

EAST ROUTLEDGE UNIT NO. 1

Waterflood Progress Report 2020

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:



TUNDRA OIL & GAS

Date: 2021-08-26

Introduction

East Routledge Unit No. 1 Enhanced Oil Recovery (EOR) Waterflood Project was approved under Board Order No. PM 20 effective May 1972 with Samedan Oil of Canada Ltd. as Operator. Tundra Oil and Gas (Tundra) acquired the unit from Topa Resources Ltd. and became operator in April 2002. The EOR project area contains 39 wells in 27 LSDs in Township 9, Range 25 W1 as shown in the figure below. The Unit contains 39 wells. 4 producers, 1 injectors, and 34 abandoned/suspended/other.

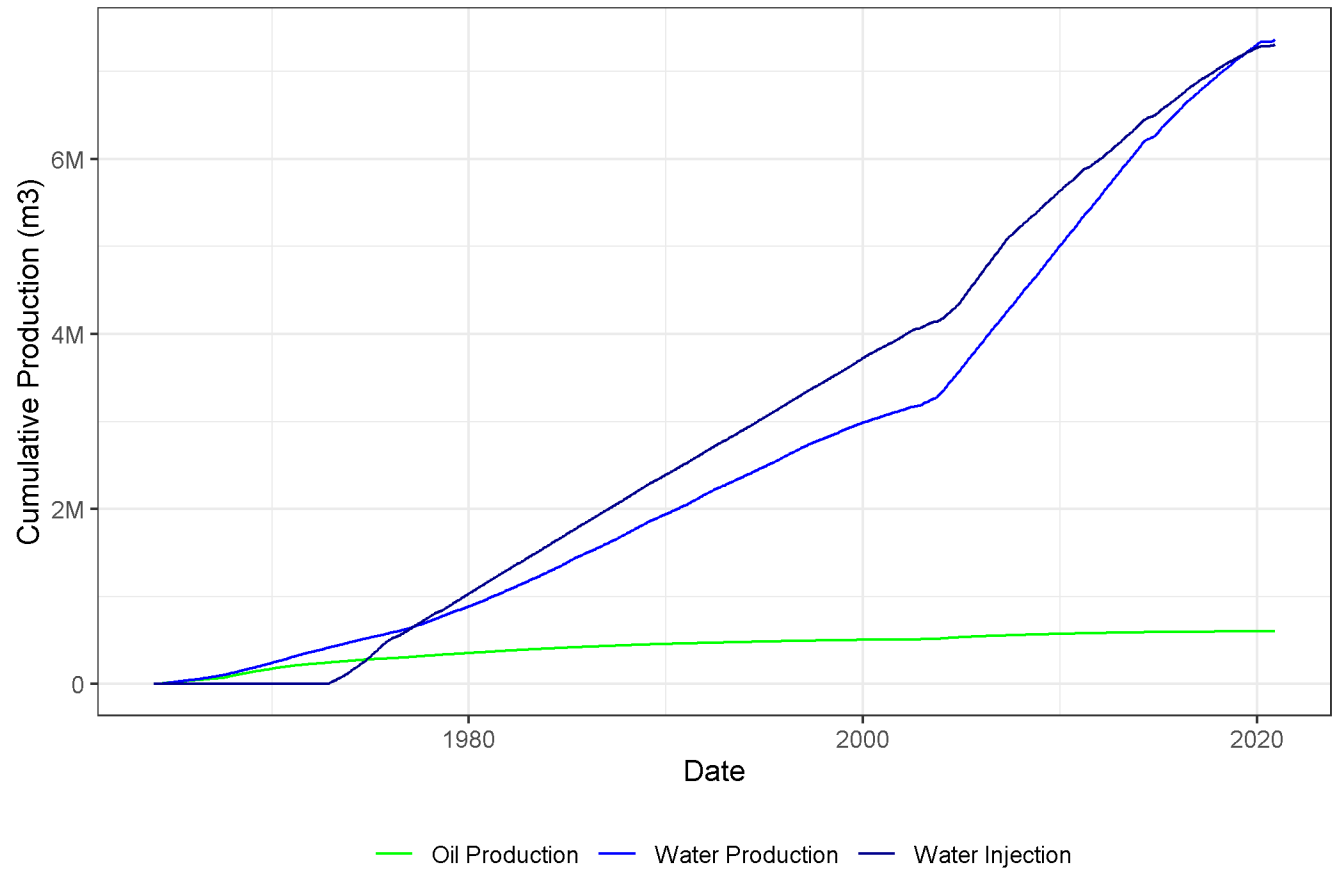
Monthly oil and water production rates, injection rate, GOR and WOR

MONTH	Cal Day Oil m3/d	Cal Day Water m3/d	Cal Day Injection m3/d	WOR	GOR
JAN 2020	5.33	485.95	327.02	91.17	0
FEB 2020	5.76	514.10	345.31	89.25	0
MAR 2020	3.61	335.89	227.47	93.04	0
APR 2020	0.00	0.00	1.67		
MAY 2020	0.00	0.00	1.01		
JUN 2020	0.08	10.37	2.13	129.62	0
SEP 2020	0.89	78.75	47.60	88.48	0
OCT 2020	2.99	269.22	174.05	90.04	0
NOV 2020	2.53	267.62	171.88	105.78	0
DEC 2020	2.42	266.45	170.26	110.10	0
Average	2.36	222.84	146.84		

Year summary of produced oil, gas, water and fluid injected

Categories	m3
Oil Production	717
Water Production	67,694
Gas Production	0
Water Injection	44,607
Cumulative Oil	602,796
Cumulative Water	7,366,015
Cumulative Injection	7,308,598

Cumulative Production and Injection



Monthly Wellhead Pressure

All readings are in kPa

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average
100.14-11-009-25W1.00	3,752	4,187	3,666	2,120	2,120	2,120	2,120	2,120	1,792	1,482	1,670	1,778	2,411

Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	MAY	JUN	SEP	OCT	NOV	DEC	Total
100.14-11-009-25W1.00	10,138	10,014	7,052	50	31	64	1,428	5,396	5,156	5,278	44,607
Grand Total	10,138	10,014	7,052	50	31	64	1,428	5,396	5,156	5,278	44,607

Voidage

All Volumes are in m3 Oil Formation Volume Factor (Rm3/Sm3) = 1.05								
MONTH	Oil	Water	Injection	Cumulative Oil	Cumulative Water	Cumulative Injection	VRR	Cumulative VRR
JAN 2020	166	15,065	10,138	602,253	7,313,382	7,274,121	0.665	0.915
FEB 2020	167	14,909	10,014	602,420	7,328,291	7,284,135	0.664	0.915
MAR 2020	112	10,413	7,052	602,532	7,338,704	7,291,187	0.670	0.915
APR 2020	0	0	50	602,532	7,338,704	7,291,237	Inf	0.915
MAY 2020	0	0	31	602,532	7,338,704	7,291,268	Inf	0.915
JUN 2020	2	311	64	602,534	7,339,015	7,291,332	0.204	0.915
SEP 2020	26	2,362	1,428	602,560	7,341,377	7,292,760	0.598	0.915
OCT 2020	93	8,346	5,396	602,653	7,349,723	7,298,156	0.639	0.914
NOV 2020	76	8,029	5,156	602,729	7,357,752	7,303,312	0.636	0.914
DEC 2020	75	8,260	5,278	602,804	7,366,012	7,308,590	0.633	0.914

Workovers

UWI	Date	Description
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Well List

UWI	Type	Status
100.01-10-009-25W1.00	Vertical	Abandoned Zone
100.08-10-009-25W1.00	Vertical	Abandoned
100.09-10-009-25W1.00	Vertical	Abandoned Zone
102.09-10-009-25W1.00	Horizontal	Producing
102.09-10-009-25W1.02	Horizontal	Producing
100.02-11-009-25W1.00	Vertical	Abandoned
100.03-11-009-25W1.00	Vertical	Abandoned
100.04-11-009-25W1.00	Vertical	Injection
100.05-11-009-25W1.00	Vertical	Abandoned
100.06-11-009-25W1.00	Vertical	Abandoned
100.07-11-009-25W1.00	Vertical	Abandoned
100.08-11-009-25W1.00	Vertical	Abandoned
102.08-11-009-25W1.00	Horizontal	Abandoned Zone
103.09-11-009-25W1.02	Horizontal	Abandoned Zone
100.10-11-009-25W1.00	Vertical	Abandoned
102.10-11-009-25W1.00	Horizontal	Abandoned Zone
100.11-11-009-25W1.00	Vertical	Abandoned
100.12-11-009-25W1.00	Vertical	Injection
100.13-11-009-25W1.00	Vertical	Abandoned
100.14-11-009-25W1.00	Vertical	Injection
100.15-11-009-25W1.00	Vertical	Abandoned
102.15-11-009-25W1.02	Horizontal	Abandoned Zone
100.05-12-009-25W1.00	Vertical	Abandoned
102.05-12-009-25W1.00	Horizontal	Producing
103.05-12-009-25W1.02	Horizontal	Producing
100.05-13-009-25W1.00	Vertical	Abandoned
102.05-13-009-25W1.00	Horizontal	Producing
100.01-14-009-25W1.00	Vertical	Abandoned
100.02-14-009-25W1.00	Vertical	Abandoned Zone
102.02-14-009-25W1.00	Horizontal	Producing
102.02-14-009-25W1.02	Horizontal	Drain
100.03-14-009-25W1.00	Vertical	Abandoned Zone
100.06-14-009-25W1.00	Vertical	Abandoned
102.06-14-009-25W1.02	Horizontal	Producing
100.07-14-009-25W1.00	Vertical	Abandoned
100.08-14-009-25W1.00	Vertical	Abandoned Zone
100.09-14-009-25W1.00	Vertical	Abandoned Zone
100.10-14-009-25W1.00	Vertical	Abandoned
100.11-14-009-25W1.00	Vertical	Abandoned