

**Preliminary Findings and Determination
Regarding
The Badami Unit
Royalty Modification
Application**

**Commissioner
of the Department of Natural Resources**

**APPROVAL OF MODIFICATION OF ROYALTY
FOR LEASES: ADLs 375094, 375093, 367006, 367011, 377011,
365533,365535**

July 7, 2023

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Executive Summary

On August 27, 2021, Savant Alaska, LLC (Savant), a Glacier Oil & Gas Corp. (Glacier) subsidiary, as operator of the Badami Unit (Badami) and working interest owner in leases corresponding to Badami, submitted an application (Application) to the Commissioner of the State of Alaska Department of Natural Resources (DNR) for modification of royalty under AS 38.05.180(j)(1)(B). This Preliminary Findings and Determination Regarding the Badami Royalty Modification Application (Preliminary Decision) constitutes DNR's analysis and preliminary decision on Savant's Application.

Royalty modification was sought for all seven leases in Badami. Savant asserted, under AS 38.05.180(j)(1)(B), that royalty modification was warranted to prolong the economic life of an oil field or pool as per barrel or barrel equivalent costs were projected to increase sufficiently due to declining production to make future production no longer economically feasible. Savant proposed a sliding scale royalty reduction based on production and retroactive application and claimed that this would extend the life of Badami.

Savant provided sufficient technical and financial information to substantiate its Application as required under 11 AAC 88.105, 11 AAC 83.185, 11 AAC 05.010(a)(10)(H), and AS 38.05.180(j)(6). Per AS 38.05.180(j)(2), the applicant clearly showed that the per-barrel cost increase was sufficient to make future production no longer economically feasible without royalty modification. Per AS 38.05.180(j)(1)(B), the applicant clearly showed that the modification of royalty would prolong the economic life of Badami.

DNR finds that granting royalty modification for Badami is in the best interests of the State. DNR authorizes a modification mechanism based on the difference between monthly revenues and monthly thresholds generated from annual aggregations of the monthly total cost estimates from Badami. DNR analyses show that the modification of royalty would extend the life of the field on average by six to seven months. Moreover, the modification of royalty and the extension of operating life for Badami translates into an expected gain of direct revenues to the State.

In addition to revenue gains, DNR also finds that there could be significant indirect benefits to the State from extending the operating life of Badami. DNR quantified the indirect benefit of preventing potential pipeline tariff increases and found that it could significantly add to potential direct revenue gains. Other unquantified indirect benefits may include Badami's reserve potential, preserving the opportunity for future development of Badami through investments from new owners SEP Alaska, heightened interest among other explorers for surrounding acreage, and the environmental and social benefits of Savant's continued operations at Badami. DNR believes that once all these unquantified indirect benefits are also considered, they provide an even more compelling case for granting royalty modification to Badami.

I. BACKGROUND

On August 27, 2021, Savant, as operator of Badami and working interest owner in leases corresponding to the onshore Badami, submitted the Application to the Commissioner of DNR for modification of royalty under Alaska Statute (AS) 38.05.180(j)(1)(B). This Preliminary Decision responds to the royalty modification application as required under AS 38.05.180(j)(8).

A. Badami Development History

The Badami oil reservoir on Alaska’s eastern North Slope lies both offshore in Mikkelson Bay and onshore just east of the Shaviovik River Delta. The Badami oil field was discovered in 1991 by Conoco and Petrofina, with nearby exploration wells drilled in the 1970s by Humble, Arco, and Mobil. In 1993, BP Exploration (Alaska) Inc. (BPXA) acquired a 70 percent interest and operatorship in the leases that would become Badami. Badami was formed on March 13, 1995, with Petrofina being the minority interest owner. Field development began in 1996, and by 1998 a facility was built, and seven wells were drilled into Badami formation sands and put on production.

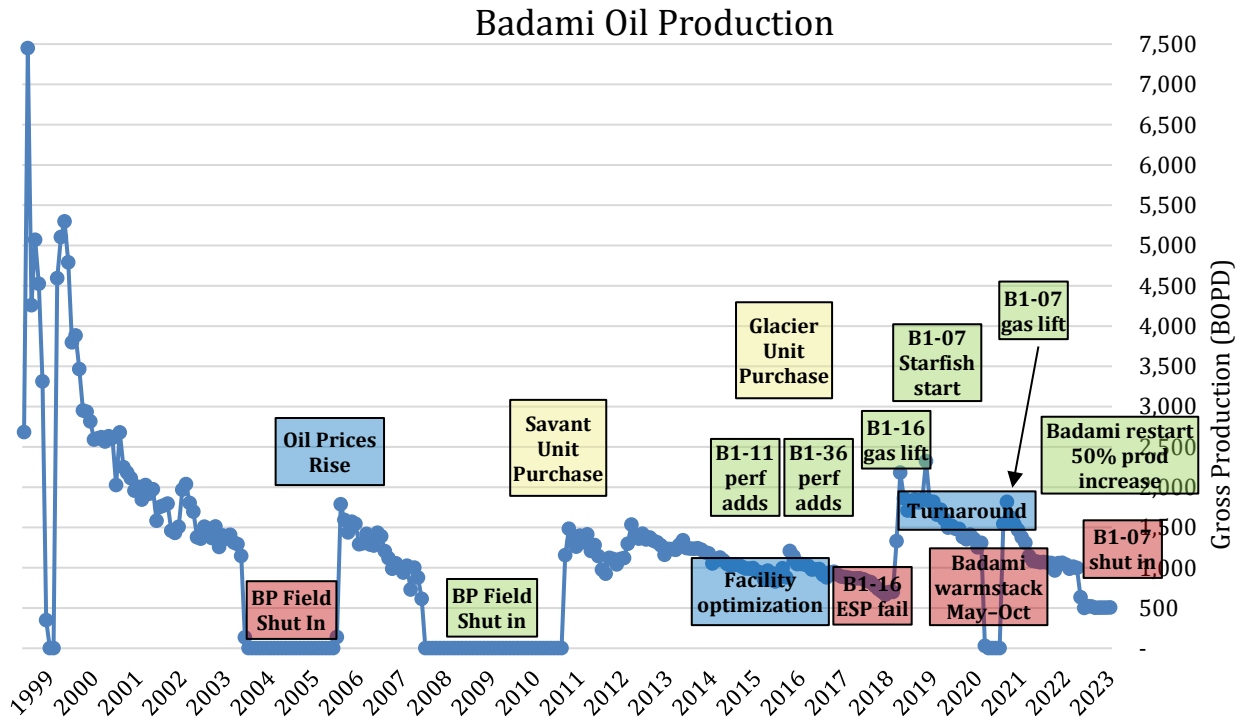


Figure 1: Badami Lifetime Reservoir Development History up to March 2023¹

First oil into the Badami Sales Oil Pipeline commenced on August 24, 1998. The Badami facilities were designed to provide process and export capabilities for a production rate of 35,000 barrels of oil per day (bopd), in addition to processing 22.5 million standard cubic feet per day (scfd) of produced gas. Expected peak production from the field was 30,000 bopd; however, actual

¹ Source: DNR- Division of Oil and Gas

production peaked at 18,000 bopd² before declining to 1,400 bopd (Figure 1). BPXA shut the field in 2003 after poor reservoir performance from the Badami sands, with reservoir compartmentalization being the determined cause. Production resumed in 2005 when oil prices increased. In 2007, BPXA shut-in the field again for economic reasons.

BPXA transferred working interest ownership in the Badami leases to Savant (67.5 percent) and ASRC Exploration, LLC (AEX) (32.5 percent) in 2010. Savant took over operatorship of Badami starting in 2011, and production resumed (Figure 1). In 2011 BPXA sold Badami to Savant, with AEX as a partner. Cook Inlet Energy (CIE), established in Alaska in 2009 and acquired by Miller Energy Resources, Inc. (Miller) in 2010, acquired Savant in December 2014. Miller owned 67.5 percent of working interest in Badami through CIE. Miller, CIE and Savant filed for bankruptcy in 2015. Following the bankruptcy, Miller was renamed Glacier in 2016, with CIE as a fully owned subsidiary of Glacier. Glacier was equally owned by HPS Investment Partners, LLC, and Apollo Investment Corporation. CIE in turn fully owned Savant,³ which was still the operator at Badami.

In 2021, AEX sold its remaining interest in Badami to Savant, resulting in Savant becoming 100 percent working interest owner in five of the seven leases of Badami. On August 13, 2021, Apollo Investment Corporation purchased the common stock held by HPS Investment Partners, LLC, becoming Glacier's sole owner, and Apollo Investment Corporation formally changed its name to MidCap Financial Investment Corp. on August 12, 2022. MidCap Financial Investment Corp. transferred ownership in Glacier, and indirect ownership of Glacier's subsidiaries, including Savant, to SEP Alaska, LLC (SEP Alaska) effective November 1, 2022. DNR approved the transfer of the oil and gas leases on October 1, 2022. SEP Alaska is 50 percent owned by Pontem Energy Capital and 50 percent owned by Sweat Equity Partners, LP.

The Badami reservoir had always been challenging to develop and had historically shown very steep declines. Increases in production were observed following optimization events such as adding perforations, gas lift installations, or the addition of the Killian sands well B1-07 in 2018 (Figure 1). These events were followed by periods of very steep annual declines.⁴ However, the overall field decline through this period had been stable, and it had been very hard to slow the decline rates. If not for the B1-07 well, Badami may have been at the end of field life earlier. Even with B1-07 coming online, and subsequent gas lifting of the well, field decline remained at earlier historic rates, around 15–20 percent.

B. Three Royalty Modification Scenarios Under Statute

Under Alaska statutes, royalty modification is allowed under three potential scenarios:

² Production peaked within three to four days after the wells were turned on and the field has been declining since.

³ As a part of the restructuring after the Miller bankruptcy, Savant merged with Nutaaq Operating, LLC (Nutaaq Operating) in 2016, an entity Savant created in 2011, with Nutaaq Operating being the survivor and renaming itself Savant. The Savant that is analyzed in terms of this Preliminary Decision is the Savant post-merger.

⁴ Some of these declines ranged 30–50 percent after periods of flush production, gas lift, and perforations.

1. **New production:** AS 38.05.180(j)(1)(A) provides for modification of royalty, “to allow for production from an oil or gas field or pool...” that “... has not previously produced oil or gas for sale.”
2. **Existing production nearing the end of field life:** AS 38.05.180(j)(1)(B) provides for modification of royalty, “to prolong the economic life of an oil or gas field or pool as per barrel or barrel equivalent costs increase or as the price of oil or gas decreases, and the increase or decrease is sufficient to make future production no longer economically feasible.”
3. **Shut-in production:** AS 38.05.180(j)(1)(C) provides for modification of royalty, “to reestablish production of shut-in oil or gas that would not otherwise be economically feasible.”

Savant is seeking modification of royalty under AS 38.05.180(j)(1)(B), since Badami is nearing the end of field life.

C. Royalty Modification Process Timeline

Overall, shifting developments both at Badami and in the general oil markets from Application submission in August 2021 to date made for a challenging environment for DNR analysis. As a result, DNR undertook an extensive period of review to account for this variability. The following is a short description of the Application process timeline that DNR followed, with more details provided later in this Preliminary Decision.

After DNR received the Application, DNR engaged in data and information gathering from September 2021 until April 2022. Savant and the Alaska Department of Revenue (DOR) aided in information gathering. While DNR continued with its analyses, DNR exchanged information with Savant from September 2021 through July 2022. Savant provided revisions to its original cash flow model submitted in August 2021 in February, May, and July 2022. In subsequent submissions the original price assumption of \$65 per barrel every month was changed to \$70 per barrel Alaska North Slope West Coast price, along with production decline profile changes.

DNR concluded its preliminary analyses in August 2022. During that process the B1-07 well, Badami's most prolific producing well, went offline⁵ due to a downhole failure caused when wireline tools were lost in the well on July 10, 2022. With B1-07 going offline in July 2022, and with production from Badami almost halving monthly, DNR decided to conduct additional analyses since results obtained based on previous assumptions were not sufficient to determine end of field life extensions or direct revenue impacts to the State. Savant provided production data to DNR for July 2022 to show the effect of B1-07 going offline, then followed up in October 2022 with a revised decline profile until 2024 assuming B1-07 would be offline, with an expected cash flow summary at \$70 per barrel prices.

⁵ Throughout this Finding the expressions B1-07 going down, shutting down, or going offline are meant to stand for the event of the B1-07 well no longer producing oil. B1-07 came online end of May 2023.

B1-07 came online in May 2023 after a successful rig workover completion, and Savant completed additional testing on the well in early June. As of this writing, B1-07 is in regular production. After concluding follow up analyses in early June 2023, DNR determined that it would be in the best interest of the State to grant the modification of royalty rates.

D. Procedure

The Commissioner will publish this Preliminary Decision and give public notice of a 30-day comment period per AS 38.05.180(j)(8), as well as offer to appear before the Legislative Budget and Audit Committee and provide a review of the Preliminary Decision and administrative process per AS 38.05.180(j)(9). The Commissioner will keep the submitted data confidential under AS 38.05.035(a)(8) at the request of the lessee or lessees applying for the royalty reduction. Within 30 days of the close of the public comment period the Commissioner will prepare a summary of the public comments, make a Final Findings and Determination, and with the Applicant's consent, amend the applicant's leases or unitization agreement consistent with the Final Findings and Determination per AS 38.05.180(j)(11). The Commissioner's Final Findings and Determination regarding a royalty reduction is final and not appealable to the court pursuant to AS 38.05.180(j)(11)(B).

II. SUMMARY OF SAVANT'S APPLICATION FOR ROYALTY MODIFICATION

Savant applied for royalty modification of all seven leases in Badami. Four of these leases (ADL 367006, ADL 367011, ADL 375093, and ADL 375094) have a 12.5 percent royalty rate, ADL 365533 has a royalty rate of 16.667 percent,⁶ ADL 365535 has a royalty rate of 16.67 percent, and ADL 377011 has a royalty rate of 16.66667 percent.⁷ Sections 2.2, 4.2, 6.2 and 7.2 of leases ADL 367006, ADL 377011, ADL 367011, and ADL 365533 respectively have a blended royalty rate of 14.585 percent⁸ (Figure 2). None of the leases have a net profit share.

The applicant asserted, under AS 38.05.180(j)(1)(B), that royalty modification was warranted to prolong the economic life of an oil field or pool as per barrel or barrel equivalent costs were to increase sufficiently to make future production no longer economically feasible. Badami is an onshore facility targeting the Badami and Killian sands. The applicant claimed that future production from these sands cannot be economically recovered due to declining production and associated increasing per-barrel costs, making the field uneconomic to continue operations. Per its Application, Savant contended that, given the expected production profile, cost structure, along with a monthly Alaska North Slope West Coast nominal oil price of \$65 per barrel, the field would

⁶ The royalty rate in Tract 7.1 in ADL 365533 was modified in August 1998 to 16.67 percent.

⁷ The royalty rate in Tract 4.1 in ADL 377011 was modified in August 1998 to 16.67 percent.

⁸ The blended royalty rate of 14.585%, was approved before field startup in August 1998, and was done for production accounting purposes for the newly proposed Participating Area (PA), Badami Sands. This blending did not change the overall royalty rate paid on the Badami leases.

generate sustained negative cash flows (after accounting for field maintenance and supplies spending) by August 2022.⁹

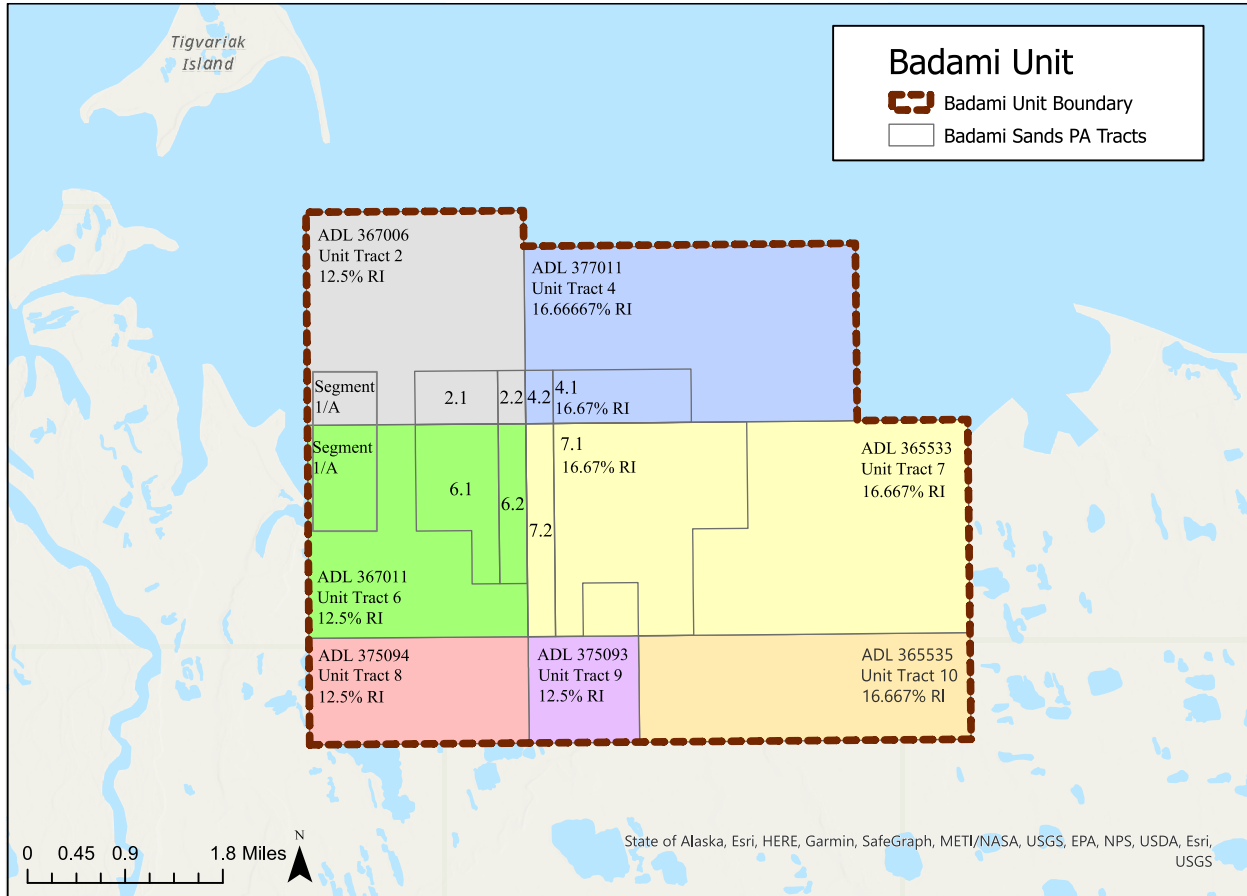


Figure 2: Badami Boundary with Lease & Tract Designations and Current Royalty Rates¹⁰

Savant proposed a sliding scale royalty reduction based on production (Table 1). According to Savant’s proposed modification mechanism, if average production from Badami in a given month was greater than 10,000 bopd, then the royalty rate for all seven leases would be unchanged from current rates, while if the average production in a given month was less than 1,000 bopd, then the royalty rate for all seven leases would be five percent (Table 1). Given the sliding scale royalty reduction that Savant proposed in that Application, royalty rates for the seven leases making up Badami would have been either 5 percent or 7 percent until January 2022, and a constant 5 percent from then on, based on expected production at the time of submission. Savant also proposed that the royalty reduction would be applied retroactively, starting from July 2021.

Savant claimed that if this production-based sliding scale royalty reduction was granted for Badami, the result would be an extension to the life of the field by three months from August to November 2022, with sustained negative cash flows from November 2022 onwards. They expected

⁹ See Section IV for more details on why shutdown did not occur.

¹⁰ Source: DNR- Division of Oil and Gas

the field to experience sustained negative cash flows in August 2022 without royalty modification, with shutdown to commence soon after.

Table 1: Savant Submitted Royalty Modification Scale Based on Daily Production

Production Barrels of Oil Per Day (bopd)	Adjusted Royalty Rate %
>10,000	Current Royalty Rates
7501-10,000	12.5%
5001-7500	9%
1001-5000	7%
<1000	5%

Savant submitted updated versions to its cash flow model of Badami. In these revised cash flow models, Savant expected Badami to experience negative sustained cash flows in January 2023 at \$70 Alaska North Slope West Coast prices. The royalty modification proposed by Savant would have generated a field life extension of one month in these revised models. In its Application, Savant indicated that granting royalty relief will enable investing in future wells (future development can entail wells on the Main Pad as well as those on a proposed new East Pad) and will also be beneficial in terms of securing an investment partner. These secondary investment assertions were unsubstantiated at the time of the Application, and the primary rationale for the Application was the increasing per-barrel costs leading to abandonment of the field.

A. Lease Summary

The Division of Oil and Gas issued:

- a. ADL’s 365533, and 365535 effective December 1, 1985, on Competitive Oil and Gas Lease Form No. DO&G 24-84 (ROYALTY)(Revised August, 1984) DNR 10-1185, with a primary term of ten years. These leases provided for a 16.667 percent¹¹ fixed royalty rate.
- b. ADL’s 367006, and 367011 effective May 1, 1986, on Competitive Oil and Gas Lease Form No. DO&G 01-86 (COMPETITIVE OIL AND GAS LEASE)(Revised January, 1986) DNR 10-4028, with a primary term of ten years. These leases provided for a 12.5 percent fixed royalty rate.
- c. ADL’s 375093, and 375094 effective April 1, 1991, on Competitive Oil and Gas Lease Form No. DNR 10-4037 (COMPETITIVE OIL AND GAS LEASE)(Revised September, 1990) DNR 10-4037, with a primary term of ten years. These leases provided for a 12.5 percent fixed royalty rate.
- d. ADL 377011 effective August 1, 1991, on Competitive Oil and Gas Lease Form No. DNR 10-4037 (COMPETITIVE OIL AND GAS LEASE)(Revised September, 1990 vers.2) DNR 10-4037, with a primary term of ten years. This lease provided for a 16.66667percent¹² fixed royalty rate.

¹¹ The royalty rate in Tract 7.1 in ADL 365533, and ADL 365535 was modified in 1998 to 16.67 percent as noted before.

¹² The royalty rate in Tract 7.1 in ADL 365533 was modified in 1998 to 16.67 percent as noted before.

These seven leases were committed to Badami effective March 13, 1995, extending the primary term in accordance with lease paragraph 4(b) so long as they remain committed to the unit agreement. Additionally, on May 10, 1994, the Badami No. 1 well located in ADL 365533 and Badami No. 2 well located in ADL 367006 were certified capable of producing in paying quantities pursuant to 11 AAC 83.361, extending the primary terms in accordance with lease paragraph 4(d). As a result of several assignments of working and royalty interest shares, Savant owns almost 100 percent of the working interest in these leases. The only exception is Red Wolf Exploration, which owns a 10 percent working interest in two segments below a vertical depth of 11,375 ft in ADL 367006 and 367011 (segments 1/A in Figure 2), while Savant retains the remaining 90 percent working interest in those segments/depths and retains 100 percent above those depths. These segments are outside of the Badami Sands PA and bordering the PA to the northwest (Figure 2). There are no overriding royalty interests burdening the seven leases.

Table 2: Lease Production Details from January 2022 to March 2023

ADL	Unit Tracts	Royalty Rate	Production Percent Allocated to Leases		
			Before B1-07 Shut in (Jan -Jun 2022)	After B1-07 Shut in (Jul 2022 – Mar 2023)	Jan 2022 – March 2023
375094	8	12.500%	-	-	-
375093	9	12.500%	-	-	-
367006	2	12.500%	-	-	-
	2.1	12.500%	-	-	-
	2.2	14.585%	5.14%	8.93%	6.79%
367011	6	12.500%	-	-	-
	Tract Operations	12.500%*	13.64%	25.43%	18.77%
	6.1	12.500%	43.51%	5.89%	27.14%
	6.2	12.500%	13.07%	23.57%	17.64%
	6.2	14.585%	2.88%	4.60%	3.63%
377011	4	16.66667%	-	-	-
	4.1	16.67%	-	-	-
	4.2	14.585%	-	-	-
365533	7	16.667%	-	-	-
	7.1	16.67%	16.84%	23.43%	19.71%
	7.2	14.585%	4.92%	8.14%	6.32%
365535	10	16.67%	-	-	-

Badami encompasses 17,203.74 acres. The seven leases that comprise Badami are further divided into tracts for accounting purposes, and these tracts inherit the royalty rates assigned to the leases from which they originate (Table 2). Production in Badami is not evenly distributed among the leases and tracts. Most of the current production is coming from the two tract operations in ADL 367011, which accounted for more than 57 percent of the production until July 2022, when the B1-07 well went offline. From July 2022 to March 2023, the production coming from these tract operations accounted for only 31 percent, and from January 2022 to March 2023 these tract operations accounted for around 46 percent. B1-07 was primarily producing from a tract operation

(starred in Table 2). The B1-07 well shutting in was a critical event because it reduced Badami production to around 500 bopd.

According to DNR estimation, B1-07 provided approximately 40 percent of fieldwide production. Most of the production was also coming from leases with 12.5 percent royalty rate (over 70 percent of total production, Table 2) until July 2022. The production weighted average royalty rate for Badami was 13.47 percent prior to B1-07 going offline in July 2022, and it was 13.93 percent after B1-07 went offline between July 2022 to March 2023. From January 2022 to March 2023, the production weighted average royalty rate for Badami was 13.67 percent.¹³

B. Field Production Expectations

The monthly average production at Badami at time of the Application was around 1,000 bopd. Savant at first used a 10 percent downtime assumption¹⁴ when projecting production from the field till the end of 2024,¹⁵ but later revised it to a 5 percent downtime assumption, due to the short time frame being considered, and the recent trend to defer maintenance. Savant revised the production decline profile when the most prolific well at Badami, B1-07, which was producing from the Killian sands, went offline in July 2022, resulting in production almost halving to around 500 bopd from August 2022 onward. When B1-07 came online in May 2023, initial production came in higher at about 700 bopd, which was more than when B1-07 went offline. As of this writing, the well is in regular production after concluding additional testing in early June 2023.

III. SUMMARY OF ROYALTY MODIFICATION AUTHORITIES AS 38.05.180(j)

A. Authority on Royalty Modification Criteria

AS 38.05.180(j)(1)(B) provides the DNR Commissioner the authority to grant modification of royalty to unitized or individual leases for existing production to extend the life of the field as mentioned in Section I- B. AS 38.05.180(j)(2) provides that the Commissioner may not grant a royalty modification unless the lessee or lessees requesting the royalty modification make a clear and convincing showing that:

1. The royalty modification is necessary to prolong the economic life of an oil or gas field or pool as per barrel or barrel equivalent costs increase or as the price of oil or gas decreases, and the increase or decrease is sufficient to make future production no longer economically feasible; and

¹³ The production weighted average royalty rate for Badami is the summation of the royalty rates for each lease multiplied by the proportion of the total production from Badami allocated to those leases (sum product). As is clear, as the production proportion allocated to each lease changes, this production weighted average royalty rate will change.

¹⁴ This is an estimated reduction to production from forecasted production decline profile due to maintenance, for example from planned or unplanned activities at the wells, facility, or export line.

¹⁵ Additionally, Savant provided field production up to 2051 under existing and possible new drilling scenarios. Savant deemed production after 2024 as uneconomic without royalty modification.

2. The royalty modification is in the best interests of the State. When evaluating whether a royalty modification is in the best interests of the State, DNR looks to the objectives and criteria listed in statutes such as AS 38.05.180(a) and (j).

B. Additional Statutory Requirements for Royalty Modification

1. Under AS 38.05.180(j)(3) the royalty modification terms must provide for an increase or decrease or other modification of the State's royalty share by a sliding scale royalty or other mechanism that shall be based on a change in the price of oil or gas and may also be based on other relevant factors such as a change in production rate, projected ultimate recovery, development costs, and operating costs.
2. Under AS 38.05.180(j)(4)(B) a modification to royalty may not be granted for the field or pool to extend the life of the field if the royalty modification would result in a royalty rate of less than three percent in amount or value of the production removed or sold from a lease or leases covering the field or pool.
3. Under AS 38.05.180(j)(5) a royalty reduction must include an explicit condition that the royalty reduction is not assignable without the prior written approval of the Commissioner, which may not be unreasonably withheld. The Commissioner shall, in the Preliminary and Final Findings and Determinations, set out the conditions under which the royalty reduction may be assigned.

IV. APPLICANT'S CLEAR AND CONVINCING SHOWING FOR ROYALTY MODIFICATION AS REQUIRED UNDER AS 38.05.180(j)

DNR determined that Savant provided sufficient technical and financial information to substantiate its Application as required under AS 38.05.180(j)(6), 11 AAC 83.185, and 11 AAC 88.105. The information was provided initially, as well as when the application review process unfolded. Savant was also forthcoming with information and responses to inquiries that DNR made.

Per AS 38.05.180(j)(2), the applicant clearly showed that the increase in per-barrel cost is sufficient to make future production no longer economically feasible from Badami without royalty modification. The increase in per-barrel costs is mainly due to declining production. Lease operating expenditures are expected to remain relatively constant, as the costs (such as labor and supplies) to operate Badami facilities do not change significantly with production. Likewise, Savant did not expect the general and administrative costs to change with production.¹⁶ As production decreases, each produced barrel bears a larger share of those fixed expenditures. Based on

¹⁶ The notable exceptions were associated with calculated royalty payments and changes in production tax due to price changes. This was especially the case once Badami's primary producer, the B1-07 well, was shut-in from mid-July 2022 onwards and the production decline profile estimate was almost halved until B1-07 was brought back online in May 2023. Potential increases in future cost profiles due to new investment and development were not considered in this Decision. Moreover, future increases in production due to such development would be sufficient to lift Badami above the monthly threshold for royalty relief.

observation of the operating costs at Badami during the application period, DNR concurred that it was reasonable to assume that the lease operating expenditures would not change significantly.

Similarly, per AS 38.05.180(j)(1)(B), the applicant clearly showed that the modification of royalty would prolong the economic life of Badami. Under the original Application, the life of Badami would have been extended by three months at a price of \$65 per barrel and using the original production decline profile. The original estimated shutdown date was August 2022, with continuous negative cash flows for Badami after that. Badami did not cease production in August 2022 since oil prices remained above \$90 per barrel from February 2022 to November 2022, inclusive, and were above \$100 per barrel between March and August 2022, inclusive.

After Savant submitted a modified cash model with a \$70 per barrel price deck in February 2022 (before B1-07 went offline), the applicant estimated that the Badami field would generate sustained negative cash flows from January 2023 onward. In that environment, Savant's proposal would have extended the life of the field by one month to February 2023. The latest DNR modeling in June 2023 estimated that, without royalty modification, the earliest shutdown date at Badami in the most likely scenarios was August 2025 (the most likely shut down date being January 2026). With the DNR royalty modification mechanism, the earliest shutdown date at Badami in the most likely scenarios was February 2026 (the most likely shut down date being September 2026).¹⁷

Additionally, per AS 38.05.180(j)(2), the applicant showed that the reduction of the royalty rate is in the best interests of the State based on extension of field life, and the potential indirect benefits of Savant's continued operation of Badami.

However, the mechanism for the reduction of the royalty rate proposed by the applicant was not acceptable to DNR. Under AS 38.05.180(j)(3), royalty modification must be based on a sliding-scale that accounts for changes in the price of oil and/or gas, and which may also consider other factors. While a modification mechanism may be based in part on production levels, a modification mechanism based solely on daily production is not allowed under the statute. The royalty modification approved by DNR seeks to rectify this shortcoming and conform to the requirements of AS 38.05.180(j)(3).

V. SUMMARY OF STATE'S ROYALTY MODIFICATION DECISION, TERMS AND CONDITIONS

A. Royalty Modification Decision

Savant has paid the filing fee and submitted a complete application for royalty modification, including meeting the financial and technical data requirements of AS 38.05.180(j)(6), 11 AAC 83.185, and 11 AAC 88.105. Savant qualifies for royalty modification on ADL's 375094, 375093, 367006, 367011, 377011, 365533, and 365535 under AS 38.05.180(j)(1)(B). However, Savant's proposed royalty modification mechanism does not comport with the requirements of AS 38.05.180(j)(3). Instead, DNR will grant royalty modification on a more restrictive basis, based on a

¹⁷ See Section VI- E for more details.

sliding scale incorporating both oil price and production. DNR’s granting of royalty modification is effective as of the date stated in the Final Best Interest Finding, through December 31, 2030.

B. Royalty Modification Terms

1. The royalty rate will be based on the monthly revenue generated by the sale of crude oil from the seven leases in Badami.¹⁸
2. Monthly revenues will be assessed against predetermined thresholds for a given month (Table 3). The monthly thresholds were generated from annual aggregations of the monthly total cost estimates for Badami that Savant provided, with adjustments that DNR deemed more reasonable.¹⁹

Table 3: DNR Royalty Modification Monthly Thresholds

Calendar Year	Monthly Threshold
2023	\$1,400,000
2024-2030	\$1,300,000

3. The procedure for determining royalty modification, and the resulting calculation, are as follows:
 - a. For every month, DNR will calculate the monthly revenue as the product of the monthly production of oil and the royalty value of such oil at Badami calculated for the corresponding production month.
 - b. If the monthly revenue is greater than or equal to the monthly threshold for that month based on the annual schedule above, then the royalty rates remain at their original values. If the monthly revenue is less than the monthly threshold for that month based on the annual schedule above, then the royalty rates in that month will be reduced so that the sum of the monthly revenue and the benefit to Savant resulting from the reduction of the royalty obligation amount (“adjusted monthly revenue”) will equal the monthly threshold for said month.
 - c. Royalty reduction shall not result in a royalty rate less than 3 percent.
 - d. These royalty calculations are subject to routine DNR royalty audits.
4. Royalty modification will apply to the seven leases included in Badami, ADLs 375094, 375093, 367006, 367011, 377011, 365533, and 36553.
5. DNR shall have the right to obtain expense invoices and financial & accounting records from Savant every six months after granting royalty modification.

¹⁸ See Exhibit A for three case examples of a modified version of the actual worksheet DNR shared with Savant for accounting and tracking purposes. Three months of hypothetical production and price are presented, along with the mechanics of the royalty modification decision, royalty relief calculation, resulting royalty rate for Badami, Savant relief amount, and State royalty take for each case.

¹⁹ The cost values were rounded to the nearest hundred thousand.

6. DNR shall have the right, upon notice to Savant, to terminate the royalty modification in whole or in part if DNR determines that the criteria of AS 38.05.180(j)(1)(B) or AS 38.05.180(j)(2) are no longer met.
7. The royalty modification shall expire on December 31, 2030, unless terminated previously pursuant to condition 6 above.
8. The royalty modification may not be assigned by Savant to another lessee, pursuant to AS 38.05.180(j)(5), without the written approval of the Commissioner. Upon the submission of an application for transfer of royalty modification, the Commissioner may approve a transfer if it does not adversely affect the best interests of the State and complies with all applicable statutes or regulations.
9. The royalty modification shall not be applied retroactively and would commence on the effective date of the Final Findings and Determination.

VI. DISCUSSION OF ROYALTY MODIFICATION DECISION

A. Leases Eligible for Consideration

Savant applied for royalty modification for the seven leases committed to Badami. Pursuant to AS 38.05.180(j)(1), DNR may grant royalty modification on the basis of leases committed to a unit, and so approves the extension of royalty modification to the Badami leases.

B. Applicant Data Submission Review

Savant was required to provide detailed information allowing DNR to comprehensively evaluate the economics of operating Badami, per AS 38.05.180(j)(6). Savant completed this requirement in two stages. In the first stage, after Application submission Savant provided a static cash flow that showed revenues (at \$65 nominal price of oil per barrel), costs, and cash flows from operating Badami from July 2021 to December 2022. Subsequently, Savant presented a more in-depth spreadsheet model on February 24, 2022, that assumed a \$70 nominal price of oil per barrel, and detailed lease operating expenditures, production decline profile, and projected general and administrative costs that included exploration costs. This revised cash flow model was from January 2022 to December 2022, but was later revised on May 4, 2022, to extend to December 2024.

Savant also provided other documents detailing the basis for its cost and production assumptions. DNR checked model inputs against cost and production assumptions reflected in these documents. DNR also reviewed the formulas used to capture the costs and benefits of the project. Upon request, Savant provided additional and updated information to incorporate into the model. Through these investigations, and with assistance and collaboration with DOR, DNR was able to create a dynamic scenario-based cash flow model to analyze the Application.

In the second stage of information submission, in July 2022, Savant provided a revised production profile for July that showed the effects of B1-07 going offline. Savant followed this up in October 2022 with a revised decline profile until 2024 assuming B1-07 would be offline and an

expected cash flow summary at \$70 per barrel prices. They maintained that Badami production would be almost halved until the well was brought back online. Savant estimated that this could be accomplished in the third quarter 2023. Other than this revised production submission, none of the other cash flow elements were changed from prior submissions, and DNR conducted its second stage of modification modeling based on this new information.

C. DNR Financial Modeling Review

As the circumstances at Badami changed, DNR requested data submissions, had conversations with Savant management, and engaged in modeling efforts. Therefore, DNR modeled the Application at three distinct stages, namely before B1-07 well went offline, during B1-07 being offline, and finally after the well was brought back online in May 2023.

During initial modeling prior to the well going offline, DNR carefully revised the Savant model for Badami in several important ways, after evaluating the model assumptions. These modifications made the model dynamic, extended the period under consideration, modeled possible Savant field shutdown scenarios, created a simulation environment where price, production, and different royalty modification mechanisms that could be tested against the status quo of no royalty modification. In all, 84 different simulation scenarios (both fixed and random stochastic assumptions) were considered before deciding upon the royalty modification mechanism proposed in this Preliminary Decision.

Following B1-07 going offline in July 2022, Savant presented a modified production decline profile in October 2022 to account for B1-07 going offline and requested DNR consider granting modification from 2023 onwards and revise the monthly thresholds (Table 3 above) to account for the fact that additional expenditures would be incurred to bring B1-07 online. DNR considered these requests and engaged in the second round of modeling that considered an extension to the exercise assuming Badami would not shut down in 2023, with B1-07 coming back online in third quarter 2023 with funding from SEP Alaska. DNR modeled 42 scenarios, the same seven price and three Savant shutdown rules for the monthly threshold mechanism as in the first stage, but with two production profiles including, and this modified production decline profile to account for the loss of B1-07.

In February 2023, Savant notified DNR that they applied for authorizations with the Alaska Oil and Gas Conservation Commission (AOGCC) to take the Thunderbird rig to Badami in April to repair B1-07 and to have it online, possibly by mid-April. At this point, DNR engaged in another round of modeling that examined the probability weighted expected outcomes (revenue impacts to the State and extensions to field life) from granting royalty modification based on from five different contingencies: B1-07 coming online in May with flush production;²⁰ B1-07 coming online in May without flush production; B1-07 coming online in November as previously considered, with flush production; B1-07 coming online in November without flush production; and B1-07 not coming

²⁰ When a well returns to service with additional production compared to when it was shut-in due to reservoir re-pressurization during the extended shut-in period, this is known as flush production.

online in 2023. Following the price, production and shutdown rules given above, DNR modeled 105 scenarios during this stage.

Finally, once B1-07 was brought online in May 2023, DNR updated prior production and price inputs, modeled production coming online by June 2023 with flush and assumed royalty modification being granted in July 2023. In all these stages of modeling, DNR compared the estimated direct impacts to State revenues (royalties, production tax, property tax, and corporate income tax²¹) and estimated the extensions to the life of the field from granting royalty modification as opposed to not doing so.

DNR estimated direct impacts to State revenues following guidelines given by DOR's Revenue Sources Book for Fall 2022, and references therein. Production tax and related authorities are found under AS 43.55, corporate income tax authorities are found under AS 43.21, while property tax authorities are found under AS 43.56. Holding other factors constant, a reduction in the royalty rate for the State translates into a higher taxable production revenue, because, in the calculation of the taxable oil, taxpayers deduct royalty oil. The same would work for corporate income tax.

D. Stochastic Modeling Approach

1. Modeling Framework

The DNR model was dynamic compared to the static model Savant presented. DNR designed a model that used a simulation framework where the user could compare outcomes from multiple scenarios by toggling between options. This framework was utilized in all stages of scenario evaluation. The modeling time horizon was between 2022 to 2028. The analysis was done on a month-to-month basis. Every stochastic scenario was simulated 5 times, with 1000 iterations in each simulation run, using Palisade's @Risk software.

2. Price Scenarios

Stochastic elements were introduced in price modeling. Given that the cash flow models for Badami generated estimates of negative cash flows within the next two years due to normal production declines, even before B1-07 going offline, price scenarios had to sufficiently capture the variation possible within this time frame. Out of many fixed price scenarios possible, DNR settled on three, namely flat prices of \$70 (Savant's revised cash flow price scenario), \$75, and \$100 per barrel. The two latter prices were used to model a fixed price slightly higher than Application price and a high

²¹ DNR estimated that corporate income tax was not a consideration for the period considered. As a Limited Liability Company, Savant does not pay corporate income tax, but rather acts as a pass-through entity for profits to be reported for tax purposes by its parent Glacier. Even though Glacier is a C-corporation, Glacier shared with DNR that they did not have a corporate income tax liability due to accumulated net operating losses until December 2022. With the acquisition of Glacier and its subsidiaries by SEP Alaska, these operating losses would sunset in December 2022. Based on a review of Glacier's historical income tax filings, general operating costs at Badami, and prevailing general economic considerations, DNR does not anticipate that Glacier will have significant corporate income tax liabilities in the time period under consideration.

price case scenario, respectively. DNR also modeled outcomes under the official State price forecast for Spring 2023 published by DOR.²²

For the random pricing scenarios, DNR first tried to fit historical Alaska North Slope West Coast oil prices to probability distributions and determined that four random distributions were better suited than others. This was not an in-depth effort at price modeling, since various considerations of modeling time series such as accounting for seasonality, trending, autocorrelation, and stationarity were not addressed in detail in generating a model of the stochastic price series observed.

Instead, DNR fitted the observed prices to known continuous distributions and determined that a triangular distribution was preferred based on information criteria, namely the Akaike Information Criterion. The other three distributions that were entertained were Pert, log normal, and log logistic. This fitting was primarily done since the time horizon for Badami field life extension was not more than three years, without significant new investment being available. Therefore, it was deemed important to try to capture as much meaningful variation as possible in the modeling window.

Out of these random distributions considered, the triangular distribution had the best fit. In general, the stochastic price distributions were modeled month-to-month, where each month's price realization was assumed to be independent and identically distributed. The two exceptions were the scenarios where the triangular distribution with prices between \$15 and \$140 were used: one scenario used prices that were on average lower earlier on but increased on average as time progressed (scenario 6a), and the other where on average prices were higher initially but decreased as time progressed (scenario 6b). In addition, a random distribution between \$60–80 was also used to model a scenario that was volatile, but prices stayed within a somewhat narrower band (Table 4). These seven price scenarios are shown below (Figure 3).²³

While the fixed price scenarios showed how a stable price regime would provide modification outcomes, the stochastic price scenarios tried to optimize the probability that the chosen scenario is realized. For example, scenario 6a used a triangular distribution in the range of prices historically seen but tried to generate price realizations that fitted the scenario DNR laid out. Likewise, scenario 2 used a uniform price path but prices were allowed to fluctuate around \$60 and \$80. By trying to model sufficient meaningful variation, DNR was trying to see what the “worst case” outcomes could be, and the variation between those outcomes.

²² See the DOR Revenue Sources Book for Spring 2023 at: <https://tax.alaska.gov/programs/programs/reports/RSB.aspx?Year=2023&Type=Spring>.

²³ Other price scenarios were laid out by DNR using combinations of fitted distributions and price levels, but the seven price scenarios presented in the Findings was seen to have sufficient differences in the three-year critical window.

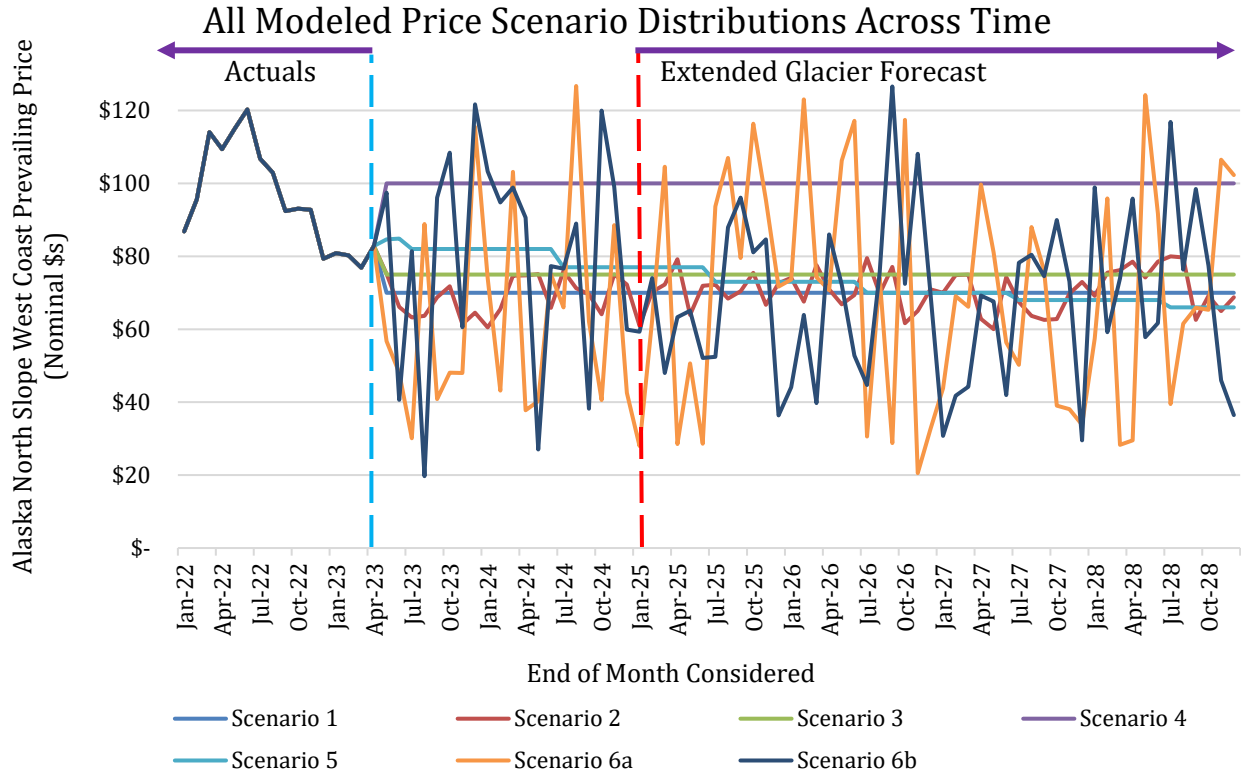


Figure 3: Modeled Price Paths for Royalty Modification Scenarios

Table 4: Modeled Price Scenarios

Price Scenario	Description
Scenario 1	Flat \$70 Prices
Scenario 2	Uniform Price Path Between \$60 & \$80
Scenario 3	Flat Price >\$70 (\$75)
Scenario 4	Flat Price >\$70 (\$100)
Scenario 5	DOR Spring 2023 Price Path
Scenario 6a	Triangular Price Path Between \$15 & \$140- Lower Initial Prices
Scenario 6b	Triangular Price Path Between \$15 & \$140- Higher Initial Prices

3. Production Scenarios

DNR introduced dynamic elements to the modeling by considering alternate production profiles. Initially in early 2022, DNR evaluated the Savant submitted decline profile and determined that it was reasonable, based on historical reservoir performance, downtime activities, and expected decline. DNR also compared this information with those observed in other fields on the North Slope. This initial decline profile was created prior to August 2021, when Badami experienced steep declines after field restart and B1-07 was gas-lifted.

Subsequent DNR modeling deemed this Savant submitted decline profile was too conservative due to field decline stability that occurred in 2022 prior to B1-07 going offline. When reviewing the production forecast in January 2023, DNR noted a significant divergence between the actual field production and the forecast supplied during the application process, since production showed a

step change back to previously seen decline rates. DNR produced their own production forecast models based on decline curve analysis using additional data.

Additionally, Savant changed the initial downtime assumptions at Badami from 10 percent per annum to 5 percent per annum in a later re-submission of data. A five-percent downtime assumption may yield optimistic annual production volumes. However, due to Badami's short remaining expected field life (less than three years when the Application was submitted) and understanding that Savant would be focusing on maintaining cashflow during the remaining field life, without major turnaround activities, this was not an unreasonable assumption in the short term from DNR estimation.²⁴ This was also consistent with field performance that DNR observed.

During DNR's extended analysis, DNR considered a range of production scenarios as the situation at Badami developed. The production profile DNR ultimately relied on considered B1-07 coming back online in June with flush production.

4. Savant Field Shutdown Scenarios

DNR used forecasted sustained negative cash flows to determine when a shutdown was likely to occur. DNR modeled this strategic consideration in three ways for every scenario: Savant was assumed to shut down the field after two, three or four consecutive months of sustained negative cash flows, including the first month. This gave DNR the ability to toggle between these time horizons to see how royalty modification would help field economics.

This gave DNR valuable insight as to how the royalty modification mechanism would incentivize field life extension depending on how loss tolerant Savant was in terms of revenue expectations. This toggling between the Savant shutdown time horizons also gave DNR ideas on how the DNR modification mechanism would interact with price and production variation, and on average, how State revenues would change accordingly.

5. The Royalty Modification Mechanism Considered

DNR only considered modification mechanisms that explicitly addressed the Badami monthly cash flow situation. DNR wanted to ensure that the proposed mechanism would grant royalty relief only when monthly revenues are sufficiently low enough to warrant such relief. Moreover, the DNR modification mechanism would result in no royalty relief awarded if revenues were to increase for any reason, such as when new drilling results in additional production or prices significantly increase.

The model used the monthly threshold-based mechanism to determine which months were eligible for royalty relief. If revenue in a given month is less than the threshold for that month, then there will be a reduction of the royalty rate. The model also estimated whether royalty relief was

²⁴ Major components of downtime can be broken down as follows: Reservoir + Wells + Facility + Export. For reference, 5 percent downtime equates to 18 days a year of the facility being offline whereas 10 percent is 36 days. This assumes there are no other downtime issues with individual wells, reservoir underperformance (more important for fields with active water or gas flood management), or export pipelines.

sufficient or not to delay shutdown of the field and the resulting royalty rate, the royalty revenue to the State, and the royalty relief to Savant amount in all cases.²⁵ It is important to note that DNR modeled the royalty modification mechanism to provide royalty relief based on monthly revenues being below monthly thresholds, while the shutdown decision was based on monthly cash flow position. This difference would be important in the results discussion in Section VI-E.

E. Results of Scenario Modeling

Although DNR conducted multiple modeling exercises in the three stages detailed in Section VI-C with updated data and assumptions, the results shown and discussed here are those after B1-07 came online end of May due to direct relevance with the current state of the field. At the end of May it became clear that B1-07 would have flush production associated with it as it came online, and that was the expectation when regular production resumed in June 2023. Additionally, DNR updated Alaska North Slope West Coast oil price up to April 2023, along with Badami production until March 2023.

The results shown (Table 5) are for both the full 21 scenarios (seven prices and three field shut down assumptions discussed in Section VI-D), and 10 most likely scenarios, namely the first five price assumptions from Table 4 (no prices from triangular distributions, i.e., scenarios 6a and 6b) and three- and four-month shutdown assumptions, with the production profile discussed in above. The results assume that DNR would grant royalty modification commencing July 1. Results do not assume any new drilling campaign, anticipated by Savant in 2023-2024.

Overwhelmingly, DNR expects the life of the field to be extended on average by 6 to 7 months, based on the scenarios modeled (Table 5). The highest extension in field life seen was 12 months (for all scenarios) and 10 months for the most likely scenarios. While the most likely shut down date without modification was seen to be July 2025, this was pushed out to January 2026 when all 21 scenarios were considered. In the most likely scenarios, the most likely shut down date without modification was January 2026, and this was pushed out to September 2026, primarily because the most volatile and least likely scenarios were omitted. In general, higher prices and more forward-looking Savant shutdown horizons resulted in longer extensions to the life of the field.

DNR found that this extension to the life of the field was accompanied by expected increases in direct revenues to the State. The State loses royalty revenue by reducing its royalty rate, on average. Prior to months of field life extension, the royalty modification mechanism would grant royalty reduction when monthly revenues fall below monthly thresholds. In some cases, the mechanism would grant royalty relief when relief would not affect the estimated shutdown month.²⁶

However, these possible royalty losses should be weighed against revenue gains. Additional royalty revenue gains occur during the months when the life of Badami is extended due to royalty modification. These royalty gains would not occur otherwise. Furthermore, royalty revenue losses

²⁵ See Exhibit A for more details of worksheet implementation and three example modification cases.

²⁶ Due to the difference between royalty relief versus monthly cash flow position (shutdown criteria).

from royalty rate reduction would be partially offset by production tax gains, and property tax gains if production is extended to an additional production year. For most scenarios, the combined revenue gains more than offset the royalty losses.

In terms of direct revenue gains to the State, the average expected gain from all the scenarios was nearly \$282,000, while this gain was nearly \$167,000 using the most likely scenarios (Table 5). There were significant gains in nearly 80 percent of scenarios modeled. In the most likely scenarios, the largest loss was less than \$350,000, while the largest gain was over \$780,000. In the most likely scenarios, the average royalty loss was around \$750,000, while the average gain in production taxes was around \$316,000 accompanied by a gain of \$600,000 in property taxes if royalty modification was granted.

Based on the relative mix, every \$1 that the State would give up in royalty revenues would lead to \$0.60 increase in production tax revenue on average if royalty was modified (ranged from \$0.14 to \$0.77 for every \$1 dollar of royalty revenue reduced through royalty modification) in these most likely scenarios. This is due to royalty rate reduction leading to higher taxable production revenue (Section VI-C). In the most likely scenarios, production is extended to the following production year leading to an additional year’s worth of property tax revenue.

To recapitulate, if regular production from B1-07 commences in June and royalty modification is granted July 1, the royalty modification mechanism is effective in terms of extending life of the field and is expected to generate revenue gains to the State, compared to not granting royalty modification. This was true in the most likely scenarios modeled as well as in all scenarios modeled.

Table 5: DNR Modeling Results Post May 2023

Direct State Benefit	Measurement of Interest (Compared to Not Granting Royalty Modification)	Scenario Profiles Considered	
		B1-07 Coming Online June 1, 2023, with Flush Production (21 Scenarios)	B1-07 Coming Online June 1, 2023, with Flush Production (10 Most Likely Scenarios)
	Average Extension	6.1 months	7.2 months
	Scenarios without Extension	5	0
	Scenarios without Extension	24%	0%
Field Life Extension	Highest Extension of Field Life	12 months	10 months
	Earliest Shutdown with Modification	April 2024	February 2026
	Most Likely Shutdown with Modification	January 2026	September 2026
	Earliest Shutdown without Modification	April 2024	August 2025
	Most Likely Shutdown without Modification	July 2025	January 2026
Direct State Revenues	Average State Revenue Gains/Losses	\$281,578	\$167,281
	Scenarios with Losses to State	4 (19%)	2 (20%)
		\$2,149,834	\$783,468
	State Direct Benefit Range	– \$(1,830,622)	– \$(344,969)

VII. THE ROYALTY MODIFICATION IS IN THE BEST INTERESTS OF THE STATE

In addition to the direct benefits presented above in terms of expected field life extension and increases in direct revenue to the State, this Preliminary Decision concludes that granting royalty modification to Badami is in the best interest of the State based on estimated indirect tariff savings detailed below. Additionally, four other indirect benefits to the State that were not quantified due to the lack of reliable information are discussed below. DNR believes that once all these unquantified indirect benefits are considered alongside the quantified benefits to the State, they have the potential to improve the best interests of the State from the modification of royalty at Badami.

A. Quantified Indirect Benefit: Savings from Delaying Potential Pipeline Tariff Increases

In its assessment of the indirect benefits to the State, DNR considered potential pipeline tariff rate increases in the Trans Alaska Pipeline System (TAPS), Badami Sales Oil Pipeline (BSOP, Figure 4 in green), and Endicott Pipeline (EP, Figure 4 in orange) if Badami were to cease production. The oil that is produced at Point Thomson flows through the Point Thomson Export Pipeline (PTEP, Figure 4 in purple) to Badami, then comingles with the oil that is produced at Badami. This comingled oil flows through BSOP to the EP, at which point it further comingles with the oil from Duck Island Unit and flows through to TAPS. The cessation of production from Badami would be reflected in lower throughput in the BSOP, the EP, and TAPS. DNR finds that a shutdown of Badami would translate into higher pipeline tariffs for transporting Point Thomson oil through the BSOP and the EP. Holding other factors constant, these higher tariffs are expected to result in less revenue for the producers at Point Thomson, and less royalty and production tax revenue to the State.

The pipeline tariff is, approximately speaking, equal to the cost of service divided by the expected number of carried barrels. Cost of service for each pipeline is calculated by using expected operating expenses and adding in other costs such as Dismantlement, Removal, and Rehabilitation allowance, depreciation, return on debt, return on equity, amortization, income tax allowance, etc.

To calculate approximate²⁷ tariff impacts of losing Badami production, DNR did the following: (a) calculated the annual cost of service for operating²⁸ the EP and BSOP for 2022 and 2023 from known maximum tariff rates submitted to the Regulatory Commission of Alaska and actual and DNR forecasted oil production from Duck Island, Badami and Point Thomson; (b) assumed that the cost of service for both the EP and BSOP would increase between 10-70 percent²⁹ between 2023 and 2024; (c) used the 2024 DNR forecasted oil production for Duck Island, Badami and Point Thomson; (d) estimated the 2024 tariff rates that could result from (b) and (c) for EP and BSOP;

²⁷ Estimates for cost of service was not available for Badami (not provided by operator). Annual averages were not available for Endicott for 2022 and 2023 due to a Settlement Agreement in place with the Endicott operator.

²⁸ Historically, annual cost of service has varied significantly up and down for all pipelines.

²⁹ Changes to cost of service has generally varied more than 10 percent, on average. The cost-of-service assumptions are used to control the changes in tariffs due to these cost changes so that the impact on tariff from throughput decline could be estimated.

and (e) estimated the 2024 tariff rates that could result from (b) and (c) if Badami production did not flow through EP and BSOP in 2024.

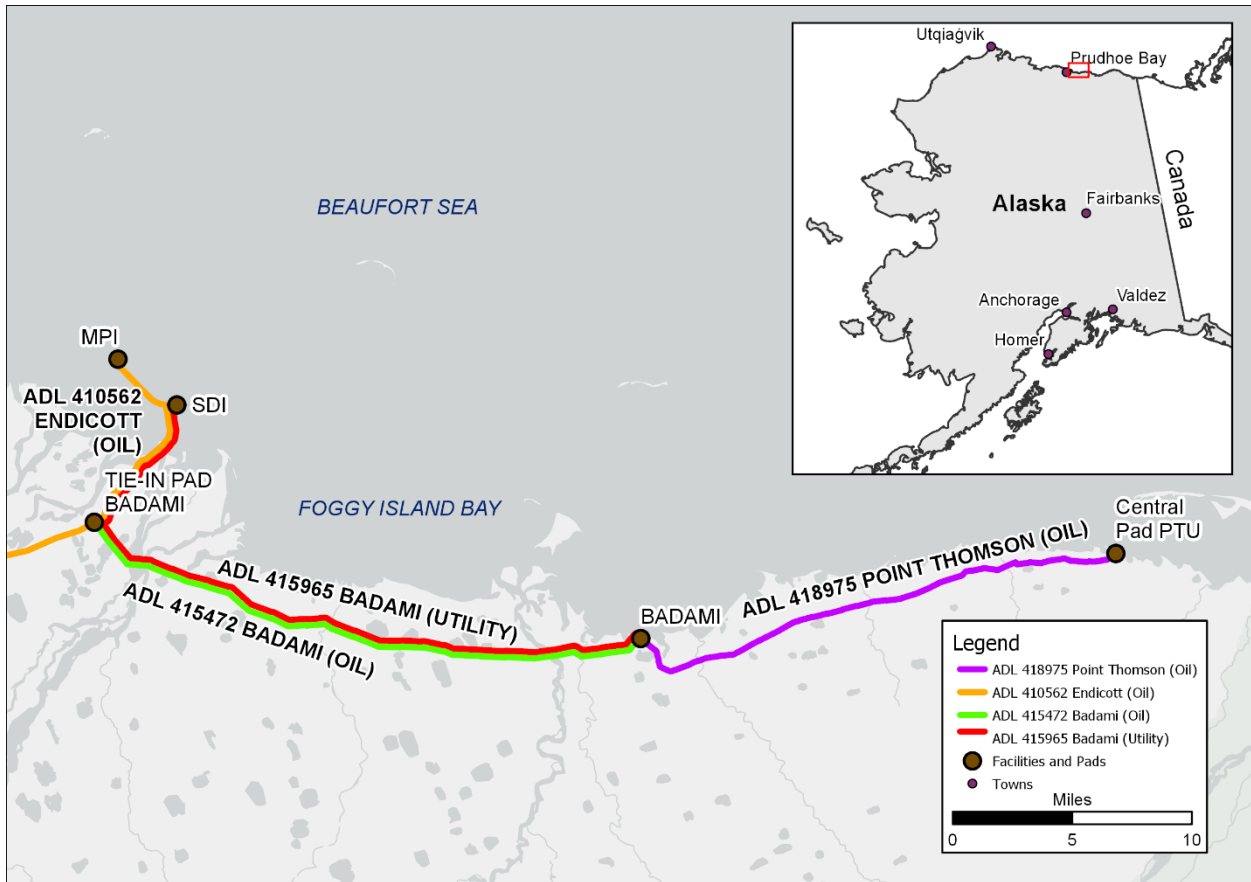


Figure 4: Associated Badami Pipelines System³⁰

The pipeline tariff for EP for the section from the Badami Tie-In Pad (Figure 4) to TAPS would increase on average by \$0.04 (3.5 percent increase) and for BSOP it would increase on average by \$0.19 (7.5 percent increase) per barrel, if cost of service were to increase by 50 percent.³¹ Using 2022 cost details for TAPS, DNR estimated that the TAPS tariffs would increase by \$0.008 per barrel if Badami production were to cease.

Delays in potential tariff changes would translate into significant revenue savings for the State and operators. DNR estimated that tariff savings would result in approximately \$22,000 in royalty and \$52,000 in production tax savings per month. Considering the 6-to-7-month extension to the life of the field that granting royalty modification is estimated to provide, this average monthly savings of

³⁰ Source: DNR- Division of Oil and Gas

³¹ There was significant variation depending on cost and output ranges: the pipeline tariff for EP would increase on average by \$0.03 and for BSOP would increase on average by \$0.14 if cost of service were to increase by 10 percent, and the tariff for EP would increase on average by \$0.05 and for BSOP would increase on average by \$0.22 if cost of service were to increase by 70 percent.

\$74,000 results in \$444,000 to \$518,000 of revenue savings to the State. In terms of operator savings, they would save an estimated \$174,000 per month for total savings between \$1,044,000 and \$1,218,000 for the 6-to-7-month extension to field life.

B. Quantified Total Benefits (Direct and Indirect) to the State

In terms of total revenue benefits to the State, the direct revenue benefits in Section VI-E should be added to the savings benefits calculated in Section VII-A above. In terms of extension to the life of the field, per AS 38.05.180(j)(1)(B), the proposed royalty modification would extend field life on average by 6 to 7 months, based on the scenarios modeled. The highest extension in field life seen was 12 months (for all scenarios) and 10 months for the most likely scenarios.

As was also seen in Section VI-E, in terms of direct revenue gains to the State, the average expected gain from all the scenarios was nearly \$282,000, while this gain was nearly \$167,000 using the most likely scenarios. There were significant gains in nearly 80 percent of scenarios modeled. In the most likely scenarios, the largest loss was less than \$350,000, while the largest gain was over \$780,000. Moreover, summing up the cost savings with the average revenue increases, the net average revenue impact to the State was an increase between \$726,000 (for all scenarios) and \$685,000 for most likely scenarios. This would more than offset the largest loss seen for the most likely scenarios.

C. Unquantified Indirect Benefits to the State

DNR's decision to grant royalty modification is also based on four different possible sources of indirect benefits to the State.

1. Acquisition by SEP Alaska, and Future Investment Expectations

DNR found that without significant capital investment and new drilling Badami will be near the end of its economic field life, even before B1-07 going offline, while royalty modification will likely prolong this event. In terms of costs that Savant faces at Badami for a new drilling campaign, DNR estimates that a multi-well campaign, especially at the more isolated Badami field, would be relatively more expensive compared to fields West of Badami on the North Slope. These additional expenses are related to well architecture, rig design and type, ice road and related logistics, possible hydrologic fracturing costs, and any additional surface facility costs, among others.

With SEP Alaska's acquisition, Glacier's new ownership expressed, "... a strong desire to expand the Company's operations on the North Slope, and to pursue a drilling program in 2024."³² SEP Alaska and Savant proposed the Killian 28 well drilling campaign for Winter 2023 recently.³³ Savant further went on to add that, "2023 will be exceptionally critical for us as we deal with the current production levels... operation to restore production from our B1-07 well, hopefully in the third

³² Comments shared by Savant/Glacier with DNR to be included in the Finding.

³³ Cashman, K. (2023, April 30). Glacier on move: Looking to drill winter exploration well in Badami's Killian sands. *Petroleum News*. <https://www.petroleumnews.com/pnads/826467449.shtml>

quarter. While we are requesting some additional level of relief, the success of this operation should very well put us at a production level that will no longer require royalty modification.”³⁴

DNR concurs with these expectations as well. The proposed royalty modification Preliminary Decision does not incentivize any new drilling. Yet, by extending the life of the field, the royalty modification would keep options open to SEP Alaska in these ventures. Additionally, the proposed mechanism will phase out if revenues increase due to additional drilling and production from Badami.

2. Badami's Reserve Potential and Challenges to Development³⁵

a. Geology of the Badami and Killian Sands, and the Canning Formation

Badami produces from two separate horizons within the Brookian sequence, the Badami sands and Killian sands. The AOGCC, in its Pool Statistics for Badami,³⁶ provided the following description of the Badami sands reservoir:

The Badami reservoir comprises several separate turbidite sandstone reservoirs assigned to the Tertiary-aged Canning Formation. These sandstone reservoirs were deposited largely as amalgamated channel sands within mud-dominated submarine fan systems. Published descriptions suggest the reservoirs are complex, comprising 61 identified fans laid down during seven depositional events. Reservoir quality sands are thin and discontinuous reservoir quality sands. No single well has encountered all of the identified fan systems; the Badami No. 1 exploratory well reportedly penetrated the most complete section. The Badami Oil Pool is defined as the accumulation of hydrocarbons common to and correlating with the interval between the measured depths of 9,500 feet and 11,500 feet in the Badami No. 1 well. The reservoir sandstones are very fine-to-fine grained and moderately sorted. Porosity ranges from 15 to 21 percent, permeability ranges from 1 to 400 md, and oil gravity reportedly ranges from 19 to 30 degrees API.

Further geological description was published in an abstract by the American Association of Petroleum Geologists written by William Bredar (n.d.).³⁷ The abstract, not quoted in its entirety, offered the following features about the Badami reservoir:

The Badami reservoir is a low [net to gross], compartmentalized and moderately overpressured Paleocene age turbidite sandstone. Seismic and well control indicate a stacked lobe system.

³⁴ Ibid.

³⁵ This subsection provides a technical description of the current resource at Badami and potential prospects therein.

³⁶ The AOGCC Pool Statistics (n.d.). Available at <http://aogweb.state.ak.us/PoolStatistics/Pool/Overview?poolNo=60100>. Accessed on 6/13/2023.

³⁷ Bredar, W. L. (n.d.). Badami Field: Recent advances in understanding and managing a challenging Brookian reservoir- An integrated geologic and engineering approach. *American Association of Petroleum Geologists*, available at <https://www.searchanddiscovery.com/documents/2008/08005biblio/06092pacific/abstracts/bredar.htm>. Accessed on 6/13/2023.

4 key facies are recognized: amalgamated pay, bedded pay, thin bedded pay, non-pay. Permeability in the amalgamated and bedded sandstones averages 100 mD while thin bedded sandstones average 10mD. Porosity averages 19%. Compartments are apparent on 5 scales: fan system, fan lobe, nested channel complex, individual channel, individual bed.

In addition to the Badami sands, the currently producing Killian sands were also described by AOGCC Pool Statistics³⁸ as follows:

In the Badami Area, the Killian sands are some of the many small, complex, late Cretaceous-aged, Brookian reservoirs that occur within the Canning Formation. These reservoirs consist of sandstone and siltstone deposited as amalgamated turbidite channels and coeval discontinuous, thin beds within a mudstone-dominated, deep, submarine slope and toe-of-slope environment.

b. Reservoir Uncertainty

The Badami sands are multi-bedded, thin, discontinuous, and poorly connected, which account for barriers and baffles to flow within the reservoir that result in overall poor reservoir performance. The Killian sands, which are older and deeper than the Badami sands but within the Canning Formation and in a similar depositional setting, have fewer well penetrations, and therefore reservoir extents and the degree to which the reservoir is compartmentalized are not known. Trapping mechanisms for both reservoirs are stratigraphic pinch-outs and structure does not appear to play a role in trapping the reservoir. Neither a gas cap nor an aquifer have been encountered and thus the degree to which aquifer drive or gas cap expansion drive contribute to primary production is not known. Finally, lower gravity oils further exacerbate fluid mobility issues in the complex reservoir.

c. Future Development Options in Badami

The discussion presented here is from publicly available sources. Based on comments in recent Plans of Development (POD) provided by Savant, additional Killian sands prospects exist within Badami; specifically, in the 2018 POD, they stated that, if economic conditions were favorable, two additional wells were hoped to be drilled in the following winter season (Figure 5 shows current well stock at Badami). This statement was made after drilling the B1-07 well in 2018 which successfully proved the Killian prospect/play concept. Also, in its 2022 POD, Savant mentioned additional Badami sands targets, stating that a total of seven prospects have been identified, at least two of which are classified as Badami Sand Proved Undeveloped Prospects. Based on those statements, in addition to the presence of a working petroleum system the elements of which are expected to exist elsewhere in the area, it is generally understood that prospective reservoir targets remain in Badami.

Given that there are prospective reservoir targets elsewhere in Badami, it is in the State's best interest to preserve the opportunity for future development of these prospects. A shutdown of

³⁸ The AOGCC Pool Statistics (n.d.). Available at <http://aogweb.state.ak.us/PoolStatistics/Pool/Overview?poolNo=60150>. Accessed on 06/13/2023.

Badami and ensuing Dismantlement, Removal, and Rehabilitation (DR&R) of its facilities would negatively impact the economic viability of developing these prospective reservoir targets. The continued existence of the Badami facilities would allow for a less expensive development of these targets compared to the scenario where another lessee could attempt to stage an exploration campaign without the aid of such facilities. Royalty modification will likely extend the life of the field, thus delaying field shutdown and increase the possibility of this development.

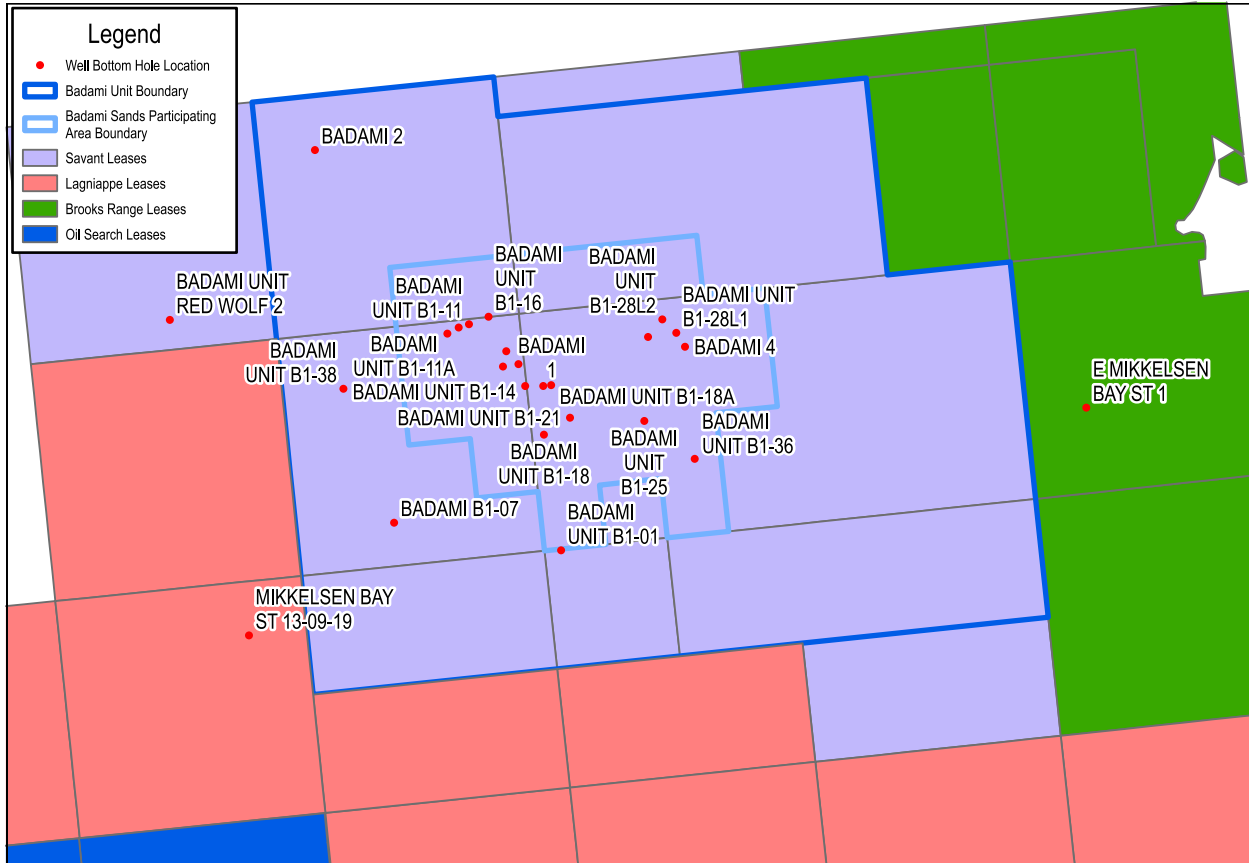


Figure 5: Location Map of Badami Wells³⁹

3. Other Developments Around Badami

There are numerous explorers that have obtained strategic positions around Badami (Figure 6). These include Lagniappe Alaska, LLC, Oil Search (Alaska), LLC and Balcony Natural Resources, Inc. (now a part of The Smith Bay Company Alaska, Inc.) (Figure 6). Any such developments surrounding Badami would result in increased throughput through the Badami pipelines system. Granting royalty modification and extending the life of the field would be beneficial for such developments. Additionally, bidding for leases in the Beaufort Sea region has been a staple during recent Areawide Lease Sales, and DNR expects this interest to continue in the future. DNR analysis finds that the presence of oil and gas infrastructure matters for lease sale participants. DNR

³⁹ Source: DNR- Division of Oil and Gas.

believes that the extension of Badami field life through royalty modification can benefit the prospects for future development and continued interest in areas around Badami and is therefore in the best interests of the State.

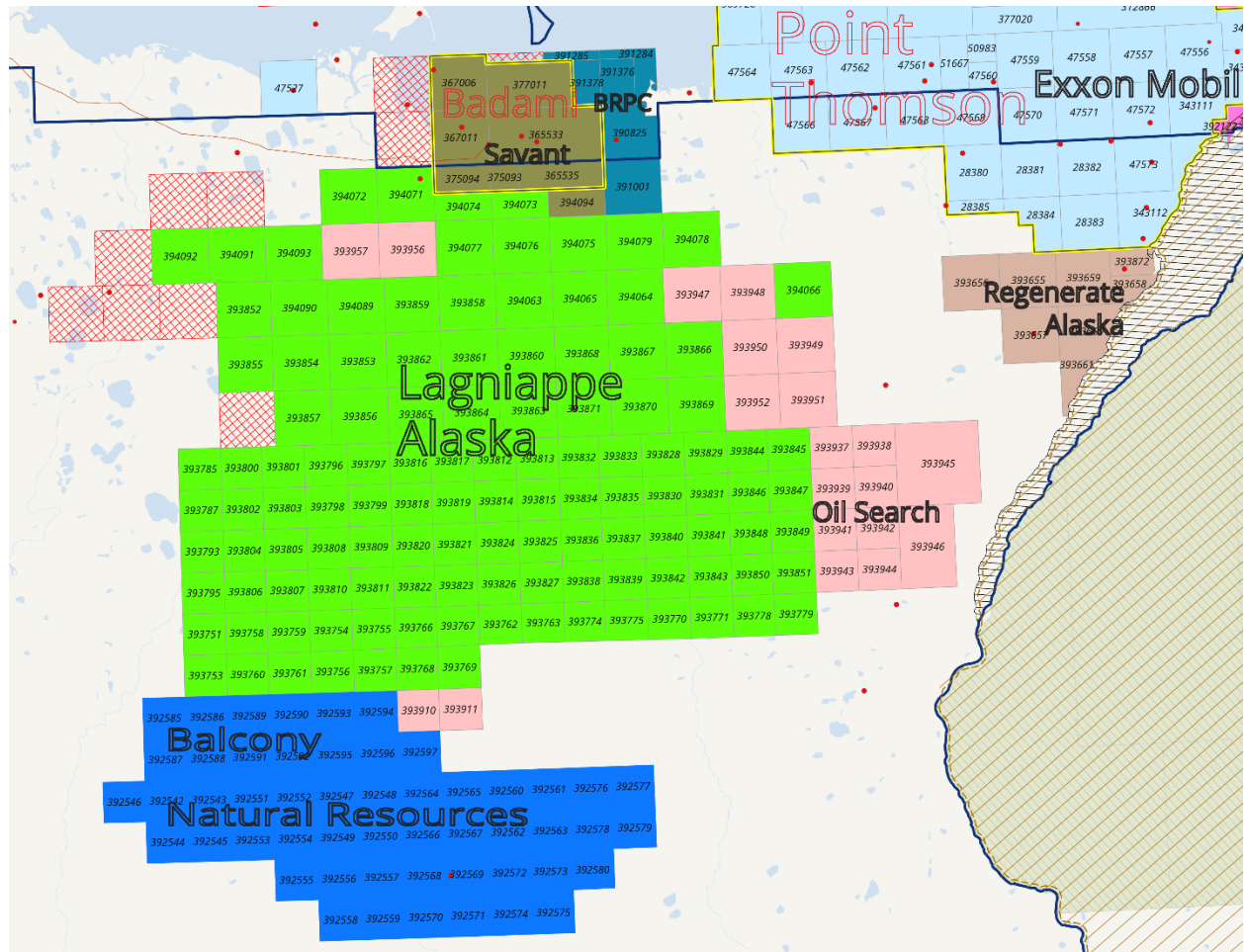


Figure 6: DNR Notification Lessee Map, January 2023⁴⁰

4. Environmental and Social Impacts

The best interests of the State also need to consider the environmental and social impacts of Savant’s continued operations at Badami that this royalty modification decision would facilitate. DNR develops lease stipulations through the Areawide Lease Sales process to mitigate the potential environmental and social impacts from oil and gas activity. Most of the company details presented below, especially those related to social impacts, were provided by Savant.

In terms of environmental impacts, the leases that are included in the royalty modification contain many stipulations designed to protect the environment and address any outstanding concerns regarding impacts to the area’s fish and wildlife species and to habitat and subsistence activities.

⁴⁰ DNR Notification Lessee Map, January 2023, available at: <https://dog.dnr.alaska.gov/Information/MapsAndGis>. Accessed on 06/13/2023.

They address the protection of primary waterfowl areas, site restoration, construction of pipelines, seasonal restrictions on operations, public access to, or use of the leased lands, and avoidance of seismic hazards. The granting of royalty modification will not result in additional restrictions or limitations on access to surface lands or to public and navigable waters.

The prospect of extending the life of Badami through royalty modification potentially allows for future exploration and development with less additional infrastructure construction. This could be environmentally impactful. Additionally, Savant has a proven track record of safety and compliance in Alaska in general, and at Badami. In the close to eight years of operating on the North Slope, Savant has had no lost time accidents. Management of Savant have over two decades of collective experience operating and managing the Badami field and related assets safely and reliably.

The Commissioner's approval of the royalty modification is an administrative action, which by itself does not convey any authority to conduct operations on the leases, within the development area, unit or participating area. Savant must still obtain approval of a Unit Plan of Operations and various permits from state agencies before initiating activities. In addition, Savant as the operator, and Glacier as the parent, have in place an Agreement for DR&R for Badami with DNR, as well as meeting bonding requirements with the AOGCC for plugging and abandoning Badami wells.

In terms of social impacts, the leases comprising Badami have provisions encouraging the lessee to employ Alaskans. Glacier, Savant's parent, is "focused solely on Alaska - operating both onshore and offshore oil assets..."⁴¹ In Badami, Savant operates the field, in addition to owning drilling, production and transportation infrastructure within Badami, which provides them opportunities for production growth and providing employment. Savant has at its disposal Glacier's experienced professionals and a committed board and executive team, as well as engineers, geologists and geoscientists, safety and environmental specialists, and land and commercial staff.

Glacier employs roughly 55 employees and an additional 25 full-time contractors, companywide. This includes both in the Cook Inlet and North Slope fields and the office, which is located and headquartered in Anchorage, AK. Badami currently has 20 employees, while Cook Inlet, which includes the Osprey Platform, Redoubt Unit, Kustatan, and West McArthur fields, includes another 21 employees, not including full time contractors. Companywide, roughly 90 percent of Glacier employees are Alaskans.

Savant operates in the North Slope basin in remote settings and conditions. On the North Slope at Badami, they operate 27 miles east of the road system along the coastline of the Beaufort Sea. Although remote operations have challenges, they can successfully, safely, and efficiently navigate and operate their facilities, wells, pipelines, and equipment also due to the strong relationship with key community stakeholders. These include the State of Alaska, North Slope Borough, Artic Slope Regional Corporation, individual landowners, and other constituents. Glacier strives to hire local Alaskans and supports the local communities throughout the North Slope as well as throughout

⁴¹ Comments shared by Savant/Glacier with DNR to be included in the Finding.

Alaska. Glacier is also a member of the Alaska Oil & Gas Association, Alaska Clean Seas, Cook Inlet Spill Prevention Inc., among others.

VIII. PROPOSED FINDINGS AND DETERMINATION

After detailed consideration where all the materials presented by the applicant were reviewed and incorporated into our analysis, DNR has determined that Savant meets the necessary requirements and that royalty modification for the Badami Unit is warranted under the terms established in Section V of this Preliminary Decision.



John C. Boyle III
Commissioner, Department of Natural Resources

7/7/2023

Date

cc: Derek Nottingham, Director, Division of Oil and Gas
Jhonny Meza, Commercial Section Manager, Division of Oil and Gas
Mary Gramling, Department of Law

EXHIBIT A – CALCULATION OF ROYALTY RELIEF – THREE EXAMPLES

Row	Royalty Relief Determined Here:	Month A	Month B	Month C
1	Royalty Value (RV) of Oil:	\$90.00	\$50.00	\$70.00
2	(WIO) Badami Gross Production:	20,000	11,500	19,000
3	Calculated Badami Royalty Production:	2,700	1,553	2,565
4	Monthly Gross Oil Revenue:	\$1,800,000.00	\$575,000.00	\$1,330,000.00
5	Calculated Royalty Revenue:	\$243,000.00	\$77,625.00	\$179,550.00
6	Monthly Royalty Modification Threshold	\$1,400,000.00	\$1,400,000.00	\$1,400,000.00
State of Alaska Royalty Relief for Elapsed Month				
7	Is Monthly Gross Oil Revenue < Monthly Royalty Modification Threshold?	NO	YES	YES
8	Royalty Rate Reduced?		REDUCED	REDUCED
9	What is the Amount of Royalty Revenue corresponding to a royalty rate of 3%?		\$17,250	\$39,900
10	(Monthly Royalty Modification Threshold) – (Monthly Gross Oil Revenue)		\$825,000	\$70,000
11	Maximum "Adjustment" to Monthly Gross Oil Revenues		\$60,375	\$139,650
12	"Adjustment" to Monthly Gross Oil Revenue		\$60,375	\$70,000
13	"Adjusted" Monthly Gross Oil Revenue		\$635,375	\$1,400,000
14	Is "Adjusted" Monthly Gross Oil Revenue ≥ Monthly Royalty Modification Threshold?		NO	YES
15	What is the Original Calculated Royalty Rate?	13.5000%	13.5000%	13.5000%
16	Calculated Royalty Revenue Remaining after "Adjustment" to Monthly Gross Oil Revenue		\$17,250	\$109,550
17	What is the Effective Royalty Rate?	13.5000%	3.0000%	8.2368%
18	Royalty Amount Collected by State After Relief	\$243,000	\$17,250	\$109,550

The table above shows how the royalty modification mechanism works. Three hypothetical months, Months A, B, C are shown. A step-by-step general description of the mechanism is provided below referencing the relevant row number in the Figure above. Rows 1–6 are inputs and calculations used for the royalty decision for each month given in Rows 7–18. This is followed by a description of three possible cases corresponding to: the case where royalty relief is not applied (Month A); royalty relief is applied, although royalty relief is not sufficient to bring adjusted monthly revenue above monthly threshold (Month B); and royalty relief is applied, and royalty relief is sufficient to bring adjusted monthly revenue above monthly threshold (Month C).

General Description

- Row 1 shows the “royalty value” of a barrel of oil for each month. This is the price of a barrel of oil at Badami, which is used in the calculation of revenue and royalty. This is equivalent to the result of subtracting the transportation costs from the price of Alaska North Slope oil at the U.S. West Coast.
- Rows 2 and 3 are gross Badami production and the royalty share of such production respectively, for each month, calculated at the lease and tract level (not shown).
- Row 4 is the monthly gross oil revenue, which is the product of the royalty value and the gross production for each month.
- Row 5 is the calculated royalty revenue, which is the product of the royalty value and the royalty production for each month.
- Row 6 is the monthly threshold for each month, based on the schedule set in Table 3.
- Rows 7 and 8 represent the royalty relief decision: if monthly gross oil revenue is greater than or equal to monthly threshold, then there is no royalty relief (“NO”). Otherwise, there is royalty relief (“YES”).
- Row 9 calculates the minimum statutorily allowable royalty amount corresponding to a royalty rate of 3 percent if the decision in Row 7 is “YES”.
- Row 10 calculates the difference between the monthly threshold and the gross monthly oil revenue if royalty relief is triggered in Row 7 (“YES”). This is essentially a “shortfall” amount calculation to determine how much royalty relief would need to be given to Savant to make the decision in Row 7 to be “NO,” where Savant would not be given relief.
- Row 11 calculates the maximum “adjustment” to monthly gross oil revenues that can be given, which is the difference between the calculated royalty revenue in Row 5 and minimum royalty amount to the State in Row 9 if royalty relief is given.
- Row 12 estimates the actual “adjustment” to monthly gross oil revenue, which is minimum value between the “shortfall” amount in Row 10 and the maximum “adjustment” in Row 11. If the “shortfall” amount is less than maximum “adjustment,” then an amount equal to the “shortfall” amount would be given in royalty relief. Otherwise, the maximum “adjustment” is given by default. This “adjustment” also represents the amount of royalty relief to Savant if relief is given.
- Row 13 calculates the “adjusted” monthly gross oil revenue if royalty modification is given, which is the sum of monthly gross oil revenue and actual “adjustment” amount in Row 12.
- Row 14 checks whether the “adjusted” monthly gross oil revenue in Row 13 is strictly greater than the monthly threshold for that month, that is, whether by giving royalty modification the State was able to provide the “shortfall” amount in Row 10. If it is the case, then it would output “YES,” and “NO” if after “adjustment” for that month the monthly threshold is still greater.

- Row 15 displays the original field wide production weighted royalty rate, which is also the ratio between the monthly gross oil revenue (Row 4) and monthly royalty revenue (Row 5).
- Row 16 calculates the amount of State royalty revenue remaining after relief is given (after "adjustment" to monthly gross oil revenue). That is, if royalty relief is given, then Row 16 will be the difference between monthly royalty revenue (Row 5) and the actual "adjustment" to monthly gross oil revenue (Row 12). Row 16 will equal Row 9 only if Row 14 outputs "NO," since then by default the minimum royalty rate of 3 percent would be applied.
- Row 17 calculates the effective royalty rate for the entire field once royalty modification is given, which is the ratio between the remaining royalty revenue to the State after relief (Row 16) and monthly gross oil revenue. If no royalty modification is given, then this effective royalty rate is equal to the royalty rate in Row 15.
- Row 18 calculates the royalty amount collected by State after modification, which is the royalty revenue in Row 5 if no royalty modification is given and is the amount of State royalty revenue remaining in Row 16 if relief is given. This is the final State royalty revenue amount.

Three Cases Considered

Month A: This is an example of no royalty relief given for this month. Row 8 determined that royalty relief is not triggered. Therefore, the original royalty rate (Row 15) would be the final, effective royalty rate for revenue calculations (Row 17). Savant would not see any royalty relief (no amount in Row 12) and State revenues (Row 18) would be the same amount that was calculated prior to using the royalty modification decision (Row 5).

Month B: This is an example where revenue is less than the threshold (Row 7). Thus, there is a reduction to the royalty rate for this month (Row 8), but there isn't enough royalty revenue (Row 11), given the 3 percent minimum royalty rate (Row 9), to meet the "shortfall" amount (Row 10). Therefore, Savant gets the maximum the State can award (Row 12). The effective royalty rate that Savant faces goes from 13.5 percent down to 3 percent, and Savant gets \$60,375 of royalty relief (Row 12). The State receives the statutory 3 percent, which is \$17,250 (Row 18).

Month C: This is an example where revenue is less than the threshold (Row 7), royalty relief takes effect (Row 8), and there is enough royalty revenue left over (Row 11) after 3 percent minimum royalty rate (Row 9) to make up the "shortfall" amount (Row 10) and to make their "adjusted" monthly revenues greater or equal to the monthly threshold amount (Row 4). Therefore, Savant gets the "shortfall" amount (Row 12), and the State had the ability for a larger royalty revenue relief (Row 11). The effective royalty rate that Savant faces goes from 13.5 percent down to 8.24 percent, and Savant gets \$70,000 of royalty relief (Row 12). The State receives 8.24 percent royalty, which is \$109,550 (Row 18).