

APPROVAL OF THE APPLICATION TO FORM THE PIKKA UNIT

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

June 18, 2015

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I. INTRODUCTION AND DECISION SUMMARY

The State of Alaska, Department of Natural Resources, Division of Oil and Gas (Division) received the initial Application for the formation of the Pikka Unit (PKU) (Application), on February 5, 2014 from the proposed PKU Operator, Repsol E&P USA Inc. (Repsol). The proposed PKU covers approximately 63,304 acres. Attachments 1 and 2 set out the acreage proposed for unitization in Exhibits A and B.

The proposed PKU is made of State of Alaska Oil and Gas Leases (State Leases) as well as State of Alaska and Arctic Slope Regional Corporation (ASRC) Oil and Gas Leases (Joint Leases). ASRC and the Division each hold executive rights with respect to interests in oil, gas, and associated substances within these Joint Leases pursuant to the 1991 Settlement Agreement Between Arctic Slope Regional Corporation and the State of Alaska. This decision only affects the interests held by the State of Alaska.

“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.” 11 AAC 83.356(a). Repsol has submitted confidential geological, geophysical, and engineering data which demonstrate that the area approved for unitization includes all or part of an oil and gas reservoir and one or more potential hydrocarbon accumulations.

The Division finds that the approval of the PKU 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. The retroactive effective date of the PKU formation is June 1, 2015.

II. APPLICATION AND LEASE SUMMARY

Repsol submitted the Application on February 5, 2014, and simultaneously paid the \$5,000.00 unit application filing fee, in accordance with 11 AAC 83.306 and 11 AAC 05.010(a)(10)(D), respectively. The Application included: the unit operating agreement, a multiple royalty ownership unit agreement form that included Arctic Slope Regional Corporation (ASRC) and the State as royalty owners but did not address joint lands, Exhibit A (Attachment 1), legally describing the proposed unit area, its leases, and ownership interests; Exhibit B (Attachment 2), a map of the proposed unit; and Exhibit G, Plan of Exploration, for the PKU. Repsol also submitted evidence of notice to proper parties. The Application also included confidential economic and technical data.

The Division notified Repsol by letter dated March 10, 2014 that the Application was incomplete. The initial Application did not include a joint lands unit agreement executed by the proper parties, as required under 11 AAC 83.306. From February 11, 2015 to March 3, 2015, DNR, Repsol, and ASRC conducted a series of meetings to develop an acceptable joint lands unit agreement and the Division deemed the Application complete on March 23, 2015. Further review by DNR and ASRC resulted in the approved joint lands unit agreement included as Attachment 5.

The Division published a public notice in the “*Alaska Dispatch News*” and in the “*Arctic Sounder*” on March 26, 2015, under 11 AAC 83.311. Copies of the Application and the public notice were provided to interested parties. DNR provided public notice to the North Slope Borough, the City of Barrow, the City of Nuiqsut, the Kuukpik Corporation, the Arctic Slope Regional Corporation (ASRC), the Nuiqsut Postmaster, the Barrow Postmaster, the radio station KBRW in Barrow, as well as the Alaska Department of Environmental Conservation, the Alaska Department of Fish and Game, the Alaska Oil and Gas Conservation Commissioners, and the ADF&G Division of Habitat. The public notices invited interested parties and members of the public to submit comments by April 27, 2015. No comments were received.

Leases within the proposed unit are described in Attachments 1 and 2. When a lease is partially committed to a unit agreement, that commitment constitutes a severance of the lease as to the unitized and nonunitized portions of the lease under 11 AAC 83.373. Attachments 3 and 4 describe the new and segregated leases. ADL 392995 was created from ADL 391303 and is outside the PKA boundary. ADL 392995 would normally expire July 31, 2015 but will be extended two years to July 31, 2017 as allowed under 11 AAC 83.373(b). The other leases created under 11 AAC 83.373, ADL 392994, ADL 392997, ADL 392993 and ADL 392996 will retain the parent lease terms and expire August 31, 2018.

Joint Leases composed of three or four sections of land were included in the application. In twelve of these leases each section within the Joint Lease has a unique division of ownership between the State of Alaska and ASRC. In accordance with the terms of the 1991 Settlement Agreement Between Arctic Slope Regional Corporation and the State of Alaska, these Joint Leases will be segregated into separate leases with the same terms and conditions as the original lease. All Joint Land acreage proposed for unitization will be included in the PKA. Attachments 3 and 4 describe the new and segregated leases.

III. DISCUSSION OF DECISION CRITERIA

A unit may be formed to conserve the natural resources of all or a part of an oil or gas pool, field, or like area when determined and certified to be necessary or advisable in the public interest (AS 38.05.180(p)). Conservation of the natural resources of all or part of an oil or gas pool, field, or like area means “maximizing the efficient recovery of oil and gas and minimizing the adverse impacts on the surface and other resources.” 11 AAC 83.395(1).

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 Commissioner will approve a proposed unit upon a finding 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 these three criteria, the Commissioner 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).

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 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.

DNR also considers environmental issues during the lease sale process and the unit plan of operations approval process. 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 formation of the PKU has no direct environmental impact. This decision is an administrative action and does not authorize any on-the-ground activity. The unit formation does not entail any environmental costs in addition to those that may occur when plans of operations 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. Repsol is operating under an approved plan of operations and plan of exploration

2. Prior Exploration Activities in the Pikka Unit Area

The proposed PKU encompasses approximately 63,304 acres of State Leases and Joint Leases in the central North Slope area in the vicinity of the Colville River delta. The proposed unit lies partially adjacent to the Colville River Unit (CRU) to the west and the Oooguruk and Placer Units to the east.

The PKU area has been part of numerous exploration efforts since the 1960s, but remained lightly explored until the 1990s due to sub-economic well results and remoteness from existing pipelines and other infrastructure. Prior to 2012 only five exploration wells had been drilled within the proposed PKU Unit: Colville Delta State 1 (1970), Colville Delta 25 1 (1986), Kuukpik 3, Till 1, and Colville River 1 (the latter three in 1993). Since 2012 Repsol has drilled six wells, two pilot holes, and two sidetracks in the proposed unit area. Of these wells only the Qugruk 2 well information is currently public; the Qugruk 1, 1PH, 3, 3A, 5, 5A, 6, and 7 information is still confidential as per 20 AAC 25.537(d). Repsol permitted three wells planned for the 2015 drilling season: Qugruk 301 (anticipated Total Depth [TD] of 4,146' Measured Depth [MD]); Qugruk 8 (anticipated TD 5,100' MD); and Qugruk 9 (projected TD 7,300' MD). Repsol has integrated all surrounding well data and their recently drilled Qugruk wells with 3-D seismic to identify multiple potential development and exploration targets and has provided sufficient data and analyses over the area from multiple stratigraphic intervals to justify the configuration and size of the proposed PKU.

Seismic coverage in the proposed PKU area consists of both 2-D and 3-D surveys. Proprietary 3-D seismic datasets cover a large portion of the proposed unit. The primary 3-D seismic surveys licensed and interpreted by Repsol in the proposed unit area are the Fiord 3-D (2000), North Tabasco 3-D (2012), and Big Island 3-D (2008). Repsol used these seismic surveys to map depth structure, fault patterns, truncation edges, and amplitude anomalies associated with potential reservoir sandstones.

Nearby units contain multiple Participating Areas (PAs), consistent with the likelihood that multiple reservoirs can be developed in the proposed PKU. Created in 1998, the CRU is anchored by the Alpine PA formed in 2000 and encompasses five satellite PAs: the Fiord-Kuparuk and Fiord-Nechelik PAs created in 2006, the Nanuq-Kuparuk and Nanuq-Nanuq PAs formed in 2006, and the Qannik PA formed in 2008. The Oooguruk Unit, created in 2003, includes the Nuiqsut and Kuparuk PAs formed in 2008 and the Torok PA created in 2010, and the operator sanctioned an expanded Torok development project (Nuna) in 2015. The Kuparuk River Unit (KRU), created in 1982, includes the major producing Kuparuk PA formed in 1982 plus four satellite PAs: the West Sak PA formed in 1997, the Tabasco and Tarn PAs issued in 1998, and the Meltwater PA created in 2001. In 2012 Repsol formed the Qugruk Unit, located west of the proposed PKU and north of CRU, primarily to develop potential reservoirs in the Nanushuk Formation Brookian topset play. One unit well has been drilled (Qugruk 4), but no production has been achieved. Three other units were formed nearby in 2011 – Placer, Southern Miluveach (SMU), and Tofkat – primarily targeting oil production from the Kuparuk C sandstone. Neither the Placer Unit nor Tofkat has seen additional drilling, but development drilling in the Kuparuk Mustang reservoir at SMU began in 2015 with the goal of first production in 2016.

Exploration in and near the PKU area began with a focus on large structures with Ellesmerian sequence targets in the late 1960s to the mid-1970s. There was a shift toward exploring combination structural/stratigraphic prospects in the Beaufortian sequence in the mid-1970s through the mid-1990s. From the mid-1990s to the present, there has been increased emphasis on drilling stratigraphic and combination traps with multiple reservoir targets in the Beaufortian

and Brookian sequences. Beyond the information presented in this decision, details of many individual well summaries, cores, and test results are described in previous unit decisions in the vicinity surrounding the PKU, including the CRU, Qugruk, Oooguruk, SMU, Tofkat, and Placer unit decisions and the Tabasco, Tarn, Meltwater, Qannik, Fiord Kuparuk, Fiord Nechelik, Nanuq Kuparuk, and Nanuq Nanuq PA decisions.

Exploration for Ellesmerian structural traps

The first exploration prospects drilled in the area were based on identifying large structural features on 2-D seismic. Prior to the Prudhoe Bay discovery at **Prudhoe Bay State 1** in December 1967, two dry holes had been drilled on the Colville High, a very large structural high on the Barrow Arch west of Prudhoe Bay, near the PKU area. At the time, the Colville High was considered a more promising trap exploration play than the Prudhoe Bay structure and the Lisburne Group carbonates were considered the most prospective candidate as a reservoir unit. The Sinclair **Colville 1** and Unocal **Kookpuk 1** wells were drilled in successive years (1965 and 1966) during this era with disappointing results. Both wells were drilled beyond the northwest truncation of the Kuparuk Formation and were unproductive in the targeted deeper sediments (Ivishak Formation and Lisburne Group). Both wells were plugged and abandoned as dry holes. The Sinclair Colville 1 well, completed in early 1966 bottomed in basement at a TD of 9,930' MD. Eleven cores were taken in the well: one from probable Ugnu sands within the permafrost; one in the Torok Formation; one from siltstone just below the Lower Cretaceous Unconformity (LCU); one in the Shublik Formation; and one from the Echooka Formation. Three cores were cut in the Lisburne and Endicott Groups and two were obtained in the basement. Three drill stem tests (DSTs) were taken in the Lisburne, the Echooka, and the Shublik. None of the tests flowed oil to the surface, but the Shublik test recovered some mud-cut oil and the Echooka test some gas-cut mud; the Lisburne test recovered some gas-cut salt water.

The Unocal Kookpuk 1 well, completed in 1967 (TD 10,193' MD) bottomed in Pre-Mississippian argillite basement after drilling the complete Ellesmerian stratigraphic section. Two conventional cores were recovered. Core one recovered two feet of siltstone from the top of the Shublik Formation. Core two recovered 16 feet of argillite from the basement complex. Occasional trace oil shows were present in the Torok Formation between approximately 4,750' and 5,500' MD. Cuttings samples from this interval were described as predominantly inter-bedded siltstone and shale with very rare occurrences of very fine-grained sandstone. The well logs were consistent with the dominantly fine grained cuttings, with gamma ray response in the range from 90-105 API units and the deep resistivity curve consistently around 4-5 ohm-meters. No flow tests were attempted.

The 1967-1968 discovery of North America's largest oil field at Prudhoe Bay came as a surprise in that the primary objective in the Lisburne Group carbonates paled in comparison to the spectacular reservoir quality discovered in the Ivishak Formation. Exploration strategy shifted immediately to drilling more Ivishak targets in structural traps, with secondary deeper Ellesmerian objectives.

Gulf Oil Corporation drilled the **Colville Delta State 1** well (TD 9,299' MD) in 1970 in the northern part of the proposed PKU as an Ellesmerian structural play. The well reached total

depth in the Mississippian Endicott Group. Mudlog oil shows were noted in the Tuluva Formation, the Nanushuk Formation, the Sag River Sandstone, the Ivishak Formation, and the Lisburne Group. An Ivishak flow test recovered 114 barrels per day of muddy formation water with a trace of oil. The test in a silty sandstone interval near the top of the Nanushuk Group did not flow oil to the surface. Water and less than one barrel of 20.8° API gravity oil were recovered by reverse circulation. None of the untested show intervals appear productive based on wireline logs. In the Kingak Formation, the Nuiqsut sandstone was not present due to erosion by the LCU, and the older Nechelek interval appeared to be non-reservoir shale. Wireline logs through the deeper portions of the Kingak Formation are consistent with non-reservoir siltstone deposited in a distal basin setting.

Exploration for Beaufortian structural/stratigraphic traps

The Kuparuk River field, the second largest field in North America, was discovered in 1969 while drilling to a deeper Ivishak/Lisburne structural objective on the Colville High. After drilling additional Kuparuk delineation wells, geologists developed the understanding that the field is trapped by a combination of structural and stratigraphic components, including anticlinal plunge on the Barrow Arch, sandstone depositional limits, and truncation of Lower Kuparuk Formation sandstones at the LCU. Even after the discovery of the Kuparuk River field, the second phase of exploration drilling still focused primarily on deeper structural closures but also had secondary shallower objectives in combination structural/stratigraphic traps in the Kuparuk Formation.

As more wells were drilled in the area, geologists recognized that the Kuparuk C sandstone unevenly distributed in the subsurface, preserved above the LCU in two types of settings: 1) in depositional lows and 2) in down-thrown fault blocks. As a result, exploration prospects from the mid-1970s through the mid-1980s in the PKU area were generally based on testing a structural high or horst block for an Ivishak Formation target in conjunction with a well trajectory that would drill through the projected Kuparuk Formation in a depositional low or down-thrown fault block. As more exploration wells were drilled, the primary exploration objectives changed from structural Ellesmerian plays to Kuparuk structural/stratigraphic plays. Until the mid-1980s the presence of potential Upper Jurassic reservoir sandstones within the Kingak Formation was not known even though earlier wells drilled through Jurassic sandstone packages en route to deeper Ellesmerian objectives. Jurassic sandstones penetrated in early wells that encountered were commonly interpreted as Kuparuk sandstones. For example, the **Nechelik 1** well, drilled west of the proposed PKU by Sohio in 1982, encountered potential reservoir quality sandstones in the Jurassic Nuiqsut sandstone that were originally misidentified as Cretaceous-age Kuparuk. Sohio did cut cores in the Torok Formation, Kuparuk Formation, Eileen interval, Ivishak Formation, Kavik Formation, Echooka Formation, and Lisburne Group, but carried out no drill stem tests.

In 1985 Texaco drilled the **Colville Delta 1** well (1-½ mile east of the northern portion of the proposed PKU) to a depth of 9,457' MD to evaluate Ellesmerian sequence targets in the Endicott Group, Lisburne Group, and Ivishak Formation, as well as the Beaufortian sequence Kuparuk Formation. Through apparent serendipity, Texaco encountered oil-bearing Jurassic sandstone in the Kingak Formation later identified as the Nuiqsut interval. Three zones were tested in the

Nuiqsut. The lower interval tested at an unstimulated rate of 31 Barrels of Oil Per Day (BOPD) of 22.7° API gravity oil; after acid stimulation and on nitrogen lift, it produced at a calculated rate of 25-100 BOPD. The middle zone produced at a calculated rate of 30 BOPD of 17.7° API gravity oil on nitrogen lift. The upper Nuiqsut had the best sand development, testing at rates of 373 to 1075 BOPD of 25° API gravity oil with a Gas-to-Oil Ratio (GOR) of 400-500 Standard Cubic Feet per Stock Tank Barrel (SCF/STB) after fracture treatment. As a result of this discovery and encouraging well results Texaco drilled the **Colville Delta 1A** sidetrack to core and further evaluate the Nuiqsut sandstone. Core porosities ranged 8-17% with an average of 11.3%; permeability varied greatly, ranging from less than 0.1 to 122 Millidarcies (mD), with an average of approximately 1.5 mD.

Texaco followed up the Nuiqsut discovery by drilling two delineation wells in 1986: the **Colville Delta 2** and **Colville Delta 3** wells. In the Colville Delta 2 well, the Nuiqsut interval (6,235-6,411' MD) was perforated over its entire thickness and after two fracture treatments flowed 24-40° API gravity oil at rates between 200 and 800 BOPD. A Torok turbidite sandstone (referred to informally as either the Moraine or Nuna interval) was also tested and flowed 44 barrels of water with a trace of oil. The Colville Delta 3 was drilled to the base of the Nuiqsut interval for a total depth of 6,800' MD. The Nuiqsut sandstone (at the top of the interval from 6,330-6,464' MD) was tested and produced 27.7° API gravity oil at a calculated rate of 290 BOPD after fracture treatment. The Moraine Torok sandstone was also tested in Colville Delta 3, initially recovering a mixture of diesel and 16-20° API gravity oil after being perforated with diesel, later producing 234 barrels per day of 24.6-29.2° API gravity oil/diesel mixture after diesel-based gel fracture stimulation.

Early in 1986, at the same time that Texaco was delineating their Nuiqsut discovery with subsequent Colville Delta wells, Amerada Hess drilled the **Colville Delta 25 1** well (near the eastern boundary within the northern part of the proposed PKU and approximately three miles southwest of the Texaco Colville Delta wells) to a total depth of 6,871' MD, about 100 feet below the base of the Nuiqsut interval. Seven cores were taken in the well: two in the Miluvealch Formation (all shale with no oil shows); one in the Kingak Shale (mudstone, siltstone, and sandstone with oil shows); and four in the Nuiqsut interval (sandstone, siltstone, and shale with oil shows). The well tested oil from two zones in the Nuiqsut sandstone (6,328-6,402' MD and 6,436-6,480' MD) that flowed at an average rate of 159 barrels of 25° API gravity oil with a GOR of 200 to 835 SCF/STB after fracture stimulation. The well also encountered 21 feet of true vertical thickness of hydrocarbon-bearing Kuparuk C sandstone (6,111-6,134' MD), but the zone was not tested. The upper 15 feet of the interval appears from density log data to contain abundant pore-occluding siderite cement.

The Colville Delta wells described above were drilled as vertical or moderately deviated wellbores before horizontal drilling and sophisticated hydraulic fracturing stimulation techniques became commonplace. The drilling muds used most likely damaged the formations and inhibited the productivity of the reservoir tests. Texaco's major challenge at the time was how to avoid damaging the reservoirs with drilling fluids to allow production of the relatively low API gravity oil. Thus, despite the encouraging drilling results in the Nuiqsut sandstones, given the viscosity of the oil, the challenges of developing an oil field in the Colville Delta, and the limits on drilling technology and completion techniques at the time, Texaco considered the project uneconomic

and did not pursue further delineation and development. The resource identified in the Colville Delta 1, 1A, and 2 wells remained undeveloped without further exploration drilling until 2003, when Pioneer and Armstrong drilled three exploration wells to the northeast of the proposed PKU in what later became the Oooguruk Unit. The primary target for the three Oooguruk exploration wells was the Kuparuk C sandstone. Turbidite sandstones of the Torok and Seabee Formations and the Nuiqsut/Nechelik sandstones of the Kingak Formation were secondary exploration objectives. Currently, three reservoirs are under development and production within the Oooguruk Unit: the Nuiqsut sandstone of the Kingak Formation; the Kuparuk C sandstone, and the Moraine/Nuna sandstone in the Torok Formation (first encountered and tested by Texaco in the Colville Delta wells).

Encouraged by the discovery of hydrocarbons in the Nuiqsut sandstone in the Colville Delta area, ARCO Alaska drilled several wells in the proposed PKU area during the early 1990s. ARCO drilled the **Till 1**, **Colville River 1**, and **Kuukpik 3** wells within the boundary of the proposed PKU and the **Fiord 1** and **Fiord 2** wells to the west. The primary objectives of these wells were the Kuparuk C and Nuiqsut sandstones. ARCO's geologic understanding of the area as stated in their permit to drill applications was that the Nuiqsut lay directly underneath the Kuparuk.

ARCO completed the Fiord 1 well in April 1992 (10,250' TD), which bottomed in the Lisburne Group to evaluate Ellesmerian sequence structural targets as well as younger stratigraphic prospects. Potential reservoirs in the Lisburne Group and Ivishak Formation were determined to be wet. ARCO cored and tested the Nechelik sandstone. Based on a four hour test, a 37 foot interval of Nechelik produced at a rate of 180 BOPD of 28° API gravity oil. A 29 foot interval of Kuparuk was tested for 41.3 hours with an average oil rate of 1065 BOPD of 33° API gravity oil with a GOR of 500 SCF/STB. The Fiord 1 well is the discovery well for Nechelik and Kuparuk production in the Fiord pool, the basis of the Fiord Nechelik and Fiord Kuparuk participating areas at CRU.

In 1993 ARCO drilled three wells and a sidetrack within the proposed PKU: Till 1, Colville River 1 and 1PB1, and Kuukpik 3. ARCO drilled the Till 1 well in early 1993 through the base of the Nuiqsut interval (TD 6,975' MD) approximately one and three quarter miles east-northeast of the location of the **Qugruk 7** well later drilled by Repsol in 2014. The Nanushuk/Torok interval appears predominantly silty from well logs. Six sidewall cores were taken in the Torok (5,658-5,732' MD). This interval consists of interbedded sandstone, siltstone, and mudstones with the gamma ray response varying between 55-85 API units and the deep resistivity log varying from 3.8-5 ohm-meters. A thin 12 foot thick Kuparuk C sandstone is present from 6,303-6,315' MD. Two sidewall cores from this interval measured 10% and 11% porosity and 0.25-0.31 mD permeability. The Nuiqsut interval was encountered from 6,592-6,830' MD. The Nuiqsut interval in this well is fairly well developed, consisting of inter-bedded siltstone, very fine-grained sandstone, and claystone based on mudlog descriptions. Good hydrocarbon shows were reported in the mudlogs, but porosity and permeability is estimated to be poor. Five sidewall cores were taken in the Nuiqsut interval (6,605 – 6,823' MD); three of those were in the upper sandstone (6,600 – 6,687' MD), where gamma ray readings in the 55-90 API range suggest decreased matrix content. The deep resistivity log in this upper sandstone is fairly consistent between around 4-5.5 ohm-meters. The porosity measurement for all three sidewall

cores was 11% and the permeability ranged from 2.56-76.8 mD. The two sidewall cores taken in the lower Nuiqsut interval measured 8% porosity and two permeability measurements of 1.36 mD and 1.96 mD. No tests were attempted in the well.

The Colville River 1 and 1PB1 holes were drilled by ARCO in 1993, reaching 7,303' MD below the base of the Nuiqsut interval in the original hole (1PB1) before plugging back and sidetracking to a TD of 6,700' MD in the Miluveach Formation. Located approximately one and three quarter miles east of the **Qugruk 8** drill site in the southeastern part of the proposed PKU, the original objective for the well was the Kuparuk Formation, which proved unsuccessful, present as only a thin five foot interval. Weak oil shows were present in thinly interbedded and mostly cemented very fine- to fine-grained sandstone, siltstone, and shale in the basal portion of the Torok Formation (5,700' and 6,050' MD). A few sidewall cores taken in this Torok interval measured porosity of 9-18% and permeability ranging 1-7 mD. No production tests were attempted. The Alpine C interval is silty and log data indicate poor reservoir quality in the Nuiqsut interval; both represent distal basin deposition at this location. No cores or production tests were attempted in this portion of the well.

The Kuukpik 3 well was drilled in 1993 by ARCO to a TD of 6,880' MD, fully penetrating the Nuiqsut interval before bottoming in distal Nechelik siltstone. It is located in the northern part of the proposed PKU and one mile northeast of Repsol's confidential Qugruk 1 and 1A wells drilled in 2013. Conventional cores were acquired in the Kuparuk C interval (6,239-6,255' MD) and Nuiqsut sandstone (6,310-6,370' MD). Core porosity in the Kuparuk C sandstone averaged 17% and permeability averaged 7.5 mD and 6.0 mD (horizontal and vertical permeability, respectively). The gamma ray log varied from 65-75 API units. Core porosity in the Nuiqsut interval averaged 12% and permeability averaged 0.6 mD.

DSTs were attempted over four prospective intervals, the Nuiqsut sandstone, the Kuparuk C sandstone, the lower Torok Formation, and the Tuluvak Formation. All four tests were produced with nitrogen lift. DST 1 flow tested the Nuiqsut interval (6,340-6,405' MD) at a rate of 24 BOPD after fracture treatment. DST 2 tested the Kuparuk C sandstone (6,234-6,249' MD) at a calculated flow rate of 20 BOPD of 23° API gravity oil. DST 3 tested a 55' interval of the lower Torok Formation (5,663-5,718' MD), flowing 90 barrels of water per day (BWPD). DST 4 tested a 26' thick sandstone in the Tuluvak Formation (2,682-2,710' MD); it flowed intermittently and produced an unspecified volume of 21°API oil, water, and mud mixture.

ARCO drilled the Fiord 2 and **Bergschrund 1** wells in 1994. Well history files indicate dual objectives for both, targeting Torok turbidites as well as and Kuparuk C sandstones., Drilled before Bergschrund 1, Fiord 2 had strong mudlog shows in the Tuluvak Formation at 2,900' MD, but the well's more important result came from the top of the Kingak Formation, where Union Texas Petroleum, a working interest owner in both wells, recognized potential in a thin 10 foot sandstone at the top of the Kingak Formation. They hypothesized that it could thicken to the west in the Bergschrund 1 area. Indeed, the Bergschrund 1 discovered an oil charged Jurassic sandstone reservoir younger than the Nuiqsut that had not been previously recognized in the area, soon thereafter named the Alpine sandstone. The Alpine tested light oil (39° API gravity) at a rate of 2,380 BOPD. The thin correlative sandstone in the Fiord 2 well was, in fact, the edge of a large, prolific reservoir. Further drilling in the area around the Bergschrund well confirmed the

presence and excellent reservoir quality of the Alpine C sandstone now encompassed by the CRU Alpine PA.

ARCO drilled the **Fiord 3** (TD 7,030' MD) and **Fiord 3A** (TD 9,147' MD) wells in 1995 as Alpine and Nuiqsut delineation wells. Both wells reached a total depth in the upper part of the Nuiqsut sandstone. The Alpine sandstone was present but not tested in both wells; based on log calculations, the Fiord 3 well had 20 feet and the Fiord 3A well 51 feet of net pay. Ten sidewall cores were obtained in the top 20 feet of the Alpine sandstone in the Fiord 3 well. Porosity ranged 12-22% and averaged 18% and permeability ranged from less than one to 8.5 mD. Three sidewall cores were taken in a well-developed 30 foot thick Torok sandstone at 6,195' MD with porosity measurements ranging from 13.6-17.6%, averaging 15.2% and two permeability measurements of 0.56 mD and 3.99 mD. The Torok sandstone was not developed in the Fiord 3A well. Nanushuk and Tuluvak Formation topset sandstones with mudlog shows are present in both wells.

In 1999 ARCO drilled the **Fiord 4** (TD 7,171' MD), **Fiord 5** (TD 7,490' MD), and **Fiord 5PH** (TD 7,412' MD) wells to delineate the Nechelik and Kuparuk discoveries in the CRU. In the Fiord 4 well, the Nanushuk/Torok interval displayed good mudlog shows, especially around 5,900' MD. The Kuparuk C sandstone was present as a siderite cemented hard streak atop LCU at 6,689' MD, resting directly on top of the Nechelik sandstone interval. Although the Nechelik was not tested, 30 feet of sandstone at the top of the interval had consistent gamma ray log readings around 50 API units and the deep resistivity readings around 9-10 ohm-meters. The Fiord 5 and 5PH wells encountered 15 feet of Kuparuk C sandstone, underlain by approximately 100 feet of distal Nuiqsut siltstone resting on underlying Nechelik sandstone. Sixty-Six feet of core was taken in the Fiord 5 well, five feet of base Nuiqsut and 61 feet of the underlying Nechelik sandstone. The upper 30 feet of the Nechelik interval contained well developed sandstone with porosity ranging 11-19%, averaging 14%, and permeability ranging from 1mD to 75 mD and averaging 11 mD. Two DSTs were conducted in the Fiord 5 well. A Nechelik-only test flowed at a calculated rate of 1,400 BOPD of 29° API gravity oil. A combined Kuparuk and Nechelik test flowed at a calculated rate of 2,400 BOPD of 30° API gravity oil.

In 2004 ConocoPhillips drilled the **Placer 1** and **Placer 2** deviated wells with bottom-hole locations two to three miles east of the proposed PKU. The primary objective for both wells was the Kuparuk C sandstone, and to obtain whole core in the Kuparuk interval. The Placer 1 well was drilled to a depth of 7,761' MD and bottomed in the Miluveach Formation. The well penetrated a 17 feet true vertical thickness of Kuparuk C sandstone. Well logs indicate that much of the sandstone is siderite-cemented. Core porosity averaged 17.2% and ranged from 6.3% in the siderite cemented zones up to 35.6% in the non-siderite cemented zones. Permeability measurements range from less than one mD in siderite cemented zones up to 3,546 mD in the non-cemented zones. The Placer 2 well was drilled to a depth of 9,118' MD and bottomed in distal Nuiqsut siltstones and mudstones. The Kuparuk interval in the Placer 2 well lacks reservoir sandstone, and is represented as a siderite cemented hard streak atop LCU at 8,220' MD. A well-developed Nuiqsut sandstone was present at the top of the Nuiqsut interval (8,840 – 8,900' MD) that had good mudlog shows. Gamma ray values range between 65 and 75 API units and the deep resistivity ranges between four and five ohm-meters. The Nanushuk/Torok interval appears silty and shaly in both wells, but did yield mud log oil shows.

No tests were conducted in either well. The Placer unit was formed in 2011, primarily to evaluate and develop the potential Kuparuk reservoir, but to date no further well testing or drilling has occurred.

In 2003 ConocoPhillips drilled the **Oberon 1** well to a total depth of 7,580' MD. Located approximately three miles southeast of the southern end of the proposed PKU, the primary target was Kuparuk C sandstone preserved above the LCU. A secondary target was the Alpine sandstone. The well bottomed in distal Nuiqsut/Nechelik siltstones and shales below a thin (15 foot) poorly developed Alpine interval. The Kuparuk C interval appears as a thin cemented transgressive lag at 6,807' MD on top of the LCU (at 6,810' MD) that corroborates the mud log description: a thin, firm to hard sandy siltstone grading to lower fine-grained sandstone with common glauconite and siderite cement. Porosity was estimated to be poor due to the presence of clay matrix and siderite cement. Well logs identify the Alpine interval as a 15 foot thick, very fine grained sandstone and siltstone with poor reservoir quality. Deep resistivity measurements are consistently in the three to five ohm-meter range and the gamma ray measurements range 75-90 API units. Estimated porosity from density/neutron logs ranges approximately 12-18%. Occasional weak oil shows were also present in the Torok Formation, but the intervals appear to be of non-reservoir quality based on well logs and mud log descriptions. No core or production tests were gathered or attempted in this well.

As noted above, further exploration and development drilling in the CRU area has led to development of six PAs, representing five reservoir units in the CRU just to the west of the proposed PKU. In stratigraphic order, these intervals are the shallow marine Nechelik sandstone of the Kingak Formation, (Fiord-Nechelik PA), the shallow marine Alpine sandstone of the Kingak Formation (Alpine PA), the shallow marine C-member sandstone of the Kuparuk Formation (Fiord-Kuparuk and Nanuq-Kuparuk PAs), the deepwater turbidite Nanuq sandstone of the Torok Formation (Nanuq-Nanuq PA), and the shallow marine Qannik sandstone of the Nanushuk Formation (Qannik PA).

At the Oooguruk Unit, immediately east of the proposed PKU, additional producing reservoirs include the shallow marine Nuiqsut sandstone of the Kingak Formation (Nuiqsut PA) and the deepwater turbidite Nuna/Moraine sandstone of the Torok Formation (Torok PA and Nuna project area, younger and depositionally isolated from the Torok Nanuq reservoir at CRU).

Geologic and Engineering Characteristics of the Reservoirs and Potential Hydrocarbon Accumulations

Geologic, geophysical, and engineering data submitted by Repsol to the Division in support of the application to form the PKU included interpretations of 2-D and 3-D seismic data, seismic attribute analysis, structure maps, interval isopachs, and net pay maps integrating seismic and well data, interpreted well logs and proprietary petrophysical analyses, well correlations, and geologic cross sections from wells within the proposed unit and surrounding area. All proprietary data and interpretations will be held confidential in accordance with AS 38.05.035(a)(8)(C). Based on non-confidential well control there are multiple potential hydrocarbon accumulations and reservoirs within the proposed PKU.

Jurassic sandstone reservoir potential

The PKU area contains three oil-bearing Upper Jurassic sandstones, all informal members of the Kingak Formation. From oldest to youngest, these are the Nechelik, Nuiqsut, and Alpine intervals. All three sandstones appear to have the same general depositional setting and lithologic characteristics. The sandstones are very fine- to fine-grained quartz arenites, which contain up to 15% glauconite. These shallow marine sandstones were shed generally southward from a northern provenance area that foundered during Late Jurassic to Early Cretaceous rifting and opening of the Canada Basin. The regional setting of the CRU, PKU, and Colville Delta area is interpreted from seismic and regional well control as a broad, very low gradient marine shelf on a south-facing passive margin. The shelf was likely a muddy one with limited accommodation space and relatively low rates of sedimentation. The three major successively stacked Upper Jurassic sand/silt/mud sequences were deposited in progradational and aggradational coarsening upward cycles over a period of approximately 20 million years.

A number of factors contributed to the preservation of the Jurassic sandstone packages: eustatic and tectonic sea level changes; local topography created by normal faulting resulting from pre-breakup rift related extensional tectonics; point source contributions of localized rivers; incised valley topography; and eroded highs sculpted by localized erosion during lowstands of sea level. The Alpine interval records the last significant sandstone pulse of Jurassic sedimentation, best developed in the vicinity of the Alpine field. The Alpine interval is absent in the northern Colville Delta area, likely due to the combined effects of non-deposition and erosion at the LCU. The locus of depositional accommodation for the underlying Nuiqsut sandstones appears to have been mainly to the northeast of the preserved Alpine sandstones, whereas the older Nechelik sandstone is best preserved to the north.

Structure at the Jurassic stratigraphic level in the proposed unit area consists of a broad southeast plunging anticline. Several prominent northwest-southeast trending normal faults are present in the proposed unit area. These faults tend to have a down to the southwest offset in the western part of the area and a down to the northeast offset in the eastern part. A younger set of normal faults with a more northerly trend is also present, particularly in the eastern part of the proposed unit. The trapping mechanism for the sands is interpreted to be predominantly stratigraphic, with the sands thinning and transitioning to mudstone in the southern, downdip (distal) direction and erosional truncation by the LCU in the northern, updip (proximal) direction. To date, the Nuiqsut sandstone is the only interval of the Jurassic Kingak Formation that has successfully tested hydrocarbons within the proposed unit area. No water leg has been observed within these Jurassic sandstones.

The depositional setting, geometry, and reservoir characteristics of the Nechelik, Nuiqsut and Alpine sandstones are well defined in the units adjacent to the proposed PKU from numerous well penetrations, core analyses, well test and production data, and seismic data. The oil gravity for the Nuiqsut sandstone producing at Oooguruk is typically in the low- to mid-20° API range. In the CRU, Nechelik oil ranges approximately 28-30° API and the Alpine oil around 40° API. Oil-bearing Nuiqsut and Nechelik sandstones have both been encountered within the proposed PKU. The Nuiqsut sandstone was tested in the Colville Delta 1, 2, and 3 wells, the Colville Delta 25 1, and the Kuukpik 3 wells. The calculated flow rates for these Nuiqsut tests are

generally less than those from the same unit at Oooguruk to the northeast. A possible reason is a general decrease in reservoir quality to the southwest as the sandstone intervals becomes more distal. Perhaps a more likely explanation is formation damage in the older wells as a result of the more primitive drilling fluids and stimulation techniques available during the 1980s. The fine-grained lithology and low permeability of the Nuiqsut sandstone coupled with relatively low gravity (around 20° API) oil makes the Nuiqsut sandstone a very challenging reservoir to develop from both a geologic and engineering point of view. Continued delineation drilling and testing is needed to determine the commercial viability and producible area of the Nuiqsut sandstone identified by the existing wells in the proposed PKU.

Because the Nechelek interval sandstones are best developed in the northern part of the CRU along a northeast-southwest depositional trend, any Nechelek reservoir would likely be restricted to the northern part of the proposed PKU. Alpine sandstones are likely to be discontinuously distributed and generally thinner in the PKU relative to their counterparts in the CRU. Alpine C sandstone was encountered in the Fiord 3 and 3A wells between the proposed PKU and CRU but neither penetration was tested.

Kuparuk C reservoir potential

Regional structure at the Kuparuk/LCU stratigraphic level is dominated by the Colville High, an extremely large, roughly circular, four-way closure that constitutes a major segment of the Barrow Arch. The proposed PKU area is centrally located relative to the area of maximum structural closure on the Colville High. At a finer scale, numerous northwest-southeast striking faults exert important control on the presence or absence of reservoir sandstones, both by syndepositional faulting creating accommodation, and by post-depositional faulting preserving reservoir sands from erosion. The trapping mechanism for Kuparuk sandstones within the regional Colville High closure is thought to be primarily structural with deposition and erosion controlling the distribution of reservoir.

The Kuparuk C sandstone is one of the major reservoirs on the North Slope with a long history of production from numerous fields, most notably within the KRU. The sandstones were deposited on a shallow marine shelf in paleo-topographic lows that formed primarily as a result of late Jurassic and Cretaceous aged rift faulting. This depositional setting results in dramatically variable sand thicknesses and aerial extent of individual sand bodies. The sandstones were deposited directly above the LCU, one of the major unconformities on the North Slope. The sandstone in the Kuparuk C interval is believed to be sourced primarily from erosion of older sandstones that subcrop below the LCU. Within the KRU, erosion and re-working of the underlying, aurally pervasive Kuparuk A sandstones provided much of the source sediments, though increased chert content in the Kuparuk C sandstones argues for contribution from provenance areas with Ivishak and older Ellesmerian formations exposed at the LCU. Outside the KRU, Kuparuk C sandstone is distributed irregularly.

Repsol integrated available subsurface control from well data with various seismic attributes to predict the presence of Kuparuk C sandstone within the proposed unit. Seismic data was primarily used to define areas of potential accumulation on the LCU, map detailed LCU subcrop patterns, and in an attempt to directly detect reservoir-prone sandstone using seismic attributes.

Kuparuk C sandstone generally displays high impedance that may produce a strong peak amplitude anomaly above the LCU when present. However, due to interference effects of different underlying subcropping strata and the limits of seismic data to resolve both the top and the base of the sandstone when the interval is thin, the amplitude patterns can be complex and sometimes misleading. This can be further complicated by the common presence of dense secondary siderite cement, either in the Kuparuk sandstone or in thin transgressive lag deposited at the unconformity, which can give a strong amplitude signature, but result in significantly diminished reservoir quality.

Siderite cementation and glauconite content are the primary controls on reservoir quality, causing great variability in porosity and permeability. Core data reveal that porosity can range from 8% to 30% and permeability can range from less than 0.1 mD to over 3,000 mD. In areas with little cementation the Kuparuk C sandstone has demonstrated the capability to produce at very high rates from relatively thin sandstones.

Numerous smaller accumulations of Kuparuk C sandstone have been discovered and developed outside the KRU in the area surrounding the proposed PKU. Currently Kuparuk C sandstone is in production to the northeast within the Oooguruk Unit and two separate accumulations in the CRU (Fiord-Kuparuk and Nanuq-Kuparuk PAs). As noted previously, the Kuparuk C reservoir at the Mustang project in the Southern Miluveach Unit is currently under development, and the interval was a key objective for the formation of the Placer and Tofkat Units.

Within the proposed PKU, the Kuukpik 3 well encountered 15-20 feet of hydrocarbon-bearing Kuparuk C sandstone that tested at a calculated flow rate of approximately 20 BOPD. Similar Kuparuk C sandstone was present in the Colville Delta 25-1 well, but was not tested. Thin Kuparuk C sandstone intervals are also present in the Fiord 3 and 3A wells adjacent to the west of the proposed unit. Even given the vagaries of exploring for Kuparuk C sandstones, it is quite possible that Kuparuk oil may eventually be produced within the proposed unit area.

Torok and Nanushuk Formation reservoir potential

The Nanushuk and Torok Formations are time-equivalent to one another, representing fundamentally different depositional settings in the Brookian sequence distinguished at the seismic scale. Major east- and northeast-flowing river systems originating in what is now the Chukchi Sea and western Brooks Range filled the Colville Foreland basin from west to east during Aptian to Cenomanian (Early to mid-Cretaceous) time, building an advancing continental terrace topped by coastal plain, river deltas, shoreline, and shallow marine shelfal environments. This style of basin fill created large scale clinoform packages that are readily imaged in seismic data. The clinoform systems are differentiated into 1) non-marine to shallow marine topset strata and 2) deepwater slope to basinal foreset and bottomset strata. The Nanushuk Formation comprises the sand-prone topset units, deposited inboard of the shelf edge. The upper part of the Torok Formation consists almost entirely of mudstone and siltstone, deposited beyond the shelf margin on the relatively steep upper to middle slope. The lower Torok, deposited in lower slope, toe-of-slope, and proximal basin floor environments, generally contains significant packages of turbidite and other sediment-gravity flow sandstones that bypassed the shelf and upper slope (particularly during lowstand cycles) and came to rest where on the lower gradient seafloor. At

the same time, still further out into the basin floor setting, slow deposition of very fine clay, volcanic ash, and organic matter created the black shale source rock facies of the lower Hue Shale, informally recognized as the highly radioactive zone (HRZ) or gamma ray zone (GRZ). Due to the overall progradation of these clinoforms across the basin, the generalized succession of the lower Brookian sequence in this area consists of the HRZ shale at the bottom, overlain by sand-prone lower Torok Formation, transitioning upward to mud-prone upper Torok, overlain by sand-prone Nanushuk Formation.

Reservoir sandstones may occur in various sizes and shapes in both the Torok and Nanushuk Formations. River-dominated deltas in the Nanushuk and submarine fans in the Torok may produce lobate reservoir geometries, whereas shelf-edge deltas or forced-regressive shoreface (Nanushuk) and various lower slope to proximal basin floor systems (Torok) may create thin, elongate bodies that can extend for 10 to 20 miles north-south along depositional strike. In the PKU area, sandstones from both formations are generally very fine to fine grained and well-sorted to very well-sorted. Torok and Nanushuk sandstones consist chiefly of quartz, chert, sedimentary and metamorphic lithic grains (rock fragments), with varying amounts of clay matrix and accessory minerals. The lithic components make these Brookian sands susceptible to compactional porosity reduction upon deep burial, but this is not a major issue high on the Barrow Arch in the PKU area, where potential Torok and Nanushuk reservoirs currently lie mostly between about 4,000 feet and 6,000 feet and were never buried to dramatically greater depths by younger Brookian strata.

As noted above, deepwater sandstones of the Torok Formation are compositionally similar to their equivalents in the Nanushuk, but the deposition is controlled more by sediment gravity processes and turbidity flows rather than deltaic or shelf processes. For this reason, deposits of Torok sandstones may consist of thinner individual sandstones interbedded with finer-grained siltstone and shale, depending on sediment supply, local basin floor topography, and other factors.

The CRU Nanuq-Nanuq PA and the modest development of the Oooguruk Unit Torok PA represent the only sustained Torok Formation production to date. The Torok Formation was tested in the Colville Delta 2 and Kuukpik 3 wells as described above, and good Torok Formation mudlog shows were noted in the Fiord 3, Fiord 4, Fiord 5, and Fiord 5PH wells. In early 2015 Caelus sanctioned a significant expansion of Torok development in the Oooguruk Unit (Nuna project), and ConocoPhillips drilled the Moraine 1 well to evaluate development of the same reservoir interval in the western portion of the KRU.

Structure at the stratigraphic level of the Nanushuk sandstones consist of a broad, arcuate, nearly flat shelf with local low-relief structural closures (dips generally less than one degree) and a generally east- to southeast dipping slope outboard of the shelf edge, where original depositional dips in places exceed about seven degrees. The trapping mechanism appears to be dominantly stratigraphic; the sandstones appear to pinch out or onlap up-dip to the west and shale-out depositionally downdip to the east.

Within the CRU, one zone of the Nanushuk Group, the informally designated Qannik sandstone, is currently being developed with six producing wells and three injection wells. The oil gravity

ranges 27-32° API, with an approximate viscosity of two centipoise and solution GOR of approximately 404 SCF/STB. The initial reservoir pressure was approximately 1,865 pounds per square inch. A gas-oil contact has been identified within the Qannik sandstone at a depth of approximately -4,000' subsea. The Qannik sandstone is the only Nanushuk Formation sandstone developed to date.

For the purposes of mapping and prospecting throughout both the Qugruk Unit and proposed PKU area, Repsol has subdivided the Nanushuk and time equivalent Torok Formation into nine individual zones, informally named Nanushuk 0 through Nanushuk 8. Based upon their subdivisions, the Qannik sandstone that is being developed in the CRU is equivalent to the Nanushuk 2 interval. Based on interpretation of available seismic data and regional subsurface mapping, Repsol believes that several Nanushuk sandstones are prospective within the western portion of the proposed unit.

None of the wells drilled by prior operators within the proposed unit area conclusively demonstrated the productivity of the Nanushuk interval with a drill stem test. However, good mudlog shows within the proposed PKU were noted in the Colville Delta 1 and Fiord 1, 3, 3A, 4, 5, and 5PH wells. The potential for multiple producible reservoirs at various levels of the Torok and Nanushuk clinoform sequence in the proposed PKU is high.

Tuluvak Formation reservoir potential

The Upper Cretaceous Tuluvak Formation is a younger Brookian sandstone than the Nanushuk and Torok Formations. The sandstone has been identified in six wells in the area at depths between 2,500 and 3,000 feet: **Gulf Colville Delta 1**, Kuukpik 3, Fiord 2, Fiord 3 and 3A, and the Qugruk 2. All six wells had good mudlog shows. A 26 foot interval was tested in the Kuukpik 3 well and flowed back an unspecified volume of oil, water, and mud mixture. The oil gravity was approximately 21° API. Because a strong gas kick was encountered while drilling through the Tuluvak interval in the Qugruk 2 well, it was plugged and abandoned at 2,525' MD. The shallow position and cold temperature of the Tuluvak Formation, located near the base Permafrost, makes development of this oil-bearing sandstone problematic and care is required to drill through this interval.

2015 Wells

Repsol drilled three exploration wells in the proposed PKU area during the 2015 drilling season: Qugruk 8 in Section 18 of Township 11 North, Range 6 East, Umiat Meridian, with a projected total depth of 5,100' MD; Qugruk 9 in Section 6 of Township 12 North, Range 6 East, Umiat Meridian, with a projected total depth of 7,300' MD; and Qugruk 301 in Section 6 of Township 11 North, Range 6 East, Umiat Meridian, with a projected total depth of 4,146' MD. Limited news reports indicate that drilling goals were achieved and that production tests yielded positive results.

Conclusions

Repsol provided the Division comprehensive interpretation and analysis of the available data in support of the application to form the PKU. The application included interpretations of 2-D and 3-D seismic data, seismic attribute analysis, structure maps, interval isopachs, and net pay maps integrating seismic and well data, interpreted well logs and proprietary petrophysical analyses from wells within the proposed unit and surrounding area, well correlations, and geologic cross sections. Through careful interpretation of 3-D seismic and analyses of previously drilled wells in the area, as well as Repsol's recent drilling activity, Repsol has identified multiple potential hydrocarbon accumulations and reservoirs over a large area in several stratigraphic intervals. Follow up drilling and testing is required in order to delineate and progress to commercial development.

The ultimate purpose for forming a unit is to protect the correlative rights of all parties, prevent waste and ensure greater ultimate recovery during development and production of a pool or reservoir which has been discovered by drilling and evaluated by testing. The unit plan provided by Repsol commits to the drilling of additional wells to delineate and determine the commercial viability of these accumulations for further development and also to evaluate additional identified prospects.

3. Plans of Exploration

Repsol submitted a (POE), as part of the Application, and met with the Division for a technical presentation on January 28, 2015. To date Repsol has drilled 11 wells in the PKU area, including sidetracks, and conducted numerous flow tests.

In the proposed POE, Repsol states that it "agrees to drill three wells during the next five years, these wells will include at a minimum the following wells, all of which are currently being drilled:" the Qugruk 8, Qugruk 9 and Qugruk 301 wells. It is the Division's understanding that these three wells have recently been completed with positive test results according to Repsol. So while Repsol suggests it may drill additional wells, its proposed POE, as written, commits only to drilling wells that are already drilled.

A POE "must describe the applicant's *proposed* exploration activities, including the bottom-hole locations and depth of proposed wells, and the estimated date drilling will commence." 11 AAC 83.341(a) (emphasis added). A list of completed wells is not proposed exploration activity, and thus Repsol's proposed POE fails to meet the regulatory requirements for a POE. Without an acceptable POE, the Division would be unable to approve the unit.

The Division has discretion to propose modifications to a unit agreement that would qualify the agreement for approval. 11 AAC 83.316(b). Accordingly, the Division proposes the following modification: Considering the drilling work Repsol has conducted this year, it is acceptable that the initial POE not include additional wells for 2015. By October 1, 2015, however, Repsol must submit a Second POE that sets forth the proposed exploration activities that it will conduct

between December 1, 2015 and December 1, 2016. Repsol may alternatively submit a Plan of Development by October 1, 2015, if appropriate.

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

DNR has an obligation to protect the public's interest in maximizing economic and physical recovery from the state's oil and gas resources. AS 38.05.180(a)(1)(A). Maximizing economic recovery of hydrocarbons ensures royalty and tax revenues and increased employment opportunities over the long-term. Realization of these potential benefits requires exploration and development of state oil and gas leases.

The PKU will provide economic benefits to the State by promoting exploration and development of all unitized leases as a single lease, rather than development conducted on a lease-by-lease basis. Development on a unitized basis will prevent redundant expenditures and activities. Although leases included in the unit will no longer be available for competitive development the Division will ensure reasonable development through review and approval of future plans of exploration and development.

Other relevant factors includes mitigation measures. 11 AAC 303(b)(6). The leases within the PKU will continue to be subject to the mitigation measures attached to the leases at issuance. These mitigation measures include measures to minimize environmental impacts and protect the State's and public interest in the land.

B. Decision Criteria considered under 11 AAC 83.303(a)

1. Promote the Conservation of All Natural Resources

A unit may be formed under AS 38.05.180(p) "[t]o conserve the natural resources of all or a part of an oil or gas pool, field, or like area." Conservation of the natural resources of all or part of an oil or gas pool, field, or like area means "maximizing the efficient recovery of oil and gas and minimizing the adverse impacts on the surface and other resources." 11 AAC 83.395(9). The unitization of oil and gas reservoirs or accumulations and the formation and expansion of unit areas to develop hydrocarbon-bearing reservoirs or accumulations are well-accepted means of hydrocarbon conservation. Unitization, with development occurring under the terms of a unit agreement, can promote efficient evaluation and development of the State's resources, and minimize impacts to the area's cultural, biological, and environmental resources. The PKU unit agreement provides the framework for maximizing efficient recovery of oil and gas within the proposed unit. The leases in the proposed unit also remain subject to mitigation measures, as well as a variety of state and federal regulatory requirements, that are designed to protect other natural resources within the unit area.

2. The Prevention of Economic and Physical Waste

Unitization, as opposed to activity on a lease-by-lease basis, may prevent economic and physical waste. Economic waste is often referred to as the drilling of wells in excess of the number

necessary for the efficient recovery of the oil and gas in place. Physical waste, among other things, includes the inefficient, excessive, or improper use of, or unnecessary dissipation of, reservoir energy.

Unitization may also prevent economic and physical waste by eliminating redundant expenditures for a given level of production, or by avoiding loss of ultimate recovery with the adoption of a unified reservoir management plan. Annual approval of the PKU development activities as described in the future plans of development must also provide for the prevention of economic and physical waste.

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). Future annually approved plans of development will provide for continued review and approval of Repsol's plans to develop the PKU in a manner which will maximize economic and physical recovery. Combining interests and operating under the terms of the PKU Agreement and PKU Operating Agreement assures an equitable allocation of costs and revenues commensurate with the resources.

The formation of the PKU protects the economic interests of the working interest owners, the State, and ASRC. Unitization 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 without the complications of competing leasehold interests promotes the State's interest. Operating under the PKU Agreement provides for accurate reporting and record keeping, State approval of plans of exploration and development and operating procedures, royalty payments, royalty in-kind taking, and emergency storage of oil and gas, all of which will further the State's interest.

The State and ASRC are co-owners of Joint Leases within the unit. Because of this the PKU Agreement is different than most unit agreements in Alaska. The State is a royalty owner and charged with the protection of all parties. In contrast ASRC is a private corporation with responsibility to shareholders and the authority to contractually obligate itself and other parties. In most cases the State and ASRC have aligned interests and management decisions are united. In the event of a dispute, Article 20 of the PKU Agreement outlines the use of third party arbitration in place of the typical DNR appeal process. This article was included to place DNR and ASRC on an equal footing with regards to management of the PKU should a conflict develop. A similar agreement is used with ASRC for the Colville River Unit and has successfully provided for development and production since 1998.

ASRC will separately provide its approval or disapproval of the PKU. As set forth in the Joint Leases, the State's approval of unitization of the Joint Leases is effective only as to the State's undivided interests.

IV. FINDINGS AND DECISION

A. The Conservation of All Natural Resources

1. Creation of the PKU will provide for exploration and development of the unitized area(s) under the PKU 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 expansion will reduce the amount of land and fish and wildlife habitat that 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 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. Repsol submitted geological, geophysical and engineering data to the Division in support of the Application. Division technical staff determined that the PKU area encompasses all or part of one or more oil and gas reservoir(s) and potential hydrocarbon accumulations.
2. The available geological, geophysical and engineering data justify including the proposed lands, as described in Section III, A.2. of this decision.

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

1. The unit formation as approved protects all parties' interests 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.
2. The economic, geological, geophysical, and engineering data that Repsol provided reasonably justify the inclusion of the PKU acreage under the terms of the applicable regulations governing formation, expansion, and operation of oil and gas units and

participating areas (11 AAC 83.301 – 11 AAC 83.395) and the terms and conditions under which these lands were leased from the State.

3. Repsol provided evidence of reasonable effort to obtain joinder of any proper party to the Agreement.
4. Repsol holds sufficient interest in the unit area to give reasonably effective control of operations.
5. The unit formation meets the requirements of 11 AAC 83.303 with the following modification: Repsol will submit a Second POE by October 1, 2015 that sets forth the proposed exploration activities that it will conduct between December 1, 2015 and December 1, 2016. Repsol may alternatively submit a Plan of Development by October 1, 2015, if appropriate..
6. The Division complied with the public notice requirements of 11 AAC 83.311.
7. 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 decision.
8. The PKU Agreement provides for additional expansions and contractions of the unit area in the future, as warranted by data obtained by exploration or otherwise. The PKU Agreement thereby protects the public interest, the rights of the parties, and the correlative rights of adjacent landowners.
9. The approved unit is effective retroactively to June 1, 2015.
10. Repsol shall submit revised Exhibits A and B within 60 days of the issuance of this decision.
11. ADL 391303 is severed as to lands committed to the PKU and as to lands not committed to the PKU. 11 AAC 83.373(a). Upon unitization that portion of ADL391303 not committed to the unit is severed, assigned a new lease number, ADL392995, and granted a two-year extension of the lease term with an expiration date of July 31, 2017. 11 AAC 83.373(b).
12. ADL 391396, ADL 391393, ADL 391391 and ADL 391387 are severed as to the lands committed to the PKU and as to lands not committed to the PKU. 11 AAC 83.373(a). The portions of these leases not committed to the unit are assigned the following new lease numbers and will retain their original expiration date of August 31, 2018: ADL 392994, ADL 392997, ADL 392993 and ADL 392996. The new and severed leases are further described in Attachments 3 and 4.

13. Twelve Joint leases will be segregated into individual single section leases with the same terms and conditions as the original lease. All Joint Leases proposed for unitization will be included in the PKU. Attachments 3 and 4 describe the new and severed leases.

For the reasons discussed in this Findings and Decision, I hereby approve the PKU formation.

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 Mark D. Myers, 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.

Sincerely,



Corri A. Feige
Director

Cc: Department of Law
Teresa Imm, ASRC

V. ATTACHMENTS

1. Pikka Unit Proposed Exhibit A
Description of Lands within the Proposed Unit
2. Pikka Unit Proposed Exhibit B
Map of Proposed Unit Area
3. Pikka Unit Description of Lands within the Approved Unit
4. Pikka Unit Map of Approved Unit Area
5. Pikka Unit Approved Joint Lands Unit Agreement

1. Pikka Unit Proposed Exhibit A
Description of Lands within the Proposed Unit

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
1	State of AK ADL 391391	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2009	Tract: 417 T. 014N., R. 006E., Umiat Meridian, Alaska. Section 19, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 119.16 acres; Section 30, Protracted, All, 620.00 acres; Section 31, Protracted, All, 623.00 acres;	1362.16	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
2	State of AK ADL 391395	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2009	Tract 426 T. 014N., R. 005E., Umiat Meridian, Alaska. Section 24, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 13.71 acres; Section 25, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 635.35 acres; Section 26, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 594.15 acres; Section 35, Protracted, All, 640.00 acres; Section 36, Protracted, All, 640.00 acres;	2523.21	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
3	State of AK ADL 391396	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2009	Tract: 427 T. 014N., R. 005E., Umiat Meridian, Alaska. Section 27, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 454.10 acres; Section 34, Protracted, All, 640.00 acres;	1094.10	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

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**DIVISION OF
OIL AND GAS**

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
4	State of AK ADL 391393	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2009	Tract: 419 T. 013N., R. 00SE., Umiat Meridian, Alaska. Section 3, Protracted, All, 640.00 acres;	640.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
5	State of AK ADL 391392	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2009	Tract 418 T. 013N., R. 00SE., Tract A, Umiat Meridian, Alaska. Section 11, Unsurveyed, All uplands, including the bed of the Elaktoveach Channel, 205.54 acres; Section 12, Unsurveyed, All uplands, including the bed of the Elaktoveach Channel, 426.42 acres; T. 013N., R. 00SE., Umiat Meridian, Alaska. Section 1, Protracted, All, 640.00 acres; Section 2, Protracted, All, 640.00 acres; Section 11, Unsurveyed, All tide and submerged lands, 434.46 acres; Section 12, Unsurveyed, All tide and submerged lands, 213.58 acres;	2560.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
6	State of AK ADL 391387	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2009	Tract: 413 T. 013N., R. 006E., Umiat Meridian, Alaska. Section 6, Protracted, All, 625.00 acres; Section 7, Unsurveyed, All tide and submerged lands, 151.64 acres; Section 8, Unsurveyed, All tide and submerged lands, 284.19 acres; T. 013N., R. 006E., Tract A, Umiat Meridian, Alaska. Section 7, Unsurveyed, All uplands, 476.36 acres; Section 8, Unsurveyed, All uplands, 355.81 acres;	1893.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
7	State of AK ADL 391303	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	8/1/2008	Tract 412 T. 13N., R. 6E., Umiat Meridian, Alaska. Section 9, Unsurveyed, All tide and submerged lands, 156.70 acres; Section 10, Unsurveyed, All tide and submerged lands, 168.45 acres; T. 13N., R. 6E., Tract A, Umiat Meridian, Alaska. Section 9, Unsurveyed, All uplands, 483.30 acres; Section 10, Unsurveyed, All uplands, 471.55 acres;	1280.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 0.76808% Edgar Kerr 0.03990% Jesse V. Sommer 0.03990% Jeffery A. Lyslo 0.03990% Edward S. Smida 0.02494% Edward Y. Teng 0.02494% Colby VanDenburg 0.00998% Patricia M. Reed 0.00998% Mathew X. Furin 0.03990% GMT Exploration Company LLC 0.33250% Andrew J Bachner 1.80000% Keith C Forsgren 0.20000%
8	State of AK ADL 391566	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	10/1/2010	Trac 411 T. 013 N., R. 006 E., Umiat Meridian, Alaska. Section 1, Unsurveyed, All tide and submerged lands, 617.37 acres; Section 2, Unsurveyed, All tide and submerged lands, 635.75 acres; Section 11, Unsurveyed, All tide and submerged lands, 150.22 acres; Section 12, Unsurveyed, All tide and submerged lands, 179.17 acres; T. 013 N., R. 006 E., Tract A, Umiat Meridian, Alaska. Section 1, Unsurveyed, All uplands, 22.63 acres; Section 2, Unsurveyed, All uplands, 4.25 acres; Section 11, Unsurveyed, All uplands, 489.78 acres; Section 12, Unsurveyed, All uplands, 460.83 acres;	2560.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
9	State of AK ADL 391388	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2009	Tract: 414 T. 013N., R. 006E., Umiat Meridian, Alaska. Section 13, Surveyed by Protraction, All including the beds of the Colville River and the Kupigrak Channel, 640.00 acres; Section 14, Surveyed by Protraction, All including the bed of the Colville River, 640.00 acres; Section 23, Surveyed by Protraction, All including the bed of the Colville River, 640.00 acres; Section 24, Surveyed by Protraction, All including the beds of the Colville River and the Kupigrak Channel, 640.00 acres;	2560.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
10	State of AK ADL 391457	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1209 T. 013N., R. 006E., Tract A, Umiat Meridian, Alaska. Section 15, Surveyed by protraction, All, including the bed of the Colville River, 640.00 acres; Section 16, Surveyed by protraction, All, including the bed of the Colville River, 640.00 acres; Section 21, Surveyed by protraction, All, including the bed of the Colville River, 640.00 acres; Section 22, Surveyed by protraction, All, including the bed of the Colville River, 640.00 acres;	2560.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
11	State of AK ADL 3914S8	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1210 T. 013N., R. 006E., Tract A, Umiat Meridian, Alaska. Section 17, Surveyed by protraction, All, 640.00 acres; Section 18, Surveyed by protraction, All, including the bed of the Elaktoveach Channel, 631.00 acres; Section 19, Surveyed by protraction, All, including the bed of the Elaktoveach Channel, 633.00 acres; Section 20, Surveyed by protraction, All, including the beds of the Elaktoveach Channel and the Colville River, 640.00 acres;	2544.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
12	State of AK ADL 391394	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2009	Tract: 421 T. 013N., R. 00SE., Umiat Meridian, Alaska. Section 14, Unsurveyed, All tide and submerged lands, 163.42 acres; T. 013N., R. 00SE., Tract A, Umiat Meridian, Alaska. Section 13, Unsurveyed, All uplands, including the bed of the Elaktoveach Channel, 640.00 acres; Section 14, Unsurveyed, All uplands, 476.58 acres; Section 23, Unsurveyed, All, 640.00 acres; Section 24, Unsurveyed, All, 640.00 acres;	2560.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
13	State of AK ADL 391456	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1208 T. 013N., R. 005E., Tract A, Umiat Meridian, Alaska. Section 25, Unsurveyed, All, including the beds of all meanderable waterbodies, 640.00 acres;	640.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
14	State of AK ADL 391461	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1213 T. 013N., R. 006E., Tract A, Umiat Meridian, Alaska. Section 29, Surveyed by protraction, All, including the beds of the Colville River and the Elaktoveach Channel, 640.00 acres; Section 30, Surveyed by protraction, All, including the bed of the Elaktoveach Channel, 636.00 acres; Section 31, Surveyed by protraction, All, including the beds of the Elaktoveach Channel and the unnamed lake, 639.00 acres; Section 32, Surveyed by protraction, All, including the beds of the Colville River and the Elaktoveach Channel, 640.00 acres;	2555.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
15	State of AK ADL 391460	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1212 T. 013N., R. 006E., Tract A, Umiat Meridian, Alaska. Section 27, Surveyed by protraction, All, including the beds of the Colville River and the unnamed lake, 640.00 acres; Section 28, Surveyed by protraction, All, including the bed of the Colville River, 640.00 acres; Section 33, Surveyed by protraction, All, including the beds of the Colville River and the unnamed lake, 640.00 acres; Section 34, Surveyed by protraction, All, including the bed of the Colville River, 640.00 acres;	2560.00	State of AK 100%	State of AK 16.66667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
16	State of AK ADL 391459	Repsol E&P USA Inc. 70 & 148, LLC	70.00% 30.00%	6/1/2009	Tract 1211 T. 013N., R. 006E., Tract B, Umiat Meridian, Alaska. Section 25, Unsurveyed, All, including that portion of ASLS 88-37 Lot 1 within Section 25 and the beds of the Colville River and Kupiguak Channel, 640.00 acres; Section 26, Unsurveyed, All, including the bed of the Colville River, 640.00 acres; Section 35, Unsurveyed, All, including the bed of the Colville River, 640.00 acres; Section 36, Unsurveyed, All, including that portion of ASLS 88-37 Lot 1 within Section 36 and the bed of the Kupiguak Channel, 640.00 acres;	2560.00	State of AK 100%	State of AK 16.66667%	
17	State of AK ADL 392111	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	12/1/2012	Tract 1145 T. 012 N., R 006E., Umiat Meridian, Alaska Section 1, Surveyed, Lots 1-3, Lots 3-5 of U.S. Survey 9999 and the bed of the Colville Reiver, 640.00 acres	640.00	State of AK 84.52% ASRC 15.48%	State of AK 14.086670% ASRC 2.580000%	
18	State of AK ADL 392257	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	12/1/2012	Tract 1145 T. 012 N., R 006E., Umiat Meridian, Alaska Section 2, Surveyed, Lots 1 and 2, Lots 2-5 of U.S. Survey 9999 and the bed of the Colville Reiver, 640.00 acres	640.00	State of AK 78.23% ASRC 21.77%	State of AK 13.038340% ASRC 3.628330%	
19	State of AK ADL 391450	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1146 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 3, Surveyed by protraction, All, 640.00 acres; Section 4, Surveyed by protraction, All, 640.00 acres; Section 9, Surveyed by protraction, All, 640.00 acres;	1920.00	Sec 3: State of AK 62.58% ASRC 37.42% Sec 4: State of AK 69.56% ASRC 30.44% Sec 9: State of AK 63.98% ASRC 36.02% Sec8:	State of AK 10.895000% ASRC 5.771670%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

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Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
20	State of AK ADL 391451	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1147 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 5, Surveyed by protraction, All, 640.00 acres; Section 6, Surveyed by protraction, All, 577.00 acres; Section 7, Surveyed by protraction, All, 580.00 acres; Section 8, Surveyed by protraction, All, 640.00 acres;	2437.00	Sec 5: State of AK 60.43% ASRC 39.57% Sec6: State of AK 100.00% ASRC 0.00% Sec 7: State of AK 60.88% ASRC 39.12% Sec8: State of AK 62.13% ASRC 37.87%	State of AK 11.725000% ASRC 4.941670%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
21	State of AK ADL 392112	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	12/1/2012	Tract 1146 T. 012 N., R 006E., Umiat Meridian, Alaska Section 10, Surveyed, Lots 1-4, Lot 1 of U.S. Survey 9999 and the bed of the Colville Reiver, 640.00 acres	640.00	State of AK 71.73% ASRC 28.27%	State of AK 11.955000% ASRC 4.711670%	
22	State of AK ADL 392258	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	12/1/2012	Tract 1145 T. 012 N., R 006E., Umiat Meridian, Alaska Section 11, Surveyed, Lots 1-4, Lots 1-3 of U.S. Survey 9999 and the bed of the Colville Reiver, 640.00 acres	640.00	State of AK 90.99% ASRC 9.01%	State of AK 15.165000% ASRC 1.501670%	
23	State of AK ADL 391449	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1145 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 12, Surveyed by protraction, All, including the beds of the Colville River and Kupigruak Channel and excluding U.S. Survey 9124, 638.13 acres; U.S. Survey. That portion of U.S. Survey 9124 located in Section 12, 1.87 acres;	640.00	State of AK 76.26% ASRC 23.74%	State of AK 12.710000% ASRC 3.956670%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

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Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
24	State of AK ADL 391452	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1148 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 13, Surveyed by protraction, All, 640.00 acres; Section 14, Surveyed by protraction, All, 640.00 acres; Section 23, Surveyed by protraction, All, 640.00 acres; Section 24, Surveyed by protraction, All, 640.00 acres;	2560.00	Sec 13: State of AK 76.78% ASRC 23.22% Sec 14: State of AK 67.26% ASRC 32.74% Sec 23: State of AK 77.39% ASRC 22.61% Sec 24: State of AK 59.42% ASRC 40.58%	State of AK 11.70000% ASRC 4.96667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
25	State of AK ADL 391453	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1149 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 15, Surveyed by protraction, All, 640.00 acres; Section 16, Surveyed by protraction, All, 640.00 acres; Section 21, Surveyed by protraction, All, 640.00 acres; Section 22, Surveyed by protraction, All, 640.00 acres;	2560.00	Sec 15: State of AK 77.57% ASRC 22.43% Sec 16: State of AK 71.89% ASRC 28.11% Sec 21: State of AK 65.65% ASRC 34.35% Sec 22: State of AK 71.71% ASRC 28.29%	State of AK 11.95000% ASRC 4.71667%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
26	State of AK ADL 391454	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1150 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 17, Surveyed by protraction, All, 640.00 acres; Section 18, Surveyed by protraction, All, 583.00 acres; Section 19, Surveyed by protraction, All, 585.00 acres; Section 20, Surveyed by protraction, All, 640.00 acres;	2448.00	Sec 17: State of AK 63.39% ASRC 36.61% Sec 18: State of AK 59.41% ASRC 40.59% Sec 19: State of AK 61.46% ASRC 38.54% Sec 20: State of AK 74.29% ASRC 25.71%	State of AK 10.80500% ASRC 5.86167%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%
27	State of AK ADL 391455	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1153 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 29, Surveyed by protraction, All, 640.00 acres; Section 30, Surveyed by protraction, All, 588.00 acres; Section 31, Surveyed by protraction, All, 591.00 acres; Section 32, Surveyed by protraction, All, 640.00 acres;	2459.00	Sec 29: State of AK 53.60% ASRC 46.40% Sec 30: State of AK 70.33% ASRC 29.67% Sec 31: State of AK 66.90% ASRC 33.10% Sec 32: State of AK 73.41% ASRC 26.59%	State of AK 10.99167% ASRC 5.675%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
28	State of AK ADL 391322	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	8/1/2008	Tract 1152 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 27, Surveyed by Protraction, All including the bed of the Colville River, 640.00 acres; Section 28, Surveyed by Protraction, All including the bed of the Colville River, 640.00 acres; Section 33, Surveyed by Protraction, All including the bed of the Colville River, 640.00 acres; Section 34, Surveyed by Protraction, All, 640.00 acres;	2560.00	Sec 27: State of AK 71.75% ASRC 28.25% Sec 28: State of AK 68.31% ASRC 31.69% Sec 33: State of AK 66.83% ASRC 33.17% Sec 34: State of AK 50.00% ASRC 50.00%	State of AK 10.703340% ASRC 5.963330%	William D. Armstrong 0.96443% Edgar Kerr 0.05010% Jesse V. Sommer 0.05010% Jeffery A. Lyslo 0.05010% Edward S. Smida 0.03131% Edward Y. Teng 0.03131% Colby VanDenburg 0.01253% Patricia M. Reed 0.01253% Mathew X. Furin 0.05010% GMT Exploration Company LLC 0.41750% AVCG, LLC 1.66333%
29	State of AK ADL 391553	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	7/1/2010	Tract 1151 T. 012N., R. 006E., Umiat Meridian, Alaska. Section 25, Surveyed by Protraction, All, including the bed of the Miluveach River, 640.00 acres; Section 26, Surveyed by Protraction, All, including the bed of the Colville River, 640.00 acres; Section 35, Surveyed by Protraction, All, 640.00 acres; Section 36, Surveyed by Protraction, All, including the bed of the Miluveach River, 640.00 acres;	2560.00	Sec 25: State of AK 55.42% ASRC 44.58% Sec 26: State of AK 50.74% ASRC 49.26% Sec 35: State of AK 50.00% ASRC 50.0% Sec 36: State of AK 52.20% ASRC 47.80%	State of AK 8.68167% ASRC 7.985%	William D. Armstrong 1.92500% Edgar Kerr 0.10000% Jesse V. Sommer 0.10000% Jeffery A. Lyslo 0.10000% Edward S. Smida 0.06250% Edward Y. Teng 0.06250% Colby VanDenburg 0.02500% Patricia M. Reed 0.02500% Mathew X. Furin 0.10000% GMT Exploration Company LLC 0.83333%

Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
30	State of AK ADL 391445	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	6/1/2009	Tract 1048 T. 011N., R. 006E., Umiat Meridian, Alaska. Section 5, Surveyed by protraction, All, including the beds of all meanderable waterbodies, 640.00 acres; Section 6, Surveyed by protraction, All, including the bed of the Colville River and all meanderable waterbodies, 593.00 acres; Section 7, Surveyed by protraction, All, including the bed of the Colville River and all meanderable waterbodies, 596.00 acres; Section 8, Surveyed by protraction, All, including the beds of all meanderable waterbodies, 640.00 acres;	2469.00	Sec 5: State of AK 58.02% ASRC 41.98% Sec 6: State of AK 80.78% ASRC 19.22% Sec 7: State of AK 60.52% ASRC 39.48% Sec 8: State of AK 55.92% ASRC 44.08%	State of AK 10.59167% ASRC 6.075%	William D. Armstrong 0.96443% Edgar Kerr 0.05010% Jesse V. Sommer 0.05010% Jeffery A. Lyslo 0.05010% Edward S. Smida 0.03131% Edward Y. Teng 0.03131% Colby VanDenburg 0.01253% Patricia M. Reed 0.01253% Mathew X. Furin 0.05010% GMT Exploration Company LLC 0.41750% AVCG, LLC 1.66333%
31	State of AK ADL 391320	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	8/1/2008	Tract 1051 T. 011N., R. 006E., Umiat Meridian, Alaska. Section 17, Surveyed by Protraction, All including the bed of the Kachemach River, 640.00 acres; Section 18, Surveyed by Protraction, All including the bed of the Kachemach River, 599.00 acres; Section 19, Surveyed by Protraction, All including the bed of the Kachemach River, 601.00 acres; Section 20, Surveyed by Protraction, All including the bed of the Kachemach River, 640.00 acres;	2480.00	Sec 17: State of AK 55.07% ASRC 44.93% Sec 18: State of AK 54.23% ASRC 45.77% Sec 19: State of AK 50.50% ASRC 49.50% Sec 20: State of AK 54.83% ASRC 45.17%	State of AK 8.950000% ASRC 7.716670%	William D. Armstrong 0.96443% Edgar Kerr 0.05010% Jesse V. Sommer 0.05010% Jeffery A. Lyslo 0.05010% Edward S. Smida 0.03131% Edward Y. Teng 0.03131% Colby VanDenburg 0.01253% Patricia M. Reed 0.01253% Mathew X. Furin 0.05010% GMT Exploration Company LLC 0.41750% AVCG, LLC 1.66333%

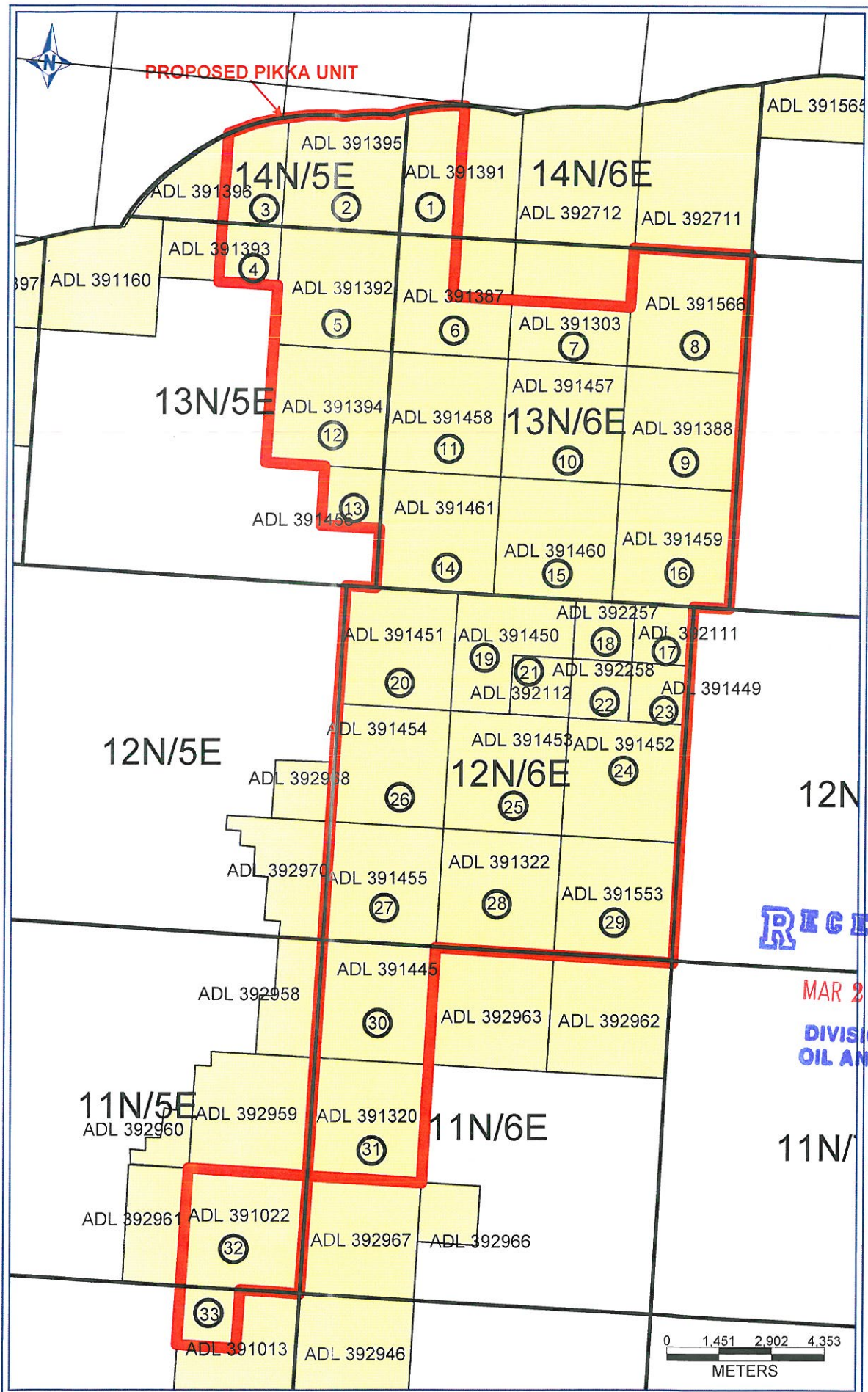
Exhibit A
To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator

Unit Tract #	Lessor & Lease No.	Working Interest Owner	Working Interest	Effective Date	Description	Acreage	Mineral Interest	Royalty	ORR Burden
32	State of AK ADL 391022	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%	9/1/2006	TRACT NS2006-1043 T. 11 N., R. 5 E., UMIAT MERIDIAN, ALASKA. SECTION 25, SURVEYED, BY PROTRACTION, ALL, INCLUDING THE BEDS OF THE UNNAMED LAKE AND THE COLVILLE RIVER, 640.00 ACRES; SECTION 26, SURVEYED, BY PROTRACTION, ALL, INCLUDING THE BED OF THE COLVILLE RIVER, 640.00 ACRES; SECTION 35, SURVEYED, BY PROTRACTION, ALL, INCLUDING THE BEDS OF THE UNNAMED LAKES AND THE COLVILLE RIVER, 640.00 ACRES; SECTION 36, SURVEYED, BY PROTRACTION, ALL, INCLUDING THE BEDS OF THE UNNAMED LAKES, 640.00 ACRES; THIS TRACT (NS2006-1043) CONTAINS 2,560.00 ACRES, MORE OR LESS.	2560.00	Sec 25: State of AK 50.65% ASRC 49.35% Sec 26: State of AK 79.61% ASRC 20.39% Sec 35: State of AK 69.63% ASRC 30.37% Sec 20: State of AK 53.40% ASRC 46.60%	State of AK 10.553335% ASRC 6.113335%	William D. Armstrong 0.96443% Edgar Kerr 0.05010% Jesse V. Sommer 0.05010% Jeffery A. Lyslo 0.05010% Edward S. Smida 0.03131% Edward Y. Teng 0.03131% Colby VanDenburg 0.01253% Patricia M. Reed 0.01253% Mathew X. Furin 0.05010% GMT Exploration Company LLC 0.41750% AVCG, LLC 1.66333%
33	State of AK ADL 391013	Repsol E&P USA Inc. 70 & 148, LLC GMT Exploration Company, LLC	70.00% 22.50% 7.50%		TRACT NS2006-0919 T. 10 N., R. 5 E., UMIAT MERIDIAN, ALASKA. SECTION 2, SURVEYED, BY PROTRACTION, ALL, INCLUDING THE BEDS OF THE UNNAMED LAKES, 640.00 ACRES;	640.00	Sec 2: State of AK 63.30% ASRC 36.70%	State of AK 9.51667% ASRC 7.15%	William D. Armstrong 0.96443% Edgar Kerr 0.05010% Jesse V. Sommer 0.05010% Jeffery A. Lyslo 0.05010% Edward S. Smida 0.03131% Edward Y. Teng 0.03131% Colby VanDenburg 0.01253% Patricia M. Reed 0.01253% Mathew X. Furin 0.05010% GMT Exploration Company LLC 0.41750% AVCG, LLC 1.66333%
						63304.47			

2. Pikka Unit Proposed Exhibit B
Map of Proposed Unit Area

Exhibit B

To the Pikka Unit Agreement dated March 1, 2015 Naming Repsol E&P USA Inc. as Operator



3. Pikka Unit Description of Lands within the Approved Unit

Description of Lands Within the Approved Unit Area

ADL Lease No.	Description	Acreage	State Mineral Interest	ASRC Mineral Interest	Unit	Lease Initiation
391391	<p>T. 014N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 19, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 119.16 acres; Section 30, Protracted, All, 620.00 acres; Section 31, Protracted, All, 623.00 acres;</p> <p>This Tract (417) contains 1,362.16 acres, more or less.</p> <p>The Final Decree in U.S. v. Alaska, No. 84 Original, fixed the offshore boundary between the United States and the State of Alaska in the Chukchi and Beaufort Seas. The acreage was taken from the Alaska's Seaward Boundary diagram depicting the offshore federal/state boundary approved by the State of Alaska on April 15, 1996.</p>	1,362.16	100.00%		Pikka Unit	Parent
392993	<p>T. 014N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 20, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 140.56 acres; Section 29, Protracted, All, 640.00 acres; Section 32, Protracted, All, 640.00 acres;</p> <p>This Tract (417) contains 1,420.56 acres, more or less.</p> <p>The Final Decree in U.S. v. Alaska, No. 84 Original, fixed the offshore boundary between the United States and the State of Alaska in the Chukchi and Beaufort Seas. The acreage was taken from the Alaska's Seaward Boundary diagram depicting the offshore federal/state boundary approved by the State of Alaska on April 15, 1996.</p>	Des	100.00%		None	Segregated
391396	<p>T. 014N., R. 005E., Umiat Meridian, Alaska.</p> <p>Section 27, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 454.10 acres; Section 34, Protracted, All, 640.00 acres;</p> <p>This Tract (427) contains 1,094.10 acres, more or less.</p> <p>The Final Decree in U.S. v. Alaska, No. 84 Original, fixed the offshore boundary between the United States and the State of Alaska in the Chukchi and Beaufort Seas. The acreage was taken from the Alaska's Seaward Boundary diagram depicting the offshore federal/state boundary approved by the State of Alaska on April 15, 1996.</p>	1,094.10	100.00%		Pikka Unit	Parent

Description of Lands Within the Approved Unit Area

ADL Lease No.	Description	Acreage	State Mineral Interest	ASRC Mineral Interest	Unit	Lease Initiation
392994	<p>T. 014N., R. 005E., Umiat Meridian, Alaska.</p> <p>Section 28, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 117.54 acres; Section 32, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 142.55 acres; Section 33, Protracted, All tide and submerged lands lying shoreward of line fixed by coordinates found in Exhibit A of the Final Decree in U.S. v. Alaska, No. 84 Original, 613.59 acres ;</p> <p>This Tract (427) contains 873.68 acres, more or less.</p> <p>The Final Decree in U.S. v. Alaska, No. 84 Original, fixed the offshore boundary between the United States and the State of Alaska in the Chukchi and Beaufort Seas. The acreage was taken from the Alaska's Seaward Boundary diagram depicting the offshore federal/state boundary approved by the State of Alaska on April 15, 1996.</p>	873.68	100.00%		None	Segregated
391393	<p>T. 013N., R. 005E., Umiat Meridian, Alaska.</p> <p>Section 3, Protracted, All, 640.00 acres;</p> <p>This Tract (419) contains 640.00 acres, more or less.</p>	640.00	100.00%		Pikka Unit	Parent
392997	<p>T. 013N., R. 005E., Umiat Meridian, Alaska.</p> <p>Section 4, Protracted, All, 640.00 acres;</p> <p>This Tract (419) contains 1,280.00 acres, more or less.</p>	640.00	100.00%		None	Segregated
391387	<p>T. 013N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 6, Protracted, All, 625.00 acres; Section 7, Unsurveyed, All tide and submerged lands, 151.64 acres; Section 8, Unsurveyed, All tide and submerged lands, 284.19 acres;</p> <p>T. 013N., R. 006E., Tract A, Umiat Meridian, Alaska.</p> <p>Section 7, Unsurveyed, All uplands, 476.36 acres; Section 8, Unsurveyed, All uplands, 355.81 acres;</p> <p>This Tract (413) contains 1,893.00 acres, more or less.</p>	1,893.00	100.00%		Pikka Unit	Parent
392996	<p>T. 013N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 5, Protracted, All, 640.00 acres;</p> <p>This Tract (413) contains 640.00 acres, more or less.</p>	640.00	100.00%		None	Segregated

Description of Lands Within the Approved Unit Area

ADL Lease No.	Description	Acreage	State Mineral Interest	ASRC Mineral Interest	Unit	Lease Initiation
391303	<p>T. 013N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 9, Unsurveyed, All tide and submerged lands, 156.70 acres; Section 10, Unsurveyed, All tide and submerged lands, 168.45 acres;</p> <p>T. 013N., R. 006E., Tract A, Umiat Meridian, Alaska.</p> <p>Section 9, Unsurveyed, All uplands, 483.30 acres; Section 10, Unsurveyed, All uplands, 471.55 acres;</p> <p>This Tract (412) contains 1,280.00 acres, more or less.</p>	1,280.00	100.00%		Pikka Unit	Parent
392995	<p>T. 013N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 3, Unsurveyed, All tide and submerged lands, 633.28 acres; Section 4, Protracted, All, 640.00 acres;</p> <p>T. 013N., R. 006E., Tract A, Umiat Meridian, Alaska.</p> <p>Section 3, Unsurveyed, All uplands, 6.72 acres;</p> <p>This Tract (412) contains 1,280.00 acres, more or less.</p>	1,280.00	100.00%		None	Segregated
391450	<p>T. 012N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 3, Surveyed by protraction, All, 640.00 acres;</p> <p>This Tract (1146) contains 640.00 acres, more or less.</p>	640.00	62.58%	37.42%	Pikka Unit	Parent
392998	<p>T. 012N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 4, Surveyed by protraction, All, 640.00 acres;</p> <p>This Tract (1146) contains 640.00 acres, more or less.</p>	640.00	69.56%	30.44%	Pikka Unit	Segregated
392999	<p>T. 012N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 9, Surveyed by protraction, All, 640.00 acres;</p> <p>This Tract (1146) contains 640.00 acres, more or less.</p>	640.00	63.98%	36.02%	Pikka Unit	Segregated
391451	<p>T. 012N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 5, Surveyed by protraction, All, 640.00 acres;</p> <p>This Tract (1147) contains 640.00 acres, more or less.</p>	640.00	60.43%	39.57%	Pikka Unit	Parent
393000	<p>T. 012N., R. 006E., Umiat Meridian, Alaska.</p> <p>Section 6, Surveyed by protraction, All, 577.00 acres;</p> <p>This Tract (1147) contains 577.00 acres, more or less.</p>	577.00	100.00%		None	Segregated

Description of Lands Within the Approved Unit Area

ADL Lease No.	Description	Acreage	State Mineral Interest	ASRC Mineral Interest	Unit	Lease Initiation
393001	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 7, Surveyed by protraction, All, 580.00 acres; This Tract (1147) contains 580.00 acres, more or less.	580.00	60.88%	39.12%	Pikka Unit	Segregated
393002	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 8, Surveyed by protraction, All, 640.00 acres; This Tract (1147) contains 640.00 acres, more or less.	640.00	62.13%	37.87%	Pikka Unit	Segregated
391452	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 13, Surveyed by protraction, All, 640.00 acres; This Tract (1148) contains 640.00 acres, more or less.	640.00	76.78%	23.22%	Pikka Unit	Parent
393003	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 14, Surveyed by protraction, All, 640.00 acres; This Tract (1148) contains 640.00 acres, more or less.	640.00	67.26%	32.74%	Pikka Unit	Segregated
393004	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 23, Surveyed by protraction, All, 640.00 acres; This Tract (1148) contains 640.00 acres, more or less.	640.00	77.39%	22.61%	Pikka Unit	Segregated
393005	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 24, Surveyed by protraction, All, 640.00 acres; This Tract (1148) contains 640.00 acres, more or less.	640.00	59.42%	40.58%	Pikka Unit	Segregated
391453	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 15, Surveyed by protraction, All, 640.00 acres; This Tract (1149) contains 640.00 acres, more or less.	640.00	77.57%	22.43%	Pikka Unit	Parent
393006	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 16, Surveyed by protraction, All, 640.00 acres; This Tract (1149) contains 640.00 acres, more or less.	640.00	71.89%	28.11%	Pikka Unit	Segregated
393007	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 21, Surveyed by protraction, All, 640.00 acres; This Tract (1149) contains 640.00 acres, more or less.	640.00	65.65%	34.35%	Pikka Unit	Segregated
393008	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 22, Surveyed by protraction, All, 640.00 acres; This Tract (1149) contains 640.00 acres, more or less.	640.00	71.71%	28.29%	Pikka Unit	Segregated

Description of Lands Within the Approved Unit Area

ADL Lease No.	Description	Acreage	State Mineral Interest	ASRC Mineral Interest	Unit	Lease Initiation
391454	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 17, Surveyed by protraction, All, 640.00 acres; This Tract (1150) contains 640.00 acres, more or less.	640.00	63.39%	36.61%	Pikka Unit	Parent
393009	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 18, Surveyed by protraction, All, 583.00 acres; This Tract (1150) contains 583.00 acres, more or less.	583.00	59.41%	40.59%	Pikka Unit	Segregated
393010	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 19, Surveyed by protraction, All, 585.00 acres; This Tract (1150) contains 585.00 acres, more or less.	585.00	61.46%	38.54%	Pikka Unit	Segregated
393011	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 20, Surveyed by protraction, All, 640.00 acres; This Tract (1150) contains 640.00 acres, more or less.	640.00	74.29%	25.71%	Pikka Unit	Segregated
391455	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 29, Surveyed by protraction, All, 640.00 acres; This Tract (1153) contains 640.00 acres, more or less.	640.00	53.60%	46.40%	Pikka Unit	Parent
393018	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 30, Surveyed by protraction, All, 588.00 acres; This Tract (1153) contains 588.00 acres, more or less.	588.00	70.33%	29.67%	Pikka Unit	Segregated
393019	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 31, Surveyed by protraction, All, 591.00 acres; This Tract (1153) contains 591.00 acres, more or less.	591.00	66.90%	33.10%	Pikka Unit	Segregated
393020	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 32, Surveyed by protraction, All, 640.00 acres; This Tract (1153) contains 640.00 acres, more or less.	640.00	73.41%	26.59%	Pikka Unit	Segregated
391322	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 27, Surveyed by Protraction, All including the bed of the Colville River, 640.00 acres; This Tract (1152) contains 640.00 acres, more or less.	640.00	71.75%	28.25%	Pikka Unit	Parent
393015	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 28, Surveyed by Protraction, All including the bed of the Colville River, 640.00 acres; This Tract (1152) contains 640.00 acres, more or less.	640.00	68.31%	31.69%	Pikka Unit	Segregated

Description of Lands Within the Approved Unit Area

ADL Lease No.	Description	Acreage	State Mineral Interest	ASRC Mineral Interest	Unit	Lease Initiation
393016	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 33, Surveyed by Protraction, All including the bed of the Colville River, 640.00 acres; This Tract (1152) contains 640.00 acres, more or less.	640.00	66.83%	33.17%	Pikka Unit	Segregated
393017	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 34, Surveyed by Protraction, All, 640.00 acres; This Tract (1152) contains 640.00 acres, more or less.	640.00	50.00%	50.00%	Pikka Unit	Segregated
391553	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 25, Surveyed by Protraction, All, including the bed of the Miluveach River, 640.00 acres; This Tract (1151) contains 640.00 acres, more or less.	640.00	55.42%	44.58%	Pikka Unit	Parent
393012	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 26, Surveyed by Protraction, All, including the bed of the Colville River, 640.00 acres; This Tract (1151) contains 640.00 acres, more or less.	640.00	50.74%	49.26%	Pikka Unit	Segregated
393013	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 35, Surveyed by Protraction, All, 640.00 acres; This Tract (1151) contains 640.00 acres, more or less.	640.00	50.00%	50.00%	Pikka Unit	Segregated
393014	T. 012N., R. 006E., Umiat Meridian, Alaska. Section 36, Surveyed by Protraction, All, including the bed of the Miluveach River, 640.00 acres; This Tract (1151) contains 640.00 acres, more or less.	640.00	52.20%	47.80%	Pikka Unit	Segregated
391445	T. 011N., R. 006E., Umiat Meridian, Alaska. Section 5, Surveyed by protraction, All, including the beds of all meanderable waterbodies, 640.00 acres; This Tract (1048) contains 640.00 acres, more or less.	640.00	58.02%	41.98%	Pikka Unit	Parent
393021	T. 011N., R. 006E., Umiat Meridian, Alaska. Section 6, Surveyed by protraction, All, including the bed of the Colville River and all meanderable waterbodies, 593.00 acres; This Tract (1048) contains 593.00 acres, more or less.	593.00	80.78%	19.22%	Pikka Unit	Segregated
393022	T. 011N., R. 006E., Umiat Meridian, Alaska. Section 7, Surveyed by protraction, All, including the bed of the Colville River and all meanderable waterbodies, 596.00 acres; This Tract (1048) contains 596.00 acres, more or less.	596.00	60.52%	39.48%	Pikka Unit	Segregated
393023	T. 011N., R. 006E., Umiat Meridian, Alaska. Section 8, Surveyed by protraction, All, including the beds of all meanderable waterbodies, 640.00 acres; This Tract (1048) contains 640.00 acres, more or less.	640.00	55.92%	44.08%	Pikka Unit	Segregated

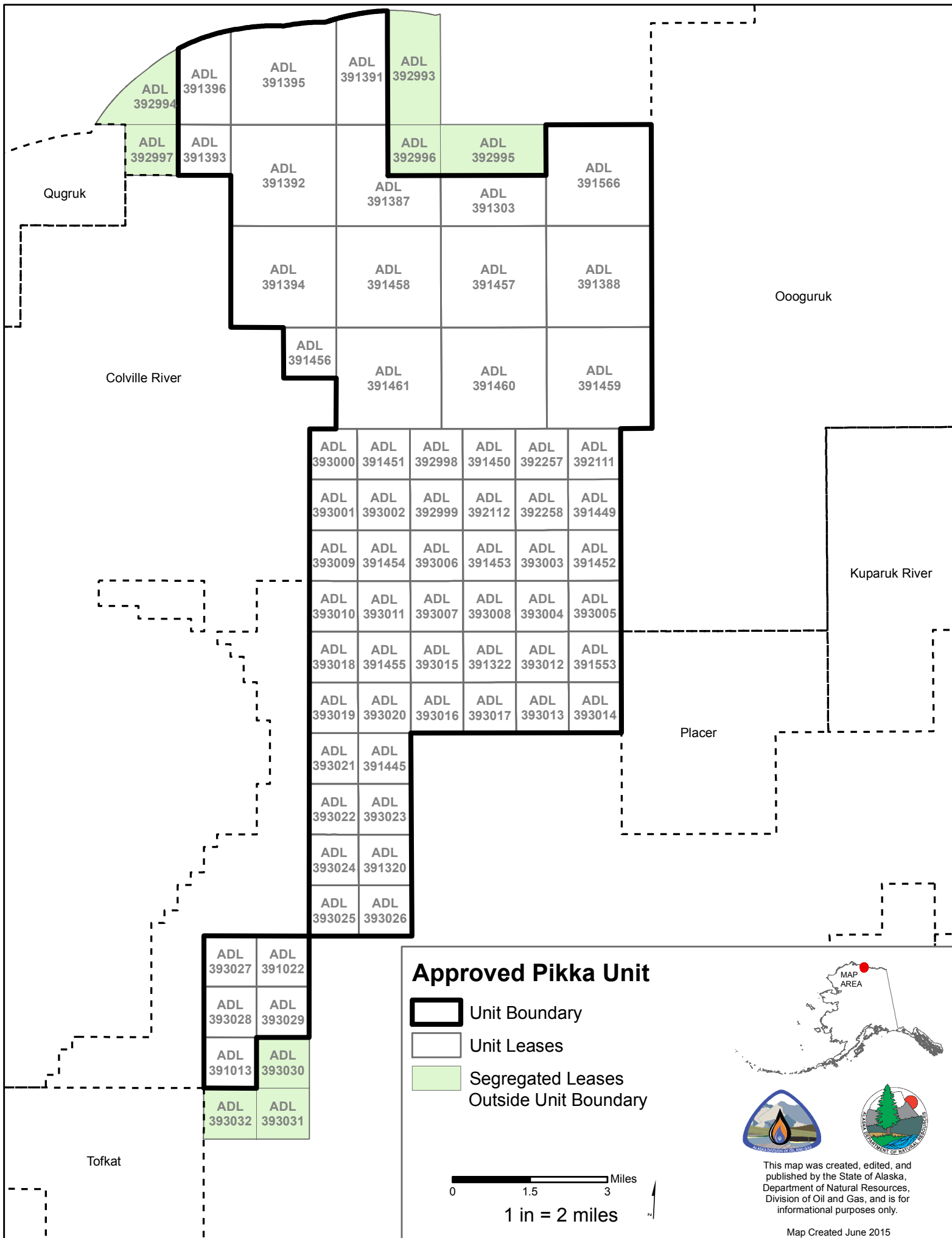
Description of Lands Within the Approved Unit Area

ADL Lease No.	Description	Acreage	State Mineral Interest	ASRC Mineral Interest	Unit	Lease Initiation
391320	T. 011N., R. 006E., Umiat Meridian, Alaska. Section 17, Surveyed by Protraction, All including the bed of the Kachemach River, 640.00 acres; This Tract (1051) contains 640.00 acres, more or less.	640.00	55.07%	44.93%	Pikka Unit	Parent
393024	T. 011N., R. 006E., Umiat Meridian, Alaska. Section 18, Surveyed by Protraction, All including the bed of the Kachemach River, 599.00 acres; This Tract (1051) contains 599.00 acres, more or less.	599.00	54.23%	45.77%	Pikka Unit	Segregated
393025	T. 011N., R. 006E., Umiat Meridian, Alaska. Section 19, Surveyed by Protraction, All including the bed of the Kachemach River, 601.00 acres; This Tract (1051) contains 601.00 acres, more or less.	601.00	50.50%	49.50%	Pikka Unit	Segregated
393026	T. 011N., R. 006E., Umiat Meridian, Alaska. Section 20, Surveyed by Protraction, All including the bed of the Kachemach River, 640.00 acres; This Tract (1051) contains 640.00 acres, more or less.	640.00	54.83%	45.17%	Pikka Unit	Segregated
391022	T. 011N., R. 005E., Umiat Meridian, Alaska. Section 25, Surveyed by Protraction, All, including the beds of the unnamed lake and the Colville River, 640.00 acres; This Tract (NS2006-1043) contains 640.00 acres, more or less.	640.00	50.65%	49.35%	Pikka Unit	Parent
393027	T. 011N., R. 005E., Umiat Meridian, Alaska. Section 26, Surveyed by Protraction, All, including the bed of the Colville River, 640.00 acres; This Tract (NS2006-1043) contains 640.00 acres, more or less.	640.00	79.61%	20.39%	Pikka Unit	Segregated
393028	T. 011N., R. 005E., Umiat Meridian, Alaska. Section 35, Surveyed by Protraction, All, including the beds of the unnamed lakes and the Colville River, 640.00 acres; This Tract (NS2006-1043) contains 640.00 acres, more or less.	640.00	69.63%	30.37%	Pikka Unit	Segregated
393029	T. 011N., R. 005E., Umiat Meridian, Alaska. Section 36, Surveyed by Protraction, All, including the beds of the unnamed lakes, 640.00 acres; This Tract (NS2006-1043) contains 640.00 acres, more or less.	640.00	53.40%	46.60%	Pikka Unit	Segregated
391013	T. 010N., R. 005E., Umiat Meridian, Alaska. Section 2, Surveyed by Protraction, All, including the beds of the unnamed lakes, 640.00 acres; This Tract (NS2006-0919) contains 640.00 acres, more or less.	640.00	63.30%	36.70%	Pikka Unit	Parent
393030	T. 010N., R. 005E., Umiat Meridian, Alaska. Section 1, Surveyed by Protraction, All, including the beds of the unnamed lakes, 640.00 acres; This Tract (NS2006-0919) contains 640.00 acres, more or less.	640.00	57.45%	42.55%	None	Segregated

Description of Lands Within the Approved Unit Area

ADL Lease No.	Description	Acreage	State Mineral Interest	ASRC Mineral Interest	Unit	Lease Initiation
393031	T. 010N., R. 005E., Umiat Meridian, Alaska. Section 11, Surveyed by Protraction, All, including the beds of the unnamed lakes, 640.00 acres; This Tract (NS2006-0919) contains 640.00 acres, more or less.	640.00	57.39%	42.61%	None	Segregated
393032	T. 010N., R. 005E., Umiat Meridian, Alaska. Section 12, Surveyed by Protraction, All, including the beds of the unnamed lakes, 640.00 acres; This Tract (NS2006-0919) contains 640.00 acres, more or less.	640.00	50.25%	49.75%	None	Segregated

4. Pikka Unit Map of Approved Unit Area



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5. Pikka Unit Approved Joint Lands Unit Agreement

RECEIVED

JUN 08 2015

**DIVISION OF
OIL AND GAS**

PIKKA UNIT AGREEMENT

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PIKKA UNIT AGREEMENT

RECITALS

Repsol E&P USA, Inc. (Repsol) submitted an application to the State of Alaska, Department of Natural Resources (State and DNR), and Arctic Slope Regional Corporation (ASRC), on behalf of Working Interest Owners (Repsol, 70&148, LLC (Armstrong), and GMT Exploration Company, LLC (GMT)), to form the Pikka Unit out of State oil and gas leases (State Leases) and joint State-ASRC oil and gas leases (Joint Leases).

The Working Interest Owner parties to this Agreement are owners of interests in the oil and gas leases that are subject to this Agreement.

The DNR Commissioner has the authority to approve unitization of the State Leases and Joint Leases under AS 38.05.180(p)..

The ASRC President or the President's authorized representative has the authority to approve unitization of Joint Leases.

The State and ASRC, an Alaska corporation, entered into the 1991 Settlement Agreement that governs the subsurface estate of certain oil and gas leases. The unit includes leases governed by this agreement as well as State leases.

Lessees may not unitize acreage governed by the 1991 Settlement Agreement without the written consent of both the State and ASRC as to their respective interests. The DNR Commissioner and ASRC President will separately issue decisions on whether to approve formation of the Pikka Unit.

This document is the Pikka Unit Agreement (Agreement) between and executed by Repsol, Armstrong, and GMT as Working Interest Owners.

AGREEMENT

In consideration of the premises and mutual promises contained in this Agreement, the Working Interest Owners commit to this Agreement their respective interests in the below-defined Unit Area, and agree severally among themselves as follows.

ARTICLE 1 **Definitions**

1.1 Approved Unit Plan means a Unit Plan that has been (i) approved by the Proper Authority pursuant to Article 8 and, (ii) if required by applicable laws, rules and regulations, approved by Regulatory Action as provided in Section 16.4.

1.2 ASRC means the Arctic Slope Regional Corporation, created by the Alaska Native Claims Settlement Act of 1971 (Public Law 92-203, 43 U.S.C. Sec. 1601, et seq., as amended.)

1.3 Alaska Oil and Gas Conservation Commission (AOGCC) means the independent quasi-judicial agency of the State of Alaska established by the Alaska Oil and Gas Conservation Act, AS 31.05.

1.4 Article means a numbered Article of this Agreement.

1.5 Btus means British Thermal Units, with each British Thermal Unit being the quantity of heat required to raise the temperature of one avoirdupois pound of water one degree Fahrenheit at or near 39.2° Fahrenheit (its temperature of maximum density), being equal to 1055.05585262 joules. Btus must be measured and calculated in accordance with any applicable laws and regulations of the State of Alaska and, subject to any such applicable laws or regulations, accepted industry practices.

1.6 Commissioner means the Commissioner of the Department of Natural Resources, State of Alaska, or the Commissioner's authorized representative.

1.7 Effective Date means the time and date this Agreement becomes effective as provided in Section 13.1.

1.8 Force Majeure means wars, riots, acts of God, unusually severe weather, or any other cause beyond the Unit Operator's reasonable ability to foresee or control including, but not limited to, delays caused by operational failure of existing transportation facilities or delays caused by judicial or administrative decisions or lack of them. Force Majeure does not include a lack of monetary resources, regardless of the cause. The period of time during which performance of any action will be excused by Force Majeure will not extend beyond the time when such Force Majeure condition could have been cured or removed and such action could have been performed in the exercise of reasonable diligence.

1.9 Joint Land means land as to which the State and ASRC each own undivided interests in the oil, gas and minerals in and under such land, subject to any applicable Joint Lease.

1.10 Joint Lease means an oil or gas lease covering the undivided interests of both the State and ASRC in Joint Land.

1.11 Oil and Gas Rights means the rights to explore, develop, and produce Unitized Substances from lands subject to this Agreement.

1.12 Original Oil In Place means the estimated volume of crude oil (including condensates, if any) (as estimated from time to time as applicable) in a given stratigraphic formation under a Participating Area as it existed immediately before commencement of Unit Operations on such Participating Area.

1.13 Outside Substances means oil, gas, other hydrocarbons or non-hydrocarbon substances purchased or otherwise obtained from outside the Unit Area by the Unit Operator and, with the approval of the Proper Authority, injected into a Reservoir in the Unit Area.

1.14 Outside PA Substances means oil, gas, other hydrocarbons or non-hydrocarbon substances purchased or otherwise obtained from another Participating Area in the Unit Area by the Unit Operator and, with the approval of the Proper Authority, injected into a Reservoir in a different Participating Area in the Unit Area.

1.15 Overriding Royalty Interest means a Royalty Interest other than the Royalty Interest reserved to the State and ASRC under the terms of State or Joint Leases. Overriding Royalty Interest owners are not parties to or third-party beneficiaries of this Agreement, nor do they have any rights to enforce the terms of this Agreement.

1.16 Participating Area means all or parts of Unit Tracts described and designated as a Participating Area pursuant to Article 9 for the purposes of allocating costs and Unitized Substances Produced from a Reservoir.

1.17 Participating Area Expense means all cost, expense or indebtedness incurred by the Unit Operator under this Agreement for or on account of production from or operations in a Participating Area and allocated solely to the Unit Tracts in that Participating Area.

1.18 Pay, Payment or Paid means and includes, with respect to a Royalty Interest in Unitized Substances, taking in value by (i.e. payment in money to) the State or ASRC, or delivery in kind to the State or ASRC, of the share of Unitized Substances Produced from the Unit Area attributable to such Royalty Interest as provided for in the applicable lease and this Agreement.

1.19 Paying Quantities means quantities of Unitized Substances sufficient to yield a return in excess of operating costs, even if drilling and equipment costs may never be repaid and the undertaking considered as a whole may ultimately result in a loss. Quantities are insufficient to yield a return in excess of operating costs unless they will produce sufficient revenue, not considering transportation and marketing, to induce a prudent operator to produce them.

1.20 President means the President of the Arctic Slope Regional Corporation, or the President's designee.

1.21 Produced means that Unitized Substances have been removed from the Unit Area or used by the Working Interest Owners or Unit Operator for a purpose other than use for development or production in the Unit Area.

1.22 Proper Authority means:

1.22.1 the Commissioner alone, if only State Land is directly implicated;

1.22.2 both the Commissioner and the President (including any decision, approval or direction required by a decision of the arbitrator resolving a dispute between the Commissioner and the President as provided for in Article 20), if any Joint Land or any combination of State Land and Joint Land is directly implicated.

1.23 Recoverable PA Volume means, as to each Participating Area, the estimated ultimately recoverable volume of crude oil (including condensates, if any) (as estimated from time to time as applicable) situated under a Participating Area as it existed immediately before commencement of Unit Operations on such Participating Area.

1.24 Recoverable Tract Volume means, as to each Unit Tract any part of which is included in a Participating Area, the estimated ultimately recoverable volume of crude oil (including condensates, if any) (as estimated from time to time as applicable) situated under a Unit Tract (insofar only as to the portion of such Unit Tract included in the Participating Area, if applicable) as it existed immediately before commencement of Unit Operations on such Participating Area.

1.25 Regulatory Action means an act of an agency of the State of Alaska required by statute or regulation.

1.26 Reservoir means an accumulation of Unitized Substances that has been discovered by drilling and evaluated by testing a well or wells, which is geologically separate from and not in hydrocarbon communication with any other accumulation.

1.27 Royalty Interest means an ownership right to or interest in any portion of, or the proceeds or value of Unitized Substances other than a Working Interest..

1.28 Royalty Owner means a party who owns a Royalty Interest

1.29 Section, unless otherwise indicated by the context, means a numbered section of this Agreement.

1.30 Settlement Agreement means the 1991 Settlement Agreement signed by ASRC and the State in December 1991 and approved by the Alaska State Legislature on May 27, 1992, as amended. For all purposes in this Agreement and any Unit Operating Agreement, references to laws, statutes and regulations will include the terms and conditions of the Settlement Agreement.

1.31 State means the State of Alaska acting in this Agreement by and through the Commissioner of the Department of Natural Resources, or the Commissioner's authorized representative.

1.32 State Land means land as to which the State owns the oil, gas and minerals in and under such land, subject to any applicable State Lease, and in which ASRC has no ownership interest in the oil, gas and minerals in and under such land.

1.33 State Lease means an oil and gas lease of State Land only.

1.34 Subsection means a numbered Subsection of this Agreement; provided that if a particular paragraph designation ((a), (b), etc.) is included in a reference to a Subsection number, such reference means that particular paragraph of the applicable numbered Subsection.

1.35 Sustained Unit Production means continuing production of Unitized Substances from a well in the Unit Area into production facilities and transportation from the Unit Area to market, excluding temporary production for initial testing purposes.

1.36 Unit Area means the lands subject to this Agreement and described in Exhibits A and B to this Agreement, as amended from time to time, submerged or not.

1.37 Unit Equipment means all personal property, lease and well equipment, plants, platforms and other facilities and equipment used, taken over or otherwise acquired for use in Unit Operations.

1.38 Unit Expense means all costs, expenses or indebtedness incurred by the Unit Operator under this Agreement and the Unit Operating Agreement for or on account of Unit Operations.

1.39 Unitized Substances means all oil, gas (except helium), gaseous substances, condensate, distillate, and all associated constituent liquid or liquefiable substances (other than water) within or produced from the Unit Area. Outside Substances (other than water) injected into a Reservoir will be deemed to be Unitized Substances when Produced from the Unit Area, except to the extent that such substances are deemed or considered to be Outside Substances pursuant to Section 10.4.

1.40 Unit Operating Agreement means any and all agreements entered into by the Unit Operator and the Working Interest Owners, as described in Article 7 of this Agreement.

1.41 Unit Operations means all operations conducted under this Agreement in accordance with an Approved Unit Plan or Plans.

1.42 Unit Operator means the party designated by the Working Interest Owners and approved by the President and the Commissioner to conduct Unit Operations within the Unit Area.

1.43 Unit Plan means a unit plan of operations, exploration, or development provided for in Article 8.

1.44 Unit Tract means each separate parcel that is described in Exhibit A and given a Unit Tract number.

1.45 Unit Tract Participation means the percentage of Unitized Substances allocated to a Unit Tract in a Participating Area.

1.46 Unit Well means a well drilled within the Unit Area after the effective date of this Agreement.

1.47 Working Interest means an interest in lands by virtue of a lease under which the owner of the interest has the right to explore for, drill for, develop, or produce Unitized Substances.

1.48 Working Interest Owner means a party who owns a Working Interest, subject, however, to the provisions of Section 20.5.

ARTICLE 2

Exhibits

2.1 The following Exhibits are to be attached to and made a part of this Agreement. The Unit Operator shall provide copies of the initial and any revised Exhibits to the Commissioner and the President. When this Agreement is approved, only Exhibits A, B, G and H are required. The Unit Operator shall provide Exhibits C and D when submitting a Participating Area application for approval. If the Unit is expanded to include net profit share leases, the Unit Operator shall provide Exhibits E and F when submitting a Participating Area application. When the Unit Operator submits a revised Exhibit to the Commissioner and the President, it becomes part of this Agreement upon approval of the Proper Authority.

2.2 Exhibit A is a schedule that identifies and describes each Unit Tract, shows the Working Interest ownership of Oil and Gas Rights in each Unit Tract, and shows the Royalty Interests and net profit share rates applicable to each Unit Tract. Within thirty (30) days of approval by the Commissioner and President of any expansion or contraction of the Unit Area under Article 12 or any approval by the Proper Authority of a change of the Working Interest ownership of Oil and Gas Rights in any Unit Tract, a revised conforming Exhibit A must be submitted to the Commissioner and President.

2.3 Exhibit B is a map that shows the boundary lines of the Unit Area and of each of the Unit Tracts. Within thirty (30) days of approval by the Commissioner and President of any expansion or contraction of the Unit Area under Article 12, a revised conforming Exhibit B must be submitted to the Commissioner and President.

2.4 Exhibit C is a schedule that identifies and describes a Participating Area established under this Agreement, including schedules showing Unit Tract numbers, legal descriptions, lease numbers, Working Interest ownership, Royalty Interest ownership, including Overriding Royalty Interest ownership, and Unit Tract Participation. Exhibit C must include a separate table for each Participating Area. Within thirty (30) days of the effective date (pursuant to Article 9 or Article 10) of any Participating Area, any expansion or contraction of a Participating Area, or of any division of interest or allocation formula establishing or revising the Unit Tract Participation of any Unit Tract or Unit Tracts in a Participating Area, an original or revised conforming Exhibit C must be submitted to the Commissioner and President.

2.5 Exhibit D is a map showing the boundary lines of a Participating Area and the Unit Tracts in that Participating Area. Exhibit D must include separate maps for each Participating Area established within the Unit Area. Within thirty (30) days of the effective date (pursuant to Article 9 or Article 10) of any Participating Area or any expansion or contraction of a Participating Area, an original or revised conforming Exhibit D must be submitted to the Commissioner and President.

2.6 The Operator shall provide an Exhibit E only if the Unit is later expanded to include net profit share leases. Exhibit E is a schedule that describes the allocation of Participating Area Expense to each Unit Tract in the Participating Area(s) established under this Agreement. Separate Exhibits must be prepared for each separate Participating Area established in the Unit Area. Each Unit Tract in a Participating Area must have the same percentage of Participating Area Expense for such Participating Area allocated to such Unit Tract as the percentage of Unitized Substances Produced from such Participating Area which is allocated to such Unit Tract from time to time pursuant to Article 10. In each instance when an initial or revised Exhibit C is required to be submitted to the Proper Authority with respect to a Participating Area pursuant to Section 2.4, an initial or revised conforming Exhibit E with respect such Participating Area shall simultaneously be submitted to the Commissioner.

2.7 The Operator shall provide an Exhibit F only if the Unit is later expanded to include net profit share leases. Exhibit F is a schedule that describes the allocation of Unit Expense to each Unit Tract in the Unit Area. In each instance when an initial or revised Exhibit C is required to be submitted to the Proper Authority with respect to a Participating Area pursuant to Section 2.4, an initial or revised Exhibit F with respect such Participating Area must simultaneously be submitted to the Commissioner for approval. Additionally, a proposed revised Exhibit F revising the allocation of Unit Expense among the Unit Tracts in the Unit Area may be submitted for approval by the Commissioner at any time desired by Working Interest Owners, but any such proposed revised Exhibit F will not be or become effective unless and until approved by the Commissioner.

2.8 Exhibit G is a specification of an agreement with respect to dispute resolution procedures to be used to resolve certain disagreements arising under this Agreement, as more fully provided in and subject to the terms and provisions of Article 20.

2.9 Exhibit H is a description of information and data to be provided to the State and ASRC by the Unit Operator and a description of the procedures to be used in providing or making such information available to representatives of the State and ASRC.

ARTICLE 3

Creation and Effect of Unit

3.1 All Oil and Gas Rights in and to the lands described in Exhibit A and shown in Exhibit B are made subject to this Agreement in order that Unit Operations may be conducted as if the Unit Area were a single lease.

3.2 Except as otherwise provided by applicable regulations with respect to State Leases, where only a portion of a State Lease or Joint Lease is committed to this Agreement, the commitment constitutes a severance of the lease as to the unitized and non-unitized portions of the lease. The portion of the lease not committed to this Agreement will be treated as a separate and distinct lease having the same effective date and term as the original lease and may be maintained thereafter only in accordance with the terms and conditions of the original lease and (as to State Leases) any applicable statutes and regulations. Any portion of the State Lease or Joint Lease not committed to this Agreement will not be affected by the unitization or pooling of any other portion of the lease, by operations in or production of Unitized Substances from the Unit Area, or by suspension approved or ordered for the Unit by the Commissioner and President or under any applicable statutes and regulations.

3.3 Production of Unitized Substances in Paying Quantities from any part of a Participating Area will be considered as production from each Unit Tract in the Participating Area and will cause the portion of each State Lease or Joint Lease that is either wholly or partially contained within the Participating Area to continue in effect just as if a well were producing from each Unit Tract in the Participating Area, subject to the provisions of Sections 3.2, 12.2, 12.3 and 14.1.

3.4 The provisions of a State or Joint Lease committed to this Agreement and of any other agreement regarding that lease are modified to conform to the provisions of this Agreement and statutes and regulations regarding oil and gas leases and units existing on the Effective Date of this Agreement or enacted thereafter. Otherwise, the provisions of the aforementioned lease and other agreements will remain in full force and effect.

3.5 This Agreement does not transfer title to any State or Joint Lease.

3.6 Except to the extent modified in this Agreement, the Unit Operator shall have the same rights to use of the surface and the subsurface and any other rights as are granted in the leases. The Unit Operator shall, to the extent feasible and prudent, minimize and consolidate surface facilities in order to minimize surface impacts.

3.7 All Unit Equipment and any other lease or well equipment, materials, and other facilities placed by the Unit Operator or any other Working Interest Owner in the Unit Area will be deemed to be and will remain personal property belonging to and may be removed by the Unit Operator or Working Interest Owner owning same. The rights, obligations, and interests in Unit Equipment or in a Working Interest Owner's personal property in the Unit Area may be addressed in the Unit Operating Agreement.

3.8 The Unit Operator shall provide to ASRC and the State data and interpretations concerning the Unit Area in accordance with this Section.

3.8.1 The Unit Operator shall provide ASRC and the State with copies of all data filed with the AOGCC concerning the Unit Area (AOGCC Data). Such copies must be

provided to ASRC and the State at the same time the AOGCC Data is filed with the AOGCC.

3.8.2 The Unit Operator and Working Interest Owners shall submit upon written request any other data, information, and interpretations of data and information, determined by the State or ASRC to be necessary for the administration of the Unit Area or for the performance of obligations under Alaska law or the terms of the State and ASRC Leases. All data or information must be provided to both the State and ASRC, regardless of which requested it. At any time at ASRC's or DNR's request and without further consideration, Repsol shall execute and deliver to ASRC or DNR such other instruments, provide such materials and information and take such other actions as ASRC or DNR may reasonably deem necessary or desirable in order to more effectively provide for the disclosures required by this Subsection. Repsol waives any confidentiality rights it may have with respect to, and authorizes DNR to disclose to ASRC, any and all information in the DNR's possession regarding Repsol's obligations, operations and performance under this Agreement, any Unit Operating Agreement, and the State and Joint Leases. ASRC and DNR will maintain the confidentiality of all information received pursuant to this Subsection as to any individual, groups, parties or entities beyond DNR, ASRC, the Unit Operator and the other Working Interest Owners.

3.8.3 The Unit Operator shall make a reasonable effort to provide all data and interpretations required or requested under this Section 3.8 to ASRC and the State in the digital or hard copy form requested by ASRC and the State.

3.8.4 The obligations to provide data and interpretations under this Section are limited to data and interpretations owned by or within the control of the Unit Operator and which are in existence at the time of the request. The Unit Operator shall not be required to make available data for which it holds a license but is not authorized by that license to share with either ASRC or the State. The Unit Operator shall not be required to generate new data or interpretations under this Section.

3.8.5 All data, and interpretations required or requested under this Section must be provided to both ASRC and the State without regard to whether title to the land to which it relates is owned by ASRC or the State.

3.8.6 Except as provided in Subsection 3.8.2, all data and interpretations provided to the State, under this Section 3.8 and Article 10, must be kept confidential by the State in accordance with governing law and regulations. All data and interpretations provided to ASRC, pursuant to this Section 3.8 and Article 10, must be kept confidential by ASRC to the same extent the State is required to keep said information confidential.

3.8.7 Unit Operator shall conduct periodic meetings with ASRC and the State to review any data and interpretations submitted under this Section. Subject to the specific requirements of Section 10.1, the meetings must be scheduled by Unit Operator and must take place semi-annually during the first five years after commencement of Sustained Unit Production from the initial Participating Area and annually thereafter. Exhibit H

describes the types of data and interpretations that the Unit Operator shall review with ASRC and the State at these meetings. ASRC may bring a representative of Kuukpik Corporation (Kuukpik) to observe and participate in meetings with the State and ASRC that are conducted by the Unit Operator, provided that Kuukpik and its representative shall agree to observe the confidentiality requirements of Subsection 3.8.6 with respect to the data and interpretations disclosed to such representative.

3.8.8 Unit Operator makes no representation or warranty, express or implied, as to the completeness, quality, reliability, or accuracy of the information provided to the State, ASRC, or Kuukpik pursuant to this Section 3.8 or Article 10. The State's, ASRC's, or Kuukpik's use or reliance upon such information will be at its sole risk and the Unit Operator will not have any liability for such information or any errors or omissions.

3.9 All Working Interest Owners of a lease must be invited to join this Agreement in order for that lease to be subject to this Agreement.

3.10 Neither the State nor ASRC will unreasonably withhold any approval required by this Agreement. If approval is required by both the State and ASRC and either the State or ASRC believe that the other is unduly withholding approval, the State or ASRC may initiate arbitration proceedings as set forth in Article 20 and Exhibit G.

ARTICLE 4

Designation of Unit Operator

4.1 Repsol is designated as the Unit Operator and agrees to accept the rights and obligations of the Unit Operator to conduct Unit Operations and to explore for, develop, and produce Unitized Substances as provided in this Agreement.

4.2 Except as otherwise provided in this Agreement and subject to the terms and conditions of Approved Unit Plans, the exclusive rights and obligations of the Working Interest Owners to conduct operations to explore for, develop, and produce Unitized Substances in the Unit Area are delegated to and shall be exercised by the Unit Operator. This delegation neither relieves a lessee of the obligation to comply with all lease terms nor transfers title to any lease. Unit Operator shall notify the other Working Interest Owners, the Commissioner, and President of all actions taken by the Unit Operator under this Agreement.

ARTICLE 5

Resignation or Removal of Unit Operator

5.1 The Unit Operator may resign at any time, but the resignation is not effective until DNR and ASRC approval of a successor Unit Operator.

5.2 The Unit Operator may be removed as provided in the Unit Operating Agreement. This removal will not be effective until the Working Interest Owners notify the President, the

Commissioner, and the Unit Operator, and until the President and the Commissioner approve the designation of a successor Unit Operator.

5.3 The resignation or removal of the Unit Operator will not release the Unit Operator from liability for any failure to meet its obligations that accrued before the effective date of its resignation or removal.

5.4 The resignation or removal of the Unit Operator will not terminate its rights, title or interest or obligations as the owner of a Working Interest or other interest in the Unit Area. A termination of the Unit Operator's rights, title or interest may occur independently under the terms of the leases and governing law. When the resignation or removal of the Unit Operator becomes effective, the Unit Operator shall relinquish to the successor Unit Operator possession of all Unit Equipment, artificial islands, wells, installations, devices, records, and any other assets used for conducting Unit Operations, whether or not located in the Unit Area.

ARTICLE 6

Successor Unit Operator

6.1 A proposed successor Unit Operator shall accept all rights, duties, and obligations of a Unit Operator in writing before it will be considered for approval by ASRC and DNR.

6.2 If no successor Unit Operator is designated within sixty (60) days after notice to the President and the Commissioner of the resignation or removal of a Unit Operator, the President and the Commissioner, at their election, may designate one of the Working Interest Owners, other than the Unit Operator, as successor Unit Operator, or they may declare this Agreement terminated.

ARTICLE 7

Unit Operating Agreement

7.1 The Working Interest Owners and the Unit Operator shall enter into a Unit Operating Agreement that describes how all costs and liabilities incurred in maintaining or conducting operations pursuant to this Agreement will be apportioned and assumed among the Working Interest Owners. The Unit Operating Agreement must also describe how the benefits that may accrue from operations conducted on the Unit Area must be apportioned among the Working Interest Owners.

7.2 Any allocation of costs or liabilities, or allocation of the production of Unitized Substances or other Unit benefits set forth in the Unit Operating Agreement will not be binding on the State or ASRC for the purposes of determination, settlement, or Payment of Royalty Interests. Allocations of Unit Expense or Participating Area Expense or Unitized Substances for the purpose of determination, settlement and Payment of Royalty Interests must be based on

Exhibits C, E and F of this Agreement, and, except as otherwise provided in Section 9.3, Section 9.7 or Section 10.1, must be approved by the Proper Authority in writing before taking effect.

7.3 The Working Interest Owners and the Unit Operator may establish, by means of one or more Unit Operating Agreements and amendments thereto, other rights and obligations between the Unit Operator and the Working Interest Owners as they deem necessary or appropriate. However, the Unit Operating Agreement will not modify the terms and conditions of this Agreement or relieve the Working Interest Owners or the Unit Operator of any obligation set forth in this Agreement. As between the State, ASRC, and the Working Interest Owners, in case of any conflict between the terms of this Agreement and the Unit Operating Agreement, this Agreement will prevail. Solely as between and among Working Interest Owners, the terms of the Unit Operating Agreement will prevail in case of any conflict with any term of this Agreement.

7.4 Any Working Interest Owner will be entitled to drill wells on the unitized portion of its lease when the Unit Operator has declined to drill such wells, so long as such activities are conducted under an approved permit to drill, an Approved Unit Plan, and in accordance with applicable statutes and regulations. If any such well drilled by a Working Interest Owner is determined to be capable of producing Unitized Substances in Paying Quantities, that land upon which it is situated must be included in a Participating Area. Such Participating Area must be established or enlarged as provided in this Agreement, and the well must thereafter be operated by the Unit Operator in accordance with the terms of this Agreement and the Unit Operating Agreement.

7.5 Copies of the Unit Operating Agreement cited in Section 7.1 must be filed with the President and Commissioner when this Agreement is submitted to the President and Commissioner for approval. The copy of the Unit Operating Agreement filed with the President and the Commissioner will be for informational purposes only. Approval of the Unit Agreement is not approval of the Unit Operating Agreement. Copies of all other Unit Operating Agreements and any amendments to Unit Operating Agreements must also be filed with the President and the Commissioner at least thirty (30) days before their effective dates.

ARTICLE 8

Plans of Operations, Exploration and Development

8.1 Any Unit Plan and any revisions or amendments thereto must be approved by the Proper Authority and, if required by applicable laws, rules or regulations, by Regulatory Action before the same will be effective. Approved Unit Plans are incorporated into this Agreement and become effective on the date of their approval by the Proper Authority.

8.1.1 A Unit Plan of exploration ("Plan of Exploration") must describe the proposed exploration activities for any land in the Unit Area not within a Participating Area. Plans of Exploration must comply with 11 AAC 83.341. Plans of Exploration must include the bottom-hole locations and depths of proposed wells and the approximate date drilling will commence. Plans of Exploration must be updated and submitted to the Proper Authority

for approval at least sixty (60) days before the expiration date of the previous approved Plan of Exploration.

8.1.2 A Unit Plan of development (“Plan of Development”) must include a description of the proposed development activities based on data reasonably available at the time the plan is submitted and plans for exploration or delineation of any land in the Unit Area not included in a Participating Area. Plans of Development must comply with 11 AAC 83.343. A Plan of Development must include, to the extent available information exists, (a) long-range proposed development activities for the Unit Area, including plans to delineate all underlying oil and gas reservoirs, bring the reservoirs into production, and maintain and enhance production once established, (b) plans for the exploration or delineation of any land in the Unit Area not included in a Participating Area, (c) details of the proposed operations for at least one year following the submission of the Plan of Development, and (d) the surface location of proposed facilities, drill pads, roads, docks, causeways, material sites, base camps, waste disposal sites, water supplies, airstrips, and any other operation or facility necessary for Unit Operations. Plans of Development must be updated and submitted to the Proper Authority for approval at least ninety (90) days before the expiration date of the previous approved Plan of Development.

8.1.3 A Unit Plan of operations (“Plan of Operations”) is required before the Unit Operator may undertake any activities in the Unit Area other than activities that would otherwise be considered generally allowed uses under 11 AAC 96. A Plan of Operations or amendment must comply with 11 AAC 83.346 and provide the statements and maps or drawings required by that regulation. A Plan of Operations or amendment application that involves leases that are subject to AS 38.05.035(e)(1)(C) and proposes operations that begin the exploration, development and production, transportation, or any other phase for those leases, is also subject to the public notice and comment requirements of AS 38.05.035(e)(1)(C). The Unit Operator shall submit amendments to an approved Plan of Operations involving operations on acreage already subject to a Plan of Operations no less than thirty (30) days before it intends to begin operations under the amendment. The Unit Operator may begin operations immediately upon approval of a Plan of Operations or amendment unless the approval specifies a different date to commence operations.

8.1.4 When the Proper Authority is both the State and ASRC, approval by both is required for the Unit Operator to have an Approved Unit Plan. If one or both Proper Authorities disapprove a Unit Plan, the Operator shall take the actions necessary to remain in compliance with requirements of the leases, this Agreement, and applicable statutes and regulations, including submission of a Unit Plan that the Proper Authority or Authorities will approve. If one Property Authority approves and the other disapproves, the disapproving authority will approve any portion of the Unit Plan that it would, in isolation, approve and will do so before the expiration of an existing Unit Plan. If the approved portions of a Unit Plan are sufficient to meet the minimum requirements for a Unit Plan under the applicable regulations, the approved portions of a Unit Plan will be deemed an “Approved Unit Plan” and the Unit Operator and Working Interest Owners

will be authorized but not required to proceed without delay in performing work and operations provided for in such approved portion or portions.

8.1.5 ASRC may participate as a party in any appeal to the Commissioner of a Unit Plan decision by DNR.

8.1.6 Disputes about Unit Plans will be resolved as follows:

(a) any dispute between the President and the Commissioner whether to approve a proposed Unit Plan or revision or amendment thereof will be resolved by Three Party Arbitration pursuant to Article 20 and Exhibit G;

(b) any dispute between the President and the Commissioner, on the one hand, and the Unit Operator, on the other hand, whether a proposed Unit Plan or revision or amendment thereof should be approved will be resolved by Three Party Arbitration pursuant to Article 20 and Exhibit G;

(c) any dispute between the Commissioner alone, on the one hand, and the Unit Operator, on the other hand, whether a proposed Unit Plan involving a Participating Area including only State Land should be approved will be resolved by State Only Resolution pursuant to Article 20 and Exhibit G.

8.1.7 An arbitrator appointed pursuant to Article 20 to resolve a dispute about approval of a Plan of Development or revision or amendment thereof shall prescribe and direct the adoption and approval of a Plan of Development or revision or amendment thereof. The Plan of Development or revision or amendment prescribed by the arbitrator will not necessarily be required to conform to any Plan of Development or revision or amendment thereof that is proposed by any party to the arbitration proceeding. The Plan of Development or revision or amendment prescribed by the arbitrator must describe, as applicable, the numbers of injection wells and production wells, the general location of injection points in injection wells and general location of completions or perforations in the productive horizon in production wells, and the program for coring, logging and testing and operation of individual wells to be drilled in a Participating Area. The Plan of Development or revision or amendment must be designed to comply with the Working Interest Owners' obligation to develop fully and maximize the overall production and recovery of Unitized Substances from the applicable Reservoir (viewed as a whole) as would a reasonable and prudent operator under the same or similar circumstances, determined without regard for ownership of, or the percentage amount or extent of, Working Interests or Royalty Interests in the respective Unit Tracts within the applicable Participating Area; provided that the Unit Operator shall not be obligated or required to drill any well (a "Non-Commercial Well") that is not reasonably estimated to produce sufficient Unitized Substances to recover the costs of drilling, completing and operating such well and a reasonable profit to the Working Interest Owners, taking into account (to the extent applicable) the amount of the Royalty Interests burdening the Unit Tract or Unit Tracts in which such well is completed

8.1.8 If a dispute (an “Approval Dispute”) arises between the Commissioner and the President whether to approve any proposed Unit Plan or any proposed amendment of any such Unit Plan, then in each such event, prior to expiration of the Decision Period specified in Subsection 20.4.1, the Commissioner and the President will approve the portion or portions, if any, of such proposed Unit Plan or amendment thereof that:

- (a) are not directly involved in such Approval Dispute in such manner that one or the other of the Commissioner or President would require a change or deletion thereof if his or her position in the Approval Dispute were to prevail;
- (b) are not disapproved by both the Commissioner and the President; and
- (c) are not disapproved by Regulatory Action.

The portion or portions, if any, of any such proposed Unit Plan or amendment thereof that are thus approved by the Commissioner and the President will be deemed to be an “Approved Unit Plan,” and the Unit Operator and Working Interest Owners shall be authorized but not required to proceed without delay in performing work and operations provided for in such approved portion or portions.

8.2 No exploration, development, or production activities may be commenced or conducted on the Unit Area except in accordance with Approved Unit Plans. The Unit Operator shall also obtain any other approvals required by law, such as permits to drill. The Unit Operator shall provide copies of applications to and approvals by government entities other than DNR to the Commissioner and President for informational purposes.

8.3 Unless prevented by Force Majeure, after the commencement of Sustained Unit Production in Paying Quantities, Unit Operations pursuant to an Approved Unit Plan must be maintained, with lapses of no more than ninety (90) days per lapse between such operations, unless suspension of operations or production has been ordered or approved by the Commissioner and the President. The Unit Operator may apply for a suspension of Unit Operations at any time if there is a reasonable basis for such suspension. The President will not unreasonably withhold approval of a request for suspension. The Commissioner’s decision will be consistent with applicable laws and regulations.

8.4 The Commissioner and the President, after giving written notice to the Unit Operator and an opportunity to be heard, may, from time to time and upon mutual agreement by the Commissioner and the President, require the Unit Operator to modify the rate of prospecting and development and the quantity and rate of production under this Agreement.

8.5 Any injection of Outside Substances or Outside PA Substances into a Reservoir in the Unit Area must be approved in advance by the Proper Authority as part of an Approved Unit Plan and will be subject to Sections 9.11, 9.12 and 10.5, as applicable.

8.6 Approved Unit Plans are part of this Agreement.

ARTICLE 9

Participating Areas

9.1 No later than ninety (90) days before Sustained Unit Production from a Reservoir in the Unit Area, the Unit Operator shall submit to the Proper Authority for approval a description of a proposed Participating Area. Absent agreement by the Proper Authority and Working Interest Owners, if one Reservoir underlies another Reservoir in whole or in part, separate Participating Areas must be created for such respective Reservoirs. The Unit Operator shall give written notice to the Commissioner and the President of the date when Sustained Unit Production commences from each Participating Area.

9.2 Before applying for a Participating Area, the Unit Operator shall make a showing to both the President and the Commissioner of where the Reservoir lies. If the Operator shows that the Reservoir lies under State Land only, both the President and the Commissioner must agree with that showing before the Commissioner alone approves the Participating Area.

9.3 For a proposed Participating Area including any Joint Land, the application for approval of a Participating Area by the Proper Authority must include Exhibits C, D, and if applicable E and F. Exhibits C and D must include a division of interest allocating Unit Tract Participation within the proposed Participating Area as determined by the Working Interest Owners in good faith in accordance with the standards and principles set forth in Article 10. Exhibit E must include a formula for allocating Participating Area Expense in proportion to Unit Tract Participation of the respective Unit Tracts as thus determined by the Working Interest Owners. Exhibit F must include a proposed formula for allocating Unit Expense. If approved by the Proper Authority, the area described in said Exhibits C and D will constitute a Participating Area, and the Unit Tract Participation and allocation of Participating Area Expense among the respective Unit Tracts in such Participating Area as determined by the Working Interest Owners will be effective upon the effective date of such Participating Area. The Proper Authority will approve the creation of a proposed Participating Area including any Joint Land if the proposed area qualifies as Includable Land under the provisions of Section 9.5. The initial division of interest submitted by the Working Interest Owners allocating Unit Tract Participation within the proposed Participating Area described above will not require approval by the Proper Authority and will remain effective until changed pursuant to Subsection 10.1. The proposed formula for allocating Unit Expense must also require approval by the Commissioner. However, failure of the Commissioner to approve the proposed formula for allocating Unit Expense will not preclude or delay approval of the creation of the Participating Area.

9.3.1 Concurrent with a Participating Area application containing any Joint Land, the Unit Operator shall submit to the Proper Authority for approval a Plan of Development or Plan of Development amendment that includes (i) a well schedule listing all injection wells and production wells proposed to be drilled into the Participating Area prior to the expiration of two (2) years after commencement of Sustained Unit Production, (ii) the

proposed locations of injection points in injection wells and proposed locations of completions or perforations in the productive formation in production wells proposed to be drilled during such period around which it is planned that a circle forming any part of the outer boundary of the Participating Area will be drawn pursuant to Subsection 9.5.1 when such Participating Area is created, and (iii) a map depicting the proposed outer boundaries of the Participating Area at the time of its creation based on the locations of the proposed injection and production wells described in such well schedule.

9.3.2 Within twenty (22) months of commencement of Sustained Unit Production from a Participating Area containing any Joint Land, the Unit Operator shall submit to the Proper Authority for approval a Plan of Development or Plan of Development amendment setting forth (i) each injection well and each production well proposed to be drilled into the Reservoir in such Participating Area prior to the expiration of five (5) years after commencement of Sustained Unit Production from such Participating Area around which it is planned that a circle forming any part of the outer boundary of the Participating Area will be drawn pursuant to Subsection 9.5.1 to establish the boundaries of such Participating Area at the expiration of two (2) years after the commencement of Sustained Unit Production from such Participating Area, and (ii) as to each such well, the approximate date drilling will commence and the proposed location of injection points in each such injection well and proposed location of completions or perforations in the productive horizon in each such production well.

9.4 The application for approval of a Participating Area containing only State Land by the Commissioner must include a description of the proposed initial Participating Area and proposed Exhibits C, D, and, if applicable, E and F. The proposed Participating Area and the Exhibits shall be effective after approval by the Commissioner.

9.4.1 A Participating Area containing only State Land must include the land known to be underlain by Unitized Substances and known or reasonably estimated through the use of geologic, geophysical or engineering data to be capable of production or contributing to production of Unitized Substances in Paying Quantities.

9.4.2 A Participating Area containing only State Land will be expanded to include acreage reasonably proven through use of geological, geophysical, or engineering data to be capable of producing or contributing to production of Unitized Substances in Paying Quantities, or contracted to exclude acreage reasonably proven through use of geological, geophysical, or engineering data to be incapable of producing or contributing to production of Unitized Substances in Paying Quantities, subject to the approval of the Commissioner. A revision of a Participating Area becomes effective as of the first day of the month in which is obtained the knowledge or information on which the revision is predicated unless a more appropriate effective date is approved or prescribed by the Commissioner. Revised Exhibits C, D, E and F, based on the decisions of the Commissioner must be filed with the Commissioner.

9.4.3 If a Participating Area containing only State Land is expanded to include any Joint Land, such Participating Area will thereafter be governed by and subject to the

provisions of this Agreement applicable to Participating Areas containing any Joint Land, rather than the provisions of this Section 9.4 and other provisions of this Agreement that are applicable solely to Participating Areas including only State Land.

9.5 When a Participating Area includes any Joint Land (regardless of whether such Participating Area also includes any State Land), the President and the Commissioner will approve the Participating Area as follows: the “Includable Land” will mean all land within an area including “Qualified Production Wells” and “Qualified Injection Wells” (as hereinafter defined) drilled or to be drilled and completed and operated in a Reservoir included in such Participating Area the outer boundaries of which area are established by the “Circle Method” provided for and described in Subsection 9.5.1 below.

9.5.1 Except as provided in the next succeeding sentence, the outer boundaries of the area to be established by the “Circle Method” pursuant to this Section 9.5 will be the outer boundaries of the area encompassed within a circle having a radius three-fourths mile in length extending from each subsurface location at which the productive formation in a Participating Area in the Unit Area is penetrated or occupied by the well bore of a “Qualified Production Well” as hereinafter defined or a “Qualified Injection Well” as hereinafter defined. Such area will, however, also include the entirety of each quarter-quarter surveyed or protracted section of land any part of which would be included within the area encompassed within the circles described above, but such area will not include any land that is outside the Unit Area. In this Subsection 9.5.1, as of any relevant date:

(a) A “Qualified Production Well” means a well that has produced Unitized Substances in Paying Quantities from the productive formation in the Reservoir in (or proposed to be included in) a Participating Area for at least six (6) months or that has been drilled and completed in such productive formation and reasonably appears on the basis of well logs, tests, or other available data and information to be capable of producing Unitized Substances in Paying Quantities from such productive formation for an aggregate period of at least six (6) months; provided, that:

(i) At the effective date of a Participating Area, each additional well that is proposed to be drilled or completed as a producing well prior to the expiration of two (2) years after commencement of Sustained Unit Production from such Participating Area as set forth in an Approved Unit Plan will also be deemed to be a “Qualified Production Well” for purposes of determining the area to be included in such Participating Area when it is created.

(ii) Two (2) years after the commencement of Sustained Unit Production from a Participating Area, each additional well that is proposed to be drilled or completed as a producing well in the Reservoir in such Participating Area during the next three (3) years as set forth in an Approved Unit Plan will also be deemed to be a “Qualified Production Well” for purposes of determining the area to be included within such Participating Area, and the Participating Area must, if applicable, be expanded accordingly, effective as of the last to occur of: (x) two (2) years after commencement of Sustained Unit Production from such

Participating Area, or (y) when the applicable Unit Plan of Development submitted by the Unit Operator pursuant to Subsection 8.1.2 becomes an Approved Unit Plan.

(b) A “Qualified Injection Well” means a well that has been operated as an injection well for the injection or reinjection of substances for repressuring, recycling or enhanced recovery purposes into the productive formation in the Reservoir in (or proposed to be included in) a Participating Area for at least six (6) months or that has been drilled and completed as an injection well in such productive formation and reasonably appears on the basis of well logs, tests, or other available data and information to be capable of being operated as an injection well for the injection or reinjection of substances for repressuring, recycling or enhanced recovery purposes into such productive formation for an aggregate period of at least six (6) months. At the effective date of a Participating Area, each additional well that is proposed to be drilled or completed as an injection well in the Reservoir in such Participating Area prior to the expiration of two (2) years after commencement of Sustained Unit Production from such Participating Area as set forth in an Approved Unit Plan will also be deemed to be a “Qualified Injection Well” for purposes of determining the area to be included within such Participating Area when it is created. Two (2) years after the commencement of Sustained Unit Production from a Participating Area, each additional well that is proposed to be drilled or completed as an injection well in the Reservoir in such Participating Area during the next three (3) years as set forth in an Approved Unit Plan will also be deemed to be a “Qualified Injection Well” for purposes of determining the area to be included within such Participating Area, and the Participating Area must, if applicable, be expanded accordingly.

9.5.2 Not more than 270 days nor less than 150 days prior to the expiration of five (5) years after commencement of Sustained Unit Production from a Participating Area including any Joint Land, the Unit Operator shall (incident to submitting a proposed revised division of interest allocating Unit Tract Participation pursuant to Subsection 10.1.3(b)) submit to the President and the Commissioner for approval by the Proper Authority a proposed expansion or contraction (if and as appropriate) of the Participating Area determined by application of the Circle Method as described in Subsection 9.5.1 with respect to “Qualified Production Wells” and “Qualified Injection Wells” then existing in the Participating Area.

9.6 Except as provided in Section 9.1, a separate Participating Area must be established for each separate Reservoir in the Unit Area. Any two (2) or more Reservoirs or Participating Areas may be combined into one Participating Area if approved by the Proper Authority, which approval will not be unreasonably withheld.

9.7 The Unit Operator, at its own election, at the direction of the Proper Authority, or if required by Subsections 9.4.2, 9.5.1, or 9.5.2, shall submit an application for expansion or contraction of the Participating Area whenever expansion or contraction is warranted by further drilling or otherwise. The application must be submitted to the Proper Authority. Before any

directed expansion or contraction of the Participating Area is implemented, the Proper Authority will give the Unit Operator reasonable notice and an opportunity to be heard

9.7.1 A Participating Area including only State Lands will be expanded or contracted in accordance with applicable laws and regulations.

9.7.2 The President and the Commissioner will approve or disapprove expansion or contraction of a Participating Area including any Joint Land to include additional acreage that is reasonably determined to be Includable Land as defined in Subsection 9.5.1, or contracted to exclude acreage that is reasonably determined not to be Includable Land as defined in Subsection 9.5.1

9.7.3 New Exhibits C and D, and if applicable Exhibit E, must be filed with the President and the Commissioner for approval by the Proper Authority as part of the application for expansion or contraction reflecting a revised division of interest allocating Unit Tract Participation and Participating Area Expense within a Participating Area (after giving effect to such proposed expansion or contraction) as determined by the Working Interest Owners in good faith in accordance with the standards and principles set forth in Article 10. Upon granting of approval by the Proper Authority, the revised Unit Tract Participation of the respective Unit Tracts in such Participating Area and corresponding allocation of Participating Area Expense as thus determined by the Working Interest Owners will become effective as provided in Section 9.8 until changed pursuant to Section 10. Any revision of Unit Tract Participation and allocation of Participating Area Expense for a Participating Area including any Joint Land incident to an expansion or contraction of such Participating Area must be approved by the Proper Authority to be effective.

9.8 A Participating Area will be effective upon approval by the Proper Authority. A revision of a Participating Area becomes effective as of the first day of the month next following the month in which such revision receives approval by the Proper Authority.

9.9 No land in a Participating Area will be excluded from the Participating Area due to the depletion of Unitized Substances.

9.10 If the Working Interest Owners are unable to agree on the fair, reasonable and equitable allocation of production or costs, such allocation will be prescribed by the Proper Authority.

9.11 Except as expressly provided in this Section, a Unitized Substance Produced from one Participating Area ("Originating Participating Area") may not be used as an Outside PA Substance for repressuring, recycling, storage or enhanced recovery purposes in another Participating Area ("Receiving Participating Area") without Payment to the owners of all Royalty Interests in such Unitized Substance as if such Unitized Substance had been sold by the Working Interest Owners.

9.11.1 Any Royalty Owner may consent to the use of a Unitized Substance Produced from an Originating Participating Area as an Outside PA Substance in a Receiving Participating Area without immediate Payment for that Royalty Owner's Royalty Interest in such Unitized Substance. Further, a Unitized Substance consisting of natural gas Produced from an Originating Participating Area may be used for repressuring, recycling, storage or enhanced recovery purposes in a Receiving Participating Area without immediate Payment for Royalty Interests in such Unitized Substance, unless either the State or ASRC as owner of a Royalty Interest in such Unitized Substance demands that immediate Payment be made for its Royalty Interest in such natural gas Unitized Substance.

9.11.2 The Unit Operator shall provide monthly reports to the Royalty Owners in both the Originating Participating Area and Receiving Participating Area reflecting the volumes of any Unitized Substance and the Btus in any natural gas Unitized Substance injected as an Outside PA Substance during the preceding month. The Working Interest Owners shall Pay all Royalty Owners in the Originating Participating Area for their Royalty Interests in the volumes of a Unitized Substance injected as an Outside PA Substance in a Receiving Participating Area when such volumes of such Unitized Substance are deemed to have been Produced from the Receiving Participating Area pursuant to Section 9.12. Any Royalty Owner who has been Paid for its Royalty Interest in such volumes of such Unitized Substance when they were Produced from the Originating Participating Area will not be Paid again for those volumes.

9.12 When any Outside PA Substance is injected into a Receiving Participating Area with the consent of the Proper Authority, it is agreed that:

9.12.1 If any Unitized Substance consisting of natural gas is Produced from an Originating Participating Area and injected as an Outside PA Substance for repressuring, recycling, storage or enhanced recovery purposes in a Receiving Participating Area, the first Unitized Substance consisting of natural gas that is thereafter Produced from the Receiving Participating Area will be considered to be the Outside PA Substance so injected until a volume of natural gas containing Btus equal to the aggregate Btus contained in the natural gas so injected is Produced from the Receiving Participating Area. All of such volumes of any natural gas Unitized Substance Produced from a Receiving Participating Area that are considered to be the Outside PA Substance so injected will be allocated to the Originating Participating Area, subject to the provisions of Subsection 9.12.2.

9.12.2 If any equipment or facility situated in or within ten (10) miles of the Unit Area is used to obtain liquid hydrocarbon substances from a natural gas Unitized Substance Produced from a Receiving Participating Area that would be considered to be an Outside PA Substance pursuant to Subsection 9.12.1, the liquid hydrocarbon substances obtained from such natural gas must be allocated to the Receiving Participating Area. In such event, the Btus contained in such natural gas will be determined after removal of such liquid hydrocarbon substances therefrom in such equipment or facility for purposes of determining the volume of natural gas Unitized Substances Produced from the Receiving

Participating Area that is to be allocated to the Originating Participating Area pursuant to Subsection 9.12.1.

9.12.3 “Injected Substances” are any Unitized Substances consisting of liquid hydrocarbon substances (not including liquid hydrocarbon substances contained in natural gas injected in a Receiving Participating Area as provided for above in this Section) Produced from an Originating Participating Area that are injected as an Outside PA Substance for repressuring, recycling, storage or enhanced recovery purposes in a Receiving Participating Area. After injection of Injected Substances, ten percent (10%) of all the liquid hydrocarbon Unitized Substances Produced from the Receiving Participating Area after one year from the time that injection of such Injected Substances was commenced will be considered to be the Injected Substances so injected and must be allocated to the Originating Participating Area until the total value of all of the Unitized Substances thus allocated to the Originating Participating Area equals the total value of all the Injected Substances so transferred from the Originating Participating Area. Such volumes will be in addition to any amounts of natural gas Unitized Substances required to be allocated to such Originating Participating Area pursuant to Subsection 9.12.1, if both liquid hydrocarbon substances and natural gas Produced from the Originating Participating Area have been injected as Outside PA Substances into the Receiving Participating Area.

9.12.4 For purposes of this Section 9.12, the “value” of each barrel of the Injected Substances injected into a Receiving Participating Area will be deemed to be the weighted average amount per barrel that would be required to be Paid by the Unit Operator (if Payment were made in money) to the Royalty Owners in the Originating Participating Area for their Royalty Interests in the share of such Injected Substances corresponding to the Unit Operator’s share of the Working Interest when such Injected Substances were Produced from the Originating Participating Area. Likewise, the “value” of each barrel of liquid hydrocarbon Unitized Substances Produced from the Receiving Participating Area that is allocated to the Originating Participating Area pursuant to Subsection 9.12.3 will be deemed to be the weighted average amount per barrel that would have been required to be Paid by the Unit Operator (if Payment were made in money) to the Royalty Owners in the Receiving Participating Area for their Royalty Interests in the share of such liquid hydrocarbon Unitized Substances corresponding to the Unit Operator’s share of the Working Interest if such Unitized Substances had been allocated to the Receiving Participating Area when they were Produced therefrom.

9.12.5 The Working Interest Owners shall not be required to Pay Royalty Owners in a Receiving Participating Area for their Royalty Interest share of volumes of Unitized Substances Produced from such Receiving Participating Area that are allocated to an Originating Participating Area pursuant to the foregoing provisions of this Section 9.12.

9.12.6 Except as to volumes of Outside PA Substances Produced from an Originating Participating Area as to which Payment for the Royalty Interest share thereof was made to such Royalty Owner in the Originating Participating Area when such Outside PA

Substances were Produced from the Originating Participating Area, the Working Interest Owners shall Pay each Royalty Owner in the Originating Participating Area for its Royalty Interest share of Unitized Substances Produced from a Receiving Participating Area that are allocated to the Originating Participating Area pursuant to this Section 9.12. Payment must be made at the same time and manner as would have been required if such Unitized Substances had been Produced from the Originating Participating Area when they were Produced from the Receiving Participating Area.

9.12.7 Before any Outside Substance may be added to or mixed with any Outside PA Substance to be injected into a Receiving Participating Area, the Proper Authority must approve the proposed recovery rate and commencement date for recovery before any substance is injected within the Unit Area.

9.13 After giving written notice to the Unit Operator and an opportunity to be heard, the Commissioner and the President, acting jointly pursuant to Section 8.4, the Proper Authority may require the Unit Operator to modify the rate of exploration and development, and the quantity and rate of production from or with respect to a Participating Area

ARTICLE 10

Allocation of Production

10.1 For the purpose of allocating Unitized Substances (and, if applicable, Participating Area Expense) for the determination of Royalty Interest Payment under this Agreement and the preparation of Exhibits C, D and E and any revisions thereof, with respect to Participating Areas that include any Joint Land, the Unit Operator shall conduct one of the information sharing meetings required by Subsection 3.8.7 before submitting an application to form a Participating Area. The State and ASRC will have thirty (30) days after the information sharing meeting to elect a basis for allocation for the proposed Participating Area. ASRC and the State may elect either Original Oil In Place or Recoverable Tract Volume as the basis for allocation. Within thirty days (30) of the information sharing meeting the State and ASRC will inform the Unit Operator in writing what allocation methodology has been elected. If ASRC and the State have not elected a basis of allocation, by default, the Unit Operator shall use Recoverable Tract Volume as the basis of allocation and the Unit Operator shall proceed with generating allocation factors. ASRC and the State will have the option to change the allocation basis one time within the five year period commencing on the date of first sustained production of Unitized Substances from the Participating Area, in which case the new allocation basis shall be used for the allocation of all production retroactively for the time period commencing on the date of first sustained production of Unitized Substances and for all time periods thereafter.

10.1.1 If Original Oil In Place is the basis for allocation for a Participating Area, each Unit Tract in a Participating Area must have allocated to it a percentage of the Unitized Substances originally in place within the Participating Area. The Unit Tract Participation of each Unit Tract in a Participating Area must be a percentage (of 100%) corresponding to the ratio of the Original Oil In Place of such Unit Tract to the Original Oil In Place of such Participating Area. The Original Oil In Place Tract Volume and Original Oil In

Place Participating Area Volume must be estimated based upon the most recent data and information available as of each date when the Unit Tract Participation of a Unit Tract or Unit Tracts in a Participating Area is required to be determined or revised in accordance with the provisions of Article 9 or Section 10.1, subject, if applicable, to the provisions of Subsection 10.1.4(b).

10.1.2 If Recoverable Tract Volume is the basis for allocation for a Participating Area, each Unit Tract in a Participating Area must have allocated to it as its Unit Tract Participation in such Participating Area a percentage of the Unitized Substances Produced from the Participating Area (and, if applicable, of the Participating Area Expense) equal to the Unit Tract Participation of such Unit Tract. The Unit Tract Participation of each Unit Tract in a Participating Area must be a percentage (of 100%) corresponding to the ratio of the Recoverable Tract Volume of such Unit Tract to the Recoverable PA Volume of such Participating Area. The Recoverable Tract Volume and Recoverable PA Volume must be estimated based upon the most recent data and information available as of each date when the Unit Tract Participation of a Unit Tract or Unit Tracts in a Participating Area is required to be determined or revised in accordance with the provisions of Article 9 or Section 10.1, subject, if applicable, to the provisions of Subsection 10.1.4(b). All parties to this Agreement desire to enable the Unit Operator to locate injector and production wells at the optimum locations designed to maximize the ultimate recovery of Unitized Substances from a Reservoir as a whole, without creating conflicts between or among the Working Interest Owners, the State and ASRC regarding the location of such wells based on ownership of, or the percentage amount or extent of, Royalty Interests in individual Unit Tracts. In this respect, consideration will be given to the reasonable interpretation of the areal distribution of recovery efficiencies and the variation in the recovery efficiency between neighboring Unit Tracts. Recovery efficiency will mean Recoverable Tract Volume divided by the estimated volume of Unitized Substances originally in place under each Unit Tract.

10.1.3 The Unit Tract Participation of the Unit Tracts within a Participating Area, and Exhibits C, D and E with respect to such Participating Area, must be revised in accordance with Subsections 10.1.1 and 10.1.2, and this Subsection 10.1.3, (herein called an "Expansion/Contraction Revision") whenever the Participating Area is expanded or contracted in accordance with the provisions of Article 9 other than Subsections 9.5.1(a)(ii), 9.5.1(b) and 9.5.2.

(a) With respect to Expansion/Contraction Revisions, the Unit Operator shall conduct one of the information sharing meetings required by Subsection 3.8.7 during the month prior to filing an application for an expansion or contraction pursuant to Section 9.7.

(b) If an Expansion/Contraction Revision is required to be made to a Participating Area, the estimates of Recoverable Tract Volumes and Original Oil In Place with respect to, and the ratio (solely as between each other) of the Unit Tract Participations of, all those Unit Tracts no part of which is either added to or excluded from the Participating Area incident to such Expansion/Contraction Revision will remain

unchanged and will not be revised or altered incident to such Expansion/Contraction Revision.

10.1.4 In addition to Expansion/Contraction Revisions provided for in Subsection 10.1.3, the Unit Tract Participation of the Unit Tracts within a Participating Area, and Exhibits C, D, and E with respect to such Participating Area, must be revised in accordance with Subsections 10.1.1 and 10.1.2 to take into account any expansion or contraction of such Participating Area provided for in Subsection 9.5.1(a)(ii), Subsection 9.5.1(b) or Subsection 9.5.2 and to take into account new or additional information reasonably requiring revision of previous estimates of the Original Oil In Place or Recoverable Tract Volumes with respect to the Unit Tracts in the Participating Area (herein called a “Reserves Estimate Revision”), as follows:

(a) At least thirty (30) days and not more than forty-five (45) days prior to the expiration of two (2) years after commencement of Sustained Unit Production from such Participating Area, the Unit Operator shall prepare and deliver to the Commissioner and the President, in the format of Exhibits C, D, and E, a revised division of interest allocating Unit Tract Participation and Participating Area Expense within the Participating Area as determined by the Unit Operator in good faith in accordance with the standards and principles set forth in this Article 10. During the month prior to such submissions to the Commissioner and the President, the Unit Operator shall conduct one of the information sharing meetings required by Subsection 3.8.7. The revised division of interest submitted by the Unit Operator allocating Unit Tract Participation and Participating Area Expense within a Participating Area as provided for in this Subsection 10.1.4(a) will be subject to and require approval by the Proper Authority and will become effective as of the first day of the first month following the last to occur of (i) the expiration of two (2) years after commencement of Sustained Unit Production from the Participating Area; or (ii) when the applicable Plan of Development submitted by the Unit Operator pursuant to Subsection 8.1.2 becomes an Approved Unit Plan.

(b) Reserves Estimate Revisions must also be made five (5), eight (8), twelve (12), sixteen (16), twenty (20), and twenty four (24) years after commencement of Sustained Unit Production from a Participating Area (individually, the “Five Year Revision,” “Eight Year Revision,” “Twelve Year Revision,” “Sixteen Year Revision,” “Twenty Year Revision,” and “Twenty Four Year Revision,” and collectively, the “Scheduled Revisions”), as follows:

(i) For each of the Scheduled Revisions, the Unit Operator shall prepare and submit to the Commissioner and the President for approval by the Proper Authority, in the format of Exhibits C, D, and E, a proposed revised division of interest allocating Unit Tract Participation and Participating Area Expense within the Participating Area. For each of the Scheduled Revisions, a proposed revised division of interest, proposed revised Exhibits, and supporting data and analysis (taking into account all data, information and interpretations available to the Unit Operator as of the relevant data cut-off date) must be submitted for approval to the Proper Authority no earlier than the relevant data cut-off date and no later than

120 days after the relevant data cut-off date. The data cut-off date for the Five Year Revision will be four (4) years and three (3) months after commencement of Sustained Unit Production from the Participating Area. The data cut-off date for the Eight Year Revision will be seven (7) years and three (3) months after commencement of Sustained Unit Production from the Participating Area. The data cut-off date for the Twelve Year Revision will be eleven (11) years and three (3) months after commencement of Sustained Unit Production from the Participating Area. The data cut-off date for the Sixteen Year Revision will be fifteen (15) years and three months after commencement of Sustained Unit Production from the Participating Area. The data cut-off date for the Twenty Year Revision will be nineteen (19) years and three months after commencement of Sustained Unit Production from the Participating Area. The data cut-off date for the Twenty Four Year Revision will be twenty three (23) years and three months after commencement of Sustained Unit Production from the Participating Area.

(ii) Within ten (10) days after receipt of the proposed revised division of interest, proposed revised Exhibits, and supporting data and analysis, the Proper Authority will notify the Unit Operator whether the submission is complete. If the submission is determined to be incomplete, the Proper Authority will provide the Unit Operator with a notice of incompleteness, specifying in detail the deficiencies in the submission. The Unit Operator shall submit additional data and analysis to the Proper Authority until the submission is determined to be complete by the Proper Authority. The Proper Authority will promptly give notice to the Unit Operator specifying the date when the submission is determined by the Proper Authority to be complete. If the Proper Authority does not provide a notice of completeness or incompleteness within ten (10) days after the initial submission, the submission will be deemed complete as of the end of the ten (10) day period. If the Proper Authority does not provide a notice of completeness or incompleteness within ten (10) days after an additional submission is made in response to a notice of incompleteness, the additional submission will be deemed complete as of the end of the ten (10) day period. "Determination of Completeness" means: (i) the date of a notice from the Proper Authority to the Unit Operator that a submission is complete, or (ii) the date a submission is deemed complete under this subparagraph.

(iii) The Proper Authority will have five (5) months from the Determination of Completeness to evaluate the Unit Operator's proposed revised division of interest and to prepare alternative proposals. During these five (5) months, ASRC and the State will have access to the Unit Operator's computerized production simulation models for up to sixty (60) days (consecutive or non-consecutive). The Unit Operator shall supply access to the Unit Operator's software and computer hardware and a qualified technical operator for the software and hardware. If either the State or ASRC access the Unit Operator's model, such party will pay the Unit Operator a fixed fee of \$1,200 per day of model use; provided that if such party requests that Unit Operator provide the

services of any additional person or persons (other than one operator), Unit Operator must be paid an additional \$150 per hour for the services of each such additional person. This five (5) month period may be extended an additional month to allow the parties to accommodate scheduling of access to the Unit Operator's model. Any analysis made by either ASRC or the State will be confidential as to that party. However, all parties must be notified of the fact that either ASRC or the State is accessing the Unit Operator's model hereunder.

(iv) In connection with each proposed revised division of interest submitted by the Unit Operator, the Unit Operator shall make available to representatives of the State and ASRC (and either of them, as applicable), upon request, all data, information and interpretations used by the Unit Operator in preparing such proposed division of interest, including, if requested by the Commissioner or the President, computerized production simulation model runs for the subject Reservoir used by the Unit Operator in planning for exploration, development and production of such Reservoir and in preparing such proposed division of interest, and shall provide information as described in Exhibit H to representatives of the State and ASRC (and either of them, as applicable) as requested as to the data, model input files, and factors used in preparing such production simulation models, the weighting assigned to such factors in producing such models, and the underlying information and assumptions, data and studies (such as, but not limited to, core samples and analyses, well logs, production and formation tests, projected monthly allocated production and injection volumes, surface and subsurface pressure tests, and seismic data, analyses and interpretations) used by Unit Operator in determining the factors and data to be utilized in preparing such models. If requested by the Commissioner or President, the Unit Operator shall also provide information as described in Exhibit H to representatives of the State and ASRC (or either of them, as applicable) as to the input parameters that were used to direct, limit and control the calculations and predictions made by the Unit Operator's production simulation models. In connection with providing access for the State and ASRC to the Unit Operator's software and computer hardware pursuant to subparagraph (iii), the State and ASRC (and either of them, as applicable) will be permitted to produce alternative production simulation models for the subject Reservoir utilizing such software and hardware with alternative factors, data or weighting of factors relevant to the subject Reservoir as specified by the State or ASRC, as applicable.

(v) If a proposed revised division of interest is approved by the Proper Authority, the Proper Authority will notify the Unit Operator in writing of such acceptance, and it will become effective as of the first day of the first month following the month during which it is approved by the Proper Authority.

(vi) If a proposed revised division of interest is not approved by the Proper Authority, the Proper Authority may prepare and submit to the Unit Operator a proposed revised division of interest (an "Alternate Division of Interest") allocating Unit Tract Participation and Participating Area Expense within the

Participating Area as determined by the Proper Authority, in good faith in accordance with the standards and principles set forth in this Article 10. An Alternate Division of Interest must be submitted to the Unit Operator, along with supporting data and analysis, within five (5) months after the Determination of Completeness (unless extended by one month pursuant to subparagraph (iii)). However, if either the Commissioner or the President does not approve the Unit Operator's proposed revised division of interest, but they are unable to agree upon an Alternate Division of Interest for a Participating Area including any State Land or Joint Land, such dispute will be resolved by Three Party Arbitration as provided for in Article 20. In such event, either the Commissioner or the President may send a notice to the other and to the Unit Operator (an "Arbitration Notice") at any time prior to the end of 180 days after the Determination of Completeness that the matter will be arbitrated. The hearing for any such arbitration will commence no earlier than 180 days after giving of such Arbitration Notice. If the Proper Authority does not submit an Alternate Division of Interest to the Unit Operator prior to the expiration of 180 days after the Determination of Completeness and no Arbitration Notice is given prior to the expiration of 180 days after the Determination of Completeness, then the Unit Operator's proposed revised division of interest will be deemed to have been approved by the Proper Authority and will become effective on the first day of the month next following the expiration of 180 days after the Determination of Completeness.

(vii) An Alternate Division of Interest submitted to the Unit Operator will become effective as of the first day of the first month following ninety (90) days after the Alternate Division of Interest is delivered to the Unit Operator, unless within such ninety (90) day period the Unit Operator gives notice to the Proper Authority that the Unit Operator objects to such Alternate Division of Interest. If either ASRC or the State used a production simulation model other than Unit Operator's model in arriving at the Alternate Division of Interest, Unit Operator will have the right during this ninety (90) day period to access such model (to the extent that ASRC or the State, as applicable, has the right to grant such access) on the same terms and conditions as ASRC and the State can access Unit Operator's model pursuant to subparagraph (iii). If the Unit Operator gives timely notice that it objects to an Alternate Division of Interest, and if such dispute is not resolved by agreement of the Unit Operator with the Proper Authority, then such dispute will be resolved by ASRC/Unit Operator Arbitration or Three Party Arbitration, as applicable, as provided for in Section 20.1. The hearing for any such arbitration will commence no earlier than six (6) months after delivery of Unit Operator's notice of objection.

(viii) The decision of an arbitrator in accordance with this Subsection 10.1.4(b) must be based only on data in existence on or before the relevant data cut-off date. In any arbitration pursuant to this Subsection 10.1.4(b), the arbitrator shall determine and prescribe a revised division of interest allocating Unit Tract Participation and Participating Area Expense within the applicable Participating

Area in accordance with the standards and principles set forth in this Article 10.

(ix) The decision of an arbitrator in accordance with this Subsection 10.1.4(b) will be final and binding upon the State, ASRC and the Working Interest Owners, and the revised division of interest prescribed by the arbitrator will become effective as of the first day of the first month following the month during which the arbitrator's decision prescribing such revised division of interest is rendered.

10.1.5 No party will be obligated to pay money to any other party to correct any imbalances that may result from retroactive application of a revised Unit Tract Participation. Royalty Owners shall look solely to production of Unitized Substances from the Participating Area after the effective date of the revised Unit Tract Participation under Subsection 10.1.3 or 10.1.4 ("Revision Date") to effect adjustments under this Section 10.1. Notwithstanding the foregoing, cash adjustments may be made between the Working Interest Owners and the Overriding Royalty Owners in accordance with Subsection 10.1.8(c), if applicable. When the Unit Tract Participation of one or more of the Unit Tracts in a Participating Area is revised incident to an Expansion/Contraction Revision or a Reserves Estimate Revision:

(a) The "Excess Allocated Volumes" of a Unit Tract are the amount of the excess, if any, of the total volumes of Unitized Substances Produced from the Participating Area before the Revision Date and allocated to that Unit Tract above the volumes of such Unitized Substances that would have been allocated to that Unit Tract pursuant to its revised Unit Tract Participation. A Unit Tract that has Excess Allocated Volumes is an "Excess Unit Tract."

(b) The "Deficient Allocated Volumes" of a Unit Tract are the amount of the deficiency, if any, of the total volumes of Unitized Substances Produced from the Participating Area before the Revision Date and allocated to that Unit Tract below the volumes of such Unitized Substances that would have been allocated to that Unit Tract pursuant to its revised Unit Tract Participation. A Unit Tract that has Deficient Allocated Volumes is a "Deficient Unit Tract."

(c) The "State Tract Excess Royalty Volume" of an Excess Unit Tract is the volume, if any, of Excess Allocated Volumes of that Unit Tract for which Payment was made to the State for its Royalty Interest under a State Lease covering any interest in that Unit Tract. The "ASRC Tract Excess Royalty Volume" of an Excess Unit Tract is the volume, if any, of Excess Allocated Volumes of that Unit Tract for which Payment was made to ASRC for its Royalty Interest under a Joint Lease covering any interest in that Unit Tract.

(d) The "State Tract Deficient Royalty Volume" and "ASRC Tract Deficient Royalty Volume" must be determined in each case as if the Deficient Allocated Volumes of a Deficient Unit Tract had been allocated to that Unit Tract when they were Produced in accordance with the revised Unit Tract Participation of such Unit Tract. The "State Tract Deficient Royalty Volume" of a Deficient Unit Tract is the volume, if any, of the Deficient Allocated Volumes of such Unit Tract for which Payment would have been

required to be made to the State for its Royalty Interest under a State Lease covering any interest in such Unit Tract. The “ASRC Tract Deficient Royalty Volume” of such Unit Tract is the volume, if any, of such Deficient Allocated Volumes for which Payment would have been required to be made to ASRC for its Royalty Interest under a Joint Lease covering any interest in such Unit Tract.

(e) If the sum of the State Tract Excess Royalty Volumes of all Excess Unit Tracts exceeds the sum of the State Tract Deficient Royalty Volumes of all Deficient Unit Tracts, that excess is the “State Excess Royalty Volume.” If the sum of the ASRC Tract Excess Royalty Volumes of all Excess Unit Tracts exceeds the sum of the ASRC Tract Deficient Royalty Volumes of all Deficient Unit Tracts, that excess is the “ASRC Excess Royalty Volume.” If the sum of the State Tract Deficient Royalty Volumes of all Deficient Unit Tracts exceeds the sum of the State Tract Excess Royalty Volumes of all Excess Unit Tracts, that excess is the “State Deficient Royalty Volume.” If the sum of the ASRC Tract Deficient Royalty Volumes of all Deficient Unit Tracts exceeds the sum of the ASRC Tract Excess Royalty Volumes of all Excess Unit Tracts, that excess is the “ASRC Deficient Royalty Volume.”

10.1.6 “Primary Adjustment Allocations” must be made under this Subsection to effect adjustments to Payments for Royalty Interests due to the State and ASRC resulting from Expansion/Contraction Revisions or Reserves Estimate Revisions.

(a) The Working Interest Owners shall Pay the State for a volume of Unitized Substances Produced from the Participating Area equal to any State Deficient Royalty Volume that has been determined under Subsection 10.1.5. The Working Interest Owners shall Pay ASRC for a volume of Unitized Substances Produced from the Participating Area equal to any ASRC Deficient Royalty Volume that has been determined under Subsection 10.1.5.

(b) Payment to the State or ASRC for volumes of Unitized Substances pursuant to Subsection 10.1.6(a) will be made from the Working Interest share of Unitized Substances Produced after the Revision Date. Such Payments will be in addition to Payment to the State and ASRC for their Royalty Interests in Unitized Substances Produced after the Revision Date. The Working Interest Owners shall contribute to these Payments in proportion to their Working Interest shares of Unitized Substances Produced after the Revision Date. Payments to the State or ASRC for volumes of Unitized Substances pursuant to Subsection 10.1.6(a) must be made and calculated in the same manner as is required for Payment for the Royalty Interests of the State or ASRC in the Unitized Substances being Produced from the Participating Area.

(c) If a State Excess Royalty Volume has been determined to exist pursuant to Subsection 10.1.5, the Working Interest Owners shall withhold up to five percent (5%) of eight-eighths (8/8ths) of the Unitized Substances produced from the Participating Area during each month after the Revision Date from the volumes of such Unitized Substances for which Payment would otherwise be required to be made to the State for its Royalty Interests until they have withheld a total volume equal to such State Excess Royalty

Volume. If an ASRC Excess Royalty Volume has been determined to exist pursuant to Subsection 10.1.5, the Working Interest Owners shall withhold up to five percent (5%) of eight-eighths (8/8ths) of the Unitized Substances produced from the Participating Area during each month after the Revision Date from the volumes of such Unitized Substances for which Payment would otherwise be required to be made to ASRC for its Royalty Interests until they have withheld a total volume equal to such ASRC Excess Royalty Volume. Withholding pursuant to this Subsection 10.1.1(c) will be made proportionately as among the Working Interest Owners in proportion to their Working Interest shares of Unitized Substances Produced after the Revision Date.

10.1.7 Except as provided below, Primary Adjustment Allocations pursuant to Subsection 10.1.6(a) must be Paid out of the Working Interest share of the first Unitized Substances Produced from the Participating Area after the applicable Revision Date. However, if sufficient recoverable reserves of Unitized Substances remain in the Participating Area to permit completion of such Primary Adjustment Allocations, the Working Interest Owners may limit the volume of Unitized Substances for which Payment is made pursuant to Subsection 10.1.6(a) out of the Working Interest share of Unitized Substances Produced from the Participating Area during any month to not more than:

(a) The volume, if any, of Unitized Substances Produced during such month that is being withheld from Payment to the State or ASRC pursuant to Subsection 10.1.6(c); plus

(b) Five percent (5%) of eight-eighths (8/8ths) of the Unitized Substances produced from the Participating Area during such month.

If such limitation is applied, Payment for the remainder of the volume of Unitized Substances for which Payment is due under Subsection 10.1.6(a) must be made during the next succeeding month or months until the required Primary Adjustment Allocations have been completed. If both the State and ASRC are entitled to receive Payment under Subsection 10.1.6(a), any reduction in the volumes of Unitized Substances Produced during any month for which Payment is required to be made under Subsection 10.1.6(a) will reduce Payments to the State and ASRC in proportion to the respective total volumes of Unitized Substances for which the State and ASRC are entitled to be Paid to effect the Primary Adjustment Allocations.

10.1.8 "Secondary Adjustment Allocations" of Unitized Substances must be made under this Subsection to effect adjustments to Payments due to Overriding Royalty Owners resulting from Expansion/Contraction Revisions or Reserves Estimate Revisions. Secondary Adjustment Allocations are in addition to Primary Adjustment Allocations. Solely for the purpose of Secondary Adjustment Allocations, all of the Unitized Substances Produced from the Participating Area after the Revision Date that would be allocated to an Excess Unit Tract (other than an Excluded Excess Unit Tract as defined in Subsection 10.1.9 will instead be specially allocated to all the Deficient Unit Tracts. This Secondary Adjustment Allocation will continue until a volume of Unitized Substances

equal to the Excess Allocated Volumes of such Excess Unit Tract has been specially allocated to Deficient Unit Tracts. If there is more than one Deficient Unit Tract, Secondary Adjustment Allocations will be made in the ratio of the relative Deficient Allocated Volumes of the Deficient Unit Tracts.

10.1.9 If an entire Excess Unit Tract (herein called an “Excluded Excess Unit Tract”) has been excluded from the Participating Area incident to an Expansion/Contraction Revision or a Reserves Estimate Revision, then, in addition to the Primary Adjustment Allocations and Secondary Adjustment Allocations, “Overriding Royalty Adjustment Allocations” must be made under this Subsection to effect adjustments to Payments made to or due to Overriding Royalty Owners, as follows:

(a) The Working Interest Owners shall, if applicable, Pay to each Overriding Royalty Owner who owns an Overriding Royalty Interest in any Unit Tract remaining in the Participating Area, in addition to Payment for such Overriding Royalty Owner’s Overriding Royalty Interests in the share of Unitized Substances allocated to such respective Unit Tracts pursuant to the revised Unit Tract Participations as adjusted by the Secondary Adjustment Allocations, for the “Increased Percentage” (if any, and as hereinafter defined) of such Overriding Royalty Owner of the total volumes of such Unitized Substances Produced from the Participating Area after the Revision Date until the total volumes of such Unitized Substances with respect to which Payment of such Increased Percentage thereof is made to such Overriding Royalty Owner shall equal the Excess Allocated Volumes of such Excluded Excess Unit Tract. The “Increased Percentage,” if any, of an Overriding Royalty Owner will be a percentage equal of the excess, if any, of the percentage of total volumes of Unitized Substances Produced from the Participating Area to which such Overriding Royalty Owner is entitled with respect to its Overriding Royalty Interests pursuant to such revised Unit Tract Participations (without regard for the Secondary Adjustment Allocations) above the percentage of total volumes of Unitized Substances Produced from the Participating Area to which such Overriding Royalty Owner was entitled immediately prior to the Revision Date.

(b) Conversely, the Working Interest Owners shall, if applicable, deduct and withhold from Payments to each Overriding Royalty Owner for its Overriding Royalty Interests in the share of Unitized Substances allocated to the respective Unit Tracts in the Participating Area pursuant to the revised Unit Tract Participations as adjusted by the Secondary Adjustment Allocations, for the “Decreased Percentage” (if any, and as hereinafter defined) of such Overriding Royalty Owner of the total volumes of Unitized Substances Produced from the Participating Area after the Revision Date until the total volumes of such Unitized Substances with respect to which Payment of such Decreased Percentage thereof is thus deducted and withheld by Working Interest Owners equal the Excess Allocated Volumes of such Excluded Excess Unit Tract. The “Decreased Percentage,” if any, of an Overriding Royalty Owner will be a percentage equal to the deficiency, if any, of the percentage of total volumes of Unitized Substances Produced from the Participating Area to which such Overriding Royalty Owner is entitled with respect to its Overriding Royalty Interests pursuant to such revised Unit Tract Participations (without regard for the Secondary Adjustment Allocations) below the

percentage of total volumes of Unitized Substances Produced from the Participating Area to which such Overriding Royalty Owner was entitled immediately prior to the Revision Date.

(c) If, however, an Overriding Royalty Owner who owned an Overriding Royalty Interest in the Excluded Excess Unit Tract does not own any Overriding Royalty Interest in any Unit Tract remaining in the Participating Area, such Overriding Royalty Owner shall, within thirty (30) days after the Revision Date, refund to each Working Interest Owner, without interest, all amounts Paid by such Working Interest Owner to such Overriding Royalty Owner for its Overriding Royalty Interest in Unitized Substances allocated to the Excluded Excess Unit Tract before the Revision Date.

10.1.10 The parties desire to minimize possible disruption of deliveries of Unitized Substances under sales arrangements made by the State or ASRC with respect to their Royalty Interests in Unitized Substances that are taken in kind pursuant to Section 11.8 that might result from the Primary Adjustment Allocations. Accordingly, it is agreed that:

(a) When the aggregate percentage of total production of a Unitized Substance from a Participating Area allocated to all Royalty Interests of the State must be reduced as a result of the Primary Adjustment Allocations, the State will be a “Deficient Party.” Likewise, when the aggregate percentage of total production of a Unitized Substance from a Participating Area allocated to all Royalty Interests of ASRC must be reduced as a result of the Primary Adjustment Allocations, ASRC will be a “Deficient Party.”

(b) If a Deficient Party was taking delivery in kind of all of its Royalty Interests in a Unitized Substance Produced from the Participating Area immediately before the effective date of commencement of the Primary Adjustment Allocations, such Deficient Party will have the option, subject to the provisions of this Subsection, to require that the Working Interest Owners deliver additional volumes of such Unitized Substance to or as directed by such Deficient Party during each month while such Primary Adjustment Allocations are being made. Additional volumes of a Unitized Substance delivered under this Subsection are called “Option Volumes” and must be delivered in the same manner and condition as the Deficient Party’s Royalty Interest share of such Unitized Substance is required to be delivered under Section 11.8. The Option Volumes of a Unitized Substance delivered during each month must be equal to the additional volume of such Unitized Substance Produced during such month for which Payment would have been due to the Deficient Party if the Primary Adjustment Allocations had not been made. However, by giving notice to the Working Interest Owners at least ninety (90) days before the first day of a month, the Deficient Party may direct that a lesser volume of such Unitized Substance be delivered during such month as Option Volumes. A Deficient Party may only require delivery of Option Volumes during each month a Primary Adjustment Allocation to Payments for that Deficient Party’s Royalty Interests is being made. A Deficient Party may exercise this option by giving

written notice to the Working Interest Owners on or before the effective date of commencement of such Primary Adjustment Allocations.

(c) A Deficient Party who elects under this Subsection to require that Option Volumes of a Unitized Substance be delivered to or as directed by such Deficient Party will pay each of the Working Interest Owners for such Option Volumes as follows. The payment must be an amount equal to the amount the respective Working Interest Owners would have been required to Pay the Deficient Party (if Payment were being made in money) for such Option Volumes under the terms of this Agreement and the Deficient Party's affected leases if the Primary Adjustment Allocations had not been made. These payments must be made on or before the date when such Payment would be due from the Working Interest Owners under the terms of the applicable lease or leases and this Agreement if the Primary Adjustment Allocations had not been made.

(d) If a Deficient Party fails to timely pay to any Working Interest Owner any amount due from such Deficient Party for Option Volumes of a Unitized Substance, such Working Interest Owner will have the right to require that all further deliveries of Option Volumes of any Unitized Substance to or as directed by the Deficient Party cease and be terminated upon receipt of notice of such default by the Unit Operator. The Working Interest Owner may exercise this right by giving written notice of such default to the Unit Operator and such Deficient Party. That Deficient Party will not thereafter have any right to require that Option Volumes of any Unitized Substance ever be delivered to it pursuant to this Subsection. If a Deficient Party has not paid a Working Interest Owner any amount due for any Option Volumes of a Unitized Substance, that Working Interest Owner will have the right, upon written notice to the Unit Operator and such Deficient Party, to require that the Option Volumes of such Unitized Substance that have been delivered by such Working Interest Owner to or as directed by such Deficient Party for which payment has not been made to such Working Interest Owner be deemed to have been over-deliveries from such Working Interest Owner of volumes of such Unitized Substance attributable to the Royalty Interests of such Deficient Party. The Working Interest Owner will then be entitled to withhold Payment for such volumes of such Unitized Substance from the next-accruing Royalty Interest Payments becoming due to such Deficient Party from such Working Interest Owner.

10.1.11 A Reservoir that, as determined by the Proper Authority, contains both crude oil and a gas cap or Unitized Substances in gaseous form (not including gas in solution in crude oil) in the Reservoir under original conditions is a "Gas Cap Reservoir." The "Interested Parties" means (a) the Commissioner and the Working Interest Owners as to a Participating Area containing only State Land, or (b) the Commissioner, the President, and the Working Interest Owners as to a Participating Area containing any combination of State Land and Joint Land. If the Interested Parties are unable to agree upon a method of equating volumes of gas contained in or Produced from a Participating Area containing a Gas Cap Reservoir with volumes of crude oil or liquids contained in or Produced from such Participating Area in order to permit calculation of a single Unit Tract Participation for each Unit Tract in the Participating Area pursuant to Subsection 10.1.1 or 10.1.2, that Participating Area will be a "Gas Cap Participating

Area.” Unless all the Interested Parties otherwise agree, the following provisions of this Subsection 10.1.11 will be applicable to a Gas Cap Participating Area; provided that in no event will the provisions of this Subsection 10.1.11 apply to the initial Participating Area.

(a) A Unit Tract Participation (the “Liquid Unit Tract Participation”) must be calculated for each Unit Tract in a Gas Cap Participating Area based on the Recoverable Tract Volumes and Recoverable PA Volume or Original Oil In Place Tract Volumes and Original Oil In Place PA Volume of crude oil and other Unitized Substances in the form of liquid in the Reservoir plus condensate contained in gas in the Reservoir. A separate Unit Tract Participation (the “Gas Unit Tract Participation”) must be calculated for each Unit Tract in Gas Cap Participating Area based on the estimated total volumes of gas or gaseous Unitized Substances originally in place in the respective Unit Tracts in the Participating Area both in the form of gas in the Reservoir and in the form of gas entrained in solution in liquid Unitized Substances in the Reservoir that will ultimately be produced in the form of gas or remain in the Reservoir upon abandonment thereof. Revisions of the Liquid Unit Tract Participation or Gas Unit Tract Participation of the Unit Tracts in a Gas Cap Participating Area must be made separately pursuant to Subsection 10.1.3 and Subsection 10.1.4.

(b) All Unitized Substances produced in the form of liquid, all condensate separated from Unitized Substances Produced in the form of gas in mechanical or field-type separators (not including liquids separated or extracted from gas by absorption, adsorption, extraction or refrigeration in a gas processing plant), and all liquids that are recovered in traps from gathering lines transmitting Unitized Substances produced in the form of gas from a Gas Cap Participating Area are called “Unitized Liquids.” All Unitized Liquids that are Produced from a Gas Cap Participating Area must be allocated among the Unit Tracts in the Gas Cap Participating Area in the ratio of the Liquid Unit Tract Participations of such Unit Tracts.

(c) All Unitized Substances produced in the form of gas from a Gas Cap Participating Area and all liquids that are separated or extracted from gas produced from a Gas Cap Participating Area by absorption, adsorption, extraction or refrigeration in a gas processing plant (not including condensate separated from such gas in mechanical or field-type separators or liquids which are recovered in traps from gathering lines transmitting Unitized Substances produced in the form of gas) are called “Unitized Gas.” All Unitized Gas that is Produced from a Gas Cap Participating Area must be allocated among the Unit Tracts in the Gas Cap Participating Area in the ratio of the Gas Unit Tract Participations of such Unit Tracts.

(d) No adjustment or payment as between or among owners of Royalty Interests in the respective Unit Tracts in a Gas Cap Participating Area will be required or effected with respect to volumes of Unitized Liquids or Unitized Gas consumed as fuel for development or production in that Gas Cap Participating Area or reinjected into that Gas Cap Participating Area, notwithstanding variations between the Liquid Unit Tract Participations and Gas Unit Tract Participations assigned to the respective Unit Tracts in

the Gas Cap Participating Area or variations between the Royalty Interests owned by such parties in such respective Unit Tracts. The volumes of Unitized Liquids produced from a Gas Cap Participating Area that are consumed as fuel for development or production in that Participating Area or reinjected into that Participating Area will not be deemed to have been "Produced" from such Participating Area for Royalty Interest Payment purposes. Likewise, the volumes of Unitized Gas produced from a Gas Cap Participating Area that are consumed as fuel for development or production in that Participating Area or reinjected into that Participating Area will not be deemed to have been "Produced" from such Participating Area for Royalty Interest Payment purposes.

10.2 As to any Participating Area including only State Land, the allocation of Unitized Substances, Participating Area Expense and Unit Expense, and any changes or revisions of such allocations, will be made in accordance with applicable laws and regulations.

10.3 All Unitized Substances Produced from the Unit Area must be allocated to the Participating Area established for the Reservoir from which the Unitized Substances were produced, except as set forth in Sections 9.12 and 10.5. Unitized Substances allocated to a Participating Area must be allocated to each Unit Tract within the Participating Area in accordance with each Unit Tract's Unit Tract Participation. The respective Working Interest Owners in a Unit Tract shall Pay for Royalty Interests in such Unit Tract in proportion to each Working Interest Owner's ownership in the Working Interests in such Unit Tract. The amount of Unitized Substances allocated to each Unit Tract, regardless of whether the amount is more or less than the actual production of Unitized Substances from the Unit Tract, if any, will be deemed for all purposes to have been Produced from that Unit Tract.

10.4 If any Outside Substance consisting of natural gas is injected for repressuring, recycling, or enhanced recovery purposes in a Participating Area ("Receiving Participating Area"), 80% of the first Unitized Substance consisting of natural gas that is thereafter Produced from the Receiving Participating Area will be considered to be the Outside Substance so injected until a volume of natural gas containing Btus equal to the aggregate Btus contained in the Outside Substance natural gas so injected has been Produced from the Receiving Participating Area and thus considered to be the Outside Substance so injected.

If, however, any equipment or facility situated in or within ten (10) miles of the Unit Area is used to obtain liquid hydrocarbon substances from natural gas Unitized Substances Produced from the Receiving Participating Area, the liquid hydrocarbon substances must be allocated to the Receiving Participating Area. In such event, the Btus contained in such natural gas will be determined after removal of such liquid hydrocarbon substances therefrom in such equipment or facility for purposes of determining the volume of natural gas Unitized Substances Produced from the Receiving Participating Area that is to be considered as the injected Outside Substance.

If the Working Interest Owners desire to inject any Outside Substance consisting of a liquid hydrocarbon substance into any Reservoir (not including liquid hydrocarbon substances contained in a natural gas Outside Substance injected in a receiving Participating Area as provided for above), they shall obtain approval of the Proper Authority as to the rate at which such Outside Substance will be recovered before commencing to inject such Outside Substance.

The Working Interest Owners shall not be required to Pay Royalty Owners in a Receiving Participating Area for their Royalty Interest share of volumes of Unitized Substances Produced from such Receiving Participating Area that are considered to be Outside Substances injected into such Receiving Participating Area pursuant to this Section 10.4.

10.5 For all Participating Areas, the Working Interest Owners may allocate Unitized Substances, Participating Area Expense, and Unit Expense solely as among themselves in amounts other than those set out in Exhibits C, E and F, provided that such allocation will not be effective for the determination of Royalty Interest Payment and that any allocation that is different than the allocations required in Exhibit C, E or F must be promptly submitted to the Commissioner for the State's information and President for ASRC's information with a statement explaining the reason for the different allocation.

10.6 No Payment will be due or payable to Royalty Owners with respect to their Royalty Interest in the portion of Unitized Substances produced from any Participating Area that is used in that Participating Area for development or production or unavoidably lost. Gas that is flared for any reason other than safety purposes as directed by the AOGCC will not be deemed to be unavoidably lost, and the Working Interest Owners shall be required to Pay for Royalty Interests in such flared gas as if it had been Produced. The parties recognize that this exemption from Payment of Royalty Interests does not apply to Unitized Substances that are sold, traded or assigned, including sales, transactions, or assignments that result in any credits or debits among the Working Interest Owners. Except as otherwise provided in Section 9.11 or Section 9.12, Unitized Substances produced from one Participating Area may not be used for development or production in another Participating Area without Payment to the owners of all Royalty Interests in such Unitized Substances as if such Unitized Substances had been sold by the Working Interest Owners. If any equipment or facility situated on the North Slope of Alaska ("Processing Equipment") is used by a Working Interest Owner to separate, extract or remove liquid hydrocarbon substances ("Plant Liquids") from natural gas Unitized Substances, the Royalty Interests of Royalty Owners with respect to such natural gas Unitized Substances must be Paid by such Working Interest Owner and calculated with respect to the volume of such Plant Liquids and with respect to the volume of residue gas remaining after processing of such natural gas in the Processing Equipment, when and if Payment for Royalty Interests in such Plant Liquids or residue gas becomes due under the other provisions of this Agreement and the applicable leases.

10.7 If a State Lease or Joint Lease committed to this Agreement provides for the reduction of the royalty rate for the first discovery of oil or gas, that lease provision will not apply to any well that has not been drilled and completed to its bottomhole location and for which written notice of intent to apply for such royalty reduction has not been received by the State or ASRC, as applicable, before the Effective Date of this Agreement.

ARTICLE 11

Leases, Rentals and Royalty Interest Payments

11.1 All terms imposed under this Article will apply to State Leases and Joint Leases included in the Unit Area and subject to this Agreement, unless otherwise stated.

11.2 The rental payments and Payment for the State's Royalty Interest pursuant to the State Leases committed to this Agreement must be made to the State by the Working Interest Owners of such leases. The rental payments and Payment for Royalty Interest pursuant to Joint Leases committed to this Agreement must be made to the State and ASRC by the Working Interest Owners of such leases.

11.3 All rental payments to ASRC must be paid in the manner directed by the President, to any depository designated by him or her with at least sixty (60) days' notice to the Unit Operator and the Working Interest Owners. All rental payments to the State must be paid in accordance with the lease and state statutes and regulations.

11.4 Each month, the Unit Operator shall furnish to the Commissioner and the President a schedule that must specify, for the previous month, the total amount of Unitized Substances Produced, the amount of Unitized Substances used for development and production or unavoidably lost, the total amount of Unitized Substances allocated to each Unit Tract, the amount of Unitized Substances allocated to each Unit Tract and delivered in kind as Royalty Interests to the State or to ASRC, and the amount of Unitized Substances allocated to each Unit Tract to be Paid to the State or ASRC in value.

11.5 Each Working Interest Owner shall pay Royalty Interests to the State and ASRC as provided in the leases and based on the production allocated to the lease. Payments to the State must also be made in accordance with 11 AAC 04 and Article 2 of 11 AAC 83.

11.6 The State and ASRC's respective Royalty Interest share of the Unitized Substances allocated to each separately owned tract will be regarded as Royalty Interest to be distributed to and among, or the proceeds of it paid to, the Royalty Owner, free and clear of all Unit Expense and free of any lien for it. Under this provision, the State and ASRC's Royalty Interest share of any Unitized Substances allocated to the Unit Area will be regarded as Royalty Interest to be distributed to, or the proceeds of it paid to, the Royalty Owner free and clear of all Unit Expenses (and any portion of those expenses incurred away from the Unit Area), including, but not limited to, expenses for separating, cleaning, dehydration, gathering, saltwater disposal, and preparing oil, gas, or associated substances for transportation off the Unit Area, and free of any lien for them. If any Working Interest Owner fails to Pay any undisputed Payment for any Royalty Interest due to the State or ASRC after thirty (30) days written notice from the Royalty Interest Owner, the State and ASRC will have all rights and remedies available to them under law, the lease and this Agreement, including any rights of cancellation and termination of the lease. However, no lease will be subject to termination by the State or ASRC for failure to Pay a disputed amount claimed to be owing for a Royalty Interest under such lease unless a Working Interest Owner fails to make proper Payment for any amount of such disputed amount that is determined to be due and owing, within thirty (30) days after such amount is determined to be

due and owing by agreement of such Working Interest Owner and the Royalty Owner involved or by a final judgment of a court of competent jurisdiction.

11.8 As close as practicable to six (6) months before the commencement of Sustained Unit Production, the Unit Operator shall give the Commissioner and the President notice of the anticipated date for commencement of production. At the option of either or both the State and ASRC, which may be exercised by either the State and ASRC (without regard to whether the other exercises or does not exercise that option) from time to time upon not less than 90 days' notice to the Unit Operator, the Unit Operator shall deliver all or a portion of the Royalty Owner's Royalty Interest Unitized Substances produced from the Unit Area in kind. The maximum share of Unitized Substances that the State and ASRC are entitled to will be calculated and determined pursuant to and as provided in the respective lease. Delivery will be in the Unit Area or at a place mutually agreed to by the State and ASRC and the Unit Operator, and must be delivered to the respective Royalty Owner or to any individual, firm, or corporation designated by that Royalty Owner.

11.8.1 In the written notices given under this Section, the Commissioner or President may elect to specify the Unit Tracts from which Royalty Interest Unitized Substances taken in kind by the State or ASRC, respectively, are to be allocated. If not specified, the Royalty Interest Unitized Substances taken in kind will be allocated to all Unit Tracts in the Participating Area in which the party taking in kind (the State or ASRC, as applicable) owns a Royalty Interest in proportion to the respective quantities of Unitized Substances allocated to the Royalty Interests of such party in said respective Unit Tracts on the basis of the respective Unit Tract Participations of such Unit Tracts.

11.8.2 The Royalty Interest Unitized Substances taken in kind by the State or ASRC must be delivered to the State or ASRC, respectively, or to any individual, firm, or corporation designated by the Commissioner or President, as applicable, at the custody transfer meter at a common carrier pipeline capable of carrying the State's or ASRC's Royalty Interest share with the Unitized Substances of the Working Interest Owners, or at any other place mutually agreed upon by the Commissioner and Unit Operator for the State's Royalty Interest share and the President and Unit Operator for ASRC's Royalty Interest share.

11.8.3 Royalty Interest Unitized Substances delivered in kind must be delivered in good and merchantable condition and be of pipeline quality. Royalty Interest Unitized Substances delivered in kind must be free and clear of all lease expenses, Unit Expenses and Participating Area Expenses incurred on the North Slope of Alaska (herein collectively called "Excluded Expenses") and free of any lien for such Excluded Expenses. Except as hereinafter provided, Excluded Expenses include, but are not limited to, expenses for separating, cleaning, dehydration, salt water removal, processing, and manufacturing costs, and costs of preparing the Unitized Substances for transportation off the Unit Area, as well as gathering and transportation costs incurred before the Delivery Point. However, the Excluded Expenses do not include, and a Royalty Owner taking delivery in kind of Royalty Interest Unitized Substances will be required to bear, certain costs as described below;

(a) The State and ASRC shall be responsible for costs of transportation of their respective Royalty Interest Unitized Substances beyond the custody transfer meter at the point at which such Royalty Interest Unitized Substances are delivered into a common carrier pipeline (the "Delivery Point").

(b) Excluded Expenses do not include, and the Royalty Owners shall be responsible for, costs incurred off the Unit Area for conversion of natural gas Royalty Interest Unitized Substances to liquids (as distinguished from separation, extraction or removal of liquids from natural gas, leaving the residue gas remaining).

(c) If a Working Interest Owner is processing its share of Unitized Substances to separate, extract or remove liquids, the State or ASRC may require the Working Interest Owner to also process the State's or ASRC's share of Unitized Substances being taken in kind without cost to the State or ASRC.

(d) Except as provided in Subsection 11.8.3(c), Excluded Expenses do not include, and the Royalty Owners shall be responsible for, costs incurred beyond the Delivery Point for processing natural gas Royalty Interest Unitized Substances taken in kind in Processing Equipment (as defined in Section 10.6) to separate, extract or remove liquids from such natural gas.

11.8.4 Each Working Interest Owner shall furnish storage in or in the vicinity of the Unit Area for the State's or ASRC's Royalty Interest share of Unitized Substances produced from the Unit Area to the same extent that the Working Interest Owner provides storage for its own share of Unitized Substances.

11.9 If a purchaser of State or ASRC Royalty Interest taken in kind does not take delivery of such Unitized Substances, or in an emergency, and with as much notice to the Unit Operator as practicable or reasonable under the circumstances, the State or ASRC may elect, without penalty, to underlift for up to six (6) months all or a portion of the State's or ASRC's Royalty Interest in kind. The State's or ASRC's right to underlift is limited to the portion of its Royalty share take in kind the purchaser did not take delivery of, or the portion necessary to meet the emergency condition.

11.10 Underlifted Royalty Interest Unitized Substances may be recovered by the State or ASRC commencing on the first day of the month after thirty (30) days prior written notice to the Unit Operator and the Working Interest Owner at a daily rate not to exceed 25 percent (25%) of the State's or ASRC's share of daily production at the time of the underlift recovery. The State, ASRC, and any Working Interest Owner will be free to enter into an agreement covering underlifting by the State or ASRC that will control the rights and obligations of the parties to such agreement rather than the provisions of this Section.

11.11 The Unit Operator shall keep in its possession books and records showing the development and production (including records of development and production expenses) of all Unitized Substances Produced from the Unit Area. Each Working Interest Owner shall keep in its possession records regarding disposition (including records of sales prices, volumes, and

purchasers) of its portion of the Unitized Substances Produced from the Unit Area. The Unit Operator and the Working Interest Owners shall permit the Commissioner and the President to examine those books and records at all reasonable times. Those books and records shall be made available to the Commissioner and the President in Anchorage, Barrow, or Juneau, Alaska, upon request. The books and records may be provided in an electronic format. These books and records of development, production, and disposition shall employ methods and techniques that shall ensure the most accurate figures reasonably available without requiring separate tankage or meters for each well. The Unit Operator and Working Interest Owners shall use generally accepted and internally consistent accounting procedures.

ARTICLE 12

Unit Expansion and Contraction

12.1 After notice to the Working Interest Owners, and with the approval of the President and the Commissioner, the Unit Operator, at its own election may, or at the direction of the President and Commissioner shall, expand the Unit Area to include any additional lands determined to overlie any Reservoir or potential hydrocarbon accumulation, any part of which is within the Unit Area, or to include any additional lands regarded as reasonably necessary to facilitate production. Any expansion will not be effective until approved by the President and Commissioner. Neither the State nor ASRC will unreasonably withhold any approval required by this Article.

12.2 Any State Lease or Joint Lease, no part of which is included in a Participating Area on the tenth anniversary of the effective date of the initial Participating Area established under this Agreement, will be excluded from the Unit Area and from this Agreement.

12.2.1 If any portion of a State Lease or Joint Lease is included in a Participating Area, the portion of such State Lease or Joint Lease outside the Participating Area will neither be severed nor will it continue to be subject to the terms and conditions of this Agreement, and the portion of such State Lease or Joint Lease outside the Participating Area will continue in full force and effect so long as production is allocated to the unitized portion of such State Lease or Joint Lease and the lessee satisfies the remaining terms and conditions of such State Lease or Joint Lease.

12.2.2 If any portion of a State Lease or Joint Lease is included in a Participating Area and also partially outside the Unit Area and production is no longer allocated to the unitized portion of such State Lease or Joint Lease will be severed.

12.3 If no Participating Area then exists in the Unit Area, then not sooner than ten (10) years from the Effective Date of this Unit Agreement the President and the Commissioner may, contract the Unit Area to include only that land (a) covered by an Approved Unit Plan of Exploration or Development, (b) underlain by one or more oil and gas reservoirs or one or more

potential hydrocarbon accumulations, and (c) that facilitates production, including the immediate adjacent lands necessary for secondary or tertiary recovery, pressure maintenance, reinjection or cycling operations.

12.4 If one or more Participating Areas then exist in the Unit Area, then not sooner than ten (10) years from the commencement of Sustained Unit Production from the initial Participating Area in the Unit Area and from time to time thereafter, the Commissioner and President may contract the Unit Area to include only the following land:

(a) land (herein called "Primary Land") which is both (i) covered by an Approved Unit Plan or underlain by one or more oil and gas reservoirs or one or more potential hydrocarbon accumulations, and (ii) within a Participating Area including producing wells or producing and injection wells drilled, completed and operated in the Unit Area; and

(b) additional land, if any, outside the Primary Land area described in Subsection 12.4(a) which was previously included in the Unit Area and is reasonably necessary to facilitate production of Unitized Substances from the Unit Area, including any immediate adjacent land necessary for primary, secondary or tertiary recovery, pressure maintenance, reinjection or cycling operations.

12.5 If the Unit Area is contracted, the State and ASRC, each to the extent only that it has the lawful right and power to do so, grants to the Unit Operator and Working Interest Owners the right to use so much of the land previously included in the Unit Area as may be reasonably necessary to conduct Unit Operations under any Approved Unit Plan or Approved Unit Plans, to gather Unitized Substances produced in the Unit Area and to transport such Unitized Substances between Participating Areas and from the Unit Area, to transport Outside Substances or Outside PA Substances to and from any Participating Area or Participating Areas in the Unit Area, and to remove machinery, equipment, tools and materials from the Unit Area and abandon and rehabilitate the sites of improvements such as roads, pads and wells pursuant to Section 14.5 and Section 14.6 after termination of this Agreement.

12.6 Before any directed contraction or expansion of the Unit Area under this Article, the President and the Commissioner will give the Unit Operator and the Working Interest Owners of the affected leases reasonable notice and an opportunity to be heard.

12.7 The Unit Area may be contracted at any time with the approval of the President, the Commissioner and an affirmative vote of Working Interest Owners in the land to be excluded from the Unit pursuant to the Unit Operating Agreement.

ARTICLE 13

Unit Effective Date, Term and Termination

13.1 This Agreement will become effective as of 12:01 a.m. on the first day following approval of this Agreement by both the Commissioner and the President. One copy of this Agreement must be filed with the Department of Natural Resources, Division of Oil and Gas, the

President, and the AOGCC. If this Agreement becomes effective pursuant to this Section 13.1, it will become binding upon each party who executes any counterpart of this Agreement or any other instrument by which it becomes a party hereto effective as of the later of the date when this Agreement becomes effective or the date when such party signs the instrument by which it becomes a party hereto.

13.2 This Agreement automatically terminates five years from the effective date unless

(a) a Unit Well in the Unit Area has been certified as capable of Sustained Unit Production, in which case this Agreement will remain in effect for so long as Unitized Substances are produced in Paying Quantities from the Unit Area, or for so long as Unitized Substances can be produced in Paying Quantities and Unit Operations are being conducted in accordance with an approved Plan of Exploration or Development, or, should production cease, for so long after that as diligent operations are in progress to restore production and then so long after that as Unitized Substances are produced in Paying Quantities; or

(b) exploration operations have been conducted in accordance with an approved Unit Plan of Exploration, and

(1) the Commissioner, after providing written notice under 11 AAC 83.311, issues a written decision extending the unit term in which he states the basis for his decision, considering the provisions of 11 AAC 83.303; no single extension will exceed five years, and

(2) the President issues a written decision extending the unit term.

(c) If a suspension of Unit operations or production on all or part of the Unit Area has been ordered or approved under federal, state, or local law, or, if the Commissioner and President determines that the Unit Operator has been prevented, despite good-faith efforts, from complying with any express or implied promise, term, condition, or covenant of the unit agreement, or from conducting exploration, development, production, transportation, or marketing operations on or from the unitized area by reason of Force Majeure, the Unit Operator's obligation to comply with the provision will be held in abeyance, but not voided, and the Commissioner and President will extend the term of the Agreement for a period of time equal to the time lost under the unit term due to the suspension or prevention by Force Majeure. If Unit operations or production are suspended or prevented under this subsection and the continuation of those operations or production without suspension or prevention would have had the effect of extending the Agreement, this Agreement does not terminate during the period in which operations or production are suspended or prevented plus a reasonable time after that, which will not be less than six months, for the Operator to resume operations or production. Nothing in this subsection holds in abeyance the obligation to pay rentals, royalties, or other production or profit-based payments to the State of Alaska or ASRC from operations or production in the Unit Area which are not suspended or prevented, or from operations or production which are unrelated to any suspension or prevention. For the purposes of this subsection, any seasonal restriction on operations or production or other conditions specifically required or imposed as a term of sale of an original lease, or as a condition required for Unit Agreement approval, will not be considered a suspension of operations or production ordered under law, or prevention due to Force Majeure. However, upon application to the Commissioner and President, seasonal

restrictions on operations or production imposed subsequent to approval of a unit agreement will be considered a suspension of operations or production ordered under law.

13.3 Any order or approval of a suspension of production or other Unit Operations on all or part of the Unit Area, as set forth above in Article 13.2, is not effective until ordered or approved by both the Commissioner and the President.

13.4 Nothing in this Article holds in abeyance the obligations to pay rentals, Royalty Interests, or other production or profit-based payments to the State or ASRC from operations or production in any part of the Unit Area. For the purposes of this Article, a seasonal restriction on operations or production or other conditions specifically required or imposed as a term of sale of the original lease will not be considered a suspension of operations or production ordered pursuant to law or prevention due to Force Majeure.

13.5 This Agreement may be terminated, with the approval of the President and the Commissioner, at any time by an affirmative vote of the Working Interest Owners as specified in the Unit Operating Agreement.

ARTICLE 14

Effect of Contraction and Termination

14.1 Any lease eliminated from the Unit Area pursuant to this Agreement may be maintained only in accordance with the terms and conditions contained in the applicable State statutes and regulations and the provisions of the lease.

14.2 Any Joint Lease or portion of a Joint Lease eliminated from the Unit Area pursuant to this Agreement will remain in force for a period not less than ninety (90) days after the date on which such Joint Lease or portion of a Joint Lease is eliminated from the Unit Area and so long thereafter as drilling or redrilling operations are being conducted on it and so long thereafter as oil or gas is produced in paying quantities.

14.3 “Materials and Equipment” means machinery, equipment, tools and materials used by the Working Interest Owners in Unit Operations.

14.3.1 Unless otherwise directed by the applicable surface owner, the Working Interest Owners shall remove all Materials and Equipment from the Unit Area within one year after this Agreement terminates. However, the Commissioner, as to State Land, and the Commissioner and President jointly, as to Joint Land, may extend the period (the “Salvage Period”) for removal of Materials and Equipment.

14.3.2 If the Working Interest Owners have not removed all Materials and Equipment from the Unit Area prior to expiration of the Salvage Period (other than Materials and

Equipment directed by the applicable surface owner not to be removed), then the Working Interest Owners shall deliver an audit report as defined in AS 9.25.490(a)(1) to the Commissioner, as to State Land, and the Commissioner and President, as to Joint Land and it is agreed that:

(a) If the State alone (but not ASRC) elects to keep any such Materials and Equipment, full title to such Materials and Equipment will be assigned to the State alone and the State alone will be solely responsible for removal and salvage of such Materials and Equipment and restoration and rehabilitation of the surface following such removal or salvage, if and when required.

(b) If ASRC alone (but not the State) elects to keep any such Materials and Equipment, full title to such Materials and Equipment will be assigned to ASRC alone and ASRC alone will be solely responsible for removal and salvage of such Materials and Equipment and restoration and rehabilitation of the surface following such removal or salvage, if and when required.

(c) Subject to (a) and (b) above, if applicable, after expiration of the applicable Salvage Period, the State on State Land, and the State and ASRC on Joint Land may either: (1) keep any or all of the Materials and Equipment that the Unit Operator and Working Interest Owners have not removed as the property of the State, or the State and ASRC, as applicable, or (2) remove any or all of such Materials and Equipment at the Unit Operator's and the Working Interest Owners' expense.

14.4 "Improvements" means improvements (such as roads, pads and wells) installed or constructed by the Working Interest Owners in the Unit Area.

14.4.1 Unless otherwise directed by the applicable surface owner, the Working Interest Owners shall abandon all Improvements to the satisfaction of the State (as to State Land, and the State and ASRC (as to Joint Land), as applicable. If the Working Interest owners do not abandon the Improvements within one year after this Agreement terminates, they shall submit an audit report, as defined in AS 9.25.490(a)(1) to the State, as to State Land or to the State and ASRC as to Joint land. Unless otherwise directed by the applicable surface owner, the State (as to State Land), and the State and ASRC (as to Joint Land), may require that the Working Interest Owners leave intact some or all of such Improvements, as to which the Working Interest Owners will be absolved of all further responsibility for the maintenance, repair and eventual abandonment and rehabilitation of such Improvements, and the party or parties who required that such Improvements be left intact will be responsible for maintenance and abandonment of such Improvements and restoration and rehabilitation of the surface following such abandonment if and when required. The State or ASRC shall, within ninety (90) days after termination of this Agreement, give the Working Interest Owners written notice of any election to require that Improvements be left intact hereunder.

The State and ASRC shall consent to Improvements being left intact on lands as to which the surface is owned by Kuukpik, if so requested by Kuukpik. In such event, insofar as

the State and ASRC are concerned, the Working Interest Owners will be absolved of all further responsibility for the maintenance, repair and eventual abandonment and rehabilitation of such Improvements, but neither the State nor ASRC will be responsible for maintenance, repair or abandonment of such Improvements or for restoration or rehabilitation of the surface following such abandonment.

14.5 Subject to Sections 14.3 and 14.4, the Working Interest Owners shall deliver up the Unit Area in good condition.

ARTICLE 15

Counterparts

The signing of these instruments shall have the same effect as if all parties had signed a single original of this Agreement.

ARTICLE 16

Laws and Regulations

16.1 This agreement will be subject to all valid applicable State laws, rules, regulations, and orders in effect on the Effective Date and to all valid applicable State laws, rules, and regulations subsequently adopted or enacted.

16.2 State Leases are subject to all valid applicable local laws and regulations in effect on the Effective Date of this Agreement, insofar as such laws and regulations:

- (a) do not conflict with Federal or State statutes, regulations, or other law;
- (b) do not conflict with the provisions of this Agreement; and
- (c) do not conflict with the terms of any State Lease subject to this Agreement.

16.3 The table of contents contained in this Agreement and the title headings are inserted for convenience only and do not have the force or effect of law. They will not be deemed to be a part of this Agreement nor will they be considered in interpreting this Agreement.

16.4 When the President acts alone as the Proper Authority, Regulatory Action may be required.

ARTICLE 17

Appearances and Notices

Except as otherwise provided elsewhere in this Agreement, any notice or order relating to this Agreement that is given to the Unit Operator will be deemed given to all Working Interest Owners in the Unit Area. All notices required by this Agreement to be given will be deemed properly given if they are in writing and delivered personally or by United States mail, postage prepaid, or facsimile machine to: (a) the Unit Operator at the address or facsimile number set forth below; (b) any other Working Interest Owner at the address or facsimile number set forth below its name on the signature page of the copy of this Agreement or other instrument agreeing to become a party to this Agreement which is executed by such Working Interest Owner; (c) the State at the address or facsimile number set forth below; or (d) ASRC at the address or facsimile number set forth below. All notices actually received will also be deemed properly given. Any Working Interest Owner may change its notice address by giving thirty (30) days written notice to the Commissioner and President and the Unit Operator. The Unit Operator may change its notice address by giving thirty (30) days written notice to the Commissioner and President and the other Working Interest Owners. The State or ASRC may change its notice address by giving thirty (30) days written notice to the Unit Operator and to the Working Interest Owners.

Address of the Unit Operator:

Repsol E&P USA Inc.
2455 Technology Forest Boulevard
The Woodlands, Texas 77381
Phone: (832) 442-1021
Fax: (832) 442-1507

Address of the State:

Commissioner, Department of Natural Resources
550 West Seventh Avenue, Suite 1400
Anchorage, Alaska 99501-3554
Fax: (907) 269-8918

with a copy to:

Director, Division of Oil and Gas
550 West Seventh Avenue, Suite 1100
Anchorage, Alaska 99501-3510
Fax: (907) 269-8938

Address of ASRC:

President, Arctic Slope Regional Corporation
1230 Agvik Street
P.O. Box 129
Barrow, Alaska 99723-0129
Fax: (907) 852-5733

with a copy to:

*ASRC
3900 C St., Ste. 1000
Anchorage, Alaska 99503
Attention Land Department
Fax: (907) 339-6028*

ARTICLE 18

Joinder

The Commissioner and the President may order or, upon request, may approve a subsequent joinder to this Agreement pursuant to the expansion provisions of Article 12. A request for a subsequent joinder must be accompanied by a signed counterpart of this Agreement and must be submitted by the Unit Operator when it submits a notice of proposed expansion pursuant to Article 12. A subsequent joinder must be subject to the requirements which may be contained in the Unit Operating Agreement,

ARTICLE 19

Default

19.1 Failure of the Unit Operator or the Working Interest Owners to comply with any of the terms of this Agreement, including any Approved Unit Plan, is a default under this Agreement. The failure to comply because of Force Majeure is not a default.

19.2 The President and the Commissioner will give notice to the Unit Operator and the Working Interest Owners of the default. The notice must state the nature of the default and include a demand to cure the default by a specified date determined by the President and the Commissioner. The cure period will be a date determined by the Commissioner and President for a failure to pay rentals or royalties and at least ninety (90) days for any other default.

19.3 If there is no well certified as capable of producing Unitized Substances in Paying Quantities and a default is not cured by the date indicated in the demand, the President and the Commissioner may, after giving the Unit Operator and the Working Interest Owners reasonable notice and an opportunity to be heard, terminate this Agreement by mailing notice of the termination to the Unit Operator. Termination is effective upon mailing the notice.

19.4 If there is a well capable of producing Unitized Substances in Paying Quantities and the default is not cured by the date indicated in the demand, the President and the Commissioner may seek to terminate this Agreement by judicial proceedings.

19.5 This Article's remedies are in addition to any other administrative or judicial remedy which may be provided for by lease, this Agreement, or federal or State law.

ARTICLE 20

Dispute Resolution; Decisions

20.1 The dispute resolution processes described in this Section will be used by the parties to this Agreement. Exhibit G identifies by Article, Section and Subsection which disputes will be resolved by the respective dispute resolution processes set forth in this Section.

20.1.1 Appeal Rights means any rights to appeal the decisions or actions of the Commissioner that may be granted to the Unit Operator, other Working Interest Owners or ASRC under applicable laws and regulations. The Unit Operator, after notice to the other affected parties, shall have the right to appeal any decisions of the Commissioner under or affecting this Agreement as provided in and pursuant to applicable statutes and regulations. Any affected Working Interest Owner shall also have the right to be heard at any such proceeding. Likewise, ASRC shall be permitted to be a party to any such appeal proceeding, to the extent permitted by applicable laws and regulations. If ASRC is permitted to be a party to any such appeal proceeding with the same rights to present arguments, briefs, evidence and pleadings as the State or any appellants, or if ASRC does not seek to become a party to any such appeal proceedings, then ASRC shall be bound by the final decision in such appeal proceedings to the same extent as the State is bound thereby (subject to exercise by ASRC of any right of further appeal or rehearing to which the State is entitled), and any such final decision reversing, revising, remanding or upholding a decision of the Commissioner under this Agreement shall have the same effect on a corresponding decision, if any, of the President or ASRC under this Agreement with respect to the same subject matter or issue. For the purposes of this Subsection, a determination of a decision by the Commissioner and President by the Commissioner Only Resolution process or by arbitration pursuant to this Article 20 and the provisions of Exhibit G shall be deemed to be a “decision” by the Commissioner and by ASRC. If, however, Appeal Rights exist and are exercised by the Unit Operator or other Working Interest Owners with respect to a decision or action of the Commissioner and the President, but ASRC is not bound by the final decision in such appeal proceeding, then, as between ASRC and the Working Interest Owners, such decision or action of the President shall be final and conclusive unless the Unit Operator or Working Interest Owners establish by suit in a court of competent jurisdiction that the President’s action or decision was unreasonable.

20.1.2 Non-Reviewable Decision applies to a decision or action made or taken jointly by the Commissioner and the President by mutual voluntary agreement or by the Commissioner, acting alone, or by the President, acting alone, in each case as made or taken in the sole discretion of the Commissioner or of the President, as applicable, under the applicable Sections and Subsections specified in Exhibit G. Such decision or action shall be final and conclusive and not subject to Appeal Rights or judicial review.

20.1.3 ASRC/Unit Operator Arbitration applies to a decision or action made or taken by the President alone under the applicable Sections and Subsections specified in Exhibit G. If the Unit Operator or Working Interest Owners disagree with such decision or action,

the Unit Operator shall be entitled to require that such dispute be resolved by binding arbitration between ASRC and the Unit Operator pursuant to Exhibit G. The decision of the arbitrator in such an arbitration proceeding shall be final and binding upon ASRC and the Working Interest Owners.

20.1.4 Commissioner Only Resolution applies to decisions or actions to be made or taken by agreement of the Commissioner and the President, under the applicable Sections and Subsections specified in Exhibit G. If the Commissioner and the President disagree as to any such decision or action, the President shall acquiesce in the Commissioner's decision. The Commissioner Only Resolution process shall apply to disagreements between the Commissioner and the President which arise with reference to decisions or actions to be made or taken (a) by agreement of the Commissioner and the President; or (b) by the "Proper Authority" in circumstances where the "Proper Authority" is both the President and the Commissioner. Any dispute resolved by Commissioner Only Resolution shall have the same effect and consequences with respect to the Working Interest Owners (and as between the Working Interest Owners, on the one hand, and ASRC and the State, on the other hand) as a decision or action by the Commissioner alone as described in Subsection 20.1.6 and shall be subject to Appeal Rights, if any, of the Unit Operator or other Working Interest Owners.

20.1.5 Commissioner/President Resolution applies to a decision or action to be made or taken by agreement of the Commissioner and the President under the applicable Article, Sections and Subsections specified in Exhibit G. The Commissioner/President Resolution process shall apply to decisions or actions provided to be made or taken (a) by agreement of the Commissioner and the President; or (b) by the "Proper Authority" in circumstances where the "Proper Authority" is both the President and the Commissioner. Any such decision or action of the Commissioner and the President shall have the same effect and consequences with respect to the Working Interest Owners (and as between the Working Interest Owners, on the one hand, and ASRC and the State, on the other hand) as a decision or action by the Commissioner alone as described in Subsection 20.1.6 and shall be subject to Appeal Rights, if any, of the Unit Operator or other Working Interest Owners.

20.1.6 State Only Resolution applies to a decision or action to be made or taken by the Commissioner alone under the applicable Sections and Subsections specified in Exhibit G. With respect to such decisions or actions, the Unit Operator or other Working Interest Owners shall have the Appeal Rights existing under then applicable laws and regulations.

20.1.7 Three Party Arbitration applies to a decision or action to be made or taken by agreement of the Commissioner and the President under the applicable Article, Sections and Subsections specified in Exhibit G. If the Commissioner and the President and the Unit Operator do not agree as to such decision or action, then any of the President, or the Commissioner or the Unit Operator may require that such dispute be resolved by binding arbitration among ASRC, the State and the Unit Operator pursuant to Exhibit G. The Three Party Arbitration process shall apply to disagreements which arise with reference to decisions or actions provided to be made or taken (a) by agreement of the

Commissioner and the President; or (b) by the “Proper Authority” in circumstances where the “Proper Authority” is both the President and the Commissioner. In every Three Party Arbitration proceeding, each of the State, ASRC and the Unit Operator shall be entitled to participate and present evidence and arguments as a party to such proceeding. The decision of the arbitrator in a Three Party Arbitration proceeding shall be final and binding upon ASRC, the State and the Working Interest Owners.

20.1.8 Commissioner/President Arbitration applies to a decision or action to be made or taken by agreement of the Commissioner and the President under the applicable Article, Sections and Subsections specified in Exhibit G. If the Commissioner and the President disagree as to such decision or action, either the Commissioner or the President shall be entitled to require that such dispute be resolved by binding arbitration between the State and ASRC pursuant to Exhibit G. The Commissioner/President Arbitration process shall apply to disagreements between the Commissioner and the President which arise with reference to decisions or actions provided to be made or taken (a) by agreement of the Commissioner and the President; or (b) by the “Proper Authority” in circumstances where the “Proper Authority” is both the President and the Commissioner. The decision of the arbitrator in a Commissioner/President Arbitration proceeding shall be final and binding upon the State and ASRC. Any decision or action required to be taken by the Commissioner and the President pursuant to the decision of the arbitrator shall have the same effect and consequences with respect to the Working Interest Owners (and as between the Working Interest Owners, on the one hand, and ASRC and the State, on the other hand) as a decision or action by the Commissioner alone as described in Subsection 20.1.6 and shall be subject to Appeal Rights, if any, of the Unit Operator or other Working Interest Owners.

20.1.9 Non-Resolvable Commissioner/President Disputes applies to disputes between the Commissioner and the President about joint decisions or actions to be made or taken under the applicable Sections and Subsections specified in Exhibit G. Disputes about such decisions or actions shall not be subject to resolution under any of the other dispute resolution processes described in this Section 20.1. Such decisions shall be made or such actions shall be taken jointly by the Commissioner and the President only if the Commissioner and the President mutually and voluntarily agree upon such decision or action.

Decisions or actions made or taken by the Commissioner and the President jointly by mutual voluntary agreement under any of the applicable Sections or Subsections specified in Exhibit G with respect to which mutual voluntary agreement of the Commissioner and the President is required shall be final and conclusive subject only to any Appeal Rights of the Unit Operator or other Working Interest Owners.

20.1.10 Non-Resolvable Three Party Disputes applies to disputes between the Commissioner and the President or between the Working Interest Owners on the one hand, and the State and ASRC, on the other hand, about joint decisions or actions of the Commissioner and the President to be made or taken under the applicable Sections and Subsections specified in Exhibit G. Disputes about such decisions or actions shall not be

subject to resolution under any of the other dispute resolution processes described in this Section 20.1. Such decisions shall be made or such actions shall be taken jointly by the Commissioner and the President only if the Commissioner, the President and the Unit Operator all mutually and voluntarily agree upon and approve such decision or action.

20.2 The failure to specify and to prescribe dispute resolution processes to resolve disputes arising under any particular Section or Subsection of this Agreement in Exhibit G is not intended and shall not be construed to limit or affect any right or remedy to which any party to this Agreement may be entitled at law or in equity in connection with any dispute arising under any such omitted Section or Subsection. However, with reference to the disputes described in Exhibit G, and with reference to which a dispute resolution process is specified in Section 20.1, each such dispute shall be resolved as provided in Section 20.1 unless all parties to such dispute otherwise mutually agree.

20.3 If a request for approval or consent of the Proper Authority requires approval or consent of the Commissioner alone, such request shall be submitted to the Commissioner with an informational copy provided to the President. If a request for approval or consent of the Proper Authority requires approval or consent of the President alone, such request shall be submitted to the President with an informational copy provided to the Commissioner. If a request for approval or consent of the Proper Authority requires approval or consent of both the Commissioner and the President, such request shall be submitted to both the Commissioner and the President. Approval, consent or direction by the Proper Authority shall be deemed to have been granted or taken when the written approval, consent or direction required to constitute the applicable action of the Proper Authority is fully executed (as applicable, by the Commissioner alone, by the President alone, or by both the Commissioner and the President).

20.4 Unless otherwise specified in this Agreement, whenever the Unit Operator or any Working Interest Owner makes a written request for approval or consent by the Commissioner and President or by the Commissioner or President, it shall be deemed that the Commissioner or the President, or both, as applicable, have declined and refused to grant such approval or consent if such approval or consent is not granted within the applicable Decision Period (as below defined) after delivery of such written request to the Commissioner or the President, or both, as applicable. However, in the case of decisions by the Commissioner, if a different decision period is required by applicable statute or regulation then, the Decision Period shall be as provided by applicable statute or regulation. For purposes of this Section, the "Decision Period" shall be 30 days, except that:

20.4.1 the Decision Period for approval or rejection of proposed Unit Plans (excluding the Initial Unit Plan) or changes or modifications of Unit Plans pursuant to Article 8 shall be sixty (60) days;

20.4.2 the Decision Period for approval or rejection of proposed Participating Areas, proposed combinations of two (2) or more Participating Areas into one Participating Area, or proposed expansion or contraction of Participating Areas pursuant to Article 9 shall be 120 days;

20.4.3 except as otherwise provided in Subsection 10.1.3(b), the Decision Period for approval or rejection of proposed allocations of Unit Tract Participation to Unit Tracts in a Participating Area and any revision or change thereof pursuant to Article 10 which require approval of the Commissioner or the President, or both, under the provisions of Article 10 shall be 120 days; and

20.4.4 the Decision Period for approval or rejection of any proposed expansion or contraction of the Unit Area pursuant to Article 12 shall be 120 days.

20.5 In each instance where a reference is made in this Agreement to a decision or action by a “Working Interest Owner” or the “Working Interest Owners” which is permitted or required to be made or taken at any time after the Effective Date under any Section or provision of this Agreement, such reference shall be deemed and construed to refer to and include only a party or parties who own a Working Interest in depths and formations above the base of the deepest Reservoir which has been discovered in the Unit Area. Accordingly, as of any time after the Effective Date, a party whose Working Interest is limited to and includes only depths and formations below the base of the deepest Reservoir which has been discovered prior to such date in the Unit Area shall not be deemed to be a “Working Interest Owner” for purposes of making or taking any decision or action which is permitted or required to be made or taken by a “Working Interest Owner” or the “Working Interest Owners” under any Section or provision of this Agreement.

[SIGNATURES ON FOLLOWING PAGES]

IN WITNESS OF THE FOREGOING, the parties have executed this Unit Agreement on the dates opposite their respective signatures.

UNIT OPERATOR

Repsol E&P USA Inc.

By: Mark K. Gress
w.s. Mark K. Gress Vice President- Land

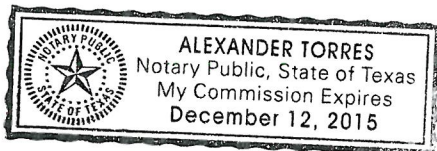
Date: 6/5/15

Address: Repsol E&P USA Inc.
2001 Timerloch Place, Suite 3000
The Woodlands, Texas 77380

STATE OF TEXAS)
)ss.
COUNTY OF Montgomery)

This certifies that on the 5th of June, 2015, before me, a notary public in and for the State of Texas, duly commissioned and sworn, personally appeared Mark K. Gress, known to me to be the person described in, and who executed the foregoing agreement, who then after being duly sworn according to law, acknowledged to me under oath that he executed same freely and voluntarily for the uses and purposes therein mentioned.

WITNESS my hand and official seal the day and year in this certificate first above written.



Alexander Torres
NOTARY PUBLIC in and for Texas
My Commission Expires: 12/12/2015

WORKING INTEREST OWNERS

70 & 148, LLC

By: _____



Date: _____

6/5/15

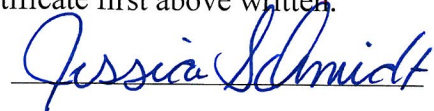
Ed Kerr – Vice President of Armstrong Oil & Gas, Inc.,
Manager of 70 & 148, LLC

Address: 70 & 148, LLC
1421 Blake Street
Denver, CO 80202

STATE OF COLORADO)
)ss.
COUNTY OF DENVER)

This certifies that on the 5th of June, 2015, before me, a notary public in and for the State of Colorado, duly commissioned and sworn, personally appeared Ed Kerr, known to me to be the person described in, and who executed the foregoing agreement, who then after being duly sworn according to law, acknowledged to me under oath that he executed same freely and voluntarily for the uses and purposes therein mentioned.

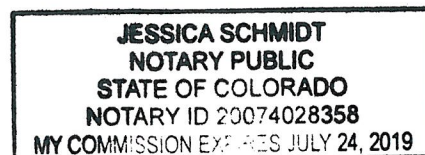
WITNESS my hand and official seal the day and year in this certificate first above written.



NOTARY PUBLIC in and for Colorado

My Commission Expires: _____

7/24/19



WORKING INTEREST OWNERS

GMT Exploration Company LLC

By: 
Philip G. Wood – Vice President

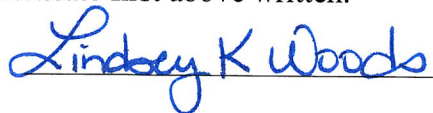
Date: 6/5/2015

Address: GMT Exploration Company LLC
1560 Broadway, Suite 2000
Denver, CO 80202

STATE OF COLORADO)
)ss.
COUNTY OF DENVER)

This certifies that on the 5th of June, 2015, before me, a notary public in and for the State of Colorado, duly commissioned and sworn, personally appeared Philip G. Wood, known to me to be the person described in, and who executed the foregoing agreement, who then after being duly sworn according to law, acknowledged to me under oath that he executed same freely and voluntarily for the uses and purposes therein mentioned.

WITNESS my hand and official seal the day and year in this certificate first above written.



NOTARY PUBLIC in and for Colorado

My Commission Expires: 12/14/17

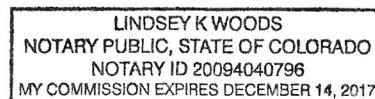


EXHIBIT G

Attached to and made a part of the Pikka Unit Agreement

Dispute Resolution

PART I
ARBITRATION PROCEDURES

RECEIVED

MAR 20 2015

DIVISION OF
OIL AND GAS

1. Terms defined in the Pikka Unit Agreement ("Unit Agreement") shall have the meaning therein stated when used in this Exhibit G unless otherwise provided herein. This Exhibit G sets forth the procedures to be followed in connection with the submission of disputes ("Disputes") to final and binding arbitration as required pursuant to Subsection 20.1.3 for ASRC/Unit Operator Arbitration, Subsection 20.1.7 for Three Party Arbitration, and Subsection 20.1.8 for Commissioner/President Arbitration. As used herein, the term "Arbitration Parties" or "Arbitration Party" shall mean (a) as to an ASRC/Unit Operator Arbitration, each of ASRC and the Unit Operator, (b) as to a Three Party Arbitration, each of ASRC, the State and the Unit Operator, and (c) as to a Commissioner/President Arbitration, each of the State and ASRC.
2. This arbitration agreement is expressly made pursuant to and shall be governed by the Uniform Arbitration Act, AS 09.43.010 - 09.43.180 (the "Arbitration Act"). It is further expressly agreed that, pursuant to AS 09.43.140, a judgment or decree shall be entered by a court of competent jurisdiction in conformity with any award made pursuant to arbitration hereunder, upon request of any Arbitration Party to the Dispute which was the subject of such arbitration. Disputes shall be resolved by arbitration in accordance with the American Arbitration Association's Commercial Arbitration Rules, as amended and effective on November 1, 1993 (the "Rules"), except as mutually agreed to the contrary by the Arbitration Parties to the Dispute to be arbitrated, and except as specified below:
 - 2.1. To the maximum extent permitted by law, the ruling of the arbitrator with reference to any Dispute submitted to arbitration pursuant to the Unit Agreement and this Exhibit G shall be final and not subject to further legal challenge or appeal by the Arbitration Parties; and each of the State, ASRC and the Working Interest Owners waives all rights set forth in the Arbitration Act which conflict with the terms of the Unit Agreement or this Exhibit G. However, nothing in this Exhibit G is intended or shall be construed to constitute an agreement to submit to arbitration any dispute or controversy arising under or in connection with the Unit Agreement other than Disputes as defined and provided in Section I of Part I of this Exhibit G.

- 2.2 In the absence of mutual agreement to another locale of the Arbitration Parties to the Dispute being arbitrated, the arbitration shall be held in Anchorage, Alaska. In no event will the American Arbitration Association (the "AAA") have the power to decide the locale of the arbitration.
- 2.3. Arbitration shall be initiated by formal written notice (an "Arbitration Demand") from any Arbitration Party to a Dispute to the other Arbitration Party or Arbitration Parties to such Dispute describing the Dispute in reasonable detail and naming three persons (or engineering or geology firms) that the Arbitration Party giving such notice (herein called the "Initiating Party") will accept as an arbitrator to resolve the matter. An Arbitration Demand may be given at any time while a Dispute exists which has not been resolved by mutual agreement of the Arbitration Parties to such Dispute. If, however, a "Decision Period" is applicable under the provisions of Section 20.4 of the Unit Agreement to a decision or action of the Commissioner and the President, jointly, or of the President alone as to which Dispute is subject to ASRC/Unit Operator Arbitration or Free Party Arbitration an Arbitration Notice may not be given by the Unit Operator with respect to such Dispute prior to the first to occur of (a) making or taking of a decision or action by agreement of the Commissioner and the President or by the President alone (as applicable) which is the subject of such Dispute, or (b) expiration of the "Decision Period" applicable with respect to such Dispute pursuant to Section 20.4 of the Unit Agreement. Within ten days of receipt of an Arbitration Notice, the Arbitration Party or Arbitration Parties receiving the notice (herein called the "Receiving Party" or "Receiving Parties") shall either agree to one of the three proposed arbitrators, or the Arbitration Parties to the Dispute will confer and attempt to agree upon another person (or engineering or geology firm) to arbitrate the Dispute. If these steps do not result in the selection of an arbitrator, then either the Initiating Party or any Receiving Party may request by written notice (a "Panel Request") to the AAA, a copy of which Panel Request shall be given to the other Arbitration Party or Arbitration Parties to the Dispute, that the AAA provide to each of the Arbitration Parties to the Dispute, in writing, a panel ("Panel") of seven names from the AAA's National Panel of Commercial Arbitrators. It is agreed and stipulated with respect to the Panel that:
- (a) All members of the Panel submitted by the AAA shall be United States nationals who are Registered Professional Engineers registered by one or more states of the United States of America or the District of Columbia and who are experienced in petroleum reservoir engineering, and the Panel Request shall so stipulate, if the Dispute to be arbitrated has arisen under any of the following Sections or Subsections of the Unit Agreement:

Sections or Subsections 3.9 (as to Disputes concerning provision of data or information requested by the President), 5.1 (as to Disputes concerning approval by the Proper Authority of the condition of facilities), 8.1 (as to Disputes concerning approval of a Unit Plan), 8.3 (as to Disputes concerning approving or ordering suspension of production or operations), 8.4 (as to Disputes concerning modification of the rate of exploration, development or production from the Unit Area), 8.6 (as to Disputes concerning approval by the Proper Authority of the injection of Outside Substances or Outside PA Substances), 9.1 (as to Disputes concerning approval by the Proper Authority of creation of a Participating Area), 9.3 (as to Disputes concerning whether land proposed to be included in a Participating Area is Includable Land), 9.5.2 (as to Disputes concerning approval by the Proper Authority of expansion or contraction of a Participating Area after five years of production), 9.6 (as to Disputes concerning approval by the Proper Authority of the combination of two Participating Areas), 9.7 (as to Disputes concerning approval by the Proper Authority of a revision of Unit Tract Participation incident to an Expansion/Contraction Revision after ten years of production), 9.8 (as to Disputes between the Commissioner and the President concerning the effective date of a Participating Area), 9.10 (as to Disputes concerning allocation of Unitized Substances by the Proper Authority), 9.13 (as to Disputes concerning modification of the rate of exploration, development or production from a Participating Area required by the Proper Authority), 10.1.3(b) (as to Disputes concerning allocation of Unitized Substances incident to a Reserves Estimate Revision), 10.4 (as to Disputes concerning the rate of recovery of an Outside Substance consisting of a liquid hydrocarbon substance).

- (b) All members of the Panel submitted by the AAA shall be United States nationals who are certified as Petroleum Geologists by the American Association of Petroleum Geologists (or any successor like organization) and who are registered Professional Geologists (if they reside in a state in which registration of professional geologists is required) and are experienced in petroleum geology, and the Panel Request shall so stipulate, if the Dispute to be arbitrated has arisen under any of the following Sections or Subsections of the Unit Agreement and does not also involve a Dispute to be simultaneously arbitrated under any of the Sections or Subsections enumerated in paragraph (a) immediately above:

Sections or Subsections 9.2 (as to Disputes concerning whether only State Land or only ASRC Land is affected by a proposed Participating Area), 9.7 (as to Disputes concerning direction or approval by the Proper Authority of expansion or contraction of a Participating Area), Subsection 10.1.10 (as to disputes concerning whether a Reservoir is a Gas Cap Reservoir), 12.1 (as to Disputes concerning direction or approval of expansion of the Unit Area), 12.3 (as to Disputes between the Commissioner and the President concerning contraction of the Unit Area), 12.4 (as to Disputes between the Commissioner and the President concerning contraction of the Unit Area).

- (c) All members of the Panel submitted by the AAA shall be United States nationals who are attorneys licensed to practice in the highest court of one or more states of the United States of America or the District of Columbia, and the Panel Request shall so stipulate, if the Dispute to be arbitrated has arisen under any of the following Article, Sections or Subsections of the Unit Agreement and does not also involve a Dispute to be simultaneously arbitrated under any of the Sections or Subsections enumerated in either paragraph (a) or paragraph (b) immediately above:

Article, Sections or Subsections 11.11.3 (as to Disputes between the Commissioner and the President concerning approval of revised Exhibits A and B for an additional Boundary Section), 13.5 (as to Disputes between the Commissioner and the President concerning approval of termination of the Unit Agreement), 14.5 (as to Disputes concerning whether the Salvage Period should be extended), 18 (as to Disputes concerning approving or requiring joinder by an additional party to the Unit Agreement or as to Disputes between the Commissioner and the President concerning modification of the Unit Operating Agreement), 19.1 (as to Disputes between the Commissioner and the President as to whether a default exists, or as to the cure period to be allowed).

- (d) The Panel shall include a brief statement of the qualifications and experience of each member of the Panel.
- (e) No member of the Panel (or any corporation, partnership, limited liability company or other organization of which such member is an employee, member, owner or partner) shall have any current or past (within the preceding five (5) years) relation with any of the State (or any branch, department, agency, board, commission or other instrumentality of the State), ASRC (or any party controlled by ASRC), or any of the Working Interest Owners (or any party controlling, controlled by or under common control with any of the Working Interest Owners), and the Panel shall include a signed statement from each member of the Panel to this effect.

2.4. After receipt of the Panel from AAA:

- (a) If the arbitration proceeding is an ASRC/Unit Operator Arbitration or a Commissioner/President Arbitration, the Initiating Party shall, within five days after receipt of the Panel, strike three names from the Panel and forward it to the Receiving Party; and the Receiving Party shall then strike three additional names from the Panel and forward the remaining name to the AAA (with a copy to the Initiating Party) within five days of receipt of the stricken Panel; or
- (b) If the arbitration proceeding is a Three Party Arbitration, the initiating Party shall, within five days after receipt of the Panel, strike two names from the Panel and forward it to the Receiving Party whose name immediately follows the name of the Initiating Party in the following list:

Unit Operator
State
ASRC
Unit Operator,

that Receiving Party shall then strike two additional names from the Panel and forward it to the other Receiving Party (with a copy to the initiating Party) within five days of receipt of the stricken Panel; and the latter Receiving Party shall then strike two additional names from the Panel and forward the remaining name to the AAA (with a copy to the Initiating Party and other Receiving Party) within five days of receipt of the stricken Panel.

The name thus forwarded to the AAA shall be the neutral arbitrator appointed to hear the Dispute. Any Arbitration Party to a Dispute may object to an entire Panel and request that the AAA provide a new Panel (whose members shall be required to have the same qualification as the members of the original Panel) by giving written notice of the request and the reason therefore to the AAA and the other Arbitration Party or Arbitration Parties to the Dispute within three days after receipt of such Panel, but such right may be exercised only one time with reference to a particular Dispute (regardless of which Arbitration Party exercises such right). Such notice may be given by telecopy, by delivery in hand, or by depositing same in the United States Postal Service, properly addressed and stamped, as certified mail. In no event may the AAA appoint an arbitrator.

- 2.5. The decision of the arbitrator shall be final and binding on each and all of the Arbitration Parties to the Dispute being arbitrated, and, in the case of An ASRC/Unit Operator Arbitration or a Three Party Arbitration, shall also be final and binding upon all other Working Interest Owners in addition to the Unit Operator.

- 2.6 If for any reason, the selected arbitrator is unable to perform his or her duties the AAA may, on proof satisfactory to it or based on the mutual agreement of all Arbitration Parties to the Dispute, declare the position vacant. In the event of such a vacancy, the provisions of Sections 2.3 and 2.4 of Part 1 of this Exhibit G shall be followed to select a new arbitrator.
- 2.7. The arbitrator shall set the date and time of each hearing hereunder. Unless otherwise agreed by all Arbitration Parties to the Dispute, the AAA shall give fifteen days notice to each Arbitration Party to the Dispute of each such hearing; provided that the initial hearing may not be held prior to expiration of thirty days after appointment of the arbitrator unless agreed by all Arbitration Parties to the Dispute. Subject to the provisions of Subsection 10.1.3(b)(vi) of the Unit Agreement, unless otherwise agreed by all Arbitration Parties to the Dispute, all hearings shall be concluded and the arbitrator's decision shall be rendered not later than one hundred twenty days after appointment of the arbitrator rendering such decision.
- 2.8. Any Arbitration Party to the Dispute may request that a stenographic record be made of all hearings hereunder. The cost of such stenographic record shall be shared equally by the Arbitration Parties to the Dispute.
- 2.9. The arbitrator will insure the privacy of the hearings hereunder to the maximum extent allowed by law. All Arbitration Parties to the Dispute and the other Working Interest Owners as to a Three Party Arbitration or ASRC/Unit Operator Arbitration shall be entitled to attend all hearings. At the request of any Arbitration Party to the Dispute, all persons shall be excluded from the hearings who are not:
- (a) officers or employees of or consultants engaged by one or more Arbitration Parties involved in the Dispute;
 - (b) officers or employees of or consultants engaged by one or more of the other Working Interest Owners as to a Three Party Arbitration or ASRC/Unit Operator Arbitration;
 - (c) attorneys for the respective Arbitration Parties involved in the Dispute;
 - (d) attorneys for one or more of the other Working Interest Owners as to a Three Party Arbitration or ASRC/Unit Operator Arbitration;
 - (e) the stenographer (if any); or
 - (f) other persons who are witnesses when actually called to testify.

- 2.10. The Arbitration Parties to the Dispute shall share equally the arbitrator's fee and expenses and any charges of the AAA. Otherwise, except for the cost of the stenographic record, each of the Arbitration Parties shall bear its own costs.

PART 2 DUTIES OF ARBITRATOR

Disputes which are submitted to an arbitrator for resolution pursuant to Subsection 20.1.3, Subsection 20.1.7. or Subsection 20.1.8, as applicable, shall be resolved by the arbitrator as follows:

(a) In an ASRC/Unit Operator Arbitration, the arbitrator shall resolve a dispute between the President and the Unit Operator or Working Interest Owners concerning approval of a proposed Unit Plan of development (other than the Initial Unit Plan) or revision or amendment of a Unit Plan of development by prescribing and directing the adoption and approval of a Unit Plan of development or revision or amendment thereof as determined by the arbitrator in accordance with the terms and provisions of, and in compliance with the standards prescribed in, Subsection 8.1.5.

(b) In an ASRC/Unit Operator Arbitration, the arbitrator shall resolve a dispute between the President and the Unit Operator or Working Interest Owners concerning approval of an Alternate Division of Interest submitted by the President to the Unit Operator pursuant to Subsection 10.1.3(b) by determining and prescribing a revised division of interest allocating Unit Tract Participation and Participating Area Expense within the applicable Participating Area in accordance with the standards set forth in Section 10.1.

(c) In any ASRC/Unit Operator Arbitration or Three Party Arbitration involving a Dispute as to whether the Proper Authority should approve the injection of Outside Substances or Outside PA Substances into a Participating Area, the arbitrator shall direct that the Proper Authority permit the Working Interest Owners to inject such Outside Substances or Outside PA Substances into the Participating Area if the arbitrator determines that such injection program would be performed by a reasonable and prudent operator under the same or similar conditions to improve and enhance the production of Unitized Substances from such Participating Area. If the arbitrator directs the Proper Authority to permit the Working Interest Owners to inject a liquid hydrocarbon substance into a Participating Area at any time prior to the Revision Date of the Twelve Year Revision of Unit Tract Participations in such Participating Area, the arbitrator shall also require that for purposes of Payment to the Royalty Owners in the Receiving Participating Area for their Royalty Interests in liquid hydrocarbon Unitized Substances Produced from the Receiving Participating Area during each month when any volumes of such liquid hydrocarbon Unitized Substances are considered to be Injected Substances pursuant to Subsection 9.12.3 or are considered to be the injected liquid hydrocarbon Outside Substance ("Injected Outside Substances") under Section 10.4, all such volumes of liquid hydrocarbon Unitized Substances thus considered to be such Injected Substances or Injected Outside Substances shall be deemed to have been Produced solely from the Affected Unit Tracts (in proportion to the relative Unit Tract Participations of such Affected Unit Tracts). Accordingly, the volumes of liquid hydrocarbon Unitized Substances allocated to

each of the Affected Unit Tracts during such months for purposes of calculating Payments for Royalty Interests in such Affected Unit Tract shall be reduced by such proportionate share of all such volumes of liquid hydrocarbon substances deemed to be such Injected Substances or Injected Outside Substances. The volumes of liquid hydrocarbon Unitized Substances allocated to all other Unit Tracts in the Participating Area (excluding the Affected Unit Tracts) for purposes of calculating Payment for Royalty Interests in such other Unit Tracts shall not be reduced by any amount of the volumes of liquid hydrocarbon Unitized Substances which are deemed to be such Injected Substances or Injected Outside Substances. "Affected Unit Tracts" shall mean and include those Unit Tracts (and only those Unit Tracts) in a Receiving Participating Area as to which the Unit Tract Participation of such Unit Tracts has not been or will not be appreciably reduced below the Unit Tract Participation which would have otherwise been allocated to such respective Unit Tracts) as a consequence of the injection of the liquid hydrocarbon Injected Substances or Injected Outside Substances which are being recovered from liquid hydrocarbon Unitized Substances Produced from the Receiving Participating Area pursuant to Subsection 9.12.3 or Section 10.4, as determined by the arbitrator. If the Arbitrator directs the Proper Authority to permit the Working Interest Owners to inject liquid hydrocarbon Outside Substances, and if the Proper Authority and the Working Interest Owners have not agreed as to the rate at which such Injected Outside Substances will be recovered, the arbitrator shall specify the rate at which such Injected Outside Substances will be recovered, based on expected reservoir response to the Injected Outside Substances and what is commercially reasonable on the North Slope of Alaska

(d) In all cases other than as described in paragraph (a), (b), or (c) of this Part 2, in an ASRC/Unit Operator Arbitration, the arbitrator shall resolve a dispute between the President and the Unit Operator or Working Interest Owners by determining whether the President acted reasonably in making the decision or taking the action which is the subject of such dispute. Unless a decision or action of the President is determined by the arbitrator by a preponderance of the evidence to have been reasonable, the arbitrator shall order such decision or action to be set aside or modified to such extent and in such manner as shall be determined by the arbitrator is required to cause such decision or action to be reasonable. The arbitrator shall not apply an "arbitrary and capricious" standard as the standard to be applied for purposes of determining whether the President's action or decision was reasonable.

(e) In a Three Party Arbitration, the arbitrator shall resolve a dispute between the President and the Commissioner or a dispute between the Unit Operator or Working Interest Owners and the President and Commissioner concerning approval of a proposed Unit Plan of development (other than the Initial Unit Plan) or revision or amendment of a Unit Plan of development by prescribing and directing the adoption and approval of a Unit Plan of development or revision or amendment thereof as determined by the arbitrator in accordance with the terms and provisions of, and in compliance with the standards prescribed in, Subsection 8.1.5.

(f) In a Three Party Arbitration, the arbitrator shall resolve a dispute between the President and the Commissioner or a dispute between the Unit Operator or Working Interest Owners and the President and Commissioner concerning an Alternate Division of Interest provided to be submitted by the President and the Commissioner to the Unit Operator pursuant to Subsection 10.1.3(b) by determining and prescribing a revised division of interest allocating Unit Tract Participation and Participating Area Expense within the applicable Participating Area in accordance with the standards and principles set forth in Section 10.1.

In a Three Party Arbitration proceeding to resolve a dispute concerning the allocation of Unit Tract Participation under Subsection 10.1.3(b), any of the Commissioner, the President or the Unit Operator may request that the arbitrator make interim reports to all parties to the proceeding as to the arbitrator's conclusions with respect to specified issues such as, for example, and without limitation the arbitrator's conclusion as to the reserves of crude oil (including condensate) originally in place under the respective Unit Tracts in the Participation Area.

(g) In all cases other than as described in paragraph (c), (e), or (f) of this Part 2, in a Three Party Arbitration, as applicable:

(i) The arbitrator shall resolve a dispute between the Commissioner and the President as to a decision or action provided to be made or taken by agreement of the Commissioner and the President (including, without limitation, a decision or action of the "Proper Authority" in circumstances when the "Proper Authority" consists of both the Commissioner and the President) by determining whether the Commissioner or the President acted reasonably in refusing to agree to a position of the other regarding such decision or action. The Commissioner or President, as applicable, whose action in refusing to agree with a position of the other regarding such decision or action is determined by the arbitrator to be unreasonable shall be ordered by the arbitrator to make or take the reasonable decision or action proposed by the other.

{ii) The arbitrator shall resolve a dispute between the Unit Operator or Working Interest Owners and the Commissioner and President as to a decision or action which has been made or taken by mutual agreement of the Commissioner and the President by determining whether the Commissioner and the President acted reasonably in making such decision or taking such action. Unless a decision or action made or taken by mutual agreement of the Commissioner and the President is determined by the arbitrator by a preponderance of the evidence to have been reasonable, the arbitrator shall order such decision or action to be set aside or modified to such extent and in such manner as shall be determined by the arbitrator is required to cause such decision or action to be reasonable. The arbitrator shall not apply an "arbitrary and capricious" standard as the standard to be applied for purposes of determining whether the action or decision of the Commissioner and the President was reasonable.

(h) In a Commissioner/President Arbitration, the arbitrator shall resolve a dispute between the Commissioner and the President as to a decision or action provided to be made or taken by agreement of the Commissioner and the President (including, without limitation, a decision or action of the "Proper Authority" in circumstances when the "Proper Authority" consists of both the Commissioner and the President) by determining whether the Commissioner or the President acted reasonably in refusing to agree to a position of the other regarding such decision or action. The Commissioner or President, as applicable, whose action in refusing to agree with a position of the other regarding such decision or action is determined by the arbitrator to be unreasonable shall be ordered by the arbitrator to make or take the reasonable decision or action proposed by the other. The arbitrator shall not apply an "arbitrary and capricious" standard as the standard to be applied for purposes of determining whether the action or decision of either the Commissioner or the President was reasonable.

PART 3
DISPUTE RESOLUTION PROCESSES

The respective dispute resolution processes specified in Section 20.1 shall apply to disputes about decisions or actions made or taken or provided to be made or taken by the Commissioner or the President (or both) under the respective Article, Sections and Subsections of the Unit Agreement as described below:

- 2.7 Proposed Exhibit F or proposed revision of Exhibit F allocating Unit Expense submitted for approval of the Commissioner.

State Only Resolution

- 3.9 Provision of data or information requested by the President or the Commissioner.

ASRC/Unit Operator Arbitration (as to data or information requested by the President), or State Only Resolution (as to data or information requested by the Commissioner)

- 5.1 Approval of condition of facilities -Approval of condition of facilities by the Proper Authority required as a condition to effectiveness of resignation of Operator.

State Only Resolution (State Land); Commissioner/President Resolution or Commissioner/President Arbitration (Joint Land); ASRC/Unit Operator Arbitration (ASRC Land)

- 5.2 Removal of Operator – Approval of successor Operator by both the Commissioner and President Is condition to effectiveness of removal.

Commissioner Only Resolution or Commissioner/President Resolution

- 6.1 Successor Operator – Approval of successor Operator by both the Commissioner and President is a condition to effectiveness of designation.

Commissioner Only Resolution or Commissioner/President Resolution

- 6.2 Appointment of successor Operator – If successor Operator not designated in 60 days, the Commissioner and President may, by agreement, appoint a successor Operator.

Commissioner Only Resolution or Commissioner/President Resolution

- 6.2 Appointment of successor Operator — If successor Operator not designated in 60 days, the Commissioner and President may, by agreement, terminate the Unit Agreement rather than appointing a successor Operator.

Commissioner/President Arbitration or Commissioner/President Resolution

- 8.1 Unit Plans--Approval by Proper Authority required for any Unit Plan or revision or amendment thereof (except Initial Unit Plan must be approved by mutual agreement of all parties or Unit Agreement is not effective),

Any combination of State Land, ASRC Land, or Joint Land (herein called "State and ASRC Land")-Three Party Arbitration

ASRC Land only- ASRC/Unit Operator Arbitration

State Land only – State Only Resolution

- 8.1.5(a) Amendment of Initial Unit Plan reducing amount of ASRC Land in the initial Participating Area-Consent of President required.

Non-Reviewable Decision

- 8.1.5(b) Amendment of Initial Unit Plan reducing amount of State Land in the initial Participating Area -Consent of Commissioner required.

Non-Reviewable Decision

- 8.3 Suspension of production or operations – Approval by both the Commissioner and President required to approve or order suspension of production or operations.

Commissioner/President Resolution or Three Party Arbitration

- 8.4 Modify rate of exploration, development or production from Unit Area – the Commissioner and the President, by agreement, may require such modification.

Commissioner/President Resolution or Three Party Arbitration

Reservoir-Approval by Proper Authority required.

State and ASRC Land- Three Party Arbitration

ASRC Land only- ASRC/Unit Operator Arbitration

State Land only- State Only Resolution

9.1 Participating Areas- Approval by Proper Authority required to create.

State and ASRC Land – Three Party Arbitration

State Land only- State Only Resolution

ASRC Land only- ASRC/Unit Operator Arbitration

9.2 Prior agreement (before application for approval of a proposed Participating Area by the President alone or by the Commissioner alone) of both the Commissioner and President that only State Land or only ASRC Land is affected.

Commissioner/President Resolution or Commissioner/President Arbitration

9.3 Approval of creation of proposed Participating Area including any ASRC Land or any Joint Land – Approval of Proper Authority that land is Includable Land required to create (no approval of Unit Tract Participation or allocation of Participating Area Expense is required); and approval by Commissioner of allocation of Unit Expense is required.

Approval that land is Includable Land:

State and ASRC Land- Three Party Arbitration

ASRC Land only - ASRC/Unit Operator Arbitration

Approval of allocation of Unit Expense:

State Only Resolution

- 9.4 Approval of creation of proposed Participating Area including State Land only and of proposed Exhibits C, D, E and F – Approval of Commissioner required.

State Only Resolution

- 9.5.2 Required expansion or contraction of Participating Area including any ASRC Land or any Joint Land at the expiration of 5 years after commencement of production -Approval of Proper Authority required.

State and ASRC Land – Three Party Arbitration

ASRC Land only- ASRC/Unit Operator Arbitration

- 9.6 Combination of two Participating Areas- Approval by Proper Authority required.

State and ASRC Land – Commissioner/President Resolution or Commissioner/President Arbitration

ASRC Land only – ASRC/Unit Operator Arbitration

State Land only -State Only Resolution

- 9.7 Expansion or contraction of Participating Area and associated change of allocation of Unit Tract Participation, Participating Area Expense and Unit Expense – Approval by Proper Authority required, or expansion or contraction can be directed by Proper Authority; provided that no approval of change or allocation of Unit Tract Participation or Participating Area Expense incident to an Expansion/Contraction Revision of a Participating Area including any ASRC Land or any Joint Land is required during the first ten years after commencement of Sustained Unit Production from the Participating Area.

Approval or direction of expansion or contraction:

State and ASRC Land – Commissioner/President Resolution or Three Party Arbitration

State Land only- State Only Resolution

ASRC Land only- ASRC/Unit Operator Arbitration

Approval of change of allocation of Unit Tract Participation and Participating Area Expense incident to Expansion/Contraction Revision:

State and ASRC Land (after 10 years of production) – Three Party Arbitration

ASRC Land only (after 10 years of production) — ASRC/Unit Operator Arbitration

State Land only-State Only Resolution

Approval of change of allocation of Unit Expense:

All Lands-State Only Resolution

9.8 Effective date of subsequent Participating Areas- Established by Proper Authority.

State and ASRC Land – Commissioner/President Arbitration or Commissioner/President Resolution

State Land only-State Only Resolution

ASRC Land only- ASRC/Unit Operator Arbitration

9.10 Allocation of Unitized Substances, Unit Expense or Participating Area Expense – Established by Proper Authority if Working Interest Owners ("WIO's") do not agree.

Allocation of Unit Expense- State Only Resolution

Allocation of Unitized Substances or Participating Area Expense:

State and ASRC Land- Commissioner/President Arbitration or Commissioner President Resolution

State Land only – State Only Resolution

ASRC Land only- ASRC/Unit Operator Arbitration

9.11 Injection of Outside PA Substance without immediate Payment for Royalty Interests – consent of Proper Authority required (except as provided in Subsection 9.11.2 of Unit Agreement).

State and ASRC Land – Non-Resolvable Commissioner/President Dispute and Non-Reviewable Decision

State Land only- Non-Reviewable Decision

ASRC Land only – Non-Reviewable Decision

9.13 Modify rate of exploration, development or production from Participating Area – WIO's may be required by Proper Authority to modify.

State and ASRC Land— Commissioner/President Resolution or Three Party Arbitration

State Land only- State Only Resolution

ASRC Land only – ASRC/Unit Operator Arbitration

10.1.3(b) Revision of Unit Tract Participations and allocation of Participating Area Expense Incident to a Reserves Estimate Revision as to a Participating Area including any Joint Land or ASRC Land – Approval by Proper Authority required.

State and ASRC Land – Three Party Arbitration

ASRC Land only – ASRC/Unit Operator Arbitration

10.1.10 Determination whether a Reservoir Is a Gas Cap Reservoir- approval by Proper Authority required.

State and ASRC Land – Commissioner/President Resolution or Commissioner/President Arbitration

ASRC Land only – ASRC/Unit Operator Arbitration

10.1.10 Equating value of oil and gas in gas cap reservoir – The "Interested Parties" must mutually agree upon valuation or reservoir will be treated as a Gas Cap Reservoir.

State and ASRC Land – Non-Resolvable Three Party Dispute and Non-Reviewable Decision

ASRC Land only-- Non-Reviewable Decision (President and WIO's must agree- no appeal or recourse to court)

- 10.2 Allocations as to Participating Area including State Land only – Approval by Commissioner Required.

State Only Resolution

- 10.4 Rate of recovery of Outside Substance consisting of liquid hydrocarbon substance – Proper Authority must approve before substance may be injected.

State and ASRC Land – Three Party Arbitration

State Land only- State Only Resolution

ASRC Land only- ASRC/Unit Operator Arbitration

- 11.11.3 Revised Exhibits A and B for additional "Boundary Section" – Commissioner and President must approve.

Commissioner/President Arbitration or Commissioner/President Resolution

- 12.1 Expansion of Unit Area- President and Commissioner must approve or may order expansion.

Three Party Arbitration

- 12.3 Contraction of Unit Area when no Participating Area exists – Shall be accomplished at the direction of both the Commissioner and the President from time to time after 10 years from the Effective Date of Unit Agreement.

Commissioner/President Arbitration or Commissioner/President Resolution

- 12.4 Contraction of Unit Area when Participating Area exists – Shall be accomplished at the direction of both the Commissioner and the President from time to time after 10 years from the commencement of Sustained Unit Production.

Commissioner/President Arbitration or Commissioner/President Resolution

- 12.7 Contraction of Unit Area upon request of WIO's – President and Commissioner must approve.

Non-Resolvable Commissioner/President Dispute (Commissioner and President must mutually agree – WIO's may have Appeal Rights if provided by Jaw)

- 13.2.2 Extension of Unit term beyond 5 years without operations or production – Approval of both the President and the Commissioner required.

Non-Resolvable Commissioner/President Dispute (Commissioner and President must agree – no arbitration, no Appeal Rights and no recourse to court)

- 13.5 Termination of Unit Agreement by agreement of WIO's- Approval of President and Commissioner required.

Commissioner/President Arbitration or Commissioner/President Resolution

- 14.1.1 Continuation of State Leases or portions thereof eliminated from Unit Area- State regulations and lease terms govern.

State Only Resolution

- 14.1.2 Extension of 90-day "Extension Period" on ASRC Joint Leases on lands excluded from the Unit Area- Approval of President required.

Non-Reviewable Decision

- 14.1.3 Extension of 90-day "Extension Period" on ASRC Leases on lands excluded from the Unit Area- Approval of President required.

Non-Reviewable Decision

- 14.2 Extension or 90-day extension period on State Leases on lands in the Unit Area following termination of Unit Agreement – Approval of Commissioner required.

State Only Resolution

- 14.3 Extension of 90-day "Extension Period" on ASRC Joint Leases on lands in the Unit Area following termination of Unit Agreement- Approval of President required.

Non-Reviewable Decision

- 14.4 Extension of 90-day "Extension Period" on ASRC Leases on lands in the Unit Area following termination of Unit Agreement – Approval of President required.

Non-Reviewable Decision

- 14.5 Decision (a) to extend Salvage Period or (b) to retain or remove (at WIO's expense) Materials and Equipment left on site after end of Salvage Period – State or ASRC action required.

Decision to extend Salvage Period:

Joint Land – Non-Resolvable Commissioner/President Dispute
(Commissioner and President must mutually agree – WIO's may have Appeal Rights if law provides)

ASRC Land – ASRC/Unit Operator Arbitration

State Land – State Only Resolution

Decision whether to retain or remove Materials and Equipment left on site:

Joint Land – Non-Resolvable Commissioner/President Dispute
(Commissioner and President must mutually agree – no arbitration, no Appeal Rights and no recourse to court; but one only of ASRC or State may elect to retain Materials and Equipment if the other desires to remove them)

ASRC Land – Non-Reviewable
Decision

State Land – Non-Reviewable Decision

- 14.6 Decision to require that Improvements be left intact — State or ASRC action required.

Joint Land – Non-Resolvable Commissioner/President Dispute
(Commissioner and President must mutually agree- no arbitration, no Appeal Rights and no recourse to court; if Commissioner and

President do not mutually agree to require that Improvements be left intact, Improvements must be removed except as to Improvements on land as to which the surface is owned by Kuukpik which Kuukpik requests be left intact)

ASRC Land- Non-Reviewable Decision

State Land- Non-Reviewable Decision

- 18 Subsequent joinder in Agreement by additional party pursuant to expansion provisions of Article 13 – Commissioner and President, acting jointly, may permit or require joinder.

Three Party Arbitration

- 18 Modification of provision of Unit Operating Agreement preventing or frustrating subsequent joinder – Commissioner and President, acting jointly, may require.

Commissioner/President Arbitration or Commissioner/President Resolution

- 19.1 Determination that a default exists and agreement on time to cure – Notice given by Commissioner and President jointly, and decision as to cure time allowed determined by Commissioner and President jointly.

Three Party Arbitration or Commissioner/President Resolution

Exhibit H

Attached to and made a part of the Pikka Unit Agreement

Data and Interpretations

The Unit Operator shall maintain and submit all the data and interpretations, in digital format acceptable to DNR and ASRC where applicable, required under Section 3.8 and Subsection 10.1.3 above to fully inform the State and ASRC on field development, and reservoir performance, including methodology and input parameters used to derive tract allocation factors. Examples of the types of data and interpretations that may be available include, but are not limited to, the following:

- a) Maps, digital grids, schedules, and spreadsheets depicting water saturation, permeability, porosity distribution, net pay, gross sand relative permeability, capillary pressure, recovery factors, pressure transient data, oil and gas PVT data. This data must be made available where applicable by model cell, well, reservoir region, tract, layer and composite layers.
- b) Displays showing history match results of oil, gas, and water rates, GOR, WOR, pressure, etc.
- c) Displays showing assumptions, weighting factors, pseudo functions, decline curve analysis, reservoir simulations, material balance calculations, volumetric calculations, and physical models.
- d) All seismic surveys acquired within the unit in paper and digital format. The surveys include 2 and 3D surveys, VSPs, and checkshots in order to image surface to surface, surface to well and well to well data.
- e) Digital copies of static and dynamic models.