

Virden Roselea Unit #3
2019 Annual EOR Report

Executive Summary

In 2019 oil production in Virden Roselea Unit #3 (VRU #3) was 52.3 m³/d (329 bbl/d) totaling 19.1 e³m³ (120 mmbbl). Annual production inclined 12% from 2018 to 2019 using the yearly average, comparing December 2018 to December 2019 the unit also declined in production by 12%. By the end of 2019 cumulative oil production from the VRU #3 was 2,686 e³m³ (16.9 mmbbl). The original forecasted recovery was 1,290 e³m³ (8.1 mmbbl) on primary recovery and 2,837 e³m³ (17.9 mmbbl) total primary plus secondary recovery.

In December 2019 there were 42 producing oil wells and 14 water injectors active in the unit. In 2016, one re-entry from an existing horizontal in the Scallion formation was drilled. In 2017, six dual leg horizontal wells and three re-entries from existing horizontals were drilled within the unit. In 2018, three dual leg horizontal wells were drilled in the unit. In 2019, two horizontal wells were drilled.

Discussion

The VRU #3 has been under waterflood since 1967, 13 years after first production from the pool in 1954. Water injection increased the oil production rate from $\sim 100 \text{ m}^3/\text{d}$ ($\sim 629 \text{ bbl/d}$) to $\sim 225 \text{ m}^3/\text{d}$ ($1,415 \text{ bbl/d}$); however, lower than peak production from the field of $450 \text{ m}^3/\text{d}$ ($2,830 \text{ bbl/d}$). Expected ultimate oil recovery was doubled by the waterflood. As of yet, the waterflood forecast has not been exceeded as in other units in Virden.

Prior to 2013, there had been only one development well drilled in VRU #3 in the last nine years, a horizontal well drilled in 2008. In 2002 and 2003, nine horizontal wells were drilled in the unit with mixed results. In 2014, two Scallion and three Virden horizontal wells were drilled in the unit. In 2015, an additional Scallion well was drilled. In 2016, a re-entry well was drilled in the Scallion formation. In 2017, six dual leg horizontal wells and three re-entries from existing horizontals were drilled within the unit. In 2018, three dual leg horizontal wells were drilled in the unit. In 2019, two horizontal wells were drilled.

2018 is the first year since 1974 to have wells converted to injection: 102/03-11-010-26W1/02 and 100/01-10-010-26W1/00. Currently, further potential conversions are under technical review to improve the sweep efficiency in the unit. In the Northeast segment of the unit different tracers were placed into the injectors and the produced water was monitored from the producing wells. The results showed that the reservoir is very complex with notable fracturing. A clear fracture trend can be seen in the NW-SE orientation, with water from distant injectors traveling to some wells and completely bypassing others. Therefore, there is an undisputable high permeability channel that is preferential to flow in some areas of the unit. This gives us the understanding that the waterflood is more complex than envisioned and the patterns that have been drawn in all of the units will rarely be correct. The intricacy of the reservoir and ultimately the waterflood behavior cannot be fully understood. With natural fractures the low recovery of the unit and poor sweep efficiency is understandable. An increase in the injector to producer ratio will likely be effective and change the well-established streamlines. This unit also has the lowest cum VRR of any of the units at 0.81 and increasing the amount of injection as well as balancing the flood would be beneficial. The water injection rate was $1,523 \text{ m}^3/\text{d}$ ($9,579 \text{ bbl/d}$) in 2019 and the producing WOR was $20 \text{ m}^3/\text{m}^3$. The injected water at VRU #3 is not filtered or treated in any way.

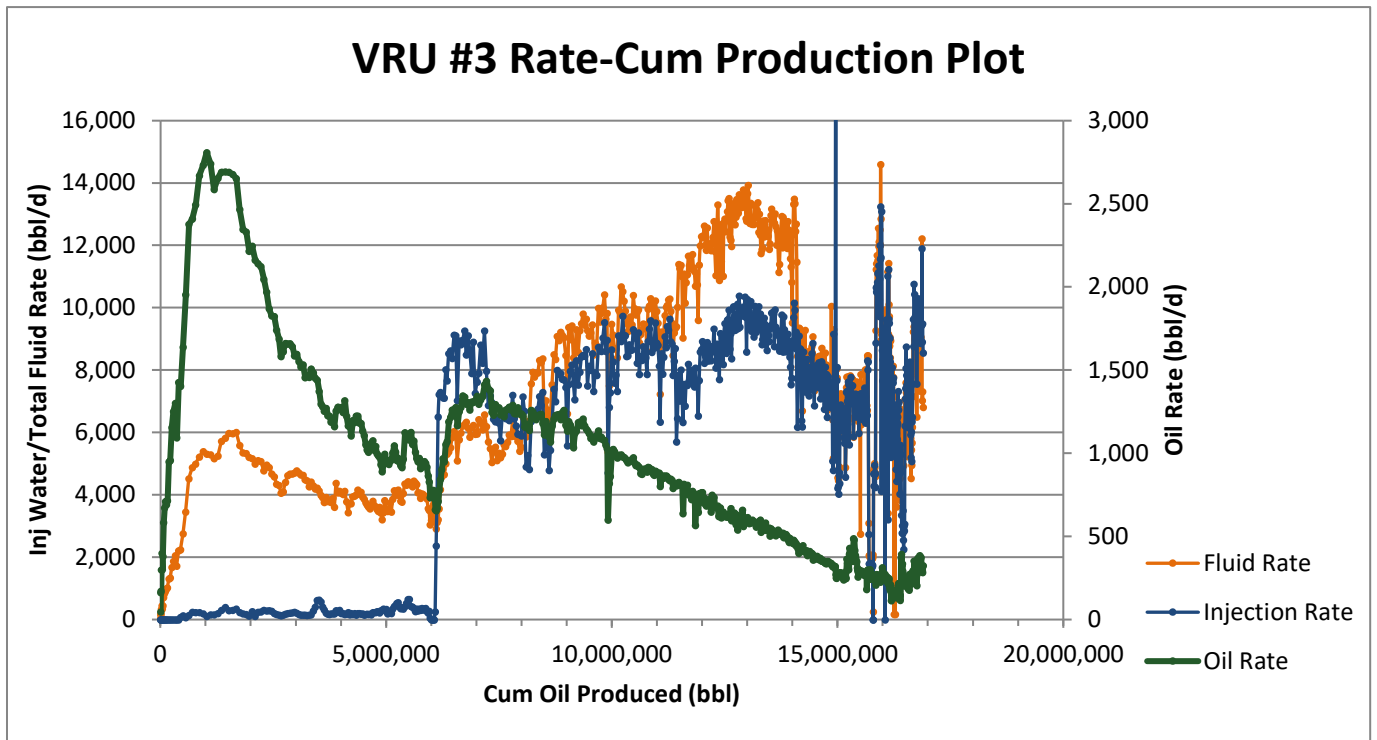
Significant events in 2019 are as follows:

- February 2019, drill the 102/05-02-010-26W1/00 horizontal well in the Sandhill/Oolites.
- March 2019, perform a water shut off using polymer on the 102/05-23-010-26W1/00 horizontal well.
- June 2019, perform a water shut off using polymer on the 103/15-07-010-25W1/00.
- August 2019, abandon the 100/03-23-010-26W1/00 vertical injection well.
- October 2019, squeeze polymer in 102/05-02-010-26W1/00 horizontal for a water shut off.
- October 2019, squeeze polymer in 102/16-14-010-26W1/00 horizontal for a water shut off.
- December 2019, drill the 103/05-23-010-26W1/00 horizontal well in the Oolites

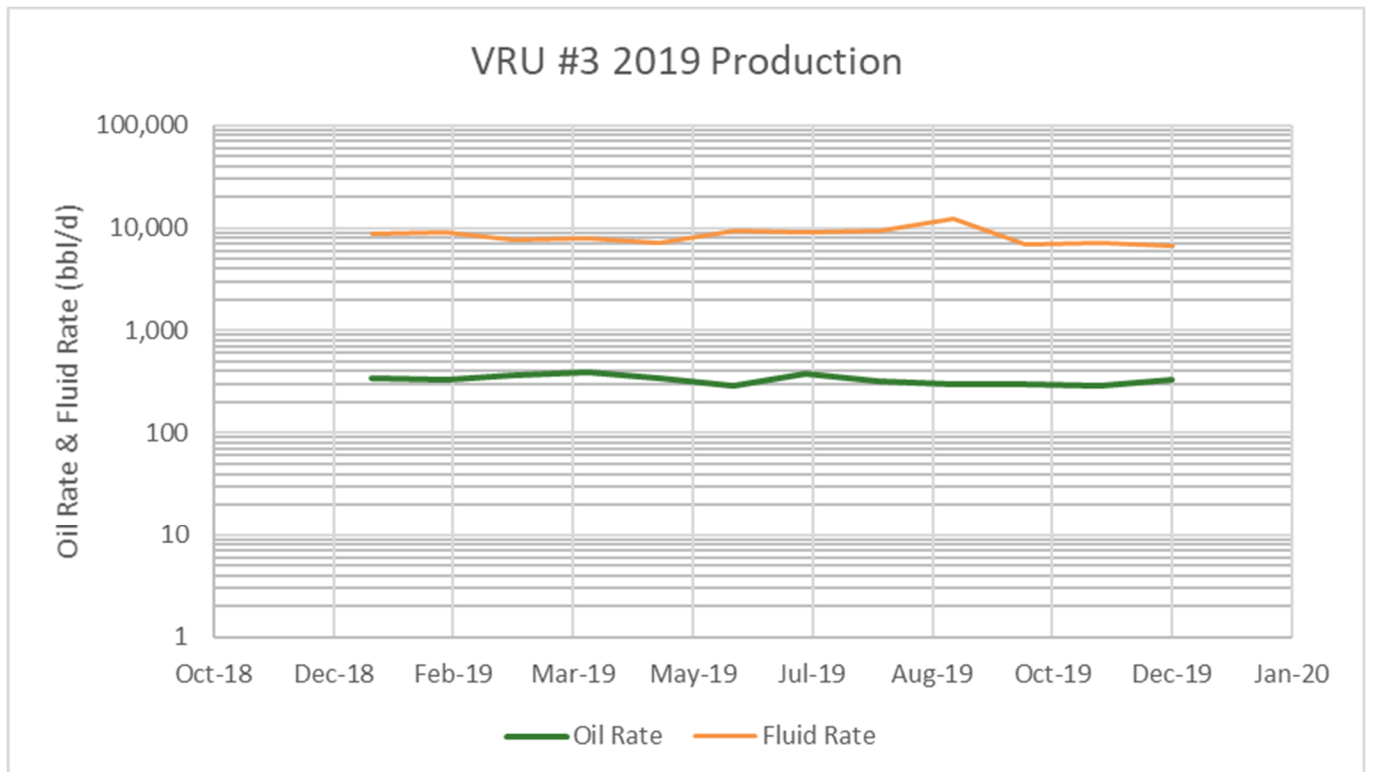
In the composite rate – cumulative oil plot below, waterflood response is clearly demonstrated at a cumulative oil production of 1000 e^3m^3 (6.3 MMbbl) after a pattern waterflood was initiated.

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

VRU #3 – Rate vs Cum Oil Production



VRU #3 – Rate vs Time



2019 Reservoir Pressure Surveys

Unit	UWI	License	Test Type	Date of Pressure	Duration of SI (days)	Datum BHP (kPaa)
VRU #3	102/05-02-010-26W1/00	11110	BH BU	2019-02-15	11	6,888
VRU #3	103/05-23-010-26W1/00	11234	BH BU	2019-12-16	3	4,256

In 2019, two pressures were taken, resulting in an average reservoir pressure of ~5,600 kPa, despite the minimal dataset this pressure is similar to previous pressure surveys taken. However, the pressure is likely decreasing with further production and more injection would be beneficial to increase the reservoir pressure and support newly drilled wells. In 2018, three pressures were taken, giving an average of 5,900 kPa. In 2017, a pressure survey conducted that gave an average reservoir pressure of 6,000 kPa. This is close to normally pressured, if a bit under pressured. In 2015, two pressure surveys were conducted within the unit, pressures close to normally pressured. In 2014, six pressure surveys were conducted giving an average pool pressure of 7,200 kPaa. Prior pressure surveys have shown that wide variations in pressure exist across the pool. There are plans to implement more waterflood conversions within the unit to reduce further decline in the pressure due to the drilling of new infill wells.

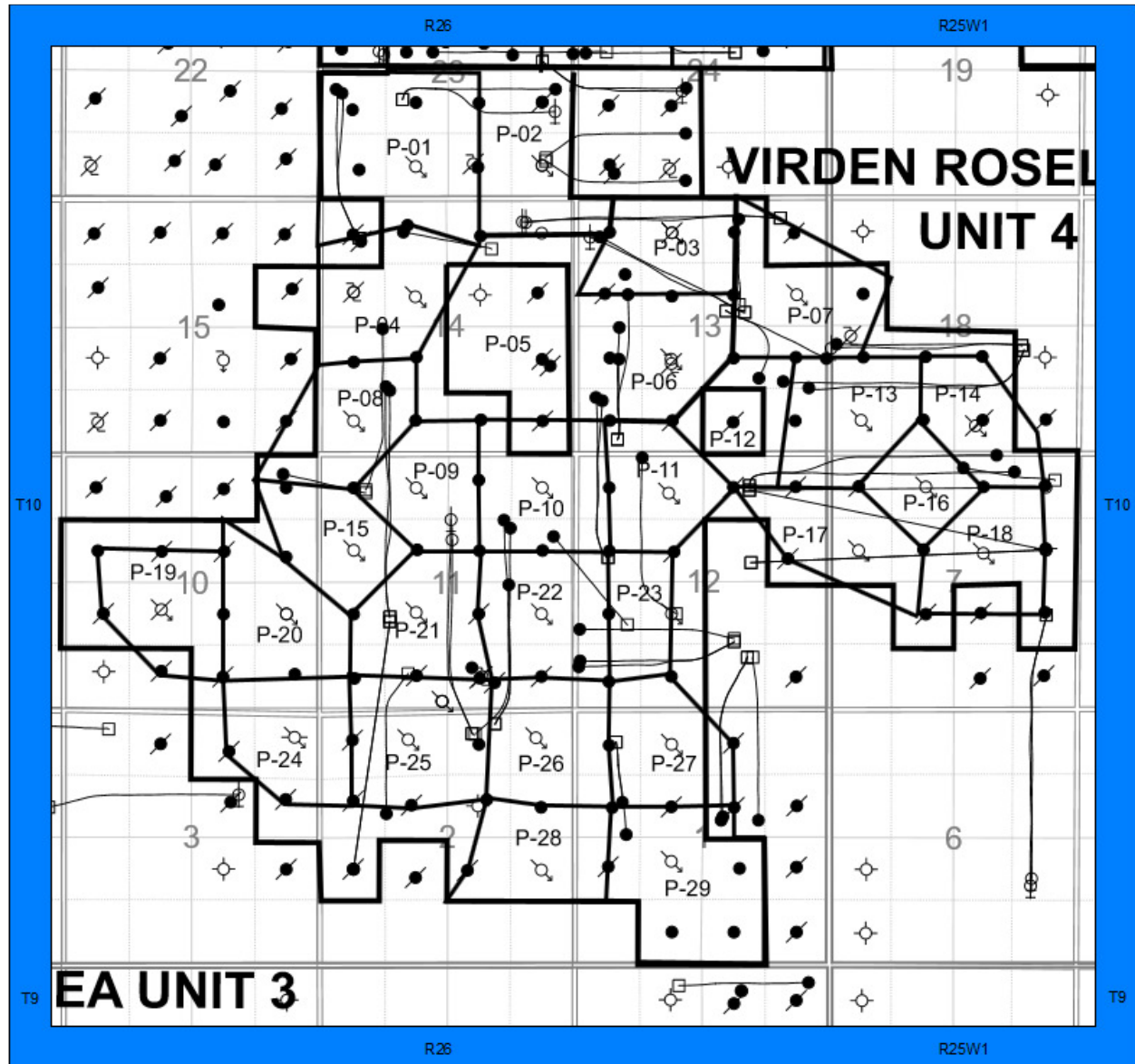
The voidage replacement ratio (VRR) in 2019 generally stayed below 1.0, except for one month, ranging from 0.45 to 1.03. At the end of the year the VRR was 0.97. The cumulative VRR at year end was 0.81. The high reservoir pressure seen in some areas is inconsistent with the cumulative VRR less than 1.0.

There is potentially partial pressure support for the field from an aquifer on the west side of the unit and the water influx from the aquifer is not accounted for in the VRR calculation. 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.

2019 Well Servicing

UWI	Unit	Licence	Start Date	Operation	Objective
102/16-14-010-26W1/00	VRU#3	10961	2019-09-22	Completion/Workover	Polymer Squeeze
PIT DELINEATION - 02-11-10-26	VRU#3	OR19VIR003	2019-12-01	Facilities	OPEX Remediation
100/11-13-010-26W1/00	VRU#3	000721	2019-01-16	Completion/Workover	Pump Repair
TURNAROUND	VRU#3	T19VIR002	2019-06-03	Facilities	Turnaround
SEPARATOR / HEADER INSTALL	VRU#3	FF19VIR006	2019-11-20	Facilities	Install Separator
102/05-23-010-26W1/00	VRU#3	10688	2019-02-28	Completion/Workover	Workover
FLOWLINE REPLACEMENT	VRU#3	P19VIR015	2019-07-17	Facilities	Pipeline / Flowline Replacement
102/05-02-010-26W1/00	VRU#3	11110	2019-01-28	Drilling	Drilling - original
102/05-02-010-26W1/00	VRU#3	11110	2019-02-05	Completion/Workover	Initial Completion
102/05-02-010-26W1/00	VRU#3	11110	2019-09-17	Completion/Workover	Polymer Squeeze
100/03-23-010-26W1/00	VRU#3	000734	2019-08-12	Abandon	Abandon Well
100/03-23-010-26W1/00	VRU#3	000734	2019-09-01	Facilities	Reclamation
PIPELINE BORE UNDER RAILROAD	VRU#3	P19VIR016	2019-08-27	Facilities	Pipelines
BIO REMEDIATION - 13-14-10-26	VRU#3	OR19VIR001	2019-09-01	Facilities	OPEX Remediation
103/05-23-010-26W1/00	VRU#3	11234	2019-12-10	Drilling	Drilling - original
103/05-23-010-26W1/00	VRU#3	11234	2019-12-14	Completion/Workover	Initial Completion
103/05-23-010-26W1/00	VRU#3	11234	2019-12-18	Facilities	Equip & Tie-In
102/09-11-010-26W1/00	VRU#3	005108	2019-12-02	Completion/Workover	Pump Repair
103/15-07-010-25W1/00	VRU#3	10802	2019-05-22	Completion/Workover	Water Shut Off
102/03-23-010-26W1/00	VRU#3	11339	2019-07-04	Facilities	Equip & Tie-In
102/03-23-010-26W1/00	VRU#3	11339	2019-07-04	Construction	Construction

Waterflood Pattern Map

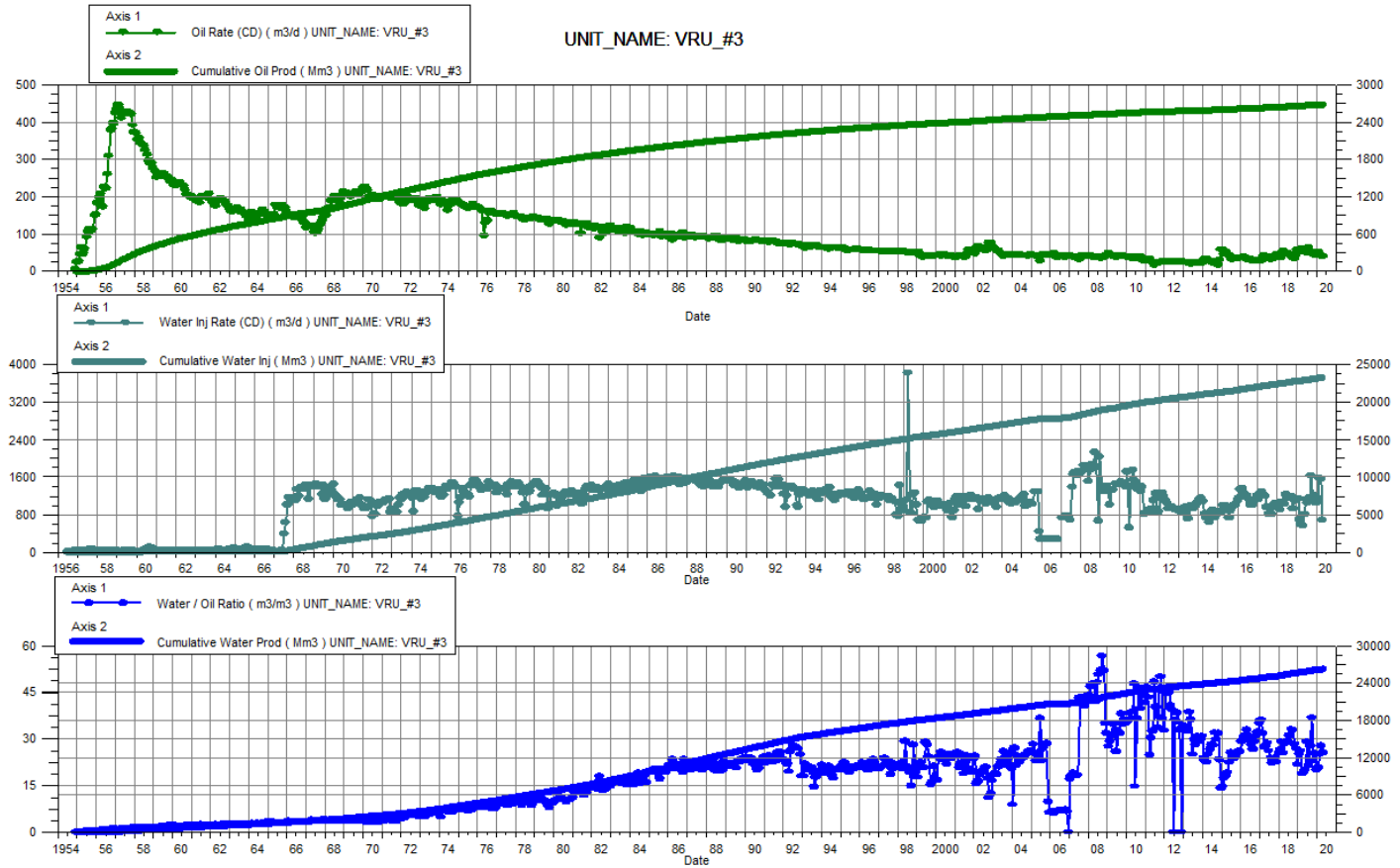


Waterflood Pattern Table

Pattern	Well
P-01	100/03-23-010-26W1/00
P-02	100/01-23-010-26W1/00
P-03	100/14-13-010-26W1/00
P-03	102/14-13-010-26W1/00
P-04	100/11-14-010-26W1/00
P-06	100/06-13-010-26W1/00
P-07	100/09-13-010-26W1/00
P-08	100/04-14-010-26W1/00
P-09	100/14-11-010-26W1/00
P-10	100/16-11-010-26W1/00
P-11	100/14-12-010-26W1/00
P-13	100/04-18-010-25W1/00
P-14	102/02-18-010-25W1/00
P-15	100/12-11-010-26W1/00
P-16	100/14-07-010-25W1/00
P-17	100/12-07-010-25W1/00
P-18	100/10-07-010-25W1/00
P-19	100/06-10-010-26W1/00
P-20	100/08-10-010-26W1/00 & 100/01-10-010-26W1/00
P-21	100/06-11-010-26W1/00
P-22	100/08-11-010-26W1/00
P-23	100/06-12-010-26W1/00
P-24	100/16-03-010-26W1/00
P-25	100/14-02-010-26W1/00 & 102/03-11-010-26W1/02
P-26	100/16-02-010-26W1/00
P-27	100/14-01-010-26W1/00
P-28	100/08-02-010-26W1/00
P-29	100/06-01-010-26W1/00

Total for VRU #3

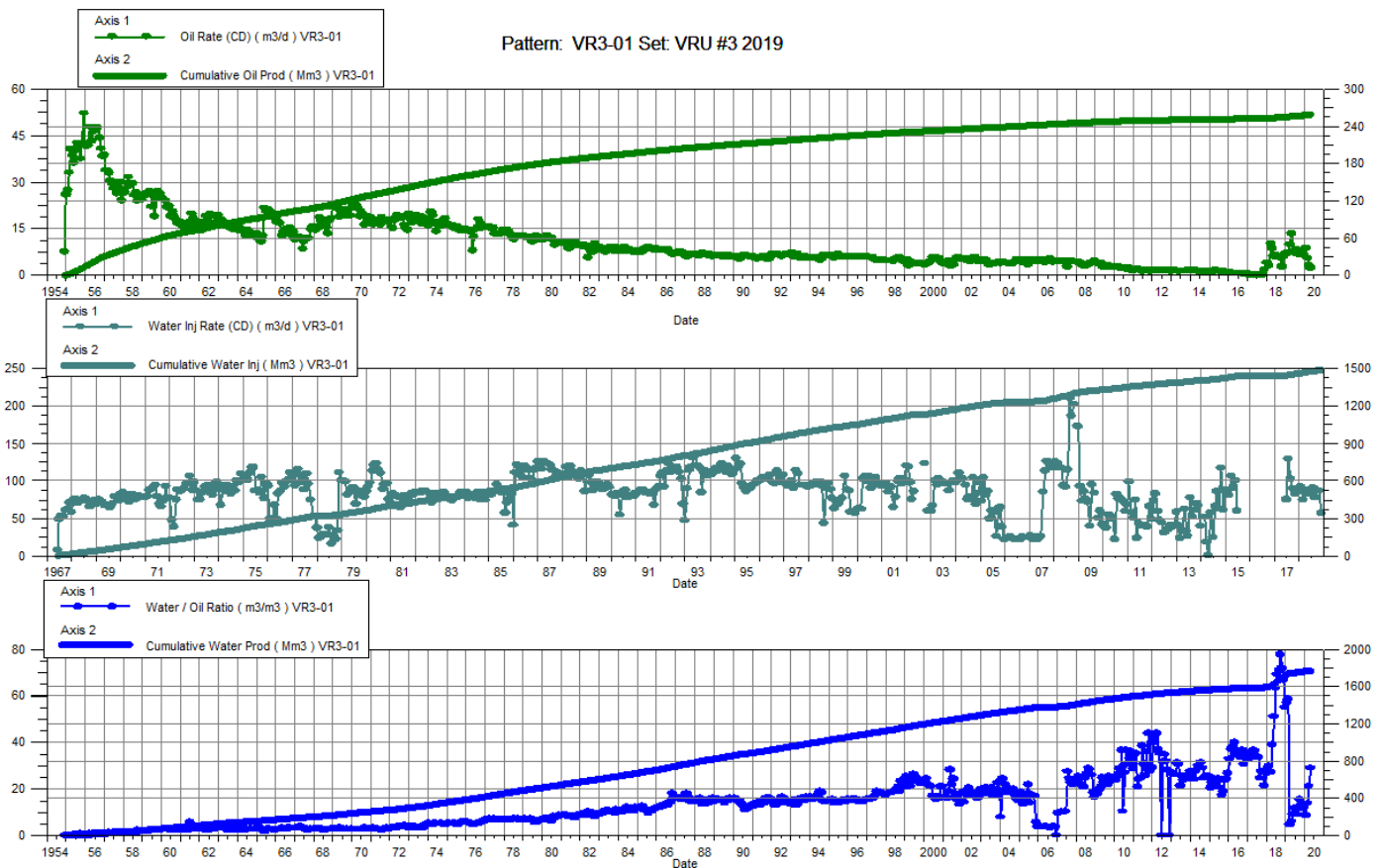
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	53.3	2667.42	1341.2	25626.49	1145.47	22925.2	25.16	0.82	0.81	4,286.21
2-28-2019	53.4	2668.92	1396.2	25665.58	693.95	22944.6	26.15	0.48	0.81	4,286.21
3-31-2019	61.2	2670.81	1149.2	25701.21	599.45	22963.2	18.78	0.50	0.81	4,286.21
4-30-2019	62.5	2672.69	1206.7	25737.41	574.02	22980.4	19.32	0.45	0.81	4,286.21
5-31-2019	55.6	2674.41	1110.6	25771.83	805.73	23005.4	19.99	0.69	0.81	4,286.21
6-30-2019	50.0	2675.91	1455.9	25815.51	1119.28	23039.0	29.11	0.74	0.81	4,286.21
7-31-2019	64.4	2677.91	1375.3	25858.15	1046.58	23071.4	21.35	0.73	0.81	4,286.21
8-31-2019	52.8	2679.54	1452.2	25903.16	1170.26	23107.7	27.53	0.78	0.81	4,286.21
9-30-2019	51.5	2681.09	1890.6	25959.88	1631.13	23156.6	36.69	0.84	0.81	4,286.21
10-31-2019	47.0	2682.55	1070.3	25993.06	1098.87	23190.7	22.76	0.98	0.81	4,286.21
11-30-2019	44.0	2683.87	1119.2	26026.64	1204.13	23226.8	25.44	1.03	0.81	4,286.21
12-31-2019	51.6	2685.47	1031.3	26058.61	1045.87	23259.2	19.99	0.97	0.81	4,286.21



VRU #3

Pattern P-01 – 00/03-23-010-26W1/0

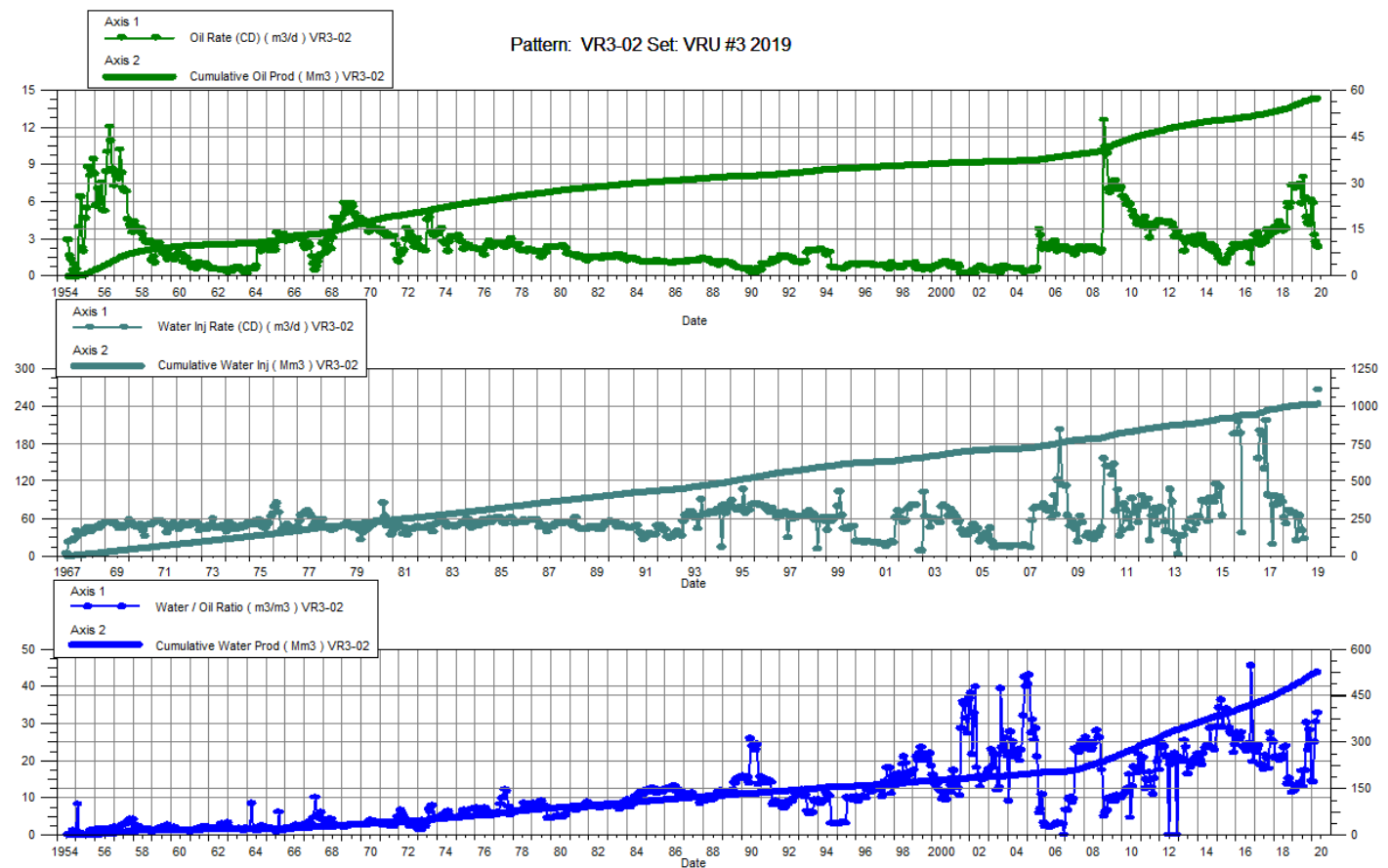
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	7.5	255.82	425.6	1722.14		1493.8	57.12		0.75	4,700.00
2-28-2019	7.2	256.02	419.6	1733.89		1493.8	58.66		0.75	4,700.00
3-31-2019	10.0	256.33	46.6	1735.33		1493.8	4.64		0.75	4,700.00
4-30-2019	13.5	256.73	81.4	1737.77		1493.8	6.05		0.75	4,700.00
5-31-2019	7.7	256.97	69.6	1739.93		1493.8	9.06		0.75	4,700.00
6-30-2019	7.4	257.19	86.6	1742.53		1493.8	11.76		0.75	4,700.00
7-31-2019	8.6	257.46	78.5	1744.96		1493.8	9.14		0.74	4,700.00
8-31-2019	6.9	257.67	85.9	1747.62		1493.8	12.41		0.74	4,700.00
9-30-2019	7.5	257.90	116.3	1751.11		1493.8	15.61		0.74	4,700.00
10-31-2019	7.0	258.11	79.1	1753.57		1493.8	11.29		0.74	4,700.00
11-30-2019	6.7	258.31	83.1	1756.06		1493.8	12.45		0.74	4,700.00
12-31-2019	6.7	258.52	58.9	1757.89		1493.8	8.84		0.74	4,700.00



VRU #3

Pattern P-02 – 00/01-23-010-26W1/0

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 Replacement Ratio	Water Inj Pressure kPa
1-31-2019	7.3	54.98	85.6	482.16		1014.3	11.76		1.89	4,700.00
2-28-2019	7.1	55.18	86.1	484.57		1014.3	12.12		1.88	4,700.00
3-31-2019	7.3	55.40	97.1	487.58		1014.3	13.24		1.86	4,700.00
4-30-2019	7.3	55.62	96.0	490.46		1014.3	13.25		1.85	4,700.00
5-31-2019	7.4	55.85	102.9	493.65		1014.3	13.92		1.84	4,700.00
6-30-2019	5.9	56.03	101.1	496.68	267.73	1022.3	17.23	2.50	1.85	4,700.00
7-31-2019	8.0	56.27	103.5	499.89		1022.3	12.93		1.84	4,700.00
8-31-2019	6.4	56.47	110.5	503.32		1022.3	17.31		1.82	4,700.00
9-30-2019	4.8	56.61	143.4	507.62		1022.3	30.20		1.81	4,700.00
10-31-2019	4.3	56.75	97.7	510.65		1022.3	22.73		1.80	4,700.00
11-30-2019	4.2	56.87	117.0	514.16		1022.3	28.11		1.79	4,700.00
12-31-2019	6.2	57.06	88.3	516.90		1022.3	14.35		1.78	4,700.00

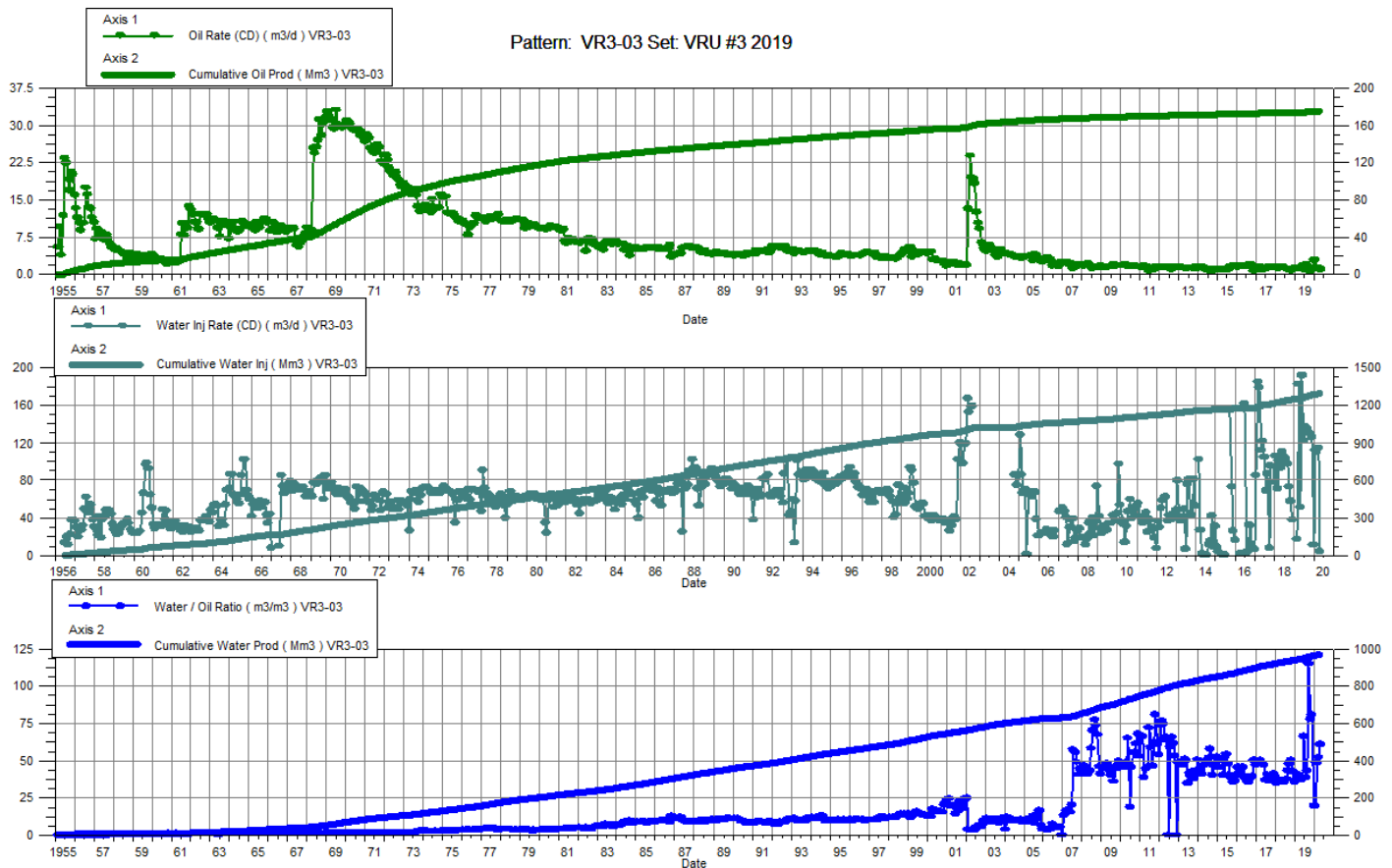


VRU #3

Pattern P-03 – 00/14-13-010-26W1/0

P-03 – 02/14-13-010-26W1/0

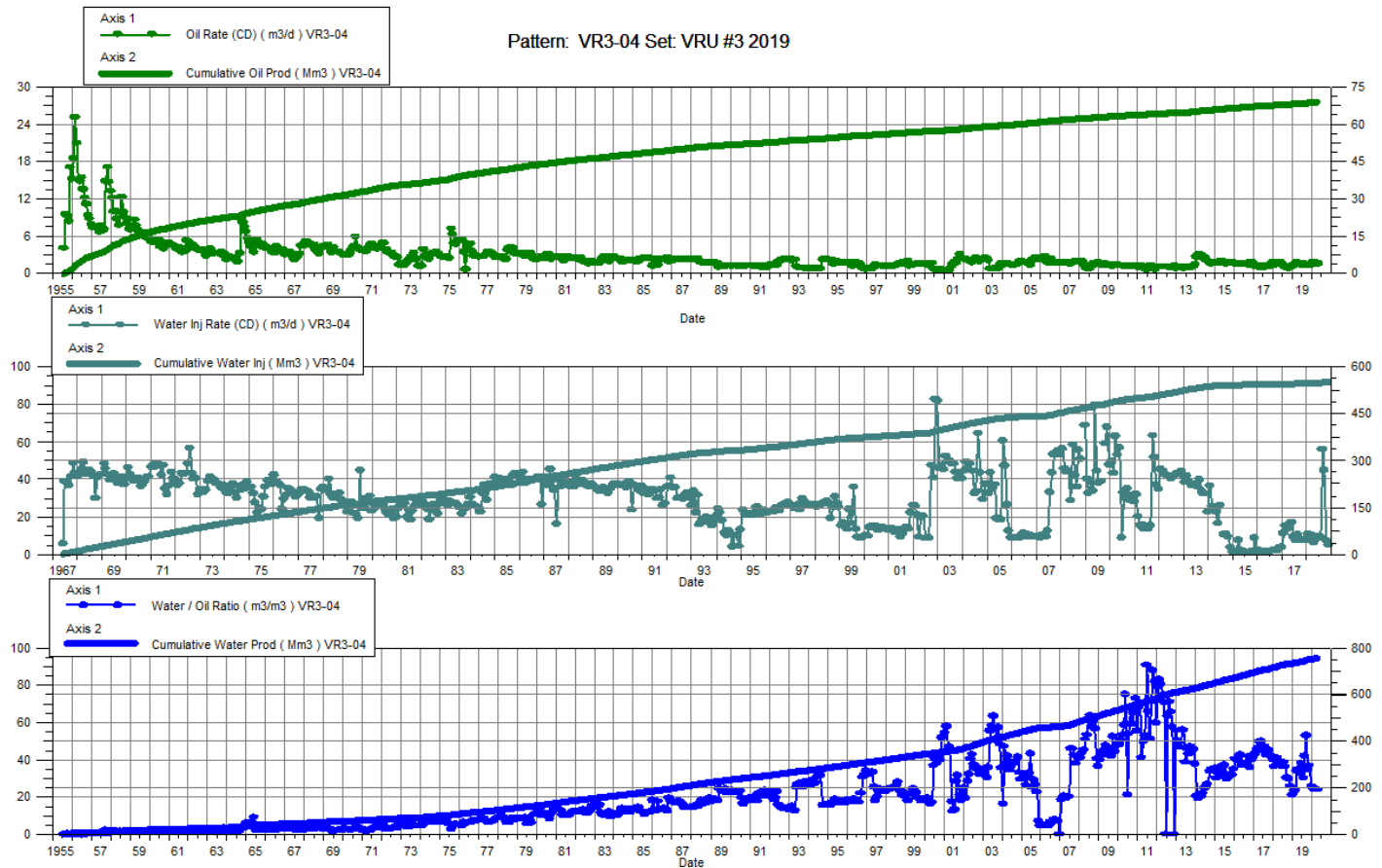
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	1.3	174.42	46.1	938.89		1250.4	36.36		1.12	4,200.00
2-28-2019	1.2	174.45	43.9	940.12	17.04	1250.8	36.99	0.38	1.12	4,200.00
3-31-2019	1.2	174.49	49.9	941.67	183.29	1256.5	40.25	3.59	1.12	4,200.00
4-30-2019	1.3	174.53	48.9	943.13	50.97	1258.1	37.34	1.02	1.12	4,200.00
5-31-2019	1.8	174.59	70.3	945.31	192.13	1264.0	39.04	2.66	1.13	4,200.00
6-30-2019	1.2	174.62	78.0	947.65	122.30	1267.7	66.15	1.54	1.13	4,200.00
7-31-2019	2.1	174.69	79.9	950.13	138.00	1272.0	38.63	1.68	1.13	4,200.00
8-31-2019	1.9	174.74	82.3	952.68	135.29	1276.1	43.17	1.61	1.13	4,200.00
9-30-2019	0.8	174.77	96.7	955.58	130.60	1280.1	114.88	1.34	1.13	4,200.00
10-31-2019	0.7	174.79	54.1	957.26	130.03	1284.1	77.90	2.37	1.13	4,200.00
11-30-2019	1.0	174.82	80.0	959.66	126.30	1287.9	80.56	1.56	1.13	4,200.00
12-31-2019	3.0	174.91	60.1	961.52	10.65	1288.2	19.97	0.17	1.13	4,200.00



VRU #3

Pattern P-04 – 00/11-14-010-26W1/0

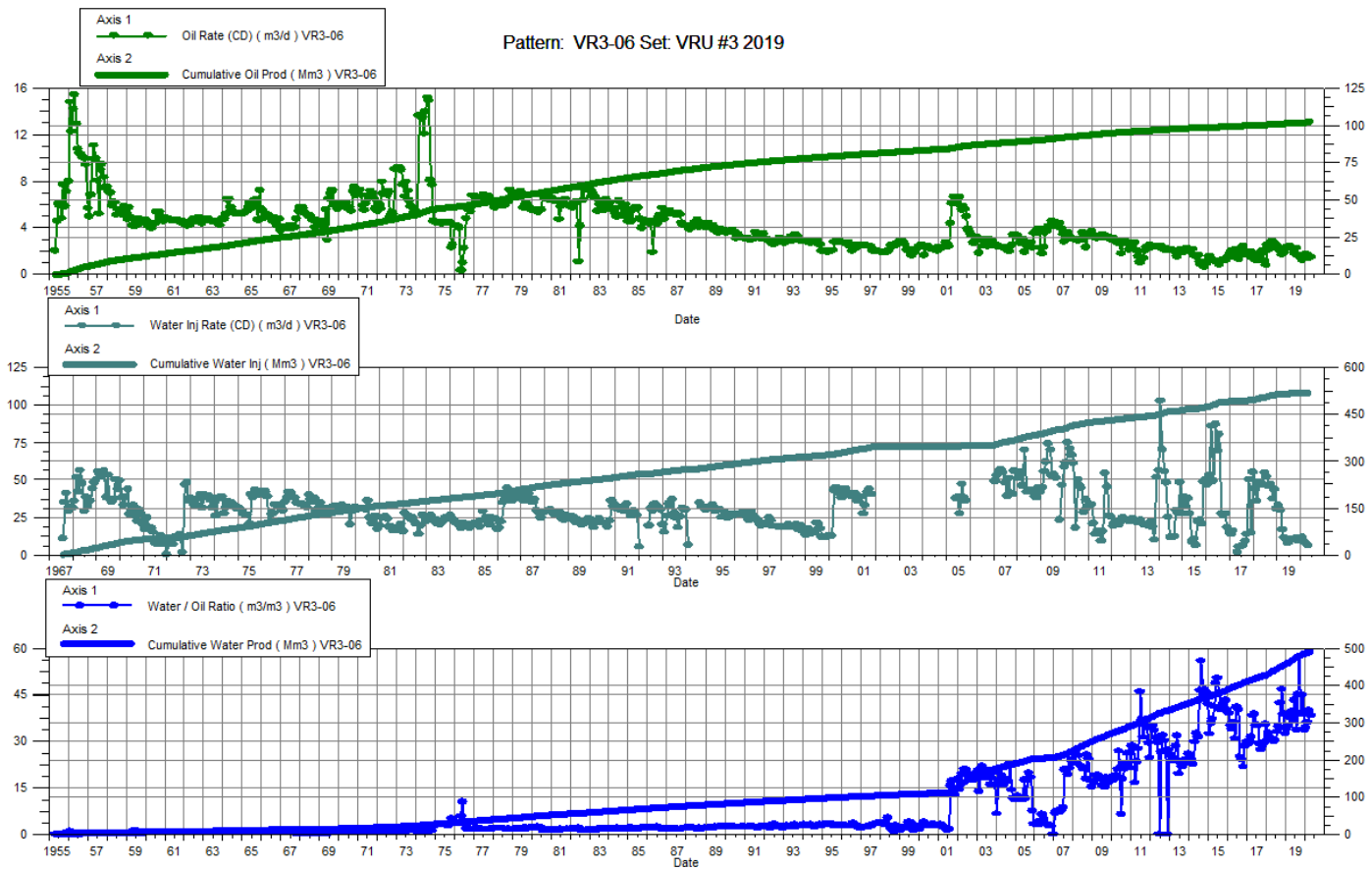
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	1.3	68.29	28.3	732.16		554.3	21.98		0.69	5,100.00
2-28-2019	1.3	68.33	31.7	733.05		554.3	23.78		0.69	5,100.00
3-31-2019	1.9	68.39	63.8	735.03		554.3	34.11		0.69	5,100.00
4-30-2019	1.7	68.44	58.2	736.78		554.3	35.02		0.69	5,100.00
5-31-2019	1.5	68.49	50.0	738.33		554.3	32.61		0.69	5,100.00
6-30-2019	1.3	68.53	51.2	739.86		554.3	38.08		0.69	5,100.00
7-31-2019	1.7	68.58	52.4	741.49		554.3	30.22		0.68	5,100.00
8-31-2019	1.3	68.62	55.5	743.21		554.3	41.97		0.68	5,100.00
9-30-2019	1.4	68.66	71.7	745.36		554.3	52.84		0.68	5,100.00
10-31-2019	1.4	68.71	49.5	746.89		554.3	34.36		0.68	5,100.00
11-30-2019	1.3	68.75	49.2	748.37		554.3	36.83		0.68	5,100.00
12-31-2019	1.5	68.79	37.9	749.54		554.3	25.87		0.68	5,100.00



VRU #3

Pattern P-06 – 00/06-13-010-26W1/0

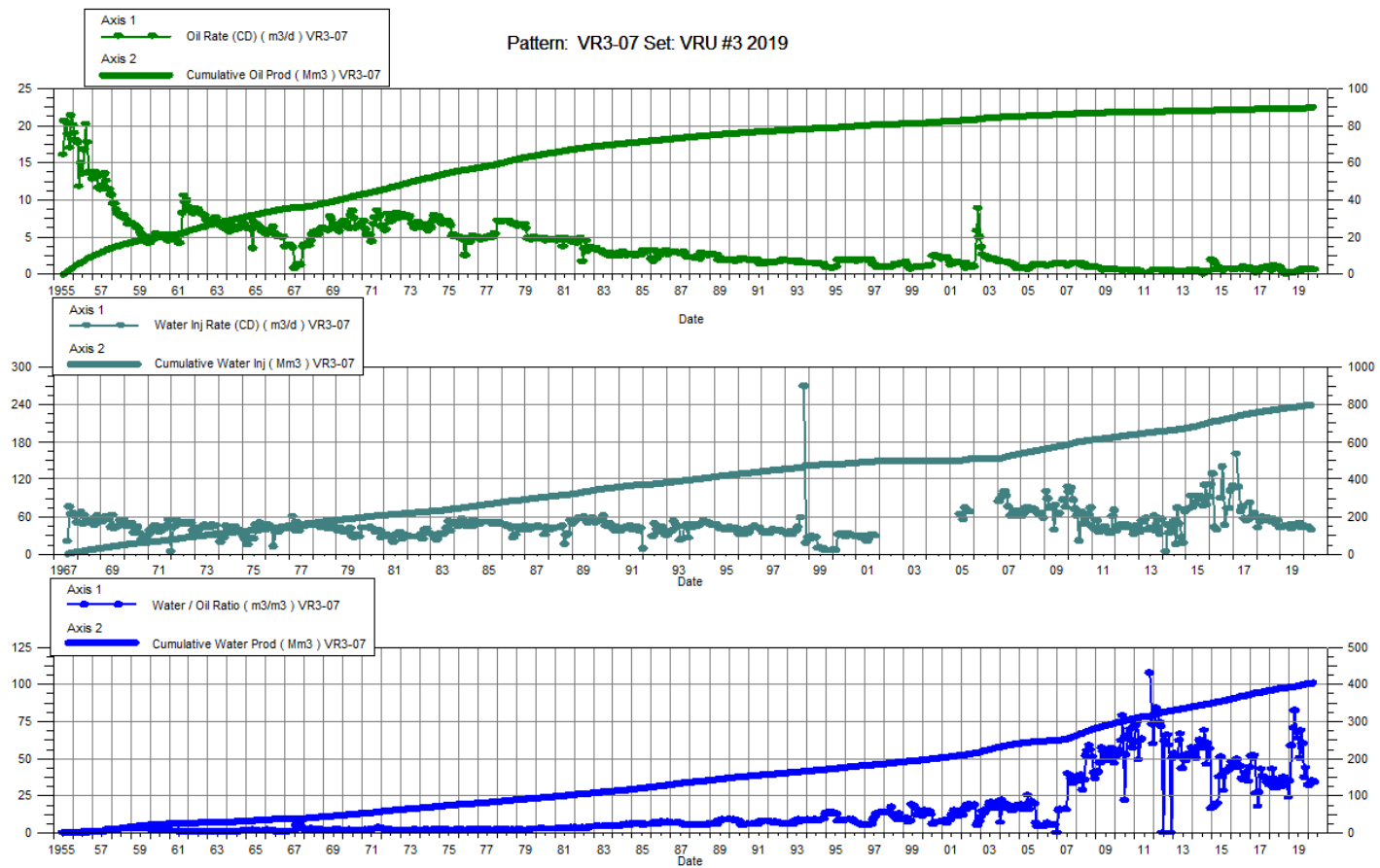
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	2.4	101.61	80.7	458.18	32.92	515.8	33.84	0.40	0.92	5,200.00
2-28-2019	2.3	101.68	81.8	460.47	29.60	516.6	34.90	0.35	0.92	5,200.00
3-31-2019	2.4	101.75	92.1	463.32	16.55	517.1	37.76	0.18	0.91	5,200.00
4-30-2019	2.3	101.82	90.4	466.03	11.21	517.4	39.45	0.12	0.91	5,200.00
5-31-2019	2.2	101.89	80.5	468.53	10.00	517.7	36.86	0.12	0.91	5,200.00
6-30-2019	1.8	101.94	79.0	470.90	7.90	518.0	43.10	0.10	0.90	5,200.00
7-31-2019	2.3	102.01	77.4	473.30	10.29	518.3	33.56	0.13	0.90	5,200.00
8-31-2019	1.7	102.07	75.5	475.64	10.29	518.6	44.98	0.13	0.90	5,200.00
9-30-2019	1.7	102.12	96.0	478.51	10.00	518.9	57.22	0.10	0.89	5,200.00
10-31-2019	1.5	102.16	59.6	480.36	10.87	519.3	38.72	0.18	0.89	5,200.00
11-30-2019	1.3	102.20	57.0	482.07	8.97	519.5	44.77	0.15	0.89	5,200.00
12-31-2019	1.6	102.25	53.2	483.72	10.19	519.8	33.63	0.19	0.88	5,200.00



VRU #3

Pattern P-07 – 00/09-13-010-26W1/0

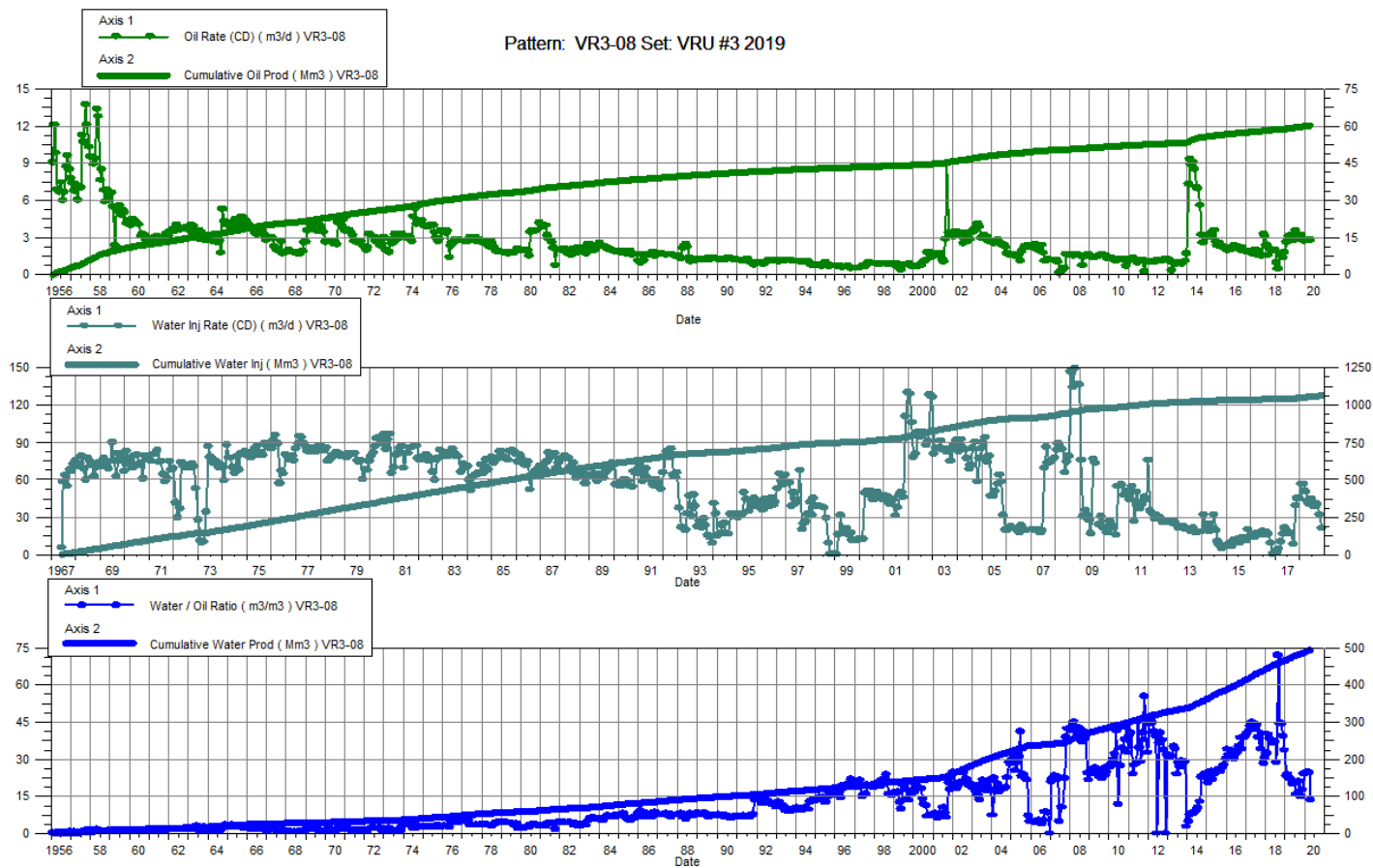
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	0.2	89.63	7.0	390.51	42.77	780.4	34.91	5.91	1.62	4,700.00
2-28-2019	0.4	89.64	23.2	391.16	43.88	781.7	58.47	1.86	1.62	4,700.00
3-31-2019	0.4	89.66	26.5	391.98	45.35	783.1	70.43	1.69	1.62	4,700.00
4-30-2019	0.3	89.67	26.1	392.77	43.62	784.4	82.38	1.65	1.62	4,700.00
5-31-2019	0.4	89.68	25.9	393.57	46.65	785.8	67.27	1.78	1.62	4,700.00
6-30-2019	0.5	89.69	30.9	394.50	40.73	787.0	63.46	1.30	1.62	4,700.00
7-31-2019	0.6	89.71	31.5	395.47	46.06	788.5	50.32	1.43	1.62	4,700.00
8-31-2019	0.5	89.73	34.2	396.53	45.00	789.9	68.97	1.30	1.62	4,700.00
9-30-2019	0.7	89.75	43.7	397.84	43.90	791.2	59.95	0.99	1.62	4,700.00
10-31-2019	0.7	89.77	26.8	398.67	48.77	792.7	37.03	1.77	1.62	4,700.00
11-30-2019	0.7	89.79	28.5	399.53	41.80	794.0	43.64	1.44	1.62	4,700.00
12-31-2019	0.7	89.81	22.1	400.21	45.45	795.4	32.32	1.99	1.62	4,700.00



VRU #3

Pattern P-08 – 00/04-14-010-26W1/0

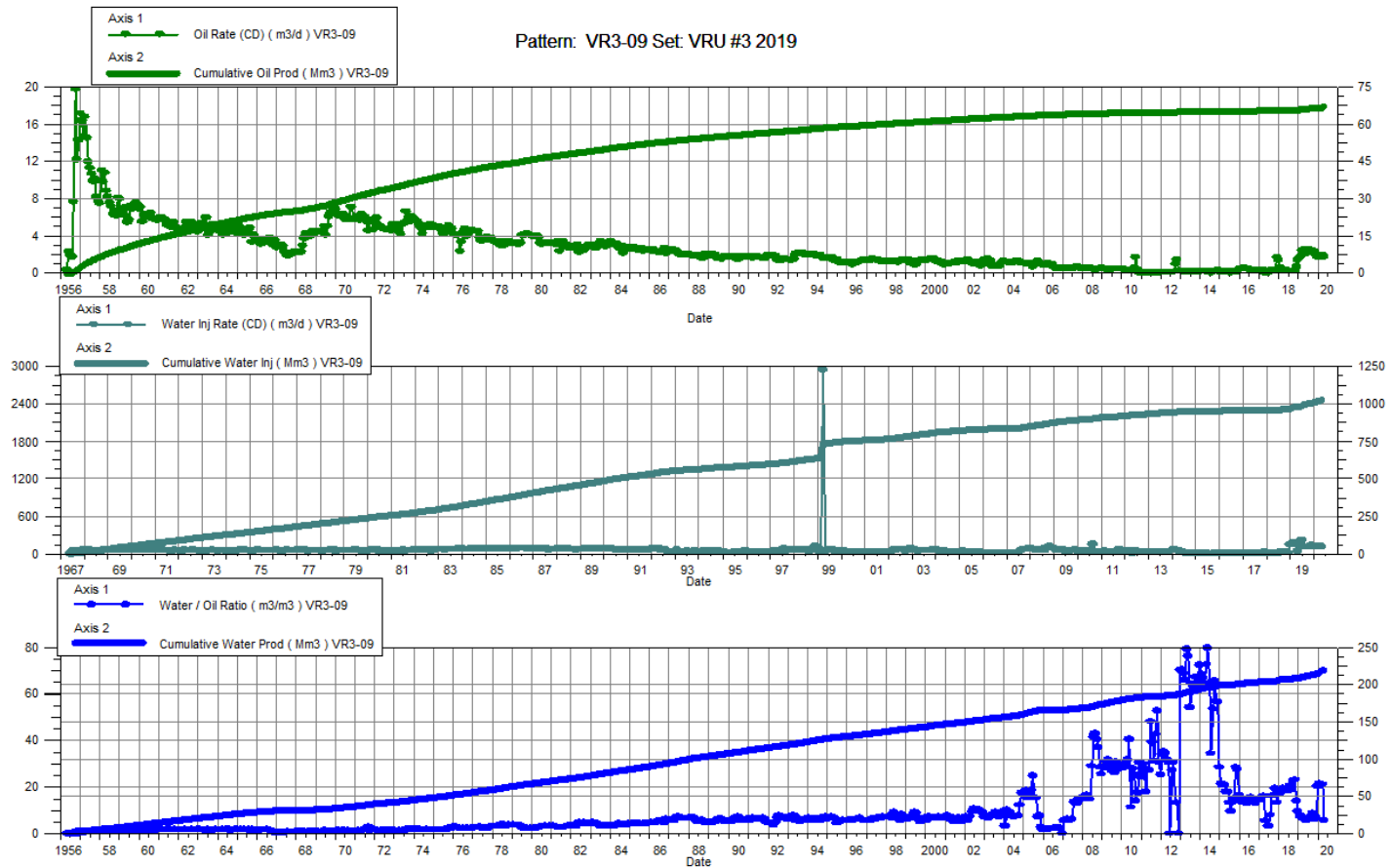
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	2.6	59.04	61.6	466.22		1065.1	23.28		2.02	4,300.00
2-28-2019	2.7	59.11	63.3	467.99		1065.1	23.85		2.02	4,300.00
3-31-2019	3.1	59.21	68.8	470.13		1065.1	22.28		2.01	4,300.00
4-30-2019	3.2	59.31	70.0	472.23		1065.1	21.62		2.00	4,300.00
5-31-2019	3.1	59.40	62.1	474.16		1065.1	19.85		1.99	4,300.00
6-30-2019	2.8	59.49	57.3	475.87		1065.1	20.28		1.99	4,300.00
7-31-2019	3.6	59.60	55.6	477.60		1065.1	15.66		1.98	4,300.00
8-31-2019	3.1	59.69	50.6	479.16		1065.1	16.30		1.97	4,300.00
9-30-2019	3.1	59.79	66.1	481.15		1065.1	21.10		1.97	4,300.00
10-31-2019	3.2	59.89	47.5	482.62		1065.1	14.89		1.96	4,300.00
11-30-2019	2.8	59.97	49.2	484.10		1065.1	17.42		1.95	4,300.00
12-31-2019	2.7	60.06	66.0	486.14		1065.1	24.08		1.95	4,300.00



VRU #3

Pattern P-09 – 00/14-11-010-26W1/0

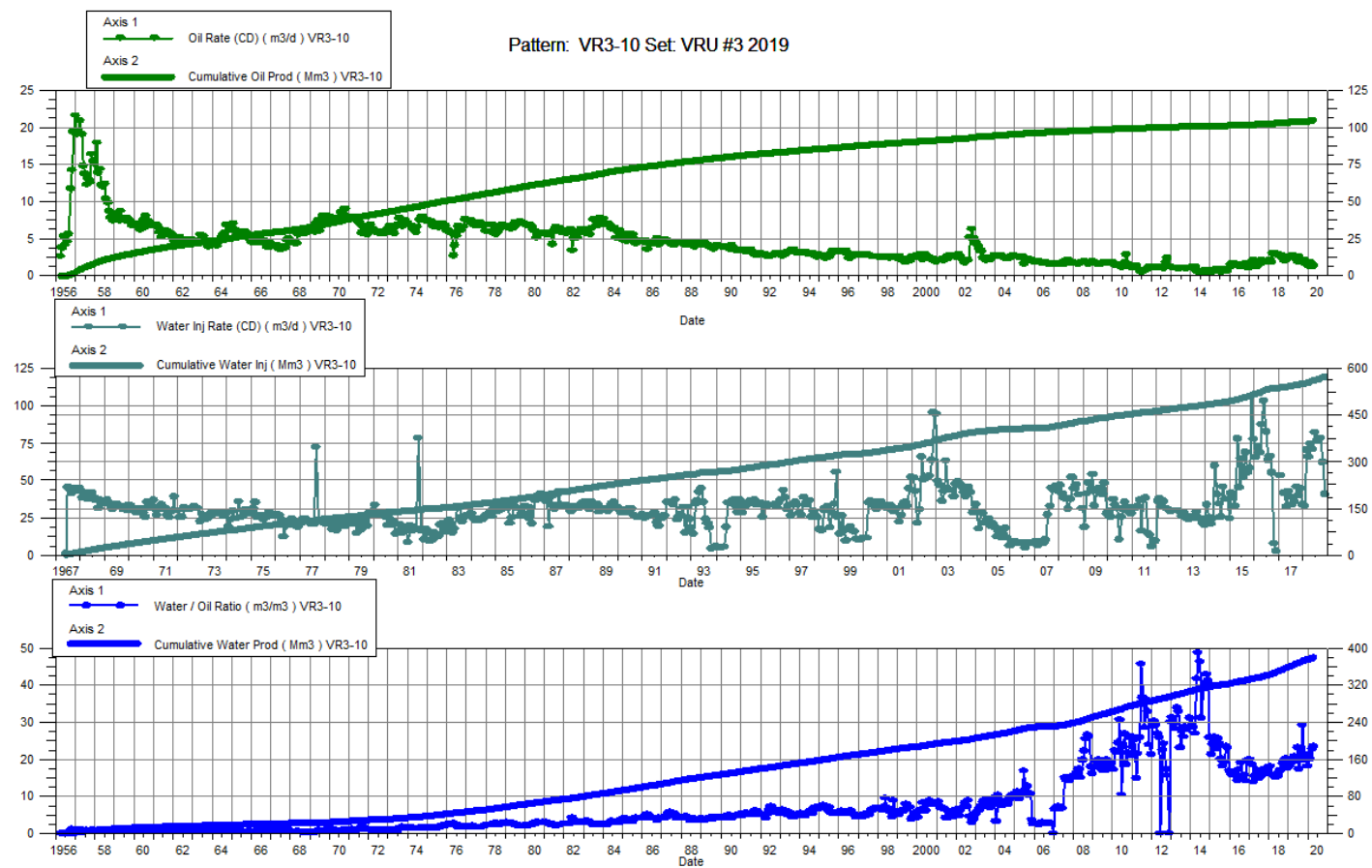
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	1.8	65.93	13.2	208.72	154.10	977.0	7.51	10.28	3.54	4,500.00
2-28-2019	1.9	65.98	14.7	209.13	180.36	982.0	7.81	10.83	3.55	4,500.00
3-31-2019	2.4	66.05	16.2	209.64		982.0	6.76		3.55	4,500.00
4-30-2019	2.6	66.13	16.0	210.12	41.50	983.3	6.23	2.23	3.54	4,500.00
5-31-2019	2.5	66.21	14.1	210.55	110.84	986.7	5.68	6.68	3.55	4,500.00
6-30-2019	2.2	66.27	15.1	211.01	217.33	993.2	6.87	12.52	3.57	4,500.00
7-31-2019	2.6	66.35	15.3	211.48	114.94	996.8	5.87	6.40	3.57	4,500.00
8-31-2019	2.4	66.43	16.6	211.99	105.48	1000.1	6.85	5.55	3.58	4,500.00
9-30-2019	2.5	66.50	22.3	212.66	108.77	1003.3	8.99	4.39	3.58	4,500.00
10-31-2019	2.4	66.58	13.9	213.09	106.26	1006.6	5.88	6.53	3.58	4,500.00
11-30-2019	2.0	66.64	14.1	213.52	130.63	1010.5	7.11	8.10	3.59	4,500.00
12-31-2019	1.8	66.69	37.6	214.68	110.26	1014.0	20.40	2.80	3.59	4,500.00



VRU #3

Pattern P-10 – 00/16-11-010-26W1/0

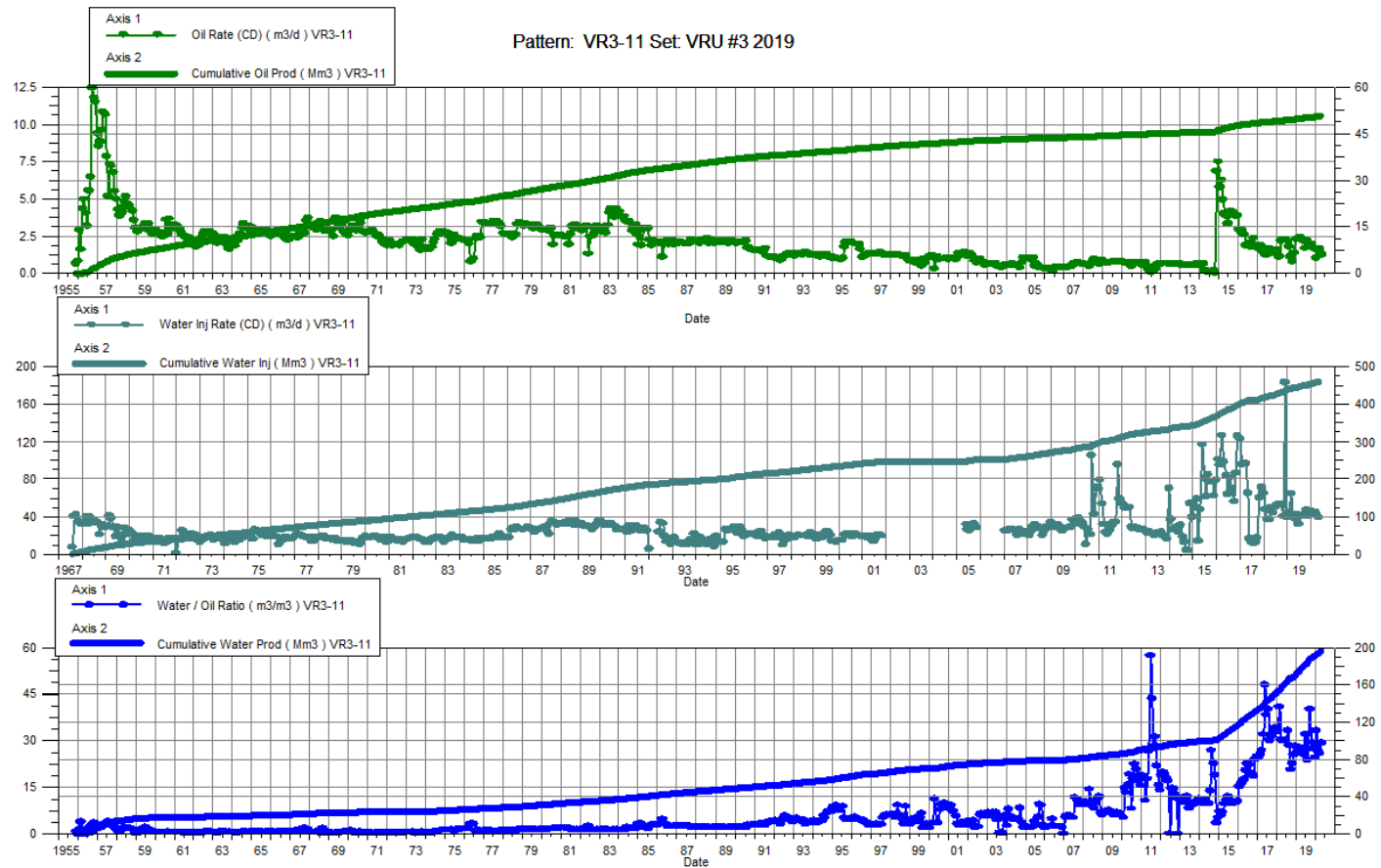
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	2.6	103.77	47.9	359.19		575.0	18.24		1.24	4,500.00
2-28-2019	2.6	103.84	49.1	360.56		575.0	18.77		1.23	4,500.00
3-31-2019	2.8	103.93	54.2	362.24		575.0	19.64		1.23	4,500.00
4-30-2019	2.6	104.00	53.6	363.85		575.0	20.72		1.22	4,500.00
5-31-2019	2.5	104.08	47.5	365.32		575.0	19.33		1.22	4,500.00
6-30-2019	2.0	104.14	45.8	366.70		575.0	23.10		1.22	4,500.00
7-31-2019	2.6	104.22	44.0	368.06		575.0	17.26		1.21	4,500.00
8-31-2019	2.1	104.28	47.3	369.53		575.0	22.55		1.21	4,500.00
9-30-2019	2.1	104.35	61.5	371.37		575.0	29.06		1.20	4,500.00
10-31-2019	2.1	104.41	41.7	372.67		575.0	19.55		1.20	4,500.00
11-30-2019	1.6	104.46	33.9	373.68		575.0	20.99		1.20	4,500.00
12-31-2019	1.9	104.52	33.4	374.72		575.0	18.08		1.20	4,500.00



VRU #3

Pattern P-11 – 00/14-12-010-26W1/0

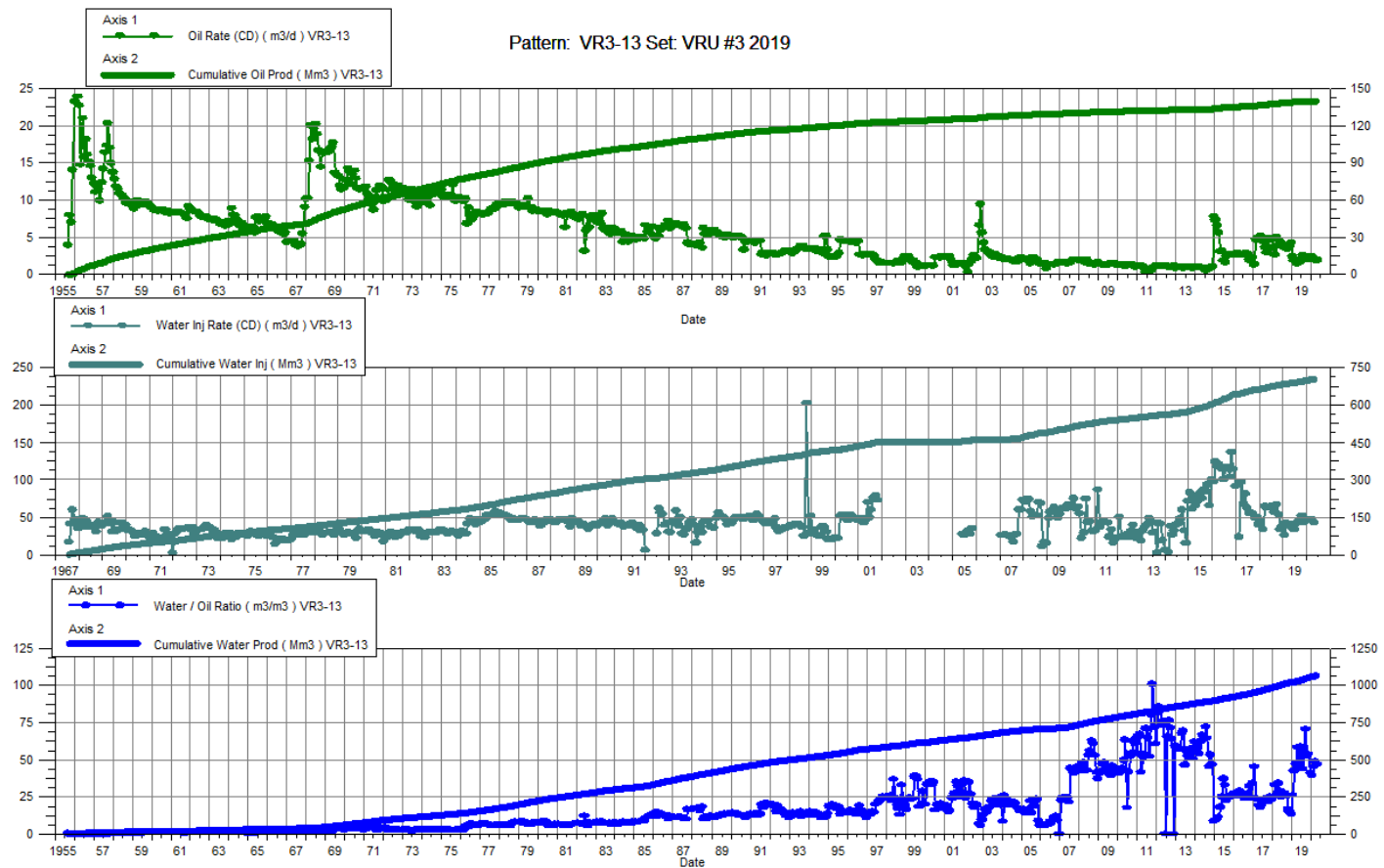
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	2.3	49.89	64.9	172.32	44.15	441.4	27.75	0.66	1.98	5,000.00
2-28-2019	2.4	49.96	63.7	174.10	64.29	443.2	26.75	0.97	1.97	5,000.00
3-31-2019	2.4	50.03	64.5	176.10	38.68	444.4	26.49	0.58	1.96	5,000.00
4-30-2019	2.3	50.10	62.1	177.96	37.71	445.6	27.30	0.59	1.95	5,000.00
5-31-2019	2.2	50.17	55.1	179.67	42.58	446.9	25.44	0.74	1.94	5,000.00
6-30-2019	1.7	50.22	54.4	181.30	32.33	447.9	31.92	0.58	1.93	5,000.00
7-31-2019	2.2	50.29	52.7	182.94	40.00	449.1	23.70	0.73	1.92	5,000.00
8-31-2019	1.8	50.34	57.0	184.70	40.55	450.4	32.06	0.69	1.91	5,000.00
9-30-2019	1.9	50.40	75.2	186.96	41.97	451.6	40.02	0.54	1.90	5,000.00
10-31-2019	2.0	50.46	53.7	188.62	46.55	453.1	27.33	0.84	1.89	5,000.00
11-30-2019	1.8	50.51	53.0	190.21	41.00	454.3	29.35	0.75	1.88	5,000.00
12-31-2019	1.7	50.56	40.7	191.47	46.29	455.7	24.45	1.09	1.88	5,000.00



VRU #3

Pattern P-13 – 00/04-18-010-26W1/0

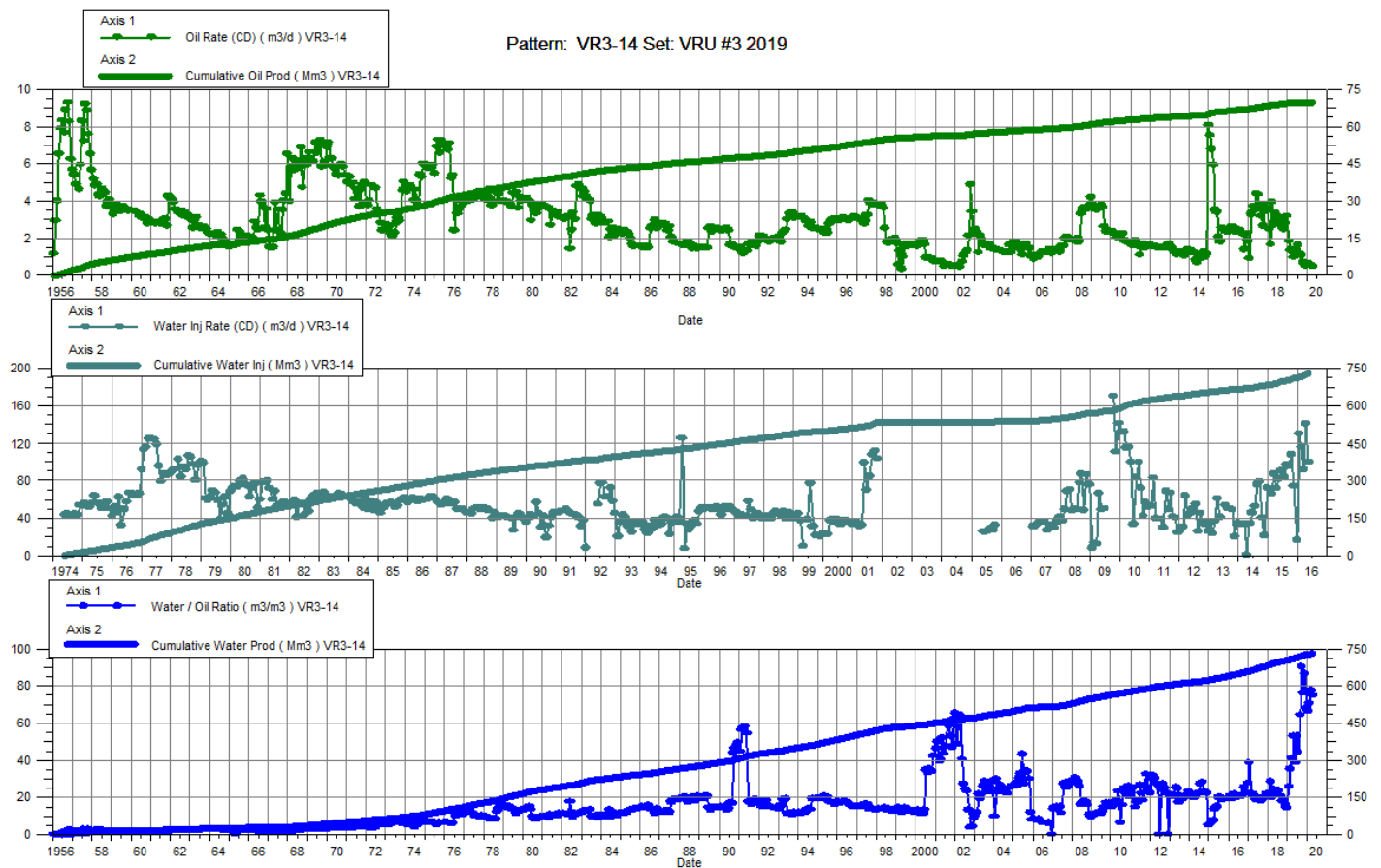
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	2.4	139.22	62.9	1017.85	26.01	686.3	26.13	0.40	0.59	4,900.00
2-28-2019	1.9	139.27	80.1	1020.09	41.48	687.5	42.42	0.51	0.59	4,900.00
3-31-2019	2.0	139.33	92.7	1022.97	40.97	688.8	47.10	0.43	0.59	4,900.00
4-30-2019	1.5	139.38	88.3	1025.62	38.80	689.9	58.32	0.43	0.59	4,900.00
5-31-2019	1.7	139.43	78.6	1028.05	38.74	691.1	46.39	0.48	0.59	4,900.00
6-30-2019	1.7	139.48	100.7	1031.07	33.27	692.1	58.70	0.33	0.59	4,900.00
7-31-2019	2.6	139.56	113.3	1034.58	41.45	693.4	43.77	0.36	0.59	4,900.00
8-31-2019	2.3	139.63	131.3	1038.65	44.19	694.8	57.24	0.33	0.59	4,900.00
9-30-2019	2.5	139.71	173.4	1043.85	45.37	696.1	70.52	0.26	0.59	4,900.00
10-31-2019	2.0	139.77	105.1	1047.11	51.68	697.7	52.09	0.48	0.59	4,900.00
11-30-2019	2.1	139.83	110.0	1050.41	43.50	699.0	53.61	0.39	0.59	4,900.00
12-31-2019	2.0	139.90	84.2	1053.02	46.16	700.5	41.23	0.54	0.59	4,900.00



VRU #3

Pattern P-14 – 02/02-18-010-26W1/0

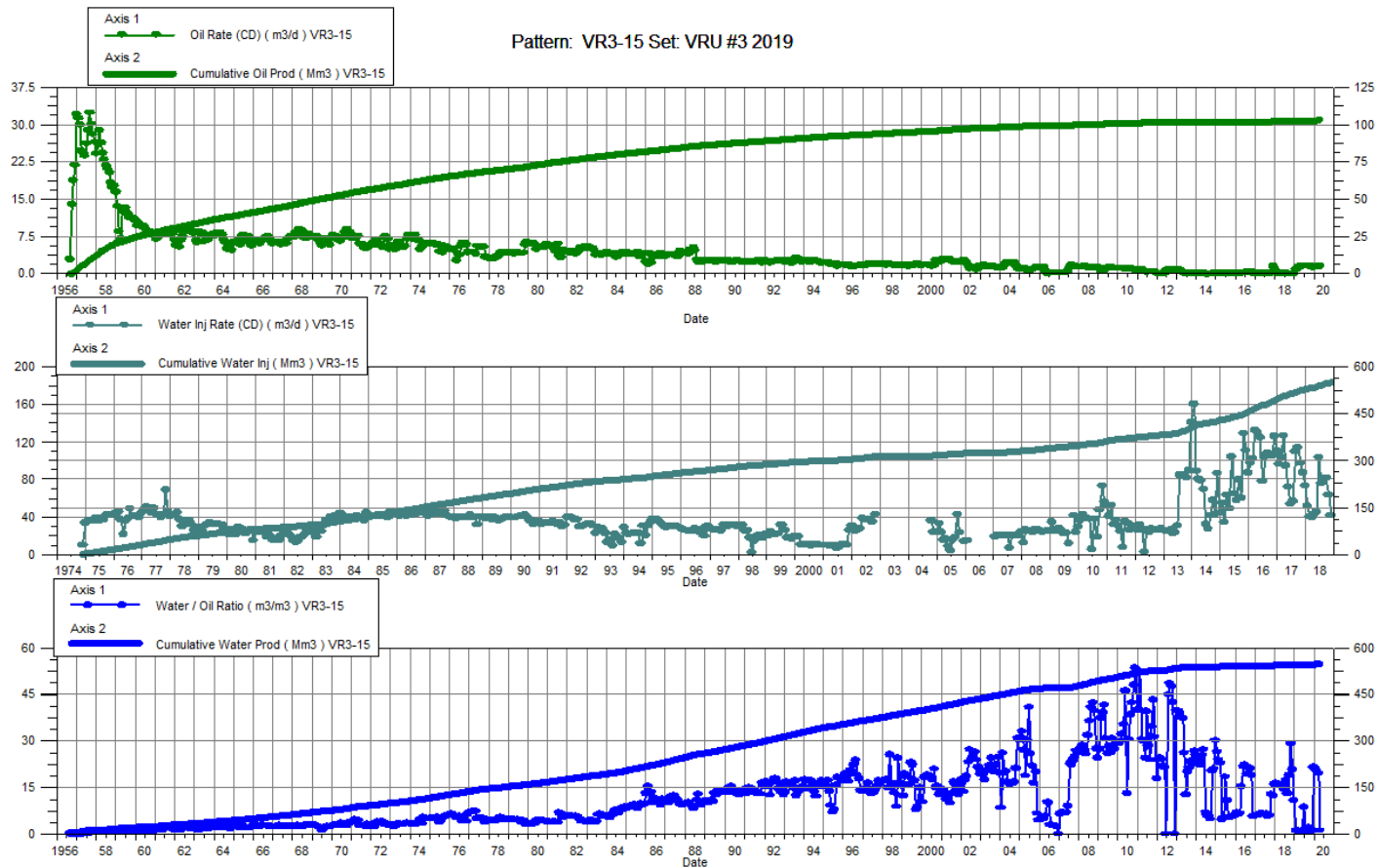
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	1.9	69.65	48.0	704.18		731.0	25.76		0.94	4,600.00
2-28-2019	1.4	69.69	48.8	705.54		731.0	35.39		0.94	4,600.00
3-31-2019	1.4	69.73	56.9	707.31		731.0	41.00		0.94	4,600.00
4-30-2019	1.0	69.76	53.8	708.92		731.0	53.04		0.94	4,600.00
5-31-2019	1.2	69.80	45.4	710.33		731.0	38.72		0.94	4,600.00
6-30-2019	1.3	69.84	70.1	712.43		731.0	52.94		0.93	4,600.00
7-31-2019	1.6	69.89	72.6	714.68		731.0	44.35		0.93	4,600.00
8-31-2019	1.2	69.92	74.3	716.99		731.0	64.36		0.93	4,600.00
9-30-2019	1.1	69.96	98.8	719.95		731.0	90.28		0.92	4,600.00
10-31-2019	0.7	69.98	54.3	721.64		731.0	76.24		0.92	4,600.00
11-30-2019	0.6	70.00	50.2	723.14		731.0	86.77		0.92	4,600.00
12-31-2019	0.6	70.01	37.9	724.32		731.0	67.85		0.92	4,600.00



VRU #3

Pattern P-15 – 00/12-11-010-26W1/0

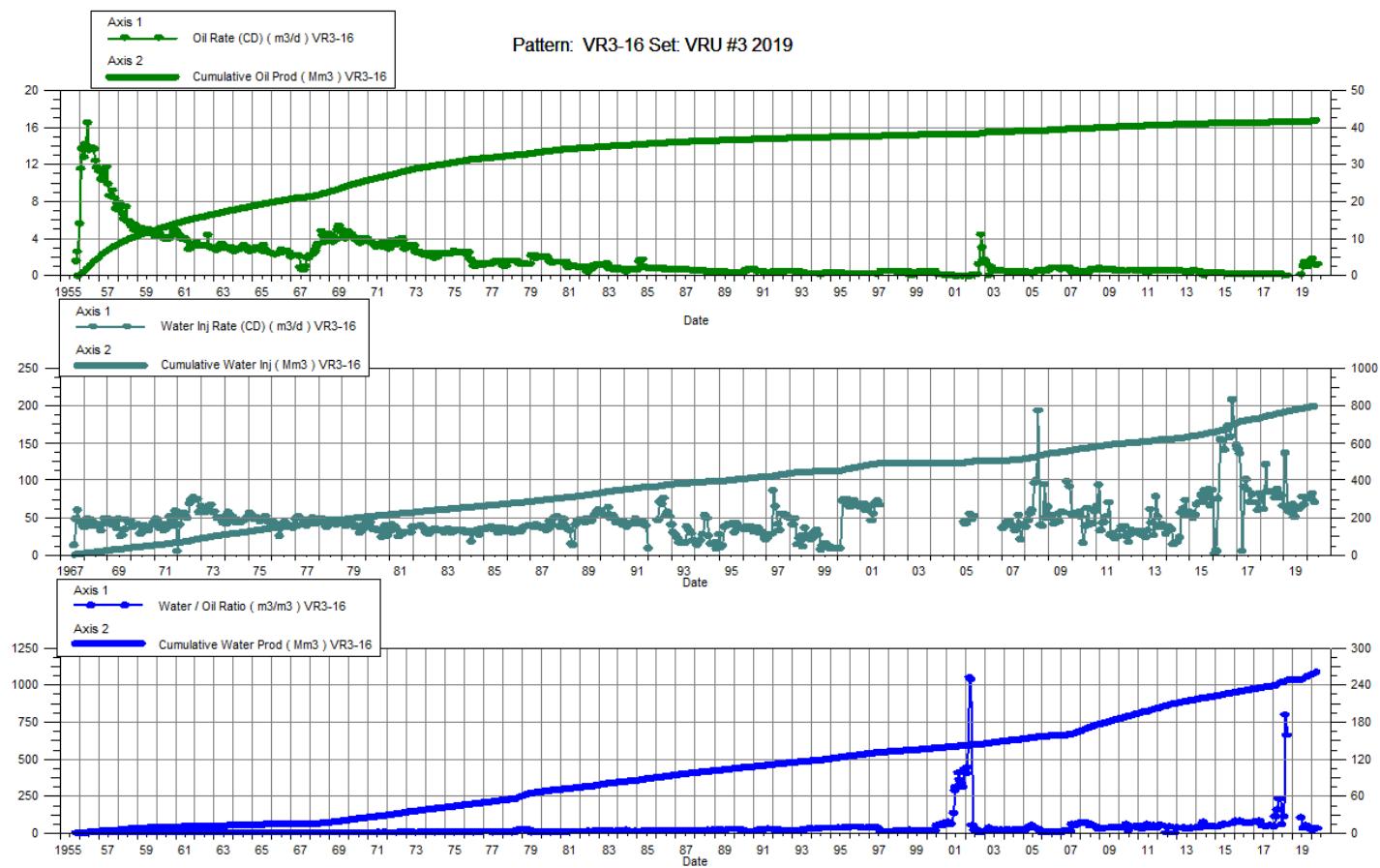
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	1.0	102.44	1.1	542.78		551.4	1.16		0.85	5,100.00
2-28-2019	1.0	102.47	1.1	542.81		551.4	1.15		0.85	5,100.00
3-31-2019	1.4	102.52	1.3	542.85		551.4	0.91		0.85	5,100.00
4-30-2019	1.6	102.56	1.3	542.89		551.4	0.77		0.85	5,100.00
5-31-2019	1.6	102.61	1.1	542.92		551.4	0.70		0.85	5,100.00
6-30-2019	1.7	102.66	14.3	543.35		551.4	8.61		0.85	5,100.00
7-31-2019	1.7	102.72	2.6	543.43		551.4	1.53		0.85	5,100.00
8-31-2019	1.7	102.77	2.9	543.52		551.4	1.73		0.85	5,100.00
9-30-2019	1.7	102.82	3.8	543.63		551.4	2.24		0.85	5,100.00
10-31-2019	1.6	102.87	1.2	543.67		551.4	0.74		0.85	5,100.00
11-30-2019	1.5	102.91	1.9	543.73		551.4	1.31		0.85	5,100.00
12-31-2019	1.4	102.96	29.2	544.63		551.4	21.43		0.85	5,100.00



VRU #3

Pattern P-16 – 00/14-07-010-25W1/0

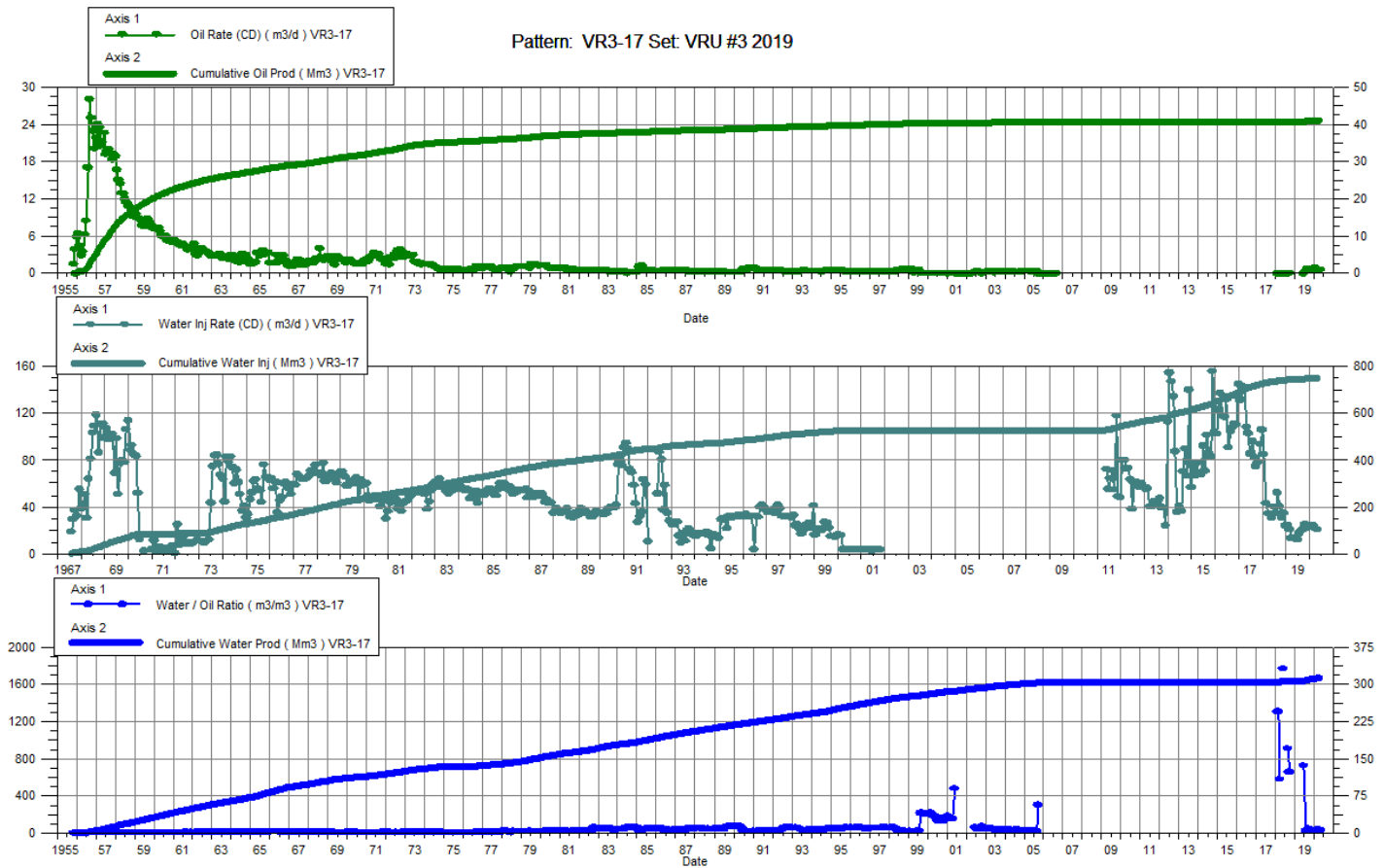
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019		41.59		247.43	136.59	771.8			2.66	4,600.00
2-28-2019		41.59		247.43	63.41	773.6			2.67	4,600.00
3-31-2019		41.59		247.43	58.90	775.4			2.68	4,600.00
4-30-2019		41.59		247.43	57.26	777.2			2.68	4,600.00
5-31-2019		41.59		247.43	67.61	779.3			2.69	4,600.00
6-30-2019	0.2	41.60	15.6	247.90	50.03	780.8	104.73	3.17	2.69	4,600.00
7-31-2019	1.1	41.63	34.8	248.98	60.52	782.6	32.29	1.69	2.69	4,600.00
8-31-2019	1.5	41.68	56.1	250.71	61.87	784.6	37.83	1.07	2.68	4,600.00
9-30-2019	1.4	41.72	73.3	252.91	64.77	786.5	51.38	0.87	2.66	4,600.00
10-31-2019	1.0	41.75	41.4	254.20	77.74	788.9	41.24	1.83	2.66	4,600.00
11-30-2019	1.4	41.79	45.3	255.56	67.83	790.9	32.07	1.45	2.65	4,600.00
12-31-2019	1.4	41.84	34.8	256.63	74.26	793.2	25.04	2.05	2.65	4,600.00



VRU #3

Pattern P-17 – 00/12-07-010-25W1/0

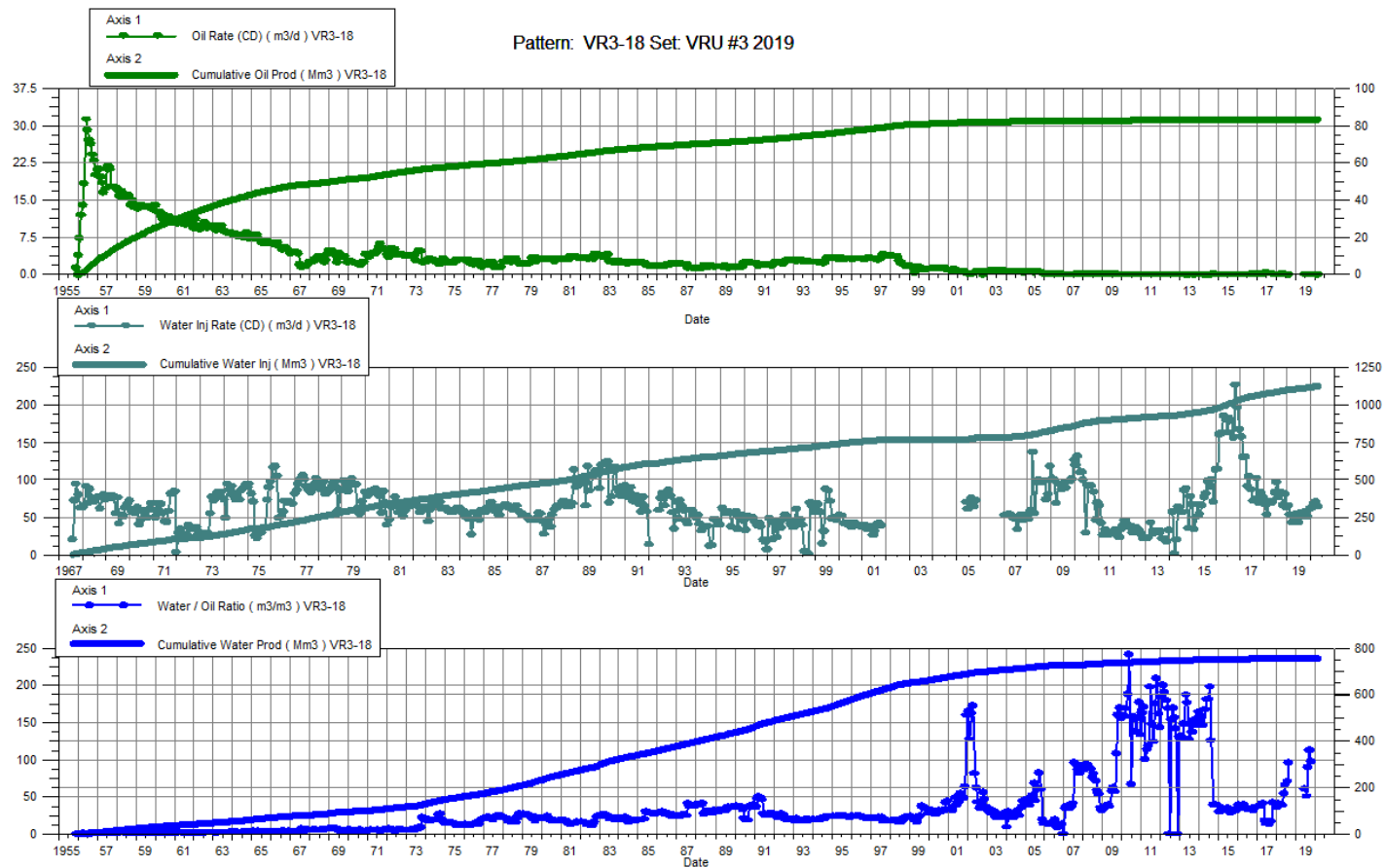
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019		40.89		306.28	24.33	745.5			2.14	5,000.00
2-28-2019		40.89		306.28	20.82	746.1			2.14	5,000.00
3-31-2019		40.89		306.28	13.06	746.5			2.15	5,000.00
4-30-2019		40.89		306.28	13.02	746.8			2.15	5,000.00
5-31-2019		40.89		306.28	13.39	747.3			2.15	5,000.00
6-30-2019	0.0	40.89	2.4	306.36	11.80	747.6	723.75	4.88	2.15	5,000.00
7-31-2019	0.5	40.91	11.9	306.72	16.84	748.1	26.23	1.37	2.15	5,000.00
8-31-2019	0.7	40.93	23.3	307.45	19.45	748.7	33.38	0.81	2.14	5,000.00
9-30-2019	0.7	40.95	30.5	308.36	20.93	749.4	45.54	0.67	2.14	5,000.00
10-31-2019	0.5	40.97	20.7	309.00	24.48	750.1	41.24	1.16	2.14	5,000.00
11-30-2019	0.7	40.99	22.6	309.68	21.37	750.8	32.07	0.92	2.14	5,000.00
12-31-2019	0.7	41.01	17.4	310.22	24.45	751.5	25.04	1.35	2.14	5,000.00



VRU #3

Pattern P-18 – 00/10-07-010-25W1/0

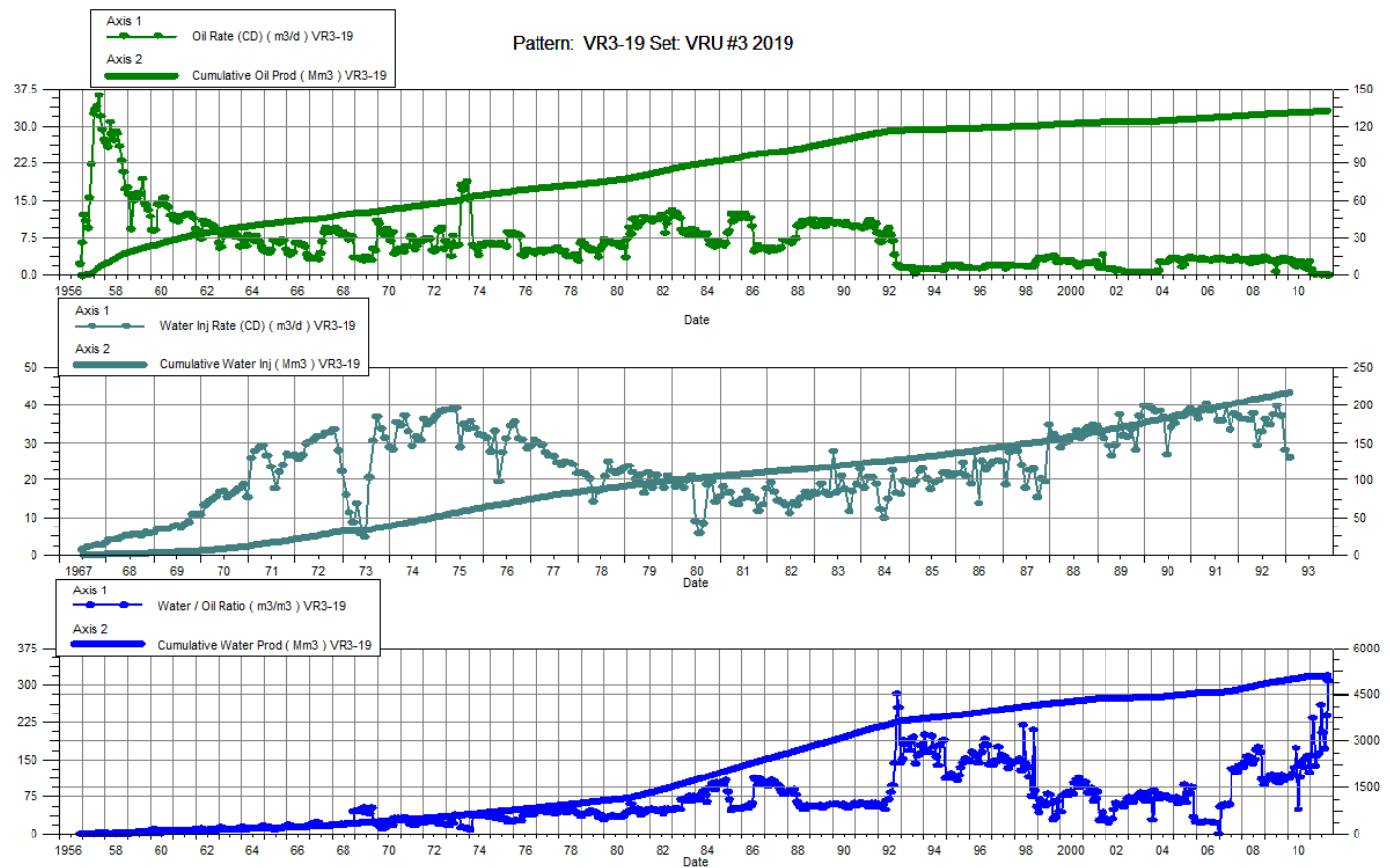
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019		83.35		755.52	65.33	1105.0			1.32	4,800.00
2-28-2019		83.35		755.52	53.01	1106.5			1.32	4,800.00
3-31-2019		83.35		755.52	42.45	1107.8			1.32	4,800.00
4-30-2019		83.35		755.52	46.39	1109.2			1.32	4,800.00
5-31-2019		83.35		755.52	54.68	1110.9			1.32	4,800.00
6-30-2019	0.1	83.36	6.5	755.72	42.73	1112.2	60.75	6.46	1.32	4,800.00
7-31-2019	0.1	83.36	6.7	755.93	55.19	1113.9	50.83	8.09	1.33	4,800.00
8-31-2019	0.1	83.36	4.5	756.07	52.06	1115.5	89.39	11.52	1.33	4,800.00
9-30-2019	0.1	83.36	5.8	756.24	50.43	1117.0	112.42	8.61	1.33	4,800.00
10-31-2019	0.1	83.37	5.2	756.40	57.68	1118.8	96.94	11.06	1.33	4,800.00
11-30-2019		83.37		756.40	50.97	1120.3			1.33	4,800.00
12-31-2019		83.37		756.40	61.65	1122.2			1.33	4,800.00



VRU #3

Pattern P-19 – 00/06-10-010-26W1/0

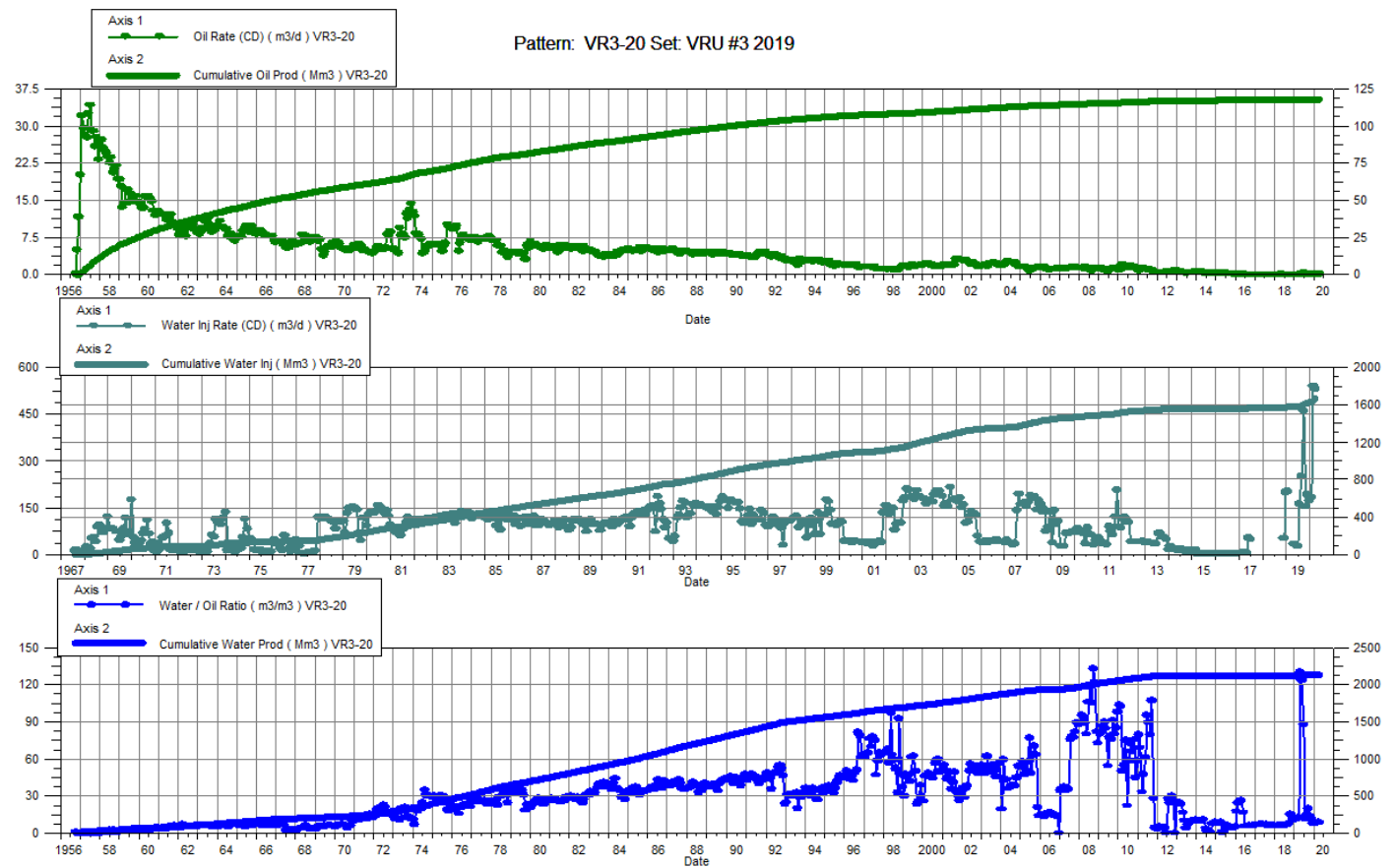
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019		132.00		5087.57		217.7	0.00	--	0.04	--
2-28-2019		132.00		5087.57		217.7	0.00	--	0.04	--
3-31-2019		132.00		5087.57		217.7	0.00	--	0.04	--
4-30-2019		132.00		5087.57		217.7	0.00	--	0.04	--
5-31-2019		132.00		5087.57		217.7	0.00	--	0.04	--
6-30-2019		132.00		5087.57		217.7	0.00	--	0.04	--
7-31-2019		132.00		5087.57		217.7	0.00	--	0.04	--
8-31-2019		132.00		5087.57		217.7	0.00	--	0.04	--
9-30-2019		132.00		5087.57		217.7	0.00	--	0.04	--
10-31-2019		132.00		5087.57		217.7	0.00	--	0.04	--
11-30-2019		132.00		5087.57		217.7	0.00	--	0.04	--
12-31-2019		132.00		5087.57		217.7	0.00	--	0.04	--



VRU #3

Pattern P-20 – 00/08-10-010-26W1/0

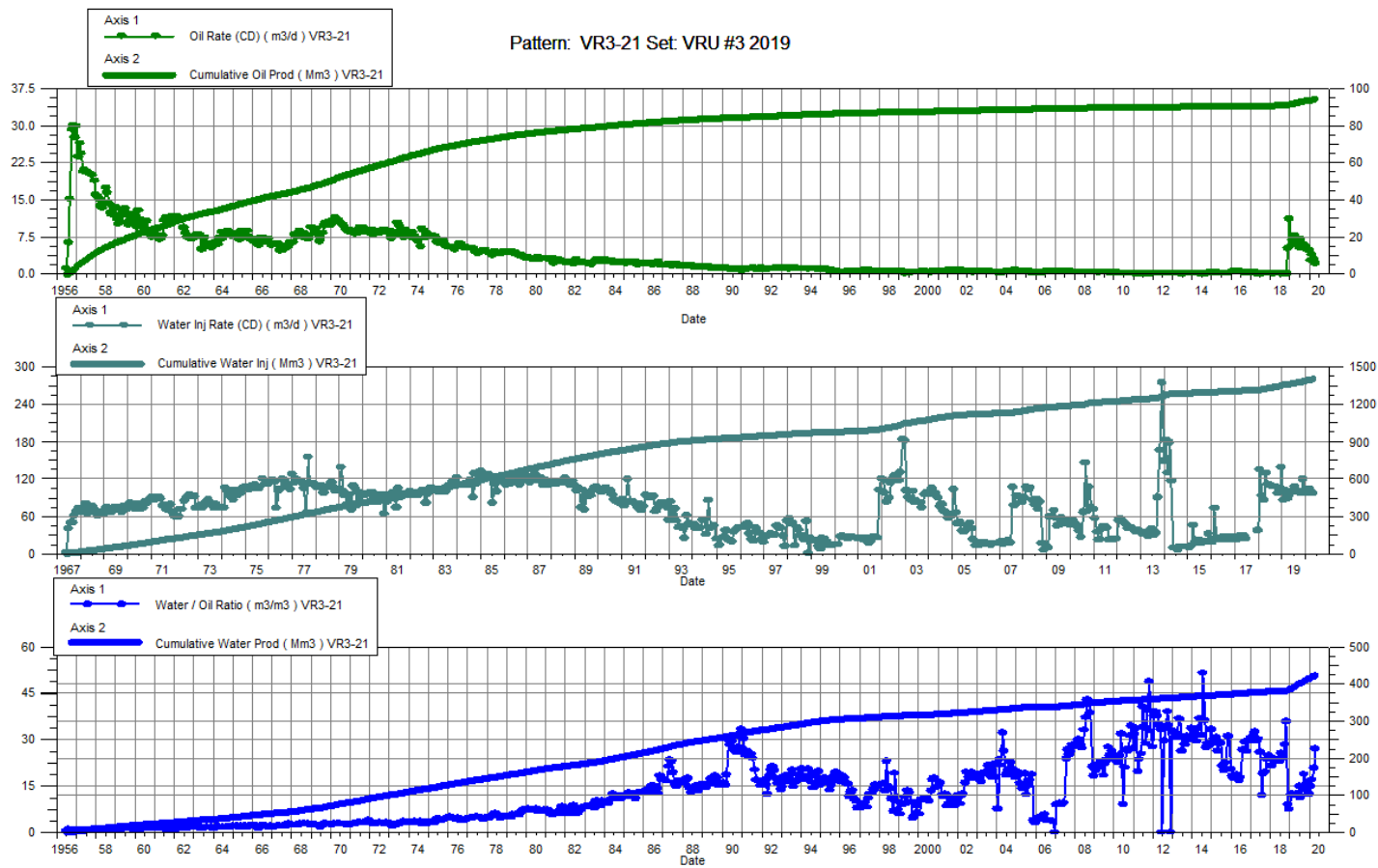
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	0.1	117.85	1.1	2116.50	202.10	1584.9	11.35	166.972	0.71	--
2-28-2019	0.1	117.85	1.1	2116.53		1584.9	11.62		0.71	--
3-31-2019	0.1	117.86	1.3	2116.57		1584.9	12.71		0.71	--
4-30-2019	0.3	117.87	33.0	2117.56	31.69	1585.8	130.05	0.954	0.71	--
5-31-2019	0.3	117.87	30.2	2118.49	29.09	1586.7	122.94	0.955	0.71	--
6-30-2019	0.5	117.89	40.7	2119.71	24.22	1587.4	87.59	0.589	0.71	--
7-31-2019	0.1	117.89	1.2	2119.75	162.47	1592.5	11.51	129.732	0.71	--
8-31-2019	0.1	117.89	1.3	2119.79	249.52	1600.2	15.47	182.81	0.71	--
9-30-2019	0.1	117.90	1.7	2119.84	461.05	1614.0	19.70	263.574	0.72	--
10-31-2019	0.1	117.90	1.2	2119.88	154.13	1618.8	13.24	119.7	0.72	--
11-30-2019	0.2	117.90	1.9	2119.93	191.00	1624.5	11.40	91.062	0.73	--
12-31-2019	0.2	117.91	1.7	2119.99	171.50	1629.9	7.98	87.36	0.73	--



VRU #3

Pattern P-21 – 00/06-11-010-26W1/0

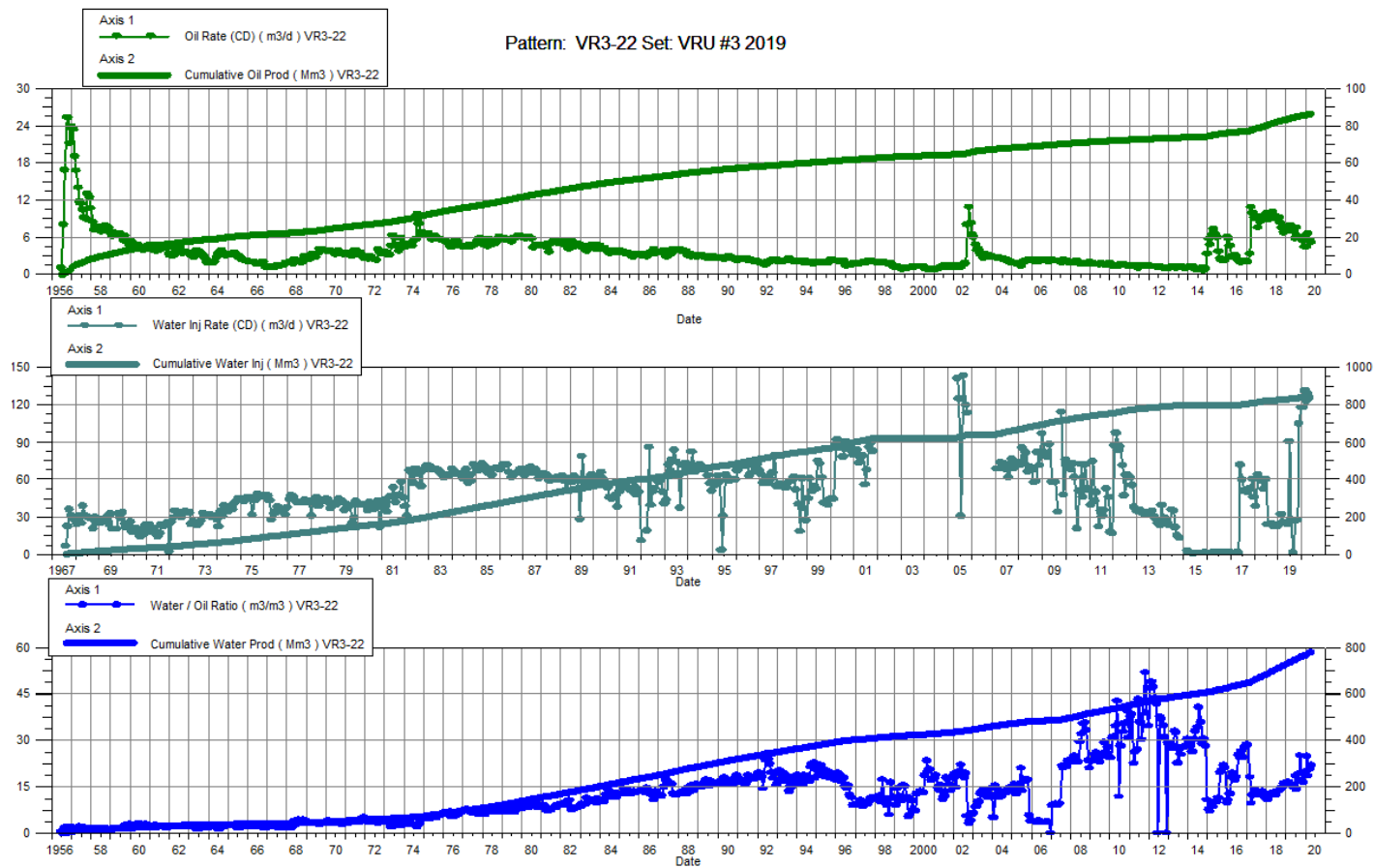
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	5.9	91.75	71.9	386.76	85.45	1360.0	12.28	1.10	2.83	5,000.00
2-28-2019	6.9	91.95	84.8	389.13	101.57	1362.9	12.36	1.11	2.82	5,000.00
3-31-2019	7.7	92.19	92.4	392.00	88.71	1365.6	11.97	0.88	2.81	5,000.00
4-30-2019	7.2	92.40	91.2	394.73	94.33	1368.4	12.61	0.96	2.80	5,000.00
5-31-2019	6.8	92.61	79.7	397.20	100.65	1371.6	11.76	1.16	2.79	5,000.00
6-30-2019	5.5	92.78	82.1	399.67	98.30	1374.5	14.93	1.12	2.78	5,000.00
7-31-2019	7.1	93.00	77.8	402.08	107.94	1377.9	11.04	1.27	2.77	5,000.00
8-31-2019	5.5	93.17	81.9	404.62	99.03	1380.9	14.84	1.13	2.76	5,000.00
9-30-2019	6.0	93.35	113.4	408.02	100.63	1383.9	18.86	0.84	2.75	5,000.00
10-31-2019	5.5	93.52	74.4	410.32	97.10	1387.0	13.57	1.21	2.74	5,000.00
11-30-2019	4.9	93.66	78.3	412.67	119.83	1390.6	15.98	1.44	2.74	5,000.00
12-31-2019	4.9	93.82	60.5	414.55	101.58	1393.7	12.39	1.55	2.73	5,000.00



VRU #3

Pattern P-22 – 00/08-11-010-26W1/0

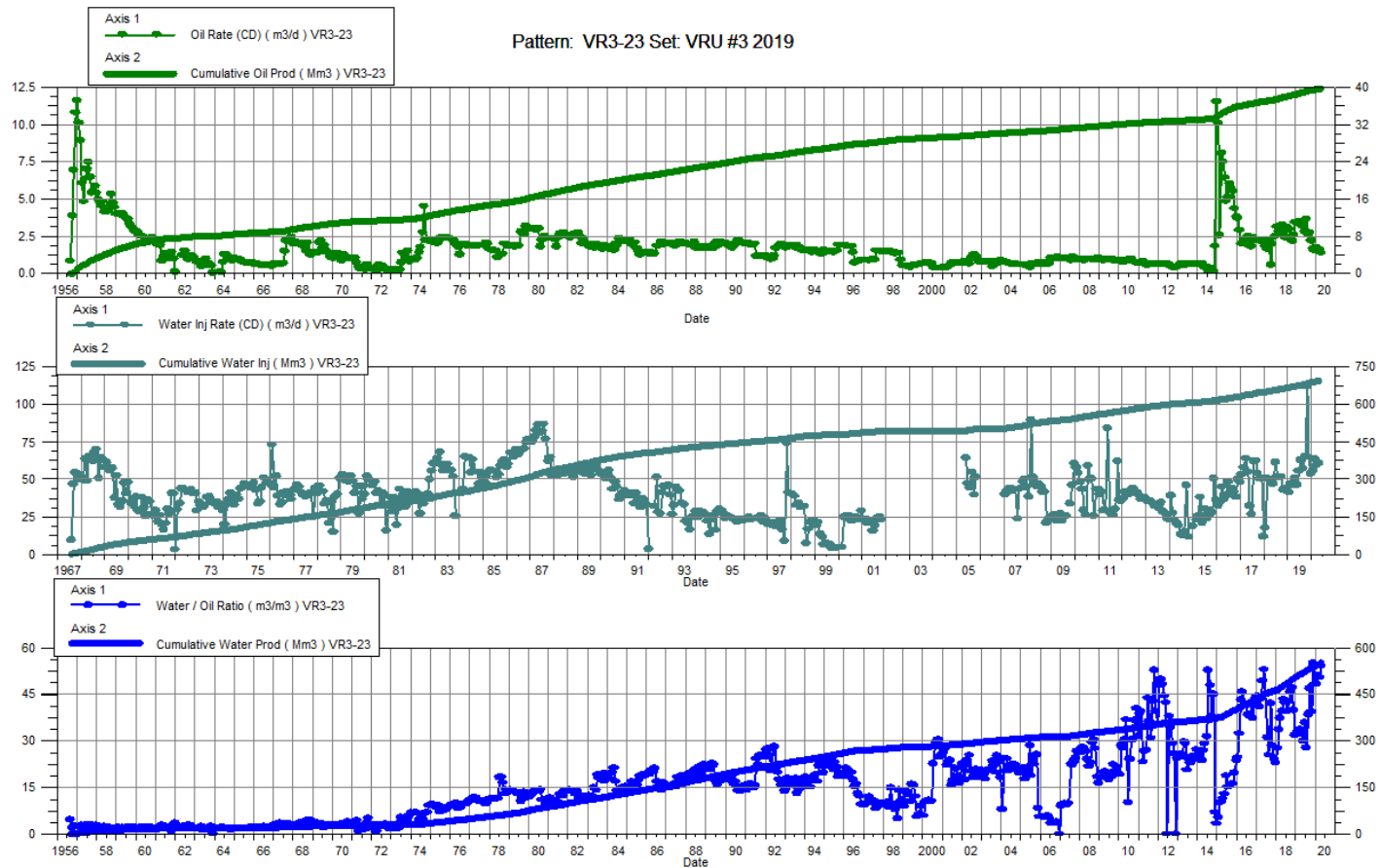
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	7.0	83.67	113.7	729.17	24.00	827.8	16.18	0.20	1.02	4,400.00
2-28-2019	7.0	83.87	116.2	732.43	31.71	828.7	16.52	0.26	1.01	4,400.00
3-31-2019	7.9	84.11	122.1	736.21	25.68	829.5	15.48	0.20	1.01	4,400.00
4-30-2019	7.4	84.33	118.1	739.76	25.13	830.2	15.91	0.20	1.01	4,400.00
5-31-2019	7.0	84.55	104.0	742.98	24.19	831.0	14.88	0.22	1.00	4,400.00
6-30-2019	5.9	84.73	108.0	746.22	90.77	833.7	18.34	0.80	1.00	4,400.00
7-31-2019	7.6	84.96	106.3	749.51	27.58	834.6	14.06	0.24	1.00	4,400.00
8-31-2019	6.1	85.15	116.8	753.13	0.97	834.6	19.12	0.01	0.99	4,400.00
9-30-2019	6.1	85.33	152.6	757.71	26.50	835.4	25.06	0.17	0.99	4,400.00
10-31-2019	5.9	85.51	98.5	760.77	27.35	836.2	16.81	0.26	0.99	4,400.00
11-30-2019	5.4	85.68	88.4	763.42	105.00	839.4	16.47	1.12	0.99	4,400.00
12-31-2019	4.5	85.81	88.6	766.17	118.13	843.1	19.90	1.27	0.99	4,400.00



VRU #3

Pattern P-23 – 00/06-12-010-26W1/0

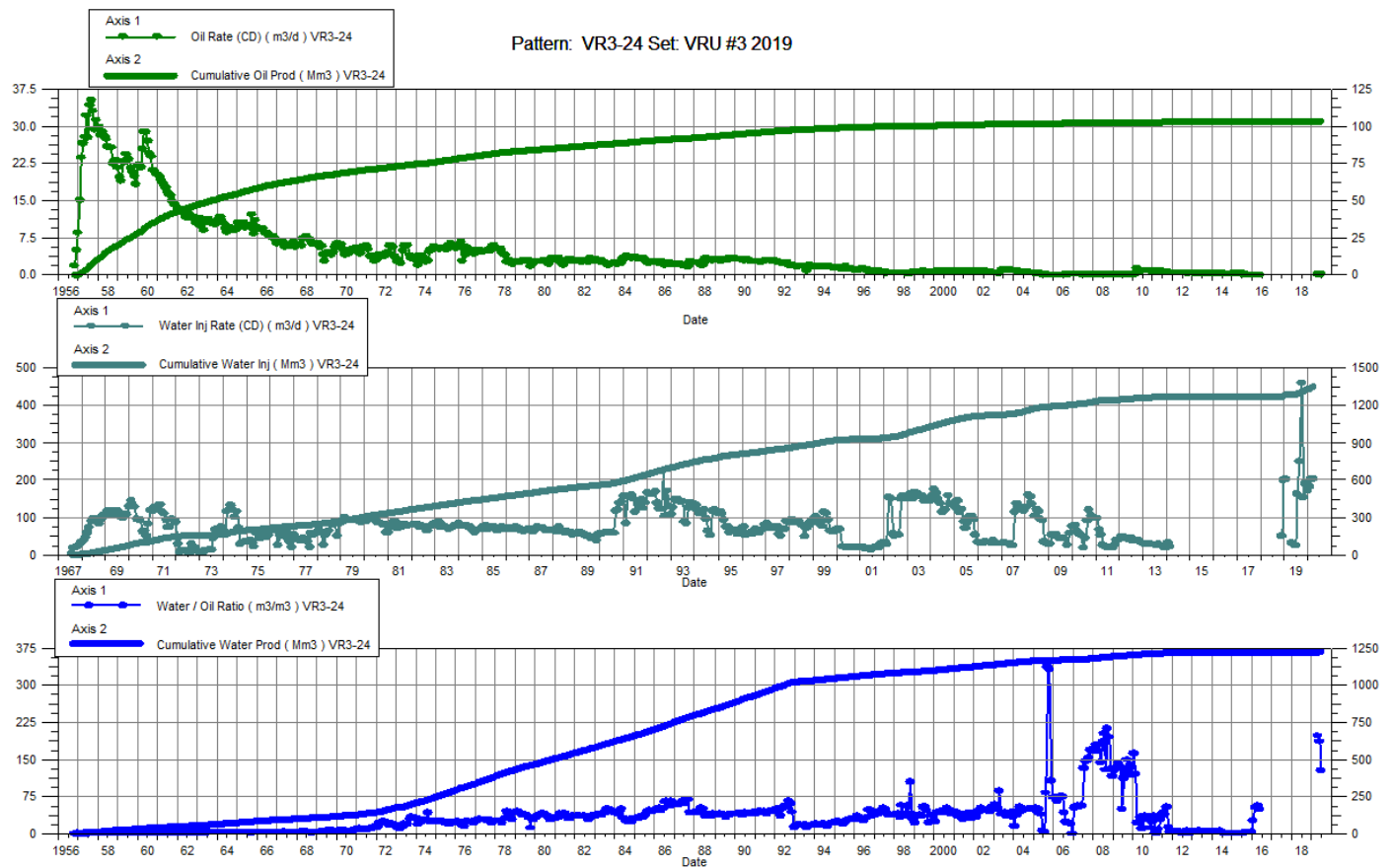
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019	3.4	38.61	111.2	505.68	41.42	669.7	32.52	0.36	1.23	5,100.00
2-28-2019	3.4	38.70	114.1	508.87	46.79	671.0	33.23	0.40	1.22	5,100.00
3-31-2019	3.5	38.81	119.3	512.57	45.81	672.4	33.81	0.37	1.22	5,100.00
4-30-2019	3.3	38.91	106.6	515.77	50.70	674.0	32.14	0.46	1.21	5,100.00
5-31-2019	3.2	39.01	94.6	518.70	46.10	675.4	29.96	0.47	1.21	5,100.00
6-30-2019	2.8	39.09	101.0	521.73	55.60	677.1	35.90	0.54	1.21	5,100.00
7-31-2019	3.7	39.21	101.6	524.88	62.84	679.0	27.67	0.60	1.20	5,100.00
8-31-2019	2.6	39.29	101.5	528.03	57.03	680.8	38.47	0.55	1.20	5,100.00
9-30-2019	2.8	39.37	128.9	531.89	65.17	682.7	46.80	0.50	1.19	5,100.00
10-31-2019	2.2	39.44	87.6	534.61	112.10	686.2	39.39	1.25	1.19	5,100.00
11-30-2019	1.7	39.49	94.9	537.45	64.93	688.1	54.92	0.67	1.19	5,100.00
12-31-2019	1.6	39.54	74.3	539.76	53.81	689.8	48.04	0.71	1.19	5,100.00



VRU #3

Pattern P-24 – 00/16-03-010-26W1/0

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 Replacement Ratio	Water Inj Pressure kPa
1-31-2019		103.79		1218.72	202.10	1288.70			0.97	--
2-28-2019		103.79		1218.72		1288.70		--	0.96	--
3-31-2019		103.79		1218.72		1288.70		--	0.96	--
4-30-2019	0.2	103.80	31.7	1219.67	31.69	1289.65	198.06	1.00	0.97	--
5-31-2019	0.2	103.80	29.1	1220.57	29.09	1290.55	185.95	1.00	0.97	--
6-30-2019	0.2	103.81	27.8	1221.41	24.22	1291.28	128.11	0.87	0.97	--
7-31-2019		103.81		1221.41	162.47	1296.31			0.98	--
8-31-2019		103.81		1221.41	249.52	1304.05			0.98	--
9-30-2019		103.81		1221.41	461.05	1317.88			0.99	--
10-31-2019		103.81		1221.41	154.13	1322.66			1.00	--
11-30-2019		103.81		1221.41	191.00	1328.39			1.00	--
12-31-2019		103.81		1221.41	171.50	1333.70			1.01	--

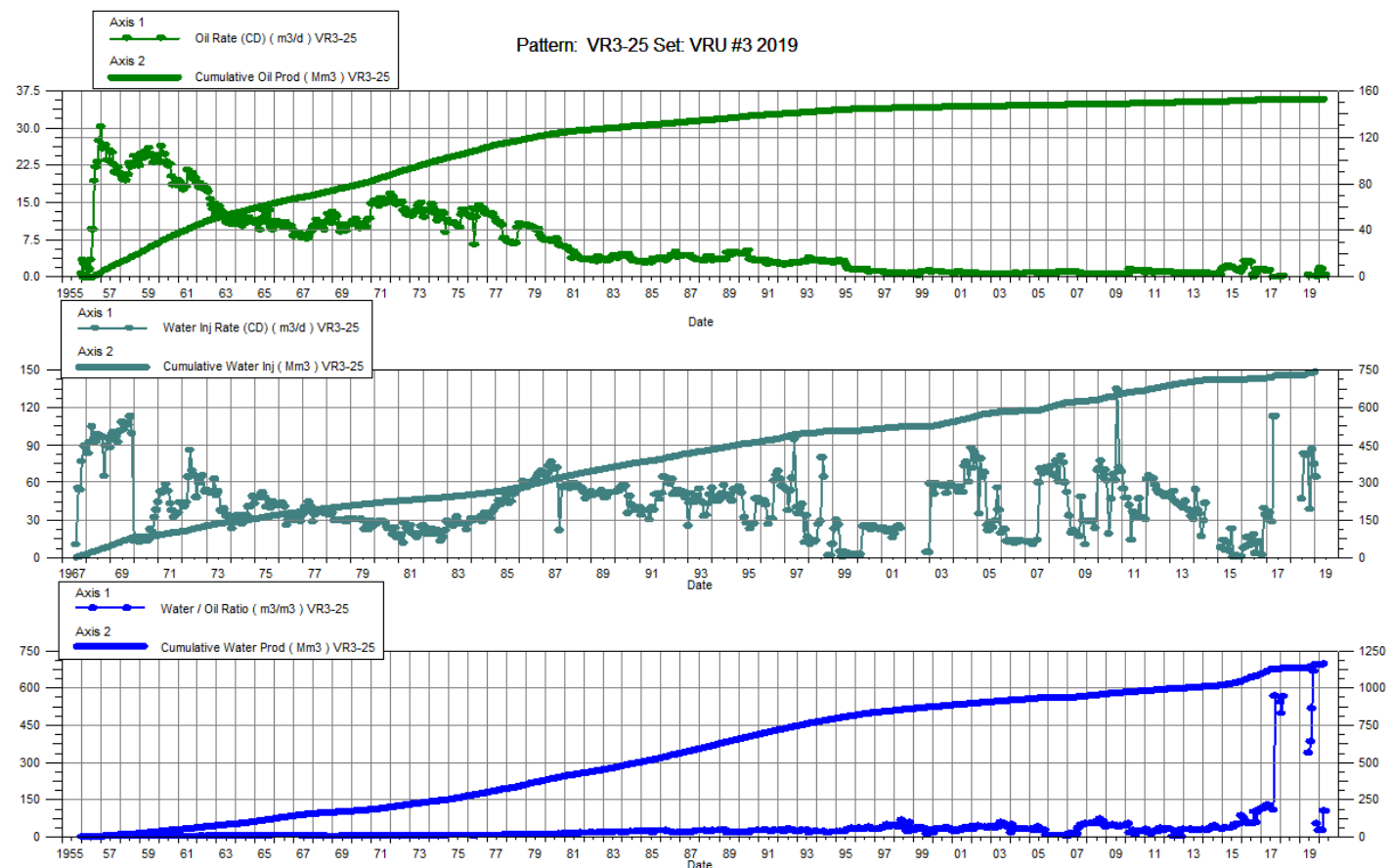


VRU #3

Pattern P-25 – 00/14-02-010-26W1/0

02/03-11-010-26W1/2

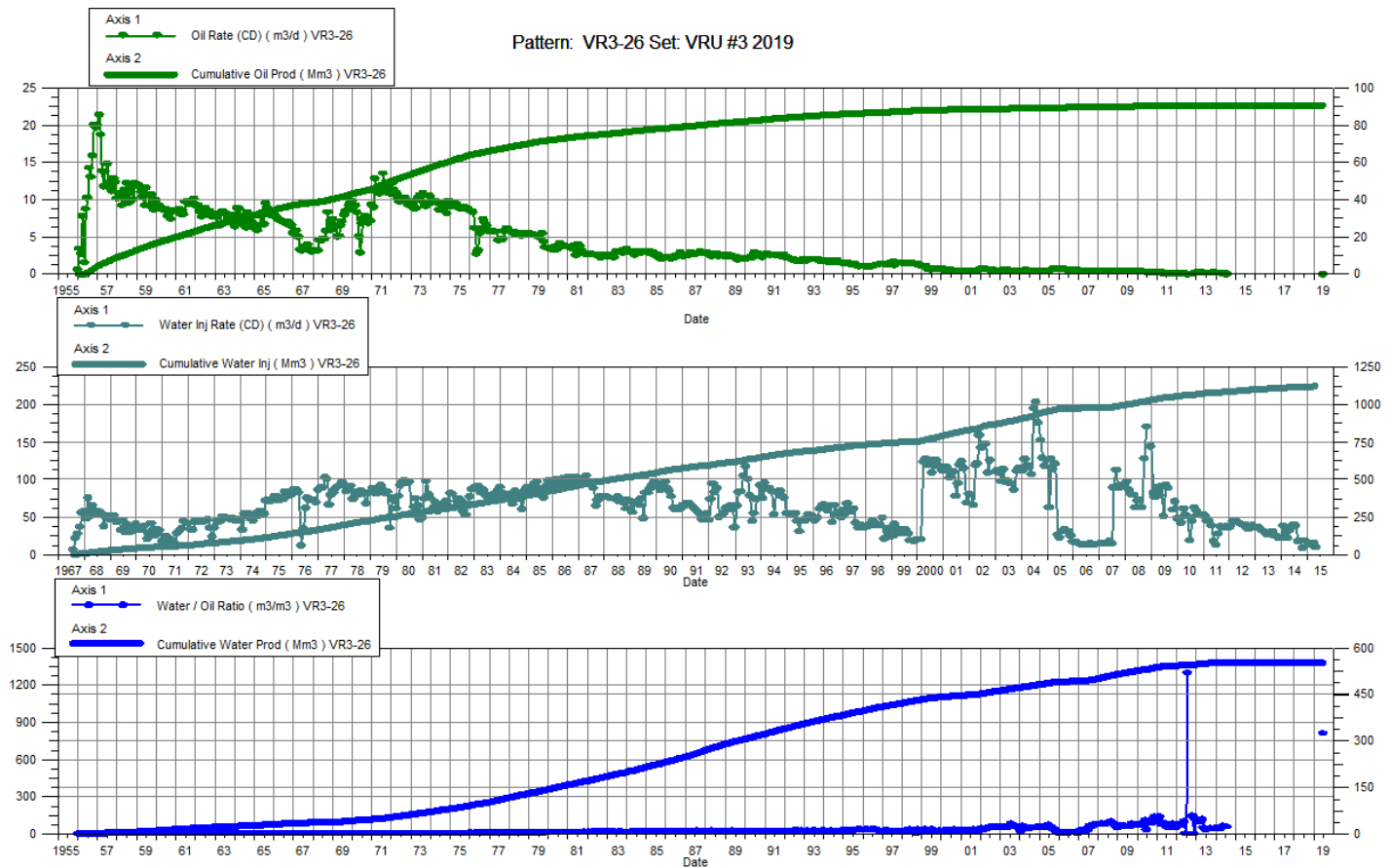
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa	Water Inj Pressure kPa
1-31-2019		152.88		1135.19	64.23	747.7			0.58	5,000.00	5,800.00
2-28-2019	0.2	152.88	117.0	1135.19	239.60	2195.1	564.78	2.04	0.58	5,000.00	5,800.00
3-31-2019		152.88		1135.19	295.59	2204.3			0.58	5,000.00	5,800.00
4-30-2019		152.88		1135.19	252.05	2211.8			0.58	5,000.00	5,800.00
5-31-2019		152.88		1135.19	240.49	2219.3			0.58	5,000.00	5,800.00
6-30-2019	0.4	152.89	141.1	1139.42		747.7	337.29		0.58	5,000.00	5,800.00
7-31-2019	0.4	152.90	137.1	1143.67		747.7	382.92		0.58	5,000.00	5,800.00
8-31-2019	0.3	152.91	156.8	1148.53		747.7	517.21		0.57	5,000.00	5,800.00
9-30-2019	0.3	152.92	203.8	1154.65		747.7	664.70		0.57	5,000.00	5,800.00
10-31-2019		152.92		1154.84		747.7			0.57	5,000.00	5,800.00
11-30-2019	0.1	152.92	6.3	1154.84		747.7	52.47		0.57	5,000.00	5,800.00
12-31-2019	1.3	152.96	35.5	1155.94		747.7	26.83		0.57	5,000.00	5,800.00



VRU #3

Pattern P-26 – 00/16-02-010-26W1/0

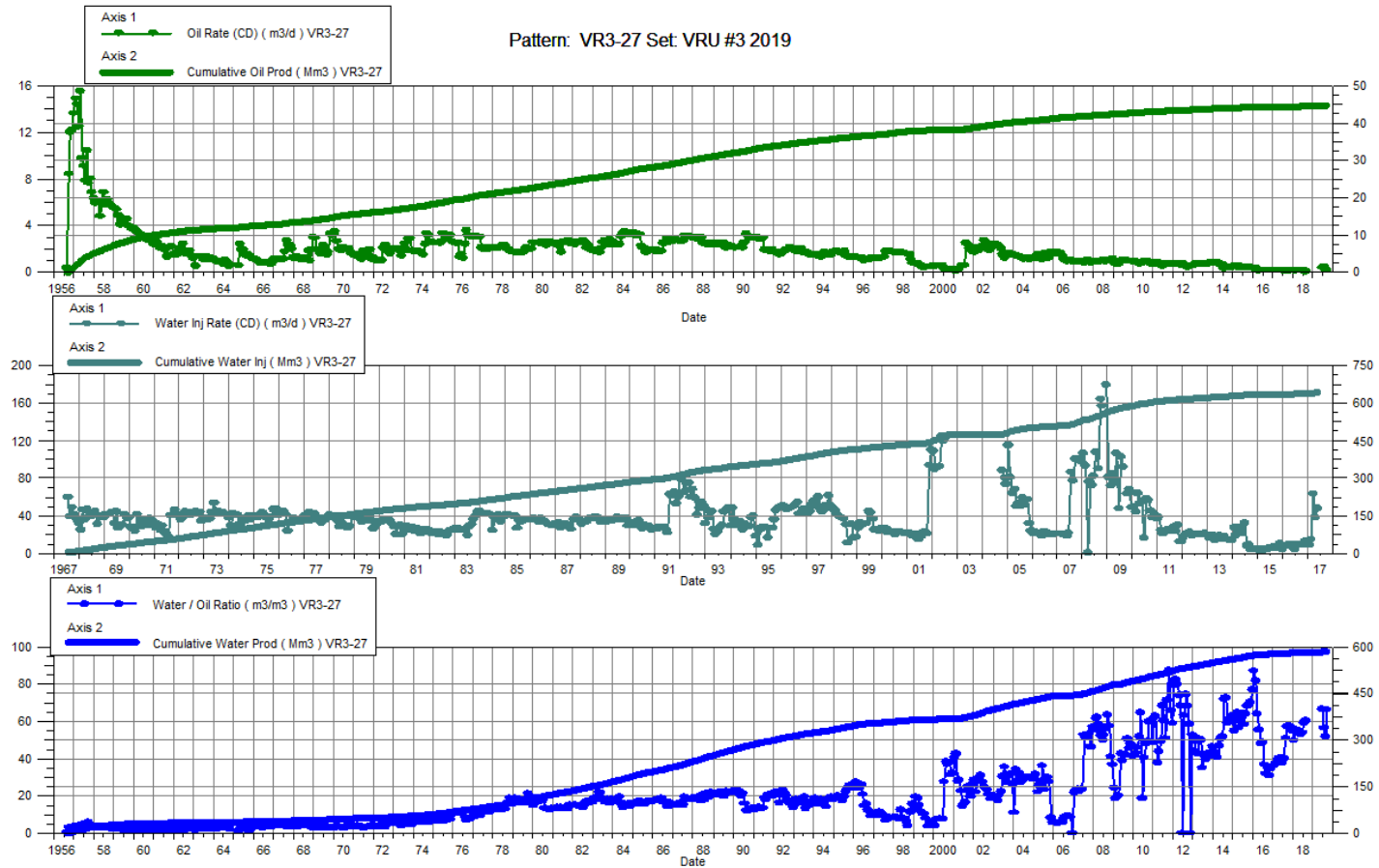
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019		90.78		551.91		1125.85			1.75	3,700.00
2-28-2019		90.78		551.91		1125.85			1.75	3,700.00
3-31-2019		90.78		551.91		1125.85			1.75	3,700.00
4-30-2019		90.78		551.91		1125.85			1.75	3,700.00
5-31-2019		90.78		551.91		1125.85			1.75	3,700.00
6-30-2019	0.0	90.78	14.8	552.36		1125.85	808.27		1.75	3,700.00
7-31-2019		90.78		552.36		1125.85			1.75	3,700.00
8-31-2019		90.78		552.36		1125.85			1.75	3,700.00
9-30-2019		90.78		552.36		1125.85			1.75	3,700.00
10-31-2019		90.78		552.36		1125.85			1.75	3,700.00
11-30-2019		90.78		552.36		1125.85			1.75	3,700.00
12-31-2019		90.78		552.36		1125.85			1.75	3,700.00



VRU #3

Pattern P-27 – 00/14-01-010-26W1/0

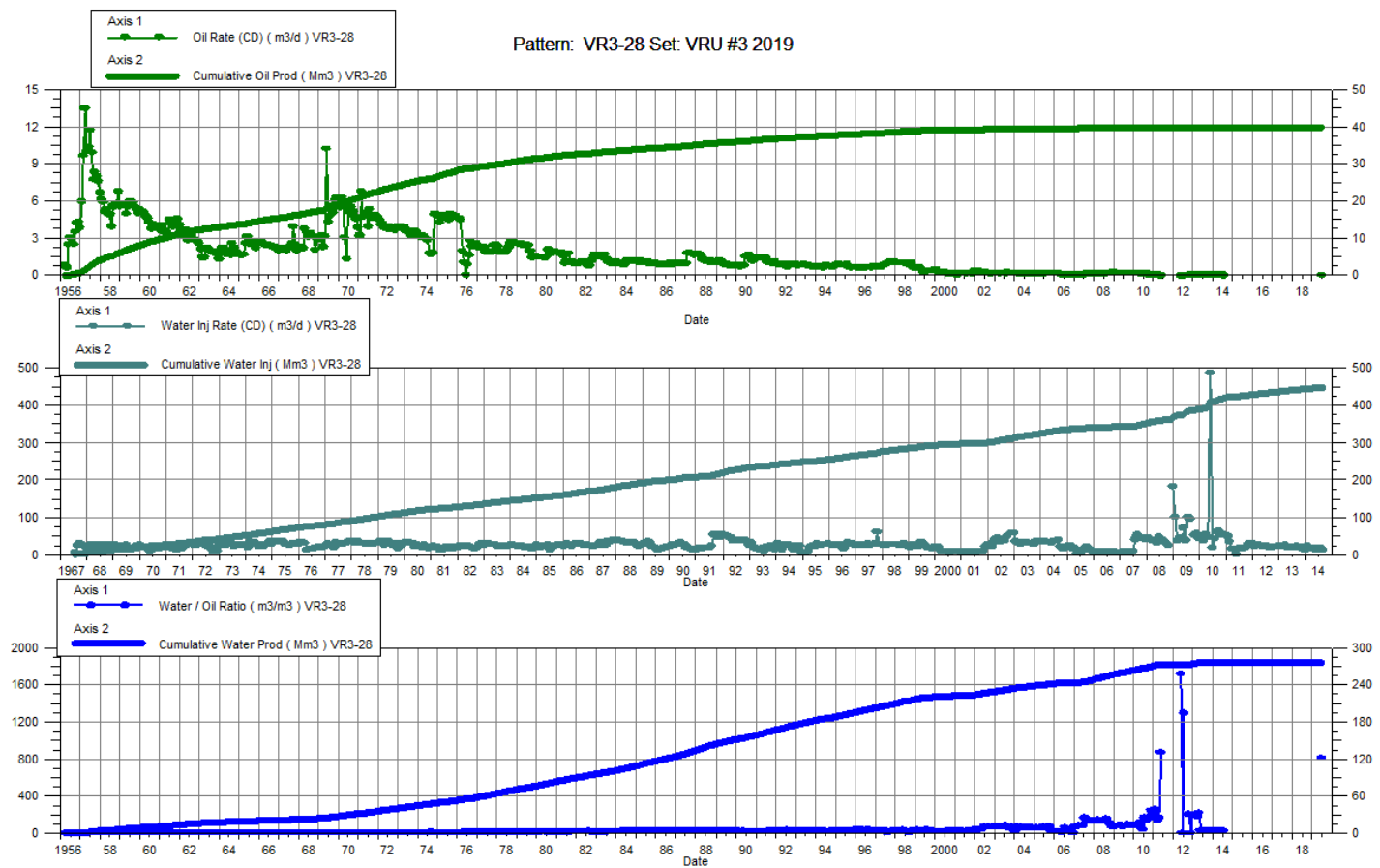
Date	Oil Rate (CD) m3/d	Cum Oil Prod Mm3	Water Rate (CD) m3/d	Cum Water Prod Mm3	Water Inj Rate (CD) m3/d	Cum Water Inj Mm3	Water Oil Ratio m3/m3	Voidage Replacement Ratio	Cum Voidage Replacement Ratio	Water Inj Pressure kPa
1-31-2019		44.60		581.77		645.6			1.03	5,400.00
2-28-2019		44.56		579.71		645.6			1.03	5,400.00
3-31-2019		44.57		580.09		645.6			1.03	5,400.00
4-30-2019		44.58		580.48		645.6			1.03	5,400.00
5-31-2019		44.58		580.84		645.6			1.03	5,400.00
6-30-2019	0.4	44.61	29.1	582.64		645.6	66.46		1.03	5,400.00
7-31-2019	0.5	44.63	29.9	583.57		645.6	56.36		1.03	5,400.00
8-31-2019	0.2	44.64	11.0	583.91		645.6	51.72		1.03	5,400.00
9-30-2019	0.2	44.64	14.3	584.34		645.6	66.05		1.03	5,400.00
10-31-2019		44.64		584.34		645.6			1.03	5,400.00
11-30-2019		44.64		584.34		645.6			1.03	5,400.00
12-31-2019		44.64		584.34		645.6			1.03	5,400.00



VRU #3

Pattern P-28 – 00/08-02-010-26W1/0

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 Replacement Ratio	Water Inj Pressure kPa
1-31-2019		40.00		275.86		448.98			1.42	3,400.00
2-28-2019		40.00		275.86		448.98			1.42	3,400.00
3-31-2019		40.00		275.86		448.98			1.42	3,400.00
4-30-2019		40.00		275.86		448.98			1.42	3,400.00
5-31-2019		40.00		275.86		448.98			1.42	3,400.00
6-30-2019	0.0	40.01	14.8	276.31		448.98	808.27		1.42	3,400.00
7-31-2019		40.01		276.31		448.98			1.42	3,400.00
8-31-2019		40.01		276.31		448.98			1.42	3,400.00
9-30-2019		40.01		276.31		448.98			1.42	3,400.00
10-31-2019		40.01		276.31		448.98			1.42	3,400.00
11-30-2019		40.01		276.31		448.98			1.42	3,400.00
12-31-2019		40.01		276.31		448.98			1.42	3,400.00



VRU #3

Pattern P-29 – 00/06-01-010-26W1/0

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 Replacement Ratio	Water Inj Pressure kPa
1-31-2019	1.4	127.67	38.7	1602.40		749.8	26.94		0.43	2,100.00
2-28-2019	1.5	127.71	39.7	1603.52		749.8	26.99		0.43	2,100.00
3-31-2019	1.5	127.76	44.5	1604.90		749.8	29.43		0.43	2,100.00
4-30-2019	1.4	127.80	42.1	1606.16		749.8	31.12		0.43	2,100.00
5-31-2019	1.3	127.84	37.7	1607.33		749.8	28.81		0.43	2,100.00
6-30-2019	1.5	127.89	60.7	1609.15		749.8	40.46		0.43	2,100.00
7-31-2019	2.1	127.95	62.3	1611.08		749.8	30.20		0.43	2,100.00
8-31-2019	1.4	127.99	44.1	1612.45		749.8	30.66		0.43	2,100.00
9-30-2019	1.5	128.04	57.3	1614.17		749.8	39.23		0.43	2,100.00
10-31-2019	1.5	128.09	40.6	1615.42		749.8	26.54		0.43	2,100.00
11-30-2019	1.4	128.13	41.7	1616.68		749.8	30.32		0.43	2,100.00
12-31-2019	1.5	128.17	32.7	1617.69		749.8	22.56		0.43	2,100.00

