

**Virden Roselea Unit #2**  
**2014 Annual EOR Report**

## Executive Summary

In 2014 oil production in the Virden Roselea Unit #2 (VRU #2) averaged 35.5 m<sup>3</sup>/d (223 bbl/d) totaling 12.9 e<sup>3</sup>m<sup>3</sup> (81.3 mmbbl). Annual production was up 38.3% from 2013 to 2014, the second year in a row that there has been a positive decline. By the end of 2014 cumulative oil production from the VRU #2 was 1 159 e<sup>3</sup>m<sup>3</sup> (7.3 mmbbl) and by the end of the year the unit was producing 71.6 m<sup>3</sup>/d (450 bbl/d) of oil and a peak of 111.3 m<sup>3</sup>/d (700 bbl/d) was reached. The original forecasted recovery was 270 e<sup>3</sup>m<sup>3</sup> (1.7 mmbbl) on primary recovery and 730 e<sup>3</sup>m<sup>3</sup> (4.6 mmbbl) total primary plus secondary recovery. It should be noted that the pool was expanded slightly after the original waterflood forecast was made; however, the waterflood has made a tremendous increase to the ultimate oil recovery and has exceeded the original expectations. That said, the unit is still at a low recovery and there is a lot of room to improve the performance and gain incremental reserves.

In December 2014 there were 36 producing oil wells and 12 water injectors active in the unit. In 2014, three horizontal Scallion wells and three horizontal Virden wells were drilled. A disposal and a vertical producer were also drilled in this unit in 2014. There were also several recompletions in the Whitewater formation on the old vertical wells that were quite successful. Due to the flooding in July of 2014, almost the entirety of the unit was shut in as the pipelines had been exposed or broken. All of the wells came back on in November and the old cement lined pipe was replaced.

Corex Resources has operated VRU #2 since December 19, 2012.

## Discussion

The VRU #2 has been under waterflood since 1966, seven years after first production from the pool in 1959. Water injection increased the oil production rate from  $\sim 60 \text{ m}^3/\text{d}$  ( $\sim 377 \text{ bbl/d}$ ) to  $\sim 150 \text{ m}^3/\text{d}$  ( $944 \text{ bbl/d}$ ), equivalent to peak production from the field. Expected ultimate oil recovery was increased by more than four times by the waterflood.

Prior to the operatorship transferring to Corex Resources very little additional development had taken place in the unit. From 1997- 2002, four horizontal wells were drilled in the unit, all with poor results. In 2013, a very successful Virden well was drilled in the unit. This year this unit has had plenty of activity. Six horizontal wells, a disposal well, and a vertical producer were drilled. In addition, 5 vertical recompletes in the Whitewater formation were executed successfully. There was also a pump upgrade and replacement of injection lines that were destroyed in the flood. There have been no wells converted to injection since 1971. The unit is mainly laid out in 5-spot patterns; however, there are some areas in the unit that have seen little to no waterflood support, mainly on the west side of the unit. There is the possibility of completing the remaining 5-spot patterns, but it was deemed more efficient to implement at horizontal-horizontal waterflood after drilling infill wells. This unit has a low recovery factor and very likely poor sweep efficiency. Changing the established patterns should help to recover incremental reserves as at this point in time there is a lot of water cycling. The water injection rate was  $515 \text{ m}^3/\text{d}$  ( $3\,237 \text{ bbl/d}$ ) in 2014, lower than usual due to the flooding, and the producing WOR was  $16 \text{ m}^3/\text{m}^3$ . The injected water at VRU #2 is not filtered or treated in any way.

Significant events in 2014 are as follows:

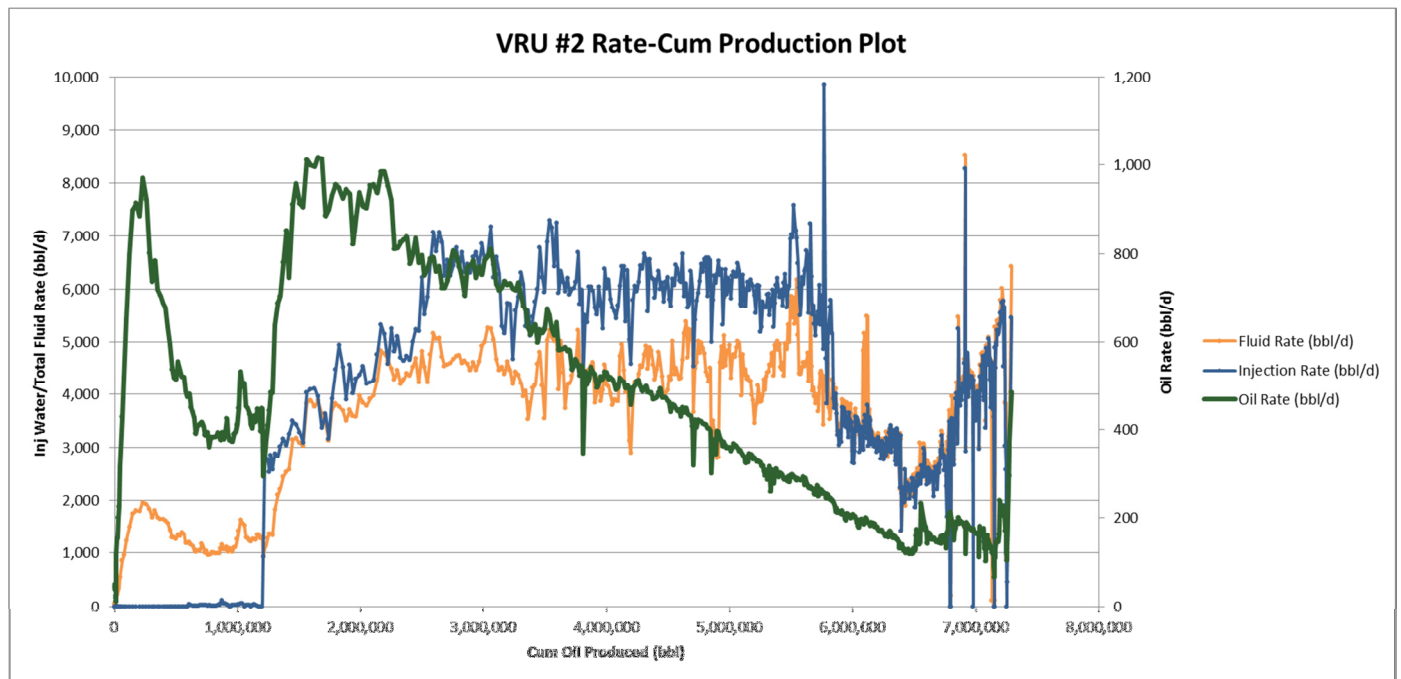
- February 2014, 100/09-06-010-26W1/00 well flooded with water. A BP was set, shutting off lower perfs, then perforated and fraced the Whitewater. Test Whitewater formation. Seemed to have fraced down to the watered out zones due to the initially high water volume, however, the Whitewater was evidently stimulated successfully. Initially, produced an incremental 50bbl/d of oil.
- May 2014, recompleted 100/09-01-010-26W1/00. Pumped gyp converter and acid and let sit. Re-perforated the Oolites and Virden, increased production after this treatment. Perforated the Whitewater and attempted an acid treatment on this formation with no success. Went back in July and fraced the Whitewater formation. Great results, incremental 50 bbl/d of oil from the Whitewater formation

- June 2014, recompleted 100/16-05-011-25W1/00 and 100/15-05-011-25W1/00; pumped gyp converter and acid and let sit. The former resulted in ~5 bbl/d incremental oil and the latter seemed to have no effect on the well.
- July 2014 there was flooding in Manitoba, due to the flood pipelines in this unit were exposed and wrecked, therefore, a large amount of production from the unit needed to be shut in. In October 2014 a pipeline replacement project began. Running new injection and production lines to get the majority of the unit back up and running. A pump upgrade was also completed during this time.
- July 2014, recomplete 100/16-01-011-26W1/00; pumped gyp converter and acid and let sit. October 2014, go back to frac the Whitewater formation in 100/16-01-011-26W1/00. This resulted in ~33 bbl/d of incremental oil from the well.
- August 2014, drilled 102/07-36-010-26W1/00 horizontal in the Virden, high pressure while drilling. Due to the high pressure and difficulty drilling the well TD was called short and the well will need to be renamed 102/10-36-010-26W1/00.
- August 2014, drilled 102/16-05-011-25W1/00 and 103/16-05-011-25W1/00 horizontal wells in the Scallion formation.
- August 2014, abandoned the vertical 100/09-05-011-25W1/00 well.
- August 2014, pump gyp converter and acid in 102/09-05-011-25W1/00 horizontal to improve inflow. Treatment improved total inflow and increased oil rate by ~5 bbl/d.
- September 2014, drill 102/08-12-011-26W1/00 in the Virden formation.
- September 2014, drill 102/07-06-011-25W1/00 vertical disposal well targeting the Birdbear, improving the water handling capability of the unit.
- October 2014, drilled vertical 102/02-12-011-26W1/00 well targeting the Virden and Oolite formations.
- October 2014, drilled 102/13-05-011-25W1/00 horizontal well in the Virden formation.
- November 2014, drill 104/09-05-011-25W1/00 Scallion well.
- November 2014, most of the unit was able to come back on production after being impacted by the flood.
- December 2014, recomplete vertical wells: 100/13-06-011-25W1/00 and 100/07-06-011-25W1/00 by pumping gyp converter and acid and let sit, then frac the Whitewater formation. The treatment on 100/13-06-011-25W1/00 resulted in an incremental ~12 bbl/d of oil. There are currently no results on the 100/07-06-011-25W1/00 recompletion.

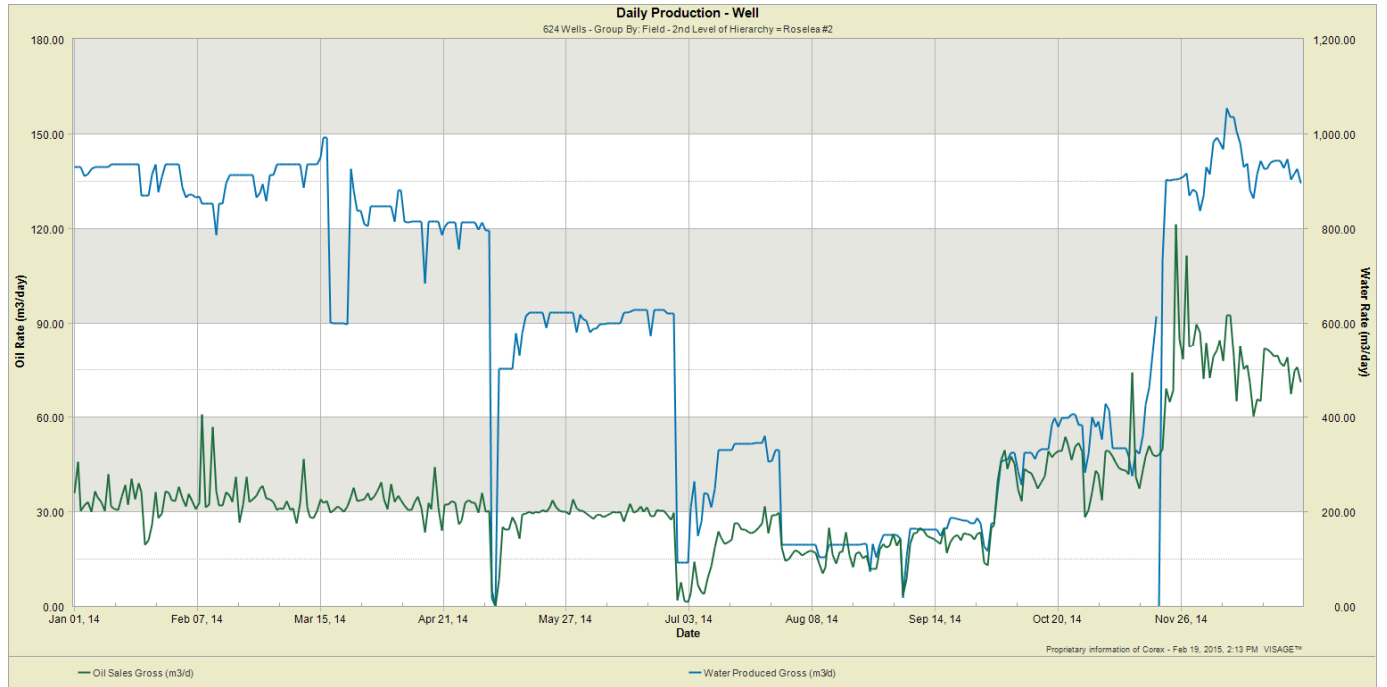
In the composite rate – cumulative oil plot below, waterflood response is clearly demonstrated at a cumulative oil production of 200 e<sup>3</sup>m<sup>3</sup> (1.25 MMbbl).

Detailed production, injection, voidage tables and plots for the total unit and each injection pattern are at the end of this report.

## VRU #2 – Rate vs Cum Oil Production



## VRU #2 – Rate vs Time



## 2014 Reservoir Pressure Surveys

Unit	UWI	License	Test Type	Date of Pressure	Duration of SI (days)	Datum BHP (kPaa)
VRU #2	100/10-36-010-26W1/00	1737	Surface Recorder	8/29/2014	56	6,477
VRU #2	100/10-36-010-26W1/00	1737	Surface Recorder	5/12/2014	7	8,815
VRU #2	100/04-05-011-25W1/00	1793	Surface Recorder	5/13/2014	8	12,347
VRU #2	100/10-05-011-25W1/00	2087	Surface Recorder	5/7/2014	5	11,817
VRU #2	100/11-05-011-25W1/00	2042	AWS BU	5/12/2014	9	8,405
VRU #2	100/12-05-011-25W1/00	1805	Surface Recorder	5/8/2014	6	10,973
VRU #2	100/15-05-011-25W1/00	2078	AWS BU	5/15/2014	12	7,806
VRU #2	100/16-05-011-25W1/00	2103	AWS BU	5/12/2014	9	7,262
VRU #2	102/16-05-011-25 W1/00	10023	Static Gradient	9/12/2014	1	6,147
VRU #2	103/16-05-011-25 W1/00	10024	Static Gradient	9/12/2014	1	7,981
VRU #2	100/02-06-011-25W1/00	1763	Surface Recorder	8/29/2014	56	7,161
VRU #2	100/02-06-011-25W1/00	1763	Surface Recorder	5/7/2014	5	11,470
VRU #2	100/07-06-011-25W1/00	1772	BH BU	12/8/2014	9	8,811
VRU #2	100/08-06-011-25W1/00	1795	Surface Recorder	5/7/2014	2	11,839
VRU #2	100/10-06-011-25W1/00	1785	Surface Recorder	5/7/2014	2	11,062
VRU #2	100/12-06-011-25W1/00	2200	Surface Recorder	9/29/2014	59	7,657
VRU #2	100/12-06-011-25W1/00	2200	Surface Recorder	5/7/2014	2	8,930
VRU #2	100/16-06-011-25W1/00	1807	Surface Recorder	5/8/2014	6	11,582
VRU #2	100/02-07-011-25W1/00	1792	Surface Recorder	5/12/2014	7	9,704
VRU #2	100/04-07-011-25W1/00	1773	Surface Recorder	9/29/2014	59	8,421
VRU #2	100/04-07-011-25W1/00	1773	Surface Recorder	5/7/2014	2	8,290
VRU #2	100/04-08-011-25W1/00	1813	Surface Recorder	5/12/2014	7	8,831
VRU #2	100/09-01-011-26W1/00	2233	BH BU	5/13/2014	4	8,338
VRU #2	100/09-01-011-26W1/00	2233	BH BU	7/16/2014	17	7,919
VRU #2	100/09-01-011-26W1/00	2233	BH BU	7/22/2014	5	7,950
VRU #2	100/01-12-011-26W1/00	2243	AWS BU	5/16/2014	13	8,310
VRU #2	100/07-12-011-26W1/00	2333	AWS BU	5/13/2014	10	7,627

The pressures, taken in 2014, show that the pool is well over the original pressure in most areas. It is interesting to note the changes in pressures in a few of the wells. The initial pressures were taken during a turnaround where the wells were only shut in for a short time period. Due to the flooding in July we were able to come back and see how the pressures had changed with a longer shut in; the pressures are not as variable and it appears as if the injectors are not as over pressured as originally thought, given enough time to fall off. Although, some of the injectors would not fall off even with time, indicating that the high pressures observed throughout the unit are real. It is also clear that the pool is over pressured as vertical wells even far away from injection have high pressure and suspended wells can hold fluid to surface for years. Therefore, the high pressures seen are throughout the pool and not localized, as such the average

reservoir pressure is above the initial pressure of the reservoir. It is hoped that the high pressure will help improve production in the new producers. We may also need to reconsider the previous notion that a significant portion of the injected water has gone out of zone. The water still may have gone out of zone, resulting in poor sweep efficiency and the overall low recovery in the unit, but it did not appear to leave the system and has therefore pressured up the unit.

It is important to note that the pressures for 102/16-05-011-25W1/00 and 103/16-05-011-25W1/00 and 104/09-05-011-25W1/00 are all taken from newly drilled Scallion wells prior to production.

Pressures taken from 2010 and 2011 ranged from 6 000 kPaa to 11 218 kPaa. The pressures for VRU #2 taken over the years are very variable resulting in a large array of pressures and uncertainty in the average pool pressure. As the pressures vary with area, and possibly by formation, it is unlikely we will be able to record consistent pressures. As the voidage replacement ratio (VRR) has been close to one over this time average pool pressure is expected to remain relatively stable. However, individual patterns have been over injecting or under injecting resulting in variable pressures by pattern.

The VRR in 2014 varied from 0.88 to 1.73 for a maximum. There were times when there was little to no injection during the flood as many of the lines were down. The cumulative VRR at year end dropped slightly to 1.11. An oil formation volume factor of  $1.06 \text{ rm}^3/\text{sm}^3$  and a water formation volume factor of  $1.04 \text{ rm}^3/\text{sm}^3$  were used in the VRR calculations.

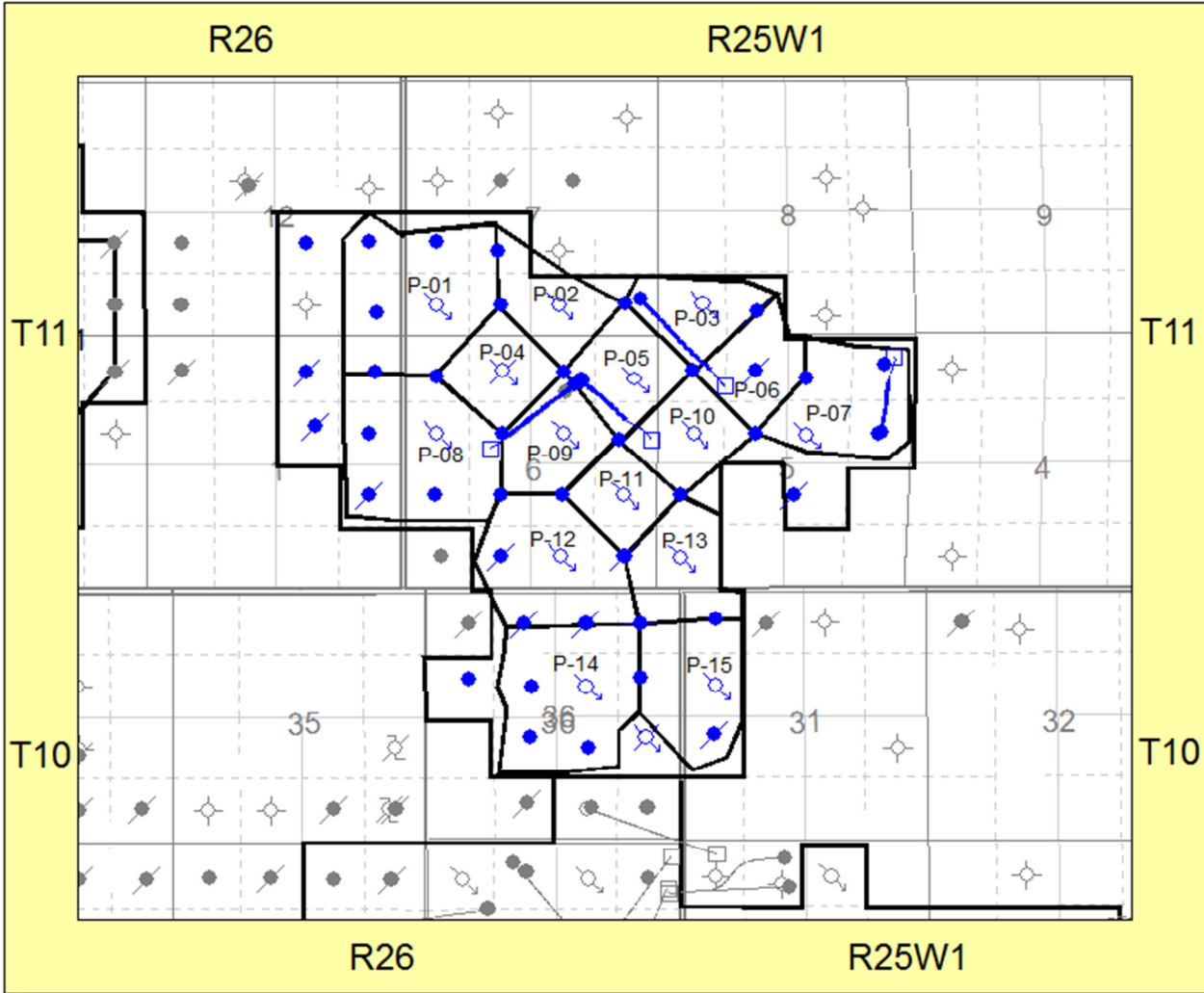


## 2014 Well Servicing

UWI	Licence	Unit	Operation	Date	Objective
100/02-06-011-25W1/00	001763	VRU#2	Equipment Pressure Integrity Test	14-APR-14	
100/02-07-011-25W1/00	001792	VRU#2	Equipment Pressure Integrity Test	16-MAY-14	Annual annulus pressure test
100/03-07-011-25W1/00	001767	VRU#2	Cathodic		
100/04-05-011-25W1/00	001793	VRU#2	Equipment Pressure Integrity Test	16-MAY-14	Annual annulus pressure test
100/04-07-011-25W1/00	001773	VRU#2	Equipment Pressure Integrity Test	14-APR-14	
100/06-36-010-26W1/00	002183	VRU#2	Pump Repair	19-MAR-14	Pump Repair
100/07-06-011-25W1/00	001772	VRU#2	Other Stimulation	12-DEC-14	
100/08-06-011-25W1/00	001795	VRU#2	Equipment Pressure Integrity Test	16-MAY-14	
100/09-01-011-26W1/00	002233	VRU#2	Other Stimulation		
100/09-05-011-25W1/00	002104	VRU#2	Abandon Well		Abandonment
100/09-06-011-25W1/00	001796	VRU#2	Upsize Pump	14-MAR-14	
100/09-06-011-25W1/00	001796	VRU#2	Other Stimulation	28-FEB-14	
100/10-05-011-25W1/00	002087	VRU#2	Equipment Pressure Integrity Test	16-MAY-14	
100/10-06-011-25W1/00	001785	VRU#2	Equipment Pressure Integrity Test	16-MAY-14	
100/10-06-011-25W1/00	001785	VRU#2	Cathodic		
100/12-05-011-25W1/00	001805	VRU#2	Equipment Pressure Integrity Test	16-MAY-14	
100/12-06-011-25W1/00	002200	VRU#2	Equipment Pressure Integrity Test	14-APR-14	
100/13-06-011-25W1/00	002238	VRU#2	Recompletion		
100/15-05-011-25W1/00	002078	VRU#2	Scale Removal	28-JUL-14	
100/16-01-011-26W1/00	002239	VRU#2	Recompletion	19-OCT-14	
100/16-01-011-26W1/00	002239	VRU#2	Acid Treatment	23-JUL-14	
100/16-05-011-25W1/00	002103	VRU#2	Acid Treatment	07-JUN-14	
102/02-12-011-26W1/00	10028	VRU#2	Initial Completion	13-NOV-14	WHITEWATER COMPLETION
102/02-12-011-26W1/00	10028	VRU#2	Equip & Tie-In		
102/02-12-011-26W1/00	10028	VRU#2	Construction		
102/02-12-011-26W1/00	10028	VRU#2	Drilling - original	22-OCT-14	
102/07-06-011-25W1/00	10054	VRU#2	Initial Completion		BIRDBEAR COMPLETION
102/07-06-011-25W1/00	10054	VRU#2	Construction		
102/07-06-011-25W1/00	10054	VRU#2	Drilling - original	14-SEP-14	
102/07-36-010-26W1/00	9820	VRU#2	Initial Completion	15-SEP-14	VIRDEN COMPLETION
102/07-36-010-26W1/00	9820	VRU#2	Construction		
102/07-36-010-26W1/00	9820	VRU#2	Equip Only		
102/07-36-010-26W1/00	9820	VRU#2	Drilling - original	19-AUG-14	

UWI	Licence	Unit	Operation	Date	Objective
102/08-12-011-26W1/00	9819	VRU#2	Construction		
102/08-12-011-26W1/00	9819	VRU#2	Equip Only		
102/08-12-011-26W1/00	9819	VRU#2	Initial Completion	10-OCT-14	VIRDEN COMPLETION
102/08-12-011-26W1/00	9819	VRU#2	Drilling - original	25-SEP-14	
102/09-05-011-25W1/00	005125	VRU#2	Acid Treatment	09-SEP-14	
102/13-05-011-25W1/00	9879	VRU#2	Equip & Tie-In		
102/13-05-011-25W1/00	9879	VRU#2	Initial Completion	19-NOV-14	VIRDEN COMPLETION
102/13-05-011-25W1/00	9879	VRU#2	Drilling - original	29-OCT-14	
102/13-05-011-25W1/00	9879	VRU#2	Construction		
102/14-06-011-25W1/00	9452	VRU#2	Upsize Pump	24-JAN-14	
102/14-06-011-25W1/00	9452	VRU#2	Cathodic		
102/16-05-011-25W1/00	10023	VRU#2	Recompletion	16-DEC-14	
102/16-05-011-25W1/00	10023	VRU#2	Drilling - original	29-AUG-14	
102/16-05-011-25W1/00	10023	VRU#2	Construction		
102/16-05-011-25W1/00	10023	VRU#2	Initial Completion	22-SEP-14	SCALLION COMPLETION
102/16-05-011-25W1/00	10023	VRU#2	Equip Only		
103/09-05-011-25W1/00	10025	VRU#2	Construction		
103/16-05-011-25W1/00	10024	VRU#2	Initial Completion	26-SEP-14	SCALLION COMPLETION
103/16-05-011-25W1/00	10024	VRU#2	Recompletion	18-DEC-14	
103/16-05-011-25W1/00	10024	VRU#2	Drilling - original	04-SEP-14	
103/16-05-011-25W1/00	10024	VRU#2	Construction		
103/16-05-011-25W1/00	10024	VRU#2	Equip Only		
104/09-05-011-25W1/00	10026	VRU#2	Equip & Tie-In		
104/09-05-011-25W1/00	10026	VRU#2	Initial Completion		SCALLION COMPLETION
104/09-05-011-25W1/00	10026	VRU#2	Drilling - original	06-NOV-14	
104/09-05-011-25W1/00	10026	VRU#2	Construction		

Waterflood Pattern Map

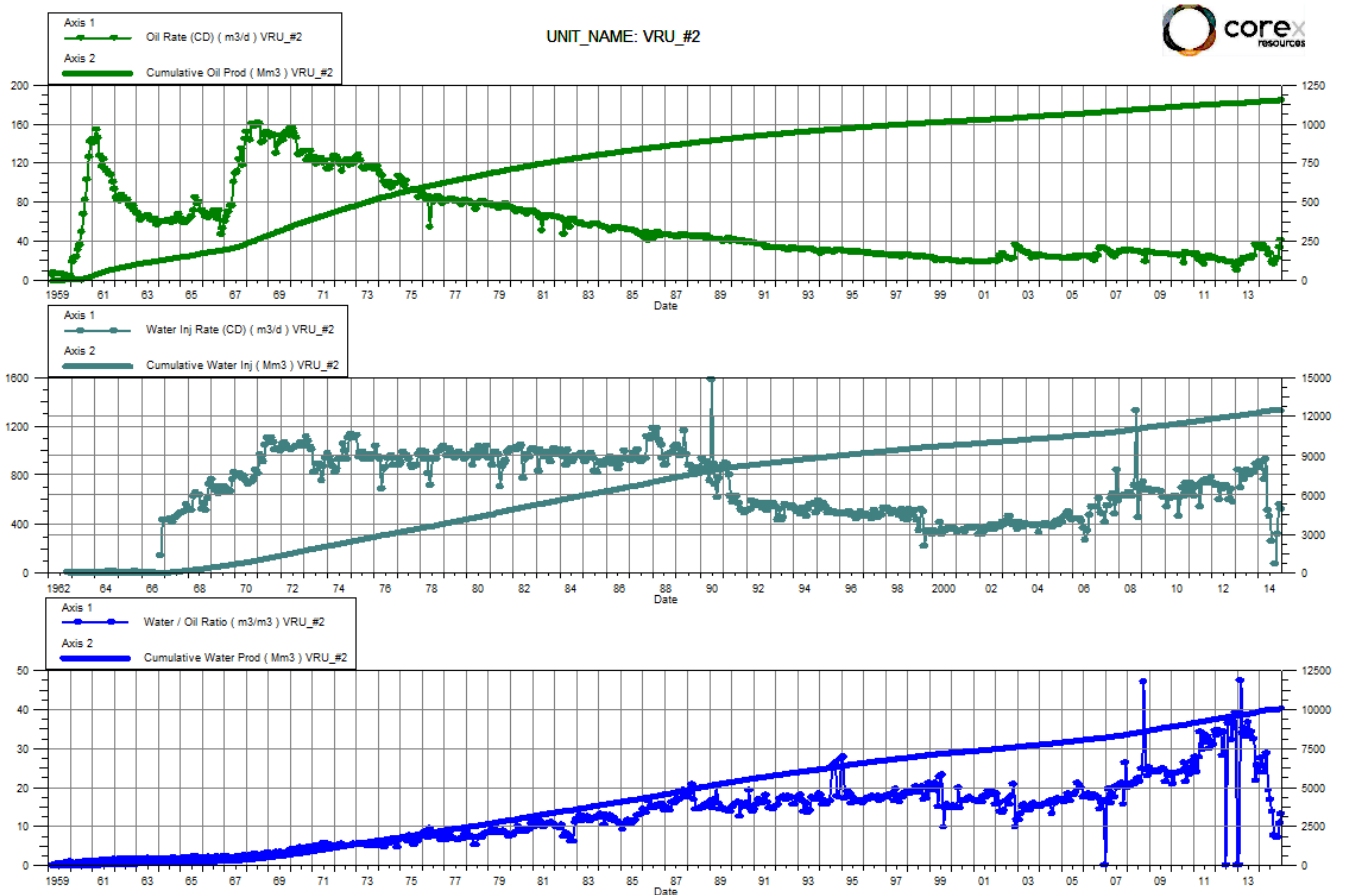


## Waterflood Patterns and Corresponding Injectors

Pattern	Injection Well
P-01	100/04-07-011-25W1/00
P-02	100/02-07-011-25W1/00
P-03	100/04-08-011-25W1/00
P-04	100/14-06-011-25W1/00
P-05	100/16-06-011-25W1/00
P-06	100/14-05-011-25W1/00
P-07	100/10-05-011-25W1/00
P-08	100/12-06-011-25W1/00
P-09	100/10-06-011-25W1/00
P-10	100/12-05-011-25W1/00
P-11	100/08-06-011-25W1/00
P-12	100/02-06-011-25W1/00
P-13	100/04-05-011-25W1/00
P-14	100/10-36-010-26W1/00
P-15	100/12-31-010-25W1/00

## Total for Virden Roselea Unit #2

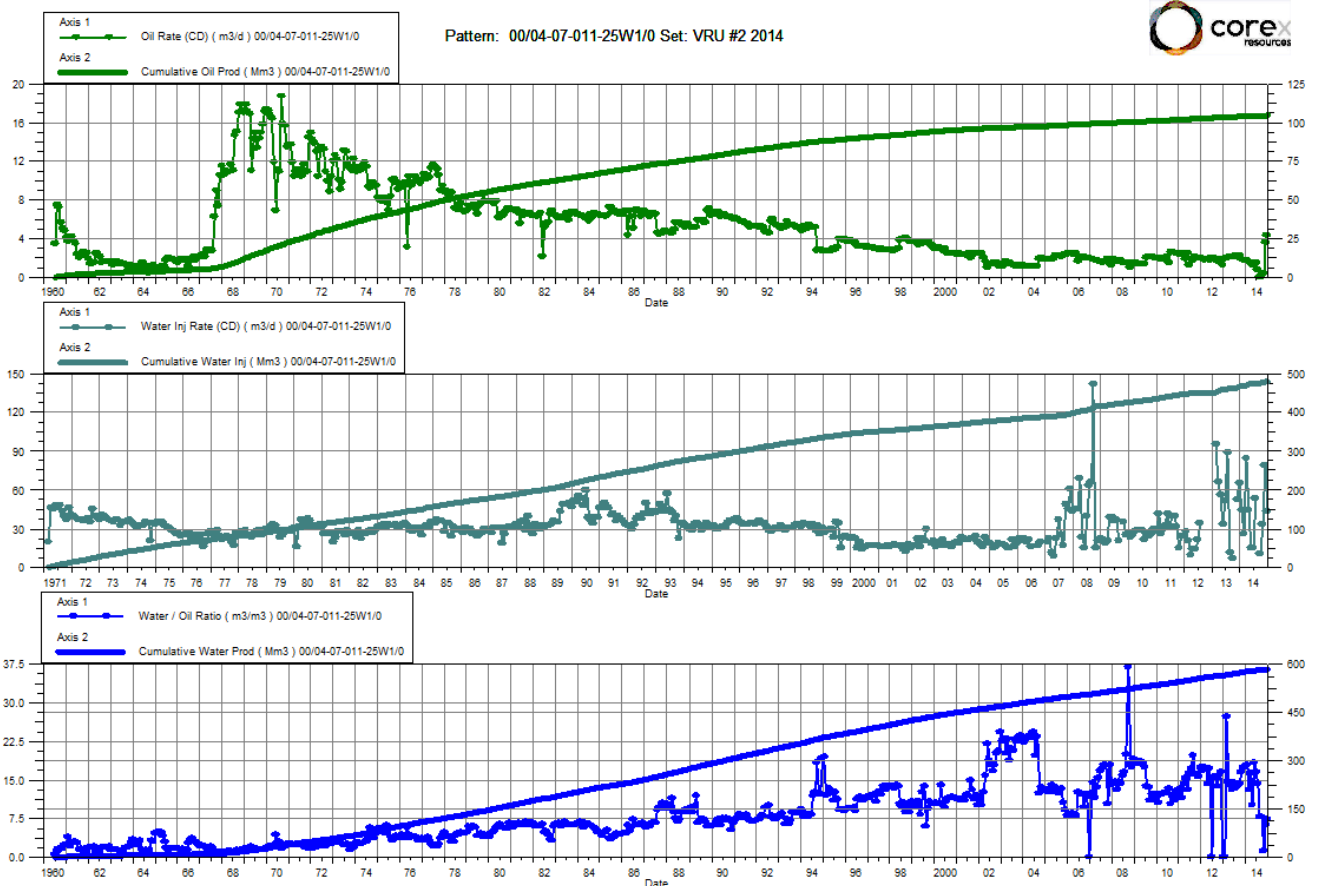
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	33.0	1146.43	907.4	9891.41	911.9	12343.5	27.48	0.97	1.12	6,112
2/28/2014	35.9	1147.43	911.2	9916.92	915.71	12369.2	25.39	0.97	1.12	6,218
3/31/2014	32.1	1148.43	762.3	9940.55	766.88	12393.0	23.74	0.97	1.12	6,271
4/30/2014	32.2	1149.40	927.7	9968.38	933.59	12421.0	28.81	0.97	1.12	6,157
5/31/2014	26.7	1150.22	512.3	9984.26	516.37	12437.0	19.23	0.96	1.12	6,792
6/30/2014	27.5	1151.05	461.1	9998.09	464.75	12450.9	16.76	0.95	1.12	5,200
7/31/2014	18.6	1151.62	253.7	10005.96	254.72	12458.8	13.63	0.93	1.11	5,122
8/31/2014	16.5	1152.13	125.9	10009.86		12458.8	7.65		1.11	2,775
9/30/2014	20.1	1152.74	145.4	10014.22	73.93	12461.0	7.22	0.45	1.11	2,775
10/31/2014	22.6	1153.44	158.5	10019.14	314.57	12470.8	7.02	1.73	1.11	2,791
11/30/2014	33.9	1154.46	360.9	10029.96	563.29	12487.7	10.63	1.42	1.11	3,275
12/31/2014	41.4	1155.74	547.2	10046.93	519.59	12503.8	13.22	0.88	1.11	3,304



# Viriden Roselea Unit No. 2

## Pattern P-01 - 00/04-07-011-25W1/0

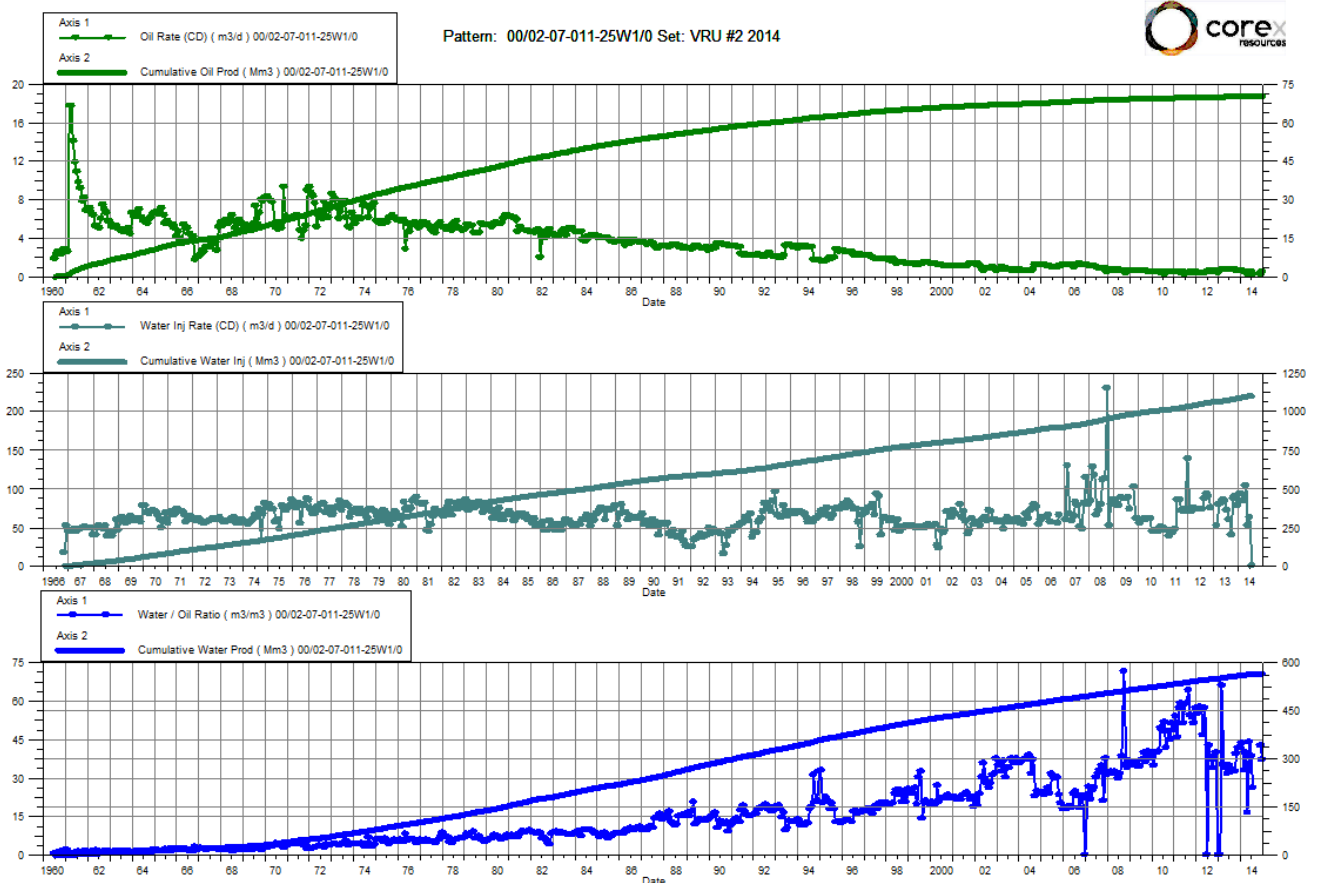
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	1.8	104.24	31.56	577.45	44.1	468.6	17.96	1.32	0.69	5,806
2/28/2014	1.7	104.29	22.48	578.08	25.91	469.35	13.16	1.07	0.69	6,007
3/31/2014	1.6	104.34	25.42	578.87	84.18	471.96	16.33	3.12	0.69	6,194
4/30/2014	1.3	104.38	13.64	579.27	44.30	473.29	10.17	2.95	0.69	6,007
5/31/2014	1.3	104.42	23.43	580.00	15.05	473.76	18.37	0.61	0.69	6,200
6/30/2014	1.5	104.46	25.05	580.75	14.67	474.20	16.43	0.55	0.69	6,200
7/31/2014	0.8	104.49	11.39	581.11	53.25	475.85	14.21	4.36	0.69	6,116
8/31/2014	0.1	104.49	0.48	581.12		475.85	7.82		0.69	3,600
9/30/2014	0.0	104.49	0.30	581.13	10.10	476.15	7.87	29.64	0.69	3,600
10/31/2014	0.4	104.50	0.51	581.15	33.45	477.2	1.22	35.70	0.69	3,648
11/30/2014	3.6	104.61	22.36	581.82	79.49	479.57	6.25	3.06	0.70	5,100
12/31/2014	4.3	104.74	31.64	582.80	43.31	480.9	7.33	1.20	0.70	5,100



# Virden Roselea Unit No. 2

## Pattern P-02 - 00/02-07-011-25W1/0

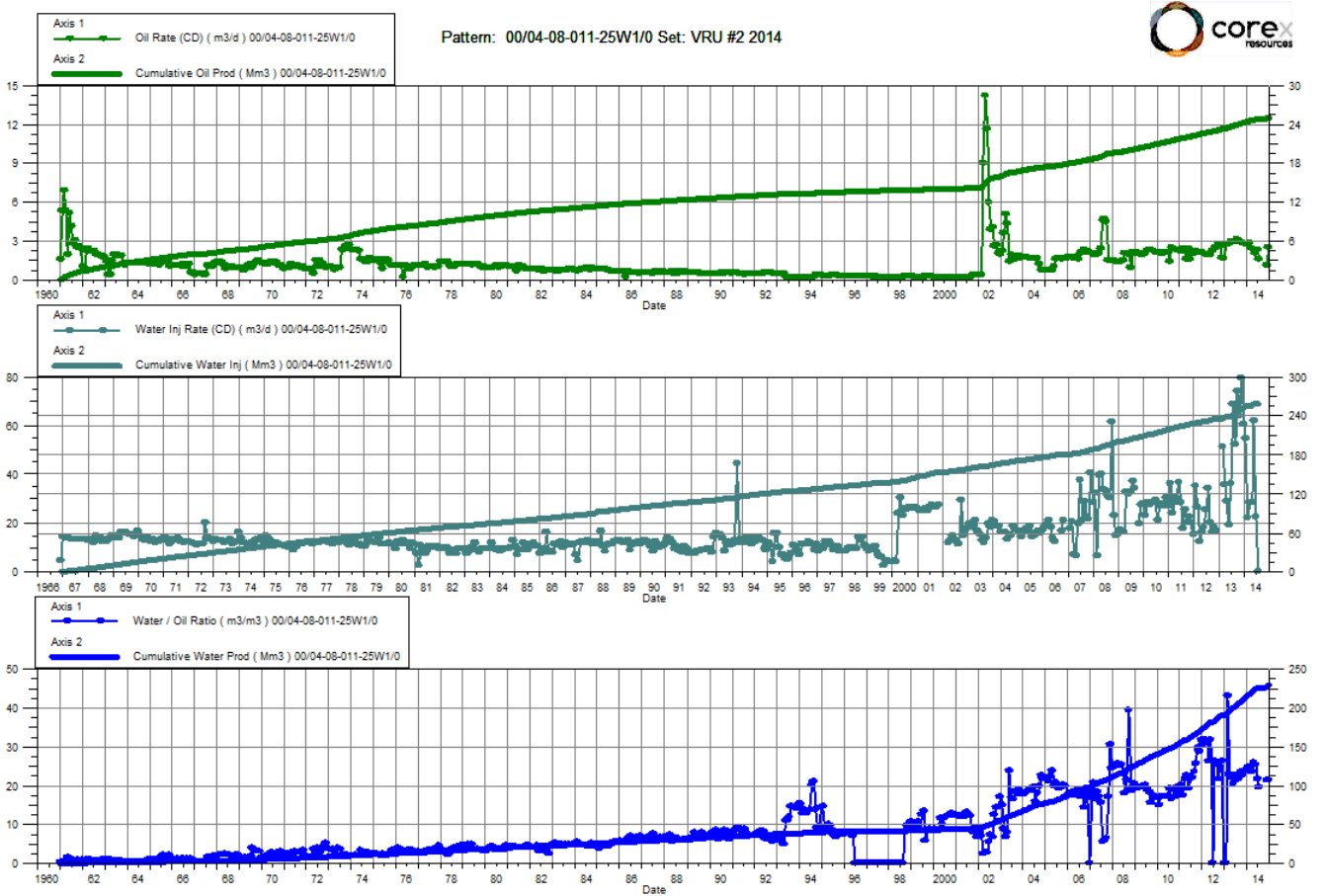
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	0.67	70.37	29.01	561.43	93.84	1088.33	43.34	3.16	1.72	5,800
2/28/2014	0.51	70.39	17.03	561.91	93.50	1090.95	33.08	5.33	1.72	5,807
3/31/2014	0.55	70.41	21.87	562.58	84.69	1093.58	39.76	3.78	1.72	6,000
4/30/2014	0.28	70.41	4.55	562.72	104.43	1096.71	16.42	21.62	1.73	6,000
5/31/2014	0.49	70.43	21.38	563.38	52.93	1098.35	44.00	2.42	1.73	5,961
6/30/2014	0.60	70.45	23.18	564.08	62.64	1100.23	38.68	2.63	1.73	4,800
7/31/2014	0.28	70.46	7.31	564.31	1.00	1100.26	26.25	0.13	1.73	4,735
8/31/2014		70.46		564.31		1100.26			1.73	2,800
9/30/2014		70.46		564.31		1100.26			1.73	2,800
10/31/2014		70.46		564.31		1100.26			1.73	2,800
11/30/2014	0.28	70.46	12.20	564.67		1100.26	42.81		1.73	2,800
12/31/2014	0.52	70.48	19.17	565.27		1100.26	36.94		1.73	2,800



# Virden Roselea Unit No. 2

## Pattern P-03 - 00/04-08-011-25W1/0

Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	2.75	24.52	68.47	216.73	54.87	254.57	24.90	0.77	1.05	6,200
2/28/2014	2.92	24.60	70.10	218.69	22.24	255.19	24.04	0.30	1.05	6,204
3/31/2014	2.47	24.68	58.53	220.51	28.74	256.08	23.66	0.47	1.04	6,200
4/30/2014	2.36	24.75	61.55	222.35	28.49	256.94	26.08	0.45	1.04	6,200
5/31/2014	2.10	24.81	52.99	224.00	62.03	258.86	25.21	1.13	1.04	--
6/30/2014	2.35	24.88	51.20	225.53	22.68	259.54	21.77	0.42	1.03	5,200
7/31/2014	1.64	24.93	32.16	226.53	0.07	259.54	19.59	0.00	1.03	5,123
8/31/2014		24.93		226.53		259.54			1.03	2,800
9/30/2014		24.93		226.53		259.54			1.03	2,800
10/31/2014		24.93		226.53		259.54			1.03	2,800
11/30/2014	1.16	24.97	24.88	227.28		259.54	21.45		1.03	2,800
12/31/2014	2.50	25.05	53.55	228.94		259.54	21.40		1.02	2,800

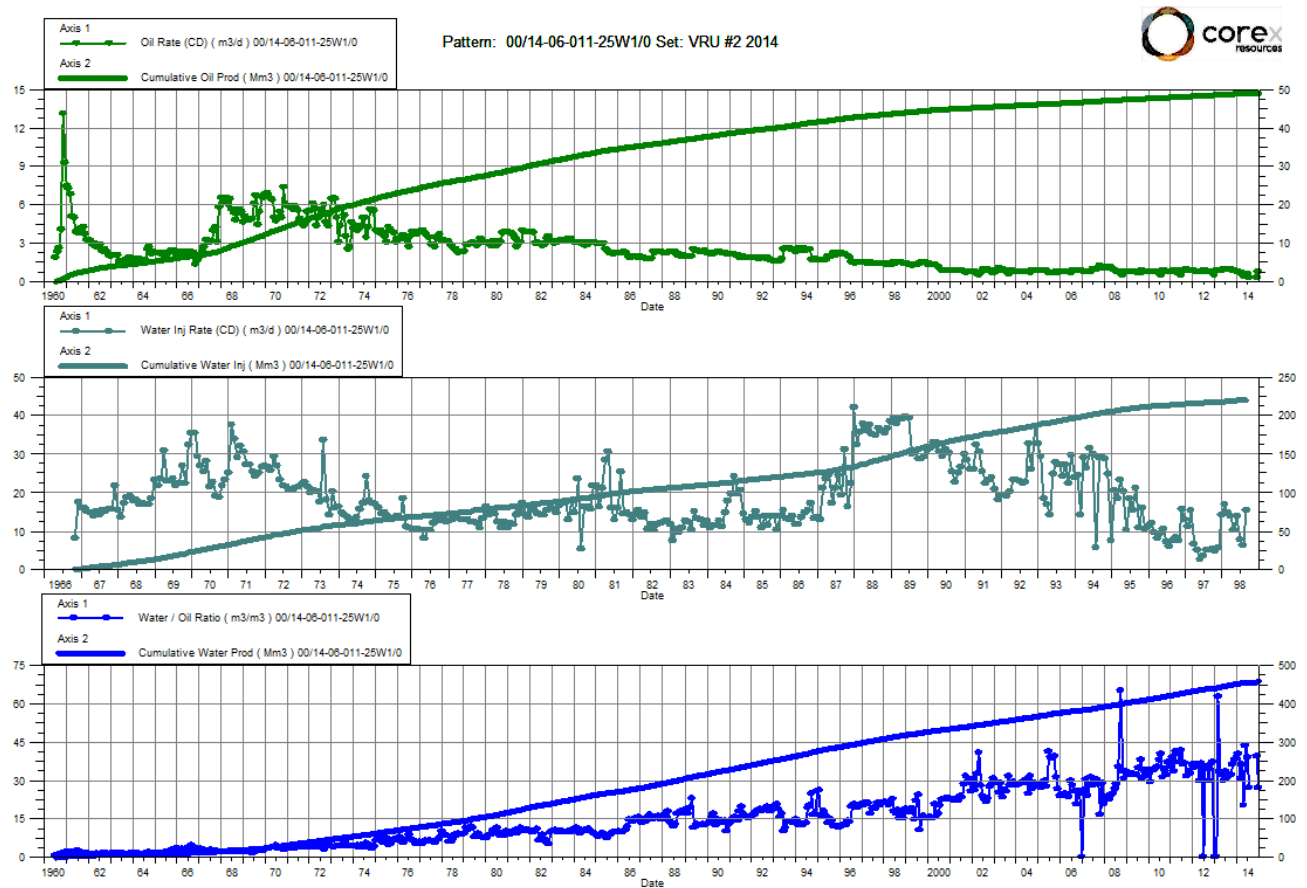




# Virden Roselea Unit No. 2

## Pattern P-04 - 00/14-06-011-25W1/0

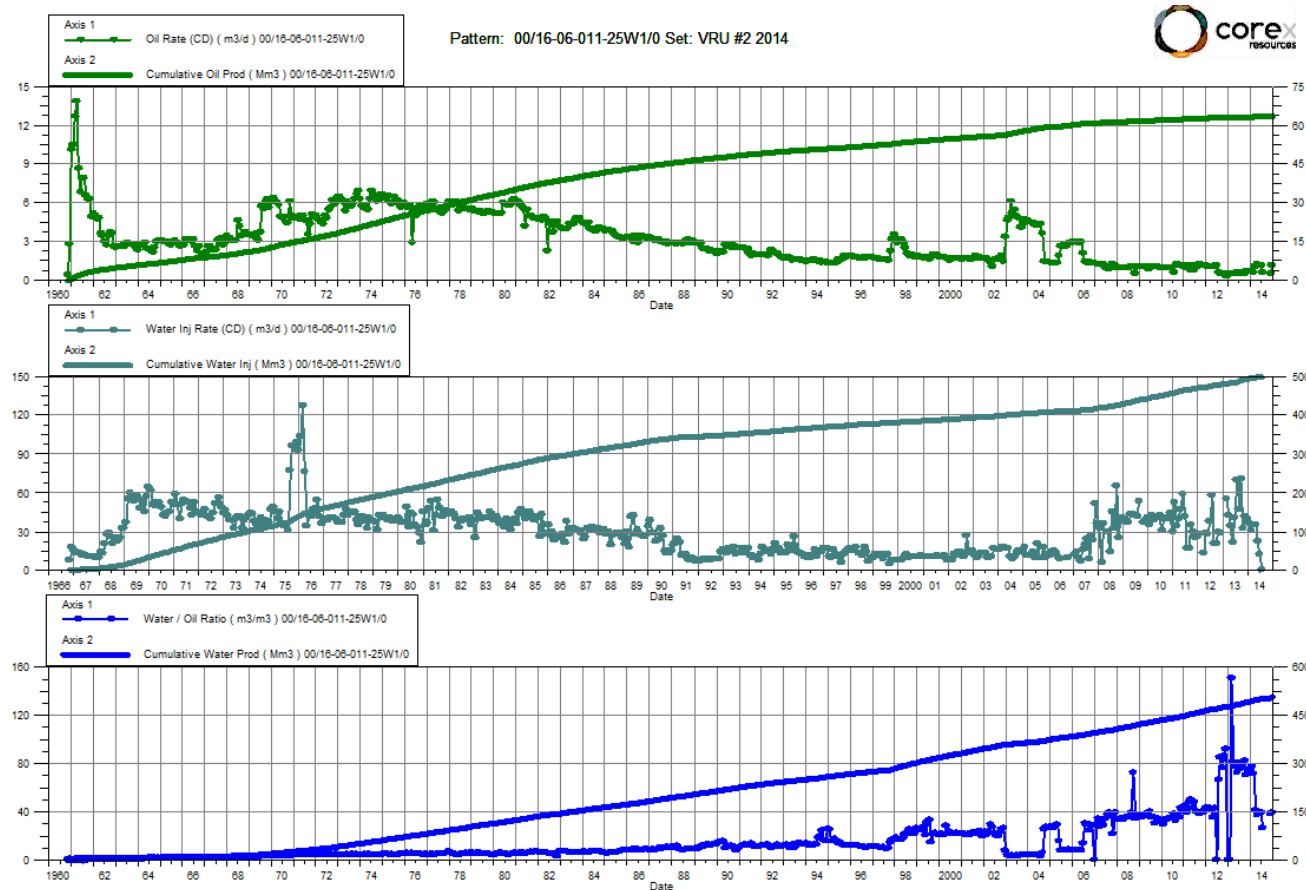
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	0.79	48.96	32.00	452.91		220.82	40.29		0.44	--
2/28/2014	0.67	48.98	20.48	453.48		220.82	30.52		0.44	--
3/31/2014	0.69	49.00	24.86	454.25		220.82	36.27		0.44	--
4/30/2014	0.41	49.01	8.34	454.50		220.82	20.11		0.44	--
5/31/2014	0.53	49.03	23.06	455.22		220.82	43.50		0.44	--
6/30/2014	0.62	49.05	24.42	455.95		220.82	39.14		0.44	--
7/31/2014	0.31	49.06	8.47	456.21		220.82	27.16		0.44	--
8/31/2014		49.06		456.21		220.82			0.44	2,800
9/30/2014		49.06		456.21		220.82			0.44	2,800
10/31/2014		49.06		456.21		220.82			0.44	2,800
11/30/2014	0.34	49.07	13.50	456.62		220.82	39.35		0.44	2,800
12/31/2014	0.84	49.09	22.58	457.32		220.82	26.94		0.44	2,800



# Viriden Roselea Unit No. 2

## Pattern P-05 - 00/16-06-011-25W1/0

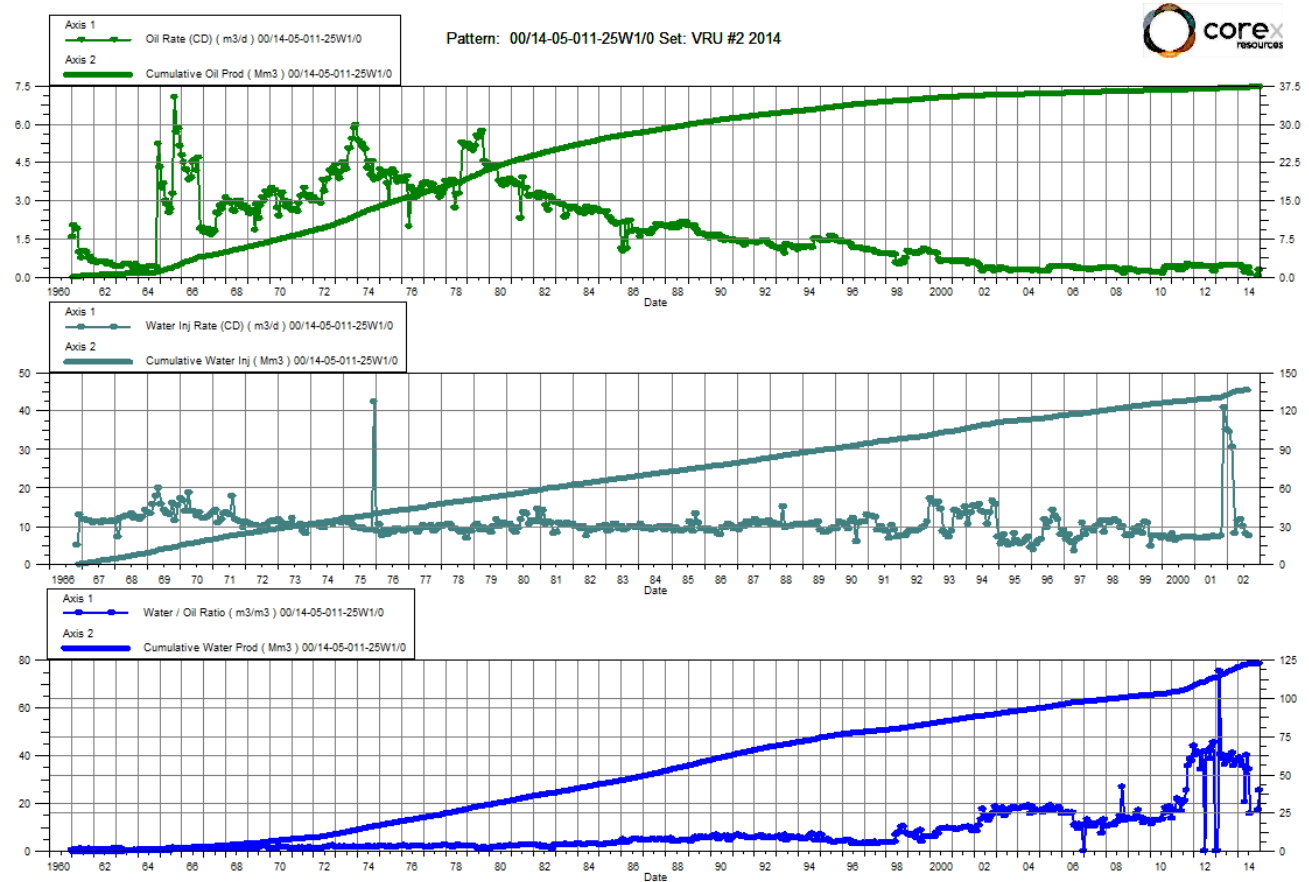
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	0.67	63.28	51.71	494.57	35.74	495.30	77.63	0.68	0.89	6,200
2/28/2014	0.65	63.30	46.66	495.87	30.36	496.15	71.79	0.64	0.89	6,200
3/31/2014	1.11	63.33	45.53	497.29	34.88	497.23	41.15	0.75	0.89	6,200
4/30/2014	1.28	63.37	47.71	498.72	35.48	498.30	37.32	0.72	0.89	6,200
5/31/2014	1.21	63.41	46.81	500.17	22.55	499.00	38.78	0.47	0.88	6,161
6/30/2014	1.21	63.44	47.09	501.58	12.55	499.37	39.05	0.26	0.88	5,000
7/31/2014	0.57	63.46	15.28	502.05	0.08	499.37	26.62	0.01	0.88	4,858
8/31/2014		63.46		502.05		499.37			0.88	2,800
9/30/2014		63.46		502.05		499.37			0.88	2,800
10/31/2014		63.46		502.05		499.37			0.88	2,800
11/30/2014	0.49	63.47	18.54	502.61		499.37	38.03		0.88	2,800
12/31/2014	1.17	63.51	46.42	504.05		499.37	39.53		0.88	2,800



# Virden Roselea Unit No. 2

## Pattern P-06 - 00/14-05-011-25W1/0

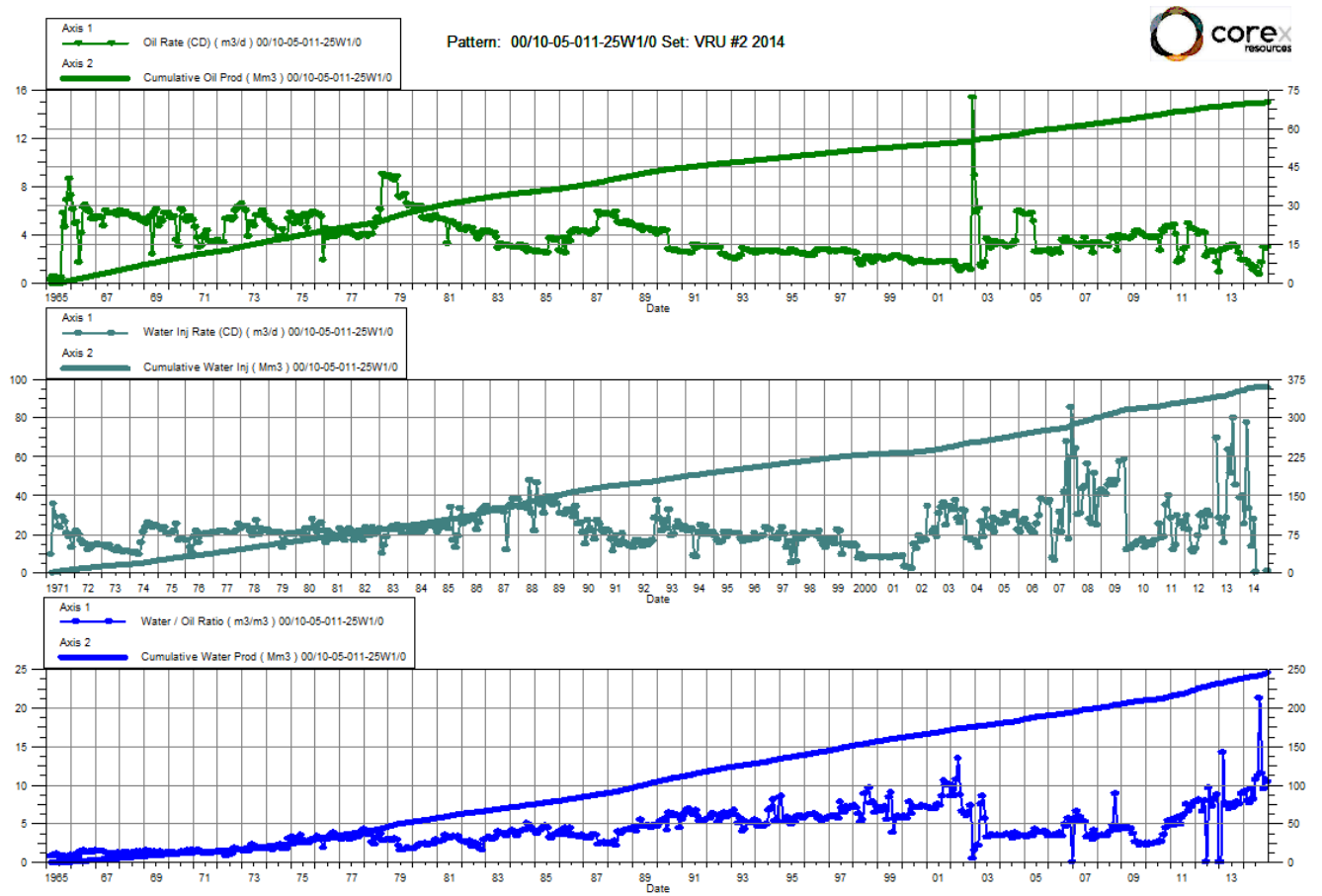
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	0.47	37.31	18.66	120.96		137.03	39.30		0.86	--
2/28/2014	0.49	37.32	18.59	121.48		137.03	37.76		0.86	--
3/31/2014	0.39	37.33	13.84	121.91		137.03	35.51		0.86	--
4/30/2014	0.24	37.34	4.87	122.05		137.03	20.66		0.86	--
5/31/2014	0.27	37.35	10.77	122.39		137.03	39.92		0.85	--
6/30/2014	0.41	37.36	13.95	122.81		137.03	34.27		0.85	--
7/31/2014	0.17	37.36	2.57	122.89		137.03	15.46		0.85	--
8/31/2014		37.36		122.89		137.03			0.85	--
9/30/2014		37.36		122.89		137.03			0.85	--
10/31/2014		37.36		122.89		137.03			0.85	--
11/30/2014	0.10	37.37	1.69	122.94		137.03	17.00		0.85	--
12/31/2014	0.31	37.38	7.91	123.18		137.03	25.58		0.85	--



# Virden Roselea Unit No. 2

## Pattern P-07 - 00/10-05-011-25W1/0

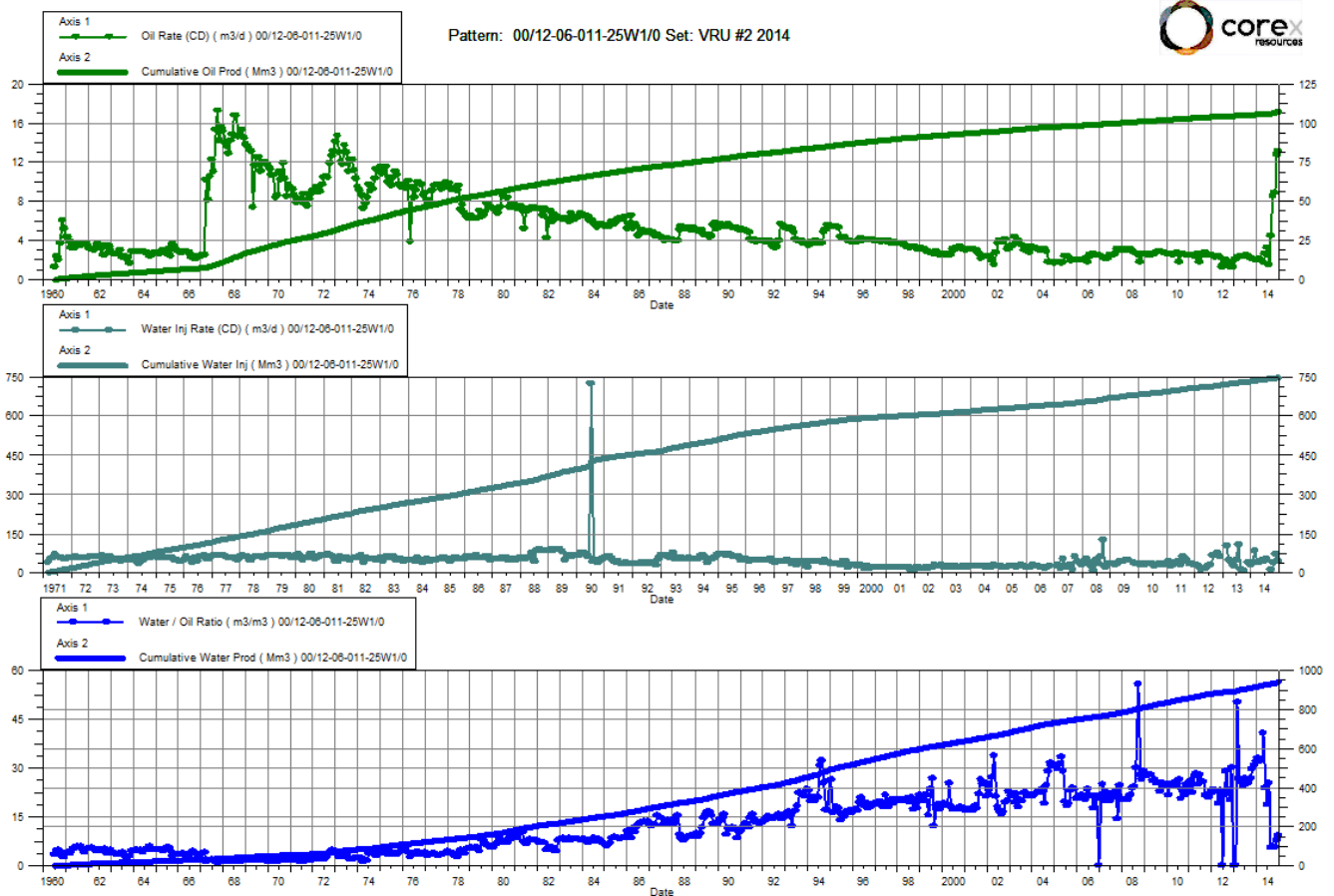
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	1.89	69.71	17.40	239.38	39.71	353.82	9.23	2.06	1.14	6,103
2/28/2014	1.83	69.76	14.39	239.79	25.27	354.53	7.88	1.56	1.14	6,207
3/31/2014	1.55	69.81	11.87	240.15	78.04	356.95	7.66	5.80	1.15	6,394
4/30/2014	1.57	69.85	15.00	240.60	33.33	357.95	9.54	2.01	1.15	6,220
5/31/2014	1.18	69.89	9.66	240.90	13.94	358.38	8.16	1.28	1.15	6,748
6/30/2014	1.33	69.93	14.15	241.33	27.63	359.21	10.63	1.78	1.15	5,200
7/31/2014	0.86	69.96	9.54	241.62	0.07	359.21	11.10	0.01	1.15	5,123
8/31/2014	0.76	69.98	16.28	242.13		359.21	21.30		1.15	2,800
9/30/2014	1.77	70.03	20.23	242.73		359.21	11.43		1.14	2,800
10/31/2014	2.96	70.12	27.98	243.60		359.21	9.46		1.14	2,800
11/30/2014	2.93	70.21	31.19	244.54		359.21	10.63		1.14	2,800
12/31/2014	3.03	70.31	31.44	245.51	1.05	359.24	10.39	0.03	1.13	2,806



# Virden Roselea Unit No. 2

## Pattern P-08 - 00/12-06-011-25W1/0

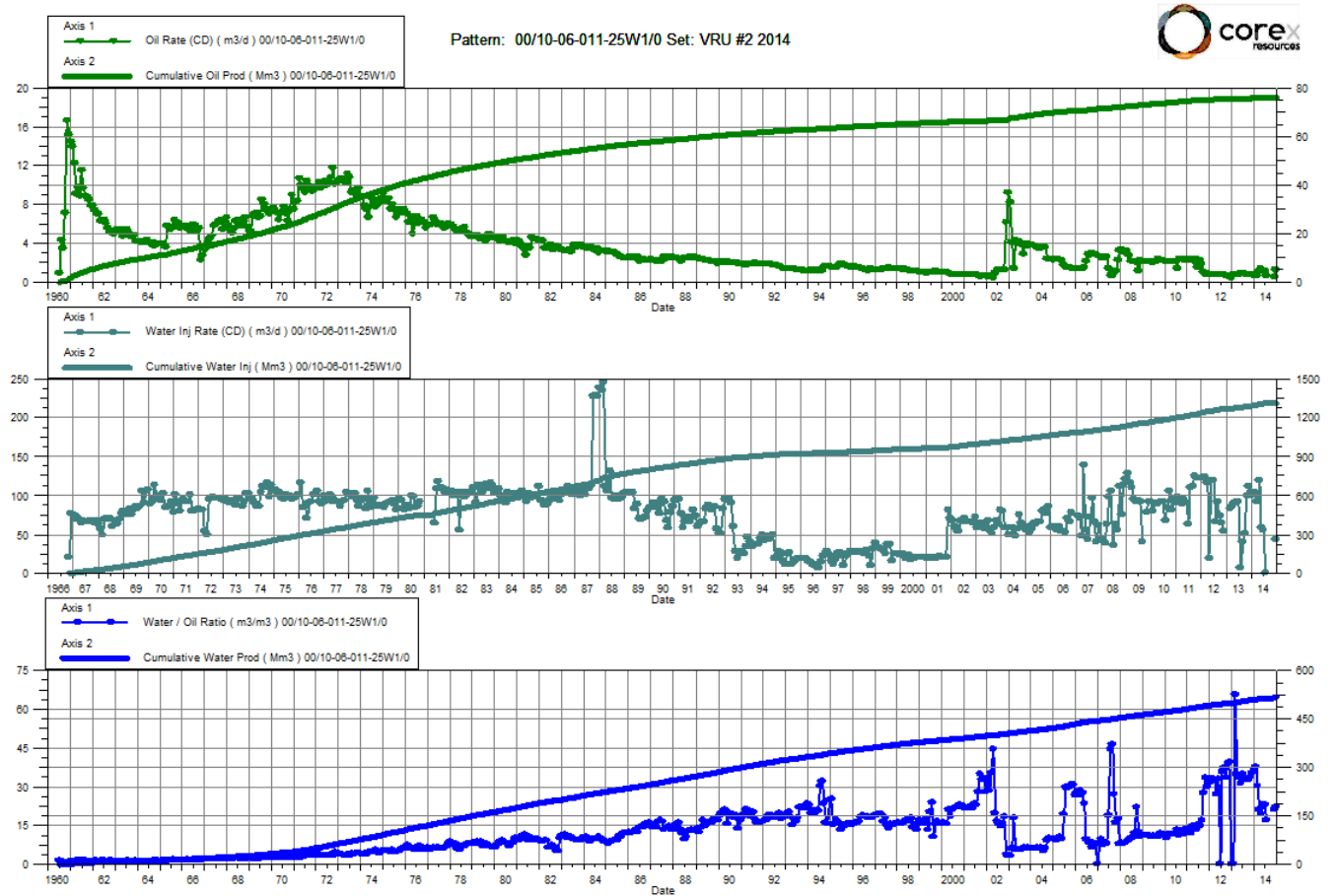
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	2.03	105.56	67.31	918.57	39.42	733.56	33.09	0.57	0.72	6,194
2/28/2014	2.16	105.62	68.61	920.49	83.46	735.89	31.77	1.18	0.72	6,000
3/31/2014	1.88	105.68	60.55	922.37	37.15	737.05	32.20	0.60	0.72	5,994
4/30/2014	1.85	105.73	75.60	924.63	37.41	738.17	40.81	0.48	0.72	5,807
5/31/2014	2.69	105.82	64.20	926.62	48.98	739.69	23.87	0.73	0.72	5,968
6/30/2014	3.30	105.92	62.20	928.49	43.10	740.98	18.84	0.66	0.72	5,000
7/31/2014	1.59	105.96	40.14	929.73	53.32	742.63	25.20	1.28	0.72	4,955
8/31/2014	4.49	106.10	25.06	930.51		742.63	5.58		0.72	3,600
9/30/2014	8.46	106.36	49.69	932.00	11.06	742.96	5.87	0.19	0.71	3,600
10/31/2014	8.92	106.63	50.80	933.58	39.78	744.20	5.70	0.66	0.71	3,652
11/30/2014	12.73	107.02	99.21	936.55	69.24	746.27	7.79	0.62	0.71	5,200
12/31/2014	13.18	107.42	121.21	940.31	41.69	747.57	9.19	0.31	0.71	5,200



# Virden Roselea Unit No. 2

## Pattern P-09 - 00/10-06-011-25W1/0

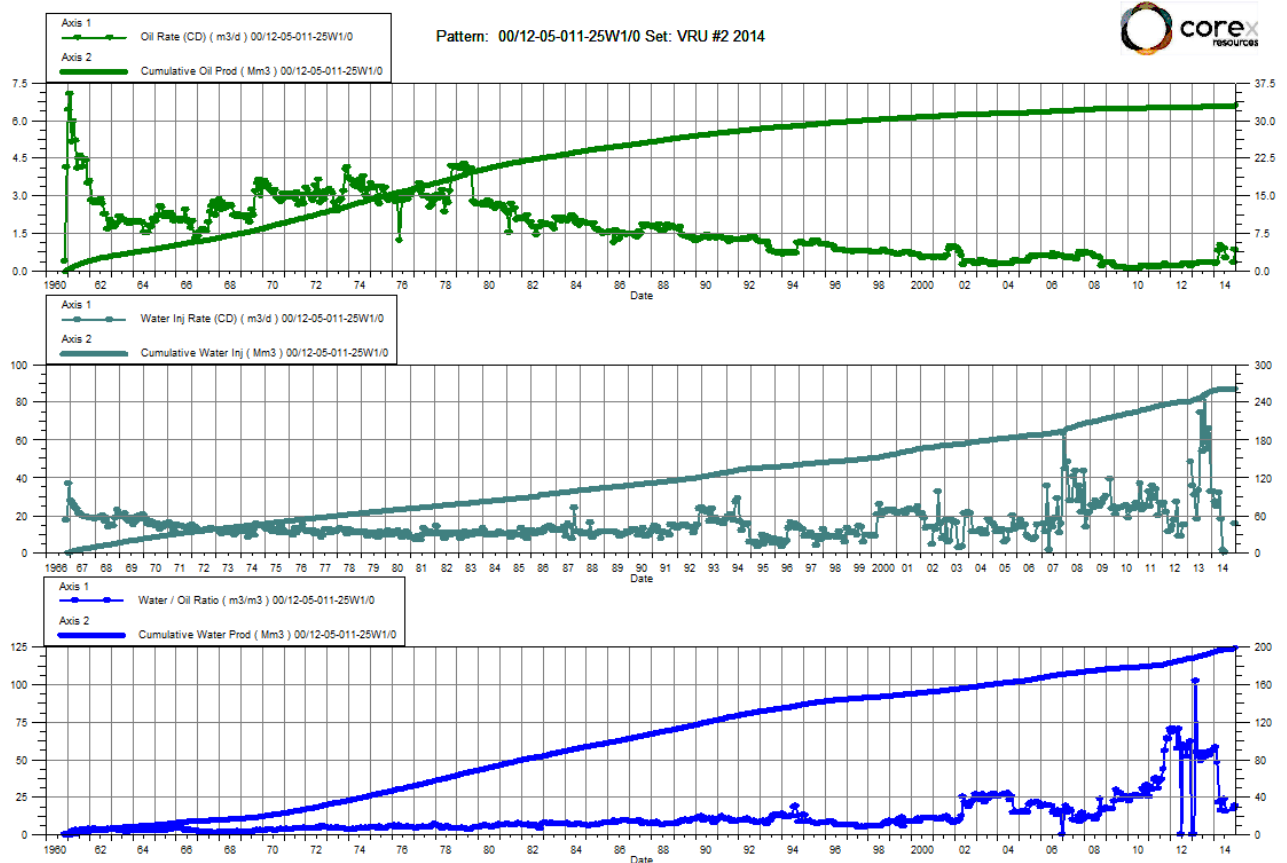
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	0.72	75.86	27.37	510.66	100.68	1295.80	37.77	3.58	2.20	6,206
2/28/2014	0.76	75.88	22.98	511.30	105.14	1298.74	30.43	4.43	2.21	6,396
3/31/2014	1.19	75.92	25.20	512.08	92.15	1301.60	21.26	3.49	2.21	6,297
4/30/2014	1.38	75.96	26.69	512.88	119.33	1305.18	19.40	4.25	2.21	6,200
5/31/2014	1.23	76.00	28.49	513.76	58.43	1306.99	23.12	1.96	2.21	6,168
6/30/2014	1.14	76.03	25.94	514.54	55.91	1308.67	22.85	2.06	2.21	5,200
7/31/2014	0.71	76.05	12.26	514.92	1.00	1308.70	17.16	0.08	2.21	5,097
8/31/2014		76.05		514.92		1308.70			2.21	2,000
9/30/2014		76.05		514.92		1308.70			2.21	2,000
10/31/2014		76.05		514.92		1308.70			2.21	2,000
11/30/2014	0.57	76.07	12.11	515.29		1308.70	21.28		2.21	2,000
12/31/2014	1.26	76.11	27.66	516.14	42.91	1310.03	21.90	1.48	2.21	2,090



# Virden Roselea Unit No. 2

## Pattern P-10 - 00/12-05-011-25W1/0

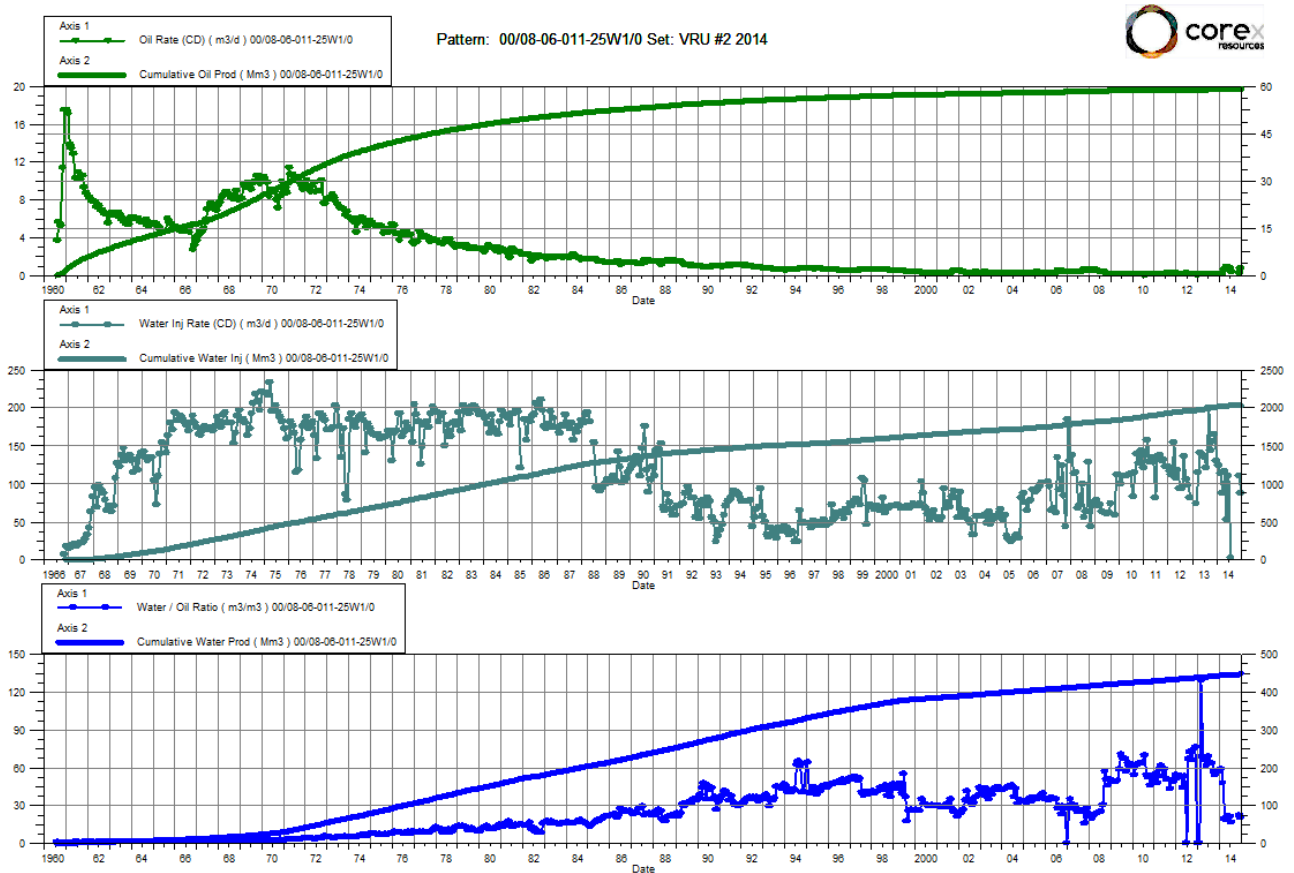
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1/31/2014	0.33	32.86	18.93	195.11	32.68	258.59	57.70		1.13	5,226
2/28/2014	0.33	32.87	16.01	195.56	27.26	259.36	48.53	1.67	1.13	6,021
3/31/2014	0.81	32.90	17.36	196.10	24.55	260.12	21.40	1.35	1.13	6,581
4/30/2014	1.02	32.93	16.58	196.59	32.12	261.08	16.30	1.82	1.13	6,013
5/31/2014	0.93	32.96	20.02	197.21	17.68	261.63	21.49	0.84	1.13	6,361
6/30/2014	0.90	32.98	21.07	197.85	1.25	261.67	23.50	0.06	1.13	5,200
7/31/2014	0.53	33.00	8.20	198.10	0.07	261.67	15.46	0.01	1.13	5,071
8/31/2014		33.00		198.10		261.67			1.13	1,200
9/30/2014		33.00		198.10		261.67			1.13	1,200
10/31/2014		33.00		198.10		261.67			1.13	1,200
11/30/2014	0.36	33.01	6.07	198.28		261.67	16.99		1.13	1,200
12/31/2014	0.85	33.04	16.60	198.80	15.48	262.15	19.46	0.89	1.13	1,329



# Viriden Roselea Unit No. 2

## Pattern P-11 - 00/08-06-011-25W1/0

Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	0.24	59.11	14.28	444.49	123.84	2017.37	58.93	8.53	4.00	6,800
2/28/2014	0.25	59.11	11.91	444.82	113.25	2020.54	47.54	9.31	4.00	6,793
3/31/2014	0.74	59.14	14.57	445.27	86.99	2023.24	19.59	5.68	4.00	6,594
4/30/2014	0.96	59.16	17.60	445.80	116.43	2026.73	18.31	6.27	4.01	6,413
5/31/2014	0.91	59.19	19.03	446.39	51.82	2028.34	20.83	2.60	4.00	6,742
6/30/2014	0.82	59.22	17.59	446.92	111.07	2031.67	21.38	6.03	4.01	5,000
7/31/2014	0.46	59.23	7.67	447.16	1.52	2031.72	16.51	0.19	4.00	4,871
8/31/2014		59.23		447.16		2031.72			4.00	1,000
9/30/2014		59.23		447.16		2031.72			4.00	1,000
10/31/2014		59.23		447.16		2031.72			4.00	1,000
11/30/2014	0.38	59.24	8.45	447.41	111.13	2035.05	22.41	12.59	4.01	1,000
12/31/2014	0.78	59.27	15.58	447.89	88.02	2037.78	19.99	5.38	4.01	1,129

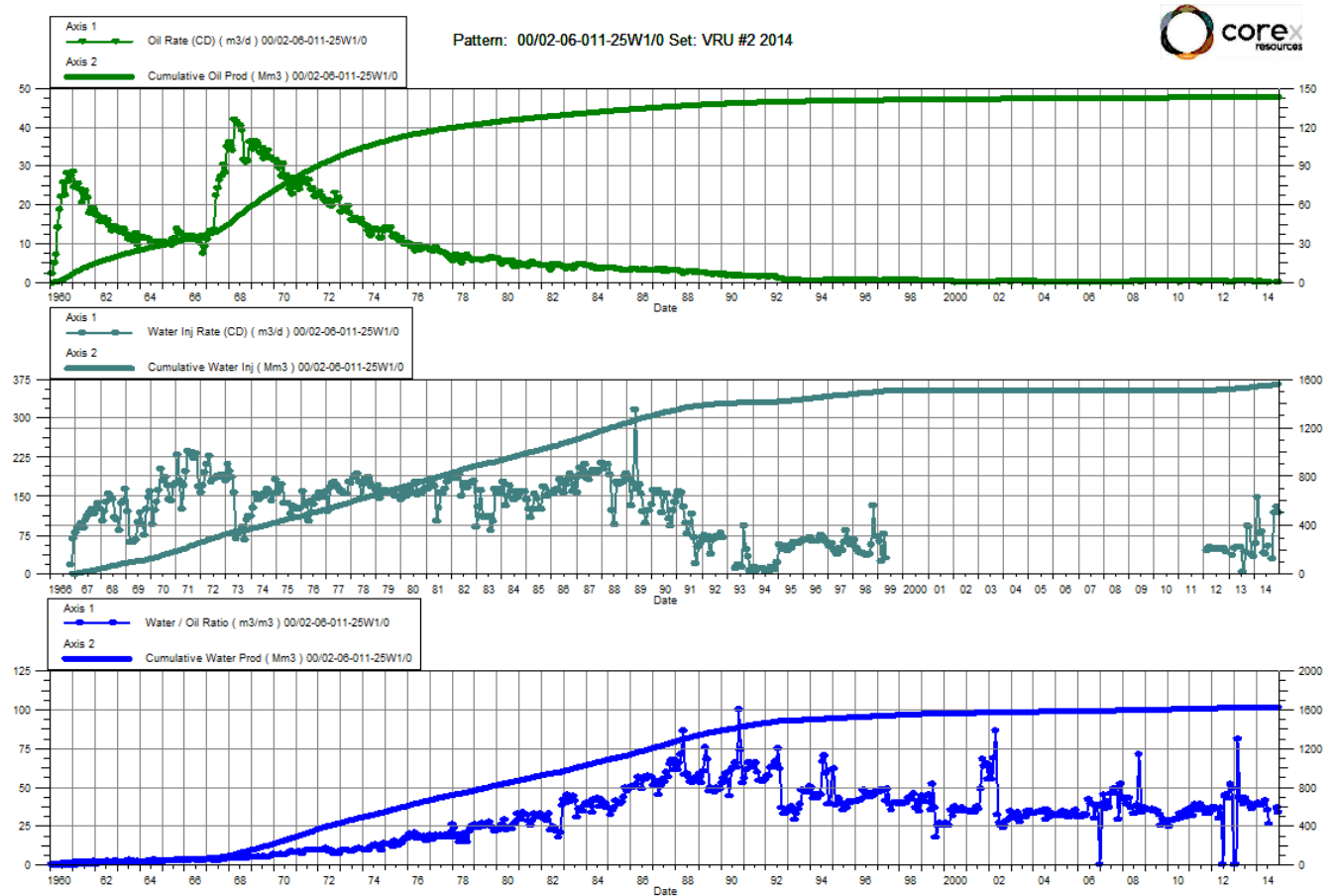




# Virden Roselea Unit No. 2

## Pattern P-12 - 00/02-06-011-25W1/0

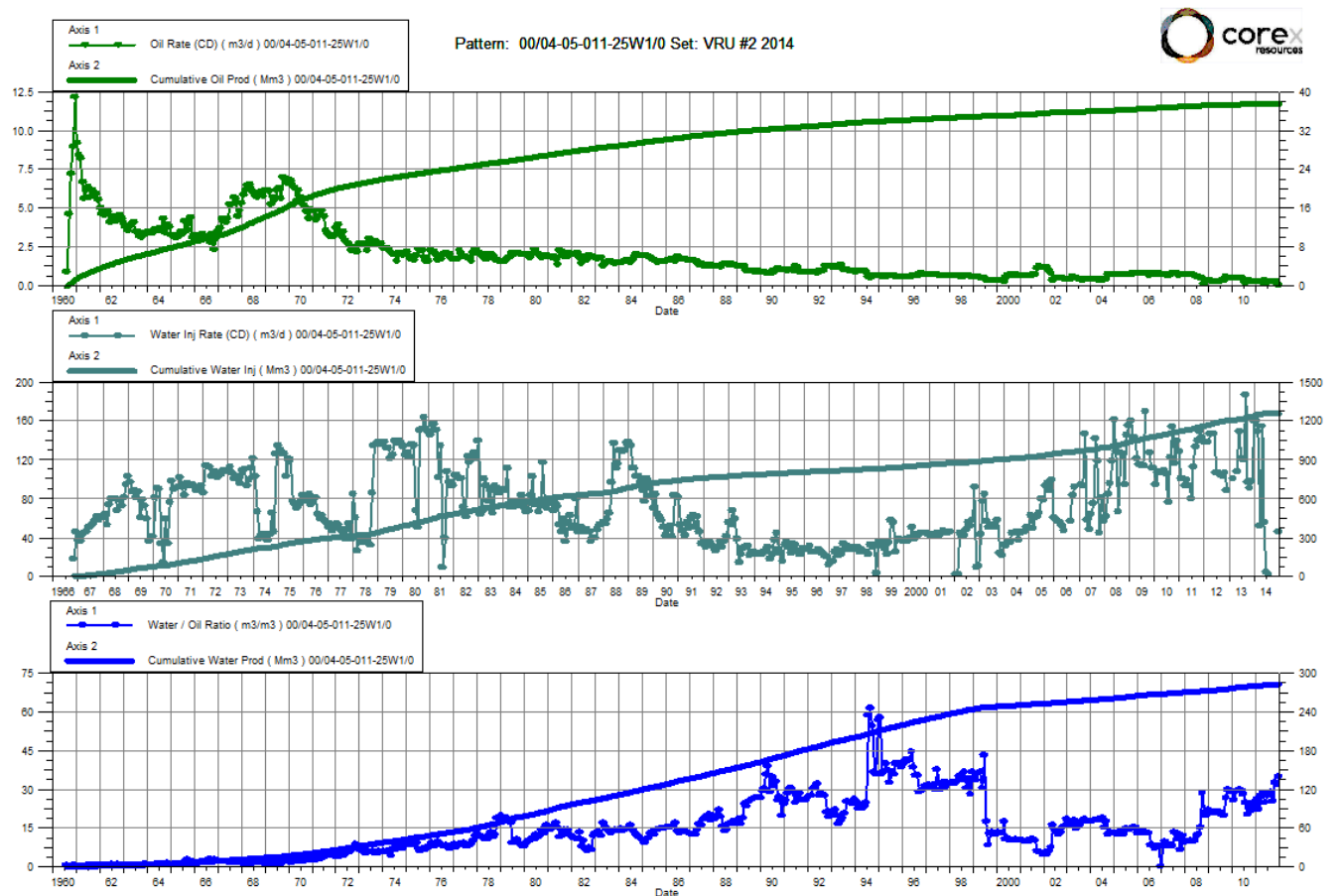
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	0.35	143.69	13.87	1628.15	57.19	1538.91	39.60	4.02	0.87	6,200
2/28/2014	0.37	143.70	14.34	1628.55	146.95	1543.02	38.63	9.98	0.87	6,193
3/31/2014	0.28	143.71	10.75	1628.88	78.31	1545.45	38.41	7.10	0.87	6,006
4/30/2014	0.14	143.71	5.74	1629.06	80.84	1547.88	39.80	13.74	0.87	6,203
5/31/2014	0.25	143.72	10.30	1629.38	40.27	1549.13	41.52	3.82	0.87	6,123
6/30/2014	0.28	143.73	9.93	1629.67	38.45	1550.28	35.28	3.76	0.87	5,200
7/31/2014	0.10	143.73	2.62	1629.75	53.02	1551.92	26.18	19.48	0.87	5,161
8/31/2014		143.73		1629.75		1551.92			0.87	4,000
9/30/2014		143.73		1629.75	28.07	1552.76			0.87	4,000
10/31/2014		143.73		1629.75	118.20	1556.43			0.88	4,039
11/30/2014	0.12	143.73	4.55	1629.89	128.32	1560.28	36.94	27.44	0.88	5,200
12/31/2014	0.20	143.74	6.76	1630.10	118.13	1563.94	33.95	16.97	0.88	5,200



# Virden Roselea Unit No. 2

## Pattern P-13 - 00/04-05-011-25W1/0

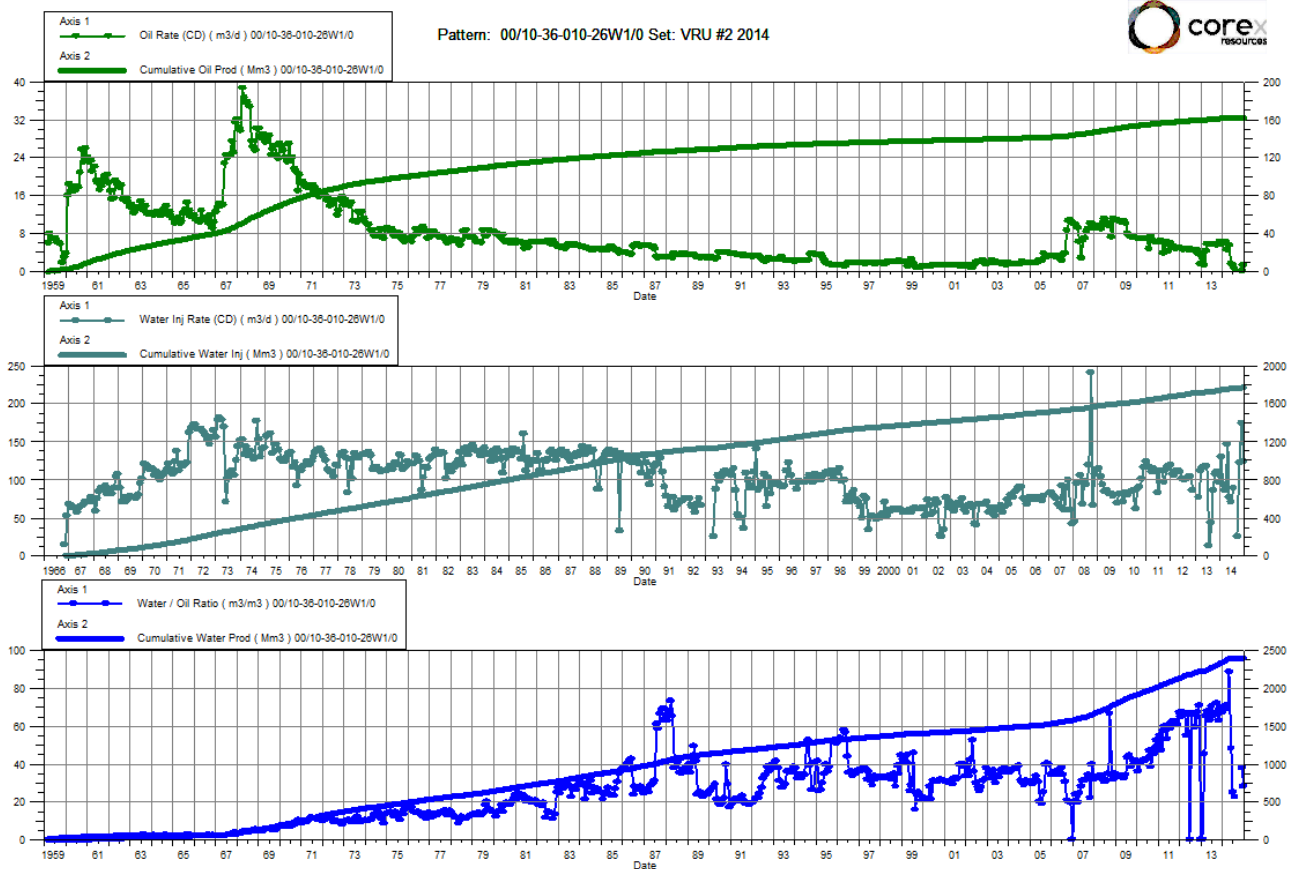
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014		37.59		282.88	159.99	1244.7			3.88	6,594
2/28/2014		37.59		282.88	149.34	1248.9			3.89	6,407
3/31/2014		37.59		282.88	51.22	1250.5			3.89	6,594
4/30/2014		37.59		282.88	154.95	1255.1			3.91	6,413
5/31/2014		37.59		282.88	55.97	1256.9			3.91	6,755
6/30/2014		37.59		282.88	3.97	1257.0			3.91	5,400
7/31/2014		37.59		282.88	1.77	1257.1			3.91	5,394
8/31/2014		37.59		282.88		1257.1			3.91	5,200
9/30/2014		37.59		282.88		1257.1			3.91	5,200
10/31/2014		37.59		282.88		1257.1			3.91	5,200
11/30/2014		37.59		282.88		1257.1			3.91	5,200
12/31/2014		37.59		282.88	45.52	1258.5			3.92	5,200



# Virden Roselea Unit No. 2

## Pattern P-14 - 00/10-36-010-26W1/0

Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	6.03	161.82	423.88	2355.91	129.84	1745.44	70.27	0.30	0.69	6,013
2/28/2014	6.39	162.00	451.51	2368.55	93.04	1748.04	70.63	0.20	0.69	6,386
3/31/2014	4.68	162.14	322.03	2378.54	86.00	1750.71	68.78	0.26	0.69	6,200
4/30/2014	5.59	162.31	495.43	2393.40	146.48	1755.10	88.68	0.29	0.69	6,207
5/31/2014	1.69	162.36	82.21	2395.95	76.73	1757.48	48.59	0.91	0.69	6,174
6/30/2014	1.31	162.40	33.19	2396.94	70.84	1759.61	25.31	2.05	0.69	5,000
7/31/2014	0.71	162.42	15.81	2397.43	89.55	1762.38	22.37	5.42	0.69	4,958
8/31/2014		162.42		2397.43		1762.38			0.69	3,700
9/30/2014		162.42		2397.43	24.70	1763.12			0.69	3,700
10/31/2014		162.42		2397.43	123.14	1766.94			0.69	3,755
11/30/2014	0.21	162.43	8.11	2397.68	175.11	1772.20	37.99	21.04	0.69	5,400
12/31/2014	1.32	162.47	37.16	2398.83	123.48	1776.02	28.06	3.21	0.69	5,394



# Viriden Roselea Unit No. 2

## Pattern P-15 - 00/12-31-010-25W1/0

Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1/31/2014	0.54	52.52	20.65	464.49		483.90	38.10		0.93	--
2/28/2014	0.58	52.53	21.36	465.09		483.90	36.91		0.93	--
3/31/2014	0.50	52.55	18.53	465.66		483.90	37.18		0.93	--
4/30/2014	0.51	52.56	23.48	466.37		483.90	46.35		0.93	--
5/31/2014	0.43	52.58	17.17	466.90		483.90	40.16		0.93	--
6/30/2014	0.47	52.59	15.44	467.36		483.90	33.21		0.93	--
7/31/2014		52.59		467.36		483.90			0.93	--
8/31/2014		52.59		467.36		483.90			0.93	--
9/30/2014		52.59		467.36		483.90			0.93	--
10/31/2014		52.59		467.36		483.90			0.93	--
11/30/2014	0.21	52.60	8.11	467.61		483.90	37.99		0.93	--
12/31/2014	0.52	52.61	18.92	468.19		483.90	36.09		0.93	--

