


KOLA UNIT NO. 2
Waterflood Progress Report 2020

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

Prepared by:

The logo for Tundra Oil & Gas features a stylized circular emblem on the left. This emblem is composed of several concentric, curved lines in shades of gold and black, creating a sense of motion or a stylized 'C' shape. To the right of this emblem, the words "TUNDRA OIL & GAS" are written in a dark blue, serif, all-caps font.

TUNDRA OIL & GAS

Date: 2021-11-30

Introduction

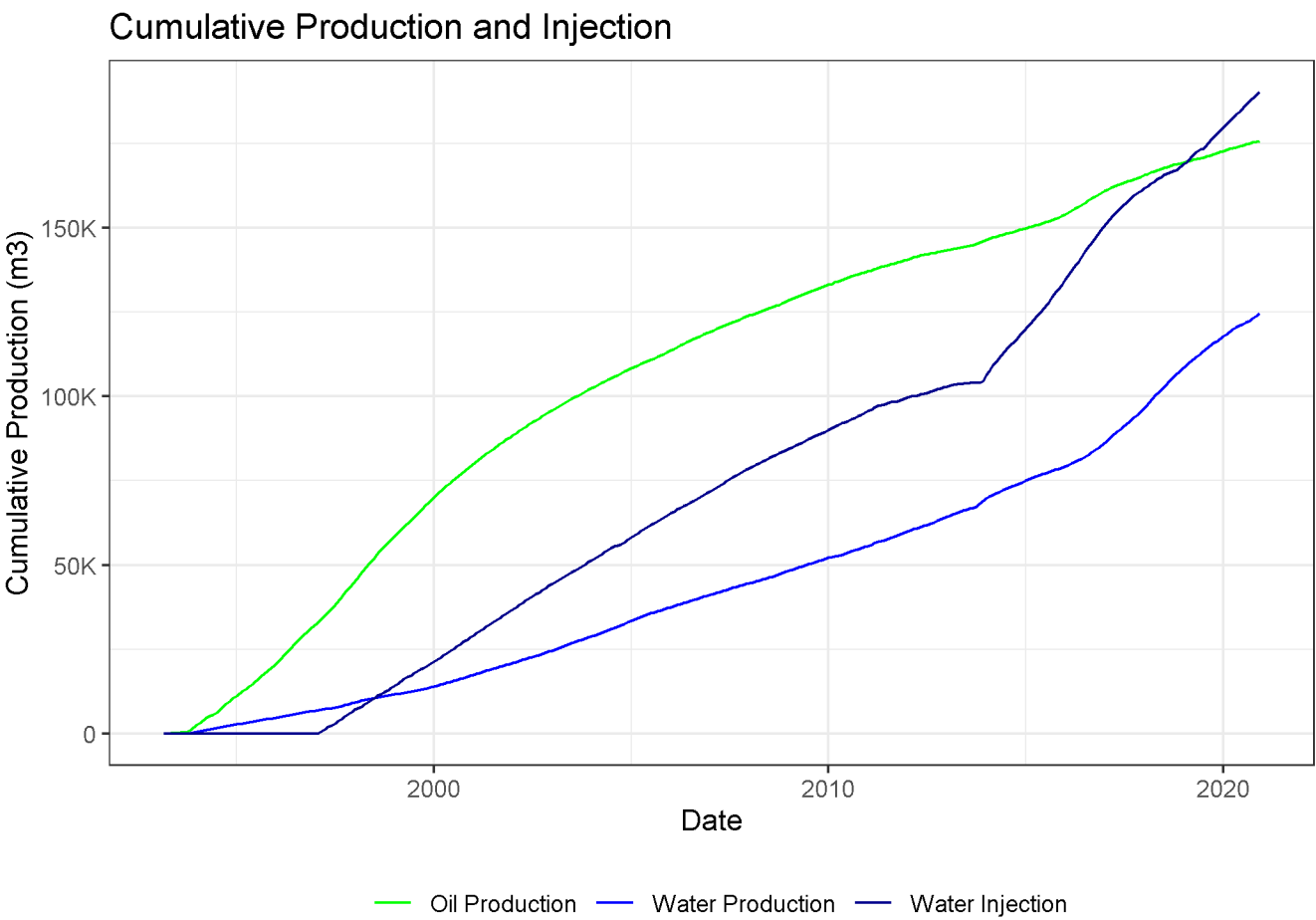
Kola Unit No. 2 Enhanced Oil Recovery (EOR) Waterflood Project was approved under Waterflood Order No. 4 effective December 1, 1996 with Tundra Oil and Gas as Operator. The EOR project area contains wells in 15 LSDs in Township 10, Range 29 W1. The Unit contains 13 wells. 7 producers, 6 injectors, and 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 | 10.32 | 24.56 | 32.06 | 2.38 | 0 |
| FEB 2020 | 10.47 | 23.30 | 32.10 | 2.23 | 0 |
| MAR 2020 | 9.63 | 24.19 | 31.90 | 2.51 | 0 |
| APR 2020 | 8.44 | 21.72 | 31.33 | 2.57 | 0 |
| MAY 2020 | 8.84 | 20.57 | 31.03 | 2.33 | 0 |
| JUN 2020 | 8.87 | 17.45 | 30.97 | 1.97 | 0 |
| JUL 2020 | 9.32 | 15.65 | 31.26 | 1.68 | 0 |
| AUG 2020 | 8.45 | 16.05 | 31.10 | 1.90 | 0 |
| SEP 2020 | 8.34 | 15.57 | 30.80 | 1.87 | 0 |
| OCT 2020 | 8.97 | 21.17 | 31.16 | 2.36 | 0 |
| NOV 2020 | 7.52 | 25.11 | 30.80 | 3.34 | 0 |
| DEC 2020 | 6.40 | 23.89 | 30.68 | 3.73 | 0 |
| Average | 8.80 | 20.77 | 31.27 | | |

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

| Categories | m3 |
|----------------------|---------|
| Oil Production | 3,218 |
| Water Production | 7,599 |
| Gas Production | 0 |
| Water Injection | 11,443 |
| Cumulative Oil | 175,664 |
| Cumulative Water | 124,598 |
| Cumulative Injection | 190,175 |



Monthly Wellhead Pressure

All readings are in kPa

| UWI | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Average |
|-----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---------|
| 100.01-32-010-29W1.00 | 5,420 | 5,415 | 5,454 | 5,426 | 5,317 | 5,447 | 5,464 | 5,447 | 5,314 | 5,469 | 5,475 | 5,322 | 5,414 |
| 100.01-33-010-29W1.00 | 6,591 | 6,600 | 6,598 | 6,601 | 6,580 | 6,503 | 6,600 | 6,595 | 6,579 | 6,607 | 6,600 | 6,587 | 6,587 |
| 100.03-33-010-29W1.00 | 3,999 | 4,002 | 4,001 | 3,995 | 3,939 | 4,003 | 3,796 | 3,962 | 3,942 | 4,002 | 4,000 | 3,934 | 3,965 |
| 100.05-33-010-29W1.00 | 2,576 | 2,709 | 2,791 | 2,875 | 2,754 | 2,923 | 2,936 | 2,873 | 2,868 | 2,903 | 2,964 | 2,968 | 2,845 |
| 100.07-33-010-29W1.00 | 6,588 | 6,598 | 6,599 | 6,599 | 6,409 | 6,503 | 6,601 | 6,599 | 8,499 | 6,609 | 6,600 | 8,434 | 6,886 |
| 100.11-33-010-29W1.00 | 6,180 | 5,992 | 6,166 | 6,161 | 6,063 | 6,047 | 5,936 | 6,139 | 6,091 | 6,208 | 6,228 | 6,172 | 6,115 |

Monthly Injected Volumes

All Volumes are in m3

| UWI | JAN | FEB | MAR | APR | MAY | JUN | JUL | AUG | SEP | OCT | NOV | DEC | Total |
|-----------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|
| 100.01-32-010-29W1.00 | 128 | 120 | 127 | 122 | 126 | 119 | 122 | 122 | 118 | 123 | 119 | 126 | 1,472 |
| 100.01-33-010-29W1.00 | 79 | 73 | 78 | 74 | 78 | 74 | 79 | 78 | 76 | 80 | 75 | 78 | 922 |
| 100.03-33-010-29W1.00 | 214 | 199 | 210 | 203 | 208 | 200 | 205 | 207 | 199 | 208 | 199 | 204 | 2,456 |
| 100.05-33-010-29W1.00 | 302 | 291 | 308 | 292 | 304 | 296 | 308 | 308 | 293 | 302 | 291 | 295 | 3,590 |
| 100.07-33-010-29W1.00 | 153 | 140 | 145 | 137 | 138 | 139 | 140 | 140 | 134 | 141 | 134 | 138 | 1,679 |
| 100.11-33-010-29W1.00 | 118 | 108 | 121 | 112 | 108 | 101 | 115 | 109 | 104 | 112 | 106 | 110 | 1,324 |
| Grand Total | 994 | 931 | 989 | 940 | 962 | 929 | 969 | 964 | 924 | 966 | 924 | 951 | 11,443 |

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 | 320 | 761 | 994 | 172,781 | 117,765 | 179,725 | 0.901 | 0.594 |
| FEB 2020 | 304 | 676 | 931 | 173,085 | 118,441 | 180,656 | 0.930 | 0.595 |
| MAR 2020 | 298 | 750 | 989 | 173,383 | 119,191 | 181,645 | 0.925 | 0.596 |
| APR 2020 | 253 | 652 | 940 | 173,636 | 119,843 | 182,585 | 1.018 | 0.597 |
| MAY 2020 | 274 | 638 | 962 | 173,910 | 120,481 | 183,547 | 1.033 | 0.598 |
| JUN 2020 | 266 | 523 | 929 | 174,176 | 121,004 | 184,476 | 1.150 | 0.600 |
| JUL 2020 | 289 | 485 | 969 | 174,465 | 121,489 | 185,445 | 1.220 | 0.601 |
| AUG 2020 | 262 | 498 | 964 | 174,727 | 121,987 | 186,409 | 1.238 | 0.603 |
| SEP 2020 | 250 | 467 | 924 | 174,977 | 122,454 | 187,333 | 1.258 | 0.605 |
| OCT 2020 | 278 | 656 | 966 | 175,255 | 123,110 | 188,299 | 1.013 | 0.606 |
| NOV 2020 | 226 | 753 | 924 | 175,481 | 123,863 | 189,223 | 0.929 | 0.607 |
| DEC 2020 | 199 | 740 | 951 | 175,680 | 124,603 | 190,174 | 0.998 | 0.608 |

Workovers

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

Well List

| UWI | Type | Status |
|-----------------------|------------|-----------|
| 100.13-28-010-29W1.00 | Vertical | Producing |
| 102.13-28-010-29W1.00 | Horizontal | Producing |
| 100.16-29-010-29W1.00 | Vertical | Pumping |
| 100.01-32-010-29W1.00 | Vertical | Injection |
| 100.02-32-010-29W1.00 | Vertical | Pumping |
| 100.08-32-010-29W1.00 | Vertical | Pumping |
| 100.01-33-010-29W1.00 | Vertical | Injection |
| 100.03-33-010-29W1.00 | Vertical | Injection |
| 100.05-33-010-29W1.00 | Vertical | Injection |
| 100.06-33-010-29W1.00 | Horizontal | Producing |
| 100.07-33-010-29W1.00 | Vertical | Injection |
| 100.11-33-010-29W1.00 | Vertical | Injection |
| 102.05-34-010-29W1.00 | Horizontal | Producing |