0.000
3/31/1972	2.20	0.00	0.00		23.68	4.17	0.00	0.000	0.000
4/30/1972	1.14	0.00	0.00		23.71	4.17	0.00	0.000	0.000
5/31/1972	4.48	0.51	0.11		23.85	4.19	0.00	0.000	0.000
6/30/1972	3.51	0.36	0.10		23.96	4.20	0.00	0.000	0.000
7/31/1972	3.06	0.36	0.12		24.05	4.21	0.00	0.000	0.000
8/31/1972	3.00	0.60	0.20		24.15	4.23	0.00	0.000	0.000
9/30/1972	1.88	0.11	0.06	6.64	24.20	4.23	0.20	3.129	0.007
10/31/1972	2.30	0.10	0.04	5.06	24.27	4.24	0.36	1.983	0.012
11/30/1972	1.47	0.00	0.00	18.44	24.32	4.24	0.91	11.702	0.030
12/31/1972	0.38	0.00	0.00	18.83	24.33	4.24	1.49	45.867	0.049
1/31/1973				13.92	24.33	4.24	1.92		0.064
2/28/1973				0.49	24.33	4.24	1.94		0.064
3/31/1973	1.37	3.57	2.61	6.43	24.37	4.35	2.14	1.275	0.070
4/30/1973	2.58	11.83	4.59	11.83	24.45	4.70	2.49	0.811	0.081
5/31/1973	1.46	10.75	7.35	10.75	24.49	5.04	2.83	0.873	0.090
6/30/1973	2.08	12.00	5.78	33.67	24.56	5.40	3.84	2.367	0.121
7/31/1973	1.84	1.43	0.78	20.06	24.61	5.44	4.46	5.921	0.140
8/31/1973	1.75	0.10	0.06	20.59	24.67	5.44	5.10	10.487	0.160
9/30/1973	1.73	0.08	0.05	17.68	24.72	5.44	5.63	9.143	0.176
10/31/1973	1.57	0.00	0.00	15.29	24.77	5.44	6.10	9.081	0.191
11/30/1973	1.34	0.00	0.00	14.58	24.81	5.44	6.54	10.200	0.204
12/31/1973				14.47	24.81	5.44	6.99		0.218
3/31/1974				20.81	24.81	5.44	7.63		0.239

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
4/30/1974				27.22	24.81	5.44	8.45		0.264
5/31/1974				19.64	24.81	5.44	9.06		0.283
6/30/1974	3.73	0.00	0.00	19.15	24.92	5.44	9.63	4.804	0.300
7/31/1974	2.16	0.00	0.00	17.19	24.99	5.44	10.16	7.425	0.316
8/31/1974	2.41	0.00	0.00	16.93	25.06	5.44	10.69	6.560	0.331
9/30/1974	1.99	0.00	0.00	13.06	25.12	5.44	11.08	6.128	0.343
10/31/1974	1.80	0.00	0.00	1.94	25.18	5.44	11.14	1.007	0.344
11/30/1974	1.10	0.00	0.00		25.21	5.44	11.14	0.000	0.344
5/31/1975	2.09	0.00	0.00		25.28	5.44	11.14	0.000	0.343
6/30/1975	2.88	0.00	0.00		25.36	5.44	11.14	0.000	0.342
7/31/1975	2.41	0.00	0.00		25.44	5.44	11.14	0.000	0.341
8/31/1975	2.24	0.00	0.00		25.51	5.44	11.14	0.000	0.340
9/30/1975	2.10	0.00	0.00		25.57	5.44	11.14	0.000	0.340
10/31/1975	1.73	0.00	0.00		25.62	5.44	11.14	0.000	0.339
11/30/1975	1.91	0.00	0.00		25.68	5.44	11.14	0.000	0.339
12/31/1975	1.30	0.00	0.00		25.72	5.44	11.14	0.000	0.338
1/31/1976	0.26	0.00	0.00		25.73	5.44	11.14	0.000	0.338
5/31/1976	2.09	0.00	0.00		25.79	5.44	11.14	0.000	0.337
6/30/1976	2.12	0.00	0.00		25.86	5.44	11.14	0.000	0.337
7/31/1976	2.37	0.00	0.00		25.93	5.44	11.14	0.000	0.336
8/31/1976	2.01	0.00	0.00		25.99	5.44	11.14	0.000	0.335
9/30/1976	1.86	0.00	0.00		26.05	5.44	11.14	0.000	0.335
10/31/1976	1.83	0.00	0.00		26.10	5.44	11.14	0.000	0.334
11/30/1976	1.85	0.00	0.00		26.16	5.44	11.14	0.000	0.333
12/31/1976	0.16	0.00	0.00		26.16	5.44	11.14	0.000	0.333
2/28/1977	1.78	0.00	0.00		26.21	5.44	11.14	0.000	0.333
3/31/1977	2.41	0.00	0.00		26.29	5.44	11.14	0.000	0.332
4/30/1977	1.90	0.00	0.00		26.35	5.44	11.14	0.000	0.331
5/31/1977	1.90	0.00	0.00		26.41	5.44	11.14	0.000	0.331
6/30/1977	1.68	0.00	0.00		26.46	5.44	11.14	0.000	0.330
7/31/1977	1.67	0.00	0.00		26.51	5.44	11.14	0.000	0.330
8/31/1977	1.69	0.00	0.00		26.56	5.44	11.14	0.000	0.329
9/30/1977	1.20	0.00	0.00		26.60	5.44	11.14	0.000	0.329
10/31/1977	0.12	0.00	0.00		26.60	5.44	11.14	0.000	0.329
11/30/1977	1.95	0.00	0.00		26.66	5.44	11.14	0.000	0.328
12/31/1977	0.33	0.00	0.00		26.67	5.44	11.14	0.000	0.328
3/31/1978	0.85	0.00	0.00		26.69	5.44	11.14	0.000	0.328
4/30/1978	2.83	0.00	0.00		26.78	5.44	11.14	0.000	0.327
5/31/1978	1.79	0.00	0.00		26.84	5.44	11.14	0.000	0.326
6/30/1978	1.62	1.09	0.67		26.88	5.48	11.14	0.000	0.325
7/31/1978	2.36	0.35	0.15		26.96	5.49	11.14	0.000	0.325
8/31/1978	2.04	0.19	0.09		27.02	5.49	11.14	0.000	0.324
9/30/1978	2.00	0.32	0.16	55.89	27.08	5.50	12.82	22.727	0.372
10/31/1978	1.78	0.14	0.08	99.14	27.14	5.51	15.89	48.371	0.460
11/30/1978	1.91	0.11	0.06		27.19	5.51	15.89	0.000	0.459
12/31/1978	1.67	0.13	0.08	44.62	27.25	5.52	17.27	23.332	0.498
1/31/1979	0.52	0.00	0.00	18.90	27.26	5.52	17.86	34.036	0.515
2/28/1979	1.64	0.00	0.00	2.12	27.31	5.52	17.92	1.208	0.516



Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
3/31/1979	1.58	0.06	0.04	5.12	27.36	5.52	18.08	2.928	0.520
4/30/1979	1.90	0.12	0.06	12.98	27.41	5.52	18.47	6.030	0.530
5/31/1979	1.80	0.05	0.03	44.14	27.47	5.52	19.84	22.403	0.568
6/30/1979	1.70	0.03	0.02	67.71	27.52	5.52	21.87	36.777	0.626
7/31/1979	1.76	0.10	0.05	37.60	27.57	5.53	23.03	18.952	0.658
8/31/1979	1.66	0.02	0.01	12.47	27.63	5.53	23.42	6.968	0.668
9/30/1979	1.64	0.03	0.02		27.68	5.53	23.42	0.000	0.667
10/31/1979	1.63	0.05	0.03		27.73	5.53	23.42	0.000	0.666
11/30/1979	1.78	0.00	0.00		27.78	5.53	23.42	0.000	0.665
12/31/1979	1.63	0.00	0.00		27.83	5.53	23.42	0.000	0.664
1/31/1980	1.36	0.00	0.00		27.87	5.53	23.42	0.000	0.663
2/29/1980	1.49	0.00	0.00	22.09	27.91	5.53	24.06	13.834	0.680
3/31/1980	1.50	0.09	0.06	14.05	27.96	5.53	24.49	8.292	0.691
4/30/1980	1.09	0.00	0.00	7.16	27.99	5.53	24.71	6.145	0.697
5/31/1980	1.24	0.00	0.00	6.39	28.03	5.53	24.91	4.814	0.701
6/30/1980	1.64	0.00	0.00	2.37	28.08	5.53	24.98	1.349	0.702
7/31/1980	1.28	0.00	0.00		28.12	5.53	24.98	0.000	0.702
8/31/1980	1.39	0.00	0.00		28.16	5.53	24.98	0.000	0.701
9/30/1980	1.34	0.00	0.00		28.20	5.53	24.98	0.000	0.700
10/31/1980	1.37	0.00	0.00		28.25	5.53	24.98	0.000	0.699
11/30/1980	1.04	0.00	0.00		28.28	5.53	24.98	0.000	0.698
12/31/1980	1.48	0.00	0.00		28.32	5.53	24.98	0.000	0.697
1/31/1981	1.47	0.00	0.00		28.37	5.53	24.98	0.000	0.696
2/28/1981	1.25	0.00	0.00		28.41	5.53	24.98	0.000	0.696
3/31/1981	1.51	0.00	0.00		28.45	5.53	24.98	0.000	0.695
4/30/1981	1.30	0.00	0.00		28.49	5.53	24.98	0.000	0.694
5/31/1981	1.30	0.00	0.00		28.53	5.53	24.98	0.000	0.693
6/30/1981	1.31	0.00	0.00		28.57	5.53	24.98	0.000	0.692
7/31/1981	1.13	0.00	0.00		28.61	5.53	24.98	0.000	0.692
8/31/1981	1.38	0.00	0.00		28.65	5.53	24.98	0.000	0.691
9/30/1981	1.54	0.00	0.00		28.69	5.53	24.98	0.000	0.690
10/31/1981	1.45	0.00	0.00		28.74	5.53	24.98	0.000	0.689
11/30/1981	1.40	0.00	0.00		28.78	5.53	24.98	0.000	0.688
12/31/1981	1.35	0.00	0.00		28.82	5.53	24.98	0.000	0.687
1/31/1982	1.55	0.00	0.00		28.87	5.53	24.98	0.000	0.686
2/28/1982	1.34	0.00	0.00		28.91	5.53	24.98	0.000	0.685
3/31/1982	1.49	0.00	0.00		28.95	5.53	24.98	0.000	0.684
4/30/1982	1.44	0.00	0.00		29.00	5.53	24.98	0.000	0.684
5/31/1982	1.14	0.00	0.00		29.03	5.53	24.98	0.000	0.683
6/30/1982	1.51	0.00	0.00		29.08	5.53	24.98	0.000	0.682
7/31/1982	1.38	0.00	0.00		29.12	5.53	24.98	0.000	0.681
8/31/1982	1.45	0.00	0.00		29.17	5.53	24.98	0.000	0.680
9/30/1982	1.35	0.00	0.00		29.21	5.53	24.98	0.000	0.679
10/31/1982	1.37	0.00	0.00		29.25	5.53	24.98	0.000	0.679
11/30/1982	1.37	0.00	0.00		29.29	5.53	24.98	0.000	0.678
12/31/1982	1.37	0.00	0.00		29.33	5.53	24.98	0.000	0.677
1/31/1983	1.42	0.00	0.00		29.38	5.53	24.98	0.000	0.676
2/28/1983	1.36	0.00	0.00		29.42	5.53	24.98	0.000	0.675

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
3/31/1983	1.42	0.00	0.00		29.46	5.53	24.98	0.000	0.674
4/30/1983	1.36	0.00	0.00		29.50	5.53	24.98	0.000	0.674
5/31/1983	1.37	0.00	0.00		29.54	5.53	24.98	0.000	0.673
6/30/1983	1.39	0.00	0.00		29.58	5.53	24.98	0.000	0.672
7/31/1983	1.35	0.00	0.00		29.63	5.53	24.98	0.000	0.671
8/31/1983	1.37	0.00	0.00		29.67	5.53	24.98	0.000	0.670
9/30/1983	1.34	0.00	0.00		29.71	5.53	24.98	0.000	0.670
10/31/1983	1.32	0.00	0.00		29.75	5.53	24.98	0.000	0.669
11/30/1983	1.33	0.00	0.00		29.79	5.53	24.98	0.000	0.668
12/31/1983	1.37	0.00	0.00		29.83	5.53	24.98	0.000	0.667
1/31/1984	1.37	0.00	0.00		29.87	5.53	24.98	0.000	0.666
2/29/1984	1.38	0.00	0.00		29.91	5.53	24.98	0.000	0.666
3/31/1984	1.36	0.00	0.00		29.96	5.53	24.98	0.000	0.665
4/30/1984	1.31	0.00	0.00		30.00	5.53	24.98	0.000	0.664
5/31/1984	1.43	0.00	0.00		30.04	5.53	24.98	0.000	0.663
6/30/1984	1.36	0.00	0.00		30.08	5.53	24.98	0.000	0.663
7/31/1984	1.34	0.00	0.00		30.12	5.53	24.98	0.000	0.662
8/31/1984	1.31	0.00	0.00		30.16	5.53	24.98	0.000	0.661
9/30/1984	1.32	0.00	0.00		30.20	5.53	24.98	0.000	0.660
10/31/1984	1.37	0.00	0.00		30.25	5.53	24.98	0.000	0.659
11/30/1984	1.33	0.00	0.00		30.29	5.53	24.98	0.000	0.659
12/31/1984	1.56	0.33	0.21		30.33	5.54	24.98	0.000	0.658
1/31/1985	1.51	0.87	0.58		30.38	5.57	24.98	0.000	0.656
2/28/1985	1.31	0.00	0.00		30.42	5.57	24.98	0.000	0.656
3/31/1985	1.48	0.46	0.31		30.46	5.58	24.98	0.000	0.655
4/30/1985	1.49	0.76	0.51		30.51	5.61	24.98	0.000	0.653
5/31/1985	1.32	0.00	0.00		30.55	5.61	24.98	0.000	0.653
6/30/1985	1.23	3.79	3.08		30.59	5.72	24.98	0.000	0.650
7/31/1985	1.32	0.00	0.00		30.63	5.72	24.98	0.000	0.649
8/31/1985	0.97	0.00	0.00		30.66	5.72	24.98	0.000	0.649
9/30/1985	1.35	0.00	0.00		30.70	5.72	24.98	0.000	0.648
10/31/1985	1.06	0.00	0.00		30.73	5.72	24.98	0.000	0.647
11/30/1985	0.89	0.03	0.03		30.76	5.72	24.98	0.000	0.647
12/31/1985	0.99	0.03	0.03		30.79	5.72	24.98	0.000	0.646
1/31/1986	1.01	0.03	0.03		30.82	5.72	24.98	0.000	0.646
2/28/1986	1.20	0.03	0.02		30.85	5.72	24.98	0.000	0.645
3/31/1986	1.34	0.05	0.04		30.89	5.72	24.98	0.000	0.644
4/30/1986	1.32	0.06	0.05		30.93	5.73	24.98	0.000	0.644
5/31/1986	1.27	0.03	0.03		30.97	5.73	24.98	0.000	0.643
6/30/1986	1.43	0.03	0.02		31.01	5.73	24.98	0.000	0.642
7/31/1986	1.25	0.06	0.05		31.05	5.73	24.98	0.000	0.641
8/31/1986	1.33	0.06	0.04		31.09	5.73	24.98	0.000	0.641
9/30/1986	1.34	0.06	0.04		31.14	5.73	24.98	0.000	0.640
10/31/1986	1.34	0.06	0.04		31.18	5.74	24.98	0.000	0.639
11/30/1986	1.34	0.07	0.05		31.22	5.74	24.98	0.000	0.638
12/31/1986	1.35	0.06	0.04		31.26	5.74	24.98	0.000	0.638
1/31/1987	1.34	0.06	0.04		31.30	5.74	24.98	0.000	0.637
2/28/1987	1.35	0.06	0.04		31.34	5.74	24.98	0.000	0.636

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
3/31/1987	1.34	0.06	0.04		31.38	5.74	24.98	0.000	0.636
4/30/1987	1.34	0.06	0.04		31.42	5.75	24.98	0.000	0.635
5/31/1987	1.29	0.06	0.04		31.46	5.75	24.98	0.000	0.634
6/30/1987	1.29	0.06	0.05		31.50	5.75	24.98	0.000	0.633
7/31/1987	1.31	0.06	0.04		31.54	5.75	24.98	0.000	0.633
8/31/1987	1.34	0.06	0.04		31.58	5.75	24.98	0.000	0.632
9/30/1987	1.36	0.07	0.05		31.62	5.76	24.98	0.000	0.631
10/31/1987	1.17	0.05	0.04		31.66	5.76	24.98	0.000	0.631
11/30/1987	1.31	0.03	0.03		31.70	5.76	24.98	0.000	0.630
12/31/1987	1.27	0.03	0.03		31.74	5.76	24.98	0.000	0.629
1/31/1988	1.25	0.04	0.03		31.78	5.76	24.98	0.000	0.629
2/29/1988	0.70	0.02	0.03		31.80	5.76	24.98	0.000	0.628
3/31/1988	0.91	0.02	0.02		31.82	5.76	24.98	0.000	0.628
4/30/1988	0.87	0.02	0.02		31.85	5.76	24.98	0.000	0.627
5/31/1988	1.22	0.03	0.03		31.89	5.76	24.98	0.000	0.627
6/30/1988	1.15	0.03	0.03		31.92	5.76	24.98	0.000	0.626
7/31/1988	1.29	0.03	0.02		31.96	5.77	24.98	0.000	0.625
8/31/1988	1.23	0.04	0.03		32.00	5.77	24.98	0.000	0.625
9/30/1988	1.28	0.08	0.06		32.04	5.77	24.98	0.000	0.624
10/31/1988	1.26	0.08	0.07		32.08	5.77	24.98	0.000	0.623
11/30/1988	1.33	0.08	0.06		32.12	5.77	24.98	0.000	0.623
12/31/1988	1.21	0.08	0.07		32.16	5.78	24.98	0.000	0.622
1/31/1989	1.17	0.08	0.07		32.19	5.78	24.98	0.000	0.621
2/28/1989	1.14	0.08	0.07		32.22	5.78	24.98	0.000	0.621
3/31/1989	0.50	0.04	0.08		32.24	5.78	24.98	0.000	0.620
4/30/1989	0.41	0.04	0.09		32.25	5.78	24.98	0.000	0.620
5/31/1989	1.35	0.10	0.08		32.29	5.79	24.98	0.000	0.620
6/30/1989	1.43	0.11	0.08		32.34	5.79	24.98	0.000	0.619
7/31/1989	1.31	0.10	0.07		32.38	5.79	24.98	0.000	0.618
8/31/1989	1.13	0.06	0.06		32.41	5.79	24.98	0.000	0.617
9/30/1989	1.09	0.07	0.07		32.44	5.80	24.98	0.000	0.617
10/31/1989	1.01	0.12	0.12		32.48	5.80	24.98	0.000	0.616
11/30/1989	1.04	0.06	0.06		32.51	5.80	24.98	0.000	0.616
12/31/1989	1.13	0.07	0.07		32.54	5.80	24.98	0.000	0.615
1/31/1990	0.99	0.07	0.08		32.57	5.81	24.98	0.000	0.615
2/28/1990	1.18	0.08	0.07		32.61	5.81	24.98	0.000	0.614
3/31/1990	1.40	0.05	0.04		32.65	5.81	24.98	0.000	0.613
4/30/1990	1.21	0.13	0.11		32.69	5.82	24.98	0.000	0.613
5/31/1990	1.16	0.13	0.11		32.72	5.82	24.98	0.000	0.612
6/30/1990	1.26	4.33	3.45		32.76	5.95	24.98	0.000	0.610
7/31/1990	1.36	0.07	0.05		32.80	5.95	24.98	0.000	0.609
8/31/1990	1.28	0.07	0.06		32.84	5.95	24.98	0.000	0.608
9/30/1990	1.21	0.09	0.08		32.88	5.96	24.98	0.000	0.608
10/31/1990	1.16	0.08	0.07		32.91	5.96	24.98	0.000	0.607
11/30/1990	1.13	0.05	0.05		32.95	5.96	24.98	0.000	0.606
12/31/1990	1.15	0.08	0.07		32.98	5.96	24.98	0.000	0.606
1/31/1991	1.27	0.07	0.05		33.02	5.96	24.98	0.000	0.605
2/28/1991	1.24	0.13	0.10		33.06	5.97	24.98	0.000	0.605

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
3/31/1991	1.23	0.08	0.06		33.09	5.97	24.98	0.000	0.604
4/30/1991	1.20	0.12	0.10		33.13	5.97	24.98	0.000	0.603
5/31/1991	1.20	0.07	0.06		33.17	5.98	24.98	0.000	0.603
6/30/1991	1.30	0.03	0.03		33.21	5.98	24.98	0.000	0.602
7/31/1991	1.25	0.05	0.04		33.25	5.98	24.98	0.000	0.601
8/31/1991	0.99	0.08	0.08		33.28	5.98	24.98	0.000	0.601
9/30/1991	1.27	0.06	0.05		33.31	5.98	24.98	0.000	0.600
10/31/1991	1.20	0.05	0.04		33.35	5.99	24.98	0.000	0.600
11/30/1991	1.28	0.09	0.07		33.39	5.99	24.98	0.000	0.599
12/31/1991	1.25	0.07	0.06		33.43	5.99	24.98	0.000	0.598
1/31/1992	1.24	0.33	0.26		33.47	6.00	24.98	0.000	0.598
2/29/1992	1.15	0.09	0.08		33.50	6.00	24.98	0.000	0.597
3/31/1992	1.25	0.08	0.06		33.54	6.01	24.98	0.000	0.597
4/30/1992	1.30	0.08	0.06		33.58	6.01	24.98	0.000	0.596
5/31/1992	1.27	0.08	0.06		33.62	6.01	24.98	0.000	0.595
6/30/1992	1.27	0.08	0.06		33.66	6.01	24.98	0.000	0.595
7/31/1992	1.39	0.05	0.04		33.70	6.01	24.98	0.000	0.594
8/31/1992	1.18	0.07	0.06		33.74	6.02	24.98	0.000	0.593
9/30/1992	1.21	0.08	0.07		33.77	6.02	24.98	0.000	0.593
10/31/1992	1.18	0.08	0.07		33.81	6.02	24.98	0.000	0.592
11/30/1992	1.06	0.10	0.10		33.84	6.02	24.98	0.000	0.592
12/31/1992	1.25	0.04	0.03		33.88	6.03	24.98	0.000	0.591
1/31/1993	0.91	0.03	0.04		33.91	6.03	24.98	0.000	0.591
2/28/1993	1.23	0.06	0.05		33.94	6.03	24.98	0.000	0.590
3/31/1993	1.13	0.15	0.13		33.98	6.03	24.98	0.000	0.590
4/30/1993	1.27	0.05	0.04		34.01	6.03	24.98	0.000	0.589
5/31/1993	1.23	0.08	0.07		34.05	6.04	24.98	0.000	0.588
6/30/1993	1.23	0.08	0.06		34.09	6.04	24.98	0.000	0.588
7/31/1993	1.15	0.08	0.07		34.13	6.04	24.98	0.000	0.587
8/31/1993	1.22	0.07	0.06		34.16	6.04	24.98	0.000	0.587
9/30/1993	1.21	0.01	0.01		34.20	6.04	24.98	0.000	0.586
10/31/1993	1.18	0.02	0.02		34.24	6.04	24.98	0.000	0.586
11/30/1993	1.16	0.03	0.02		34.27	6.05	24.98	0.000	0.585
12/31/1993	0.98	0.01	0.01		34.30	6.05	24.98	0.000	0.585
1/31/1994	0.72	0.01	0.02		34.32	6.05	24.98	0.000	0.584
2/28/1994	1.05	0.00	0.00		34.35	6.05	24.98	0.000	0.584
3/31/1994	0.94	0.01	0.01		34.38	6.05	24.98	0.000	0.583
4/30/1994	0.61	0.01	0.01		34.40	6.05	24.98	0.000	0.583
5/31/1994	1.03	0.06	0.06		34.43	6.05	24.98	0.000	0.583
6/30/1994	1.64	0.02	0.01		34.48	6.05	24.98	0.000	0.582
7/31/1994	1.23	0.02	0.01		34.52	6.05	24.98	0.000	0.581
8/31/1994	1.23	0.04	0.03		34.56	6.05	24.98	0.000	0.581
9/30/1994	1.16	0.00	0.00		34.59	6.05	24.98	0.000	0.580
10/31/1994	1.24	0.00	0.00		34.63	6.05	24.98	0.000	0.580
11/30/1994	1.15	0.00	0.00		34.67	6.05	24.98	0.000	0.579
12/31/1994	0.94	0.01	0.01		34.70	6.05	24.98	0.000	0.579
1/31/1995	0.87	0.04	0.05		34.72	6.05	24.98	0.000	0.578
2/28/1995	0.90	0.02	0.02		34.75	6.05	24.98	0.000	0.578

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
3/31/1995	0.89	0.03	0.04		34.77	6.05	24.98	0.000	0.578
4/30/1995	1.25	0.08	0.06		34.81	6.06	24.98	0.000	0.577
5/31/1995	1.31	0.02	0.02		34.85	6.06	24.98	0.000	0.576
6/30/1995	1.33	0.02	0.02		34.89	6.06	24.98	0.000	0.576
7/31/1995	1.22	0.02	0.02		34.93	6.06	24.98	0.000	0.575
8/31/1995	1.32	0.02	0.01		34.97	6.06	24.98	0.000	0.575
9/30/1995	1.18	0.05	0.05		35.01	6.06	24.98	0.000	0.574
10/31/1995	1.12	0.05	0.04		35.04	6.06	24.98	0.000	0.574
11/30/1995	0.89	0.06	0.06		35.07	6.06	24.98	0.000	0.573
12/31/1995	1.05	0.06	0.06		35.10	6.07	24.98	0.000	0.573
1/31/1996	0.98	0.05	0.05		35.13	6.07	24.98	0.000	0.572
2/29/1996	0.93	0.05	0.06		35.16	6.07	24.98	0.000	0.572
3/31/1996	0.99	0.04	0.04		35.19	6.07	24.98	0.000	0.572
4/30/1996	0.92	0.05	0.05		35.22	6.07	24.98	0.000	0.571
5/31/1996	0.63	0.04	0.06		35.24	6.07	24.98	0.000	0.571
6/30/1996	0.69	0.05	0.07		35.26	6.07	24.98	0.000	0.571
7/31/1996	1.08	0.04	0.04		35.29	6.08	24.98	0.000	0.570
8/31/1996	1.06	0.06	0.05		35.32	6.08	24.98	0.000	0.570
9/30/1996	1.21	0.08	0.06		35.36	6.08	24.98	0.000	0.569
10/31/1996	1.23	0.09	0.07		35.40	6.08	24.98	0.000	0.569
11/30/1996	1.22	0.08	0.07		35.43	6.08	24.98	0.000	0.568
12/31/1996	1.13	0.12	0.10		35.47	6.09	24.98	0.000	0.567
1/31/1997	1.34	0.09	0.07		35.51	6.09	24.98	0.000	0.567
2/28/1997	1.21	0.12	0.10		35.54	6.09	24.98	0.000	0.566
3/31/1997	0.97	0.14	0.15		35.57	6.10	24.98	0.000	0.566
4/30/1997	0.95	0.09	0.10		35.60	6.10	24.98	0.000	0.565
5/31/1997	1.10	0.05	0.05		35.64	6.10	24.98	0.000	0.565
6/30/1997	1.15	0.06	0.05		35.67	6.11	24.98	0.000	0.564
7/31/1997	1.02	0.06	0.06		35.70	6.11	24.98	0.000	0.564
8/31/1997	1.19	0.05	0.04		35.74	6.11	24.98	0.000	0.563
9/30/1997	1.19	0.05	0.04		35.78	6.11	24.98	0.000	0.563
10/31/1997	1.02	0.06	0.06		35.81	6.11	24.98	0.000	0.563
11/30/1997	1.05	0.08	0.08		35.84	6.11	24.98	0.000	0.562
12/31/1997	0.88	0.05	0.05		35.87	6.12	24.98	0.000	0.562
1/31/1998	0.85	0.06	0.07		35.89	6.12	24.98	0.000	0.561
2/28/1998	0.83	0.05	0.06		35.92	6.12	24.98	0.000	0.561
3/31/1998	0.85	0.04	0.04		35.94	6.12	24.98	0.000	0.561
4/30/1998	0.92	0.06	0.07		35.97	6.12	24.98	0.000	0.560
5/31/1998	0.90	0.05	0.06		36.00	6.12	24.98	0.000	0.560
6/30/1998	1.32	0.08	0.06		36.04	6.13	24.98	0.000	0.559
7/31/1998	1.38	0.09	0.07		36.08	6.13	24.98	0.000	0.559
8/31/1998	1.25	0.06	0.05		36.12	6.13	24.98	0.000	0.558
9/30/1998	1.21	0.07	0.06		36.16	6.13	24.98	0.000	0.558
10/31/1998	1.20	0.08	0.07		36.19	6.14	24.98	0.000	0.557
11/30/1998	1.17	0.08	0.07		36.23	6.14	24.98	0.000	0.557
12/31/1998	0.83	0.04	0.05		36.25	6.14	24.98	0.000	0.556
1/31/1999	0.88	0.07	0.08		36.28	6.14	24.98	0.000	0.556
2/28/1999	0.91	0.06	0.07		36.31	6.14	24.98	0.000	0.555

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
3/31/1999	0.87	0.05	0.06		36.33	6.14	24.98	0.000	0.555
4/30/1999	1.66	0.08	0.05		36.38	6.15	24.98	0.000	0.554
5/31/1999	1.33	0.09	0.07		36.42	6.15	24.98	0.000	0.554
6/30/1999	1.20	0.10	0.08		36.46	6.15	24.98	0.000	0.553
7/31/1999	1.29	0.09	0.07		36.50	6.16	24.98	0.000	0.553
8/31/1999	1.09	0.06	0.06		36.53	6.16	24.98	0.000	0.552
9/30/1999	1.13	0.13	0.12		36.57	6.16	24.98	0.000	0.552
10/31/1999	1.14	0.07	0.06		36.60	6.16	24.98	0.000	0.551
11/30/1999	1.08	0.10	0.10		36.64	6.17	24.98	0.000	0.551
12/31/1999	1.06	0.14	0.13		36.67	6.17	24.98	0.000	0.550
1/31/2000	1.12	0.10	0.09		36.70	6.17	24.98	0.000	0.550
2/29/2000	1.10	0.07	0.07		36.73	6.18	24.98	0.000	0.549
3/31/2000	1.00	0.05	0.05		36.77	6.18	24.98	0.000	0.549
4/30/2000	1.06	0.11	0.10		36.80	6.18	24.98	0.000	0.549
5/31/2000	0.97	0.06	0.07		36.83	6.18	24.98	0.000	0.548
6/30/2000	0.93	0.07	0.08		36.86	6.19	24.98	0.000	0.548
7/31/2000	1.09	0.09	0.08		36.89	6.19	24.98	0.000	0.547
8/31/2000	1.09	0.08	0.08		36.92	6.19	24.98	0.000	0.547
9/30/2000	0.92	0.07	0.07		36.95	6.19	24.98	0.000	0.546
10/31/2000	1.00	0.07	0.07		36.98	6.19	24.98	0.000	0.546
11/30/2000	1.11	0.10	0.09		37.02	6.20	24.98	0.000	0.546
12/31/2000	1.19	0.07	0.06		37.05	6.20	24.98	0.000	0.545
1/31/2001	1.10	0.09	0.08		37.09	6.20	24.98	0.000	0.545
2/28/2001	1.11	0.08	0.07		37.12	6.20	24.98	0.000	0.544
3/31/2001	1.12	0.07	0.06		37.15	6.21	24.98	0.000	0.544
4/30/2001	1.12	0.07	0.06		37.19	6.21	24.98	0.000	0.543
5/31/2001	0.81	0.09	0.12		37.21	6.21	24.98	0.000	0.543
6/30/2001	0.63	0.07	0.11		37.23	6.21	24.98	0.000	0.543
7/31/2001	0.69	0.06	0.08		37.25	6.22	24.98	0.000	0.542
8/31/2001	0.65	0.06	0.09		37.27	6.22	24.98	0.000	0.542
9/30/2001	0.62	0.07	0.11		37.29	6.22	24.98	0.000	0.542
10/31/2001	0.64	0.06	0.09		37.31	6.22	24.98	0.000	0.542
11/30/2001	0.76	0.05	0.07		37.33	6.22	24.98	0.000	0.541
12/31/2001	0.70	0.05	0.06		37.35	6.22	24.98	0.000	0.541
1/31/2002	0.67	0.05	0.07		37.37	6.23	24.98	0.000	0.541
2/28/2002	0.63	0.05	0.07		37.39	6.23	24.98	0.000	0.541
3/31/2002	0.61	0.04	0.07		37.41	6.23	24.98	0.000	0.540
4/30/2002	0.61	0.04	0.07		37.43	6.23	24.98	0.000	0.540
5/31/2002	0.78	0.08	0.10		37.45	6.23	24.98	0.000	0.540
6/30/2002	0.92	0.19	0.20		37.48	6.24	24.98	0.000	0.539
7/31/2002	0.94	0.11	0.12		37.51	6.24	24.98	0.000	0.539
8/31/2002	0.70	0.05	0.07		37.53	6.24	24.98	0.000	0.539
9/30/2002	0.69	0.05	0.07		37.55	6.24	24.98	0.000	0.538
10/31/2002	0.49	0.04	0.07		37.57	6.25	24.98	0.000	0.538
11/30/2002	0.67	0.05	0.08		37.59	6.25	24.98	0.000	0.538
12/31/2002	0.73	0.05	0.08		37.61	6.25	24.98	0.000	0.538
1/31/2003	0.69	0.05	0.08		37.63	6.25	24.98	0.000	0.537
2/28/2003	0.61	0.05	0.09		37.65	6.25	24.98	0.000	0.537

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
3/31/2003	0.63	0.05	0.08		37.67	6.25	24.98	0.000	0.537
4/30/2003	0.64	0.05	0.08		37.69	6.25	24.98	0.000	0.537
5/31/2003	0.65	0.05	0.08		37.71	6.26	24.98	0.000	0.536
6/30/2003	0.68	0.05	0.07		37.73	6.26	24.98	0.000	0.536
7/31/2003	0.65	0.05	0.08		37.75	6.26	24.98	0.000	0.536
8/31/2003	0.63	0.05	0.08		37.77	6.26	24.98	0.000	0.535
9/30/2003	0.56	0.05	0.09		37.79	6.26	24.98	0.000	0.535
10/31/2003	0.59	0.05	0.09		37.80	6.26	24.98	0.000	0.535
11/30/2003	0.61	0.06	0.09		37.82	6.27	24.98	0.000	0.535
12/31/2003	0.61	0.05	0.09		37.84	6.27	24.98	0.000	0.534
1/31/2004	0.57	0.05	0.10		37.86	6.27	24.98	0.000	0.534
2/29/2004	0.57	0.06	0.10		37.87	6.27	24.98	0.000	0.534
3/31/2004	0.55	0.05	0.09		37.89	6.27	24.98	0.000	0.534
4/30/2004	0.58	0.05	0.09		37.91	6.27	24.98	0.000	0.534
5/31/2004	0.60	0.05	0.09		37.93	6.28	24.98	0.000	0.533
6/30/2004	0.65	0.06	0.09		37.95	6.28	24.98	0.000	0.533
7/31/2004	0.62	0.05	0.08		37.97	6.28	24.98	0.000	0.533
8/31/2004	0.59	0.05	0.09		37.98	6.28	24.98	0.000	0.533
9/30/2004	0.58	0.04	0.07		38.00	6.28	24.98	0.000	0.532
10/31/2004	0.74	0.06	0.08		38.02	6.28	24.98	0.000	0.532
11/30/2004	0.72	0.05	0.07		38.05	6.29	24.98	0.000	0.532
12/31/2004	0.68	0.05	0.08		38.07	6.29	24.98	0.000	0.532
1/31/2005	0.54	0.04	0.08		38.08	6.29	24.98	0.000	0.531
2/28/2005	0.59	0.05	0.08		38.10	6.29	24.98	0.000	0.531
3/31/2005	0.56	0.04	0.07		38.12	6.29	24.98	0.000	0.531
4/30/2005	0.61	0.04	0.07		38.14	6.29	24.98	0.000	0.531
5/31/2005	0.58	0.04	0.07		38.15	6.29	24.98	0.000	0.530
6/30/2005	0.60	0.04	0.07		38.17	6.29	24.98	0.000	0.530
7/31/2005	0.60	0.04	0.07		38.19	6.30	24.98	0.000	0.530
8/31/2005	0.65	0.04	0.06		38.21	6.30	24.98	0.000	0.530
9/30/2005	0.63	0.04	0.07		38.23	6.30	24.98	0.000	0.529
10/31/2005	0.61	0.04	0.06		38.25	6.30	24.98	0.000	0.529
11/30/2005	0.63	0.04	0.06		38.27	6.30	24.98	0.000	0.529
12/31/2005	0.64	0.04	0.07		38.29	6.30	24.98	0.000	0.529
1/31/2006	0.71	0.04	0.06		38.31	6.30	24.98	0.000	0.528
2/28/2006	0.61	0.04	0.06		38.33	6.30	24.98	0.000	0.528
3/31/2006	0.57	0.04	0.07		38.34	6.31	24.98	0.000	0.528
4/30/2006	0.56	0.04	0.07		38.36	6.31	24.98	0.000	0.528
5/31/2006	0.56	0.05	0.08		38.38	6.31	24.98	0.000	0.528
6/30/2006	0.63	0.05	0.08		38.40	6.31	24.98	0.000	0.527
7/31/2006	0.58	0.05	0.08		38.41	6.31	24.98	0.000	0.527
8/31/2006	0.62	0.05	0.08		38.43	6.31	24.98	0.000	0.527
9/30/2006	0.64	0.05	0.07		38.45	6.31	24.98	0.000	0.527
10/31/2006	0.61	0.05	0.09		38.47	6.32	24.98	0.000	0.526
11/30/2006	0.67	0.05	0.07		38.49	6.32	24.98	0.000	0.526
12/31/2006	0.62	0.04	0.06		38.51	6.32	24.98	0.000	0.526
1/31/2007	0.61	0.05	0.08		38.53	6.32	24.98	0.000	0.526
2/28/2007	0.59	0.05	0.08		38.55	6.32	24.98	0.000	0.525

Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
3/31/2007	0.59	0.04	0.06		38.57	6.32	24.98	0.000	0.525
4/30/2007	0.56	0.05	0.08		38.58	6.32	24.98	0.000	0.525
5/31/2007	0.53	0.05	0.10		38.60	6.33	24.98	0.000	0.525
6/30/2007	0.60	0.05	0.09		38.62	6.33	24.98	0.000	0.525
7/31/2007	0.53	0.07	0.13		38.63	6.33	24.98	0.000	0.524
8/31/2007	0.58	0.08	0.15		38.65	6.33	24.98	0.000	0.524
9/30/2007	0.50	0.08	0.16		38.67	6.33	24.98	0.000	0.524
10/31/2007	0.54	0.10	0.19		38.68	6.34	24.98	0.000	0.524
11/30/2007	0.56	0.10	0.18		38.70	6.34	24.98	0.000	0.523
12/31/2007	0.56	0.10	0.18		38.72	6.34	24.98	0.000	0.523
1/31/2008	0.55	0.10	0.17		38.73	6.35	24.98	0.000	0.523
2/29/2008	0.58	0.10	0.17		38.75	6.35	24.98	0.000	0.523
3/31/2008	0.58	0.10	0.17		38.77	6.35	24.98	0.000	0.522
4/30/2008	0.67	0.04	0.06		38.79	6.35	24.98	0.000	0.522
5/31/2008	0.69	0.02	0.03		38.81	6.35	24.98	0.000	0.522
6/30/2008	0.70	0.02	0.03		38.83	6.35	24.98	0.000	0.522
7/31/2008	0.65	0.02	0.03		38.85	6.36	24.98	0.000	0.521
8/31/2008	0.70	0.02	0.03		38.87	6.36	24.98	0.000	0.521
9/30/2008	0.71	0.02	0.03		38.89	6.36	24.98	0.000	0.521
10/31/2008	0.70	0.02	0.02		38.92	6.36	24.98	0.000	0.521
11/30/2008	0.72	0.02	0.03		38.94	6.36	24.98	0.000	0.520
12/31/2008	0.38	0.01	0.03		38.95	6.36	24.98	0.000	0.520
1/31/2009	0.67	0.02	0.03		38.97	6.36	24.98	0.000	0.520
2/28/2009	0.59	0.03	0.05		38.99	6.36	24.98	0.000	0.520
3/31/2009	0.76	0.10	0.13		39.01	6.36	24.98	0.000	0.520
4/30/2009	0.77	0.11	0.14		39.03	6.37	24.98	0.000	0.519
5/31/2009	0.65	0.10	0.15		39.05	6.37	24.98	0.000	0.519
7/31/2009	1.06	0.20	0.18		39.09	6.38	24.98	0.000	0.519
8/31/2009	1.15	0.21	0.18		39.12	6.38	24.98	0.000	0.518
9/30/2009	1.16	0.21	0.18		39.16	6.39	24.98	0.000	0.518
10/31/2009	1.08	0.18	0.17		39.19	6.39	24.98	0.000	0.517
11/30/2009	1.01	0.18	0.18		39.22	6.40	24.98	0.000	0.517
12/31/2009	1.06	0.18	0.17		39.25	6.40	24.98	0.000	0.516
1/31/2010	0.98	0.17	0.18		39.28	6.41	24.98	0.000	0.516
2/28/2010	1.15	0.21	0.19		39.32	6.42	24.98	0.000	0.515
3/31/2010	1.16	0.23	0.20		39.35	6.42	24.98	0.000	0.515
4/30/2010	1.11	0.28	0.25		39.39	6.43	24.98	0.000	0.514
5/31/2010	0.94	0.27	0.29		39.42	6.44	24.98	0.000	0.514
6/30/2010	0.83	0.25	0.30		39.44	6.45	24.98	0.000	0.514
7/31/2010	0.68	0.19	0.28		39.46	6.45	24.98	0.000	0.513
8/31/2010	1.17	0.29	0.25		39.50	6.46	24.98	0.000	0.513
9/30/2010	1.09	0.28	0.25		39.53	6.47	24.98	0.000	0.512
10/31/2010	1.09	0.28	0.26		39.56	6.48	24.98	0.000	0.512
11/30/2010	1.07	0.27	0.25		39.60	6.49	24.98	0.000	0.512
12/31/2010	1.08	0.34	0.31		39.63	6.50	24.98	0.000	0.511
1/31/2011	1.06	0.29	0.27		39.66	6.51	24.98	0.000	0.511
2/28/2011	1.06	0.29	0.28		39.69	6.51	24.98	0.000	0.510
3/31/2011	1.02	0.33	0.32		39.72	6.52	24.98	0.000	0.510



Date	Oil Rate (CD) m3/d	Water Rate (CD) m3/d	Water Oil Ratio m3/m3	Water Inj Rate (CD) m3/d	Cum Oil Prod Km3	Cum Water Prod Km3	Cum Water Inj Km3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio
4/30/2011	1.04	0.30	0.29		39.76	6.53	24.98	0.000	0.509
5/31/2011	1.10	0.30	0.27		39.79	6.54	24.98	0.000	0.509
6/30/2011	1.13	0.30	0.27		39.82	6.55	24.98	0.000	0.508
7/31/2011	0.77	0.22	0.28		39.85	6.56	24.98	0.000	0.508
8/31/2011	1.11	0.28	0.25		39.88	6.57	24.98	0.000	0.508
9/30/2011	0.83	0.18	0.22		39.91	6.57	24.98	0.000	0.507
10/31/2011	0.79	0.20	0.25		39.93	6.58	24.98	0.000	0.507
11/30/2011	0.70	0.20	0.28		39.95	6.59	24.98	0.000	0.507
12/31/2011	0.70	0.20	0.29		39.97	6.59	24.98	0.000	0.506
1/31/2012	0.27	0.08	0.30		39.98	6.59	24.98	0.000	0.506
2/29/2012	0.65	0.19	0.29		40.00	6.60	24.98	0.000	0.506
3/31/2012	0.65	0.18	0.27		40.02	6.60	24.98	0.000	0.506
4/30/2012	0.58	0.08	0.14		40.04	6.61	24.98	0.000	0.505
5/31/2012	0.67	0.07	0.11		40.06	6.61	24.98	0.000	0.505
6/30/2012	0.05	0.01	0.13		40.06	6.61	24.98	0.000	0.505
7/31/2012	0.22	0.02	0.10		40.07	6.61	24.98	0.000	0.505
8/31/2012	1.03	0.07	0.07		40.10	6.61	24.98	0.000	0.505
9/30/2012	0.83	0.07	0.08		40.12	6.61	24.98	0.000	0.504
10/31/2012	1.05	0.08	0.08		40.16	6.62	24.98	0.000	0.504
11/30/2012	0.66	0.01	0.02		40.18	6.62	24.98	0.000	0.504
12/31/2012	0.64	0.01	0.02		40.20	6.62	24.98	0.000	0.504
1/31/2013	0.60	0.01	0.02		40.21	6.62	24.98	0.000	0.503
2/28/2013	0.63	0.01	0.02		40.23	6.62	24.98	0.000	0.503
3/31/2013	0.64	0.01	0.02		40.25	6.62	24.98	0.000	0.503
4/30/2013	0.65	0.01	0.02		40.27	6.62	24.98	0.000	0.503
5/31/2013	0.32	0.00	0.01		40.28	6.62	24.98	0.000	0.503
6/30/2013	0.10	0.00	0.00		40.28	6.62	24.98	0.000	0.503
7/31/2013	0.05	0.00	0.00		40.29	6.62	24.98	0.000	0.503
8/31/2013	0.09	0.00	0.00		40.29	6.62	24.98	0.000	0.503
9/30/2013	0.11	0.00	0.00		40.29	6.62	24.98	0.000	0.503
10/31/2013	0.20	0.01	0.05		40.30	6.62	24.98	0.000	0.502
11/30/2013	0.20	0.01	0.05		40.30	6.62	24.98	0.000	0.502
12/31/2013	0.21	0.01	0.05		40.31	6.62	24.98	0.000	0.502