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NATURAL GAS FIELDS--COOK INLET BASIN, ALASKA

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UNITED STATES DEPARTMENT OF THE INTERIOR

Rogers C.E. Morton, Secretary

BUREAU OF MINES

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NATURAL GAS FIELDS--COOK INLET BASIN, ALASKA

by

Donald P. Blasko 1/

ABSTRACT

Oil and gas production, and production potential, in the Cook Inlet basin area extends from the Kachemak Bay area north to the mouth of the Susitna River and includes fields in offshore Cook Inlet, the west shore of Cook Inlet, and the western half of the Kenai Peninsula. The entire area covers approximately 4,400 square miles. Fourteen non-associated natural gas fields which produce only dry natural gas, one natural gas field with an oil reservoir, and two oilfields with dry natural gas reservoirs have been discovered within that area, (as well as four other oilfields) but only five of the fields are producing non-associated natural gas. To the end of 1973, 731,728,350 MCF 2/ of dry natural gas has been produced. Total combined remaining recoverable reserves of non-associated natural gas from known fields in the Cook Inlet basin is estimated to be nearly 6.8 trillion cubic feet of gas as of 1-1-74. Included in this figure are the reserves of those fields which have not been developed for production which totals nearly 2 trillion cubic feet of gas. The natural gas from fields in the Cook Inlet basin has low sulphur content and high BTU characteristics, making the gas ideal as a

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2/ All gas figures are given at a pressure base of 14.65 psia.

fuel for power generation as well as domestic heating and cooking. All production is from Tertiary formations. (Figure 2)

INTRODUCTION

This report summarizes and consolidates information that is available in one form or another in several published reports 3/ and includes additional gas analyses which have not yet been published by the U.S. Bureau of Mines. It is the intent of this report to provide a concise summary of the characteristics of the Cook Inlet natural gas fields. The information contained herein includes the locations of the gas fields within the Cook Inlet area (Figure 1), the extent of development of the individual fields, the estimated recoverable reserves and production, and an analysis of the natural gas from each field when available.

3/ References utilized in the preparation of this report are listed at the end of the report.

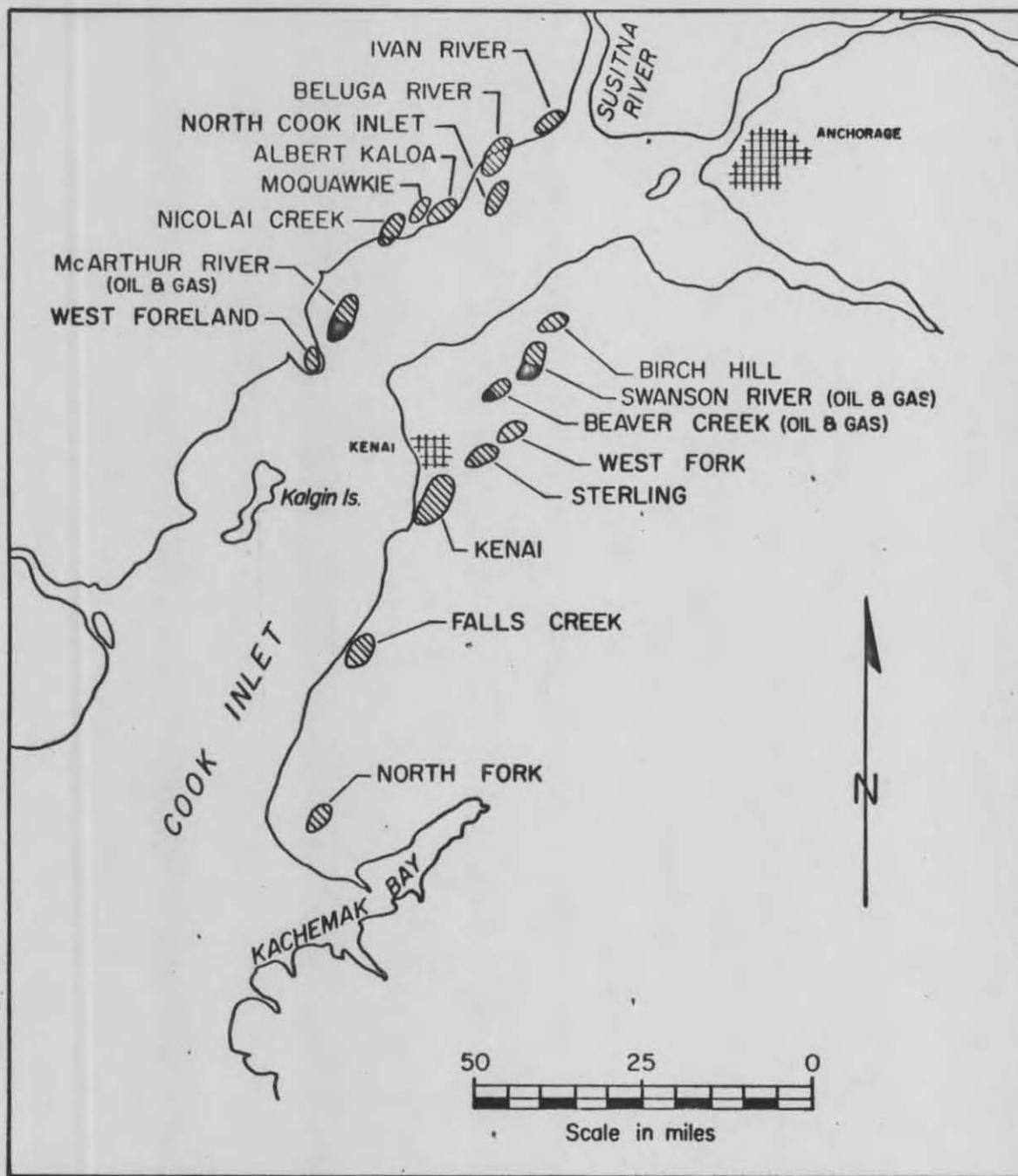


FIGURE 1-NATURAL GAS FIELDS IN THE COOK INLET BASIN,
ALASKA

AGE	PERIOD	GROUP	FORMATION	
C E N T E R T E R I A R Y	C O Z O R I C	K e n a i	S T E R L I N G F O R M A T I O N	
			B E L U G A F O R M A T I O N	
			T Y O N E K F O R M A T I O N	C h u i t n a M e m b e r
				M i d d l e G r o u n d S h o a l M e m b e r
			H E M L O C K F O R M A T I O N	
			W E S T F O R E L A N D F O R M A T I O N	

Adapted from Alaska Geological Society
Stratigraphic Committee, year 1968-1969

FIGURE 2-GENERALIZED TERTIARY STRATIGRAPHY OF COOK
INLET BASIN, ALASKA

Kenai Peninsula Fields

There are eight fields on the western half of the Kenai Peninsula between Turnagain Arm and Kachemak Bay which are capable of producing non-associated dry natural gas. Only two have ever produced for commercial purposes. Limited production from the others has been for test purposes and lease use. Of the non-producing fields, one field has three shut-in wells, four fields are undeveloped one-well fields which do not contain any pipeline or transmission facilities, and one field is an oil field which has a dry gas reservoir in which six wells are completed as dry gas wells. The estimated reserves yet to be recovered from the eight fields combined is 3,520,000,000 MCF of gas. Of this figure, 2,600,000,000 MCF of gas belongs to the two fields which are being produced commercially, leaving 920,000,000 MCF of gas which is shut-in capacity.

Kenai Field

Location: Approximately 70 miles SW of Anchorage, approximately 7 miles south of Kenai.

Discovered: October, 1959

Production started: August, 1961

Discovery well test potential: 11,500 MCFPD

Producing formation: Sterling (4,240'-5,728')
Tyonek (9,155'-9,890')

Status, 1973: 29 wells producing

Production, 1973: 71,344,911 MCF

Cumulative Production, 12-73: 493,776,651 MCF

Estimated Remaining Recoverable Reserves: 2,400,000 MCF

Operator(s): Union Oil Co. of California
other participants: Marathon Oil Co.
Atlantic Richfield Co.
Standard Oil Co. of California

Pipeline: From - Kenai Field
To - North Kenai Area (Collier Carbon and Chemical Alaska Ammonia and Urea Plant; Phillips--Marathon Liquefied Natural Gas Plant; Standard Oil Co. of California Refinery and Asphalt Plant.
Kenai Area (Kenai Pipeline).
Swanson River Oilfield.
Anchorage Area (Alaska Pipeline).

Gas utilized: Collier Carbon and Chemical Alaska Ammonia and Urea Plant; Phillips--Marathon Liquefied Natural Gas Plant; Standard Oil Co. of Calif. Refinery and Asphalt Plant; Nikiski Dock; Standard Oil Co. of Calif. Swanson River Oil Field Gas Re-pressurization Program; Anchorage and Kenai Residential and Commercial Consumers.

Bureau of Mines Gas Analysis:

Methane	<u>98.0 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>Trace %</u>
Ethane	<u>0.2 %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>Trace %</u>
Propane	<u>Trace %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.0 %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>0.7 %</u>	CO ₂	<u>0.1 %</u>
Specific Gravity	<u>N.A.</u>	Helium	<u>Trace %</u>		

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 1,005

Miscellaneous Information:

Sterling Field

Location: Approximately 60 miles SW of Anchorage;
approximately 8 miles east of Kenai.

Discovered: August, 1961

Production started: June, 1962

Discovery well test potential: 3,059 MCFTD

Producing formation: Sterling (5,250'-5,254')

Status, 1973: One well producing

Production, 1973: 26,972 MCF

Cumulative Production, 12-73: 1,781,057 MCF

Estimated Remaining
Recoverable Reserves: 200,000,000 MCF

Operator(s): Union Oil Co. of California
Other participants: Marathon Oil Company

Pipeline: From - Sterling Field
To - Kenai--Soldotna Area

Gas utilized: Residential and commercial consumption
in the Kenai--Soldotna area.

Bureau of Mines Gas Analysis:

Methane	<u>97.7 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>0.0 %</u>
Ethane	<u>0.1 %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>Trace %</u>
Propane	<u>Trace %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.0 %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>2.0 %</u>	CO ₂	<u>0.1 %</u>
Specific Gravity	<u>N.A.</u>	Helium	<u>0.001 %</u>		

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 991

Miscellaneous information:

Beaver Creek Field

Location. Approximately 50 miles SW of Anchorage; approximately 10 miles NE of Kenai.

Discovered: February, 1967

Production started: Field shut-in since discovery; no commercial production.

Discovery well test potential: 11,710 MCF/D

Producing formation: Sterling (5,422'-5,703')
Beluga

Status, 1973: Two wells shut-in
one well producing lease gas

Production, 1973: 54,102 MCF

Cumulative Production, 12-73: 54,102 MCF

Estimated Remaining Recoverable Reserves: 400,000,000 MCF

Operator(s): Marathon Oil Company
Other participants: Union Oil Co. of California

Pipeline: No pipeline facilities exist.

Gas utilized: No gas produced for commercial utilization.

Bureau of Mines Gas Analysis:

Methane	98.3 %	Normal Pentane	0.0 %	Oxygen	0.1 %
Ethane	0.1 %	Isopentane	0.0 %	Argon	Trace %
Propane	Trace %	Cyclopentane	0.0 %	Hydrogen	Trace %
Normal Butane	0.0 %	Hexanes Plus	0.0 %	H ₂ S	0.0 %
Isobutane	0.0 %	Nitrogen	1.4 %	CO ₂	Trace %
	Specific Gravity	0.561		Helium	Trace %

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 998

Miscellaneous information:

The Beaver Creek gas field is undeveloped. Two additional gas wells have been completed and shut-in since the initial discovery. Oil has also been discovered in the field, and is being produced by gas lift. This field is situated within the Kenai National Moose Range administered by the Bureau of Sport Fish and Wildlife, Department of Interior.

Birch Hill Field

Location: Approximately 40 miles SW of Anchorage; approximately 30 miles NE of Kenai.

Discovered: June, 1965

Production started: Field shut-in since discovery; no commercial production.

Discovery well test potential: 6,240 MCFD

Producing formation: Tyonek (8,190'-8,220')

Status, 1973: Field (one-well) shut-in since discovery.

Production, 1973: No recorded production

Cumulative Production, 12-73: 65,331 MCF

Estimated Remaining Recoverable Reserves: 20,000,000 MCF

Operator(s): Standard Oil Co. of California
Other participants: Atlantic Richfield Co.
Union Oil Co. of California
Marathon Oil Company

Pipeline: No pipeline facilities exist.

Gas utilized: No gas produced for utilization.

Bureau of Mines Gas Analysis:

Methane	<u>98.6 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>0.0 %</u>
Ethane	<u>0.2 %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>Trace %</u>
Propane	<u>0.3 %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.1 %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>0.7 %</u>	CO ₂	<u>0.1 %</u>
	Specific Gravity	<u>N.A.</u>		Helium	<u>Trace %</u>

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 1,014

Miscellaneous information: The shut-in one-well Birch Hill gas field is undeveloped. No further well have been drilled since discovery. The field is situated within the Kenai National Moose Range which is administered by the Bureau of Sport Fish and Wildlife, Department of Interior.

Falls Creek Field

Location: Approximately 80 miles SW of Anchorage; approximately 10 miles NE of Minilchik.

Discovered: June, 1961

Production started: Field shut-in since discovery; no commercial production

Discovery well test potential: 1,980 MCFPD

Producing formation: Tyonek (7,562'-7,600')

Status, 1973: No recorded production

Cumulative Production, 12-73: 18,983 MCF

Estimated Remaining Recoverable Reserves: 80,000,000 MCF

Operator(s): Standard Oil Co. of California
Other participants: Atlantic Richfield Co.

Pipeline: No pipeline facilities exist.

Gas utilized: No gas produced for utilization.

Bureau of Mines Gas Analysis:

Methane <u>99.1 %</u>	Normal Pentane <u>0.0 %</u>	Oxygen <u>0.0 %</u>
Ethane <u>0.2 %</u>	Isopentane <u>0.0 %</u>	Argon <u>0.0 %</u>
Propane <u>0.3 %</u>	Cyclopentane <u>0.0 %</u>	Hydrogen <u>0.0 %</u>
Normal Butane <u>0.0 %</u>	Hexanes Plus <u>0.0 %</u>	H ₂ S <u>0.0 %</u>
Isobutane <u>0.0 %</u>	Nitrogen <u>0.3 %</u>	CO ₂ <u>0.0 %</u>
Specific Gravity <u>N.A.</u>		Helium <u>Trace %</u>

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 1,015

Miscellaneous information: The one-well gas field has been shut-in since discovery. The well was directionally drilled to an offshore location. The field is probably developed, as two other wells drilled in an attempt to define the production limits were both dry holes.

North Fork Field

Location: Approximately 110 miles SW of Anchorage; approximately 15 miles N of Homer.

Discovered: December, 1965

Production started: Field shut-in since discovery; no commercial production.

Discovery well test potential: 4,360 MCFPD

Producing formation: Tyonek (8,563'-8,602')

Status, 1973: One well shut-in.

Production, 1973: No recorded production.

Cumulative Production, 12-73: 104,595 MCF

Estimated Remaining Recoverable Reserves: 20,000,000 MCF

Operator(s): Standard Oil Co. of California
Other participants: Atlantic Richfield Company
Sun Oil Company

Pipeline: No pipeline facilities exist.

Gas utilized: No gas produced for utilization.

Bureau of Mines Gas Analysis:

Methane	<u>98.1 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>0.0 %</u>
Ethane	<u>0.3 %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>Trace %</u>
Propane	<u>0.1 %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.0 %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>1.2 %</u>	CO ₂	<u>0.2 %</u>
	Specific Gravity	<u>0.56</u>		Helium	<u>Trace %</u>

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 1,002

Miscellaneous information: The North Fork field has been shut-in since discovery. One additional well has been drilled in an attempt to define the productive capabilities of the field. It resulted in a dry hole.

West Fork Field

Location:	Approximately 50 miles SW of Anchorage; approximately 14 miles NE of Kenai.
Discovered:	September, 1960
Production started:	Field shut-in since discovery; no commercial production.
Discovery well test potential:	2,670 MCFPD
Producing formation:	Sterling
Status, 1973:	One well, shut-in.
: Production, 1973:	No recorded production.
Cumulative Production, 12-73:	No recorded production.
Estimated Remaining Recoverable Reserves:	100,000,000 MCF
Operator(s): Other participants:	Standard Oil Company of California Atlantic Richfield Company Belco Petroleum Company Petroleum Corp. of Texas Halbouty Alaska Oil Company
Pipeline:	No pipeline facilities exist.
Gas utilized:	No gas produced for utilization.
Bureau of Mines Gas Analysis:	None available.
Miscellaneous information:	The one-well West Fork Field has been shut-in since discovery. It may be that the field is developed, for three other wells drilled in the area were dry holes. The field is situated within the Kenai Moose Range which is administered by the Bureau of Sport Fish and Wildlife, Depart- ment of Interior.

Swanson River Field

Location: Approximately 45 miles SW of Anchorage:
approximately 18 miles NE of Kenai.

Discovered: August, 1957

Production started: July, 1960 (Intermittant)

Discovery well test potential: 8,550 MCF/D

Producing formation: Sterling

Status, 1973: Six wells, shut-in since 1967.

Production, 1973: No recorded production.

Cumulative production, 12-73: 11,839,353 MCF

Estimated Remaining
Recoverable Reserves: 300,000,000 MCF

Operator(s): Standard Oil Company of California
Other participants: Atlantic Richfield Corporation
Union Oil Company of California
Marathon Oil Company

Pipeline: No transmission outside the field.

Gas utilized: No dry gas produced for commercial
utilization.

Bureau of Mines Gas Analysis:

Methane	<u>98.7 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>0.1 %</u>
Ethane	<u>0.1 %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>Trace %</u>
Propane	<u>0.0 %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.0 %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>1.0 %</u>	CO ₂	<u>0.1 %</u>
Specific Gravity	<u>N.A.</u>	Helium	<u>Trace %</u>		

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 1,002

Miscellaneous information:

The Swanson River field is primarily an oil field. Dry gas occurs in shallow zones. Dry gas was at one time produced from the field and injected into the oil reservoir. Production problems forced shutting-in the six dry gas wells in the field in 1967. The field is within the Kenai National Moose Range which is administered by the Bureau of Sport Fish and Wildlife, Department of Interior.

Offshore Cook Inlet Fields

There are two fields in offshore Cook Inlet capable of producing dry natural gas. One is a dry natural gas field with estimated remaining recoverable reserves of 1,500,000 MCF of gas. This field is developed. The other field is an oil field that has wells completed in a dry gas reservoir. Production of dry gas from this field is used for oil production purposes at the present time. Estimated remaining recoverable reserves of dry gas in that field approaches one trillion cubic feet of gas.

In addition, there is a one-well shut-in field which contains reserves estimated at 250,000,000 MCF of dry natural gas.

North Cook Inlet Field

Location: Approximately 38 miles SW of Anchorage;
approximately 38 miles NE of Kenai.

Discovered: September, 1962

Production started: March, 1969

Discovery well test potential: Undetermined because of uncontrolled
blowout at time of discovery. Well
subsequently recompleted.

Producing formation: Sterling (4,200')
Peluga (5,100')

Status, 1973: Eight wells producing.

Production, 1973: 42,709,176 MCF

Cumulative Production, 12-73: 178,142,035 MCF

Estimated Remaining
Recoverable Reserves: 1,500,000 MCF

Operator(s): Phillips Petroleum Company

Pipeline: From - Platform in Cook Inlet
To - Kenai Peninsula (North Kenai area)

Gas utilized: Phillips--Marathon Liquefied Natural Gas
Plant

Bureau of Mines Gas Analysis:

Methane	<u>99.7 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>0.0 %</u>
Ethane	<u>Trace %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>0.0 %</u>
Propane	<u>Trace %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>Trace %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>0.1 %</u>	CO ₂	<u>0.1 %</u>
	Specific Gravity	<u>N.A.</u>		Helium	<u>0.0 %</u>
Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury					<u>993</u>

NOTE: Analysis furnished by operator.

Miscellaneous information:

McArthur River Field

Location:	Approximately 65 miles SW of Anchorage; approximately 24 miles NE of Kenai.
Discovered:	December, 1968
Production started:	December, 1968
Discovery well test potential:	7,000 MCFPD
Producing formation:	Tyonek (4,580'-4,590') (5,360'-6,010')
Status, 1973:	Four wells producing.
Production, 1973:	4,884,646 MCF
Cumulative Production, 12-73:	22,062,153 MCF
Estimated Remaining Recoverable Reserves:	800,000,000 MCF
Operator(s):	Union Oil Company of California Marathon Oil Company Atlantic Richfield Company
Other participants:	Amoco Production Company Phillips Petroleum Company Skelly Oil Company Standard Oil Company of California
Bureau of Mines Gas Analysis:	None available.
Miscellaneous information:	McArthur River is an oil field. Gas produced with the oil is transmitted to a liquid extraction plant on shore. Therefore, dry gas is produced to run pumps and compressors on the platform.

North Middle Ground Shoal Field

Location: Approximately 56 miles SW of Anchorage;
approximately 30 miles N of Kenai.

Discovered: November, 1964

Production started: Field shut-in since discovery;
no commercial production.

Discovery well test potential: Unknown

Producing formation: Tyonek (9,108'-9,132')

Status, 1973: One well, shut-in.

Production, 1973: No recorded production.

Cumulative production, 12-73: No commercial production.

Estimated Remaining
Recoverable Reserves: 125,000,000 MCF

Operator(s): Amoco Production Co.
Other participants: Phillips Petroleum Co.
Skelly Oil Co.

Pipeline: No transmission facilities exist.

Gas utilized: No gas produced for utilization.

Bureau of Mines Gas Analysis: None available.

Miscellaneous information: Well blew out of control on discovery;
therefore, no guage test potential avail-
able. This well, and field, would re-
quire an extensive investment in the form
of a production platform for development.

West Side Cook Inlet Fields

There are six dry-gas fields on the west side of Cook Inlet. Of the six, only two are being produced for commercial utilization. Two are undeveloped. Of the remaining two, both have had a short-lived production history; one is now abandoned, the other is shut-in.

Total reserves of the fields on the west side is 875,000,000 MCF with figures unavailable for two of the fields. Reserves of fields which are not being produced at the present is over 125,000,000 MCF.

Beluga River Field

Location: Approximately 40 miles west of Anchorage.
 Discovered: December, 1962
 Production started: March, 1968
 Discovery well test potential: 4,800 MCF/D
 Producing formation: Sterling (3,437'-5,250')
 Beluga
 Status, 1973: Seven wells producing periodically.
 Production, 1973: 4,929,248 MCF
 Cumulative Production, 12-73: 22,071,540 MCF
 Estimated Remaining
 Recoverable Reserves: 700,000,000 MCF
 Operator(s): Standard Oil Company of California
 Other participants: Shell Oil Company
 Atlantic Richfield Company
 Pipeline: From - Beluga River field
 To - Beluga River power plant
 Gas utilized: Chugach Electric Association, Inc. power
 plant (mine-mouth power generation).

Bureau of Mines Gas Analysis:

Methane	<u>99.7 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>0.0 %</u>
Ethane	<u>0.3 %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>0.0 %</u>
Propane	<u>0.0 %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.0 %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>0.0 %</u>	CO ₂	<u>0.0 %</u>
Specific Gravity	<u>N.A.</u>	Helium	<u>0.0 %</u>		

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 1,014

Miscellaneous information:

Nicolai Creek Field

Location: Approximately 57 miles SW of Anchorage;
approximately 32 miles NW of Kenai.

Discovered: May, 1966

Production started: October, 1968

Discovery well test potential: 7,350 MCFPD

Producing formation: Beluga (1,900'-2,328')
Tyonek (3,615'-3,630')

Status, 1973: One well producing.

Production, 1973: 5,814 MCF

Cumulative Production, 12-73: 827,491 MCF

Estimated Remaining
Recoverable Reserves: 50,000,000 MCF

Operator(s): Texaco, Inc.
Other participants: The Superior Oil Company

Pipeline: From - Nicolai Creek Field
To - Granite Point

Gas utilized: Production and transmission operations
for Granite Point Field.

Bureau of Mines Gas Analysis:

Methane	<u>96.2 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>0.1 %</u>
Ethane	<u>0.1 %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>Trace %</u>
Propane	<u>0.0 %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.0 %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>3.4 %</u>	CO ₂	<u>0.1 %</u>
Specific Gravity	<u>N.A.</u>	Helium	<u>Trace %</u>		

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 976

Miscellaneous information: The field has two more shut-in wells capable
of production.

Ivan River Field

Location: Approximately 30 miles west of Anchorage.

Discovered: October, 1966

Production started: Field shut-in since discovery; no commercial production.

Discovery well test potential: 5,910 MCFPD

Producing formation: Tyonek (7,935'-7,955')

Status, 1973: One well, shut-in.

Production, 1973: No recorded production.

Cumulative production, 12-73: No commercial production.

Estimated Remaining Recoverable Reserves: 5,000,000 MCF

Operator(s): Standard Oil Company of California
Other participants: Atlantic Richfield Company

Pipeline: No pipeline facilities exist.

Gas utilized: No gas produced for utilization.

Bureau of Mines Gas Analysis:

Methane <u>98.9 %</u>	Normal Pentane <u>0.0 %</u>	Oxygen <u>0.1 %</u>
Ethane <u>0.1 %</u>	Isopentane <u>0.0 %</u>	Argon <u>Trace %</u>
Propane <u>Trace %</u>	Cyclopentane <u>0.0 %</u>	Hydrogen <u>0.0 %</u>
Normal Butane <u>0.0 %</u>	Hexanes Plus <u>0.0 %</u>	H ₂ S <u>0.0 %</u>
Isobutane <u>0.0 %</u>	Nitrogen <u>0.8 %</u>	CO ₂ <u>0.1 %</u>
Specific Gravity <u>0.56</u>		Helium <u>Trace %</u>

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 1,004

Miscellaneous information: The Ivan River field is a one-well undeveloped field.

Albert Kalca Field

Location:	Approximately 55 miles SW of Anchorage.
Discovered:	January, 1968.
Production started:	Field shut-in since discovery: no commercial production.
Discovery well test potential:	29,320 MCFD
Producing formation:	Tyonek (3,213'-3,403')
Status, 1973:	One well, shut-in.
Production, 1973:	No recorded production.
Cumulative Production, 12-73:	No commercial production.
Estimated Remaining Recoverable Reserves:	Not known.
Operator(s): Other participants:	Amoco Production Company Atlantic Richfield Company Phillips Petroleum Company Shelley Oil Company
Pipeline:	No pipeline facilities exist.
Gas utilized:	No gas produced for utilization.
Bureau of Mines Gas Analysis:	None available.
Miscellaneous information:	

West Foreland Field

Location: Approximately 70 miles SW of Anchorage.
 Discovered: March, 1962
 Production started: Field shut-in since discovery;
 no commercial production.
 Discovery well test potential: 16,500 MCFPD
 Producing formation: Tyonek (9,336'-0,352')
 Status, 1973: One well, shut-in.
 Production, 1973: No recorded production.
 Cumulative production, 12-73: No commercial production.
 Estimated Remaining
 Recoverable Reserves: 120,000,000 MCF
 Operator(s): Amoco Production Company
 Other participants: Atlantic Richfield Company
 Phillips Petroleum Company
 Skelly Oil Company
 Pipeline: No pipeline facilities exist.
 Gas utilized: No gas produced for utilization.

Bureau of Mines Gas Analysis:

Methane	<u>92.07 %</u>	Normal Pentane	<u>0.01 %</u>	Oxygen	<u>0.03 %</u>
Ethane	<u>0.56 %</u>	Isopentane	<u>0.01 %</u>	Argon	<u>0.0 %</u>
Propane	<u>0.07 %</u>	Cyclopentane	<u>-- %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.02 %</u>	Hexanes Plus	<u>0.01 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.01 %</u>	Nitrogen	<u>6.67 %</u>	CO ₂	<u>0.53 %</u>
	Specific Gravity	<u>0.59</u>		Helium	<u>0.01 %</u>

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 929

NOTE: Analysis furnished by operator.

Miscellaneous information: The West Foreland field is a one-well shut-in field. No development wells have been drilled to define the productive limits of the field.

Moquawkie Field

Location: Approximately 40 miles SW of Anchorage;
approximately 30 miles NW of Kenai.

Discovered: November, 1965.

Production started: September, 1967

Discovery well test potential: 32,000 MCFPD

Producing formation: Tyonek (2,735'-2,765')
(5,300'-5,365')

Status, 1973: Field abandoned.

Production, 1973: No recorded production.

Cumulative production, 12-73: 985,059 MCF

Estimated Remaining
Recoverable Reserves: Not known.

Operator(s): Mobil Oil Corporation
Other participants: Atlantic Richfield Company

Pipeline: From - Moquawkie field
To - Tyonek Village Power Plant (pipeline
inoperative, 1973)

Gas utilized: Gas from Moquawkie at one time was
utilized by the Tyonek Indians to gen-
erate power (mine-mouth plant) for
use of the Tyonek village. Problems
with the supply well forced abandon-
ment of the well and the gas turbine
generator was switched to diesel about
1969.

Bureau of Mines Gas Analysis:

Methane	<u>99.0 %</u>	Normal Pentane	<u>0.0 %</u>	Oxygen	<u>0.0 %</u>
Ethane	<u>0.1 %</u>	Isopentane	<u>0.0 %</u>	Argon	<u>0.0 %</u>
Propane	<u>0.0 %</u>	Cyclopentane	<u>0.0 %</u>	Hydrogen	<u>0.0 %</u>
Normal Butane	<u>0.0 %</u>	Hexanes Plus	<u>0.0 %</u>	H ₂ S	<u>0.0 %</u>
Isobutane	<u>0.0 %</u>	Nitrogen	<u>0.9 %</u>	CO ₂	<u>0.0 %</u>
				Helium	<u>0.0 %</u>
		Specific Gravity	<u>0.559</u>		

Calculated gross Btu/cu.ft., dry at 60°F. and 30" mercury 1,006

Miscellaneous information: Several dry holes were drilled in the vicinity of the Moquawkie producer.

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