Alaska Oil and Gas Activities

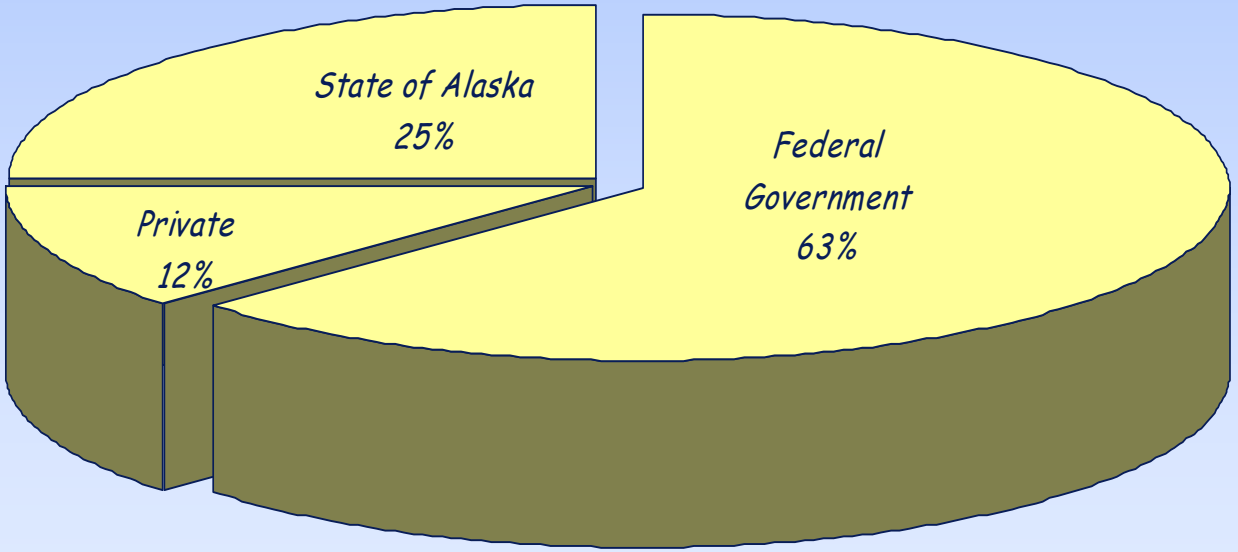
Division of Oil and Gas
February 1999

Alaska Department of
Natural
Resources

http://www.dnr.state.ak.us/oil/data/data.htm

Alaska Land Ownership

ALASKA: 570,000 Square Miles
1.48 Million Square Kilometers
365 Million Acres



Majority of known petroleum reserves are on state-owned lands
About 30% of proven U.S. oil reserves are located in Alaska

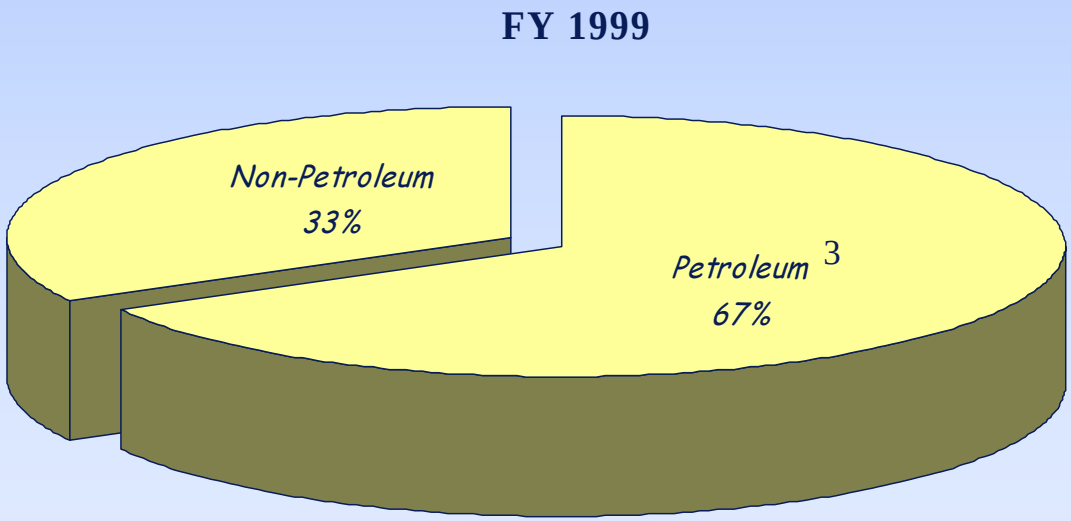
The State Revenue Pie

Petroleum Revenue Sources (FY98):

Royalties:
$737.2 Million

Bonus & Rents[1]:
$58.3 Million

Taxes:
$829.1 Million[2]
(Oil & Gas Property Tax + Income Tax + Severance Tax)



[3]

1 Includes Federally shared rentals

2 Source: pg 12, DOR Fall 1998 Revenue Sources Book

3 Source: pg 18, DOR Fall 1998 Revenue Sources Book

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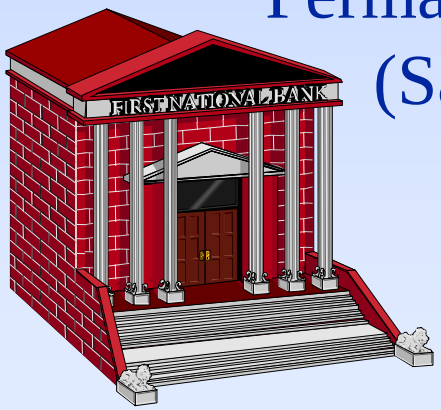
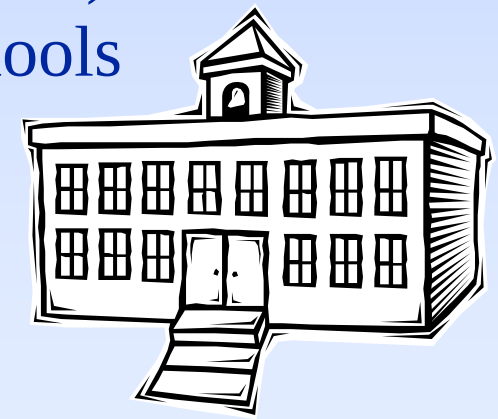
Where Our Petroleum Royalty Money Goes….

(69.1%)*
General Fund
(Spending)

(30.2%)*
Permanent Fund
(Savings)



(0.5%)*
Schools



*FY 1999 year-to-date; statute for new production since 1981; does not add to 100%.

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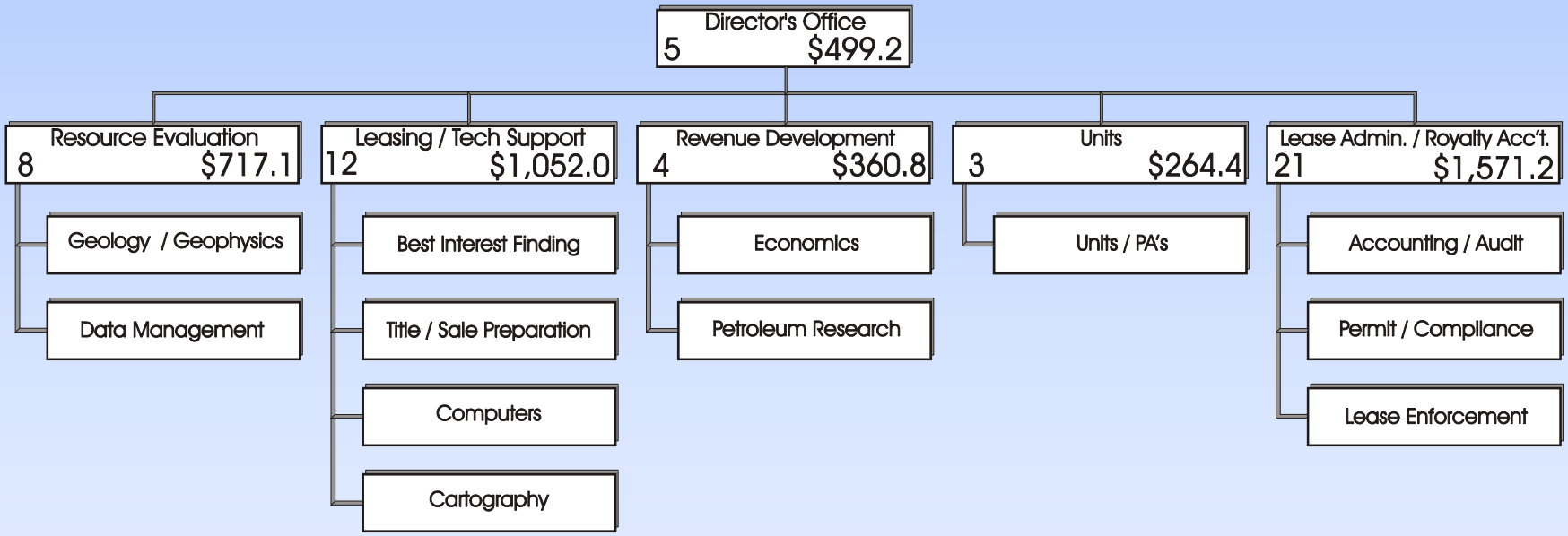
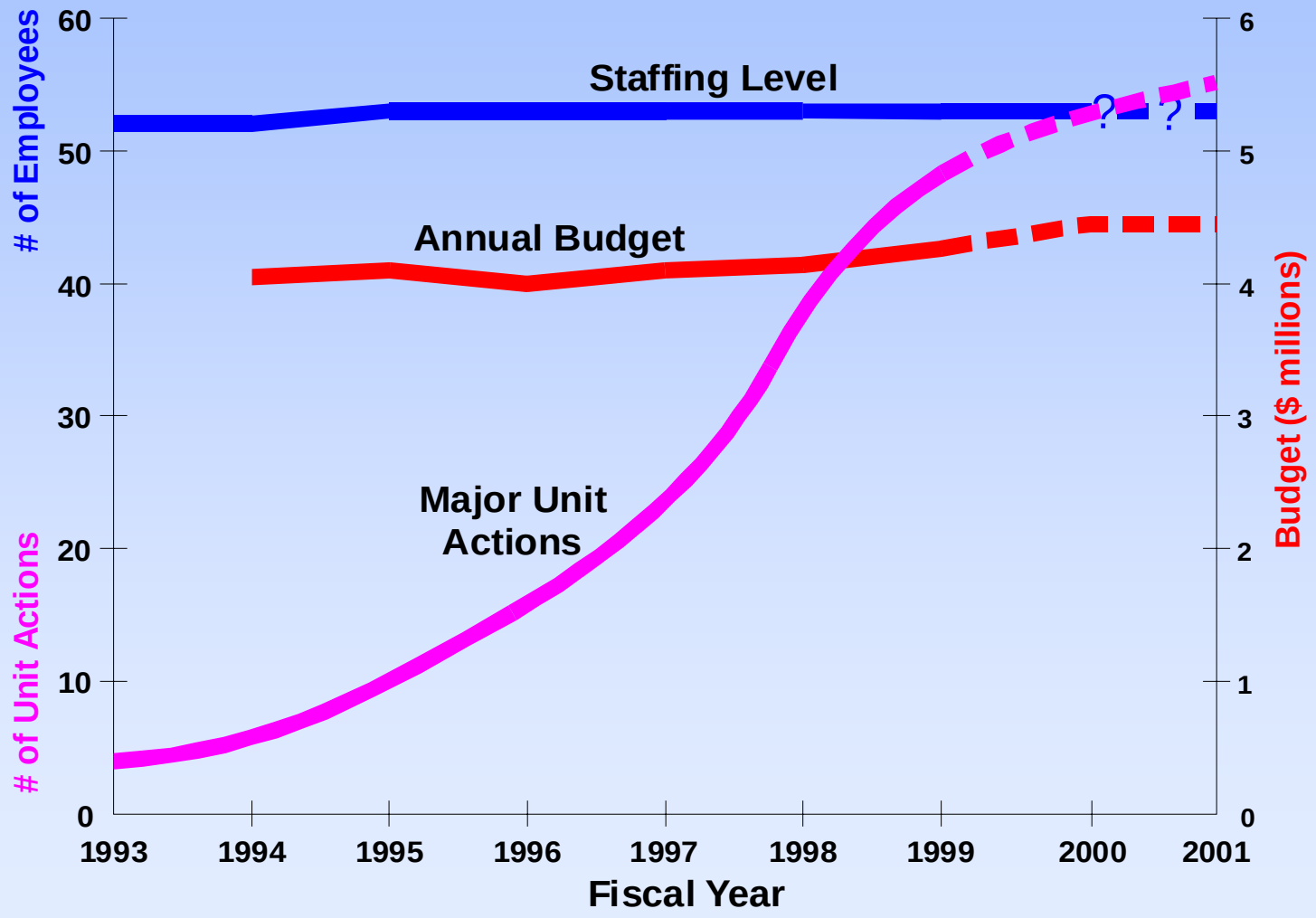
Division of Oil and Gas Organization

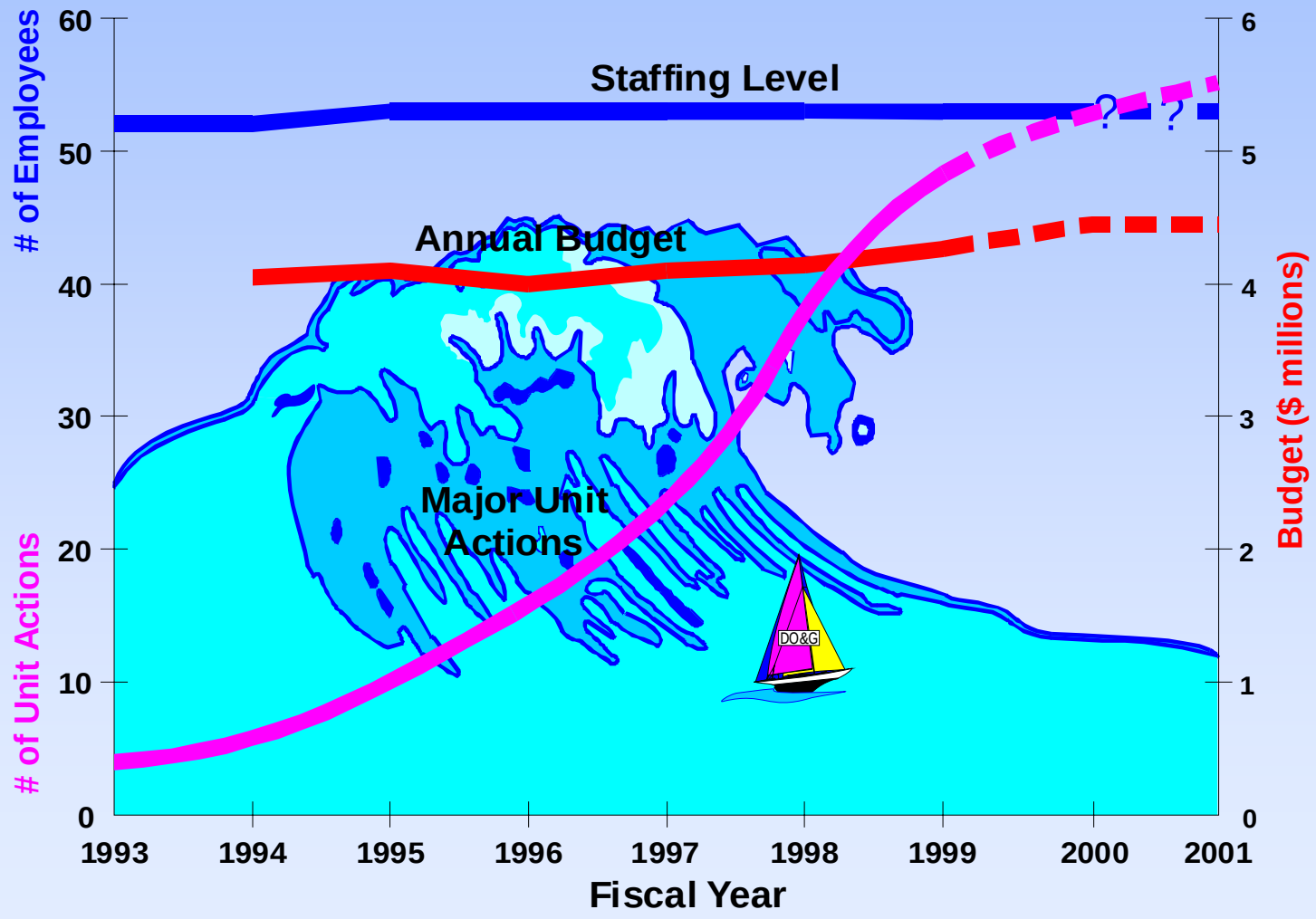
FY 2000 Request (Governor)



Division of Oil and Gas
Increased Workload with New Oil & Gas Activity



Division of Oil and Gas
Oil Niño Floods Alaska with new Oil & Gas Activity



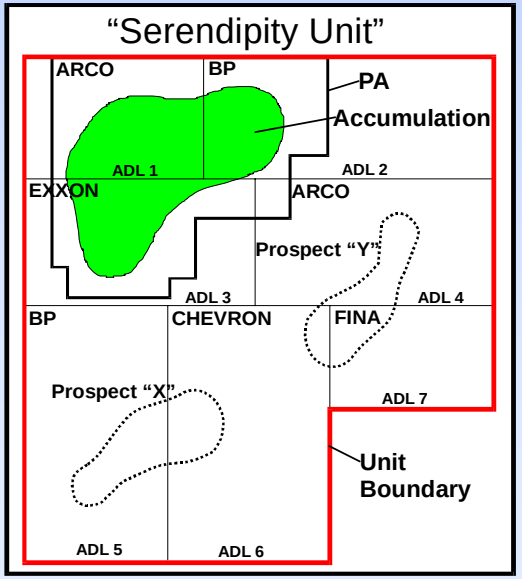
What Are The Common Lease/Unit Administrative Actions?

Unit - Units are groups of leases; units are established to efficiently explore and develop the leases covering one or more potential hydrocarbon accumulations

Participating Area (PA) - That portion of leases in a unit which cover a known or estimated accumulation and to which production is allocated via a unit agreement

Units Actions:
- Initial Formation
- Technical Evaluations - Reservoir Extent, Paying Quantities
- Negotiations - Unit Agreement
- Work Commitments
- Expansions
- Contractions
- Annual Plan of Exploration or Development

Participating Areas:
- Initial Formation
- Technical Evaluations - Commerciality
- Tract Allocation Factors
- Field Costs/Processing Costs
- Gas and Gas Liquids
- Fluid Commingling
- Facility Sharing
- Well Test Allocation
- Expansions
- Contractions
- Annual Plan of Development

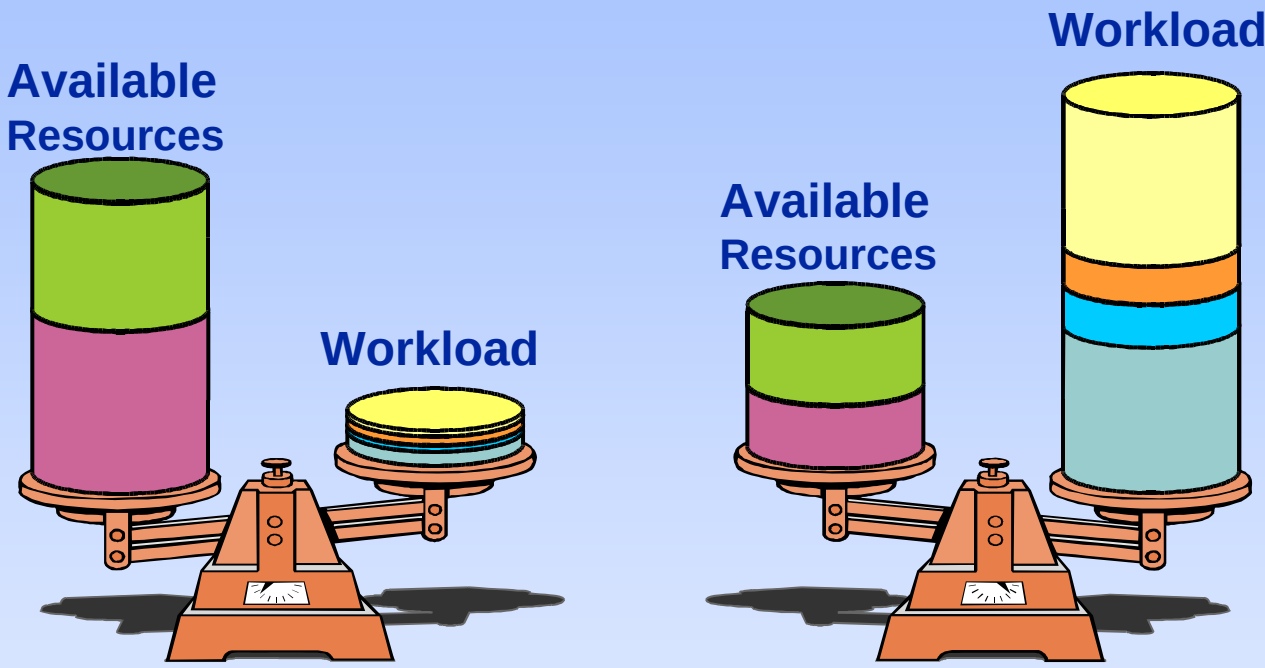


State-Federal Comparison
Activity, Staffing and Budgets
for Oil and Gas Agencies[1]

	State DO&G	Federal[2]
Active Leases	1,036	108
Active Units	28	8
Producing Units	314	30[3]
Annual Oil Production	510.8 mmbbls.	1.6 mmbbls[4]
Number of Employees	54	92[5]
Annual Budget	$4.2.	$11.7 million

(1) all figures based on 1997 data
(2) combines MMS and BLM; does not include federal royalty accounting group in Denver
(3) all producing leases are in Cook Inlet; mostly gas production
(4) million barrels
(5) includes 85 MMS employees and 7 BLM employees

State-Federal Comparison
Activity, Staffing and Budgets
for Oil and Gas Agencies



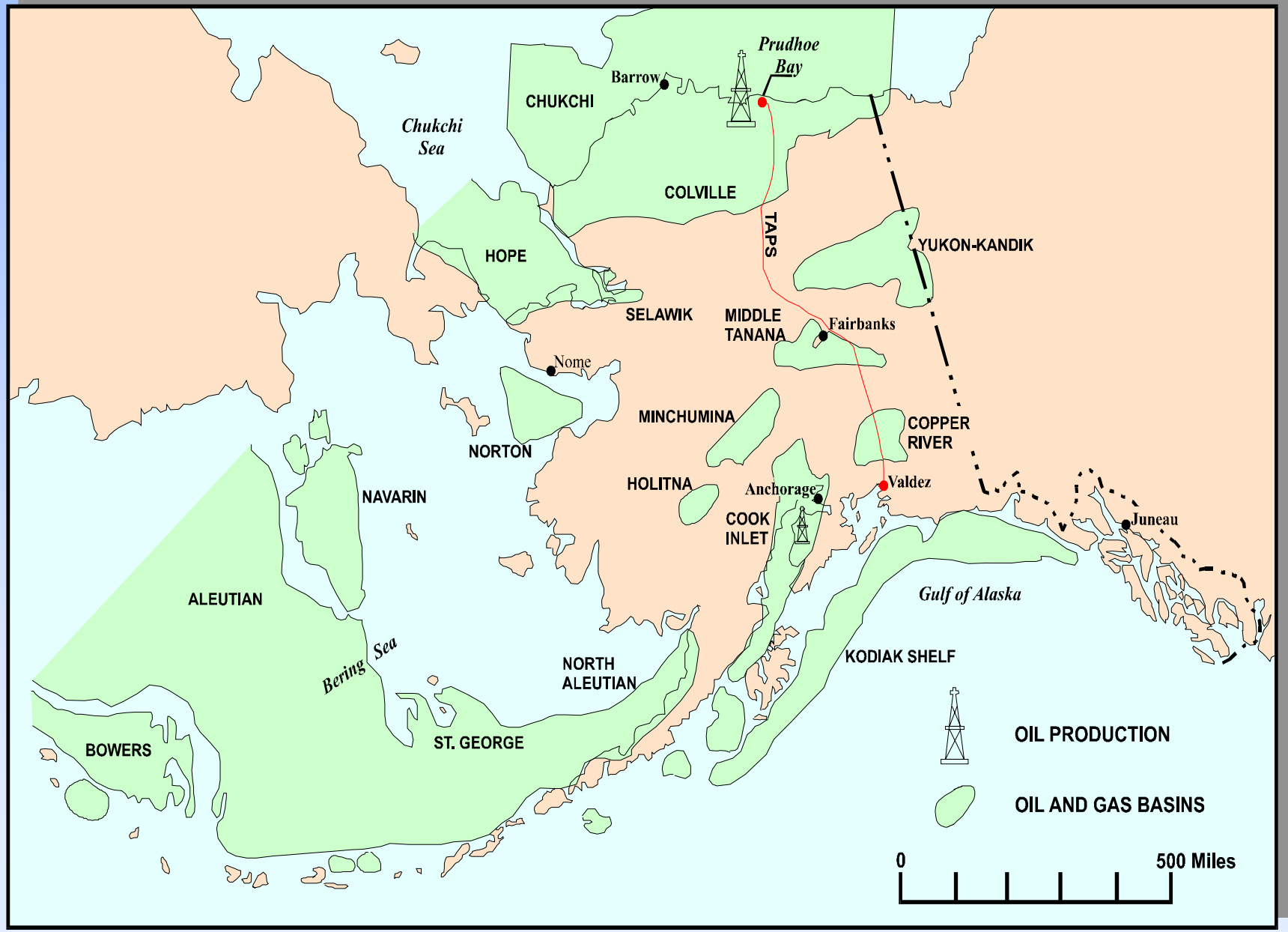
Available Resources:

- Number of Employees
- Annual Budget

Workload:

- Annual Oil Production
- Units Under Management
- Producing Leases
- Active Leases

Alaska Oil and Gas Basins



Alaska Reserves and Production

- **30% of total U.S. oil reserves.**
- 6.5 billion barrels of oil (U.S. total)
- **21% of total U.S. gas reserves**
- 34.2 trillion cubic feet of gas (U.S. total)
- **20% of total U.S. oil production**
- 1.27 million barrels of oil per day (U.S. total)

Sources: Alaska data are from Historical and Projected Oil & Gas Consumption 1999 (Draft)
U.S. data are from Energy Statistics Sourcebook, Oil & Gas Journal Energy Database 1998

Alaska Oil & Gas Facts

		Cook Inlet	North Slope
Producing Fields:	Oil	7	14
	Gas	17	3
Average Daily Production:	Oil	0.029	1.263
(Millions of barrels oil or billion cubic feet gas)	Gas (Net)	0.587	0.757
Cumulative Net Production:	Oil	1,248	12,239
(Millions of barrels oil or billion cubic feet gas)	Gas	5,575	3,549
Remaining Reserves:	Oil	64	6,458
(Millions of barrels oil or billion cubic feet gas)	Gas	3,066	31,155

Source: Historical and Projected Oil & Gas Consumption 1999 (Draft)

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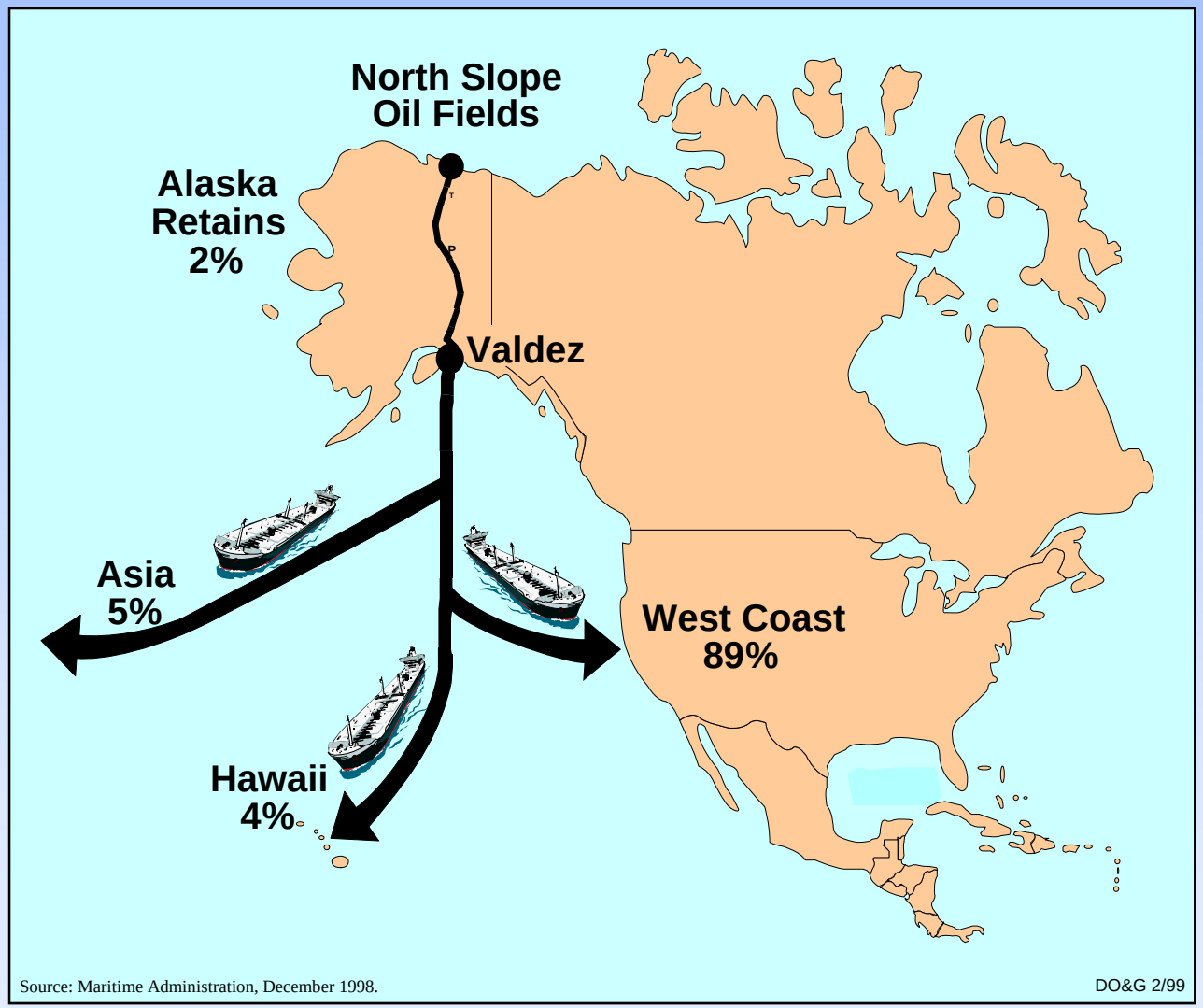
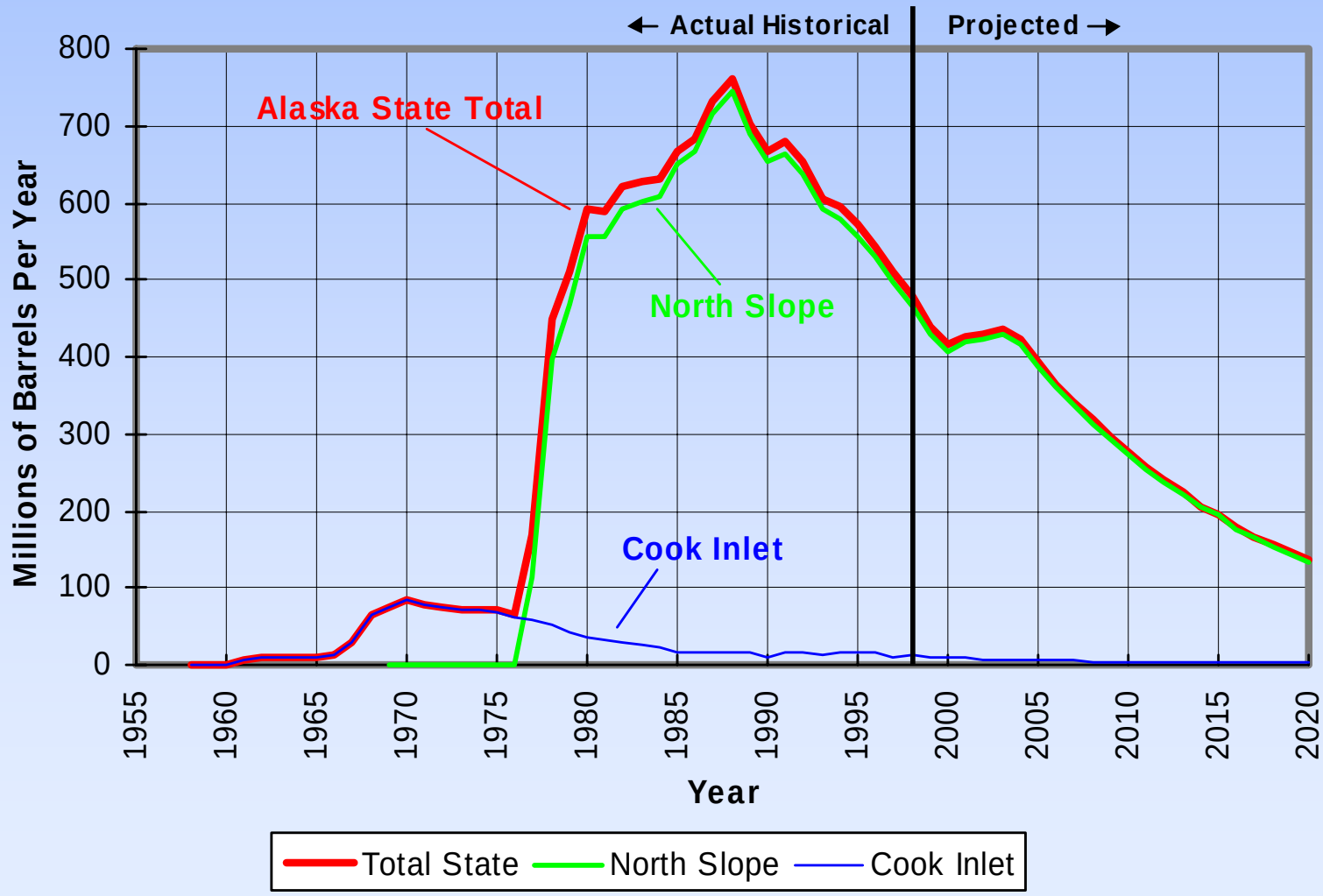
Alaska North Slope Crude Oil Destinations 1998



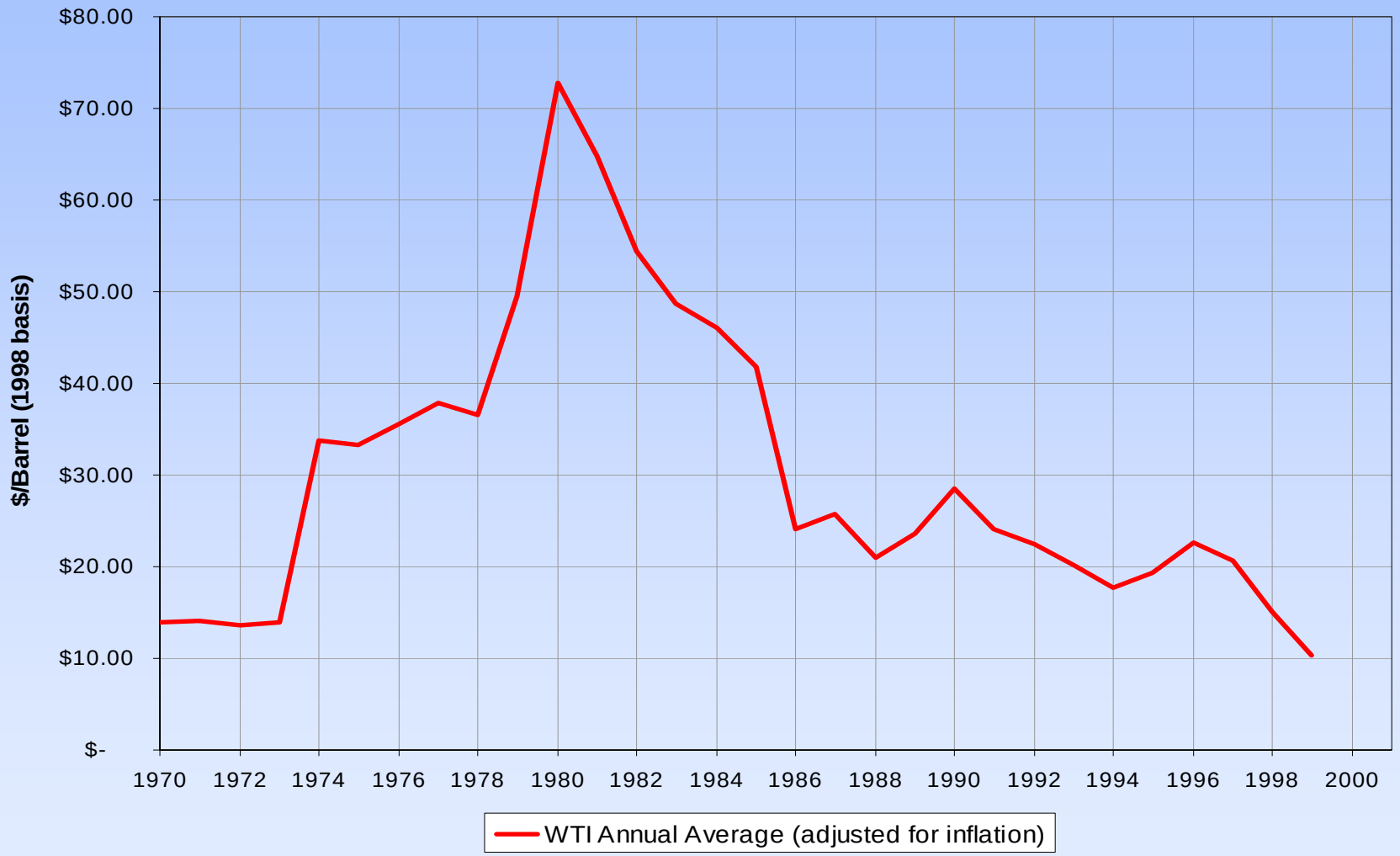
Alaska Oil Production Rates

Historical and Projected



Historical WTI Oil Prices

Inflation Adjusted (1998 Basis)



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Major Corporate News

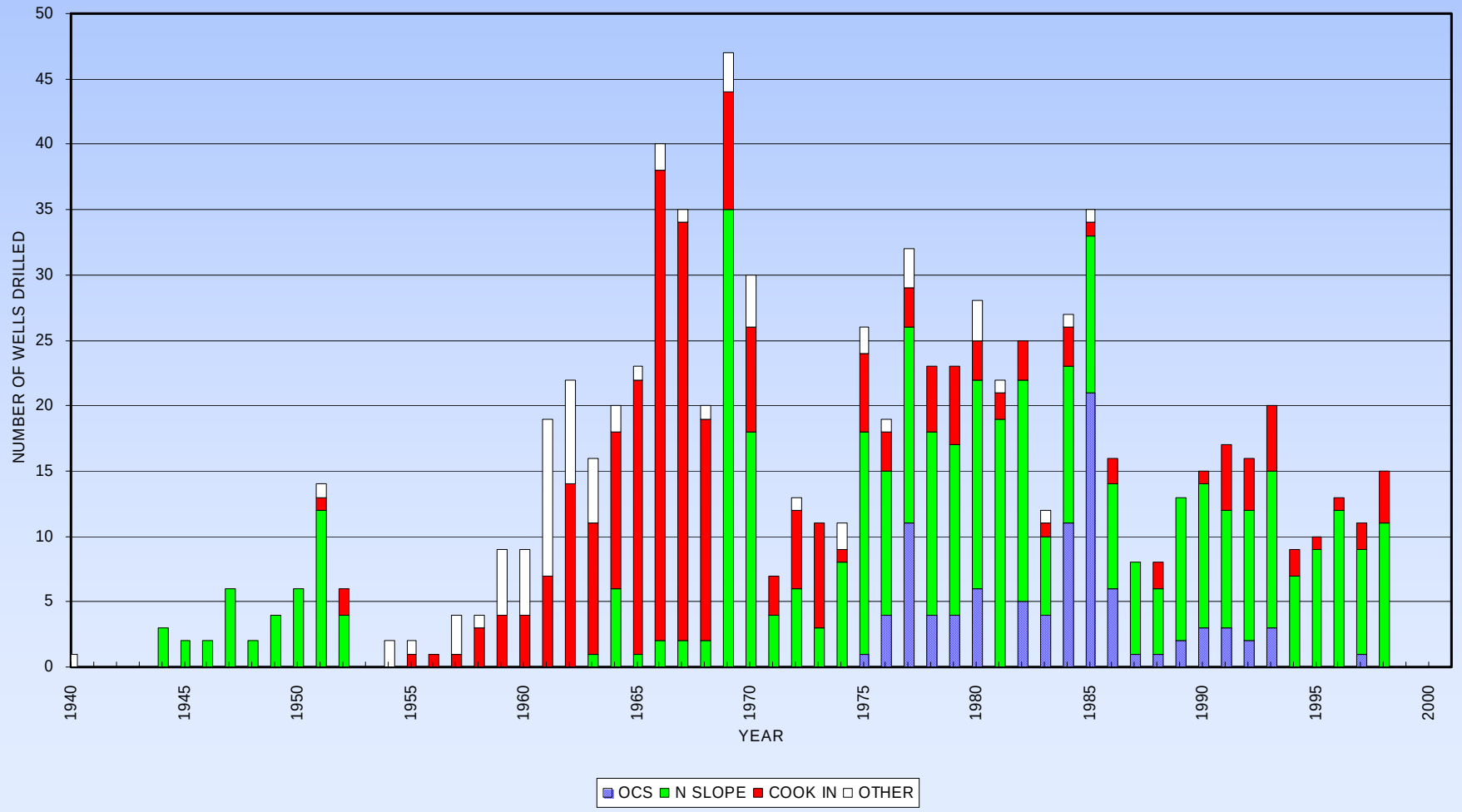
- ARCO acquires Union Texas Petroleum, cuts personnel and capital budget
  - Acquisition means ARCO effectively increases its share of Alpine
  - UTP had started to bid independently at lease sales, this competition eliminated
  - Alaska fared relatively well in ARCO's cuts: 80 jobs lost, 1999 capital budget lowered by$100 million, still higher than early 1990s
  - West Sak production stopped
- BP acquires AMOCO Corp., cuts personnel spending in Alaska
  - Big dollars changed hands in merger deal
  - Alaska is hit hard by cuts; 600 jobs cut, capital spending reduced by $600 million
  - Badami production stopped, Northstar and Liberty development postponed
- Exxon acquires Mobil Oil
  - May change the course of development at Point Thomson, Exxon now has 59.72%
  - Otherwise may not affect Alaska much
- Unocal tries to sell Alaska assets
  - No buyers found for fertilizer plant; oil and gas negotiations continue
- ARCO and Chevron enter into several exploration agreements in Alaska and worldwide
  - Both companies have said they have no plans to merge

Independents - Alaska's New Players

- ***Anadarko Petroleum Corp.***
  - Has been involved in some of the world's major oil finds in recent years
  - One of U.S.'s larger and more aggressive independents
  - Established office in Alaska in 1997
  - CEO has described Alaska as "core area" for Anadarko; no slowdown in Alaska projects
  - Acquired rights to 3.3 million acres north of Brooks Range from ASRC
- ***Forcenergy Inc.***
  - Bought leases in the McArthur River, Trading Bay and Redoubt Shoal fields in 1996
  - Currently constructing facilities for development of Redoubt Shoal in Korea
  - Established Anchorage office in 1997
  - Active bidder and leaseholder throughout Cook Inlet
  - Debt ratings lowered twice in 1999, placed on credit watch list (it may happen again)
- ***Cross Timbers Oil Co.***
  - Bought Cook Inlet properties and operations from Shell Oil in 1998
  - Increased recoverable reserve estimate for Middle Ground Shoal field to 12 mmbo
  - Small Fort Worth, Texas-based company
  - Young company; went public in 1993 (predecessor companies formed in 1986)
- ***Frontier Petroleum Corp.***
  - Small Syracuse, New York-based company
  - Ranked 11th in State of Alaska lease acreage held versus no position in Alaska two ago

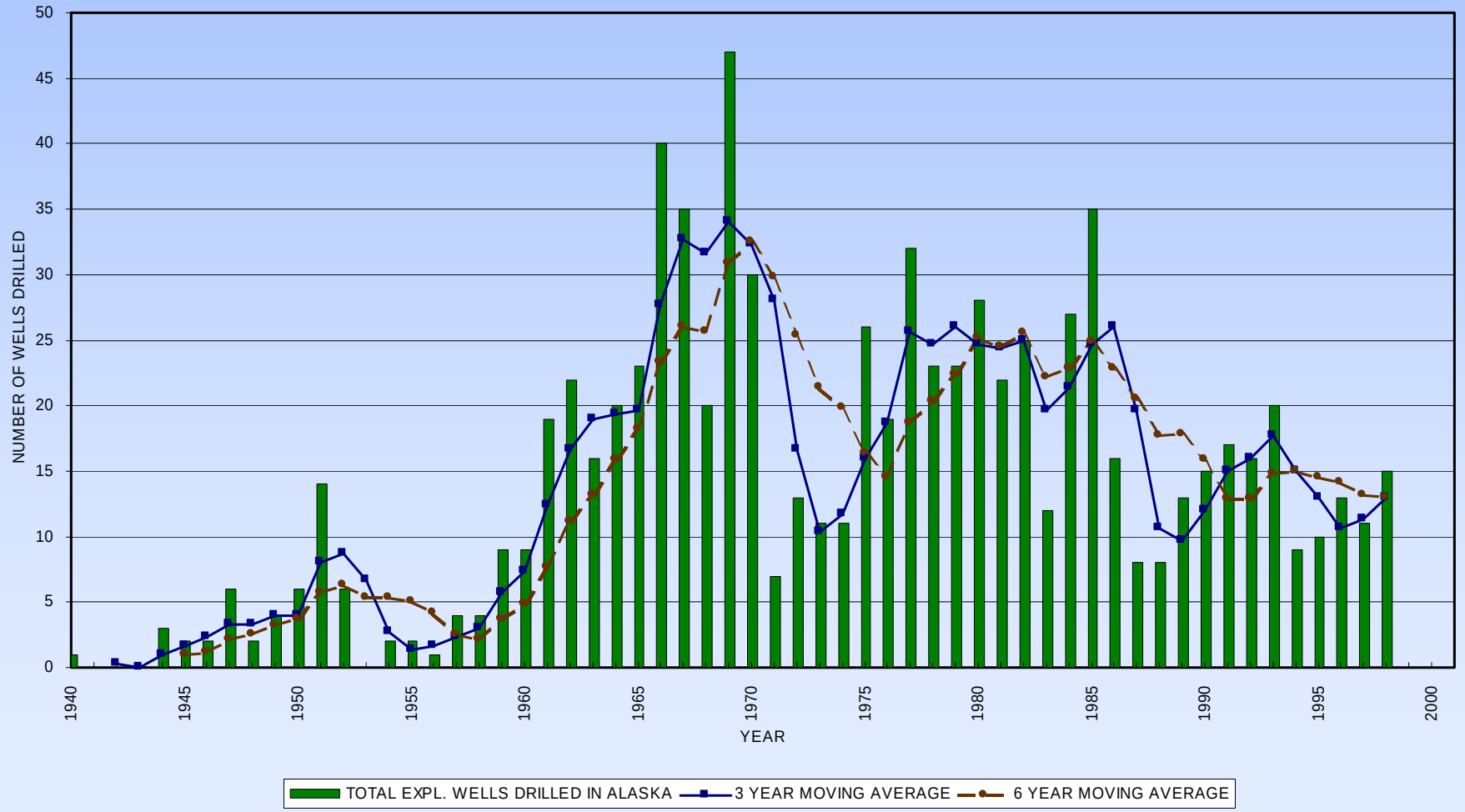
Alaska Exploration Well Statistics

Grouped By Area



Alaska Exploration Well Statistics

Total Exploration Wells vs. 3 & 6 Year Moving Averages



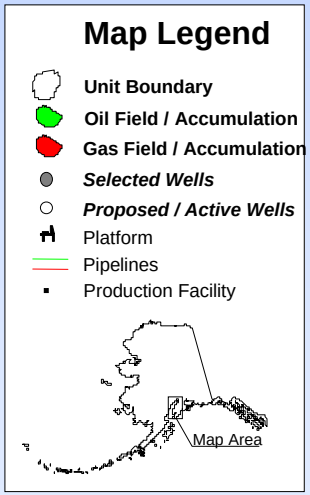
Top 10 Alaska Leaseholders

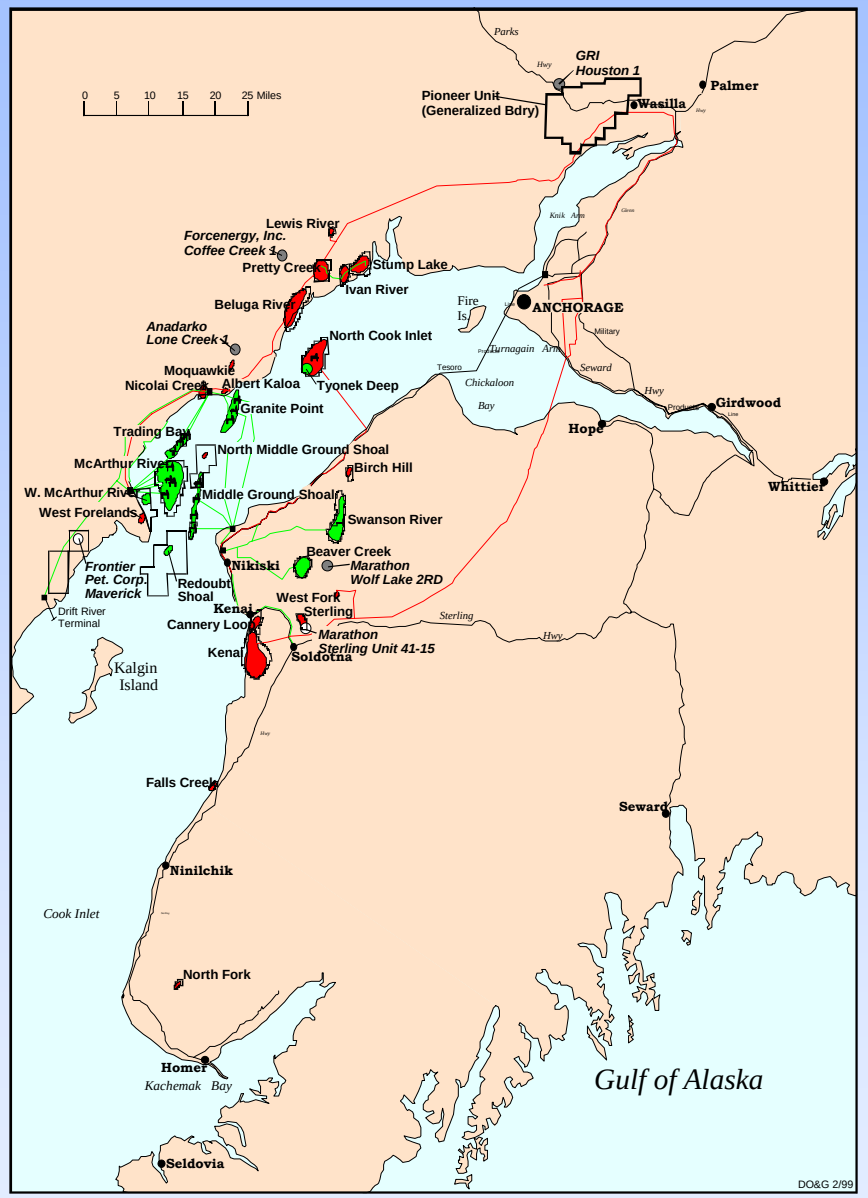
Ranked By Current State of Alaska Acreage Held

Rank	Campany Name	1999 Acres	1998 Acres	'98 Rank
1	ARCO[1]	1,135,389	908,400	(2)
2	BP	912,088	970,102	(1)
3	Chevron	260,165	146,389	(4)
4	UNOCAL	234,967	208,212	(3)
5	Anadarko	204,497	71,260	(10)
6	Forcenergy	179,113	133,325	(5)
7	Exxon[2]	178,846	132,079	(6)
8	Phillips	105,496	119,130	(7)
9	Petrofina	66,181	55,278	(11)
10	Marathon	63,141	75,038	(9)

1 1999 figures include merger with Union Texas Petroleum.
2 1999 figures include merger with Mobil.

Cook Inlet Activity





Cook Inlet - Activity (1)

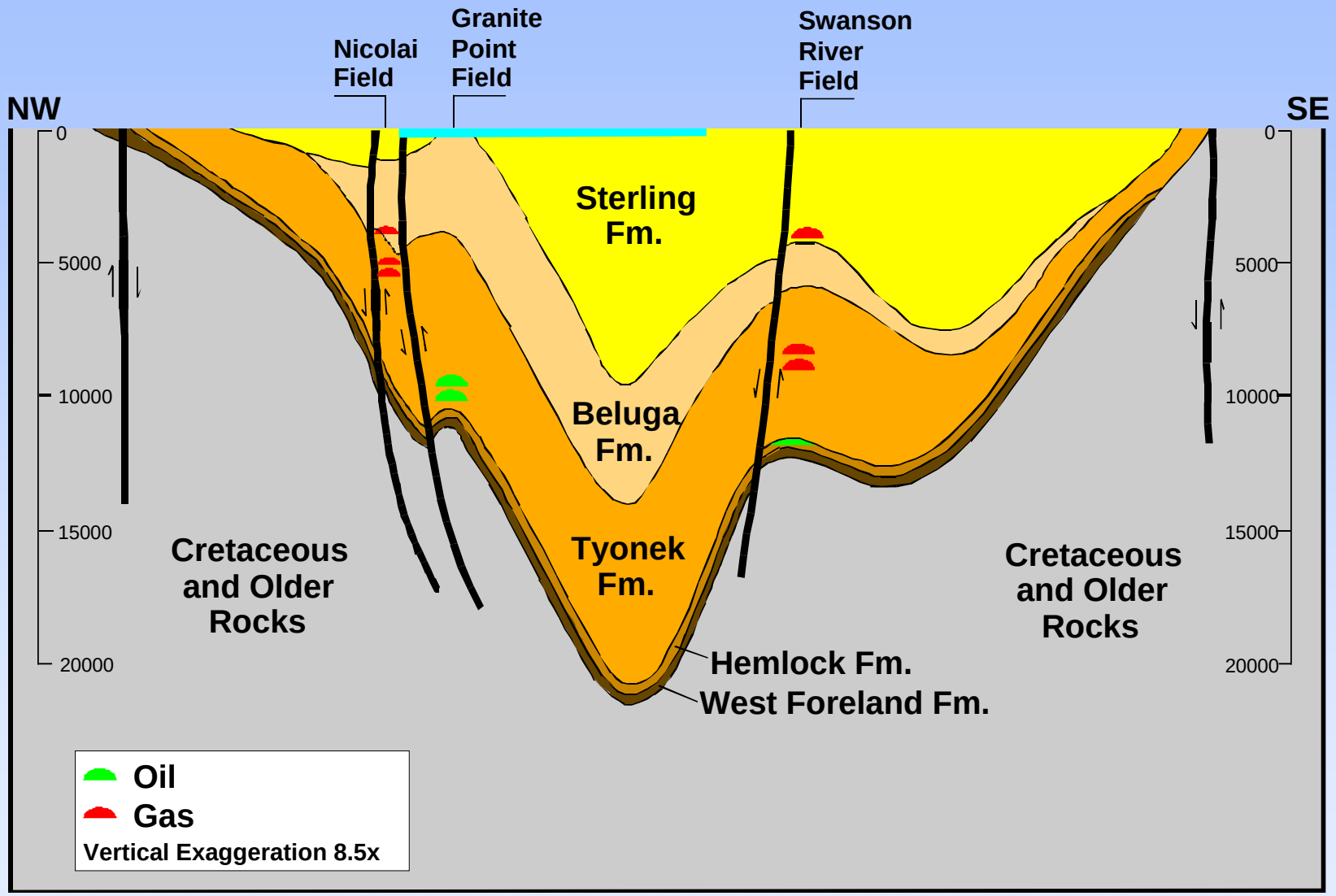
- Growth Resources testing coalbed gas potential near Houston
  - 3 shallow wells were drilled in 1998, a fourth was abandoned at shallow depth
  - Locations are along the Castle Mountain fault in south-central Alaska
  - Currently “transfer producing” up to 500 barrels of saline water from coal and diverting to deeper injection interval, gas amounts undisclosed
- UNOCAL has work commitment for three coalbed gas wells and reentering another well at its Pioneer Unit
  - Still looking for a partner(s) in project
- Forcenergy announced that the Coffee Creek #1 gas test was dry hole
- Anadarko announced gas discovery at Lone Creek #1 near Moquawkie
  - Tested gas at 10.6 MMCF/D from 2,400 ft. depth
  - If commercial would be first such gas discovery since 1979 at Cannery Loop
- Phillips Petroleum writes down expenses related to Tyonek Deep
  - Three delineation wells drilled in 1998
  - Development plans placed on hold

Cook Inlet - Activity (2)

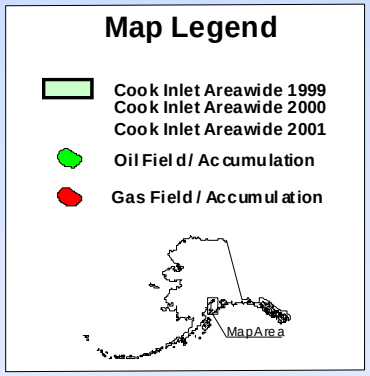
- Frontier Petroleum has work commitment for exploration well
  - At Maverick Prospect, onshore west of Trading Bay field
  - Will drill through to Talkeetna Formation
- Anadarko evaluating development of Moquawkie prospect
  - Lone Creek #1 discovery is near Tyonek on Moquawkie (surface)/CIRI (subsurface) land
- Forcenergy as operator, continues with plans to develop Redoubt Unit
- Marathon sees some success at Wolf Lake #2 and in Sterling field; may drill additional wells at Kenai field
- Ninilchik area 2D, Upper Cook Inlet offshore 3D and Swanson River 3D surveys completed in 1997. N Middle Ground Shoal 3D/2D survey completed in 1998
- State Lease Sale 85 areawide set for April 1999; OCS sale postponed
  - Sale 85A-W reoffer was held in February 1998
  - Included about 758,000 acres, bonus bids totaled about $829,000
  - OCS sale originally planned for 2001 is deferred due to lack of interest

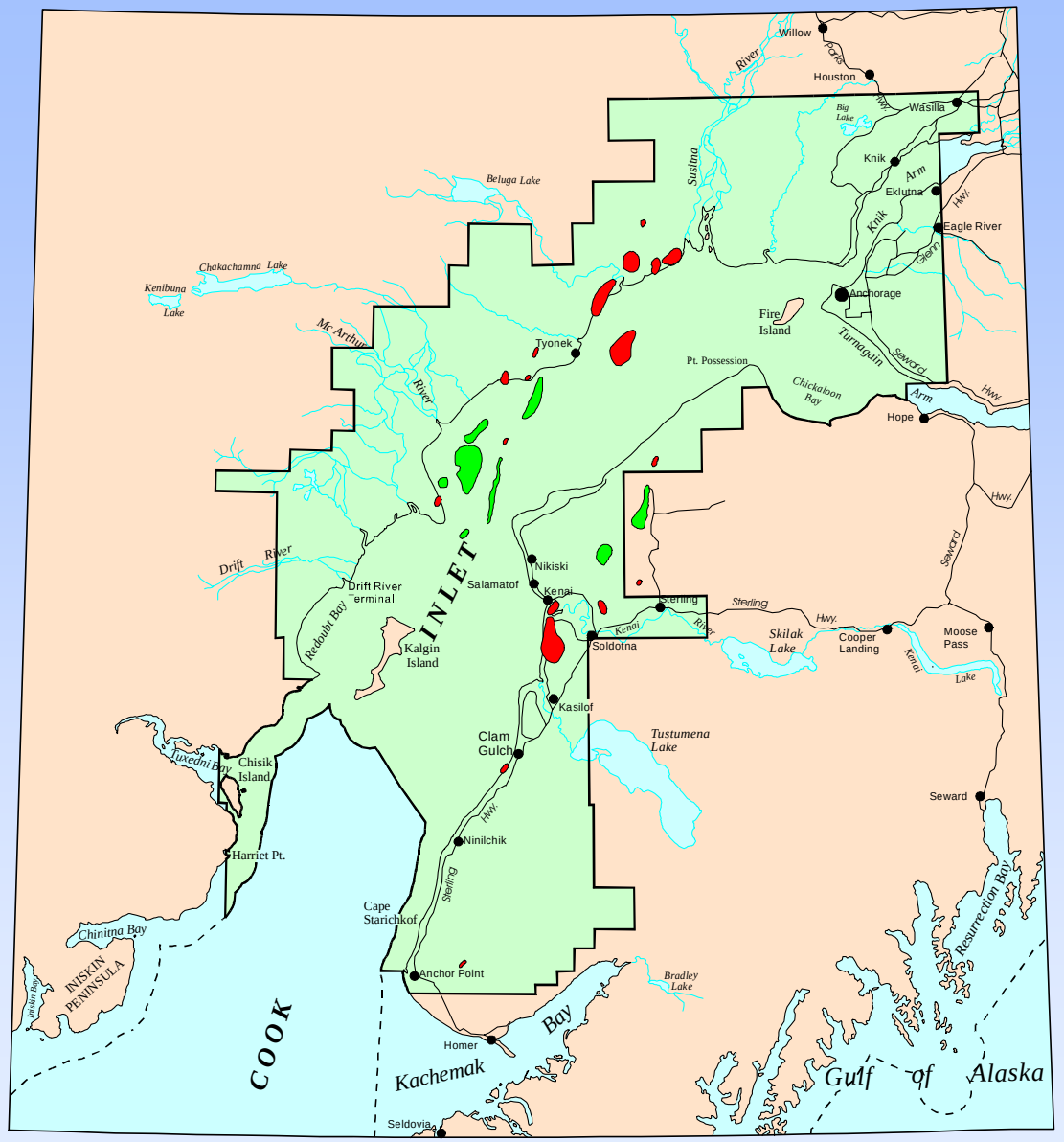
Cook Inlet Basin

Generalized Geologic Cross Section



Cook Inlet Leasing Activity

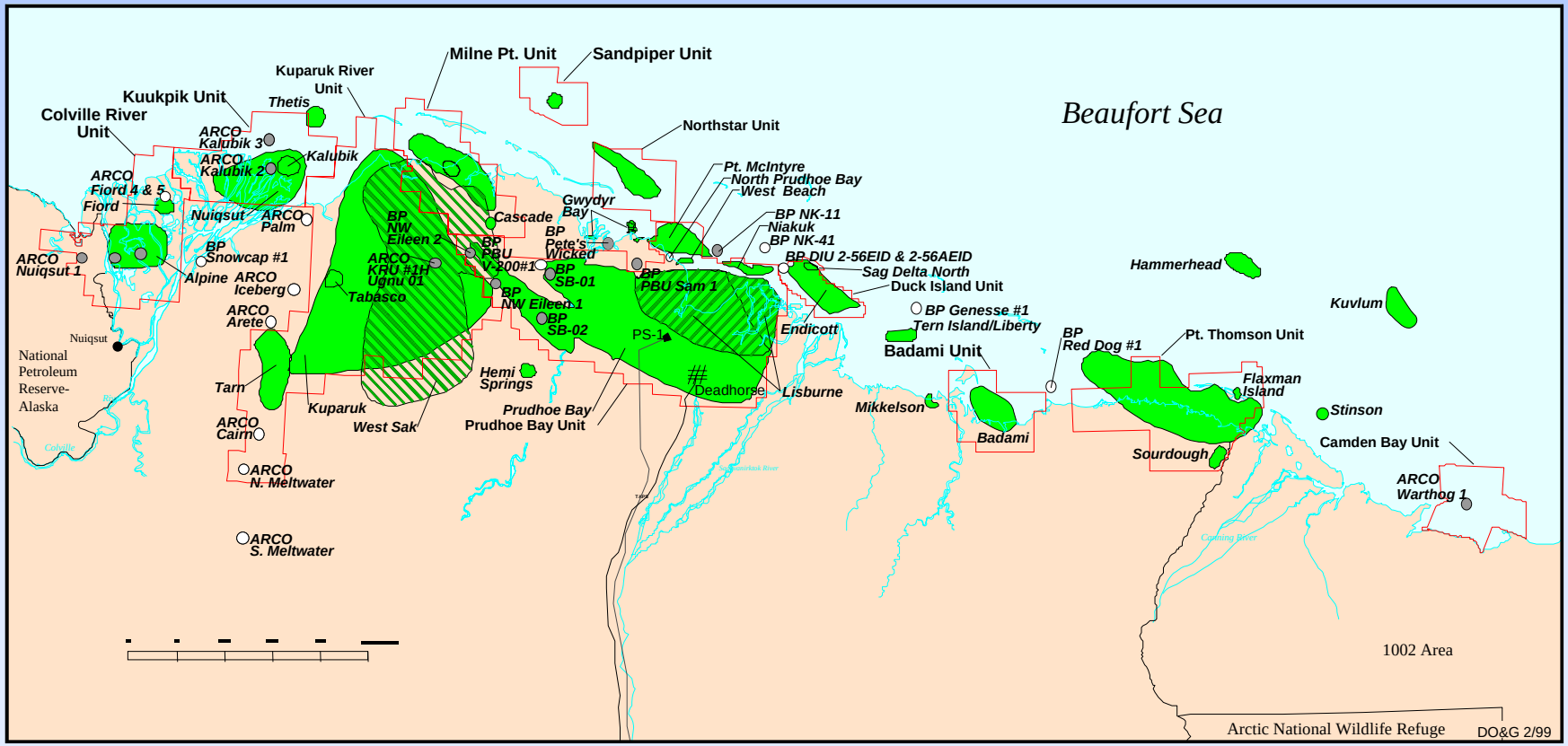




Tyonek Deep Accumulation

- Formerly known as Sunfish accumulation
- Discovery Date: 1991, ARCO Sunfish #1 well
- Reservoir: Tyonek Formation, “Sunfish” sandstone
  - Deeper horizon than North Cook Inlet gas field
- Recoverable Reserve Estimate: 77(?) million barrels oil
  - Largest oil find in Cook Inlet since the 1970s
- Operator: Phillips Petroleum (Tyonek platform)
- Discovery well flowed 1,100 bopd 42° API gravity oil
- NCIU #B-01, announced as non-commercial in 1997
  - B-01A, B-02 and B-03 wells drilled in 1998
- Phillips says project “isn’t viable” due to low oil prices
  - Takes $71 million charge against earnings related to Tyonek Deep project

Northern Alaska Activity



http://www.dnr.state.ak.us/oil

Primary Producing Oil Fields

Northern Alaska (February 1998)

Name Discovery Date	Projected Avg. Dly. Prod. *1998* *(x 1,000 bbls/d)*	Cumulative Production *Thru '97* *(x 1,000,000 bbls)*	+	Remaining Reserves *As of 1/98* *(x 1,000,000 bbls)*	=	Est. Ultimate Recovery *As of 1/98* *(x 1,000,000 bbls)*
Prudhoe Bay **1967**	**715**	**9,508**		**3,511**		**13,019**
Kuparuk River [1] **1969**	**266**	**1,485**		**1,474**		**2,959**
Endicott [2] **1978**	**61**	**358**		**254**		**612**
Point McIntyre Area [3] **1988**	**180**	**367**		**499**		**861**
Milne Point [4] **1969**	**53**	**85**		**541**		**626**

[1] Includes West Sak & Tarn
[2] Includes Sag Delta North
[3] Includes Pt. McIntyre, Lisburne, Niakuk, West Beach, North Prudhoe Bay State, West Niakuk, Niakuk 28, & Niakuk 29
[4] Includes Schrader Bluff & Sag River

Note: Primary means greater than 50 Mbbls/d projected
Numbers reflect Oil + NGL's - Injectant

Projects Under Development

Northern Alaska (February 1999)

Project	Status	Expected Start Up Date	Expected Peak Production Rate *(x 1,000 bbls/d)*
Badami	**Production started, but currently shut-in**	**N.A.**	**?**
Northstar**	**Ice road construction and EIS work underway**	**2001 ?**	**60**
Alpine	**Construction work underway**	**2000**	**70**
Prudhoe Bay Satellites	**Exploration/delineation/testing underway**	**1998 ***	**40**
Kuparuk River Satellites	**Exploration/delineation/testing underway**	**1998**	**29**
West Sak	**Initial development underway**	**1998**	**16**
Schrader Bluff	**Expansion work slowed; under review**	**N.A.**	**16**

***** Various Facility Sharing Agreements Needed Prior to Start-Up
****** Construction of modules halted, moving forward with permitting

Undeveloped Oil Accumulations

Northern Alaska (February 1999)

Name	Discovery Date	Estimated Recoverable Reserves	Comments
Point Thomson	**1977**	**200 MMBO 3.5 TCFG**	**Near ANWR; gas, condensate, and oil**
Flaxman Island	**1975**	**? Oil**	**Tertiary turbidites , in Pt. Thomson Unit**
Sourdough	**1994**	**? Oil**	**Adjacent to ANWR, in Pt. Thomson Unit**
Kuvlum	**1992**	**325 MMBO**	**East Beaufort OCS, tested at 3400 BOPD**
Tern Is./Liberty	**1982**	**120 MMBO**	**Mikkelson Bay area OCS**
Hammerhead	**1986**	**? Oil**	**OCS waters north of Pt. Thomson**
Colville Delta	**1985**	**? Oil**	**Near Kuparuk Field**
Fiord	**1992**	**? Oil**	**Two intervals at 1245 BOPD**
Kalubik	**1992**	**? Oil**	**Two intervals at 1610 BOPD**
Northstar *	**1984**	**144 MMBO**	**Beaufort Sea, including Seal Island**
Prudhoe Bay *	**Satellites**	**241 MMBO**	**Several separate accumulations**

* Development in progress or planned in the near term.
MMBO - millions of barrels of oil
TCFG - trillions of cubic feet of gas

Northern Alaska - Activity (1)

- Alpine development continues; more wells planned for 1999
  - Two development wells and an exploration well drilled in 1998
  - ARCO increases reserve estimates to 350-400 MMBO recoverable
  - More wells may be drilled than previously planned, up to 82 in phase I
  - Peak production of 70,000 BOPD expected by 2001
- Fiord #4 and #5 permitting underway by ARCO
- BP Snowcap #1 drilling planned near Alpine field; may be deferred
- Tarn production started; development drilling continues; additional exploration by ARCO underway
  - Producing 22,000 BOPD, estimated peak production at 30,000 BOPD
  - ARCO Meltwater S. #1 permit issued; second well possible
  - Palm, KIAN, Cairn, Fiord and Meltwater N. in application process
- Tabasco development drilling continues, full-scale production in late 1999
  - 20-30 MMBO recoverable reserves of heavy crude oil
  - Phase I drilling calls for up to 18 new wells
  - Tested at up to 3,500 BOPD from 3,800 ft. depth in the KRU #2T-202
  - Peak production should reach 10,000 BOPD

Northern Alaska - Activity (2)

- West Sak/Schrader Bluff heavy oil production halted in late 1998
  - PA and pool rules established for West Sak “core area” in 1997
  - West Sak full scale production began in December 1997
  - Producing about 4,000 BOPD in early 1998
  - Economically recoverable reserve estimate: 279 MMBO in West Sak “core area”, 281 MMBO in Schrader Bluff “core area”
- Ugnu reservoir in Kuparuk Unit tested by ARCO in 1998
- Cascade tracts added to Milne Pt. Unit, new PA formed
- Oil in NW Eileen area confirmed
  - NWE #1-01 and #1-02 found Kuparuk oil; #2-01 found Ivishak/Sag R. oil
  - BP estimates 30-50 MMBO in Kuparuk and 30-50 MMBO in Sag R./Ivishak reserves present
- BP Prudhoe Bay #SB-01 and #SB-02 drilled in 1998
  - Flowed oil from Schrader Bluff at 1,000 BOPD
- BP PBU V-200 #1 permitted and drilling

Northern Alaska - Activity (3)

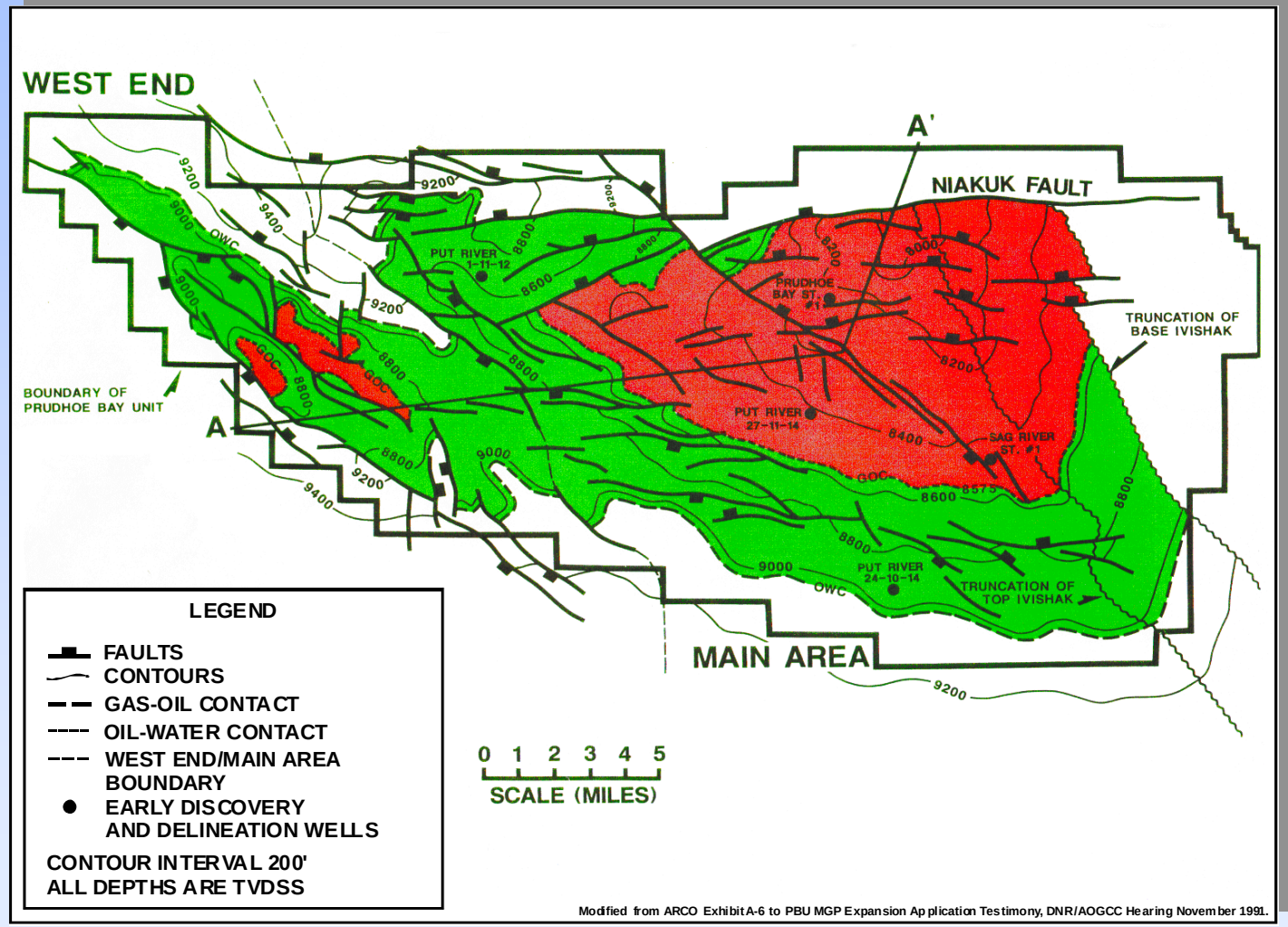
- Northstar development deferred due to low oil prices
  - Surface use permit approved by DO&G in Feb. 1999
  - Ice road under construction; may begin hauling gravel in early 1999
  - Construction of production modules halted in Dec. 1998
- BP Pete's Wicked #1 development planned
  - Sag R./Ivishak confirmed in 1997 well
- Midnight Sun/Sambucca development plans
  - BP Sam #1 confirmed oil in Kuparuk and Sag R./ Ivishak in 1997
  - Kuparuk (Midnight Sun) reservoir tested at 4,000 BOPD at 11,662 ft. (MD)
  - Sag R./ Ivishak (Sambucca) tested at 1,400 BOPD at 12,965 ft (MD)
  - BP Midnight Sun #1 well permit approved
- BP Niakuk Field, reservoir extended
  - NK-11 gains North America extended reach drilling record; 19,804 ft. ERD
- BP's Eider discovery begins production in 1998
  - DIU MPI #2-56AEID discovery well production tested at 3,000 BOPD
  - 8 MMBO estimated reserves
  - New PA approved in September 1998
- Liberty development deferred for at least one year
  - Discovery wells located in OCS waters
  - 120 MMBO estimated recoverable reserves

Northern Alaska - Activity (4)

- BP Genesse #1 taken out of review process; may restart in early ‘99
- Badami production slowed dramatically; later is shut-in
  - Aug. 1998 peak, 7,500 BOPD; original estimated peak, 30,000 BOPD
- BP Red Dog #1 permitted and drilling
- Kuvlum and Hammerhead leases relinquished
- Sale 86 - Beaufort Sea held in November 1997
  - Drew $28 million in total high bonus bids
- Several 3D seismic programs were completed in 1998
  - Northern/BP for Flaxman Is to ICWest 3D and Milne West 3D
  - Western spec for multiple 3D surveys from Midway to Cross Is. 3D
  - Western/Arco Challenge Island 3D survey
- Two 3D seismic programs planned for 1999
  - Western/BP program of seven surveys; W. Sag R., Sag R., Mesa (upland Colville Delta), Summit (Colville Delta), NPRA, E.Sag R., and Eastern
  - Western/Arco program of four surveys; Grizzly (upland Colville Delta, E. NPRA, W. NPRA, Salmon(off shore Prudhoe Bay)
  - Each program plans call for 500 to 1000 square miles of total coverage

Prudhoe Bay Field

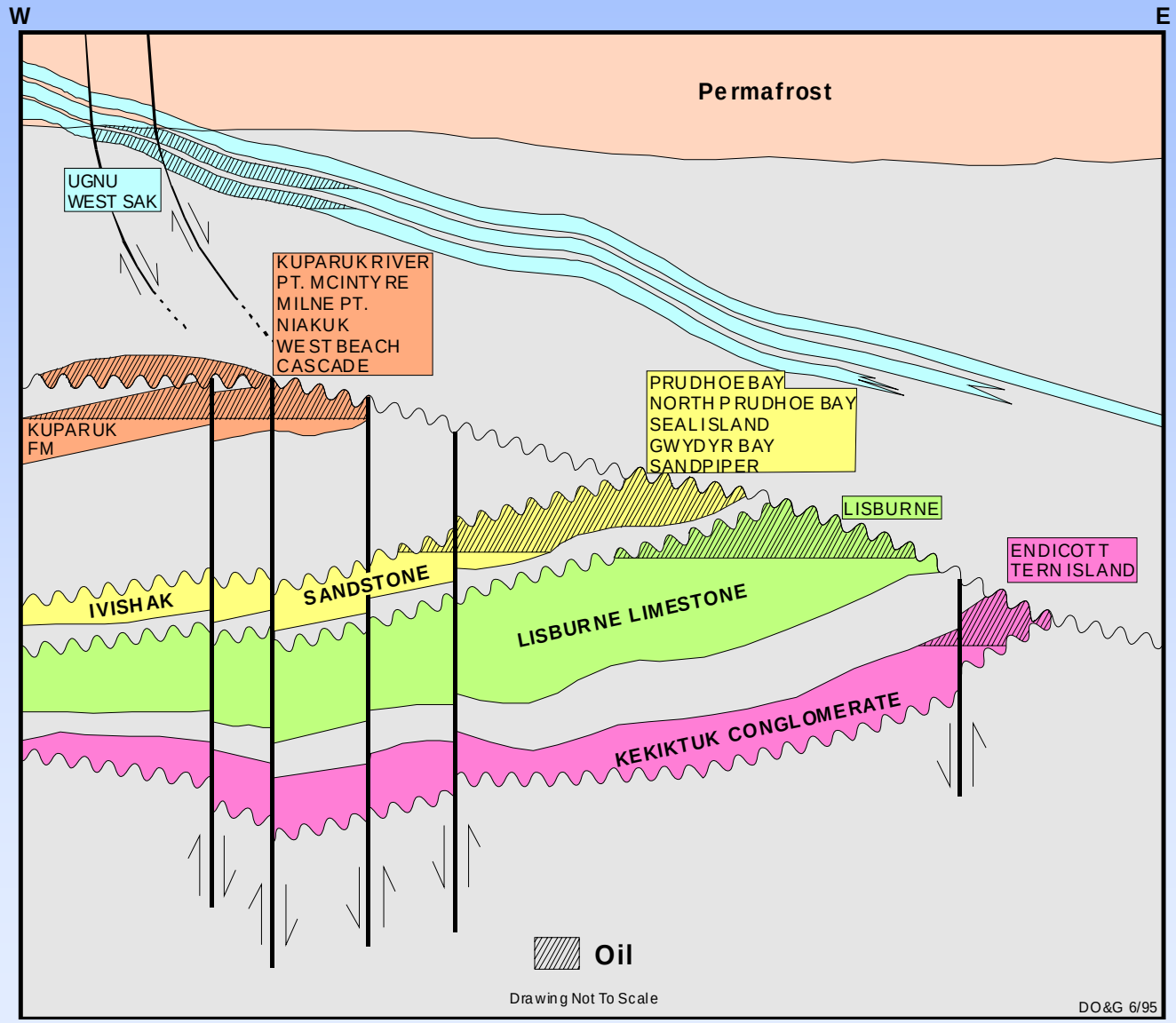
Top Ivishak Structure



Modified from ARCO Exhibit A-6 to PBU MGP Expansion Application Testimony, DNR/AOGCC Hearing November 1991.

Central North Slope

Generalized Geologic Cross Section

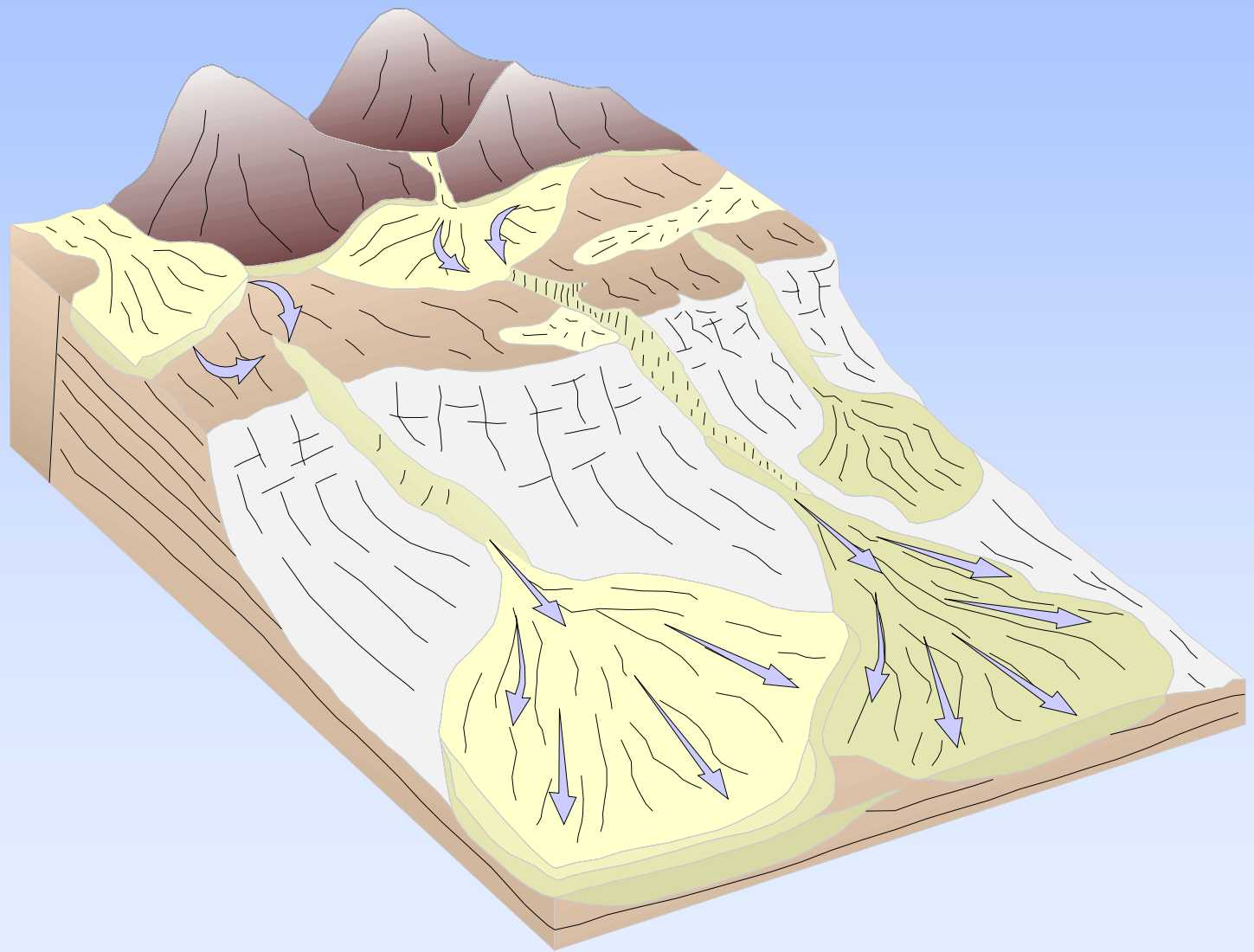


Badami Field

- Discovery Date: 1990, Conoco Badami #1 well
- Reservoir: Canning Formation, Brookian turbidite (9,900 ft. subsea)
- Recoverable Reserve Estimate: 120 million barrels oil
- BP Operator (70%), Petrofina (30%)
- Production started in August 1998
- Production peaked at 7,500 BOPD, recently was 3,000 BOPD
  - Originally BP estimated peak production at 30,000 BOPD
- Remote, stand-alone facility; designed for production rate up to 35,000 BOPD
- Low flow means thick waxy oil may congeal at low temperatures
- Turbidite sands are complex reservoirs; many unconnected sand bodies

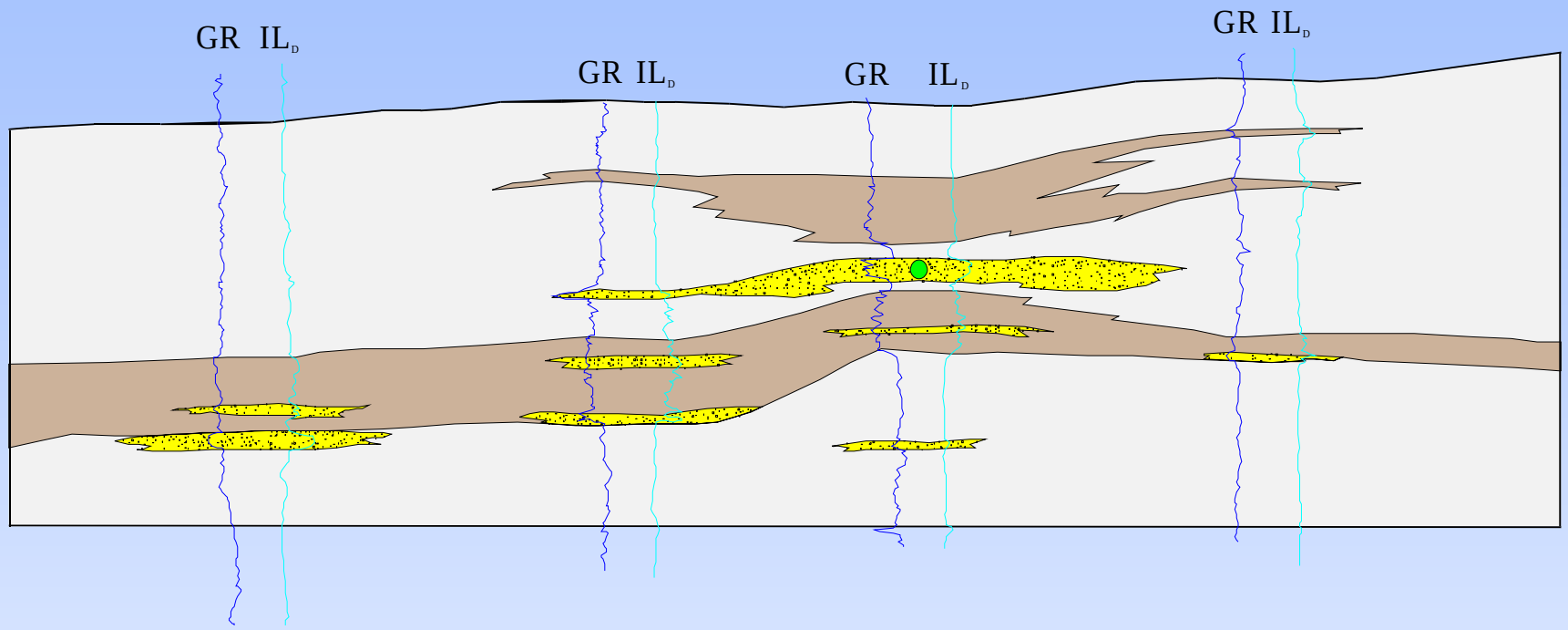
Submarine Fan

Badami Depositional Model



Cross Section Model of Submarine Turbidite Fan

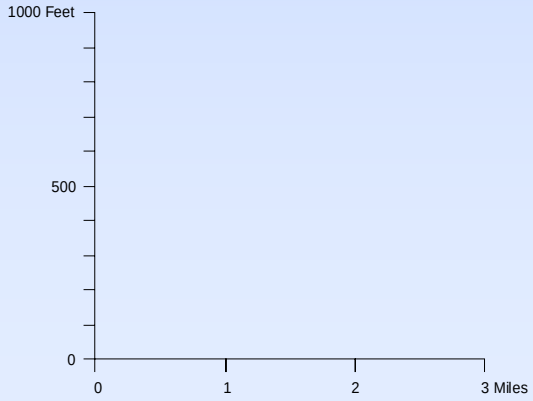
Illustrates Complexity of Sandstone Bodies



Sandstone

Siltstone

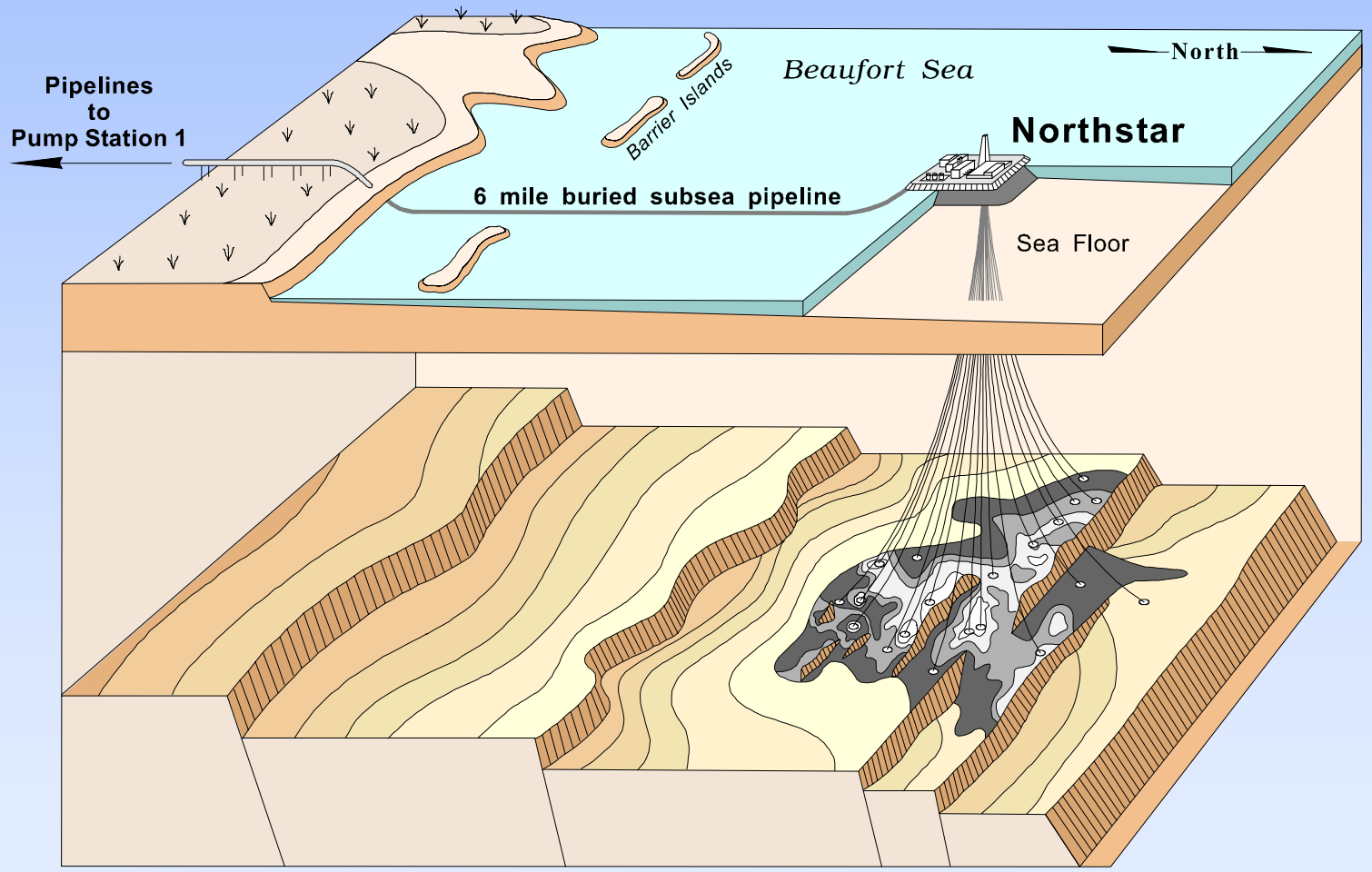
Shale



Northstar Field

- Discovery Date: 1982 , Shell BF-47 (Seal Island) #1 well
- Reservoir: Ivishak Sandstone (11,000 ft. subsea)
- Recoverable Reserve Estimate: 144 million barrels oil
- BP Operator (98%), Murphy Oil (2%)
- Located entirely offshore north of Prudhoe Bay field
- Construction activities halted for at least one year due to low oil prices
- Permitting/EIS proceeding very slowly
- Next draft of the EIS is not expected until April 1998

Northstar Schematic Block Diagram



From BP Exploration Co. Ltd. 11/96

Alpine Field

- Discovery Date: 1994 , ARCO Bergschrund #1 well
  - Flowed oil at 2,380 BOPD, at depth of 6,836 ft. subsea
- Reservoir: Kingak Formation, “Alpine sandstone”, Jurassic age
- Recoverable Reserve Estimate: 350-400 million barrels oil
  - Increased in 1998 from 250-350 MMBO
- ARCO Operator (78%), Anadarko (22%)
- Will be first oil produced from Native-owned lands on North Slope
- Facilities and pipeline construction in progress
- ARCO plans drilling more development wells in 1999
  - Two development wells and an exploration well drilled in 1998
- Waterflood EOR planned, may be followed by miscible WAG
- Peak production expected at 70,000 BOPD by 2001

Point Thomson / Sourdough Area

Pt. Thomson:

- Discovery Date: 1977. Operator: Exxon
- Recoverable Reserve Estimate: 200 MM bbls. oil, 5 TCF gas
- Reservoirs: Lower Cretaceous Thomson sandstone, Tertiary Flaxman turbidite
- Exxon and State negotiating the terms of latest Plan of Development
- Co-owners airing differences over reserve amounts present

Sourdough Area (BP Operator):

- Two wells - Sourdough #2 (3/94), #3 (3/96); #1 never drilled
- Sourdough discovery confirmed, 100 MM bbls. oil estimated reserves
- Wells confidential
- Originally planned drilling for 1998 postponed

Niakuk Field and Tract Operations

- Discovery Date: 1985 , BP Niakuk #5 well
- Reservoir: Kuparuk Formation
- Recoverable Reserve Estimate: 90 million barrels oil
- Operators: BP and ARCO
- Interim Niakuk PA approved in 1997
- Directional drilling record achieved with drilling of ARCO NK-28 well
  - Over 18,000 feet horizontal reach
- Kuparuk reservoir extension exploration drilling planned to the northwest outside the existing PA
  - Permit-to-drill issued on NK-41, bottom outside existing PA.

Colville River Area Reservoirs

Bergschrund No. 1 (Straight)

Reservoir Name	Top (md) (feet)	Top (ss) (feet)	Gross SS (feet)	Net SS (feet)	Net Pay (feet)	Porosity (%)	K (md)	Sw (%)	API (deg)	Rate (bopd)
Kuparuk SS	6784	-6743	negl	0	0	tight	-	-	-	-
Alpine SS	6877	-6836	52	47	47	20	40	20	39	2380
Nuiqsut SS	7090	-7049	negl	0	0	tight	-	-	-	-
Nechelik SS	7349	-7308	25	18	18	12	0.23	40	?	-

Fiord No. 1 (Directional)

Reservoir Name	Top (md) (feet)	Top (ss) (feet)	Gross SS (feet)	Net SS (feet)	Net Pay (feet)	Porosity (%)	K (md)	Sw (%)	API (deg)	Rate (bopd)
Kuparuk SS	6868	-6634	26	26	26	24	160	27	33	1065
Alpine SS	not prsnt	-	0	0	0	-	-	-	-	-
Nuiqsut SS	7074	-6794	negl	0	0	tight	-	-	-	-
Nechelik SS	7312	-7032	37	30	30	12	1.5	40	28	180

Colville Delta No. 1-A (Slightly Directional) (core data from 1-A wellbore, test rate from #1 wellbore)

Reservoir Name	Top (md) (feet)	Top (ss) (feet)	Gross SS (feet)	Net SS (feet)	Net Pay (feet)	Porosity (%)	K (md)	Sw (%)	API (deg)	Rate (bopd)
Kuparuk SS	6169	-6044	negl	0	0	tight	-	-	-	-
Alpine SS	not prsnt	-	0	0	0	-	-	-	-	-
Nuiqsut SS	6290	-6145	152	95	95	12	1.0	40	25	1075
Nechelik SS	not prsnt	-	0	0	0	-	-	-	-	-

Fiord No. 2 (Directional)

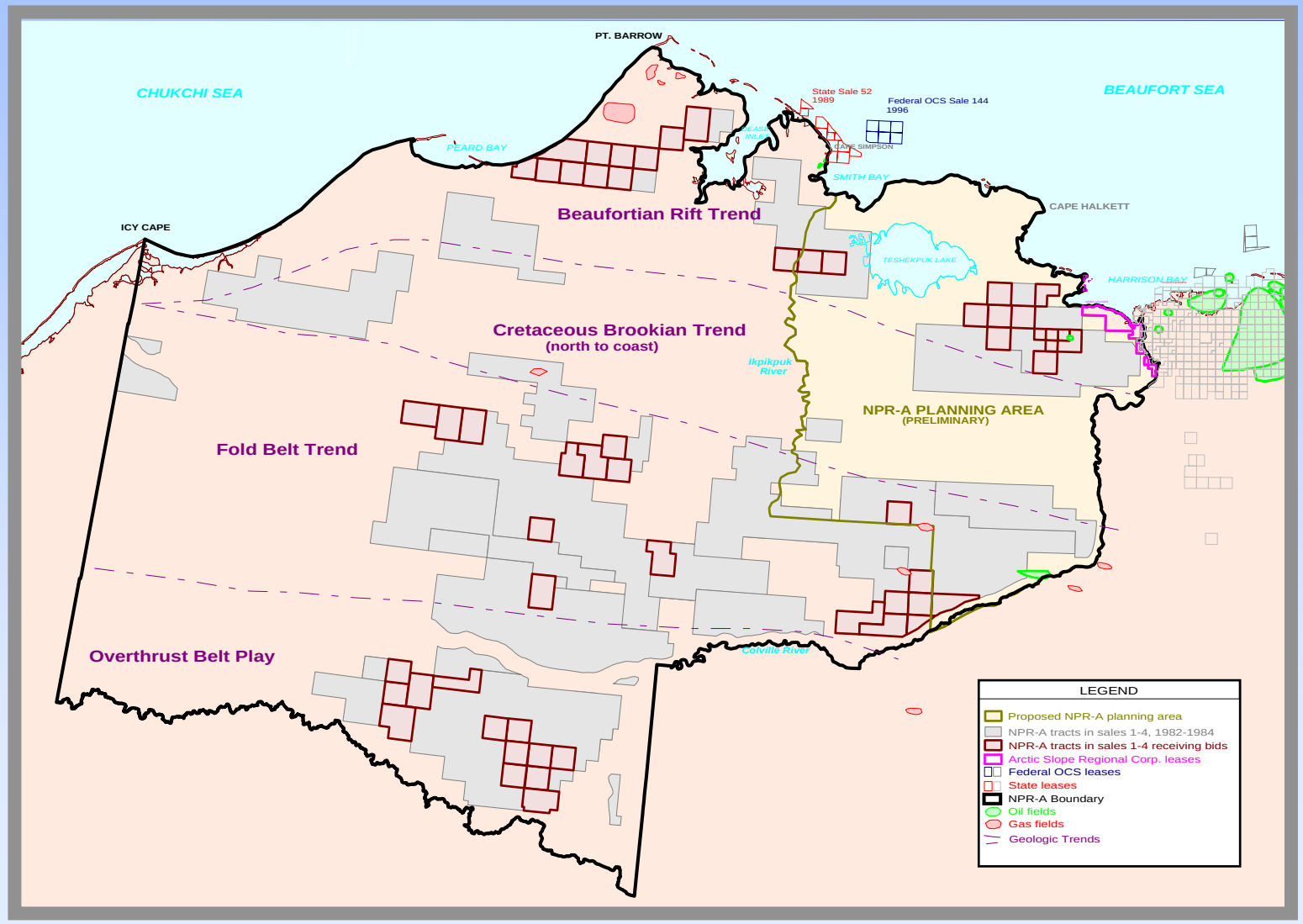
Reservoir Name	Top (md) (feet)	Top (ss) (feet)	Gross SS (feet)	Net SS (feet)	Net Pay (feet)	Porosity (%)	K (md)	Sw (%)	API (deg)	Rate (bopd)
Kuparuk SS	7774	-6561	negl	0	0	tight	-	-	-	-
Alpine SS	7914	-6696	6	6	6	20	-	-	-	-
Nuiqsut SS	8072	-6851	negl	0	0	tight	-	-	-	-
Nechelik SS	at TD ?	-	-	-	-	-	-	-	-	-

Kalubik No. 1 (Straight)

Reservoir Name	Top (md) (feet)	Top (ss) (feet)	Gross SS (feet)	Net SS (feet)	Net Pay (feet)	Porosity (%)	K (md)	Sw (%)	API (deg)	Rate (bopd)
Kuparuk SS	6080	-6047	43	35	30	20 - 25	50	40	26	1200
Alpine SS	not prsnt	-	-	-	-	-	-	-	-	-
Nuiqsut SS	6323	-6290	224	170	75	15	10	45	21	410
Nechelik SS	not prsnt	-	-	-	-	-	-	-	-	-

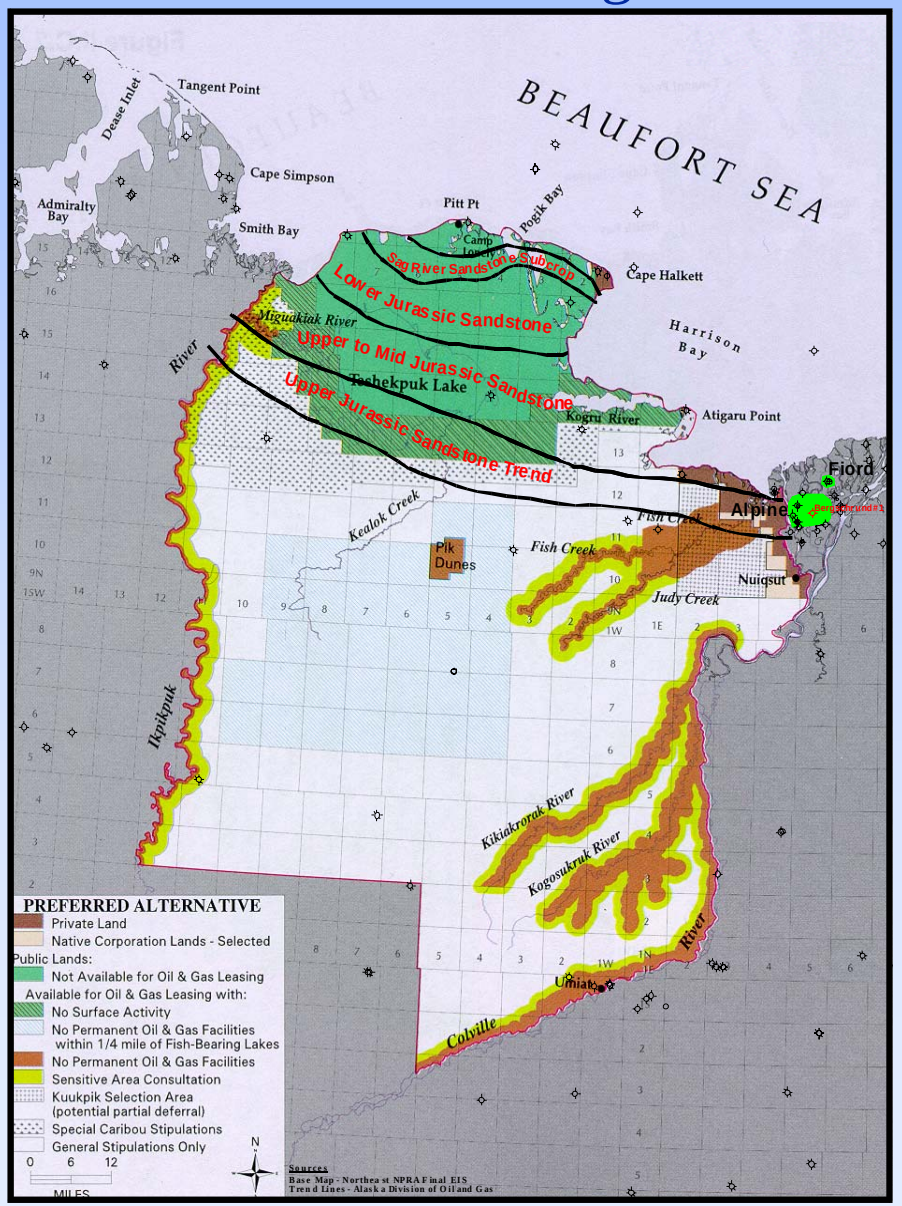
National Petroleum Reserve-Alaska (NPR-A)

Historical Leasing Activity



National Petroleum Reserve-Alaska (NPR-A)

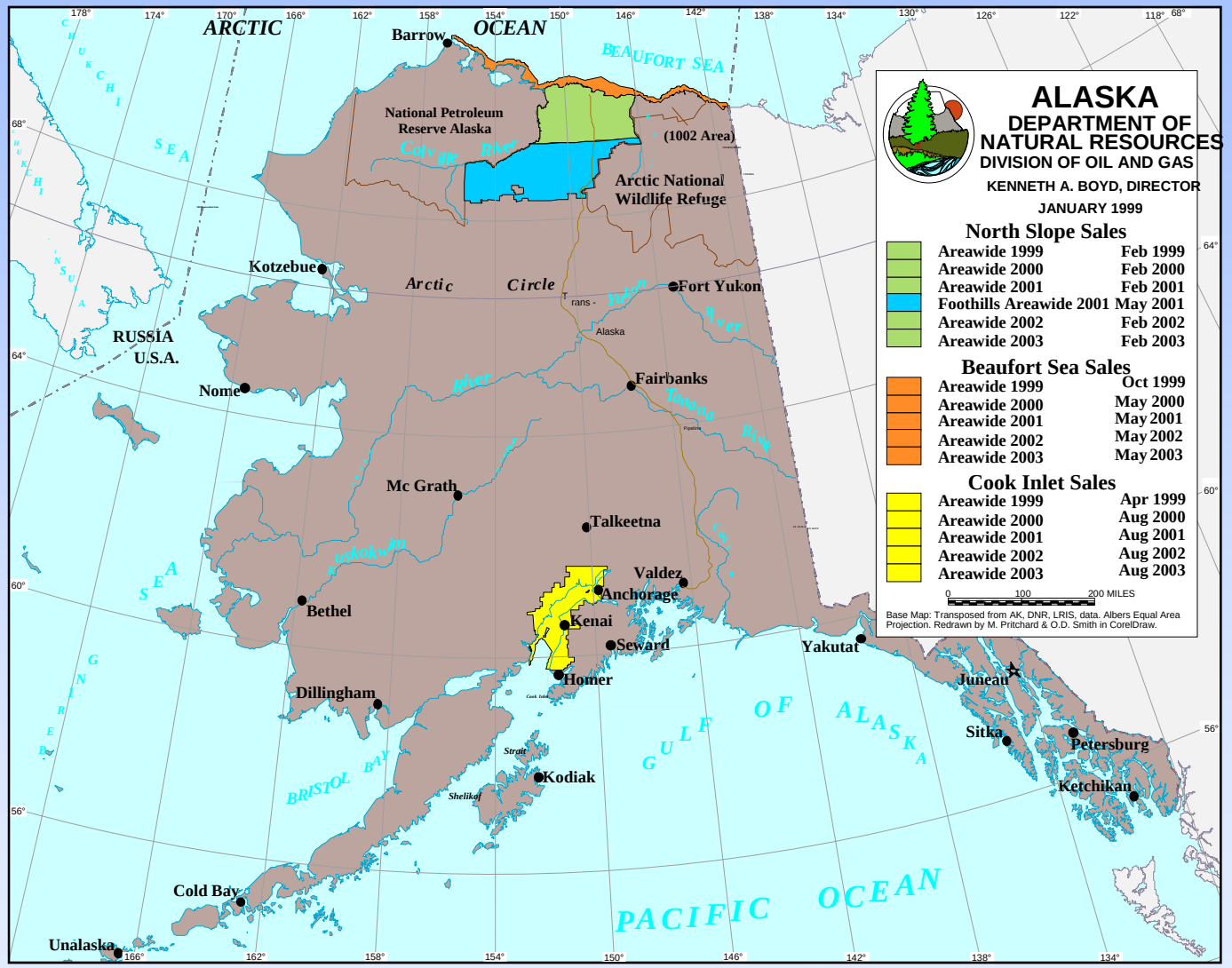
Northeast Planning Area



Issues Regarding NPR-A

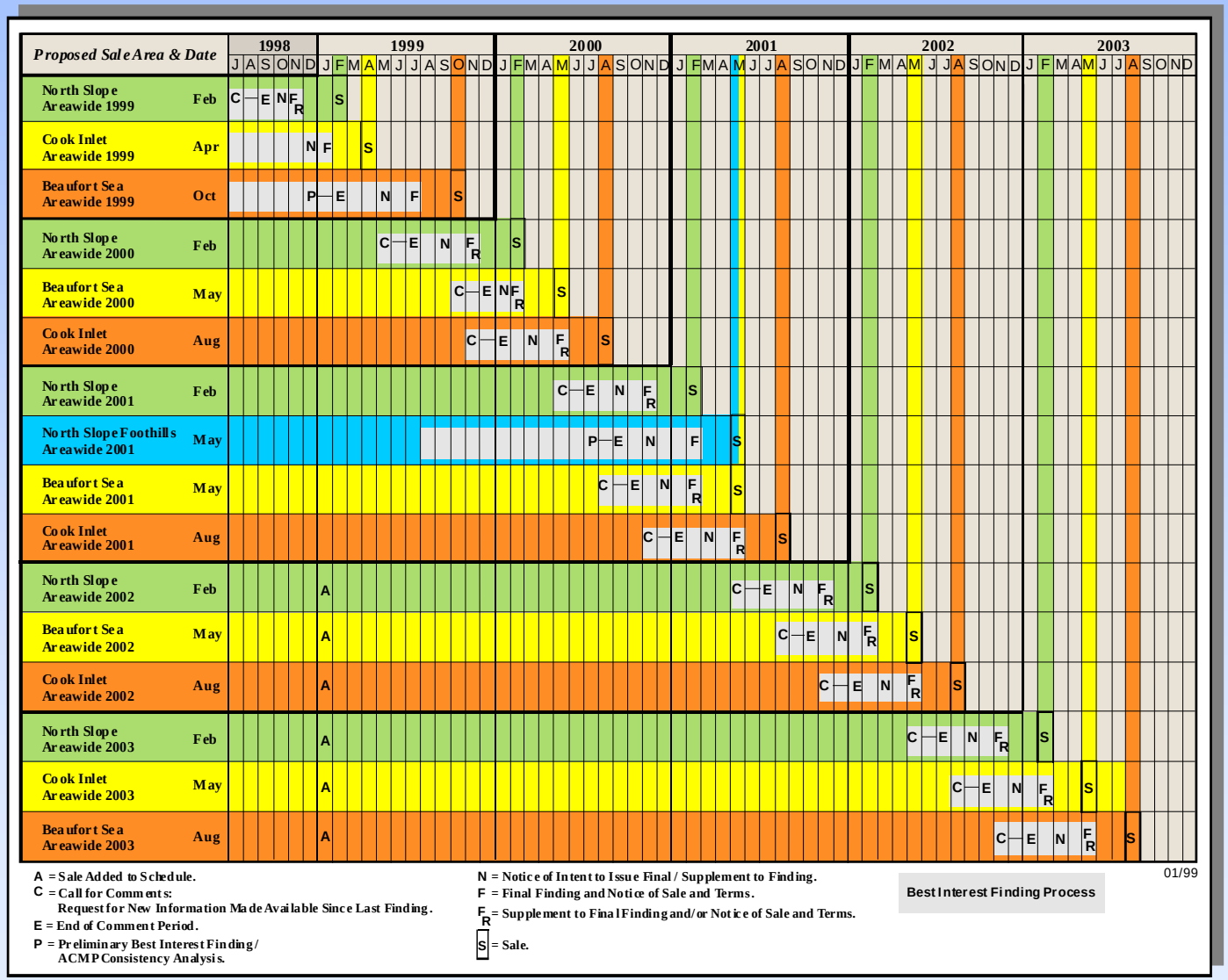
- Lease proposal released in Aug. 1998
- Northeast planning area (NEPA) was 4.6 million acres
- 580,000 acres of NEPA are barred from any leasing
- Additional 900,000 acres to be leased, but with no surface activity
- Most of remaining 3.1 million acres located in south part of NEPA
- Lease sale probably in the “first week or two” of May 1999
  - $25 minimum bid; 16 2/3% royalty; $5 per acre annual rental
- Environmental Issues: New technology, drilling restrictions, stipulations, mitigation and monitoring
- DNR is performing technical evaluation in support of leasing
- ARCO and BP have completed NPR-A 2D and 3D seismic surveys in NPR-A and plan more 3D surveys in 1999

Alaska Oil & Gas Leasing Program



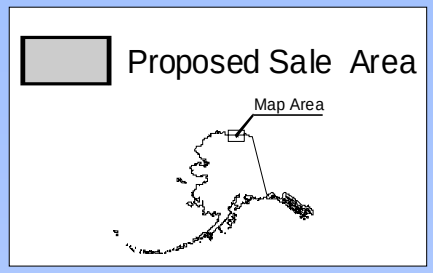
Five-Year Oil and Gas Leasing Program

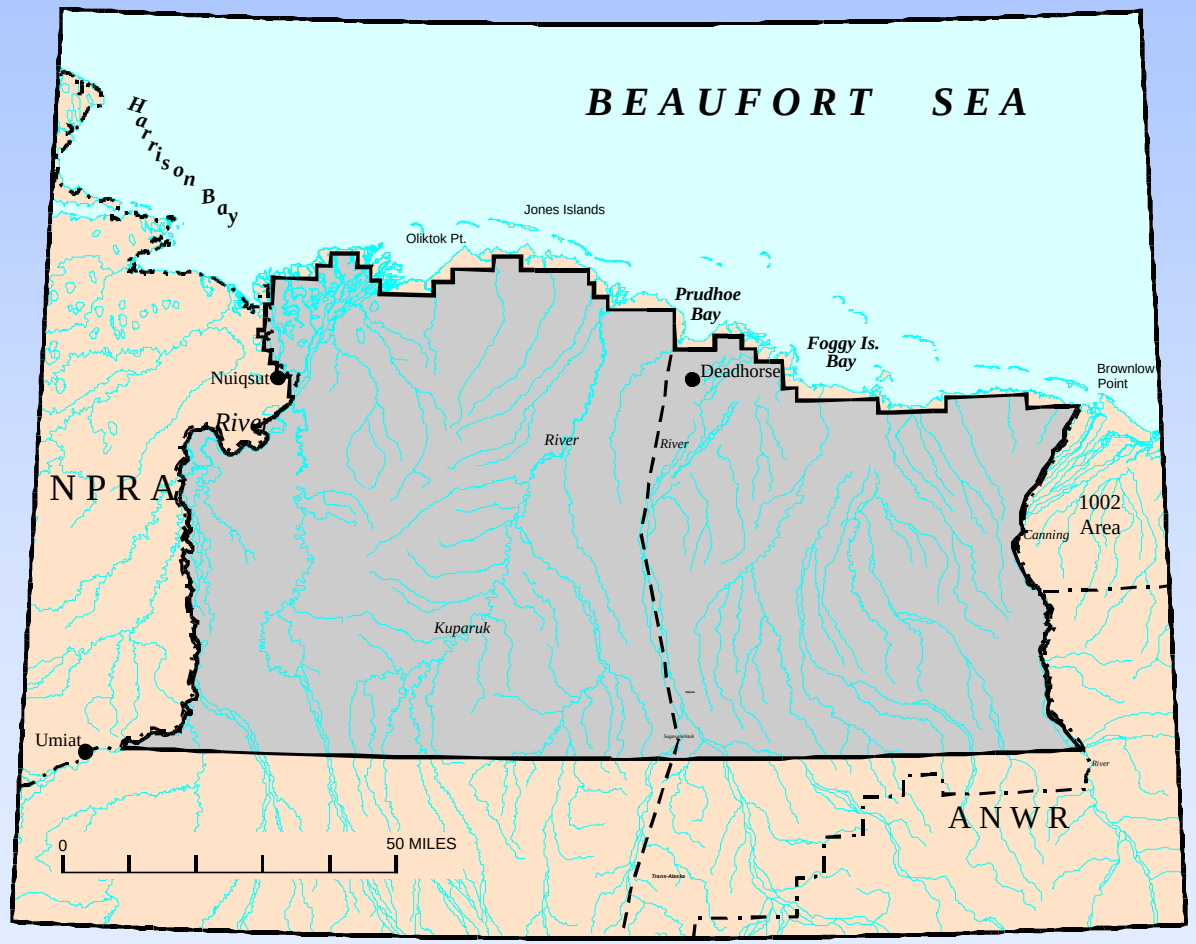
Public Notification Schedule



Proposed Oil and Gas Lease Sales

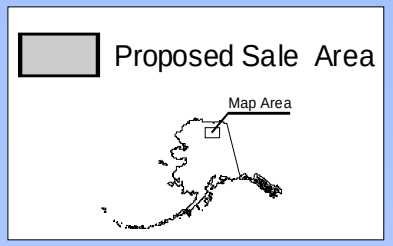
North Slope Areawide 1999, 2000, 2001, 2002, 2003

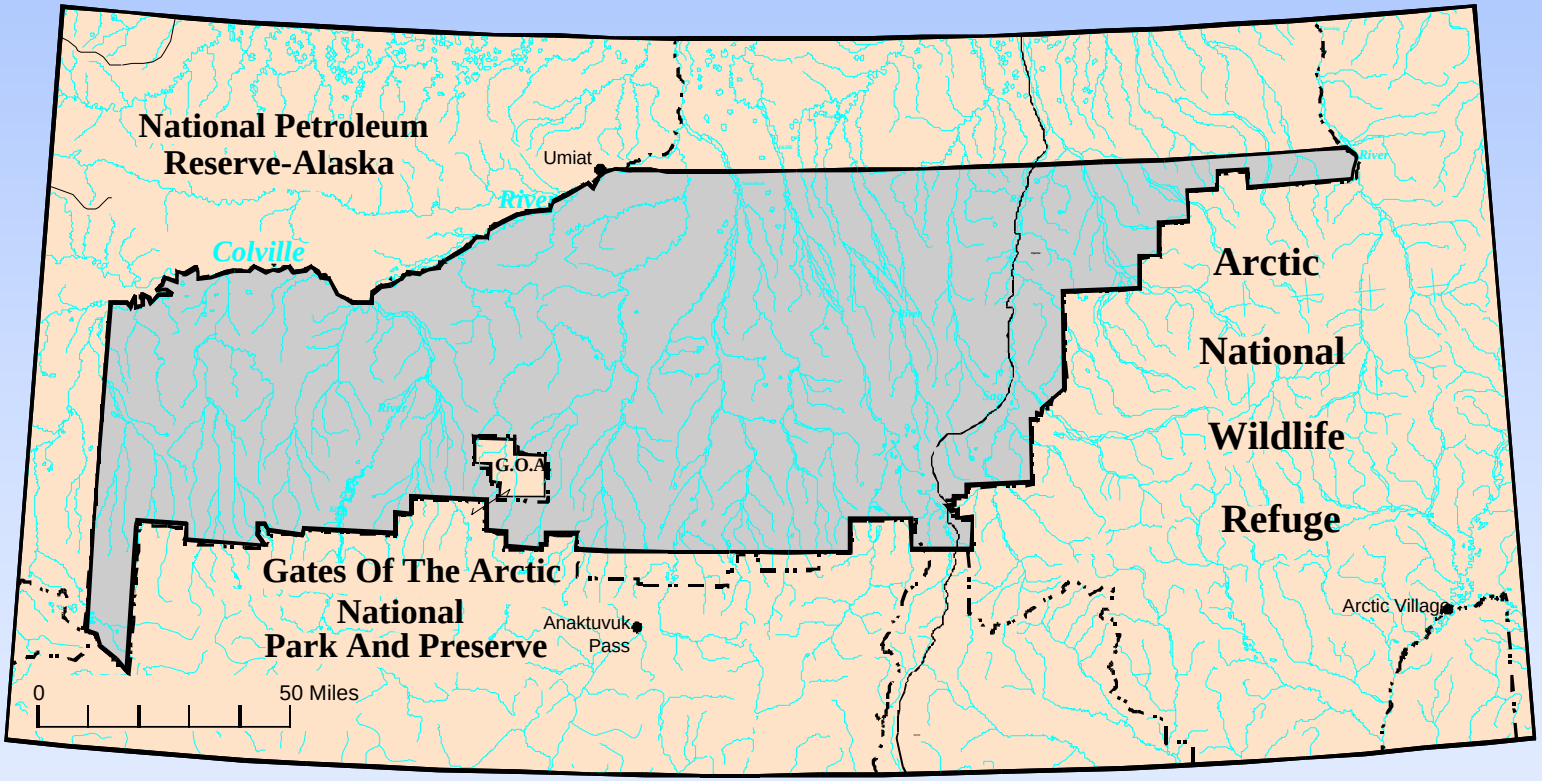




Proposed Oil and Gas Lease Sales

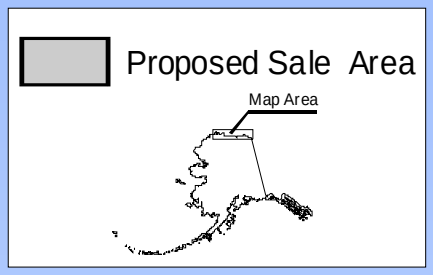
North Slope Foothills Areawide 2001

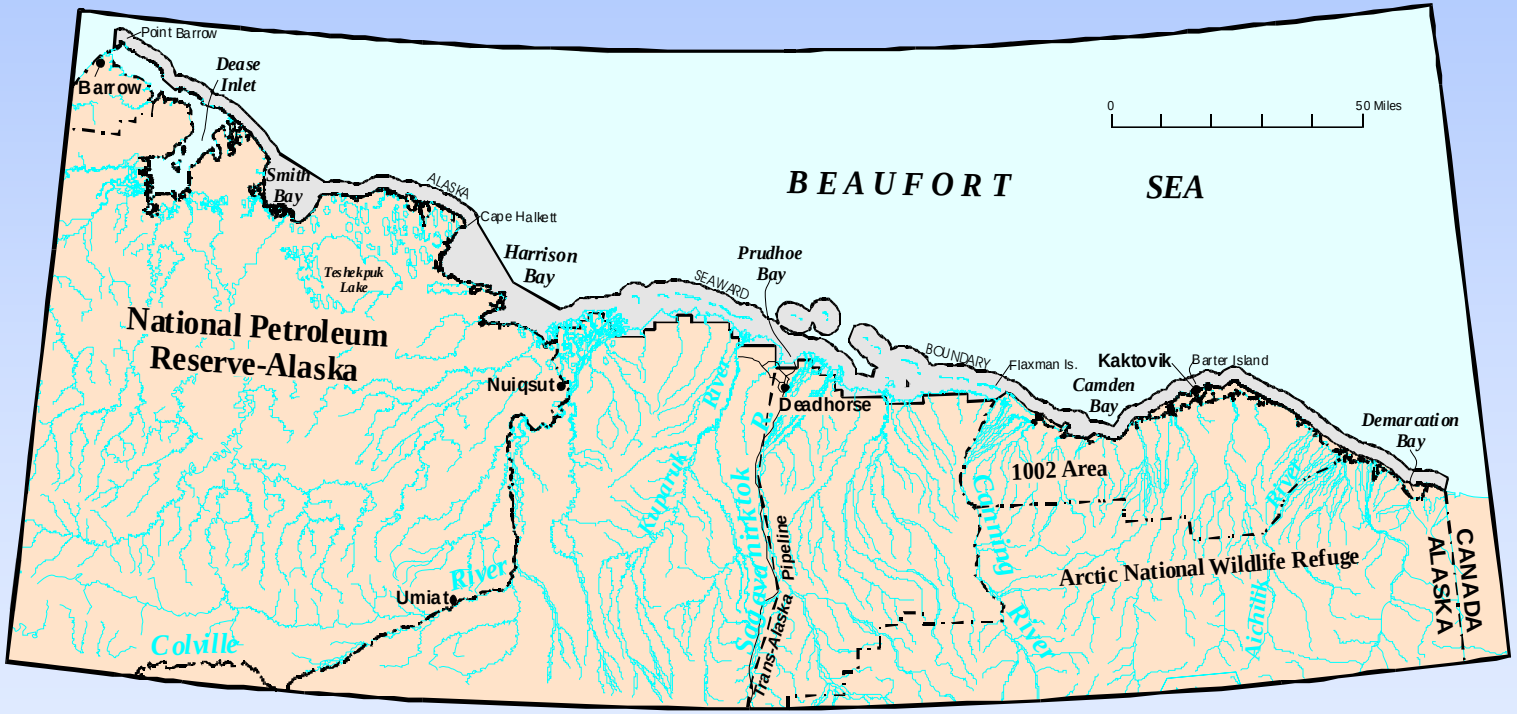




Proposed Oil and Gas Lease Sales

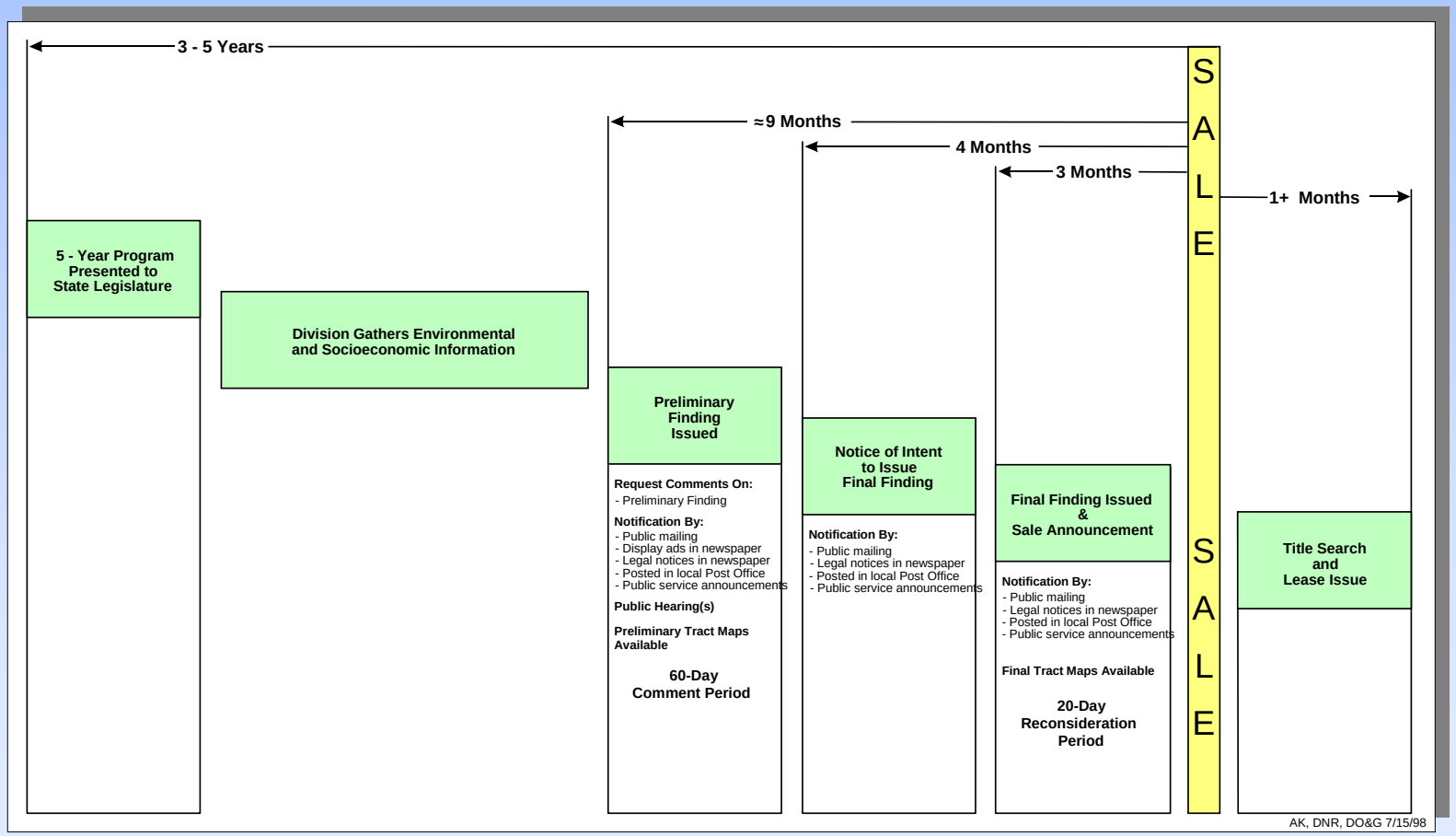
Beaufort Sea Areawide 1999, 2000, 2001, 2002, 2003





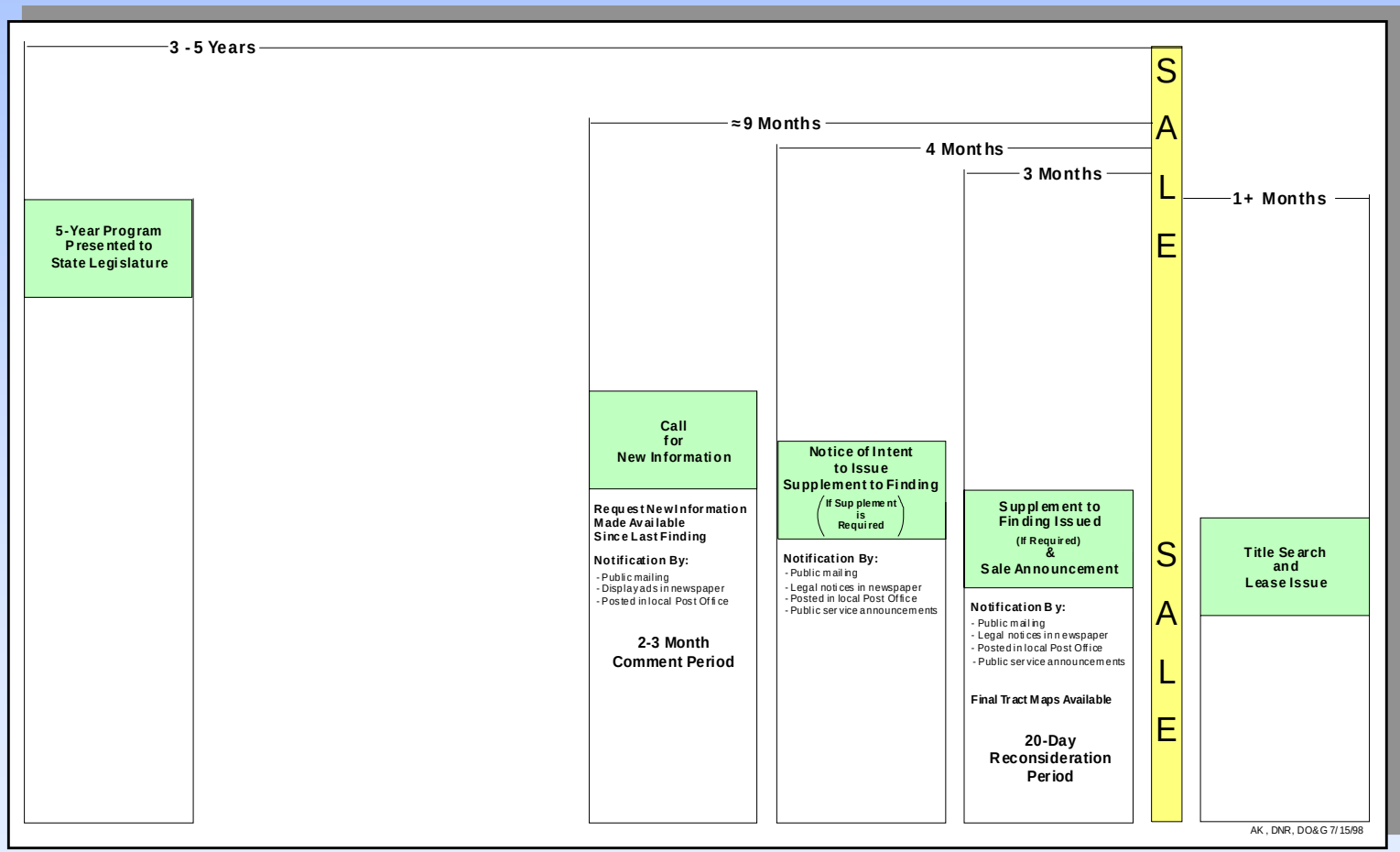
Oil and Gas Lease Sale Public Notification Process

When an Original Finding is Required



Oil and Gas Lease Sale Public Notification Process

When an Original Finding is Not Required



Oil and Gas Programs and Incentives

- Areawide Lease Sales
- Exploration Incentive Credits (Unleased & Private Land)
- Royalty Reduction
- Cook Inlet Discovery Royalty
- Shallow Gas Leasing
- Exploration Licensing

Areawide Lease Sales

- Beginning in 1999:
  - Lease sales in North Slope, Cook Inlet and Beaufort Sea
  - Best Interest Findings good for 10 years
  - Subsequent lease sales held annually in each area
  - Public input sought prior to each annual sale
- Allows companies to plan exploration activities years in advance
- Results in more efficient exploration and earlier development

Exploration Incentive Credits
Title 38 Program

- May be given to exploratory well on state lease
  - Up to 50% of cost of drilling
  - Applied against royalty, rentals, taxes; benefit may be assigned
  - To date, $51.8 million credits granted to 17 wells

- Also applies to geophysical surveys
  - Data made public following lease sale
  - No geophysical EIC’s have been requested

Exploration Incentive Credits
Title 41 Program

- May be given to exploratory well on any land
  - Up to 50% of costs if on state land
  - Up to 25% of costs if on federal or private land
  - Applied against royalty, rentals, taxes, benefit may be assigned
  - Credit may not exceed $5 million per well
  - Total of all credits may not exceed $30 million
- Also applies to geophysical surveys
  - Data may be shown to 3rd parties, but not transferred
- This EIC provision ends July 1, 2004
- None earned to date

Cook Inlet Discovery Royalty

- For wells that discover oil or gas in a previously undiscovered pool
- Wells must be capable of producing in paying quantities
- Royalty set at 5% for 10 years
- Applied only to lease containing the discovery well
- Applied only to the new pool

Shallow Gas Leasing

- Over-the counter leasing for exploration down to 3,000 feet
- No Best Interest Finding required
- Reduced Lease Rental: $0.50 per acre
- Establishes royalty rate of:
  - 12.5 % if gas exported from the state
  - 6.25% if gas is used intrastate
- Exempted from obtaining Waste Discharge Permit (DEC)
- May operate without Oil Discharge Prevention & Contingency Plan
- Reduces proof of financial responsibility from $1 million to $25,000
- DO&G is developing regulations
- Industry has expressed interest in 30 leases near Houston and Nenana

Exploration Licensing

- Purpose:
  - To supplement conventional oil and gas lease sales
  - Encourage exploration for oil and gas on certain state lands
- The State Grants:
  - The exclusive right to explore, for up to 10 years, designated tracts of not less than 10,000 acres nor larger than 500,000 acres, limited to 2 million acres per licensee
  - Option to convert license areas to standard leases
- The Licensee Accepts:
  - Obligation to perform exploration work
  - The requirement to post a substantial performance bond
  - Relinquishment and termination provisions such that:
    - Complete 25% of work within 4 years or forfeit license
    - Complete 50% of work within 4 years or relinquish acreage

Revenue Development

- New five-year royalty-in-kind (RIK) contract with Mapco was submitted for Legislature's approval. Oil deliveries began 12/98
- Ongoing review of effectiveness of royalty value settlement agreements
- Evaluate probable upcoming royalty reduction applications

North Slope Natural Gas Development Options -- Gas to Liquids (GTL) or Liquified Natural Gas (LNG)?

- Not a winner take all situation. No need to be first on line
- Competition between technologies is out in the market place
  - Which project(s) will produce a rate of return sufficient to attract investors and operators?
  - What products does the market want/need over the next 20 years?
- Different fields may utilize different technologies or both technologies within the same field.
- Gas utilization on the North Slope is and will remain an important part of the oil recovery process
  - Field fuel
  - Pressure maintenance
  - Enhanced oil recovery (EOR)
  - Artificial lift

Points of Comparison

North Slope LNG

- Known markets
- Large volume market(s) needed
- Lacks a transportation system
- Requires a very large up-front investment
- Large scale project needed for start-up
- Good expansion economics
- Potentially makes gas available to south-central Alaska
- Technology is proven
- Good track record for estimating costs
- Extends life of Prudhoe Bay Unit oil--gas carries most of the future Unit operating cost

North Slope GTL

- Known markets
- Smaller markets required
- Transportation system already in place--though not for batch shipments
- Requires a large up-front investment
- Project size can be scaled to fit.
- Expansion economics unknown, but probably good
- No new gas available south of the Brooks Range
- Technology being improved
- Cost estimates still uncertain
- Extends life of TAPS and lowers TAPS tariff--extends life of most North Slope oil fields

Royalty Reduction

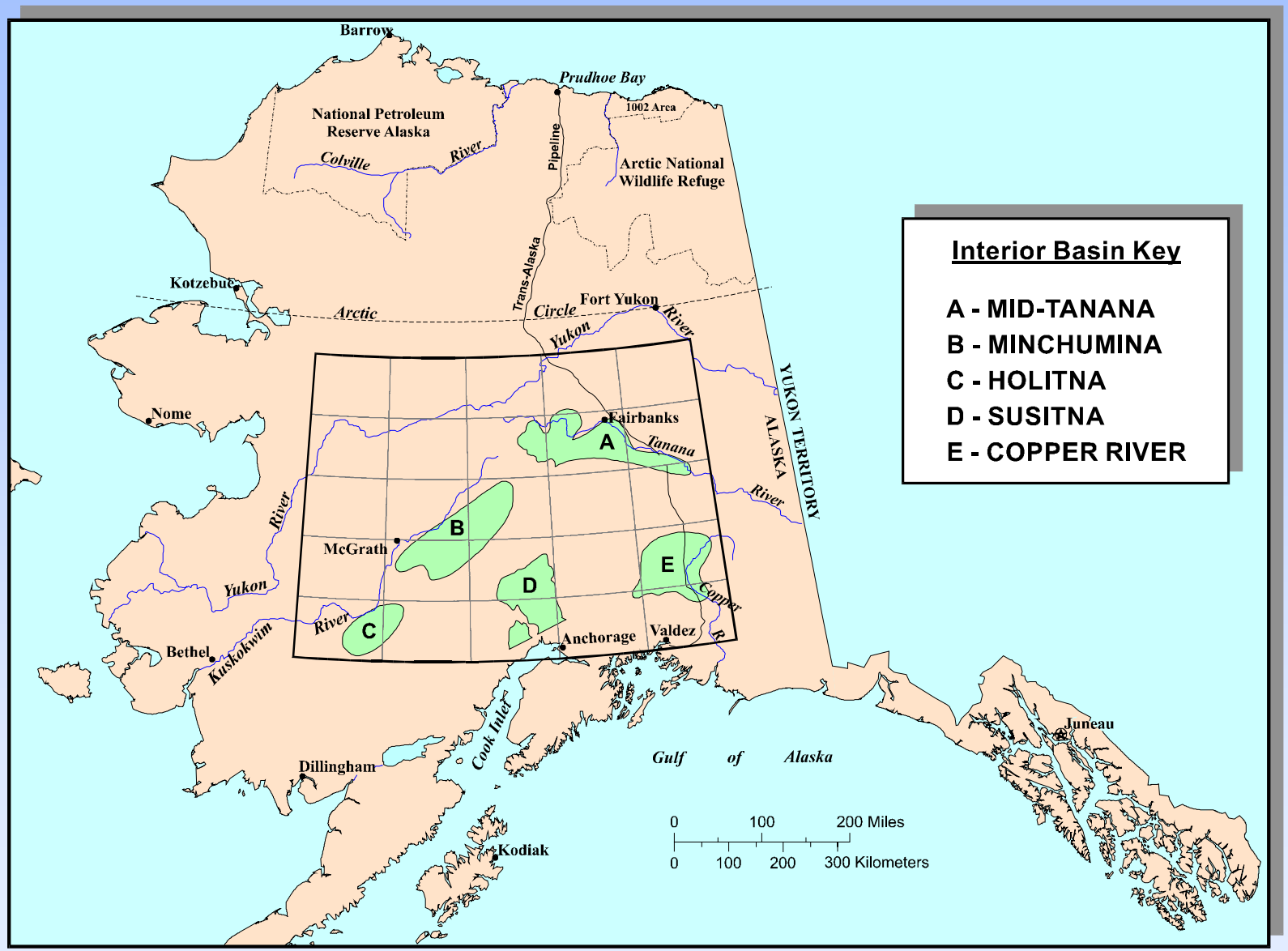
- To encourage otherwise uneconomic production of oil and gas
- In State's interest and must make a clear and convincing showing
- If a field has not previously produced:
  - Reduced to as low as 5%
- To prolong economic life of existing field:
  - Reduced to as low as 3%
- To establish production of shut-in field:
  - Reduced to as low as 3%
- Provisions expire July 1, 2015

- Special treatment for certain undeveloped or shut-in oil and gas fields in Cook Inlet:
  - Reduced to 5% on the first 25 MMBLS of oil and 35 BCF gas produced over 10 years following initial production
  - Production must begin before 1/1/2004

Interior Basins Study

- Intended to promote exploration of Alaska's interior basins
  - Study area is a 25 quad area of south-central Alaska
  - Little or no exploration activity over vast areas
  - Little is known about the area's oil and gas potential
- Joint USGS/DO&G geology compilation now available
  - Digital data available as GIS files or graphics files on CD
  - Also available on paper in 1:500,000 scale
- Published set of magnetic and gravity maps over interior Alaska
  - The first time there has been a compilation of all publicly-available data for interior Alaska
  - The data is available in hardcopy and digital files

Geology and Gravity/Magnetic Data



Seismic Exploration Activity Summary

- Alaska Seismic Industry Update
  - Western Geophysicalbought Northern Geophysical of America
  - Western Geophysical is now a subsidiary of Baker Hughes Inc.
  - Western Geophysical is the only company requesting permits to shoot seismic in Alaska
- Cook Inlet Seismic Activity
  - Upper Cook Inlet offshore 3D and Swanson River 3D surveys completed in 1997
  - Ninilchik area 2D survey completed in 1998
  - Western/Forcenergy North Middle Ground Shoal 3D/2D, survey completed in 1998, 400 sq. miles/100 miles.
- North Slope Seismic Activity
  - Completed in 1997: Kuukpik 3D, Cirque 3D, Kalubik 3D, Pt. Thomson 3D, Milne 3D
  - Completed in 1998: Northern/BPX 3D program for Flaxman Is. to ICWest area and Milne West 3D. Western spec 3D program with surveys in the Midway to Cross Island, Flaxman Island, Jones Island areas. Western/Arco Challenge Island 3D survey.
  - Permit issued for a Western/PBX program consisting of seven surveys; W. Sag R., Sag R., Mesa (upland Collville Delta), Summit (Colville Delta), NPRA, E.Sag R., and Eastern. Total coverage planned is 500 to 1000 sq. miles.
  - Permits issued for a Western/Arco program consisting of four surveys; Grizzly (upland Colville Delta), E. NPRA, W. NPRA, Salmon (offshore Prudhoe Bay) . Total coverage planned is 500 to 1000 sq. miles.

Top 10 Producing U.S. Oil Fields, 1997*

1. *Prudhoe Bay . . . . . Alaska*
2. *Kuparuk . . . . . Alaska*
3. Midway . . . . . California
4. *Point McIntyre . . . . Alaska*
5. Kern River . . . . . California
6. Belridge South . . . . . California
7. Wasson . . . . . Texas
8. Spraberry Trend . . . . Texas
9. Garden Banks . . . . . Louisiana
10. *Endicott . . . . . Alaska*

*Source: Oil and Gas Journal, Jan. 26, 1998.

Leading Oil Producing Countries

Ranked by estimated oil production (in thousands of barrels per day)*

1.	Saudi Arabia	8,249
2.	Russian Federation	7,099
3.	*U.S.*	*6,441*
4.	Iran	3,680
5.	China	3,209
6.	Venezuela	3,195
7.	Norway	3,176
8.	Mexico	3,020
9.	United Kingdom	2,574
10.	Nigeria	2,288

Alaska production . . . . . 1,270 thousand bbls. per day

*Source: Oil & Gas Journal Energy Database 1999

dhz/krb 2/99

Leading Oil Countries By Reserves

Ranked by estimated crude reserves (in billions of barrels)*

1.	Saudi Arabia	259.0
2.	Iraq	112.5
3.	Kuwait	94.0
4.	Iran	93.0
5.	Abu Dhabi (U.A.E.) .	92.2
6.	Venezuela	71.6
7.	Russia	48.5
8.	Mexico	40.0
9.	Libya	29.0
10.	China	24.0

U.S. total	***22.0 billion bbls.***
Alaska	***7.5 billion bbls.***

*Source: Oil & Gas Journal Energy Database, 1998.

Outlook and Predictions For Cook Inlet

- Areawide sales make entire area available for exploration and development.
- Independents will become an increasing influence.
  - More competition for prospects and leases
  - New thinking and inventive technology and business climate
- Independents will drive exploration and development costs lower.
  - This may mean less profit for the State of Alaska, as well as service companies
- Oil continues to be an increasingly elusive target in Cook Inlet.
- Coalbed gas will become an important exploration target.
  - Viability of this exploration play is yet to be determined

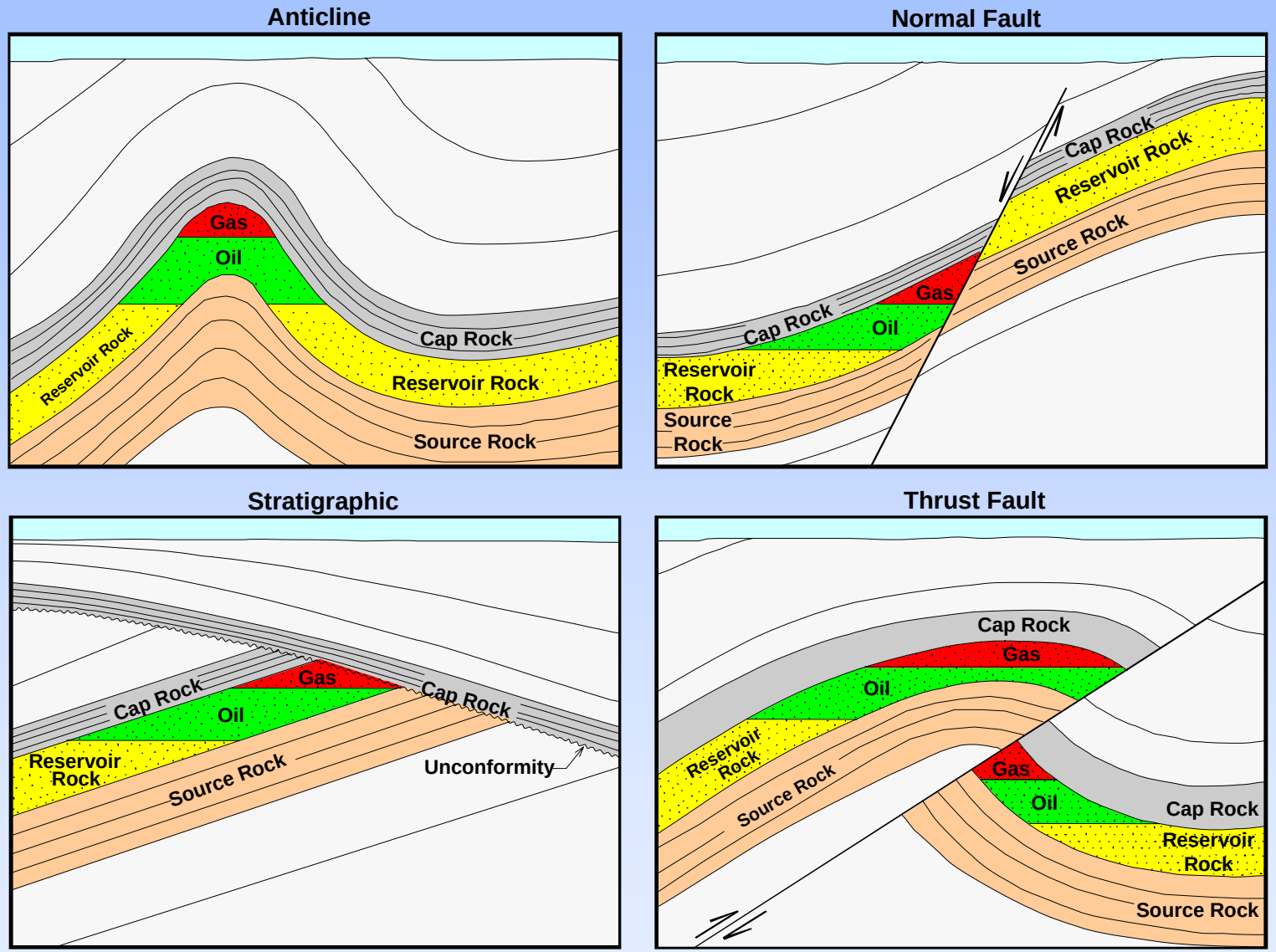
Outlook and Predictions For North Slope

- Areawide sales make entire area available for exploration and development
- Exploration climate will remain cooled for a few years; build back slowly
  - Rig activity sharply curtailed since Dec. 1998
  - Fewer prospects will get drilled for the next few years
- Activity will pull back even closer to existing infrastructure
  - Development of satellites will continue at a less frantic pace
  - The hunt for elephants will slow
- Heavy oil will become a more important component of N Slope production
- Anadarko will test the limits of conventional thinking in foothills area
- NPR-A lease sale will test the resolve of companies' commitment to Alaska
- More oil *will* be discovered, but production will continue to *decline*
  - As Prudhoe Bay goes, so goes Alaska's oil patch

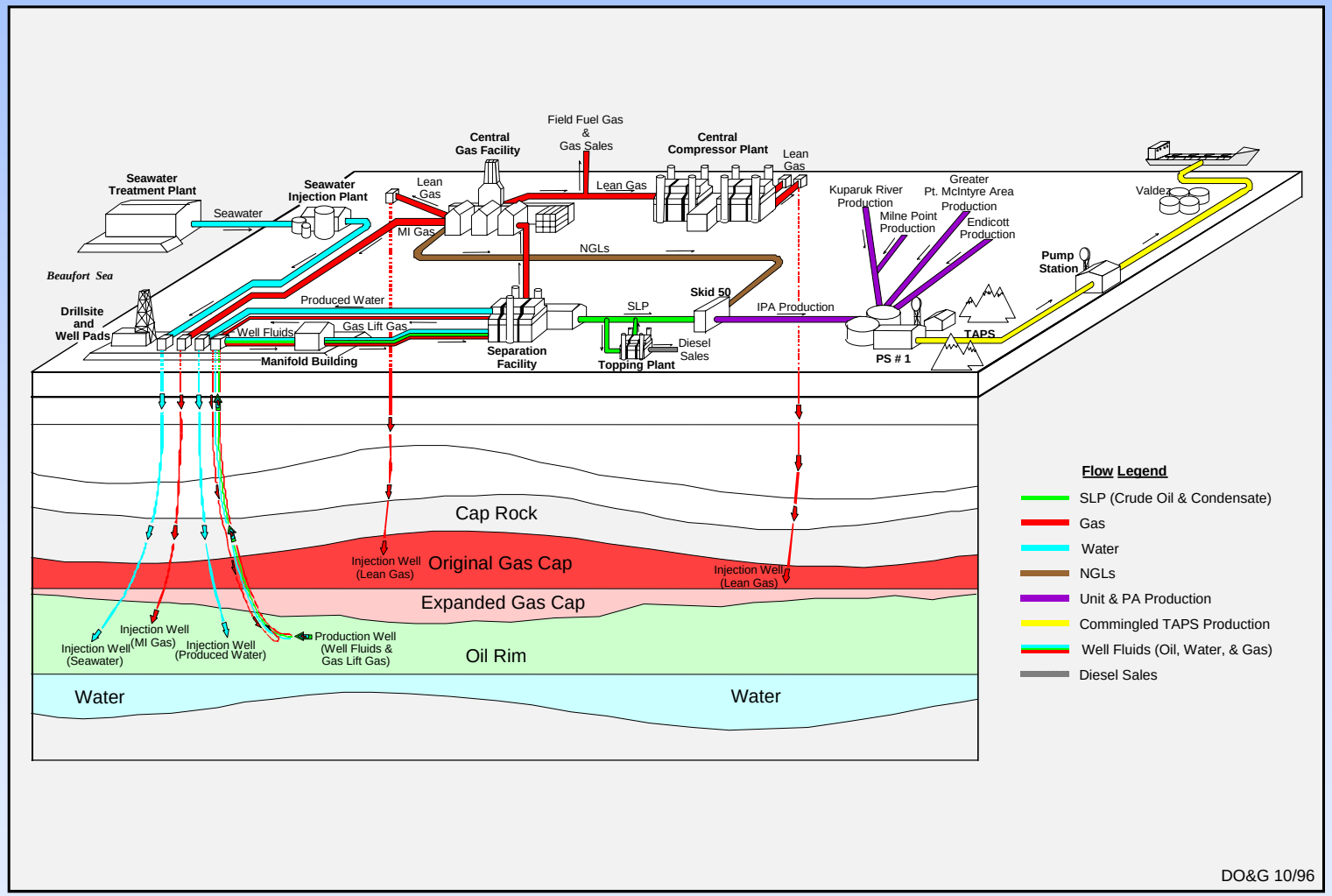
Alaska's Global Position
North Slope Still Holds Favorable Position

- Underutilized infrastructure
  - Pipelines will soon extend from the Colville River to Mikkelsen Bay
  - Extensive infrastructure in Cook Inlet
  - TAPS and many production facilities are well below peak capacity
- Large, world-class discoveries are still possible
  - Recent discoveries include Alpine, Tarn, and Midnight Sun
  - NPR-A remains underexplored
  - ANWR remains unexplored., undiscovered resource estimates remain favorable
- Stable, positive economic and political climate
  - Facilities sharing agreements lower economic risk
  - High E&P and transportation costs, but known and relatively stable
  - Areawide sales allow advanced planning
  - Environmental mitigation hurdles can be high (this is not necessarily a negative)
  - No Third World politics here (Iraq may soon equal Alaska in selling oil in U.S. market)
- Alaska is a ***GREAT*** place to live***!***

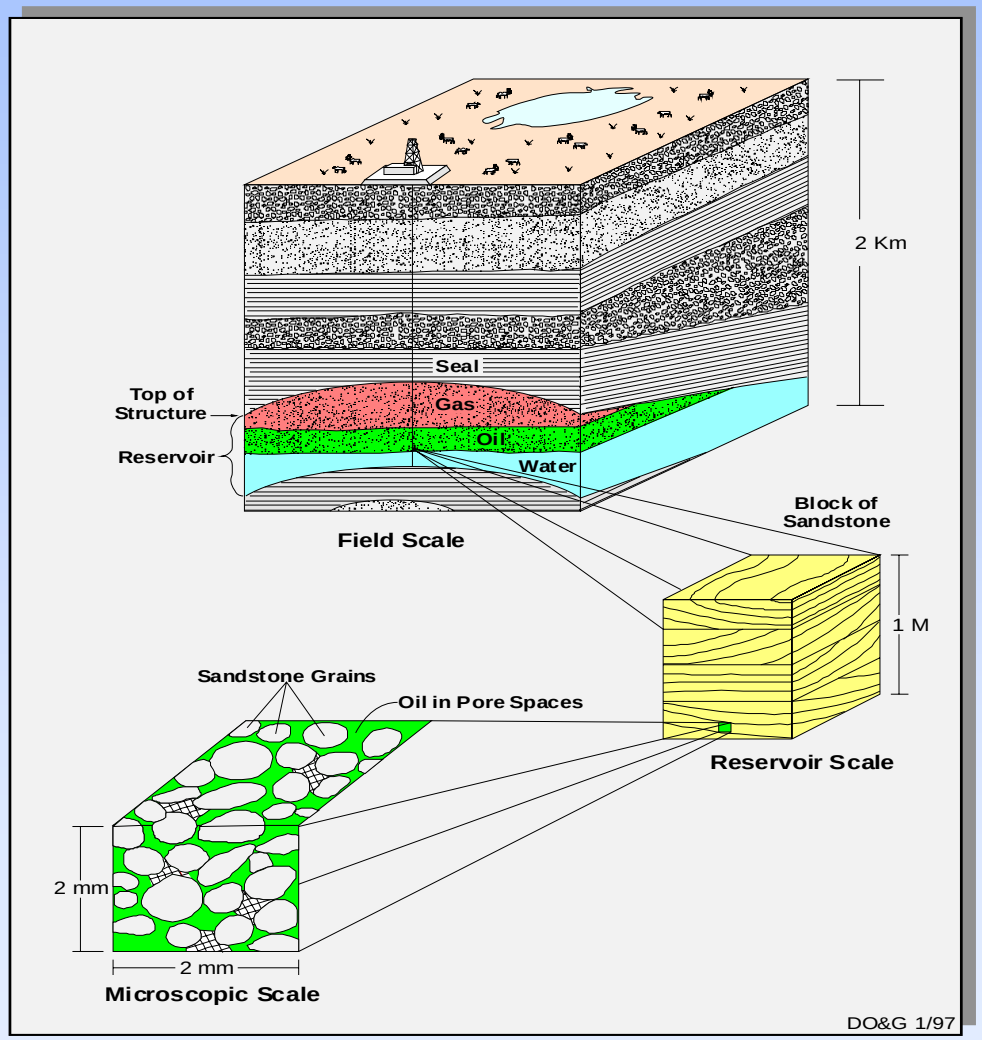
Oil and Gas Trapping Mechanisms



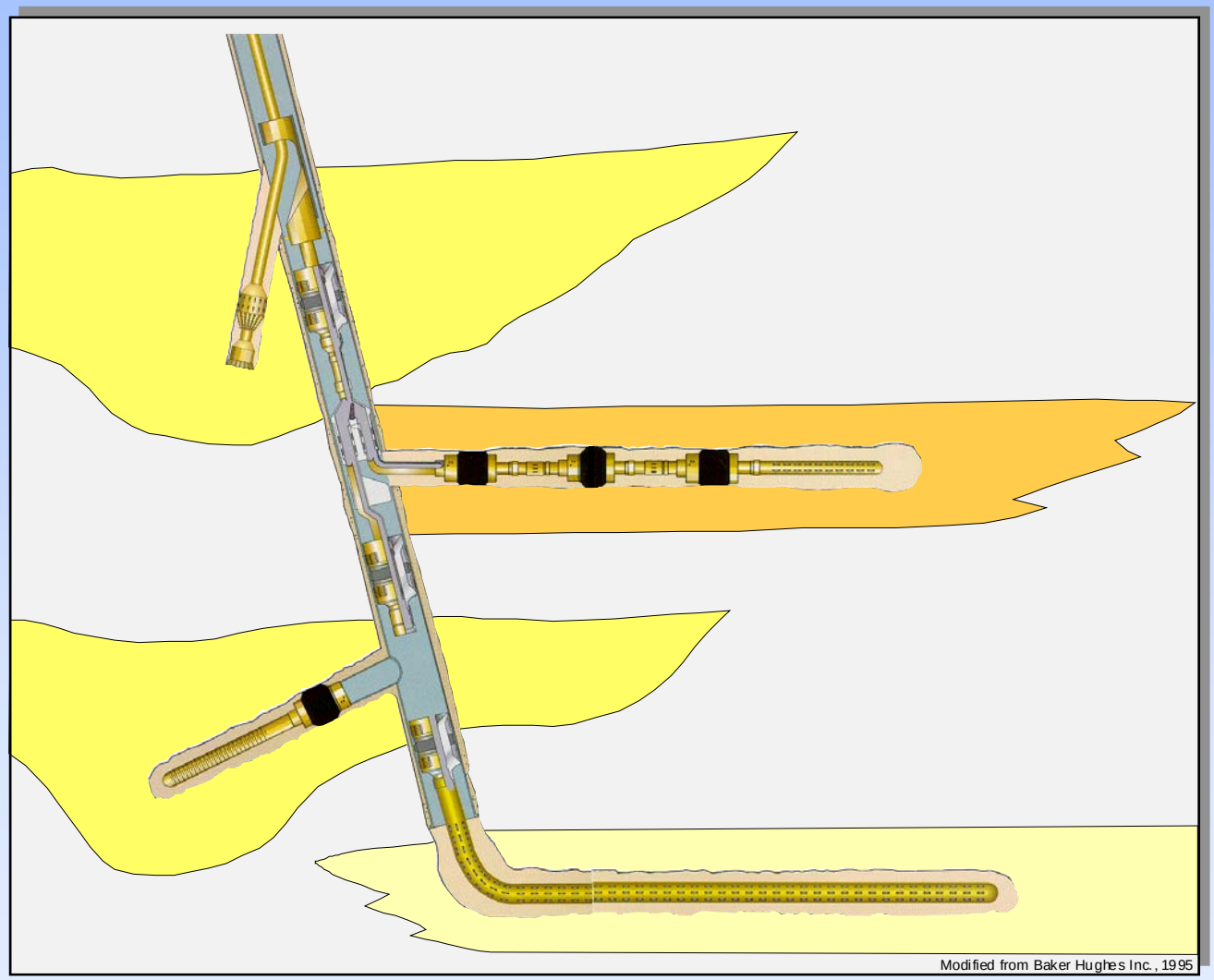
Prudhoe Bay Production & TAPS Schematic



Oil & Gas Accumulation Viewed at Different Scales

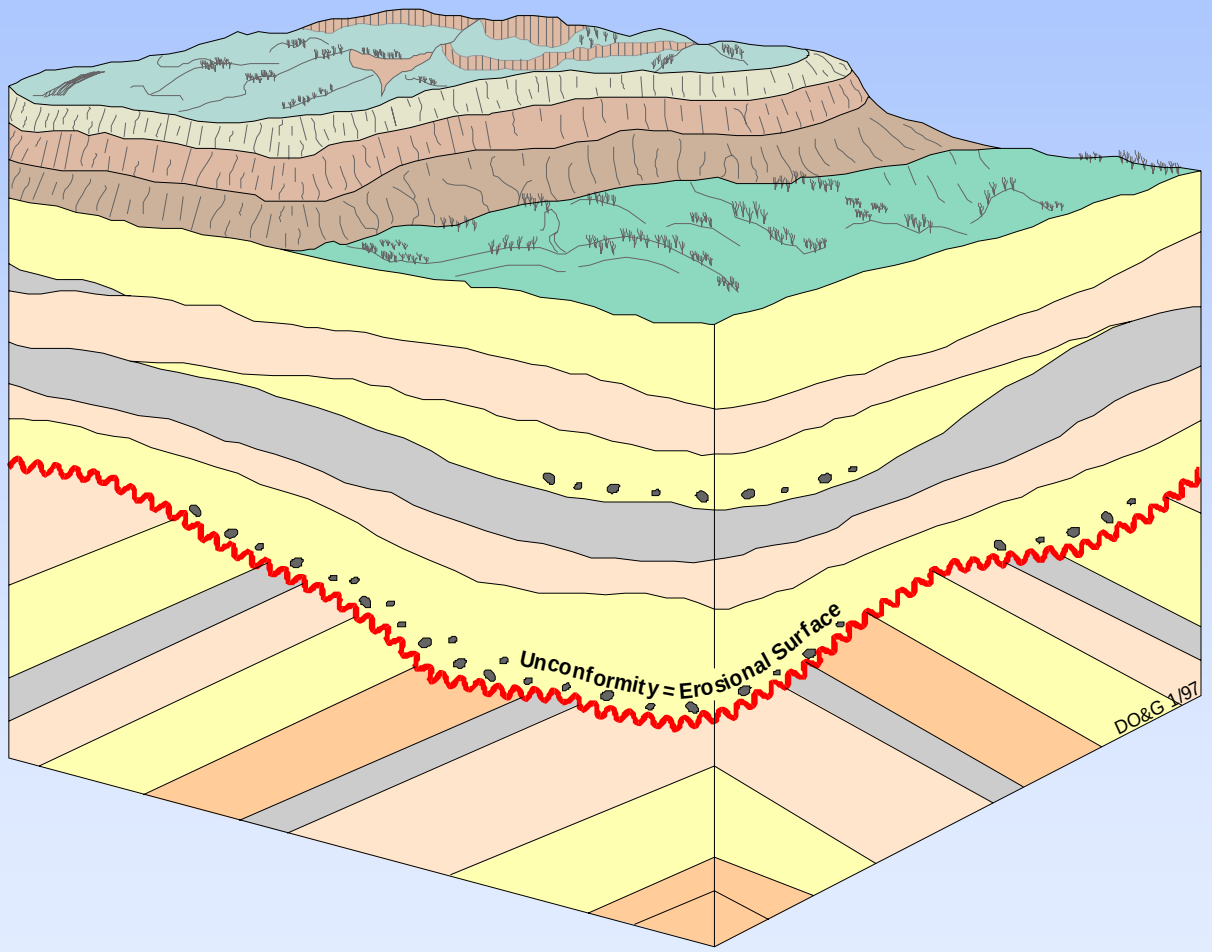


Multi-Lateral Wellbore Completions

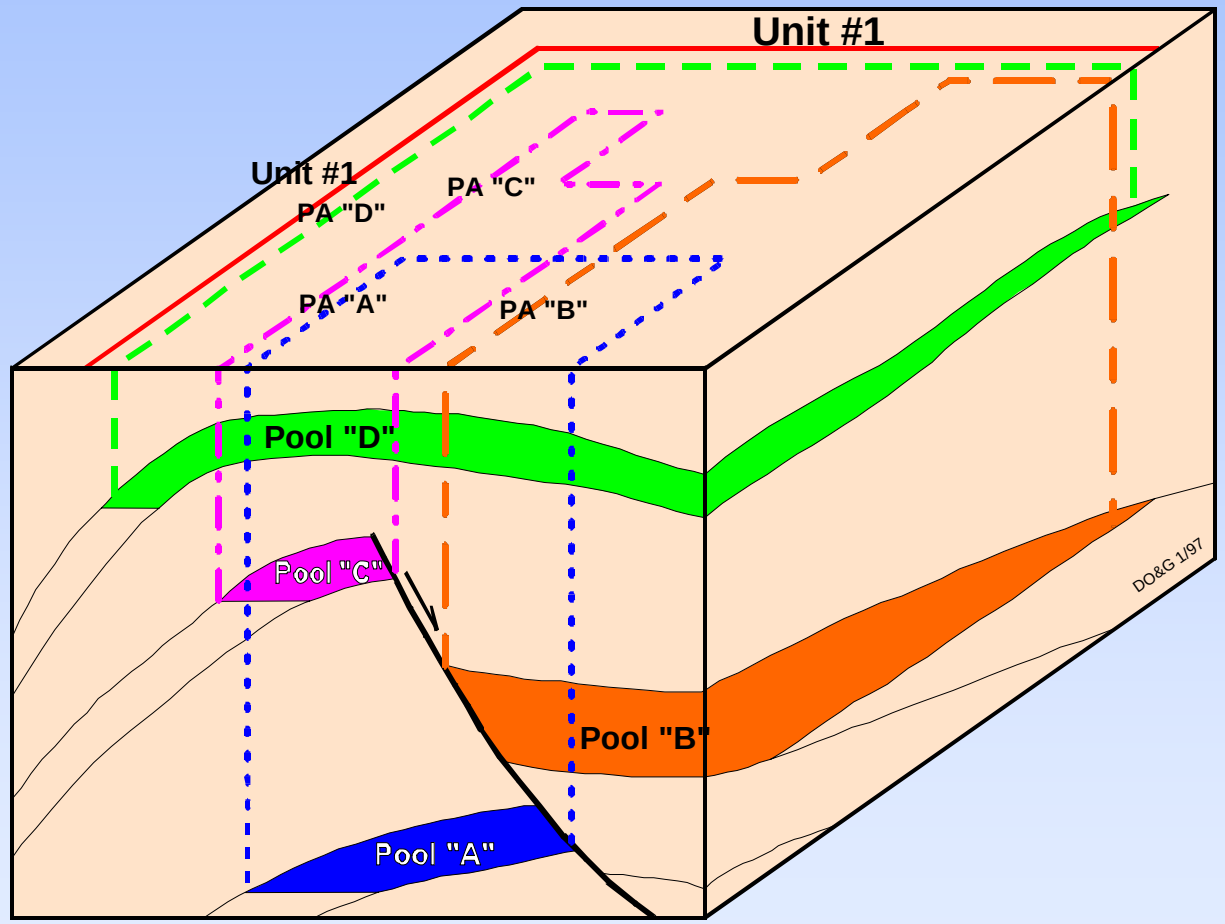


Angular Unconformity

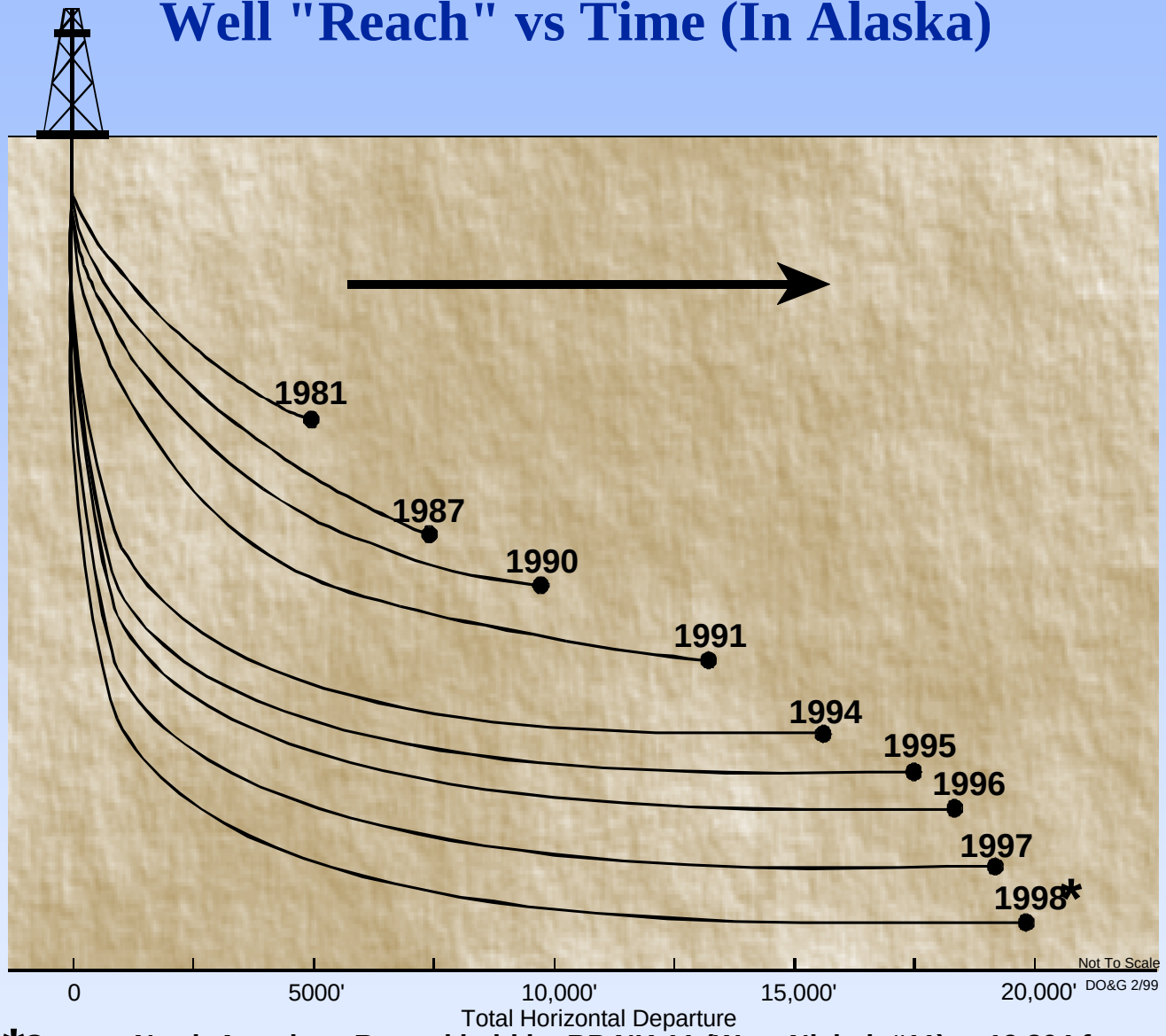
An Erosional Surface That Separates Rocks of Markedly Different Ages



Hypothetical Unit with 4 Pools & Four Participating Areas (PAs)

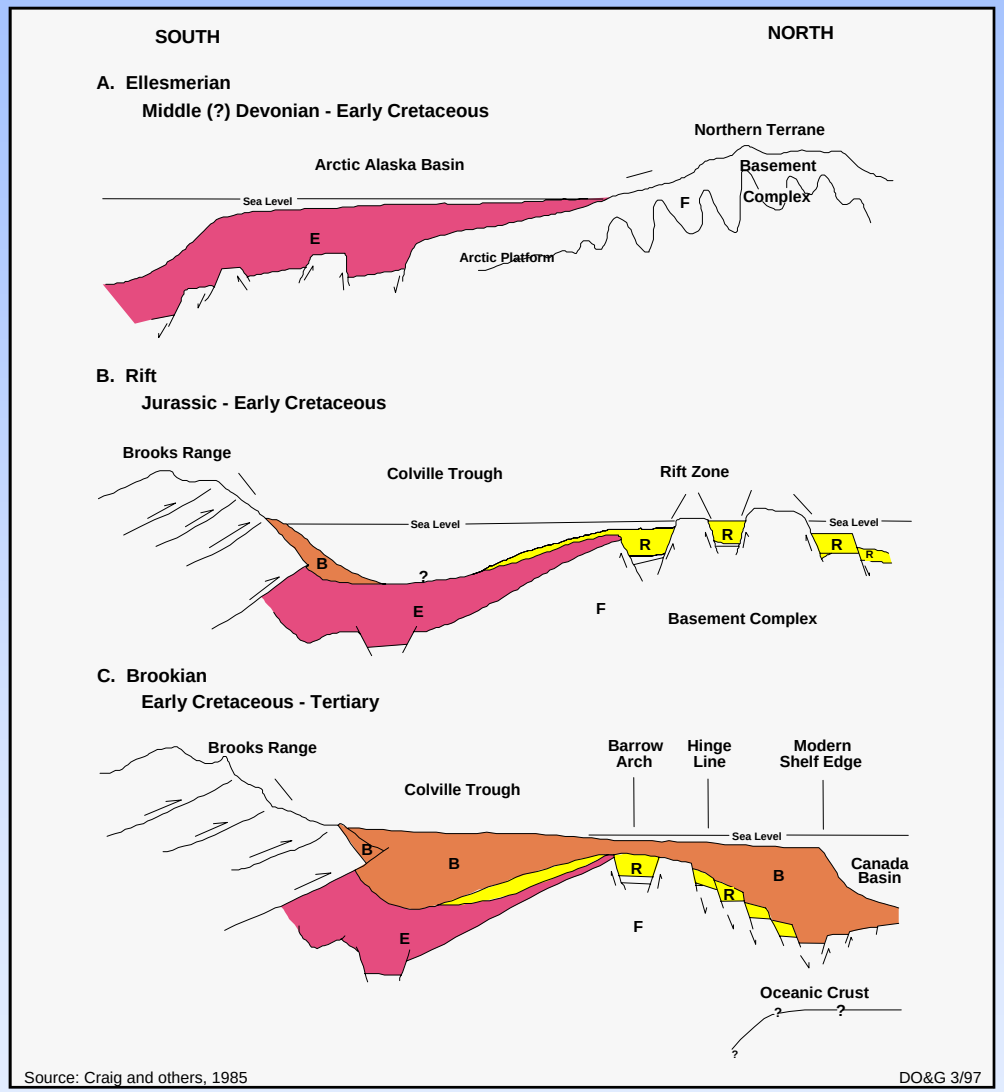


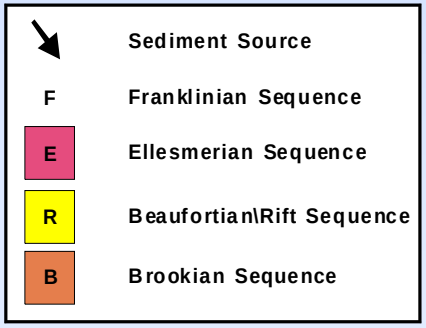
Well "Reach" vs Time (In Alaska)



***Current North American Record held by BP NK-11 (West Niakuk #11) at 19,804 feet.**

Generalized Geologic Evolution of Northern Alaska





Decreasing Development Footprint Minimizes Environment Impact