


EWART UNIT NO. 9
Waterflood Progress Report 2020

Prepared for:
Manitoba Industry, Economic Development and Mines
Petroleum Branch

Prepared by:
 **TUNDRA OIL & GAS**

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Introduction

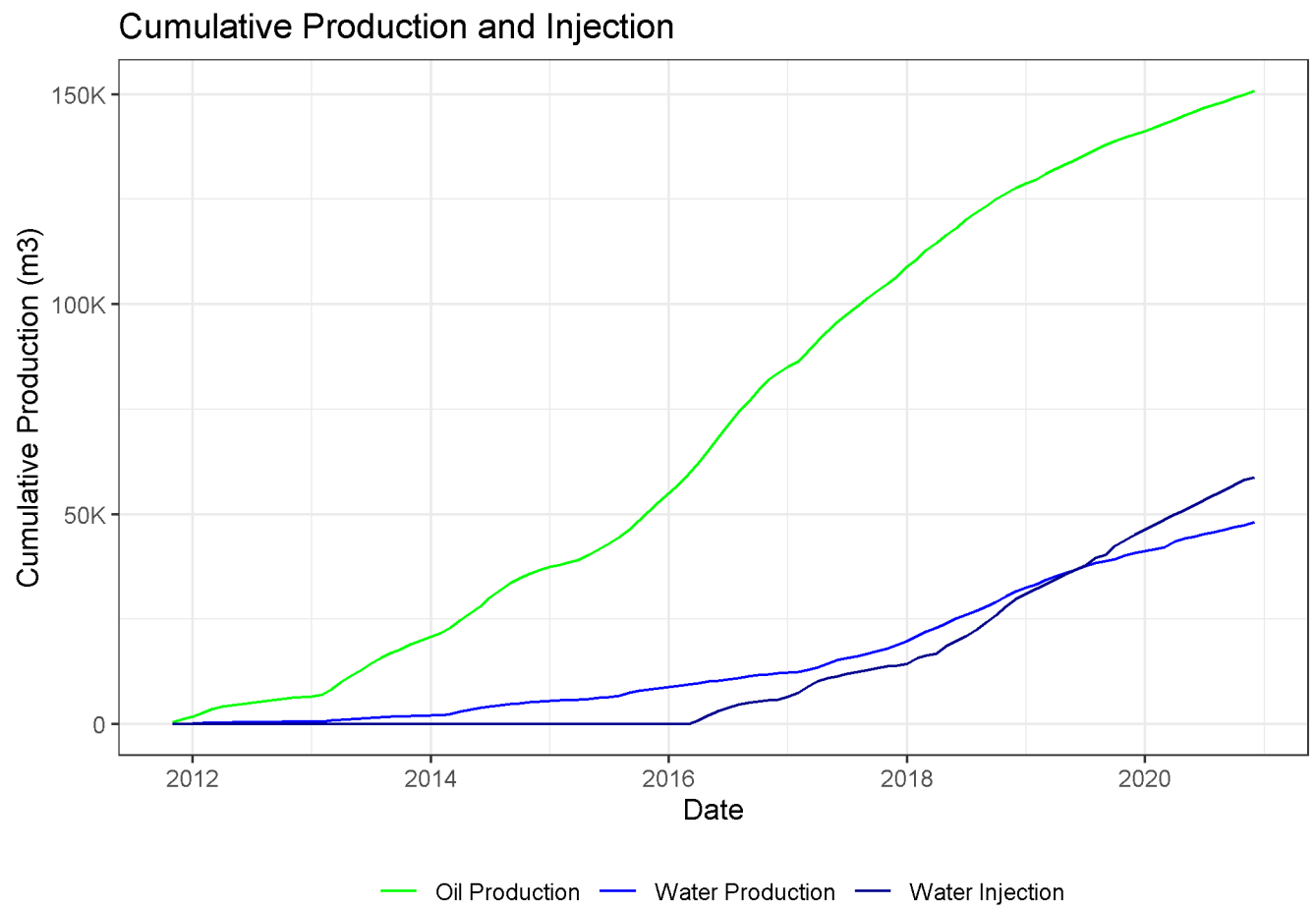
Ewart Unit No. 9 Enhanced Oil Recovery (EOR) Waterflood Project was approved effective September 1st, 2015 with Tundra Oil and Gas as Operator. The EOR project area, outlined in blue in Figure 1, contains 8 horizontal producing wells and 4 horizontal injectors in 16 LSDs in Township 8, Range 28W1. The Unit contains 12 wells. 8 producers, 4 injectors, and 0 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	24.33	14.96	40.65	0.61	0
FEB 2020	30.13	16.46	39.53	0.55	0
MAR 2020	27.83	16.46	38.88	0.59	0
APR 2020	32.29	44.01	40.16	1.36	0
MAY 2020	29.25	23.01	37.97	0.79	0
JUN 2020	30.15	18.19	36.23	0.60	0
JUL 2020	28.96	16.17	38.62	0.56	0
AUG 2020	26.28	17.79	39.50	0.68	0
SEP 2020	25.38	17.69	39.50	0.70	0
OCT 2020	26.54	18.20	39.51	0.69	0
NOV 2020	28.14	18.06	39.22	0.64	0
DEC 2020	25.98	20.39	21.30	0.78	0
Average	27.94	20.12	37.59		

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

Categories	m3
Oil Production	10,217
Water Production	7,353
Gas Production	0
Water Injection	13,749
Cumulative Oil	150,762
Cumulative Water	48,070
Cumulative Injection	58,815



Monthly Wellhead Pressure

All readings are in kPa

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average
102.13-29-008-28W1.00	-94	-90	-94	-93	-86	-93	-93	-93	-91	-92	-92	-95	-92
103.04-29-008-28W1.00	224	416	464	464	464	464	464	464	464	464	464	464	440
103.05-29-008-28W1.00	78	170	251	309	341	375	410	443	477	512	547	577	374
104.12-29-008-28W1.02	6,711	6,585	6,146	6,593	6,527	6,632	6,692	6,726	6,710	6,790	6,841	6,726	6,640

Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
102.13-29-008-28W1.00	1,050	981	1,044	1,041	1,018	933	1,033	1,069	1,035	1,068	1,030	549	11,851
104.12-29-008-28W1.02	210	166	162	163	160	154	164	156	150	157	147	111	1,900
Grand Total	1,260	1,147	1,206	1,204	1,178	1,087	1,197	1,225	1,185	1,225	1,177	660	13,751

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	754	464	1,260	141,300	41,180	46,325	1.003	0.244
FEB 2020	874	477	1,146	142,174	41,657	47,471	0.822	0.249
MAR 2020	862	510	1,205	143,036	42,167	48,676	0.852	0.253
APR 2020	969	1,320	1,205	144,005	43,487	49,881	0.516	0.256
MAY 2020	907	713	1,177	144,912	44,200	51,058	0.707	0.260
JUN 2020	905	546	1,087	145,817	44,746	52,145	0.726	0.264
JUL 2020	897	501	1,197	146,714	45,247	53,342	0.830	0.268
AUG 2020	815	552	1,224	147,529	45,799	54,566	0.869	0.272
SEP 2020	762	531	1,185	148,291	46,330	55,751	0.890	0.276
OCT 2020	823	564	1,225	149,114	46,894	56,976	0.858	0.280
NOV 2020	844	542	1,177	149,958	47,436	58,153	0.824	0.284
DEC 2020	806	632	660	150,764	48,068	58,813	0.446	0.285

Workovers

UWI	Date	Description
104.12-29-008-28W1.02	2020-12-21	Rigless Acid Stimulation

Well List

UWI	Type	Status
103.04-29-008-28W1.00	Horizontal	Injection
104.04-29-008-28W1.00	Horizontal	Producing
105.04-29-008-28W1.00	Horizontal	Producing
106.04-29-008-28W1.00	Horizontal	Producing
103.05-29-008-28W1.00	Horizontal	Injection
104.05-29-008-28W1.00	Horizontal	Producing
105.05-29-008-28W1.00	Horizontal	Producing
104.12-29-008-28W1.02	Horizontal	Injection
102.13-29-008-28W1.00	Horizontal	Injection
103.13-29-008-28W1.00	Horizontal	Producing
104.13-29-008-28W1.00	Horizontal	Producing
105.13-29-008-28W1.00	Horizontal	Producing