

CONSERVATION ORDER 341F

Docket Number: CO-15-009

Prudhoe Bay Field

Prudhoe Bay Unit

Prudhoe Bay Oil Pool

North Slope Borough, Alaska

1. July 17, 2015 BPXA's request for amendment of Pool Rule 9 and modification of AIO 3A and AIO 4F (appendix held confidential in secure storage)
2. July 20, 2015 Notice of hearing, affidavit of publication, email distribution, mailings
3. July 23, 2015 Revised notice of hearing, affidavit of publication, email distribution, mailings
4. August 19, 2015 CPAI's comments
5. August 25, 2015 BPXA's comments (appendix held confidential in secure storage)
6. August 27, 2015 Transcript (parts held confidential in secure storage), sign-in sheet, public testimony, presentations (parts held confidential in secure storage)
7. September 3, 2015 CPAI's supplemental submission
8. September 4, 2015 Email: supplemental information on CO2 disposal
9. September 8, 2015 BPXA's post hearing submission (appendix held confidential in secure storage)
10. November 2, 2015 Request for AA for waiver of monthly reporting of daily production allocation data (CO 341F.001)
11. May 24, 2016 Request for AA for pressure survey and gas oil contact monitoring requirements (CO 341F.002)
12. December 8, 2016 Request for AA for waiver of neutron logging requirement for coil sidetrack well (CO 341F.003 Denied)
13. December 14, 2016 BPXA's request for AA for waiver of neutron log requirement coil sidetrack well PBU 07-15B (CO 341F.004)
14. January 17, 2017 Request for reconsideration of CO 341F.003 (attachment held confidential in secure storage)
15. December 14, 2016 BPXA's request for AA for waiver of neutron log requirement coil sidetrack well PBU 07-29E (CO 341F.005)
16. December 16, 2016 BPXA's request for AA for waiver of neutron log requirement coil sidetrack well PBU G-27B (CO 341F.006)
17. August 28, 2017 BPXA's request for AA to amend Rules 6, 7, 8 and 13.

STATE OF ALASKA
ALASKA OIL AND GAS CONSERVATION COMMISSION
333 West 7th Avenue
Anchorage Alaska 99501

Re: THE APPLICATION OF BP Exploration) Docket Number: CO-15-009
(Alaska) Inc. for amendment of Prudhoe Oil Pool) Conservation Order No. 341F
Rule 9.)
) Prudhoe Bay Field
) Prudhoe Bay Unit
) Prudhoe Bay Oil Pool
) North Slope Borough, Alaska
)
) October 15, 2015

IT APPEARING THAT:

1. By application received July 17, 2015, BP Exploration (Alaska) Inc. (BPXA) on behalf of itself and ExxonMobil Alaska Production Inc. (ExxonMobil) as working interest owners (WIOs) in the Prudhoe Bay Unit requested that Conservation Order (CO) 341E be amended to increase the allowable gas offtake limit in Rule 9 from an annual average of 2.7 billion standard cubic feet per day (BSCFPD) to 4.1 BSCFPD.
2. Pursuant to 20 AAC 25.540, the Alaska Oil and Gas Conservation Commission (AOGCC) scheduled a public hearing for August 27, 2015. On July 20, 2015, the AOGCC published notice of that hearing on the State of Alaska's Online Public Notice website and on the AOGCC's website, electronically transmitted the notice to all persons on the AOGCC's email distribution list, and mailed printed copies of the Notice of Public Hearing to all persons on the AOGCC's mailing distribution list. On July 21, 2015, the notice was published in the ALASKA DISPATCH NEWS.
3. On July 23, 2015, the AOGCC published notice of that the location of the hearing had changed on the State of Alaska's Online Public Notice website and on the AOGCC's website, electronically transmitted the notice to all persons on the AOGCC's email distribution list, and mailed printed copies of the Notice of Public Hearing to all persons on the AOGCC's mailing distribution list. On July 24, 2015, the notice was published in the ALASKA DISPATCH NEWS.
4. By letter received August 19, 2015, ConocoPhillips Alaska, Inc. (CPAI) on behalf of itself and Chevron U.S.A. Inc. (Chevron) as PBU WIOs supported BPXA's request to increase the allowable gas offtake limit, but requested the limit to be set at 3.6 BSCFPD.
5. On August 25, 2015, the AOGCC received pre-filed testimony from BPXA.
6. On August 27, 2015, the AOGCC received a letter from ExxonMobil supporting BPXA's application
7. The hearing commenced at 9:00 AM on August 27, 2015, in the Alaska State Legislature Building, Legislative Information Office located at 716 West 4th Avenue, Anchorage, Alaska.

8. Testimony was received from representatives of BPXA, CPAI, and a Mr. Tom Lakosh, a private citizen.
9. The record was held open until September 8, 2015, to allow the presenter to respond to requests made during the hearing.
10. The AOGCC received written comments from Mr. Lakosh on August 27, 2015, the requested additional information from CPAI on September 3, 2015, and the requested additional information from BPXA on September 8, 2015.

FINDINGS:

1. Operator and Owners: BPXA is the operator of the leases in the portion of the PBU covered by the Affected Area of this order. BPXA, ExxonMobil, CPAI, and Chevron are the WIOs, and the State of Alaska, Department of Natural Resources (DNR) is the landowner of the Affected Area, which is located within the North Slope Borough, along Alaska's northern coastline.
2. Affected Area: The Affected Area is defined in CO 341E and remains unchanged for this amended order.
3. BPXA Request: BPXA and ExxonMobil request that the allowable gas offtake from the Prudhoe Oil Pool be increased from annual average of 2.7 BSFPD to 4.1 BSCFPD to provide the opportunity to sell gas to the Alaska LNG Project (AK LNG), which is currently being planned, beginning in or about 2025. According to the request, the anticipated sales volume from the Prudhoe Oil Pool to the AK LNG project is 2.7 BSCFPD, and estimated fuel usage for the PBU along with continued small local sales amounts to approximately 0.6 BSCFPD, for a total anticipated annual average daily offtake rate of 3.3 BSCFPD. BPXA believes the requested annual average 4.1 BSCFPD offtake allowable would enable the Prudhoe Oil Pool to provide the full 3.5 BSCFPD planned capacity for the AK LNG project, should other anticipated gas sources for the AK LNG project not come to fruition, as well as meet fuel-gas needs for the PBU and continue the small volume sales from PBU that are currently taking place.
4. CPAI Request: CPAI and Chevron request that the allowable gas offtake from the Prudhoe Oil Pool be increased, but only to an annual average of 3.6 BSCFPD. The basis for this request is CPAI's disagreement with BPXA'S assumption that the Prudhoe Oil Pool must provide the full 3.5 BSCFPD capacity of the AK LNG project for an indefinite period of time. CPAI and Chevron contend this assumption is unrealistic because an annual average limit of 3.6 BSCFPD will provide the ability to meet the full 3.5 BSCFPD capacity of the AK LNG project for several months in the event of an extended period of disruption to the other sources of gas feeding the AK LNG project. CPAI also requests that CO 341E be amended to allow for future modifications of the allowable gas offtake limit to be achieved administratively.
5. Alternative Development Plans Considered: During the hearing, confidential information and testimony were presented in which the WIO's discussed reservoir simulation model construction, showed simulation results for BPXA's proposal along with several other development options—including alternative offtake rates and AK LNG project start dates, and presented sensitivity analyses for different aspects of the simulation model. The

simulation results show that ultimate recovery from the Prudhoe Oil Pool could only be maximized with major gas sales as there are significantly more barrels of oil equivalent (BOE) of reserves in the form of gas within the pool than there are in the liquids that remain within the pool. The simulation results also indicate that ultimate recovery is relatively insensitive to size and timing of gas sales and to the various sensitivity cases that were also analyzed. The only sensitivity case that may have a significant impact on ultimate recovery is the size of the Prudhoe Oil Pool being significantly different than expected, which is unlikely given the amount of well, seismic, and reservoir data available for the pool.

6. Reservoir Development and Management: The Prudhoe Oil Pool will continue to be developed with the goal of maximizing liquids recovery until major gas sales in support of the AK LNG project begin (currently envisioned to commence in or about 2025). Once major gas sales begin, production from the field would continue, but the volume of gas available for reinjection for enhanced oil recovery purposes will be reduced by the amount sold to the AK LNG project. However, an effluent stream from the AK LNG gas treatment plant (GTP) that is nearly pure carbon dioxide will be available for injection. Eventually, the production wells within the Prudhoe Oil Pool will not be able to provide enough gas to meet the AK LNG project sales requirement. At that time, the WIO's anticipate existing gas cap injection wells will begin to be converted from injectors to producers in order to meet sales requirements.

CONCLUSIONS:

1. Selling gas from the Prudhoe Oil Pool is necessary to maximize ultimate recovery from the reservoir. The ultimate recovery achievable under major gas sales is relatively insensitive to differences in the specifics of the sale.
2. An annual average gas offtake rate of 3.6 BSCFPD provides adequate capacity to meet the anticipated gas sales requirements for the AK LNG project. This determination is made without prejudice to future reconsideration should circumstances change. Monitoring of development operations within the Prudhoe Oil Pool prior to commencement of major gas sales is vital to ensure that liquids recovery is maximized.
3. CO₂ within the AK LNG GTP effluent stream may prove to be a very valuable resource for enhanced recovery projects on the North Slope.