

WASKADA LOWER AMARANTH 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

Waskada Lower Amaranth Unit No. 1 Enhanced Oil Recovery (EOR) Waterflood Project was approved under Board Order No. PM 58 effective February 1983. The Unit area contains wells in 32 LSDs in Township 1, Range 26 W1. The Unit contains 72 wells. 8 producers, 6 injectors, and 58 abandoned/suspended/other.

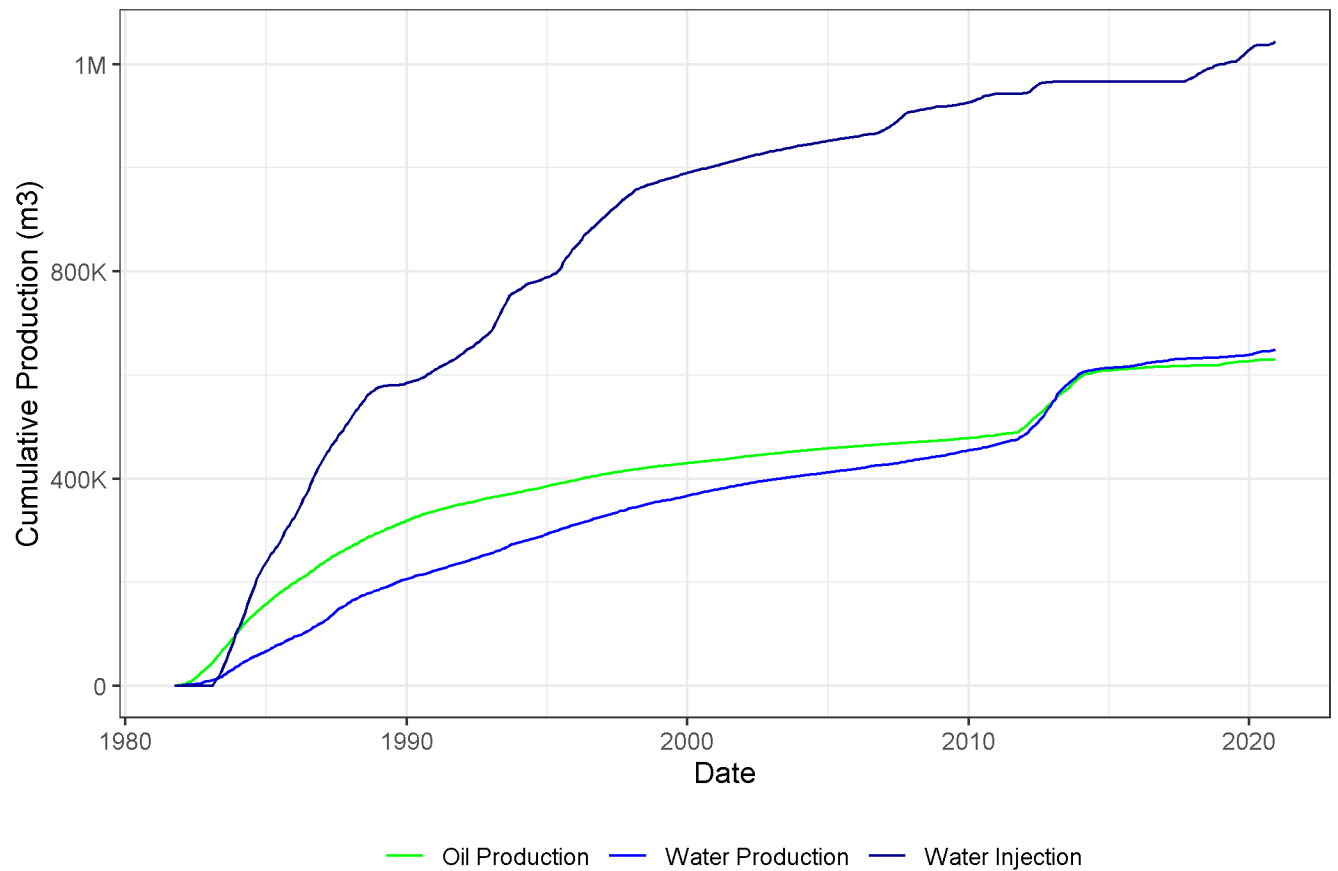
Monthly oil and water production rates, injection rate, GOR and WOR

MONTH	Cal Day Oil m3/d	Cal Day Water m3/d	Cal Day Injection m3/d	WOR	GOR
JAN 2020	13.63	16.87	137.48	1.24	0
FEB 2020	13.83	15.03	122.97	1.09	0
MAR 2020	21.75	74.59	121.52	3.43	0
APR 2020	22.89	65.78	20.90	2.87	0
MAY 2020	13.41	43.24	0.00	3.22	0
JUN 2020	8.85	25.67	23.07	2.90	0
JUL 2020	0.00	0.00	12.06		
SEP 2020	0.19	0.74	0.00	3.89	0
OCT 2020	8.62	41.44	45.77	4.81	0
NOV 2020	8.61	40.50	64.20	4.70	0
DEC 2020	5.32	35.21	94.58	6.62	0
Average	10.65	32.64	58.41		

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

Categories	m3
Oil Production	3,562
Water Production	10,968
Gas Production	0
Water Injection	19,565
Cumulative Oil	629,913
Cumulative Water	649,342
Cumulative Injection	1,243,598

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
100.05-25-001-26W1.02	316												316
100.07-25-001-26W1.00	-93												-93
102.10-24-001-26W1.00	2,040	2,344	2,433	2,855	2,855	2,855	2,855	2,855	2,855	2,855	2,855	2,855	2,709
103.09-24-001-26W1.00	1,882	1,948	1,847	321	-92	-59	1,157	1,500	1,500	270	61	1,850	1,015
103.10-25-001-26W1.00	-83	-84	-83	-87	-87	-79	-88			-86	-87	-84	-85
106.10-25-001-26W1.00	-83	-84	-84	-84	-84	-78	-87			-87	-86	-78	-84

Monthly Injected Volumes

All Volumes are in m3

UWI	JAN	FEB	MAR	APR	JUN	JUL	OCT	NOV	DEC	Total
102.10-24-001-26W1.00	1,192	948	984							3,124
103.09-24-001-26W1.00	1,226	892	1,100	233	237	185	474	740	1,117	6,204
103.10-25-001-26W1.00	922	862	842	190	228	102	473	592	907	5,118
106.10-25-001-26W1.00	922	864	841	204	227	87	472	594	908	5,119
Grand Total	4,262	3,566	3,767	627	692	374	1,419	1,926	2,932	19,565

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	423	523	4,262	626,781	638,896	1,228,284	4.187	0.895
FEB 2020	401	436	3,566	627,182	639,332	1,231,850	3.940	0.897
MAR 2020	674	2,312	3,767	627,856	641,644	1,235,617	1.215	0.898
APR 2020	686	1,973	627	628,542	643,617	1,236,244	0.226	0.896
MAY 2020	416	1,341	0	628,958	644,958	1,236,244	0.000	0.895
JUN 2020	266	770	692	629,224	645,728	1,236,936	0.640	0.895
JUL 2020	0	0	374	629,224	645,728	1,237,310	Inf	0.895
SEP 2020	6	22	0	629,230	645,750	1,237,310	0.000	0.895
OCT 2020	267	1,285	1,419	629,497	647,035	1,238,729	0.888	0.895
NOV 2020	258	1,215	1,926	629,755	648,250	1,240,655	1.270	0.896
DEC 2020	165	1,092	2,932	629,920	649,342	1,243,587	2.282	0.897

Workovers

UWI	Date	Description
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Well List

UWI	Type	Status
100.09-23-001-26W1.00	Vertical	Abandoned
102.10-23-001-26W1.00	Vertical	Abandoned
103.10-23-001-26W1.00	Horizontal	Producing
100.15-23-001-26W1.00	Vertical	Abandoned
100.16-23-001-26W1.00	Vertical	Abandoned
100.09-24-001-26W1.02	Vertical	Abandoned
102.09-24-001-26W1.00	Horizontal	Producing
103.09-24-001-26W1.00	Horizontal	Injection
104.09-24-001-26W1.00	Horizontal	Producing
100.10-24-001-26W1.00	Vertical	Abandoned
102.10-24-001-26W1.00	Horizontal	Injection
103.10-24-001-26W1.00	Horizontal	Producing
104.10-24-001-26W1.00	Horizontal	Producing
100.11-24-001-26W1.00	Vertical	Abandoned
100.12-24-001-26W1.02	Vertical	Abandoned
102.12-24-001-26W1.00	Horizontal	Suspended
102.13-24-001-26W1.00	Vertical	Abandoned
103.13-24-001-26W1.00	Horizontal	Suspended
100.14-24-001-26W1.00	Vertical	Abandoned
100.15-24-001-26W1.00	Vertical	Abandoned
102.16-24-001-26W1.00	Vertical	Abandoned
103.16-24-001-26W1.02	Horizontal	Suspended
100.01-25-001-26W1.02	Vertical	Abandoned
102.01-25-001-26W1.00	Vertical	Abandoned
103.01-25-001-26W1.00	Horizontal	Producing
100.02-25-001-26W1.02	Vertical	Abandoned
100.03-25-001-26W1.02	Vertical	Abandoned Zone
103.03-25-001-26W1.00	Horizontal	Suspended
104.03-25-001-26W1.00	Horizontal	Suspended
105.03-25-001-26W1.00	Horizontal	Producing
100.04-25-001-26W1.02	Vertical	Abandoned Zone
100.05-25-001-26W1.02	Vertical	Suspended
100.06-25-001-26W1.00	Vertical	Abandoned
102.06-25-001-26W1.00	Horizontal	Producing
100.07-25-001-26W1.00	Vertical	Abandoned
102.08-25-001-26W1.00	Vertical	Abandoned
100.09-25-001-26W1.00	Vertical	Abandoned Zone
102.09-25-001-26W1.00	Horizontal	Producing
103.09-25-001-26W1.00	Horizontal	Producing
100.10-25-001-26W1.00	Vertical	Abandoned
102.10-25-001-26W1.00	Horizontal	Suspended
103.10-25-001-26W1.00	Horizontal	Injection
104.10-25-001-26W1.00	Horizontal	Producing

UWI	Type	Status
105.10-25-001-26W1.00	Horizontal	Producing
106.10-25-001-26W1.00	Horizontal	Injection
100.11-25-001-26W1.00	Vertical	Abandoned Zone
102.11-25-001-26W1.00	Horizontal	Suspended
103.11-25-001-26W1.00	Horizontal	Suspended
104.11-25-001-26W1.00	Horizontal	Producing
105.11-25-001-26W1.00	Horizontal	Suspended
100.12-25-001-26W1.00	Vertical	Abandoned
100.13-25-001-26W1.00	Vertical	Abandoned
100.14-25-001-26W1.00	Vertical	Abandoned
102.14-25-001-26W1.00	Horizontal	Suspended
103.14-25-001-26W1.00	Horizontal	Suspended
104.14-25-001-26W1.00	Horizontal	Suspended
100.15-25-001-26W1.00	Vertical	Abandoned
102.15-25-001-26W1.00	Horizontal	Suspended
103.15-25-001-26W1.00	Horizontal	Producing
104.15-25-001-26W1.00	Horizontal	Producing
100.16-25-001-26W1.00	Vertical	Abandoned Zone
1B0.16-25-001-26W1.00	Vertical	Abandoned
100.01-26-001-26W1.02	Vertical	Abandoned
100.02-26-001-26W1.00	Vertical	Abandoned Zone
102.02-26-001-26W1.00	Horizontal	Producing
103.02-26-001-26W1.00	Horizontal	Producing
104.02-26-001-26W1.00	Horizontal	Producing
105.02-26-001-26W1.00	Horizontal	Suspended
100.07-26-001-26W1.00	Vertical	Abandoned
102.07-26-001-26W1.00	Horizontal	Producing
103.07-26-001-26W1.00	Horizontal	Producing
100.08-26-001-26W1.00	Vertical	Abandoned