

OOOGURUK UNIT

APPROVAL OF THE THIRD EXPANSION OF THE UNIT AREA

Findings and Decision of the Director
of the Division of Oil and Gas,
Under Delegation of Authority
from the Commissioner of the State of Alaska
Department of Natural Resources

MAY 8, 2014

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I. INTRODUCTION AND DECISION SUMMARY

The State of Alaska (State), Department of Natural Resources (DNR), Division of Oil and Gas (Division), approved the formation of the Oooguruk Unit (OU) effective June 11, 2003. On March 7, 2007, the Division approved the First Expansion of the OU. On August 31, 2011, the Division approved the Second Expansion of the OU retroactively effective to April 30, 2011. The current OU covers approximately 51,907 acres comprised of 22 state oil and gas leases. Pioneer Natural Resources, Alaska Inc. (Pioneer) is the designated OU operator.

On February 7, 2014, the Division received an application (Application) from Pioneer to expand the OU to include three additional leases acquired by Pioneer in 2012 that are located within the existing OU boundary. The proposed expansion would add an additional 156.25 acres to the OU. Pioneer submitted confidential and public portions of the Application that meet the requirements for a complete application under 11 AAC 83.306. The public comment period closed on March 17, 2014 and the Division received no comments.

Under 11 AAC 83.356(a), “A unit must encompass the minimum area required to include all or part of one or more oil or gas reservoirs, or all or part of one or more potential hydrocarbon accumulations.” The confidential geological, geophysical, and engineering data demonstrate that the area proposed for unit expansion includes all or part of an oil reservoir.

The Division finds that the expansion of the OU promotes conservation of all natural resources, promotes the prevention of economic and physical waste, and provides for the protection of all parties of interest, including the State. AS 38.05.180(p); 11 AAC 83.303. I approve the Application under the terms and conditions of Section V. The effective date of the OU Third Expansion is May 8, 2014.

II. APPLICATION

Pioneer submitted the Application on February 7, 2014, and simultaneously paid the \$500.00 unit application filing fee, in accordance with 11 AAC 83.306 and 11 AAC 05.010(a)(10)(D), respectively. The Application includes: Exhibit A, legally describing the proposed expanded unit area, its leases, and ownership interests and Exhibit B, a map of the proposed expanded unit. The Application referenced confidential data filed with the Division from previous OU expansions. The Division deemed the Application complete on February 10, 2014.

The Division published a public notice in the *Anchorage Daily News* and in the *Arctic Sounder* on February 13, 2014, under 11 AAC 83.311. Copies of the Application and the public notice were provided to interested parties. The Division provided public notice to the Alaska Department of Environmental Conservation, the DNR Office of Habitat,

Management and Permitting, the North Slope Borough, the City of Barrow, the City of Nuiqsut, the Kuukpik Corporation, the Arctic Slope Regional Corporation, the Nuiqsut Postmaster, and the radio station KBRW in Barrow. The notice was also published on the State of Alaska Public Notice website and the Division's website. The public notices invited interested parties and members of the public to submit comments by March 17, 2014. The Division received no comments regarding the Application.

III. LEASE BACKGROUND

Pioneer proposed expanding the unit to add three leases: ADLs 392157, 392158, and 392113.

ADLs 392157 and 392158 were issued effective January 1, 2013 on form number DOG 201112 (REV 09/12) with a primary term of ten years and a royalty rate of 16.66667 percent, expiring on December 31, 2022.

ADL 392113 was issued effective December 1, 2012 on form number DOG 201112 (REV 09/12) with a primary term of ten years and a royalty rate of 16.66667 percent, expiring on November 30, 2022.

Pioneer holds 100 percent of the working interest in the three leases.

IV. DISCUSSION OF DECISION CRITERIA

The DNR Commissioner (Commissioner) reviews applications related to units under 11 AAC 83.303--11 AAC 83.395. By memorandum dated September 30, 1999, the Commissioner approved a revision of Department Order 003 and delegated this authority to the Division Director. The Division's review of the Application is based on the criteria set out in 11 AAC 83.303 (a) and (b). A discussion of the subsection (b) criteria, as they apply to the Application, is set out directly below, followed by a discussion of the subsection (a) criteria.

A. Decision Criteria considered under 11 AAC 83.303(b)

1. Environmental Costs and Benefits

The proposed expansion area lies within the Colville River delta in the southern portion of the existing OU. This area is habitat for various mammals, waterfowl, and fish. Area residents may use this area for subsistence hunting and fishing. Oil and gas activity in the proposed unit area may affect some wildlife habitat and some subsistence activity. DNR develops lease stipulations through the lease sale process to mitigate the potential environmental impacts from oil and gas activity. Alaska statutes require DNR to give public notice and issue a written finding before disposal of the State's oil and gas resources. AS 38.05.035(e); AS 38.05.945; 11 AAC 82.415. In the written best interest

finding, the Commissioner may impose additional conditions or limitations beyond those imposed by law. AS 38.05.035(e).

Approval of the OU expansion has no direct environmental impact. This decision is an administrative action and does not authorize any on-the-ground activity. The unit expansion does not entail any environmental costs in addition to those that may occur when permits to conduct lease-by-lease exploration or development are issued. The unit operator must obtain approval of a Plan of Operations from the State and permits from various agencies on state leases before drilling a well or wells or initiating development activities to produce reservoirs within the unit area. 11 AAC 83.346. Potential effects on the environment are analyzed when permits to conduct exploration or development in the unit area are reviewed. DNR considers environmental issues during the lease sale process, and the unit Plan of Operations approval process.

2. Geologic and Engineering Characteristics

Introduction and Summary

The proposed expansion area overlies a geologic area reviewed by the Division in the approval of the second OU expansion in 2011.

At that time, Pioneer applied to expand the OU to the south and southwest based primarily on the prospectivity of the Torok formation, with additional upside potential within the Kuparuk C and Nuiqsut reservoir sandstones. Current OU production is from the Kuparuk, Nuiqsut, and Torok participating areas (PAs), which lie entirely within the existing OU boundary. Pioneer previously provided sufficient geological, geophysical, and engineering data to justify the unit expansion to the south, but not to the southwest.

Jurassic Nuiqsut Sandstone

The OU and the proposed expansion area contain one of the three oil-bearing intervals within the Jurassic Kingak Formation. From oldest to youngest these reservoir intervals are the Nechelik, Nuiqsut, and Alpine sandstones. These three sandstones were deposited on a broad, very low gradient marine shelf on a south-facing passive margin. Sedimentation on the shelf was relatively muddy due to limited accommodation space and relatively low rates of sediment input. In the proposed expansion area, the Nuiqsut sandstone is preserved. The cleanest and best sands form at the top of the overall coarsening upward sequence, where not truncated by the Lower Cretaceous Unconformity (LCU).

Several older exploration wells in the Colville Delta area, on the western side of the current OU, tested oil in the Nuiqsut sandstone: 1) the Texaco Colville Delta 1 well produced at a rate of 1075 barrels of oil per day (BOPD) of 25 degree API oil; 2) the Texaco Colville Delta 2 well produced at a rate of 409 BOPD with the measured oil gravity varying from 24 – 40 degree API; 3) the Texaco Colville Delta 3 well produced

at a rate of 2170 BOPD of 27.7 degree API oil; and 4) the ARCO Kalubik 1 well produced at a rate of 410 BOPD of 21 degree API gravity oil.

The Nuiqsut sandstone in the Amerada Hess Colville Delta 25-1 well located just north of the proposed expansion acreage and just west of the current OU rate averaged 104 BOPD after fracture stimulation. The Nuiqsut interval is approximately 150' thick in the Till 1 well to the west of the proposed expansion area, but was not tested.

Reservoir Characteristics of the Nuiqsut Sandstone

Reservoir and fluid properties for the Oooguruk Nuiqsut Reservoir in the OU have been determined through the analysis of exploration well test data, conventional and sidewall core data, and well log data. Within the OU, the Oooguruk Nuiqsut reservoir consists of very fine- to fine-grained, quartz rich sandstone with up to 15 percent siderite and glauconite. Reservoir porosity ranges from 10 to 20 percent and averages about 15 percent. Permeability ranges from 0.1 to 50 millidarcies (md) and averages approximately 15 md. Estimated water saturation varies with facies and permeability and generally ranges between 40 and 60 percent for typical reservoir quality sandstone.

Kuparuk C Sandstone

The Kuparuk C sandstone is deposited on top of the eroded irregular topography created by the LCU and represents the first sediments sourced from local structural highs. Kuparuk C sandstone is absent by erosion or non-deposition on paleo-topographic highs. The most productive C sandstone areas tend to be associated with thicker sand intervals deposited in down-thrown fault blocks and paleo-topographic depressions. The Kuparuk C sandstone, is below seismic resolution (generally less than 40 feet thick) so its areal extent is difficult to predict. Seismic amplitudes may indicate the presence of the Kuparuk C interval, if thick enough, but not the lithology which can be sandstone, siderite cemented sandstone, or sideritized mudstone. Examples of Kuparuk C sandstone quality in the area include the Amerada Hess Colville Delta 25-1 well which encountered approximately 21 feet of oil-bearing Kuparuk C sandstone, with the upper two-thirds appearing siderite cemented on the density log. The Palm 1 and the Placer 1 and 2 wells to the south of the Proposed Expansion Area all exhibit an amplitude anomaly in the Kuparuk interval. Palm 1 and Placer 1 contain Kuparuk C sandstone, but the Placer 2 well does not contain any sandstone in the Kuparuk interval.

Reservoir Characteristics of the Kuparuk C Sandstone

Within the existing OU the Kuparuk C interval ranges from 0' to about 55' in thickness. Along with mudstone and siltstone, it consists of very fine- to coarse-grained, fining upward sandstone that contains 5 percent to 25 percent glauconite; 10 percent to 35 percent siderite cement; and up to 50 percent clay matrix. Kuparuk C porosity ranges from 13 percent to 32 percent, and averages approximately 17 percent. Permeability ranges from 0.5 md to 500 md and averages approximately 50 md to 100 md. Average water saturation is about 30 percent. Based on oil samples taken in the Kuukpik No.3

and Kalubik No.1 exploration wells, oil gravity in the Kuparuk ranges from 23 to 26 degree API gravity.

Torok Formation

The Torok formation is a time transgressive unit of Albian to Cenomanian age and forms a complex series of interbedded sandstone, siltstone, and mudstone deposits that record a complex interaction of deposition, sedimentation, subsidence, sea-level changes, and erosion along shelf edge margins during the middle Cretaceous. The resultant sedimentary deposits record depositional patterns of progradation, regression, and aggradation. The entire Torok interval is generally around 250 feet thick in the OU area. The most prospective Torok reservoirs were deposited in a lower slope-to-basin floor environment as toe of slope and basin floor fan sandstone deposits. Some composite sand packages greater than 35 to 40 feet can be recognized and mapped with 3D seismic. Because the Torok reservoir consists of very finely interbedded sandstones, siltstones, and mudstones, it is difficult to correlate individual beds, but far easier to define and correlate the entire interval. In the proposed expansion area, the western closure of the Torok reservoirs is interpreted to be stratigraphic thinning and onlap onto the shelf edge margins along the slope and toe of slope.

The basis for defining the outline of the potential Torok accumulation is the -5150 feet subsea Lowest Known Oil (LKO) contour established from the Colville Delta 3 well. The Sinclair Colville well, that lies approximately 1 mile to the SE of the proposed expansion, encountered a zone of significant Torok reservoir interval. The Alaska Oil and Gas Conservation Commission defined the Oooguruk-Torok Oil Pool (Torok Pool) boundary in Conservation Order No. 645 (CO 645), May 26, 2011. The Torok Pool extends south from the existing unit into the proposed expansion area.

Reservoir Characteristics of the Torok Formation

The Torok interval in the OU and proposed expansion area ranges from 200 to 250 feet thick and varies from fine sand to coarse silt. The lithology consists of quartz (20 percent to 50 percent); feldspar (15 percent to 25 percent); and clay (5 percent to 40 percent); and contains metamorphic rock fragments and minor amounts of carbonate. Sand net-to-gross is typically 45 percent to 50 percent. Porosity ranges from 12 percent to 26 percent, averaging 19 percent. Permeability ranges from 0.1 to 100 md and averages 4 md. Water saturation estimates for the reservoir sandstones range from 40 percent to 55 percent, with an average of about 50 percent.

Conclusion

Pioneer previously submitted confidential geological, geophysical, and engineering data to justify the expansion of the Oooguruk Unit to include the three leases located within the existing OU boundary.

3. Plan of Exploration and Development

Exploration and development within the proposed expansion area will be conducted under a plan of development (POD) approved under 11 AAC 83.343. Pioneer is currently conducting activities in the OU under the 7th POD, which expires on August 30, 2014. Pioneer's proposed 8th POD for the OU is due to the Division on June 1, 2014.

4. The Economic Costs and Benefits to the State and Other Relevant Factors

The assessment and development of hydrocarbons on state lands will create jobs and in-state economic activity benefiting the State and its residents. These economic benefits result from unitized development conducted under the OU Agreement that provides for development of all the unitized leases as a single lease, rather than development conducted on a lease by lease basis. Unitized development maximizes oil and gas recovery, promotes conservation, prevents waste, and protects all of the parties of interest.

B. Decision Criteria Considered Under 11 AAC 83.303(a)

1. Promote the Conservation of All Natural Resources

The unitization of oil and gas reservoirs and the expansion of unit areas to develop hydrocarbon-bearing reservoirs are well-accepted means of hydrocarbon conservation. Expansion of an existing unit, with development occurring under the terms of a unit agreement and approved POD, promotes efficient evaluation and development of the State's resources, and minimizes impacts to the area's cultural, biological, and environmental resources.

2. The Prevention of Economic and Physical Waste

Unitization prevents economic and physical waste by eliminating redundant expenditures for a given level of production, and by avoiding loss of ultimate recovery with the adoption of a unified reservoir management plan. Reducing costs and environmental impacts through unitized operations will expedite development of any reserves and will promote greater ultimate recovery of any oil and gas from the unit area. This will increase and extend the State's income stream from production taxes and royalties.

3. The Protection of All Parties of Interest, Including the State

The people of Alaska have an interest in the development of the State's oil and gas resources to maximize the economic and physical recovery of the resources. AS 38.05.180(a). Approval of the proposed expansion area under future annually approved PODs will provide for continued review and approval of Pioneer's plans to develop the OU in a manner which will maximize economic and physical recovery. Combining interests and operating under the terms of the OU Agreement and OU Operating

Agreement assures each individual Working Interest Owner (WIO) an equitable allocation of costs and revenues commensurate with the resources of its leases.

The OU expansion protects the economic interests of the WIOs and the royalty owner. The expansion promotes the State's economic interests because hydrocarbon recovery will be maximized and additional production-based revenue will be derived from the increased production. Diligent exploration and development under a single approved unit plan promotes the State's interest. Operating under the OU Agreement provides for accurate reporting and record keeping, DNR approval of plans of exploration and development and operating procedures, royalty settlement, in-kind taking, and emergency storage of oil and gas, all of which will further the State's interest.

V. FINDINGS AND DECISION

A. The Conservation of All Natural Resources

1. Expansion of the OU will provide for exploration and development of the proposed expansion area under the OU Agreement and will maximize the efficient recovery of oil and gas and minimize the adverse impacts on the surface and other resources, including hydrocarbons, gravel, sand, water, wetlands, and valuable habitat.
2. The unitized development and operation of the leases in this proposed expanded unit will reduce the amount of land, and fish and wildlife habitat, which would otherwise be disrupted by individual lease development. This reduction in environmental impacts and preservation of subsistence access is in the public interest.
3. There is potential for environmental impacts associated with reservoir development. All unit development must proceed according to an approved plan of development. Additionally, before undertaking any specific operations, the unit operator must submit a unit plan of operations to the Division and other appropriate state and local agencies for review and approval. The lessees may not commence any drilling or development operations until all agencies have granted the required permits. DNR may condition its approval of a unit plan of operations and other permits on performance of mitigation measures in addition to those in the modified leases and the Agreement, if necessary or appropriate. Compliance with mitigation measures will minimize, reduce, or completely avoid adverse environmental impacts.

B. The Prevention of Economic and Physical Waste

1. Unitization of the proposed expansion area will prevent economic and physical waste by eliminating redundant expenditures for a given level of production, and by avoiding loss of ultimate recovery with the adoption of a unified reservoir management plan. Reducing costs and environmental impacts through unitized operations will expedite development of the existing reserves and will promote greater ultimate recovery of any oil and gas from the unit area. This will increase and extend the State's income stream from production taxes and royalties.

C. The Protection of All Parties in Interest, Including the State

1. Approval of the proposed expansion area protects all parties in interest including the people of Alaska who have an interest in the development of the State's oil and gas resources to maximize the economic and physical recovery of the resources. AS 38.05.180(a).
2. Pioneer holds sufficient interest in the unit area to give reasonably effective control of operations.
3. Approval of the proposed expansion area meets the requirements of 11 AAC 83.303.
4. The Division complied with the public notice requirements of 11 AAC 83.311.
5. The unit expansion will not diminish access to public and navigable waters beyond those limitations (if any) imposed by law or already contained in the oil and gas leases covered by this Agreement.

For the reasons discussed in this Findings and Decision, I hereby approve the expansion subject to the conditions set out in this decision, effective May 8, 2014.

A 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 Joe Balash, 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@dnr.state.ak.us. 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.



W. C. Barron,
Director
Division of Oil and Gas

4/8/14
Date

VI. ATTACHMENTS

- 1) Exhibit A, Proposed Expanded Oooguruk Unit Tracts/leases
- 2) Exhibit B, Map of the Proposed Expanded Oooguruk Unit Boundary

ATTACHMENT 1

Exhibit A, Proposed Expanded Oooguruk Unit Tracts/leases

Exhibit A
Attached to and made a part of that certain Oooguruk Unit Agreement

16	State of AK ADL 355039	Pioneer Natural Resources Alaska, Inc.	70.00000%	8 1/83	<u>T13N, R7E, UMIAT MERIDIAN</u>	5,645.24	12.5%*	30% NPS	Total 5.0767380% See Details Below
		Eni Petroleum US LLC	30.00000%						
	Segment 1 UPPER INTERVAL	Upper Interval (i.e. the interval from the surface down to the stratigraphic equivalent of 8,373' (Driller's total depth +100') which is equivalent to 8,402' (Wireline Logger's total depth + 100') below the Kelly Bushing as shown on the Dual Laterolog Run #3 log dated April 5, 1992, in the ARCO-Kalubik #1 well located in Sec. 11, T.13 N., R. 7 E., U.M. known in the DNR computer records as "Segment 1" of the Lease.)							
	Segment A LOWER INTERVAL	Pioneer Natural Resources Alaska, Inc. Eni Petroleum US LLC	83.120967% 16.879033%						Total 2.250542% See Details Below
		Lower Interval (i.e. the interval below the stratigraphic equivalent of 8,373' (Driller's total depth +100') which is equivalent to 8,402' (Wireline Logger's total depth + 100') below the Kelly Bushing as shown on the Dual Laterolog Run #3 log dated April 5, 1992, in the ARCO-Kalubik #1 well located in Sec. 11, T.13 N., R. 7 E., U.M. known in the DNR computer records as "Segment A" of the Lease.)							
17	State of AK ADL 389959	Pioneer Natural Resources Alaska, Inc.	70.00000%	9 1/02	<u>T14N, R7E, UMIAT MERIDIAN</u>	2,560.00	16.66667%*		4.25000% See details below
		Eni Petroleum US LLC	30.00000%						
18	State of AK ADL 389960	Pioneer Natural Resources Alaska, Inc.	70.00000%	9 1/02	<u>T14N, R7E, UMIAT MERIDIAN</u>	2,523.00	16.66667%		4.25000% See details below
		Eni Petroleum US LLC	30.00000%						

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19	State of AK ADL 379301	Pioneer Natural Resources Alaska, Inc. Eni Petroleum US LLC	70.00000% 30.00000%	9/1/02	<u>T14N, R7E, UMIAT MERIDIAN</u> Sec 19: Protracted, All Sec 28: Protracted, All Sec 29: Protracted, All Sec 30: Protracted, All	2,517.00	16.66667%	4.25000% See details below
20	State of AK ADL 390505	Pioneer Natural Resources Alaska, Inc.	100.00000%	5/1/04	<u>T12N, R7E, TRACT B, UMIAT MERIDIAN</u> Sec 5: Section 5: Unsurveyed, All, including the beds of all meanderable waterbodies, excluding U.S. Survey 4316, 4326 and 9124 Sec 8: Section 8: Unsurveyed, All, including the beds of all meanderable waterbodies, excluding U.S. Survey 9124 Special Survey: U.S. Survey 4316, U.S. Survey 9124, those portions of Lots 2 thru 4 located in sections 5 and 8	1,230.15	16.66667%	0.99999% See details below
21	State of AK ADL 390434	Pioneer Natural Resources Alaska, Inc.	100.00000%	5/1/04	<u>T12N, R7E, UMIAT MERIDIAN</u> Sec 3: Unsurveyed, All, including the bed of the Colville River and excluding U.S. Survey 9124, Lot 1 Sec 4: Unsurveyed, All, including the bed of the Colville River and excluding U.S. Surveys 4326 and 9124, Lots 1 and 2 Sec 9: Unsurveyed, All, including the bed of the Colville River Sec 10: Unsurveyed, All, including the beds of the Colville River all meanderable waterbodies Special Surveys: U.S. Survey 9124, Lots 1 and 2 located in Sections 3 and 4	2,556.40	16.66667%	0.99999% See details below
22	State of AK ADL 390697	Pioneer Natural Resources Alaska, Inc.	100.00000%	7/1/05	<u>T12N, R7E, UMIAT MERIDIAN</u> Sec 15: Unsurveyed, All, including the beds of all meanderable waterbodies Sec 16: Unsurveyed, All, including the beds of all meanderable waterbodies Sec 21: Unsurveyed, All, including the beds of all meanderable waterbodies Sec 22: Unsurveyed, All	2,560.00	16.66667%	0.99999% See details below

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23	State of AK ADL 390506	Pioneer Natural Resources Alaska, Inc.	100.00000%	5/1/04	<u>T12N, R7E, UMIAT MERIDIAN</u>	1,280.00	16.66667%	Sec 17: Unsurveyed, All, including the beds of all meanderable waterbodies Sec 20: Unsurveyed, All, including the beds of all meanderable waterbodies	2.62377% See details below
25	State of AK ADL 391908	Pioneer Natural Resources Alaska, Inc.	100.00000%	5/1/01	<u>T12N, R7E, UMIAT MERIDIAN</u>	1,157.00	16.66667%	Sec 6: Unsurveyed, All, including the beds of all meanderable waterbodies Sec 7: Unsurveyed, All, including the beds of all meanderable waterbodies, excluding U.S. Survey 9124 Special Survey: U.S. Survey 9124 that portion of Lot 4 located within Section 7	0.99999% See details below
26	State of AK ADL 391909	Pioneer Natural Resources Alaska, Inc.	100.00000%	5/1/04	<u>T12N, R7E, UMIAT MERIDIAN</u>	1,168.00	16.66667%	Sec 18: Unsurveyed, All, including the beds of all meanderable waterbodies, excluding U.S. Survey 9124 Sec 19: Unsurveyed, All, including the beds of all meanderable waterbodies Special Survey: U.S. Survey 9124 that portion of Lot 4 located within Section 18	2.62377% See details below
27	State of AK ADL 392113	Pioneer Natural Resources Alaska, Inc.	100.00000%	12/1/12	<u>T12N, R7E, TRACT B, UMIAT MERIDIAN</u>	49.85	16.66667%	Sec 5: Surveyed, Fractional, those portions of Lots 1-3 of U.S. Survey 4326	None
28	State of AK ADL 392157	Pioneer Natural Resources Alaska, Inc.	100.00000%	1/1/13	<u>T12N, R7E, TRACT B, UMIAT MERIDIAN</u>	3.60	16.66667%	Sec 4: Surveyed, Fractional, Portion of Lot 3 U.S. Survey 4326	None
29	State of AK ADL 392158	Pioneer Natural Resources Alaska, Inc.	100.00000%	1/1/13	<u>T13N, R7E, TRACT B, UMIAT MERIDIAN</u>	102.80	16.66667%	Sec 31: Surveyed, Fractional, Portion of Lots 1, U.S. Survey 4326 Sec 32: Surveyed, Fractional, those portions of Lots 1, 2, 3 and 4, U.S. Survey 4326	None

Working Interest Owners
Pioneer Natural Resources Alaska, Inc.
700 G St., Suite 600
Anchorage, AK 99501

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Exhibit A
Attached to and made a part of that certain Oooguruk Unit Agreement

Eni Petroleum US LLC
1201 Louisiana St., Suite 3500
Houston, TX 77002-5609

Tracts 4-12 are burdened by Overriding Royalty Interests ("ORRI") held by the following parties in the stated percentages Before Payout ("BPO")

William D. Armstrong 1421 Blake Street Denver, CO 80202	1.556800%
Jesse V. Sommer 4531 West Geddes Avenue Littleton, CO 80128	0.046330%
Edgar Kerr 6750 Lemon Gulch Dr. Castle Rock, CO 80108	0.046330%
Jeffery A. Lyslo 91 Buckthorn Drive Littleton, CO 80127	0.046330%
Reed LIGC, LLC P.O. Box 411 Franktown, CO 80116	0.046330%
Matthew X. Furin 2001 South Madison Denver, CO 80210	0.046330%
Richard C. Geesaman 820 Pine Street, Gold Hill Boulder, CO 80302	0.013350%
Stuart W. Gustafson P.O. Box 1466 La Conner, WA 98257	0.023170%
Maeco Family Trust P.O. Box 5 Edmonds, WA 98020	0.023170%
GMT North Slope Royalty Exploration Company LLC 1560 Broadway, Suite 800 Denver, CO 80202	0.080000%
Chester E. Paris 1208 Mesa Court Golden, CO 80403	0.005200%

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The ORRI noted above affecting Tracts 4-12 are set forth in and subject to that certain Development Agreement dated effective November 1, 2002 between Armstrong Resources, LLC and Pioneer Natural Resources Alaska, Inc.

Exhibit A
Attached to and made a part of that certain Oooguruk Unit Agreement

Tracts 4-12 are burdened by Overriding Royalty Interests ("ORRI") held by the following parties in the stated percentages

After Payout ("APO")	William D. Armstrong 1421 Blake Street Denver, CO 80202	2.800000%
	Jesse V. Sommer 4531 West Geddes Avenue Littleton, CO 80128	0.083330%
	Edgar Kerr 6750 Lemon Gulch Dr. Castle Rock, CO 80108	0.083330%
	Jeffery A. Lyslo 91 Buckthorn Drive Littleton, CO 80127	0.083330%
	Reed LIGC, LLC P.O. Box 411 Franktown, CO 80116	0.083330%
	Matthew X. Furin 2001 South Madison Denver, CO 80210	0.083330%
	Richard C. Geesaman 820 Pine Street, Gold Hill Boulder, CO 80302	0.083330%
	Stuart W. Gustafson P.O. Box 1466 La Conner, WA 98257	0.041670%
	Maeco Family Trust P.O. Box 5 Edmonds, WA 98020	0.041670%

The ORRI noted above affecting Tracts 4-12 are set forth in and subject to that certain Development Agreement dated effective November 1, 2002 between Armstrong Resources, LLC and Pioneer Natural Resources Alaska, Inc.

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Attached to and made a part of that certain Ooguruk Unit Agreement

Tract 13 is burdened by Overriding Royalty Interests ("ORRI") held by the following parties in the stated percentages:

Tract 13	XH, LLC	0.252100%
Segment 1 - Upper Interval	1601 Elm Street, Suite 4700 Dallas, TX 75201	
	Eni Petroleum US LLC 1201 Louisiana, Suite 3500 Houston, TX 77002	0.514290%
	Pioneer Natural Resources Alaska, Inc. 700 G Street, Suite 600 Anchorage, AK 00501	1.200000%
	ConocoPhillips Alaska, Inc. 700 G Street Anchorage, AK 99501	2.500000%
	William D. Armstrong 1421 Blake Street Denver, CO 80202	0.404000%
	GMT North Slope Royalty Exploration Company LLC 1560 Broadway, Suite 800 Denver, CO 80202	0.074000%
	Jesse V. Sommer 4531 West Geddes Avenue Littleton, CO 80128	0.012000%
	Edgar Kerr 6750 Lemon Gulch Dr. Castle Rock, CO 80108	0.012000%
	Jeffery A. Lyslo 91 Buckthorn Drive Littleton, CO 80127	0.012000%
	Reed LIGC, LLC P.O. Box 411 Franktown, CO 80116	0.012000%
	Matthew X. Furin 2001 South Madison Denver, CO 80210	0.012000%
	Stuart W. Gustafson P.O. Box 1466 La Conner, WA 98257	0.006000%
	Macco Family Trust P.O. Box 5 Edmonds, WA 98020	0.006000%

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Tract 13 Segment A - Lower Interval	ConocoPhillips Alaska, Inc. 700 G Street Anchorage, AK 99501	1.680670%
	OXY USA Inc. Attn: Land Manger 9600 Ming Ave., Suite 300 Bakersfield, CA 93311	1.714290%
	XH, LLC 1601 Elm Street, Suite 4700 Dallas, TX 75201	0.252100%
	William D. Armstrong 1421 Blake Street Denver, CO 80202	0.734118%
	GMT North Slope Royalty Exploration Company LLC 1560 Broadway, Suite 800 Denver, CO 80202	0.134454%
	Jesse V. Sommer 4531 West Geddes Avenue Littleton, CO 80128	0.021848%
	Edgar Kerr 6750 Lemon Gulch Dr. Castle Rock, CO 80108	0.021848%
	Jeffery A. Lyslo 91 Buckthorn Drive Littleton, CO 80127	0.021848%
	Reed LIGC, LLC P.O. Box 411 Franktown, CO 80116	0.021848%
	Matthew X. Furin 2001 South Madison Denver, CO 80210	0.021848%
	Stuart W. Gustafson P.O. Box 1466 La Conner, WA 98257	0.010924%
	Maeco Family Trust P.O. Box 5 Edmonds, WA 98020	0.010924%
	Chester E. Paris 1208 Mesa Court Golden, CO 80403	0.008744%

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Tracts 14, 15 & 16 are burdened by Overriding Royalties ("ORRI") held by the following parties in the stated percentages:

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Tracts 14, 15 & 16 Segment 1 - Upper Interval	Anadarko Petroleum Corporation P.O. Box 1330 Houston, TX 77251-1330	0.093548%
	David L. Herbaly as Trustee of the David L. Herbaly Revocable Trust dated May 24, 2004 1420 W Canal Ct Ste 150 Littleton, CO 80120	1.350000%
	XH, LLC 1601 Elm Street, Suite 4700 Dallas, TX 75201	0.126050%
	George Alan Joyce, Jr. 3528 Eisenhower Lane Plano, TX 75023	0.150000%
	Eni Petroleum US LLC 1201 Louisiana, Suite 3500 Houston, TX 77002	0.257140%
	Pioneer Natural Resources Alaska, Inc. 700 G Street, Suite 600 Anchorage, AK 00501	0.600000%
	ConocoPhillips Alaska, Inc. 700 G Street Anchorage, AK 99501	2.500000%
Tracts 14, 15 & 16 Segment A - Lower Interval	ConocoPhillips Alaska, Inc. 700 G Street Anchorage, AK 99501	1.406590%
	David L. Herbaly as Trustee of the David L. Herbaly Revocable Trust dated May 24, 2004 1420 W Canal Ct Ste 150 Littleton, CO 80120	1.350000%
	George Alan Joyce, Jr. 3528 Eisenhower Lane Plano, TX 75023	0.150000%

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OXY USA Inc. Attn: Land Manger 9600 Ming Ave., Suite 300 Bakersfield, CA 93311	0.857140%
XH, LLC 1601 Elm Street, Suite 4700 Dallas, TX 75201	0.126050%
Anadarko Petroleum Corporation P.O. Box 1330 Houston, TX 77251-1330	0.141000%
William D. Armstrong 1421 Blake Street Denver, CO 80202	0.614397%
GMT North Slope Royalty Exploration Company LLC 1560 Broadway, Suite 800 Denver, CO 80202	0.112527%
Jesse V. Sommer 4531 West Geddes Avenue Littleton, CO 80128	0.018285%
Edgar Kerr 6750 Lemon Gulch Dr. Castle Rock, CO 80108	0.018285%
Jeffery A. Lyslo 91 Buckthorn Drive Littleton, CO 80127	0.018285%
Reed LIGC, LLC P.O. Box 411 Franktown, CO 80116	0.018285%
Matthew X. Furin 2001 South Madison Denver, CO 80210	0.018285%
Stuart W. Gustafson P.O. Box 1466 La Conner, WA 98257	0.009143%

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Maeco Family Trust P.O. Box 5 Edmonds, WA 98020	0.009143%
Chester E. Paris 1208 Mesa Court Golden, CO 80403	0.731800%

Tracts 17, 18 & 19 are burdened by Overriding Royalties ("ORRI") held by the following parties in the stated percentages:

Tracts 17, 18 & 19 Anadarko Petroleum Corporation P.O. Box 1330 Houston, TX 77251-1330	4.250000%
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Tracts 20, 21, 22 & 25 are burdened by Overriding Royalties ("ORRI") held by the following parties in the stated percentages:

Tracts 20, 21, 22 & 25 William D. Armstrong 1421 Blake Street Denver, CO 80202	0.727970%
Jesse V. Sommer 4531 West Geddes Avenue Littleton, CO 80128	0.021670%
Edgar Kerr 6750 Lemon Gulch Dr. Castle Rock, CO 80108	0.021670%
Jeffery A. Lyslo 91 Buckthorn Drive Littleton, CO 80127	0.021670%
Reed LIGC, LLC P.O. Box 411 Franktown, CO 80116	0.021670%
Matthew X. Furin 2001 South Madison Denver, CO 80210	0.021670%
Richard C. Geesaman 820 Pine Street, Gold Hill Boulder, CO 80302	0.021670%
Stuart W. Gustafson P.O. Box 1466 La Conner, WA 98257	0.010835%
Maeco Family Trust P.O. Box 5 Edmonds, WA 98020	0.010835%
Chester E. Paris 1208 Mesa Court Golden, CO 80403	0.008670%



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GMT North Slope Royalty Exploration Company LLC 1560 Broadway, Suite 800 Denver, CO 80202	0.133330%
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Tracts 23 & 26 are burdened by Overriding Royalties ("ORRI") held by the following parties in the stated percentages:

Tracts 23 & 26	ConocoPhillips Alaska, Inc. 700 G Street Anchorage, AK 00501	2.500000%
	Chevron U.S.A. Inc. Attn: NOJV Group 1029 West 3rd Ave., Suite 150 Anchorage, AK 99501	0.123770%

*The state's royalty interest in ADL 355036, ADL 355037, ADL 355038, ADL 355039, ADL 389950, ADL 389952, ADL 389954, ADL 389958 and ADL 389959 is subject to that certain Final Findings and Determination of the Commissioner of DNR dated February 1, 2006 (modifying lease royalty in response to the Oooguruk Development Royalty Modification Application filed on May 20, 2005).

**ORRI are borne exclusively by Eni Petroleum US LLC, considered Other Burdens as defined in Article 4.4 Oooguruk Unit Operating Agreement; not borne by Pioneer Natural Resources Alaska, Inc.

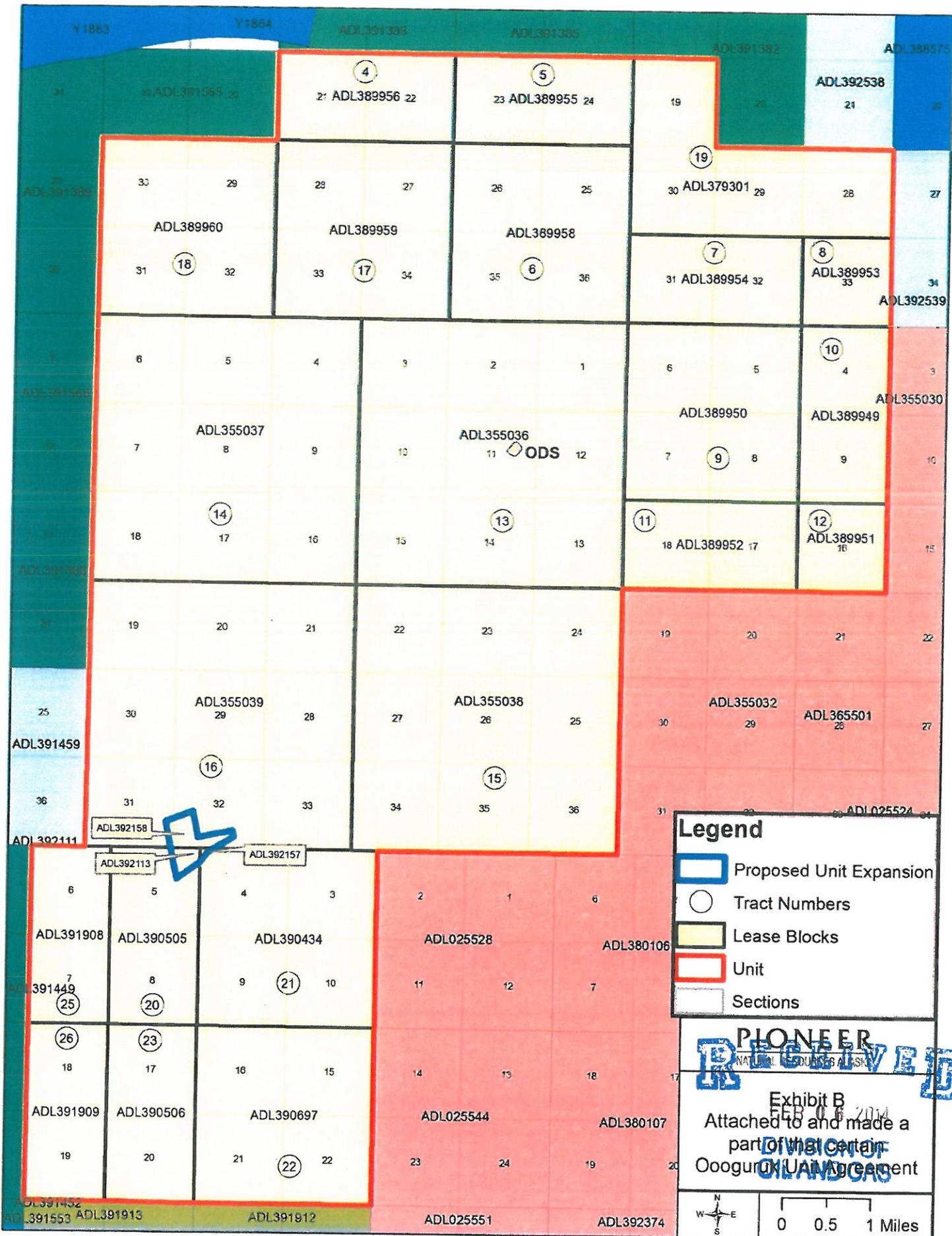
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ATTACHMENT 2

Exhibit B, Map of the Proposed Expanded Oooguruk Unit Boundary



Legend

-  Proposed Unit Expansion
-  Tract Numbers
-  Lease Blocks
-  Unit
-  Sections

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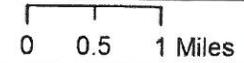
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