

Virden Roselea Unit #1
2018 Annual EOR Report

Executive Summary

In 2018 oil production in the Virden Roselea Unit #1 (VRU #1) was 62.4 m³/d (392 bbl/d) totaling 22.8 e³m³ (143.1 mmbbl). Annual production increased by 13% from 2017 to 2018. By the end of 2018 cumulative oil production from the VRU #1 was 3,059 e³m³ (19.2 mmbbl). The original forecasted recovery was 845 e³m³ (5.3 mmbbl) on primary recovery and 2,300 e³m³ (14.4 mmbbl) total primary plus secondary recovery.

In December 2018 there were 57 producing oil wells and 6 water injectors active in the unit. In 2014, three horizontal Scallion wells were drilled in the unit and three horizontal Virden wells were also drilled. In 2015, only one well was drilled in the Virden formation. In 2016, two wells were drilled in the Virden formation and some existing Scallion horizontals were perforated in the Oolites. In 2017, three dual leg horizontal wells were drilled within the unit. In 2018, one Oolite dual leg well and one Scallion/Oolite dual leg well were drilled.

Discussion

The VRU #1 has been under waterflood since 1965, 11 years after initial production in 1954. Water injection increased the oil production rate from $\sim 125 \text{ m}^3/\text{d}$ (786 bbl/d) just prior to injection to $\sim 250 \text{ m}^3/\text{d}$ ($\sim 1,570 \text{ bbl/d}$), equivalent to peak production from the field. Expected ultimate oil recovery was increased by 2.5 – 3 times due to the waterflood. Due to this there are areas in the unit that have a higher recovery than what is seen in the other Roselea units, and overall, the unit has a higher recovery.

Horizontal drilling has offset the production decline over the last decade. In 2014, an additional three Scallion horizontals and three Virden horizontals were drilled in this unit with variable results. In 2015, one Virden horizontal was drilled and in 2016 another two Virden wells were drilled. In 2017, three dual leg horizontal wells were drilled. In 2018, one Oolite dual leg well and one Scallion/Oolite dual leg well were drilled.

In this unit it appears as if there may be a preferential orientation for fluid flow, as in large portions of the unit the wells offsetting injectors in the E-W direction were generally more successful than the adjacent producers to the North and South. The majority of the horizontals are aligned in an E-W orientation and the unit outline may support implementing an E-W line drive; technical work has yet to be conducted. The water injection rate was $1,512 \text{ m}^3/\text{d}$ (9,513 bbl/d) in 2018 and the producing WOR was $24 \text{ m}^3/\text{m}^3$. The injected water at VRU #1 is not filtered or treated in any way.

Significant events in 2018 are as follows:

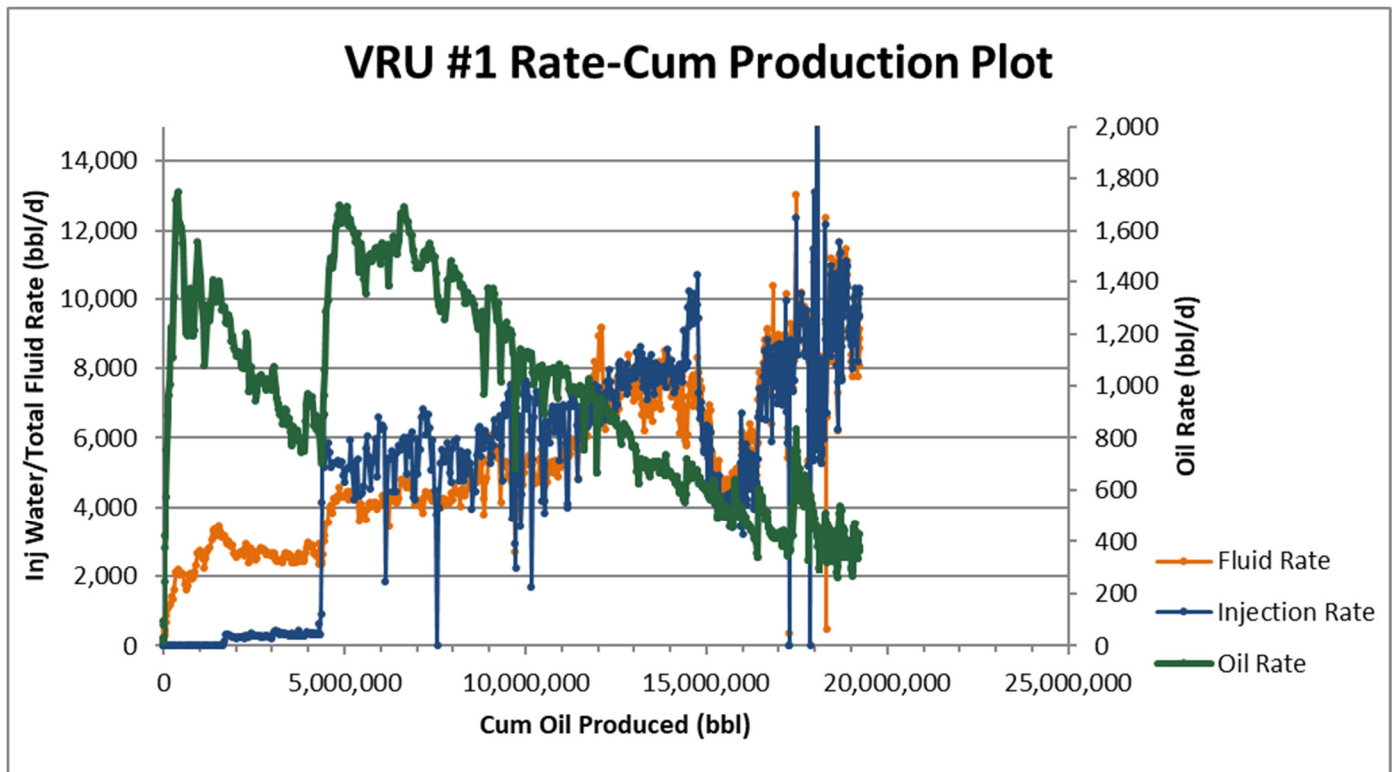
- March 2018, abandon the 100/01-29-010-25W1/00 vertical well.
- March 2018, abandon the 100/02-29-010-25W1/00 vertical well.
- August 2018, drill the 103/12-23-010-26W1/00 horizontal well in the Oolites.
- November 2018, drill the 102/14-20-010-25W1/00 horizontal well in the Scallion/Oolites.

It is important to note that publicly available production data does not include contribution from the newly drilled wells. Volumes quoted, and unit graphs presented are based on public production data augmented with proprietary data, and consequently should accurately reflect all wells. The pattern data within the tables below is based solely on publicly available production data and therefore missing some production volumes. These tables will be updated in subsequent progress reports.

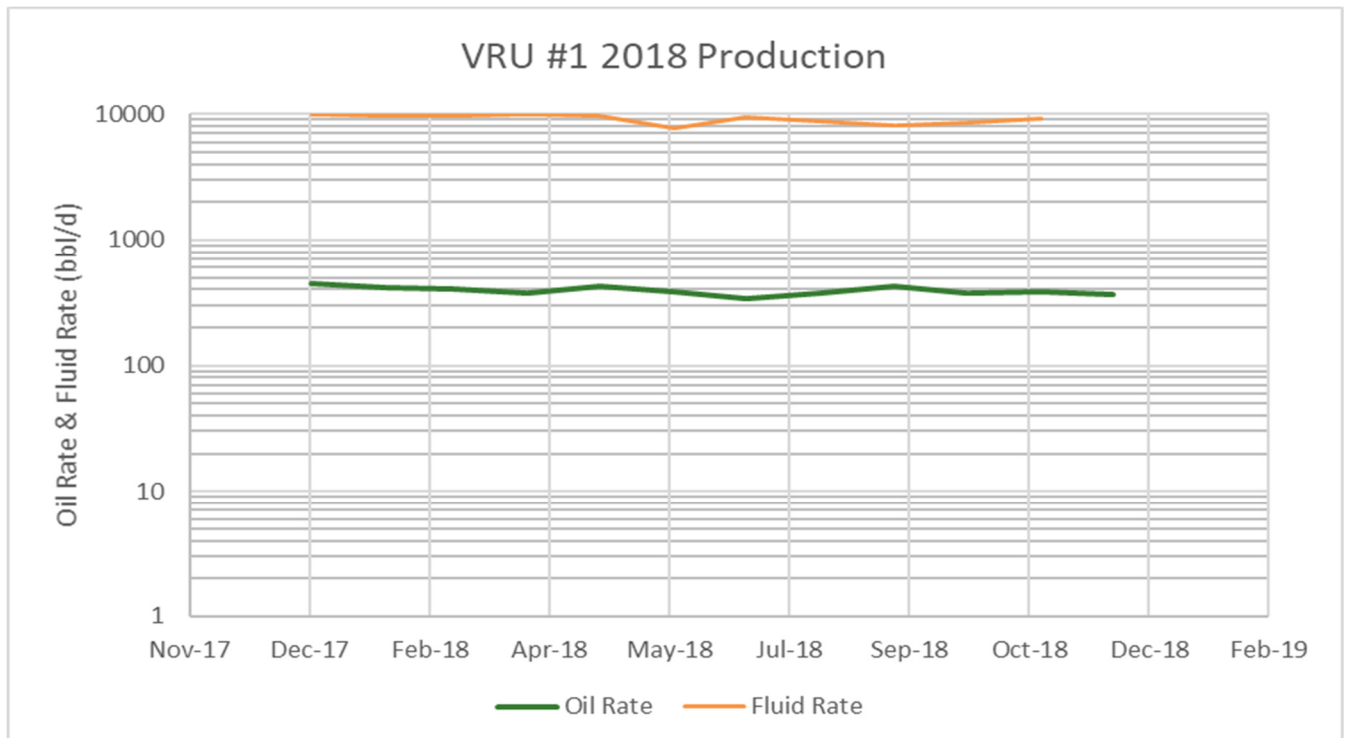
In the composite rate – cumulative oil plot below, waterflood response is clearly demonstrated at a cumulative oil production of 650 e³m³ (4 MMbbl).

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

VRU #1 – Rate vs Cumulative Oil Production



VRU #1 – Rate vs Time



2018 Reservoir Pressure Surveys

Unit	UWI	License	Test Type	Date of Pressure	Duration of SI (days)	Datum BHP (kPaa)
VRU #1	102/14-20-010-25W1/00	10964	BH BU	2018-11-13	4	7,572
VRU #1	103/12-23-010-26W1/00	10952	BH BU	2018-08-14	8	4,090

In 2018, two pressures were taken on new drilled open hole wells. In one, a higher pressure than expected was observed, due to historical injection in the area and the second pressure recorded makes sense given the historical production and drainage in the area. In 2017, twenty-two pressures were taken in the unit, giving an average reservoir pressure of 7,000 kPa. This is similar to previous years, where, in 2014, there were nine reservoir pressures recorded averaging 7,200 kPaa. As with most of the Virden units there is a large range in pressure. The initial reservoir pressure is estimated at 6,340 kPaa and the bubble point pressure as 1,273 kPaa. Many of the pressures recorded in 2017 seem to be reasonable and were taken on wells that had been shut in for a long period of time, and so are assumed to be stable. Only three pressures were recorded on newly drilled wells.

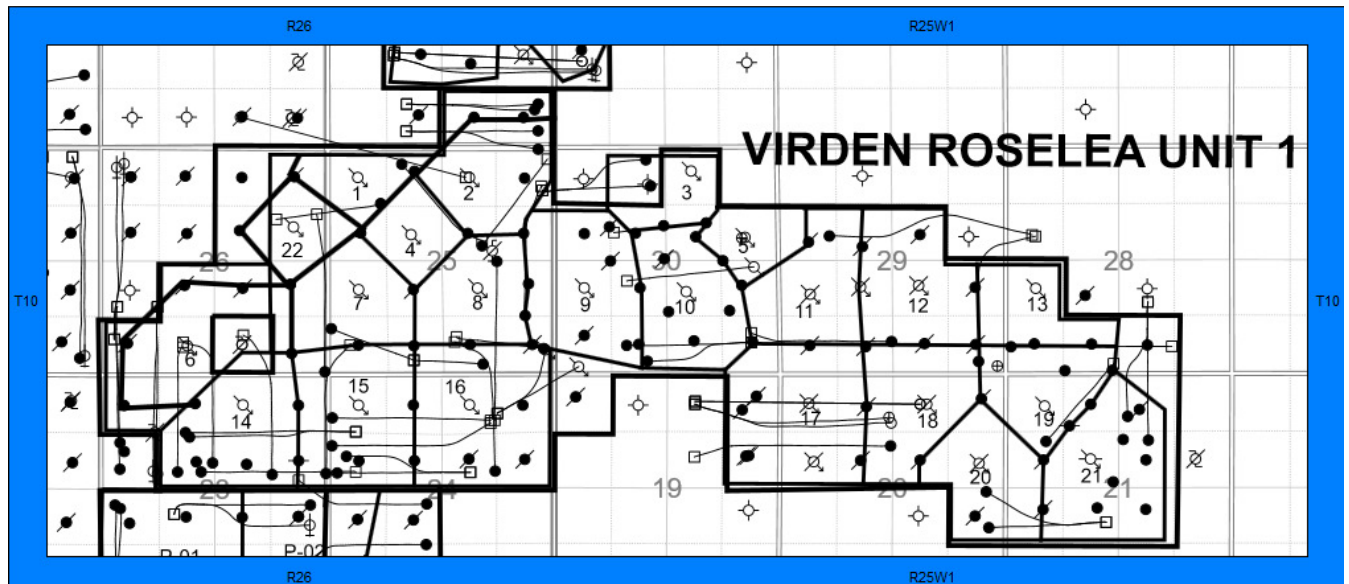
The voidage replacement ratio (VRR) in 2018 was maintained close to 1.00, increasing towards the end of the year. The cumulative VRR at the end of 2018 was 0.97. An oil formation volume factor of 1.06 rm^3/sm^3 and a water formation volume factor of 1.04 rm^3/sm^3 were used in the VRR calculations.

The higher than initial reservoir pressure is inconsistent with the cumulative VRR of 0.97. The pressure inconsistency may be due to the partial pressure support for the field from an aquifer on the west side of the unit. This water influx from the aquifer is not accounted for in the VRR calculation.

2018 Well Servicing

UWI	Unit	Licence	Operation	Date	Objective
INLET PIPING MODIFICATION - 12-30-10-25	VRU#1	RM18VIR004	Battery Upgrade	2018-02-15	
PIPELINE REPLACEMENT	VRU#1	P18VIR003	Pipeline / Flowline Replacement	2018-03-01	
100/01-29-010-25W1/00	VRU#1	001425	Abandon Well	2018-03-01	
100/02-29-010-25W1/00	VRU#1	001418	Abandon Well	2018-03-08	
102/15-20-010-25W1/00	VRU#1	10965	Equip & Tie-In	2018-04-17	
TEST SEPARATOR INSTALL	VRU#1	FF17VIR010	Install Separator	2018-04-30	
HEADER REPLACEMENT	VRU#1	FF18VIR002	Header Repair	2018-05-22	
EMULSION LINE INSTALLATION	VRU#1	P18VIR022	Pipelines	2018-07-11	
102/12-23-010-26W1/00	VRU#1	6394	Pump Repair	2018-07-13	
HEAT TRACE & INSULATE	VRU#1	RM18VIR015	Major Surface R&M	2018-07-31	
103/12-23-010-26W1/00	VRU#1	10952	Completion	2018-08-14	SANDHILL / OOLITES
DEAD LEG REMOVAL	VRU#1	RM18VIR019	Dead Leg Removal	2018-08-29	
TURNAROUND	VRU#1	T18VIR007	Turnaround	2018-09-05	
100/15-30-010-25W1/00	VRU#1	001110	Packer Repair	2018-10-09	
104/08-30-010-25W1/00	VRU#1	005124	Packer Repair	2018-10-14	
102/14-20-010-25W1/00	VRU#1	10964	Initial Completion	2018-11-10	SAND / OOL / SCAL
100/08-30-010-25W1/00	VRU#1	001053	Inhibitor Squeeze	2018-11-16	

VRU #1 Waterflood Pattern Map

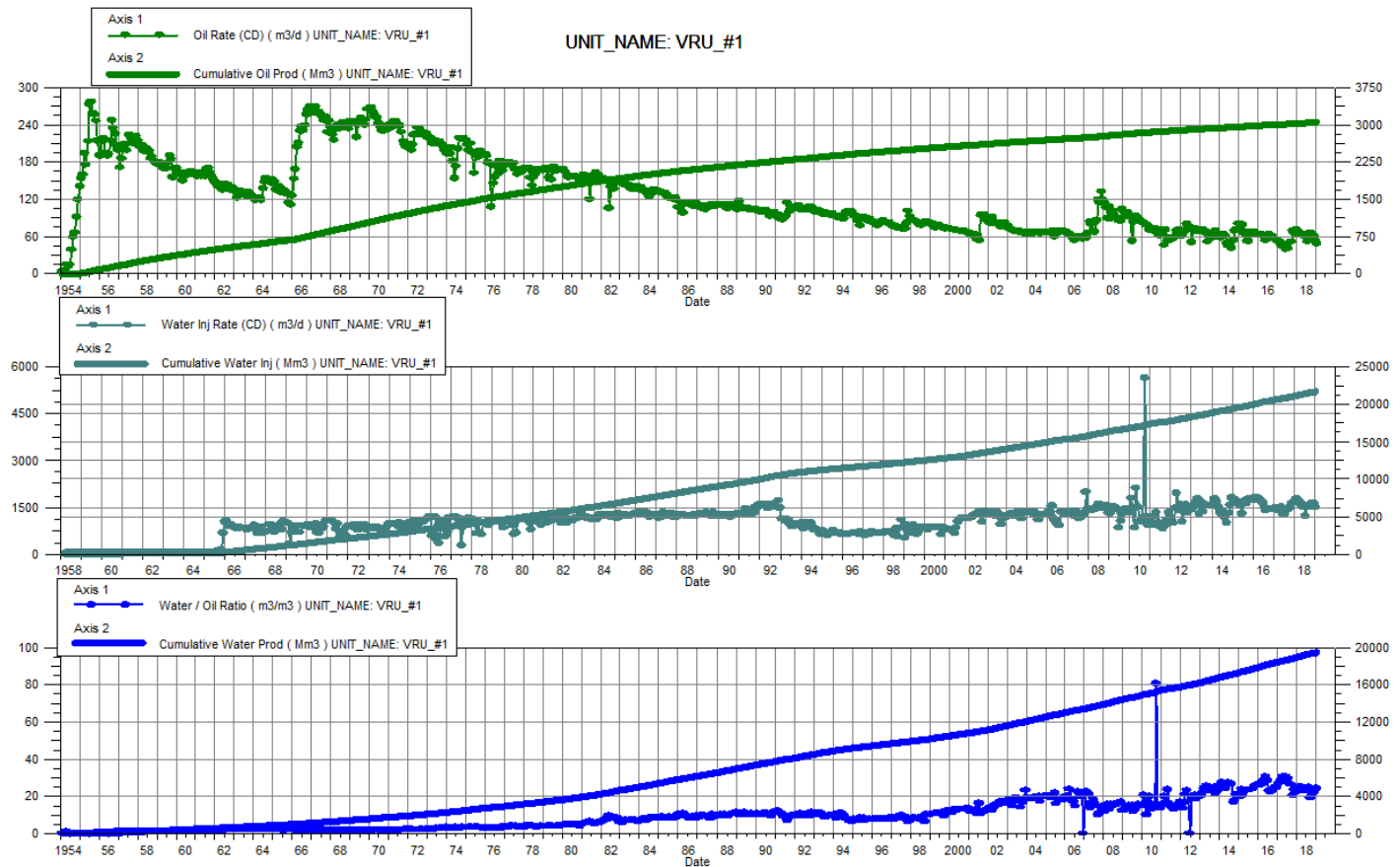


VRU #1 Waterflood Pattern Table

Pattern	Well
P-01	100/13-25-010-26W1/00
P-02	100/15-25-010-26W1/00
P-03	100/15-30-010-25W1/00
P-04	100/11-25-010-26W1/00
P-05	100/09-30-010-25W1/00
P-06	100/03-26-010-26W1/00
P-07	100/05-25-010-26W1/00
P-08	100/07-25-010-26W1/00
P-09	100/05-30-010-25W1/00
P-09	103/01-25-010-26W1/00
	100/07-30-010-25W1/00
P-10	104/08-30-010-25W1/00
P-11	100/05-29-010-25W1/00
P-12	100/06-29-010-25W1/00
P-12	100/07-29-010-25W1/00
P-13	100/05-28-010-25W1/00
P-14	100/15-23-010-26W1/00
P-15	100/13-24-010-26W1/00
P-16	100/15-24-010-26W1/00
P-16	103/01-25-010-26W1/00
P-19	100/13-21-010-25W1/00
P-21	100/11-21-010-25W1/00
P-22	100/09-26-010-26W1/00

Total for VRU #1

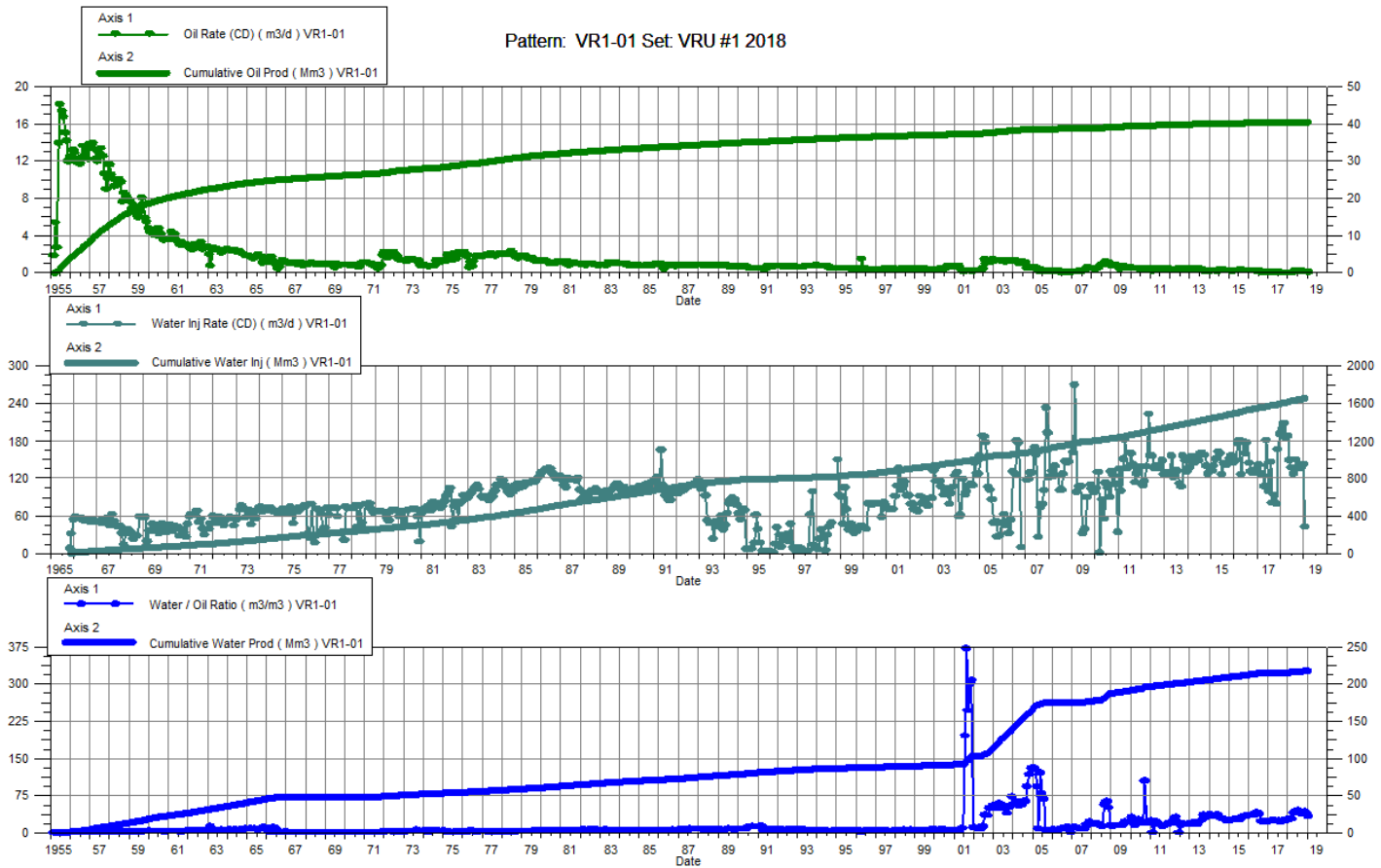
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	70.57	3036.20	1644.26	18926.91	1716.52	21220.46	23.30	1.00	0.96	5,760.00
2-28-2018	66.45	3038.06	1677.39	18973.88	1762.38	21269.81	25.24	1.01	0.96	5,760.00
3-31-2018	64.11	3040.05	1622.37	19024.17	1701.24	21322.55	25.31	1.01	0.96	5,760.00
4-30-2018	63.59	3041.95	1577.97	19071.51	1656.81	21372.25	24.82	1.01	0.96	5,760.00
5-31-2018	63.40	3043.92	1463.25	19116.87	1532.94	21419.77	23.08	1.00	0.96	5,760.00
6-30-2018	60.66	3045.74	1436.77	19159.97	1498.84	21464.74	23.69	1.00	0.96	5,760.00
7-31-2018	51.95	3047.35	1177.77	19196.48	1219.48	21502.54	22.67	0.99	0.96	5,760.00
8-31-2018	59.59	3049.20	1483.44	19242.47	1553.97	21550.71	24.89	1.01	0.96	5,760.00
9-30-2018	66.98	3051.21	1289.58	19281.16	1513.90	21596.13	19.25	1.12	0.96	5,760.00
10-31-2018	59.05	3053.04	1221.75	19319.03	1508.20	21642.88	20.69	1.18	0.97	5,760.00
11-30-2018	60.14	3054.84	1327.99	19358.87	1636.26	21691.97	22.08	1.18	0.97	5,760.00
12-31-2018	53.28	3056.49	1291.96	19398.92	1615.86	21742.06	24.25	1.20	0.97	5,760.00



VRU No. 1

Pattern P-01 - 00/13-25-010-26W1/0

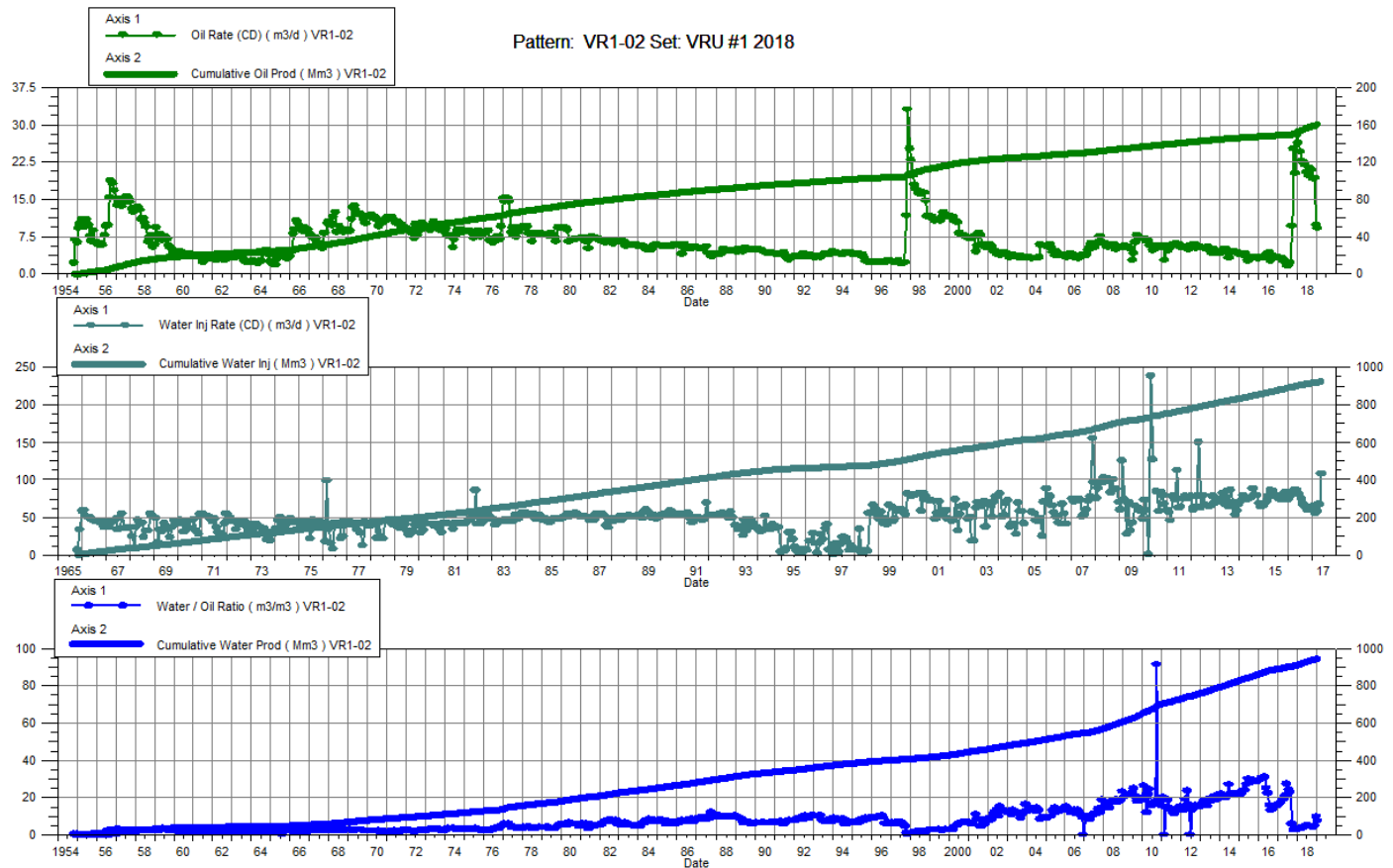
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	0.07	40.43	1.74	215.00	198.30	1605.76	26.52	109.87	6.27	4,950.00
2-28-2018	0.07	40.43	1.80	215.05	208.20	1611.59	27.55	111.43	6.29	4,950.00
3-31-2018	0.06	40.43	1.78	215.10	185.43	1617.34	27.67	100.29	6.31	4,950.00
4-30-2018	0.11	40.44	4.24	215.23	187.81	1622.97	40.20	43.24	6.33	4,950.00
5-31-2018	0.20	40.44	8.63	215.50	149.28	1627.60	43.11	16.90	6.34	4,950.00
6-30-2018	0.19	40.45	8.15	215.74	137.00	1631.71	43.30	16.42	6.35	4,950.00
7-31-2018	0.19	40.45	8.35	216.00	127.25	1635.65	44.97	14.90	6.36	4,950.00
8-31-2018	0.20	40.46	8.66	216.27	149.58	1640.29	42.99	16.87	6.37	4,950.00
9-30-2018	0.20	40.47	7.81	216.50	136.03	1644.37	38.35	16.96	6.38	4,950.00
10-31-2018	0.14	40.47	5.78	216.68	135.06	1648.56	40.23	22.79	6.39	4,950.00
11-30-2018	0.17	40.48	7.10	216.90	137.96	1652.70	42.32	18.98	6.40	4,950.00
12-31-2018	0.17	40.48	6.54	217.10	142.29	1657.11	38.95	21.19	6.41	4,950.00



VRU No. 1

Pattern P-02 - 00/15-25-010-26W1/0

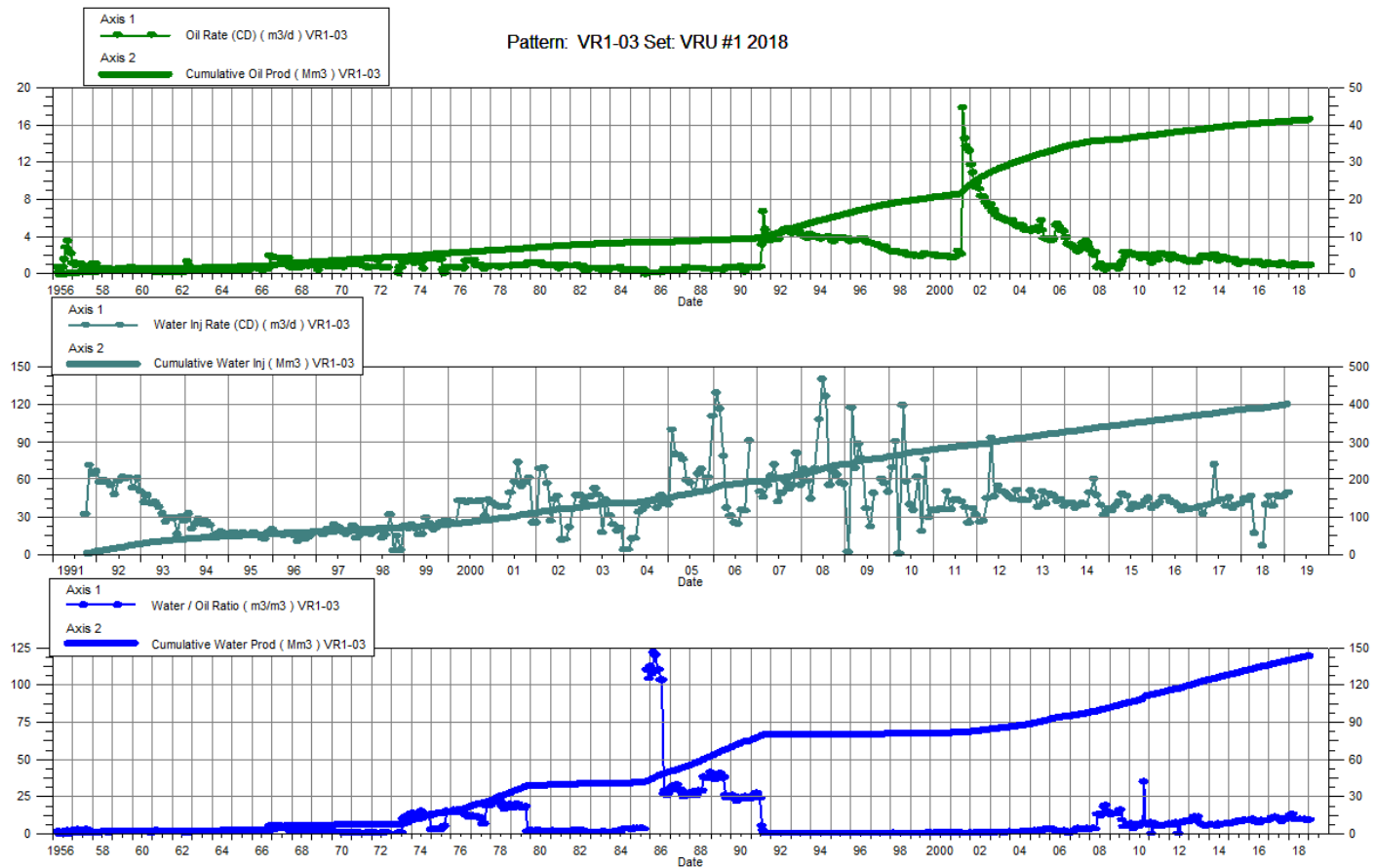
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	26.39	153.04	84.21	911.00		929.60	3.19		0.87	6,200.00
2-28-2018	24.62	153.73	82.06	913.30		929.60	3.33		0.87	6,200.00
3-31-2018	22.78	154.43	79.50	915.76		929.60	3.49		0.87	6,200.00
4-30-2018	22.55	155.11	92.76	918.54		929.60	4.11		0.86	6,200.00
5-31-2018	22.00	155.79	105.55	921.82		929.60	4.80		0.86	6,200.00
6-30-2018	20.46	156.41	99.74	924.81		929.60	4.87		0.86	6,200.00
7-31-2018	19.82	157.02	99.73	927.90		929.60	5.03		0.85	6,200.00
8-31-2018	21.24	157.68	99.87	930.99		929.60	4.70		0.85	6,200.00
9-30-2018	20.92	158.31	93.83	933.81		929.60	4.48		0.85	6,200.00
10-31-2018	19.17	158.90	80.47	936.30		929.60	4.20		0.85	6,200.00
11-30-2018	19.34	159.48	96.06	939.19		929.60	4.97		0.84	6,200.00
12-31-2018	9.93	159.79	97.15	942.20		929.60	9.78		0.84	6,200.00



VRU No. 1

Pattern P-03 - 00/15-30-010-25W1/0

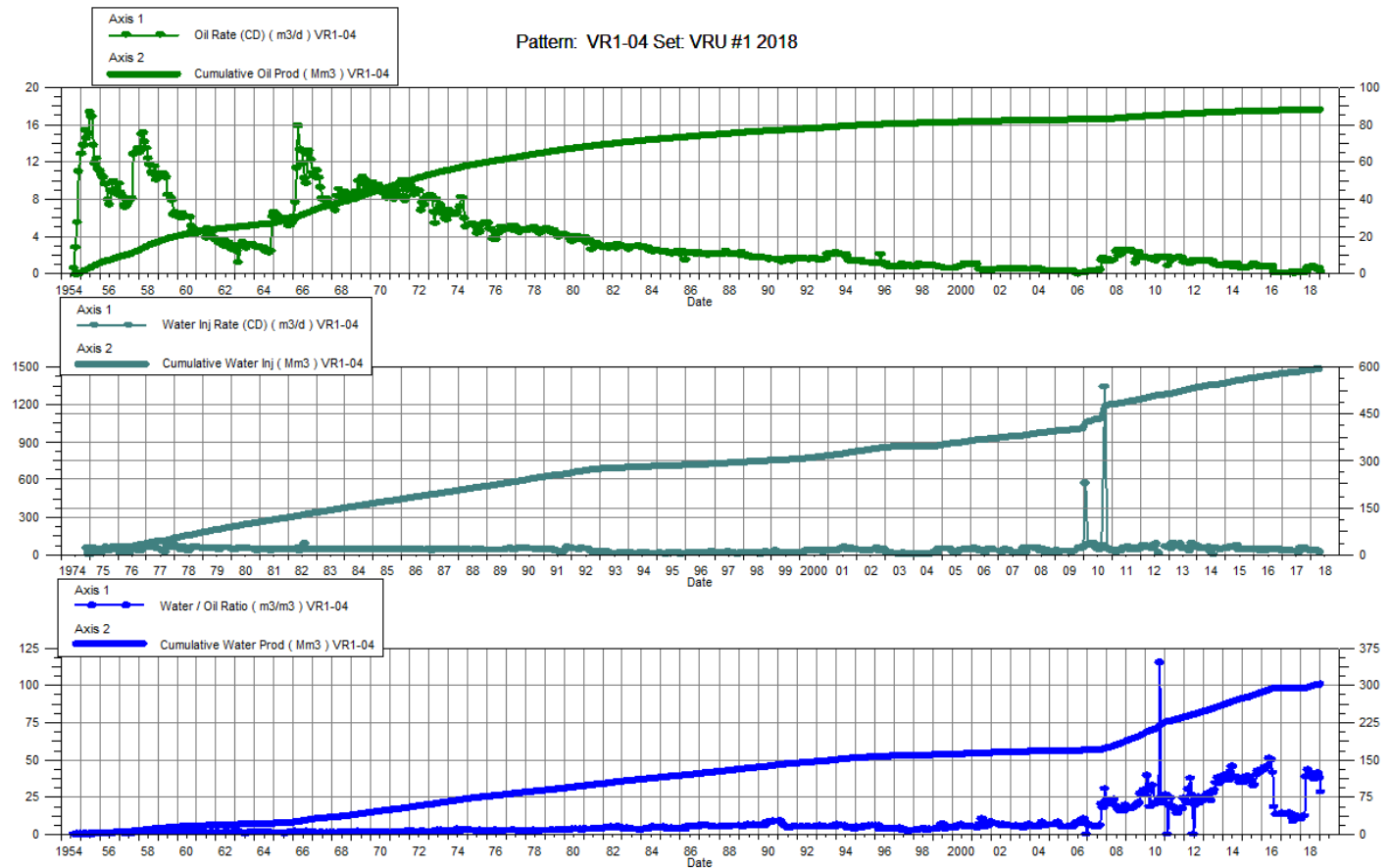
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	0.91	41.19	11.18	139.88	44.48	388.73	12.26	3.67	2.14	6,900.00
2-28-2018	0.90	41.22	11.28	140.19	43.12	389.94	12.60	3.54	2.14	6,900.00
3-31-2018	0.86	41.24	11.36	140.55	46.49	391.38	13.26	3.80	2.14	6,900.00
4-30-2018	1.12	41.28	10.98	140.87	16.65	391.88	9.77	1.37	2.14	6,900.00
5-31-2018	1.02	41.31	9.51	141.17		391.88	9.31		2.14	6,900.00
6-30-2018	0.99	41.34	9.11	141.44	6.72	392.08	9.19	0.66	2.14	6,900.00
7-31-2018	0.98	41.37	9.37	141.73	39.55	393.31	9.54	3.81	2.14	6,900.00
8-31-2018	1.05	41.40	9.90	142.04	46.39	394.75	9.41	4.23	2.14	6,900.00
9-30-2018	1.05	41.43	9.98	142.34	38.97	395.91	9.49	3.53	2.15	6,900.00
10-31-2018	1.00	41.46	9.50	142.63	47.27	397.38	9.53	4.49	2.15	6,900.00
11-30-2018	0.99	41.49	9.05	142.91	45.83	398.75	9.13	4.56	2.15	6,900.00
12-31-2018	0.97	41.52	8.50	143.17	46.56	400.20	8.74	4.91	2.16	6,900.00



VRU No. 1

Pattern P-04 - 00/11-25-010-26W1/0

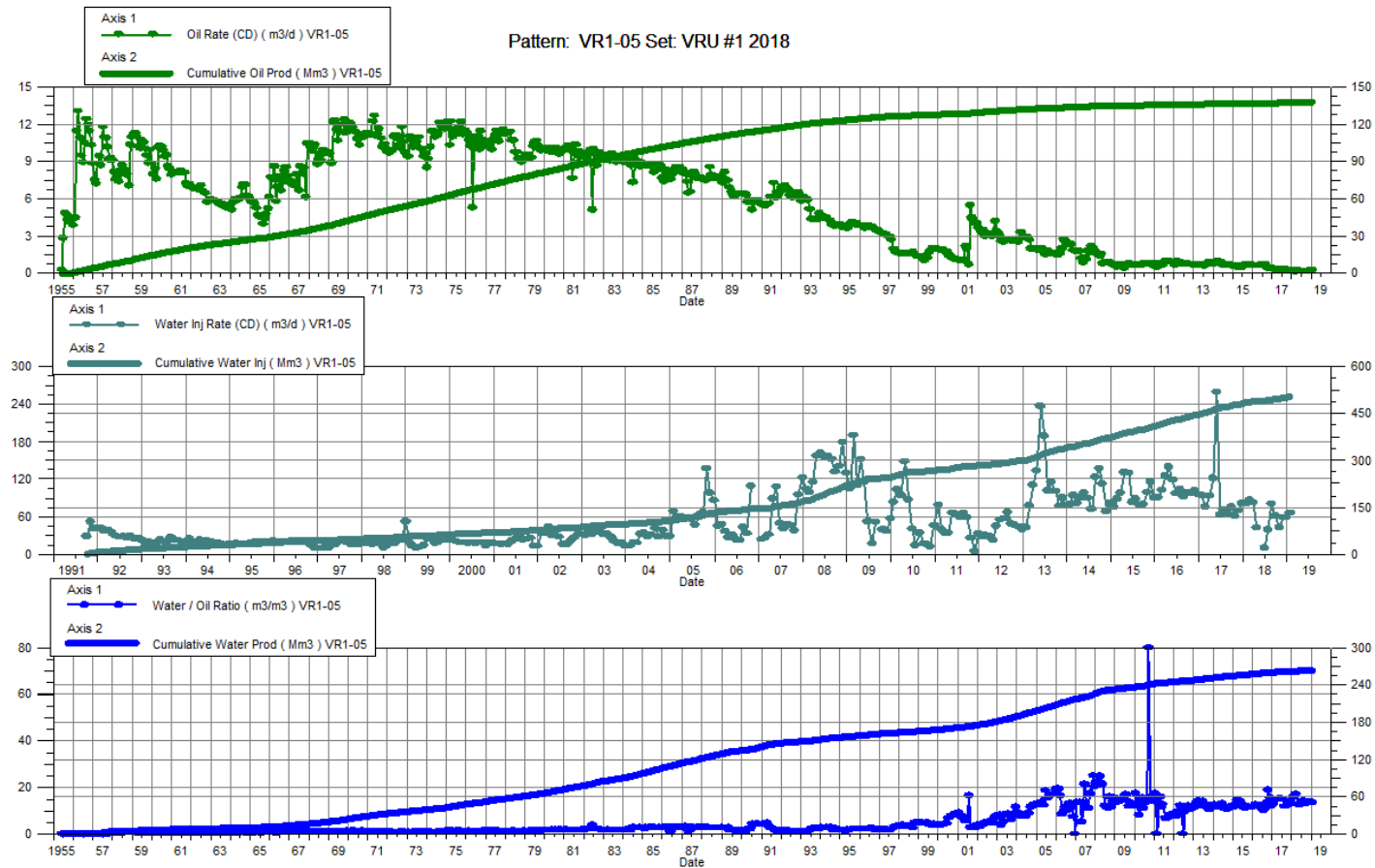
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	0.20	88.04	2.12	294.27	33.56	594.78	10.57	14.42	1.55	6,400.00
2-28-2018	0.17	88.04	2.10	294.33	31.85	595.67	12.51	14.04	1.55	6,400.00
3-31-2018	0.17	88.05	2.08	294.40	31.71	596.66	12.39	14.11	1.55	6,400.00
4-30-2018	0.34	88.06	13.26	294.80	19.96	597.26	38.89	1.47	1.55	6,400.00
5-31-2018	0.78	88.08	33.59	295.84		597.26	43.22		1.55	6,400.00
6-30-2018	0.77	88.10	30.36	296.75		597.26	39.56		1.55	6,400.00
7-31-2018	0.76	88.13	31.28	297.72		597.26	41.00		1.54	6,400.00
8-31-2018	0.81	88.15	32.20	298.71		597.26	39.58		1.54	6,400.00
9-30-2018	0.79	88.18	29.40	299.60		597.26	37.23		1.53	6,400.00
10-31-2018	0.52	88.19	20.45	300.23		597.26	39.06		1.53	6,400.00
11-30-2018	0.64	88.21	26.23	301.02		597.26	41.18		1.53	6,400.00
12-31-2018	0.64	88.23	24.19	301.77		597.26	37.79		1.53	6,400.00



VRU No. 1

Pattern P-05 - 00/09-30-010-25W1/0

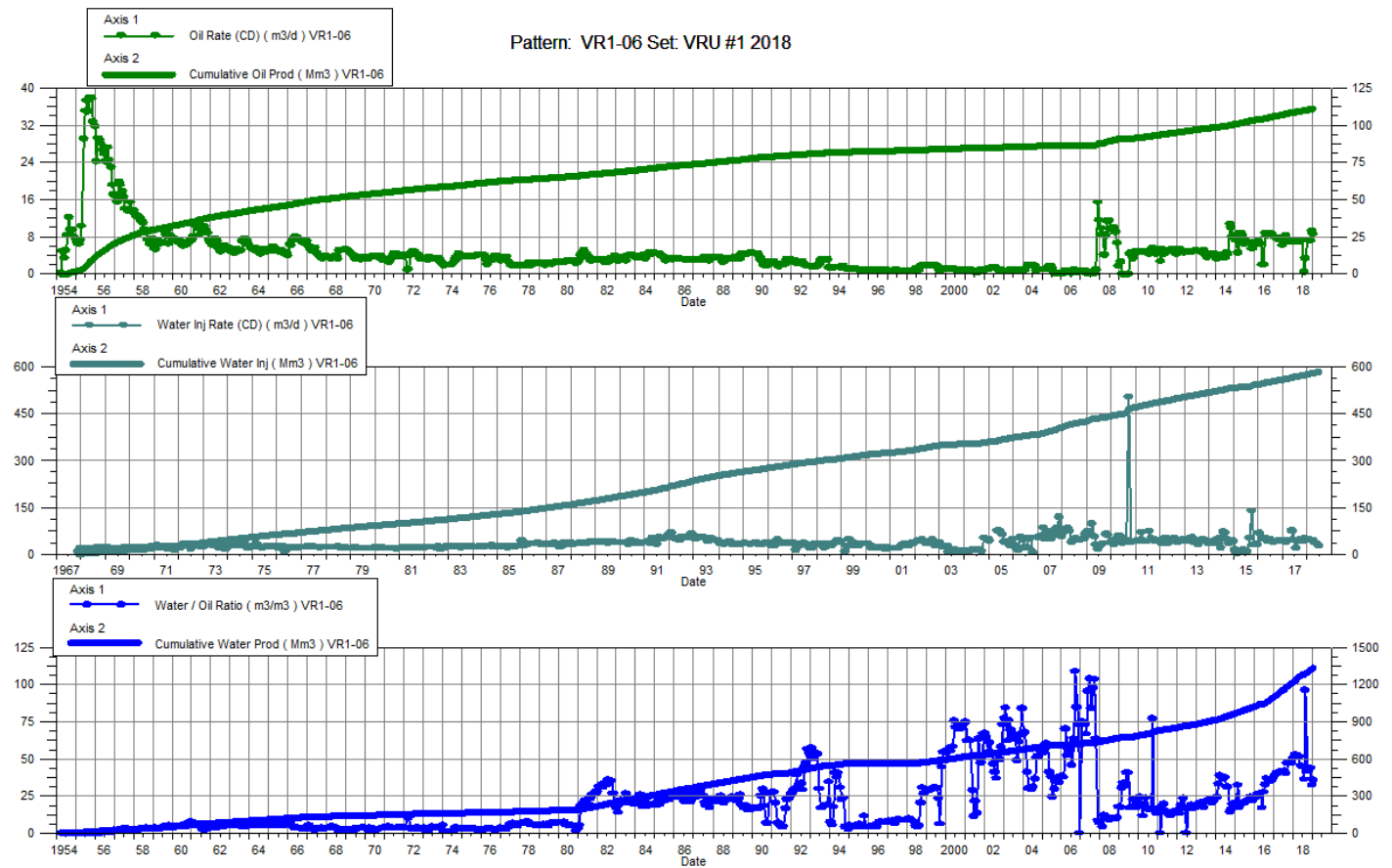
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	0.26	137.52	4.10	261.36	81.55	485.45	16.03	18.68	1.21	7,370.00
2-28-2018	0.20	137.52	3.28	261.45	87.00	487.89	16.14	24.93	1.22	7,370.00
3-31-2018	0.19	137.53	3.17	261.55	82.12	490.43	17.11	24.44	1.22	7,370.00
4-30-2018	0.24	137.53	3.13	261.64	41.62	491.68	12.81	12.34	1.22	7,370.00
5-31-2018	0.22	137.54	2.75	261.73		491.68	12.45		1.22	7,370.00
6-30-2018	0.22	137.55	2.95	261.82	9.53	491.97	13.35	3.00	1.22	7,370.00
7-31-2018	0.22	137.55	3.19	261.91	39.42	493.19	14.39	11.54	1.23	7,370.00
8-31-2018	0.24	137.56	3.31	262.02	80.60	495.69	14.00	22.68	1.23	7,370.00
9-30-2018	0.24	137.57	3.07	262.11	61.42	497.53	13.04	18.58	1.24	7,370.00
10-31-2018	0.22	137.58	2.98	262.20	42.34	498.84	13.54	13.23	1.24	7,370.00
11-30-2018	0.22	137.58	3.00	262.29	58.13	500.59	13.85	18.07	1.24	7,370.00
12-31-2018	0.24	137.59	3.30	262.39	58.11	502.39	13.64	16.41	1.25	7,370.00



VRU No. 1

Pattern P-06 - 00/03-26-010-26W1/0

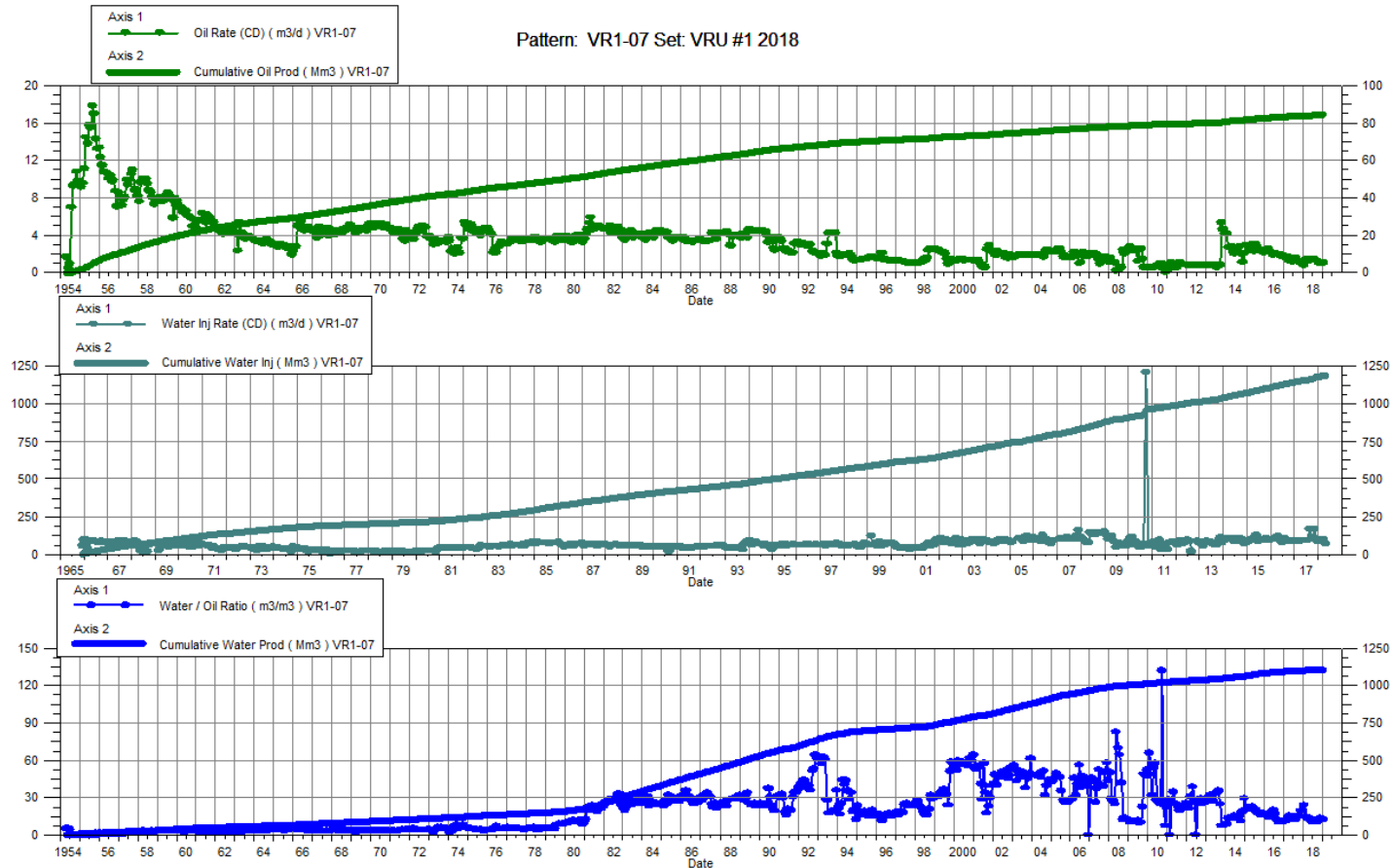
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	7.09	108.88	357.88	1223.43	46.30	579.58	50.51	0.13	0.43	4,850.00
2-28-2018	7.07	109.07	372.84	1233.87	44.06	580.81	52.76	0.12	0.43	4,850.00
3-31-2018	7.01	109.29	364.94	1245.18	42.66	582.13	52.06	0.12	0.43	4,850.00
4-30-2018	6.91	109.50	355.00	1255.83	38.41	583.29	51.36	0.11	0.43	4,850.00
5-31-2018	7.16	109.72	323.75	1265.87	33.06	584.31	45.21	0.10	0.42	4,850.00
6-30-2018	7.19	109.94	322.76	1275.55	25.95	585.09	44.87	0.08	0.42	4,850.00
7-31-2018	0.52	109.95	18.76	1276.14		585.09	35.96		0.42	4,850.00
8-31-2018	3.39	110.06	325.62	1286.23		585.09	96.02		0.42	4,850.00
9-30-2018	7.47	110.28	308.50	1295.48		585.09	41.28		0.42	4,850.00
10-31-2018	7.25	110.51	304.58	1304.93		585.09	41.99		0.41	4,850.00
11-30-2018	7.18	110.72	312.94	1314.31		585.09	43.57		0.41	4,850.00
12-31-2018	9.26	111.01	297.40	1323.53		585.09	32.11		0.41	4,850.00



VRU No. 1

Pattern P-07 - 00/05-25-010-26W1/0

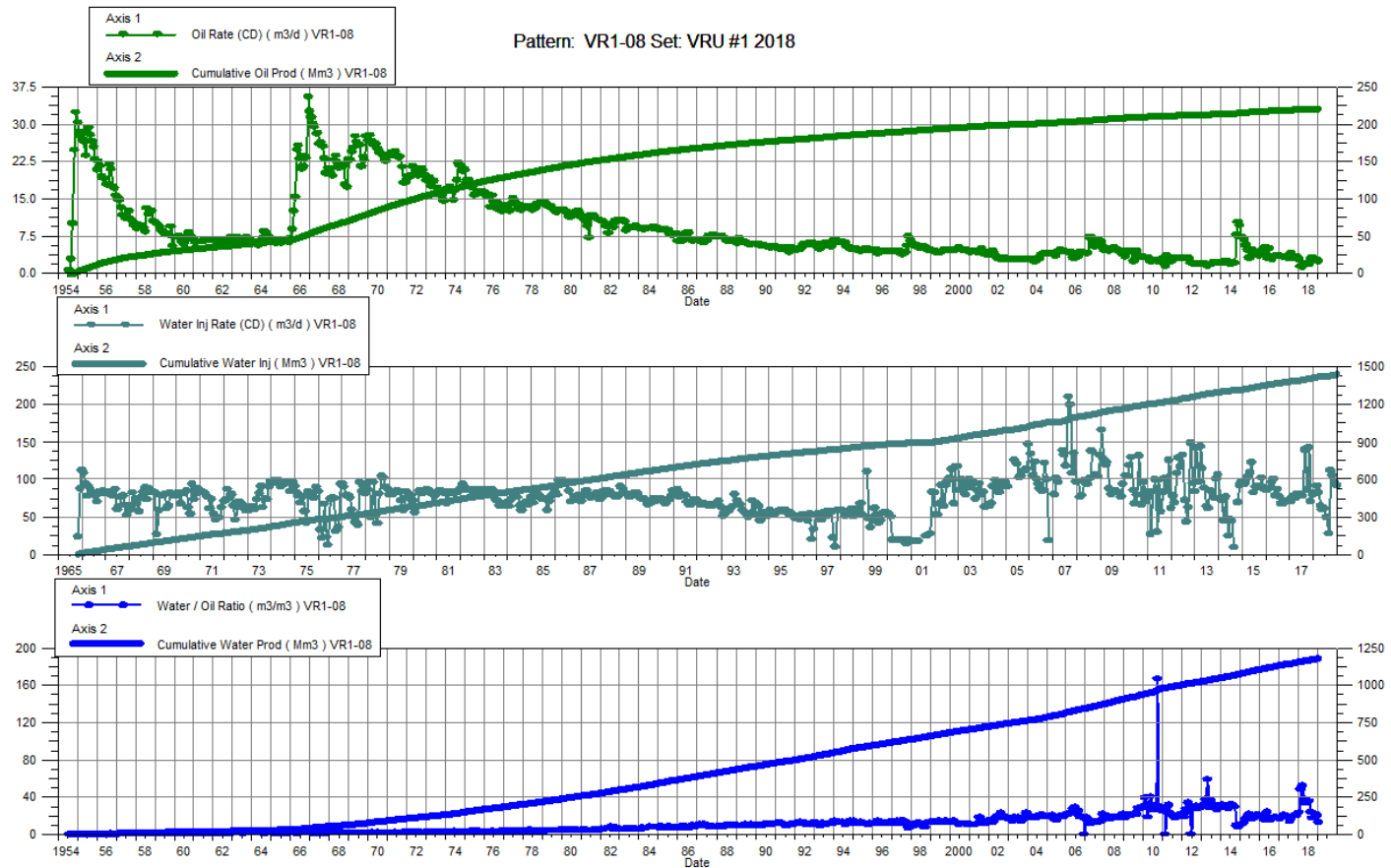
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	0.82	84.05	19.82	1097.54	96.02	1184.92	24.21	4.65	1.00	6,200.00
2-28-2018	1.30	84.09	19.31	1098.08	96.99	1187.64	14.86	4.70	1.00	6,200.00
3-31-2018	1.43	84.13	19.03	1098.67	96.46	1190.63	13.30	4.71	1.01	6,200.00
4-30-2018	1.26	84.17	17.40	1099.19	71.54	1192.78	13.83	3.83	1.01	6,200.00
5-31-2018	1.38	84.21	15.83	1099.68		1192.78	11.50		1.01	6,200.00
6-30-2018	1.53	84.26	16.01	1100.16		1192.78	10.48		1.01	6,200.00
7-31-2018	1.52	84.30	16.50	1100.67		1192.78	10.86		1.01	6,200.00
8-31-2018	1.39	84.35	15.43	1101.15		1192.78	11.13		1.01	6,200.00
9-30-2018	1.25	84.39	13.26	1101.55		1192.78	10.61		1.00	6,200.00
10-31-2018	1.07	84.42	13.98	1101.98		1192.78	13.08		1.00	6,200.00
11-30-2018	1.09	84.45	14.58	1102.42		1192.78	13.42		1.00	6,200.00
12-31-2018	1.09	84.48	13.55	1102.84		1192.78	12.43		1.00	6,200.00



VRU No. 1

Pattern P-08 - 00/07-25-010-26W1/0

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
1-31-2018	3.03	220.24	71.45	1153.90	81.18	1418.84	23.56	1.09	1.03	7,000.00
2-28-2018	1.50	220.29	73.16	1155.95	91.08	1421.39	48.85	1.22	1.03	7,000.00
3-31-2018	1.39	220.33	72.43	1158.19	83.25	1423.97	52.11	1.13	1.03	7,000.00
4-30-2018	1.97	220.39	74.78	1160.44	64.27	1425.89	37.95	0.84	1.03	7,000.00
5-31-2018	1.99	220.45	66.74	1162.50	59.07	1427.73	33.47	0.86	1.03	7,000.00
6-30-2018	1.91	220.51	66.86	1164.51	61.58	1429.57	34.97	0.90	1.03	7,000.00
7-31-2018	1.89	220.57	67.60	1166.61	49.19	1431.10	35.77	0.71	1.03	7,000.00
8-31-2018	2.77	220.65	66.86	1168.68	27.00	1431.93	24.16	0.39	1.03	7,000.00
9-30-2018	3.33	220.75	57.41	1170.40	111.93	1435.29	17.23	1.84	1.03	7,000.00
10-31-2018	2.79	220.84	49.31	1171.93	104.84	1438.54	17.69	2.01	1.03	7,000.00
11-30-2018	2.84	220.92	60.82	1173.75	95.20	1441.40	21.44	1.49	1.03	7,000.00
12-31-2018	2.80	221.01	54.86	1175.46	91.94	1444.25	19.59	1.59	1.03	7,000.00

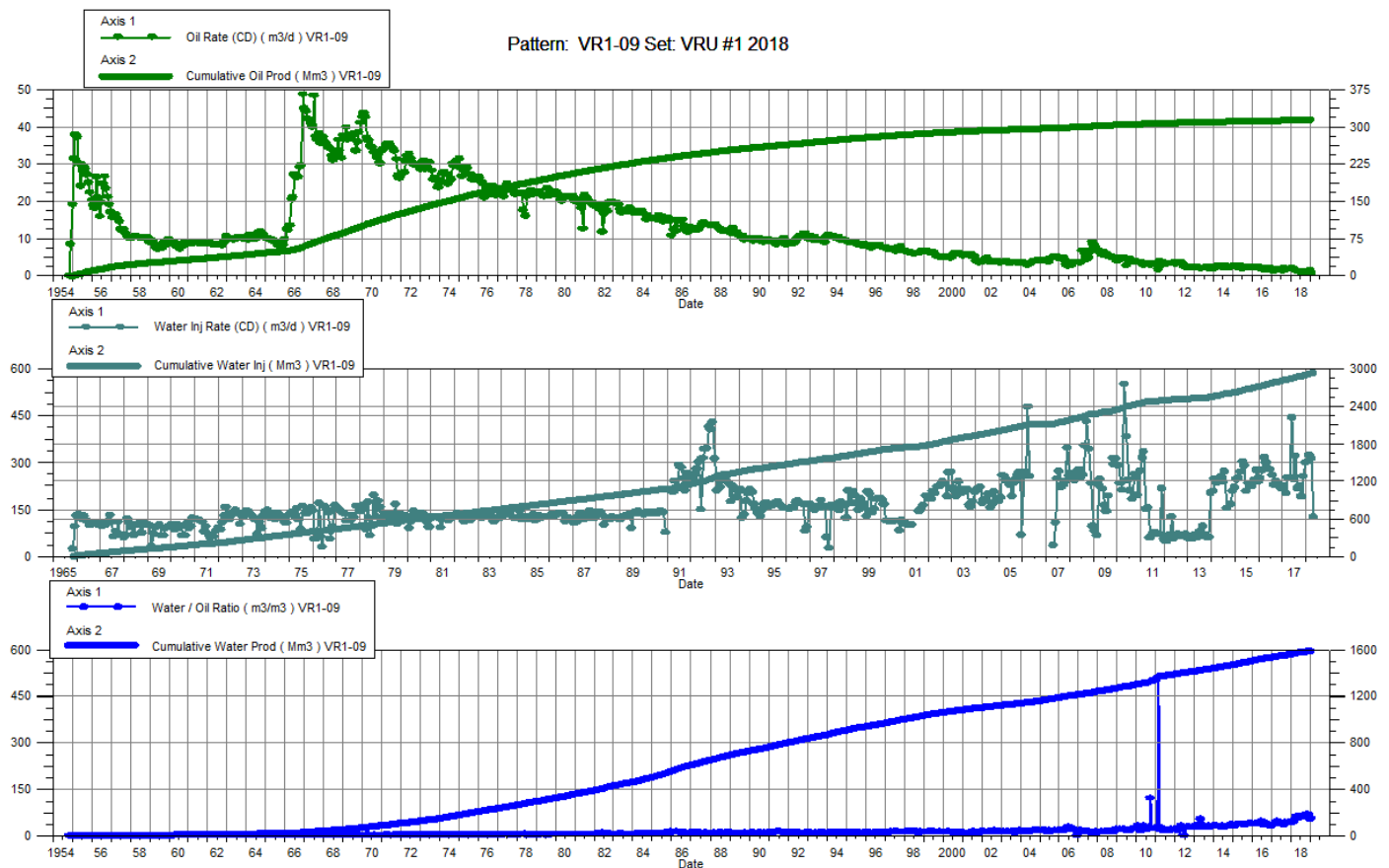


VRU No. 1

Pattern P-09 – 00/05-30-010-25W1/0

P-09 – 03/01-25-010-26W1/0

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	Water Inj Pressure kPa
1-31-2018	2.04	314.16	89.08	1561.74	302.96	2927.96	43.71	3.32	1.56	6,550.00	--
2-28-2018	1.95	314.22	89.18	1564.24	323.34	2937.01	45.78	3.55	1.56	6,550.00	--
3-31-2018	1.63	314.27	88.69	1566.99	313.45	2946.73	54.36	3.47	1.56	6,550.00	--
4-30-2018	1.40	314.31	88.23	1569.63	126.74	2950.53	63.15	1.41	1.56	6,550.00	--
5-31-2018	1.35	314.35	77.30	1572.03		2950.53	57.18		1.56	6,550.00	--
6-30-2018	1.20	314.39	73.18	1574.23		2950.53	60.96		1.56	6,550.00	--
7-31-2018	1.17	314.42	73.59	1576.51		2950.53	62.71		1.56	6,550.00	--
8-31-2018	1.26	314.46	77.23	1578.90		2950.53	61.24		1.55	6,550.00	--
9-30-2018	1.25	314.50	74.67	1581.14		2950.53	59.84		1.55	6,550.00	--
10-31-2018	0.86	314.53	60.99	1583.03		2950.53	70.72		1.55	6,550.00	--
11-30-2018	1.18	314.56	81.04	1585.46		2950.53	68.94		1.55	6,550.00	--
12-31-2018	1.55	314.61	82.58	1588.02		2950.53	53.39		1.55	6,550.00	--

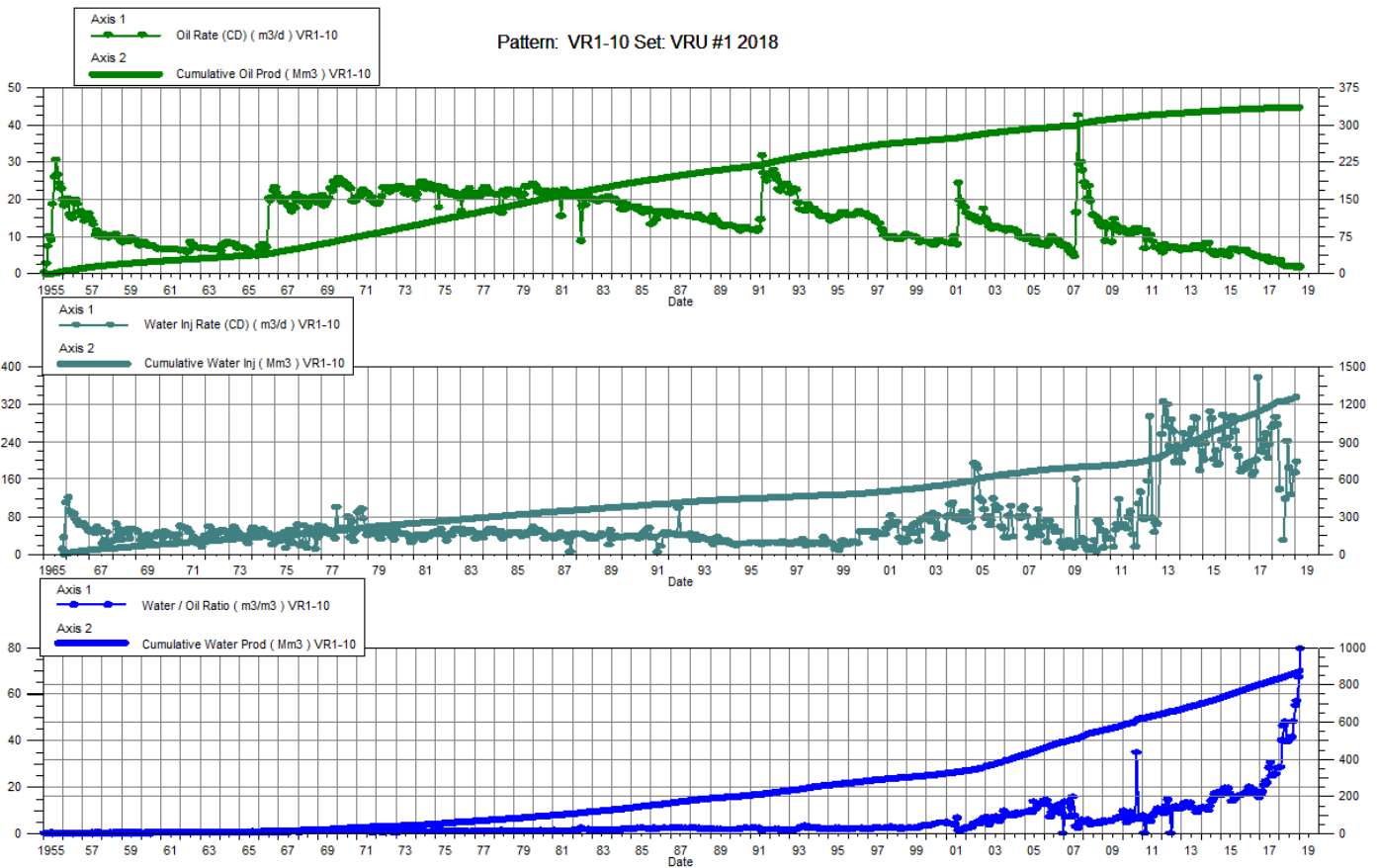


VRU No. 1

Pattern P-10 - 00/07-30-010-25W1/0

P-10 - 04/08-30-010-25W1/0

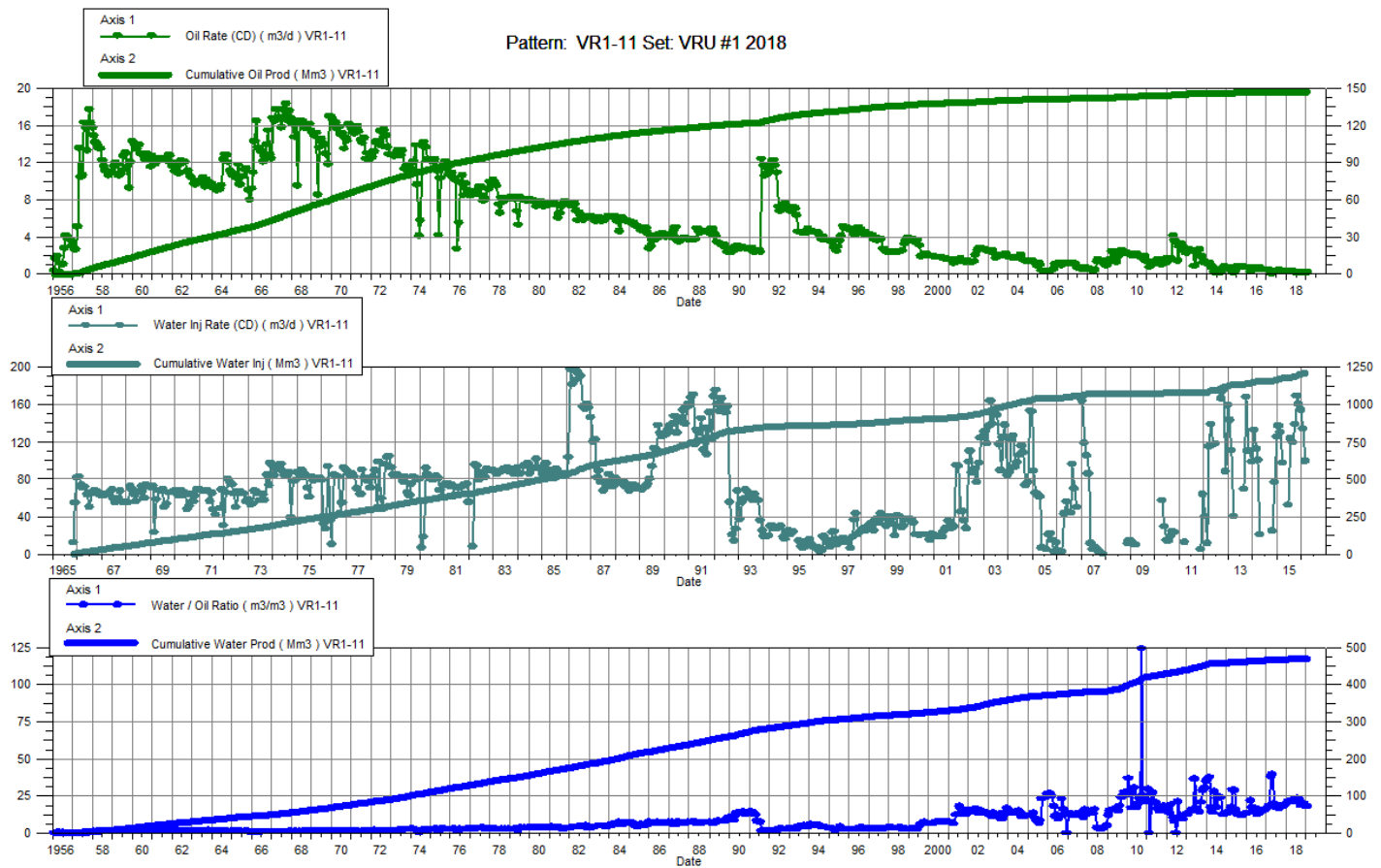
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacem t Ratio	Water Inj Pressure kPa	Water Inj Pressure kPa
1-31-2018	3.56	335.54	101.43	835.46	276.52	1205.93	28.53	2.63	1.02	6,900.00	7,200.00
2-28-2018	2.57	335.61	102.48	838.33	292.42	1214.12	39.89	2.78	1.03	6,900.00	7,200.00
3-31-2018	2.21	335.68	102.55	841.51	276.71	1222.70	46.35	2.64	1.03	6,900.00	7,200.00
4-30-2018	2.02	335.74	96.13	844.39	138.28	1226.84	47.68	1.41	1.03	6,900.00	7,200.00
5-31-2018	2.19	335.81	85.88	847.05		1226.84	39.16		1.03	6,900.00	7,200.00
6-30-2018	2.04	335.87	80.71	849.47	28.58	1227.70	39.63	0.35	1.03	6,900.00	7,200.00
7-31-2018	2.01	335.93	82.67	852.04	118.25	1231.37	41.08	1.40	1.03	6,900.00	7,200.00
8-31-2018	2.16	336.00	89.34	854.81	241.79	1238.86	41.46	2.64	1.04	6,900.00	7,200.00
9-30-2018	2.14	336.06	102.50	857.88	184.25	1244.39	48.00	1.76	1.04	6,900.00	7,200.00
10-31-2018	1.83	336.12	100.44	861.00	127.02	1248.33	54.80	1.24	1.04	6,900.00	7,200.00
11-30-2018	2.04	336.18	115.67	864.47	174.38	1253.56	56.81	1.48	1.04	6,900.00	7,200.00
12-31-2018	2.27	336.25	152.21	869.18	174.32	1258.96	67.14	1.13	1.04	6,900.00	7,200.00



VRU No. 1

Pattern P-11 - 00/05-29-010-25W1/0

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
1-31-2018	0.38	147.13	7.68	466.53		1215.47	20.11		1.97	6,800.00
2-28-2018	0.35	147.14	7.59	466.74		1215.47	21.51		1.97	6,800.00
3-31-2018	0.36	147.16	7.55	466.97		1215.47	21.00		1.97	6,800.00
4-30-2018	0.35	147.17	7.27	467.19		1215.47	21.02		1.97	6,800.00
5-31-2018	0.29	147.18	6.01	467.38		1215.47	20.74		1.97	6,800.00
6-30-2018	0.24	147.18	5.56	467.55		1215.47	23.00		1.97	6,800.00
7-31-2018	0.24	147.19	5.73	467.72		1215.47	23.69		1.97	6,800.00
8-31-2018	0.26	147.20	5.89	467.91		1215.47	22.82		1.97	6,800.00
9-30-2018	0.25	147.21	4.61	468.04		1215.47	18.49		1.97	6,800.00
10-31-2018	0.23	147.21	4.42	468.18		1215.47	19.33		1.97	6,800.00
11-30-2018	0.22	147.22	4.48	468.32		1215.47	19.96		1.97	6,800.00
12-31-2018	0.25	147.23	4.51	468.46		1215.47	18.15		1.97	6,800.00

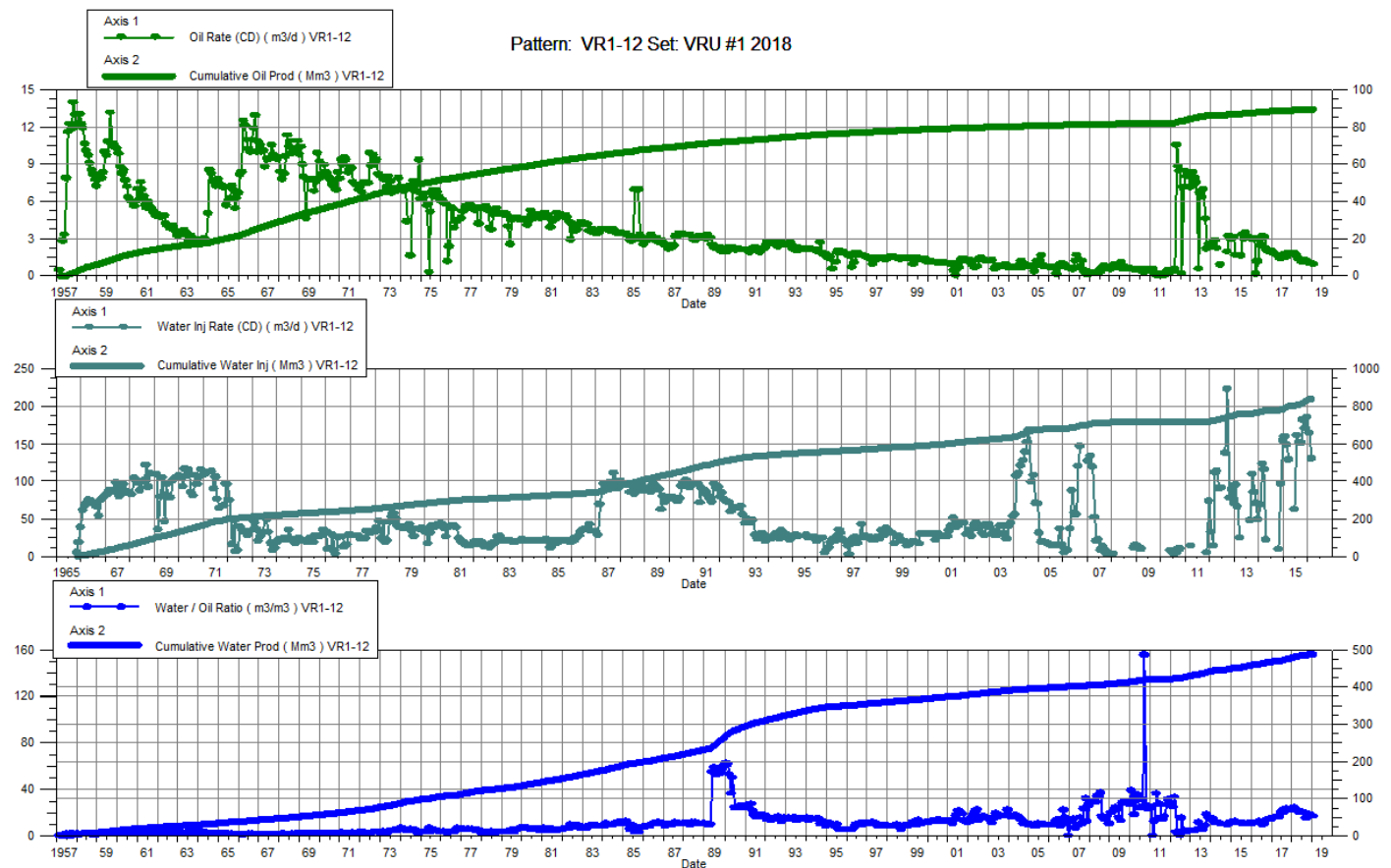


VRU No. 1

Pattern P-12 – 00/06-29-010-25W1/0

P-12 – 00/07-29-010-25W1/0

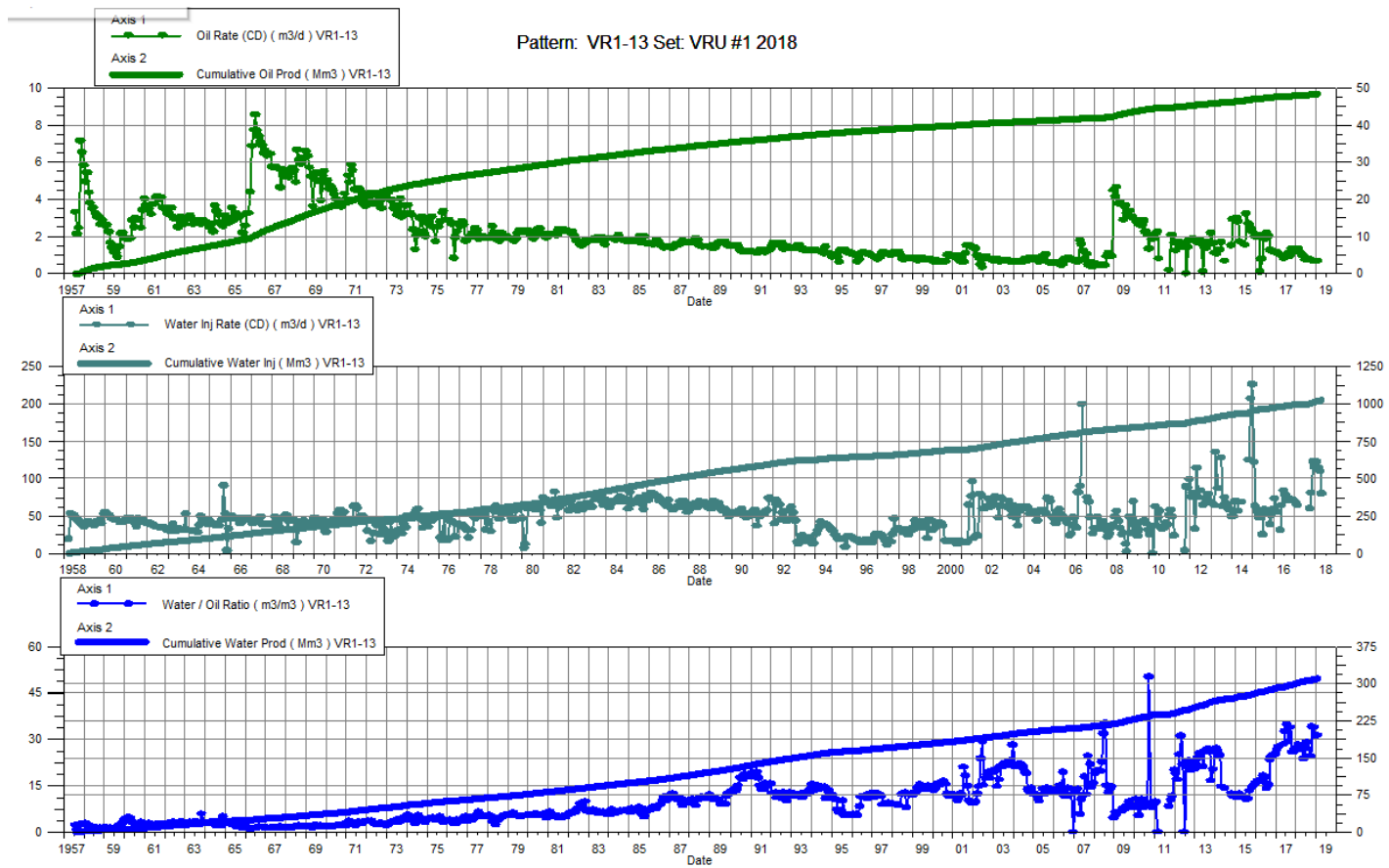
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa	Water Inj Pressure kPa
1-31-2018	1.84	89.17	42.35	477.94		844.13	23.03		1.48	6,800.00	6,800.00
2-28-2018	1.82	89.22	43.90	479.17		844.13	24.12		1.48	6,800.00	6,800.00
3-31-2018	1.62	89.27	36.12	480.29		844.13	22.32		1.48	6,800.00	6,800.00
4-30-2018	1.49	89.31	32.67	481.27		844.13	21.91		1.48	6,800.00	6,800.00
5-31-2018	1.33	89.35	25.92	482.07		844.13	19.53		1.47	6,800.00	6,800.00
6-30-2018	1.18	89.39	23.22	482.77		844.13	19.66		1.47	6,800.00	6,800.00
7-31-2018	1.17	89.42	23.90	483.51		844.13	20.35		1.47	6,800.00	6,800.00
8-31-2018	1.26	89.46	24.61	484.27		844.13	19.53		1.47	6,800.00	6,800.00
9-30-2018	1.18	89.50	18.22	484.82		844.13	15.51		1.47	6,800.00	6,800.00
10-31-2018	1.06	89.53	19.05	485.41		844.13	18.01		1.46	6,800.00	6,800.00
11-30-2018	1.05	89.56	19.31	485.99		844.13	18.44		1.46	6,800.00	6,800.00
12-31-2018	1.05	89.60	17.49	486.53		844.13	16.73		1.46	6,800.00	6,800.00



VRU No. 1

Pattern P-13 - 00/05-28-010-25W1/0

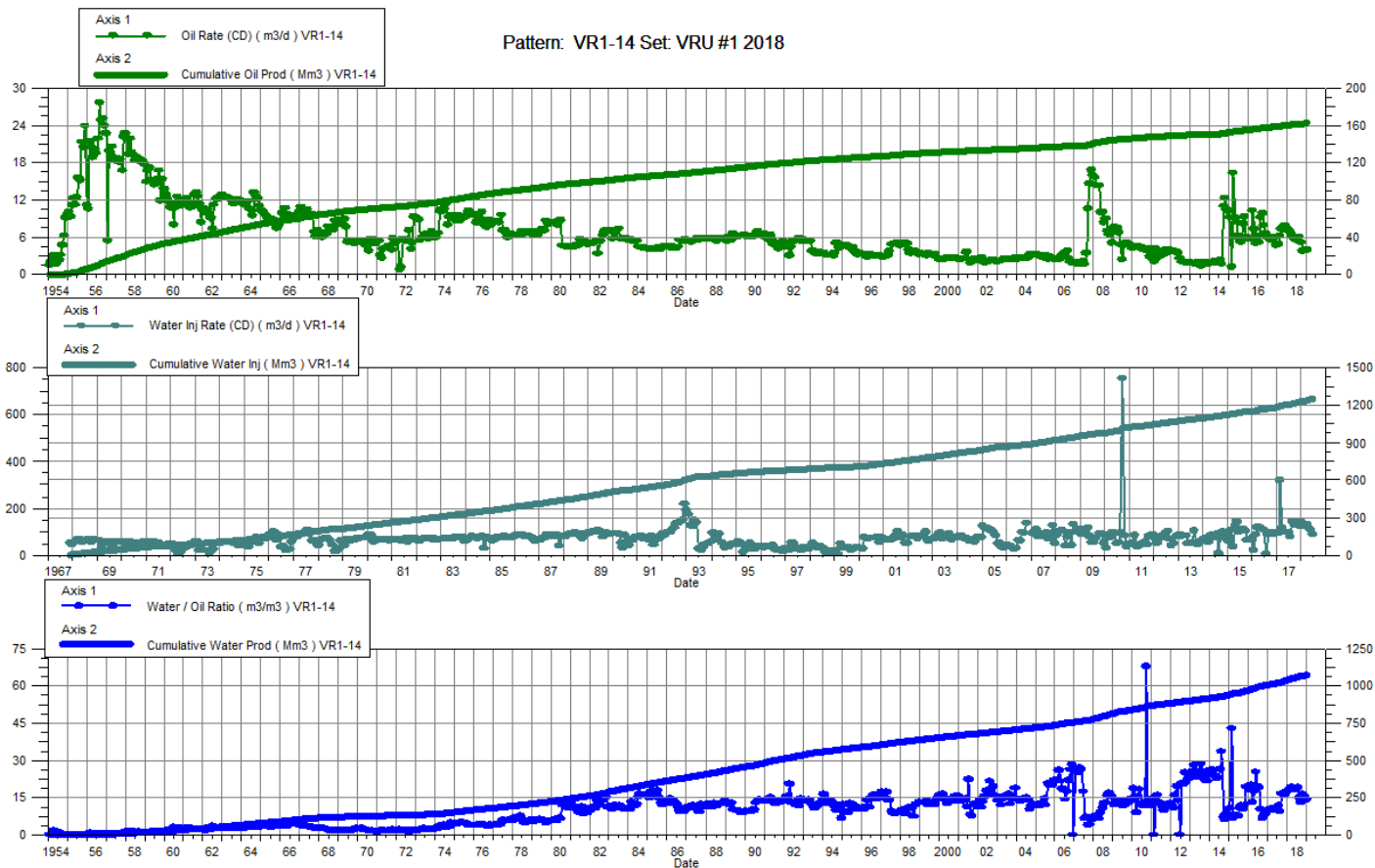
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	1.35	48.05	36.66	300.39	122.40	1018.50	27.12	3.22	2.92	5,600.00
2-28-2018	1.34	48.09	38.00	301.45	114.65	1021.71	28.35	2.91	2.92	5,600.00
3-31-2018	1.13	48.13	30.21	302.39	109.94	1025.12	26.77	3.51	2.92	5,600.00
4-30-2018	1.02	48.16	26.96	303.20	80.06	1027.52	26.50	2.86	2.92	5,600.00
5-31-2018	0.95	48.19	22.59	303.90		1027.52	23.66		2.91	5,600.00
6-30-2018	0.75	48.21	21.05	304.53		1027.52	28.00		2.91	5,600.00
7-31-2018	0.75	48.23	21.67	305.20		1027.52	29.00		2.90	5,600.00
8-31-2018	0.79	48.26	21.30	305.86		1027.52	26.91		2.89	5,600.00
9-30-2018	0.77	48.28	18.88	306.43		1027.52	24.48		2.89	5,600.00
10-31-2018	0.70	48.30	23.90	307.17		1027.52	33.92		2.88	5,600.00
11-30-2018	0.71	48.32	24.05	307.89		1027.52	33.86		2.88	5,600.00
12-31-2018	0.71	48.35	21.94	308.57		1027.52	30.96		2.87	5,600.00



VRU No. 1

Pattern P-14 - 00/15-23-010-26W1/0

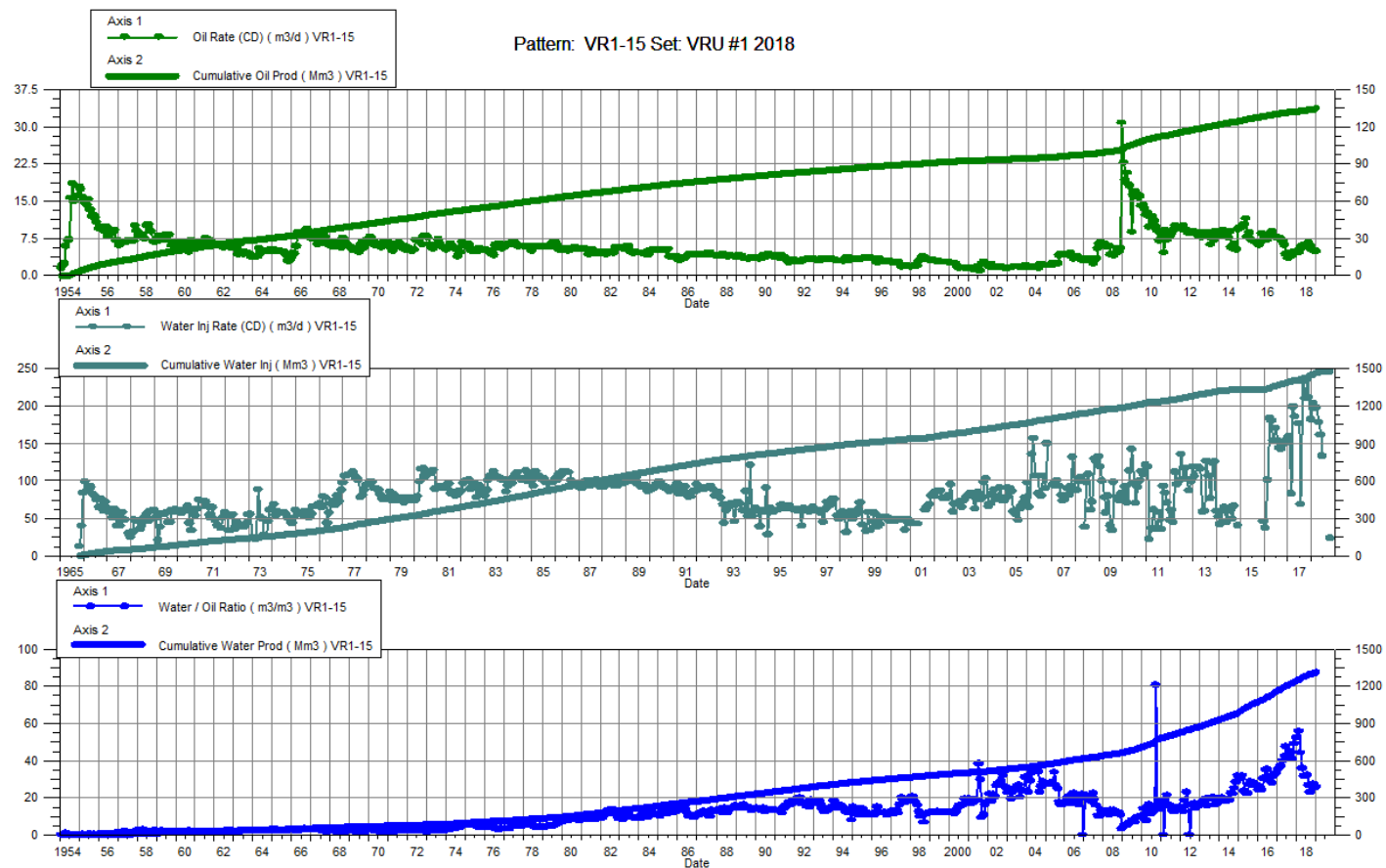
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	7.35	160.78	128.35	1037.35	138.55	1236.83	17.45	1.02	1.03	5,000.00
2-28-2018	6.91	160.97	124.96	1040.84	129.04	1240.45	18.08	0.98	1.03	5,000.00
3-31-2018	6.62	161.18	125.89	1044.75	131.22	1244.51	19.03	0.99	1.03	5,000.00
4-30-2018	6.03	161.36	115.40	1048.21	115.45	1247.98	19.15	0.95	1.03	5,000.00
5-31-2018	5.78	161.54	103.54	1051.42	105.66	1251.25	17.90	0.97	1.03	5,000.00
6-30-2018	5.71	161.71	106.08	1054.60	87.09	1253.86	18.58	0.78	1.03	5,000.00
7-31-2018	5.65	161.89	108.73	1057.97		1253.86	19.23		1.03	5,000.00
8-31-2018	6.08	162.07	91.39	1060.80		1253.86	15.02		1.02	5,000.00
9-30-2018	5.18	162.23	67.17	1062.82		1253.86	12.97		1.02	5,000.00
10-31-2018	3.80	162.35	62.27	1064.75		1253.86	16.40		1.02	5,000.00
11-30-2018	3.95	162.47	61.50	1066.59		1253.86	15.58		1.02	5,000.00
12-31-2018	4.03	162.59	56.29	1068.34		1253.86	13.96		1.02	5,000.00



VRU No. 1

Pattern P-15 - 00/13-24-010-26W1/0

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
1-31-2018	4.90	132.69	256.49	1245.70	203.77	1458.23	52.39	0.78	1.06	6,600.00
2-28-2018	4.68	132.82	260.83	1253.00	196.76	1463.74	55.74	0.74	1.05	6,600.00
3-31-2018	5.47	132.99	241.59	1260.49	198.50	1469.89	44.13	0.80	1.05	6,600.00
4-30-2018	6.08	133.17	218.23	1267.04	178.72	1475.26	35.92	0.80	1.05	6,600.00
5-31-2018	6.16	133.36	194.64	1273.07	161.37	1480.26	31.61	0.80	1.05	6,600.00
6-30-2018	6.09	133.55	193.53	1278.88	133.40	1484.26	31.76	0.67	1.05	6,600.00
7-31-2018	5.94	133.73	191.69	1284.82		1484.26	32.27		1.04	6,600.00
8-31-2018	6.56	133.94	176.15	1290.28		1484.26	26.83		1.04	6,600.00
9-30-2018	5.93	134.11	136.68	1294.38		1484.26	23.05		1.04	6,600.00
10-31-2018	5.17	134.27	135.06	1298.57	23.06	1484.97	26.14	0.16	1.04	6,600.00
11-30-2018	4.97	134.42	136.18	1302.65		1484.97	27.38		1.03	6,600.00
12-31-2018	4.97	134.58	125.65	1306.55		1484.97	25.29		1.03	6,600.00

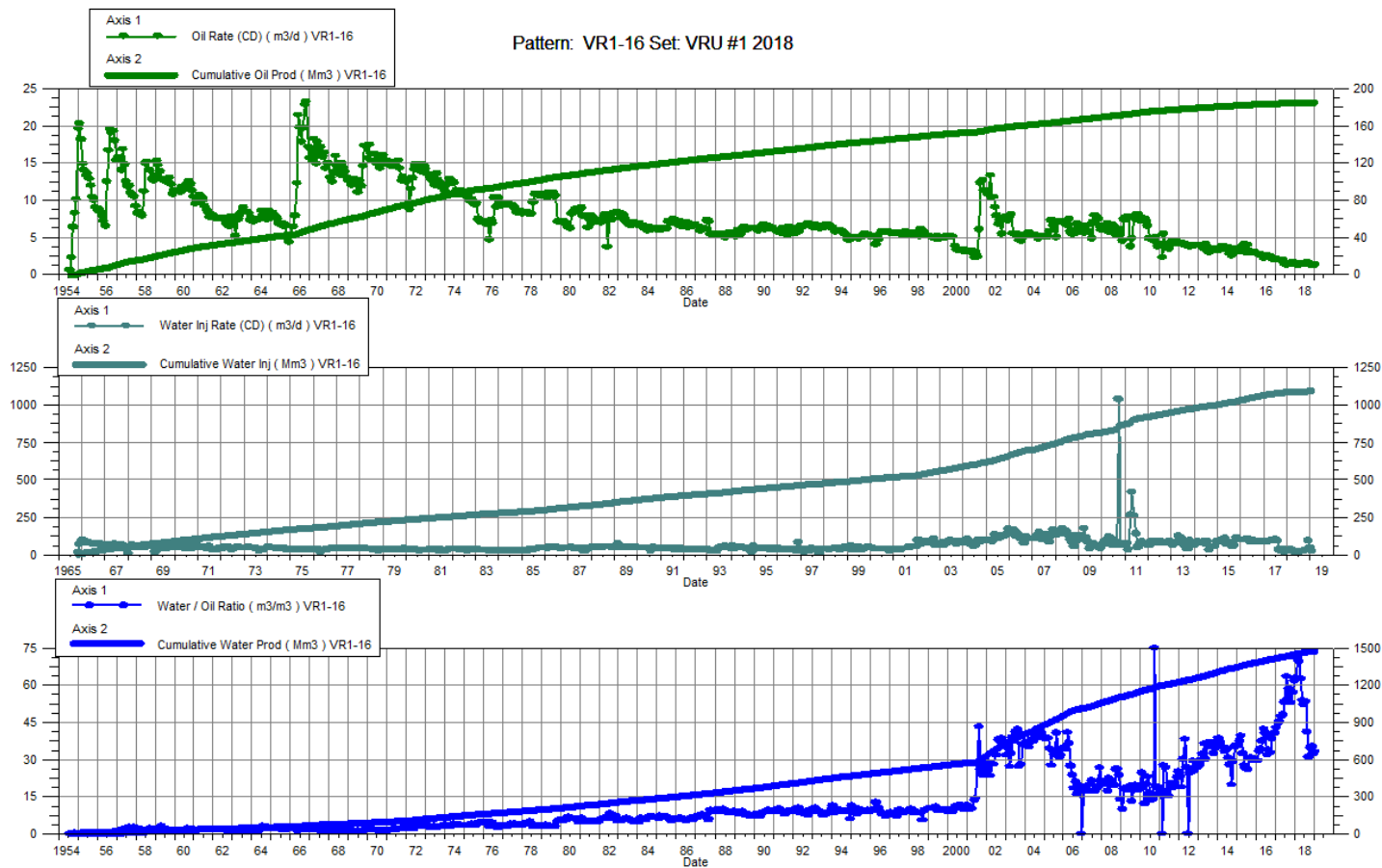


VRU No. 1

Pattern P-16 – 00/15-24-010-26W1/0

P-16 – 03/01-25-010-26W1/0

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	Water Inj Pressure kPa
1-31-2018	1.54	184.93	96.42	1446.58	22.06	1089.15	62.57	0.23	0.67	6,600.00	-
2-28-2018	1.40	184.97	99.03	1449.35	31.15	1090.02	70.84	0.31	0.67	6,600.00	-
3-31-2018	1.37	185.01	95.27	1452.31	28.78	1090.92	69.33	0.30	0.67	6,600.00	-
4-30-2018	1.47	185.06	91.54	1455.05	17.12	1091.43	62.47	0.18	0.66	6,600.00	-
5-31-2018	1.52	185.11	82.01	1457.60	16.02	1091.93	53.79	0.19	0.66	6,600.00	-
6-30-2018	1.55	185.15	80.49	1460.01	11.38	1092.27	51.80	0.14	0.66	6,600.00	-
7-31-2018	1.52	185.20	81.16	1462.53		1092.27	53.23		0.66	6,600.00	-
8-31-2018	1.64	185.25	67.45	1464.62	20.03	1092.89	41.24	0.29	0.66	6,600.00	-
9-30-2018	1.57	185.30	48.73	1466.08	25.73	1093.66	31.02	0.51	0.66	6,600.00	-
10-31-2018	1.40	185.34	48.57	1467.59		1093.66	34.69		0.66	6,600.00	-
11-30-2018	1.40	185.38	49.21	1469.06	95.20	1096.52	35.23	1.88	0.66	6,600.00	-
12-31-2018	1.40	185.43	45.34	1470.47	45.68	1097.93	32.37	0.98	0.66	6,600.00	-

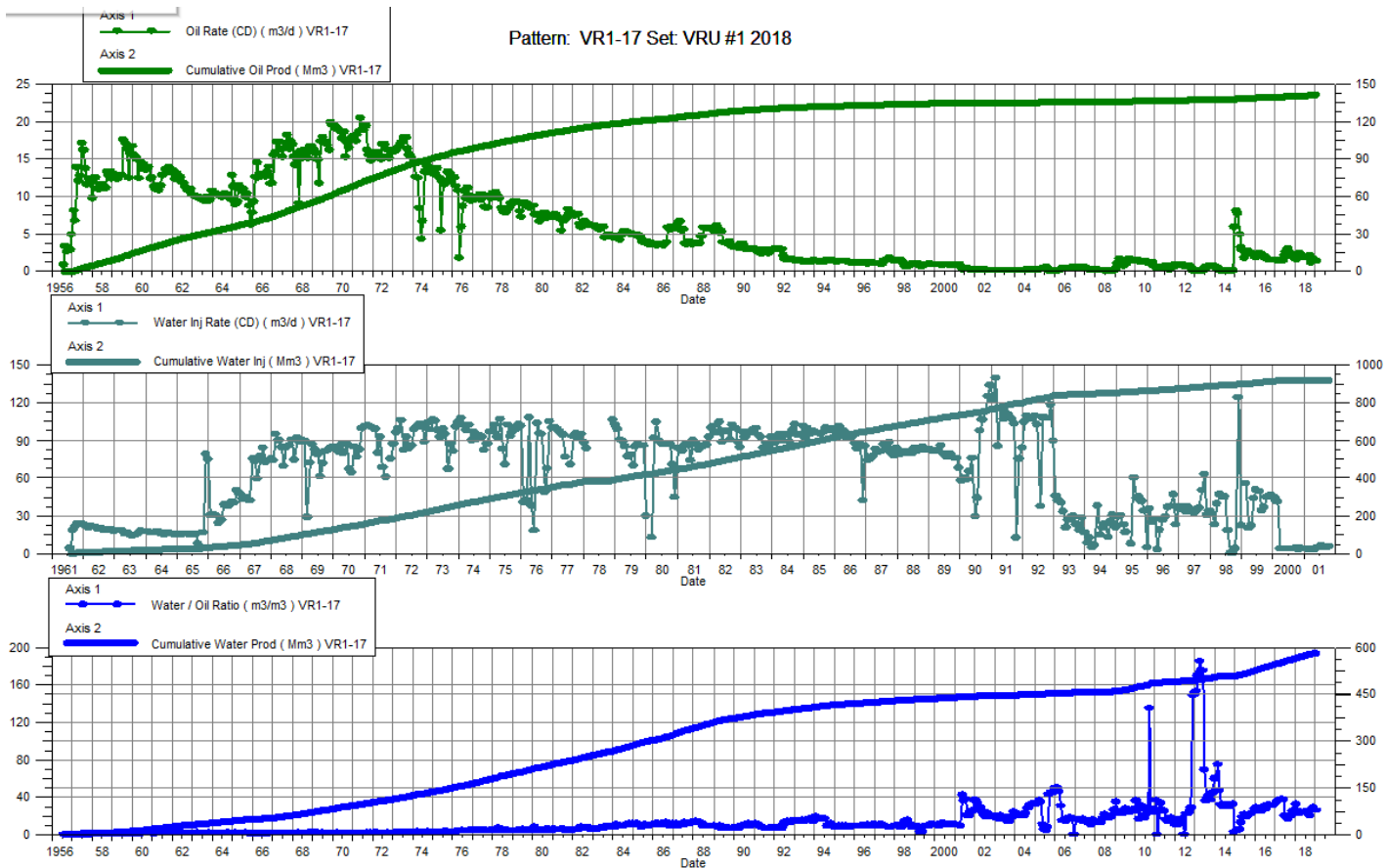


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Pattern P-17 - 00/13-20-010-25W1/0 &

00/12-20-010-25W1/0

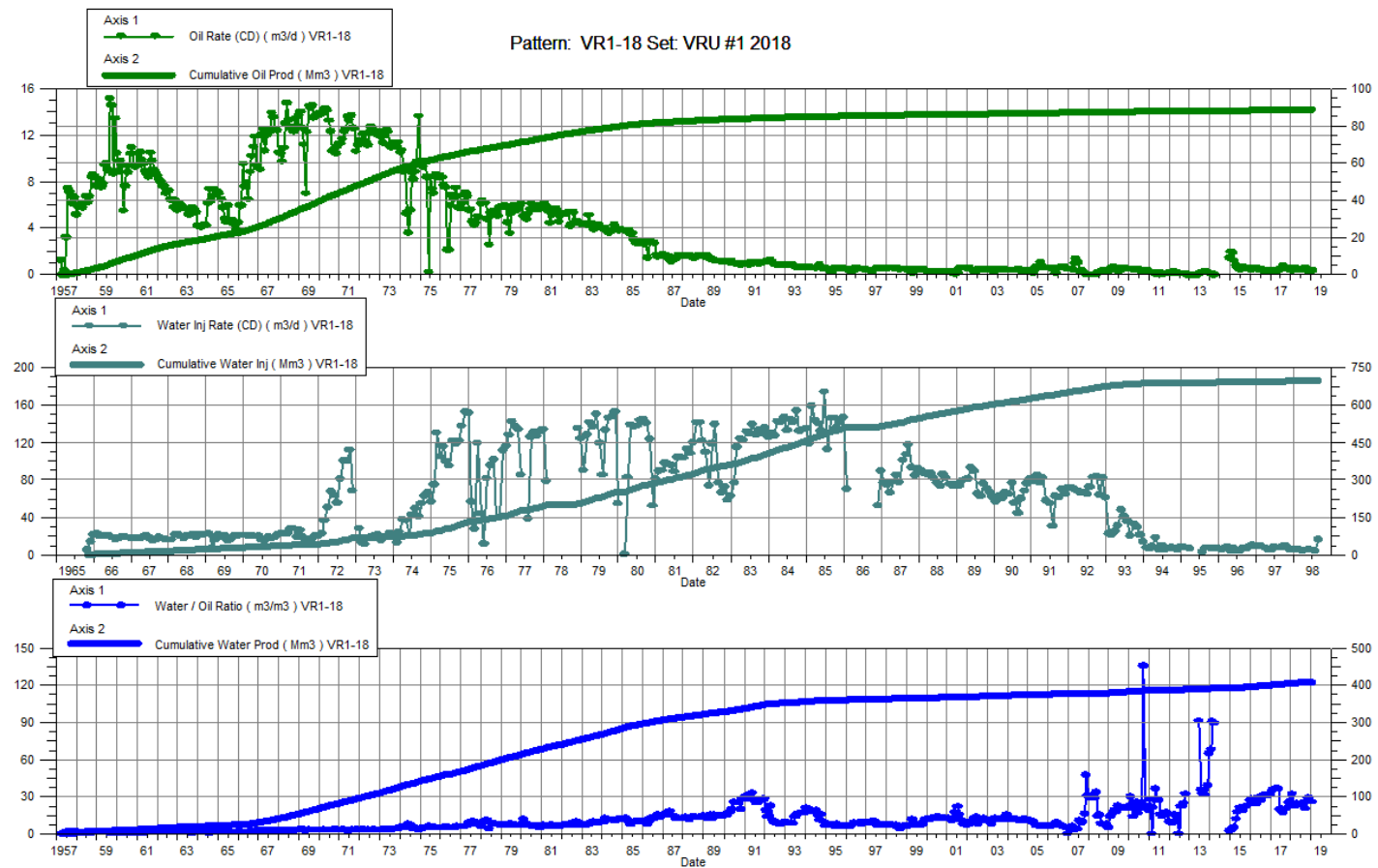
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	1.62	140.66	52.46	564.20		922.03	32.37		1.30	-
2-28-2018	2.25	140.72	53.57	565.70		922.03	23.76		1.30	-
3-31-2018	2.43	140.80	53.52	567.36		922.03	22.04		1.30	-
4-30-2018	2.14	140.86	51.96	568.92		922.03	24.33		1.29	-
5-31-2018	1.98	140.92	46.95	570.38		922.03	23.69		1.29	-
6-30-2018	1.95	140.98	46.69	571.78		922.03	23.98		1.29	-
7-31-2018	1.93	141.04	48.03	573.26		922.03	24.88		1.29	-
8-31-2018	2.07	141.10	49.44	574.80		922.03	23.86		1.28	-
9-30-2018	2.23	141.17	44.94	576.15		922.03	20.18		1.28	-
10-31-2018	1.24	141.21	32.04	577.14		922.03	25.76		1.28	-
11-30-2018	1.64	141.26	47.92	578.58		922.03	29.22		1.28	-
12-31-2018	1.54	141.31	39.98	579.82		922.03	25.99		1.27	-



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Pattern P-18 - 00/15-20-010-25W1/0

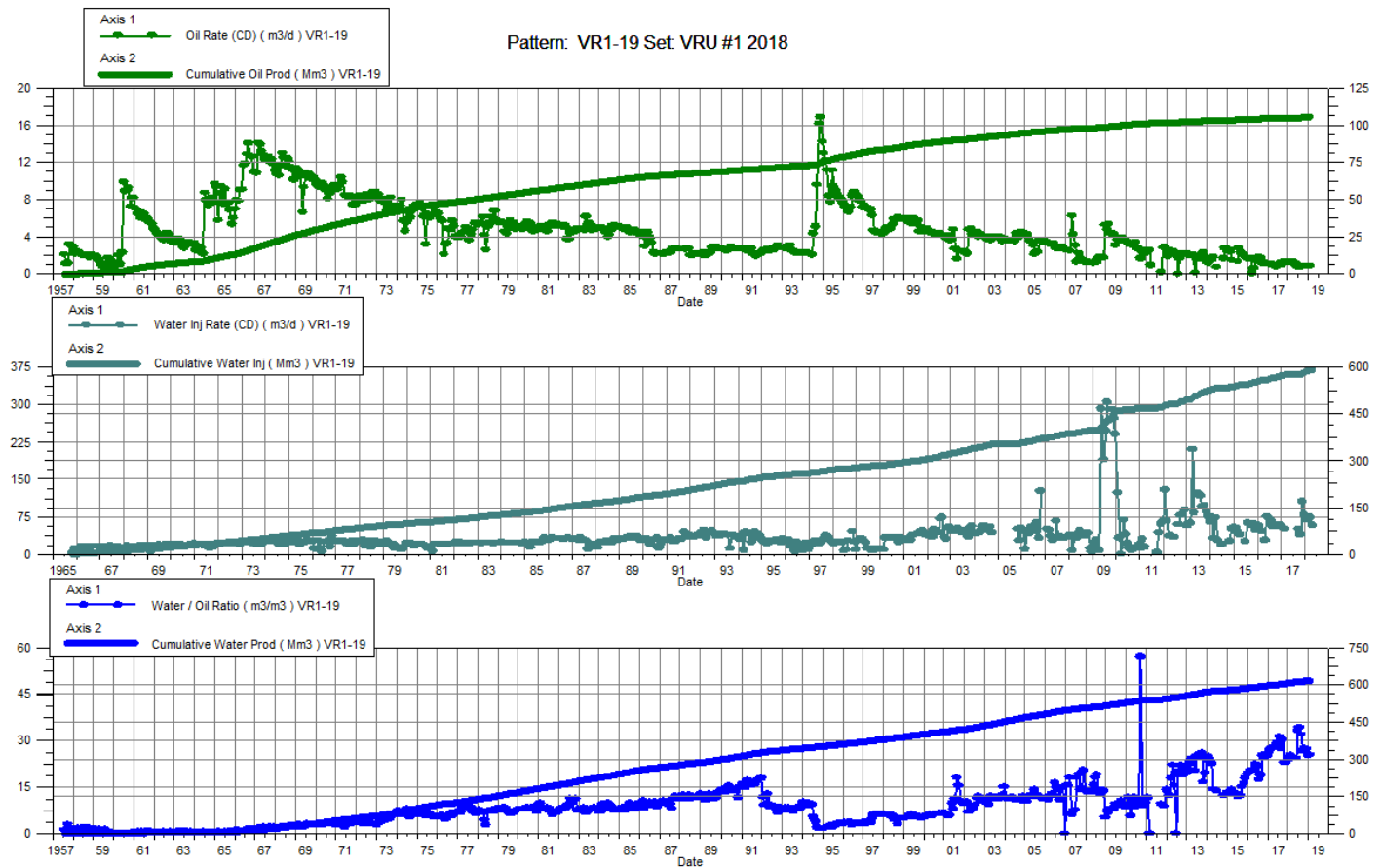
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	0.41	88.92	13.12	404.30		700.19	32.37		1.42	-
2-28-2018	0.56	88.93	13.39	404.68		700.19	23.76		1.41	-
3-31-2018	0.61	88.95	13.38	405.09		700.19	22.04		1.41	-
4-30-2018	0.53	88.97	12.99	405.48		700.19	24.33		1.41	-
5-31-2018	0.50	88.98	11.74	405.85		700.19	23.69		1.41	-
6-30-2018	0.49	89.00	11.67	406.20		700.19	23.98		1.41	-
7-31-2018	0.48	89.01	12.01	406.57		700.19	24.88		1.41	-
8-31-2018	0.52	89.03	12.36	406.95		700.19	23.86		1.41	-
9-30-2018	0.56	89.05	11.23	407.29		700.19	20.18		1.41	-
10-31-2018	0.31	89.06	8.01	407.54		700.19	25.76		1.41	-
11-30-2018	0.41	89.07	11.98	407.90		700.19	29.22		1.40	-
12-31-2018	0.38	89.08	9.99	408.21		700.19	25.99		1.40	-



VRU No. 1

Pattern P-19 - 00/13-21-010-25W1/0

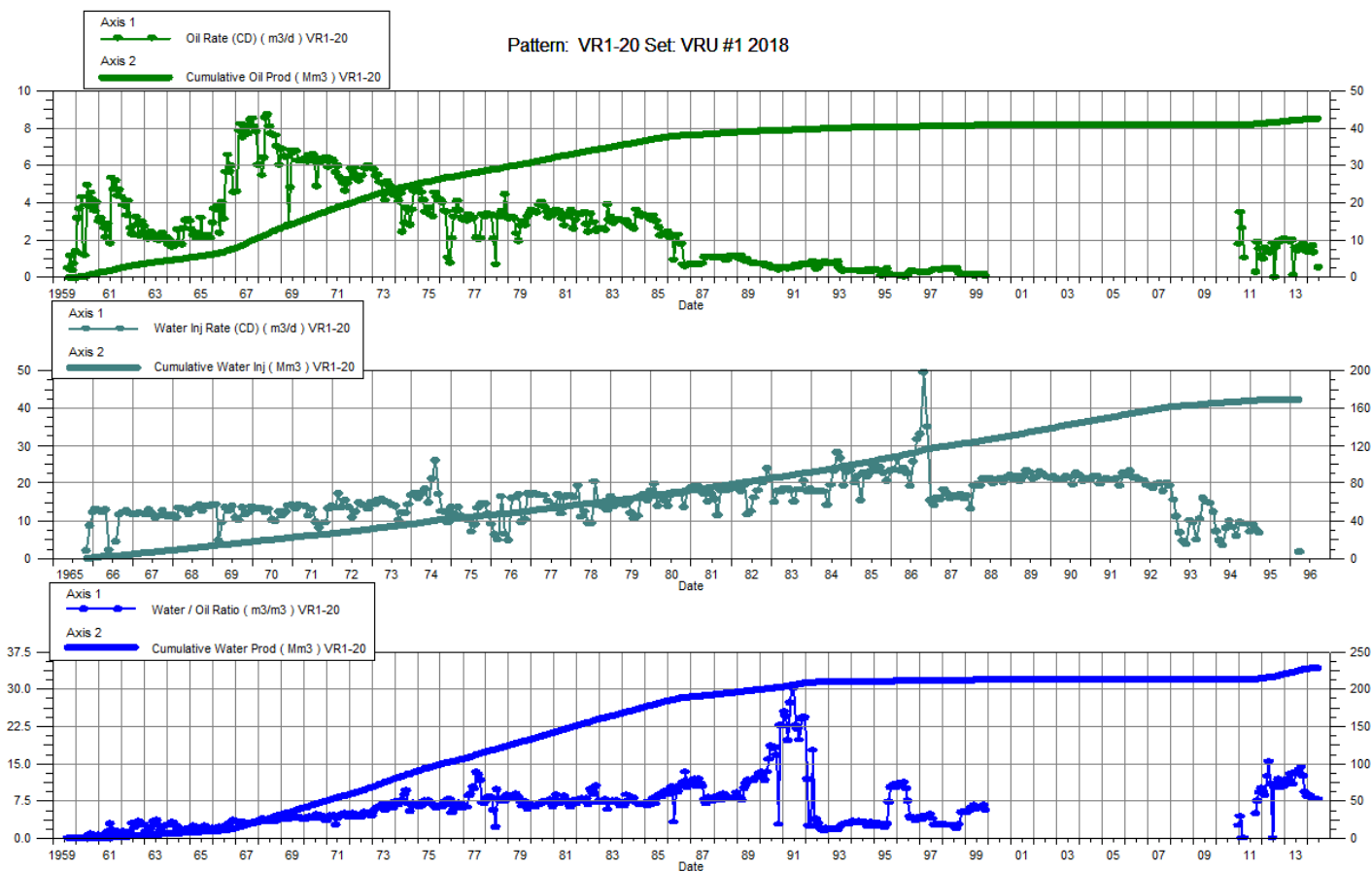
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018	1.37	105.12	32.89	605.58	68.88	588.20	24.08	2.01	0.83	7,000.00
2-28-2018	1.36	105.16	34.09	606.53	72.72	590.24	25.15	2.05	0.83	7,000.00
3-31-2018	1.32	105.20	32.36	607.53	74.52	592.55	24.51	2.21	0.83	7,000.00
4-30-2018	1.26	105.24	30.81	608.46	57.76	594.28	24.38	1.80	0.83	7,000.00
5-31-2018	1.10	105.27	26.68	609.28		594.28	24.23		0.83	7,000.00
6-30-2018	0.77	105.29	25.47	610.05		594.28	33.08		0.83	7,000.00
7-31-2018	0.77	105.32	26.23	610.86		594.28	34.15		0.83	7,000.00
8-31-2018	0.81	105.34	25.99	611.67		594.28	31.95		0.83	7,000.00
9-30-2018	0.88	105.37	23.42	612.37		594.28	26.59		0.83	7,000.00
10-31-2018	0.90	105.40	24.85	613.14		594.28	27.60		0.83	7,000.00
11-30-2018	0.90	105.42	24.62	613.88		594.28	27.21		0.82	7,000.00
12-31-2018	0.90	105.45	22.57	614.58		594.28	25.06		0.82	7,000.00



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Pattern P-20 - 00/09-20-010-25W1/0

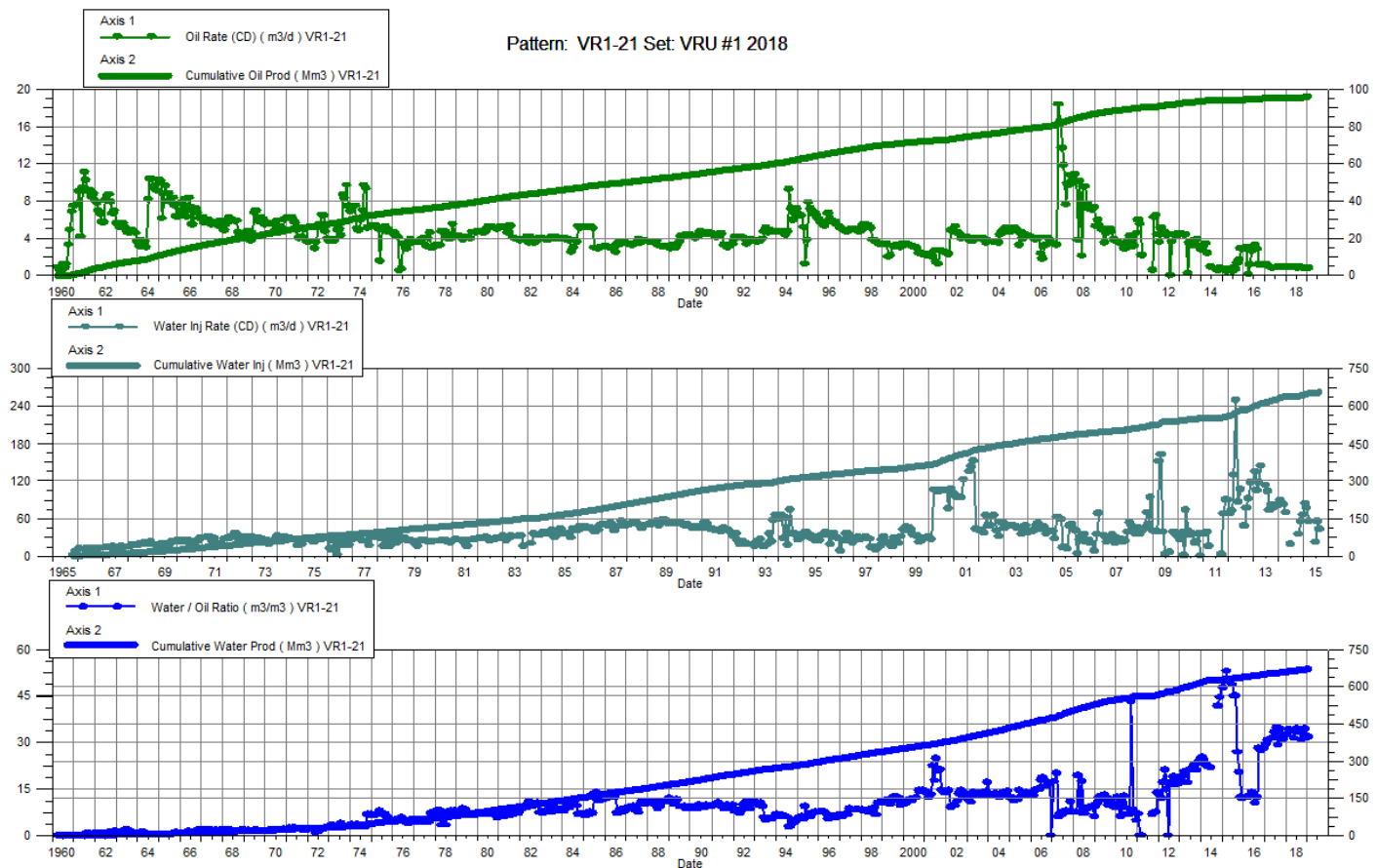
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacemt Ratio	Water Inj Pressure kPa
1-31-2018		42.70		228.19		169.20			0.62	-
2-28-2018		42.70		228.19		169.20			0.62	-
3-31-2018		42.70		228.19		169.20			0.62	-
4-30-2018		42.70		228.19		169.20			0.62	-
5-31-2018		42.70		228.19		169.20			0.62	-
6-30-2018		42.70		228.19		169.20			0.62	-
7-31-2018		42.70		228.19		169.20			0.62	-
8-31-2018		42.70		228.19		169.20			0.62	-
9-30-2018		42.70		228.19		169.20			0.62	-
10-31-2018		42.70		228.19		169.20			0.62	-
11-30-2018		42.70		228.19		169.20			0.62	-
12-31-2018		42.70		228.19		169.20			0.62	-



VRU No. 1

Pattern P-21 - 00/11-21-010-25W1/0

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
1-31-2018	0.98	95.64	31.93	658.36		656.98	32.56		0.87	5,000.00
2-28-2018	0.97	95.66	33.10	659.29		656.98	34.14		0.87	5,000.00
3-31-2018	0.99	95.69	33.11	660.32		656.98	33.60		0.87	5,000.00
4-30-2018	0.95	95.72	32.03	661.28		656.98	33.54		0.87	5,000.00
5-31-2018	0.94	95.75	29.18	662.18		656.98	31.19		0.87	5,000.00
6-30-2018	0.88	95.78	29.21	663.06		656.98	33.26		0.86	5,000.00
7-31-2018	0.88	95.81	30.08	663.99		656.98	34.34		0.86	5,000.00
8-31-2018	0.94	95.84	30.96	664.95		656.98	33.04		0.86	5,000.00
9-30-2018	0.90	95.86	27.80	665.79		656.98	30.95		0.86	5,000.00
10-31-2018	0.81	95.89	27.17	666.63		656.98	33.56		0.86	5,000.00
11-30-2018	0.84	95.91	28.88	667.49		656.98	34.38		0.86	5,000.00
12-31-2018	0.85	95.94	26.81	668.33		656.98	31.48		0.86	5,000.00



VRU No. 1

Pattern P-22 - 00/09-26-010-26W1/0

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
1-31-2018										
2-28-2018										
3-31-2018										
4-30-2018		104.22		2540.64	502.41	15.07			0.01	-
5-31-2018		104.22		2540.64	1008.47	46.33			0.02	-
6-30-2018		104.22		2540.64	997.61	76.26			0.03	-
7-31-2018	1.04	104.25	132.51	2544.75	845.84	102.48	127.97	6.33	0.04	-
8-31-2018	0.48	104.26	58.46	2546.56	988.58	133.13	122.46	16.77	0.05	-
9-30-2018		104.26		2546.56	955.57	161.80			0.06	-
10-31-2018		104.26		2546.56	1028.60	193.68			0.07	-
11-30-2018		104.26		2546.56	1029.56	224.57			0.09	-
12-31-2018		104.26		2546.56	1056.97	257.34			0.10	-

