

DECISION AND FINDINGS OF THE COMMISSIONER  
DEPARTMENT OF NATURAL RESOURCES

PRUDHOE BAY UNIT  
FIRST EXPANSION OF THE UNIT AREA

FEBRUARY 29, 1984

AGD 1361770

PRUDHOE BAY UNIT  
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I. INTRODUCTION AND BACKGROUND

The Prudhoe Bay Unit was approved by the State of Alaska on November 18, 1977, effective April 1, 1977. It is located on the Alaska North Slope east of the Kuparuk River Unit and west of the Duck Island Unit. The Unit Area currently covers all or portions of 111 State of Alaska oil and gas leases totalling 245,767 acres, more or less, of State-owned lands. The unit is operated jointly by ARCO Alaska, Inc. (Arco) and Sohio Alaska Petroleum Company (Sohio), on their own behalf, and on behalf of 12 other Working Interest Owners.

On November 21, 1983, ARCO and Sohio jointly submitted an application to the Director of the Division of Minerals and Energy Management\* requesting an expansion of the Prudhoe Bay Unit Area pursuant to Article 9 of the Prudhoe Bay Unit Agreement. This expansion would add an additional seven tracts of Alaska leased lands comprising 5,760 acres, more or less, to the current Unit Area, for a total Unit Area of 251,437 acres.

The Prudhoe Bay Unit is proposed to be expanded on two fronts; on the northern border of the existing unit portions of three leases are proposed to be added to the Unit Area, and on the eastern border all or portions of four leases are proposed to be added to the Unit Area. At the time of application, two of the three tracts proposed to be added on the northern border were included within the borders of the Gwydyr Bay Unit, but were not committed to that unit.

The proposed expansion is supported by geologic and engineering data presented by Exxon Company U.S.A. and Sohio Alaska Petroleum Company indicating potential hydrocarbon production from the Permo-Triassic Reservoir (northern expansion) and the Lisburne Reservoir (eastern expansion). The proposed northern expansion area is thought to contain hydrocarbon accumulations which are contiguous to and in the same formation as the producing reservoir of the Prudhoe Bay Unit.

The Unit Operator notified all Working Interest and Royalty Owners of the proposed expansion in a notice dated November 21, 1983. Subsequently, in a letter dated December 28, 1983, Conoco, Inc., the Unit Operator of the Gwydyr Bay Unit, objected to the expansion of the Prudhoe Bay Unit to the north to encompass the two tracts then within the boundaries of the Gwydyr Bay Unit. Conoco's arguments for retaining these tracts within the Gwydyr Bay Unit were based on its supposition that there was no new geological information since the formation of the Gwydyr Bay Unit to justify the inclusion of the disputed tracts within the Prudhoe Bay Unit, and that there would be a negative impact on the Gwydyr Bay Unit's economics and prospects for development should the disputed tracts be contracted out of the Gwydyr Bay Unit.

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\* On February 1, 1984, a reorganization of the Division of Minerals and Energy Management resulted in the delegation of the duties and responsibilities of that division concerning oil and gas activities to the current Director of the Division of Oil and Gas.

No other affected parties objected to the expansion of the Prudhoe Bay Unit, per se, to include these leases, but three Gwydyr Bay Unit Working Interest Owners, Champlin Petroleum Company, Reading and Bates Petroleum Company, and Highland Resources, Inc., objected to the concomitant required contraction of the Gwydyr Bay Unit to exclude the disputed leases from the Gwydyr Bay Unit. Their arguments were identical to Conoco's.

The Division considered the objections raised by Conoco and the other Gwydyr Bay Unit Working Interest Owners in light of the criteria required to approve any unit activity under 11 AAC 83.303. It was the final decision of the Division, however, that, although the expansion of the Prudhoe Bay Unit and the concomitant contraction of the Gwydyr Bay Unit is not immediately dictated by either protection of correlative rights or prevention of physical waste, it is in the overall best interest of the State to approve such an expansion/contraction, as the disputed area would probably be developed earlier as a part of the Prudhoe Bay Unit, and the State would benefit accordingly.

On December 23, 1983, under Article 2(a) of the Gwydyr Bay Unit Agreement, the Division directed Conoco to prepare and distribute to all Gwydyr Bay Unit Working Interest Owners a proposal to contract the Gwydyr Bay Unit Area to exclude the two disputed tracts. On January 16, 1984, Conoco mailed such notice to the Gwydyr Bay Unit Working Interest Owners. Pursuant to Article 2(c) of the Gwydyr Bay Unit Agreement, on February 21, 1984, Conoco then mailed the proposed contraction, along with evidence of mailing and all received objections to the State. On February 29, 1984, the Director of the Division of Oil and Gas approved the proposed contraction of the Gwydyr Bay Unit to exclude the two disputed tracts, such contraction to be effective as of 12:01 a.m. March 1, 1984.

Comments on the proposed expansion were also received from the Alaska Department of Fish and Game (ADFG), and the Alaska Oil and Gas Conservation Commission (AOGCC). ADFG listed no specific objections to the proposed expansion, but did request that certain conditions be imposed on surface operations due to the biological sensitivity of the proposed expansion areas. The conditions that ADFG asked to be imposed related to documentation and consideration of caribou usage of the surface lands in formulating plans of operations, and protection of wetland habitats through the consideration of cross-drainage of the surface lands. These concerns are addressed in Part V. of this decision. AOGCC noted that the expansion, per se, is not justified strictly on the grounds of protection of correlative rights or prevention of physical waste; however they recognized that there may be other factors to consider and they expressed no objections to expanding the unit as a result of such considerations. AOGCC did note that if an expansion of the Prudhoe Bay Permo-Triassic Reservoir Participating Area to the north was subsequently approved by the Division, an expansion of the northernmost boundary of the Prudhoe Oil Pool should also be effected.

## II. GEOLOGICAL CONSIDERATIONS

A. Northern Expansion. A structure contour map, an oil-water contact map, a hydrocarbon isopach map, and two structural cross-sections were presented to the State in support of the proposed northern expansion of the Prudhoe Bay Unit Area. These exhibits support the likelihood of the existence of hydrocarbons in the Prudhoe Permo-Triassic Reservoir on the leases comprising the proposed northern expansion of the unit.

B. Eastern Expansion. A structure contour map, a geologic cross-section, and data from wells penetrating the Lisburne Reservoir were presented to the State in support of the proposed eastern expansion of the Prudhoe Bay Unit Area. These exhibits support the existence of hydrocarbons in the Lisburne Reservoir on the leases comprising the proposed eastern expansion of the unit.

## III. ROYALTY AND RENTAL CONSIDERATIONS

It is the stated policy of the Division to consider renegotiation of rental, royalty, minimum royalty, drilling, and producing terms of all leases proposed to be included in a unit, particularly if the lease is at the end of its term and would terminate if not included in an approved unit. A provision for renegotiation of the above terms upon unitization is found in the lease contracts and in the State statutes.

The leases proposed to be included in the Prudhoe Bay Unit expansion generally fall into three categories. These are: (1) leases which are already partially within the Prudhoe Bay Unit and are thereby held in force in accordance with the terms of the Prudhoe Bay Unit Agreement; (2) leases outside of the Prudhoe Bay Unit Area which are presently being allocated production by some of the Prudhoe Bay Working Interest Owners pending arbitration of objections by other Prudhoe Bay Working Interest Owners; and (3) leases which are not being allocated production from the Prudhoe Bay Unit and do not lie partially within the Prudhoe Bay Unit. Since the leases in the first category will not expire in the near future, the State has not sought to revise the terms of those leases. As to the second category of leases, the State has not attempted to renegotiate the terms of these leases because, on the basis of information presented to the State, we are persuaded that there is a reasonable probability that hydrocarbons are present under these leases, and therefore the original lease terms have been satisfied. Should the inferred oil in place be confirmed by the ongoing arbitration proceedings, these leases would be eligible for inclusion in a Participating Area under the terms of the Prudhoe Bay Unit Agreement. If production is not allocated to these leases under an approved Participating Area by 1987, they will be contracted out of the Unit Area under the terms of Article 9.3 of the Prudhoe Bay Unit Agreement.

There is only one lease which belongs in the third category, ADL 28342, leased by Sohio Alaska Petroleum Company. The State has decided that a revision of this lease contract is appropriate, as the lease is not a near-term candidate to receive hydrocarbon allocation, and would otherwise terminate on March 27, 1984. Consequently, the State is making the inclusion of ADL 28342 in the Prudhoe Bay Unit expansion conditional upon two revisions to that lease

contract. These revisions are: (1) Paragraph 9 of ADL 28342 will be revised to change the annual rental from \$1/acre/year to \$3/acre/year, and (2) Paragraph 10 of the ADL 28342 will be deleted to eliminate the minimum royalty provision. These changes mildly enhance the economic interests of the State through higher rentals and the elimination of minimum royalties in lieu of rentals. The latter change insures that the State will receive rental payments at the beginning of the lease year rather than receive minimum royalty in lieu of rentals at the end of that year. These changes will also help bring the affected lease into conformance with recent State leases, and thus aid in the administration of State leases in general. While additional changes would have to be made to bring this lease into complete conformance with the State's most recent lease form, the State chose not to seek more substantive revisions in consideration of the original terms Prudhoe Bay Unit Agreement, the Prudhoe Bay Settlement Agreement, and ongoing litigation proceedings (State of Alaska vs. Amerada Hess Corporation, et al.)

With regards to ADL 28342, this Decision and Findings is made conditional on Sohio's acceptance of the above changes in rental and minimum royalty terms. Sohio will be required to enter into an agreement with the State of Alaska by March 26, 1984 reflecting those amended lease terms. If such an agreement is not executed within the required time period, the lease will be considered not to have joined the Prudhoe Bay Unit, and will then terminate as of 12:00 midnight March 27, 1984.

#### IV. DISCUSSION OF DECISION CRITERIA

In accordance with the applicable regulations (11 AAC 83.301 -- 11AAC 83.395), the Commissioner will approve an expansion of an existing oil and gas unit if she finds that such an expansion is necessary or advisable to protect the public interest. In determining whether a proposed expansion is in the public interest, the Commissioner will consider the following factors:

(1) the conservation of all natural resources; (2) the prevention of economic and physical waste; and (3) the protection of all parties of interest, including the State. A discussion of these factors follows.

(1) The Conservation of All Natural Resources. Unitized development and production from a reservoir has been recognized as a conservation mechanism for some time. By unitized exploration and operation of a prospective productive area, drilling operations can be optimized and surface impacts can be reduced. Unitized exploration also provides a means for several parties to combine expertise and resources to explore an area that might be beyond the capabilities of a single party to explore efficiently, especially if the prospective area is only marginally economic.

There are sufficient geological, geophysical, and engineering data to indicate the probable existence of economically producible hydrocarbon reservoirs in the areas proposed to be added to the Prudhoe Bay Unit Area. There is also considerable evidence that these hydrocarbon reservoirs would be only marginally economic under current technological and market conditions, and in fact may never meet a strict "commercial quantities" definition if developed on their own. As a result, the inclusion of these tracts into the producing Prudhoe Bay Unit does promote the conservation of all natural resources by allowing production and cost sharing to be extended to these tracts through the Unit Agreement and Unit Operating Agreement.

(2) The Prevention of Economic and Physical Waste. As discussed in Section II above, a question as to the proper allocation of the existing Prudhoe Bay Permo-Triassic Reservoir hydrocarbons to the northern tracts proposed to be added to the Prudhoe Bay Unit still exists. Although the Prudhoe Bay Working Interest Owners have not demonstrated conclusively to the satisfaction of the State that the inferred hydrocarbon reservoir underlying these tracts is properly allocated production from the Prudhoe Bay Unit, the State is willing to consider the decision of the ongoing arbitration proceedings as to the correct allocation of hydrocarbons to these tracts. Upon completion of the arbitration proceedings, the Unit Operators must submit an application to the State for approval of an expansion of the Participating Area in order that those tracts may be properly allocated production from the Prudhoe Bay Unit Area. If the arbitration proceedings finally determine that no hydrocarbons should be allocated to these northern tracts, then, upon further consideration of the facts, they will be contracted out of the Unit Area in 1987 following Article 9.3 of the Prudhoe Bay Unit Agreement. (At the time of this Decision and Findings, the arbitration board empanelled to decide this issue had made a preliminary decision on the relevant oil-water contact that supports the proposed expansion of the Prudhoe Bay Unit Area to the north.)

Assuring proper allocation of hydrocarbons to each affected lease is, however, only one concern in resource allocation, as economic and physical waste can still occur if equitable cost sharing formulas and well integrated exploration and development plans for the affected areas do not exist. Both of these components are necessary to ensure that physical and economic recovery from all reservoirs included within the unit boundaries is maximized.

The benefits of unitization are especially applicable to marginally economic areas, particularly the periphery of reservoirs. In such areas, added reserves that would not be economically producible on their own are often gained through unitized operations. Capital savings as a result of not duplicating facilities and consolidating reservoir evaluation and management allows less profitable areas of a reservoir to be tested, developed, and produced.

In the proposed expansion, the State believes that prevention of economic waste will be effected by accelerated development and production of the projected hydrocarbon reserves if the affected tracts are committed to the Prudhoe Bay Unit. The operation of the expanded areas as parts of the Prudhoe Bay Unit will, therefore, significantly enhance the probability of early production from these areas.

(3) The Protection of All Parties of Interest, Including the State. A primary goal of unitization is the protection of all parties having an economic interest in one or more common hydrocarbon reservoirs. Unitization conserves natural resources and prevents economic waste by eliminating the many competing interests for delineation and operation of common reservoirs while retaining separate interests and accounts for equitable sharing of costs and benefits based on original ownership. By ratification of the Unit Agreement and acceptance of the final decision regarding proper tract allocation of the Permo-Triassic hydrocarbon pool, all parties are assured an allocation of costs and production commensurate with the value of their leases.

The expansion of the Prudhoe Bay Unit extends these benefits and protection to leases considered likely to be capable of contributing to the production from the Prudhoe Bay Permo-Triassic Reservoir. The State's economic interest is protected by maximizing any physical recovery of hydrocarbons that may exist in the area, and thereby the production-based revenue accruing to the State is maximized. Accelerated development of the affected tracts also contributes to the economic well-being of the State as a result of the time value of the revenues received, and the additional subsurface information obtained due to early development and production. Unitized operations within the expansion areas also minimize impacts to the areas' cultural, biological, and environmental resources.

#### V. FINDINGS AND DECISION

Considering the facts discussed in this finding and the administrative record, I hereby find:

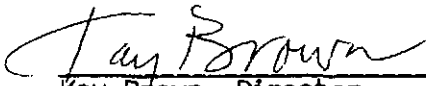
1. Based on the available geologic and engineering data submitted to the State, the expansion area consisting of the eastern tracts (all or parts of ADL's 28339, 28340, 28342, and 28343) is proper and justified. The Prudhoe Bay Unit Agreement provides for further expansions or contractions of the Unit Area in the future as warranted by additional information. Therefore, the public interest and the correlative rights of all parties affected in this expansion are protected.
2. Based on the available geologic and engineering data submitted to the State, the expansion area consisting of the northern tracts (the southern halves of ADL's 28275, 28276, and 47469) is proper and justified. The State has agreed to consider the results of the ongoing arbitration proceedings to determine whether in fact hydrocarbons may properly be allocated to these tracts. If the arbitration proceedings determine that hydrocarbons are not properly allocatable to these tracts, the affected tracts will contract out of the Unit Area pursuant to Article 9.3 of the Prudhoe Bay Unit Agreement. If the tracts are allocated hydrocarbon production under the ongoing arbitration proceedings, an application to include these leases in an appropriate Participating Area must be filed with the Commissioner for approval by the State.
3. Pursuant to Article 9.4 of the Prudhoe Bay Unit Agreement, the northern halves of ADLs 28275 and 28276 not included in the Prudhoe Bay Unit will be segregated, and will remain within the Gwydyr Bay Unit Area. If the Working Interest Owners of the northern halves of ADLs 28275 and 28276 do not commit to an appropriate established unit, or commence continuous drilling procedures under their lease terms within two years of the effective date of this expansion, the segregated portions of the original leases outside the Prudhoe Bay Unit Area will be terminated pursuant to Article 9.4 of the Prudhoe Bay Unit Agreement.

4. Approval of this expansion of the Prudhoe Bay Unit Area is necessary and advisable to protect the public interest. Lessees' ratification of the Unit Agreement will insure a fair and equitable return to the State from any production of hydrocarbons from the expanded areas.
5. Diligent exploration and delineation of the reservoirs underlying the proposed expansion areas will be conducted by the Unit Operators under the Plans of Development and Operations approved by the State.
6. The economic benefits to the State in the form of unitized development and production of the expanded Unit Area outweigh the economic costs to the State in approving such expansion.
7. Expansion of the Prudhoe Bay Unit Area to include the additional leases will provide for the increased conservation of all natural resources including hydrocarbons, gravel, sand, water, wetland, and other valuable habitat.
8. Expansion of the Prudhoe Bay Unit to include the additional leases will reduce the amount of surface lands and fish and wildlife habitat that would otherwise be used if the area were to be explored and developed on a lease-by-lease basis. This reduction in the impact on the environment and on subsistence activity in the area is in the public interest.
9. Prior to the commencement of production activities on any of the tracts added to the Prudhoe Bay Unit Area through this expansion, the Working Interest Owners will present to the Department of Natural Resources and the Department of Fish and Game a document summarizing caribou usage on the tracts. All Plans of Development and Operations, and updates thereto, for the expanded Unit Area must take such caribou usage patterns into account. Considerations of caribou usage in the Prudhoe Bay Unit Plans of Development and Operations, and updates thereto, should be integrated with caribou usage considerations for unit areas adjacent to the Prudhoe Bay Unit Area to the extent possible.
10. Preservation of sensitive wetland habitat shall be addressed in all Prudhoe Bay Unit Plans of Development and Operations, and updates thereto, with emphasis being placed on minimizing cross-drainage problems.
11. Expansion of the Prudhoe Bay Unit to include the additional leases will not limit or diminish access to public and navigable waters beyond any limitations already contained in the oil and gas leases proposed to be added to the Unit Area.
12. Sohio Alaska Petroleum Company, the lessee of ADL 28342, explicitly agrees to enter into an agreement with the State of Alaska regarding amended lease terms concerning this lease by March 27, 1984. If such an agreement has not been entered into by March 27, 1984, ADL 28342 will terminate as of that date.



13. This expansion of the Prudhoe Bay Unit Area will be effective as of 12:01 a.m. March 1, 1984.

For these reasons, and subject to the conditions noted, I hereby approve the first expansion of the Prudhoe Bay Unit.

  
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Kay Brown, Director  
Division of Oil and Gas

*Feb. 29, 1984*  
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Date

For: Esther C. Wunnicke, Commissioner  
Alaska Department of Natural Resources

Attachment: Delegation of Authority from Commissioner, Department of Natural Resources, to Director, Division of Oil and Gas

1629A:KB:KF:ms

DELEGATION OF AUTHORITY FOR OIL AND GAS LEASE UNITIZATION ACTIONS

| <u>Regulatory Citation</u> | <u>Purpose or Action</u>   | <u>Authority Vested In</u> | <u>Authority Delegated To</u>  |
|----------------------------|--|----------------------------|--------------------------------|
| 11 AAC 82.605              | Approve/deny assignments of oil and gas leases   | Commissioner               | Director, Div. Oil & Gas (DOG) |
| 11 AAC 82.610              | Segregate leases   | Commissioner               | Director, DOG                  |
| 11 AAC 83.158              | Approve/deny lease plan of operations  | Commissioner               | Director, DOG                  |
| 11 AAC 83.306              | Accept application for unit agreement approval   | Commissioner               | Director, DOG                  |
| 11 AAC 83.311              | Publish public notice of unit agreement application  | Commissioner               | Director, DOG                  |
| 11 AAC 83.316              | Approve/deny unit agreement  | Commissioner               | No delegation                  |
| 11 AAC 83.326              | Require or accept nonstandard unit agreement language  | Commissioner               | No delegation                  |
| 11 AAC 83.328              | Mandate unitization (Involuntary Unitization)  | Commissioner               | No delegation                  |
| 11 AAC 83.331              | Approve/deny change in unit operator   | Commissioner               | Director, DOG                  |
| 11 AAC 83.336              | Grant extension of unit term; grant suspension of operations (force majeure); terminate unit | Commissioner               | No delegation                  |
| 11 AAC 83.341              | Approve/deny plan of exploration   | Commissioner               | Director, DOG                  |
| 11 AAC 83.343              | Approve/deny plan of development   | Commissioner               | Director, DOG                  |
| 11 AAC 83.346              | Approve/deny plan of operations  | Commissioner               | Director, DOG                  |
| 11 AAC 83.351              | Approve/deny participating area  | Commissioner               | Director, DOG                  |
| 11 AAC 83.356              | Expand/contract unit area  | Commissioner               | Director, DOG                  |
| 11 AAC 83.361              | Certify wells as capable of production in paying quantities                                  | Commissioner               | Director, DOG                  |
| 11 AAC 83.371              | Approve/deny allocation of cost and production formulas                                      | Commissioner               | Director, DOG                  |
| 11 AAC 83.373              | Sever leases   | Commissioner               | Director, DOG                  |
| 11 AAC 83.374              | Declare unit in default  | Commissioner               | No delegation                  |
| 11 AAC 83.383              | Notation of approval on joinder  | Commissioner               | Director, DOG                  |
| 11 AAC 83.385              | Modification of unit agreement   | Commissioner               | Director, DOG                  |
| 11 AAC 83.393              | Approval of federal or private party unit agreements   | Commissioner               | No delegation                  |

I hereby delegate the authority vested in me through AS 38.05.180 to the Director of the Division of Oil and Gas as noted above. This delegation of authority is effective until revoked by me.

*Esther C. Wunnicke*  
 Esther C. Wunnicke, Commissioner  
 Alaska Department of Natural Resources

*Feb 22, 1984*  
 Date

AGO 1361779

EXHIBIT A-1  
PRUDHOE BAY UNIT EXPANSION

| <u>Tract No.</u> | <u>Description<br/>(Umiat Meridian, Alaska)</u> | <u>No. of<br/>Acres</u> | <u>ADL<br/>Serial<br/>No.</u> | <u>Basic<br/>Royalty</u> | <u>Lessee<br/>of Record</u> | <u>O.R.R.<br/>Interest</u> | <u>Working<br/>Interest<br/>Ownership</u> |
|------------------|---|-------------------------|-------------------------------|--------------------------|-----------------------------|----------------------------|---|
| 9A               | T12N-R13E, Sec. 20                              | 640                     | 47469                         | 1/8                      | Mobil,<br>Phillips          |                            | Mobil-50%<br>Phillips-50%                 |
| 66A              | T11N-R16E, Sec. 20                              | 640                     | 28339                         | 1/8                      | Sohio                       | *                          | Sohio-100%                                |
| 67A              | T11N-R16E, Sec. 21                              | 640                     | 28340                         | 1/8                      | Sohio                       | *                          | Sohio-100%                                |
| 69A              | T11N-R16E, Sec. 29                              | 640                     | 28343                         | 1/8                      | Sohio                       | *                          | Sohio-100%                                |
| 112              | T12N-R13E, Secs. 21,22                          | 1,280                   | 28275                         | 1/8                      | Arco & Exxon                |                            | Arco-50%<br>Exxon-50%                     |
| 113              | T12N-R13E, Sec. 23                              | 640                     | 28276                         | 1/8                      | Arco & Exxon                |                            | Arco-50%<br>Exxon-50%                     |
| 114              | T11N-R16E, Secs. 28, 33                         | 1,280                   | 28342                         | 1/8                      | Sohio                       | *                          | Sohio-100%                                |

\*BP Alaska, Inc. owns an overriding royalty interest equal to 75% of all net profits from production between certain levels of oil production.

PRUDHOE BAY UNIT  
EXHIBIT B-1  
UNIT OUTLINE

Shaded with 1/10-1/20, 1/10-1/16, 1/16-1/8 Unit Outlines  
North Slope of Alaska

- LEASE LEGEND
- A-E - ARCO-EXXON
  - M-C - MOBIL-CHEVRON
  - M-P - MOBIL-PHILLIPS
  - M-P-C - MOBIL-PHILLIPS-CHEVRON
  - SOHIO - SOHIO
  - A.H.H. - AMERICAN HESS, HESS & HESS
  - A.H.-GETTY - AMERICAN HESS-GETTY
  - A.S.-H. - ARCO-SOHIO, HESS, LLP

APRIL 1, 1977

