

WASKADA UNIT NO. 18 - PM 68

Waterflood Progress Report 2020

Prepared for:

Manitoba Industry, Economic Development and Mines

Petroleum Branch

Prepared by:



TUNDRA OIL & GAS

Date: 2021-08-26

Introduction

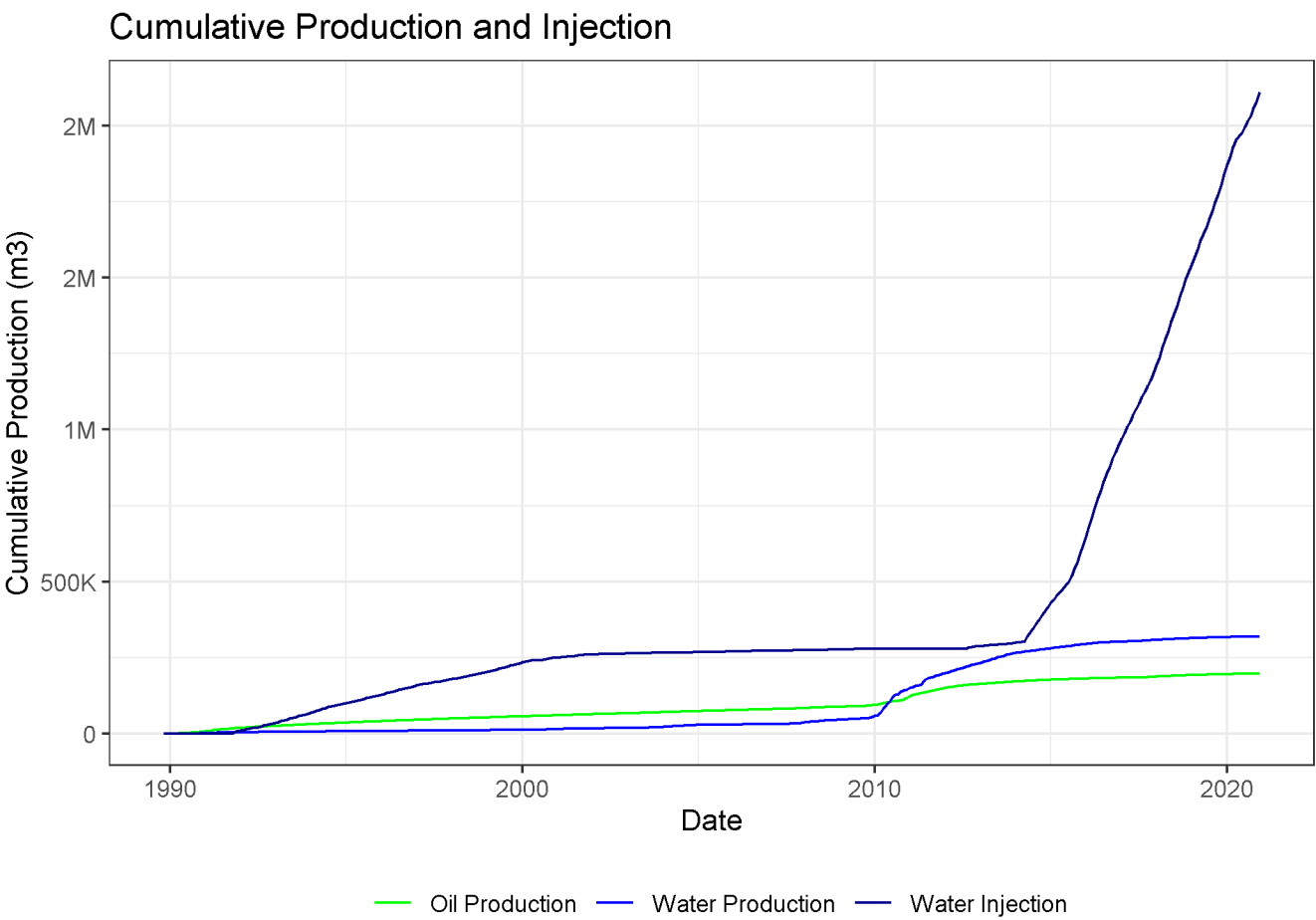
The Waskada Unit No. 18 pressure maintenance project commenced water injection into the Lower Amaranth A pool in accordance with Manitoba Energy and Mines Order No. PM 68, dated October 1, 1991. Waskada Unit No. 18 was acquired from EOG Resources Canada Inc. effective October 1, 2014 (closing date December 1, 2014) with Tundra Oil and Gas (Tundra) as the new operator. The EOR project area contains wells over 18 LSDs in Township 1, Range 25W1. The Unit contains 35 wells. 10 producers, 6 injectors, and 19 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	5.21	5.28	1,021.74	1.01	0
FEB 2020	7.28	11.50	972.06	1.58	0
MAR 2020	8.41	7.17	953.76	0.85	0
APR 2020	4.72	4.58	835.38	0.97	0
MAY 2020	1.17	1.12	324.52	0.96	0
JUN 2020	1.65	1.53	453.38	0.93	0
JUL 2020	3.96	4.36	559.11	1.10	0
AUG 2020	5.24	5.85	656.22	1.12	0
SEP 2020	2.82	4.84	526.15	1.72	0
OCT 2020	5.89	9.08	827.99	1.54	0
NOV 2020	7.22	8.16	772.20	1.13	0
DEC 2020	6.86	7.47	972.73	1.09	0
Average	5.04	5.91	739.60		

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

Categories	m3
Oil Production	1,841
Water Production	2,156
Gas Production	0
Water Injection	270,600
Cumulative Oil	197,784
Cumulative Water	320,038
Cumulative Injection	2,110,053



Monthly Wellhead Pressure

All readings are in kPa

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Average
100.10-21-001-25W1.00												3,962	3,962
100.14-21-001-25W1.00	4,976	4,979	5,164	4,992	4,981	4,981	4,980	4,971	4,976	4,827	4,978	4,978	4,982
100.15-16-001-25W1.00	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89	-89
100.15-21-001-25W1.00	2,462	2,462	2,462	2,462	2,462	2,462	2,462	2,462	2,462	2,462	2,462	2,462	2,462
102.12-21-001-25W1.00	4,970	4,967	4,969	4,931	4,975	4,985	4,961	4,970	4,969	4,921	4,980	4,976	4,964
103.06-21-001-25W1.00	4,274	4,107	3,987	3,802	3,639	2,997	4,026	3,255	3,335	3,815	3,819	3,781	3,736

Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Total
100.14-21-001-25W1.00	114	106	112	109	112	108	110	110	106	112	100	108	1,307
102.12-21-001-25W1.00	261	241	255	244	250	241	248	246	236	242	237	244	2,945
103.06-21-001-25W1.00	31,299	27,843	29,199	24,709	9,698	13,253	16,974	19,987	15,442	25,314	22,829	29,802	266,349
Grand Total	31,674	28,190	29,566	25,062	10,060	13,602	17,332	20,343	15,784	25,668	23,166	30,154	270,601

Voidage

All Volumes are in m3				Oil Formation Volume Factor (Rm3/Sm3) = 1.17				
MONTH	Oil	Water	Injection	Cumulative Oil	Cumulative Water	Cumulative Injection	VRR	Cumulative VRR
JAN 2020	162	164	31,674	196,102	318,043	1,871,132	89.591	3.418
FEB 2020	211	333	28,190	196,313	318,376	1,899,322	48.614	3.466
MAR 2020	261	222	29,566	196,574	318,598	1,928,888	56.063	3.516
APR 2020	142	137	25,061	196,716	318,735	1,953,949	82.671	3.560
MAY 2020	36	35	10,060	196,752	318,770	1,964,009	130.446	3.578
JUN 2020	49	46	13,601	196,801	318,816	1,977,610	131.627	3.602
JUL 2020	123	135	17,332	196,924	318,951	1,994,942	62.142	3.631
AUG 2020	162	181	20,343	197,086	319,132	2,015,285	54.901	3.666
SEP 2020	84	146	15,785	197,170	319,278	2,031,070	64.618	3.693
OCT 2020	182	282	25,668	197,352	319,560	2,056,738	51.861	3.736
NOV 2020	217	245	23,166	197,569	319,805	2,079,904	46.435	3.775
DEC 2020	212	232	30,154	197,781	320,037	2,110,058	62.816	3.826

Workovers

UWI	Date	Description
-----	------	-------------

Well List

UWI	Type	Status
100.07-16-001-25W1.00	Vertical	Abandoned Zone
100.10-16-001-25W1.00	Vertical	Abandoned Zone
102.10-16-001-25W1.00	Horizontal	Producing
103.10-16-001-25W1.00	Horizontal	Producing
102.11-16-001-25W1.00	Vertical	Abandoned
103.11-16-001-25W1.00	Vertical	Abandoned
100.12-16-001-25W1.00	Vertical	Producing
100.13-16-001-25W1.00	Vertical	Producing
102.13-16-001-25W1.00	Horizontal	Potential
100.14-16-001-25W1.00	Vertical	Producing
102.14-16-001-25W1.00	Horizontal	Producing
100.15-16-001-25W1.00	Vertical	Abandoned
100.16-16-001-25W1.00	Vertical	Producing
102.16-16-001-25W1.00	Horizontal	Suspended
103.16-16-001-25W1.00	Horizontal	Suspended
100.02-21-001-25W1.00	Vertical	Producing
100.03-21-001-25W1.00	Vertical	Producing
100.04-21-001-25W1.00	Vertical	Abandoned
102.04-21-001-25W1.00	Horizontal	Producing
103.04-21-001-25W1.00	Horizontal	Producing
100.05-21-001-25W1.00	Vertical	Producing
102.05-21-001-25W1.00	Horizontal	Producing
103.05-21-001-25W1.00	Horizontal	Producing
100.06-21-001-25W1.00	Vertical	Abandoned
102.06-21-001-25W1.00	Vertical	Abandoned
103.06-21-001-25W1.00	Dir/Dev	Injection
100.10-21-001-25W1.00	Vertical	Abandoned
100.11-21-001-25W1.00	Vertical	Abandoned Zone
100.12-21-001-25W1.00	Vertical	Abandoned
102.12-21-001-25W1.00	Horizontal	Injection
103.12-21-001-25W1.00	Horizontal	Producing
102.13-21-001-25W1.02	Horizontal	Producing
100.14-21-001-25W1.00	Vertical	Injection
100.15-21-001-25W1.00	Vertical	Injection
102.15-21-001-25W1.00	Horizontal	Suspended