

EWART UNIT NO. 14

Waterflood Progress Report 2020

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:



TUNDRA OIL & GAS

Date: 2021-08-26

## Introduction

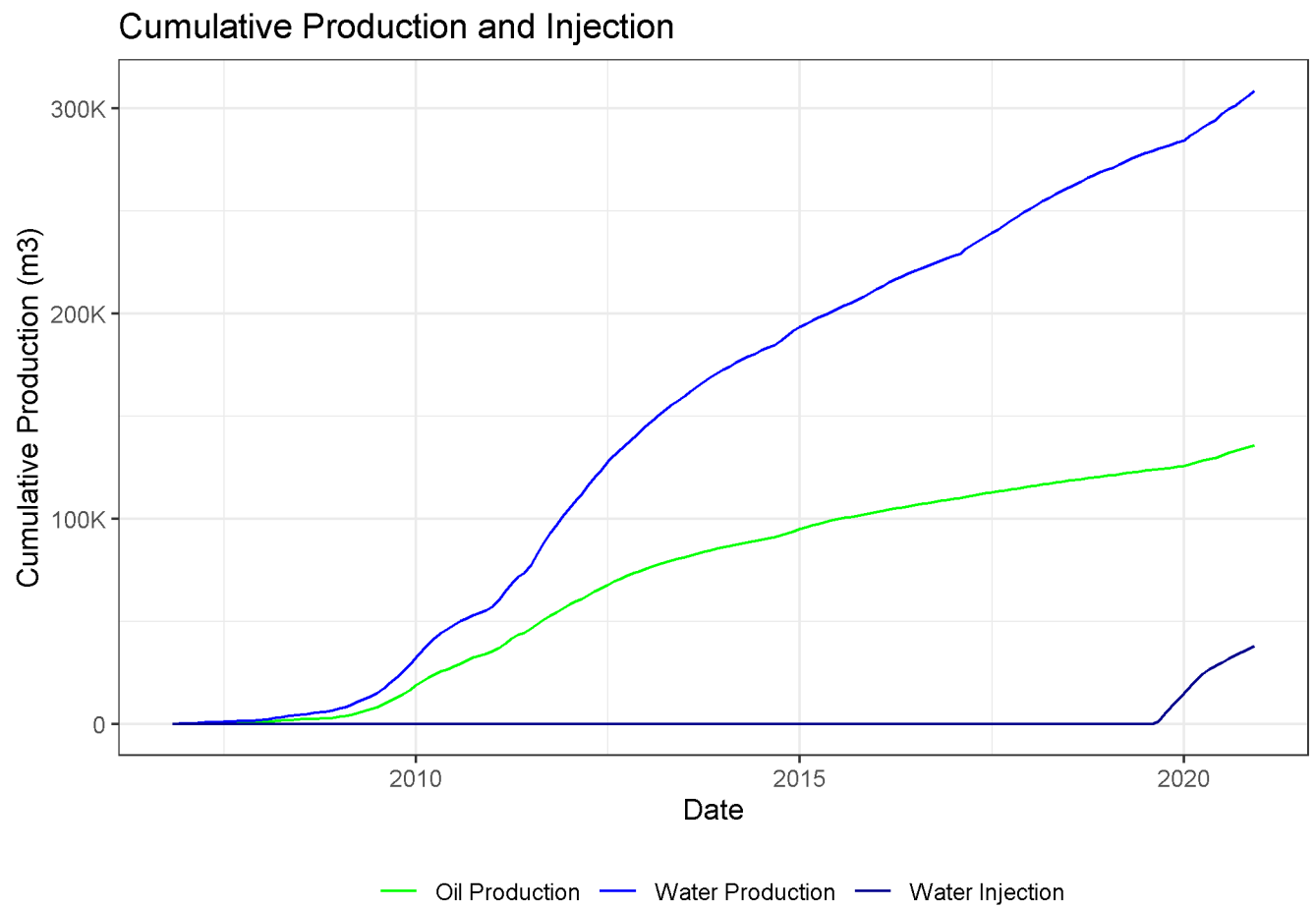
Ewart Unit No. 14 Enhanced Oil Recovery (EOR) Waterflood Project was approved effective December 1, 2018 with Tundra Oil and Gas as Operator. The EOR project area contains wells in 60 LSDs in Township 8, Range 28 W1. The Unit contains 22 wells. 15 producers, 4 injectors, and 3 abandoned/suspended/other.

## 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	14.46	37.56	114.68	2.60	0
FEB 2020	27.23	76.24	112.79	2.80	0
MAR 2020	31.54	63.83	111.00	2.02	0
APR 2020	29.31	72.79	90.20	2.48	0
MAY 2020	20.07	59.69	71.35	2.97	0
JUN 2020	28.42	58.95	58.80	2.07	0
JUL 2020	35.04	100.23	49.68	2.86	0
AUG 2020	36.70	69.88	59.81	1.90	0
SEP 2020	34.91	51.90	55.93	1.49	0
OCT 2020	32.92	76.57	46.06	2.33	0
NOV 2020	30.68	79.14	54.70	2.58	0
DEC 2020	26.69	77.45	49.87	2.90	0
Average	29.00	68.69	72.91		

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

Categories	m3
Oil Production	10,608
Water Production	25,136
Gas Production	0
Water Injection	26,636
Cumulative Oil	135,997
Cumulative Water	308,595
Cumulative Injection	38,161



## Monthly Wellhead Pressure

All readings are in kPa

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average
100.01-10-008-28W1.00	1,823	1,989	1,969	1,981	1,981	1,784	2,084	2,570	2,980	2,870	3,340	3,973	2,445
100.08-10-008-28W1.00	741	1,860	2,907	2,976	2,976	2,649	2,991	3,555	3,976	3,964	4,308	4,870	3,148
100.09-10-008-28W1.00	1,734	1,985	1,988	2,000	2,000	1,783	1,987	2,006	1,990	1,992	2,370	2,968	2,067
100.16-10-008-28W1.00	-95	-96	263	745	989	813	886	1,001	997	983	973	973	703

## Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
100.01-10-008-28W1.00	535	417	384	335	306	262	255	441	404	332	468	438	4,577
100.08-10-008-28W1.00	952	984	1,145	826	664	510	446	651	622	480	524	490	8,294
100.09-10-008-28W1.00	918	830	711	534	485	426	418	391	358	353	442	443	6,309
100.16-10-008-28W1.00	1,150	1,040	1,201	1,011	757	566	421	371	294	263	207	175	7,456
Grand Total	3,555	3,271	3,441	2,706	2,212	1,764	1,540	1,854	1,678	1,428	1,641	1,546	26,636

## Voidage

All Volumes are in m3 Oil Formation Volume Factor (Rm3/Sm3) = 1.071

MONTH	Oil	Water	Injection	Cumulative Oil	Cumulative Water	Cumulative Injection	VRR	Cumulative VRR
JAN 2020	448	1,164	3,555	125,851	284,621	15,080	2.163	0.036
FEB 2020	790	2,211	3,271	126,641	286,832	18,351	1.070	0.043
MAR 2020	977	1,979	3,441	127,618	288,811	21,792	1.137	0.051
APR 2020	880	2,184	2,706	128,498	290,995	24,498	0.866	0.057
MAY 2020	622	1,850	2,212	129,120	292,845	26,710	0.879	0.062
JUN 2020	852	1,768	1,764	129,972	294,613	28,474	0.658	0.066
JUL 2020	1,086	3,108	1,540	131,058	297,721	30,014	0.361	0.069
AUG 2020	1,137	2,167	1,854	132,195	299,888	31,868	0.548	0.072
SEP 2020	1,047	1,557	1,678	133,242	301,445	33,546	0.627	0.076
OCT 2020	1,020	2,374	1,428	134,262	303,819	34,974	0.412	0.078
NOV 2020	920	2,374	1,641	135,182	306,193	36,615	0.488	0.081
DEC 2020	827	2,400	1,546	136,009	308,593	38,161	0.471	0.084

## Workovers

UWI	Date	Description
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## Well List

UWI	Type	Status
100.08-02-008-28W1.00	Horizontal	Producing
100.11-02-008-28W1.00	Horizontal	Producing
100.12-02-008-28W1.00	Vertical	Abandoned Zone
100.14-02-008-28W1.00	Horizontal	Producing
100.11-03-008-28W1.00	Horizontal	Producing
100.12-03-008-28W1.00	Vertical	Producing
100.14-03-008-28W1.00	Horizontal	Producing
100.01-10-008-28W1.00	Horizontal	Injection
100.04-10-008-28W1.00	Vertical	Producing
100.05-10-008-28W1.00	Vertical	Producing
100.08-10-008-28W1.00	Horizontal	Injection
102.08-10-008-28W1.00	Horizontal	Producing
103.08-10-008-28W1.00	Horizontal	Producing
100.09-10-008-28W1.00	Horizontal	Injection
103.09-10-008-28W1.00	Horizontal	Drilled & Cased
100.13-10-008-28W1.00	Vertical	Producing
100.16-10-008-28W1.00	Horizontal	Injection
100.06-11-008-28W1.00	Horizontal	Producing
100.09-11-008-28W1.00	Horizontal	Producing
100.16-11-008-28W1.00	Horizontal	Producing
100.03-14-008-28W1.00	Horizontal	Producing
100.06-14-008-28W1.00	Horizontal	Producing