

# **FOURTH PLAN OF DEVELOPMENT**

## **KITCHEN LIGHTS UNIT**

**OCTOBER 7, 2016**

Furie Operating Alaska, LLC  
Operator

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**DIVISION OF  
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## 1. OBJECTIVE

This Fourth Plan of Development for the Kitchen Lights Unit (KLU) is submitted by Furie Operating Alaska, LLC (Furie) as Operator on behalf of itself and the other working interest owners to the Department of Natural Resources (DNR) pursuant to Article 8 of the Kitchen Unit Agreement and 11 AAC 83.343. The Third Plan of Development called for the following activities in 2016:

- Delivery of a jack-up rig to Alaska waters on or before May 15, 2016;
- On or before November 30, 2016, drill and acquire all necessary logs and data to properly evaluate two new development wells in the Corsair block to the stratigraphic equivalent of the deepest sand that was flow tested and determined to be commercially viable in the KLU #3 well, namely the sand encountered from 6964 feet to 6998 feet measured depth in the KLU #3 well, unless the Director finds that interpretations from the shallower data in a well indicate that producible hydrocarbons are unlikely to be found by drilling to that equivalent horizon depth;
- Based on the logs and data acquired from the new development wells, develop a plan for completing the wells and present the plan to DNR;
- Use commercially reasonable efforts, weather permitting, to complete, by December 31, 2016, one new development well in the Corsair block.

In addition, DNR proposed modifications to the 2016 Plan of Development, which were included as commitments:

- Within 60 days of the approval of the Third Plan of Development, provide a revised Exhibit A to the Kitchen Lights Unit Agreement;
- By September 1, 2016, complete seismic interpretation for the entire KLU and provide bottom hole locations for exploration and development wells;
- Within 30 days of the date of the approval of the Third Plan of Development, provide DNR with evidence that Furie secured the use and contracted the delivery of the jack-up rig.

Furie has met or will meet these commitments in a timely manner. The Randolph Yost jack-up rig was delivered well before May 15, 2016. Furie then drilled the KLU #A2 well to 7038' MD / 5210' TVD. Based on the logs, the KLU #A2 well was plugged back and sidetracked at 2290' MD. Furie then drilled the KLU #A2-A to 8160' MD / 7301' TVD, logged and completed the well, and is currently producing the well. In addition, Furie has commenced drilling the KLU #A1 well, with an eye toward completing it in 2017. Furie plans to present the well results of these wells to DNR along with the plan to complete the KLU #A1.

Furie also met the modifications to the Third Plan of Development that were proposed by DNR. Furie provided a revised Exhibit A and evidence that the use and delivery of the rig was secured in a timely manner. Per correspondence with DNR on August 30, 2016, Furie has obtained seismic data covering the entire KLU and although initial interpretation is complete, the analysis of the data is ongoing and will continue for some time. Furie has submitted proposed well locations as part of the plan of operations process and in the interest of consistency Furie does

not see a need to revise any well locations stated in the plan of operations at this time. Please note that the wells referenced in the plan of operations are at this point intended to be vertical wells such that the bottom hole locations will coincide with the coordinates provided in the plan of operations. In any event, as previously discussed in regard to the plan of operations, the proposed schedule of wells and their exact locations will likely evolve.

The objective of this Fourth Plan of Development is to:

- Continue the safe and effective development of the proven gas reserves in the KLU;
- Continue and increase production of natural gas on the Julius R Platform;
- Continue the pragmatic exploration of the KLU.

## **2. RESERVOIR CHARACTERISTICS AND MANAGEMENT**

### 2.1 Reservoir Characteristics

The geologic formations that Furie has been targeting are the Sterling and the Beluga formations. Multiple pools within the Sterling and Beluga formations have been identified by well logs as being productive. Of the multiple pools identified, 28 had MDT log evaluations (19 different sand test points) and five have been flow tested to date (4 of which were proven to be economically viable). Gas samples contained 99% methane. One or more of the tested horizons may be shown to be in communication with other horizons within the same formation.

### 2.2 Reservoir Management

The KLU #3, and KLU #A2-A are natural gas wells. The KLU #3 well has been in commercial production since November of 2015. The KLU #A2-A well has been completed and is currently producing. Numerous layers of pay were encountered in the Sterling and Beluga formations. The proposed development is designed to efficiently exploit these pools by completing the wells at various intervals. The more prolific Sterling reservoirs may be exploited in the first development wells to increase reserves and deliverability.

Based on well tests of three of the twenty-one intervals evaluated to have significant hydrocarbon deposits, the initial well is anticipated to produce approximately 15-18 million cubic feet per day. If analyses indicate that the well will support increased flow rates, production may be increased. Initial production is expected to be dry gas. Gas samples taken during well testing were approximately 99% methane. Water content is expected to increase as the reservoir is produced. As each producing zone becomes depleted or uneconomic to produce, that zone will be isolated and another zone introduced into production.

A portion of the produced gas will be utilized on the platform for production operations.

### **3. WELLS AND DRILLING**

Initial production has been from the KLU #3 well. The KLU #A2-A well was drilled and completed in 2016 and is currently producing. The platform is designed to accommodate up to four additional wells, for a total of six wells. Additional wells will be drilled as appropriate to maximize recovery from the reservoir. Well workovers will also be performed as appropriate during the life of the field.

Wells have been and will continue to be drilled using a jack-up rig brought to the site for that purpose, and the platform will support a workover rig (platform rig) that may be used for well completions and maintenance. When needed, the workover rig (platform rig) will be transported to the platform and installed using the platform crane, then removed after completion of the well work.

Development wells will be directionally drilled to penetrate development prospects using conventional drilling techniques. The wells will be completed as results justify with single and dual completions. The Beluga and shallower formations will typically be completed with gravel packs.

### **4. PROPOSED 2017 KLU DEVELOPMENT**

With the installation and completion of the platform, subsea pipeline, and onshore production facility, and ongoing production from the KLU #3 well, development will focus on additional wells for increased reserves and deliverability. However, existing natural gas market constraints through 2019 may have an impact on the necessity of multiple wells.

Accordingly, Furie proposes the following work commitments for development activities in 2017:

- (i) On or before November 30, 2017, complete the KLU #A-1 well if advisable based on logs, data and market conditions
- (ii) On or before November 30, 2017, drill and acquire all necessary logs and data to properly evaluate one new development well in the Corsair block to the stratigraphic equivalent of the Sterling flow tested zones in the KLU #3 well, namely the sand encountered from 6964 feet to 6998 feet measured depth in the KLU #3 well, unless interpretations from the shallower data in a well indicate that producible hydrocarbons are unlikely to be found by drilling to that equivalent horizon depth. Based on the logs and data acquired from the new development well, develop a plan for completing the well and present the plan to DNR.
- (iii) As an alternative to the development well described in (ii), Furie may conduct further drilling and evaluation of the KLU #4 exploration well as described below.

**5. PLANS FOR EXPLORATION OR DELINEATION OF LANDS OUTSIDE PA**

As an alternative to the development well described in (ii), Furie proposes the following work commitment for exploration activities in 2016:

Provided Furie has enough time and conditions safely permit, on or before December 30, 2016, use commercially reasonable efforts to drill and acquire sufficient logs and data to evaluate the KLU #4 well to a depth sufficient to penetrate the Sunfish Channel of the lower Tyonek Formation.