

APPROVAL OF THE APPLICATION FOR DISCOVERY WELL CERTIFICATION
KITCHEN LIGHTS NO. 3 WELL

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

September 16, 2015

CONTENTS

I.	INTRODUCTION AND DECISION SUMMARY	3
II.	FACTS.....	3
A.	Lease History	3
B.	Drilling History	4
C.	Discovery Royalty Application History.....	4
III.	STATUTORY AND REGULATORY PROVISIONS RELEVANT TO THE APPLICATION	5
IV.	DISCUSSION OF DECISION CRITERIA.....	9
A.	PRIORITY AS TO TIME AND DATE OF DISCOVERY.....	9
B.	LEASE ELIGIBLE FOR COOK INLET DISCOVERY ROYALTY	9
C.	PREVIOUSLY UNDISCOVERED POOL	10
1.	Meeting the “Pool” Definition Under 11 AAC 83.1049(11)	10
2.	Previously Undiscovered Oil or Gas Pool.....	12
D.	CAPABLE OF PRODUCTION IN PAYING QUANTITIES	12
V.	FINDINGS AND CERTIFICATION.....	13
EXHIBIT A:	Furie’s Statement of Discovery	15
EXHIBIT B:	Furie’s Discovery Well Certification application cover letter	18
EXHIBIT C:	Furie’s Supplement to the Discovery Well Certification application	20

I. INTRODUCTION AND DECISION SUMMARY

This is the decision of the Alaska Department of Natural Resources (DNR), Director (Director) of the Division of Oil and Gas (Division) pursuant to a September 30, 1999, delegation of authority from the DNR Commissioner on the June 25, 2014, application of Furie Operating Alaska, LLC (Furie), unit operator of the Kitchen Lights Unit (KLU), on behalf of the working interest owners of ADL 389197, for certification of a discovery well. The lessees seek a reduction of the royalty rate from 12.5% to a discovery royalty rate of 5% for all production allocated to previously undiscovered pools within ADL 389197 for a 10-year period from June 30, 2013 to June 29, 2023.

The Director finds that the Kitchen Lights Unit Well No. 3 (KLU #3) is the discovery well for four previously undiscovered gas pools in the Cook Inlet sedimentary basin. AS 38.05.180(f)(4) and 11 AAC 83.1030(b). This approval constitutes the written findings and decision required under 11 AAC 83.1030(b) and is appealable.

II. FACTS

A. Lease History

The lease, ADL 389197, was bid upon on April 21, 1999, in the State of Alaska Competitive Oil and Gas Lease Sale by Forcenergy, Inc. and issued effective February 1, 2000. The lease sets forth a twelve and one-half percent (12.5%) royalty rate and a seven-year primary term with an expiration date of January 31, 2007. On March 30, 2001, Forcenergy assigned its interest in the lease to Forest Oil Company. Effective January 31, 2007, the lease was committed to the Corsair Unit, and shortly thereafter, Forest Oil assigned its interest in the lease to Pacific Energy Alaska. In early 2009, Pacific Energy Alaska assigned its interest in the lease to Escopeta Oil Company, LLC (Escopeta). The Corsair Unit then terminated on June 30, 2009 and, concurrent with the termination, the leases from the Corsair Unit, including ADL 389197, were absorbed into the newly-formed Kitchen Lights Unit. Escopeta changed its name to Cornucopia Oil and Gas Company, LLC on March 29, 2012. Portions of the royalty interest in the lease have been assigned to several other lessees since 2011. The current working interest ownership in ADL 389197 is as follows:

Working Interest Owners	Percentage of Working Interest Ownership
Cornucopia Oil & Gas Company, LLC	78.999
A.L. Berry	7.875
Danny S. Davis	6.875
Furie Operating Alaska, LLC	1.000
Taylor Minerals, LLC	5.250
Corsair Oil & Gas, LLC	.001
TOTAL	100.000

B. Drilling History

Prior to drilling the KLU #3, seven exploration wells were drilled on the Corsair structure. Four of these wells are located such that they could have penetrated the gas-bearing intervals in the KLU #3 well; these wells are the State SRS No. 1, Tern A SRS No. 1, South Cook Inlet State No. 2 and the Kitchen Lights Unit No. 1 (KLU #1) well.

The first well drilled on this structure was Shell's State SRS No.1 completed on August 11, 1965, at a total measured depth of 16,375 feet. This well is located approximately 2,600 feet northeast of the KLU #3 location. The mud log and drilling report have good-to-strong gas shows in the Beluga Formation. However, no flow tests were conducted in these intervals.

The Phillip's Tern A SRS No. 1 well, completed on August 28, 1982, and was drilled approximately 6,700 feet to the northeast of the KLU #3 well. This well was drilled to evaluate the Sterling, Beluga, and upper Tyonek Formations for their gas potential. Seven flow tests were attempted from the Sterling and Beluga Formations. One flow test in the upper Beluga Formation resulted in an instantaneous flow rate of 0.544 million cubic feet per day but most of the tests were plagued by sand production and plugged tools. There were no sustained flow tests that would support a discovery determination.

The South Cook Inlet State No. 2 well was operated by ARCO primarily to evaluate lower Tyonek Formation oil. The well was completed on December 5, 1993 at a total depth of 15,189 feet. This well is located approximately 10,800 feet to the northeast of the KLU #3. This well had good gas shows on the mud log in the Beluga Formation that were evaluated with a repeat formation tester. However, no flow tests were conducted on these zones.

The Kitchen Lights Unit No.1 (KLU #1), suspended on August 18, 2012, was drilled to a total measured depth of 15,298 feet by Furie. This well is roughly 1,300 feet east of the KLU #3 location. The lower Sterling and Beluga Formations had good gas shows on the mud log and cross-over on the porosity log curves. Most of these sands were evaluated with Modular Dynamic Formation tester (MDT) but no flow tests were performed.

The KLU #3 well was spud on April 26, 2013 and suspended on July 10, 2013. It reached a total vertical depth of 10,391 feet on May 14, 2013. According to the statement of discovery, Furie conducted flow tests on the KLU #3 well from June 25 – 30, 2013. Under 11 AAC 83.1020(c), the lessee shall notify and furnish transportation, if requested, so the Commissioner's representative can witness the flow test required under 11 AAC 83.361. The DNR was not notified of, and therefore was not present to witness, the flow tests conducted by Furie in the KLU #3 well in June 2013.

C. Discovery Royalty Application History

On July 30, 2013, Furie submitted a sworn Statement of Discovery (Statement). In the affidavit, Furie claims that on June 30, 2013, a well drilled on ADL 389197 was the first well to discover natural gas in previously undiscovered pools in the Sterling and Beluga Formations. Furie submitted information with its Statement, including depths to the top and base of each formation as identified by well logs and selected horizons, indicating where Modular Formation Dynamics

Tests (MDT) and flow tests were conducted. On August 9, 2013, the Division published notice of the Statement in accordance with 11 AAC 83.1010(c).

On June 25, 2014, Furie submitted its application for discovery well certification (Application). The Division received Furie's Application fee in the amount of \$5,000.00 on July 3, 2014. In the Application, Furie states that other wells had been drilled in the general vicinity before the KLU #3, but none had confirmed a commercial discovery of natural gas. Furie submitted confidential reserves reports, well logs, and flow test results among other data sets to support its claim for discovery well certification.

On July 18, 2014, the Division contacted Furie and asked for additional geologic and engineering information to complete the Application. On April 7, 2015, the Division received a letter from Furie dated March 30, 2015, responding to the information request with a supplement to the Application (Supplement). The Supplement included production forecast data; seismic correlations; maps of the aerial extent of the reservoir; pressure data from the KLU #1, #2A, and #3 wells; KLU #3 well logs and formation tops; and cross sections of the KLU #3 and nearby wells. The Division deemed the Application complete on May 19, 2015.

On May 29, 2015, within 10 days of receiving the complete Application, the Division gave public notice of the Application by publishing "Notice of Application for Cook Inlet Discovery Royalty of State of Alaska Oil and Gas Lease ADL 389197" in the *Alaska Dispatch*. 11 AAC 83.1030(a). Simultaneously, the Division published the public notice on the Division's website at <http://dog.dnr.alaska.gov/Units/Units.htm#recentnotices> and on the State's website at <http://dnr.alaska.gov/commis/pic/pubnotfrm.htm>. The deadline for objections to the Application was June 29, 2015. The Division did not receive any objections within the 30-day comment period.

III. STATUTORY AND REGULATORY PROVISIONS RELEVANT TO THE APPLICATION

The Alaska State Legislature enacted the Cook Inlet Discovery Royalty (CIDR) program to enhance the state oil and gas leasing program under AS 38.05.180(f)(4):

(4) notwithstanding a requirement in the leasing method chosen of a minimum fixed royalty share, on and after March 3, 1997, the lessee under a lease issued in the Cook Inlet sedimentary basin who is the first to file with the commissioner a nonconfidential sworn statement claiming to be the first to have drilled a well discovering oil or gas in a previously undiscovered oil or gas pool and who is certified by the commissioner within one year of completion of that discovery well to have drilled a well in that pool that is capable of producing in paying quantities shall pay a royalty of five percent on all production of oil or gas from that pool attributable to that lease for a period of 10 years following the date of discovery of that pool, and thereafter the royalty payable on all production of oil or gas from the pool attributable to that lease shall be determined and payable as specified in the lease; for purposes of this paragraph, the reduced royalty authorized by this paragraph is subject to the following:

(A) only one reduction of royalty authorized by this paragraph may be allowed on each lease that qualifies for reduction of royalty under this paragraph;

DNR has set forth discovery royalty decision criteria under 11 AAC 83.1000-.1049:

11 AAC 83.1000. Cook Inlet discovery royalty

A lessee that drills a well making a discovery of oil or gas in a previously undiscovered pool in the Cook Inlet sedimentary basin and complies with the requirements of 11 AAC 83.1000 - 11 AAC 83.1049 shall pay a royalty of five percent on all production from that pool produced from or allocated to the discovery lease for 10 years following the date of discovery. If the lessee discovers more than one pool in the discovery well, the commissioner will grant a discovery royalty to each pool that qualifies under 11 AAC 83.1000 - 11 AAC 83.1049.

11 AAC 83.1010. Statement of discovery

(a) To establish priority as to time and date of discovery of oil or gas in a pool described in 11 AAC 83.1000, the lessee shall file a nonconfidential sworn statement with the commissioner claiming to be the first to have drilled a well making the discovery.

(b) The lessee shall file the statement described in (a) of this section within 30 days after the date of discovery. The statement must include:

- (1) the time and date of discovery;
- (2) the surface and bottomhole location of the discovery well;
- (3) the location, measured depth, and subsea depth of the wellbore penetration of the top and base of the pool;
- (4) the name of the geologic formation containing the pool; and
- (5) the Alaska lease number and American Petroleum Institute well number of the discovery well.

(c) Within 10 days of receipt of the statement described in (b) of this section, the commissioner will publish notice of the statement in a newspaper of general statewide circulation and the division's world wide web page on the Internet.

11 AAC 83.1020. Evidence of discovery and production in paying quantities

(a) Within one year of the discovery well completion date, the lessee shall apply to the commissioner for a discovery well certification. The application must be accompanied by evidence to establish the discovery of a previously undiscovered pool and evidence that a well within the pool is capable of production in paying quantities.

(b) The evidence accompanying the application described in (a) of this section must include:

(1) casing records, perforation data, well test information, electric logs, drilling logs, mud logs, information derived from sample cuttings and logs, and the lessee's pre-drilling and post-drilling interpretation of the prospect;

(2) all geophysical and geochemical data, core analyses, age control, and any other information, data, records or interpretations that the lessee deems pertinent; and

(3) the data required under 11 AAC 83.361 to make a certification that a well within the pool is capable of production in paying quantities;

(c) The lessee shall notify the commissioner five days in advance of the flow test required under 11 AAC 83.361 and furnish transportation, if requested, to the commissioner or the commissioner's representative to witness the flow test.

(d) The lessee shall submit the application fee prescribed in 11 AAC 05.010(a)(10)(D) for the application for Cook Inlet discovery royalty with the application for a discovery well certification.

11 AAC 83.1030. Discovery well certification

(a) Within 10 days after receipt of a complete application for discovery well certification, the commissioner will publish notice of the application in a newspaper of general statewide circulation and the division's world wide web page on the Internet. The notice must state that any interested party who objects to the application shall submit written comments to the commissioner within 30 days of the date of the notice. If an interested party objects to the application, the commissioner will, in the commissioner's discretion, conduct an adjudicative hearing on the application, at which time the commissioner will take testimony from the lessee and any interested party. At least 15 days in advance of the hearing, the commissioner will publish a notice of the hearing in a newspaper of general statewide circulation and the division's world wide web page on the Internet, and notify the lessee and any interested party by certified letter. Within 120 days after the hearing or after the notice of the completed application, if there is no hearing, the commissioner will either deny or grant the application for a discovery well certification.

(b) If the application for discovery well certification is granted, the commissioner will certify:

(1) the lessee discovered a previously undiscovered pool and shall pay a royalty of five percent on all production from that pool, allocated to the discovery lease under an allocation schedule approved by the commissioner, for the 10 years from the date of discovery, and thereafter shall pay a royalty as provided in the discovery lease;

(2) the lessee has established that the pool has a well capable of producing in paying quantities;

(3) another lessee is not eligible for a discovery well certification of that pool;

(4) the lessee shall pay royalty on any other pool under or within the boundaries of the discovery lease as provided in the discovery lease;

(5) the lessee is not entitled to another discovery well certification on the discovery lease; and

(6) the time and date of discovery.

(c) The discovery well certification will be effective as of the date the commissioner determines that the application for discovery well certification submitted under 11 AAC 83.1020 was complete.

11 AAC 83.1049. Definitions

In 11 AAC 83.1000 - 11 AAC 83.1049, unless the context clearly requires a different meaning:

(1) "commissioner" means the commissioner of the Department of Natural Resources or the commissioner's designee;

(2) "Cook Inlet" means the area bounded by

(A) the north boundary of Township 18 North, Seward Meridian;

(B) the Seward Meridian;

(C) the south boundary of Township 7 South, Seward Meridian; and

(D) the west boundary of Range 19 West, Seward Meridian;

(3) "date of discovery" means the date that the first acceptable evidence of a discovery is acquired by the lessee;

(4) "discovery" means the first acceptable evidence, as determined by the commissioner, of the existence of a previously undiscovered oil or gas pool by a well;

(5) "discovery lease" means the state oil and gas lease on which the discovery is made;

(6) "discovery well" means the well in which the discovery is made;

(7) "discovery well completion date" means, as applied to a discovery well, the earliest of "well abandonment date," "well completion date," or "well suspension date," as those terms are defined in 20 AAC 25.570;

(8) "division" means the state division of oil and gas in the Department of Natural Resources;

(9) "interested party" means the lessee or owner of the subsurface rights of any tract adjoining the lease for which a lessee applies for a discovery well certification, or any lessee or owner of the subsurface rights who claims to have previously discovered the pool;

(10) "paying quantities" has the meaning given that term by 11 AAC 83.395(4);

(11) "pool" means an accumulation of oil or gas in a single and separate reservoir that has been discovered by drilling, is characterized by a single natural pressure system, and has a trapping mechanism which is structural, stratigraphic, or both.”

IV. DISCUSSION OF DECISION CRITERIA

To be granted discovery well certification and the corresponding royalty reduction under 11 AAC 83.1000 – .1049, a lessee is required to establish: 1) priority as to time and date of discovery; 2) eligibility for discovery well certification under AS 38.05.180(f)(4); 3) discovery of a previously undiscovered oil or gas pool; and 4) a well has been drilled in the pool that is capable of production in paying quantities. Each of these requirements will be discussed in order below.

A. PRIORITY AS TO TIME AND DATE OF DISCOVERY

To establish priority as to time and date of discovery, a lessee must furnish a non-confidential sworn statement with substantiating evidence acceptable to the Division, that oil or gas has been encountered in sufficient showing to cause a reasonable and prudent operator to conduct further operations in an effort to complete a well in the discovery zone so that such well can be tested for potential oil or gas production in paying quantities. The statement must include: 1) time and date of discovery; 2) surface and bottomhole location; 3) location, measured depth, and subsea depth of the wellbore penetration of the top and base of the pool; 4) name of the geologic formation containing the pool; and, 5) the Alaska lease number and American Petroleum Institute well number of the discovery well. 11 AAC 83.1010.

A statement of discovery must be received by the Commissioner within 30 days of the date of discovery per 11 AAC 83.1010(b). Furie deemed the date of discovery to be June 30, 2013, at 7:00 pm Alaska Standard Time. The statement of discovery was hand delivered to the DNR Commissioner’s office on July 30, 2013. Furie has complied with the first requirement 11 AAC 83.1010(b) for discovery well certification by properly submitting its statement of discovery within 30 days of the date of discovery.

B. LEASE ELIGIBLE FOR COOK INLET DISCOVERY ROYALTY

Furie was the first to file with the Commissioner a non-confidential sworn statement claiming to be the first to have drilled well on ADL 389197 discovering a previously undiscovered oil or gas pool under AS 38.05.180(f)(4). The Division published a public notice shortly after the Application was deemed complete. The Division received no objection to or comments on the notice.

The statute governing Cook Inlet Discovery Royalty (AS 38.05.180(f)(4)) places restrictions on the eligibility of leases that may be granted discovery royalty. Leases entered into before March 3, 1997, are subject to limitations set forth in AS 38.05.180(f)(4)(B). Discovery well certification

applications for leases entered into on or after March 3, 1997 shall pay Cook Inlet discovery royalty rate if the application complies with the requirements in 11 AAC 83.1000 - .1049. Furie's discovery lease (ADL 389197) was issued February 1, 2000, thus the discovery lease is not subject to the limitations in AS 38.05.180(f)(4)(B) and is eligible to be granted discovery royalty.

C. PREVIOUSLY UNDISCOVERED POOL

1. Meeting the "Pool" Definition Under 11 AAC 83.1049(11)

Once the discovery lease is found to be eligible for discovery royalty, a technical review of the materials and data in a discovery well certification application will commence. The lessee must make a convincing showing of evidence establishing: 1) it has drilled a well making a discovery of a previously undiscovered oil or gas pool and 2) that a well within the pool is capable of production in paying quantities. Discovery well certification is determined by the Commissioner upon receipt of an application that provides "evidence to establish the discovery of a previously undiscovered pool and evidence that a well within the pool is capable of production in paying quantities." 11 AAC 83.1020(a).

To establish the first element, the lessee must show the oil and gas pool meets the definition of "pool" under 11 AAC 83.1049(11).

an accumulation of oil or gas in a single and separate reservoir that has been discovered by drilling, is characterized by a single natural pressure system, and has a trapping mechanism which is structural, stratigraphic, or both.

If the lessee discovers more than one pool in the discovery well, the Commissioner will grant discovery royalty to each pool that qualifies. 11 AAC 83.1000.

The Statement submitted by Furie provides a list of multiple "horizons" encountered by the KLU #3 well within the Sterling and Beluga Formations. The Statement identified 29 horizons Furie determined to be previously undiscovered natural gas pools discovered by the KLU #3 well. The Statement identifies the type of test conducted on each horizon and the measured depth and subsea depth in feet of those horizons in the KLU #3 well. In the Statement, MDT evaluations were sworn to have been conducted on 28 of the 29 horizons and flow tests conducted on six of the 29 horizons in the KLU #3 well. The entire list of horizons identified in the Statement submitted by Furie is in Exhibit A.

Furie's Application dated June 25, 2014, and its supplement to the Application dated March 30, 2015, provide data and materials as required in 11 AAC 83.1020(b). The Division reviewed the KLU #3 well test report and drilling logs completed by Schlumberger in the *Furie Oil and Gas, LLC Field Operations Report* dated July 30, 2013. Schlumberger's report indicates well tests were not conducted on several horizons identified in the sworn Statement as previously undiscovered natural gas pools. The following 10 horizons identified in the Statement show no evidence of MDT or flow testing in the Application.

Horizon	Measured depth (feet)	Subsea Depth (feet MSL)
Horizon 1 (Sterling)	3,732' – 3,738'	3,618' – 3,624'
Horizon 2 (Sterling)	3,864' – 3,879'	3,750' – 3,765'
Horizon 3 (Sterling)	3,968' – 3,990'	3,854' – 3,876'
Horizon 5 (Sterling)	4,135' – 4,147'	4,021' – 4,033'
Horizon 13 (Sterling)	4,725' – 4,740'	4,611' – 4,626'
Horizon 14 (Beluga)	4,973' – 5,000'	4,859' – 4,886'
Horizon 16 (Beluga)	5,086' – 5,116'	4,972' – 5,002'
Horizon 20 (Beluga)	5,597' – 5,606'	5,493' – 5,492'
Horizon 27 (Beluga)	6,320' – 6,342'	6,206' – 6,228'
Horizon 29 (Beluga)	7,617' – 7,622'	7,501' – 7,508'

There is no well test evidence to prove these 10 horizons meet the definition for “pool” under 11 AAC 83.1049(11) and whether the KLU #3 well would be able to produce hydrocarbons in paying quantities from each of the 10 horizons. Because the Application failed to include evidence of a well test for those ten horizons, the Division must eliminate the horizons from consideration to receive discovery royalty under 11 AAC 83.1000 – 11 AAC 83.1049.

As noted above, Furie elected to flow test six horizons in the KLU #3 well. The remaining horizons received MDT or no well test at all. A MDT provides data such as near wellbore permeability and pressures, but it is employed after drilling is completed when the formation is compromised by drilling mud. The pressures measured by the MDT are indirect pressures transferred from the reservoir fluid through invaded mud. This data will not conclusively establish the potential hydrocarbon-bearing zone as a single, natural pressure system. Only a flow test, such as a production test or a drill stem test (DST), can determine whether a pool is indeed a single, natural pressure system.

Based on pressure transient analysis data provided in the reports by Expro Reservoir Information Services, six horizons were flow tested and are tabulated below.

Flow Tested Horizons	Measured Depth (feet)	Subsea Depth (feet MSL)
Horizon 6 (Sterling)	4,190' – 4,225'	4,076' – 4,111'
Horizon 10 (Sterling)	4,565' – 4,592'	4,451' – 4,478'
Horizon 11 (Sterling)	4,600' – 4,632'	4,486' – 4,518'
Horizon 25 (Beluga)	5,941' – 5,959'	5,827' – 5,845'
Horizon 26 (Beluga)	5,999' – 6,005'	5,885' – 5,891'
Horizon 28 (Beluga)	6,964' – 6,998'	6,850' – 6,884'

Horizons 10 and 11 were determined to be water-bearing, not an accumulation of oil or gas, based on flow tests and well log data. The results of the tests produced large amounts of water with very little gas. The four horizons shown below meet the regulatory definition for pool.

Flow Tested Horizons	Measured Depth (feet)	Subsea Depth (feet MSL)
Horizon 6 (Sterling)	4,190' – 4,225'	4,076' – 4,111'
Horizon 25 (Beluga)	5,941' – 5,959'	5,827' – 5,845'
Horizon 26 (Beluga)	5,999' – 6,005'	5,885' – 5,891'
Horizon 28 (Beluga)	6,964' – 6,998'	6,850' – 6,884'

2. Previously Undiscovered Oil or Gas Pool

Four horizons identified in the Application met the CIDR regulatory definition for pool. The next technical factor the Division evaluates under the CIDR regulations is whether the pool or pools were previously undiscovered. Under 11 AAC 83.1049(4), “discovery” is defined as “the first acceptable evidence, as determined by the Commissioner, of the existence of a previously undiscovered oil or gas pool by a well.” The Commissioner has broad latitude to determine what constitutes the “discovery” of a pool.

The lessee has the burden to provide sufficient information and data or adequate evidence in its application to the Commissioner. This means the lessee must provide evidence to the Division that the pool has not been previously discovered by another well. The lessee is given one year to make its best case for receiving discovery royalty. Any CIDR application must include a compilation of well information and drilling interpretations, all geophysical and geological data, data required under 11 AAC 83.361 (well test certification), and “any other information, data, records, and interpretations that the lessee deems pertinent.” 11 AAC 83.1020(b)(2). This information is required so the Division can be certain that another nearby well did not discover the pool or pools.

In evaluating whether the four pools in the KLU #3 were previously undiscovered, the Division reviewed pressure data, cross sections of the KLU #3, earlier wells drilled in the area, and flow test information from nearby wells. The four horizons the Division deemed to be gas pools in the KLU #3 may have been encountered by other wells, but no credible flow tests were found to have been performed on those horizons in any surrounding well. Thus, the Division finds that the information and data submitted in the Application is sufficient to conclude that the four pools in the KLU #3 were not previously discovered.

D. CAPABLE OF PRODUCTION IN PAYING QUANTITIES

The final element to consider in the discovery well certification application is whether a well within a pool is capable of production in paying quantities. The Division must evaluate each pool which satisfies the requirements of a discovery of a previously undiscovered oil or gas pool under the paying quantities standard set forth in 11 AAC 83.395(4). “Paying quantities” under the CIDR regulation is given the meaning under 11 AAC 83.395(4).

Quantities sufficient to yield a return in excess of operating costs, even if drilling and equipment costs may never be repaid and the undertaking consider as a whole may ultimately result in a loss; quantities are insufficient to yield a return in excess of operating costs unless those quantities, not considering the costs of transportation and marketing, will produce sufficient revenue to induce a prudent operator to produce those quantities.

Under 11 AAC 83.1020(b)(3), the lessee must provide “the data required under 11 AAC 83.361 to make a certification that a well within the pool is capable of production in paying quantities.” The data listed under 11 AAC 83.361 includes all results of the flow test or tests, geological data, and cost data. Furie conducted flow tests of six horizons of the KLU #3 well. However, Furie did not inform the Division of the flow testing as required under 11 AAC 83.1020(c), thus the Division was unable to witness the flow testing which occurred between June 25, 2013 and June 30, 2013.

The Division will rely solely upon the flow test reports included with the Application to make its findings.

The Division evaluated each pool separately to determine whether a well that penetrates the pool meets the capable of production in paying quantities threshold. In its evaluation of the KLU #3 pools, the Division compared the marginal net revenue contribution, based on production profiles generated using data provided from Expro’s reservoir reports and the expected price of gas used in the Netherland, Sewell & Associates, Inc. reserves report, to the corresponding marginal contribution to the cost of producing that gas. Given that the expected variation in the cost of producing gas for each horizon is minimal, the analysis used an average cost to produce one thousand cubic feet of gas from all of the producing horizons included in the KLU #3 well, as provided by Furie. The Division evaluated the capability of the KLU #3 well to produce in paying quantities from each of the four pools. Since the marginal net revenue stemming from four horizons was greater than their corresponding cost of production, the Division finds the four pools in the previous table are capable of producing gas in paying quantities.

V. FINDINGS AND CERTIFICATION

After consideration of the materials presented in the Application, I grant discovery well certification for the Kitchen Lights Unit #3 well in state oil and gas lease ADL 389197. This decision is effective as of May 19, 2015, the date the Division deemed the Application complete.

The Division certifies the following findings:

- 1) The time and date of the discovery is June 30, 2013 at 7:00 pm Alaska Standard Time.
- 2) A lessee of ADL 389197, Furie Operating Alaska LLC, discovered four previously undiscovered gas pools and established that the four pools have a well capable of producing in paying quantities. The pools granted discovery royalty are listed below with measured and subsea depths.

Flow Tested Horizons	Measured Depth (feet)	Subsea Depth (feet MSL)
Horizon 6 (Sterling)	4,190’ – 4,225’	4,076’ – 4,111’
Horizon 25 (Beluga)	5,941’ – 5,959’	5,827’ – 5,845’
Horizon 26 (Beluga)	5,999’ – 6,005’	5,885’ – 5,891’
Horizon 28 (Beluga)	6,964’ – 6,998’	6,850’ – 6,884’

- 3) The discovery lease is state oil and gas lease ADL 389197. The lessees are not entitled to another discovery well certification on this discovery lease.
- 4) The lessees are entitled to pay the discovery royalty rate, on the natural gas pools identified above, until June 29, 2023, 10 years from the date of discovery.
- 5) The lessees of the ADL 389197 will pay the discovery royalty rate of five percent (5%) on all natural gas production allocated to the discovery lease and each of the four pools in the discovery lease under an allocation schedule approved by the Commissioner. Furie must

provide the Division with proposed tract allocations and production allocations for approval of the four qualifying pools within 60 days of the date of this decision.

- 6) The lessees will pay twelve and one-half percent (12.5 %) royalty on all other gas produced in the discovery lease.

A person affected by this decision may appeal it, in accordance with 11 AAC 02. Any appeal must be received within 20 calendar days after the date of "issuance" of this decision, as defined in 11 AAC 02.040(c) and (d) and may be mailed or delivered to Mark 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 immediately takes effect. 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.



Corri A. Feige, Director
Division of Oil and Gas



Date

EXHIBITS

- A. Furie's Statement of Discovery, dated July 30, 2013
- B. Furie's Discovery Well Certification application cover letter, dated June 25, 2014
- C. Furie's Supplement to the Discovery Well Certification application, dated March 30, 2015

The depths to the top and base of each formation containing the natural gas pools that were identified by well logs, and the selected horizons that had MDT logs or were tested in each formation, are as follows:

<u>Tested horizons within the Sterling Formation</u> (2,944' MD to 4,973' MD) (2,830' SSD to 4,859' SSD)	Measured Depth (MD) in feet	Subsea Depth (SSD) (MD – 114') in feet from MSL
Horizon 1 (MDT)	3,732' to 3,738'	3,618' to 3,624'
Horizon 2 (MDT)	3,864' to 3,879'	3,750' to 3,765'
Horizon 3 (MDT)	3,968' to 3,990'	3,854' to 3,876'
Horizon 4 (MDT)	4,018' to 4,070'	3,904' to 3,956'
Horizon 5 (MDT)	4,135' to 4,147'	4,021' to 4,033'
Horizon 6 (MDT)	4,172' to 4,234'	4,058' to 4,120'
Horizon 6 (flow tested)	4,190' to 4,225'	4,076' to 4,111'
Horizon 7 (MDT)	4,270' to 4,288'	4,156' to 4,174'
Horizon 8 (MDT)	4,325' to 4,343'	4,211' to 4,229'
Horizon 9 (MDT)	4,462' to 4,508'	4,348' to 4,394'
Horizon 10 (MDT)	4,561' to 4,600'	4,447' to 4,486'
Horizon 10 (flow tested)	4,565' to 4,592'	4,451' to 4,478'
Horizon 11 (flow tested)	4,600' to 4,632'	4,486' to 4,518'
Horizon 12 (MDT)	4,669' to 4,719'	4,555' to 4,605'
Horizon 13 (MDT)	4,725' to 4,740'	4,611' to 4,626'

<u>Tested horizons within the Beluga Formation</u> (4,973' MD to 8,657' MD) (4,859' SSD to 8,513' SSD)	Measured Depth (MD) in feet	Subsea Depth (SSD) (MD – 114') in feet from MSL
Horizon 14 (MDT)	4,973' to 5,000'	4,859' to 4,886'
Horizon 15 (MDT)	5,061' to 5,082'	4,947' to 4,968'
Horizon 16 (MDT)	5,086' to 5,116'	4,972' to 5,002'
Horizon 17 (MDT)	5,225' to 5,238'	5,111' to 5,124'
Horizon 18 (MDT)	5,250' to 5,265'	5,136' to 5,151'
Horizon 19 (MDT)	5,402' to 5,413'	5,288' to 5,299'
Horizon 20 (MDT)	5,597' to 5,606'	5,483' to 5,492'
Horizon 21 (MDT)	5,630' to 5,645'	5,516' to 5,531'
Horizon 22 (MDT)	5,700' to 5,717'	5,586' to 5,603'
Horizon 23 (MDT)	5,795' to 5,805'	5,681' to 5,691'
Horizon 24 (MDT)	5,869' to 5,894'	5,755' to 5,780'
Horizon 25 (MDT)	5,940' to 5,958'	5,826' to 5,844'
Horizon 25 (flow tested)	5,941' to 5,959'	5,827' to 5,845'
Horizon 26 (MDT)	5,998' to 6,007'	5,884' to 5,893'
Horizon 26 (flow tested)	5,999' to 6,005'	5,885' to 5,891'
Horizon 27 (MDT)	6,320' to 6,342'	6,206' to 6,228'

Horizon 28 (MDT)	6,960' to 6,996'	6,846' to 6,882'
Horizon 28 (flow tested)	6,964' to 6,998'	6,850' to 6,884'
Horizon 29 (MDT)	7,615' to 7,622'	7,501' to 7,508'

7. The discovery well is located on ADL-389197 (surface and bottom hole locations) and the API well number is 50-733-20610-00-00.

By signing below, I certify that the statements contained herein are true to the best of my knowledge.

Bruce Webb,
Vice President, Furie Operating Alaska, LLC

STATE OF ALASKA)
) ss.
THIRD JUDICIAL DISTRICT)

SUBSCRIBED AND SWORN TO OR AFFIRMED before me at Anchorage, Alaska on July 30, 2013.

State of Alaska
NOTARY PUBLIC
Joel M. Stratman
My Commission Expires September 2, 2013

Notary Public in and for Alaska
My Commission expires: 9/2/13

EXHIBIT B: Furie's Discovery Well Certification application letter, dated June 25, 2014



June 25, 2014

Joe Balash, Commissioner
Department of Natural Resources
550 West 7th Avenue, Suite 1400
Anchorage, AK 99501

DEPARTMENT OF
NATURAL RESOURCES

JUN 25 2014

COMMISSIONER'S OFFICE
ANCHORAGE

Re: KLU No. 3 Discovery Royalty Application

Dear Commissioner Balash:

As Unit Operator of the Kitchen Light Unit, Furie Operating Alaska, LLC ("Furie") files this request for a discovery royalty pursuant to 11 AAC 83.1000—11 AAC 83.1049. On July 30, 2013, Furie filed a Statement of Discovery setting forth the date and pertinent details of the discovery. This letter and attachments complete our application for a discovery royalty.

As indicated in the Statement of Discovery, Furie discovered natural gas in the KLU No. 3 Well ("KLU #3") on June 30, 2013. We are submitting under separate cover our confidential Reserves Report prepared by Netherland, Sewell and Associates, Inc. which provides the data required under 11 AAC 83.361 to certify that the well is capable of producing in paying quantities. We have also enclosed the information required under 11 AAC 83.1020 and the application fee of \$5,000 as prescribed in 11 AAC 05.010(a)(10)(D).

Although other wells had been drilled in the general vicinity prior to the KLU #3, none had confirmed a commercial discovery of natural gas. Prior to the flow test of the KLU #3, the entire KLU was designated a "contingent resource" because commerciality was in question. The flow tests performed in the KLU #3 motivated the reserve qualifying third parties to upgrade the area with "Proved, Probable, and Possible reserves." The test demonstrated that the reservoir sands are characteristically similar to known commercial developments and result in reserve estimates that support commercial development at current gas prices in the market. The drilling of the KLU #3 and subsequent logging of the well established that high quality gas reservoirs correlative to offset down structure hydrocarbon shows exist structurally high, attic to pre-existing wells, and expanded on the known areal extent of the gas accumulations. Hydrocarbon accumulations to the southwest and across faults from the KLU #3, by third party designations, remain "contingent" resources.

The chronology of events related to KLU #3 is as follows:

- The AOGCC issued permit number 213-015 authorizing Furie to drill the well.
- Furie spud the well on April 26, 2013 and reached true vertical depth of 10,391 feet on May 14, 2013.

76311431.1 0075051-00006

1029 W. 3rd Avenue, Suite 500 | Anchorage, Alaska | 99501 | Office: 907.277.3726 | Fax: 907.277.3796



- On June 25, 2013, Furie began flow testing the well and completed the flow test on June 30, 2013.
- The discovery was made on June 30, 2013 at 7:00 p.m.
- On July 10, 2013, the KLU #3 was suspended.

For the reasons set forth in this submittal, Furie respectfully requests that a discovery royalty be approved for the KLU #3 well.

Please do not hesitate to contact me if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "DK", is written over a light blue horizontal line.

Damon Kade, President

Enclosures

76311431.1 0075051-00006

1029 W. 3rd Avenue, Suite 500 | Anchorage, Alaska | 99501 | Office: 907.277.3726 | Fax: 907.277.3796

EXHIBIT C: Supplement - Discovery Well Certification application, dated March 30, 2015



RECEIVED

March 30, 2015

APR 07 2015

Mark Myers, Commissioner
Department of Natural Resources
550 West 7th Avenue, Suite 1400
Anchorage, AK 99501

**DIVISION OF
OIL AND GAS**

Re: KLU No. 3 Discovery Royalty Application – Response to Additional Information Request

Dear Commissioner Myers:

As Unit Operator of the Kitchen Lights Unit, Furie Operating Alaska, LLC (“Furie”) has filed an application for a discovery royalty pursuant to 11 AAC 83.1000 - 11 AAC 83.1049. This letter and enclosed confidential technical information respond to a request from the Department for additional information related to the application.

Enclosed please find the following confidential documentation.

1. Rate and production forecast data for the KLU #3 well is shown on two production plots. One production plot is for KLU #3 only and the other is for the three well development plan that is currently contemplated.
2. Cross sections of the discovery well and prior wells drilled in the area. One cross section shows the depth interval from the Sterling formation to the Tyonek formation while the other cross section shows the depth interval from the Tyonek formation to TD.
3. Well logs and formation tops for the KLU #3 well. Two log plots of KLU #3 are provided, one of the shallow pay section (Sterling) and the other of the Beluga pay section.
4. Seismic correlations of depicted sand packages over the area.
5. Pressure data acquired by Furie from the KLU #1, #2A, and #3 wells.
6. Maps of the aerial extent of the discovered pool with a discussion of the structural and stratigraphic settings, trapping mechanisms, and natural pressure systems for the area.

Commissioner Myers
March 30, 2015
Page 2

All of this data demonstrates that the KLU #3 well discovered a new pool and qualifies for the discovery royalty. The rate and production forecast data demonstrates that the well will yield a return in excess of operating costs sufficient to induce a prudent operator to produce those quantities. The cross sections show that it was not until the flow test of the KLU #3 that the discovery was capable of producing in paying quantities. The well logs, seismic correlations, and pressure data define the boundaries of the discovery, which is described by the maps and other information included in Item 6.

Furthermore, Netherland and Sewell (NSAI) is a highly recognized third party expert worldwide in the field of determining and estimating hydrocarbon resources and reserves. In the prior years leading up to drilling, evaluating, and testing the KLU #3, NSAI had all the information available on the KLU 1, 2, and 2 STA but was not satisfied that these wells sufficiently verify the existence of commercially viable reserves to designate any volumes as "proved." Only in late 2013 (August) was NSAI able to report "Proved reserves" stemming from the new information acquired in the KLU #3. It was only the total net feet of pay in the KLU #3 that established the threshold levels of reserves for a viable project to be possible.

Due to the volume of data, we are providing this information in electronic format only. Please let us know if you have any questions.

Best regards,



Bruce Webb
Senior Vice President