



THE STATE
of **ALASKA**
GOVERNOR BILL WALKER

Department of Natural Resources

Division of Oil & Gas
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July 28, 2016

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mr. Erik Keskula
North Slope Development Manager
ConocoPhillips Alaska, Inc.
700 G Street
Anchorage, AK 99501

Subject: Approval of the 2016 Kuparuk River Unit Plans of Development

Dear Mr. Keskula:

On June 28, 2015, the Department of Natural Resources, Division of Oil and Gas (Division) timely received from the unit operator, ConocoPhillips Alaska, Inc. (CPAI), its proposed 2016 Kuparuk River Unit Plans of Development (2016 KRU POD). CPAI submitted its proposed plan on its own behalf and on behalf of the other KRU working interest owners BP Exploration (Alaska), Inc., Chevron U.S.A., Inc., and ExxonMobil Alaska Production, Inc. The 2016 KRU POD contains updates for the Kuparuk, Meltwater, Tabasco, Tarn, and West Sak Participating Areas (PA). The Division notified CPAI by e-mail on July 6, 2016, that the POD application was deemed complete based on the information provided under 11 AAC 83.343(a). The Division and CPAI met for the annual KRU POD presentation on July 14, 2016. CPAI presented a technical summary of field development activities conducted under the 2015 KRU POD and plans for proposed field development activities under the 2016 KRU POD.

The KRU was formed effective December 1, 1981, and is located immediately west of the Prudhoe Bay Unit and southwest of the Milne Point Unit. The unit includes five participating areas (PA): Kuparuk (KPA), Meltwater, Tabasco, Tarn, and West Sak. As the field has matured, reservoir management strategies and associated operational activities continue to evolve. In addition to locating and drilling additional oil targets, maximizing production from the KRU relies on maintaining and upgrading facilities, increasing well work-overs to keep existing wells online, employing new technologies, and optimizing current and future Enhanced Oil Recovery (EOR) programs to recover the remaining oil.

2015 Activity Highlights

In 2015, CPAI drilled 20 coiled tubing drilling (CTD) sidetrack wells in the KPA with a total of 48 lateral well bores drilled and completed in these wells. A peak incremental oil rate of about 3.5 thousand barrels of oil per day (MBOPD) was generated by the CTD program. Additionally, seven rotary wells were drilled in the KPA, including several horizontal wells in the southern periphery of the field. Workover activities in the KPA added 6.5 MBOPD, and non-rig wellwork added approximately 13.2 MBOPD in 2015. Construction of drill site 2S to access the Shark Tooth Resource was complete in 2015 and production from this drill site began in October 2015.

A major turnaround and the installation of natural gas liquid injection pumps was completed at Central Processing Facility 2.

Natural gas liquids (NGL) imported from the Prudhoe Bay Unit (PBU) ended in July, 2014. CPAI will maximize use of the limited volume of KRU gas for reservoir management. The Oliktok Pipeline was converted to a fuel gas import pipeline from PBU. Miscible injection will continue with KRU indigenous NGL at drill sites 1B, 1C, 1D, and 1E.

In the Tarn PA, five development wells were drilled and completed during 2015. Two rig workovers were also completed during 2015, 2L-307 and 2N-320. The addition of these wells helped increase the average daily oil production in 2015 to 9.3 MBOPD from 7.74 MBOPD in 2014.

In the West Sak PA, CPAI drilled and completed eight new wells and three lateral wellbores during 2015. CPAI planned to begin the 1H NEWS drilling program during 2016, but deferred because of market conditions. Much of the pad and facilities work was completed in 2015 and early 2016.

Following well tests of the Torok Moraine interval in the 3S-19 well in 2013-2014, CPAI drilled the Moraine #1 well and 3S-620 horizontal producer in early 2015. Injection well 3S-613 was drilled in Q2 of 2016 to test the ability to provide injection support to 3S-620. Results from the analyses of core from Moraine #1 and reservoir performance from 3S-620 and 3S-613 wells will guide future plans for the Moraine.

Well 1H-Ugnu-401 was drilled in 1998 to test the Ugnu sands and has been intermittently produced. The well was on production through most of 2014 at rates up to 120 BOPD until it was shut-in due to problems with the Electrical Submersible Pump. CPAI is evaluating returning the well to production with an upgraded pump to determine if higher production rates can be sustained.

Combined, the Kuparuk field and the four satellite fields within the KRU had over 1000 active producer and injector wells in 2015. The average daily oil production for the unit during this time was approximately 104,606 BOPD, compared to 110,224 BOPD in 2014. The average gas production rate was 255 million standard cubic feet per day (MMSCFD), up from 221 MMSCFD in 2014. The average daily water production rate was 552,666 barrels per day. The cumulative volume of oil produced from the KRU as of May 31, 2015, was 2.63 billion barrels.

Proposed 2016 Activities

CPAI plans to drill 21 CTD sidetrack and eight rotary wells in the KPA during 2016. The CTD program began in 2004 and accounts for approximately 15 percent of the field's current daily oil production. Evaluation of further wells will continue and two workovers will be performed in the West Sak PA during the 2016 period.

As mentioned above, in 2014 CPAI stopped importing NGLs from PBU for use in the KRU and began importing fuel gas from PBU to maximize use of the remaining KRU formation gas. Because PBU gas contains hydrogen sulfide it would cause corrosion issues in KRU wells and facilities and therefore can only be used as fuel gas. Use of KRU's indigenous NGLs for Miscible Water Alternating Gas (MWAG) in the KPA and VRWAG in the West Sak PA started

in January 2015. MWAG will be first used at those drill sites with the least mature well patterns while the remaining drill sites will convert to injecting a lean gas chase in the form of Immiscible Water Alternating Gas (IWAG). The purpose of this lean gas injection is to recover NGLs left behind by the original MWAG process and to provide benefit in lifting the oil to the surface within the well bore.

Additionally, facilities and infrastructure will continue to be maintained through repair or replacement of pipelines, turbines, and process control safety systems to target an estimated 25 years of additional production from the KPA and KRU satellite fields.

In a letter dated January 14, 2016 Commissioner of the Department of Natural Resources Mark Myers requested information concerning marketing of unit production and facility access and sharing be addressed in the POD. CPAI responded that as unit Operator, CPAI is not involved in marketing of hydrocarbons from the KRU. All unit production is combined and shipped through the TAPS system and each KRU owner markets its own share of hydrocarbons. Heavy and viscous oil resources are currently under development and are addressed in the POD in the West Sak and Northeast West Sak Participating Areas. The KRU currently imports fuel gas from the Prudhoe Bay Unit and there are no gas sales from the KRU.

The KRU owners have entered into various facility and infrastructure sharing agreements, including but not limited to, processing production from the Oooguruk Unit (OU) and KRU satellite fields and sharing. Equipment and services of various types are shared with third parties who agree to the Kuparuk River Unit Infrastructure Ad Hoc Use Agreement, commonly known as the Ballot 260 Agreement.

POD Evaluation Criteria

The Division must consider the criteria in 11 AAC 83.303(a) and (b) when evaluating a POD for approval. 11 AAC 83.303(c)(3). The Division will approve a POD upon a finding that it is necessary or advisable to protect the public interest and that it will (1) promote conservation of all natural resources, including all or part of an oil or gas pool, field, or like area; (2) promote the prevention of economic and physical waste; and (3) provide for the protection of all parties of interest including the state. 11 AAC 83.303(a). In evaluating conservation, prevention of waste, and the parties' interest, the Division will consider (1) the environmental costs and benefits of unitized exploration or development; (2) the geological and engineering characteristics of the potential hydrocarbon accumulation or reservoir proposed for unitization; (3) prior exploration activities in the proposed unit area; (4) the applicant's plans for exploration or development of the unit area; (5) the economic costs and benefits to the state; and (6) any other relevant factors, including measures to mitigate impacts identified above, the commissioner determines necessary or advisable to protect the public interest. 11 AAC 83.303(b).

Findings and Decision

In approving earlier KRU PODs, the Division considered 11 AAC 83.303 and found the KRU PODs promoted conservation of natural resources, promoted prevention of waste, and protected the parties' interests. The Division incorporates those findings by reference.

The 2016 KRU POD will continue to maximize oil production through continued development activities such as; coiled tube drilling programs, research, and well, facilities, and pipeline

maintenance. The Division has considered the 11 AAC 83.303(b) factors and (a) criteria, and the degree to which the additional development impacts its analysis from previous POD approvals. Planned work in the 2016 KRU POD will benefit the state through reservoir management and continued oil production from the KRU.

Considering the Division's earlier POD approvals and analysis of the 11 AAC 83.303(b) factors for the additional development work proposed, the Division finds that the 2015 KRU POD protects the public interest, promotes conservation, prevents waste, and protects the parties' interests.

Based on its findings, the Division approves the 2016 KRU POD for the period August 1, 2016 through July 31, 2017. Pursuant to Article 5.1.1(2) of the KRU agreement, the 2017 updates to the KRU POD are due to the Division on or before July 1, 2017.

Appeal

An eligible person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of "issuance" of this decision, as defined in 11 AAC 02.040(c) and (d), and may be mailed or delivered to Andy Mack, Commissioner, Department of Natural Resources, 550 W. 7th Avenue, Suite 1400, Anchorage, Alaska 99501; faxed to 1-907-269-8918; or sent by electronic mail to dnr.appeals@alaska.gov. This decision takes effect immediately. An eligible person must first appeal this decision in accordance with 11 AAC 02 before appealing this decision to Superior Court. A copy of 11 AAC 02 may be obtained from any regional information office of the Department of Natural Resources.

If you have any questions regarding this decision, contact Kevin Pike with the Division at 907-269-8451 or by email at Kevin.pike@alaska.gov.

Sincerely,



Corri A. Feige
Director

cc: DOL