

Miniota Unit No. 1
2020 Annual EOR Report

Miniota Unit No. 1 became effective November 1, 2019. This report discusses the operations of the Unit for the period from inception to November 30, 2020 and the performance of the Project to date. The area map of the Miniota Unit No. 1 is shown in Figure 1.

Discussion

Oil Production

Since inception of the Unit in November 2019, the oil production rate for the Unit averaged 3.5 m³/d with a WOR of 16.4 m³/m³. In comparison, the average oil production rate for 2019 was 8.8 m³/d with a WOR of 13.0 m³/m³. The reduction in oil production is due to the shut-in period between Mar-June of 2020 (negative oil price and uneconomic market conditions). A list of well servicing jobs in the reporting period is shown in Table 1.

Total oil production since Unit inception is 1.392 E3m³. Cumulative oil since commencement of production is 53.4 E3m³. Details of the production data are shown in Table 4 as well as graphically in the attached figures.

Water Injection

The Unit average water injection rate for the reporting time was 293 m³/d. The first injector conversion in the Unit was 00/03-01-013-27W1/2 well in November 2019. When the Unit production was shut in due to uneconomic market conditions, injection was maintained to allow catching up on historical voidage.

Cumulative water injected to November 30, 2020 is 115.6 E3m³. Details of the water injection data are also shown in Table 3 as well as the attached figures 2-6.

Voidage

There is no gas production since Unit inception therefore, it was not included in the voidage replacement ratio (VRR) calculations. The total project voidage during 2020 was 21.215 E3m³, resulting in the voidage replacement ratio (VRR) of 12.1. It is important to note that there is a weak aquifer providing some pressure support to the southwest side of the Unit. The VRR calculation does not take into account the water influx as it is difficult to quantify. The total water produced is injected back into the reservoir as well as nearby Lodgepole produced water as make up and is included in the injection volume for voidage calculations. The calculated VRR of 12.1 at the overall project level may appear to be high due to a period of shut-in of oil wells during uneconomic conditions.

Cumulative total voidage from commencement of production to December 31, 2020 is 21.215 E3m³ and the cumulative VRR is 0.4. Oil formation volume factor used in calculations is 1.052 m³/stm³. Detailed voidage calculations are shown in Table 3.

Reservoir Pressure

In 2020, reservoir pressures have been obtained by Fluid Level shots in most of the producers during the uneconomic shut-in period. These Fluid Level shots were obtained after a relatively long shut-in time are considered to be stable and representative of the current reservoir pressure. Table 2 shows calculated reservoir pressure. The average reservoir pressure is 5,210 KPag.

Recovery

Based on the current estimated OOIP of 597 E3m³, recovery to end of the reporting period is 8.9 %. Full cycle development is expected to recover an additional 20-25% of the OOIP or 119 – 149 E3m³. The ultimate recover factor is estimated between 30-35% based on analogy field works. Future simulation project is planned to quantify this estimate. In addition, Elcano is just beginning to observe waterflood response in early 2021. Therefore it is planned to convert additional oil producer(s) into water injector(s) to improve sweep efficiency and to drill additional wells to increase total oil recovery.

Waterflood Patterns

The Miniota Unit No. 1 waterflood was developed mainly as an injectivity test with the conversion of 00/03-01-013-27W1/2 to water injector in November 2019. Future development will bring the unit to inverted 5-spot patterns and eventually line drive pattern configuration.

Table 3 provides detailed production, injection, well head injection pressure and voidage for the Unit.

Figure 1: Miniota Unit No. 1- Area Map

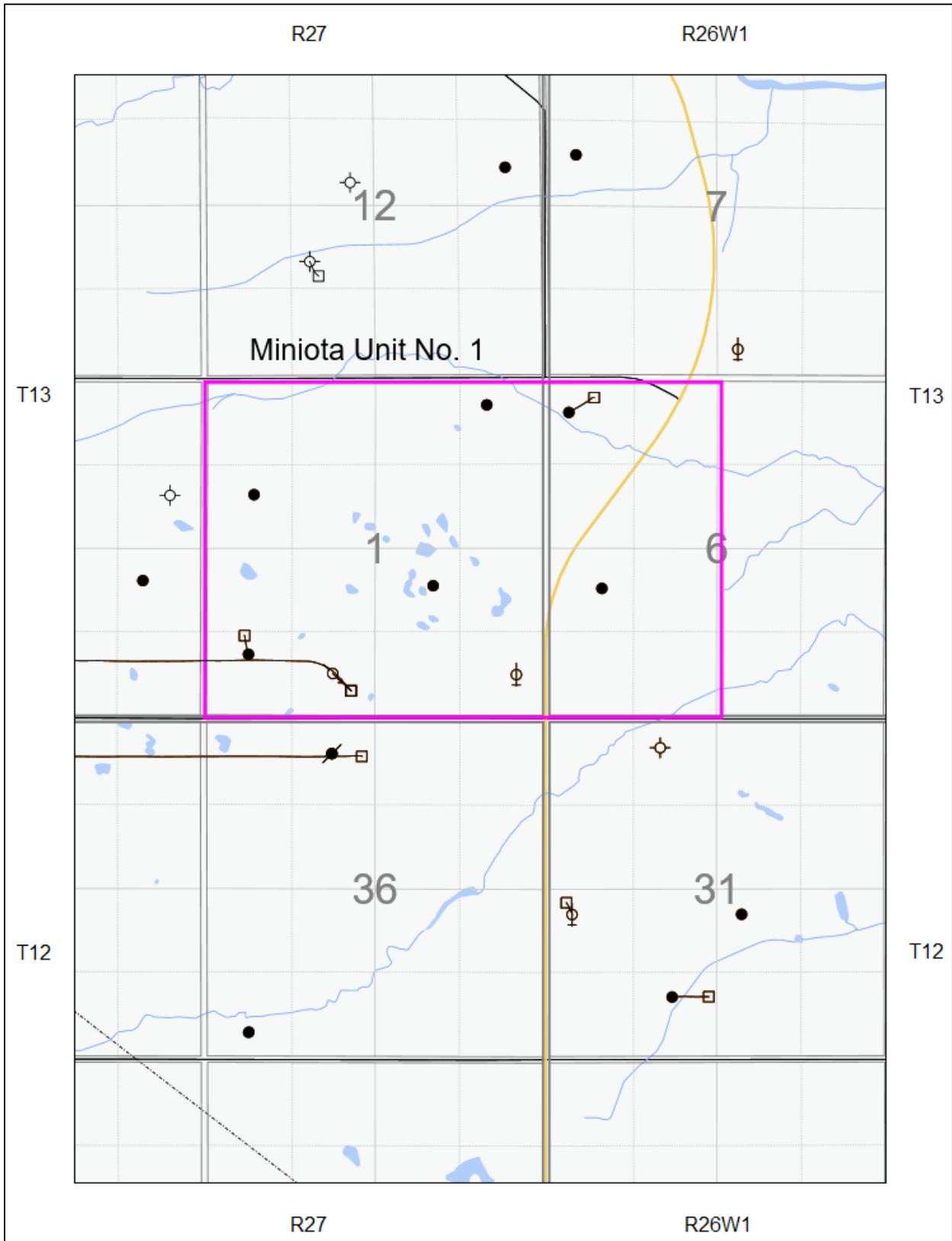


Table 1: November 2019 – November 2020 Well Service Record

Well Identification	Well Service Type	Comments
00/03-01-013-27W1/2	Injector Conversion	Formerly 00/03-02-013-27W1/0
00/13-06-013-26W1/0	Reactivation	

Table 2: Miniota Unit - Calculated Reservoir Pressures

Calculated Reservoir Pressure (via Fluid Levels)

Well	Formation	Shut-in Date	Fluid Shot Date after shut in	# Joint to Fluid	(m to fluid)	Mid Point of Perforation MPP (m)	Fluid Column (m)	Estimated MPP Pressure (Kpag)
00/05-08-013-26W 1/0	RESTON-MRNTH-LD D	31-Mar-20	15-Oct-20	3	29	538	509	5,130
00/13-08-013-26W 1/0	RESTON-MRNTH-LD D	Sep-18	20-Nov-20	2	19	566	537	5,310
00/04-01-013-27W 1/0	RESTON-MRNTH-LD D	05-Jan-20	08-Oct-20	1	10	562	552	5,560
00/07-01-013-27W 1/0	RESTON-MRNTH-LD D	04-Feb-20	30-Oct-20	3	29	538	509	5,130
00/12-01-013-27W 1/0	RESTON-MRNTH-LD D	31-Mar-20	01-Jul-20	3	29	544	515	5,080
00/16-01-013-27W 1/0	RESTON-MRNTH-LD D	31-Mar-20	01-Jul-20	3	29	536	507	4,950
00/01-01-013-27W 1/0	RESTON-MRNTH-LD D	Observation Well	01-Oct-20	1	10	536	526	5,300

Average

5,210

Table 3: Detail Production, Injection Data & Voidage Replacement Ratio Calculations

Date	PRD Monthly OIL m3	PRD Monthly WTR m3	PRD Monthly GAS e3m3	PRD Well Count	INJ Monthly Water m3	INJ Well Count	CD Oil m3/d	CD Water m3/d	WOR m3/m3	CD Water Injection m3/d	Injection Pressure KPag	VRR	Cum VRR
Dec-13	256	419	-	1	-	-	8.4	13.8	1.6	-	-	-	-
Jan-14	424	602	-	1	-	-	14.0	19.8	1.4	-	-	-	-
Feb-14	224	749	-	1	-	-	7.4	24.6	3.3	-	-	-	-
Mar-14	311	1,444	-	2	-	-	10.2	47.5	4.6	-	-	-	-
Apr-14	682	2,850	-	2	-	-	22.4	93.8	4.2	-	-	-	-
May-14	803	2,634	-	2	-	-	26.4	86.6	3.3	-	-	-	-
Jun-14	342	1,588	-	2	-	-	11.3	52.2	4.6	-	-	-	-
Jul-14	521	3,500	-	1	-	-	17.1	115.1	6.7	-	-	-	-
Aug-14	533	3,243	-	1	-	-	17.5	106.7	6.1	-	-	-	-
Sep-14	919	3,244	-	2	-	-	30.2	106.7	3.5	-	-	-	-
Oct-14	2,110	4,392	-	4	-	-	69.4	144.5	2.1	-	-	-	-
Nov-14	2,115	4,766	-	5	-	-	69.6	156.8	2.3	-	-	-	-
Dec-14	1,970	3,551	-	5	-	-	64.8	116.8	1.8	-	-	-	-
Jan-15	2,295	1,982	-	5	-	-	75.5	65.2	0.9	-	-	-	-
Feb-15	2,143	3,765	-	5	-	-	70.5	123.8	1.8	-	-	-	-
Mar-15	2,075	3,210	-	6	-	-	68.3	105.6	1.5	-	-	-	-
Apr-15	2,561	4,644	-	6	-	-	84.2	152.8	1.8	-	-	-	-
May-15	1,836	3,841	-	6	-	-	60.4	126.3	2.1	-	-	-	-
Jun-15	1,749	3,788	-	6	-	-	57.5	124.6	2.2	-	-	-	-
Jul-15	1,719	3,521	-	6	-	-	56.5	115.8	2.0	-	-	-	-
Aug-15	1,537	1,584	-	6	-	-	50.6	52.1	1.0	-	-	-	-
Sep-15	1,522	2,313	-	6	-	-	50.1	76.1	1.5	-	-	-	-
Oct-15	1,403	3,374	-	6	-	-	46.1	111.0	2.4	-	-	-	-
Nov-15	1,183	3,967	-	5	-	-	38.9	130.5	3.4	-	-	-	-
Dec-15	1,153	3,692	-	6	-	-	37.9	121.4	3.2	-	-	-	-
Jan-16	1,236	5,347	-	6	-	-	40.6	175.9	4.3	-	-	-	-
Feb-16	1,206	5,395	-	6	-	-	39.7	177.5	4.5	-	-	-	-
Mar-16	1,114	4,662	-	6	-	-	36.7	153.4	4.2	-	-	-	-
Apr-16	721	3,215	-	5	-	-	23.7	105.8	4.5	-	-	-	-
May-16	550	2,216	-	5	-	-	18.1	72.9	4.0	-	-	-	-
Jun-16	427	3,181	-	6	-	-	14.0	104.6	7.4	-	-	-	-
Jul-16	577	4,589	-	6	-	-	19.0	151.0	8.0	-	-	-	-
Aug-16	530	4,306	-	6	-	-	17.4	141.6	8.1	-	-	-	-
Sep-16	467	4,199	-	6	-	-	15.4	138.1	9.0	-	-	-	-
Oct-16	467	4,088	-	6	-	-	15.4	134.5	8.7	-	-	-	-
Nov-16	559	4,427	-	6	-	-	18.4	145.6	7.9	-	-	-	-
Dec-16	491	4,275	-	6	-	-	16.1	140.6	8.7	-	-	-	-
Jan-17	444	3,907	-	6	-	-	14.6	128.5	8.8	-	-	-	-
Feb-17	354	3,475	-	6	-	-	11.6	114.3	9.8	-	-	-	-
Mar-17	322	3,618	-	6	-	-	10.6	119.0	11.2	-	-	-	-
Apr-17	342	4,078	-	6	-	-	11.2	134.1	11.9	-	-	-	-
May-17	408	4,254	-	6	-	-	13.4	139.9	10.4	-	-	-	-
Jun-17	388	3,967	-	6	-	-	12.7	130.5	10.3	-	-	-	-
Jul-17	399	4,280	-	6	-	-	13.1	140.8	10.7	-	-	-	-
Aug-17	375	3,673	-	6	-	-	12.3	120.8	9.8	-	-	-	-
Sep-17	367	3,544	-	6	-	-	12.1	116.6	9.7	-	-	-	-

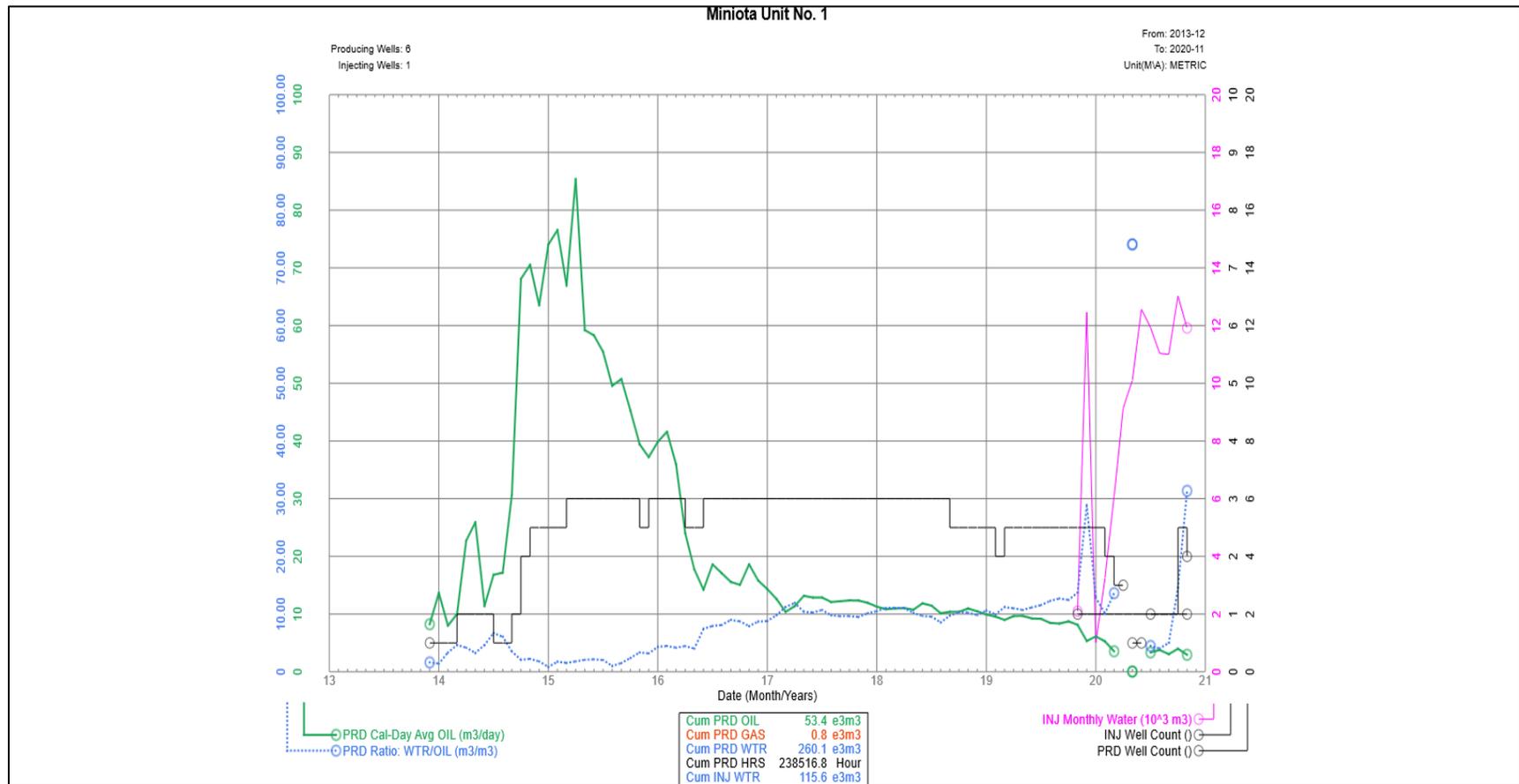
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Oct-17	384	3,709	-	6	-	-	12.6	122.0	9.7	-	-	-	-
Nov-17	371	3,525	-	6	-	-	12.2	115.9	9.5	-	-	-	-
Dec-17	371	3,785	-	6	-	-	12.2	123.8	10.2	-	-	-	-
Jan-18	350	3,679	-	6	-	-	11.5	121.0	10.5	-	-	-	-
Feb-18	304	3,382	-	6	-	-	10.0	110.8	11.1	-	-	-	-
Mar-18	341	3,772	-	6	-	-	11.2	124.1	11.1	-	-	-	-
Apr-18	331	3,662	0	6	-	-	10.9	120.5	11.0	-	-	-	-
May-18	333	3,402	0	6	-	-	11.0	111.9	10.2	-	-	-	-
Jun-18	356	3,453	-	6	-	-	11.7	113.8	9.7	-	-	-	-
Jul-18	355	3,392	0	6	-	-	11.7	111.8	9.5	-	-	-	-
Aug-18	315	2,699	-	6	-	-	10.4	88.8	8.6	-	-	-	-
Sep-18	312	3,043	-	5	-	-	10.3	100.1	9.7	-	-	-	-
Oct-18	322	3,337	-	5	-	-	10.6	109.8	10.4	-	-	-	-
Nov-18	329	3,373	-	5	-	-	10.8	110.9	10.2	-	-	-	-
Dec-18	325	3,201	-	5	-	-	10.7	105.3	9.8	-	-	-	-
Jan-19	308	3,288	-	5	-	-	10.1	107.5	10.6	-	-	-	-
Feb-19	268	2,667	-	4	-	-	8.8	87.7	10.0	-	-	-	-
Mar-19	279	3,124	-	5	-	-	9.2	102.8	11.2	-	-	-	-
Apr-19	290	3,193	-	5	-	-	9.5	105.0	11.0	-	-	-	-
May-19	300	3,222	-	5	-	-	9.9	108.0	10.7	-	-	-	-
Jun-19	277	3,098	-	5	-	-	9.1	101.9	11.2	-	-	-	-
Jul-19	285	3,293	-	5	-	-	9.4	108.3	11.6	-	-	-	-
Aug-19	263	3,228	-	5	-	-	8.6	106.2	12.3	-	-	-	-
Sep-19	251	3,189	-	5	-	-	8.3	104.9	12.7	-	-	-	-
Oct-19	271	3,378	-	5	-	-	8.9	111.1	12.5	-	-	-	-
Nov-19	244	3,353	-	5	2,101	1	8.0	110.3	13.7	69.1	-	0.6	0.0
Dec-19	165	4,778	-	5	12,462	1	5.4	157.2	28.9	409.9	-	2.5	0.0
Jan-20	191	2,445	-	5	1,003	1	6.3	80.4	12.8	33.0	-	0.4	0.1
Feb-20	153	1,548	-	4	3,246	1	5.0	50.9	10.1	106.8	-	1.9	0.1
Mar-20	110	1,502	-	3	6,082	1	3.6	49.4	13.6	200.1	-	3.8	0.1
Apr-20	-	-	-	-	9,135	1	-	-	-	300.5	-	-	0.1
May-20	2	126	-	1	10,101	1	0.1	4.1	74.1	332.3	305	79.1	0.1
Jun-20	-	-	-	-	12,562	1	-	-	-	413.2	1,834	-	0.2
Jul-20	104	468	-	2	11,928	1	3.4	15.4	4.5	392.4	2,373	20.7	0.2
Aug-20	118	476	-	2	11,035	1	3.9	15.7	4.0	363.0	2,740	18.4	0.3
Sep-20	92	464	-	2	11,001	1	3.0	15.3	5.0	361.9	2,977	19.6	0.3
Oct-20	124	1,811	-	5	13,029	1	4.1	59.6	14.6	428.6	3,323	6.7	0.3
Nov-20	89	2,779	-	4	11,917	1	2.9	91.4	31.4	392.0	3,545	4.1	0.4

Cumulative Oil Production, E3m3 53.4
 Cumulative Gas Production, E3m3 0.8
 Cumulative Water Production, E3m3 280.1
 Cumulative Water Injection, E3m3 115.6

UWI
100/05-06-013-26W1/00
100/13-06-013-26W1/00
100/03-01-013-27W1/02
100/04-01-013-27W1/00
100/07-01-013-27W1/00
100/12-01-013-27W1/00
100/16-01-013-27W1/00

Figure 2: Miniota Unit No. 1 – Historical Production/Injection Data



Figures 3-6: Miniota Unit No. 1

Details Oil Production, WOR/Water Production, Water Injection/WHIPressure and VRR/Cum VRR

