-ALASKA-

HISTORIC AND PROJECTED OIL AND GAS CONSUMPTION

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DEPARTMENT OF NATURAL RESOURCES

FOR

ALASKA ROYALTY OIL AND GAS DEVELOPMENT ADVISORY BOARD

AND

THE 11TH ALASKA STATE LEGISLATURE

HISTORIC AND PROJECTED OIL AND GAS CONSUMPTION

for

The Alaska Royalty Oil and Gas
Development Advisory Board

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Table of Contents

	Page
Chapter I: Oil and Natural Gas Consumption in Recent Years	1
Chapter II: Oil and Natural Gas Consumption Projected to 2000	16
Chapter III: Oil and Gas Supply	24
Chapter IV: Surplus Oil and Gas	27
Appendix A: Disposition of Royalty Oil and Gas	29

I. Oil and Natural Gas Consumption in Recent Years

I.A. Total

Combined oil and gas consumption in Alaska is estimated at 64.8 million barrels of crude oil equivalent in 1977, 71.5 million barrels in 1978, and 75 million barrels in 1979. Most of the growth during this period is attributable to two industrial uses of petroleum products. These are:

1. Increased use of natural gas in the production of ammonia-urea on the Kenai Peninsula.
2. Use of both natural gas and oil to power the pump stations for the Alyeska pipeline.

A large use of natural gas is reinjection. It is not considered to be consumption because most of the gas which is reinjected to increase the production of oil from a reservoir is eventually recoverable. During the past three years, the amount of gas used for reinjection has increased from 22 million barrels of oil equivalent in 1976 to 101 million barrels of oil equivalent in 1979.

Table 1A displays petroleum liquids and natural gas consumption in commodity units. Petroleum consumption is estimated at 28.5 million barrels in 1979, which is equivalent to 78 thousand barrels daily. Natural gas consumption is estimated at 226 million mcf or 619 thousand mcf daily

TABLE 1A. ALASKA OIL AND GAS USE IN COMMODITY UNITS

	PETROLEUM (barrels)		NATURAL GAS (mcf)		NATURAL GAS (Net of Reinjection) (mcf)	
	Total 10^6	Daily Average 10^3	Total 10^6	Daily Average 10^3	Total 10^6	Daily Average 10^3
1970	--	--	217	594	144	395
1971	--	--	228	625	154	422
1972	--	--	223	611	147	403
1973	--	--	223	611	135	370
1974	--	--	228	625	141	386
1975	--	--	256	701	163	447
1976	24.4	67	271	743	160	438
1977	24.5	67	376	1,030	193	529
1978	27.1	74	603	1,652	217	595
1979 (est.)	28.5	78	731	2,003	226	619

SOURCE: See later tables.

Table 1B converts the totals to barrels of oil equivalents On this basis, natural gas use is approximately five times that of petroleum products and consumption of natural gas (use net of reinjection) exceeds that of petroleum liquids by 50 percent

I.B. Natural Gas

Natural gas uses in order of quantities utilized in 1979 are as follows (Table 2):

1. Reinjection (69 percent)
2. LNG exports (9.1 percent)
3. Petroleum production related (including refinery and pipeline use) (8.7 percent)
4. Ammonia-urea production (7.1 percent)
5. Electricity generation (3.5 percent)
6. Gas utility sales (1.9 percent)
7. Military consumption (.7 percent)

Recent trends in use and consumption are:

- Gas use for reinjection has increased dramatically with crude oil production from Prudhoe Bay
- Gas exportation as LNG has remained relatively constant
- Gas consumption in petroleum-related uses has doubled in the three years, primarily as the result of gas use at Prudhoe Bay and along the northern portion of the oil pipeline.
- Gas utilization in ammonia-urea production has doubled in the three years with the increase in capacity of the fertilizer plant on the Kenai Peninsula.

TABLE 1B. ALASKA OIL AND GAS USE IN BARRELS OF CRUDE OIL EQUIVALENTS

	PETROLEUM LIQUIDS		NATURAL GAS		NATURAL GAS (Net of Reinjection)		COMBINED OIL AND GAS (Net of Reinjection of Gas)	
	Total 10^6	Daily Average 10^3	Total 10^6	Daily Average 10^3	Total 10^6	Daily Average 10^3	Total 10^6	Daily Average 10^3
1970	--	--	43	119	28	79	--	--
1971	--	--	46	125	31	84	--	--
1972	--	--	45	122	30	81	--	--
1973	--	--	45	122	27	74	--	--
1974	--	--	46	125	28	77	--	--
1975	--	--	51	140	32	89	--	--
1976	25.7	70	54	149	32	88	57.7	158
1977	25.8	71	75	206	39	106	64.8	177
1978	28.5	78	120	330	43	119	71.5	197
1979	30	82	146	400	45	124	75	206

SOURCE: See later tables.

Conversion Factors: 1 barrel of oil = 5 mcf natural gas
1 barrel of oil = .95 barrel petroleum liquids

TABLE 2. ALASKA NATURAL GAS USE
(million mcf)

	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979 (est.)[k]
TOTAL USE[a]	217	228	223	223	228	256.399	271.162	375.832	602.687	730.7
Anchorage Natural Gas Utility Sales[b]	8	10	13	14	15	11.588	12.089	12.218	13.010	13.8
Anchorage Electric Utility Sales[c]	8	10	13	15	17	19.619	22.188	23.590	24.592	25.5
Military Sales[d]	6	7	7	6	6	5.842	5.424	5.100	5.126	5.0
Petroleum Production Related[e]	48	45	33	18	19	34.200	32.426	54.240	61.779	63.7
Miscellaneous Sales[f]						3.037	.187	1.941	2.499	0
TOTAL SALES TO FINAL CONSUMPTION IN ALASKA	70	72	66	53	57	74.286	72.314	97.089	107.006	108
Ammonia-Urea Production[g]	17	19	21	21	22	23.888	24.257	28.620	48.879	52.1
LNG Exports[h]	57	63	60	61	62	64.777	63.509	66.912	60.874	66.2
TOTAL CONSUMPTION	144	154	147	135	141	162.951	160.080	192.621	216.759	226.3
Reinjection[i]	73	74	76	88	87	93.448	111.082	183.211	385.928	504.4

TABLE 2. NOTES

Note: Figures before 1975 from Sweeney et al, Natural Gas Demand and Supply to the Year 2000 in the Cook Inlet Basin of South Central Alaska, Stanford Research Institute prepared for Pacific LNG Company, November 1977, Table 3, page 10, except for Anchorage Natural Gas Utility Sales.

a. State of Alaska Report of Gas Disposition, Monthly Report of State of Alaska Division of Oil and Gas Conservation.

b. Annual Financial Report to Alaska Public Utilities Commission by Anchorage Natural Gas.

Utility sales from source (b) plus Beluga River Gas Field Sales to Chugach Electric from source (a).

d. Harold Schmidt, Alaska Gas and Service Company.

e. From source (a) the sum of vented and flared gas, gas used on the lease, shrinkage, and sales from the following fields: Granite Point, Middle Ground Shoal, Nicolai Creek, Swanson River, Trading Bay, and Prudhoe Bay. Since 1978, it also includes Prudhoe Bay other category.

f. This is a residual consisting primarily of small users on the Kenai Peninsula and at Barrow.

g. Kenai and Beaver Creek Gas Field Sales monthly compilation of the State of Alaska Division of Oil and Gas Conservation, calculation of sales to Collier Chemical, plus source (a) sales from McCarthur River field.

h. Source (g) calculation of sales to Phillips LNG plus source (a) sales from North Cook Inlet field.

i. Source (a) plus source (c) calculation of gas rentals from Kenai gas field.

k. Based upon ten months actually reported to source (a) and source (g). No 1979 source (b) available.

- Gas use to generate electricity for Anchorage and surrounding communities continues to increase. Growth in the past three years has averaged about 5 percent annually. This is substantially below the growth rate experienced in the early part of the decade.
- Gas utilities sales growth has averaged about 4 percent over each of the past three years. This is attributable both to a slow-down in the growth rate of Anchorage and to mild winters for several years
- Military sales continue their moderate decline which has reduced their annual consumption by about 25 percent since the early 1970s also may be partially attributable to the recent mild winters experienced by Anchorage.

There are three natural gas market areas within the state. Prudhoe is the largest, with all of its production either reinjected or utilized in the production and transportation of crude oil (including indirect uses such as electricity generation for administrative facilities). Estimated 1979 production from Prudhoe Bay is 427 million mcf, with about 90 percent reinjected

Barrow is the smallest market, with 1979 production estimated at less than 1 million mcf. Uses at Barrow are primarily government related and utility sales

Cook Inlet is the remaining market, with 1979 production estimated at 303 million mcf. The ranking of important uses of gas from the Cook

Inlet field is similar to that of the state taken as a unit except that reinjection declines in relative importance and petroleum production-related uses are reduced to fifth place in the ranking. That ranking as well as percentage of use is as follows:

1. Reinjection (39 percent)
2. LNG exports (22 percent)
3. Ammonia-urea production (17 percent)
4. Electricity generation (8 percent)
5. Petroleum-production related (7 percent)
6. Gas utility sales (5 percent)
7. Military consumption (2 percent)

I.C. Petroleum Liquids

The largest use of petroleum liquids is for transportation in motor vehicles (Table 3). In 1979, this use accounted for 70 percent of estimated consumption, with 20.1 million barrels. Next in order of importance is space heating, with an estimated 3.5 million barrels, or 12 percent. The oil pipeline is the next largest consumer, with 2.6 million barrels, or 9 percent. Electric utilities account for about 2.3 million barrels, or 8 percent of consumption.

It is important to note that among the motor vehicle fuels, consumption of jet fuel is highest. In 1979, over 50 percent of motor vehicle liquid fuels use was for jet aircraft. Recent trends in consumption are as follows:

TABLE 3. ALASKA PETROLEUM LIQUIDS CONSUMPTION

(million barrels of product)

Year	Transportation	Pipeline	Space Heat	Electric Utilities	Total
1970	--	0	--	--	--
1971	12.0	0	--	--	--
1972	13.1	0	--	--	--
1973	14.9	0	--	--	--
1974	16.7	0	--	--	--
1975	18.5	0	--	--	--
1976	18.4	0	3.7	2.3	24.4
1977	17.4	1.3	3.5	2.3	24.5
1978	18.7	2.6	3.5	2.2	27.1
1979 (est.)	20.1	2.6	3.5	2.3	28.5

SOURCE: See following tables.

- Use of motor vehicle fuels increased from a four-year plateau as a result of a sharp increase in the consumption of jet fuel (Table 4). In contrast, gasoline consumption has increased at only about 3 percent annually since 1976; and diesel fuel consumption, which declined sharply after the completion of the oil pipeline, increased in 1978 but fell again in 1979

is estimated that petroleum liquids use for space heating has remained fairly constant over the past three years since population growth outside Anchorage has been moderate (Table 5).

- Pipeline consumption commenced in 1977.

is estimated that petroleum liquids use for electricity generation has remained fairly constant over the past three years since population growth outside the Anchorage-Fairbanks railbelt area has been moderate.

TABLE 4A. ALASKAN CONSUMPTION OF MOTOR VEHICLE FUELS: GASOLINE

(million gallons)

	Highway		Marine		Aviation		Total		Grand Total
Year	Taxable	Exempt[a]	Taxable	Exempt[b]	Taxable	Exempt[a]	Taxable	Exempt	
1971	100.136	12.929	5.645	.012	8.588	2.595	114.369	15.536	129.905
1972	112.129	28.435	4.688	.141	9.288	4.130	126.105	32.706	158.811
1973	119.550	14.752	6.395	.023	10.714	1.819	136.659	16.594	153.253
1974	128.850	12.634	6.352	.025	13.194	1.728	148.396	14.387	162.783
1975	167.575	7.203	5.238	.200	15.275	1.215	188.088	8.618	196.706
1976	182.875	5.091	5.855	.254	13.784	1.289	202.514	6.634	209.148
1977	181.119	5.094	6.060	.388	15.249	1.521	202.428	7.003	209.431
1978	178.069	9.503	7.160	.554	15.145	.718	201.374	10.775	212.149
1979 (est)	175.434	24.397	7.801	1.887	16.563	.569	199.798	26.853	226.651

[a] Military and government

[b] Military, government, and nonpropulsion uses

SOURCE: Department of Revenue, Motor Fuel Tax Returns

TABLE 4B. ALASKAN CONSUMPTION OF MOTOR VEHICLE FUELS: DIESEL

(million gallons)

	Highway		Marine			Total		Grand Total
Year	Taxable	Exempt[a]	Taxable	Exempt-A[b]	Exempt-B[c]	Taxable	Exempt	
1971	34.995	71.769	20.843	2.737	NA	55.838	74.506	130.344
1972	28.723	55.054	20.823	7.007	NA	49.546	62.061	111.607
1973	24.706	89.109	21.426	13.041	5.586	46.132	107.736	153.868
1974	65.563	100.247	21.547	1.884	6.809	87.110	108.940	196.050
1975	132.835	71.166	21.799	7.403	9.156	154.634	87.725	242.359
1976	139.665	65.274	24.945	4.072	10.353	164.610	79.699	244.309
1977	98.704	45.162	32.217	11.719	NA	130.921	56.881	187.802
1978	101.598	54.050	41.869	10.116	NA	143.467	64.166	207.633
1979 (est)	58.959	57.781	54.008	6.176	NA	112.967	63.957	176.924

[a]Military, government, and electric utility power generation

[b]Military and government

[c]Nonpropulsion

SOURCE: Department of Revenue, Motor Fuel Tax Returns

TABLE 4C. ALASKAN CONSUMPTION OF MOTOR VEHICLE FUELS: JET FUEL

(million gallons)

Year	Taxable[a]	Exempt[b]	Bonded[c]	Exempt and Bonded	Grand Total
1971	48.968	194.485	NA	194.485	243.453
1972	46.594	231.581	NA	231.581	278.175
1973	35.293	150.055	131.452	281.507	316.800
1974	79.647	144.386	116.939	261.375	341.022
1975	96.586	215.366	26.035	241.401	337.987
1976	95.488	189.734	32.765	222.499	317.987
1977	103.164	190.382	40.517	230.899	334.063
1978	113.006	220.789	29.776	250.565	363.571
1979 (est)	120.022	241.812	76.771	318.583	438.605

[a]Civilian domestic operations

[b]Military and international operations utilizing domestic fuel

[c]International operations utilizing foreign fuel

SOURCE: Department of Revenue, Motor Fuel Tax Returns

TABLE 4D. ALASKAN CONSUMPTION OF MOTOR VEHICLE FUELS: TOTAL

(million gallons)

Year	Gasoline	Diesel	Jet Fuel	Total
1971	129.905	130.344	243.453	503.702
1972	158.811	111.607	278.175	548.593
1973	153.253	153.868	316.800	623.921
1974	162.783	196.050	341.022	699.855
1975	196.706	242.359	337.987	777.052
1976	209.148	244.309	317.987	771.444
1977	209.431	187.802	334.063	731.296
1978	212.149	207.633	363.571	783.353
1979 (est)	226.651	176.924	438.605	842.180

SOURCE: Department of Revenue, Motor Fuel Tax Returns

TABLE 5. ALASKA PETROLEUM LIQUIDS CONSUMPTION
NON-MOTOR VEHICLE FUELS

(million barrels of product)

Year	Pipeline	Space Heat	Electric Utilities	Total
1970	0	--	--	--
1971	0	--	--	--
1972	0			--
1973	0			--
1974	0	--	--	--
1975	0	--	--	--
1976	0	3.674	2.340	6.014
1977	1.3	3.5	2.3	7.1
1978	2.6	3.5	2.2	8.3
1979	2.6	3.5	2.3	8.4

SOURCES: (1976) Goldsmith and Lane, Oil and Gas Consumption in Alaska: 1976 to 2000, prepared for the Alaska Royalty Oil and Gas Development Advisory Board and the 1978 Alaska State Legislature, 1978.

(1977 to date) Space heat - estimated to grow at same rate as population growth outside Anchorage. Electric utilities - estimated to grow at same rate as non-railbelt population.

Pipeline data from Alyeska Pipeline Service Company.

II. Oil and Natural Gas Consumption Projected to 2000

II.A. Summary

By 2000, it is possible that consumption of natural gas (not including reinjection) could increase by 90 percent from 228 to 435 million mcf annually. Consumption of petroleum liquids could increase 130 percent 29.3 to 67.5 million barrels annually (Table 6). Summing annual consumption estimates between 1980 and 2000 results in total natural gas consumption of 8,331 million mcf (8.3 trillion cubic feet) and petroleum liquids consumption of 1,111 million barrels (1.1 billion barrels).

The most rapid growth is likely in industrial use of petroleum liquids which is dominated by the royalty oil refinery use of liquids. Electric utility generation using petroleum liquids should also continue to increase rapidly because of the unavailability of alternative generation modes in many parts of the state combined with continued population expansion. This continued population growth should also contribute to a increase in the use of liquid fuels for transportation. Possibilities for conservation and utilization of alternatives should result in more moderate increases in the use of liquid fuels for space heating

Continued consumer preference for natural gas as a space heating fuel in the Anchorage area combined with rapid population growth will result

TABLE 6. 2000 PROJECTION OF ALASKA OIL AND GAS CONSUMPTION

Liquids = million barrels
Natural Gas = million mcf

	1980	2000	21-Year Total
Transportation			
Liquids	20.5	39	624
Natural Gas	0	0	0
Utility Electricity Generation			
Liquids	2.4	5.7	87
Natural Gas	26	38	738
Space Heat			
Liquids	3.6	6.8	109
Natural Gas	14	31	473
Industrial Use (includes military)			
Liquids	5.8	16	291
Natural Gas	188	366	7,120
Total			
Liquids	29.3	67.5	1,111
Natural Gas	228	435	8,331

SOURCE: See text.

in greatly increased use of gas for this purpose. Industrial use of gas could double, primarily the result of completion of a second LNG facility to ship gas to California. Use of gas for utility electricity generation will expand at a more moderate rate as utilities are forced to switch to alternative generating modes to meet continued load growth

II.B. Sensitivity of Projection

Actual consumption of oil and gas in future years could differ considerably from these projections for many reasons

Industrial consumption is the largest projected end use for gas and subject to the most uncertainty. Table 7 shows what projects have been included in the projection and their average annual consumption rates Changing the assumptions about which large industrial projects will actually be built and their timing could easily change the projection of total natural gas consumption in 2000 by 10-to-20 percent. Industrial use of oil is much smaller as a percentage but is also highly dependent upon the assumptions made about particular projects.

The level of transportation use of liquid fuels is dependent upon a large number of factors. Jet fuel consumption depends primarily on military requirements and international movements. Domestic flights account for the smallest portion of use. Gasoline and diesel use are both heavily dependent upon population and consumption per capita. Use per capita will be influenced positively by increases in real incomes and negatively by higher prices and fuel economy standards in new motor

TABLE 7. POTENTIAL AVERAGE ANNUAL INDUSTRIAL DEMAND FOR OIL AND GAS

USE	OIL (million barrels)	GAS (million mcf)
Included in Projection		
LNG to California	-	160
LNG to Japan	-	80
Oil and Gas Production	1	50
Ammonia-Urea	-	48
Oil Pipeline	3	10
Gas Pipeline	-	15
Alaskan Royalty Oil Refinery	9	-
Military	3	2.5
Not Included in Projection		
Aluminum Smelting	-	20-53
Iron Ore Processing	-	29
Methanol Plant	-	24
Copper Processing	-	22
Polyethylene Plant	-	6

SOURCE: Goldsmith, Scott and Tom Lane. Oil and Gas Consumption in Alaska 1976-2000. Report for Alaska Royalty Oil and Gas Development Advisory Board and Alaska State Legislature, 1978, and author's estimates.

vehicles. Diesel will also be a function of large construction project activity (pipelines, for example) and to a lesser extent of growth of the fishing industry.

Use of fuels for space heating is subject to considerable uncertainty over the next twenty years because of the possibility of the substitution of electricity, generated by hydropower, for oil and gas in the railbelt. Alternatively, there is the possibility of substituting natural gas, from Prudhoe Bay, for liquid fuels in the Fairbanks market. In addition to this uncertainty concerning the modal split, space heating requirements are a function of population, income, and the conservation response to higher energy prices.

Projecting the use of fuels for electricity generation is also subject to uncertainty related to choice of modal split. The ability of Anchorage to provide for expanding electricity load with gas and to continue to use gas for existing load is partially dependent upon the economics of alternatives, but more importantly upon government regulation on the use of gas to generate electricity. For Fairbanks, economics is more clearly a determinant of the potential for switching toward coal, although government regulation is also a factor there. The possible construction of the Susitna hydroelectric project adds another alternative generating mode to the possible substitutes for oil and gas. Electricity consumption, itself, is related to population, income, and price variables

II.C. Projection Assumptions

This projection of oil and gas consumption to 2000 is quite simple and based upon a limited number of assumptions. They are as follows:

- Population in Alaska grows to 800 thousand by 2000 as a result of strong growth of basic industries and heavy state government involvement in stimulation of the private economy.

- Per capita use of transportation fuels remains constant over time. Thus, the combination of high prices and fuel economy standards reduces consumption to the same extent that increasing real incomes and increasing international air traffic increases consumption.

- The space heating modal split remains constant through the projection period. Gas is the preferred fuel for new consumers in the Anchorage region; and fuel oil, elsewhere. New consumers utilize fuel at the same rate as existing consumers, thus balancing the effects of rising real incomes and rising real energy prices

- For electricity consumption in the railbelt, new generation until 1990 is provided by gas in Anchorage and oil in Fairbanks. Subsequently, new load is served by some alternative; but the amount provided by oil and gas does not decline. For the rest of the state, liquid fuel use for electricity generation grows continuously for the next twenty years Anchorage consumption growth is 4 percent annually due to improvements in the heat rates of existing units, while the annual growth rates for Fairbanks and the rest of the state are 5 percent.

- Industrial consumption includes the projects listed in Table 7. The new projects LNG to California, the gas pipeline, and the Alaskan

royalty oil refinery--all begin operation in the early 1980s so that the time profile of industrial consumption rises rapidly to a level about double present use.

- All industrial projects continue at projected annual consumption levels through the year 2000 independent of currently dedicated gas supplies or presently projected supplies of oil.

Note on Data Sources

Natural gas production data is used in conjunction with Anchorage Natural Gas utility sales data to provide a reasonably accurate portrayal of natural gas consumption by use.

No acceptable data source exists for determining petroleum liquids consumption by use. Rough approximations of electric utility consumption can be obtained from electricity generation data. Alaska Department of Revenue motor vehicle fuel reports provide information on transportation fuel consumption but are contaminated by some electricity generation and space heating fuel reported as motor vehicle fuel. Department of Energy petroleum liquids deliveries data is not of a quality to warrant its use at this time.

Consequently, the data presented in this report must be considered to be very rough approximations based upon the author's attempt to provide an overall picture of oil and gas consumption in the state.

The interested reader is referred to the following publications for a more detailed treatment of the data problems surrounding a determination of Alaska energy consumption:

Goldsmith, Scott, and Tom Lane. Oil and Gas Consumption in Alaska 1976-2000. Report for the Alaska Royalty Oil and Gas Development Advisory Board and 1978 Alaska State Legislature. Institute of Social and Economic Research, University of Alaska, 1978.

Goldsmith, Scott, and Kent Miller. Energy Consumption in Alaska. Report for Alaska Department of Commerce and Economic Development, Division of Energy and Power Development. Institute of Social and Economic Research, University of Alaska, 1977.

III. Oil and Gas Supply

The petroleum and natural gas reserves and royalty portion are presented on Tables 8 and 9. It is estimated that the total remaining recoverable reserves of natural gas are about 25,310 billion cubic feet (BCF). The State's royalty portion amounts to about 2,908 BFC

Prudhoe Bay natural gas reserves are the largest share of the State's total reserves. New reservoir models and production information may revise the numbers in the near future, but at this time, it is believed that the Prudhoe Bay gas cap alone may contain 21,000 BCF of recoverable gas. The State's royalty from these reserves would be approximately 2,625 BCF.

Total Cook Inlet reserves comprise only about 17% of the total known reserves in the State, while the Cook Inlet royalty reserves total about 10% of the total State royalties known to exist at this time.

Total remaining recoverable reserves of petroleum are approximately 9,234 million barrels, and Alaska's royalty share amounts to about 1,143 million barrels. Again Prudhoe Bay dominates the picture with an estimated 9,000 million barrels. The royalty share about 1,126 million barrels

Cook Inlet fields comprise about 3% of the total petroleum reserves known in the State. Cook Inlet royalty oil is about 1.5% of the total royalty reserves in Alaska.

A summary of the disposition of the State's royalty oil and natural gas may be found in Appendix A of this report.

TABLE 8

ESTIMATED REMAINING RECOVERABLE
NATURAL GAS RESERVES IN ALASKA AS OF 1/1/79

Field	Total (BCF)	State Royalty (%)	State Royalty (BCF)
Albert Kaloa	0	0	
Beaver Creek	239	0	
Beluga River	1,043	7.99	83.34
Birch Hill	11	0	
Falls Creek	13	0	
Ivan River	101	0	
Kenai	1,506	*	46.5
Lewis River	90	0	
McArthur River	109	12.5	13.63
Moquawkie	0	0	
Nicolai Creek	17	12.5	2.13
North Cook Inlet	1,093	12.5	136.63
North Fork	12	0	
North Middle Ground Shoal	0	12.5	
Prudhoe Bay (Gas Cap)	21,000	12.5	2,625
Sterling	23	2.72237	.63
Swanson River	0	0	
West Foreland	20	0	
West Fork	8	0	
South Barrow	25	0	
TOTAL	25,310		2,907.6

*Due to federal leases in the field, the effective state royalty for the Kenai Unit and the Kenai Deep producing zones are 3.61635% and 1.14069%, respectively. Royalty reserves are 45.2BCF and 1.3BCF, respectively.

Source: Russ Douglas, Alaska Oil and Gas Conservation Commission via phone conversation January 7, 1980

TABLE 9

ESTIMATED REMAINING RECOVERABLE
PETROLEUM RESERVES IN ALASKA AS OF 1/1/79

Field	Total (Million BBLS)	State Royalty (%)	State Royalty (BCF)
Granite Point	22	12.5	3
McArthur River	93	12.5	12
Middle Ground Shoal	66		
Prudhoe Bay	9,000*	12.5	1,126
Swanson River	41		
Trading Bay	12	12.5	2
TOTAL	9,234		1,143

*May be revised as a result of a new model to be completed by mid-1980.

Source: Russ Douglas, Alaska Oil and Gas Conservation Commission via phone conversation January 7, 1980

IV. Surplus Oil and Gas

A comparison of projected consumption levels with current estimated remaining recoverable reserves indicates that presently identifiable Alaskan needs for both oil and gas could be met by Alaskan resources (Table 10).

State royalty oil appears to be sufficient in total to meet Alaskan liquid fuel requirements through 2000. In early years, royalty oil will exceed demand; while later in the 1990s, the reverse will be the case

Royalty gas, from both Cook Inlet and Prudhoe Bay, is insufficient to meet instate gas requirements through 2000. In addition, total present Cook Inlet reserves do not appear to be sufficient to meet total Cook Inlet gas market demand through 2000 as projected

TABLE 10. CALCULATION OF SURPLUS OIL AND GAS

	Oil (million barrels)	Gas (million mcf)
Recoverable Reserves as of January 1, 1979		
Total	9,234	25,310
State Royalty	1,143	2,907.6
Prudhoe Bay		
Total	9,000	21,000
State Royalty	1,126	2,625
Cook Inlet		
Total	234	4,310
State Royalty	17	282.6
Estimated Consumption 1980 - 2000	1,111	8,331

APPENDIX A

DISPOSITION OF ROYALTY OIL AND GAS

by

Edward Park

January 10, 1980

TRADING BAY

Statistics relating to this field are shown on the attached table.

Current Status

All Royalty oil produced from this field is taken in kind and sold to Tesoro-Alaska Petroleum Company.

Gas produced for this field is casinghead gas and was formerly flared. DOGC Flaring Order Number 104 dated June 30, 1971, has prohibited flaring since July 1, 1972, and this gas is now recovered and used locally. This gas is considered to have no value because the costs of extraction, compression, and amortization purportedly exceeds its value; therefore, no royalty is paid.

Recent increases in gas prices still do not exceed operating costs.

Alternative

None

Finding

It is in the best interest of the State to continue taking this gas royalty in value.

Royalty Oil and Gas Status

Unit: Trading Bay

Location: West Side Cook Inlet (Offshore)

Operator: Union

Owners: Union, Amoco, Phillips, Arco, Getty

Leases: ADL 17579, 17594, 17602, 18716, 18729, 18730, 18758, 18772, 18777, 21068

Royalty: 12.5%

Purchaser:	Price $/Mcf	Price $/Bbl	State Royalty Status
Tesoro		7.86 (as of Sept. 1979)	
Date Initial Production:	12-67 (oil) 12-68 (gas)		
Avg. Monthly Production Rate (9/30/79) gas:	140,449 Mcf		RIV
Avg. Monthly Sales 9/30/79) gas:	20,223 Mcf		
Avg. Monthly Production Rate 9/30/79) oil:	162,689 Bbls		RIK
Total Production to 9/30/79 (casinghead) gas:	50,310,571 Mcf		
Total Production to 9/30/79 oil:	78,029,575 Bbls		
Estimated percent produced to 9/30/79	85% Oil		

RIV: Royalty in Value

RIK: Royalty in Kind

KENAI UNIT AND KENAI DEEP

Statistics relating to this field are shown on the attached table.

CURRENT STATUS

The Kenai Unit and Kenai Deep provide most of the gas sales in the Cook Inlet area. The estimated quantity of Alaska State royalty gas sales amounts to approximately 235,000 MCF per month. The State does not receive the full 12 1/2% royalty share because of the predominance of Federal leases in the unit. The price the State receives for its royalty share results from prices paid under existing contracts between the lessees and the purchasers. Anchorage Municipal Light and Power has approached the State to purchase the royalty share.

Alternative

The Anchorage Municipal Light and Power is currently investigating whether or not it would be in their interest to purchase this royalty share. They are also in the process of preparing necessary contracts with the State and Alaska Pipeline. Alaska Pipeline Company will need to receive the gas and deliver to Municipal Light and Power. The impact of such a sale on existing AGAS agreements and the producers and operators of the field is being studied. ML&P desires to have a contract completed for submission to the Royalty Board and Legislature during the current session.

The State could also offer this royalty gas for sale to the other purchasers of gas from this field.

Finding

The State should continue taking this royalty in value while continuing to explore alternative described above.

Royalty Oil and Gas Status

Kenai and Kenai Deep

Location: Kenai, Alaska

Operator: Union

Owner: Union, Marathon, Arco, Chevron, Charles Schraier, Samuel Gray

Leases: Fed. AO28047, A028055, A028056, AO28103, AO28140, AO28142, AO28143
State ADL 22330, 00460, 02397, 00588, 00593, 00594, 02411

Royalty: Sates effective rate is 3.61635% from Kenai Unit and 1.14069% from Kenai Deep

Purchaser:	Royalty Price $/Mcf
City of Kenai	0.29
Collier Chemical Corp.	0.18 & 0.595
Phillips-Marathon LNG	0.485
Alaska Pipeline	0.485
Rental Gas (Swanson River Oil Field)	0.16
Chevron Refining	0.485

		State Royalty Status
Date Initial Production:	1-62	
Avg. Monthly Production Rate (1979)	7,584,844 Mcf	RIV
Cumulative Production to 11/30/79	977,524,397 Mcf	
Estimated Percent Produced to 12/31/78	9%	

RIV: Royalty in Value

McARTHUR RIVER FIELD

Statistics relating to this field are shown on the attached table

Current Status

All Royalty oil produced from this field is taken in kind and sold to Tesoro-Alaska Petroleum Company.

Gas produced for this field is casinghead gas and was formerly flared. DOGC Flaring Order Number 104 dated June 30, 1971 has prohibited flaring since July 1, 1972, and this gas is now recovered and used locally. This gas is considered to have no value because the costs of extraction, compression, and amortization purportedly exceeds its value; therefore, no royalty is paid.

Recent increases in gas prices have not yet reached a high enough value to exceed costs.

There is no current purchaser for the State's royalty gas.

Alternative

There is no present alternative.

Finding

It is in the best interest of the State to continue taking this gas royalty in value.

Royalty Oil and Gas Status

McArthur River Field

Location: West Side Cook Inlet (Offshore)

Operator: Union

Leases: ADL 18777, 17579

Royalty: 12.5%

Purchaser:

	Price $/Mcf	Price $/Bbl	
Tesoro	-	5.94	(as of Sept 1979)

Date Initial Production: 12-67

		State Royalty Status
Avg. Monthly Production Rate to 11/30/79) gas:	1,315,971 Mcf	RIV
Avg. Monthly Sales (gas):	567,080 Mcf	
Avg. Monthly Production Rate (1979) oil:	1,976,904 Bbls	RIK
Total Production to 9/30/79 (casinghead & dry) gas:	192,104,407 Mcf	
Total Production to 9/30/79 oil:	413,242,426 Bbls	
Estimated percent produced 9/30/79 (gas):	38%	
Estimated percent produced 9/30/79 (oil):	77%	

RIV: Royalty in Value

RIK: Royalty in Kind

GRANITE POINT FIELD

Statistics relating to this field are shown on the attached table.

Current Status

All Royalty oil produced from this field is taken in kind and sold to Tesoro-Alaska Petroleum Company.

Gas produced from this field is casinghead gas and was formerly flared. DOGC Flaring Order Number 194 dated June 30, 1971, has prohibited flaring since July 1, 1972, and this gas is now recovered and used locally. This gas is considered to have no value because the costs of extraction, compression, and amortization purportedly exceeds its value; therefore, no royalty is paid. However, very small quantities of the gas are sold to Arco, Amoco, and Union for the prices indicated to support petroleum operations in this area.

Recent increases in gas prices has not as yet become high enough to exceed costs.

There is no current purchaser for the State's royalty gas.

Alternative

There is no present alternative.

Finding

It is in the best interest of the State to continue taking this gas royalty in value.

Royalty Oil and Gas Status

Granite Point Field

Location: West Side Cook Inlet (Offshore)

Operator: Union - Amoco

Leases: ADL 17586, 17587, 18742, 18761

Royalty: 12.5%

Purchaser:

	Price $/Mcf	Price $/Bbl
Tesoro		6.60
Amoco Platform (1)	0.118	
Arco (1)	0.10	
Union (1)	0.118	

Date Initial Production: 12-67

		State Royalty Status
Avg. Monthly Sales (11/30/79 - gas)	6,035 Mcf	
Avg. Monthly Production Rate (1979) gas:	48,280 Mcf	RIV
Avg. Monthly Production Rate (1979) oil:	395,480 Bbl	RIK
Total Production to 11/30/79 (casinghead) gas:	67,315,784 Mcf	
Total Production to 10/31/79 oil:	78,359,120 Bbl	
Estimated percent oil produced to 11/30/79	78%	

Footnotes: (1) Small amount of casinghead gas sold to Amoco for use on platform, the remainder has a negative value.

RIV: Royalty in Value

RIK: Royalty in Kind

PRUDHOE BAY

Statistics relating to this unit are shown on the attached table

Current Status

Small quantities of casinghead gas are presently being sold to the owners of the Trans-Alaska Pipeline. The State is receiving royalty in value with the price being set by the owners of the gas cap. They are using the price established by the Natural Gas Policy Act of 1978 as their guideline. There presently isn't any other market. The State's share of sales is 12 1/2%.

The State's royalty share of the oil produced is 12 1/2% with 1% presently being taken in kind and sold to North Pole Refinery. The State has requested that an additional 10.625% be taken in kind beginning July 1, 1980, which will ultimately go to ALPECTCO. The remainder will continue to be taken in value which presently has the price set at the ceiling price for upper tier oil as set by the Department of Energy. Beginning January 1, 1980, the price of upper tier oil will be decontrolled by the federal government causing the value to go to world market price.

The State currently has three signed royalty contracts with North Pole Refinery, Golden Valley Electric Association, and Alaska Petrochemical Company. These three contracts represent 95% of the State royalty share.

Alternative

The State's alternatives for the disposition of the royalty share of gas and gas liquids which will be available in the future are presently under study.

Finding

It is in the interest of the State to continue taking royalties in kind to enable the State help support in State industry.

Royalty Oil and Gas Status

Unit: Prudhoe Bay

Location: North Slope (Onshore)

Operator: Arco-Sohio/BP

Owners: See Attachment

Leases: See Attachment

Royalty: 12.5%

Purchaser:

	Price $/Mcf	Price $/Bbl
TAPS Owners	1.18	
Topping Plant, Power-plant, & Pump Stations		
Avg. Well Head Price		12.76 (as of Oct 1979)

		State Royalty Status
Date Initial Production:	10-69	
Avg. Monthly Production Rate (10/31/79) gas:	40,133,693 Mcf	RIV
Avg. Monthly Sale (10/31/79 - gas):	844,417 Mcf	
Avg. Monthly Production Rate (10/31/79) oil:	42,551,890 Bbls	RIV
Avg. Monthly Sale (10/31/79) oil:	42,551,890 Bbls	
Total Production to 10/31/79 (gas):	760,045,910 Mcf	
Total Production to 10/31/79 (oil	906,517,002 Bbls	
Estimated Percent Produced to 10/31/79:	11% oil	
Estimated Percent Produced to 10/31/79:	5% gas	

RIV: Royalty in Value

RIK: Royalty in Kind

OWNERS

Amerada Hess—Amerada Hess Corporation

A.R.Co.—Atlantic Richfield Company

BP Alaska—BP Alaska Exploration Inc.

Chevron—Chevron U.S.A., Inc.

Exxon—Exxon Corporation

Getty—Getty Oil Company

Hunt Ind.—Hunt Industries

Caroline Hunt Tr.—Caroline Hunt Trust Estate

Lamar Hunt Tr. Est.—Lamar Hunt Trust Estate

N. B. Hunt—N. B. Hunt

Wm. Herbert Hunt Tr.—William Herbert Hunt Trust Estate

LL&E—The Louisiana Land and Exploration Company

Marathon—Marathon Oil Company

Mobil—Mobil Oil Corporation

Phillips—Phillips Petroleum Company

Placid—Placid Oil Company

Sohio—Sohio Petroleum Company

LEASES

	Description	No. of Acres	ADL Serial No.	Basic Royalty	Lessee of Record	O.R.R. Interest	Working Interest Ownership
	(Umiat Meridian, Alaska)						
	T12N-R11E, Secs. 9, 10	1,280	47445	1/8	Mobil and Chevron		Mobil—50% Chevron—50%
	T12N-R11E, Secs. 11, 12	1,280	28235	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
	T12N-R12E, Sec. 7	580	28254	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
	T12N-R15E, Sec. 23, 24	1,280	34625	1/8	Sohio Petroleum Co.		Sohio—100%
	T12N-R15E, Secs. 21, 22	1,280	34626	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
5	T12N-R15E, Secs. 19, 20	1,225	34627	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
7	T12N-R14E, Secs. 23, 24	1,280	34624	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
8	T12N-R14E, Sec. 22	640	28297	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
9	T12N-R13E, Sec. 19	585	47469	1/8	Mobil and Phillips		Mobil—50% Phillips—50%
0	T12N-R12E, Secs. 23, 24	1,280	47448	1/8	Mobil and Phillips		Mobil—66⅔% Phillips—33⅓%
1	T12N-R12E, Secs. 21, 22	1,280	28256	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
2	T12N-R12E, Secs. 17, 18, 19, 20	2,448	28255	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
13	T12N-R11E, Secs. 13, 14, 23, 24	2,560	28237	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
14	T12N-R11E, Secs. 15, 16, 21, 22	2,560	47447	1/8	Mobil and Chevron		Mobil—50% Chevron—50%
15	T12N-R11E, Secs. 17, 18, 19, 20	2,448	47446	1/8	Mobil and Chevron		Mobil—50% Chevron—50%
16	T12N-R10E, Secs. 13, 24	1,280	25637	1/8	A.R.Co., BP Alaska, Sohio Petroleum Co.		A.R.Co.—50% BP Alaska—37½% Sohio—12½%
17	T12N-R11E, Secs. 29, 30, 32	1,568	47449	1/8	Mobil and Chevron		Mobil—50% Chevron—50%
18	T12N-R11E, Secs. 27, 28, 33, 34	2,560	28239	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
19	T12N-R11E, Secs. 25, 26, 35, 36	2,560	28238	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
20	T12N-R12E, Secs. 29, 30, 31, 32	2,459	28259	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
21	T12N-R12E, Secs. 27, 28, 33, 34	2,560	28258	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
22	T12N-R12E, Secs. 25, 35, 36, N/2 and SE/4 Sec. 26	2,400	28257	1/8	Mobil and Phillips		Mobil—50% Phillips—50%

*See comment on page A-5.

Tract No.	Description	No. of Acres	ADL Serial No.	Basic Royalty	Lessee of Record	O.R.R. Interest	Working Interest Ownership
	(Umiat Meridian, Alaska)						
22A	T12N-R12E, SW/4 Sec. 26	160	28257	1/8	Mobil, Phillips, Chevron		Mobil--33⅓% Phillips--33⅓% Chevron--33⅓%
23	T12N-R13E, Secs. 29, 30, 31, 32	2,459	28279	1/8	Sohio Petroleum Co.		Sohio--100%
24	T12N-R13E, Secs. 27, 28, 33, 34	2,560	28278	1/8	Sohio Petroleum Co.		Sohio--100%
25	T12N-R13E, Secs. 26, 35, 36	1,920	28277	1/8	Sohio Petroleum Co.		Sohio--100%
26	T12N-R14E, Secs. 29, 31, 32	1,871	28299	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
27	T12N-R14E, Secs. 27, 28, 33, 34	2,560	28300	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
28	T12N-R14E, Secs. 25, 26, 35, 36	2,560	28301	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
29	T12N-R15E, Secs. 29, 30, 31, 32	2,459	34628	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
30	T12N-R15E, Secs. 27, 28, 33, 34	2,560	34629	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
31	T12N-R15E, Secs. 25, 26, 35, 36	2,560	34630	1/8	Sohio Petroleum Co.		Sohio--100%
32	T12N-R16E, Secs. 29, 30, 31, 32	2,459	34635	1/8	Sohio Petroleum Co.		Sohio--100%
33	T12N-R16E, Secs. 27, 28, 33, 34	2,560	34634	1/8	Sohio Petroleum Co.		Sohio--100%
34	T12N-R16E, Secs. 25, 26, 35, 36	2,560	34633	1/8	Sohio Petroleum Co.		Sohio--100%
35	T11N-R16E, Secs. 1, 2, 11, 12	2,560	34636	1/8	Sohio Petroleum Co.		Sohio--100%
36	T11N-R16E, Secs. 3, 4, 9, 10	2,560	28337	1/8	Sohio Petroleum Co.		Sohio--100%
37	T11N-R16E, Secs. 5, 6, 7, 8	2,469	28338	1/8	Sohio Petroleum Co.		Sohio--100%
38	T11N-R15E, Secs. 1, 2, 11, 12	2,560	28320	1/8	Sohio Petroleum Co.		Sohio--100%
39	T11N-R15E, Secs. 3, 4, 9, 10	2,560	34631	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
40	T11N-R15E, Secs. 5, 6, 7, 8	2,469	34632	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
41	T11N-R14E, Secs. 1, 2, 11, 12	2,560	28302	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
42	T11N-R14E, Secs. 3, 4, 9, 10	2,560	28303	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
43	T11N-R14E, Secs. 5, 6, 7, 8	2,469	28304	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
44	T11N-R13E, Secs. 1, 2, 11, 12	2,560	28280	1/8	Sohio Petroleum Co.		Sohio--100%
45	T11N-R13E, Secs. 3, 4, 9, 10	2,560	28281	1/8	Sohio Petroleum Co.		Sohio--100%
46	T11N-R13E, Secs. 5, 6, 7, 8	2,469	28282	1/8	Sohio Petroleum Co.		Sohio--100%
47	T11N-R12E, Secs. 1, 2, 11, 12	2,560	28260	1/8	Sohio Petroleum Co.		Sohio--100%
48	T11N-R12E, Secs. 3, 4, 9, 10	2,560	28261	1/8	Mobil and Phillips		Mobil--50% Phillips--50%
49	T11N-R12E, Secs. 5, 6, 7, 8	2,469	47450	1/8	Mobil, Phillips, Chevron		Mobil--33⅓% Phillips--33⅓% Chevron--33⅓%
50	T11N-R11E, Secs. 1, 2, 11, 12	2,560	28240	1/8	A.R.Co. and Exxon		A.R.Co.--50% Exxon--50%
51	T11N-R11E, Secs. 4, 9, 10, N/2 and SW/4 Sec. 3	2,400	28241	1/8	Mobil and Phillips		Mobil--50% Phillips--50%
51A	T11N-R11E, SE/4 Sec. 3	160	28241	1/8	Mobil, Phillips, Chevron		Mobil--33⅓% Phillips--33⅓% Chevron--33⅓%

*See comment on page A-5.

Tract No.	Description	No. of Acres	ADL Serial No.	Basic Royalty	Lessee of Record	O.R.R. Interest	Working Interest Ownership
	(Umiat Meridian, Alaska)						
52	T11N-R11E, Sec. 15	640	28244	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
53	T11N-R11E, Secs. 13, 14, 24	1,920	28245	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
54	T11N-R12E, Secs. 17, 18, 19	1,840	28262	1/8	Chevron		Chevron—100%
54A	T11N-R12E, Sec. 20	640	28262	1/8	Chevron, Mobil, Phillips		Chevron—33⅓% Mobil—33⅓% Phillips—33⅓%
55	T11N-R12E, Secs. 15, 16	1,280	28263	1/8	Mobil and Phillips		Mobil—50% Phillips—50%
55A	T11N-R12E, Secs. 21, 22	1,280	28263	1/8	Mobil, Phillips, Chevron		Mobil—33⅓% Phillips—33⅓% Chevron—33⅓%
56	T11N-R12E, Secs. 13, 14, 23, 24	2,560	47451	1/8	Mobil, Phillips, Chevron		Mobil—33⅓% Phillips—33⅓% Chevron—33⅓%
57	T11N-R13E, Secs. 17, 18, 19, 20	2,480	28283	1/8	Sohio Petroleum Co.		Sohio—100%
58	T11N-R13E, Secs. 15, 16, 21, 22	2,560	28284	1/8	Sohio Petroleum Co.		Sohio—100%
59	T11N-R13E, Secs. 13, 14, 23, 24	2,560	28285	1/8	Sohio Petroleum Co.		Sohio—100%
60	T11N-R14E, Secs. 17, 18, 19, 20	2,480	28305	1/8	Sohio Petroleum Co.		Sohio—100%
61	T11N-R14E, Secs. 15, 16, 21, 22	2,560	28306	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
62	T11N-R14E, Secs. 13, 14, 23, 24	2,560	28307	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
63	T11N-R15E, Secs. 17, 18, 19, 20	2,480	28321	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
64	T11N-R15E, Secs. 15, 16, 21, 22	2,560	28322	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
65	T11N-R15E, Secs. 13, 14, 23, 24	2,560	28323	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
66	T11N-R16E, Secs. 17, 18, 19	1,840	28339	1/8	Sohio Petroleum Co.		Sohio—100%
67	T11N-R16E, Secs. 15, 16	1,280	28340	1/8	Sohio Petroleum Co.		Sohio—100%
68	T11N-R16E, Secs. 13, 14	1,280	28341	1/8	Sohio Petroleum Co.		Sohio—100%
69	T11N-R16E, Secs. 30, 31, 32	1,851	28343	1/8	Sohio Petroleum Co.		Sohio—100%
70	T11N-R15E, Secs. 25, 26, 35, 36	2,560	28324	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
71	T11N-R15E, Secs. 27, 28, 33, 34	2,560	28325	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
72	T11N-R15E, Secs. 29, 30, 31, 32	2,491	28326	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
73	T11N-R14E, Secs. 25, 26, 35, 36	2,560	28308	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
74	T11N-R14E, Secs. 27, 28, 33, 34	2,560	28309	1/8	Sohio Petroleum Co.		Sohio—100%
75	T11N-R14E, Secs. 29, 30, 31, 32	2,491	28310	1/8	Sohio Petroleum Co.		Sohio—100%
76	T11N-R13E, Secs. 25, 26, 35, 36	2,560	28286	1/8	Sohio Petroleum Co.		Sohio—100%
77	T11N-R13E, Secs. 27, 28, 33, 34	2,560	28287	1/8	Sohio Petroleum Co.		Sohio—100%
78	T11N-R13E, Secs. 29, 30, 31, 32	2,491	28288	1/8	Mobil and Phillips		Mobil—50% Phillips—50%
79	T11N-R12E, Secs. 25, 26, 35, 36	2,560	28264	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%

*See comment on page A-5.

Tract No.	Description	No. of Acres	ADL Serial No.	Basic Royalty	Lessee of Record	O.R.R. Interest	Working Interest Ownership
	(Umiat Meridian, Alaska)						
80	T11N-R12E, Secs. 27, 28, 33, 34	2,560	47452	1/8	Mobil, Phillips, Chevron		Mobil—33⅓% Phillips—33⅓% Chevron—33⅓%
81	T11N-R12E, Secs. 29, 30, 31, 32	2,491	47453	1/8	Mobil, Phillips, Chevron		Mobil—33⅓% Phillips—33⅓% Chevron—33⅓%
82	T11N-R11E, Sec. 25	640	28246	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
83	T10N-R12E, Secs. 3, 4, 10	1,920	47454	1/8	Mobil, Phillips, Chevron		Mobil—33⅓% Phillips—33⅓% Chevron—33⅓%
84	T10N-R12E, Secs. 1, 2, 11, 12	2,560	28265	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
85	T10N-R13E, Secs. 6, 7, 8, S/2 and NE/4 Sec. 5	2,341	28289	1/8	Mobil and Phillips		Mobil—50% Phillips—50%
85A	T10N-R13E, NW/4 Sec. 5	160	28289	1/8	Mobil, Phillips, Chevron		Mobil—33⅓% Phillips—33⅓% Chevron—33⅓%
86	T10N-R13E, Secs. 3, 4, 9, 10	2,560	47471	1/8	Amerada Hess, et. al.		Amerada Hess—27% Getty—30.5% LL&E—13.25% Placid—9.125% N. B. Hunt—6.3625% Hunt Ind.—3.8625% Caroline Hunt Tr.—3.3% Wm. Herbert Hunt Tr.—3.3% Lamar Hunt Tr. Est.—3.3%
87	T10N-R13E, Secs. 1, 2, 11, 12	2,560	47472	1/8	Amerada Hess and Getty		Amerada Hess—50% Getty—50%
88	T10N-R14E, Secs. 5, 6, 7, 8	2,501	28313	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
89	T10N-R14E, Secs. 3, 4, 9, 10	2,560	28312	1/8	Sohio Petroleum Co.		Sohio—100%
90	T10N-R14E, Secs. 1, 2, 11, 12	2,560	28311	1/8	Sohio Petroleum Co.		Sohio—100%
91	T10N-R15E, Secs. 5, 6, 7, 8	2,501	28329	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
92	T10N-R15E, Secs. 3, 4, 9, 10	2,560	28328	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
93	T10N-R15E, Secs. 1, 2, 11, 12	2,560	28327	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
94	T10N-R16E, Secs. 5, 6, 7, 8	2,501	28345	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
95	T10N-R16E, Secs. 4, 9	1,280	28344	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
96	T10N-R16E, Sec. 16	640	28347	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%

*See comment on page A-5.

Tract No.	Description (Umiat Meridian, Alaska)	No. of Acres	ADL Serial No.	Basic Royalty	Lessee of Record	O.R.R. Interest	Working Interest Ownership
97	T10N-R16E, Secs. 17, 18, 19, 20	2,512	28346	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
98	T10N-R15E, Secs. 13, 14, 23, 24	2,560	28332	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
99	T10N-R15E, Secs. 15, 16, 21, 22	2,560	28331	1/8	Sohio Petroleum Co.		Sohio—100%
100	T10N-R15E, Secs. 17, 18, 19, 20	2,512	28330	1/8	Sohio Petroleum Co.		Sohio—100%
101	T10N-R14E, Secs. 13, 14, 23, 24	2,560	28315	1/8	Sohio Petroleum Co.		Sohio—100%
102	T10N-R14E, Secs. 15, 16, 21, 22	2,560	28314	1/8	Mobil and Phillips		Mobil—50% Phillips—50%
103	T10N-R14E, Secs. 17, 18, 19, 20	2,512	47475	1/8	Amerada Hess, et. al.		Amerada Hess—25% Getty—25% Marathon—25% Placid—7.5% N. B. Hunt—5% Hunt Ind.—3.125% Caroline Hunt Tr.—3.125% Wm. Herbert Hunt Tr.—3.125% Lamar Hunt Tr. Est.—3.125%
104	T10N-R13E, Secs. 13, 14, 24	1,920	47476	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
105	T10N-R13E, Secs. 15, 16	1,280	28290	1/8	Mobil and Phillips		Mobil—50% Phillips—50%
106	T10N-R14E, Secs. 27, 28	1,280	47482**	1/8	A.R.Co. and Exxon		A.R.Co.—50% Exxon—50%
107	T10N-R14E, Secs. 26, 36	1,280	28316	1/8	Chevron		Chevron—100%
107A	T10N-R14E, Sec. 25	640	28316	1/8	Chevron, Mobil, Phillips		Chevron—33⅓% Mobil—33⅓% Phillips—33⅓%
108	T10N-R15E, Secs. 29, 30, 31, 32	2,523	28335	1/8	Sohio Petroleum Co.		Sohio—100%
109	T10N-R15E, Secs. 33, 34	1,280	28334	1/8	Mobil and Phillips		Mobil—50% Phillips—50%
109A	T10N-R15E, Secs. 27, 28	1,280	28334	1/8	Mobil, Phillips, Chevron		Mobil—33⅓% Phillips—33⅓% Chevron—33⅓%
110	T10N-R15E, Secs. 25, 26, 35, 36	2,560	28333	1/8	Sohio Petroleum Co.		Sohio—100%
111	T10N-R16E, Secs. 29, 30, 31	1,883	28349	1/8	Sohio Petroleum Co.		Sohio—100%
		245,767					

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

**This Tract Number 106 was assigned to A.R.Co. and Exxon. Upon approval of the assignment by the Director a new ADL Serial No. will be given to this Tract.

NICOLAI CREEK

Statistics relating to this unit are shown on the attached table.

Current Status

Gas from this small field, when produced, is used only to provide fuel for platform and shore facilities supporting petroleum production in this area. However, at the present time there is no production. There is no prospective purchaser for the State's royalty share.

Alternative

There is no present alternative to taking this royalty in value.

Finding

It is in the interest of the State to continue taking this royalty in value unless a viable alternative is established.

Royalty Oil and Gas Status

Unit: Nicolai Creek

Location: West Side - Cook Inlet (Onshore-Offshore)

Operator: Texaco

Owner: Texaco, Superior

Leases: Fed. AO34161, ADL 17585, 17598

Royalty: 12.5%

Purchaser:	Royalty Price $/Mcf	State Royalty Status
Amoco (1)		
Date Initial Production	10-68	
Avg. Monthly Production Rate (1979) gas:	-0- Mcf	RIV
Total Production to 10/31/79 (dry gas):	1,062,055 Mcf	

Footnotes: (1) Shut-in

RIV: Royalty in Value

NORTH COOK INLET

Statistics relating to this field are shown on the attached table.

Current Status

Gas from this offshore field is primarily delivered to the Phillips LNG plant and the products are subsequently sold in Japan. However, in 1977, the State entered into agreements with Phillips and Alaska Pipeline Company to sell the royalty share to Alaska Pipeline Company for delivery to the Alaska market. Royalty gas in excess of purchases by Alaska Pipeline Company is purchased by Phillips.

Alternative

There is no alternative since all royalty gas is dedicated to Alaska Pipeline Company until 1984.

Finding

No finding is required.

Royalty Oil and Gas Share

Unit: North Cook Inlet

Location: North Cook Inlet

Operator: Phillips

Owners: Phillips, Chevron

Leases: ADL 17590, 18741, 37831, 18740, 17589

Royalty: 12.5%

Purchaser:	Royalty Price $/Mcf	State Royalty Status
Alaska Pipeline	0.7941 (RIK; as of July 1979)	RIK
Phillips	0.7941 (RIV; as of April 1979)	RIV

Date Initial Production: 3-69

Avg. Monthly Production Rate 9/30/79) gas: 4,503,062 Mcf

Avg. Monthly Sales (9/30/79): 4,494,398 Mcf

Total Production to 9/30/79 (dry gas): 448,507,544 Mcf

Estimated percent produced to 9/30/79: 17%

Comments: Contracts completed 1977 to take in kind for sale to Alaska Pipeline Company.

RIK: Royalty in Kind

RIV: Royalty in Value

STERLING

Statistics relating to this unit are shown on the attached table.

Current Status

This is a small field in Kenai Peninsula. Since Federal leases are involved, the State's royalty share is approximately 2.7%. The only gas sold from this field is consumed locally. There is no gas pipeline currently available to deliver this gas from this field to any other market. Because of the limited reserves, there is no prospect of additional markets.

There is no current purchaser for the State's royalty

Alternative

There is no present alternative to taking this royalty in value.

Finding

It is in the interest of the State to continue taking this royalty in value until a viable alternative is established.

Royalty Oil and Gas Status

Unit: Sterling

Location: Kenai Peninsula (Onshore)

Operator: Union

Owner: Union, Marathon

Leases: Fed. AO28135, AO28063, ADL 01836, 02497, 00479-A

Royalty: 12.5% (1)

Purchaser:	Royalty Price $/Mcf
Sport Lake Greenhouse	0.40

		State Royalty Status
Date Initial Production:	5-62	
Avg. Monthly Production Rate (9/30/79) gas:	988 Mcf	RIV
Avg. Monthly Sales (9/30/79):	988 Mcf	
Total Production to 9/30/79 (dry gas)	1,952,592 Mcf	
Estimated percent produced to 12/31/78:	8%	

Footnotes: (1) A portion of Unit is owned by Federal government. The State's effective rate is 2.72237%.

RIV: Royalty in Value

BELUGA RIVER

Statistics relating to this unit are shown on the attached table

Current Status

This operating unit is located on the North-West side of the Cook Inlet. Chugach Electric is the only current purchaser of this gas. Their contract price is as stated and results in the royalty "in value" price. It is understood that Pacific Alaska LNG has contracted to purchase gas from this field in the future.

Chugach Electric uses this gas for power generation which is delivered to the Anchorage market.

There is no gas pipeline currently available to deliver gas from this field to any other market.

There is no current purchaser for the State's royalty.

Alternative

There is no present alternative to taking this royalty in value, however, the feasibility of a spur gas line for sale in the Kenai area should receive further consideration.

Finding

It is the interest of the State to continue taking this royalty in value until a viable alternative is established.

Royalty Oil and Gas Status

Unit: Beluga River

Location: West Side - Cook Inlet (Onshore)

Operator: Chevron

Owner: Chevron, Arco, Shell

Leases: Fed. AO29656, AO29657, ADL 17658, 17592, 17599, 21128, 21127, 21129, 21126

Royalty: 12.5% 1

Purchaser:	Royalty Price $/Mcf	State Royalty Status
Chugach Electric	.193	RIV

Date Initial Production: 1-68

Avg. Monthly Production Rate (9/30/79) gas: 1,279,068 Mcf

Avg. Monthly Sales (9/30/79): 1,273,758 Mcf

Total Production to 9/30/79 (dry gas): 85,548,001 Mcf

Estimated percent produced to 9/30/79 9%

Footnotes: (1) Federal leases involved. State's effective royalty rate is 7.99%.

RIV: Royalty in Value

MIDDLE GROUND SHOALS FIELD

Statistics relating to this field are shown on the attached table

Current Status

All Royalty oil produced from this field is taken in kind and sold to Tesoro-Alaska Petroleum Company.

Gas produced for this field is casinghead gas and was formerly flared. DOGC Flaring Order Number 104 dated June 30, 1971, has prohibited flaring since July 1, 1972, and this gas is now recovered and used locally. This gas is considered to have no value because the costs of extraction, compression, and amortization purportedly exceeds its value; therefore, no royalty is paid

Recent increases in gas prices has not yet gone high enough to exceed operating costs.

There is no current purchaser for the State's royalty gas.

Alternative

None

Finding

It is in the best interest of the State to continue taking this gas royalty in value until the results of the audit are determined.

Royalty Oil and Gas Status

Middle Ground Shoals Oil Field

Location: East Side - Cook Inlet (Offshore)

Operator: Shell & Amoco

Leases: ADL 17595, 18754, 18756, 18744, 18746

Royalty: 12.5%

Purchaser:

	Price $/Mcf	Price $/Bbl	State Royalty Status
Tesoro		6.31 (as of Sept. 1979)	RIV

Date Initial Production:	9-67
Avg. Monthly Production Rate 9/30/79) gas:	225,922 Mcf
Avg. Monthly Sales 9/30/79) gas:	18,531 Mcf
Avg. Monthly Production Rate 9/30/79) oil:	444,805 Bbls
Avg. Monthly Sales (9/30/79) oil:	55,601 Bbls
Total Production 9/30/79 (casinghead gas):	59,491,440 Mcf
Total Production 9/30/79 oil:	123,278,150 Bbls
Estimated percent produced to 9/30/79 oil:	65%

RIV: Royalty in Value