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ROYALTY OIL ISSUES

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Alaska Oil & Chemical Company

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INTRODUCTION

In response to the State of Alaska's request, Alaska Oil & Chemical Company (AOC) and other potential purchasers have submitted contracts to the Commissioner of Natural Resources for the purchase of a portion of the State of Alaska's Prudhoe Bay Unit royalty oil. As a part of the solicitation, the potential purchasers received a policy statement containing eight guidelines.

The bidding procedure followed has not created any forum under which the merits of the various proposals or the applicability of the various guidelines could be examined. Therefore, AOC has prepared the attached report for the assistance of the Royalty Oil and Gas Development Advisory Board and anyone else interested in the wise use of Alaska's Prudhoe Bay royalty oil.

The underlying issues are examined in what AOC believes is a logical sequence starting with the availability of Prudhoe Bay royalty oil. Following the examination of these issues, AOC's plan, the cost thereof to the State, and the potential benefits to the State are discussed.

ISSUES

1. DOES THE STATE HAVE ENOUGH ROYALTY OIL TO SUPPORT ANY OF THE PROPOSED PROJECTS?

No "official" forecasts of Prudhoe Bay royalty oil production were supplied with the bid request. However, the State made available the Van Poolen report and suggested AOC use Case 3A. The State has also stipulated that it will not commit more than 85% of its 12.5% royalty. Figure 1 opposite shows the Van Poolen forecast of total oil production, royalty oil and 85% of the royalty oil.

This forecast indicates that the royalty oil available will drop below AOC's 100,000 barrels per day (B/D) requirement in the seventh year. Therefore, other forecasts were sought and 85% of the royalty oil indicated in such forecasts is shown below, and graphically on Pages 4, 5 and 6.

Plant Year	Calendar Year	Van Poolen Case 3A	Dept. Nat. Resources		AOC	Confid Info	FPC Filings		
			Reasonable	Conserv			Mobil	Arco	Sohio
1	1983	159.4	159.4	123.3	159.4	159.4	159.4	159.4	159.4
2	1984	159.4	159.4	123.3	159.4	159.4	159.4	159.4	159.4
3	1985	159.4	159.4	123.3	159.4	159.4	159.4	157.8	159.8
4	1986	159.4	159.4	123.3	150.5	148.2	106.3	136.0	127.5
5	1987	142.8	159.4	123.3	142.2	137.9	106.3	108.4	127.5
6	1988	122.4	132.4	123.3	134.4	128.2	-	95.6	-
7	1989	117.3	111.1	123.3	127.3	119.2	-	-	-
8	1990	81.3	95.6	123.3	118.3	110.9	-	-	-
9	1991	58.3	64.1	123.3	110.0	103.1	-	-	-
10	1992	46.6	-	98.7	102.3	95.9	-	-	-
11	1993	38.0	-	64.3	95.1	89.2	-	-	-
12	1994	49.0	-	-	88.5	83.0	-	-	-
13	1995	47.6	-	-	82.3	77.1	-	-	-
14	1996	38.5	-	-	76.6	71.7	-	-	-
15	1997	29.2	-	-	71.2	66.7	-	-	-

It is apparent that even the most optimistic projections (DNR-Conservative, AOC and Confidential) indicate that after about the ninth year less than 100,000 B/D will be available. Therefore, AOC concludes the optimum size facility should not exceed 100,000 B/D and that financing of anything larger without State assistance will be difficult.

FIGURE 1

VAN POOLEN REPORT
CASE 3A
PRUDHOE BAY UNIT

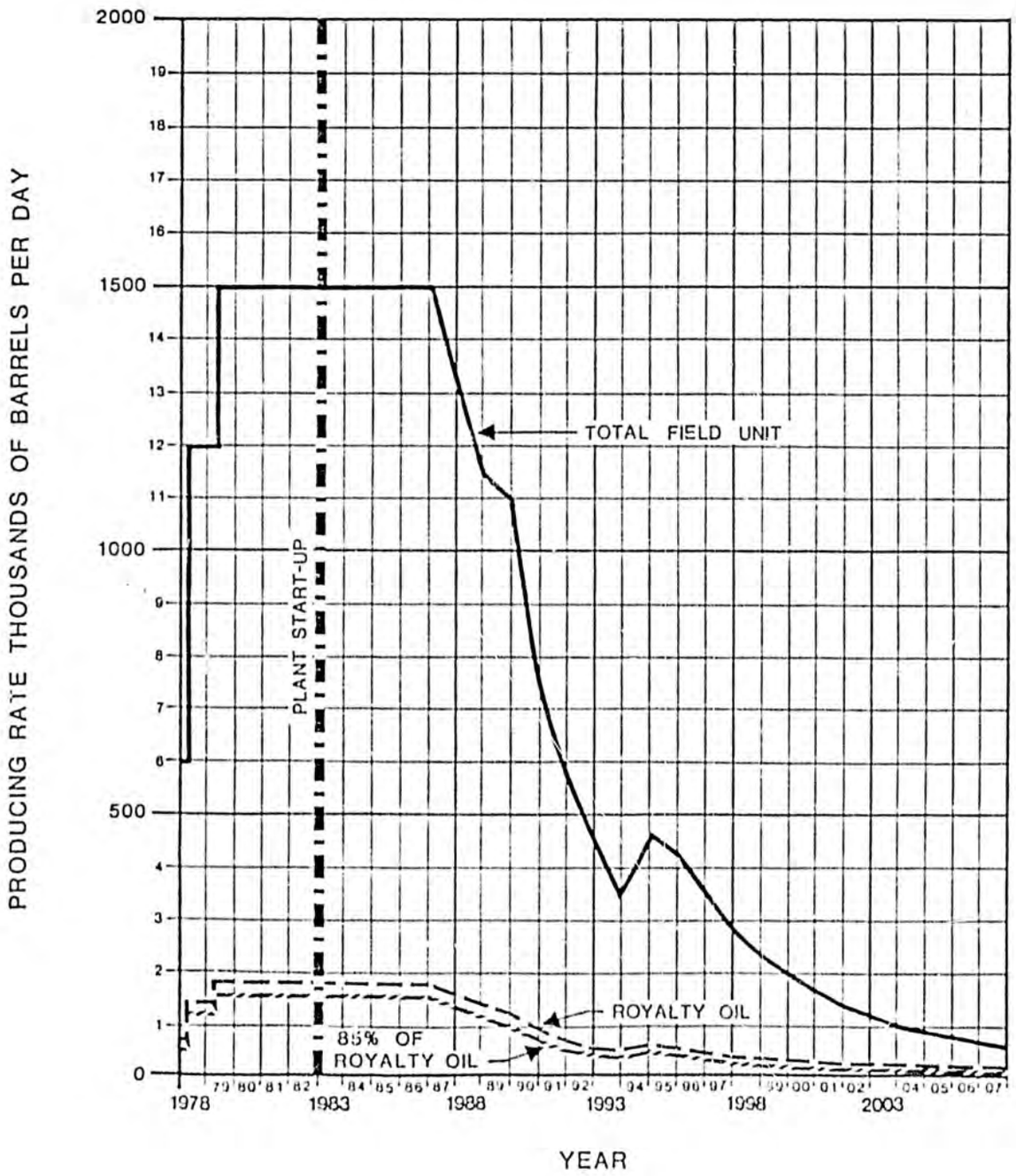

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FIGURE 2

VAN POOLEN AND DEPARTMENT OF NATURAL RESOURCES FORECASTS

85% OF PRUDHOE BAY ROYALITY OIL

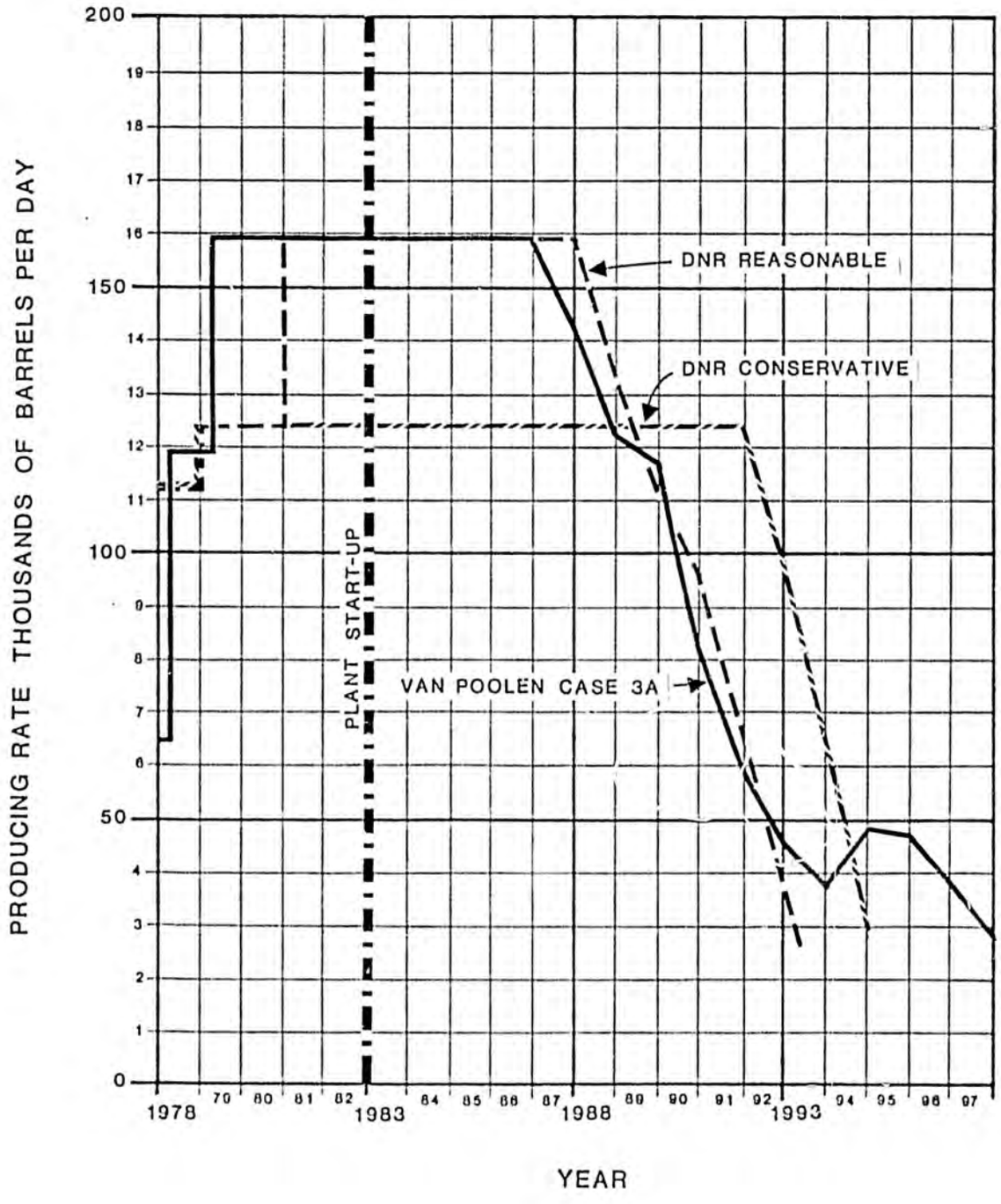

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FIGURE 3

VAN POOLEN, AOC AND CONFIDENTIAL FORECASTS

85% OF PRUDHOE BAY ROYALTY OIL

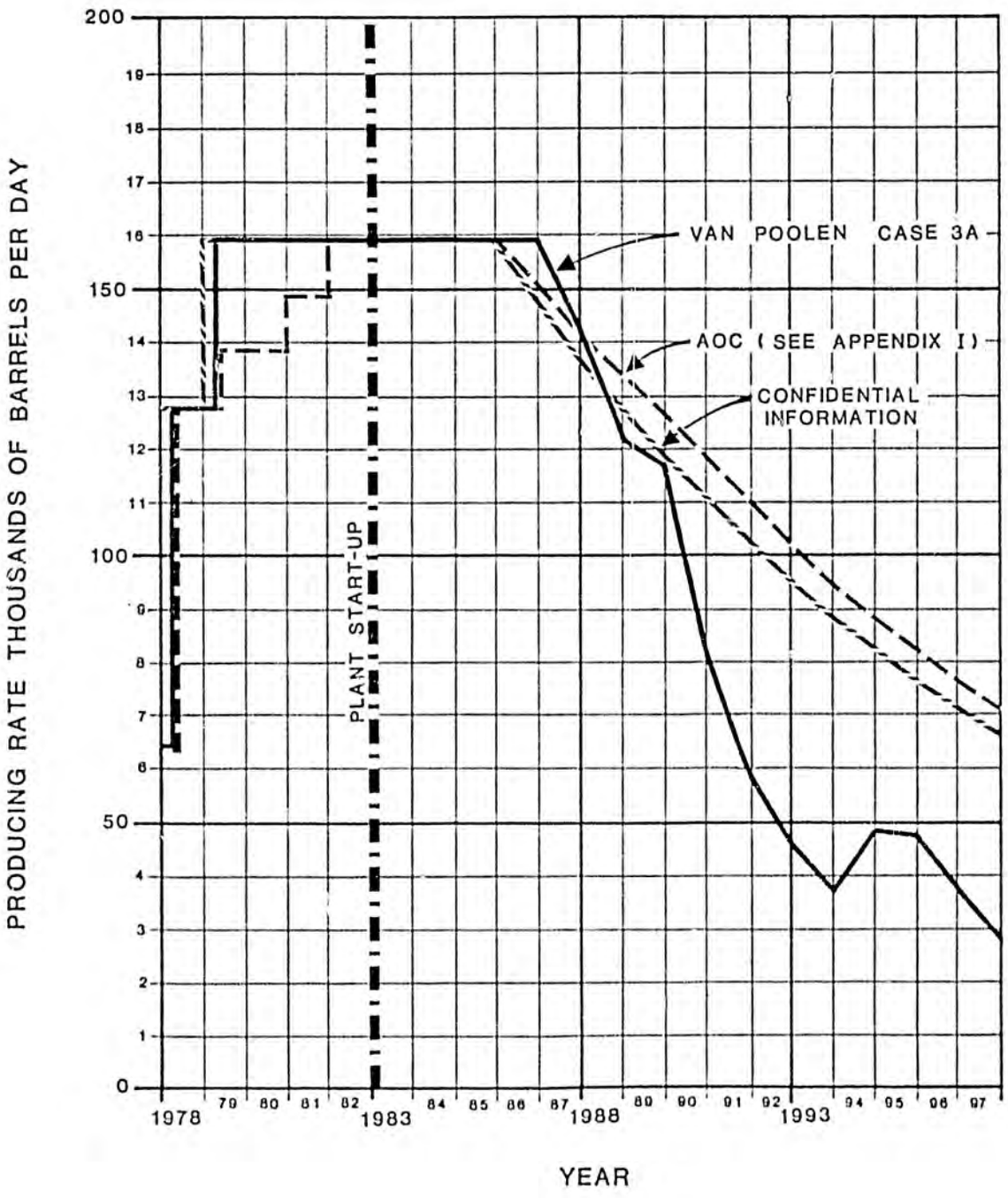

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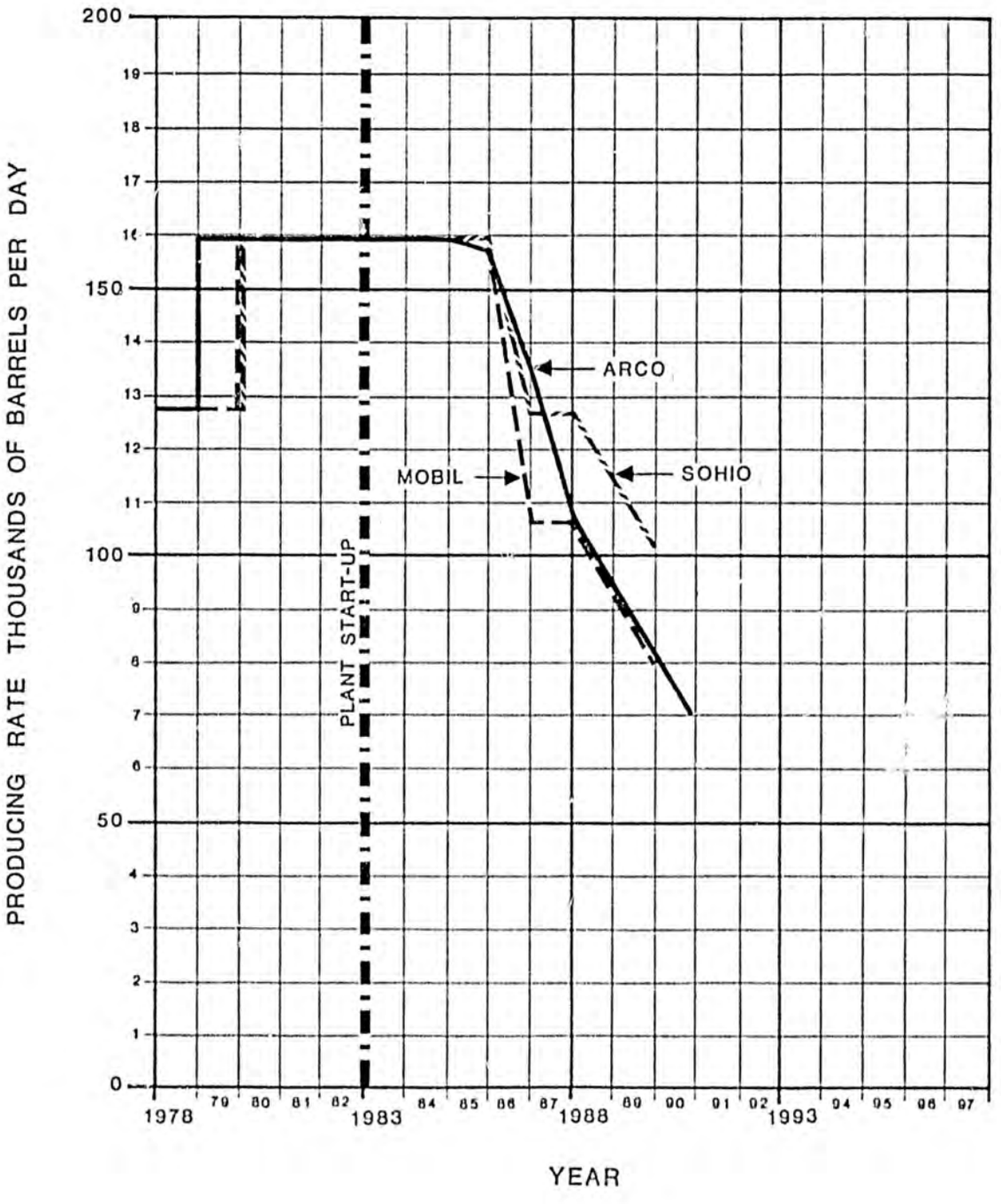
FIGURE 4

ARCO, SOHIO AND MOBIL FPC FORECASTS

85% OF PRUDHOE BAY ROYLTY OIL



Unfortunately, neither the Bonner & Moore Associates, Inc. (Bonner & Moore) report nor the Smith Barney, Harris Upham & Co. (Smith Barney) report consider this fundamental limitation. However, in fairness, Bonner & Moore was instructed to develop economics using 1.2 and 1.8 million B/D of North Slope crude and Smith Barney was not called upon to determine the project feasibility.

Specifically, Bonner & Moore determined their "Deemed Economic Price" on the basis of a 16-year life (see pages 3-4 and 3-5 of the Bonner & Moore report). This means their economics are valid if the facilities operate at rated capacity for 16 years. It is obvious that if the available oil is less than the rated capacity the unit costs for at least the capital related items must increase.

To assist the Royalty Board in weighing these proposals, AOC has recalculated the Capital-Related Charges developed by Bonner & Moore to reflect the effect on the "Deemed Economic Price" if only the most optimistic forecast (AOC's) of Prudhoe Bay royalty oil is processed in the proposed facility. These economics are developed in Appendix II and are summarized below.

	ALPETCO		Petrofining		APC	
	At Rated Capacity 150 MB/D	Available Royalty Oil 111.8 MB/D	At Rated Capacity 250 MB/D	Available Royalty Oil 115 MB/D	At Rated Capacity 150 MB/D	Available Royalty Oil 111.8 MB/D
Deemed Economic Price	7.10	2.88	6.85	4.70	6.26	5.51
In-Value	6.33	6.33	6.33	6.33	6.33	6.33
Premium (Debit)	0.77	(3.45)	0.52	(1.63)	(0.07)	(0.82)

Based on the foregoing, AOC suggests that the Royalty Board seriously consider whether its best interests are served by inducing any company to expend large sums of money in pursuing an in-State refining venture, or whether a more modest endeavor, such as proposed by AOC, is appropriate.

2. HOW SHOULD ALASKA USE THIS SHORT-TERM BONANZA?

The options are:

a. Take the maximum current revenue in the form of "in-value" payments, or

b. Use the royalty oil to establish an industry which will be viable after Prudhoe Bay declines.

Nothing AOC has been able to develop during the bidding process, or has seen in the contracts proposed by others, indicates that an in-State facility can, initially at least, assure the State as much money as if it took its royalty in money. Notwithstanding, AOC believes that the wisest course for the State is to examine carefully the possibility of committing a reasonable portion of its royalty oil to an in-State processing facility. Such commitment should be carefully constructed so that the purchaser has strong economic incentives to maximize the delivery point value of the royalty oil.

However, it would be presumptuous of AOC or any applicant to make the final decision for the State if there is any likelihood that there will be a long-term cost associated with such decision. Thus, AOC has tailored its proposal to provide continuous participation by the State in the decision making.

3. SHOULD THE STATE ENCOURAGE THE ESTABLISHMENT OF:

(A) A FUELS REFINERY, OR (B) A PETROCHEMICAL REFINERY?

Two types of facilities - fuels refineries or petrochemical refineries, have been proposed. AOC has examined both possibilities and feels the State should take into consideration the following factors:

1. In either case, products must very largely be exported from Alaska. While a new fuels refinery could be expected to capture a portion, at least, of the growth in local demand, AOC does not believe this benefits the State. There is already sufficient competition in the State and adding another refinery does not assure lower fuel costs. Actually, Alaskans would benefit if the existing refineries could expand and therefore have lower unit costs.

2. On the other hand, a petrochemical refinery will add a new dimension to Alaska's economic life. It will enable Alaskans to more clearly control their destiny and, as indicated previously, would provide a nucleus for future development when Prudhoe Bay declines. Unlike a refinery which must compete head on with refined products produced in Alaska, on the West Coast or Hawaii from existing or expanded refineries, petrochemicals destined for the West Coast have a natural niche since most of them are currently produced on the Gulf Coast and shipped to the West Coast. AOC has never underestimated the difficulties in establishing a petrochemical refinery in Alaska. On the contrary, AOC has consistently pointed out the difficulties. No one will know, however, whether a facility is viable until the State commits for a period of time its oil to one responsible experienced group to endeavor to

find out the true economics of producing petrochemicals. Once this is established the State can determine the cost/benefit of such venture. Only AOC has consistently proposed such an approach.

4. SHOULD THE STATE MAKE A FINAL DECISION NOW?

AOC believes that the bidding process which is being completed has served a very useful purpose in bringing into focus these various issues. Conspicuous by their absence from any of the bidding have been any of the petrochemical companies or major refining companies. AOC submits that the guideline of "no less than in-value" virtually precludes offering the economic incentive required to establish either a refinery or petrochemical plant in Alaska given the added costs of building, owning and operating a facility in Alaska. None of the proposals irrevocably demonstrated that they can meet this guideline. This should speak volumes to the Board and to the legislature.

AOC has consistently attempted to deal constructively with this issue rather than play games trying to meet an unrealistic guideline. In simplest terms it proposes to do all the work necessary to provide the State with the necessary information on which the State can base a final decision. The decision itself is left totally with the State. AOC thinks this is the only practical approach to take and that in the final analysis, regardless of which proposal is accepted, the State will have to exercise such judgment. Why not do it in a businesslike, well-organized way with an experienced and competent consortium in which experienced Alaskans are full partners?

5. ARE THE GUIDELINES SET FORTH IN THE BOARD'S POLICY STATEMENT REALISTIC?

AOC submits that the bidding process has demonstrated that two of the guidelines in the Policy Statement are unrealistic and should be revised. AOC has no quarrel with guidelines (3) through (8). However, (1) and (2), although worthy targets, appear to be mutually exclusive - at least in the short term. AOC firmly believes that a fair "bottom line" evaluation of net benefits to present and future generations of Alaskans will conclusively demonstrate that a petrochemical refinery will produce long term net benefits. However, AOC likewise believes that the ramifications of the State's inducing establishment of such new industry are so widespread that the final decision should be retained by the State.

AOC fully accepts that the net benefits to the State must be the controlling judgment factor. However, it believes the State should not arbitrarily impose the guideline of in-value. Rather, it should be used as a test of the net benefits.

AOC'S PLAN

AOC proposes an orderly, businesslike approach to determine the minimum incentives that would be required to induce purchasers to buy the output of the petrochemical refinery and/or build satellite downstream plants in Alaska. To do this, the State is asked to make three commitments. First, the State must accept a minimum cost formula that assures financibility of the plant. Second, it must designate a plant site. Third, agree to make a "go, no go" decision by a date certain.

With these factors established, AOC will, at its sole cost and expense, obtain offtake and construction contracts through the process of soliciting competitive proposals. AOC will also perform, at its sole cost and expense, detailed engineering and economic forecasts. Such work is to be completed in 12 months. AOC's complete staff and files will be available to the State during this time and the State is invited to participate to the extent the State deems appropriate in this process.

During the next six months the State will prepare its own Cost/Benefit Analysis and within two additional months reach its decision on the desirability of implementing the previously negotiated contracts. AOC will assist the State in such analysis, but the decision will rest with the State.

If the State decides it wishes AOC to proceed, the contracts will be implemented. If the State decides <u>not</u> to require AOC to proceed, AOC will have the option to purchase a limited quantity of oil.

WHAT DOES AOC'S PLAN COST THE STATE?

1. An agreement not to commit 100,000 B/D or up to 85% of its royalty oil for a maximum period of two years.

2. Such loss, if any, the State deems appropriate to take upon completion of its cost/benefit analysis.

3. Any costs incurred by the State in the preparation of its cost/benefit analysis. (Such costs are totally within the State's power to control.)

4. The granting of an option to AOC to purchase at in-value up to 40,000 B/D of oil only if:

   (a) the State cancels the contract, or

   (b) the State, having completed its cost/benefit analysis, decides not to have AOC proceed with the construction of the facilities. Such option contract not to have a term in excess of ten years from the date of the basic agreement.

WHAT ARE THE POTENTIAL BENEFITS OF AOC'S PLAN?

AOC has recognized from the beginning that asking the State to assume the risk of not receiving the alternate or "in-value" means AOC is not entitled to more profit than required to attract the necessary capital. At the same time, AOC is very cognizant that the State would be ill-advised to guarantee a financible project unless AOC had substantive incentives to maximize the price the State receives for its royalty oil. Thus, AOC has developed a cost-of-service approach with specific incentives in the form of increased return to AOC based solely on the price the State gets for the royalty oil sold to AOC. Therefore, at all times AOC has a strong incentive to maximize the return to the State. This formula and illustrative examples are discussed in the following section of this report.

In addition to a minimum cost operation where AOC has strong economic incentives to maximize the State's revenue, AOC recognizes that at some point in time the petrochemical refinery will have spare capacity. This capacity will have been underwritten by the basic contract to process Prudhoe Bay royalty oil. Therefore, AOC is prepared to share equally this surplus capacity with the State. Since, as illustrated in the next section, this will most likely occur when the depreciation component of the formula has been eliminated, this could result in the State having extremely cheap capacity available for new oil just when Prudhoe Bay oil production is declining rapidly.

HOW DOES AOC'S PROCESSING FEE FORMULA WORK?

PROCESSING FEE (Article VII of AOC's Proposed Contract)

The processing fee is designed to provide the maximum net revenue to the State consistent with AOC being able to finance. It has built into it incentives to maximize the State's net revenue. The individual components are:

A. OPCST = Operating Costs. These are fixed and variable operating costs incurred by AOC and include transportation from Prudhoe Bay to the core petrochemical refinery and direct operating costs therein. Since there is no profit involved, it is to the mutual advantage of the State and AOC to minimize such costs.

B. DEPR = Depreciation. This charge returns the fixed investment to the investors, both debt and equity. AOC proposes it be tied to the average term of the sales contracts. AOC believes these terms will be determined by the reserves committed to the project which AOC's figures indicate will be about ten years after the refinery starts up. Of course, AOC would be prepared to extend the depreciation period provided the State can assure AOC and, more importantly, the offtake purchasers that the oil will be available. Such extension obviously would reduce the processing fee and benefit both AOC and the State.

C. INT = Interest. This charge merely returns actual interest costs. Therefore, it is obviously in the mutual interest of AOC and the State to minimize these costs.

D. INC TAX = Actual Income Tax. This charge merely covers the taxes AOC, as

a profit-making entity, must pay. AOC is well aware that Internal Revenue Service regulations permit investment tax credits, accelerated depreciation, etc. in computing income taxes. The effect of these is illustrated in the tables discussed below.

E. RETURN = Return on Capital Employed. AOC chose a variable return to demonstrate conclusively AOC's intention of maximizing the value of Prudhoe Bay royalty oil. The minimum return is that required to obtain the debt and equity. In the event the State is receiving less than in-value, AOC's return is the minimum 15% required to attract the debt and equity capital. When the State receives more than in-value AOC gets an increased return up to 20%. In the event the State is getting in-value and AOC is getting 20%, then AOC will get 10% of any additional revenue and the State will get 90%. In no case will the State have to pay AOC.

ILLUSTRATIVE EXAMPLES

AOC has developed three examples to illustrate how its proposed formula would work over a 15-year period.

Tables I and I-A are based on AOC's Probable Forecast.

Table II is based on Van Poolen's Case 3A.

Tables III and III-A are based on full plant operation.

In each case the plant is assumed to cost $1 billion and be capable of operating 350 days per year. Operating costs have been estimated at $50 million per year. It has been assumed that the debt, $800 million, would be retired in equal instalments and bear interest at 9%.

For simplicity, it has been assumed that the gross sales revenue less the in-value is $7.50/B of oil purchased. AOC believes this is in the

range for the assumed configuration of the plant.

Table I opposite illustrates the operation of the formula if only AOC's Probable Forecast volume of oil is processed and no accelerated depreciation or investment tax credit is taken. It is included to illustrate the principles of the formula.

The top two lines show the forecast of the field production and the resultant royalty oil. The next three lines indicate the disposition of this oil. As the note indicates, the refinery runs 100,000 B/D for 350 days per year, or 85% of the State's royalty oil, whichever is less. It should be noted this assumes the refinery would have sufficient crude oil storage in the declining years to take the royalty oil every day.

The next three lines show the sources of the refinery feed. For this example no other feed is expected.

The gross difference is the $7.50/B multiplied by the number of barrels processed.

The Deductions are per the contract as noted above. It can be seen that in the first three years the Deductions exceed the Gross Difference, which means the State would be getting less than in-value. Thus, the State is suffering a debit and, of course, AOC only gets its minimum return. In Years 3 and 4 the Gross Difference exceeds the minimum Deduction so the State gets its in-value and AOC gets slightly more than the minimum. This change occurs because the interest payments are going down.

By the sixth year the Gross Difference exceeds the Deductions and the State moves into the Premium position.

The State gets an increased premium which rapidly accelerates when

TABLE I

ALASKA OIL & CHEMICAL COMPANY

PROBABLE FORECAST

SALES LESS IN-VALUE = $7.50/bbl.

(Thousands of Dollars Unless Otherwise Noted)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984-1992 (1-10)	1993	1994	1995	1996	1997	Total to Average	%
Oil Purchasing, BOPD:																	
[illegible]	1,503.0	1,500.0	1,500.0	1,416.0	1,338.0	1,265.0	1,198.0	1,114.0	1,035.0	963.0	1,282.9	895.0	831.0	775.0	721.0	670.0	1,114.9	-
[illegible]	187.5	187.5	187.5	177.0	167.3	158.1	149.8	139.3	299.4	120.4	160.4	111.9	104.1	96.9	90.1	83.8	139.4	-
Royalty Oil Deduction, BOPD:																	
Alaska Petrochemical Refinery[1]	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	350.0	34.7	32.3	30.1	28.0	26.0	501.1	65.7
[illegible]	33.4	33.4	33.4	29.6	26.1	22.7	19.7	15.8	12.7	8.9	235.2	6.1	5.7	5.3	4.9	4.6	261.8	34.3
Total	68.4	68.4	68.4	64.6	61.1	57.7	54.7	50.8	47.2	43.9	585.2	40.8	38.0	35.4	32.9	30.6	762.9	100.0
Alaska Petrochemical Refinery Fuel Deduction in Royalty Oil, BOPD:	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	350.0	34.7	32.3	30.1	28.0	26.0	501.1	100.0
Royalty Oil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0
Total	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	350.0	34.7	32.3	30.1	28.0	26.0	501.1	100.0
[illegible]	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	2,625,000	260,250	242,250	225,750	210,000	195,000	3,758,250	-
Royalties:																	
[illegible]	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	50,000	50,000	50,000	50,000	50,000	250,000	-
[illegible]	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	-	-	-	-	-	1,000,000	-
[illegible]	60,200	54,200	54,000	46,800	37,600	32,500	25,200	18,400	10,000	3,600	360,000	-	-	-	-	-	360,000	-
[illegible]	40,000	40,000	40,000	32,850	36,450	40,000	40,000	40,000	40,000	40,000	359,300	40,000	40,000	40,000	40,000	40,000	559,300	-
Total	40,000	40,000	40,000	32,850	36,450	40,000	40,000	40,000	40,000	40,000	359,300	40,000	40,000	40,000	40,000	40,000	559,300	-
Subtotal	250,200	244,200	244,000	262,500	262,500	262,500	255,200	248,800	240,800	233,600	2,578,600	130,000	130,000	130,000	130,000	130,000	1,228,600	-
[illegible]	(15,000)	(9,200)	(1,500)	-	-	100	7,100	14,500	21,700	28,900	46,400	110,250	112,250	95,750	80,000	65,000	529,650	-
[illegible]	(0.43)	(0.252)	(0.04)	-	-	-	0.21	0.41	0.62	0.83	0.13	3.25	3.48	3.18	2.86	2.53	1.06	

Note: [illegible] 100,000 B/D or 8% of Alaska's Royalty Oil, whichever is less.

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the interest and depreciation terms of the formula are extinguished. However, this is just when the volumes available begin to fall off so, while the unit premiums are high, the average over the life is $1.06/B. This clearly illustrates the effect on the viability of any surplus capacity. Put another way, the State and AOC have a strong incentive to keep the petrochemical refinery full as long as possible.

While the preceeding Table, Table I, clearly illustrates the working of the contract, it does not take into account the benefits which would accrue to the State and AOC of taking maximum advantage of accelerated depreciation and investment tax credit. Table I-A opposite illustrates the same case taking advantage of maximum tax depreciation and investment tax credit.

It can be seen that all the numbers down through Gross Difference are identical. However, the combination of accelerated depreciation and income tax credit reduce the taxes for the first six years so the State is not in a Debit position. However, after the seventh year the taxes jump up when the investment tax credit has run out and the depreciation is getting low and the State moves into a Debit position.

It should be noted that, while investment tax credits reduce taxes, rapid depreciation merely changes the timing on when the taxes are paid. The net overall effect is a rearrangement of the Premium and Debits and a slight increase in the Premium due to the operation of the investment tax credit.

TABLE I-A

ALASKA OIL & CHEMICAL COMPANY

PROBABLE FORECAST - MINIMUM TAX

SALES LESS IN-VALUE = 57.50/BBL

(Thousands of Dollars Unless Otherwise Noted)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1984-1992 (1-10)	1993	1994	1995	1996	1997	Total to Average	%
	1,500.0	1,500.0	1,500.0	1,416.0	1,338.0	1,265.0	1,198.0	1,114.0	1,035.0	963.0	1,282.9	895.0	733.0	725.0	721.0	620.0	1,115.9	-
	187.5	187.5	187.5	177.0	167.3	158.1	149.8	139.3	299.4	120.4	160.4	111.9	104.1	90.7	90.1	83.8	139.4	-
	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	350.0	34.2	32.3	30.1	28.0	26.0	501.1	65.7
	33.4	33.4	33.4	29.6	26.1	22.7	19.2	15.8	12.2	8.9	213.2	6.1	5.7	5.1	4.9	4.6	261.8	34.3
	68.4	68.4	68.4	64.6	61.1	57.7	54.2	50.8	47.2	43.9	563.2	40.8	38.0	35.4	32.9	30.6	762.9	100.0
	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	350.0	34.2	32.3	30.1	28.0	26.0	501.1	100.0
	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0.0
	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	350.0	34.2	32.3	30.1	28.0	26.0	501.1	100.0
	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	2,625,000	240,250	242,250	225,750	210,000	195,000	3,758,250	-
	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	50,000	50,000	50,000	50,000	50,000	750,000	-
	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	-	-	-	-	-	1,000,000	-
	61,200	61,200	55,080	46,200	33,600	22,600	25,200	19,800	10,800	1,600	355,080	-	-	-	-	-	460,080	-
	-	-	11,000	23,500	30,500	36,500	42,060	82,000	90,000	96,000	411,560	30,000	30,000	11,000	40,000	40,000	552,560	-
	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	40,000	400,000	50,000	50,000	50,000	40,000	40,000	630,000	-
	251,200	251,200	256,080	260,300	260,100	258,900	257,200	286,000	280,800	279,600	2,643,500	190,000	190,000	161,000	130,000	130,000	3,254,500	
	11,300	11,300	6,500	2,500	2,500	1,600	5,300	(17,500)	(18,300)	(17,100)	(18,500)	160,250	142,250	124,750	80,000	65,000	551,250	-
	.17	.17	.16	.06	.02	.10	0.35	(.50)	(.52)	(.49)	(.05)	4.62	4.40	4.14	2.86	2.50	1.11	

(1) 40% of Net Income Before Depletion, Alaska Royalty Oil, whichever is less.

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Table II opposite has been included to reflect the operation of the formula based on the Van Poolen report Case 3A. Because of the very rapid drop off in available oil beginning in 1990, the State moves back into a Debit position that year. If, indeed, the final contracts and anticipated oil deliveries indicate Debits of this magnitude, the State would have to find offsetting factors such as job opportunities, diversification, etc., before it could decide it wants AOC to proceed.

For the reasons set forth in Appendix I, AOC does not believe the Van Poolen report fully reflects the oil availability. However, it believes the State should exercise that judgment when the final information is available.

TABLE II

ALASKA OIL & CHEMICAL COMPANY

VAN POOLEN REPORT FORECAST

SALES LESS 10% VALUE = $7.50/BBL.

(Thousands of Dollars Unless Otherwise Noted)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1983-1992	1993	1994	1995	1996	1997	Total In Average	%
	1	2	3	4	5	6	7	8	9	10	(1-10)	11	12	13	14	15		
Oil Production, M/B																	
Proven Reserves	1,500.0	1,500.0	1,500.0	1,500.0	1,444.0	1,252.0	1,104.0	265.0	559.0	439.0	11,353.0	358.0	561.0	448.0	362.0	275.0	881.9	
Sales, Proven Oil	187.5	187.5	187.5	187.5	168.0	144.0	139.0	95.6	68.6	55.9	1,419.1	44.8	57.6	56.0	45.3	33.4	110.5	
Royalty Oil - Alaska, M/B																	
Royalty Interest Retained	15.0	15.0	15.0	15.0	15.0	15.0	15.0	29.7	21.1	17.0	313.0	13.9	17.9	17.4	14.0	10.7	396.9	64.0
Royalty	13.5	13.5	13.5	13.5	26.3	17.6	13.4	9.2	3.7	3.5	204.8	2.5	3.1	3.0	2.5	1.9	217.8	36.0
Total	28.5	28.5	28.5	28.5	41.3	32.6	28.5	38.9	24.8	20.6	517.8	16.4	21.0	20.5	16.5	12.6	614.7	100.0
Net Oil Production, M/B	262,500	262,500	262,500	262,500	262,500	262,500	262,500	227,450	159,750	127,500	2,357,500	104,250	134,250	130,500	105,000	80,250	2,901,250	
Sales Price																	
Operating Costs	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	50,000	50,000	50,000	50,000	50,000	750,000	
Drilling Costs	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	-	-	-	-	-	1,000,000	
Royalties	59,500	61,500	54,000	56,000	79,000	37,600	25,200	15,000	10,000	1,600	360,000	-	-	-	-	-	360,000	
Royalty Tax	30,000	30,000	30,000	32,850	36,450	50,000	50,000	50,000	50,000	40,000	359,300	40,000	40,000	40,000	40,000	50,000	559,300	
Federal	33,000	33,000	30,000	32,850	36,450	50,000	50,000	50,000	50,000	40,000	359,300	50,000	50,000	50,000	50,000	40,000	559,300	
Total Cost	220,500	221,500	214,000	222,500	252,500	237,600	225,200	215,000	210,000	231,600	2,578,600	140,000	140,000	140,000	140,000	140,000	1,558,600	
Profit (Loss)	(15,500)	(8,000)	(1,500)	-	-	100	(1,300)	(25,250)	(81,050)	(106,100)	(231,100)	(25,750)	5,250	500	(25,000)	(49,750)	(326,550)	
Cumulative Profit (Loss)	(15,500)	(23,500)	(25,000)	(25,000)	(25,000)	(24,900)	(26,200)	(51,450)	(132,500)	(238,600)	(469,700)	(495,450)	(490,200)	(489,700)	(514,700)	(564,450)	(891,000)	

Note: All Production is Alaska's Royalty Oil, Whichever Is Less

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Tables III opposite and III-A, overleaf, illustrate the operation of the formula if the State and AOC are able to keep the petrochemical refinery operating at full capacity for 15 years. It is assumed that the Van Poolen volumes would be supplemented by other compatible oil sources so that the petrochemical refinery would operate at full capacity.

Such full capacity operation has a marked effect on the Premium received by the State. Table III has been included to illustrate the operation of the formula. It should be compared to Table I. It will be noted that just filling up the refinery from 501.1 million barrels of oil to 525.0 million barrels increases the premium from $1.06 to $1.35/B for all oil processed.

Table III-A uses the same basis but allows for the effects of rapid depreciation and investment tax credit.

It should be noted that none of these tables illustrates the incentive AOC has to improve the profitability further once the State, on a cumulative basis, gets its in-value. AOC and the State share 10% and 90%, respectively in such Premium.

TABLE III

ALASKA OIL & CHEMICAL COMPANY

FULL CAPACITY OPERATION

SALES LESS IN-VALUE = $7.50/BBL.

(Thousands of Dollars Unless Otherwise Noted)

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1983-1992	1993	1994	1995	1996	1997	Total To Average	
	1	2	3	4	5	6	7	8	9	10	(1-10)	11	12	13	14	15		
Oil Production, M/D																		
Prudhoe Bay Field	1,500.0	1,500.0	1,500.0	1,344.0	1,152.0	1,104.0	765.0	559.0	419.0	358.0	10,211.0	461.0	448.0	362.0	325.0	298.0	294.7	
Less: Royalty Oil	187.5	187.5	187.5	168.0	144.0	138.0	95.6	69.8	54.9	44.8	1,276.6	57.6	56.0	45.3	36.4	29.8	101.0	
Royalty Oil Disposition, M/BBL																		
Arctic Petrochemical Refinery[1]	35.0	35.0	35.0	35.0	35.0	35.0	29.7	21.3	17.0	13.9	291.9	17.9	17.4	14.1	10.7	9.2	361.2	67.8
Otherwise	33.5	33.5	33.5	26.3	17.6	15.4	5.2	3.7	3.0	2.5	173.9	3.1	5.0	2.4	1.9	1.7	196.0	32.2
Total	68.5	68.5	68.5	61.3	52.6	50.4	34.9	25.0	20.0	16.4	465.8	21.0	20.4	16.5	12.6	10.9	557.2	100.0
Arctic Petrochemical Refinery Feed																		
Crudoil by Royalty Oil M/BBL	35.0	35.0	35.0	35.0	35.0	35.0	29.7	21.3	17.0	13.9	291.9	17.9	17.4	14.1	10.7	9.2	361.2	68.8
Other Oil	0.0	0.0	0.0	0.0	0.0	0.0	5.3	13.7	18.0	21.1	58.1	17.1	17.6	20.9	24.3	25.8	163.8	31.2
Total	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	350.0	35.0	35.0	35.0	35.0	35.0	525.0	100.0
Gross Difference	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	2,625,000	262,500	262,500	262,500	262,500	262,500	1,837,500	
Deductions																		
Operating Costs	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	50,000	50,000	50,000	50,000	50,000	350,000	
Depreciation	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	-	-	-	-	-	1,000,000	
Interest	65,200	61,200	55,000	46,800	34,600	27,400	25,200	18,000	10,800	1,600	360,000	-	-	-	-	-	360,000	
Income Tax	40,000	40,000	40,000	32,850	36,450	40,000	40,000	40,000	40,000	40,000	359,300	40,000	40,000	40,000	40,000	40,000	559,300	
Return	40,000	40,000	40,000	32,850	36,450	40,000	40,000	40,000	40,000	40,000	359,300	40,000	40,000	40,000	40,000	40,000	559,300	
Subtotal	295,200	291,200	285,000	262,500	267,500	262,400	255,200	248,000	240,800	233,600	2,578,600	130,000	130,000	130,000	130,000	130,000	1,278,600	
Pretax Profit	(32,700)	(29,700)	(22,500)	-	-	100	7,300	14,500	21,700	28,900	46,500	132,500	132,500	132,500	132,500	132,500	559,000	
Pretax Profit $ per Bbl	(0.35)	(0.32)	(0.24)	-	-	-	0.21	0.41	0.62	0.83	0.13	3.79	3.79	3.79	3.79	3.79	1.35	

Note: [1] 100,000 B/D or 35% of Alaska's Royalty Oil, whichever is less.

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TABLE III-A

ALASKA OIL & CHEMICAL COMPANY

FULL CAPACITY OPERATION - MINIMUM TAX

SALES LESS IN-VALUE = $7.50/BBL.

(Thousands of Dollars Unless Otherwise Noted)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	1991-2000	2001	2002	2003	2004	2005	Total To Payout	%
	1	2	3	4	5	6	7	8	9	10	(1-10)	11	12	13	14	15		
Oil Production, MB/D																		
Taxable Oil	1,500.0	1,500.0	1,500.0	1,354.0	1,152.0	1,104.0	765.0	559.0	439.0	358.0	10,211.0	461.0	448.0	362.0	225.0	238.0	294.2	
Royalty Oil	187.5	187.5	187.5	168.0	144.0	138.0	95.6	69.6	54.9	44.8	1,276.4	57.6	56.0	45.3	28.4	29.8	368.0	
Taxable Oil Disposition, MMBBL																		
Field Extraction of Refinery(1) Fuel	35.0	35.0	35.0	35.0	35.0	35.0	24.2	21.1	17.0	13.9	291.9	17.9	17.4	14.1	10.7	9.2	91.2	44.8
Others	33.4	33.4	33.4	26.1	17.6	15.4	5.2	3.7	3.0	2.5	123.9	5.1	3.0	2.4	1.9	1.2	136.0	66.9
Total	68.4	68.4	68.4	61.1	52.6	50.4	35.9	29.0	20.0	16.4	465.8	21.0	20.4	16.5	12.6	10.9	567.5	100.0
Net Taxable Chemical Output (Less Feedstock Royalties Out Of Ref. Extraction)	35.0	35.0	35.0	35.0	35.0	35.0	29.2	21.1	17.0	13.9	291.9	17.9	17.4	14.1	10.7	9.2	361.2	44.8
Others	0.0	0.0	0.0	0.0	0.0	0.0	5.4	13.7	18.0	14.1	56.1	17.1	17.6	20.9	24.1	25.8	161.6	20.1
Total	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	28.0	350.0	35.0	35.0	35.0	35.0	35.0	525.0	100.0
Net Taxable Chemical Output	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	262,500	2,625,000	262,500	262,500	262,500	262,500	262,500	3,937,500	
Royalties																		
Royalty Oil	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	50,000	50,000	50,000	50,000	50,000	750,000	
Oil Production	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	1,000,000	-	-	-	-	-	1,000,000	
Feedstock	65,500	61,200	54,000	46,800	39,600	32,500	25,200	18,000	10,800	3,600	360,000	-	-	-	-	-	360,000	
Chemicals	-	-	11,000	21,500	31,500	36,000	37,000	82,000	90,000	95,000	414,500	10,000	10,000	11,000	40,000	50,000	575,500	
Total	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	50,000	500,000	50,000	50,000	50,000	50,000	50,000	750,000	
Net Income	256,500	251,200	252,000	249,300	260,100	258,900	257,200	280,000	280,800	279,600	2,655,500	102,000	102,000	101,000	130,000	142,500	3,293,000	
Tax - Credit	11,500	11,500	5,500	2,200	2,500	1,600	5,400	(17,500)	(18,000)	(17,000)	(18,000)	162,500	162,500	161,500	132,500	132,500	733,500	
Income Tax Rate	0.15	0.15	0.16	0.06	0.02	0.10	0.15	(0.50)	(0.50)	(0.49)	(0.05)	4.66	4.64	4.61	3.79	3.74	1.34	

(1) Net Taxable Oil Production Less Feedstock Royalties Oil, whichever is less.

(2) Credit Applied

WHAT IS THE BOTTOM LINE?

AOC believes that the State should use its Prudhoe Bay royalty oil to sponsor a petrochemical refinery in Alaska. However, if and when the State so decides by taking its oil in kind, it assumes the same risks and enjoys the same potential for profit as does any owner of property. Thus, AOC believes the State must be involved in the decision making and does not believe the State should be bound by guidelines which have proved to be unrealistic. Its real protection lies not in guidelines, but in a thorough understanding of the industry it proposes to sponsor.

AOC's principals have a demonstrated track record and, to quote Bonner & Moore:

> "The development plan set forth by AOC is sound. It has the very important merit of bringing more chemical companies into Alaska. This also tends to alleviate the competitive problems mentioned earlier. If petrochemical plants were built by present market suppliers around a core crude-processing facility, then those plants would almost assuredly be planned to supply new increments of demand for each company's existing markets. This would be a healthy kind of development."

In developing its proposal to implement the above plan, AOC has tried to be candid. It has worked hard to develop a workable concept and a contract which fits the real world. In actuality, it costs the State nothing more than it will spend otherwise.

Last, but certainly not least, resident Alaskans are equal in management and development of the project.

APPENDICES

APPENDIX I AOC Forecast of Prudhoe Bay Production

APPENDIX II Recalculation of the Deemed Economic Price

APPENDIX I

AOC FORECAST OF PRUDHOE BAY PRODUCTION

During the negotiations, AOC repeatedly asked for the State's forecast of the oil volumes that would be available under the contract. AOC was referred to the Department of Natural Resources and obtained some suggestions based on the Van Poolen report. The only other guideline from the State was that the maximum would be 85% of the available royalty oil. Using this information, on December 3, 1977 AOC transmitted to Joe Moore and Commissioner LeResche its estimate of the oil that would be available. Such estimate included an assumed additional 300,000 B/D of oil from other sources by 1982, bringing the total to 1.5 million B/D. The information supplied by the Department indicated that the decline might be 9% or 10% per year and, therefore, these volumes were declined at 9% per year, starting in 1986.

On February 1, in response to a written inquiry, Commissioner LeResche identified Case 3A of the Van Poolen report as the appropriate forecast. In the interim, however, AOC had made its own independent evaluation of the likely production rates. These have been identified in the main body of this report. Confidential information available to AOC indicates that a 7% decline, starting in 1986, is indicated rather than the previously used 9%. This, in effect, allows for some tertiary recovery. Thus, AOC has modified its December 3, 1977 forecast to reflect this slower rate of decline. Table I-1 shows the development of this forecast. It will be noted that this forecast shows the highest rate of production of any forecast in the latter years. AOC believes it to be a reasonable forecast.

TABLE I-1

ALASKA OIL & CHEMICAL COMPANY

PRUDHOE BAY

AOC FORECAST OF PRODUCTION

Thousand Barrels per Day

	Prudhoe Bay	Other	Total	Available Royalty @ 12.5%	Plant Capacity or 85% of Available
1978	1,000	-	1,000	125.0	
1979	1,200	-	1,200	150.0	
1980	1,200	100	1,300	162.5	
1981	1,200	200	1,400	175.0	
1982	1,200	300	1,500	187.5	
1983	1,200	300	1,500	187.5	100.0
1984	1,200	300	1,500	187.5	100.0
1985	1,200	300	1,500	187.5	100.0
1986	1,116	300	1,416	177.0	100.0
1987	1,038	300	1,338	167.3	100.0
1988	965	300	1,265	158.1	100.0
1989	898	300	1,198	149.8	100.0
1990	835	279	1,114	139.3	100.0
1991	776	259	1,035	129.4	100.0
1992	722	241	963	120.4	100.0
1993	671	224	895	111.9	95.1
1994	624	209	833	104.1	88.5
1995	581	194	775	96.9	82.3
1996	540	181	721	90.1	76.6
1997	502	168	670	83.8	71.2

OKW
February 1978

APPENDIX II

RECALCULATION OF THE DEEMED ECONOMIC PRICE

The "in-values" developed in the Bonner & Moore report are based on the stipulated 1.2 or 1.8 million B/D of North Slope production. AOC believes the Sohio pipeline project (or its equivalent) will be built and therefore AOC believes $6.33 is a reasonable "in-value" in 1985. (Case D in Bonner & Moore report.)

It should be noted that at 1.2 million B/D the maximum available royalty oil assuming only 85% is available is only 130,000 B/D and that at 1.8 million B/D is only 190,000 B/D. Thus, only at the assumed 1.8 million B/D rate could a 150,000 B/D refinery be satisfied during the peak years, and in no case can a 250,000 B/D refinery be satisfied with royalty oil alone.

The economic calculations are based on an assumption that the facilities will operate at <u>full rated capacity</u> for 16 years. AOC contends that with the forecast volumes available it is unrealistic to calculate economics based on assumed full capacity operation. AOC has, therefore, computed the actual amount of royalty oil that would be available to service all three refineries. Table II-1 shows the forecast utilizing as a basis AOC's forecast. As mentioned previously, this is the most optimistic forecast AOC has found. In all cases it has been assumed that the refineries would operate 350 days per year, but would have sufficient storage to take crude oil every day in the year. Again, this is the most optimistic approach. It will be noted that even for AOC's proposed 100,000 B/D refinery there is a shortfall, with the average oil available over 16 years being slightly under 90,000 B/D. The

TABLE II-1

ALASKA OIL & CHEMICAL COMPANY

FORECAST THROUGHPUT FOR VARIOUS REFINERIES

USING PRUDHOE BAY ROYALTY OIL

	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	Total	Avg. B/D
Available																		
Prudhoe Bay Royalty ACC Forecast																		
MB/D	187.5	187.5	187.5	177.0	167.3	158.1	149.8	139.3	129.4	120.4	111.9	104.1	96.9	90.1	83.8	77.9	2,168.5	135.5
365 Days MMB	68.4	68.4	68.4	64.6	61.1	57.7	54.7	50.8	47.2	43.9	40.8	38.0	35.4	32.9	30.6	28.4	791.3	135.5
Disposition																		
100,000 B/D Refinery:																		
350 Days MMB[1]	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	35.0	34.7	32.3	30.1	28.0	26.0	24.1	525.2	89.9
Other	33.4	33.4	33.4	29.6	26.1	22.7	19.7	15.8	12.2	8.9	6.1	5.7	5.3	4.9	4.6	4.3	266.1	45.6
	68.4	68.4	68.4	64.6	61.1	57.7	54.7	50.8	47.2	43.9	40.8	38.0	35.4	32.9	30.6	28.4	791.3	135.5
150,000 B/D Refinery:																		
350 Days MMB[1]	52.5	52.5	52.5	52.5	51.9	49.0	46.5	43.2	40.1	37.3	34.7	32.3	30.1	28.0	26.0	24.1	653.2	111.8
Other	15.9	15.9	15.9	12.1	9.2	8.7	8.2	7.6	7.1	6.6	6.1	5.7	5.3	4.9	4.6	4.3	138.1	23.7
	68.4	68.4	68.4	64.6	61.1	57.7	54.7	50.8	47.2	43.9	40.8	38.0	35.4	32.9	30.6	28.4	791.3	135.5
250,000 B/D Refinery:																		
350 Days MMB[1]	58.1	58.1	58.1	54.9	51.9	49.0	46.5	43.2	40.1	37.3	34.7	32.3	30.1	28.0	26.0	24.1	672.4	115.1
Other	10.3	10.3	10.3	9.7	9.2	8.7	8.2	7.6	7.1	6.6	6.1	5.7	5.3	4.9	4.6	4.3	118.9	20.4
	68.4	68.4	68.4	64.6	61.1	57.7	54.7	50.8	47.2	43.9	40.8	38.0	35.4	32.9	30.6	28.4	791.3	135.5

Note: (1) Refinery Capacity or 85% of available, whichever is smaller

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150,000 B/D refinery, because it takes more in the peak years, would average almost 112,000 B/D, and the 250,000 B/D refinery would average 115,000 B/D.

Since Bonner & Moore's economics were based on full capacity operation, AOC has recalculated Bonner & Moore's economics including the revised economics for ALPETCO shown in Joe Moore's letter of February 10. The results of these calculations are shown in Table II-2.

In making these calculations, AOC has accepted all Bonner & Moore's numbers, except that capital related items have been increased to reflect the lower quantity of royalty oil. It will be noted that in all cases premiums forecast move into substantial debits, ranging from $3.45 debit for ALPETCO to $0.82 debit for Alaska Petroleum Company. Put another way, these deemed values would be those that would flow if the optimistic AOC volumes alone were available for the proposed refinery. AOC believes this further demonstrates that the concept of very large in-State facilities needs close examination by the Royalty Board.

TABLE II-2

ALASKA OIL & CHEMICAL COMPANY

ADJUSTED DEEMED ECONOMIC PRICE

	ALPETCO		Petrofining		APC	
	At Rated Capacity 150 MB/D	Available Royalty Oil 111.8 MB/D	At Rated Capacity 250 MB/D	Available Royalty Oil 115.1 MB/D	At Rated Capacity 150 MB/D	Available Royalty Oil 111.8 MB/D
Operating Charge Calculation						
Direct Operating Expenses	5.00	5.00	0.97	0.97	1.06	1.06
Capital-Related Charges	12.32	16.54	1.83	3.98	2.19	2.94
Total Charges	17.32	21.54	2.80	4.95	3.25	4.00
Deemed Economic Price Calculation						
Average Product Price	28.65	28.65	13.88	13.88	13.74	13.74
Less Total Charges	(17.32)	(21.54)	(2.80)	(4.95)	(3.25)	(4.00)
Crude Oil Purchase Cost	11.33	7.11	11.08	8.93	10.49	9.74
Entitlement Credit	2.30(1)	2.30	2.30	2.30	2.30	2.30
Actual FOB Plant	13.63	9.41	13.38	11.23	12.79	12.04
Crude Tankering	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)	(0.37)
Taps Tariff	(6.16)	(6.16)	(6.16)	(6.16)	(6.16)	(6.16)
Deemed Economic Price	7.10	2.88	6.85	4.70	6.26	5.51
Anticipated Premium (Debit)						
Deemed Economic Price	7.10	2.88	6.85	4.70	6.26	5.51
In-Value	6.33	6.33	6.33	6.33	6.33	6.33
Premium (Debit)	0.77	(3.45)	0.52	(1.63)	(0.07)	(0.82)

Note: (1) Pursuant to Joe Moore's letter of February 10, 1978

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