



Steve Thatcher
Manager, WNS Development
North Slope Operations and Development

Post Office Box 100360
Anchorage, Alaska 99510-0360
Phone: (907) 263-4464

March 15, 2019

Ms. Chantal Walsh, Director
Alaska Department of Natural Resources
Division of Oil and Gas
550 West 7th Ave, Suite 1100
Anchorage, AK 99501

Mr. Rex Rock Sr., President
Arctic Slope Regional Corporation
1230 Agvik Street
P. O. Box 129
Barrow, AK 99723-0129

Mr. Wayne Svejnoha
U.S. Department of the Interior
Bureau of Land Management
222 West 7th Avenue #13
Anchorage, AK 99513

RE: Twenty-First Annual Status Update to the Unit Plan, Colville River Unit Agreement

Dear Ms. Walsh, Mr. Rock, and Mr. Svejnoha:

Attached for your review is the 21st Annual Status Update to the Unit Plan, Colville River Unit Agreement. These updates are submitted pursuant to 11 AAC 83.341(d), 11 AAC 83.343(d), and articles 3.9.7, 3.9.8 and 3.9.9 of the Colville River Unit Agreement, and 5 U.S.C. 552(b)(4) and (b)(9).

As always, these plans are subject to change based upon business conditions. ConocoPhillips Alaska, Inc. submits this update as Operator of the Colville River Unit.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Steve Thatcher'.

Steve Thatcher
Manager
WNS Development



Twenty-First Annual Status Update to the Unit Plan

COLVILLE RIVER UNIT AGREEMENT

NON- CONFIDENTIAL VERSION

***Confidential Sections have been removed, but are still listed in
Table of Contents***

MARCH 15, 2019

TABLE OF CONTENTS

Introduction	1
Unit Plan of Exploration Operations CONFIDENTIAL	N/A
Unit Plan of Development	1
Alpine Pool Plan of Development	2
Fiord Pool Plan of Development	3
Nanuq Pool Plan of Development	4
Qannik Pool Plan of Development	5
Reservoir Management Summary	5
Facilities Expansion Update	6
Processing of Greater Mooses Tooth Unit #1 (Lookout PA) Production at ACF.....	7
Status Update by Pool and PA	7
Table 1: Production and Injection Splits for CRU Tract Operations	7
Table 2: Wells Drilled by PA in 2018 and CONFIDENTIAL Planned for 2019 - Q1 2020	11
Figure 1: Colville River Unit and Participating Areas - 2018	14
Figure 2: CONFIDENTIAL Alpine PA Development Wells	N/A
Figure 3: CONFIDENTIAL Nanuq Kuparuk PA Development Wells	N/A
Figure 4: CONFIDENTIAL Fiord Kuparuk PA Development Wells	N/A
Figure 5: CONFIDENTIAL Fiord Nechelik PA Development Wells	N/A
Figure 6: CONFIDENTIAL Nanuq PA Development Wells	N/A
Figure 7: CONFIDENTIAL Qannik PA Development Wells	N/A
Figure 8: CONFIDENTIAL Fiord West Kuparuk Pilot Hole	N/A
Table 3: Colville River Unit Active Wells Drilled as of January 1, 2019	15
Table 4: CRU Flood Status Update by PA	21

Introduction

ConocoPhillips Alaska, Inc., (CPAI) as Operator on behalf of the working interest owners of the Colville River Unit (CRU), submits this twenty-first annual status update for the CRU Unit Plan, pursuant to 11 AAC 83.341(d), 11 AAC 83.343(d) and Article 8 of the Colville River Unit Agreement (CRUA).

CPAI requests that the sections identified as “Confidential” in this document be treated as confidential, and not disclosed outside those in the State of Alaska, Department of Natural Resources, Division of Oil and Gas, that need to know the information. The information provided hereunder by CPAI, is confidential and proprietary to CPAI and is not subject to disclosure because it contains information or data that is (1) trade secret information as defined in AS 45.50.940(3) and State v. Arctic Slope Regional Corp., 834 P.2d 134 (Alaska 1991); (2) required to be held confidential under AS 38.05.035(a)(8); (3) exempted from disclosure under 5 U.S.C. 552(b)(4) and (b) (9) and/or (4) required to be held confidential pursuant to Article 3.9.7, 3.9.8 and 3.9.9 of the CRUA, as amended.

This update reports on the CRU status as of January 1, 2019. See **Figure 1** for a map of the current CRU boundaries and the current participating areas (PA’s) as of January 1, 2019.

Unit Plan of Development

CPAI plans on drilling up to fourteen wells within the CRU during 2019 and Q1 2020. The CRU consists of six PA’s, four oil pools, and eight distinct reservoir areas defined by sands within pools. Additionally, an application to form the new Fiord West Kuparuk participating area was submitted for approvals on December 21, 2018. The following is a discussion organized by pool and PA. See **Table 2** for a list of wells by PA drilled in 2018 and proposed for 2019 and Q1 2020. See **Table 3** for a list of all wells drilled in the CRU that are active as of January 1, 2019.

The Alpine Satellites Development Project, now in the development and production phase, includes satellite oil pools at three drillsites: (1) Qannik Pool at CD2, (2) Fiord Pool at CD3, and (3) Nanuq Pool at CD4. The oil pools have separate and distinct PA agreements: Qannik Pool has the Qannik PA, Fiord Pool has the Fiord Nechelik PA and Fiord Kuparuk PA, and Nanuq Oil Pool has the Nanuq PA. The Nanuq Kuparuk Pool has been incorporated into the Alpine Pool by order of the AOGCC, and is no longer recognized as a separate pool; all allocation goes to the Alpine Pool, but wells in the Kuparuk sand are under order of the Nanuq Kuparuk PA.

All CRU oil pools are developed primarily with horizontal well technology. The Qannik and Nanuq PA’s are primarily waterflooded (the Nanuq PA receives limited MWAG injection as MI availability allows), while Alpine, Fiord Nechelik, Fiord Kuparuk, and Nanuq Kuparuk PA’s employ MWAG injection for enhanced oil recovery. In this Unit Plan, MWAG refers to a gas-alternating-water flood using either a miscible gas or sub-miscible enriched gas.

Development of these satellites has strategic value as they maximize the use of the existing Alpine infrastructure.

The following minor deviations from the prior approved Plan occurred: Two CD5 Alpine A+C sand CTD multilateral wells were planned between Q1 2018 and Q1 2019 (CD5-23L1 and CD5-25L1), however, these CTD sidetracks were deferred into 2020 due to the high activity level (both exploration and development) during the winter season. An additional Nanuq rotary horizontal well (CD4-288) was deferred into 2020 to accommodate additional drilling days realized on the remaining wells. No fracture stimulations were planned for 2018, however, a single frac was pumped on the CD2-468 Qannik well.

Alpine Pool Plan of Development

The Alpine PA is within the Alpine Pool. Production from the Alpine PA is sent to the Alpine Central Facility (ACF) where it is combined with the Fiord, Nanuq, and Qannik Pools in addition to Greater Moose's Tooth Unit production. This maximizes the overall oil rate from the combined development and more fully utilizes ACF capacity.

Reservoir management of the Alpine PA in 2019 will attempt to maximize oil rate and partially offset field decline by:

1. Targeting a minimum pattern level injection/withdrawal ratio of one
2. Managing MWAG injection to maximize recovery
3. Updating and ranking workover and peripheral development opportunities for optimum drilling rig utilization
4. Identifying well stimulation candidates

Total CRU water production averaged 53,752 BWPD in 2018 and is expected to increase in 2019. Total water handling (including seawater imports from the Greater Kuparuk Area) averaged 125,581 BWPD in 2018.

All Alpine wells planned for initial development from drillsites CD1 and CD2 were completed by November 2005. Since that time, peripheral opportunities have been pursued in conjunction with satellite wells. Development of the Alpine A and C sands from CD4 commenced in 2006. Construction at CD5 was completed in 2015 with completion of the Nigliq Bridge and installation of pipelines and drillsite facilities. The rig was mobilized to the drillsite in late April 2015 and drilling operations commenced. Production startup at CD5 was achieved in late October 2015.

The Alpine rotary development program continues into 2019 with plans to drill five Alpine producers and three Alpine injectors starting in Q1 2019 and going through Q1 2020. Additional targets include three Alpine horizontal producers, any of which may be moved into the 2019 – Q1 2020 schedule as rig optimization/utilization dictates.

Development during 2019 – Q1 2020 will also include coiled tubing drilling (CTD) targets. In early 2020 the heel space between injectors CD5-23 and CD5-25 will be reduced via CTD laterals drilled into the gap between the wells. Further CTD development in 2020 could be progressed with possible targets including four CTD producers, as described in the list of "Other Opportunities" in **Table 2**.

See **Figure 2** to view the locations of existing, planned, and opportunity wells in the Alpine PA as of January 1, 2019.

Development of the Alpine reservoir continues to focus on the expansion of the existing MWAG flood and the use of line-drive horizontal well patterns. There are a few slant completions at Alpine, however, use of this well design will remain mostly limited to injectors due to the relatively low productivity and limited pattern size associated with producers of this type. Continued implementation of the enhanced oil recovery (EOR) process is an integral part of the Alpine development. Performance to date has indicated significant EOR is achievable in the Alpine reservoir.

CPAI will progress a plan to eliminate the conductor water drips at CD5. This will be achieved by depressurizing the interval from which the brine is believed to be coming from. A suspended well will be perforated in the brine interval and produced. Information from this activity will inform the longer-term depressurization plan.

Fracture Stimulation Operations

No fracture stimulations were performed on Alpine wells in 2018. Five Alpine fracture stimulations are currently planned for 2019, however, the plan could change depending on the opportunities and resources available.

Alpine Pool Tract Operations

CD1-04, CD1-17, and CD1-47 were initially completed and produced in the Alpine PA. CD1-04 was recompleted in the Kuparuk sands interval and began production in August 2008, and CD1-17 was recompleted in the Kuparuk sands interval and began producing in June 2008. The CD1-47 completion in the Kuparuk sand has been intermittently produced since July 2014. The rates and cumulative volumes from these tracts are accounted for in the Alpine PA metrics for 2018. Production and injection split information for these wells can be found in **Table 1** in the Status Update by Pool and PA section.

CPAI may consider producing the Kuparuk formation, if encountered, in future wells whose primary target is the Alpine A or Alpine C formation.

Nanuq Kuparuk Sand

Performance from the Nanuq Kuparuk PA continues to exceed expectations. Production started in November 2006. Current production is approximately 13,000 BOPD and 6,000 BWPd. As of December 2018, the cumulative injection/withdrawal ratio was just under 1.0.

In 2013 the CD4-96 well, which originally targeted the Alpine reservoir, was completed in the Nanuq Kuparuk PA due to problems while drilling. In 2014, CD4-96 was successfully sidetracked to the original Alpine target, however, the Nanuq Kuparuk sand was not completed in the new well (CD4-96A).

Under the CD5 program two wells targeting the Nanuq Kuparuk sands were drilled in 2015: CD5-313 (horizontal producer, previously CD5-314) and CD5-315 (horizontal injector). While drilling the surface section of CD5-314, shallow water flow was encountered necessitating cementing operations which left the original CD5-314 well slot unusable. The reservoir target was then drilled and completed as CD5-313 using the adjacent well slot. Two additional wells targeting the Nanuq Kuparuk sands were drilled in 2017: CD5-314X (horizontal producer) and CD5-316 (horizontal injector with pilot hole). The CD5-314X producer was drilled from a conductor installed immediately adjacent to the original 314 well slot. Together, CD5-313 and CD5-314X have accounted for most of the current production from the Nanuq Kuparuk. The area encompassing CD5-313, CD5-314X, and CD5-315 was included in the 2016 Third Revision of the Nanuq Kuparuk PA and Eight-Year Reserves Estimate Revision effective June 1, 2017. The area encompassing CD5-316 was included in the Fourth Revision of the Nanuq Kuparuk PA and Twelve-Year Reserves Estimate Revision effective January 1, 2019.

Drilling results from each CD5 well supported the next westward target. With CD5-316, results suggest another target exists to the west, but the location will need a drilling rig larger than Doyon 19 to access its potential. As such, there are no plans to drill additional Nanuq Kuparuk wells in 2019, however, a potential infill/CTD sidetrack opportunity could be drilled in 2019 – Q1 2020 as rig optimization/utilization dictates.

See **Figure 3** for a map of existing and opportunity wells in the Nanuq Kuparuk PA as of January 1, 2019.

Fiord Pool Plan of Development

Twenty-three wells, thirteen producers and ten injectors, have been completed in the Fiord Nechelik PA. The Fiord Nechelik plan of development does not include new wells in 2019 – Q1 2020, however three

producer and two injector CTD sidetrack opportunities have been identified and could be drilled in 2019 – Q1 2020 as rig optimization/utilization dictates. The application submitted by CPAI for the Fourth Revision of the Fiord Nechelik PA and Twelve-Year Reserves Estimate Revision was approved and became effective on September 1, 2018.

The Fiord Kupaaruk PA had six active wells in 2018: three producers and three injectors. CD3-130 will be brought into the PA as part of the 2018 Fiord Kupaaruk Twelve-Year Royalty Redetermination once it is approved in early 2019. The Fiord Kupaaruk wells produce at high water cut making them non-competitive with other wells in the field. Each well is brought online when permitted by facility water handling capacity. There are currently no plans to drill any additional Fiord Kupaaruk wells in the 2019 – Q1 2020 timeframe. However, CD3-320 is currently being evaluated as a candidate for a rig workover recompletion in the Alpine sand below Fiord Kupaaruk.

See **Figures 4 and 5** for a map of existing and opportunity wells in the Fiord Kupaaruk and Fiord Nechelik PA's as of January 1, 2019.

Drillsite CD3 Tract Operations

CD3-118 was drilled and completed within the Kupaaruk sand in April 2008 and produced until January 2009. CD3-118 was converted to water injection and continues injection into the Kupaaruk sand. CD3-128 was completed in the Kupaaruk sand in 2011 and produced through year-end 2012. CD3-127 was drilled and completed within the Kupaaruk sand in April 2013. CD3-130 was completed in the Kupaaruk sand in March 2015. The rates and cumulative volumes from these tracts are accounted for in the Fiord Kupaaruk PA metrics for 2018. Production and injection split information for these wells can be found in **Table 1** in the Status Update by Pool and PA section.

Fracture Stimulation Operations

There were no fracture stimulations on Fiord wells in 2018 and there are no planned fracture stimulations on Fiord wells in 2019 or Q1 2020.

Fiord West Kupaaruk Pilot Hole

Development plans in Q1 2019 include a slant pilot hole well targeting the Fiord West Kupaaruk reservoir near where future extended reach laterals are planned to be drilled using the Extended Reach Drilling (ERD) rig. The purpose of this well is to evaluate static subsurface properties and production to assist detailed ERD well planning and execution efforts. This well and subsequent development wells will be included in the Fiord West Kupaaruk PA which is anticipated to be approved by mid-2019. The ERD rig is due to arrive and begin drilling in 2020.

See **Figure 8** to view the locations of the planned and opportunity wells in the proposed Fiord West Kupaaruk PA.

Nanuq Pool Plan of Development

The Nanuq Pool has been developed primarily from CD4 and includes wells in the Nanuq PA. Currently, there are six active producers and four active injectors in the pool. The area encompassing CD1-229 was included in the Fourth Revision of the Nanuq Kupaaruk PA and Twelve-Year Reserves Estimate Revision effective January 1, 2019. The well has been shut-in since January 2016 because its production was not competitive due to low rate and the need for frequent treatments for paraffin deposition. In 2019, the well will be re-evaluated and opened if and when it becomes competitive again.

In 2018, two CTD laterals were added to producer CD4-211. One CTD sidetrack is planned to be drilled in 2019 – Q1 2020. However, several targets for both CTD and rotary drilling will be considered as rig optimization/utilization dictates.

See **Figure 6** for a map of existing and opportunity wells in the Nanuq PA as of January 1, 2019.

Qannik Pool Plan of Development

The Qannik Pool has been developed from CD2 and includes a total of nine wells: six outboard producers and three inboard water injectors. The ongoing recovery scheme involves waterflood from inboard injection wells supplemented with a natural gas cap expansion drive from the east.

To optimize pattern throughput and recovery, a plan was devised to reduce injector-producer spacing by adding CTD laterals to existing wells. In 2018, four CTD laterals were added to producer CD2-463. In 2019 – Q1 2020, one producer-injector well pair are planned to be drilled from CD4. Other rotary and CTD sidetrack targets may be considered as rig optimization/utilization dictates.

See **Figure 7** for a map of existing, planned, and opportunity wells in the Qannik PA as of January 1, 2019.

Reservoir Management Summary

MWAG Management

Significant oil production rate benefits and increased ultimate recovery estimates have been observed in the unit due to enhanced oil recovery processes. Alpine PA, Fiord Nechelik PA, Fiord Kupaaruk PA, and Nanuq Kupaaruk PA are all currently managed using an MWAG approach to voidage replacement. The Qannik and Nanuq PA's are primarily waterflooded, however, the Nanuq PA receives limited MWAG injection as MI availability allows. Water and gas injection placement are constantly being optimized to maximize rate and recovery for the unit. Thus, all CRU wells compete for available injection water, and all wells that are under MWAG injection compete for available gas injection.

Water Injection

The Alpine Central Facility (ACF) water injection system consists of three 50 MBWPD centrifugal pumps and two 17 MBWPD electric submersible pumps (nominal capacities). Water injection in 2018 ranged from 50 - 70 MBPD produced water and 70 - 90 MBPD seawater. The need to mitigate against corrosion in the water injection lines prevents long term mixing of produced water and seawater at Alpine and thus reduces system flexibility. Currently, one of the centrifugal pumps and both electric submersible pumps take produced water while the rest are on seawater imported from the Kupaaruk River Unit Seawater Treatment Plant. Pump configurations are modified as needed to optimize placement of injection fluids.

Gas Injection

In March of 2009, regulatory approval was received to inject enriched, sub-miscible gas in the WAG process. All CRU wells on gas injection service in 2018 used enriched gas except for CD1-06 and CD1-14, which injected lean gas.

Flood Status

Several Alpine injection patterns at CD1 and CD2, as well as Nanuq Kupaaruk patterns at CD4, and Fiord Kupaaruk patterns at CD3 have reached the target maturity of 30% HCPVI (hydrocarbon pore volume injected) and no longer receive gas injection. Such patterns are managed as waterflood only. Overall

MWAG and waterflood field response remains excellent. See **Table 4** for a detailed list of estimated pattern maturity and flood status.

Scale Squeeze Program

A scale squeeze program has been ongoing since 2008 to treat wells with downhole scaling tendencies. A total of thirteen scale inhibition treatments were performed in Kuparuk and Nechelik wells in 2018. Performance evaluation of these and other wells in the program is ongoing, and it is expected that a similar treatment scope will be implemented in 2019 as part of the ongoing scale management process.

Reservoir Pressure Monitoring

An extensive reservoir pressure monitoring program was completed in 2018 in each CRU oil pool. A total of 60 static reservoir pressure surveys were recorded in 2018, and 26 permanent down-hole gauges were in use for continuous monitoring. The Annual Reservoir Pressure Report for the CRU will be issued to the AOGCC in late March 2019, and will contain all reservoir pressure data gathered during 2018.

Reservoir pressure is continuously managed to optimize CRU flood performance and prepare for drilling operations. Static pressure monitoring will continue during 2019, especially during sheltering opportunities. In addition, installation of new permanent down-hole gauges is planned for all new producers that will be drilled during 2019.

Key Meetings

The CRUA Section 3.9.8 Review was held on December 11, 2018, pursuant to the CRUA. The next CRUA Section 3.9.8 Review will be held in December of 2019.

Facilities Expansion Update

No major process expansions are currently planned for the Alpine Central Facility (ACF) in 2019. Engineering studies were performed in 2018 to evaluate current ACF limitations (water, oil, and gas systems), and analyze and estimate the options available to maximize facility capacity for growth opportunities.

The Alpine Gas Expansion (AGX) project was kicked off in 2018 after completion of the engineering study. The objective of the AGX project is to debottleneck the gas handling capacity at ACF through an upgrade to the C1 turbine-compressor package. The project will also address other facility gas handling bottlenecks associated with the increase in gas throughput, including higher efficiency compressor bundles, addition of a dry low oxides of nitrogen burner package, inlet air and fuel gas valve modifications, compression train knockout (KO) vessels internal upgrades, tri-ethylene glycol (TEG) regeneration system upgrades, inlet separator pressure safety valves, and flare tips. The project schedule is premised on installation and start-up occurring in mid-2020, but potentially could be deferred to mid-2021.

There are no expansions being planned and engineered for the CD1, CD3, or CD4 drillsites in 2019. The first expansion of CD5 was installed in 2017, adding twelve well slots. Engineering, design studies, and permitting of a second CD5 expansion (CD5X2) was completed in 2018. CD5X2 will add ten additional well slots to CD5 in 2019.

Engineering, design studies, and permitting of the CD2X expansion to support the Fiord West Development were completed in 2018. Gravel haul for the 5.3 acre pad expansion was completed during the 2018 ice road season. Drillsite facility expansion of 21 well slots will be installed in 2019, with a ready for start-up date in Q1 2020. Three existing well slots that were never used on the CD2 Qannik well row will be available for the ERD rig, and three additional slots will be added to the CD2 Qannik well row. In

total 27 well slots should be available for ERD use starting in Q1 2020, with future expansion capacity for eleven well slots.

In 2019, the Capital Projects Organization and Engineering will work the front-end engineering design for a future project to install additional power generation capacity and switchgear at ACF in order to meet future development drilling and facility power demands.

No other major infrastructure upgrades are planned for 2019.

Processing of Greater Moose's Tooth Unit #1 (Lookout PA) Production at ACF

Greater Moose's Tooth Unit #1 (Lookout) development drilling commenced in late March 2018. Initial development drilling activities were completed in mid-February 2019 and the rig moved back to CD5. Production at the Lookout development started in early October 2018 and is being processed through the ACF at CRU.

Status Update by Pool and PA

The following includes a table showing production and injection splits for CRU tract operations, as well as a summary of the status of each pool as of January 1, 2019:

- Alpine Pool (Alpine PA and Nanuq Kuparuk PA)
- Fiord Pool (Fiord Kuparuk PA and Fiord Nechelik PA)
- Nanuq Pool (Nanuq PA)
- Qannik Pool (Qannik PA)

Table 1 below is a summary of CRU tract operations for wells that are commingled with PA specific production or injection. The production and injection splits are as of January 1, 2019.

TABLE 1: Production and Injection Splits for CRU Tract Operations

Production Splits					
<i>Accounting Code</i>	<i>Well Name</i>	<i>Business Area ID</i>	<i>Oil Split</i>	<i>Gas Split</i>	<i>Water Split</i>
N/A	CD1-04	ALP	0%	0%	100%
CR17	CD1-04	TR1002	100%	100%	0%
CR16	CD1-17	TR1001	100%	100%	100%
N/A	CD1-47	ALP	90%	90%	90%
CR25	CD1-47	TR1006	10%	10%	10%
N/A	CD3-127	FIORDNECH	97%	97%	97%
CR24	CD3-127	TR1005	3%	3%	3%
CR28	CD3-130	TR1009	100%	100%	100%

Injection Splits				
<i>Accounting Code</i>	<i>Well Name</i>	<i>Business Area ID</i>	<i>Gas Split</i>	<i>Water Split</i>
N/A	CD3-118	FIORDNECH	81%	81%
CR24	CD3-118	TR1005	19%	19%
N/A	CD3-128	FIORDNECH	98%	98%
CD24	CD3-128	TR1005	2%	2%
N/A	CD5-316	TR1023	100%	100%

Alpine Pool

Development Drilling

Alpine PA: 152 wells drilled (excluding sidetracks and re-drills)

- 78 Producers
- 72 Injectors
- 2 Disposal Wells (completed in the Ivishak)

Nanuq Kuparuk PA: 13 wells drilled (excluding sidetracks and re-drills)

- 6 Producers
- 7 Injectors

Alpine PA Average Metrics for 2018

Average oil production rate 37.1 MBOPD
Average gas production rate 40.3 MMSCFD
Average water production rate 32.4 MBWPD
Average gas injection rate 23.6 MMSCFD
Average water injection rate 80.8 MBWPD

Nanuq Kuparuk PA Average Metrics for 2018

Average oil production rate 12.6 MBOPD
Average gas production rate 8.5 MMSCFD
Average water production rate 6.1 MBWPD
Average gas injection rate 12.8 MMSCFD
Average water injection rate 16.2 MBWPD

Alpine PA Cumulative Volumes Produced and Injected Since Start-Up

Cumulative oil production through December 2018 442.6 MMSTBO
Cumulative gas production through December 2018 526.9 BSCF

Cumulative water production through December 2018	141.9 MMSTBW
Cumulative gas injection through December 2018	435.2 BSCF
Cumulative water injection through December 2018	635.5 MMSTBW

Nanug Kuparuk PA Cumulative Volumes Produced and Injected Since Start-Up

Cumulative oil production through December 2018	38.3 MMSTBO
Cumulative gas production through December 2018	36.0 BSCF
Cumulative water production through December 2018	22.5 MMSTBW
Cumulative gas injection through December 2018	33.1 BSCF
Cumulative water injection through December 2018	58.9 MMSTBW

Fiord Pool

Development Drilling

Fiord Kuparuk PA: 6 wells drilled (excluding sidetracks and re-drills)

- 3 Producers (includes CD3-130)
- 3 Injectors

Fiord Nechelik PA: 23 wells drilled (excluding sidetracks and re-drills)

- 13 Producers
- 10 Injectors

Fiord Kuparuk PA Average Metrics for 2018

Average oil production rate	0.4 MBOPD
Average gas production rate	0.8 MMSCFD
Average water production rate	3.9 MBWPD
Average gas injection rate	1.9 MMSCFD
Average water injection rate	6.4 MBWPD

Fiord Nechelik PA Average Metrics for 2018

Average oil production rate	5.5 MBOPD
Average gas production rate	5.9 MMSCFD
Average water production rate	11.0 MBWPD
Average gas injection rate	6.5 MMSCFD
Average water injection rate	16.8 MBWPD

Fiord Kuparuk PA Cumulative Volumes Produced and Injected Since Start-Up

Cumulative oil production through December 2018	13.9 MMSTBO
Cumulative gas production through December 2018	22.3 BSCF
Cumulative water production through December 2018	20.4 MMSTBW
Cumulative gas injection through December 2018	17.9 BSCF
Cumulative water injection through December 2018	33.5 MMSTBW

Fiord Nechelik PA Cumulative Volumes Produced and Injected Since Start-Up

Cumulative oil production through December 2018	57.4 MMSTBO
Cumulative gas production through December 2018	47.9 BSCF
Cumulative water production through December 2018	19.7 MMSTBW
Cumulative gas injection through December 2018	52.7 BSCF
Cumulative water injection through December 2018	81.9 MMSTBW

Nanuq Pool

Development Drilling

Nanuq PA: 10 wells drilled (excluding sidetracks and re-drills)

- 6 Producers (includes CD1-229)
- 4 Injectors

Nanuq PA Average Metrics for 2018

Average oil production rate	1.2 MBOPD
Average gas production rate	1.7 MMSCFD
Average water production rate	0.1 MBWPD
Average gas injection rate	2.3 MMSCFD
Average water injection rate	1.5 MBWPD

Nanuq PA Cumulative Volumes Produced and Injected Since Start-Up

Cumulative oil production through December 2018	4.7 MMSTBO
Cumulative gas production through December 2018	7.3 BSCF
Cumulative water production through December 2018	0.4 MMSTBW
Cumulative gas injection through December 2018	1.3 BSCF

Cumulative water injection through December 2018 9.8 MMSTBW

Qannik Pool

Development Drilling

Qannik PA: 9 wells drilled (excluding sidetracks and re-drills)

- 6 Producers
- 3 Injectors

Qannik PA Average Metrics for 2018

Average oil production rate 1.6 MBOPD
Average gas production rate 1.3 MMSCFD
Average water production rate 0.3 MBWPD
Average gas injection rate 0.0 MMSCFD
Average water injection rate 1.9 MBWPD

Qannik PA Cumulative Volumes Produced and Injected Since Start-Up

Cumulative oil production through December 2018 7.1 MMSTBO
Cumulative gas production through December 2018 4.8 BSCF
Cumulative water production through December 2018 0.5 MSTBW
Cumulative gas injection through December 2018 0.0 BSCF
Cumulative water injection through December 2018 9.8 MMSTBW

TABLE 2: Wells Drilled by PA in 2018 and Planned/Other Opportunities for 2019 - Q1 2020

Note: All Jurassic targets have the potential to include Kuparuk sand, which may be evaluated for completion and commingling when encountered.

Alpine PA

Wells Drilled in 2018

CD5-23	Alpine Injector	Horizontal
CD5-25	Alpine Injector	Multilateral
CD4-210B	Alpine Producer	CTD Multilateral
CD4-208A	Alpine Producer	CTD Multilateral

TABLE 2 (continued)

To Be Drilled in 2019, Q1 2020 (no particular order) **CONFIDENTIAL**

Other Opportunities 2019, Q1 2020 (depending on drilling results and rig schedule) **CONFIDENTIAL**

Nanuq Kuparuk PA (Includes wells that are anticipated to be included within the next PA Expansion)

Wells Drilled in 2018

No wells were drilled in 2018.

To Be Drilled in 2019, Q1 2020 **CONFIDENTIAL**

Other Opportunities 2019, Q1 2020 (depending on drilling results and rig schedule) **CONFIDENTIAL**

Fiord Kuparuk PA

Wells Drilled in 2018

No wells were drilled in 2018.

To Be Drilled in 2019, Q1 2020 **CONFIDENTIAL**

Other Opportunities 2019, Q1 2020 (depending on drilling results and rig schedule) **CONFIDENTIAL**

Fiord Nechelik PA

Wells Drilled in 2018

No wells were drilled in 2018.

To Be Drilled in 2019, Q1 2020 **CONFIDENTIAL**

Other Opportunities 2019, Q1 2020 (depending on drilling results and rig schedule) **CONFIDENTIAL**

Nanuq PA

Wells Drilled in 2018

CD4-211L1 Nanuq Producer CTD Multilateral

To Be Drilled in 2019, Q1 2020 **CONFIDENTIAL**

Other Opportunities 2019, Q1 2020 (depending on drilling results and rig schedule) **CONFIDENTIAL**

Qannik PA

Wells Drilled in 2018

CD2-463L1 Qannik Producer CTD Multilateral

To Be Drilled in 2019, Q1 2020 **CONFIDENTIAL**

TABLE 2 (continued)

Other Opportunities 2019, Q1 2020 (depending on drilling results and rig schedule) **CONFIDENTIAL**

Fiord West Kuparuk (PA application pending)

Wells Drilled in 2018

No wells were drilled in 2018.

To Be Drilled in 2019, Q1 2020

CD2-162	Fiord W. Kuparuk Pilot Producer	Slant
---------	---------------------------------	-------

Other Opportunities 2019, Q1 2020 **CONFIDENTIAL**

FIGURE 1: Colville River Unit and Participating Areas

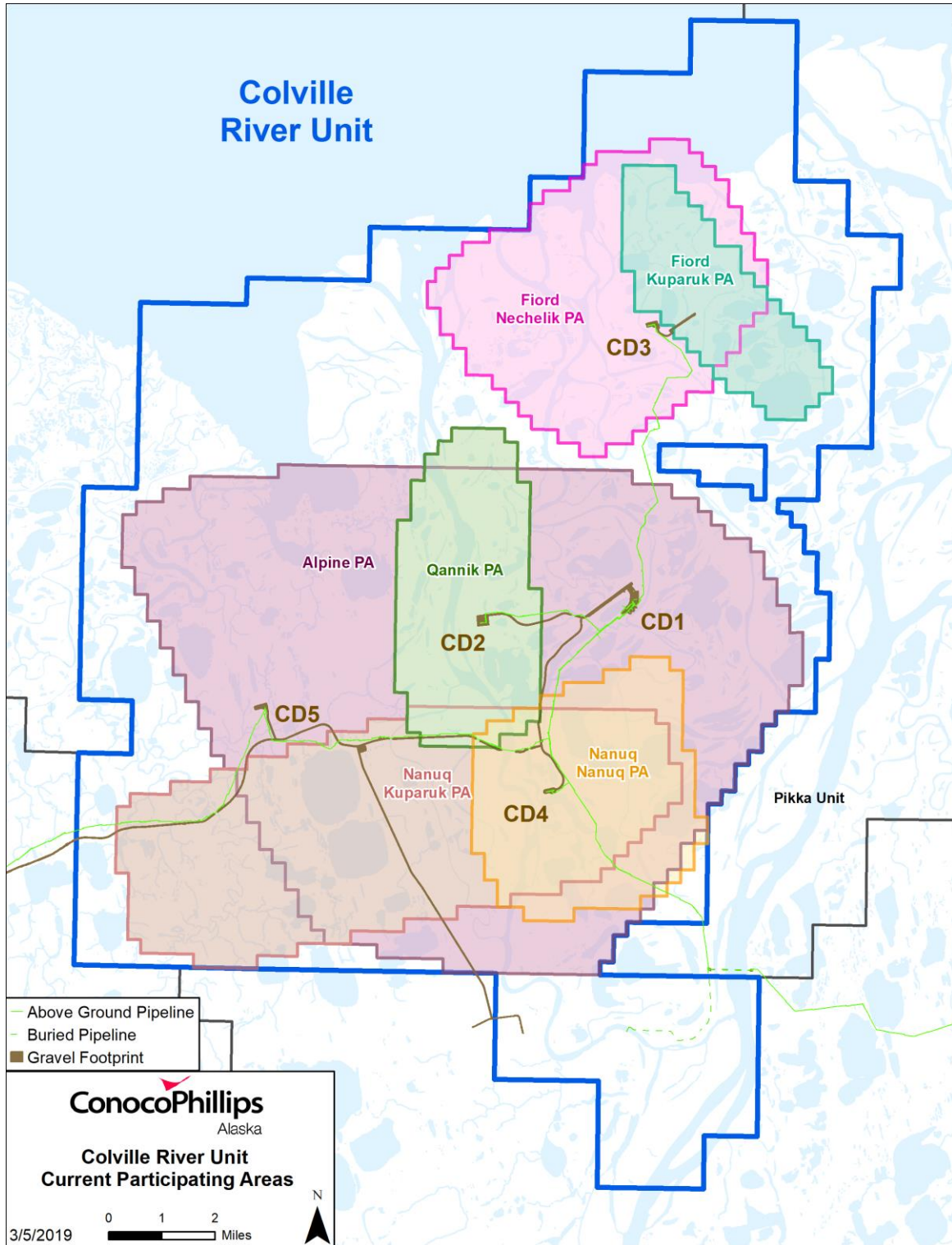


TABLE 3: Colville River Unit Active Wells Drilled as of January 1, 2019

WELL NAME	CASING SHOE (MD)	SURF X LOC	SURF Y LOC	TD X LOC	TD Y LOC	TOTAL DEPTH (MD)
CD1-01A	8705.4	1526032.77	5975652.46	1524952.14	5975910.64	9908
CD1-02	8201.1	1526025.63	5975645.25	1526805.92	5981831.74	12773
CD1-03A	11629.7	1526018.63	5975638.4	1525929.19	5984381.94	11896
CD1-04	9444.8	1526011.62	5975631.18	1532420.61	5974946.44	13977
CD1-05	10632.6	1526004.36	5975623.97	1533843.02	5975392.81	14515
CD1-06	13500	1525997.61	5975617.49	1536983.89	5975744.3	16024
CD1-07	13477	1525990.10	5975609.92	1537797.55	5967803.87	17590
CD1-08	12515	1525983.44	5975601.97	1536123.79	5967745.72	15837
CD1-09	11894	1525975.46	5975595.50	1535185.49	5976061.76	15350
CD1-10	7908.6	1525968.94	5975588.28	1529672.04	5973708.99	11693
CD1-11	12293.2	1525962.05	5975581.06	1534769.48	5967103.11	15057
CD1-12	11656.3	1525955.17	5975574.21	1532970.62	5967262.12	13812
CD1-12L1	11656.3	1525955.17	5975574.21	1532640.21	5968053.55	12954
CD1-13	8841.2	1525947.79	5975567.00	1531068.26	5974270.5	11300
CD1-14	14073	1525940.78	5975560.16	1539784.98	5970229.55	18939
CD1-15	20225	1525933.89	5975552.57	1543532.17	5978955.17	20700
CD1-16	9595.9	1525926.89	5975546.09	1532851.37	5970781.89	12600
CD1-17	13181	1525919.63	5975538.88	1538265.02	5970439.71	18590
CD1-18	11381.7	1525912.75	5975532.03	1530960.21	5964743.12	15056
CD1-20	10634	1525898.48	5975517.61	1532531.15	5964455.73	16114
CD1-21	9049	1525891.23	5975510.77	1521109.85	5980851.22	11087
CD1-229	11309	1525834.91	5975454.16	1524052.98	5963454.99	16118
CD1-22B	13159	1525883.97	5975503.56	1527394.95	5984658.76	13500
CD1-23	11473	1525877.21	5975496.34	1535536.15	5972052.57	14477
CD1-24	10771	1525870.08	5975489.49	1534365.76	5971283.98	13706
CD1-25	8886.7	1525863.07	5975482.64	1531646.34	5969913.78	12147
CD1-26	8553.8	1525855.08	5975475.45	1529961.62	5969806.37	11134
CD1-27	8500	1525848.81	5975468.22	1528801.98	5968765.16	11492
CD1-28	7448.7	1525841.92	5975461.37	1527261.9	5971877.83	10468
CD1-30	9520	1525826.9	5975446.23	1519105.92	5981194.07	12850
CD1-31	10387.7	1525819.05	5975440.12	1517562.86	5980982.02	14364
CD1-32	11128	1525813.39	5975432.89	1516499.05	5979588.97	14353
CD1-33	7878.3	1525806.00	5975424.95	1525878.91	5971231.29	10854
CD1-34	8410.3	1525798.14	5975418.48	1524480.51	5970723.86	11190
CD1-35	8158	1525792.37	5975411.98	1522198.21	5981582.21	13450
CD1-36	7654.2	1525785.23	5975404.77	1522280.63	5978348.33	10654
CD1-37	9095.4	1525778.22	5975397.56	1527721.09	5967738.81	12134
CD1-38	9170	1525771.22	5975391.07	1526171.49	5967419.78	12240
CD1-39	10288.9	1525762.72	5975382.78	1524853.54	5966538.86	13289
CD1-40	12042	1525757.07	5975376.28	1524220.34	5964694.93	15438

TABLE 3 (continued)

<u>WELL NAME</u>	<u>CASING SHOE (MD)</u>	<u>SURF X LOC</u>	<u>SURF Y LOC</u>	<u>TD X LOC</u>	<u>TD Y LOC</u>	<u>TOTAL DEPTH (MD)</u>
CD1-41	8332.5	1525750.19	5975369.43	1520980.44	5977491.93	11170
CD1-42	9054	1525742.93	5975362.22	1519762.12	5976596.78	11608
CD1-43	10065	1525735.79	5975354.65	1521855.47	5969340.97	12921
CD1-44	10070	1525727.42	5975347.45	1518365.24	5976030.68	12811
CD1-45	9032	1525721.78	5975340.95	1523171.09	5969916.22	11950
CD1-46	11334.5	1525714.53	5975334.11	1529629.84	5963921.01	15187
CD1-47	10960	1525707.76	5975326.89	1520473.64	5984934.79	14120
CD1-48A	13080	1525700.38	5975319.68	1529618.80	5960958.73	18112
CD1-49	13433	1525693.49	5975312.47	1526906.55	5962975.67	15348
CD2-01	12953	1511714.60	5974527.67	1516113.35	5985941.23	17513
CD2-02	16048	1511715.66	5974517.41	1497367.58	5986125.01	21178
CD2-03	13774	1511717.47	5974508.22	1506224.28	5986405.03	15682
CD2-03L1	13774	1511717.47	5974508.22	1506388.64	5986123.85	15356
CD2-05	13712.3	1511718.10	5974487.35	1502373.24	5972114.12	16350
CD2-05L1	13712.3	1511718.10	5974487.35	1501772.23	5973448.61	17816
CD2-06	9672	1511719.54	5974477.81	1507849.15	5986580.48	16680
CD2-07	10857.1	1511720.98	5974468.26	1511819.22	5985502.17	14977
CD2-08	12241.5	1511721.54	5974458.00	1514598.12	5986489.87	18050
CD2-09	12617	1511722.97	5974448.10	1503443.88	5985256.38	16409
CD2-09L1	12617	1511722.97	5974448.10	1503599.52	5984981.9	16094
CD2-10	10702	1511723.79	5974438.20	1510317.36	5985108.48	14475
CD2-11	13809	1511724.85	5974428.30	1501634.09	5985603.12	18186
CD2-12	8676	1511725.79	5974418.40	1506669.8	5982458.99	13632
CD2-13	10595	1511726.98	5974408.49	1514371.77	5983741.94	14575
CD2-14	7671	1511727.79	5974398.23	1510442.4	5978323.38	11056
CD2-15	9829	1511728.97	5974388.33	1504190.26	5980628.59	14161
CD2-16	9529	1511730.17	5974378.79	1514815.26	5979759.58	12500
CD2-17A	8184	1511731.23	5974368.89	1511559.07	5979620.74	11819
CD2-18	12112	1511732.16	5974358.62	1500241.84	5980903.06	18019
CD2-19	8769.4	1511733.24	5974349.45	1516929.06	5972219.67	11714
CD2-20	9163	1511734.53	5974338.81	1507484.19	5984108.07	14570
CD2-21	13382.2	1511735.23	5974328.92	1500090.29	5985294.14	19359
CD2-22	7845	1511736.91	5974319.37	1509083.42	5977748.89	11134
CD2-23	9676	1511737.23	5974309.12	1505478.45	5981446.52	13438
CD2-24	10810.4	1511738.54	5974299.21	1503244.63	5979249.14	14302
CD2-25	8721.7	1511739.60	5974289.31	1507821.89	5976892.05	11995
CD2-26	8618.6	1511740.53	5974279.04	1515438.79	5971827.79	11238
CD2-27	12530	1511741.84	5974268.77	1520669.18	5961711.55	18250

TABLE 3 (continued)

WELL NAME	CASING SHOE (MD)	SURF X LOC	SURF Y LOC	TD X LOC	TD Y LOC	TOTAL DEPTH (MD)
CD2-28	8694.5	1511742.66	5974259.24	1512832.17	5980249.12	13200
CD2-29	9556.3	1511744.09	5974249.33	1518266.85	5972913.18	12560
CD2-30	11481	1511744.78	5974239.44	1503338.68	5974808.99	15700
CD2-31	13811	1511745.85	5974229.53	1498979.84	5978713.01	18131
CD2-32	8722.7	1511746.90	5974219.27	1506611.69	5975965.05	11720
CD2-33B	9979.9	1511747.98	5974210.10	1505255.50	5975221.84	13078
CD2-34	7802	1511748.90	5974199.10	1513399.11	5972637.71	8755
CD2-35A	9063	1511750.21	5974189.56	1517705.77	5967564.52	13500
CD2-36	13523	1511751.15	5974179.66	1514665.91	5960145.16	17663
CD2-37	14162	1511752.22	5974169.76	1513070.38	5960238.16	17085
CD2-38	9209	1511753.41	5974160.22	1515195.84	5965766.05	13010
CD2-39A	9122.5	1511754.59	5974149.95	1516046.35	5967146.43	12296
CD2-39AL1	9122.5	1511754.59	5974149.95	1513537.43	5971707.81	11571
CD2-40	11207	1511755.40	5974140.05	1507148.89	5967231.41	14250
CD2-404	5559	1511718.77	5974497.59	1509053.25	5982386.72	11540
CD2-41	9532	1511756.59	5974130.15	1513669.62	5965488.95	13024
CD2-42	9633	1511757.54	5974120.62	1509203.74	5967631.06	13138
CD2-43	13106	1511758.34	5974109.99	1507228.19	5962744.81	19040
CD2-44	11319	1511759.65	5974100.08	1520370.66	5968943.90	14555
CD2-45	9972	1511760.85	5974090.91	1519021.61	5968237.25	13402
CD2-46	7878.5	1511761.77	5974080.28	1513002.44	5970066.92	11000
CD2-463	5149	1511461.89	5973923.27	1512255.80	5981083.33	10886
CD2-463L1	5149	1511461.89	5973923.27	1514044.35	5979958.44	10700
CD2-463L1-01	5149	1511461.89	5973923.27	1510999.04	5979613.03	10686
CD2-463L2	5149	1511461.89	5973923.27	1511093.81	5975297.81	7656
CD2-463L2-01	5149	1511461.89	5973923.27	1514602.91	5976001.3	7542
CD2-464	5039.6	1511442.13	5973921.04	1514048.78	5966583.16	10776
CD2-465	9639.4	1511422.00	5973919.19	1512669.23	5985823.08	13733
CD2-466	10773	1511402.48	5973916.60	1510927.71	5990288.24	18286
CD2-467	5396.9	1511382.24	5973914.75	1510658.44	5964830.59	13836
CD2-468	4510.7	1511362.48	5973912.53	1508364.32	5988066.62	17850
CD2-469	7394.1	1511342.72	5973910.31	1506669.23	5980062.70	14297
CD2-47A	10839.5	1511762.45	5974069.65	1510946.74	5963311.73	14990
CD2-47AL1	10839.5	1511762.45	5974069.65	1511118.77	5963037.70	15301
CD2-470	7938.1	1511322.84	5973908.46	1506977.23	5965275.31	15233
CD2-48	10074	1511763.90	5974060.47	1512336.58	5964804.87	13622
CD2-49	8890.8	1511764.84	5974050.57	1510232.52	5968841.22	11874
CD2-50	7906.3	1511765.78	5974040.67	1511826.31	5968954.01	11624
CD2-51	13246	1511767.08	5974030.40	1522503.45	5964731.39	17320
CD2-52	12897	1511767.90	5974020.87	1521158.82	5964034.98	16881
CD2-53	12394	1511769.08	5974010.60	1518991.96	5961782.89	16985
CD2-54	14378	1511770.27	5974000.70	1500220.45	5972319.01	16617
CD2-54L1	14378	1511770.27	5974000.70	1499495.45	5973780.11	18250
CD2-55	12210.2	1511771.21	5973990.80	1509008.21	5963635.28	15238

TABLE 3 (continued)

<u>WELL NAME</u>	<u>CASING SHOE (MD)</u>	<u>SURF X LOC</u>	<u>SURF Y LOC</u>	<u>TD X LOC</u>	<u>TD Y LOC</u>	<u>TOTAL DEPTH (MD)</u>
CD2-56	14391	1511772.15	5973980.90	1504595.73	5963808.85	18027
CD2-56L1	14895	1511772.15	5973980.90	1505249.23	5962430.47	19554
CD2-57	12642.4	1511773.69	5973970.26	1517353.50	5961495.90	16433
CD2-58	12129	1511774.39	5973960.73	1515869.90	5961215.10	16389
CD2-58L1	12129	1511774.39	5973960.73	1514586.36	5963741.24	13550
CD2-59	15743	1511775.58	5973951.19	1497111.04	5978173.58	20027
CD2-60A	14328.9	1511776.65	5973941.29	1512294.48	5956625.47	21001
CD2-72	16781	1511282.95	5973904.02	1496355.11	5983852.49	21089
CD2-73	17173	1511263.06	5973901.80	1494819.40	5982551.12	21810
CD2-74	19595.8	1511243.06	5973899.58	1492314.63	5983181.40	25007
CD2-75	21198.2	1511223.30	5973897.72	1495463.56	5976901.10	23539
CD2-76	15498	1511203.42	5973895.50	1503057.03	5984373.03	15769
CD2-77	17735	1511183.29	5973893.29	1518144.03	5955001.67	22658
CD2-78	17444.5	1511163.90	5973891.43	1493466.09	5976267.53	23786
CD3-106	13390	1528298.41	6003599.20	1524947.97	6017019.47	17664
CD3-106L1	12987.9	1528298.41	6003599.20	1526340.53	6016257.05	16193
CD3-107	11874	1528278.94	6003594.36	1532779.03	6012673.17	18315
CD3-107L1	11874	1528278.94	6003594.36	1532520.94	6013796.55	19482
CD3-108	11075	1528259.72	6003589.53	1528396.56	6016492.82	18915
CD3-109	9685	1528239.88	6003585.07	1525890.53	6017704.91	20321
CD3-110	8958.8	1528220.42	6003580.97	1523565.64	6015579.09	17991
CD3-111A	8530	1528201.20	6003576.13	1525101.47	6010229.84	11642
CD3-112	8572.6	1528181.26	6003572.40	1520503.73	6012560.67	16021
CD3-113	9362	1528161.42	6003567.58	1518479.94	6011618.64	17338
CD3-114	10627	1528142.32	6003562.74	1516918.71	6010336.30	18042
CD3-115	12268	1528122.61	6003558.28	1515886.74	6008531.70	19564
CD3-117	15710	1528084.04	6003549.34	1512407.57	6006986.69	21597
CD3-118	13694	1528064.46	6003544.88	1513809.64	6008329.97	21228
CD3-119	15810	1528044.86	6003540.05	1530452.16	6018297.38	19375
CD3-121	8876	1528005.93	6003531.12	1529467.41	5999572.58	15081
CD3-122	9127.9	1527986.72	6003526.65	1527997.60	5998039.55	15409
CD3-123	11059	1527967.13	6003522.19	1525609.61	5997324.29	17142
CD3-124	21000	1527947.67	6003518.09	1509769.69	6006633.57	23981
CD3-125	11817	1527927.95	6003513.26	1523786.60	5996710.86	16529
CD3-127	14429	1527889.37	6003503.22	1519845.86	5995844.75	20033
CD3-128	18685	1527869.93	6003499.86	1522865.91	5994312.11	20387
CD3-130	14310	1527831.11	6003490.56	1536060.65	6012974.65	15757

TABLE 3 (continued)

<u>WELL NAME</u>	<u>CASING SHOE (MD)</u>	<u>SURF X LOC</u>	<u>SURF Y LOC</u>	<u>TD X LOC</u>	<u>TD Y LOC</u>	<u>TOTAL DEPTH (MD)</u>
CD3-198	8726.5	1528434.41	6003630.10	1532750.30	6002456.29	13228
CD3-199	8867.9	1528415.44	6003625.99	1531563.54	6000249.70	15742
CD3-301A	10583.5	1528395.60	6003621.16	1528063.86	6013303.95	13047
CD3-302A	12590.7	1528376.38	6003616.69	1533221.10	6011788.84	12603
CD3-303	14289	1528356.80	6003612.23	1540543.80	6003919.19	14654
CD3-304	17408	1528337.09	6003607.77	1543596.40	5999915.62	17843
CD3-305	15491.9	1528317.62	6003603.30	1541372.80	5997688.67	16859
CD3-316B	10995.2	1528103.02	6003553.82	1530029.47	6011105.26	17492
CD4-03	15747.6	1518169.28	5957263.72	1519373.17	5942275.46	18524
CD4-05	14350	1518130.34	5957254.11	1503666.18	5961085.34	21142
CD4-07	17826	1518091.53	5957245.22	1500062.85	5968120.45	25040
CD4-12	11497	1517994.42	5957221.91	1517326.95	5946819.95	16004
CD4-16	13894	1517916.53	5957203.05	1507435.83	5962261.51	16850
CD4-17	13334	1517897.19	5957198.97	1505965.84	5961150.46	17975
CD4-208A	12253	1518071.80	5957240.05	1520866.92	5942499.65	19289
CD4-208AL1	12253	1518071.80	5957240.05	1517084.89	5949486.23	14852
CD4-209	6992.4	1518052.21	5957235.61	1520599.70	5949481.66	13215
CD4-210B	12359	1518032.98	5957230.80	1515920.52	5945112.30	16441
CD4-211	7727	1518013.77	5957226.72	1519009.07	5949550.07	14379
CD4-211L1	7727	1518013.77	5957226.72	1515082.65	5957439.32	10701
CD4-211L1-01	7727	1518013.77	5957226.72	1514981.15	5957629.59	10989
CD4-214	14814.3	1517955.59	5957212.30	1518099.96	5947883.27	15072
CD4-215	9512.4	1517935.51	5957207.86	1516241.56	5948389.83	14761
CD4-23	12640	1517780.48	5957170.49	1514698.29	5947773.39	17280
CD4-24	13565	1517760.89	5957166.05	1509106.91	5954690.94	19530
CD4-25	17566	1517741.42	5957161.25	1507171.45	5954120.50	21168
CD4-25L1	17978	1517741.42	5957161.25	1507330.83	5953707.23	20725
CD4-26	16559	1517722.07	5957156.80	1501983.23	5960052.09	24749
CD4-27	15179	1517697.52	5957150.98	1513617.41	5944695.14	16878
CD4-213B	12203.5	1517974.70	5957217.11	1509521.73	5954253.45	12420
CD4-289	8161	1518421.90	5957323.68	1525378.07	5950601.60	14513
CD4-290	7660.3	1518402.55	5957319.23	1523804.84	5951079.12	12955
CD4-291	7207.5	1518382.96	5957314.43	1522632.41	5950839.17	12595
CD4-292	7064.7	1518363.61	5957309.98	1521580.50	5950112.82	12867
CD4-298	10826	1518247.53	5957282.22	1529812.26	5953165.94	16025
CD4-301B	15051	1518208.35	5957272.97	1526455.73	5961831.58	18806
CD4-302	9613.3	1518188.75	5957268.17	1524237.98	5956595.75	9626
CD4-304	14605	1518149.93	5957258.91	1506328.98	5962105.04	17300
CD4-306	10113	1518110.87	5957249.67	1512052.87	5960436.66	10346
CD4-318A	15719	1517877.46	5957193.44	1506475.37	5956850.33	20612
CD4-319	12190	1517858.00	5957189.36	1512400.81	5958189.08	18684

TABLE 3 (continued)

<u>WELL NAME</u>	<u>CASING SHOE (MD)</u>	<u>SURF X LOC</u>	<u>SURF Y LOC</u>	<u>TD X LOC</u>	<u>TD Y LOC</u>	<u>TOTAL DEPTH (MD)</u>
CD4-320	8143	1517839.01	5957183.81	1519937.49	5951326.66	14471
CD4-321	18434	1517819.25	5957176.82	1501408.34	5953240.29	19337
CD4-322	18538	1517799.95	5957174.93	1500861.02	5958794.03	19452
CD4-93A	12348	1518344.13	5957304.81	1514030.64	5948518.27	22059
CD4-96A	13260	1518286.47	5957291.10	1511545.66	5944475.29	19293
CD5-01	12654	1489572.45	5965661.57	1500578.53	5962680.75	19279
CD5-02A	14695	1489553.34	5965656.46	1490078.03	5983472.85	22106
CD5-03	14341	1489534.60	5965650.98	1488606.52	5982796.57	20999
CD5-04	11837	1489514.86	5965645.15	1492311.28	5975127.19	18878
CD5-05	11177	1489495.49	5965639.69	1499655.72	5961339.52	17900
CD5-06	9612	1489476.26	5965634.58	1495463.74	5959503.7	18057
CD5-06L1	9612	1489476.26	5965634.58	1494810.48	5960742.88	16657
CD5-07	10633	1489457.02	5965629.11	1487354.24	5981892.23	23711
CD5-08	10872	1489437.67	5965624.01	1498397.96	5960265.56	20155
CD5-09	13272	1489418.54	5965618.17	1484223.56	5984762.83	23381
CD5-10	9797	1489399.19	5965613.07	1489817.89	5973864.70	16278
CD5-11	9823	1489379.82	5965607.60	1497180.21	5959363.51	17236
CD5-12	8968	1489360.59	5965602.13	1482753.11	5984279.33	26196
CD5-17	15831	1489264.27	5965575.15	1505162.83	5947049.91	28645
CD5-17L1	15831	1489264.27	5965575.15	1502759.56	5952230.95	22957
CD5-18	15251	1489245.28	5965569.67	1503556.65	5946801.48	27089
CD5-18L1	15251	1489245.28	5965569.67	1501858.42	5950188.12	23331
CD5-19	13825	1489225.92	5965564.57	1502417.47	5945759.07	27873
CD5-19L1	13825	1489225.92	5965564.57	1499911.68	5950638.15	22418
CD5-20	12291	1489206.68	5965559.10	1493857.18	5959247.37	24119
CD5-20L1	12291	1489206.68	5965559.10	1493072.97	5960644.84	22523
CD5-22	10708	1489168.20	5965547.80	1480976.19	5984540.22	24933
CD5-23	8621	1489148.84	5965542.7	1479012.91	5985268.9	27430
CD5-25	8460	1489110.24	5965532.13	1499872.27	5944100.48	30218
CD5-25L1	8460	1489110.24	5965532.13	1495691.81	5952341.42	20973
CD5-99A	15571	1489592.18	5965666.66	1505937.17	5949032.53	27128
CD5-313	13422	1489341.46	5965596.29	1496384.43	5949930.29	20835
CD5-314X	14976	1489317.39	5965589.82	1485527.73	5943106.73	27010
CD5-315	12651	1489303.12	5965586.08	1491077.98	5945837.57	23053
CD5-316	19333	1489283.63	5965580.62	1479397.90	5944843.41	27798
WD-02	9459	1526693.97	5976307.86	1528565.81	5975898.53	10255

TABLE 4: CRU Flood Status Update by PA

Pattern maturity is shown by percent of hydrocarbon pore volume injected (HCPVI) for water and MI. MI refers to miscible injectant or enriched gas.

PA	Well	Water HCPVI	MI HCPVI	Current Flood Status
ALPINE	CD1-01	77.7%	32.7%	P&A
ALPINE	CD1-02	104.3%	62.4%	Waterflood Only
ALPINE	CD1-03	123.2%	71.2%	P&A
ALPINE	CD1-03	144.6%	0.4%	MWAG
ALPINE	CD1-05	89.1%	77.1%	Waterflood Only
ALPINE	CD1-06	0.0%	414.7%	Lean Gas Only (Black Start Well)
ALPINE	CD1-07	94.9%	29.4%	Waterflood Only
ALPINE	CD1-11	124.4%	36.2%	Waterflood Only
ALPINE	CD1-13	69.3%	42.4%	Waterflood Only
ALPINE	CD1-14	58.1%	195.5%	Lean Gas Only (Black Start Well)
ALPINE	CD1-16	79.8%	38.6%	Waterflood Only
ALPINE	CD1-20	78.8%	17.6%	Waterflood Only
ALPINE	CD1-21	102.5%	89.4%	Waterflood Only
ALPINE	CD1-23	84.0%	35.4%	Waterflood Only
ALPINE	CD1-26	75.6%	32.6%	Waterflood Only
ALPINE	CD1-31	87.3%	55.7%	Shut In Well
ALPINE	CD1-33	59.5%	39.0%	Waterflood Only
ALPINE	CD1-36	59.1%	29.7%	Waterflood Only
ALPINE	CD1-37	47.3%	24.5%	Waterflood Only
ALPINE	CD1-39	63.4%	31.3%	Waterflood Only
ALPINE	CD1-42	75.3%	34.3%	Waterflood Only
ALPINE	CD1-45	57.3%	32.0%	Waterflood Only
ALPINE	CD1-46	78.3%	19.3%	Waterflood Only
ALPINE	CD1-49	10.2%	1.6%	MWAG
ALPINE	CD2-02	53.4%	14.1%	Waterflood Only
ALPINE	CD2-06	76.0%	34.7%	Waterflood Only
ALPINE	CD2-07	132.0%	48.2%	Waterflood Only
ALPINE	CD2-08	71.1%	34.7%	Shut In Well
ALPINE	CD2-11	99.1%	27.9%	MWAG
ALPINE	CD2-12	128.4%	33.4%	Waterflood Only
ALPINE	CD2-15	71.7%	30.6%	Waterflood Only
ALPINE	CD2-16	105.2%	45.9%	Waterflood Only
ALPINE	CD2-17	72.1%	43.2%	Waterflood Only
ALPINE	CD2-17A	20.9%	9.6%	P&A
ALPINE	CD2-18	55.2%	21.9%	Waterflood Only
ALPINE	CD2-22	51.8%	32.8%	Shut In Well
ALPINE	CD2-26	55.1%	39.3%	Shut In Well
ALPINE	CD2-27	37.6%	13.6%	MWAG

ALPINE	CD2-29	103.4%	34.4%	Waterflood Only
ALPINE	CD2-30	34.3%	13.1%	MWAG
ALPINE	CD2-32	39.2%	14.9%	MWAG
ALPINE	CD2-35	48.6%	27.3%	MWAG
ALPINE	CD2-35	0.0%	0.0%	P&A
ALPINE	CD2-36	55.0%	26.3%	MWAG
ALPINE	CD2-38	41.5%	26.5%	MWAG
ALPINE	CD2-40	24.8%	9.0%	MWAG
ALPINE	CD2-44	88.7%	37.5%	Shut In Well
ALPINE	CD2-46	44.4%	27.7%	MWAG
ALPINE	CD2-48	32.5%	18.4%	MWAG
ALPINE	CD2-49	41.9%	26.2%	MWAG
ALPINE	CD2-51	68.0%	25.5%	Waterflood Only
ALPINE	CD2-54	126.0%	49.2%	Waterflood Only
ALPINE	CD2-55	19.9%	6.1%	Waterflood Only
ALPINE	CD2-56	43.7%	10.5%	MWAG
ALPINE	CD2-57	58.0%	28.0%	MWAG
ALPINE	CD2-59	51.0%	19.8%	Suspended Well
ALPINE	CD2-60	9.8%	2.7%	Waterflood Only
ALPINE	CD2-60A	1.0%	0.0%	P&A
ALPINE	CD2-73	37.1%	22.0%	MWAG
ALPINE	CD2-78	46.4%	6.4%	MWAG
ALPINE	CD4-03	70.1%	16.2%	MWAG
ALPINE	CD4-12	46.8%	19.7%	MWAG
ALPINE	CD4-17	55.3%	12.2%	Waterflood Only
ALPINE	CD4-213A	45.6%	32.8%	Waterflood Only
ALPINE	CD4-213B	0.0%	0.0%	P&A
ALPINE	CD4-24	22.6%	4.4%	MWAG
ALPINE	CD4-26	25.8%	0.9%	Waterflood Only
ALPINE	CD4-27	21.5%	0.9%	Waterflood Only
ALPINE	CD5-01	5.7%	2.6%	MWAG
ALPINE	CD5-02	12.2%	8.5%	MWAG
ALPINE	CD5-06	14.1%	2.6%	MWAG
ALPINE	CD5-07	11.6%	2.7%	MWAG
ALPINE	CD5-08	12.7%	4.9%	MWAG
ALPINE	CD5-12	13.2%	2.3%	MWAG
ALPINE	CD5-17	11.5%	2.1%	MWAG
ALPINE	CD5-19	7.6%	0.0%	MWAG
ALPINE	CD5-23	0.0%	0.0%	MWAG
FIORD KUPARUK	CD3-302	84.6%	43.9%	Waterflood Only
FIORD KUPARUK	CD3-302A	44.6%	0.0%	P&A
FIORD KUPARUK	CD3-303	32.4%	9.8%	MWAG
FIORD KUPARUK	CD3-305	66.6%	34.4%	Waterflood Only
FIORD KUPARUK	CD3-316	0.0%	0.0%	P&A
FIORD KUPARUK	CD3-316A	73.6%	26.3%	P&A

FIORD NECHELIK	CD3-108	49.5%	24.1%	MWAG
FIORD NECHELIK	CD3-110	37.7%	24.6%	MWAG
FIORD NECHELIK	CD3-112	42.7%	21.6%	Shut In Well
FIORD NECHELIK	CD3-114	55.5%	24.2%	Waterflood Only
FIORD NECHELIK	CD3-118	38.1%	23.7%	MWAG
FIORD NECHELIK	CD3-121	8.3%	9.4%	MWAG
FIORD NECHELIK	CD3-123	28.8%	1.5%	Waterflood Only
FIORD NECHELIK	CD3-124	32.7%	18.9%	MWAG
FIORD NECHELIK	CD3-128	33.1%	1.7%	Waterflood Only
FIORD NECHELIK	CD3-198	40.6%	4.7%	Waterflood Only
NANUQ	CD4-208	0.9%	0.0%	P&A
NANUQ	CD4-209	38.2%	0.0%	Waterflood Only
NANUQ	CD4-213	0.0%	0.0%	P&A
NANUQ	CD4-214	34.2%	3.4%	Waterflood Only
NANUQ	CD4-289	35.8%	0.0%	Waterflood Only
NANUQ	CD4-291	17.6%	8.6%	MWAG
NANUQ KUPARUK	CD4-302	74.2%	29.6%	MWAG
NANUQ KUPARUK	CD4-306	106.4%	52.7%	Waterflood Only
NANUQ KUPARUK	CD4-319	77.4%	31.8%	Waterflood Only
NANUQ KUPARUK	CD4-321	52.4%	26.0%	Waterflood Only
NANUQ KUPARUK	CD4-322	51.7%	18.7%	Waterflood Only
NANUQ KUPARUK	CD5-315	25.3%	8.5%	MWAG
NANUQ KUPARUK	CD5-316	9.6%	4.0%	Waterflood Only
QANNIK	CD2-404	28.3%	0.0%	Waterflood Only
QANNIK	CD2-466	38.7%	0.0%	Waterflood Only
QANNIK	CD2-467	21.8%	0.0%	Waterflood Only