

EWART UNIT NO. 11

Waterflood Progress Report 2020

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:



TUNDRA OIL & GAS

Date: 2021-08-26

Introduction

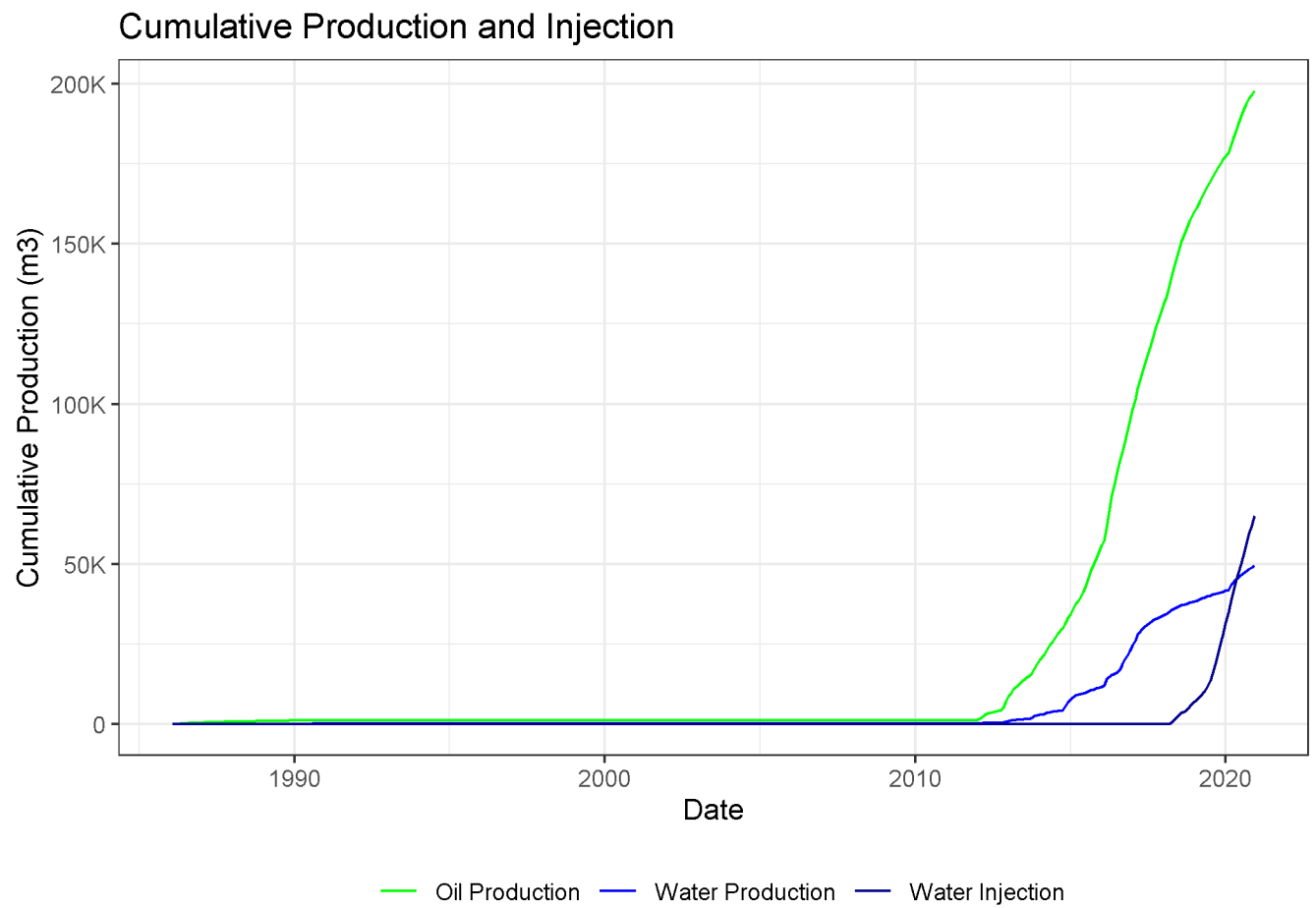
Ewart Unit No. 11 Enhanced Oil Recovery (EOR) Waterflood Project was approved effective May 1st, 2017 with Tundra Oil and Gas as Operator. The EOR project area contains wells in 32 LSDs in Township 8, Range 28W1. The Unit contains 18 wells. 12 producers, 5 injectors, and 1 abandoned/suspended/other.

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	32.66	7.52	109.84	0.23	0
FEB 2020	41.24	11.58	117.38	0.28	0
MAR 2020	78.48	51.65	119.77	0.66	0
APR 2020	78.19	30.77	109.47	0.39	0
MAY 2020	68.35	23.12	95.87	0.34	0
JUN 2020	76.77	23.28	87.07	0.30	0
JUL 2020	74.02	21.50	82.97	0.29	0
AUG 2020	62.42	22.96	98.06	0.37	0
SEP 2020	58.65	19.41	102.93	0.33	0
OCT 2020	50.66	15.60	98.03	0.31	0
NOV 2020	43.35	20.70	97.17	0.48	0
DEC 2020	37.92	22.13	92.68	0.58	0
Average	58.56	22.52	100.94		

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

Categories	m3
Oil Production	21,444
Water Production	8,259
Gas Production	0
Water Injection	36,917
Cumulative Oil	197,772
Cumulative Water	49,669
Cumulative Injection	65,105



Monthly Wellhead Pressure

All readings are in kPa

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average
100.09-17-008-28W1.00	753	1,700	2,846	2,970	2,929	2,985	2,950	3,934	4,917	4,998	4,703	2,911	3,216
102.09-16-008-28W1.00	6,119	5,822	3,593	2,850	2,850	2,850	2,850	2,850	2,850	2,850	1,678	-84	3,090
102.13-17-008-28W1.00	-93	406	1,720	2,131	2,131	2,755	2,949	4,045	4,967	4,968	4,957	4,972	2,992
102.16-16-008-28W1.00	6,213	6,087	6,127	6,090	6,090	5,763	6,155	6,271	6,239	6,460	6,641	6,634	6,231
103.08-16-008-28W1.00	-95	-93	-92	-93	-93	-94	524	2,086	2,346	2,814	2,693	2,081	999

Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
100.09-17-008-28W1.00	1,177	1,077	1,167	926	824	697	644	899	1,051	1,073	1,173	1,214	11,922
102.09-16-008-28W1.00	360	627	355								111	298	1,751
102.13-17-008-28W1.00	1,186	1,087	1,190	1,105	925	746	671	863	803	719	691	687	10,673
102.16-16-008-28W1.00	56	43	63	61	57	62	73	60	62	76	66	66	745
103.08-16-008-28W1.00	626	570	938	1,192	1,166	1,107	1,184	1,218	1,172	1,171	874	608	11,826
Grand Total	3,405	3,404	3,713	3,284	2,972	2,612	2,572	3,040	3,088	3,039	2,915	2,873	36,917

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	1,013	233	3,405	177,345	41,646	31,593	2.626	0.139
FEB 2020	1,195	336	3,404	178,540	41,982	34,997	2.140	0.153
MAR 2020	2,433	1,600	3,713	180,973	43,582	38,710	0.894	0.166
APR 2020	2,346	923	3,284	183,319	44,505	41,994	0.970	0.177
MAY 2020	2,119	717	2,972	185,438	45,222	44,966	1.010	0.187
JUN 2020	2,303	699	2,612	187,741	45,921	47,578	0.838	0.196
JUL 2020	2,295	667	2,572	190,036	46,588	50,150	0.836	0.204
AUG 2020	1,935	712	3,040	191,971	47,300	53,190	1.108	0.214
SEP 2020	1,759	582	3,088	193,730	47,882	56,278	1.271	0.224
OCT 2020	1,571	484	3,039	195,301	48,366	59,317	1.424	0.234
NOV 2020	1,300	621	2,915	196,601	48,987	62,232	1.468	0.244
DEC 2020	1,175	686	2,873	197,776	49,673	65,105	1.497	0.253

Workovers

UWI	Date	Description
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Well List

UWI	Type	Status
102.01-16-008-28W1.00	Horizontal	Producing
103.01-16-008-28W1.00	Horizontal	Producing
103.08-16-008-28W1.00	Horizontal	Injection
104.08-16-008-28W1.00	Horizontal	Producing
102.09-16-008-28W1.00	Horizontal	Injection
103.09-16-008-28W1.00	Horizontal	Producing
102.16-16-008-28W1.00	Horizontal	Injection
103.16-16-008-28W1.00	Horizontal	Producing
104.16-16-008-28W1.00	Horizontal	Producing
103.04-17-008-28W1.00	Horizontal	Producing
104.04-17-008-28W1.00	Horizontal	Producing
102.05-17-008-28W1.00	Horizontal	Producing
100.08-17-008-28W1.00	Horizontal	Producing
100.09-17-008-28W1.00	Horizontal	Injection
102.09-17-008-28W1.00	Horizontal	Producing
102.13-17-008-28W1.00	Horizontal	Injection
103.13-17-008-28W1.00	Horizontal	Producing
100.15-17-008-28W1.00	Vertical	Abandoned