

# **Review of Alaska Oil and Gas Development Activity - 2004 and Beyond**

Presented to

**PAC COM Expo & Conference 2005**

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State of Alaska

Department of Natural Resources

Division of Oil and Gas



Alaska Department of  
**Natural  
Resources**

*<http://www.dog.dnr.state.ak.us/oil/products/products.htm>*

# The State Revenue Pie

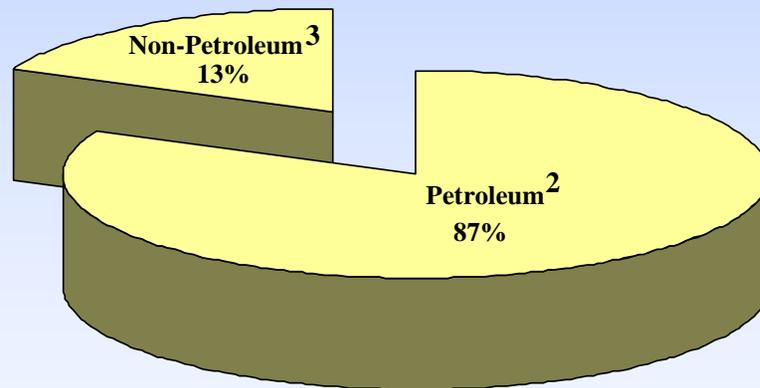
Petroleum Revenue Sources, (FY 2004, Estimate)

**Total Royalties, Bonuses, Rents & Settlements:**  
**\$1,417.8 Million**

General Fund Royalties, Bonuses & Rents:<sup>1</sup>  
**\$1,056.0 Million**

Royalties to Permanent Fund & School Fund:  
**\$361.8 Million**

FY 2004 Unrestricted Revenue



## Taxes:

**\$998.0 Million<sup>2</sup>**

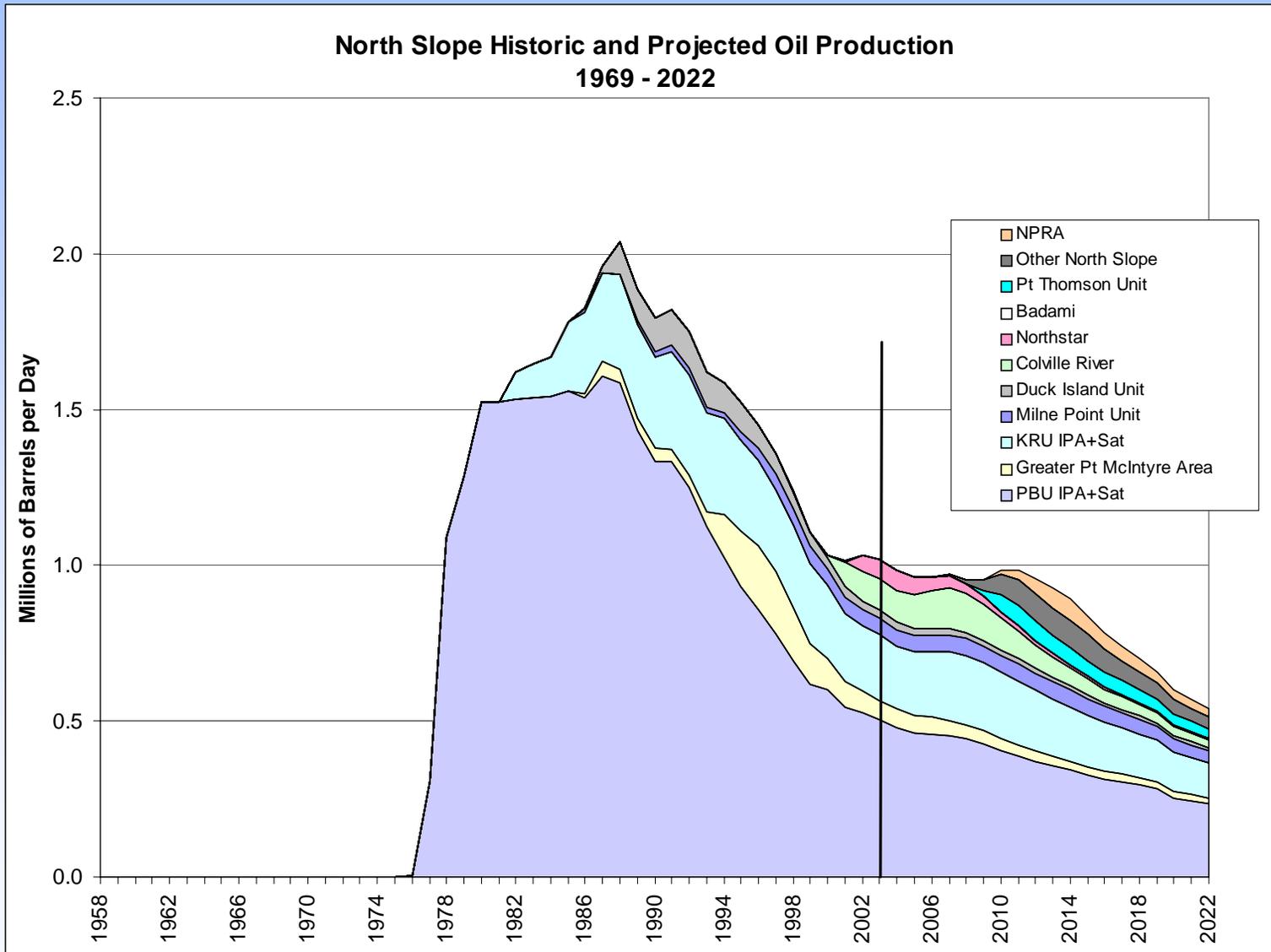
(Oil & Gas Property Tax + Income Tax + Severance Tax)

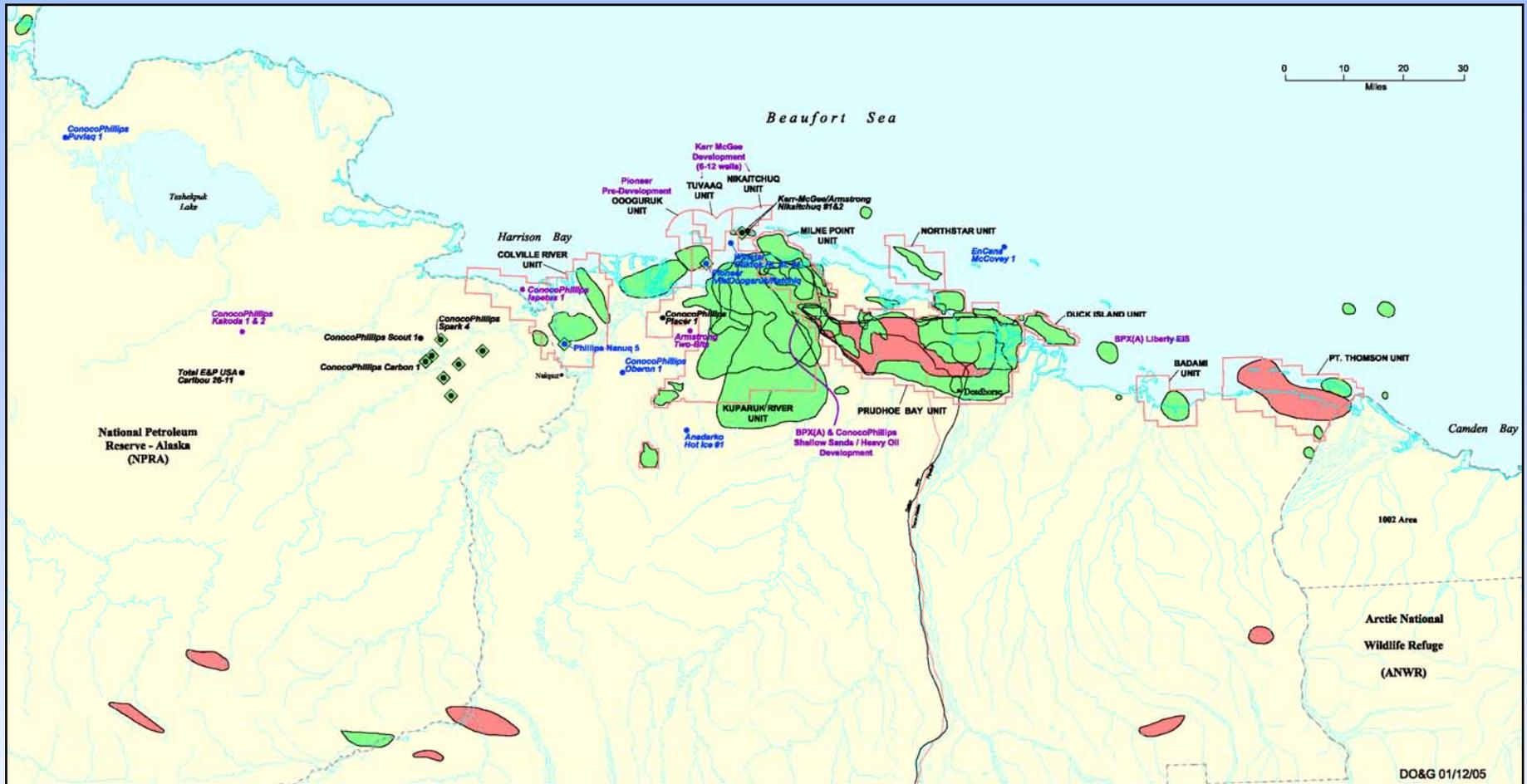
<sup>1</sup> Includes Federally shared rentals + royalties

<sup>2</sup> Source: DOR Spring 2004 Revenue Sources Book

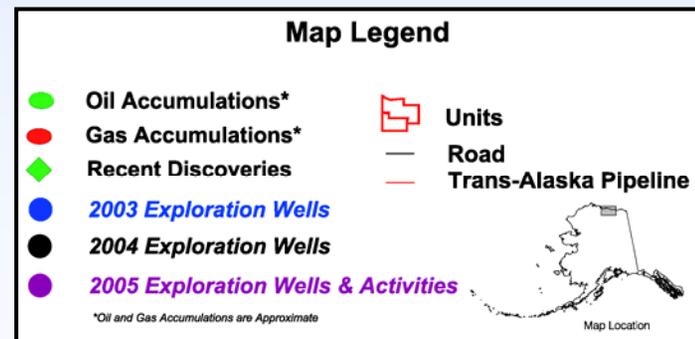
<sup>3</sup> Source: DOR Spring 2004 Revenue Sources Book

# Historic and Projected Oil Production 1969-2022





# North Slope Oil & Gas Activities & Discoveries January 2005



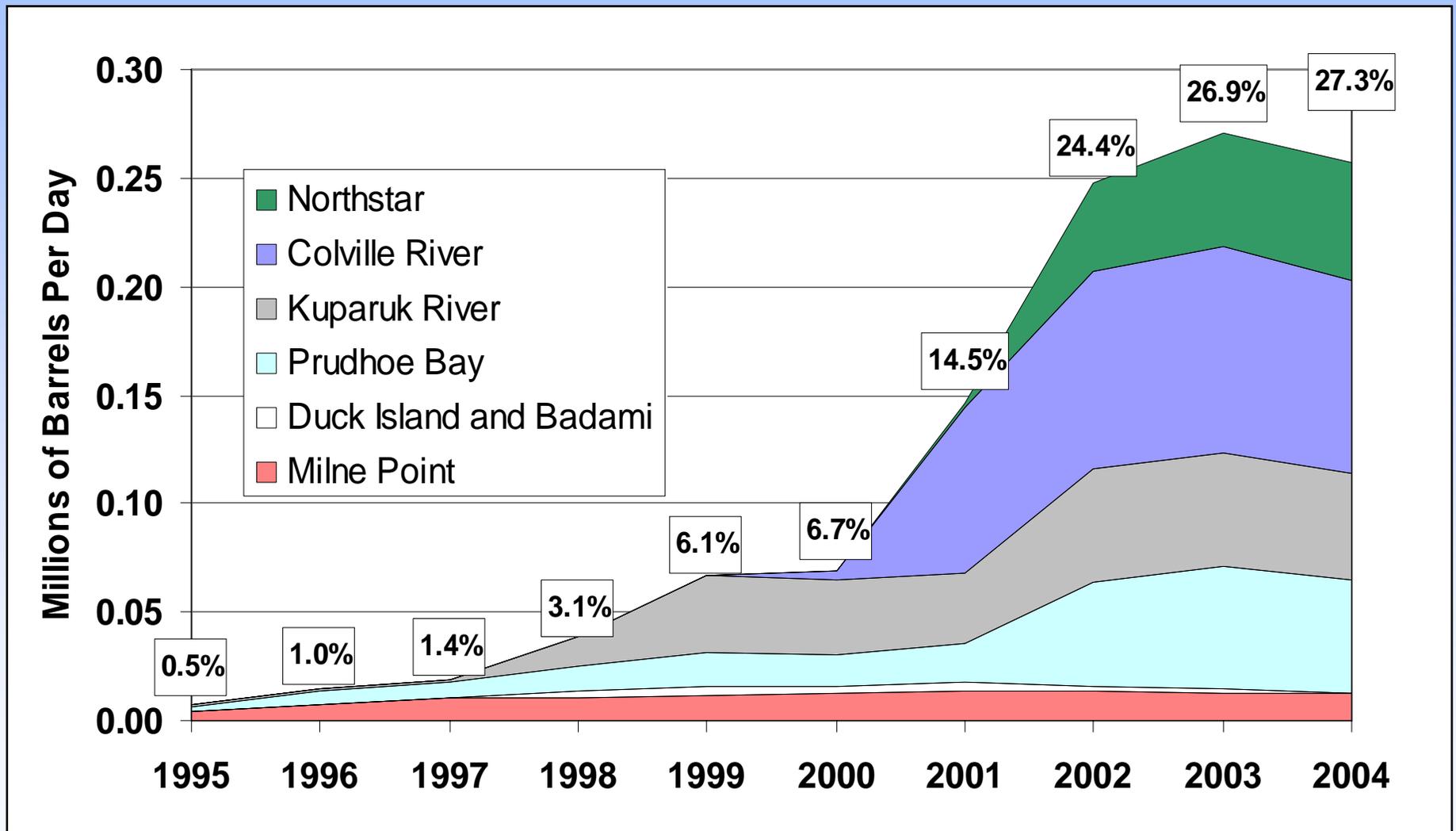
# North Slope Development Activities

## 2004-2005

### Northern Alaska

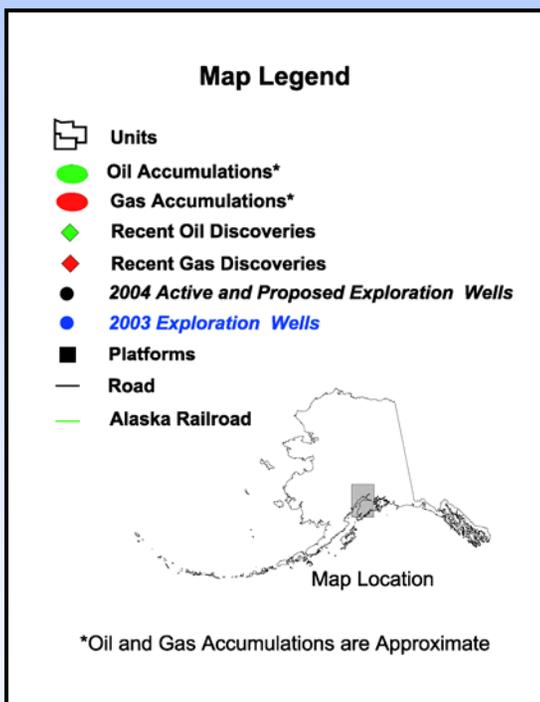
Project Name	Status	Expected Start-Up Date	Estimated Reserves or Expected Production	
PBU Oil Rim - field gas offtake expansion w/ increases miscible injectant for EOR	Projects Underway	2003-2004	10,000-15,000 BOPD	
PBU Pt.McIntyre PM2 to GC1 Project	Pt. McIntyre PM2 production to GC1	Mar-04	8,000 - 10,000 BOPD increase	
PBU Borealis	Development continuing/PA expansion submitted second quarter 2004	Producing	35,000 BOPD	
Shallow Sands/ Heavy Oil (West Sak/Schrader Bluff)	Development continuing	Producing	1.0 - 1.5BBO recoverable 140MBOPD by 2010 (est) 30,000+ BOPD New	
KRU Palm (DS-3S)	Development continuing	2002 (Nov.)	35 MMBO	16,000 bbls. oil/day
CRU Fiord	Technical studies, permitting, EIS or EA	2006	10,000-20,000 BOPD	
CRU Nanuq	Technical studies, permitting, EIS or EA	2006	10,000-20,000 BOPD	
CRU ACX-1: Various Facility Expansion Projects: Upgrades to Oil & Gas Processing Capacity; Produced Water System and Handling. Seawater Injection System	Projects Underway	4th Qtr 2004	5,000 - 10,000 BOPD increment	
CRU ACX-2: Further capacity increases to Oil Processing & Seawater Injection Systems	Planning / Some Early Acceleration	3rd Qtr 2005	25,000 - 30,000 BOPD increment	
Nikaitchuk/Tuvaak Development	Planning 6-10 development wells	2004-05	Not disclosed	
Point Thomson	Begin development drilling by June 2006, must have 7 wells & approved PA by June 2008	2008	75,000 bbls. condensate/day	
Liberty Development	EIS for artificial drilling/development island	2007	120MMBO recoverable (est)	

## Incremental North Slope Oil Production since 1995 by Unit



Note: Percentage figures show fraction of incremental oil since 1995, as a proportion of total North Slope production by year.  
Sources: AOGCC and ADNR.

# Cook Inlet Oil & Gas Activities & Discoveries December 2004



# Cook Inlet Drilling Summary – 2004 (1)

- Cosmopolitan Unit – Conoco Phillips (Oil discovered in 1967 by Penzoid)
  - Hansen #1 well P&Aed, Forest reported successful results, no word from Conoco Phillips yet
  - Hansen #1A well completed as oil producer, test production is being trucked to Nikisiki refinery.
- Iliamna Prospect – Pelican Hill
  - Iliamna #1 drilled and suspended, now converting to disposal well
- Kasilof Unit – Marathon (Gas)
  - Unit approved in October 2002
  - Kasilof South #1 and #1L drilled, evaluating
- Middle Ground Shoals Field – Unocal & XTO
  - While XTO continues operations at two platforms, Unocal has ceased operations at this field and placed its two platforms (Dillon and Baker) in lighthouse mode.
  - Decision on “decommissioning” platforms still to come
  - XTO drilling C31-26RD in progress
- Nicolai Creek Unit – Aurora Gas
  - NCU #3 production of gas ended March 2004
  - NCU #2, 1B, 9 completed, producing gas since November 2003
- Nikolaevsk Unit – Unocal
  - Red #1 drilled, results confidential. First of a 5-year 3 well commitment
  - Results Confidential
- Ninilchik Unit – Marathon
  - G.O. #1 well completed as gas well, tested at 11.2 MMCF/D from one zone
  - G.O. #2 well completed as gas well, tested at 11.9 MMCF/D from three zones between 8,048 and 9,440 ft. (MD).
  - Falls Creek #1RD completed as gas well, tested at 6.8 MMCF/D from a depth of 8,714 ft. (<D).
  - Susan Dionne #3 (SDPA) completed as gas well; Falls Creek #3 (FCPA) active, no details available.
  - Abalone #1 well drilled in 2003 at north end of unit, not completed, currently shut down, no other details available.
  - Plans to drill Susan Dionne #2 (SDPA), Ninilchik State #1 (GOPA).
  - Production started at GOPA in Septmeber 2003, currently about 15 MMCF/D rate.

# Cook Inlet Drilling Summary – 2004 (2)

- North Fork Unit and Deep Creek Unit – Unocal
  - Unit getting renewed interest from small investor group
  - Non-binding pipeline contract with ENSTAR signed in September 2003
  - Development drilling will begin 2005
- Redoubt Unit – Forest Oil (Oil discovered in 1968 by Pan Am)
  - Production began Dec. 9, 2002
  - Recent drilling results indicate field is more complicated than previously thought; reserves probably to be reduced
  - Waterflood most likely to come online soon (end of 2005?)
  - RU#3 well began producing fuel gas on 7/28/2003
- South Ninilchik Unit and Deep Creek Unit – Unocal
  - Pearl #1 and Deep Creek NNA #1 wells completed as gas producers in 2002, Unocal reported disappointing results.
  - Nine wells drilled to date, two more in progress. Some of these wells have been successful, some not.
  - Unocal built gas pipeline connecting Happy Valley pad to KKPL. Start-up Nov. 1, 2004.
- Three Mile Creek Unit
  - Unit approved March 26, 2004.
  - Objective is Beluga Formation gas zones bypassed by early opener.
  - Additional 2-D seismic acquired
  - Three mile Creek #1 well drilled
- Trading Bay Unit/McArthur River Field – Unocal
  - T.B.U. #K-13 came on production at 7,100 BOPD, highest rate of any well in Cook Inlet
  - Unit and PA expansions approved to bring boundaries into agreement with producing areas

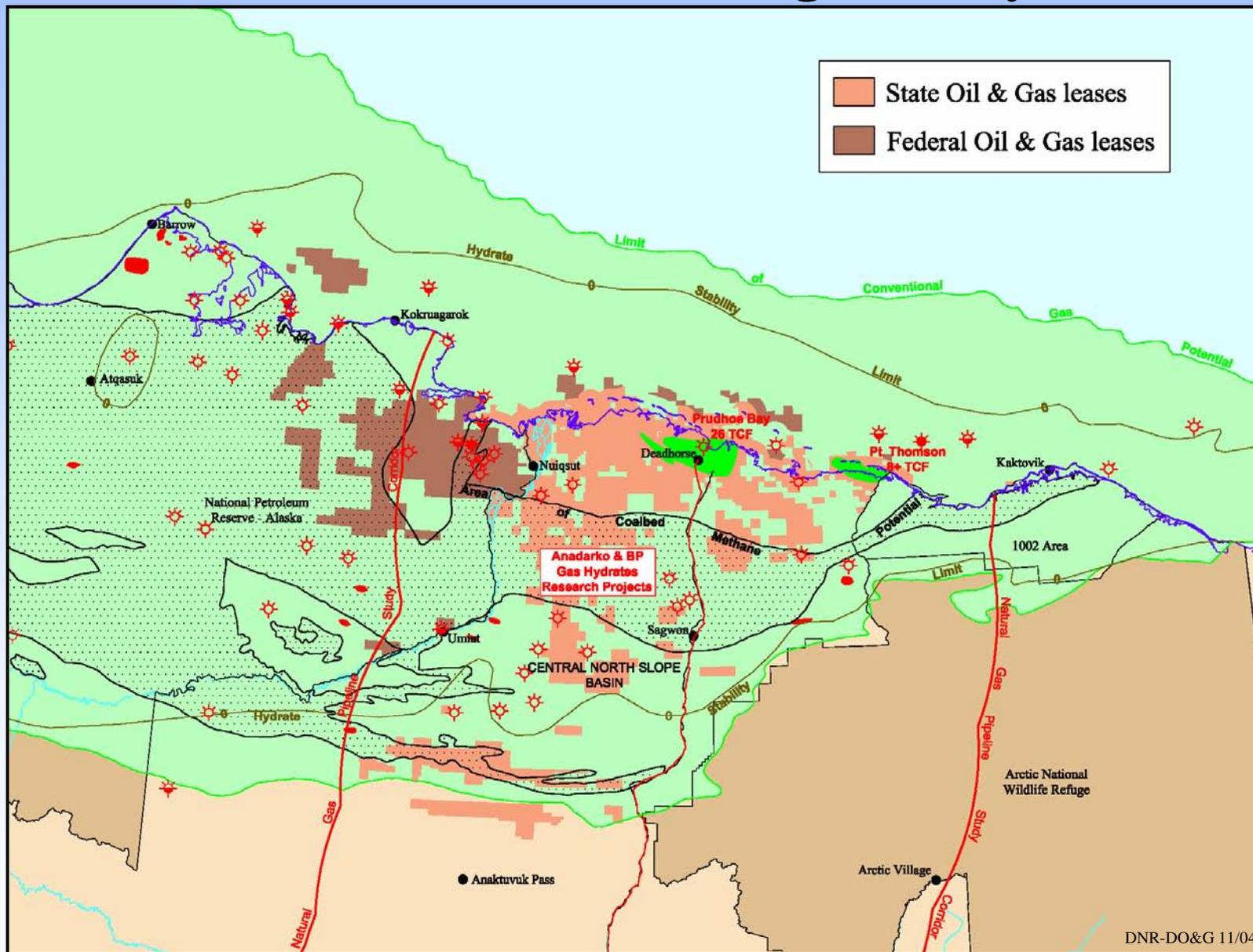
# Gasline Update

- **Stranded Gas Negotiations (Producers / Transcanada)**
- **MOU discussions (ANGDA/Port Authority)**
- **Economic Modeling**
- **Regulatory decisions (FERC)**
- **Right-of-Way Permitting**
- **Resource Assessments**

# Resource Assessments

- **Alaska's gas can make a huge contribution to reducing our nations dependence on foreign sources of energy.**
- **Federal and state geologists believe that the 35 TCF of gas from Prudhoe Bay and Pt. Thomson is just the tip of the iceberg.**
- **North Slope and offshore conventional mean technically recoverable undiscovered resource potential exceeds 236 TCF.**
- **Gas hydrate resource in the Prudhoe/Kuparuk Milne Pt. field area alone is 100 TCF.**

# Gas Potential – North Slope Area with Oil & Gas Leasing Activity



# Mean Value, Total Natural Gas Reserve and Resource Base for Gas Pipeline Supply Report

All Values Trillions of Cubic Feet (TCF)  
Alaska Division of Oil and Gas (01/12/05)

BASIN	KNOWN RESERVES	RISKED UNDISCOVERED CONVENTIONALLY RECOVERABLE RESOURCE	RISKED UNDISCOVERED CONVENTIONALLY RECOVERABLE DEEP GAS RESOURCE <sup>2</sup>	GAS HYDRATES IN PLACE RESOURCE <sup>6</sup>	COALBED METHANE IN PLACE RESOURCE	BASIN TOTAL
NORTH ALASKA (onshore)	35.000 <sup>1</sup>	141.700 <sup>3</sup>	17.700 <sup>2</sup>	590.000 <sup>6</sup>	800.000 <sup>7</sup>	1,566.700
NORTH ALASKA (Beaufort shelf) <sup>2</sup>	0.000	32.070	N/A	32,325.000 <sup>3</sup>	N/A	32,357.070
NORTH ALASKA (Chukchi shelf) <sup>2</sup>	0.000	60.110	N/A	50.000 <sup>3</sup>	N/A	110.110
CENTRAL ALASKA <sup>4</sup>	0.000	2.760	N/A	N/A	N/A	2.760
YUKON FLATS <sup>9</sup>	0.000	5.460	N/A	N/A	N/A	5.460
KANDIK <sup>5</sup>	0.000	0.116	N/A		N/A	0.116
NENANA/TANANA	0.000	N/A	N/A	N/A	N/A	N/A
COPPER RIVER	0.000	N/A	N/A	N/A	N/A	N/A
<b>TOTAL BY GAS TYPE</b>	<b>35.000<sup>1</sup></b>	<b>242.216</b>	<b>17.700<sup>2</sup></b>	<b>32,965.000</b>	<b>800.000<sup>7</sup></b>	<b>34,042.216</b>

After Craig, J., and Sherwood, K., Prospects for development of Alaska natural gas: a review as of January 2001, Minerals Management Service, Alaska Region. tbl. 9, p. 76.  
Modified to include only North and Central Alaska basins and updated to include new information as footnoted.

N/A = Not Assessed

<sup>1</sup> Current estimate of known "stranded" recoverable North Slope conventional gas reserves in Prudhoe Bay, Point Thomson and smaller fields.

<sup>2</sup> Subcategory of and included in "Undiscovered Technically Recoverable Conventional Reserves". Represents Basin Deep or Basin Centered component > 15,000' depth.

<sup>3</sup> Craig and Sherwood arbitrarily split offshore hydrate resource estimates between Beaufort and Chukchi Sea shelves. Total North Alaska offshore gas hydrate potential remains 32,375 tcf.

<sup>4</sup> 1995 National Assessment of United States Oil and Gas Resources, U.S. Geological Survey, Open File Report, Digital Data Series-30, pub. 1995. For all central Alaska basins except the Kandik Basin. Other basins not evaluated individually.

<sup>4,5</sup> Geological Survey of Canada estimated mean undiscovered gas in place ~ 0.489 - 0.800 TCF. Alaska component estimated as 0.116 Tcf.

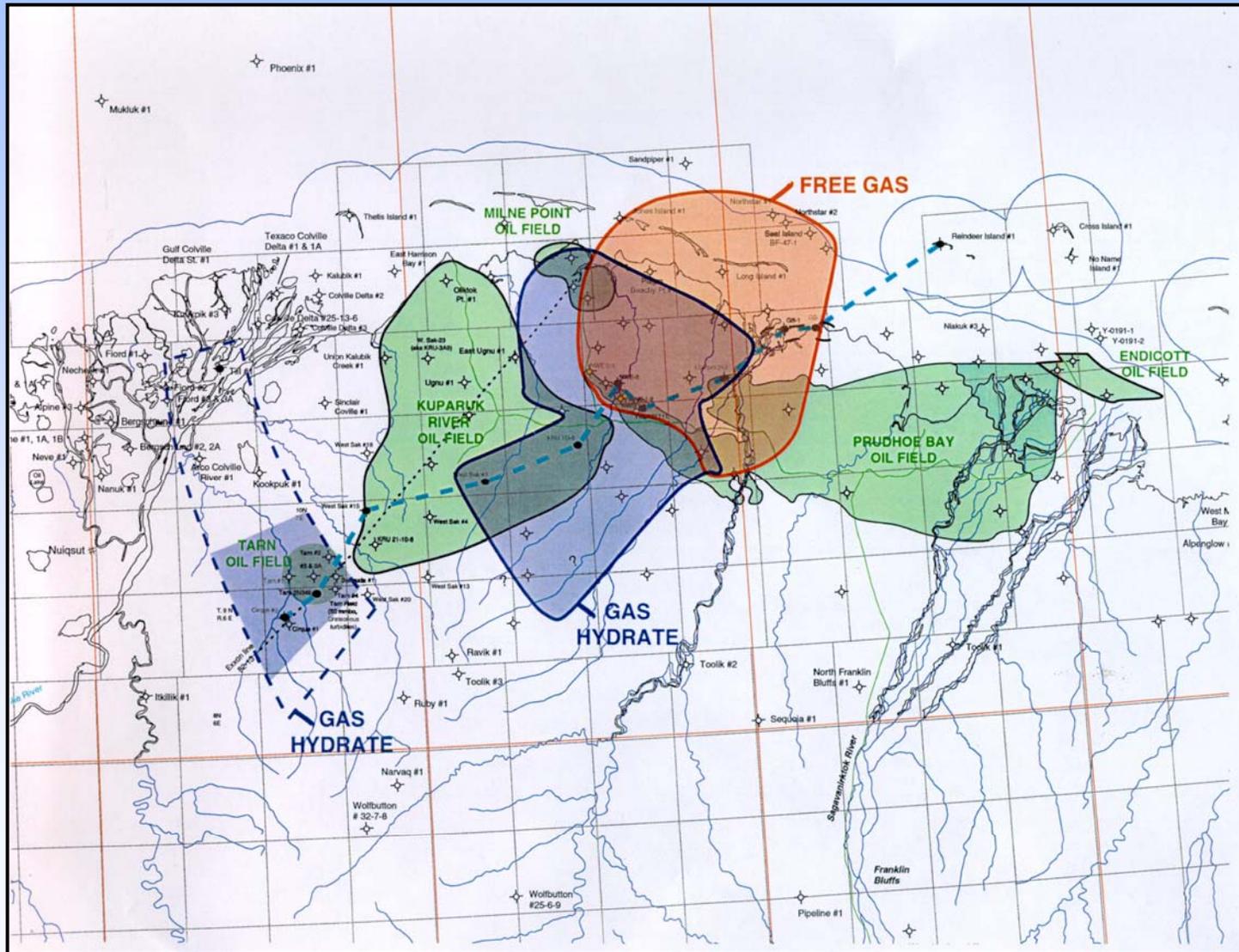
<sup>6</sup> Collett, personal communication, 11/26/04.

<sup>7</sup> Barker, C.E., Clough, J.G., Roberts, S.B., and Fisk, R., Coalbed methane in Northern Alaska: potential resources for rural use and added supply for the proposed trans-Alaska gas pipeline; AAPG-SPEM Joint Technical Conference, Anchorage, AK, May 2002.

<sup>8</sup> Includes nonassociated and associated gas. State and Native lands are estimated to be approximately 60 TCF and are included in this total.

<sup>9</sup> Oil and Gas Assessment of Yukon Flats, East-Central Alaska, 2004, USGS Fact Sheet 2004-3121, December 2004.

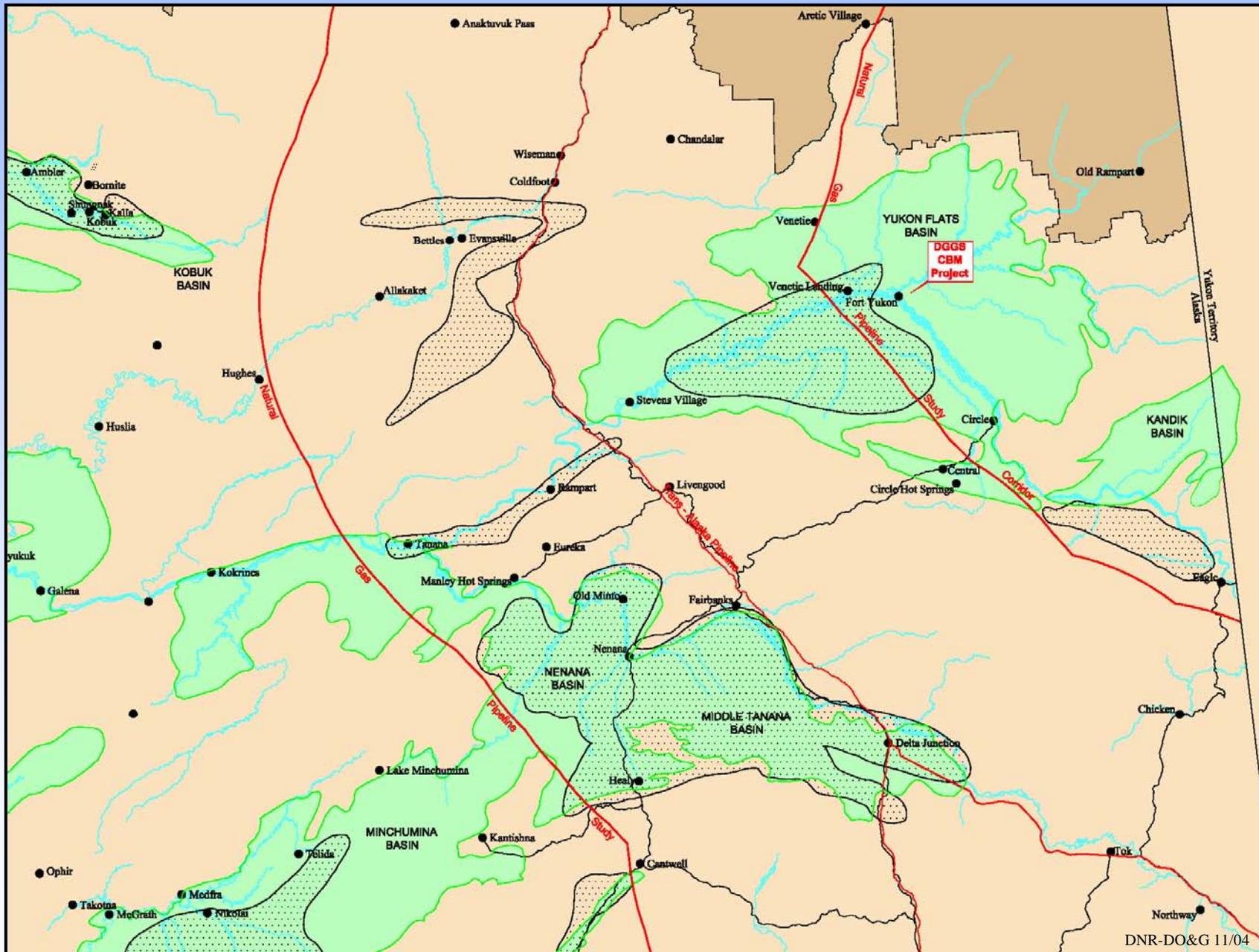
# Known Gas Hydrate Accumulations (shown in blue)



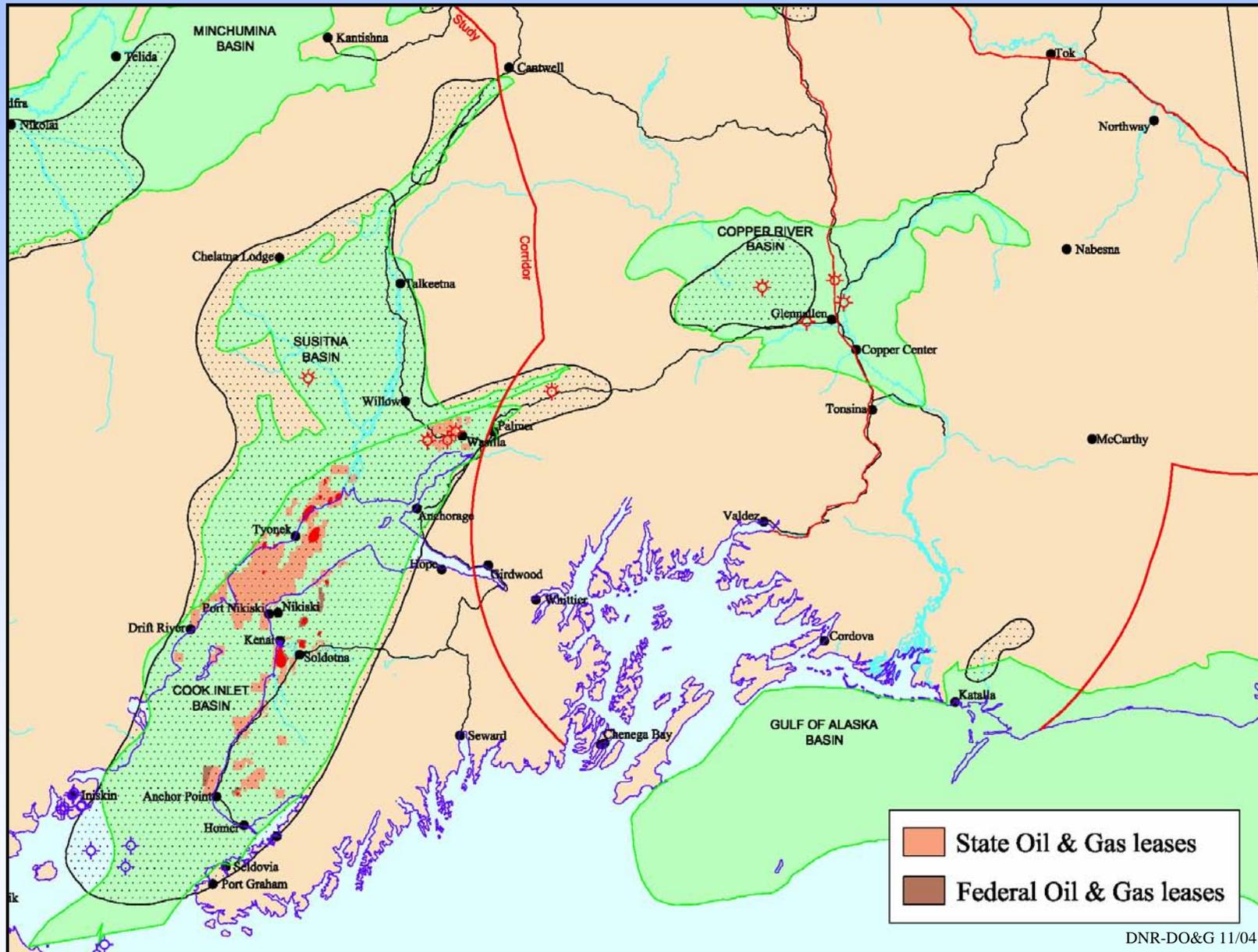
# Natural Gas Hydrate Proposal

- Joint Legislative and Administration proposal
- Alaska's gas hydrate potential
  - Onshore natural gas hydrates in place estimated at 590 trillion cubic feet (40 - 100 trillion cubic feet of which are in place in the central portion of the North Slope in close proximity to or underlying existing producing fields).
  - North Slope fields recognized as best place in America to attempt commercialization of gas hydrates
- Five-year \$70 million federal request
- Focusing on evaluation, long term testing, and commerciality of near infrastructure hydrates

# Gas Potential – Interior Area



# Gas Potential – Southcentral Area with Oil & Gas Leasing Activity





# Estimates of Technically Recoverable Oil Federal Lands - Alaska North Slope



## NPRA

### Oil Volumes (BBO)

<u>F95</u>	<u>Mean</u>	<u>F05</u>
6.7	10.6	15

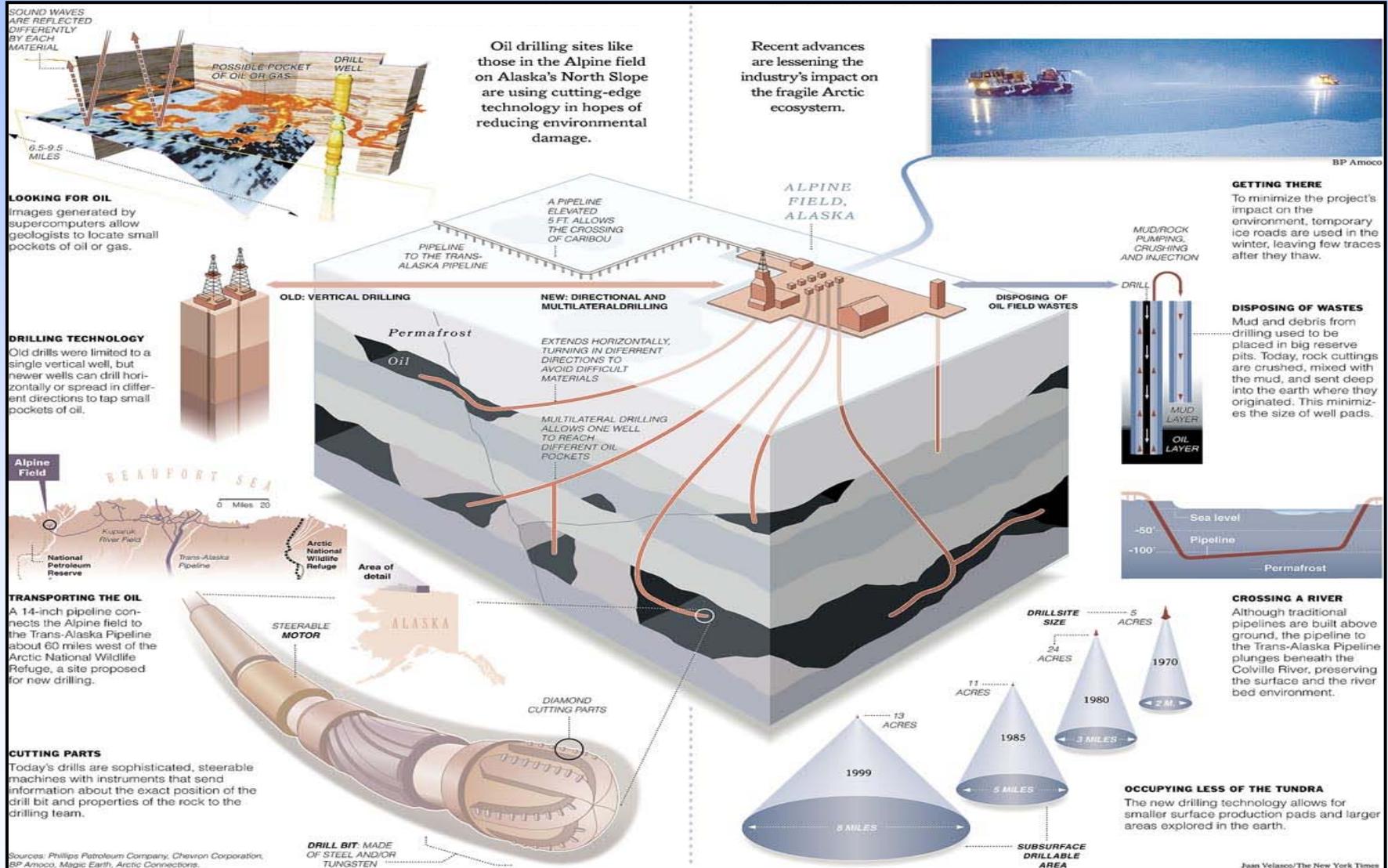
## ANWR

### Oil Volumes (BBO)

	<u>F95</u>	<u>Mean</u>	<u>F05</u>
1002 Area (Federal Part)	4.2	7.7	11.8
Entire Assessment Area*	5.7	10.4	16.0

\*(includes Native Lands & State Waters)

# Using the Latest Drilling Technology to Reduce Environmental Damage



Sources: Phillips Petroleum Company, Chevron Corporation, BP Amoco, Magic Earth, Arctic Connectors.

# Drilling done from ice pads



# Exploration well site



# Tundra undisturbed by drilling

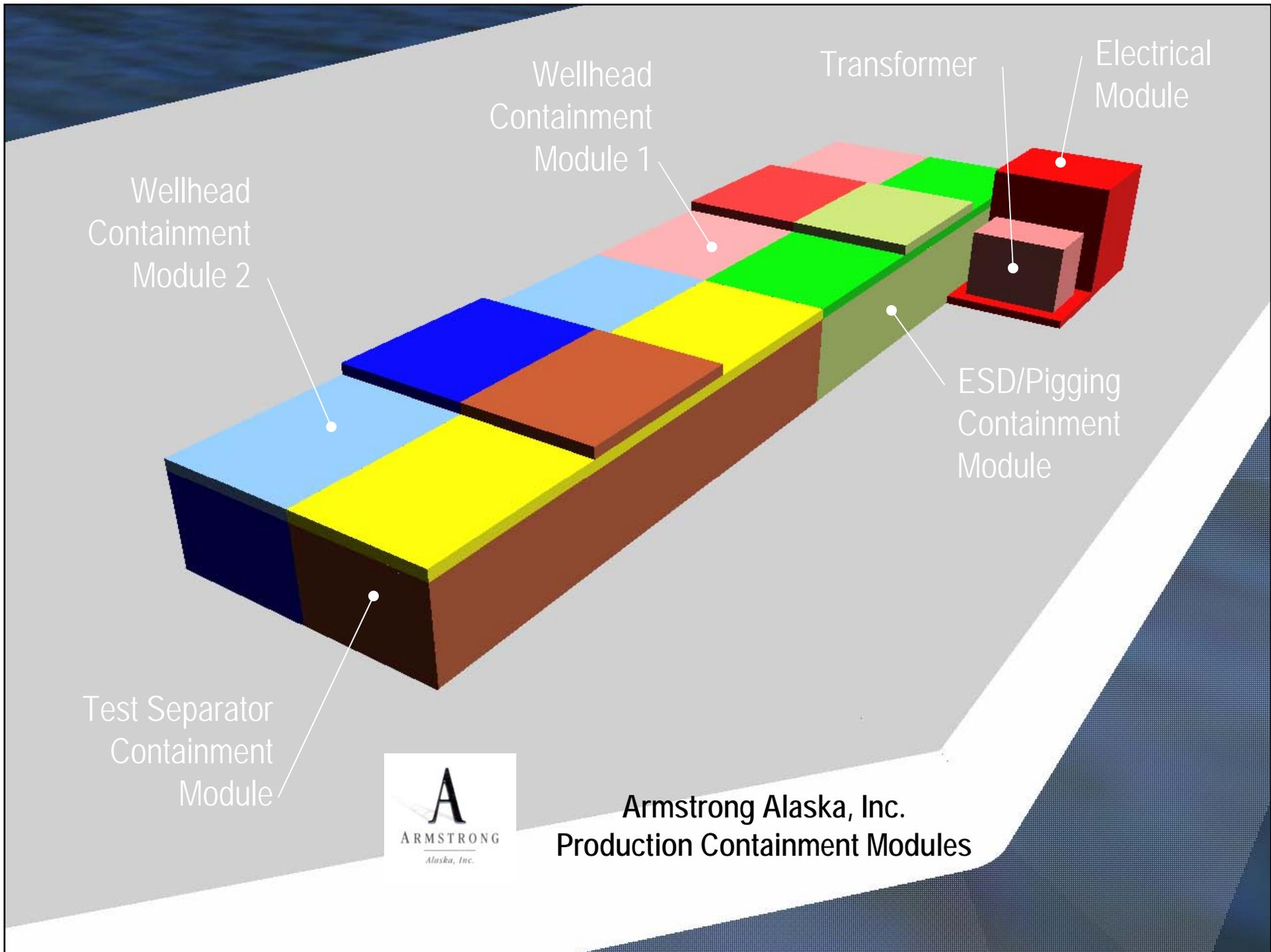


# Hot Ice Platform

February 2004



photo by Steve Schmitz



Wellhead Containment Module 2

Wellhead Containment Module 1

Transformer

Electrical Module

ESD/Pigging Containment Module

Test Separator Containment Module



**Armstrong Alaska, Inc.**  
**Production Containment Modules**

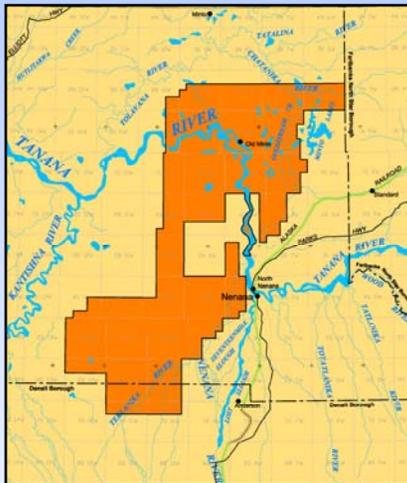
# Promoting New Investments

- **Leasing / Licensing New Areas**
- **Data Integration**
- **DOE Grant**
- **Governor's meetings with the Independents**
- **Streamlined Permitting**
- **Maximizing the Use of Existing Facilities**
- **Development of New Infrastructure**

# Exploration Licensing Program

## Issued / Awarded Licenses

### Nenana Basin



**Nenana Basin: Issued**  
 Licensee:     Andex Resources  
 Size:           483,175 Acres

### Bristol Bay



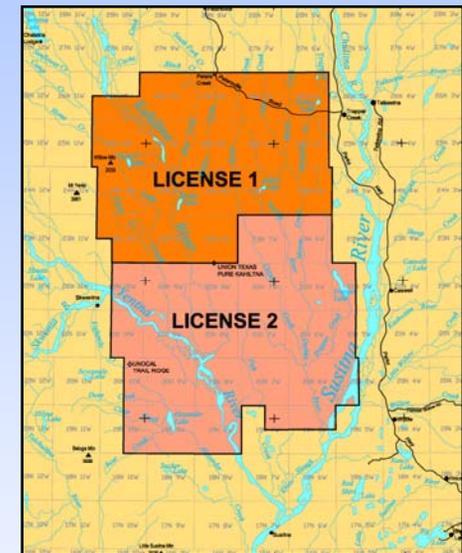
**Bristol Bay License: Awarded**  
 Licensee: Bristol Shores LLC  
 Size: 329,113 Acres

### Copper River Basin



**Copper River License: Issued**  
 Licensee:     Forest Oil Corporation  
 Size:           318,756.35 Acres

### Susitna Basin

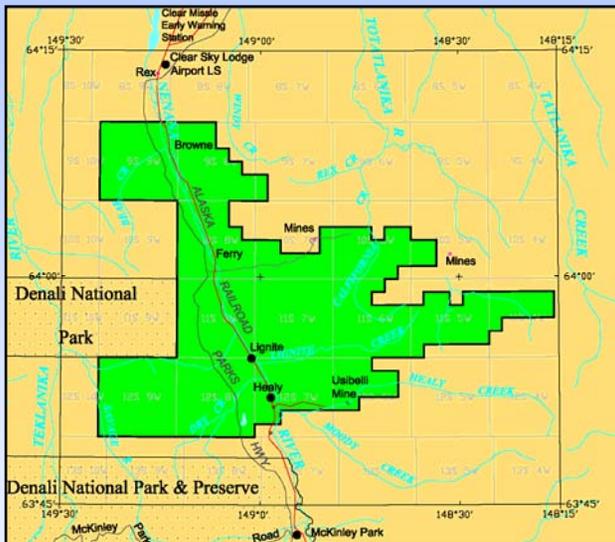


**Susitna Basin License 1: Issued**  
 Licensee - Forest Oil Corp.  
 386,207 Acres  
**Susitna Basin License 2: Issued**  
 Licensee - Forest Oil Corp.  
 471,474 Acres

# Exploration Licensing Program

## Proposed Licenses

### Proposed Healy Basin Exploration License Area



Usibelli Coal Mine Inc. proposed a work commitment of \$500,000 with a 10 year term.

Solicitation of Competing Proposals ended Dec. 9 (none received).

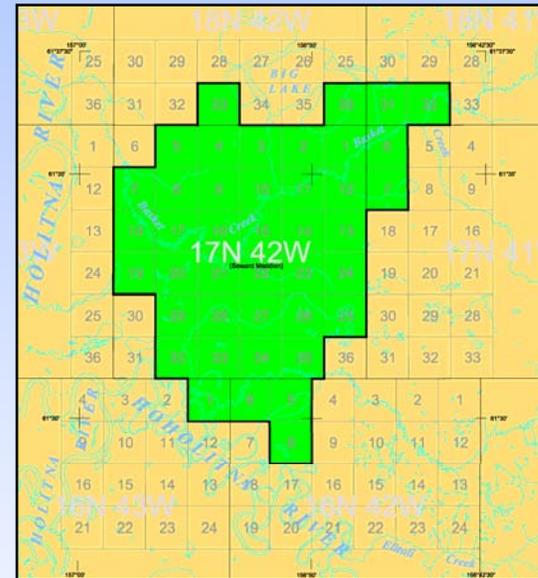
Solicitation of Public Comments (Deadline March 11).

Public Meeting in Healy (Jan. 19).

Preliminary Best Interest Finding (April 2005).

Final Best Interest Finding (Summer 2005).

### Proposed Holitna Basin Exploration License Area



Holitna Energy Co. converted from Shallow Natural Gas applications (Under HB 531).

Solicitation of Public Comments (Ended Dec. 21).

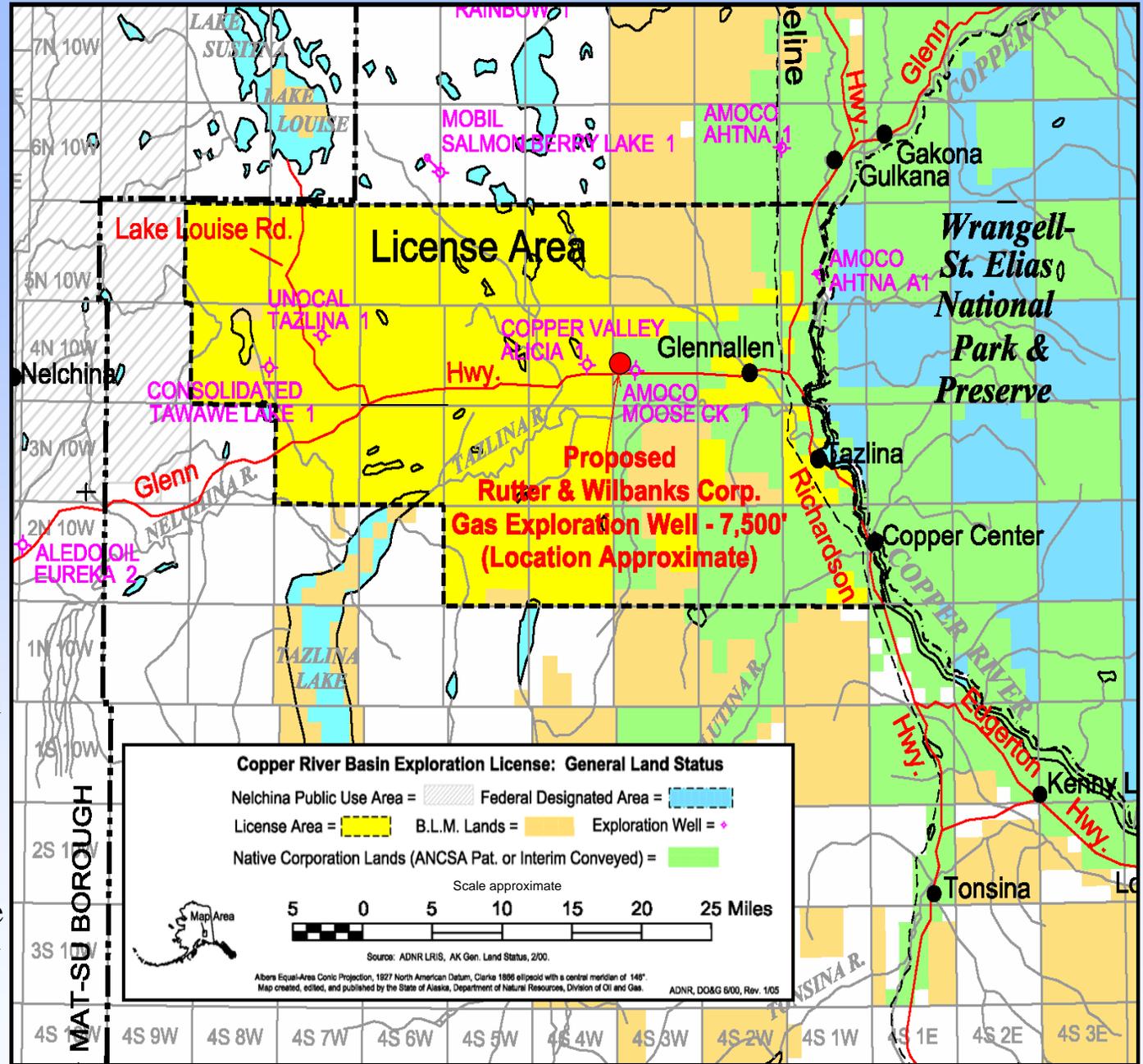
Preliminary Best Interest Finding (March/April 2005).

Final Best Interest Finding (Summer 2005).

# Copper River Basin Exploration License Area

Proposed Rutter &  
Wilbanks Corp.  
Gas Exploration Well

- Plans to drill in February 2005 to 7500 feet.
- The first gas exploration well in the Copper River basin in more than 20 years.
- The Exploration License expires Oct. 2005. It may be converted to leases at licensee's option.



Well location from Dwight's Alaska Report; Section 19, Twp. 4N, Rge. 3W, Copper River Meridian.

# **FY 2004 Areawide Lease Sales**

**Total Acres Leased = 633,317**

**Total Bonus Bids = \$7,680,712**

## **North Slope 2003**

- 210,006 Acres Leased
- \$3,586,400 in Bonus Bids

## **Beaufort Sea 2003**

- 36,995 Acres Leased
- \$1,358,187 in Bonus Bids

## **North Slope Foothills 2004**

- 19,796 Acres Leased
- \$106,305 in Bonus Bids

## **•Cook Inlet 2004 (P)**

- 363,520 Acres Leased
- \$2,629,820 in Bonus Bids

(P) - Preliminary Sale Results

# **FY 2005 Areawide Lease Sales**

**Total Acres Leased (To date) = 350,720**  
**Total Bonus Bids (To date) = \$14,728,141**

## **North Slope 2004 (P)**

- 225,280 Acres Leased
- \$9,447,757 in Bonus Bids

## **Beaufort Sea 2004 (P)**

- 125,440 Acres Leased
- \$5,280,384 in Bonus Bids

(P) - Preliminary Sale Results

# Bidders in C. Y. 2003 & 2004 Oil & Gas Lease Sales

- \* Alliance Energy Group LLC  
Anardarko Petroleum Corporation
- \* Arctic Falcon Exploration LLC  
Armstrong Alaska, Inc.  
Aurora Gas, LLC  
AVCG LLC  
BP Exploration (Alaska) Inc.  
Conoco Phillips Alaska, Inc.  
Daniel Donkel
- \* Devon Energy Production Company, L.P.
- \* Douglas A. Barr  
EnCana Oil & Gas (USA) Inc.  
Escopeta Oil CO LLC
- \* Evergreen Resources, Inc.  
ExxonMobil Alaska Production Inc.  
Forest Oil Corporation
- \* Fortuna Exploration LLC (Talisman Energy, Inc.)
- \* George Kasper
- \* James L. Thurman  
Keith C. Forsgren
- \* Kenneth A. Mehaffey
- \* Kerr-McGee Oil and Gas Corporation
- \* Laurel Bassett  
Marathon Oil Company
- \* Mark Anderson
- \* Mary Azalea Goldstein  
Monte J. Allen
- \* Pelican Hill Oil & Gas, Inc.  
Petro-Canada (Aaska) Inc.
- \* Pioneer Natural Resources Alaska, Inc.
- \* Pioneer Oil Company Inc.  
Prodigy Alaska, LLC  
Robert O. Bolt
- \* UltraStar Exploration LLC  
Union Oil Company of California

\* Identifies entities who were new bidders or had not bid in O&G lease sales within the last 10 years.

# Proposed Alaska Peninsula Areawide Oil and Gas Lease Sale Area





**Oil Seeps  
along  
Oil Creek - Alaska Peninsula**



# Gas seep; hot springs



# Alaska Peninsula Areawide Oil and Gas Lease Sale Timeline

AK Peninsula Areawide Leasing	2003						2004						2005						2006			
	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr
Request for Agency Information	█																					
Request for Public Comment			█	█																		
DO&G Conducts public informational meetings									█													
Draft Prelim. Finding & ACMP Consistency Analysis			█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█	█
Issue Prelim. Finding and Consistency Analysis																						
Public comment period																						
DO&G Interprets geological and geophysical data																						
DO&G and DGGs geologic field parties																						
Draft proposed ACMP Consistency Determination																						
Consistency Determination elevation period																						
Draft Final Best Interest Finding (BIF)																						
Issue BIF & CD; Announce Sale																						
Reconsideration (30-day)/Court Appeal (30-day)																						
<b>LEASE SALE</b>																						
Title review																						
Leases awarded																						
Effective date of leases - April 1																						

# Promoting New Investments

- **Data Integration**
- **DOE Grant**
- **Governor's meetings with the Independents**
- **Streamlined Permitting**
- **Maximizing the Use of Existing Facilities**
- **Development of New Infrastructure**